Planning Proposal

Rezoning of 400-404 Cabramatta Road West, Cabramatta

Proposed amendment to Fairfield Local Environmental Plan 2013

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Appendices

Introduction

This Planning Proposal has been prepared in accordance with Section 3.33 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and "A guide to preparing Planning Proposals" by the Department of Planning and Environment dated August 2016. The Planning Proposal has been drafted in accordance with the Guideline, detailing:

- Objectives and intended outcomes;
- Explanation of Provisions;
- Justification;
- Community consultation; and
- Summary and Recommendations

Council is in receipt of a Planning Proposal for multiple lots located at the intersection of Cabramatta Road West and Orange Grove Road also known as Cumberland Highway. The subject site (figure 1) consists of six privately owned lots and has a total site area of 15,349m^2.

Locality Map

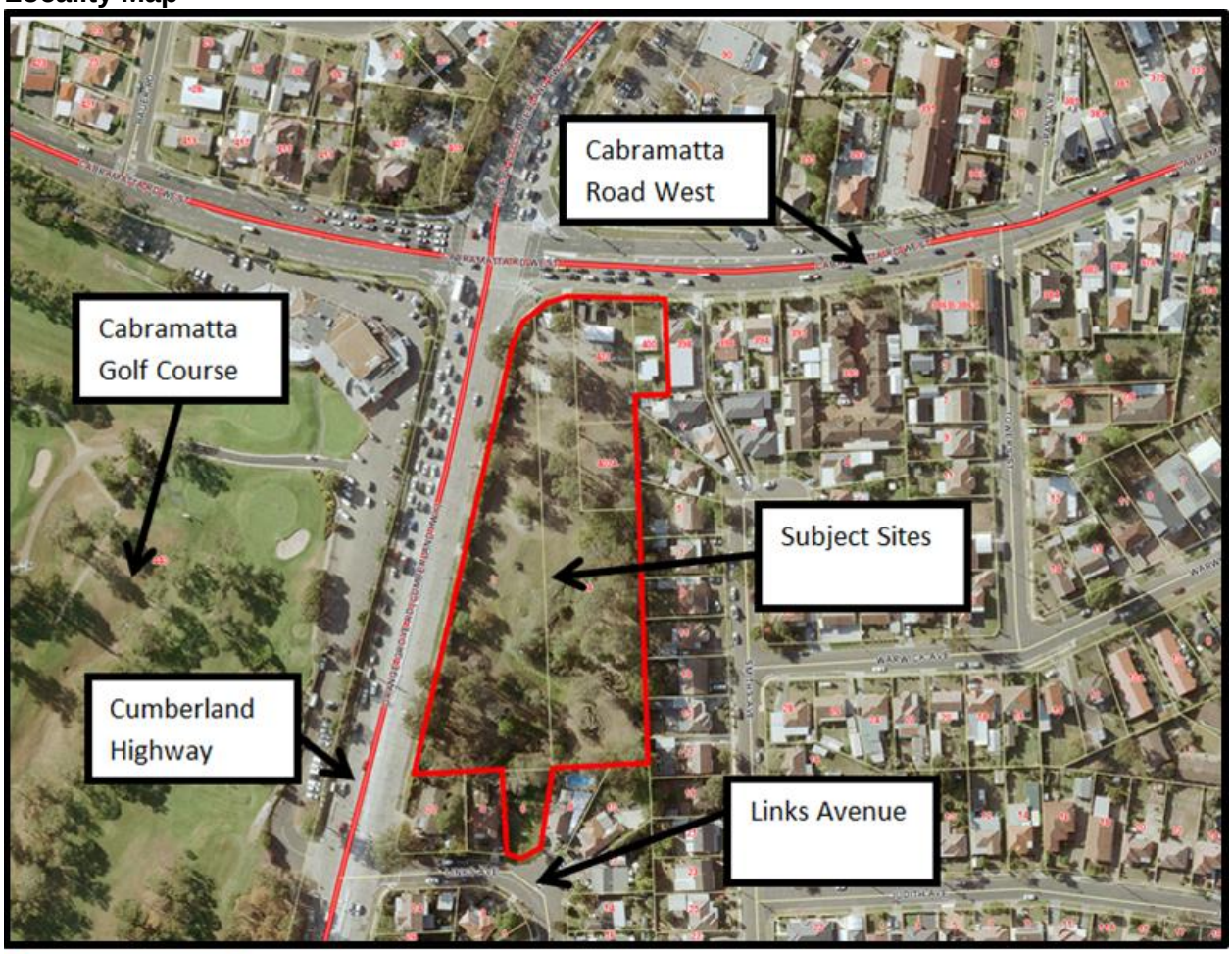


Figure 1. Location Map

The Planning Proposal seeks to amend the following provisions of Fairfield LEP 2013:

- Height of Buildings map;
- Floor Space Ratio map;
- Zoning Map;

- Minimum Lot Size Map;
- Minimum Lot Size Dual Occupancy Map;
- Key Sites Map.

The Planning Proposal is seeking amendment to the land zoning map by rezoning the northern portion of the site from R2 Low Density Residential to R4 High Density to facilitate a 4 storey apartment building with a 5th storey pop up. The Planning Proposal is also seeking to rezone the southern portion of the site from R2 Low Density Residential to R3 Medium Density Residential to facilitate townhouse/terrace style development. The Planning Proposal also seeks to amend the relevant development standards map to facilitate the redevelopment.

Background

A previous iteration of a Planning Proposal for the subject site was lodged with Council in 2016. The proposal was not supported by Council officers due to what would have resulted in significant over development of the site. The previous proposal proposed the following:

- R1 General Residential Zoning across the entire site;
- Increased height of buildings to part 14 metres (4 storeys) and part 27 metres (8 storeys);
- Increase the maximum floor space ratio for the site to 2:1
- Allow “Office Premises” and “Business Premises” as additional permitted uses on the site.

Council at its meeting on 12 September 2017 resolved to not proceed with the Planning Proposal. The applicant chose to submit the Planning Proposal to the Sydney Western City Planning Panel for a pre Gateway rezoning review. On 11 April 2018, the Sydney Western City Planning Panel determined that the application should not proceed to Gateway Determination as the proposal had not demonstrated site specific strategic merit.

While the proposal had demonstrated strategic merit at the District level by adding to the supply of housing it was inconsistent with the Fairfield Residential Development Strategy which constitutes the strategic framework developed by Fairfield Council to deliver its housing supply.

It was further suggested by the panel that a more appropriately scaled form of medium density residential development be discussed.

A new amended Planning Proposal was submitted to Council on 20 August 2018 which sought to address the reasons for refusal.

Part 1 – Objectives

The purpose of the planning proposal is to amend Fairfield Local Environmental Plan 2013:

- Land zoning map to show the site as part R3 Medium Density Residential and R4 High Density Residential.
- Floor Space Ratio (FSR) and Height of Building (HOB) applying to the site to facilitate a medium and high density development.

In summary, the objective of the Planning Proposal is to amend the Fairfield Local Environmental Plan 2013 to:

1. Amend the land zoning map to show the site as Part R3 Medium Density Residential and part R4 High Density Residential respectively;
2. Amend the Height of Buildings map to show the R3 portion of the site as 10 metres and the R4 portion of the site as 17 metres respectively;
3. Amend the Floor Space Ratio Map to show the R3 portion of the site as 0.7:1 and the R4 portion of the site as 1.7:1 respectively;
4. Amend the Lot Size Map to remove the subject sites;
5. Amend the Minimum Lot Size Dual Occupancy Development Standards Map to remove reference to the subject sites;
6. Amend the Key Sites map to remove reference to the subject site.

The planning proposal applies to the following land:

Address	**Legal Description**
400 Cabramatta Road West	Lot 1 DP 29449
402 Cabramatta Road West	Lot 1 DP 503339
402A Cabramatta Road West	Lot 2 DP 503339
404 Cabramatta Road West	Lot 6 DP 709126
2-18 Orange Grove Road	Lot 7 DP 709126
6 Links Avenue	Lot 3 DP 30217

Part 2 – Explanation of provisions

To achieve the objectives mentioned above, the Planning Proposal will need to amend the Fairfield Local Environmental Plan 2013 (FLEP 2013) as follows:

1. Amend the Land Zoning Map Sheet LZN_017 by rezoning the site to part R3 Medium Density Residential and part R4 High Density Residential;
2. Amend the Height of Buildings Map Sheet HOB_017 by applying a part height limit of 10 metres and part height limit of 17 metres ;
3. Amend the Floor Space Ratio Map Sheet FSR_017 by applying a floor space ratio of part 0.7:1 and part 1.7:1.
4. Amend the Lot Size Map Sheet LSZ_017 by removing the development standard applying to the site;
5. Amend the Lot Size for Dual Occupancy Development Map Sheet LSD_017 by removing the development standard applying to the site;
6. Amend the Key Site Map Sheet KYS_017 by removing the development standard applying to the site.
7. The proposed changes to the zone, height and FSR maps are within the Urban Design Report (submitted separately by the applicant and forms Appendix B of this report), and;

8. Amend Schedule 1 item 3 to delete ‘multi dwelling housing’ as an additional permitted use on the site.

Refer to Appendices depicting the above mentioned site and related maps.

Part 3 – Justification

Section A – Need for a planning proposal

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

The Planning Proposal is not the result of any specific strategic study or report. The Planning Proposal will deliver approximately 130 new dwellings in an appropriate location without undermining Council's Residential Development Strategy.

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

The Planning Proposal is the best means of achieving the intended outcome - the current land use zoning, height and FSR controls prohibit the proposed redevelopment of the site.

Section B – Relationship to strategic planning framework

Is the planning proposal consistent with the objectives and actions contained within the applicable regional or sub-regional strategy (including *A Plan for Growing Sydney*, *draft Greater Sydney Region Plan* and the *Western City District Plan*)?

Metropolis of Three Cities – A vision to 2056

The Metropolis of three cities – A Vision to 2056 is the overarching strategic land use plan for the Greater Sydney metropolitan area. It outlines the strategic vision for managing growth in Sydney to 2056. The vision seeks to transform Greater Sydney into a metropolis of three cities.

- The Western Parkland City – the site is located within the Western Parklands City;
- The Central River City; and
- The Eastern Harbour City

The strategy for Greater Sydney is underpinned by 10 strategic directions each with specific objectives designed to deliver the plan. Table 2 summarises the Planning Proposal's consistency with the relevant directions.

Directions	Comments
A city supported by infrastructure	Cabramatta and Liverpool are a short bus ride from the site, and the Orange Grove MegaCenta is within proximity. The planning proposal will facilitate a reasonable increase in housing density which will increase the local community's capacity to live within 30 minutes of the nearest strategic centres. Further, the planning proposal will not compromise the delivery of any planned metropolitan infrastructure projects.
A collaborative city	The planning proposal will not compromise the co-ordination and delivery of the Western City Deal or the proposed Liverpool collaboration area. The planning proposal is a result of ongoing consultation between the landowner and Council; it will also be publicly exhibited to allow the wider community and authorities to provide their views on the proposal.
Housing the city	The planning proposal will facilitate the provision

	of approximately 130 new dwellings in a variety of typologies, within proximity to the Orange Grove Mega Centa, and adjacent to bus stops that connect to Cabramatta and Liverpool. The planning proposal will increase housing diversity and supply in an appropriate location.
A well-connected city	As outlined above, the planning proposal is close to surrounding strategic centres and will not prevent the delivery of metropolitan transport infrastructure projects.
Jobs and skills for the city	The planning proposal seeks to increase the density of existing residentially zoned land within reasonable limits. It does not seek to rezone industrial or urban services land.
A city in its landscape	The Plan does not identify the site as having any ecological or biodiversity significance. The site's existing landscape is highly modified and degraded and it is bounded by two high volume major arterial roads and existing urban development. Notwithstanding, the planning proposal retains many trees on-site and provides a significant area of communal open space. The planning proposal does not propose to rezone any environmentally zoned land. An Ecological Issues and Assessment Report, and a Preliminary Arboricultural Assessment were submitted with the planning proposal. Both assessments concluded that the planning proposal is supportable. Council's Environmental Management Team reviewed the proposal and did not raise any objections.

Western City District Plan

The Greater Sydney Commission's overarching vision for the Western City is to provide a 30-minute city; this means that residents in the Western City District will have quicker and easier access to a wider range of jobs, housing types and activities. The Western City District Plan sets out 20 strategic Planning Priorities to achieve the vision. The table sets out the planning priorities and justification of consistency.

Planning Priority	**Consistency**
Planning Priority W5 – "Providing housing supply, choice and affordability with access to jobs, services and public transport"	The Planning Proposal will boost housing supply within the established neighbourhood of Cabramatta, close to Liverpool which is consistent with the Draft Plan and will also enable the existing community to remain in place. The site is unique and represents one of the largest single landholdings in the LGA. It has the capacity to provide a range of smaller affordable dwelling types to suit the change in housing demand for one and two-person dwellings. Council have acknowledged that the delivery of

	smaller housing types needs to be prioritised to meet the changing needs of the local community. The site is within proximity of the Orange Grove MegaCenta and within 30 minutes travel time on public transport to Liverpool CBD, Cabramatta and Fairfield. Therefore, it is in a strategically appropriate location to deliver the '30-minute City' by taking advantage of the amenity, services and employment opportunities provided by the surrounding strategic centres.
Planning Priority W14 "Protecting and enhancing bushland and biodiversity"	The site does not contain urban bushland or remnant vegetation. It has previously accommodated residential dwellings. It has been cleared of structures and has remained vacant for a significant period. It is bounded by two major arterial roads and existing urban residential development. It is currently zoned R2 Low Density Residential and is not identified on the Fairfield LEP "Terrestrial Biodiversity Map" or "Riparian Lands and Watercourses Map". Further, it is not subject to any additional local environmental protection provisions in the LEP. The ecological assessment undertaken and submitted with the planning proposal concluded that: The site is located within a significant area of existing urban development and has been substantially cleared and developed in the past. The existing vegetation on the site is described as 'synthetic' and is dominated by introduced species and horticultural plantings. The development area is not considered critical or important for the survival of a viable local population of any threatened biota or threatened or migratory species.

Is the planning proposal consistent with the local Council's community strategic plan, or other local strategic plan?

The Planning Proposal is consistent with a number of themes and goals within the Fairfield City Plan 2016 – 2026. The table below illustrates how the planning Proposal aims to achieve the outcome of these themes and goals.

Relevant FCCSP Outcome within the theme	Outcome	How the planning Proposal achieves the outcome
Theme 2 – Places and Infrastructure **Goal A.**	High quality development that meets the community's needs.	The Planning Proposal seeks to encourage development of different housing types to meet the varied needs of the community.
Theme 4 – Local Economy and Employment **Goal C.**	A variety of job and training opportunities available in the city	The Planning Proposal will generate full time short term employment through the construction of the project. The ongoing maintenance of the development will generate employment for the local

		economy.

Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (the EP&A Act) and the Environmental Planning and Assessment Regulation 2000 (EPA (Reg.) set out:

- Requirements for rezoning land;
- Requirements regarding the preparation of a local environmental study as part of the rezoning process;
- Matters for consideration when determining a development application; and
- Approval permits and/or licences required from other authorities under other legislation

This Planning Proposal has been prepared in accordance with the requirements set out in section 3.33 of the EP&A Act in that it explains the intended outcomes of the proposed instrument. The Planning Proposal also provides justification and an environmental analysis of the proposal.

SEPP 65 – Principle 1 "Context and Neighbourhood Character"

The Planning Panel considered that the initial Planning Proposal would result in a development that would contrast with the character of the immediate urban precinct. The Panel wrote that:

"*The proposal is considered to lack site specific merit as it would result in an isolated medium/high density development distinctly contrasting with the character of the immediate urban precinct in which is located. That immediate precinct constitutes low density detached dwellings adjoining the common eastern and southern boundaries of the site. Significant open space and vistas are provided by the golf course located opposite on Orange Grove Road. This element of the proposal's setting is unlikely to undergo significant change in the medium term.*

There is no development with similar form or height to the development that is proposed in the area surrounding the Orange Grove development and surrounding commercial development.
Given those matters, the resulting development is considered to be incompatible with the surrounding urban context, and would result in development in conflict with State Environmental Planning Policy (SEPP) 65 Design Quality of Residential Apartments, Principle 1: Context and Neighbourhood Character. "

The indicative concept design submitted with the current Planning Proposal has been prepared to be compatible with the surrounding urban context and allow the efficient and orderly development of the site. The current Planning Proposal seeks to primarily facilitate medium density townhouses of a scale and form that is compatible with the adjacent detached dwellings. The mass and scale of the single residential flat building is significantly lower than the mass and scale of the residential flat buildings considered by the Planning Panel. This section of the report demonstrates that the Planning Proposal and the future built form of the proposed residential flat building is consistent with the Principle 1. Principle 1 is reproduced below:

"Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood.
Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change."

The proposed residential flat building is consistent with Principle 1 for the following reasons:

- The site is large and currently vacant; it is located on a major arterial road intersection on a prominent ridgeline at the southern gateway to the Fairfield LGA. It is a unique location. The immediate surrounding context comprises a range of uses including a highway service centre, fast food outlet, golf club and course, low density detached dwellings and multi dwelling houses. The existing maximum height limit on the immediately adjoining land is 9m.

- The indicative concept for the residential flat building responds to the surrounding context in the following manner: − The proposal is setback 6m from the public domain which is consistent with the front building line setback established by the lower density dwellings to the east. The Cabramatta Road West building façade at the ground plane and upper levels can be broken down vertically and horizontally to respond to and reflect the scale of the adjacent low-density dwellings. By implementing these mechanisms, the proposal can respond and contributes to the existing streetscape.

    - The proposal is setback 18m from the adjoining low density at the fifth storey, and 9m from the adjoining low density at the fourth storey. These distances allow the form and scale to transition between the 9m low density zone to the four storey (12m) component without resulting in an abrupt change in the streetscape. The addition of a detailed landscaping strategy at the DCP or development application stage will further soften the transition between the two zones.
    - The recessive fifth storey 'pop-up' element is set back 3m from the building's street façade (9m from the street boundary) and between 18m – 14m from the side facades. The proposed built form will read as a four-storey building from the immediate surrounds, and it will create a landmark that addresses the corner, which will improve geographical legibility and create a distinct identity for the immediate area.

In summary, the proposed location, height, mass and scale of the residential flat building has been scaled back per and diminished per the recommendations of the Sydney South West Local Planning Panel.

<u>Fairfield Local Environmental Plan 2013 (Fairfield LEP 2013)</u>

The Fairfield LEP is the key environmental planning instrument that applies to the site. In summary the Planning Proposal will endeavour:

- Provide appropriate housing types to meet a range of lifestyles and cultures, and;
- Provide a built form that is sensitive to the existing character of the surrounding residential properties and will not generate any unacceptable impacts on the amenity of the neighbouring dwellings

Objective FLEP 2013	**Proposal Compliance**
to ensure that appropriate housing opportunities are provided for all existing and future residents and that those	The Planning Proposal is consistent as it seeks to increase the number of dwellings permitted on the site. This will increase the range and diversity of housing

Objective FLEP 2013	Proposal Compliance
housing opportunities accommodate different lifestyles, incomes and cultures,	opportunities the LGA.
to ensure that the economic, employment and educational needs of the existing and future community are appropriately planned for,	The Planning Proposal is related to residential land uses in a residential area. It will not undermine the achievement of this objective.
to conserve the environmental heritage of Fairfield,	The Planning Proposal is consistent as it will not have any impact on the preservation of the environmental heritage of Fairfield.
To protect and manage areas of remnant bushland, natural watercourses and threatened species.	The Planning Proposal is consistent as it will not have any adverse impact on the sensitive ecological systems located in Fairfield.
Objectives of R4 Zone	**Proposal Compliance**
To provide for the housing needs of the community within a high density residential environment.	The Planning Proposal will facilitate the development of a modest residential flat building with approximately 69 apartments adjacent to public transport and within proximity of the Orange Grove MegaCenta.
To provide for a variety of housing types within a high density residential environment.	The Planning Proposal will facilitate a variety of one, two and three bedroom apartments.
To enable other land uses that provide facilities or services to meet the day to day needs of residents.	The residential flat building is not incompatible with other land uses that are permissible in the R4 zone.
To maximise opportunities for increased development on all land by encouraging site amalgamations.	The Planning Proposal seeks to facilitate a reasonable residential development on an amalgamated site.
Objectives of R3 Zone	**Proposal Compliance**
To provide for the housing needs of the community within a medium density residential environment.	The Planning Proposal will facilitate the development of approximately 63 multi-dwelling houses (townhouses) adjacent to public transport and within proximity to orange grove MegaCenta.
To provide a variety of housing types within a medium density residential environment.	The Planning Proposal will facilitate the development of a variety of two and three bedroom townhouses.
To enable other land uses that provide facilities or services to meet the day to day needs of residents.	The proposed townhouses are not incompatible with other land uses that are permissible in the R3 zone.

Fairfield Residential Development Strategy 2009

The Fairfield Residential Development Strategy (RDS) identifies areas within Fairfield City that should be investigated for future increases in residential density. The key principle for the increase in density within the City outlined by the RDS is density around centres and along corridors. This was reflected in the initial RDS which proposed residential density increase in and around the Cabramatta Town Centre.

The preparation of the Cabramatta Transport and Accessibility Management Plan (TMAP) identified significant issues associated with the proposed increased densities in and around Cabramatta, particularly within the western half of the City. The TMAP identified that significant intervention and investment would be required, should the proposed densities be introduced in the western part of the Centre.

The planning proposal provides an opportunity to implement urban renewal to the south of Cabramatta and increase diversity in housing typology. The site is well serviced by regular bus services running south to Liverpool station, east to Cabramatta station and west to the T-Way station at Brown Road, Bonnyrigg.

Fairfield City Wide Development Control Plan 2013

The proposal was considered against objectives and desired character of Chapter 6A council's multi dwelling housing chapter and Chapter 7 Residential Flat Buildings.

Specifically the planning proposal will achieve the following objectives and desired character outcomes of chapter 6A:

- To provide for the housing needs of the community within a medium density residential environment, meeting the needs of families and households that require smaller dwelling units and more affordable housing choices;
- To ensure the development makes a positive contribution to the streetscape and neighbourhood.

Specifically the planning proposal will achieve the following objectives and desired character outcomes of chapter 7:

- Visually integrate new development with neighbouring housing via compatible dwelling form;
- Maximise access to sunlight for dwellings in and around the development;
- Maximise the effective use of the site including front and side setbacks.

Whilst the proposal is generally consistent with the desired future character of the locality the scale of development proposed is considerably greater than that provided for under the controls of the existing DCP. For this reason, it is recommended that a draft Site Specific DCP should be prepared for the site should the proposal be successful in receiving a favourable Gateway Determination. Details of the draft SSDCP are discussed in further detail later in this report.

Is the planning proposal consistent with the relevant state environmental policies?

The relevant State Environmental Planning Policies are outlined in the table below:

SEPP Title	Applicable Yes/No	If Applicable - Consistency with Planning Proposal
SEPP 1 – Development Standards	Yes	Proposal seeks change in development standards applying to site. The applicant seeks on the R3 portion of the site an FSR of 0.7:1. The proposed FSR on the R4 portion of the site is 1.7:1. The requested maximum HOB on the R4 portion of the site is 17 metres and on the R3 portion of the site 10 metres. An ADG compliance assessment has been undertaken and shows consistency with the provisions of SEPP 65 which is generally consistent with councils City Wide DCP including deep soil areas.
SEPP 14 – Coastal Wetlands	Yes	SEPP coastal management applies to the entire state however the site is not currently identified as an environmentally sensitive area under SEPP coastal

SEPP Title	Applicable Yes/No	If Applicable - Consistency with Planning Proposal
		management.
SEPP 19 – Bushland in Urban Areas	Yes	Endemic species such as shale plains woodland is located onsite. Including red gum varieties. These are proposed to be removed as part of the development. These species are identified as low significance in council's biodiversity strategy. The proposal is generally consistent with this policy subject to compliance with conditions set by council's natural resources team.
SEPP 21 – Caravan Parks	N/A	
SEPP 26 – Littoral Rainforests	N/A	-
SEPP 30 – Intensive Agriculture	N/A	
SEPP 33 – Hazardous and Offensive Development	N/A	
SEPP 36 – Manufactured Home Estates	N/A	-
SEPP 44 – Koala Habitat Protection	N/A	-
SEPP 47 – Moore Park Show Ground	N/A	-
SEPP 50 – Canal Estate Development	N/A	
SEPP 52 – Farm Dams and Other Works in Land and Water Management Plan Areas	N/A	-
SEPP 55 – Remediation of Land	N/A	The site is not known to be contaminated and is currently zoned for residential uses. Notwithstanding this, contamination will be further addressed at the DA stage.
SEPP 62 – Sustainable Aquaculture	N/A	
SEPP 64 – Advertising and Signage	N/A	SEPP 64 is not relevant to the Planning Proposal. The SEPP may be relevant to future DAs.
SEPP 65 – Design Quality of Residential Apartment Development	YES	Detailed compliance with SEPP 65 will be demonstrated in any future DA for any building facilitated by this Planning Proposal. Testing of SEPP 65 and the Apartment Design Guide (ADG) was conducted throughout the design of the indicative scheme which is capable of satisfying the requirements of the SEPP and associated Apartment Design Guide. As outlined in the Urban Design Report (submitted separately) the indicative residential flat building can achieve the solar access and natural ventilation requirements of the ADG and achieves compliant building separation and setbacks to the surrounding lower density residential development.
SEPP 70 – Affordable Housing	N/A	SEPP 70 is not relevant to proposed

SEPP Title	Applicable Yes/No	If Applicable - Consistency with Planning Proposal
(Revised Schemes)		amendment.
SEPP 71 – Coastal Protection	N/A	
SEPP (Kurnell Peninsula) 1989	N/A	
SEPP (Building Sustainability Index: BASIX) 2004	YES	Detailed compliance with SEPP (BASIX) will be demonstrated in a future development application for the scheme facilitated under this Planning Proposal.
SEPP (Housing for Seniors or People with a Disability) 2004	N/A	
SEPP (State Significant Precincts) 2005	N/A	
SEPP (Sydney Region Growth Centres) 2006	N/A	
SEPP (Kosciuszko National Park – Alpine Resorts) 2007	N/A	
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	N/A	
SEPP (Infrastructure) 2007	N/A	SEPP (infrastructure) will apply to any future development of the site facilitated by the Planning Proposal.
SEEP (Exempt and Complying Development Codes) 2008	YES	SEPP (Exempt and Complying Development Codes) may apply to the future development of the site.
SEPP (Rural Lands) 2008	N/A	
SEPP (Western Sydney Employment Area) 2009	N/A	
SEPP (Western Sydney Parklands) 2009	N/A	
SEPP (Affordable Rental Housing) 2009	N/A	SEPP (Affordable Rental Housing) is not relevant to the proposed amendment.
SEPP (Urban Renewal) 2010	N/A	
SEPP (State and Regional Development) 2011	YES	The future development of the site is likely to be deemed as 'regional development' (meeting the relevant thresholds under Schedule 4A of the EP&A Act), with the JRPP acting as the determining authority.
SEPP (Sydney Drinking Water Catchment) 2011	YES	Yes the proposal is within the Sydney drinking water catchment.
SEPP (Miscellaneous Consent Provisions) 2007	N/A	
SEPP (Integration and Repeals) 2016	N/A	
SEPP (Penrith Lakes Scheme) 1989	N/A	
SEPP (Three Ports) 2013	N/A	
SREP No. 9 (Extractive Industry) (No 2 – 1995)	N/A	

SEPP Title	Applicable Yes/No	If Applicable - Consistency with Planning Proposal
SREP No. 20 (Hawkesbury-Nepean River) (No 2 – 1997)	N/A	
GMREP No. 2 Georges River Catchment	YES	The proposal falls within the Georges River catchment.

Is the planning proposal consistent with applicable Ministerial Directions (s.117 directions)?

The relevant Section 117 Directions contained within the Environmental Planning and Assessment Act 1979 are outlined in the table below:

Section 117 Direction No. &Title	Contents of Section 117 Direction	Planning Proposal	Comply
1. Employment and Resources			
1.1 Business and Industrial Zones	▪ Encourage employment growth in suitable locations ▪ Protect employment land in business and industrial zones ▪ Support the viability of identified strategic centres.	The proposal does not impact on the intent of this direction.	N/A
1.2 Rural Zones	▪ Protect agricultural production value of rural land.	The proposal does not impact on the intent of this direction.	N/A
1.3 Mining, Petroleum Production and Extractive Industries	▪ Ensure future extraction of State and regionally significant reserves of coal, other minerals, petroleum and extractive materials are not compromised by inappropriate development.	The proposal does not impact on the intent of this direction.	N/A
1.5 Rural Lands	▪ Protect agricultural production value of rural land and facilitate orderly and economic development of rural lands and related purposes.	The proposal does not impact on the intent of this direction.	
2. Environment and Heritage			
2.1 Environment Protection Zones	▪ Protect and conserve environmentally sensitive areas.	The proposal does not impact on the intent of this direction.	N/A
2.2 Coastal Protection	▪ Implement the principles in the NSW Coastal Policy.	The proposal does not impact on the intent of this direction.	N/A
2.3 Heritage Conservation	▪ Conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance.	The planning proposal itself does not relate to a property of heritage significance as identified under Fairfield LEP 2013. However there are items of heritage significance, namely the Red Gums located on the Cabramatta Golf Course which are unlikely to be affected by this proposal.	N/A
2.4 Recreation	▪ Protect sensitive land or land with	The proposal does not impact	N/A

Section 117 Direction No. &Title	Contents of Section 117 Direction	Planning Proposal	Comply
Vehicle Areas	significant conservation values from adverse impacts from recreation vehicles.	on the intent of this direction.	
1. Housing, Infrastructure and Urban Development			
3.1 Residential Zones	▪ Encourage a variety and choice of housing types to provide for existing and future housing needs ▪ Make efficient use of existing infrastructure and services and ensure that new housing has appropriate access to infrastructure and services ▪ Minimise the impact of residential development on the environment and resource lands.	The Planning Proposal seeks to rezone to R3 and R4 zoning. The R3 portion of the proposal is generally consistent with this direction. However, the subject site already benefits from an additional permitted use of 'multi dwelling housing'. This form of medium density housing is currently not available in the locality. This built form is more sympathetic to the surrounding properties which are zoned R2 Low Density Residential with a maximum Height of Buildings of 9 metres.	YES
3.2 Caravan Parks and Manufactured Home Estates	▪ Provide for a variety of housing types ▪ Provide opportunities for caravan parks and manufactured home estates.	The proposal does not impact on the intent of this direction.	N/A
3.3 Home Occupations	▪ Encourage the carrying out of low-impact small businesses in dwelling houses.	The proposal will not affect any existing permissibility or exemptions for home occupations.	N/A
3.4 Integrating Land Use and Transport	▪ Improve access to housing, jobs and services by walking, cycling and public transport. ▪ Increase choice of available transport and reducing car dependency. ▪ Reduce travel demand and distance (especially by car) ▪ Support the efficient and viable operation of public transport services ▪ Provide for the efficient movement of freight	The subject site is located on the corner of two existing arterial roads with four accessible bus routes. The bus routes that service this site are the Badgerys Creek to Liverpool, Liverpool to Orange Grove, Mt Pritchard to Cabramatta, and Greenfield Park to Cabramatta. However, this site is not within a reasonable walking distance to a major transport node such as train station or T-Way.	YES
3.5 Development Near Licensed Aerodromes	▪ Ensure effective and safe operation of aerodromes ▪ Ensure aerodrome operation is not compromised by development ▪ Ensure development for residential purposes or human occupation, if situated on land	No this direction is not applicable because the site is not located on an aerodrome, within the vicinity of an aerodrome and there are no previous or current approvals for this land use on the subject site.	N/A

Section 117 Direction No. &Title	Contents of Section 117 Direction	Planning Proposal	Comply
	within the ANEF contours between 20 and 25, incorporate noise mitigation measures.		
3.6 Shooting Ranges	▪ Maintain appropriate levels of public safety and amenity when rezoning land adjacent to an existing shooting range, ▪ Reduce land use conflict arising between existing shooting ranges and rezoning of adjacent land ▪ Identify issues that must be addressed when giving consideration to rezoning land adjacent to an existing shooting range.	No this direction is not applicable because the site does not have a shooting range on it nor is within the vicinity of one and there are no previous or current approvals for this and use type.	N/A
4. Hazard and Risk			
4.1 Acid Sulphate Soils	▪ Avoid significant adverse environmental impacts form the use of land that has a probability of containing acid sulphate soils.	No the land is not subject to Acid Sulphate Soils	N/A
4.2 Mine Subsidence and Unstable Land	▪ Prevent damage to life, property and the environment on land identified as unstable or potentially subject to mine subsidence.	No the land is not subject to geotechnical land slip. The land was not previously used for the purpose of mining.	N/A
4.3 Flood Prone Land	▪ Ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the *Floodplain Development Manual 2005*. ▪ Ensure that the provisions of an LEP on flood prone land are commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land.	No subject site is not flood prone. The subject site is not subject to local overland flooding or mainstream flooding. Adjacent sites have been mapped as potentially flood prone (overland flooding), however council has not studied the area yet. However, some adjoining properties are likely to be affected by overland flooding that originates from this site. It is considered that the level of overland flooding is not at a level of risk that prevents the use of this site for higher forms of residential development.	YES
4.4 Planning for Bushfire Protection	▪ Protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas. ▪ Encourage sound management of bush fire prone areas.	The subject site is not identified as being bushfire prone.	N/A
5. Regional Planning			

Section 117 Direction No. &Title	Contents of Section 117 Direction	Planning Proposal	Comply
5.1 Implementation of Regional Strategies	▪ To give legal effect to the vision, land use strategy, policies, outcomes and actions contained in regional strategies.	The proposal does not impact on the intent of this direction.	N/A
5.8 Second Sydney Airport – Badgerys Creek	▪ To avoid incompatible development in the vicinity of any future second Sydney Airport at Badgerys Creek	Whilst Fairfield City Council Local Government area is partly affected by the "Badgerys Creek–Australian Noise Exposure Forecast–Proposed Alignment–Worst Case Assumptions" map, from the Second Sydney Airport Site Selection Program Environmental Impact Statement, the subject site does not fall within the area of affectation.	YES
6. Local Plan Making			
6.1 Approval and Referral Requirements	▪ Ensure LEP provisions encourage the efficient and appropriate assessment of development	The planning proposal has been referred to RMS for comment. It is likely that the RMS and other state agencies will be given further opportunity to comment at the formal exhibition stage should a Gateway Determination be issued.	YES
6.2 Reserving Land for Public Purposes	▪ Planning proposal to facilitate the provision of public services and facilities by reserving land for public purposes ▪ Facilitate the removal of reservations of land for public purposes where the land is no longer required for acquisition.	The proposal does not impact on the intent of this direction.	N/A
6.3 Site Specific Provisions	▪ Discourage unnecessarily restrictive site specific planning controls	The subject site is subject to additional permitted uses under Schedule 1 the FLEP 2013. Additional permitted uses are for the purpose of multi dwelling houses. It is considered that the proposal in its current form will require the provision of Site Specific Controls to ensure that development is sympathetic to the adjoining low density residential development.	YES
7. Metropolitan Planning			

Section 117 Direction No. &Title	Contents of Section 117 Direction	Planning Proposal	Comply
7.1 Implementation of A Plan for Growing Sydney	▪ Ensure consistency with the NSW Government's *A Plan for Growing Sydney 2014*.	The proposal seeks to increase residential densities in an established area. It is therefore considered that the proposal is consistent with a number of directions within the NSW Government's A Plan for Growing Sydney including: - Direction 2.1: Improve housing supply across Sydney - Direction 2.2: Ensure more homes closer to jobs - Direction 2.3: Improve housing choice to suit different needs and lifestyles - Direction 3.1: Revitalize existing suburbs The proposal is seeking a form of residential housing in an area has not been identified by the Fairfield Residential Development Strategy.	YES

Section C – Environmental, social and economic impact

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?

The Planning Proposal will not adversely affect critical habitat or threatened species, populations or ecological communities or their habitats.

Ecological Impacts and Tree Retention

An Ecological Issues and Assessment Report was prepared by Gunninah to support the initial Planning Proposal. Gunninah have reviewed their previous assessment with regard to the current indicative concept (submitted separately).

In summary, the assessment concluded that,

“The highly modified and degraded condition of the subject land is a relevant consideration; as is the lack of any biodiversity conservation significance and the circumstances of the site (surrounded as it is by existing urban development and major roads).

Development of the subject land at Cabramatta Road in accordance with the current Planning Proposal would not impose any significant or relevant adverse impact on the natural environment – because the vegetation present is highly degraded; and because the subject land has little or no ecological or biodiversity conservation value.

The removal of trees from the subject land would not adversely affect any threatened fauna species to any relevant or significant extent; and could not conceivably be inconsistent with the Biodiversity Conservation Act 2016.

There is no potential for the proposed development of the subject land at Cabramatta in accordance with the Planning Proposal imposing a “significant impact” on any Matter of National Environmental Significance in respect of the Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act).”

The Planning Proposal to facilitate medium to higher density residential development on the site is supportable on ecological grounds.

Tree Retention

A Preliminary Arboricultural Assessment was prepared by Urban Forestry Australia for the initial Planning Proposal. Urban Forestry have reviewed their previous assessment with regard to the current indicative concept (submitted separately). In summary, the assessment concluded that,

“The estimated maximum tree retention under the current Planning Proposal is estimated to be approximately twenty-three (23) trees, with detailed assessment required of at least seven (7) of these trees due to their size, age, and proximity to proposed built works.

It is our view that any adverse tree-related impacts resulting from the current Planning Proposal could be mitigated by ensuring planting of medium to large canopy trees in suitable locations through the site, where they would have a better opportunity to mature to their full dimensions within a new development.”

The impacts on existing trees can be mitigated and the Planning Proposal to facilitate medium to higher density residential development will not impact any threatened species.

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

A Flood Analysis Report was prepared by ANA Civil for the initial Planning Proposal. ANA Civil have reviewed their previous assessment with regard to the current indicative concept (submitted separately). In summary, the assessment concluded that:

"The reduction in dwelling numbers and the proposed changes to the built form in the current Planning Proposal do not change our previous assessment. It is our view that any stormwater impacts resulting from the current Planning Proposal are acceptable. The proposed pipes and garden edge/swale on the eastern and western boundaries to carry existing overland flows could be still implemented in the new proposal. New Proposal will not block or redirect overland flows causing nuisance or flooding issues to the site and existing residences around it.

The reduction in dwelling numbers and the proposed changes to the built form in the current Planning Proposal will have the capacity to reduce the amount of runoff from the site.

It is our view that any drainage impacts resulting from the current Planning Proposal are acceptable."
Therefore, the Planning Proposal is supportable on flooding and stormwater grounds.

How has the planning proposal adequately addressed any social and economic effects?

The Planning Proposal will have a positive social impact and will provide additional dwellings close to 30 minute public transport connections to surrounding employment centres.

The indicative design concept for the residential flat building has been designed to generally meet the requirements of the Apartment Design Guide (ADG); and the indicative concept design for the townhouses has been designed to generally meet the requirements of the Fairfield DCP to achieve good levels of residential amenity for the future residents. Notably, the indicative design concept demonstrates that the site can accommodate medium to high density residential development that will provide:

- A pleasant outlook for residents across the Cabramatta Golf Course to the Blue Mountains;
- Apartments consistent with the ADG minimum size requirements;
- A minimum of two hours solar access to 77% of the indicative apartments;
- Natural cross ventilation to 61% of the proposed apartments;
- Separation distances between buildings in accordance with the minimum requirements of the ADG;
- Circulation cores that service no more than eight apartments per floor;
- 1,012sqm of communal open space (29.9% of the site area), and 1,188sqm deep soil (35.1% of the site area) for the residential flat building; and
- 956sqm of communal open space (8.1% of the site area), and 4,306sqm deep soil (36.6% of the site area) for the townhouse component;

It is noted that design prepared by Aleksandar Design Group is indicative for the purposes of understanding the opportunities on the site. Further design detail regarding apartment and townhouse layouts would be resolved as part of any future DCP and subsequent

development applications. Any future detailed design would also ensure that facades and glazing on the dwellings facing Cabramatta Road West and Orange Grove Road were designed to mitigate any traffic noise and achieve the relevant internal noise standards.

Section D – State and Commonwealth interests

There are no significant Commonwealth or State interests in the Planning Proposal other than the general objective to achieve an appropriate planning and development outcome on the site that has considered the State's regional and subregional strategic planning framework as described in this report.

Is there adequate public infrastructure for the planning proposal?

The site is immediately adjacent to bus routes that provide direct access to Liverpool and Cabramatta. These bus routes run frequently during peak times and have travel times of no more than approximately 12 minutes.

RMS upgrades to the immediate road network are completed and will accommodate the proposed increase in vehicle movements generated by the Planning Proposal without creating any significant impact on the operation of the surrounding road network.

What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

No formal consultation, at the time of writing this Planning Proposal, has been undertaken with Commonwealth or State authorities. Where necessary, consultation with relevant authorities will be undertaken in accordance with the initial Gateway determination.

Part 4 – Maps

This part of the Planning Proposal deals with the maps associated with the Fairfield Local Environmental Plan 2013 that are to be amended to facilitate the necessary changes as described in this report.

To achieve the objectives of the Planning Proposal, Fairfield Local Environmental Plan 2013 will be amended as follows:

- Amend the relevant zoning map 2850_COM_LZN_017_010_20150408 to rezone the subject land from R2 Low Density Residential to part R3 Medium Density residential and part R4 High Density Residential;

- Amend the relevant Floor Space Ratio Map 2850_COM_FSR_017_010_20150408 to provide for 1.7:1 to the R4 portion of the site and 0.7:1 for the R3 portion of the site;

- Amend the relevant Height of Buildings map 2850_COM_HOB_017_010_20180702 to provide for a building height of 10 metres to part of the site and 17 metres to part of the site;

- Amend the relevant Lot Size Dual Occupancy Development Map 2850_COM_LSD_017_010_20130117 to remove reference to the subject sites.

- Amend the relevant Lot size map 2850_COM_LSZ_017_010_20160624 to remove reference to the subject sites.

- Amend the Key Sites Map 2850_COM_KYS_017_010_20140922 to remove reference to the subject sites.

Note that **Appendix A** contains maps of existing and proposed zones and development standards applying to this Planning Proposal.

- The land subject to the Planning Proposal
- Current and proposed Land Use Zone
- Current and proposed Floor Space Ratio
- Current and proposed Height of Building

Part 5 - Community Consultation

Community consultation is required under Sections 56(2)(c)and 57 of the Environmental Planning and Assessment Act 1979.

The Act sets out the community consultation requirement for planning proposals and these are determined or confirmed at the Gateway.

It is proposed that in accordance with ‘A guide to preparing local environmental plans’ that the Planning Proposal undergo a 28 day public exhibition period. It is noted that confirmation of the public exhibition period and requirements for the Planning Proposal will be given by the Minister as part of the LEP Gateway determination. Any future DA for the site would also be exhibited in accordance with the Council’s notification requirements at which time the public and relevant authorities can make further comments on the redevelopment of the site.

In addition, the Planning Proposal will be advertised within the Fairfield City Champion and placed on Councils website during the public exhibition period.

Part 6 – Project Timeline

The project timeline is intended to be used only as a guide and may be subject to changes such as changes to issues that may arise during the public consultation process and/or community submissions.

No.	Step	Process content	Timeframe
1	s.56 – request for Gateway Determination	• Prepare and submit Planning Proposal to DP&I	December 2018/ January 2019
2	Gateway Determination	• Assessment by DP&I (including LEP Panel) • Advice to Council	March/ April 2019
3	Completion of required technical information and report (if required) back to Council	• Prepare draft controls for Planning Proposal • Update report on Gateway requirements	June 2019
4	Public consultation for Planning Proposal	• In accordance with Council resolution and conditions of the Gateway Determination.	July – August 2019
5	Government Agency consultation	• Notification letters to Government Agencies as required by Gateway Determination	August 2019
6	Public Hearing (if required) following public consultation for Planning Proposal	• Under the Gateway Determination issued by DP&I public hearing is not required.	August 2019
7	Consideration of submission	• Assessment and consideration of submissions	August 2019
8	Report to Council on submissions to public exhibition and public hearing	• Includes assessment and preparation of report to Council	September/ October 2019
9	Possible re-exhibition	• Covering possible changes to draft Planning Proposal in light of community consultation	October / November 2019
10	Report back to Council	• Includes assessment and preparation of report to Council	December 2019
11	Referral to PCO and notify DP&I	• Draft Planning Proposal assessed by PCO, legal instrument finalised • Copy of the draft Planning Proposal forwarded to DP&I.	January/February 2020
12	Plan is made	• Notified on Legislation web site	March 2020
Estimated Time Frame			15 months

APPENDIX A MAPS

Appendix A– Current and Proposed Maps

Existing Zoning Map

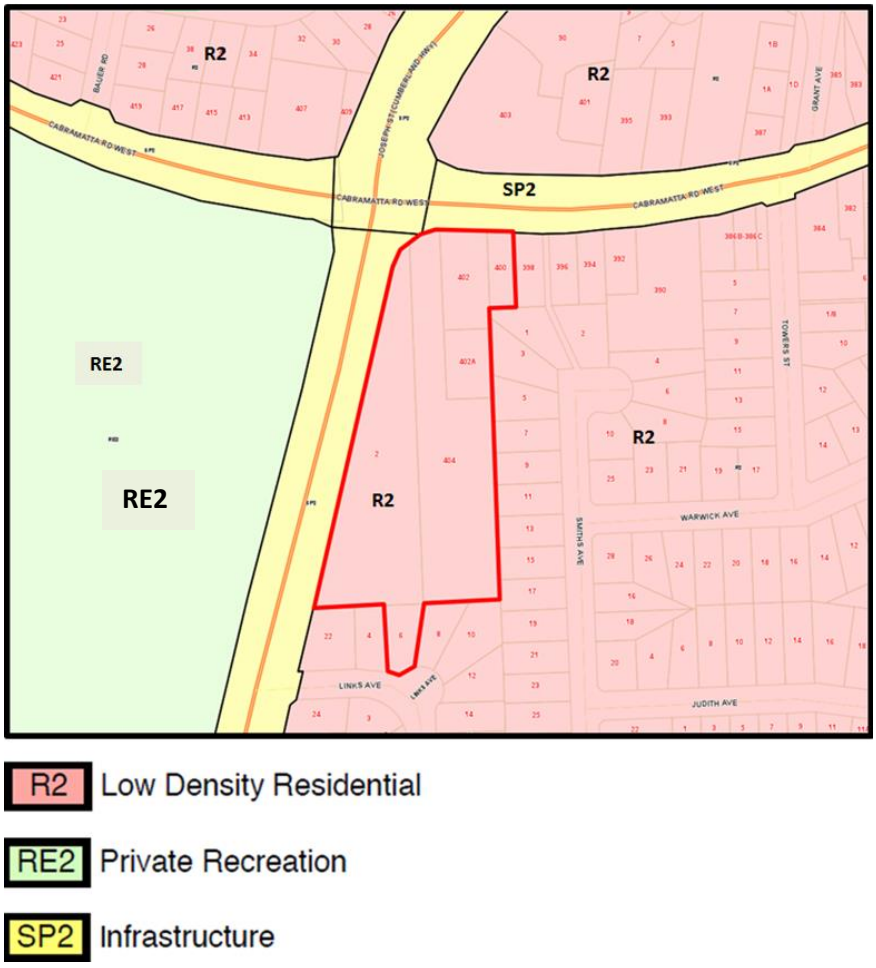


Figure 1 Existing Zoning MAP

Appendix A– Current and Proposed Maps

Existing Floor Space Ratio Map

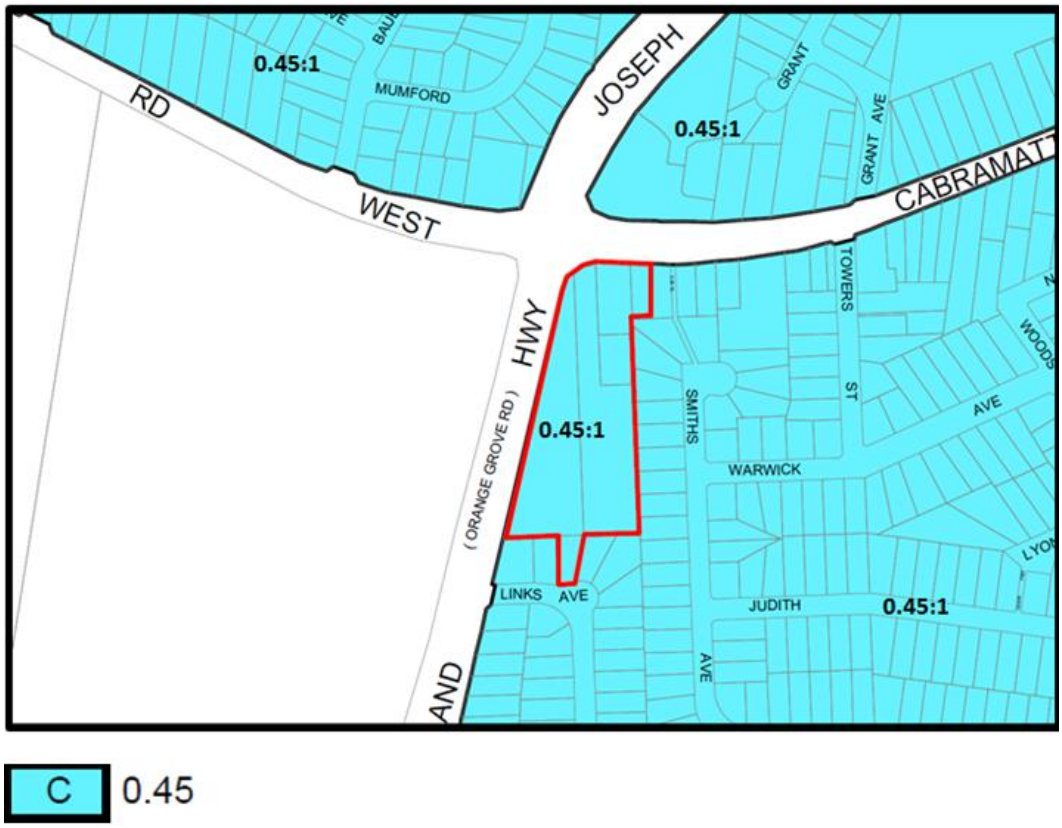


Figure 2 Existing Floor Space Ratio

Appendix A– Current and Proposed Maps

Existing Height of Buildings

Figure 3 Existing HOB

Appendix A– Current and Proposed Maps

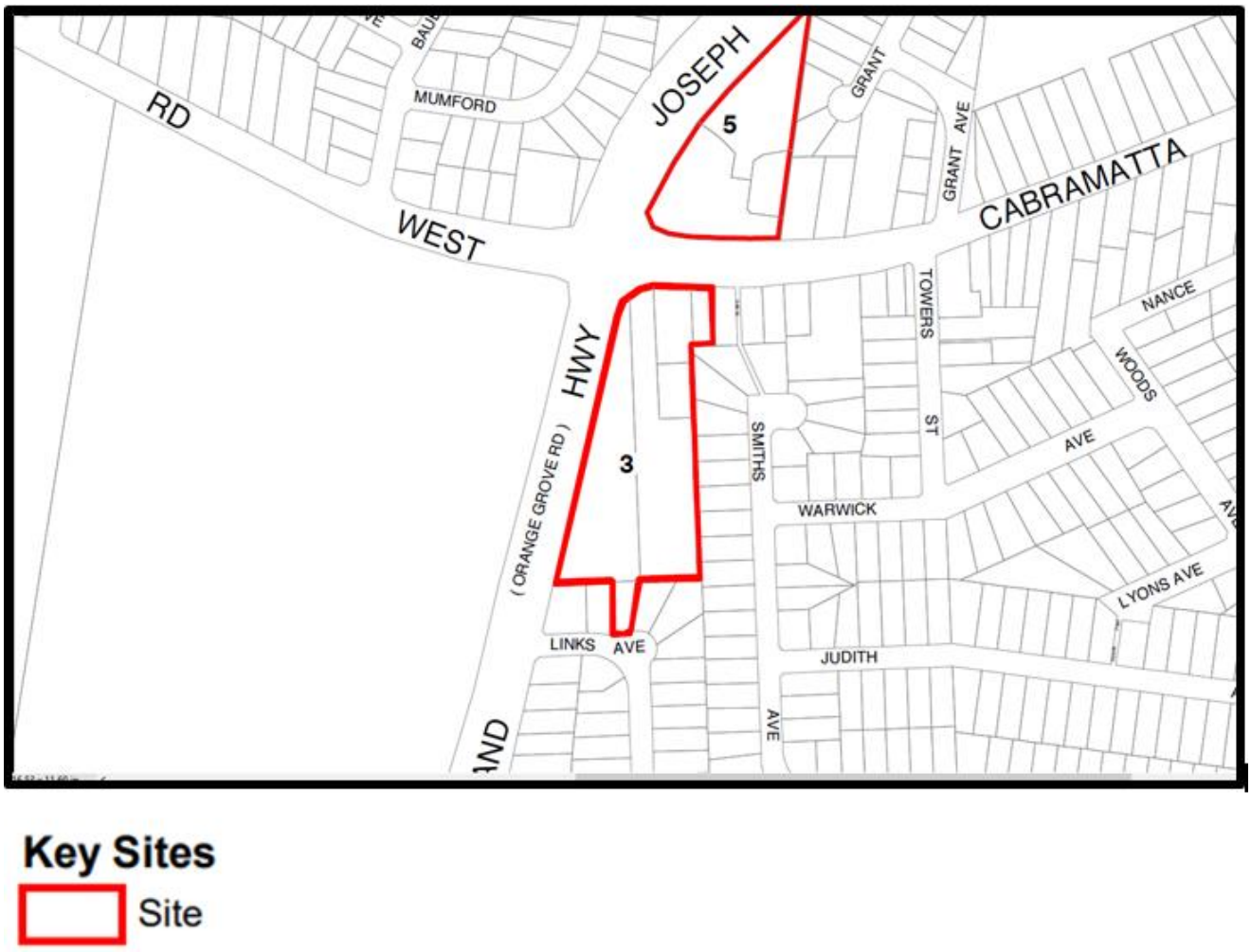


Figure 4 Existing Key Sites Map

A.2 Proposed Maps

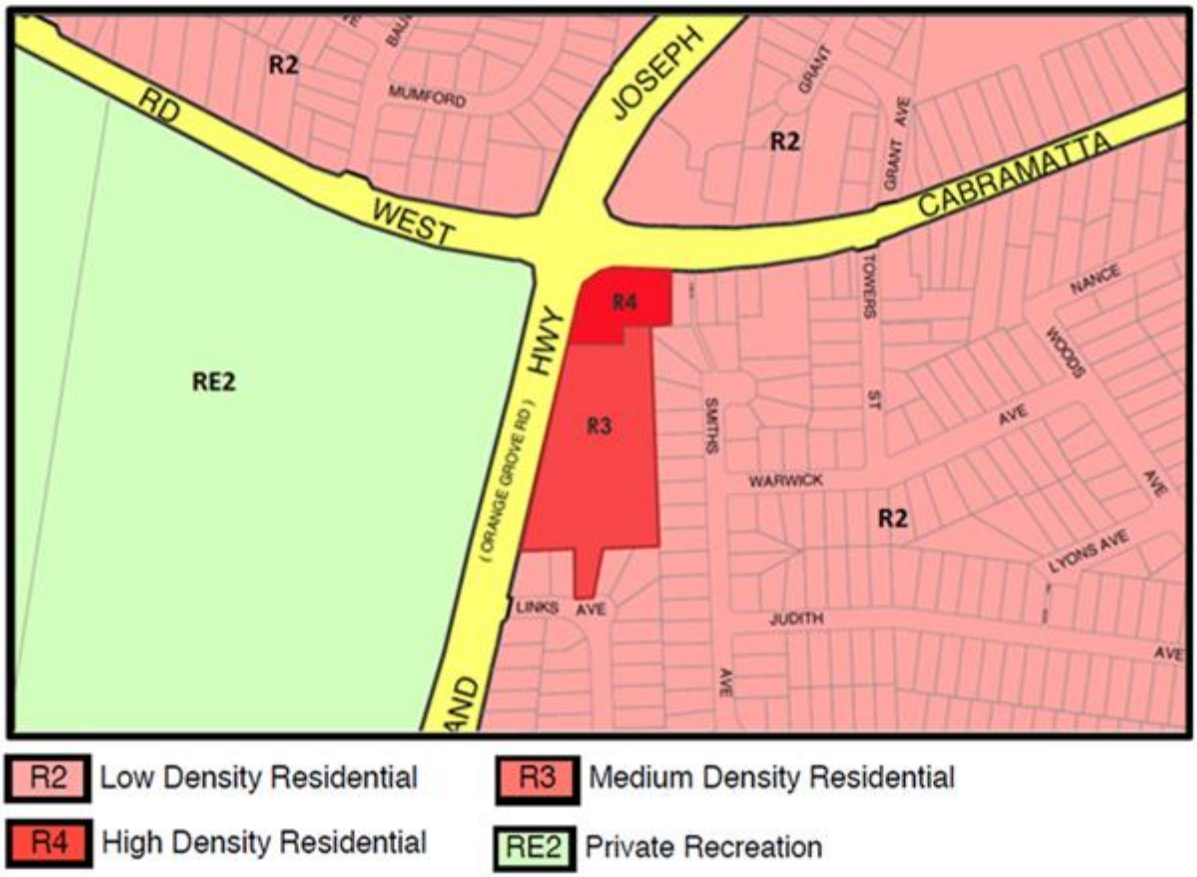


Figure 3. Proposed land zoning map

A.2 Proposed Maps

Figure 4. Proposed height of building map

A.2 Proposed Maps

Figure 5. Proposed floor space ratio map

Appendix B
Technical Reports

URBAN DESIGN REPORT
FOR A RESIDENTIAL DEVELOPMENT
400-404 CABRAMATTA RD WEST
CABRAMATTA

FOR TCON CONSTRUCTIONS
FEBRUARY 2019

1 INTRODUCTION

This Urban Design report has been prepared by Aleksandar Design Group on behalf of TCON Constructions as part of a Planning Proposal that seeks to review the key controls for 400-404 Cabramatta Rd West, Cabramatta.

TCON Constructions have expressed a desire to develop the site into a multi-residential development. The proposal seeks a change to the sites zoning, and an increase to both the height limit and FSR. The proposal seeks to deliver medium and high density housing in an appropriate location.

This urban design report examines:

• The position of the surrounding buildings, their height limits and FSR, whether those buildings are likely to be redeveloped and their potential height etc at a micro context. The analysis also consider the proximity of adjoining buildings to the subject site, and whether specific setbacks should be applied.

• Building envelope testing (height, setbacks, floor plate, efficiencies, bulk, mass and overshadowing, Apartment Design Guide amenity/ building separations).

• 3D modelling of the built form proposed on the subject site and on adjacent properties is provided to demonstrate impact as well as contextual fit.

• The impact of the redevelopment on neighbouring sites.

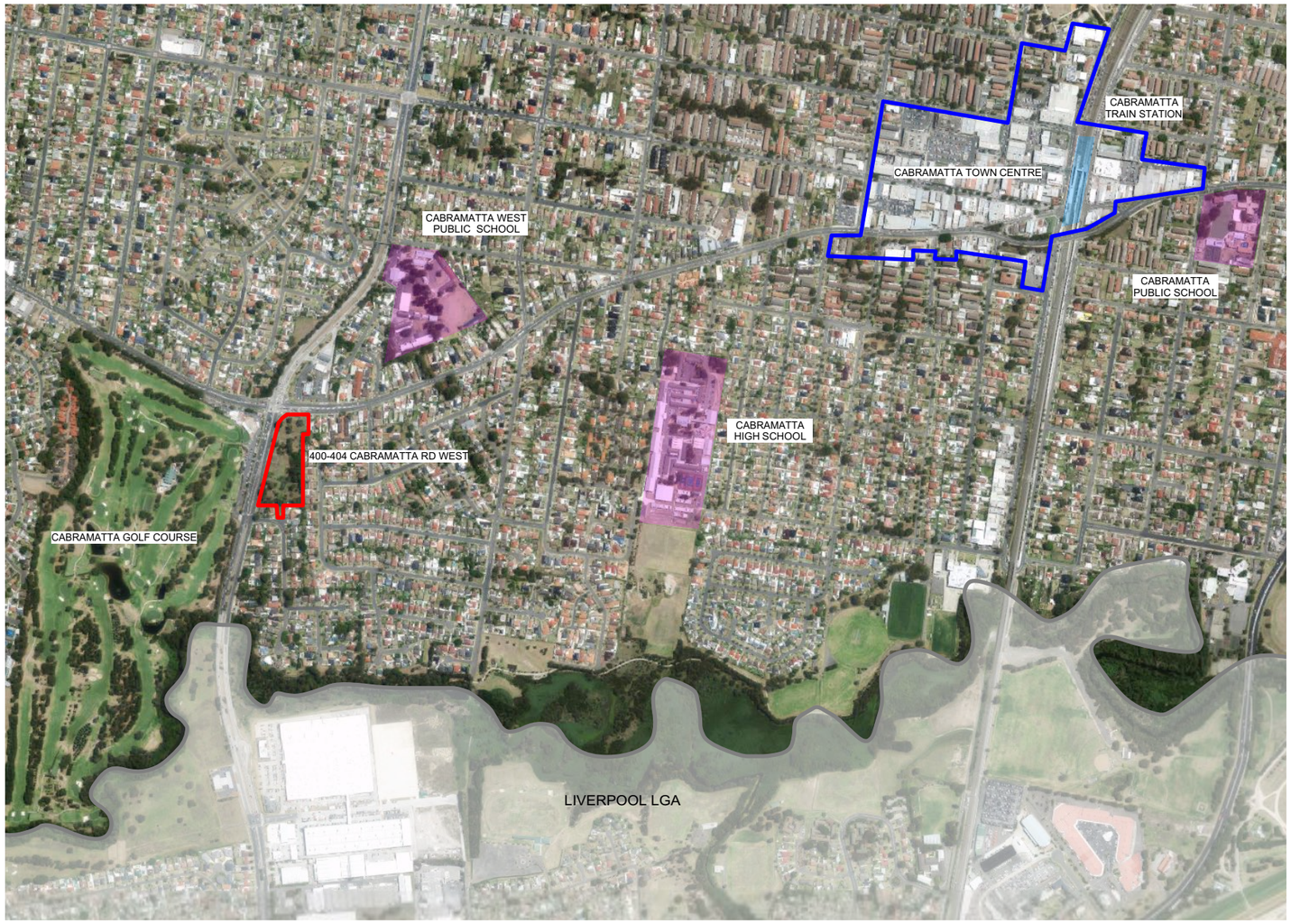
In thoroughly examining these issues this report identifies a preferred built form that satisfies the above objectives.

2 LOCATION

The site is located on the corner of Cabramatta Road West and Cumberland Highway, Cabramatta and is known as 400-404 Cabramatta Road West, Cabramatta. It is located to the west of Cabramatta Town Centre and adjacent to Cabramatta Golf Course.

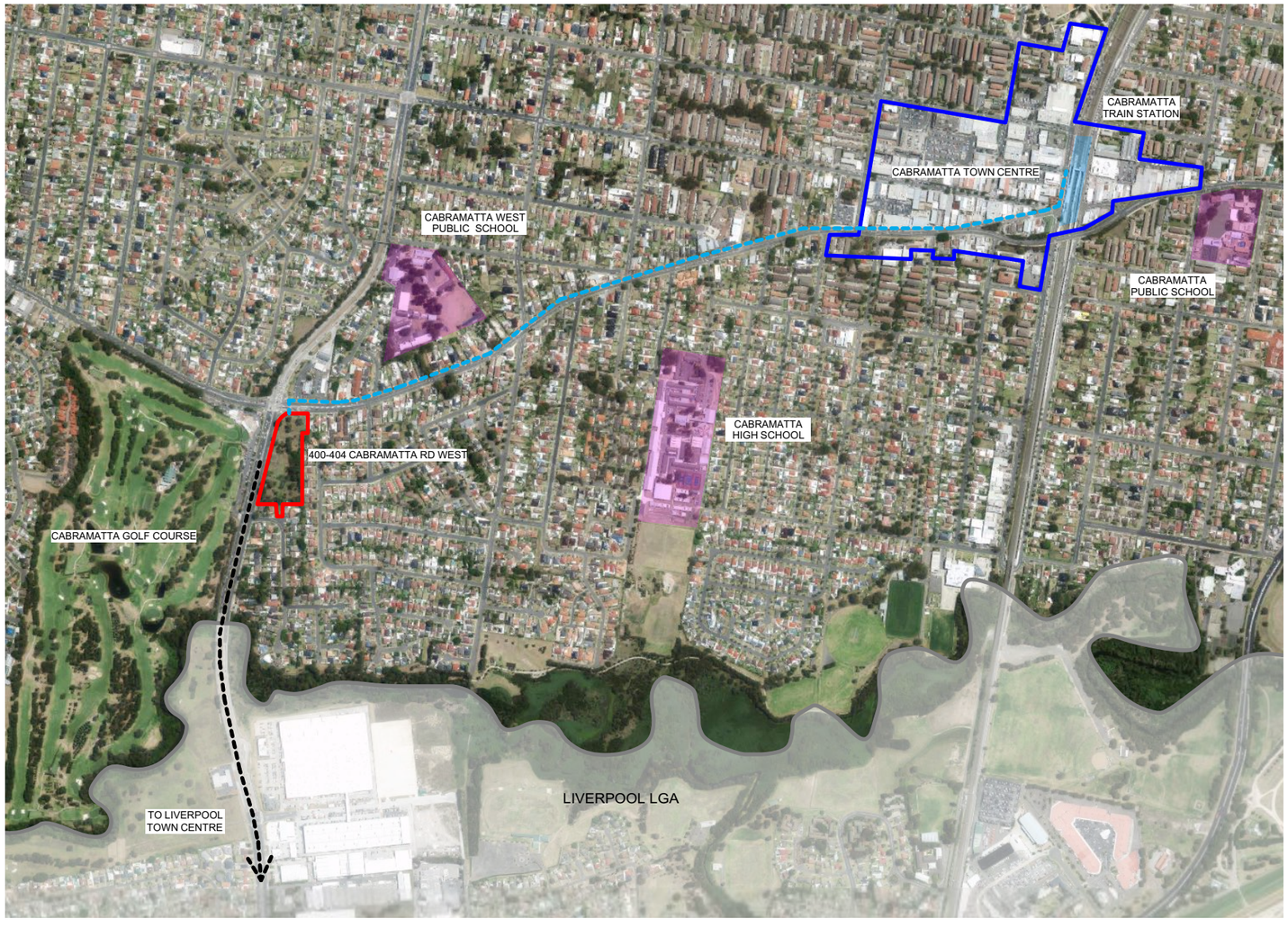
The site is defined by the following factors:

- Large raw site, 15349m^2 site area
- Significant street frontage to Cabramatta Road West and Cumberland Highway
- Close proximity to key transport infrastructure and town centres
- Close proximity to key leisure, retail and commercial areas



The site is defined by its proximity to key areas and infrastructure including:

- Orange Grove MegaCenta
- Cabramatta Town Centre
- Liverpool Town Centre
- Cabramatta Train Station
- Cabramatta Golf Course
- Local schools
- Local Commercial + Retail precincts



2 LOCATION

The western side of Cabramatta is predominantly characterised by a mix of low-density and multi-dwelling housing.

The subject site is currently undeveloped. It is approximately 210m long x 74m wide at the centre, with a site area of 15349m^2. The site runs along a north-south axis with the long boundary to Cumberland Highway facing west and the short side to Cabramatta Road West facing north. The site is surrounded by low-density residential housing to the east and south.

The site is subject to a number of opportunities and constraints including:

- Open views to the west over Cabramatta Golf Course
- Ideal solar orientation along a north-south axis
- Generous street frontage
- Potential noise from Cumberland HWY and Cabramatta Rd West
- Low density residential to the South and East

4 PLANNING FRAMEWORK

The Site sits within the Fairfield City Council local government area. The Fairfield Local Environmental Plan 2013 is the key planning instrument for the Site.

The key controls that affect development on the Site are:

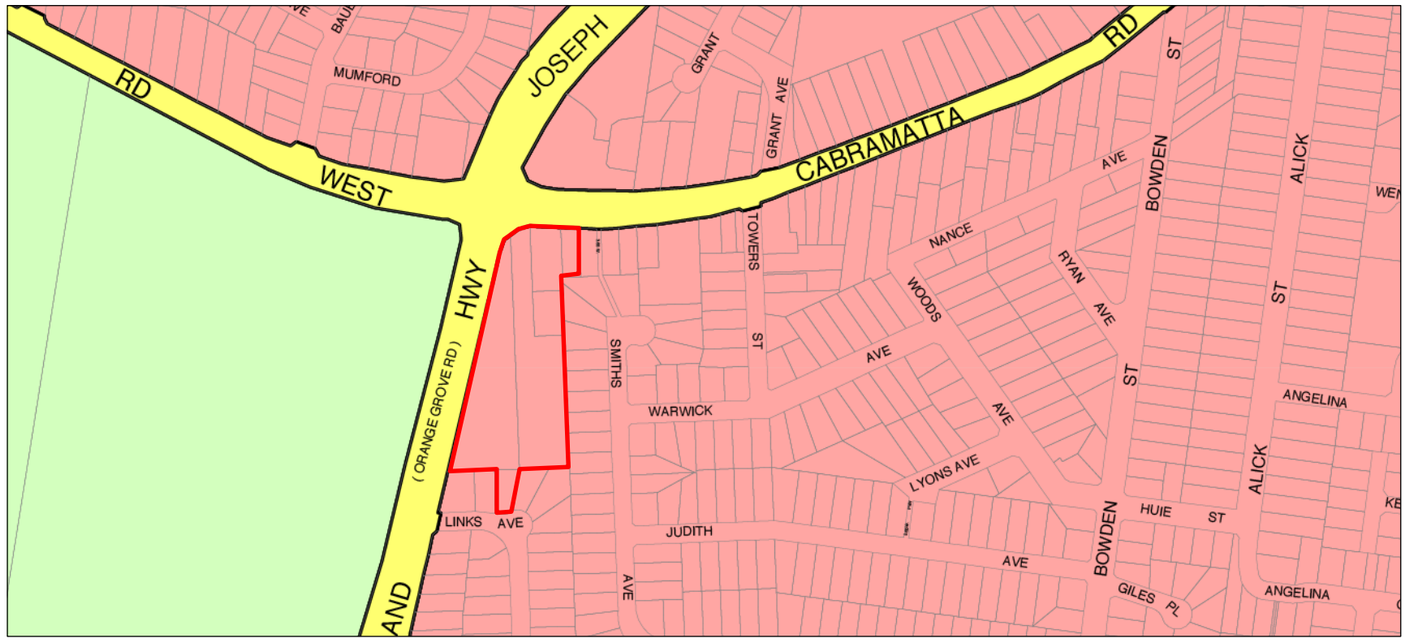
- Land zoning;
- Floor space ratio;
- Height of buildings;
- Key Site controls

Land Zoning

The site is zoned R2 Low Density Residential.

Zone

B1	Neighbourhood Centre	R3	Medium Density Residential
B2	Local Centre	R4	High Density Residential
B3	Commercial Core	RE1	Public Recreation
B4	Mixed Use	RE2	Private Recreation
B5	Business Development	RU1	Primary Production
B6	Enterprise Corridor	RU2	Rural Landscape
E2	Environmental Conservation	RU4	Primary Production Small Lots
E3	Environmental Management	RU5	Village
IN1	General Industrial	SP1	Special Activities
IN2	Light Industrial	SP2	Infrastructure
R1	General Residential	SP3	Tourist
R2	Low Density Residential	W2	Recreational Waterways

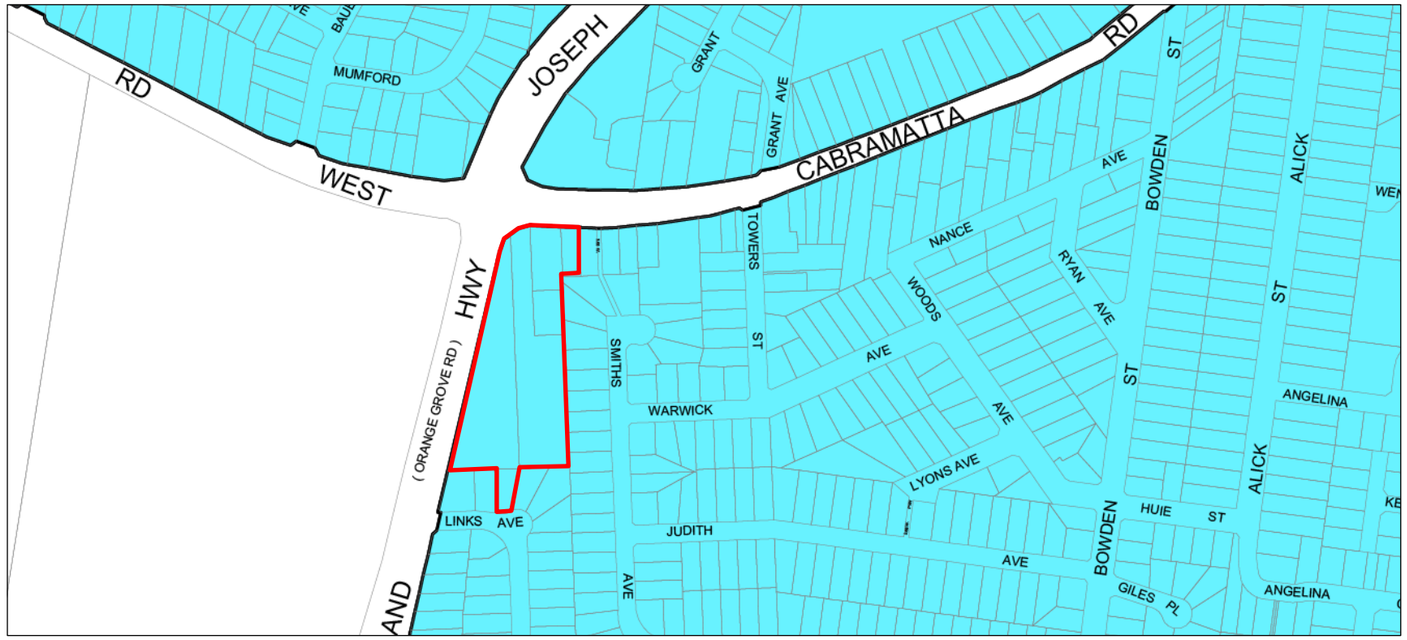


Floor Space Ratio

The site is permitted to have a floor space ratio of 0.45:1 (C). With a site area of 15,349 sqm, the maximum floor space permitted is 6,907 sqm.

Maximum Floor Space Ratio (n:1)

A1	0.1
A2	0.33
C	0.45
E	0.57
J	0.8
N	1
R	1.45
S	1.5
T	2
U	2.5
V	3
W	3.5
X	4



Height of Buildings

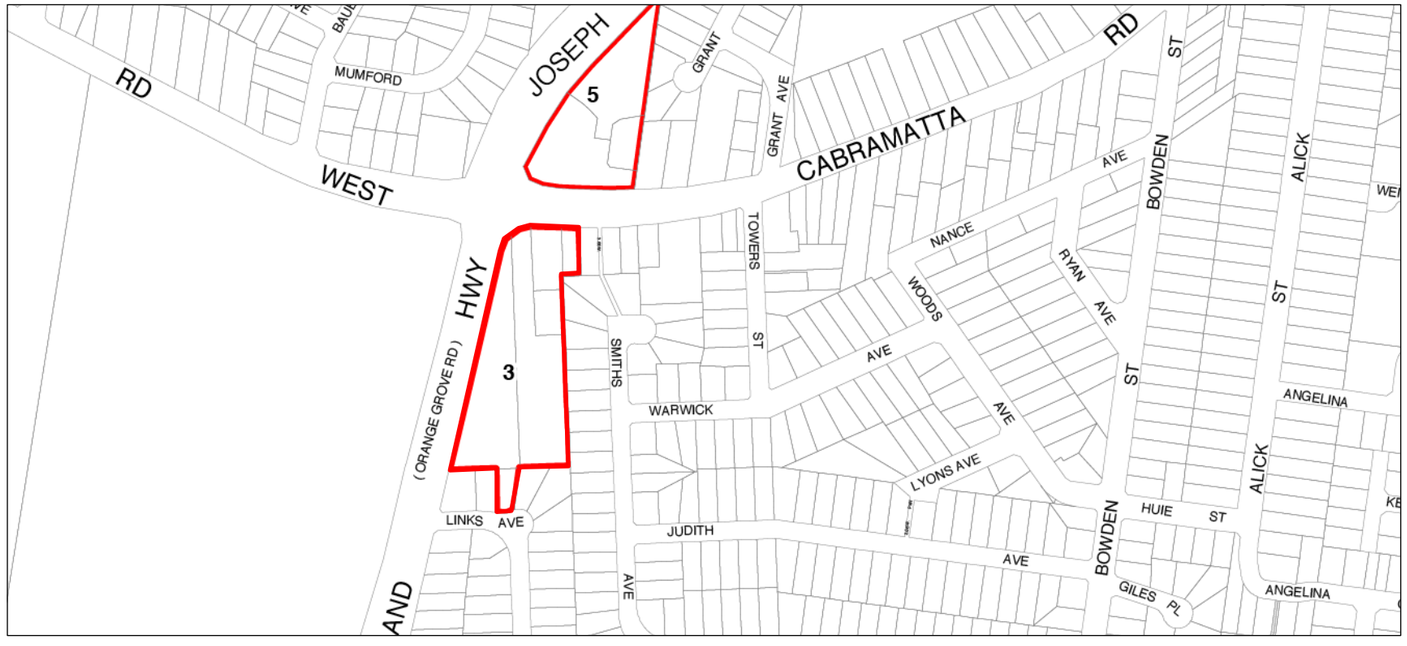
The site is permitted to have a building height of 9m (J).

Maximum Building Height (m)

G	7	Q	20
H	7.5	R	21
I	8	S	23
J	9	T1	25
K	10	T2	26
L	11	T3	27
M	12	T4	29
N1	13	U1	30
N2	14	U2	33
O1	15	V1	38
O2	16	V2	39
P1	17	W	42
P2	18	AA	66

Key Sites Map

The site is nominated as a key site.



5 INDICATIVE FLOOR PLANS

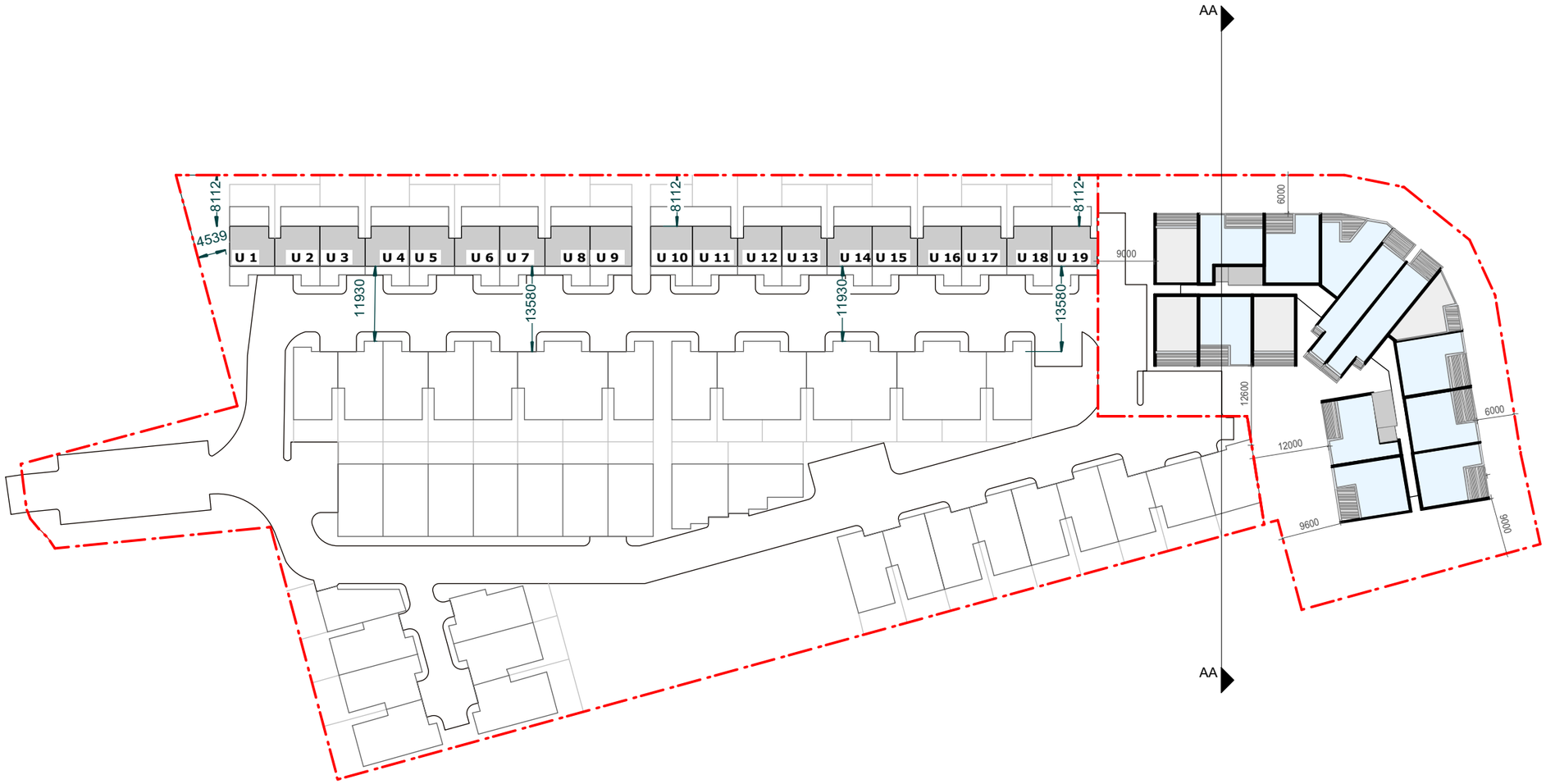
INDICATIVE GROUND FLOOR PLAN

COLLECTION VEHICLE TURNING CIRCLE

5 INDICATIVE FLOOR PLANS

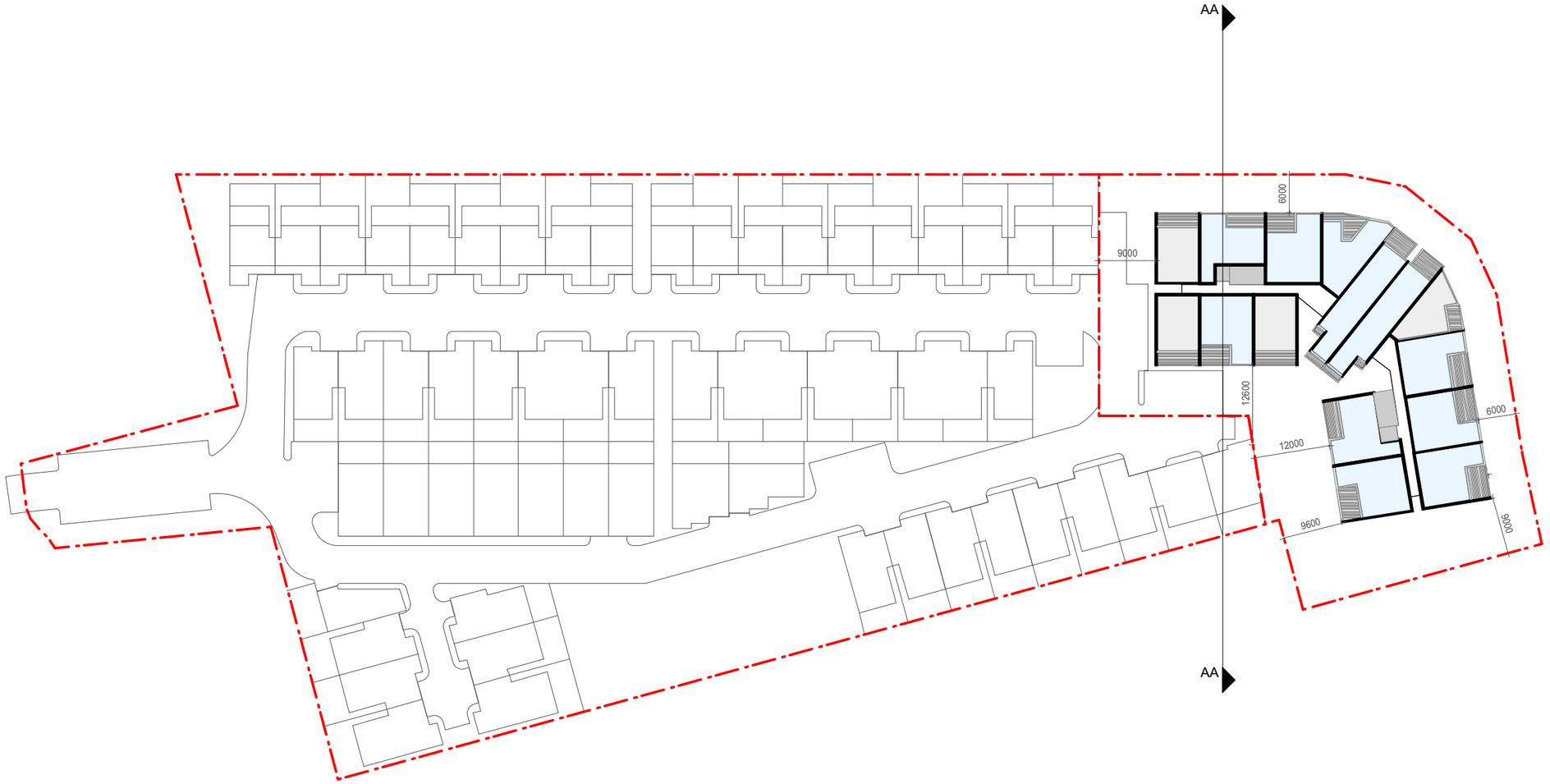
INDICATIVE LEVEL 01 PLAN

5 INDICATIVE FLOOR PLANS



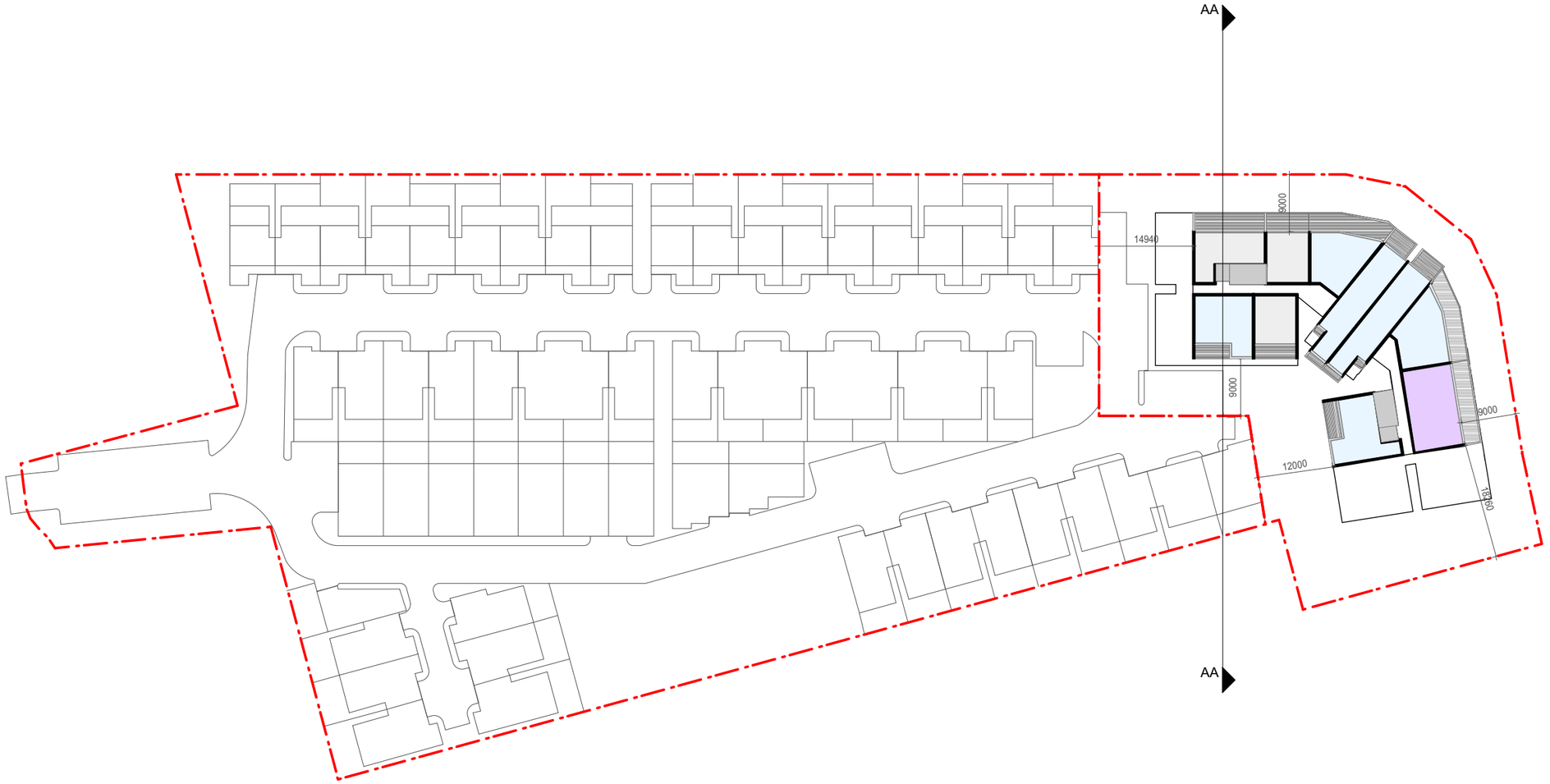
INDICATIVE LEVEL 02 PLAN

5 INDICATIVE FLOOR PLANS



INDICATIVE LEVEL 03 PLAN

5 INDICATIVE FLOOR PLANS



INDICATIVE LEVEL 04 PLAN

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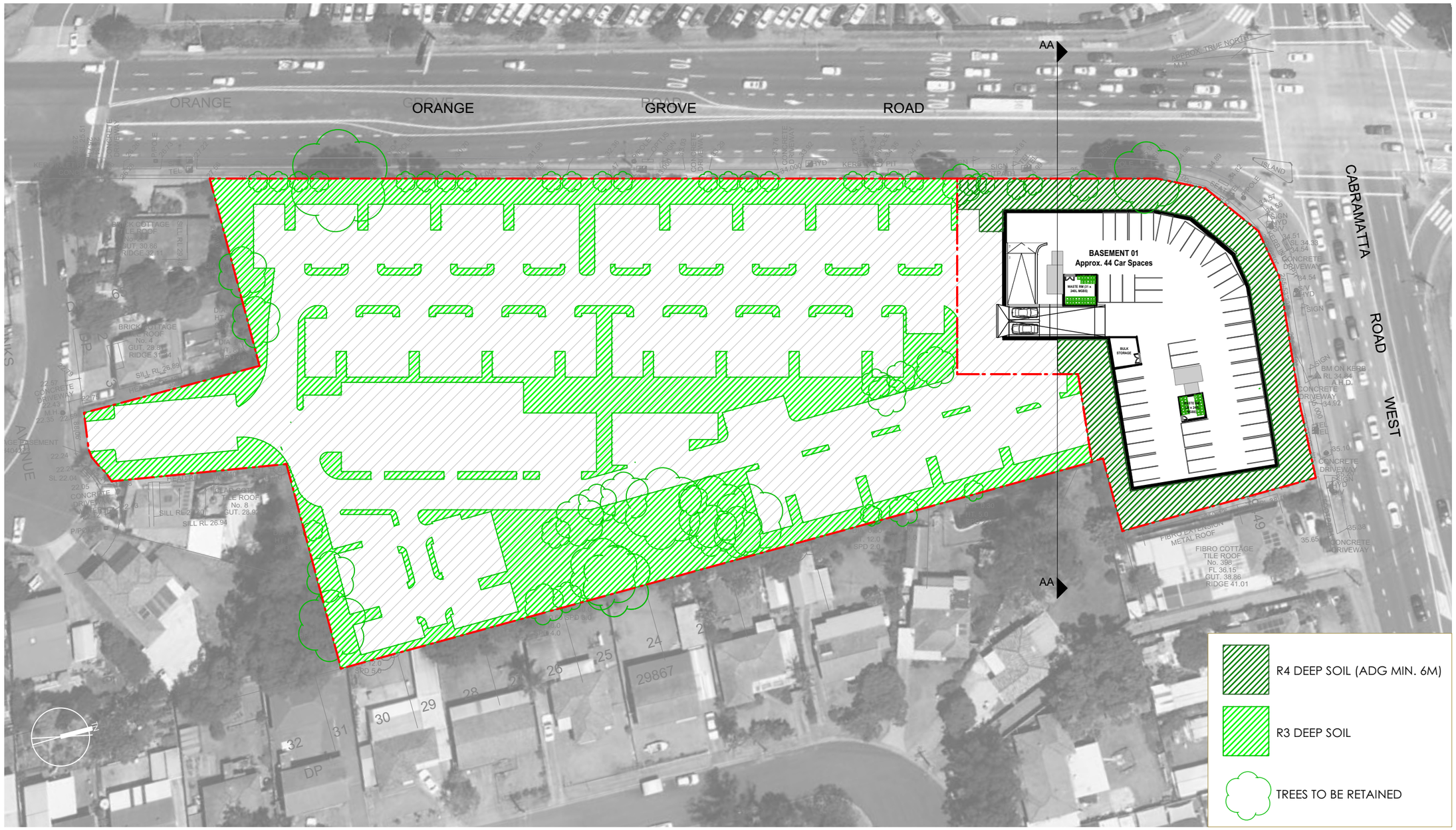
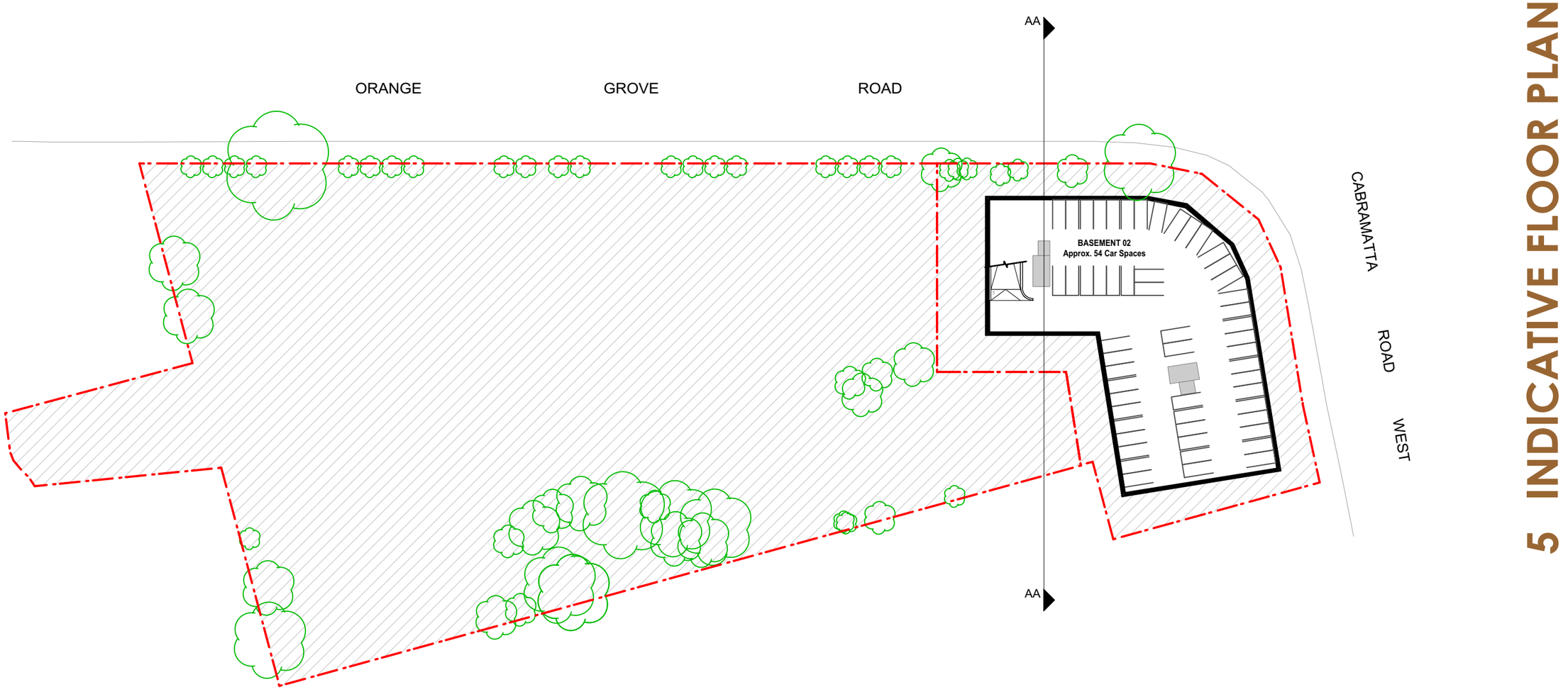
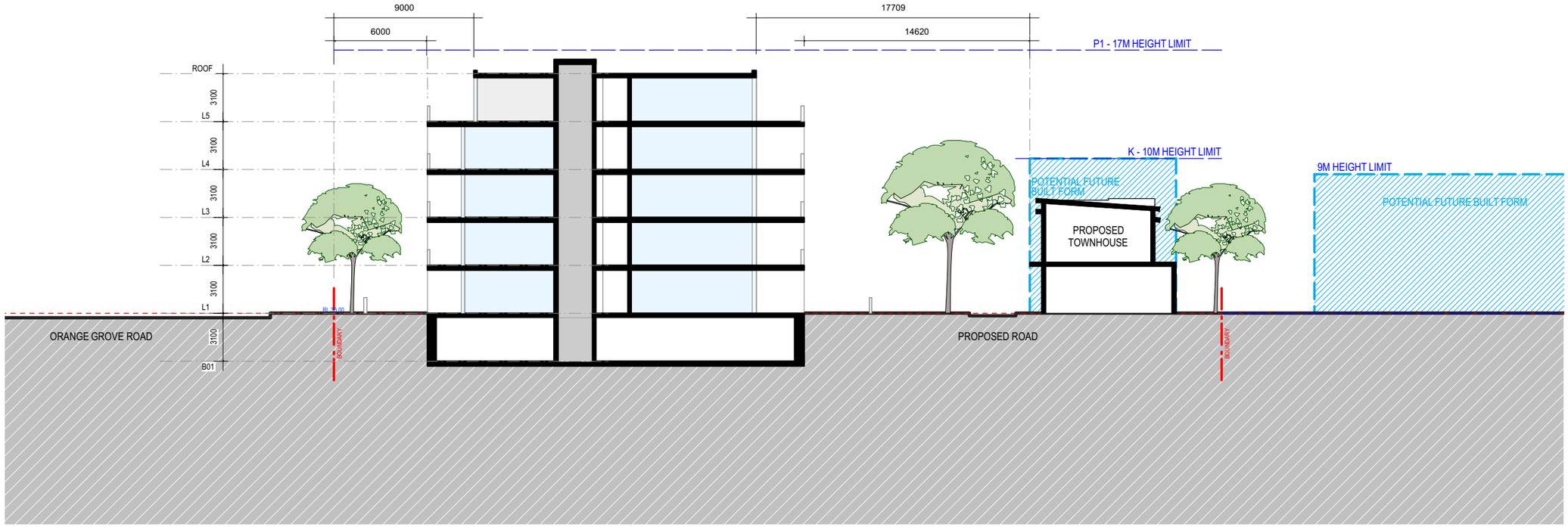


INDICATIVE BASEMENT LEVEL 01

5 INDICATIVE FLOOR PLANS



INDICATIVE BASEMENT LEVEL 02



INDICATIVE SECTION AA

Shadow Testing

The overshadowing impacts of the proposed design were tested for the 21st June mid-winter. In order to test potential impacts, the existing built forms were projected for the neighbouring sites. The testing indicated that the proposed massing did not prevent the neighbouring sites from receiving solar access to their private open space or living areas during mid-winter.

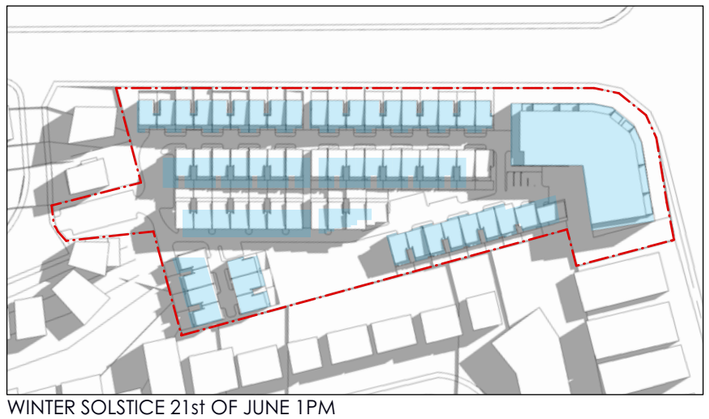
SUBJECT SITE

WINTER SOLSTICE 21st OF JUNE 9AM

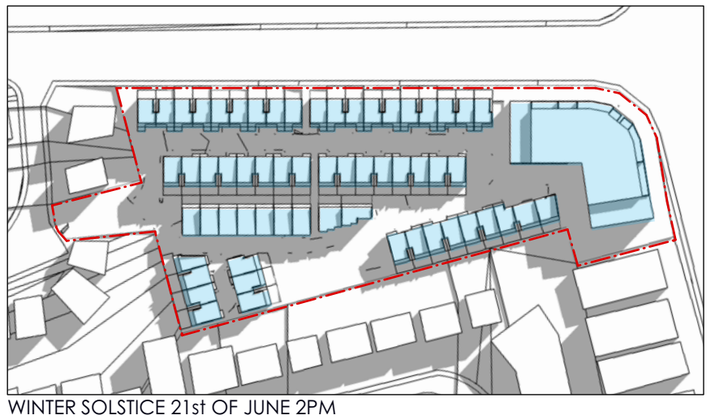
WINTER SOLSTICE 21st OF JUNE 10AM

WINTER SOLSTICE 21st OF JUNE 11AM

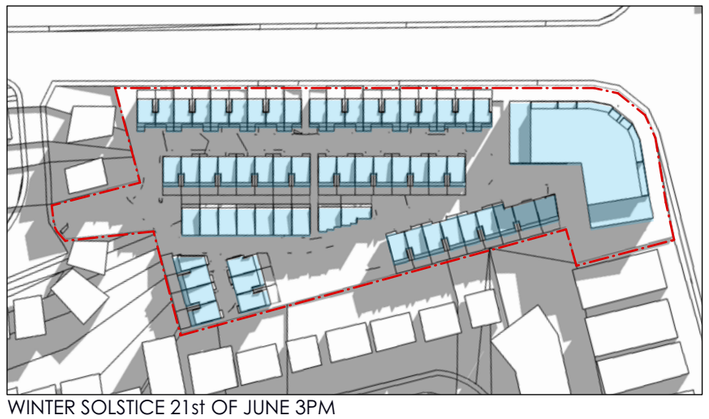
WINTER SOLSTICE 21st OF JUNE 12PM



WINTER SOLSTICE 21st OF JUNE 1PM



WINTER SOLSTICE 21st OF JUNE 2PM



WINTER SOLSTICE 21st OF JUNE 3PM

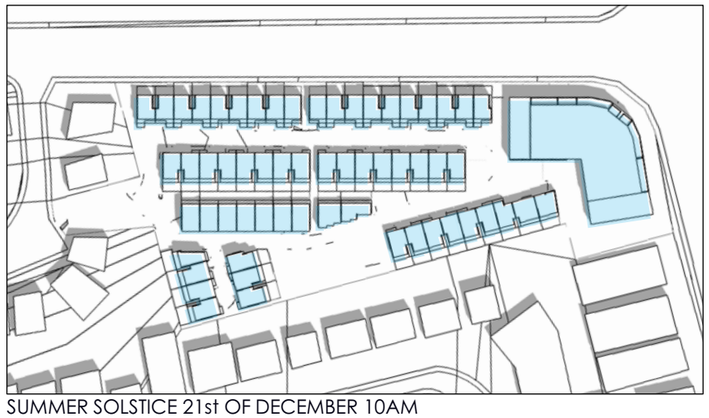
6 SHADOW DIAGRAMS

Shadow Testing

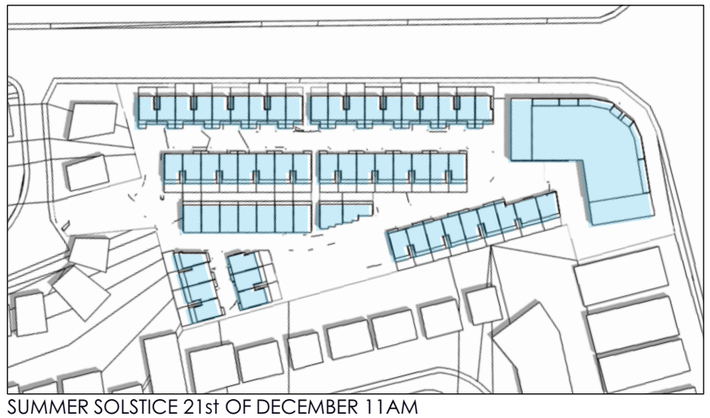
The overshadowing impacts of the proposed design were also tested for the 21st December. Again the testing indicated that the proposed massing did not prevent the neighbouring sites from receiving solar access to their private open space or living areas.

SUBJECT SITE

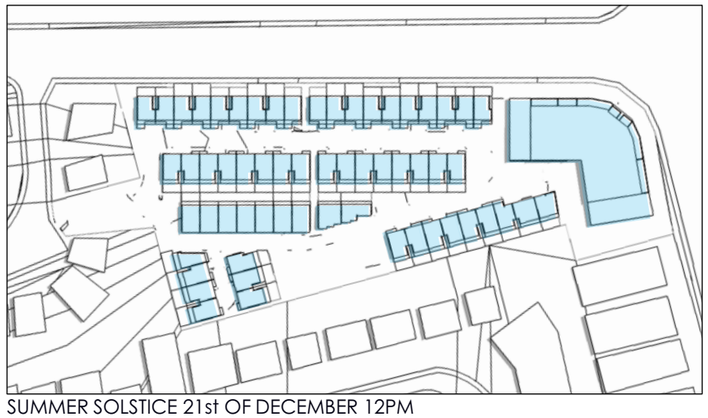
SUMMER SOLSTICE 21st OF DECEMBER 9AM



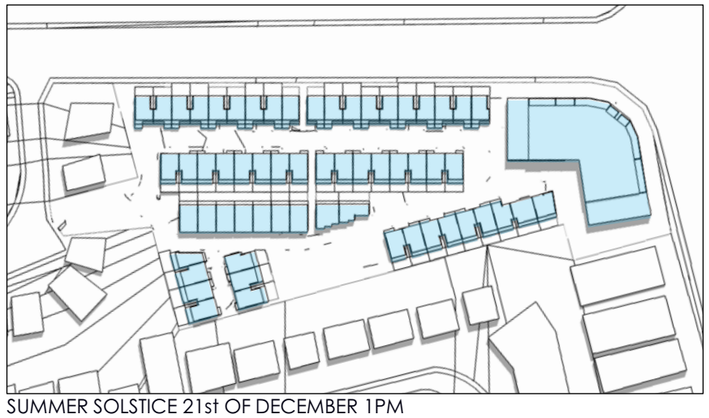
SUMMER SOLSTICE 21st OF DECEMBER 10AM



SUMMER SOLSTICE 21st OF DECEMBER 11AM



SUMMER SOLSTICE 21st OF DECEMBER 12PM



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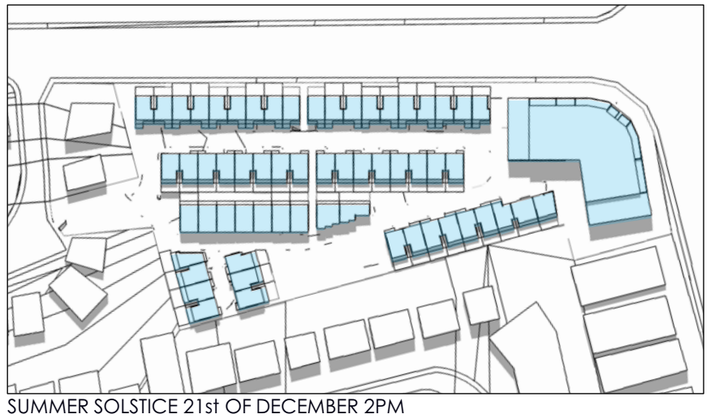

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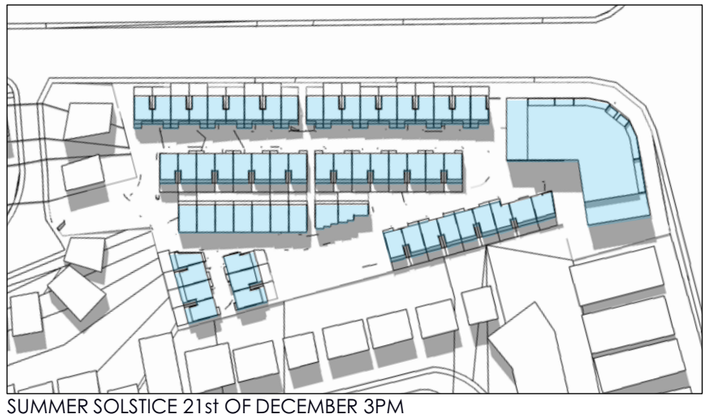


SUMMER SOLSTICE 21st OF DECEMBER 3PM

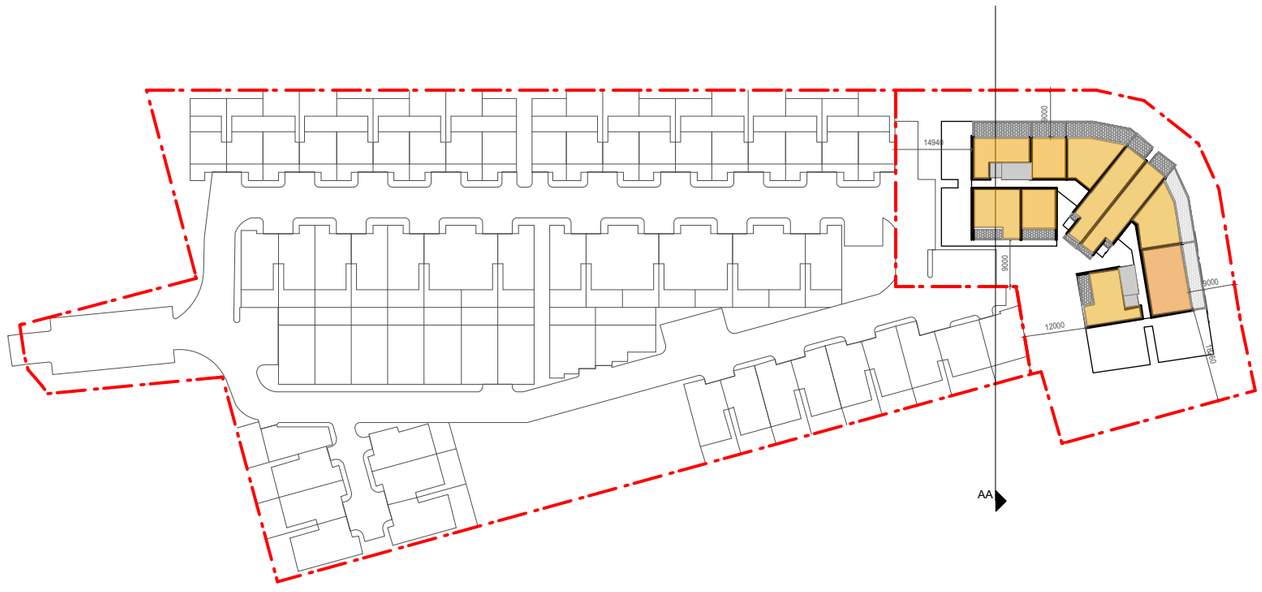
6 SHADOW DIAGRAMS

Solar Access to Apartments

The building envelopes have been designed to maximise solar access, with buildings orientated along a north-south axis. 77% of units achieve 2hrs of solar access between 9am - 3pm 21st June, satisfying the minimum requirement of the Apartment Design Guide. The adjacent diagram indicatively shows those apartments which receive 2hrs of solar access.

YIELD			
	Total Apartments	SOLAR	NO SOLAR
LEVEL 1	14	10	4
LEVEL 2	15	10	3
LEVEL 3	15	10	2
LEVEL 4	15	10	1
LEVEL 5	10	13	0
Sub Totals Units	69		
PROPOSED SOLAR %		**77%**	**14%**
		70%	15%

TYPICAL LEVEL 1-4



LEVEL 5

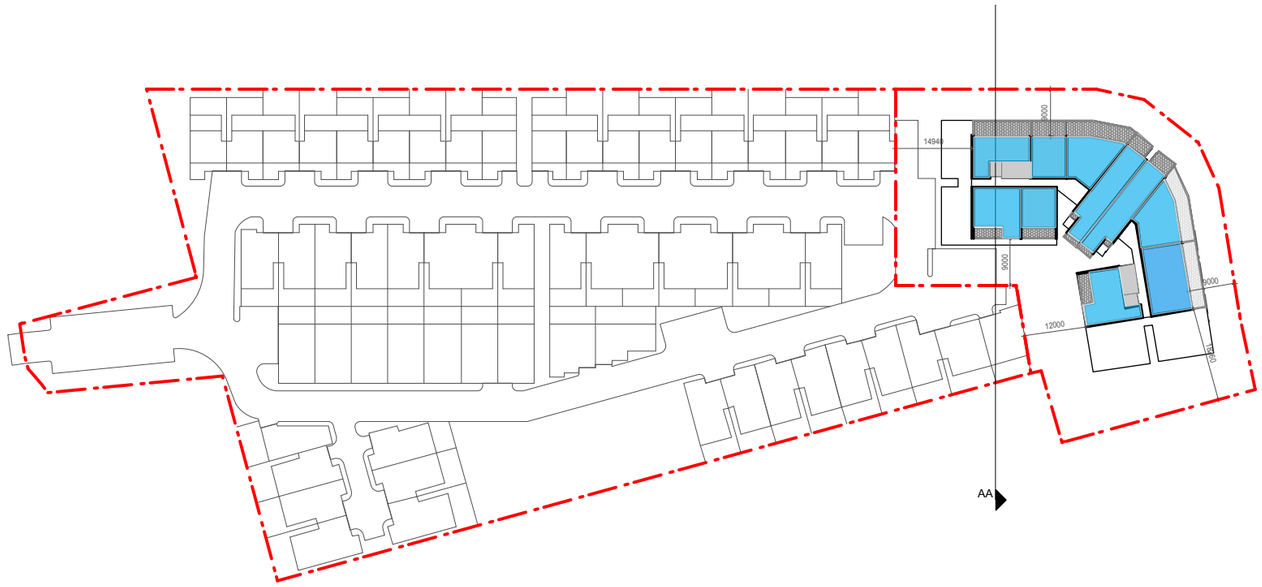
2 HRS DAYLIGHT ACCESS

Cross Ventilated Apartments

The building facade is articulated to enable cross ventilation. 61% of units are cross ventilated, satisfying the minimum requirement of the Apartment Design Guide. The adjacent diagram indicatively shows those apartments which are cross ventilated.

YIELD		
	Total Apartments	**CROSS VENT**
LEVEL 1	14	8
LEVEL 2	15	8
LEVEL 3	15	8
LEVEL 4	15	8
LEVEL 5	10	10
Sub Totals Units	**69**	
PROPOSED CROSS VENT %		**61%**
		60%

TYPICAL LEVEL 1-4

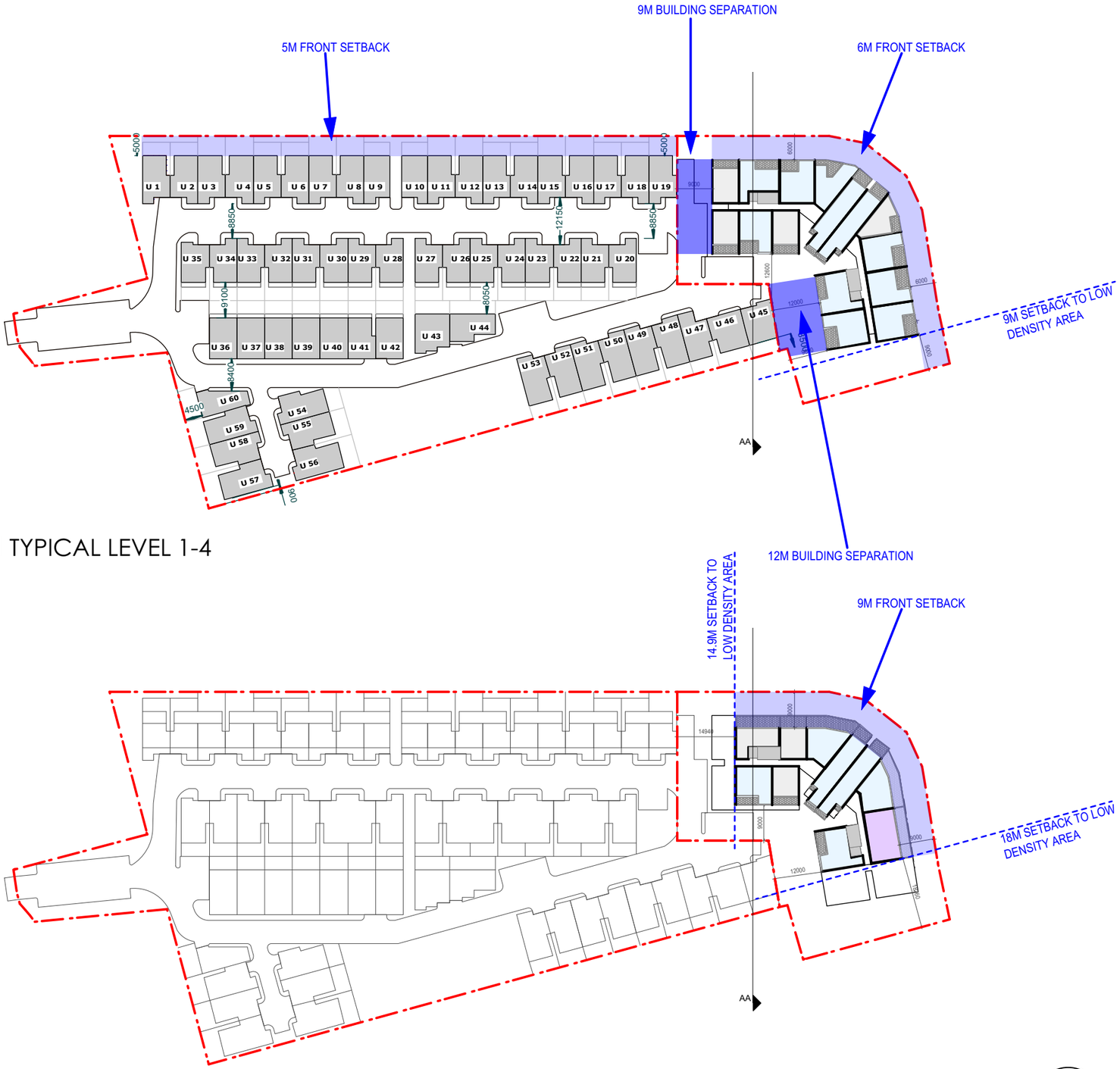


LEVEL 5 - UNITS VENTILATED BY SKYLIGHTS

CROSS VENTILATED UNIT

SETBACK & SEPARATION COMPLIANCE

The proposed setbacks and building separations comply with the Medium Density Design Guide 2017 & ADG minimum distances as shown.



TYPICAL LEVEL 1-4

LEVEL 5

Principle 1: Context and Neighbourhood Character

Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area neighbourhood. Consideration of local context is important for all sites, including sites in established change.

This design proposes a predominently 4-storey residiential flat building with a recessed 5th storey pop-up adjoining 60 townhouses.

The proposed residential flat building sits on the West side of the site. The built form has 6-9m setbacks on all boundaries, creating a generous transition zone to the neighbouring buildings.

Additionally level 5 is further set back, and proposes to be built out of lightweight materials to further reduce the bulk and scale of the top floor. The additional separation also reduces the impact of potential privacy and overshadowing issues to the adjoining properties.

The proposed townhouses provides a generous transition to the sites to the East and North by stepping to the sloping site, and stepping down levels from predomintly 4 storeys to 2 storeys.

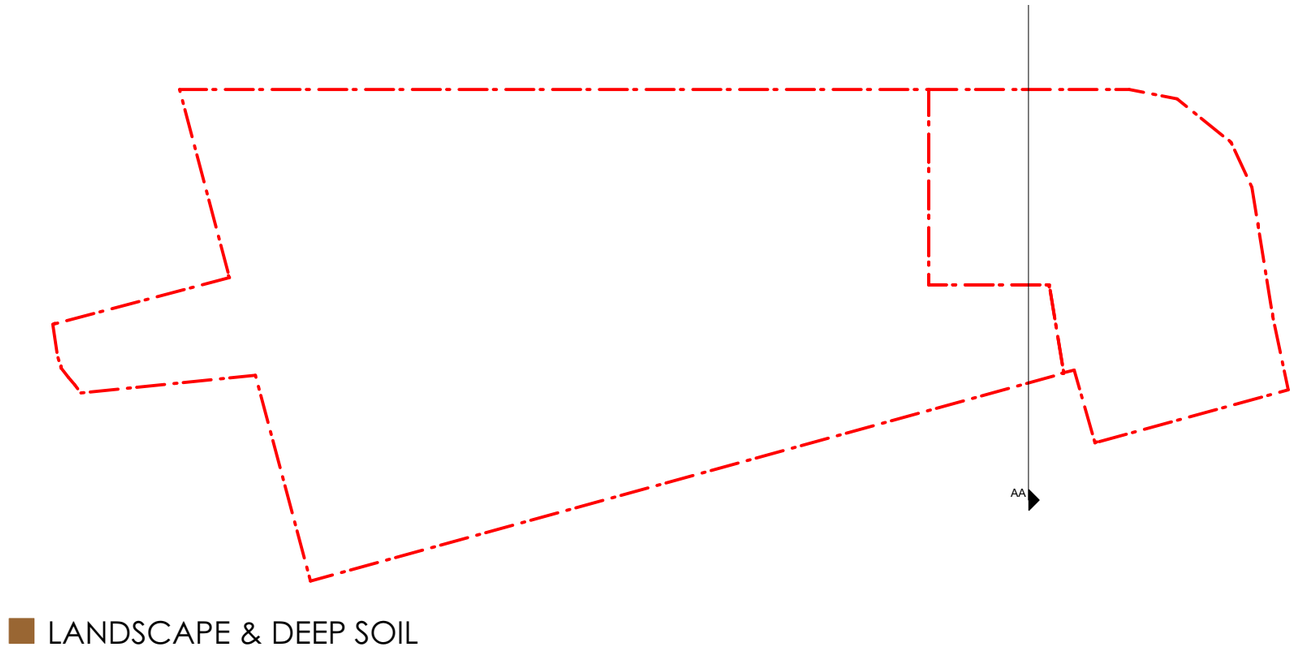
The building has been oriented to address the major traffic intersection.

Landscape & Deep Soil

The Medium Density Design Guide 2017 requires 20% of the townhouses total site area to be soft landscaping. The ADG for the residential flat building requires 4% of the total site area to be deep soil.

The proposal achieves 35% total soft landscaping & deepsoil to the townhouses.

The proposal achieves 28.1% deep soil to the residential flat building.



LANDSCAPE & DEEP SOIL

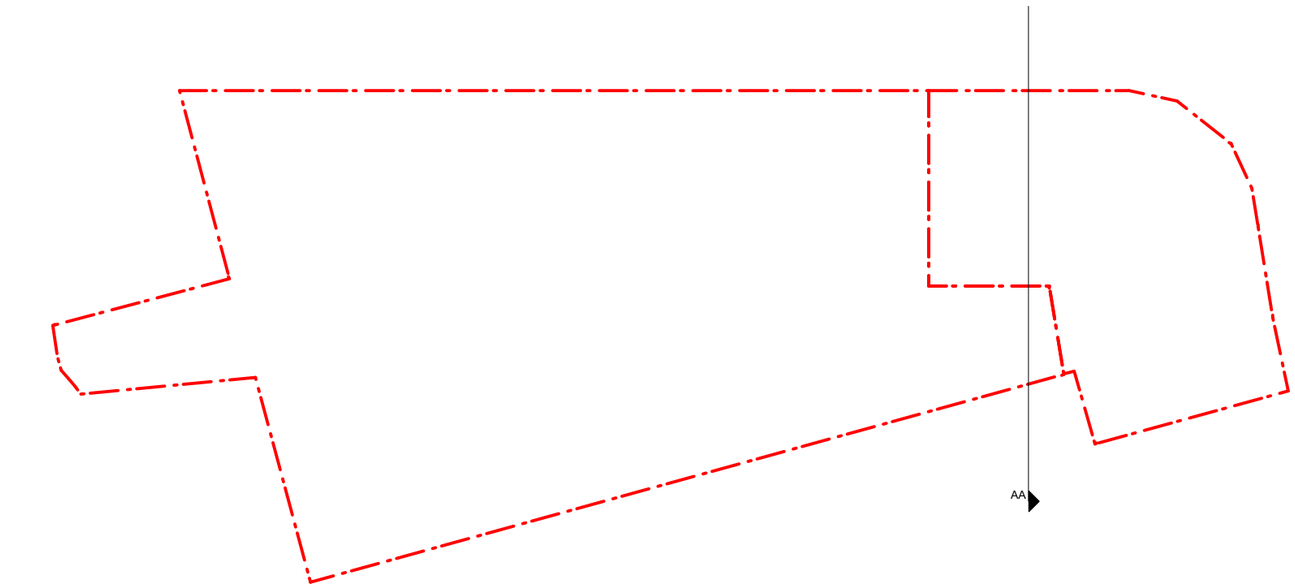
Communal Open Space

The Medium Density Design Guide 2017 for townhouses requires 5% of the townhouses site area to be communal open space.

The ADG for residential flat buildings requires 25% of the site to be communal open space, with 25% of the total communal open space to be deep soil.

The proposal achieves 8.25% communal open space to the townhouses site area. All of the communal open space is also deep soil.

The proposal achieves 25% COS for the residential flat building with 51.2% (434sqm) of the COS is deep soil.



COMMUNAL OPEN SPACE

6 INDICATIVE NUMERICAL SUMMARY

400-404 CABRAMATTA RD W, CABRAMATTA		
TOTAL Site Area	15349	m²

DCP & ADG REQUIREMENTS FOR RESIDENTIAL FLAT BUILDINGS							
RFB SITE AREA	3388	m²					
DCP & ADG REQUIRED COS	847	m²	*25% OF SITE AREA*	**Proposed COS**	**847.0**	**m²**	**25.0%**
ADG REQUIRED DEEP SOIL	237	m²	*7% OF SITE AREA, MIN DIM 6M*	**Proposed DEEP SOIL**	**953.0**	**m²**	**28.1%**
DCP REQUIRED DEEP SOIL TO COS	212	m²	*25% OF COS*	**Proposed DEEP SOIL TO COS**	**434.0**	**m²**	**51.2%**

MEDIUM DENSITY DESIGN GUIDE REQUIREMENTS FOR TOWNHOUSES - R3				
REQUIRED HEIGHT	11.0	m	**Proposed HEIGHT**	**10** **m (max)**
MAX STOREYS	3.0	STOREYS	**Proposed STOREYS**	**3** **(max)**
REQUIRED SETBACK TO PRIMARY ROAD	3.5	m (MIN)	**Proposed STREET SETBACK**	**5** **m**
REQUIRED LANDSCAPE %	20.0	%	**Proposed LANDSCAPE**	**35** %
REQUIRED COS	5.0	%	**Proposed COS**	**8.25** %

YIELD

	1 Bed	2 Bed 75m²	3 Bed	TOWNHOUSES	Total Apartments	GFA (m²)	SOLAR	NO SOLAR	CROSS VENT
LVL 1 TOWNHOUSES				60		8010			
LEVEL 1	7	7			14	1174	10	4	8
LEVEL 2	4	11			15	1244	10	3	8
LEVEL 3	4	11			15	1244	10	2	8
LEVEL 4	4	11			15	1244	10	1	8
LEVEL 5	3	6	1		10	870	13		10
Sub Totals Units/Townhouses	22	46	1	60			**77%**	**14%**	**61%**
Proposed - Unit Mix	**32%**	**67%**	**1%**			**ADG REQUIREMENT**	70% MIN	15% MAX	60% MIN

Total Townhouses GFA	**8372**	**m²**
Townhouses FSR	**0.70**	**:1**
Total RFB GFA	**5776**	**m²**
RFB FSR	**1.70**	**:1**
TOTAL UNITS	**69**	
TOTAL TOWNHOUSES	**60**	

CAR PARKING	
R4	**PROVIDED SPACES (2 TYPICAL BASEMENTS)**
RESIDENTIAL RFB	**81**
VISITOR	**17**
	98
R3	**PROVIDED SPACES**
TOWNHOUSES	**90**
VISITOR	**15**
	105

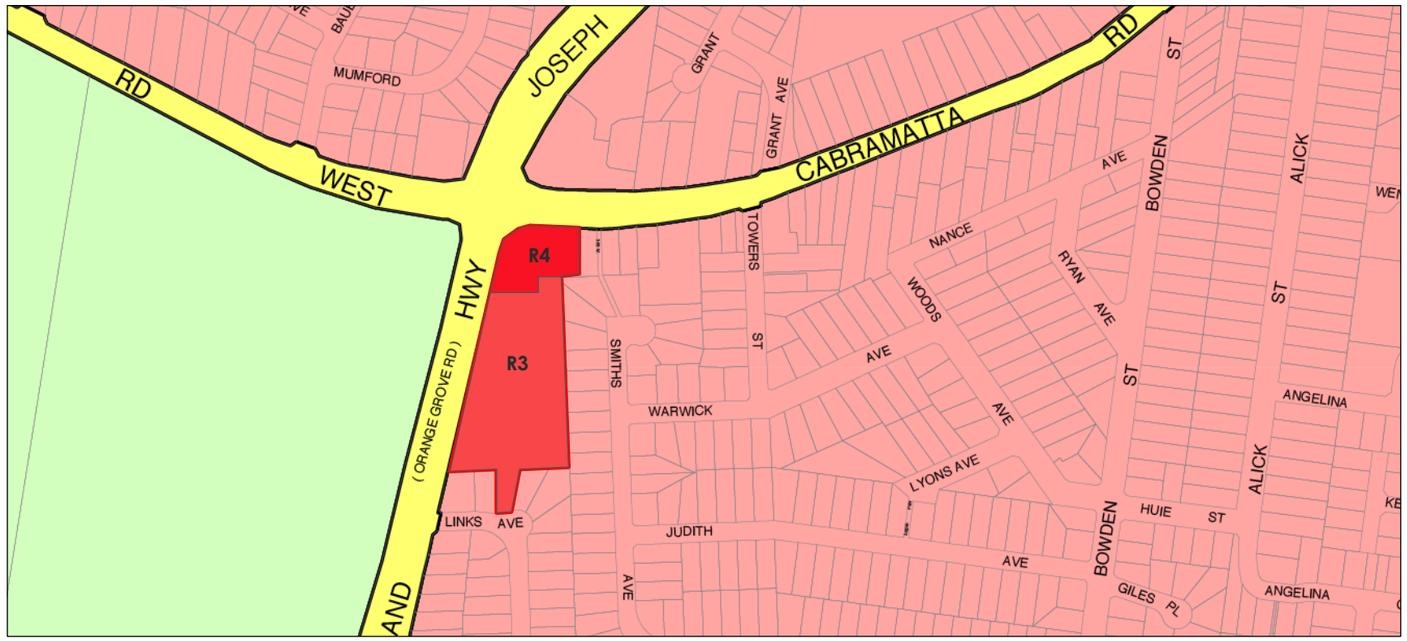
Land Zoning

The site is currently zoned R2 Low Density Residential.

It is proposed this site to be zoned R4 High Density Residential & R3 Medium Density Residential.

Zone

B1	Neighbourhood Centre	R3	Medium Density Residential
B2	Local Centre	R4	High Density Residential
B3	Commercial Core	RE1	Public Recreation
B4	Mixed Use	RE2	Private Recreation
B5	Business Development	RU1	Primary Production
B6	Enterprise Corridor	RU2	Rural Landscape
E2	Environmental Conservation	RU4	Primary Production Small Lots
E3	Environmental Management	RU5	Village
IN1	General Industrial	SP1	Special Activities
IN2	Light Industrial	SP2	Infrastructure
R1	General Residential	SP3	Tourist
R2	Low Density Residential	W2	Recreational Waterways

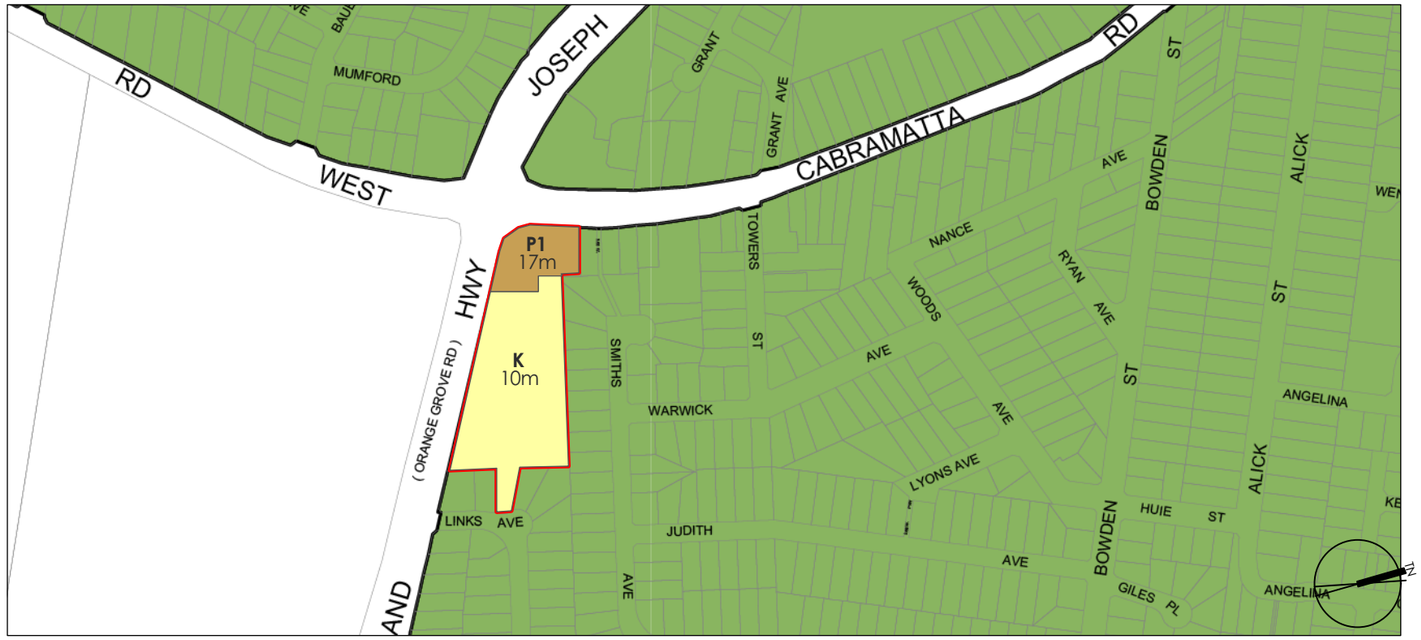


Height of Buildings

The site is currently permitted to have a building height of 9m (J). It is proposed this site to have a building height of 17m (P1) to the north of the site, on the proposed R4 zone only.

Maximum Building Height (m)

G	7	Q	20
H	7.5	R	21
I	8	S	23
J	9	T1	25
K	10	T2	26
L	11	T3	27
M	12	T4	29
N1	13	U1	30
N2	14	U2	33
O1	15	V1	38
O2	16	V2	39
P1	17	W	42
P2	18	AA	66



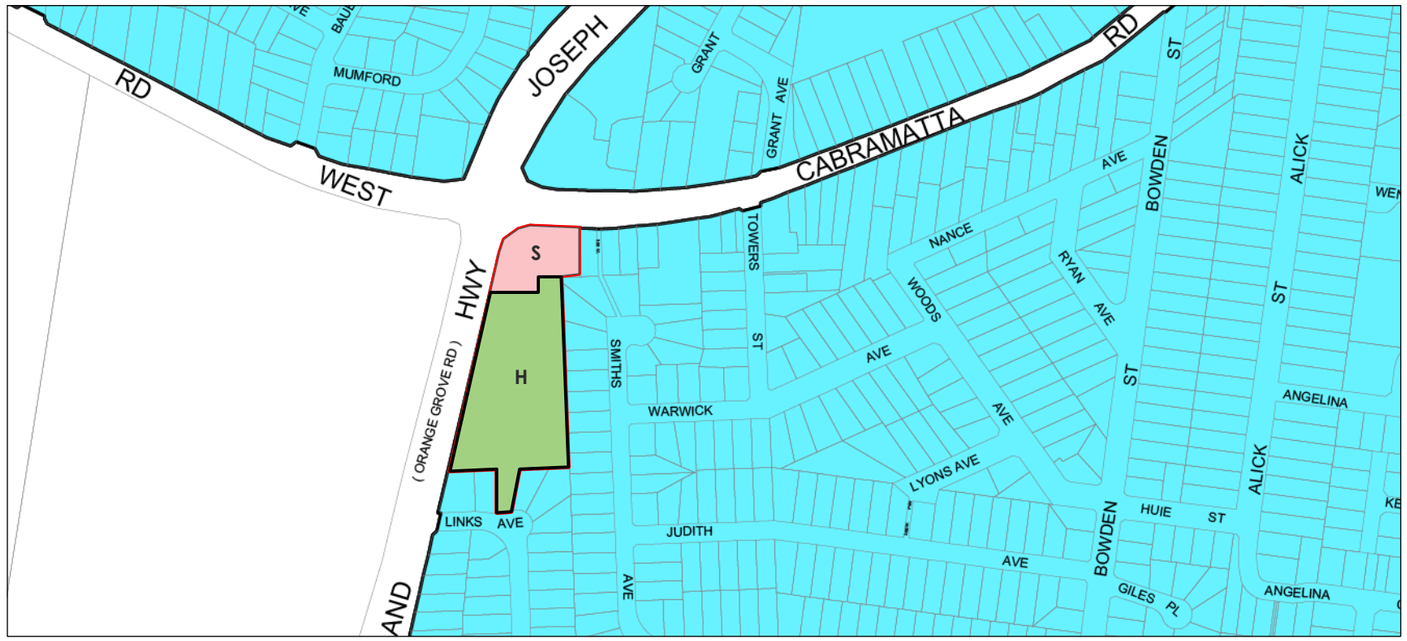
Floor Space Ratio

The site is currently has a floor space ratio of 0.45:1 C.

It is proposed this site to have an FSR of 1.7:1 across the R4 potion of the site, and 0.7:1 across the R3 potion of the site.

Maximum Floor Space Ratio (n:1)

A1	0.1
A2	0.33
C	0.45
E	0.57
H	0.7
J	0.8
N	1
R	1.45
S	1.7
T	2
U	2.5
V	3
W	3.5
X	4



LOOKING EAST FROM ACROSS CUMBERLAND
HIGHWAY/ORANGE GROVE ROAD

Ref: 0123l01v1

9 August 2018

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Fairfield City Council
PO Box 21
Fairfield NSW 1860

Attention: Chris Shinn – Coordinator Strategic Planning

RE: 400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta – Traffic Impact Assessment Addendum

Dear Chris,

We write regarding the current Planning Proposal for the above site (the Site). In this regard, it is noted that Ason Group has prepared a Traffic Impact Assessment Report dated 29 February 2016 (the 2016 TIA Report) for a previous Planning Proposal (the 2016 Proposal) for the Site (Refer to **Attachment 1**). The 2016 TIA assessment was informed by an indicative concept design prepared by Aleksandar Design Group that proposed the following:

- 6 x buildings ranging height from 4 storeys to 8 storeys.
- Approximately 340 x 2-bedroom apartments.
- 30,780m^2 of gross floor area (GFA) incorporating:
  - 29,580m^2 of residential floor area, and
  - 1,200m^2 of non-residential floor area at the corner of Cabramatta Road West and Orange Grove Road.
- Basement parking,
- Vehicular access via a new internal road connecting to Links Avenue,
- Communal open space and landscaping including the retention of the existing trees around the perimeter of the Site.

The 2016 TIA Report made the following 3 key conclusions:

- ***Public Transport Accessibility:*** *The Site is well served by a number of bus routes that provide direct access to the town centres of Cabramatta and Liverpool. The Cabramatta services provide onward connections at Cabramatta railway station to key Sydney metropolitan centres such as Campbelltown, Liverpool, Fairfield, Bankstown, Parramatta and the Sydney CBD. These bus routes are easily accessible with stops (in both directions) generally adjacent to the site on Cabramatta Road West and the Cumberland Highway and well within the target walk distance of 400 metres.*
- ***Design and DCP Compliance:*** *Preliminary analysis of the site indicates that it would satisfactorily accommodate the requirements of Council's DCP 2013 and relevant Australian Standards, including car parking provisions, vehicular access and servicing including garbage collection by Council's waste collection vehicle.*
- ***Traffic Impact Analysis:*** *The analysis demonstrates that the forecast traffic demand arising from the Proposal would be adequately accommodated on the local road network with no material increases in delays at the key intersections. The SIDRA analysis, which considered the proposed RMS upgrades, demonstrates that both of the key intersections would operate* satisfactorily with a LOS of D or better during the morning and evening peak periods.

In summary, the 2016 TIA Report concluded that the 2016 Planning Proposal for 400-404 Cabramatta Road West was supportable on traffic planning grounds.

However, concerns have been raised by Council and other authorities regarding the 2016 Planning Proposal. In response, a revised scheme is now proposed (the revised Proposal) which provides a reduced dwelling density across the Site.

The purpose of this Traffic Impact Assessment Addendum (TIA Addendum) is to consider whether the revised Proposal remains supportable on traffic planning grounds. In this regard, this TIA Addendum has the following key objectives:

1. **Public Transport Accessibility:** Assess whether the revised Proposal benefits from the same level of Public Transport Accessibility as the 2016 Proposal.
2. **Design and DCP Compliance:** Assess whether the Site and the revised Proposal can satisfactorily accommodate the requirements of Council's DCP and relevant Australian Standards.
3. **Traffic Impact Analysis:** Assess whether the revised Proposal would have lower peak hour traffic generation than the 2016 Proposal.

Our analysis of the proposal against these 3 key objectives is provided herewith.

Overview of the Revised Proposal

A revised indicative design concept has been prepared by Aleksandar Design Group, dated in August 2018, which proposes the following:

- 1 x 5 storey apartment building accommodating approximately 72 apartments.
- Approximately 63 x townhouses with at grade garage parking.
- Approximately 14,891m^2 of residential GFA.
- Basement parking for apartment residents and visitors.
- Vehicular access via a new internal road connecting to Links Avenue.
- Communal open space and landscaping including the retention of the existing trees around the perimeter of the Site.

In this regard, we have reviewed the revised concept plan (relevant plan is appended to this TIA Addendum at **Attachment 2**) and now advise as follows:

Public Transport Accessibility

The 2016 TIA report demonstrated that the Site has a good level of public transport accessibility. It is well served by a number of bus routes that provide direct access to the town centres of Cabramatta and Liverpool. These bus routes are easily accessible with stops (in both directions) generally within walking distance of 400 metres to the Site. It is also noted that the Cabramatta Station & Transport Interchange is located approximately 1.8 kilometres to the Site and can be accessed via a bus trip of about 7-8 minutes using the 815 / 816 services on Cabramatta Road.

In summary, the Site location has not changed and therefore the revised Proposal benefits from the same level of public transport accessibility as the 2016 Proposal.

Design and DCP Compliance

The main access to the Site from Links Avenue is provided in the same location as was adopted for the 2016 Planning Proposal and it would be designed to comply with the requirements of AS2890.1 and Austroads GRD4A. Regarding the internal road network and car park provision, based on the size of the Site, there are no obvious restrictions that would prohibit the Site from providing an internal access arrangement with car parking – generally consistent in layout to that shown on the attached plan - that is consistent with the requirements of Council's DCP and relevant Australian Standards.

In summary, the Site can deliver the revised Proposal with an access arrangement and car parking that meets the requirements of Council's DCP and relevant Australian Standards.

Traffic Impact Analysis

The following analysis demonstrates that the forecast traffic generation of the revised Proposal is 63 vehicle trips per hour during both the morning and evening perk periods. A comparison between the 2016 Planning Proposal and the current Planning Proposal traffic generation is summarised in **Table 1**.

Table 1: Comparison Between Previous and Revised Traffic Generation

	Yield		Rate[1]	Trip generation	
Land Use	**The 2016 PP**	**Current PP**	**(both AM and PM peak periods)**	**The 2016 PP**	**Current PP**
Apartments	340 units	72 units	0.3 trips per unit[2]	102	22
Townhouses	-	63 dwellings	0.65 trips per dwelling	-	41
Commercial	1,200m^2	-	2 trips per 100 m^2 GFA	24	-
Total				**126**	**63**

Note: 1) Trip generation rates are adopted from The RTA Guide to Traffic Generating Developments and The RMS Guide Technical Direction TDT 2013/04.

2) For high density residential units, the traffic generation rates are derived from site surveys of 2 residential flat building developments in the Sydney Metropolitan Region, which has similar characteristics with the Site.

It is evident that the reduction in dwelling numbers and the proposed changes to the built form in the current Planning Proposal will result in a reduction of 63 vehicle trips per hour during both morning and evening peak periods. This represents a 50% reduction in traffic generation in comparison with the 2016 Proposal.

In summary, the revised Proposal would generate significantly fewer peak hour trips compared with the 2016 Proposal and therefore the revised Proposal would have significantly reduced traffic impacts in comparison with the 2016 Proposal.

Conclusion

In summary, the TIA Addendum analysis presented above demonstrates:

- The Site location has not changed and therefore the revised Proposal benefits from the same level of public transport accessibility as the 2016 Proposal.
- The Site can deliver the revised Proposal with an access arrangement and car parking that meets the requirements of Council's DCP and relevant Australian Standards.
- The revised Proposal would generate significantly fewer peak hour trips compared with the 2016 Proposal and therefore the revised Proposal would have significantly reduced traffic impacts in comparison with the 2016 Proposal.

In conclusion, the comparative analysis presented in this TIA Addendum clearly demonstrates that the revised Planning Proposal for 400-404 Cabramatta Road West remains supportable on traffic planning grounds.

We trust the above is of assistance and please contact the undersigned or Sara Hu should you have any queries or require further information in relation to the above.

Yours sincerely,

Director – Ason Group
Email: piran.trethewey@asongroup.com.au

Attachment(s): 1) 2016 Traffic Impact Assessment Report

2) Revised Plan

Attachment 1

asongroup

Prepared for
TCON CONSTRUCTION PTY LTD

Traffic Impact Assessment Report

Planning Proposal
400-404 Cabramatta Road West, Cabramatta

Ref: 0123r01v3
29/02/16

Info@asongroup.com.au | +61 2 9083 6601 | Suite 1404, Level 14, 101 Grafton Street, Bondi Junction, NSW 2022

Table of Contents

1 Introduction

Ason Group has been engaged by Tcon Constructions Pty Ltd to prepare a Traffic Impact Assessment (**TIA**) report to support a Planning Proposal (the **Proposal**) that seeks to initiate the preparation of a Local Environmental Plan amendment for the land at 400-404 Cabramatta Road West, Cabramatta (the **Site**). The Site is located within the local government area of Fairfield City Council (**Council**).

In this regard, JBA Urban Planning Consultants has prepared a Planning Proposal report to assist Council in preparing a Planning Proposal for the rezoning of the Site in accordance with Section 55 of the *Environmental Planning and Assessment Act 1979*.

The current principal planning instrument for the subject site is the *Fairfield Local Environmental Plan 2013* (**FLEP 2013**), which zones the land R2 Low Density Residential. The FLEP 2013 prescribes a height standard of 9 metres (3 storeys) and a floor space ratio (**FSR**) standard of 0.45:1.

The intended outcome of this Planning Proposal is to amend the FLEP 2013 as follows:

- Amendment to the permitted use of the site for residential flat buildings and non-residential uses.
- Amendment to the height limit to facilitate a maximum building height of 27 metres.
- Amendment to the FSR standard to a maximum 2.1:1.
- For the purpose of assessing the implications of the Proposal – including a high-level assessment of traffic impacts – a conceptual medium-high density residential and commercial scheme (the **Concept Plan**) has been developed. In summary, the Concept Plan consists of 6 residential flat buildings providing a total of approximately 340 units and 1,200m^2 of commercial floor space.
- Internal access road running generally north-south through the site and connecting with Links Avenue at its southern end.
- Two levels of basement car parking to satisfy Council's minimum parking requirements.

This TIA report has been prepared to determine the potential access, traffic and parking implications of the Proposal, and to specifically identify any potential impacts to the local traffic and transport environment arising from the Proposal, and means by which any such impacts can be appropriately mitigated.

As part of this TIA study, Ason Group has:

- Visited the Site to observe the operation of the local traffic network.
- Commissioned and reviewed traffic surveys to quantify flows on the adjacent road network.
- Assessed Site connectivity with regard to local and sub-regional facilities and services, and specifically public transport and pedestrian accessibility.
- Determined the traffic generating potential of the Proposal, and assessed potential impacts arising from that traffic generation distributed to the adjacent road network.
- Examined the design of on-site parking and service vehicle facilities.
- Reviewed the key development controls, and traffic and transport guidelines and assessment criteria, pertinent to the Site and the Proposal, including:
    - Fairfield City Wide Development Control Plan 2013 (**DCP 2013**),
    - RMS (formerly RTA) Guide to Traffic Generating Developments (**RMS Guide**),
    - RMS Technical Direction 2013/04a – Guide to Traffic Generating Developments; Updated traffic surveys (**RMS Guide Update**),
    - Austroads Guide to Road Design Part 4A Unsignalised and Signalised Intersections (**Austroads GRD4A**),
    - Australian Standard 4299: Adaptable housing (**AS4299**),
    - Australian Standard 2890.1: Parking Facilities – Off Street Car Parking (**AS2890.1**),
    - Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities (**AS2890.2**),
    - Australian Standard 2890.6: Parking Facilities – Off Street Parking for People with Disabilities (**AS2890.6**).

2 The Existing Site

2.1 Location

The Site is located at 400-404 Cabramatta Road West, Cabramatta and enjoys a corner block with frontage to both Cabramatta Road West to the north and Orange Grove Road (Cumberland Highway) to the west. The Site has a total area of 15,349m^2 and is currently vacant with no recent development history.

The Site in its sub-regional and local context is shown on the Location Plan & Site Plan at **Figure 1**.

2.2 Road Network

With reference to Figure 1, the key local roads influenced by the proposal include:

Cabramatta Road West – an RMS classified sub-arterial road that generally runs in an east-west direction between Elizabeth Drive to the west and Cabramatta Road East to the east. The road generally carries 2 lanes of traffic in each direction and is subject to a 60 km/h speed zoning. Cabramatta Road West intersects the Cumberland Highway adjacent to the northwest corner of the site, in the form of a major signalised intersection. Parking along Cabramatta Road west is generally restricted within proximity of the site. The road provides a key access route to Cabramatta Railway Station, which has parking facilities for commuters using the rail network. The Cabramatta Road West – Elizabeth Drive corridor connects the Site to the proposed Western Sydney Airport, which is to be located at Badgerys Creek approximately 20 kilometres to the west of the Site. It is anticipated that 30,000 jobs could be generated directly by the airport's operation by 2060, and indirect employment around the airport site could contribute an additional 30,000 jobs.

Cumberland Highway (Orange Grove Road / Joseph Street) – an RMS classified arterial road that runs in a north-south direction, providing a key road link between Parramatta to the north and Liverpool to the south. The road generally carries 2 lanes of traffic in each direction along a divided carriageway and is subject to a 70 km/h speed zoning. The Cumberland Highway intersects with Links Avenue to the southwest of the site, in the form of a signalised intersection. It is expected that the majority of traffic generated by the Proposal would use this intersection and Cumberland Highway to access the wider road network.

Links Avenue – a local road linking to the Cumberland Highway that provides access to the wider road network for residents fronting Links Avenue, Stafford Street, Panorama Street and View Street. The road generally carries 2 lanes in both directions and is subject to a 50 km/h speed zoning. Parking is generally unrestricted along Links Avenue with “No Stopping” restrictions in operation adjacent to the intersection with the Cumberland Highway.

Figure 1: Location & Site Plan

2.3 Public & Active Transport

2.3.1 Overview

The following summarises the facilities – including public transport services – within proximity of the Site. Reference should be made to the Public Transport and Cycling routes plan shown in **Figure 2**.

2.3.2 Bus services

With regard to bus travel, the *Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area* (Transport for NSW, December 2013) state that bus services influence the travel mode choices of areas within 400 metres walk (approximately 5 minutes) of a bus stop. In this regard – and with reference to Figure 2 – it can be seen that there are a number of bus stops within 400 metres of the site, which provide access to local, sub-regional and regional (T-Way and Metrobus) bus services running on the Cumberland Highway and/or Cabramatta Road West. Of note are the 815 and 816 services, which provide direct access to Cabramatta railway station with weekday services every 15 minutes during the commuter peak hours. In addition, the 801 and 819 services provide access to Liverpool town centre and railway station to the south of the site also with weekday services every 15 minutes during the commuter peak hours.

2.3.3 Rail services

With reference to Figure 2, the Cabramatta Station & Transport Interchange is located approximately 1.8 kilometres to the northwest of the Site and provides access to the metropolitan rail system as well as connections to other sub-regional and regional bus services. It is noted that the interchange can be accessed via a bus trip of about 7-8 minutes using the 815 / 816 services on Cabramatta Road.

Cabramatta Station is serviced by the T2 Inner West & South Line, T3 Bankstown Line and T5 Cumberland Line and provides direct services to key Sydney metropolitan centres including Fairfield, Bankstown, Liverpool, Campbelltown, Parramatta and Sydney CBD. Train frequencies are high across the weekday, with significant services available in commuter peak periods. In addition, interchanges at Granville, Lidcombe and Redfern provide access to the T1 Northern & Western Line, T4 Eastern Suburbs and Illawarra Line, T7 Olympic Park Line.

2.3.4 Walking and Cycling

With regard to cycling, Figure 2 shows the site has access to on-street bicycle routes to the north east of the site, with routes to the Cabramatta Town Centre and railway station. An off-road trail is provided along the Cabramatta Creek, which provide connections to recreational and sporting facilities near the Cabramatta Rugby Leagues Club.

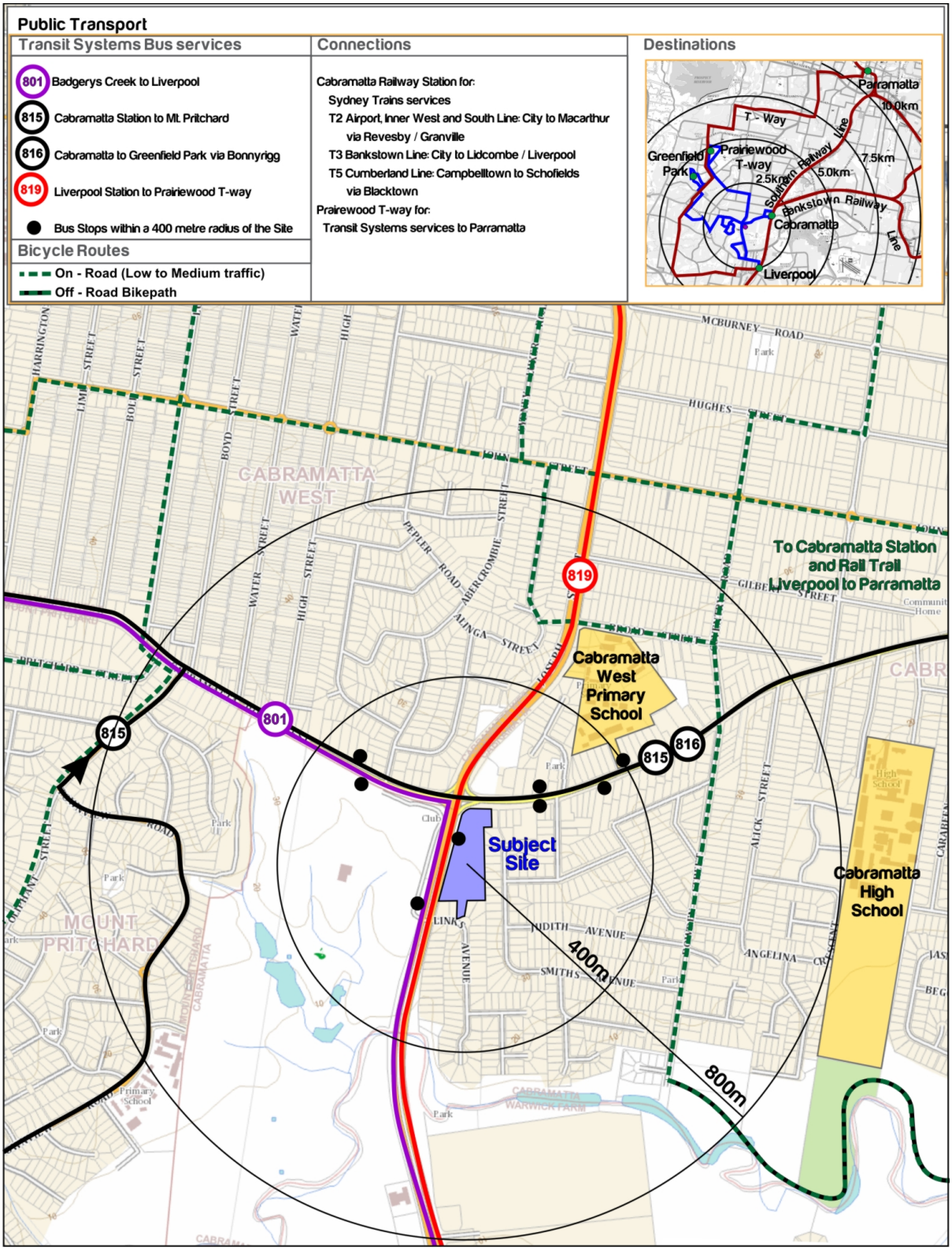


Figure 2: Public Transport and Cycling Routes

With regard to walking, all the streets in the area have footpaths and there are pedestrian crossings on all approaches to the signalised intersection of Cabramatta Road West with the Cumberland Highway, which – importantly – provides a safe pedestrian connection between the site and bus stops for all the services operating in the area. It is noteworthy that the site is well located with regard to the local schools of Cabramatta West Public School to the northeast and Cabramatta High School to the east.

In summary, the site is well served by a number of bus routes that provide direct access to the town centres of Cabramatta and Liverpool. The Cabramatta services provide onward connections at Cabramatta railway station to key Sydney metropolitan centres such as Campbelltown, Liverpool, Fairfield, Bankstown, Parramatta and the Sydney CBD. These bus routes are easily accessible with stops (in both directions) generally adjacent to the site on Cabramatta Road West and the Cumberland Highway and well within the target walk distance of 400 metres. Cycling routes are situated near the Site with on-street routes to the railway station for commuters and off-street routes along the Cabramatta Creek for recreational and leisure activities.

2.4 Local Traffic

2.4.1 Existing Traffic Flows

In order to determine local traffic flows, surveys were undertaken in August 2015 at the following key intersections:

- Cumberland Highway with Cabramatta Road West, and
- Cumberland Highway with Links Avenue.

Importantly, these intersections have been selected as they represent the locations that have significant potential to be impacted by the Proposal, as they provide the primary access paths between the Site and the broader arterial road network.

The survey data is provided in full in **Appendix A** and the peak hour volumes are summarised in **Figure 3**.

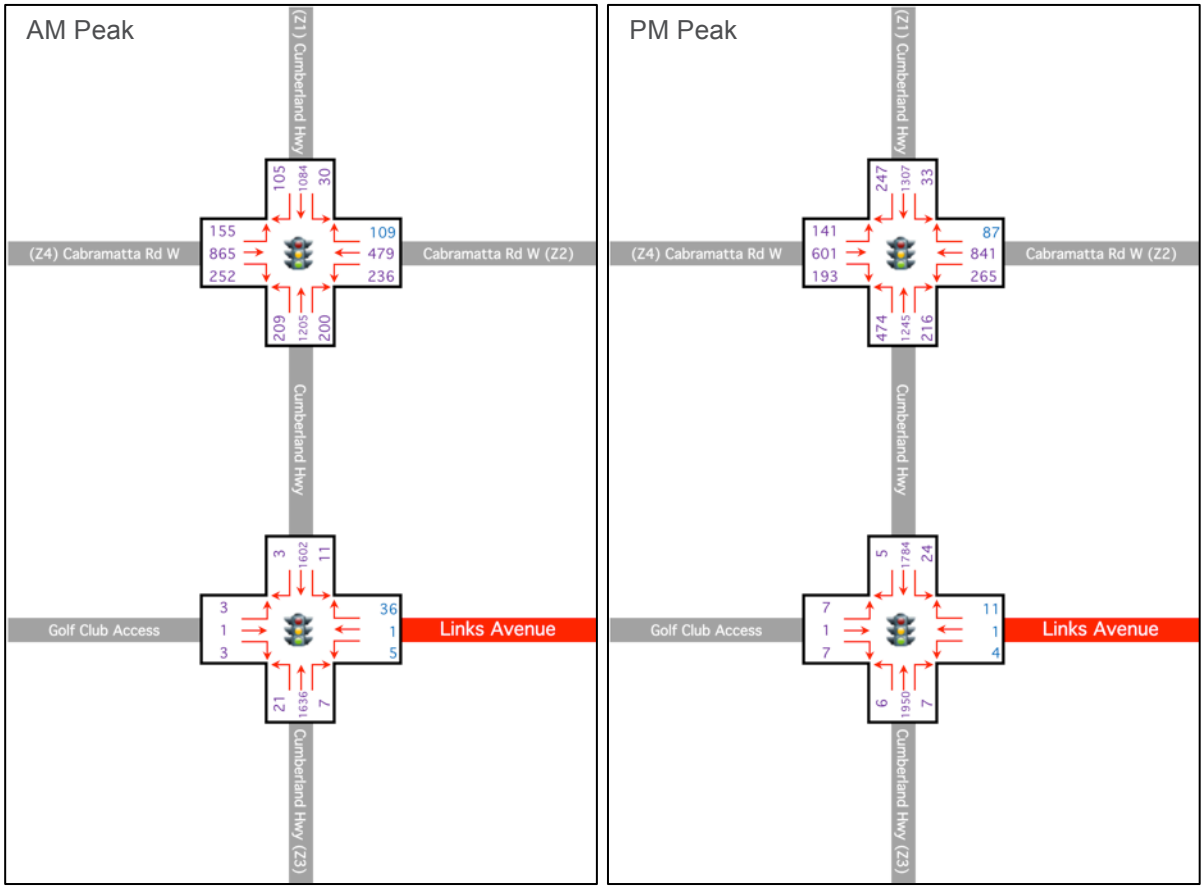


Figure 3: 2015 Peak Hour Traffic Flows

2.5 Network Performance

The performance of the key intersections have been analysed using the SIDRA Intersection modelling program. SIDRA modelling outputs a range of performance measures, in particular:

- *Degree of Saturation (DOS)* – The DOS is defined as the ratio of demand (arrival) flow to capacity. The DOS is used to measure the performance of intersections where a value of 1.0 represents an intersection at theoretical capacity, above 1.0 represent over-saturated conditions (demand flows exceed capacity) and degrees of saturation below 1.0 represent under-saturated conditions (demand flows are below capacity). As the performance of an intersection approaches DOS of 1.0, queue lengths and delays increase rapidly. It is usual to attempt to keep DOS to less than 0.9, with satisfactory intersection operation generally achieved with a DOS below 0.8.
- *Average Vehicle Delay (AVD)* – Delay represents the difference between interrupted and uninterrupted travel times through an intersection and is measured in seconds per vehicle. Delays include queued vehicles accelerating and decelerating from/to the intersection stop lines,

as well as general delays to all vehicles travelling through the intersection. The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.

- *Level of Service (LOS)* – This is a comparative measure that provides an indication of the operating performance, based on AVD. For signalised and roundabout intersections, LOS is based on the average delay to all vehicles, while at priority controlled intersections LOS is based on the worst approach delay. The following table provides a recommended baseline for assessment as per the RMS Guide:

Level of Service	Average Delay per Vehicle (sec/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 & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

- *Queue Length* – Queue length is the number of vehicles waiting at the stop line, and in this assessment is based on the 95th percentile back of queue length in metres, that is the queue length that is exceeded only 5% of the time. It is measured as the number of queued vehicles per traffic lane at the start of the green period (signals) or queued vehicles in each 'gap acceptance cycle' for roundabouts and priority intersections (i.e. the longest period in which no vehicles from the minor movement can enter the opposing primary flow).

The results of the 'Existing Scenario' SIDRA analysis are summarised in **Table 1**; relevant SIDRA outputs and intersection layouts are attached to this report at **Appendix B**.

Table 1: Existing Intersection Performance

Intersection	Scenario	Period	Degree of Saturation (DOS)	Average Vehicle Delay (AVD)	Level of Service (LOS)
Cumberland Hwy / Cabramatta Rd West	Existing	AM	0.925	41.9	C
		PM	1.107	71.9	F
Cumberland Hwy / Links Avenue	Existing	AM	0.659	2.6	A
		PM	0.701	1.4	A

The results demonstrate that the operation of the intersection at Cumberland Highway / Cabramatta Road West is operating at a satisfactory LOS of C during the morning peak hour; however, it is noteworthy that with an average delay of 41.9 seconds per vehicle, this is a 'High' C, with LOS changing D when average delays exceed 42 seconds. The results also show that the intersection is operating above its theoretical capacity with a LOS of F during the evening peak hour. The intersection of Cumberland Highway and Links Avenue currently performs satisfactorily with minimal average delays and operating at a LOS of A during both peak hours.

3 Proposed RMS Upgrades

3.1 Summary of Upgrades

With reference to **Figure 4**, as part of the RMS Pinch Point Program, a proposal is currently underway to improve safety and ease congestion at the intersection of Cumberland Highway with Cabramatta Road West and Cumberland Highway with Links Avenue – key intersections affecting access to/from the Site.

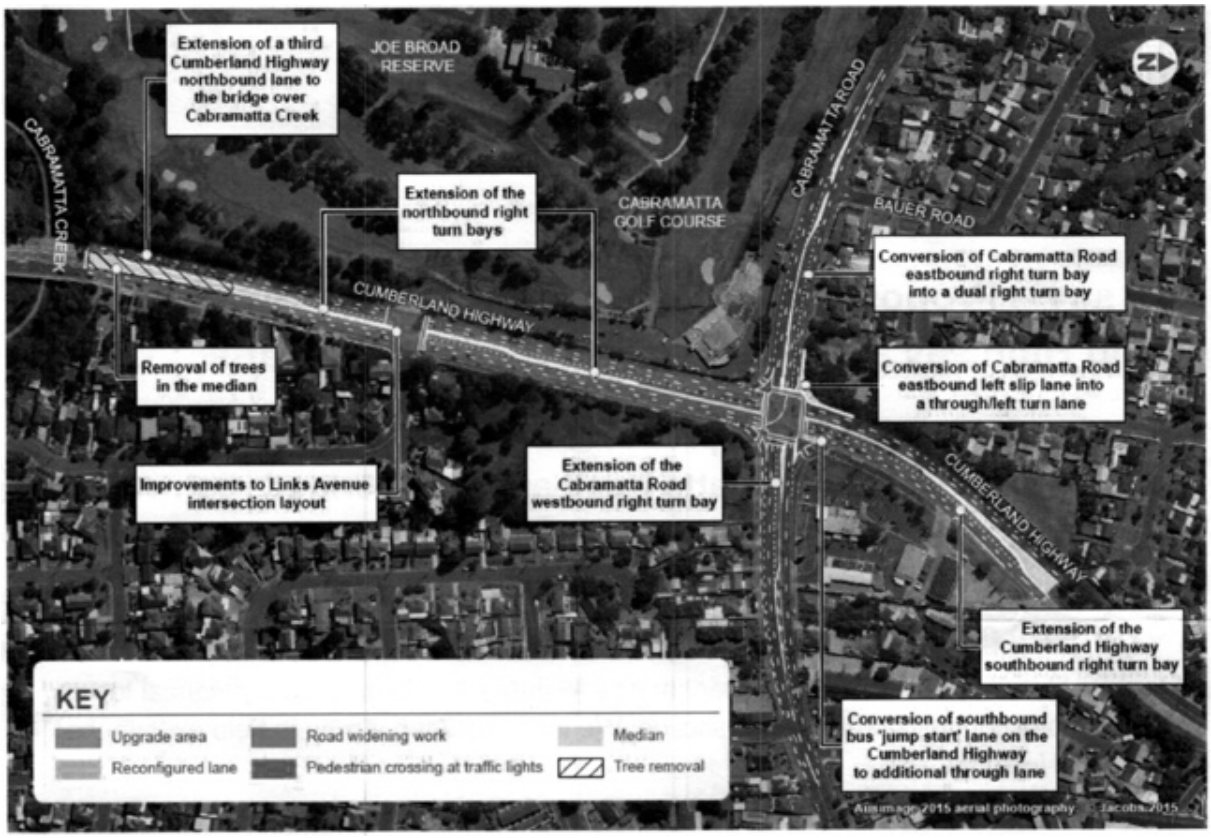


Figure 4: Proposed RMS Upgrades

The following summarises the proposed upgrade works:

- Extension of the third northbound lane on the Cumberland Highway from Cabramatta Road West intersection to the bridge over Cabramatta Creek. This would include widening in the Links Avenue intersection.
- Extension of the Cumberland Highway southbound and northbound right-turn bays.
- Conversion the southbound bus lane on the Cumberland Highway to an additional through lane.

- Extension of the Cabramatta Road West westbound right-turn bay.
- Conversion of the Cabramatta Road West eastbound right-turn bay into a dual right-turn bay.
- Conversion of the Cabramatta Road West eastbound left-slip lane into a through and left-turn lane.
- Improvements to traffic light phasing on the Cumberland Highway at the intersections of Cabramatta Road West and Links Avenue.
- Removal of shrubs in the median and replacement of the grass median with a concrete median.

From informal consultation with DownerMouchel – the delivery contractor – it is understood that based on submissions, the proposed works (as exhibited) are generally supported by key stakeholders and the public. Therefore, it is likely that the upgrades would be implemented as per the summary of works above. Furthermore, it is understood that construction is scheduled to commence mid-2016, the current program has a 6-month duration and accordingly the upgrades are expected to be completed by early 2017.

Recognising that the program for the subject Proposal estimates that (subject to approvals) the Site would be constructed and occupied by early to mid 2019 – some 2.0-2.5 years following the estimated completion of the upgrades, the 'Baseline' analysis in this report assumes completion of the upgrade works and accordingly the traffic impacts of the Proposal are assessed against this baseline scenario, which adopts the improved intersection layouts.

3.2 Baseline Network Performance

With reference to the above, the performance of the upgraded Cumberland Highway intersections with Cabramatta Road West and Links Avenue has been reassessed using SIDRA. The results of the 'Baseline Scenario' (including the RMS upgrades) SIDRA analysis is summarised in **Table 2** and compared alongside the 'Existing Scenario'; relevant SIDRA outputs and intersection layouts are attached at Appendix B.

Table 2: Comparison of Existing and Baseline Intersection Performance

Intersection	Scenario	Period	Degree of Saturation (DOS)	Average Vehicle Delay (AVD)	Level of Service (LOS)
Cumberland Hwy / Cabramatta Rd West	Existing	AM	0.925	41.9	C
		PM	1.107	71.9	F
	Baseline	AM	0.900	45.8	D
		PM	0.900	47.7	D
Cumberland Hwy / Links Avenue	Existing	AM	0.659	2.6	A
		PM	0.701	1.4	A
	Baseline	AM	0.602	1.5	A
		PM	0.664	1.1	A

The results above demonstrate a significant improvement to operating performance at the Cumberland Highway intersection with Cabramatta Road West during the critical evening peak hour, which improves from LOS F to LOS D with the average delay reducing by 24.2 seconds from 71.9 seconds to 47.7 seconds. With regard to the intersection of Cumberland Highway with Links Avenue, the SIDRA intersection analysis demonstrates that the intersection would improve and maintain a 'good' level of performance with LOS A under the 'Baseline Scenario'.

In summary, the proposed RMS upgrades would improve safety and ease congestion in accordance with the objectives of the Pinch Point Program.

4 Indicative Concept Plan

A detailed description of the Proposal is provided in the Planning Proposal report prepared separately by JBA. As mentioned, the key aspects of the Proposal can be summarised as follows:

- Permit the use of the site for residential flat buildings and non-residential uses.
- Increase the height limit to facilitate a maximum building height of 27 metres.
- Increase the FSR control to a maximum of 2.1:1.

An indicative Concept Plan for the residential development of the Site has been developed by Aleksandar Design Group (**ADG**) to inform this Planning Proposal process and provide an indicative development yield against which potential impacts of the Proposal can be assessed, including traffic and parking impacts. On this basis, the following summarises characteristics of the indicative Concept Plan that are of relevance to traffic and parking:

- 340 residential units.
- 1,200m^2 of commercial floor area (assumed small business premises).
- Car parking across 2 basement levels.
- Vehicle access provided via a two-way road connecting to Links Avenue through the vacant lot at No.6 Links Avenue.

The potential traffic and parking implications of the Proposal are covered in the following sections. Reference should also be made to the plans submitted separately, of which, traffic and parking relevant plans are attached to this report at **Appendix C**.

5 Development Control Plan Requirements

5.1 Parking Provisions

DCP 2013, Chapter 12 – Car Parking, Vehicle and Access Management (Amendment 10) prescribes the following minimum parking spaces for residential flat buildings and commercial (office or business) premises:

- 1 space per dwelling, plus
- 1 visitor space per 4 dwellings where a development has more than 2 proposed dwellings.
- 1 space per 40m^2 of gross leasable area.

It is noteworthy that the residential flat building parking rates are consistent with the rates presented in Chapter 7 – Residential Flat Buildings of DCP 2013.

Application of the above rates to the proposed indicative yield of the Concept Plan returns a minimum parking requirement of 455 parking spaces to comply with DCP 2013. This is inclusive of residential parking spaces, residential visitor spaces and commercial spaces.

The indicative Concept Plan demonstrates a typical basement level of car parking can provide for approximately 300 parking spaces. Accordingly, the 455 parking spaces required to comply with Council's DCP could be readily provided across 2 basement levels. Adaptable parking (for residents) and accessible parking (for visitors) would also be provided. Adaptable parking spaces would be provided either in accordance with the requirements of AS4299 (3.8 metre wide spaces) or AS2890.6 (2.4 metre wide space with adjacent 2.4 metre shared space). All accessible parking spaces for visitors would be provided in accordance with AS2890.6.

With regards to bicycle parking, DCP 2013 at Chapter 12 has no minimum requirements for bicycle parking. However, the provision of bicycle parking spaces should be adopted to encourage the use of cycling as an alternative mode of transport to private vehicles.

5.2 Car Parking, Servicing and Vehicle Access Arrangements

All general and service vehicle access will be provided via a two-way road connecting to Links Avenue through the vacant lot at No.6 Links Avenue, a location which would comply with the design requirements of AS2890.1 and Austroads GRD4A. In particular, the location ensures adequately visibility (and inter-visibility) is provided between vehicles exiting the access road and vehicles on Links Avenue.

The proposed vehicular basement access point would be from the internal road via a single access point. The proposed driveway would provide access to all parking and servicing areas, and all vehicles will enter and depart the Site in a forward direction. The access driveway and ramps to basement parking and service levels/areas will necessarily be designed to provide full compliance with AS2890.1, AS2890.2 and DCP 2013, Chapter 7, Section 7.5.2.

It is envisaged that waste servicing of the site would be provided at the street level on the internal access road connecting from Links Avenue. A cul-de-sac would be designed to ensure Council's waste collection vehicle could turn around and egress the site in a forward direction.

6 Traffic Analysis

6.1 Trip Generation

The RMS Guide Update provides trip generation rates for residential flat building developments, including trip rates per unit for a number of sites in the Sydney Metropolitan Region. In this regard, the average peak hour trips rates derived from all 8 Sydney Metropolitan site surveys are 0.19 trips per unit during the morning peak hour and 0.15 trips per unit during the evening peak hour.

However, it is noteworthy that 6 of the 8 sites are in locations that significantly better access to public transport – in particular rail transport – than the subject site. Accordingly, the following trip generation analysis is based only on the 2 survey sites that do not benefit from direct access to a train station, namely the Rockdale site and the Liberty Grove site. Interrogation of the raw RMS Guide Update data indicates that these 2 sites – on average – generate 0.3 trips per unit during the morning and evening peak hours.

With regards to the commercial uses, RMS Guide data indicates that 2 trips per 100m^2 GFA is an appropriate trip rate to adopt to assess the traffic impacts.

With reference to Section 4, the Concept Plan proposes 340 residential units and 1,200m^2 of commercial floor space, and as a result the trip generation is estimated to be:

- 126 trips during the morning peak hour (87 departure trips, 39 arrival trips); and
- 126 trips during the evening peak hour (39 departure trips, 87 arrival trips).

6.2 Trip Distribution & Assignment

Based on the 2011 Journey to Work data provided by the Bureau of Transport Statistics, the following presents the adopted vehicle-trip distribution of residents to their place of work from the broader Cabramatta West area:

- 25% of development traffic would arrive/depart to the north via the Cumberland Highway. This is associated with trips to/from Fairfield (parts of), Merrylands, Guildford, Parramatta and Auburn.
- 45% of development traffic would arrive/depart to the east via Cabramatta Road West. This is associated with trips to/from Fairfield, Sydney CBD, Bankstown and Auburn.
- 20% of development traffic would arrive/depart to the south via Cumberland Highway. This is associated with trips to/from Campbelltown, Liverpool and the general greater south-west Sydney region.

- 10% of vehicle trips traffic would arrive/depart to the west via Cabramatta Road West. This is associated with trips to/from Blacktown, Penrith and greater western Sydney.

For the purpose of this assessment, it is assumed that the distribution of commercial trips would be similar to that above adopted for the residential component.

With reference to the sections above and adopting an 20;80 (arrival:departure) split for residential trips and 80:20 split for commercial trips during the morning peak hour (and vice versa during the evening peak hour), the resulting trip assignment to the local road network is shown in **Figure 5**.

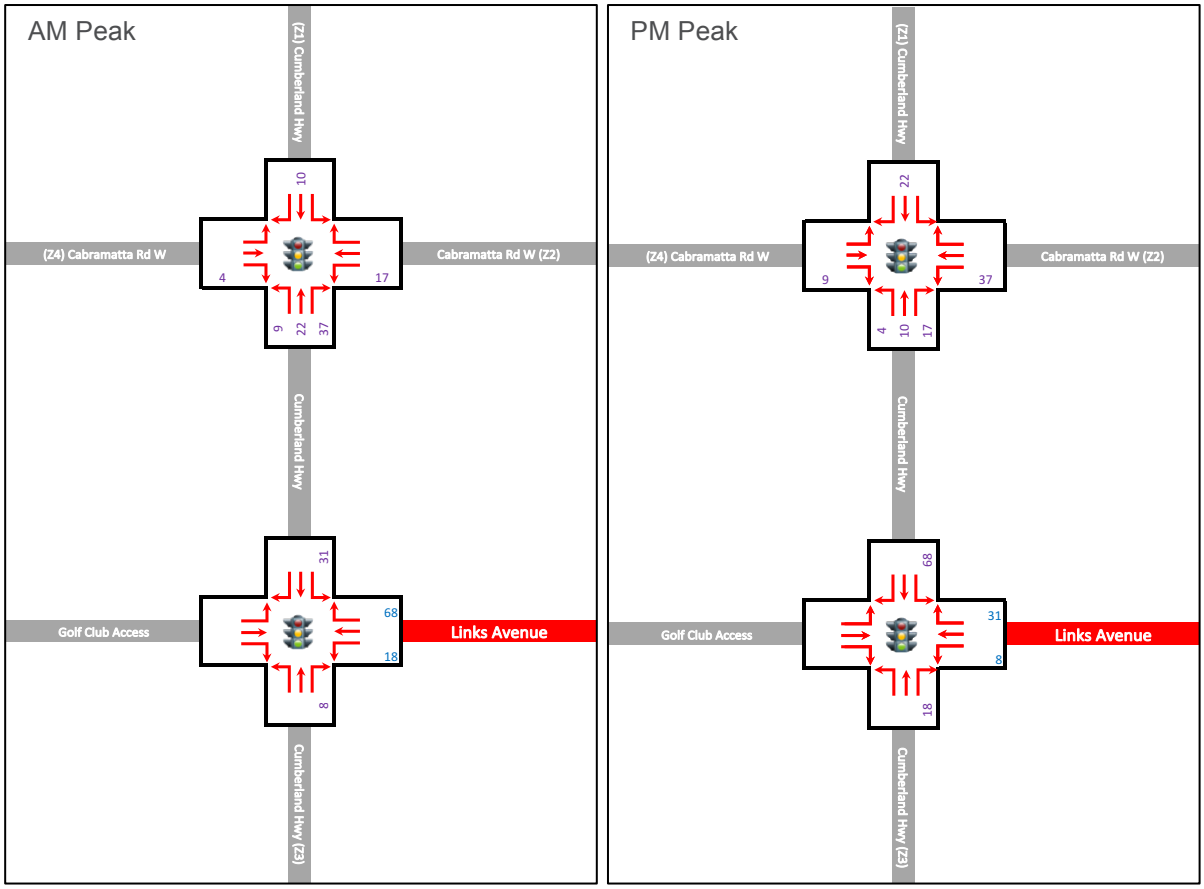


Figure 5: Trip Assignment of Future Development Traffic

6.3 Future Intersection Operation

Table 3 presents a summary of the results of the SIDRA analysis of the key intersections under the 'Future Scenario' (baseline plus development) and for comparison, also presents to Baseline Scenario results from Table 2. The detailed SIDRA outputs are attached at Appendix B.

Table 3: Comparison of Baseline and Future Local Intersection Performance

Intersection	Scenario	Period	Degree of Saturation (DOS)	Average Vehicle Delay (AVD)	Level of Service (LOS)
Cumberland Hwy / Cabramatta Rd West	Baseline	AM	0.900	45.8	D
		PM	0.900	47.7	D
	Future	AM	0.922	46.9	D
		PM	0.939	48.1	D
Cumberland Hwy / Links Avenue	Baseline	AM	0.602	1.5	A
		PM	0.664	1.1	A
	Future	AM	0.614	3.0	A
		PM	0.689	1.9	A

With regard to the intersection of Cumberland Highway with Links Avenue, the SIDRA intersection analysis demonstrates that the intersection would maintain a 'good' level of performance by maintaining a LOS A under the Future Scenario.

With regard to the intersection of Cumberland Highway with Cabramatta Road West, the SIDRA analysis of the morning and evening peak hour indicates that the traffic generation arising from the Proposal would be accommodated at the intersection as it is expected to continue to operate at LOS D during the morning and evening peak hours with only minimal increases in AVD (0.4 – 1.1 seconds).

In summary, the forecast traffic demand arising from the Proposal would be adequately accommodated on the local road network with no material increases in delays at the key intersections. The SIDRA analysis, which considered the proposed RMS upgrades, demonstrates that both of the key intersections would operate satisfactorily with a LOS of D or better during the morning and evening peak periods.

7 Conclusion

The key findings of this Traffic Impact Assessment are:

- Ason Group has been engaged by Tcon Constructions Pty Ltd to prepare a Traffic Impact Assessment report to support a Planning Proposal that seeks to initiate the preparation of a Local Environmental Plan amendment for the land at 400-404 Cabramatta Road West, Cabramatta, which would permit residential flat building development and non-residential uses.
- The Site is well served by a number of bus routes that provide direct access to the town centres of Cabramatta and Liverpool. The Cabramatta services provide onward connections at Cabramatta railway station to key Sydney metropolitan centres such as Campbelltown, Liverpool, Fairfield, Bankstown, Parramatta and the Sydney CBD. These bus routes are easily accessible with stops (in both directions) generally adjacent to the site on Cabramatta Road West and the Cumberland Highway and well within the target walk distance of 400 metres.
- Preliminary analysis of the site indicates that it would satisfactorily accommodate the requirements of Council's DCP 2013 and relevant Australian Standards, including car parking provisions, vehicular access and servicing including garbage collection by Council's waste collection vehicle.
- As part of the RMS Pinch Point Program, a proposal is currently underway to improve safety and ease congestion at the intersection of Cumberland Highway with Cabramatta Road West and Cumberland Highway with Links Avenue. SIDRA analysis demonstrates that the upgrades significantly improve the operation of the local road network during the critical evening peak hour.
- The analysis demonstrates that the forecast traffic demand arising from the Proposal would be adequately accommodated on the local road network with no material increases in delays at the key intersections. The SIDRA analysis, which considered the proposed RMS upgrades, demonstrates that both of the key intersections would operate satisfactorily with a LOS of D or better during the morning and evening peak periods.

It is therefore concluded that the Planning Proposal for 400-404 Cabramatta Road West is supportable on traffic planning grounds.

Appendix A

TTM Data

TTM Reference: 15SYD201
Location: Cabramatta Rd & Orange Grove Rd
Suburb: Cabramatta
Date: Thursday, 6 August 15
Survey Duration: 0700-0900 & 1600-1800
AM Peak: 0800-0900
Weather: Fine
PM Peak: 1700-1800
Notes:

Time	Northern Approach: Joseph St												Southern Approach: Orange Grove Rd												Eastern Approach: Cabramatta Rd												Western Approach: Cabramatta Rd											
15 min	Left			Straight			Right			U-turns	TOTAL	Peds	Left			Straight			Right			U-turns	TOTAL	Peds	Left			Straight			Right			U-turns	TOTAL	Peds	Left			Straight			Right			U-turns	TOTAL	Peds
time start	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
7:00	4	1	**5**	189	10	**199**	21	3	**24**	**0**	**228**	0	25	2	**27**	250	18	**268**	24	3	**27**	**0**	**322**	0	32	1	**33**	73	5	**78**	7	1	**8**	**0**	**119**	0	40	3	**43**	158	3	**161**	62	1	**63**	**0**	**267**	0
7:15	4	3	**7**	291	29	**320**	16	2	**18**	**0**	**345**	0	20	4	**24**	259	20	**279**	17	0	**17**	**0**	**320**	0	34	0	**34**	79	5	**84**	18	2	**20**	**0**	**138**	0	40	4	**44**	163	7	**170**	81	4	**85**	**0**	**299**	0
7:30	8	2	**10**	337	23	**360**	13	2	**15**	**0**	**385**	0	30	3	**33**	283	24	**307**	35	1	**36**	**0**	**376**	0	36	3	**39**	76	4	**80**	8	2	**10**	**0**	**129**	0	56	3	**59**	165	7	**172**	76	3	**79**	**0**	**310**	0
7:45	5	2	**7**	316	31	**347**	18	4	**22**	**0**	**376**	0	40	2	**42**	234	18	**252**	39	2	**41**	**0**	**335**	0	38	3	**41**	118	9	**127**	19	1	**20**	**0**	**188**	0	45	2	**47**	238	5	**243**	66	0	**66**	**0**	**356**	0
8:00	9	0	**9**	249	13	**262**	14	4	**18**	**0**	**289**	0	50	4	**54**	348	24	**372**	51	1	**52**	**0**	**478**	0	45	0	**45**	111	0	**111**	21	0	**21**	**0**	**177**	0	41	4	**45**	200	2	**202**	53	1	**54**	**0**	**301**	0
8:15	6	1	**7**	295	25	**320**	25	1	**26**	**0**	**353**	0	39	2	**41**	269	27	**296**	64	2	**66**	**0**	**403**	0	72	1	**73**	109	6	**115**	30	1	**31**	**0**	**219**	0	31	1	**32**	164	4	**168**	40	3	**43**	**0**	**243**	0
8:30	8	1	**9**	183	18	**201**	20	1	**21**	**0**	**231**	0	50	1	**51**	271	21	**292**	36	1	**37**	**0**	**380**	0	46	3	**49**	141	6	**147**	23	0	**23**	**0**	**219**	0	35	0	**35**	242	6	**248**	85	0	**85**	**0**	**368**	0
8:45	5	0	**5**	286	15	**301**	37	3	**40**	**0**	**346**	0	58	5	**63**	219	26	**245**	41	4	**45**	**0**	**353**	0	64	5	**69**	102	4	**106**	33	1	**34**	**0**	**209**	0	40	3	**43**	239	8	**247**	67	3	**70**	**0**	**360**	0
TOTAL	**49**	**10**	**59**	**2146**	**164**	**2310**	**164**	**20**	**184**	**0**	**2553**	**0**	**312**	**23**	**335**	**2133**	**178**	**2311**	**307**	**14**	**321**	**0**	**2967**	**0**	**367**	**16**	**383**	**809**	**39**	**848**	**159**	**8**	**167**	**0**	**1398**	**0**	**328**	**20**	**348**	**1569**	**42**	**1611**	**530**	**15**	**545**	**0**	**2504**	**0**
AM Peak	28	2	30	1013	71	1084	96	9	105	0	1219	0	197	12	209	1107	98	1205	192	8	200	0	1614	0	227	9	236	463	16	479	107	2	109	0	824	0	147	8	155	845	20	865	245	7	252	0	1272	0
16:00	11	1	**12**	287	12	**299**	52	0	**52**	**0**	**363**	0	101	2	**103**	258	19	**277**	62	1	**63**	**0**	**443**	0	65	0	**65**	217	7	**224**	19	2	**21**	**0**	**310**	0	45	1	**46**	156	5	**161**	68	0	**68**	**0**	**275**	0
16:15	7	3	**10**	396	13	**409**	63	2	**65**	**0**	**484**	0	120	5	**125**	312	19	**331**	56	0	**56**	**0**	**512**	0	71	0	**71**	184	2	**186**	31	1	**32**	**0**	**289**	0	30	1	**31**	156	4	**160**	36	0	**36**	**0**	**227**	0
16:30	7	1	**8**	330	15	**345**	45	1	**46**	**0**	**399**	0	100	4	**104**	266	17	**283**	55	0	**55**	**0**	**442**	0	62	0	**62**	197	3	**200**	28	1	**29**	**0**	**291**	0	33	1	**34**	134	8	**142**	41	1	**42**	**0**	**218**	0
16:45	9	1	**10**	334	5	**339**	60	0	**60**	**0**	**409**	0	97	4	**101**	301	16	**317**	41	0	**41**	**0**	**459**	0	46	1	**47**	165	5	**170**	15	1	**16**	**0**	**233**	0	32	1	**33**	169	5	**174**	57	1	**58**	**0**	**265**	0
17:00	7	1	**8**	304	9	**313**	61	1	**62**	**0**	**383**	0	107	2	**109**	302	19	**321**	65	2	**67**	**0**	**497**	0	58	0	**58**	203	6	**209**	20	1	**21**	**0**	**288**	0	43	2	**45**	133	5	**138**	41	1	**42**	**0**	**225**	0
17:15	4	0	**4**	317	16	**333**	59	2	**61**	**0**	**398**	0	93	1	**94**	304	11	**315**	45	0	**45**	**0**	**454**	0	74	0	**74**	219	2	**221**	25	0	**25**	**0**	**320**	0	28	2	**30**	137	6	**143**	57	1	**58**	**0**	**231**	0
17:30	8	1	**9**	309	10	**319**	54	0	**54**	**0**	**382**	0	123	4	**127**	288	14	**302**	56	1	**57**	**0**	**486**	0	81	0	**81**	211	10	**221**	20	0	**20**	**0**	**322**	0	24	0	**24**	161	4	**165**	41	0	**41**	**0**	**230**	0
17:45	12	0	**12**	328	14	**342**	69	1	**70**	**0**	**424**	0	143	1	**144**	291	16	**307**	47	0	**47**	**0**	**498**	0	52	0	**52**	189	1	**190**	20	1	**21**	**0**	**263**	0	42	0	**42**	150	5	**155**	52	0	**52**	**0**	**249**	0
TOTAL	**65**	**8**	**73**	**2605**	**94**	**2699**	**463**	**7**	**470**	**0**	**3242**	**0**	**884**	**23**	**907**	**2322**	**131**	**2453**	**427**	**4**	**431**	**0**	**3791**	**0**	**509**	**1**	**510**	**1585**	**36**	**1621**	**178**	**7**	**185**	**0**	**2316**	**0**	**277**	**8**	**285**	**1196**	**42**	**1238**	**393**	**4**	**397**	**0**	**1920**	**0**
PM Peak	31	2	33	1258	49	1307	243	4	247	0	1587	0	466	8	474	1185	60	1245	213	3	216	0	1935	0	265	0	265	822	19	841	85	2	87	0	1193	0	137	4	141	581	20	601	191	2	193	0	935	0

TTM Data

TTM Reference: 15SYD201
Location: Orange Grove Rd & Links Rd
Suburb: Cabramatta
Date: Thursday, 6 August 15
Survey Duration: 0700-0900 & 1600-1800
AM Peak: 0730-0830
Weather: Fine
PM Peak: 1700-1800
Notes:

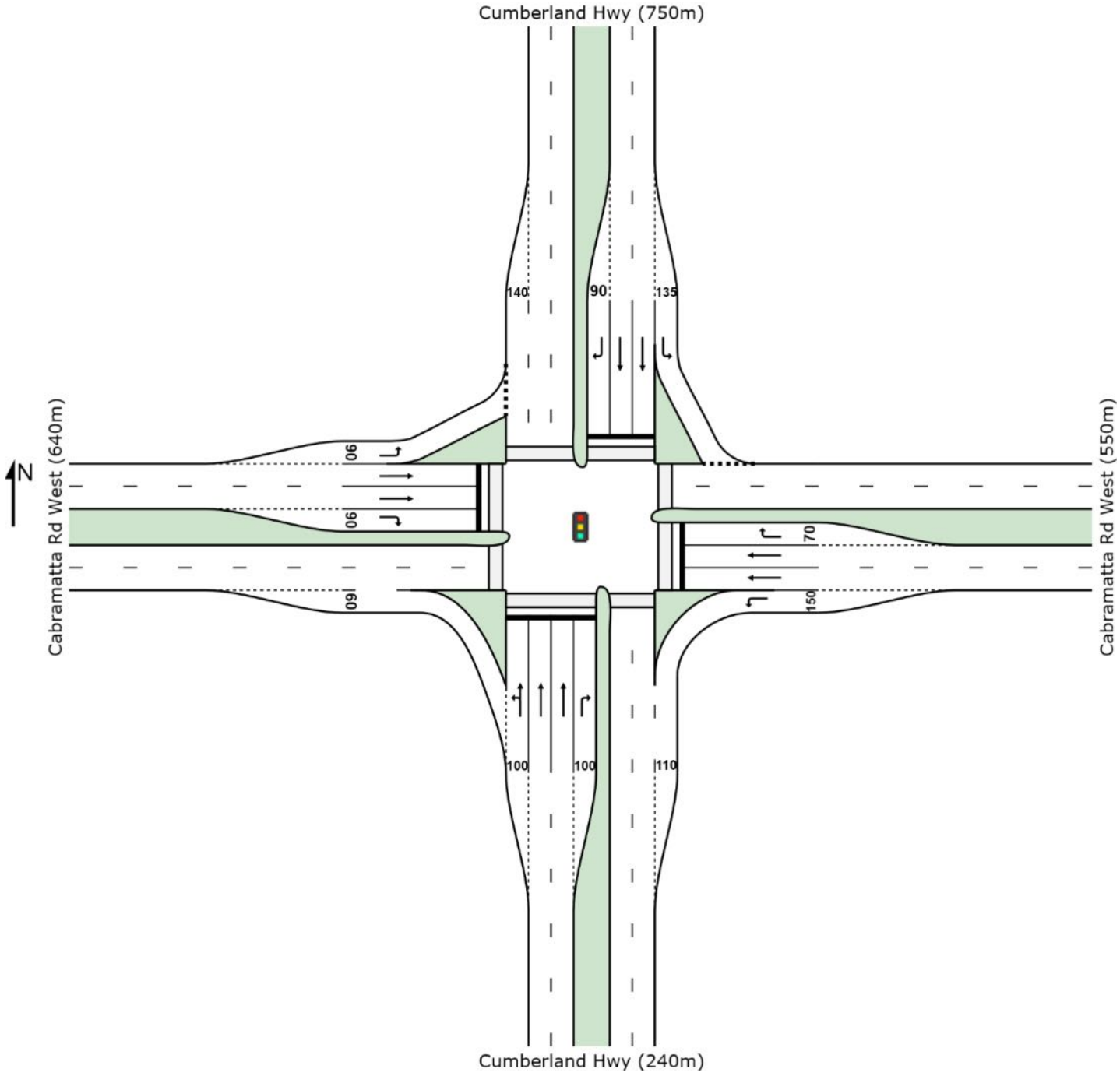
Time	Northern Approach: Orange Grove Rd												Southern Approach: Orange Grove Rd												Eastern Approach: Links Rd												Western Approach: Golf Course Access											
15 min	Left			Straight			Right			U-turns	TOTAL	Peds	Left			Straight			Right			U-turns	TOTAL	Peds	Left			Straight			Right			U-turns	TOTAL	Peds	Left			Straight			Right			U-turns	TOTAL	Peds
time start	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
7:00	1	0	**1**	275	19	**294**	3	0	**3**	**0**	**298**	0	1	0	**1**	347	21	**368**	0	0	**0**	**0**	**369**	0	1	0	**1**	0	0	**0**	1	0	**1**	**0**	**2**	0	1	0	**1**	0	0	**0**	0	0	**0**	**0**	**1**	0
7:15	3	0	**3**	351	29	**380**	0	0	**0**	**0**	**383**	0	0	0	**0**	330	27	**357**	1	0	**1**	**1**	**359**	0	2	0	**2**	0	0	**0**	3	0	**3**	**0**	**5**	0	0	0	**0**	1	0	**1**	0	0	**0**	**0**	**1**	0
7:30	2	0	**2**	387	22	**409**	0	0	**0**	**0**	**411**	0	2	0	**2**	412	31	**443**	1	0	**1**	**0**	**446**	0	1	0	**1**	0	0	**0**	0	0	**0**	**0**	**1**	0	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	0
7:45	4	0	**4**	391	28	**419**	2	0	**2**	**0**	**425**	0	3	0	**3**	409	35	**444**	1	0	**1**	**0**	**448**	0	1	0	**1**	0	0	**0**	5	1	**6**	**0**	**7**	0	1	0	**1**	0	0	**0**	0	0	**0**	**0**	**1**	0
8:00	0	0	**0**	374	12	**386**	0	0	**0**	**0**	**386**	0	8	0	**8**	425	25	**450**	3	0	**3**	**0**	**461**	0	1	0	**1**	0	0	**0**	9	0	**9**	**0**	**10**	0	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	0
8:15	3	1	**4**	398	33	**431**	1	0	**1**	**0**	**436**	0	6	0	**6**	376	31	**407**	2	0	**2**	**0**	**415**	0	2	0	**2**	0	0	**0**	12	0	**12**	**0**	**14**	0	1	0	**1**	0	0	**0**	0	0	**0**	**0**	**1**	0
8:30	3	0	**3**	356	28	**384**	0	0	**0**	**0**	**387**	0	6	0	**6**	378	25	**403**	1	0	**1**	**0**	**410**	0	1	0	**1**	0	0	**0**	7	1	**8**	**0**	**9**	0	0	0	**0**	0	0	**0**	3	0	**3**	**0**	**3**	0
8:45	4	0	**4**	383	18	**401**	1	1	**2**	**0**	**407**	0	1	0	**1**	341	35	**376**	1	0	**1**	**0**	**378**	0	1	0	**1**	0	0	**0**	7	0	**7**	**0**	**8**	0	2	0	**2**	0	0	**0**	0	0	**0**	**0**	**2**	0
TOTAL	**20**	**1**	**21**	**2915**	**189**	**3104**	**7**	**1**	**8**	**0**	**3133**	**0**	**27**	**0**	**27**	**3018**	**230**	**3248**	**10**	**0**	**10**	**1**	**3286**	**0**	**10**	**0**	**10**	**0**	**0**	**0**	**44**	**2**	**46**	**0**	**56**	**0**	**5**	**0**	**5**	**1**	**0**	**1**	**3**	**0**	**3**	**0**	**9**	**0**
AM Peak	9	1	10	1550	95	1645	3	0	3	0	1658	0	19	0	19	1622	122	1744	7	0	7	0	1770	0	5	0	5	0	0	0	26	1	27	0	32	0	2	0	2	0	0	0	0	0	0	0	2	0
16:00	4	0	**4**	430	17	**447**	0	0	**0**	**0**	**451**	0	1	0	**1**	470	18	**488**	0	0	**0**	**0**	**489**	0	2	0	**2**	0	0	**0**	1	0	**1**	**0**	**3**	0	0	0	**0**	0	0	**0**	1	0	**1**	**0**	**1**	0
16:15	5	0	**5**	443	12	**455**	0	0	**0**	**0**	**460**	0	2	0	**2**	509	19	**528**	2	0	**2**	**0**	**532**	0	1	0	**1**	0	0	**0**	2	0	**2**	**0**	**3**	0	1	0	**1**	0	0	**0**	1	0	**1**	**0**	**2**	0
16:30	7	0	**7**	477	19	**496**	1	0	**1**	**0**	**504**	0	1	1	**2**	420	22	**442**	1	0	**1**	**0**	**445**	0	4	0	**4**	0	0	**0**	5	0	**5**	**0**	**9**	0	0	0	**0**	0	0	**0**	1	0	**1**	**0**	**1**	0
16:45	2	0	**2**	389	6	**395**	2	0	**2**	**0**	**399**	0	1	0	**1**	474	20	**494**	1	0	**1**	**0**	**496**	0	1	0	**1**	0	0	**0**	5	0	**5**	**0**	**6**	0	0	0	**0**	1	0	**1**	0	0	**0**	**0**	**1**	0
17:00	3	0	**3**	436	14	**450**	1	0	**1**	**0**	**454**	0	1	0	**1**	469	21	**490**	0	0	**0**	**0**	**491**	0	0	0	**0**	0	0	**0**	1	0	**1**	**0**	**1**	0	1	1	**2**	0	0	**0**	0	0	**0**	**0**	**2**	0
17:15	6	0	**6**	416	14	**430**	0	0	**0**	**0**	**436**	0	2	0	**2**	461	11	**472**	2	0	**2**	**0**	**476**	0	1	0	**1**	1	0	**1**	4	0	**4**	**0**	**6**	0	2	0	**2**	0	0	**0**	2	0	**2**	**0**	**4**	0
17:30	9	0	**9**	449	14	**463**	0	0	**0**	**0**	**472**	0	1	0	**1**	477	21	**498**	3	0	**3**	**0**	**502**	0	2	0	**2**	0	0	**0**	4	0	**4**	**0**	**6**	0	1	0	**1**	0	0	**0**	4	0	**4**	**0**	**5**	0
17:45	6	0	**6**	429	12	**441**	4	0	**4**	**3**	**454**	0	2	0	**2**	474	16	**490**	2	0	**2**	**0**	**494**	0	1	0	**1**	0	0	**0**	2	0	**2**	**0**	**3**	0	2	0	**2**	0	0	**0**	1	0	**1**	**0**	**3**	0
TOTAL	**42**	**0**	**42**	**3469**	**108**	**3577**	**8**	**0**	**8**	**3**	**3630**	**0**	**11**	**1**	**12**	**3754**	**148**	**3902**	**11**	**0**	**11**	**0**	**3925**	**0**	**12**	**0**	**12**	**1**	**0**	**1**	**24**	**0**	**24**	**0**	**37**	**0**	**7**	**1**	**8**	**1**	**0**	**1**	**10**	**0**	**10**	**0**	**19**	**0**
PM Peak	24	0	24	1730	54	1784	5	0	5	3	1816	0	6	0	6	1881	69	1950	7	0	7	0	1963	0	4	0	4	1	0	1	11	0	11	0	16	0	6	1	7	0	0	0	7	0	7	0	14	0

Appendix B

SITE LAYOUT

Site: EX AM

Cabramatta Rd West x Cumberland Hwy
Existing Scenario
AM Peak
Signals - Fixed Time Coordinated



Organisation: ASON PTY LTD | Created: Sunday, September 20, 2015 11:21:01 PM
Project: \\psf\Home\Google Drive_ASON SL1 (Director)_Ason_SL2\Projects\0123\Projects\Modelling\AG0123m01 Cabramatta Road West x Cumberland Highway.sip6

LANE SUMMARY

Site: EX AM

Cabramatta Rd West x Cumberland Hwy
Existing Scenario
AM Peak
Signals - Fixed Time Coordinated Cycle Time = 107 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (240m)													
Lane 1	417	6.9	747	0.558	81[6]	27.0	LOS B	15.2	112.5	Short	100	0.0	NA
Lane 2	498	8.1	727	0.686	100	26.2	LOS B	19.3	144.8	Full	500	0.0	0.0
Lane 3	498	8.1	727	0.686	100	26.2	LOS B	19.3	144.8	Full	500	0.0	0.0
Lane 4	200	4.0	219	0.912	100	72.0	LOS F	12.4	90.1	Short	100	0.0	NA
Approach	1614	7.3		0.912		32.1	LOS C	19.3	144.8				
East: Cabramatta Rd West (550m)													
Lane 1	236	3.8	1808	0.131	100	5.7	LOS A	0.0	0.0	Short	150	0.0	NA
Lane 2	240	3.3	321	0.746	100	48.7	LOS D	12.6	90.8	Full	550	0.0	0.0
Lane 3	240	3.3	321	0.746	100	48.7	LOS D	12.6	90.8	Full	550	0.0	0.0
Lane 4	109	1.8	120	0.909	100	73.0	LOS F	6.7	47.8	Short	70	0.0	NA
Approach	824	3.3		0.909		39.6	LOS C	12.6	90.8				
North: Cumberland Hwy (750m)													
Lane 1	30	6.7	990	0.030	100	12.2	LOS A	0.3	2.6	Short	135	0.0	NA
Lane 2	559	6.5	629	0.889	100	43.7	LOS D	30.7	226.9	Full	750	0.0	0.0
Lane 3	525	6.5	591[1]	0.889	100	43.3	LOS D	28.0	207.0	Full	750	0.0	0.0
Lane 4	105	8.6	114	0.917	100	75.6	LOS F	6.6	49.4	Short	90	0.0	NA
Approach	1219	6.7		0.917		45.5	LOS D	30.7	226.9				
West: Cabramatta Rd West (640m)													
Lane 1	155	5.2	961	0.161	100	12.4	LOS A	3.0	21.9	Short	90	0.0	NA
Lane 2	433	2.3	485	0.892	100	53.9	LOS D	25.8	184.1	Full	640	0.0	0.0
Lane 3	433	2.3	485	0.892	100	53.9	LOS D	25.8	184.1	Full	640	0.0	0.0
Lane 4	252	2.8	272	0.925	100	72.2	LOS F	16.1	115.3	Short	90	0.0	NA
Approach	1272	2.8		0.925		52.5	LOS D	25.8	184.1				
Intersection	4929	5.3		0.925		41.9	LOS C	30.7	226.9				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

LANE SUMMARY

Site: EX PM

Cabramatta Rd West x Cumberland Hwy
Existing Scenario
PM Peak
Signals - Fixed Time Coordinated Cycle Time = 148 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (240m)													
Lane 1	474	1.7	633[1]	0.748	88[5]	7.3	LOS A	0.0	0.0	Short	100	0.0	NA
Lane 2	622	4.8	728	0.855	100	44.2	LOS D	40.6	296.1	Full	500	0.0	0.0
Lane 3	622	4.8	728	0.855	100	44.2	LOS D	40.6	296.1	Full	500	0.0	0.0
Lane 4	216	1.4	199	1.086	100	181.7	LOS F	25.9	183.4	Short	100	0.0	NA
Approach	1935	3.7		1.086		50.5	LOS D	40.6	296.1				
East: Cabramatta Rd West (550m)													
Lane 1	265	0.0	1857	0.143	100	5.6	LOS A	0.0	0.0	Short	150	0.0	NA
Lane 2	437	2.3	403	1.085	100	170.1	LOS F	53.3	380.3	Full	550	0.0	0.0
Lane 3	404	2.3	372[1]	1.085	100	176.3	LOS F	49.5	352.9	Full	550	0.0	0.0
Lane 4	87	2.3	123	0.705	100	83.3	LOS F	6.6	46.8	Short	70	0.0	NA
Approach	1193	1.8		1.085		129.3	LOS F	53.3	380.3				
North: Cumberland Hwy (750m)													
Lane 1	33	6.1	1123	0.029	100	9.4	LOS A	0.2	1.8	Short	135	0.0	NA
Lane 2	712	3.7	787[1]	0.904	100	45.4	LOS D	49.2	355.1	Full	750	0.0	0.0
Lane 3	595	3.7	658[1]	0.904	100	44.9	LOS D	37.1	267.8	Full	750	0.0	0.0
Lane 4	247	0.8	274	0.900	100	87.5	LOS F	20.1	141.6	Short	90	0.0	NA
Approach	1587	3.3		0.904		51.0	LOS D	49.2	355.1				
West: Cabramatta Rd West (640m)													
Lane 1	141	2.8	1031	0.137	100	13.4	LOS A	3.4	24.6	Short	90	0.0	NA
Lane 2	301	3.3	451	0.666	100	55.2	LOS D	19.7	141.7	Full	640	0.0	0.0
Lane 3	301	3.3	451	0.666	100	55.2	LOS D	19.7	141.7	Full	640	0.0	0.0
Lane 4	193	1.0	174	1.107	100	197.2	LOS F	24.2	170.6	Short	90	0.0	NA
Approach	935	2.8		1.107		78.2	LOS F	24.2	170.6				
Intersection	5650	3.0		1.107		71.9	LOS F	53.3	380.3				

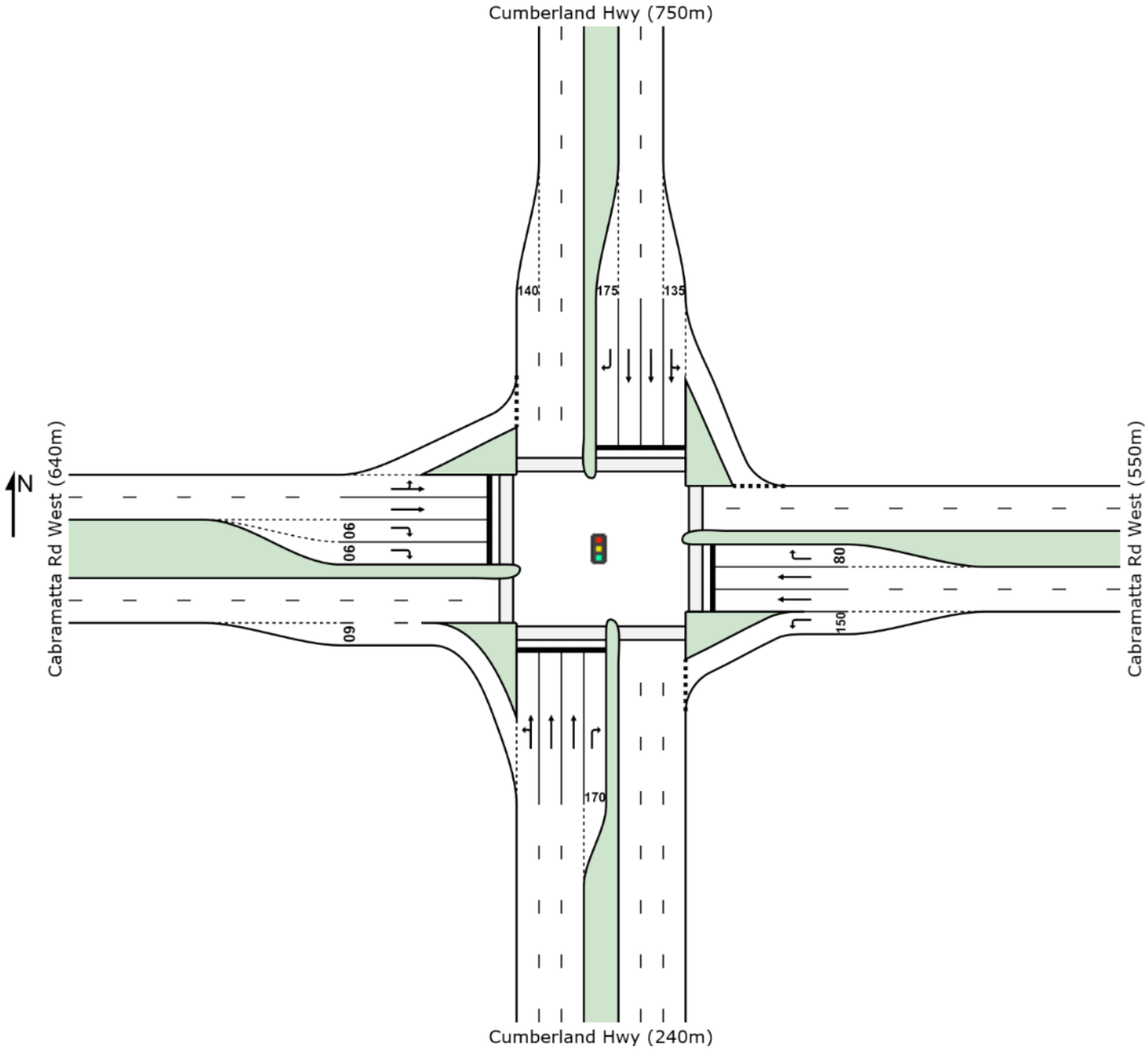
Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
5 Lane under-utilisation found by the program

SITE LAYOUT

Site: BASE AM

Cabramatta Rd West x Cumberland Hwy
Baseline Scenario
AM Peak - Post RMS Improvement
Signals - Fixed Time Coordinated



LANE SUMMARY

Site: BASE AM

Cabramatta Rd West x Cumberland Hwy
Baseline Scenario
AM Peak - Post RMS Improvement
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (240m)													
Lane 1	417	6.9	681	0.612	81[6]	33.9	LOS C	18.4	136.8	Full	500	0.0	0.0
Lane 2	499	8.1	664	0.751	100	34.2	LOS C	23.8	178.5	Full	500	0.0	0.0
Lane 3	499	8.1	664	0.751	100	34.2	LOS C	23.8	178.5	Full	500	0.0	0.0
Lane 4	200	4.0	226	0.886	100	74.5	LOS F	13.3	96.5	Short	170	0.0	NA
Approach	1614	7.3		0.886		39.1	LOS C	23.8	178.5				
East: Cabramatta Rd West (550m)													
Lane 1	236	3.8	1077	0.219	100	11.5	LOS A	4.5	32.7	Short	150	0.0	NA
Lane 2	240	3.3	334	0.717	100	52.4	LOS D	13.7	98.8	Full	550	0.0	0.0
Lane 3	240	3.3	334	0.717	100	52.4	LOS D	13.7	98.8	Full	550	0.0	0.0
Lane 4	109	1.8	122	0.892	100	78.0	LOS F	7.3	52.2	Short	80	0.0	NA
Approach	824	3.3		0.892		44.0	LOS D	13.7	98.8				
North: Cumberland Hwy (750m)													
Lane 1	373	6.6	564	0.661	100	50.3	LOS D	18.1	133.7	Short	135	0.0	NA
Lane 2	371	6.5	561	0.661	100	39.0	LOS C	17.7	131.2	Full	750	0.0	0.0
Lane 3	371	6.5	561	0.661	100	39.0	LOS C	17.7	131.2	Full	750	0.0	0.0
Lane 4	105	8.6	117	0.900	100	80.3	LOS F	7.1	53.7	Short	175	0.0	NA
Approach	1219	6.7		0.900		46.0	LOS D	18.1	133.7				
West: Cabramatta Rd West (640m)													
Lane 1	534	3.1	605	0.883	100	59.7	LOS E	33.4	240.2	Full	640	0.0	0.0
Lane 2	486	2.3	551[1]	0.883	100	52.6	LOS D	30.5	218.0	Full	640	0.0	0.0
Lane 3	126	2.8	364	0.346	100	50.5	LOS D	6.4	45.9	Short	90	0.0	NA
Lane 4	126	2.8	364	0.346	100	50.5	LOS D	6.4	45.9	Short	90	0.0	NA
Approach	1272	2.8		0.883		55.1	LOS D	33.4	240.2				
Intersection	4929	5.3		0.900		45.8	LOS D	33.4	240.2				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

LANE SUMMARY

Site: BASE PM

Cabramatta Rd West x Cumberland Hwy
Baseline Scenario
PM Peak - Post RMS Improvement
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (240m)													
Lane 1	567	2.2	782	0.726	81[6]	35.6	LOS C	26.9	192.1	Full	500	0.0	0.0
Lane 2	576	4.8	646	0.891	100	47.3	LOS D	34.9	254.5	Full	500	0.0	0.0
Lane 3	576	4.8	646	0.891	100	47.3	LOS D	34.9	254.5	Full	500	0.0	0.0
Lane 4	216	1.4	276	0.783	100	64.2	LOS E	13.1	92.7	Short	170	0.0	NA
Approach	1935	3.7		0.891		45.7	LOS D	34.9	254.5				
East: Cabramatta Rd West (550m)													
Lane 1	265	0.0	1134	0.234	100	12.4	LOS A	5.6	39.2	Short	150	0.0	NA
Lane 2	432	2.3	480	0.900	100	60.5	LOS E	28.8	205.8	Full	550	0.0	0.0
Lane 3	409	2.3	454[1]	0.900	100	60.3	LOS E	27.0	192.8	Full	550	0.0	0.0
Lane 4	87	2.3	107	0.816	100	73.9	LOS F	5.6	40.2	Short	80	0.0	NA
Approach	1193	1.8		0.900		50.7	LOS D	28.8	205.8				
North: Cumberland Hwy (750m)													
Lane 1	447	3.9	652	0.686	100	42.8	LOS D	20.3	146.8	Short	135	0.0	NA
Lane 2	446	3.7	650	0.686	100	34.7	LOS C	20.7	149.3	Full	750	0.0	0.0
Lane 3	446	3.7	650	0.686	100	34.7	LOS C	20.7	149.3	Full	750	0.0	0.0
Lane 4	247	0.8	277	0.892	100	73.2	LOS F	16.5	116.3	Short	175	0.0	NA
Approach	1587	3.3		0.892		43.0	LOS D	20.7	149.3				
West: Cabramatta Rd West (640m)													
Lane 1	381	3.1	504	0.756	100	52.3	LOS D	20.1	144.2	Full	640	0.0	0.0
Lane 2	361	3.3	477	0.756	100	46.7	LOS D	20.2	145.4	Full	640	0.0	0.0
Lane 3	97	1.0	108	0.897	100	79.1	LOS F	6.5	46.1	Short	90	0.0	NA
Lane 4	96	1.0	108	0.897	100	79.1	LOS F	6.5	46.1	Short	90	0.0	NA
Approach	935	2.8		0.897		55.7	LOS D	20.2	145.4				
Intersection	5650	3.0		0.900		47.7	LOS D	34.9	254.5				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

LANE SUMMARY

Site: FU(R4) AM

Cabramatta Rd West x Cumberland Hwy
Future Scenario (High Density Resi. & Office)
AM Peak - Post RMS Improvement
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (240m)													
Lane 1	426	6.7	683	0.624	81[6]	34.2	LOS C	19.0	141.0	Full	500	0.0	0.0
Lane 2	509	8.0	664	0.767	100	34.9	LOS C	24.8	185.8	Full	500	0.0	0.0
Lane 3	509	8.0	664	0.767	100	34.9	LOS C	24.8	185.8	Full	500	0.0	0.0
Lane 4	237	3.4	257	0.922	100	79.4	LOS F	16.6	119.7	Short	170	0.0	NA
Approach	1682	7.0		0.922		41.0	LOS C	24.8	185.8				
East: Cabramatta Rd West (550m)													
Lane 1	253	3.6	1081	0.234	100	11.9	LOS A	5.1	36.6	Short	150	0.0	NA
Lane 2	240	3.3	334	0.717	100	52.4	LOS D	13.7	98.8	Full	550	0.0	0.0
Lane 3	240	3.3	334	0.717	100	52.4	LOS D	13.7	98.8	Full	550	0.0	0.0
Lane 4	109	1.8	122	0.892	100	78.0	LOS F	7.3	52.2	Short	80	0.0	NA
Approach	841	3.2		0.892		43.5	LOS D	13.7	98.8				
North: Cumberland Hwy (750m)													
Lane 1	376	6.5	533	0.705	100	53.9	LOS D	19.1	141.4	Short	135	0.0	NA
Lane 2	374	6.5	530	0.705	100	41.6	LOS C	18.7	137.9	Full	750	0.0	0.0
Lane 3	374	6.5	530	0.705	100	41.6	LOS C	18.7	137.9	Full	750	0.0	0.0
Lane 4	105	8.6	117	0.900	100	80.3	LOS F	7.1	53.7	Short	175	0.0	NA
Approach	1229	6.7		0.900		48.7	LOS D	19.1	141.4				
West: Cabramatta Rd West (640m)													
Lane 1	534	3.1	605	0.883	100	60.0	LOS E	33.5	240.5	Full	640	0.0	0.0
Lane 2	486	2.3	551[1]	0.883	100	52.7	LOS D	30.5	218.0	Full	640	0.0	0.0
Lane 3	128	2.7	364	0.351	100	50.6	LOS D	6.5	46.7	Short	90	0.0	NA
Lane 4	128	2.7	364	0.351	100	50.6	LOS D	6.5	46.7	Short	90	0.0	NA
Approach	1276	2.7		0.883		55.3	LOS D	33.5	240.5				
Intersection	5028	5.2		0.922		46.9	LOS D	33.5	240.5				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

LANE SUMMARY

Site: FU(R4) PM

Cabramatta Rd West x Cumberland Hwy
Future Scenario (High Density Resi. & Office)
PM Peak - Post RMS Improvement
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (240m)													
Lane 1	572	2.2	782	0.732	81[6]	35.7	LOS C	27.3	194.4	Full	500	0.0	0.0
Lane 2	581	4.8	646	0.898	100	48.4	LOS D	35.7	260.5	Full	500	0.0	0.0
Lane 3	581	4.8	646	0.898	100	48.4	LOS D	35.7	260.5	Full	500	0.0	0.0
Lane 4	233	1.3	261	0.894	100	74.1	LOS F	15.6	110.6	Short	170	0.0	NA
Approach	1966	3.6		0.898		47.8	LOS D	35.7	260.5				
East: Cabramatta Rd West (550m)													
Lane 1	302	0.0	1123	0.269	100	12.7	LOS A	6.7	46.6	Short	150	0.0	NA
Lane 2	432	2.3	480	0.900	100	60.5	LOS E	28.8	205.8	Full	550	0.0	0.0
Lane 3	409	2.3	454[1]	0.900	100	60.3	LOS E	27.0	192.8	Full	550	0.0	0.0
Lane 4	87	2.3	107	0.816	100	73.9	LOS F	5.6	40.2	Short	80	0.0	NA
Approach	1230	1.7		0.900		49.6	LOS D	28.8	205.8				
North: Cumberland Hwy (750m)													
Lane 1	455	3.9	668	0.681	100	42.1	LOS C	20.3	146.9	Short	135	0.0	NA
Lane 2	454	3.7	667	0.681	100	33.7	LOS C	20.7	149.6	Full	750	0.0	0.0
Lane 3	454	3.7	667	0.681	100	33.7	LOS C	20.7	149.6	Full	750	0.0	0.0
Lane 4	247	0.8	277	0.892	100	73.2	LOS F	16.5	116.3	Short	175	0.0	NA
Approach	1609	3.3		0.892		42.1	LOS C	20.7	149.6				
West: Cabramatta Rd West (640m)													
Lane 1	381	3.1	504	0.756	100	52.3	LOS D	20.1	144.2	Full	640	0.0	0.0
Lane 2	361	3.3	477	0.756	100	46.7	LOS D	20.2	145.4	Full	640	0.0	0.0
Lane 3	101	1.0	108	0.939	100	85.2	LOS F	7.2	50.5	Short	90	0.0	NA
Lane 4	101	1.0	108	0.939	100	85.2	LOS F	7.2	50.5	Short	90	0.0	NA
Approach	944	2.8		0.939		57.2	LOS E	20.2	145.4				
Intersection	5749	3.0		0.939		48.1	LOS D	35.7	260.5				

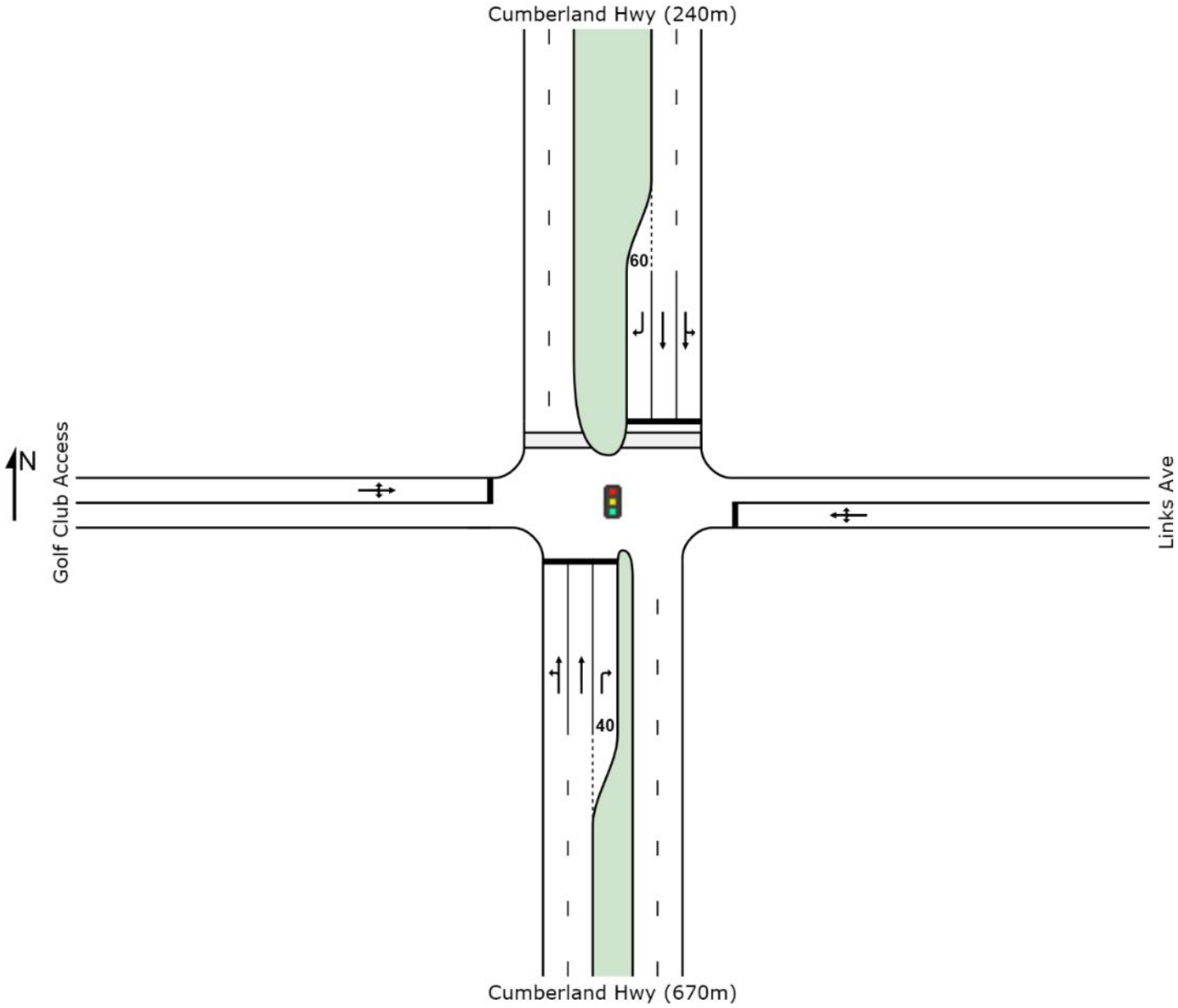
Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the adjacent full-length lanes. Some upstream delays at entry to short lanes are not included.
6 Lane under-utilisation due to downstream effects

SITE LAYOUT

Site: EX AM

Cumberland Hwy x Links Ave
Existing Scenario
AM Peak
Signals - Fixed Time Coordinated



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LANE SUMMARY

Site: EX AM

Cumberland Hwy x Links Ave
Existing Scenario
AM Peak
Signals - Fixed Time Coordinated Cycle Time = 107 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (670m)													
Lane 1	872	6.9	1324	0.659	100	2.0	LOS A	6.3	47.0	Full	670	0.0	0.0
Lane 2	872	7.1	1324	0.659	100	1.9	LOS A	6.3	47.0	Full	670	0.0	0.0
Lane 3	7	0.0	139	0.053	100	13.8	LOS A	0.1	1.0	Short	40	0.0	NA
Approach	1752	7.0		0.659		2.0	LOS A	6.3	47.0				
East: Links Ave													
Lane 1	44	2.4	276	0.160	100	45.4	LOS D	2.0	14.2	Full	500	0.0	0.0
Approach	44	2.4		0.160		45.4	LOS D	2.0	14.2				
North: Cumberland Hwy (240m)													
Lane 1	848	5.7	1334	0.636	100	1.9	LOS A	5.8	42.8	Full	240	0.0	0.0
Lane 2	849	5.7	1336	0.636	100	1.8	LOS A	5.8	42.8	Full	240	0.0	0.0
Lane 3	3	33.3	96	0.033	100	14.8	LOS B	0.1	0.6	Short	60	0.0	NA
Approach	1701	5.8		0.636		1.9	LOS A	5.8	42.8				
West: Golf Club Access													
Lane 1	7	0.0	294	0.025	100	43.1	LOS D	0.3	2.2	Full	500	0.0	0.0
Approach	7	0.0		0.025		43.1	LOS D	0.3	2.2				
Intersection	3504	6.3		0.659		2.6	LOS A	6.3	47.0				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

LANE SUMMARY

Site: EX PM

Cumberland Hwy x Links Ave
Existing Scenario
PM Peak
Signals - Fixed Time Coordinated Cycle Time = 148 seconds (User-Given Cycle Time)

Lane Use and Performance

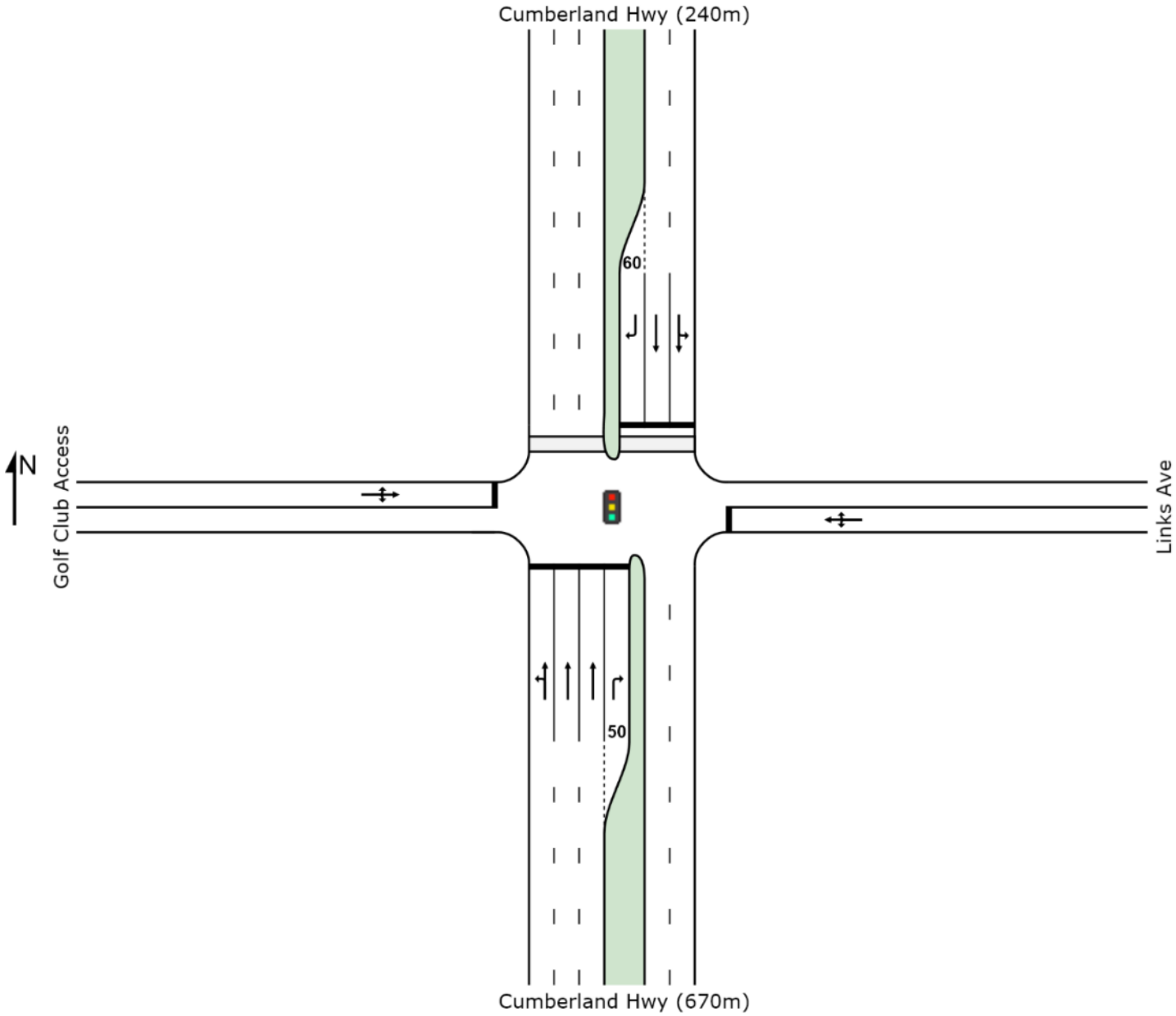
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (670m)													
Lane 1	1029	3.5	1468	0.701	100	0.9	LOS A	4.6	33.4	Full	670	0.0	0.0
Lane 2	1030	3.5	1468	0.701	100	0.9	LOS A	4.6	33.4	Full	670	0.0	0.0
Lane 3	7	0.0	101	0.073	100	12.2	LOS A	0.2	1.1	Short	40	0.0	NA
Approach	2066	3.5		0.701		1.0	LOS A	4.6	33.4				
East: Links Ave													
Lane 1	17	6.3	225	0.075	100	63.1	LOS E	1.1	7.8	Full	500	0.0	0.0
Approach	17	6.3		0.075		63.1	LOS E	1.1	7.8				
North: Cumberland Hwy (240m)													
Lane 1	951	2.9	1472	0.646	100	1.0	LOS A	3.6	26.2	Full	240	0.0	0.0
Lane 2	952	3.0	1473	0.646	100	0.8	LOS A	3.7	26.2	Full	240	0.0	0.0
Lane 3	5	0.0	83	0.063	100	12.5	LOS A	0.1	0.8	Short	60	0.0	NA
Approach	1908	3.0		0.646		0.9	LOS A	3.7	26.2				
West: Golf Club Access													
Lane 1	16	6.7	233	0.068	100	62.9	LOS E	1.0	7.3	Full	500	0.0	0.0
Approach	16	6.7		0.068		62.9	LOS E	1.0	7.3				
Intersection	4007	3.3		0.701		1.4	LOS A	4.6	33.4				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

SITE LAYOUT

Site: BASE AM

Cumberland Hwy x Links Ave
Baseline Scenario
AM Peak - Post RMS Improvements
Signals - Fixed Time Coordinated



LANE SUMMARY

Site: BASE AM

Cumberland Hwy x Links Ave
Baseline Scenario
AM Peak - Post RMS Improvements
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (670m)													
Lane 1	581	6.8	1398	0.416	100	0.8	LOS A	1.1	8.3	Full	670	0.0	0.0
Lane 2	581	7.1	1398	0.416	100	0.5	LOS A	1.1	8.3	Full	670	0.0	0.0
Lane 3	581	7.1	1398	0.416	100	0.5	LOS A	1.1	8.3	Full	670	0.0	0.0
Lane 4	7	0.0	140	0.053	100	11.3	LOS A	0.1	0.9	Short	50	0.0	NA
Approach	1752	7.0		0.416		0.7	LOS A	1.1	8.3				
East: Links Ave													
Lane 1	44	2.4	234	0.189	100	53.6	LOS D	2.3	16.5	Full	500	0.0	0.0
Approach	44	2.4		0.189		53.6	LOS D	2.3	16.5				
North: Cumberland Hwy (240m)													
Lane 1	848	5.7	1409	0.602	100	0.8	LOS A	2.4	17.4	Full	240	0.0	0.0
Lane 2	849	5.7	1410	0.602	100	0.7	LOS A	2.4	17.4	Full	240	0.0	0.0
Lane 3	3	33.3	120	0.026	100	11.5	LOS A	0.1	0.5	Short	60	0.0	NA
Approach	1701	5.8		0.602		0.7	LOS A	2.4	17.4				
West: Golf Club Access													
Lane 1	7	0.0	248	0.030	100	51.0	LOS D	0.4	2.6	Full	500	0.0	0.0
Approach	7	0.0		0.030		51.0	LOS D	0.4	2.6				
Intersection	3504	6.3		0.602		1.5	LOS A	2.4	17.4				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

LANE SUMMARY

Site: BASE PM

Cumberland Hwy x Links Ave
Baseline Scenario
PM Peak - Post RMS Improvements
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (670m)													
Lane 1	686	3.5	1429	0.480	100	0.6	LOS A	1.5	10.7	Full	670	0.0	0.0
Lane 2	686	3.5	1430	0.480	100	0.6	LOS A	1.5	10.7	Full	670	0.0	0.0
Lane 3	686	3.5	1430	0.480	100	0.6	LOS A	1.5	10.7	Full	670	0.0	0.0
Lane 4	7	0.0	112	0.066	100	11.7	LOS A	0.1	0.9	Short	50	0.0	NA
Approach	2066	3.5		0.480		0.6	LOS A	1.5	10.7				
East: Links Ave													
Lane 1	17	6.3	230	0.073	100	52.2	LOS D	0.9	6.3	Full	500	0.0	0.0
Approach	17	6.3		0.073		52.2	LOS D	0.9	6.3				
North: Cumberland Hwy (240m)													
Lane 1	951	2.9	1433	0.664	100	0.9	LOS A	3.1	22.4	Full	240	0.0	0.0
Lane 2	952	3.0	1434	0.664	100	0.7	LOS A	3.1	22.4	Full	240	0.0	0.0
Lane 3	5	0.0	130	0.041	100	11.1	LOS A	0.1	0.6	Short	60	0.0	NA
Approach	1908	3.0		0.664		0.8	LOS A	3.1	22.4				
West: Golf Club Access													
Lane 1	16	6.7	236	0.067	100	52.0	LOS D	0.8	5.9	Full	500	0.0	0.0
Approach	16	6.7		0.067		52.0	LOS D	0.8	5.9				
Intersection	4007	3.3		0.664		1.1	LOS A	3.1	22.4				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

LANE SUMMARY

Site: FU(R4) AM

Cumberland Hwy x Links Ave
Future Scenario (High Density Resi. and Office)
AM Peak - Post RMS Improvements
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (670m)													
Lane 1	581	6.8	1398	0.416	100	0.8	LOS A	1.1	8.3	Full	670	0.0	0.0
Lane 2	581	7.1	1398	0.416	100	0.5	LOS A	1.1	8.3	Full	670	0.0	0.0
Lane 3	581	7.1	1398	0.416	100	0.5	LOS A	1.1	8.3	Full	670	0.0	0.0
Lane 4	16	0.0	134	0.118	100	11.6	LOS A	0.3	2.0	Short	50	0.0	NA
Approach	1760	6.9		0.416		0.7	LOS A	1.1	8.3				
East: Links Ave													
Lane 1	135	0.8	236	0.571	100	57.2	LOS E	7.6	53.4	Full	500	0.0	0.0
Approach	135	0.8		0.571		57.2	LOS E	7.6	53.4				
North: Cumberland Hwy (240m)													
Lane 1	865	5.5	1408	0.614	100	1.0	LOS A	2.5	18.2	Full	240	0.0	0.0
Lane 2	866	5.7	1410	0.614	100	0.7	LOS A	2.5	18.3	Full	240	0.0	0.0
Lane 3	3	33.3	120	0.026	100	11.5	LOS A	0.1	0.5	Short	60	0.0	NA
Approach	1734	5.6		0.614		0.9	LOS A	2.5	18.3				
West: Golf Club Access													
Lane 1	7	0.0	242	0.030	100	51.0	LOS D	0.4	2.6	Full	500	0.0	0.0
Approach	7	0.0		0.030		51.0	LOS D	0.4	2.6				
Intersection	3636	6.1		0.614		3.0	LOS A	7.6	53.4				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

LANE SUMMARY

Site: FU(R4) PM

Cumberland Hwy x Links Ave
Future Scenario (High Density Resi. & Office)
PM Peak - Post RMS Improvements
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cumberland Hwy (670m)													
Lane 1	686	3.5	1429	0.480	100	0.6	LOS A	1.5	10.7	Full	670	0.0	0.0
Lane 2	686	3.5	1430	0.480	100	0.6	LOS A	1.5	10.7	Full	670	0.0	0.0
Lane 3	686	3.5	1430	0.480	100	0.6	LOS A	1.5	10.7	Full	670	0.0	0.0
Lane 4	26	0.0	103	0.255	100	12.8	LOS A	0.6	4.0	Short	50	0.0	NA
Approach	2085	3.5		0.480		0.7	LOS A	1.5	10.7				
East: Links Ave													
Lane 1	58	1.8	233	0.249	100	54.2	LOS D	3.1	21.8	Full	500	0.0	0.0
Approach	58	1.8		0.249		54.2	LOS D	3.1	21.8				
North: Cumberland Hwy (240m)													
Lane 1	986	2.7	1430	0.689	100	1.4	LOS A	3.5	25.0	Full	240	0.0	0.0
Lane 2	989	3.0	1434	0.689	100	0.8	LOS A	3.5	25.1	Full	240	0.0	0.0
Lane 3	5	0.0	130	0.041	100	11.1	LOS A	0.1	0.6	Short	60	0.0	NA
Approach	1980	2.9		0.689		1.1	LOS A	3.5	25.1				
West: Golf Club Access													
Lane 1	16	6.7	232	0.068	100	52.1	LOS D	0.8	6.0	Full	500	0.0	0.0
Approach	16	6.7		0.068		52.1	LOS D	0.8	6.0				
Intersection	4139	3.2		0.689		1.9	LOS A	3.5	25.1				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

Appendix C

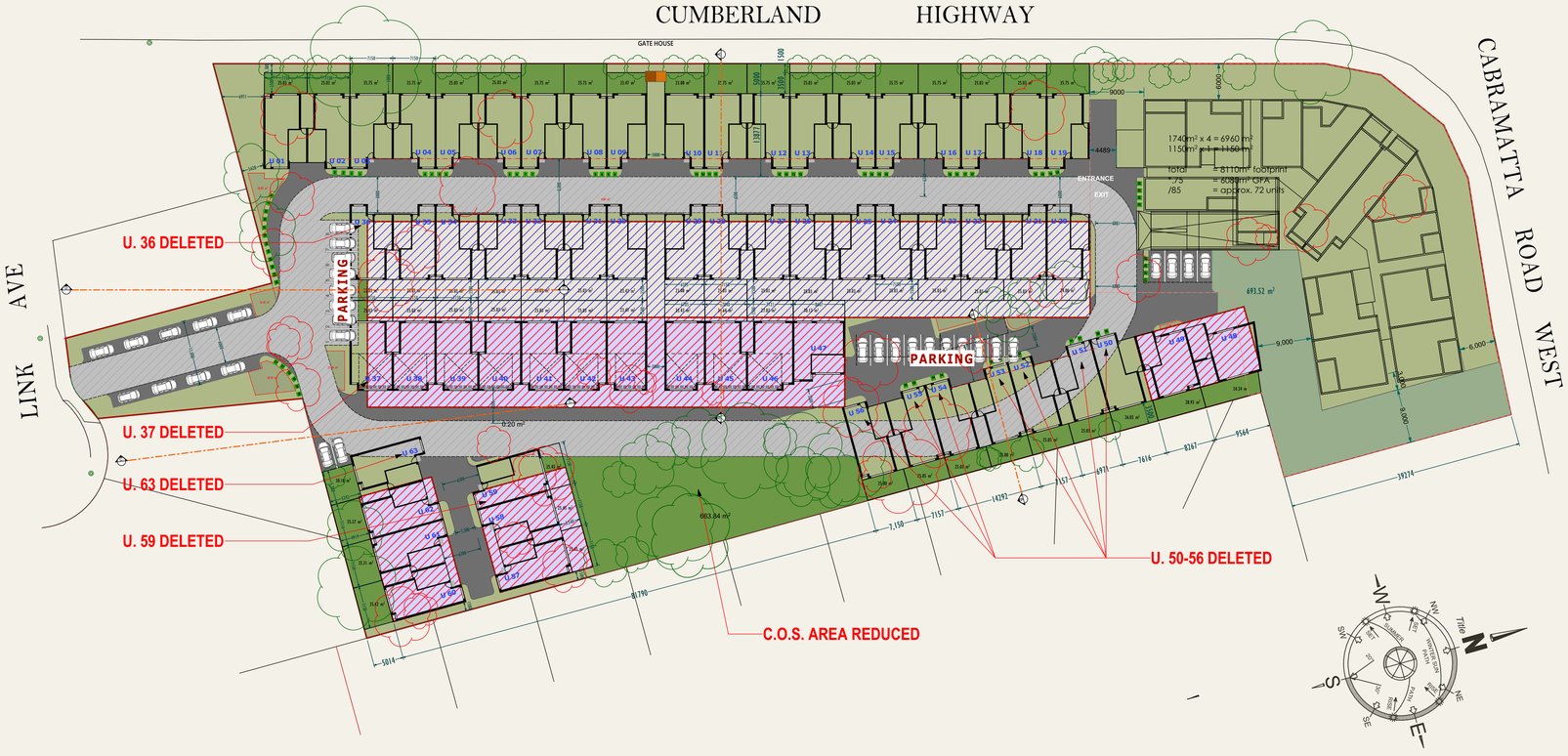
7 TYPICAL FLOOR PLANS

GROUND FLOOR PLAN

TYPICAL BASEMENT LEVEL

Attachment 2

INDICATIVE GROUND FLOOR PLAN



SITE PLAN - 6m TWO WAY INTERNAL ROAD

SCALE : 1/500

PRELIMINARY

AMENDMENTS LIST		
ISSUE	DATE	AMENDMENTS
A	12.10.17	Schematic Concepts
B	14.05.18	Schematic Concepts
C	29.10.18	Waste collection and garages indicated

NORTH

PROJECT TITLE	CLIENT
Proposed medium density residential development	TCON Constructions Pty Ltd
PROJECT ADDRESS	**DRAWING TITLE**
400 - 404 CABRAMATTA ROAD WEST CABRAMATTA	**SITE PLAN - 6m TWO WAY INTERNAL ROAD**

Designiche P/L
1/45 Crosby Street,
Greystanes N.S.W. 2145
(T) 02 9631 7844
(M) 0438 538 118
(E)orhan@designiche.com.au

designiche Building Designers

DRAWN	DATE	SCALE	DRAWING NO	ISSUE
S.B.	14.05.18	1:500	17097 01	C

Ref: 0123tn01v2

1 November 2018

info@asongroup.com.au
+61 2 9083 6601
Suite 1202, Level 12, 220 George Street
Sydney, NSW 2000
www.asongroup.com.au

Attn: Jim Murray

RE: 400-404 Cabramatta Road West, Cabramatta – Traffic and Safety Assessment

Dear Jim,

We refer to your email on 01 November 2018 regarding the traffic and safety assessment of the proposed internal shared road at 400-404 Cabramatta Road West, Cabramatta (The Site).

In this regard, we have reviewed the materials provided, relevant standards and now advise as follows.

- The proposed development includes the following:
  - A 5-storey apartment building accommodating 69 apartments,
  - 63 Townhouses with at-grade garage parking, and
  - A total provision of 202 car parking spaces, comprises:
    - 98 parking spaces for the 5-storey apartment at basement level
    - 53 townhouses with single garage
    - 10 townhouses with double garage
    - 31 visitor / open-air parking spaces
- Based on the indicative design, the internal road is proposed to be a one-way shared road with a speed limit of 10km/h.
- The internal shared road will serve a total of 202 car parking spaces; hence it can be considered equivalent to a small-moderate scale car park facility. Such facilities typically rely on pedestrians walking within vehicular aisles and do not provide dedicated footpaths.
- It is noted that AS/NZS 2890.1 suggests best practice for parking aisles is to limit aisle (for User Class 1A as applies in this instance) to about 100 parking spaces in total. However, the internal road is designed to be one-way, reducing the effective circulating traffic volumes to half that which might otherwise occur. That is, the traffic volumes at any one point of the at-grade circulation road would be consistent with that of a 101 space car park. On this basis, the proposed 'roadway' is regarded as a standard 'parking aisle' when applying relevant Standards.
- The one-way nature of the system also provides an improved walking environment for pedestrians by:
  - traffic is approaching from one direction only and therefore simplifies the 'awareness' required for pedestrians walking within the aisle.
  - wider roadway so that the vehicles can drive pass pedestrians more easily, and
  - provides opportunity of reduced carriageway widths (using landscaped blisters when clear of garages); reducing the crossing distance for pedestrians.
- In addition to the above, the following are provided to promote a slow speed environment and hence a safe environment for pedestrians:
  - Speed humps will be provided along the internal shared road with appropriate spacing to reduce the vehicle speed in accordance with AS/NZS 2890.1.
  - Speed signage shall be provided at the site entry and on both side of the 'aisle' to remind drivers to control the vehicle speed below 10km/h.

- Different pavement type or threshold treatment shall be applied to the internal road to make drivers and pedestrians aware of the different driving conditions and reinforce that it is a parking aisle and NOT a standard 'road' environment.

Having regard of above, the provision of internal one-way shared road acting as the 10 km/h shared zone is deemed supportable.

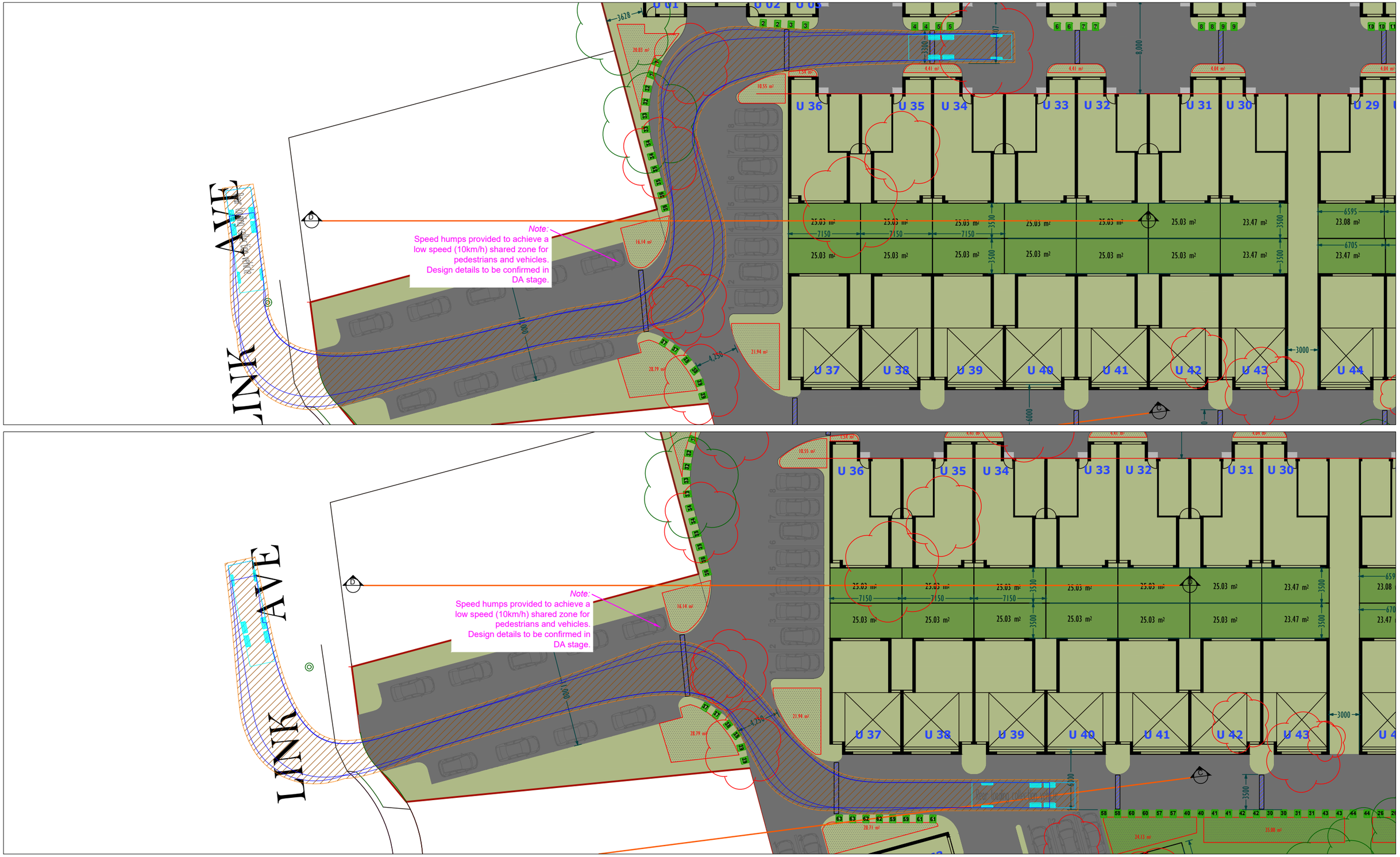
We trust the above is of assistance and please contact undersigned or Tim Lewis (tim.lewis@asongroup.com.au) should you have any queries or require further information in relation to the above.

Yours sincerely,

Traffic Engineer | Ason Group

T: +61 2 9083 6601 | E: sara.hu@asongroup.com.au

A: Suite 1202, Level 12, 220 George Street, Sydney NSW 2000



Notes:

This drawing is provided for information purposes only and should not be used for construction.

Document Info:

Drawn by: Shihui Hu

File name: 0123v5 400-404 Cabramatta Road West.dwg

Client:

TCON Constructions Pty Ltd

Project:

0123

400-404 Cabramatta Road West

Drawing Title:

10.24m Garbage Truck

Site Access

Date:

31-Oct-18

Scale @ A3:

[scale]

Drawing Number:

AG01

asongroup

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Sydney NSW 2000

info@asongroup.com.au

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Drawn by: Shihui Hu

File name: 0123v5 400-404 Cabramatta Road West.dwg

Client:

TCON Constructions Pty Ltd

Project:

0123

400-404 Cabramatta Road West

Drawing Title:

10.24m Garbage Truck Circulation

Date:

31-Oct-18

Scale @ A3:

[scale]

Drawing Number:

AG02

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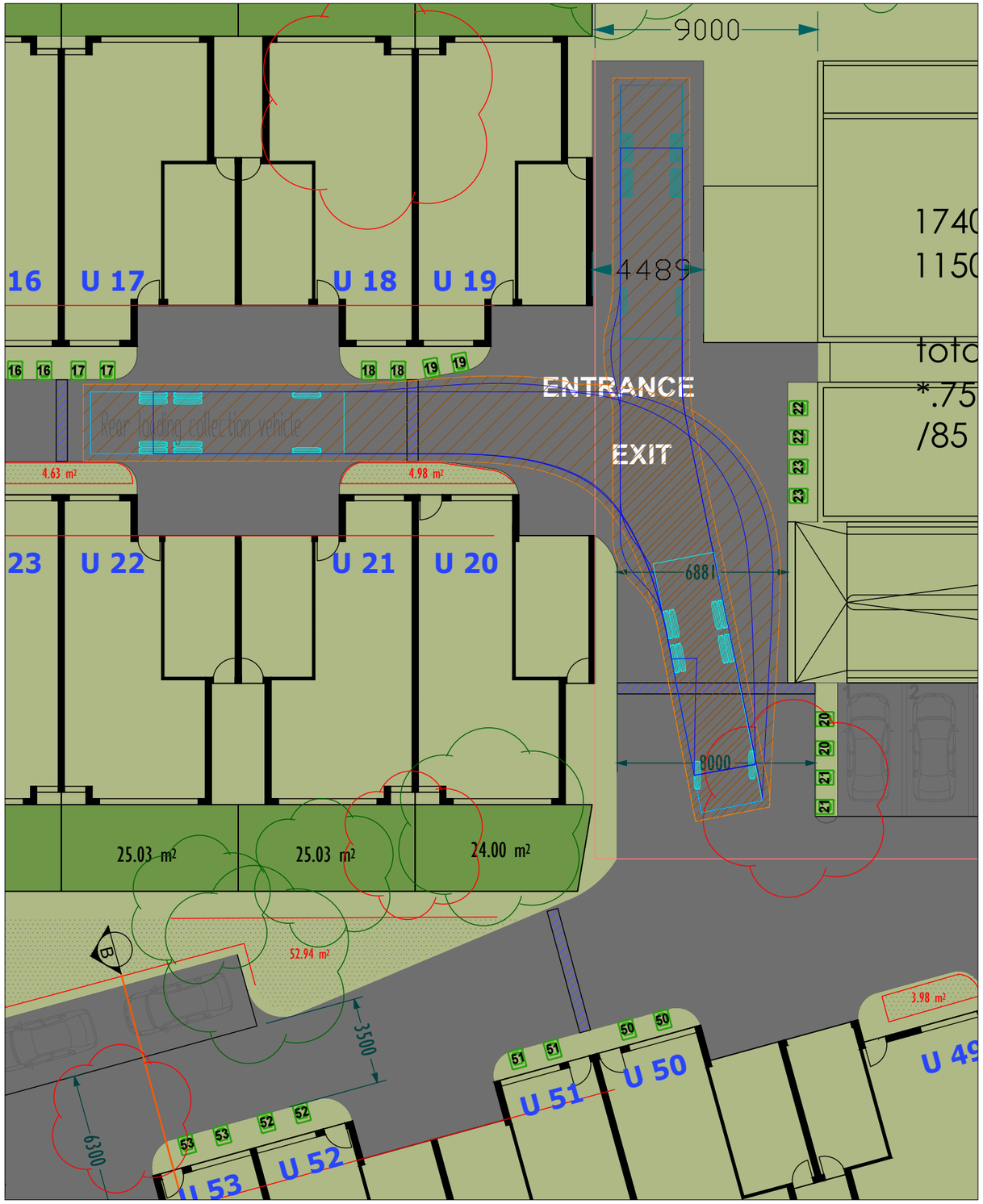
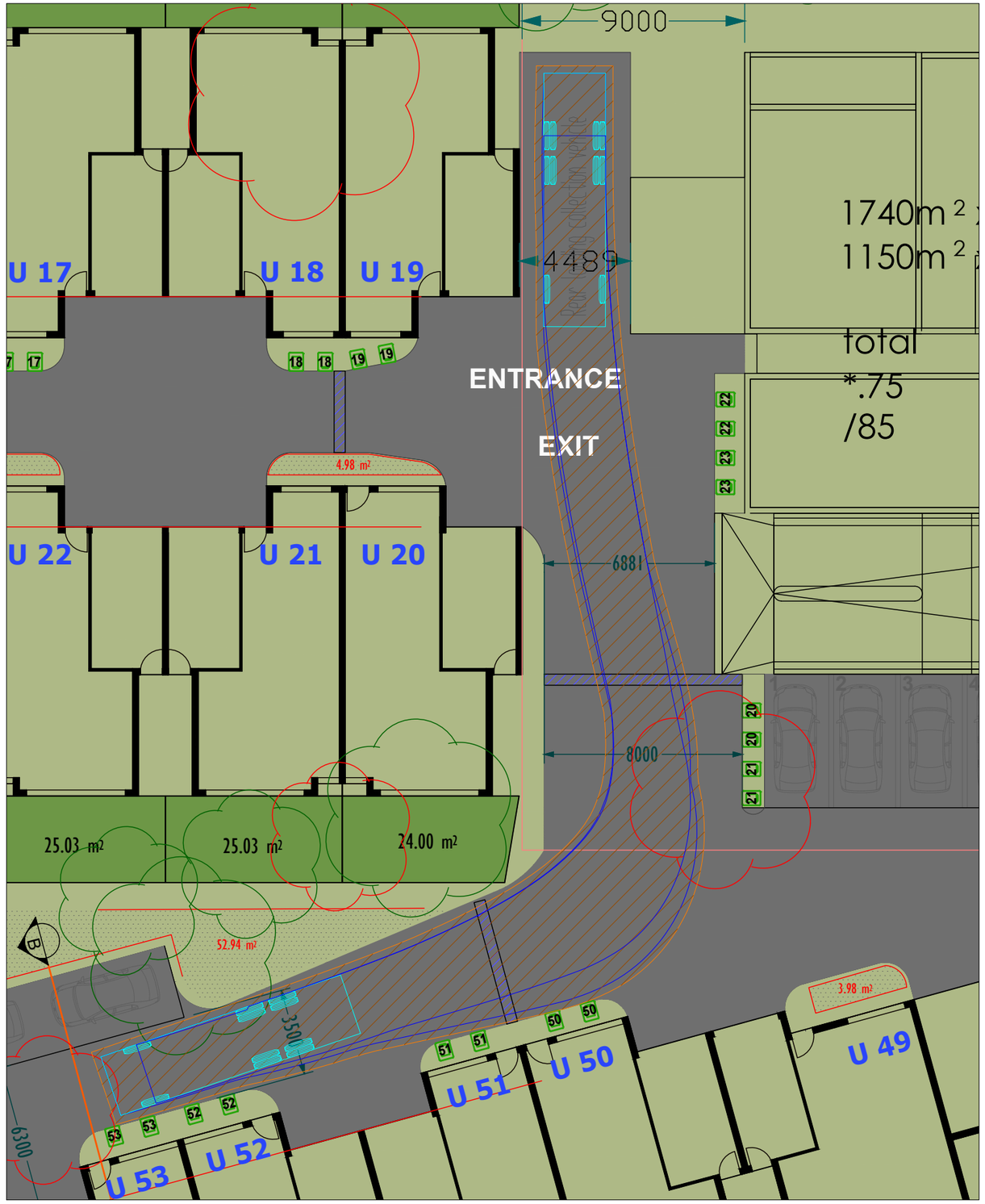
Sydney NSW 2000

info@asongroup.com.au





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Document Info:

Drawn by: Shihui Hu

File name: 0123v5 400-404 Cabramatta Road West.dwg

Client:

TCON Constructions Pty Ltd

Project:

0123

400-404 Cabramatta Road West

Drawing Title:

10.24m Garbage Truck

Access Loading Bay

Date:

31-Oct-18

Scale @ A3:

[scale]

Drawing Number:

AG03

asongroup

Suite 1202, Level 12, 220 George Street
Sydney NSW 2000

info@asongroup.com.au

1740m^2 x 4 = 6960 m^2
1150m^2 x 1 = 1150 m^2

total = 8110m^2 footprint
*.75 = 6080m^2 GFA
/85 = approx. 72 units

U 16 U 17 U 18 U 19
U 23 U 22 U 21 U 20
U 50 U 49 U 48

ENTRANCE
EXIT

4489
6300
6881
8000
9,000
7150
3500
4.63 m²
4.98 m²
52.94 m²
3.98 m²
25.03 m²
25.03 m²
25.03 m²
24.00 m²
693.52 m²

Notes:
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Document Info:
Drawn by: Shihui Hu
File name: 0123v5 400-404 Cabramatta Road West.dwg

Client:
TCON Constructions Pty Ltd

Project:
0123
400-404 Cabramatta Road West

Drawing Title:
B99
Basement Ramp Access

Date:
31-Oct-18

Scale @ A3:
[scale]

Drawing Number:
AG04

asongroup
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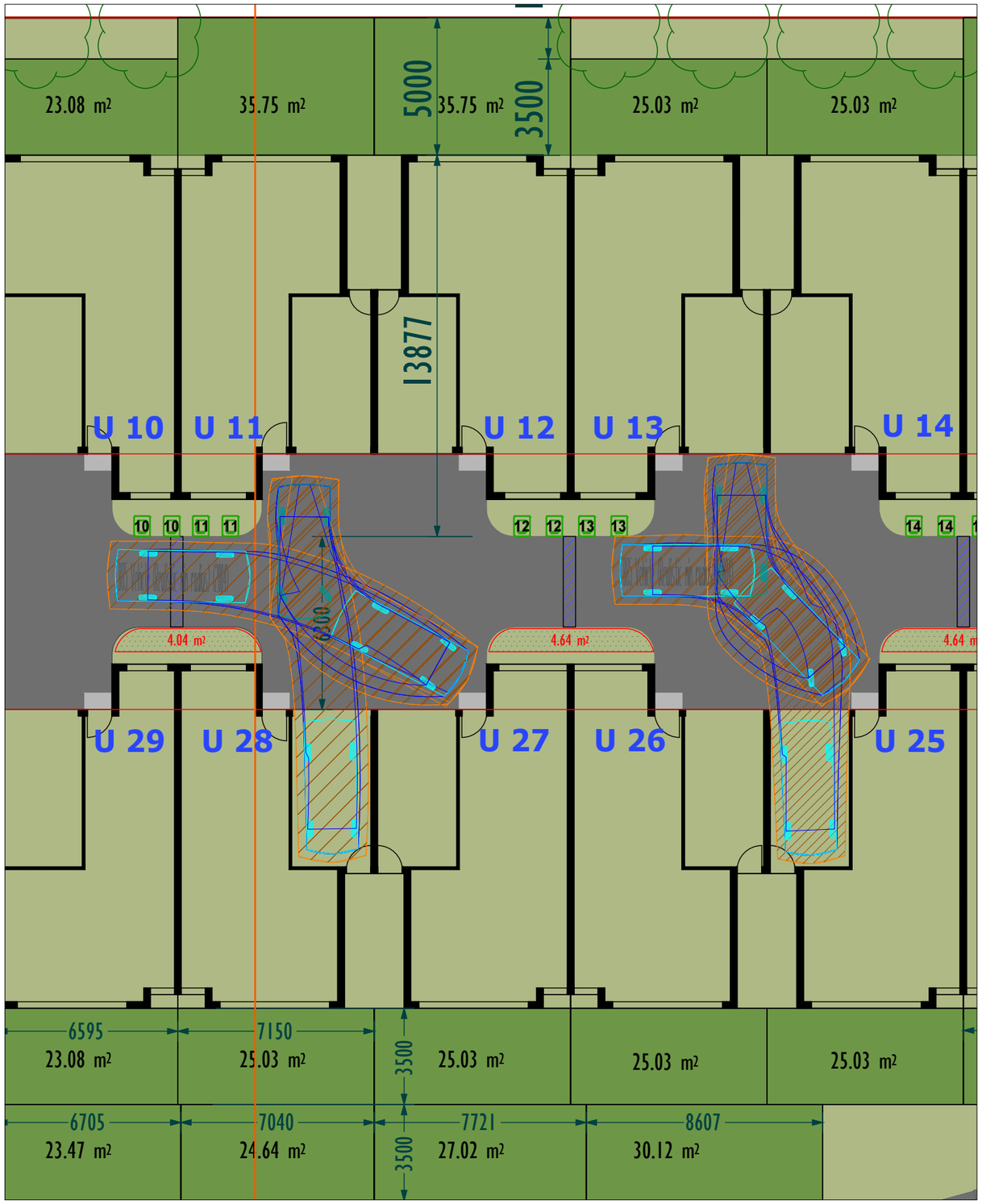
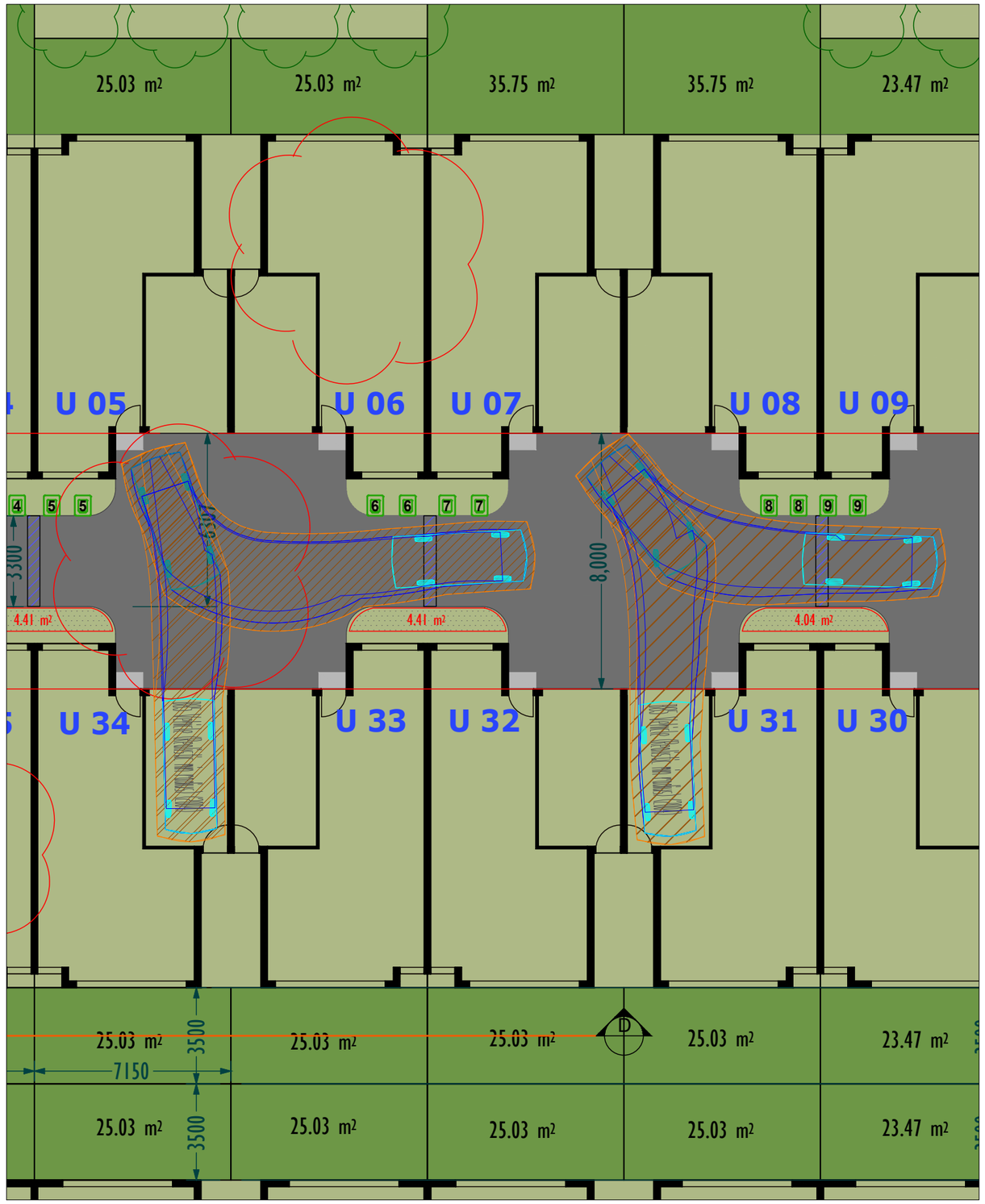
Sydney NSW 2000
info@asongroup.com.au





Notes:

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Document Info:

Drawn by: Shihui Hu

File name: 0123v5 400-404 Cabramatta Road West.dwg

Client:

TCON Constructions Pty Ltd

Project:

0123

400-404 Cabramatta Road West

Drawing Title:

B85

Access Townhouse Garage

Date:

31-Oct-18

Scale @ A3:

[scale]

Drawing Number:

AG05

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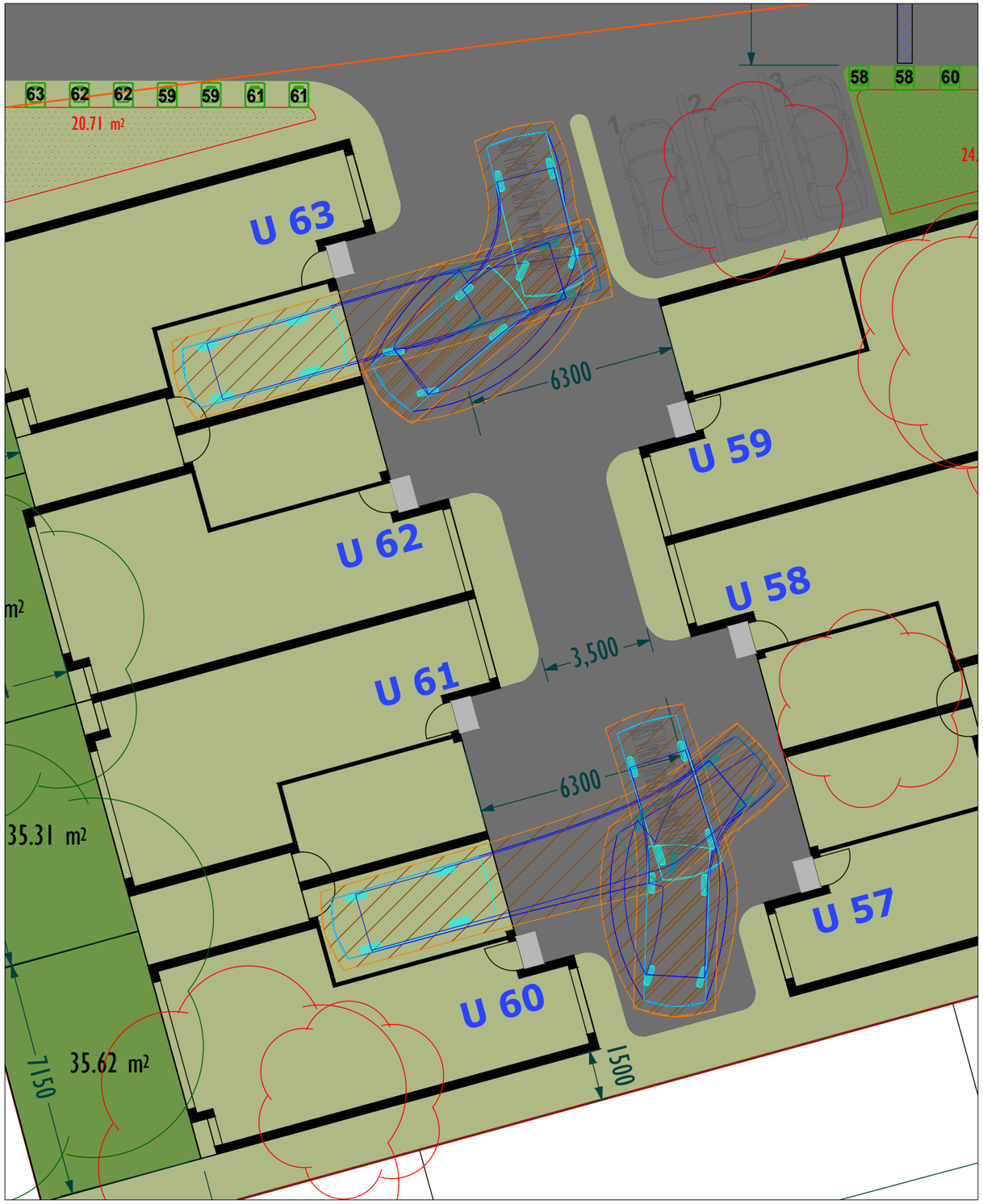

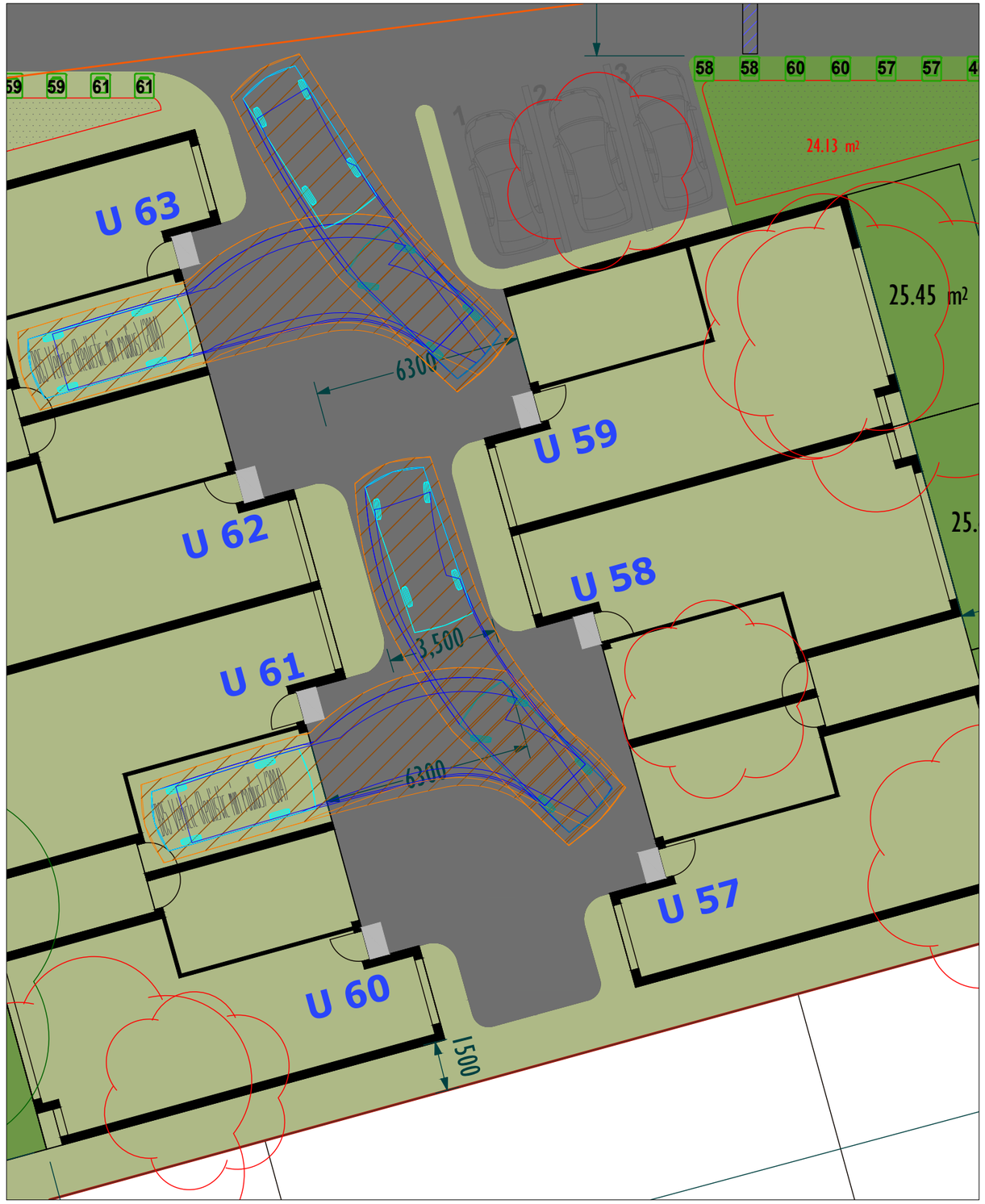

Notes:

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Document Info:

Drawn by: Shihui Hu

File name: 0123v5 400-404 Cabramatta Road West.dwg

Client:

TCON Constructions Pty Ltd

Project:

0123

400-404 Cabramatta Road West

Drawing Title:

B85

Access Townhouse Garage

Date:

31-Oct-18

Scale @ A3:

[scale]

Drawing Number:

AG06

asongroup

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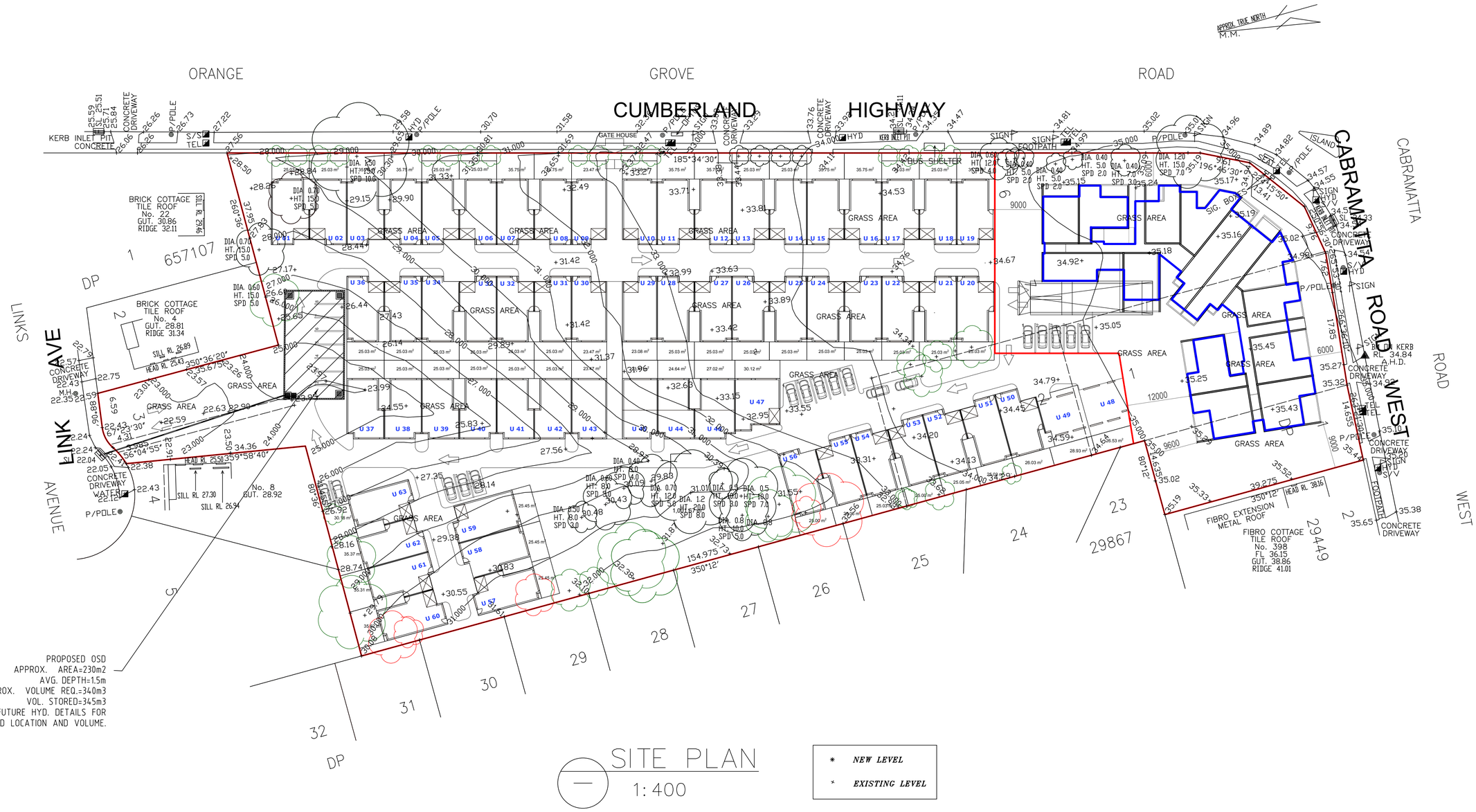
info@asongroup.com.au



SITE PLAN

1:400

* *NEW LEVEL*

* *EXISTING LEVEL*

ANAcivil PTY. LTD (CIVIL & STRUCTURAL ENGINEERS)
Level 6, Suite 603, Compass Centre, Bankstown 2200. (ABN: 78140434206)
Tel: 9793 1393 Fax: 9708 3113. Email: admin@anacivil.com

Project	Designed by	Title	Scale
PROPOSED DEVELOPMENT NO. 400-404 Cabramatta Rd, 2-18 Orange Rd & 6 Links Ave, Cabramatta.	N.SHAHID	*HYDRAULIC DETAILS*	AS SHOWN
	Drawn by N.SHAHID		Job No. 2017118
	Checked by M. ZAIOOR		Drawing No. 2017118 H02
	Date 26/10/2018		Rev. -

No.	Date	Revision	By	No.	Date	Revision	By

URBAN FORESTRY AUSTRALIA

TREE MANAGEMENT CONSULTING ARBORICULTURISTS

PRELIMINARY ARBORICULTURAL ASSESSMENT (Planning Proposal)

for

TCON Constructions Pty Ltd

SITE ADDRESS

400–404 CABRAMATTA ROAD WEST
CABRAMATTA

AUGUST 2015

Prepared by Catriona Mackenzie
Accredited member of
INSTITUTE OF AUSTRALIAN CONSULTING ARBORICULTURISTS ®

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EXECUTIVE SUMMARY

This Preliminary Arboricultural Assessment is an inventory of the existing tree assets on the site. The primary aim of this assessment was to present an analysis of the projected tree retention and removal relating to the planning proposal put forward for this site.

A total of seventy-five (75) trees were assessed and accorded retention values based on their current health and condition (i.e. their *Useful Life Expectancy*) and their significance in the landscape (Appendix E).

Twenty-eight (28) trees were identified as being of high retention value.
Twenty-five (25) trees are attributed with a medium retention value.
Twenty (20) trees were identified as being of low retention value.
Two (2) trees were identified as having no retention value (due to irreversible decline), and would inevitably be removed regardless of any future development of the site.

A tree location plan and schedule of all assessed trees, which included their landscape significance and tree retention values, was provided to the project team members to assist with the planning proposal. During discussions, tree retention was considered in the context of the permissible development of the site and the need to try and retain perimeter trees to assist in retaining some of the existing landscape trees facing the public domain.

A total of thirty-nine (39) trees are likely to be removed to facilitate the proposal.

It is expected that a replacement landscape will eventually provide a complimentary tree planting commensurate with and sympathetic to, the indigenous species assemblage current on the site.

CONTENTS

1 INTRODUCTION

1.1 This Preliminary Arboricultural Assessment (PAA) was commissioned by Orhan Kaba of Designiche, on behalf of the owners of the subject site. "The site" is identified as Lots 6 and 7 in D.P. 1709126, Lot 3 in D.P. 30217, Lots 1 and 2 in D.P. 503339 and Lot 1 in D.P. 29449, collectively known as 400–404 Cabramatta Road West, Cabramatta, New South Wales.

1.2 This report is to accompany a planning proposal to Fairfield City Council for a multi-unit residential/mixed-use development of the site.

1.3 The purpose of this PAA is to assess the *vigour* and *condition* of the surveyed trees, in, or in close proximity to the projected building envelope, and identify the probable removal and retention of trees associated with the projected building envelope.

1.4 This PAA gives recommendations for tree retention or removal, and provides guidelines for planning and designing built elements in proximity to existing trees to be retained.

1.5 Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible; however, I can neither guarantee nor be responsible for the accuracy of information provided by others.

1.6 This PAA is not intended as an assessment of any impacts on trees by any proposed future development of the site, other than the current planning proposal.

1.7 This report is not intended to be a comprehensive tree *hazard* or *risk* assessment, nor is it intended as a development or construction impact assessment or tree protection specification; however the report may make recommendations, where appropriate, for further assessment, treatment or testing of trees where potential structural problems have been identified, or where below ground investigation may be required.

2 METHODOLOGY

2.1 In preparation for this PAA, ground level, *visual tree assessments*[1] of seventy-five (75) trees were undertaken by Catriona Mackenzie (AQF5 arboriculturist) and Mark Jamieson (AQF4 horticulturist) on 11th August, 2015. Inspection details of these trees are provided in Appendix E – *Schedule of Assessed Trees.*

2.2 Tree heights were measured where possible with a Nikon Forestry Pro laser rangefinder, and canopy spreads were visually estimated or measured with a Leica Distometer laser measurer. Unless otherwise noted in Appendix E, all trunk diameters were measured at 1.4 metres above ground level (DBH) using a Yamiyo diameter tape.

2.3 Field observations were written down at the time of site visit and tree inspections, and photographs of the site and trees taken using a Canon EOS1000D digital SLR and/or iphone 5 cameras.

2.4 No *aerial inspections*, *root mapping* or woody tissue testing were undertaken as part of this tree assessment. Information contained in this tree report covers only the trees that were examined and reflects the condition of those trees at the time of inspection.

2.5 Plans and documents referenced for the preparation of this report include:

- Detail Survey, Ref. No. 2437CD, dated 24/03/2015, prepared by Chami & Associates.
- Preliminary Urban Design Report 400-404 Cabramatta Rd West, Cabramatta, prepared by Aleksandar Design Group
- Plans MP01–04 (Concept Issue), June 2015, prepared by Aleksandar Design Group,
- Fairfield Local Environment Plan 2013 (LEP) Schedules and Maps, Clauses 5.9, 5.9AA.
- Fairfield Citywide Development Control Plan (DCP), Chapter 3 *Environmental Management and Constraints*.
- AS4970-2009 *Protection of trees on development sites*, Standards Australia.

2.6 The subject trees are shown on a marked up copy of the site survey. This plan is attached as Appendix F—Tree Location Plan.

[1] Visual Tree Assessment (VTA) is a procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.

3 OBSERVATIONS AND DISCUSSION

3.1 Assessed Trees—Species Recorded

3.1.1 Seventy-five (75) trees were assessed and included in this report. Details of these are included in the Schedule of Assessed Trees – Appendix E.

3.1.2 The main, indigenous canopy tree species found on the site are consistent with Cumberland Plain Woodlands. Of the 75 assessed trees, the following thirty-four (34) are considered indigenous (or are known to be associated with CPW vegetation communities):

- Sixteen (16) *Eucalyptus tereticornis* (Forest Red Gum),
- Nine (9) *Corymbia maculata* (Spotted Gum),
- Three (3) *Eucalyptus sideroxylon* (Mugga Ironbark),
- One (1) *Eucalyptus moluccana* (Grey Box)
- One (1) *Eucalyptus amplifolia* (Cabbage Gum),
- One (1) *Corymbia gummifera* (Red Bloodwood)
- One (1) *Acacia decurrens* (Black Wattle)
- One (1) *Melaleuca linariifolia* (Snow-in–summer),
- One (1) *Angophora costata* (Smooth-barked Apple),

3.1.3 The remaining thirty-six (36) assessed trees are considered to be exotic or introduced native Australian species:

- Ten (10) *Brachychiton acerifolius* (Illawarra Flame Tree),
- Three (3) *Grevillea robusta* (Silky Oak),
- Five (5) *Melaleuca quinquenervia* (Broad-leaved Paperbark)
- Three (3) *Corymbia citriodora* (Lemon-scented Gum)
- Two (2) *Eucalyptus microcorys* (Tallowwood),
- Two (2) *Allocasuarina littoralis* (Black She-oak)
- Two (2) *Quercus robur* (English Oak),
- Two (2) *Jacaranda mimosifolia* (Jacaranda),
- One (1) *Castanospermum australe* (Blackbean),
- One (1) *Eucalyptus elata* (River Peppermint),
- One (1) *Hymenosporum flavum* (Native Frangipani),
- One (1) *Lophostemon confertus* (Brush Box),
- One (1) *Lagerstroemia indica* (Crape Myrtle),
- One (1) *Nyssa sylvatica* (Tupelo)
- One (1) *Populus deltoides* (Cottonwood),

3.1.4 Five (5) trees found on the site are considered to be undesirable due to their weed status or detrimental species traits (in this site context), such as proliferate propagules or ability to out-compete nearby vegetation:

- Two (2) *Ligustrum lucidum* (Large-leaved Privet),
- One (1) *Ficus decora* (Rubber Plant),
- One (1) *Cinnamomum camphora* (Camphor Laurel),
- One (1) *Lagunaria patersonia* (Norfolk Island Hibiscus)

3.2 Assessed Trees—Retention Values

3.2.1 Based on the Useful Life Expectancy and Landscape significance of the trees, the following Retention Values are accorded.

- High Retention Value trees x 28.
  - 1, 2, 3, 4, 6, 7, 66, 67, 71—Spotted Gums.
  - 9, 21, 28, 33, 36, 40, 49—Forest Red Gums.
  - 52, 62, 65—Lemon-scented Gums.
  - 61, 63, 64—Mugga Ironbarks.
  - 69, 75—Tallowwoods.
  - 26, 35, 51, 54—Blackbean, Illawarra Flame Tree, Grey Box, Silky Oak.
- Medium Retention Value trees x 25
  - 13, 23, 24, 25, 30, 38, 45, 46, 70—Forest Red Gums.
  - 29, 34, 41, 48, 53, 58—Flame Trees.
  - 19, 50—Jacarandas.
  - 27, 59—Black She-oaks.
  - 42, 43—English Oaks.
  - 14, 31, 39, 56—Red Bloodwood, Native Frangipani, Cabbage Gum, Cottonwood.
- Low Retention Value trees x 20
  - 11, 12, 72—Broad-leaved Paperbarks.
  - 22, 32, 37—Flame Trees.
  - 15, 17—Large-leaved Privets.
  - 16, 44—Silky Oaks.
  - 5, 8, 18, 20, 47, 55, 57, 68, 73, 74—River Peppermint, Norfolk Island Hibiscus, Rubber Tree, Camphor Laurel, Black Wattle, Brush Box, Crape Myrtle, Tupelos, Snow-in-summer, Smooth-barked Apple.
- Nil (remove) Retention Value trees x 2
  - 10, 60—Broad-leaved Paperbarks.

3.2.2 The site is not zoned E2 Environmental Conservation, or E3 Environmental Management.

3.2.3 No trees are identified as, or contributing to, listed Heritage Items, or occurring within Riparian Zones or Biodiversity Areas (LEP Maps–017 area).

3.2.4 No species of assessed tree is listed as threatened under the Threatened Species Conservation Act 1995 (TSC Act) or Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act).

3.3 Assessed Trees—Consideration of Conservation Issues

3.3.1 It is acknowledged that the site contains tree species associated with Cumberland Plain Woodland, a critically endangered ecological community under the TSC and EPBC Acts. Under Section 3.2 of Chapter 3 of the DCP, it is generally only those sites zoned E2, E3 or affected by Riparian Lands and Waterways or Biodiversity, that might require preparation of a 7 Part Test[2]. It would appear therefore, this site would be exempt from that 7 part test requirements. Despite the DCP allowing for arboriculturists to prepare a 7 part test, it is my opinion this is not appropriate unless the assessing arboriculturist has environmental consulting qualifications.

3.3.2 It is my advice that if it is deemed necessary, any potential impacts on threatened species, endangered ecological communities or populations on this site, must be assessed by an appropriately qualified consulting ecologist.

3.4 Projected Tree Removal

3.4.1 Of the 75 assessed trees, it is expected that thirty-nine (39) would be removed to accommodate the projected development footprint. Refer to Appendix E for trees likely to be removed under the planning proposal.

3.4.2 Trees removed would include the majority of trees concentrated in the site interior, as these pose considerable constraints on future site development. As the trees are relatively mature, they have correspondingly great *Tree Protection Zone* (TPZ) offsets. The retention of trees near site perimeters presents the greatest opportunities for successful retention.

[2] A '7 Part Test' is a statutory mechanism which allows Council to assess whether a proposed development or activity is likely to have a 'significant effect' on threatened species, populations or ecological communities, or their habitats. It describes and assesses the ecological impact of the proposal on a threatened species or its habitat.

3.5 Potential Impacts on Trees Proposed for Retention

3.5.1 Under the Australian Standard 4970-2009 *Protection of trees on development sites* (AS4970), encroachments less than 10% of the *Tree Protection Zone* (TPZ) are considered to be minor. There are no specifications provided in AS4970 for potential impacts of 10% or greater. The 10% figure is taken to be a threshold and trigger where arboricultural investigations into TPZ encroachments beyond this figure need to be considered.

3.5.2 Provision for the TPZ offsets of trees to be retained will be required at detailed design stage. Tree impact encroachments will need to quantified and, if necessary, changes to footprints for paths, ancillary structures, services and building offsets to trees may be required. Refer to Appendix E for those TPZ offsets.

3.5.3 It is possible a number of trees mainly concentrated to the site perimeters could be successfully retained subject to advanced impact assessment and possible 'massaging' of the design to consider high retention values trees in locations where retention would not relate to major 'sterilisation' of the site for future development.

3.5.4 Trees potentially retained are as follows (not including weeds or undesirable species):

- 16, 19, 22, 23, 24, 25, 26, 38, 39, 40, 41, 42, 43, 48, 49, 50, 51, 52, 53, 54, 61, 62, 64, 65, 68, 69, 70, 71, 72, 73, 74 and 75 (Total = 32 trees)

4 PRELIMINARY GUIDELINES FOR PLANNING AND DESIGN

4.1 Minimising Impacts on Trees to be Retained

4.1.1 Generally, potential impacts from site development can be summarised as follows;

- Incursions (i.e. excavation or filling over existing ground, grading and removing of topsoils) into the root zones of trees resulting in loss of fine feeder roots, or severing of structural woody roots.
- Structural branch loss through close proximity of structures to trees.
- Significant changes to surrounding soil levels which can affect soil hydrology and tree root health.

4.1.2 Where tree retention is desired, the *Tree Protection Zone* (TPZ) of an individual tree is estimated at 12 times the stem diameter, or the outer extent of the *canopy dripline* (whichever is the greater). It is prudent to add, where possible, an additional 1–2 m to this TPZ setback to ensure construction scaffolding can be accommodated without excessive removal of foliage and branches from the tree. Where trees have high crowns this additional setback may be reduced following further arboricultural assessment of impacts on individual trees near proposed development.

4.1.3 To facilitate adequate protection of tree root zones and tree crowns, separate appraisal of each development area (e.g. proposed construction and future site access points and construction areas in proximity to trees to be retained) should be carried out. A suitably qualified arboriculturist (i.e. a minimum Australian Qualification Framework Level 5 [Diploma] in arboriculture) must be advised prior to any development proposed to occur within the TPZ offset of those trees, to enable assessment and protection recommendations. Refer to Appendix E for the TPZ offset for each tree.

4.1.4 Without any specific root zone investigation the entire TPZ is to be kept entirely free of any development works, e.g. changes to existing ground levels, use of machinery, stockpiling, etc.

4.1.5 On no account are any works approved within the *Structural Root Zone* (SRZ) of a tree without prior root investigation and the approval of the site arboriculturist or Council.

4.1.6 Wherever possible all major utilities and service corridors are to be located away from trees, and preferably outside the TPZ of trees to be retained.

5 CONCLUSIONS

- Seventy-five (75) trees in the site were assessed to provide base arboricultural data to assist in the planning and design footprint.
- The site is not zoned E2 or E3, and is not mapped as a Riparian Land and Waterway or Biodiversity area.
- No heritage items were identified on or directly adjoining the site.
- No tree species has identified conservation status under the TSC and EPBC Acts.
- Thirty-nine (39) trees would likely be removed based on the current building footprint.
- Thirty-two trees (32) could be retained if considered during the detailed design process.
- Four (4) trees are weeds or undesirable species and would be removed.
- Liaising with an arboriculturist during development design and review will improve the retention success of trees to be retained.

Report prepared by Catriona Mackenzie

August, 2015

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6 BIBLIOGRAPHY

Australian Standard 4970-2009 *Protection of trees on development sites.*

Barrell, J (1995) *Pre-development Tree Assessment* from *Trees and Building Sites*, Eds. Watson & Neely, International Society of Arboriculture, Illinois.

Mattheck, C. & Breloer, H.(1999) *The Body Language of Trees.* Research for Amenity Trees No.4, The Stationary Office, London.

APPENDIX A

TERMS AND DEFINITIONS

TERMS AND DEFINITIONS

The following relates to terms or abbreviations that may have been used in this report and provides the reader with a detailed explanation of those terms.

Aerial inspection Where the subject tree is climbed by a professional tree worker or arborist specifically to inspect and assess the upper stem and crown of the tree for signs or symptoms of defects, disease, etc.

Aerial roots Above ground, adventitious roots generally formed on stems and/or branches. Depending on plant species these roots perform a specific function, e.g. support, access to oxygen, vegetative propagation, as a parasite, etc.

Age classes

- **Y** *Young* refers to a well-established but juvenile tree
- **SM** *Semi-mature* refers to a tree at growth stages between immaturity and full size
- **EM** *Early-mature* refers to a tree that is more or less full sized and vigourously growing.
- **M** *Mature* refers to a full sized tree with some capacity for further growth
- **LM** *Late Mature* refers to a full sized tree with little capacity for growth, not yet about to enter decline
- **OM** *Over-mature* refers to a tree about to enter decline or already declining.

Bracket fungus The rigid fruiting body of some fungus species, especially those associated with live trees or the *decay* of wood. The structure is often bracket shaped, usually protruding from the roots, trunk or branches of the host tree when the fungus matures. The fruiting body may be ephemeral or persist for many years, and may be solitary or gregarious.

Branch failure The structural collapse of a branch that is physically weakened by wounding or from the actions of pests diseases, or overcome by loading forces in excess of its load-bearing capacity.

Co-dominant refers to stems or branches equal in size and relative importance.

Compression fork A fork formed where two stems or branches with an acute branch crotch grow pressing against each other with included bark. Eventually the bark becomes enclosed bark where the stems flatten at their interface under increasing compression from each successive growth increment, forming a weak graft as a welded fork, which remains susceptible to tensile stress.

Condition refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.

Crown All the parts of a tree arising above the trunk where it terminates by its division forming branches, e.g. the branches, leaves, flowers and fruit: or the total amount of foliage supported by branches.

Deadwood refers to any whole limb that no longer contains living tissues (e.g. live leaves and/or bark). Some dead wood is common in a number of tree species.

Diameter at Breast Height (DBH) refers to the tree trunk **d**iameter at **b**reast **h**eight, i.e. at 1.4m above ground level.

Dieback Death of growth tips/shoots and partial limbs, generally from tip to base. Dieback is often an indicator of stress and tree health.
Epicormic Shoots which arise from adventitious or latent buds. These shoots often have a weak point of attachment. They are often a response to stress in the tree. Epicormic growth/shoots are generally a survival mechanism, often indicating the presence of a current, or past stress event such as fire, excessive pruning, drought, etc.

Inclusion - the pattern of development at branch or stem junctions where bark is turned inward rather than pushed out. This fault is located at the point where the stems/branches meet. This is normally a genetic fault and potentially a weak point of attachment as the bark obstructs healthy tissue from joining together to strengthen the joint.

Lopping Cutting between branch unions (not to branch collars), or at internodes on a tree, with the final cut leaving a stub. Lopping may result in dieback of the stub and can create infection courts for disease or pest attack.

Necrosis Dead areas of tissue that may be localised, or spread over large areas of leaves, branches, bark or roots.

Risk is the combination of the likelihood of an event and the severity of the potential consequences.

Root Mapping The exploratory process of recording the location of roots usually in reference to a datum point where depth, root diameter, root orientation and distance from trunk to existing or proposed structures are measured. It may be slightly invasive (disturbs or displaces soil to locate but not damage roots, e.g. hand excavation, or use of air or water knife), or non-invasive (does not disturb soil, e.g. ground penetrating radar).

Scaffold branch/root A primary structural branch of the crown or primary structural root of the tree.

Structural Root Zone (SRZ) Refers to the radial distance in metres, measured from the centre of the tree stem, which defines the critical area required to maintain stability of the tree. Only thorough investigation into the location of structural roots within this area can identify whether any minor incursions into this protection zone are feasible. Note: The SRZ is calculated on the diameter measured immediately above the root/stem buttress (DAB). Where this measurement is not taken in the field, it is calculated by adding 12.5% to the stem diameter at breast height (DBH).(Based on averages calculated from DBH and DAB measurements taken from 20 mature Brush Box and Camphor Laurel). Note: The SRZ may not be symmetrical in shape/area where there is existing obstruction or confinement to lateral root growth, e.g. structures such as walls, rocky outcrops, etc).

Sucker Epicormic shoots growing from latent buds in older wood. Such shoots are vigourous and usually upright, arising from below the graft union on the understock, or at or below ground from the trunk or roots.

Suppressed In crown class, trees which have been overtopped and whose crown development is restricted from above.

Sweep A curve in the trunk, generally near the ground. This usually occurs when a tree is partially wind thrown when young, but then stabilises itself and straightens due to reaction wood. Stem sweep can also be a naturally developed feature of some tree species. e.g. *Araucaria columnaris* (Cook Pine), that has no relationship to a defect or partial windthrow.

Tree Protection Zone (TPZ). Refers to the radial distance in metres, measured from the centre of the tree stem which defines the *tree protection zone* for a tree to be retained. This is generally the minimum distance from the center of the tree trunk where protective fencing or barriers are to be installed to create an exclusion zone. The **TPZ** surrounding a tree aids the tree's ability to cope with disturbances associated with construction works. Tree protection involves minimising root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death and the possibly damage to structural stability of the tree from root damage.
To limit damage to the tree, protection within a specified distance of the tree's trunk must be maintained throughout the proposed development works. No excavation, stockpiling of building materials or the use of machinery is permitted within the TPZ. Note: In many circumstances the tree root zone does not occupy a symmetrically radial area from the trunk, but may be an irregular area due to the presence of obstructions to root spread or inhospitable growing conditions.

USEFUL LIFE EXPECTANCY (ULE) In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. ULE i.e. a system designed to classify trees into a number of categories so that information regarding tree retention can be concisely communicated in a non-technical manner. ULE categories are easily verifiable by experienced personnel without great disparity. A tree's ULE category is the life expectancy of the tree modified first by its age, health, condition, safety and location (to give the life expectancy); then by economics (i.e. cost of maintenance - retaining trees at an excessive management cost is not normally acceptable); and finally, effects on better trees, and sustained amenity (i.e. establishing a range of age classes in a local population). ULE assessments are not static but may be modified as dictated by changes in tree health and environment. Trees with a short ULE may at present be making a contribution to the landscape, but their value to the local amenity will decrease rapidly towards the end of this period, prior to them being removed for safety or aesthetic reasons. For details of ULE categories see Appendix B, modified from Barrell 2001.

Vigour (syn. health) refers to the tree's health as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback.

APPENDIX B

ULE CATEGORIES

Useful Life Expectancy (ULE) CATEGORIES (after Barrell 1996, updated 01/04/01)

The five categories and their sub-groups are as follows:

1. Long ULE - tree appeared retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance:

A. structurally sound trees located in positions that can accommodate future growth
B. trees which could be made suitable for long term retention by remedial care
C. trees of special significance which would warrant extraordinary efforts to secure their long term retention

2. Medium ULE - tree appeared to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk, assuming reasonable maintenance:

A. trees which may only live from 15 to 40 years
B. trees which may live for more than 40 years but would be removed for safety or nuisance reasons
C. trees which may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
D. trees which could be made suitable for retention in the medium term by remedial care

3. Short ULE - tree appeared to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk, assuming reasonable maintenance:

A. trees which may only live from 5 to 15 years
B. trees which may live for more than 15 years but would be removed for safety or nuisance reasons
C. trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
D. trees which require substantial remediation and are only suitable for retention in the short term

4. Removal - trees which should be removed within the next 5 years

A. dead, dying, suppressed or declining trees
B. dangerous trees through instability or recent loss of adjacent trees
C. dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.
D. damaged trees that are clearly not safe to retain.
E. trees which may live for more than 5 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.
F. trees which are damaging or may cause damage to existing structures within the next 5 years.
G. trees that will become dangerous after removal of other trees for the reasons given in (a) to (f).
H. trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.

5. Small, young or regularly pruned - Trees that can be reliably moved or replaced.

A. small trees less than 5m in height.
B. young trees less than 15 years old but over 5m in height.
C. formal hedges and trees intended for regular pruning to artificially control growth.

APPENDIX C

SIGNIFICANCE OF A TREE ASSESSMENT RATING

IACA Significance of a Tree, Assessment Rating System (STARS)© (IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

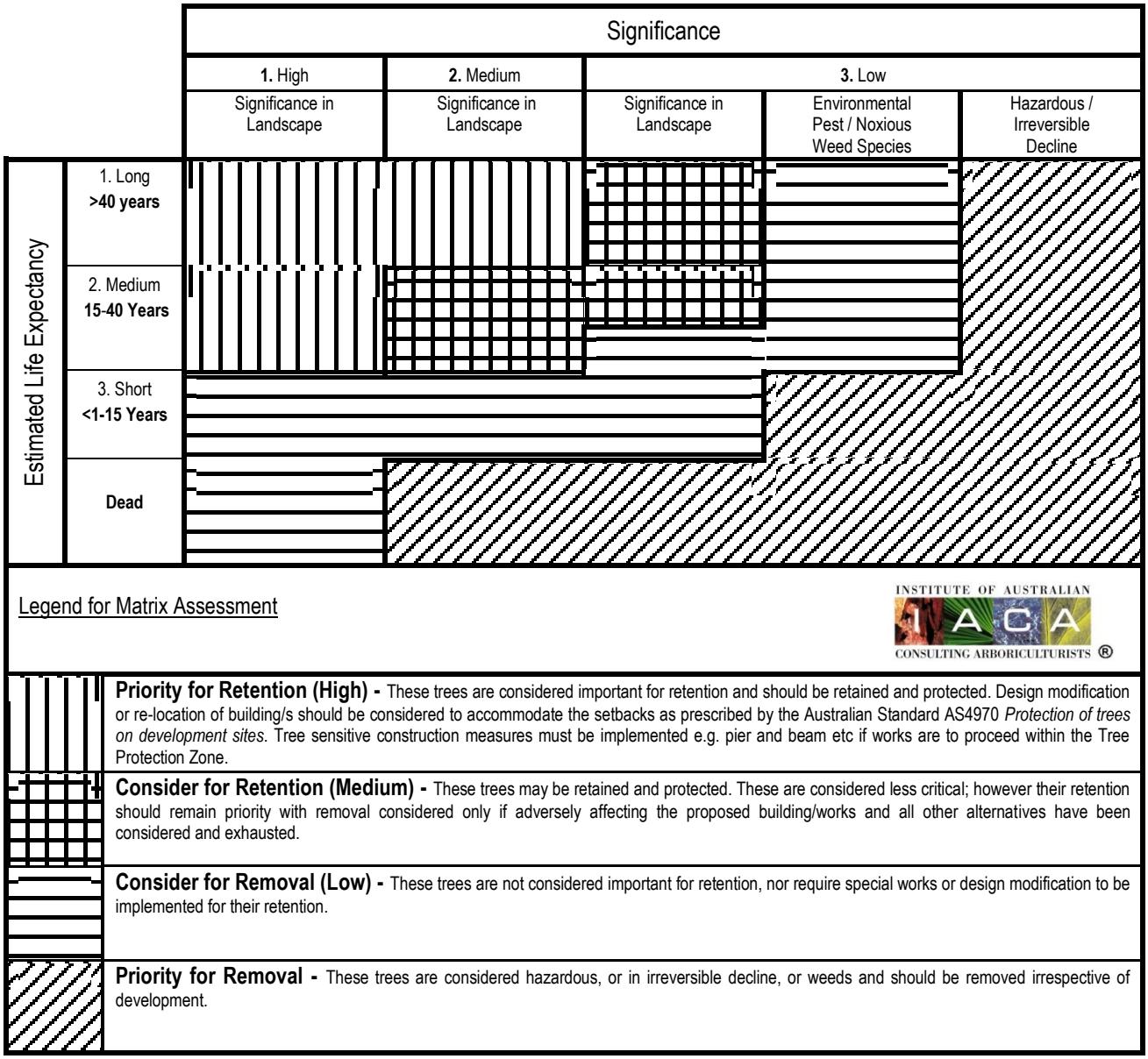
Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

Table 1 - Tree Retention Value - Priority Matrix.



IACA, 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

REFERENCES

Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au

APPENDIX D

SITE PHOTOGRAPHS—PERIMETER TREES

Plate 1
Looking west from within the site at high Retention Value (RV) perimeter tree 69 (Tallowwood).
C. Mackenzie

Plate 2
Looking southeast from within the site at medium and high RV trees 21–28 (Forest Red Gums). Low RV Camphor Laurel (Tree 20) is at left, foreground.
C. Mackenzie

Plate 3
Looking south from Cumberland Road reserve near intersection with Cabramatta Rd. West, at high RV perimeter Tree 75 (Tallowwood).
C. Mackenzie

Plate 4
Looking south along Cumberland Road at high RV perimeter tree 71 (Spotted Gum).
C. Mackenzie

Plate 5
Looking south/southeast from within the site at high RV perimeter trees-left to right, 49 (Forest Red Gum), 51 (Grey Box) and 52 (Lemon-scented Gum).
C. Mackenzie

Plate 6
Looking southeast from within the site at medium RV perimeter trees 42 and 43 (English Oaks). Note when these are in full leaf they will function as a dense screen between the site and adjoining properties.

APPENDIX E

SCHEDULE OF ASSESSED TREES

SCHEDULE OF ASSESSED TREES

400–404 Cabramatta Road West, Cabramatta. 14 August, 2015.

Tree No.	*Genus* and *species* Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ† (m)	TPZ† (m)	TPZ (area)
1	*Corymbia maculata* **Spotted Gum**	20	9	525	EM	G	G	Dense **crown**. Low volume of medium Ø **deadwood**. Minor pruning in the past.	1A	H	H	2.7	6.4	129
2	*Corymbia maculata* **Spotted Gum**	13	7	325	EM	G	F–G	Mechanical damage to lower stem N side. Mistletoe in crown. Low volume of medium Ø deadwood.	1A	M	H	2.2	3.9	48
3	*Corymbia maculata* **Spotted Gum**	22	11	600	EM	F–G	F–G	Some minor **dieback** upper crown interior.Mistletoe in crown.	2A	H	H	2.9	7.2	163
4	*Corymbia maculata* **Spotted Gum**	17.5	9	500	EM	G	G	Some bark cracking/discolouration. Deadwood to 90mm Ø.	1A	H	H	2.7	6	113
5	*Eucalyptus elata* **River Peppermint**	8	7	*400 GL	SM	G	P	Basal **suckers**. Open, **suppressed** crown- sprawling habit.	4	L	L	2.3	4.8	72
6	*Corymbia maculata* **Spotted Gum**	20	12	625	EM	G	G	Mistletoes in crown. Very minor tip dieback.	1A	H	H	2.9	7.6	180
7	*Corymbia maculata* **Spotted Gum**	21	12	550	EM	G	G	Some bark **necrosis** to lower NNE **scaffold** noted. Low volume of small to medium Ø deadwood.	1A	H	H	2.8	6.6	137
8	*Lagunaria patersonia* **Norfolk Island Hibiscus**	9.5	5	300	SM	F–G	F–G	Badly '**lopped**'. Overall tip dieback, although not severe. Undesirable species due to 'fibreglass-like' irritant filaments produced in seed capsule.	2B	L	L	2.2	3.6	41
9	*Eucalyptus tereticornis* **Forest Red Gum**	21	13	725	M	F–G	F	Scattered dieback. Mistletoes. **Included** primary stems.	2D	H	H	3.1	8.8	241
10	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	11	4	475 AB	SM	V–P	P	Almost dead. Significant crown decline. Deadwood >200mm Ø.	4	L	L	2.5	5.4	92
11	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	14	5	600 AB	SM	P	F	Significant dieback. Suppressed on 2 sides.	3D	M	L	2.9	7.2	163
12	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	11	6	450 AB	SM	P	F	Suppressed to E. Notable, significant decline.	3D	M	L	2.4	5.1	84
13	*Eucalyptus tereticornis* **Forest Red Gum**	23	12	625	M	F	F	Small to medium Ø branch failures. Upper crown dieback and deadwood >100mm Ø.	2D	H	M	2.9	7.6	180

Tree No.	*Genus* and *species* Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ† (m)	TPZ† (m)	TPZ (area)
14	*Corymbiagummifera* **Red Bloodwood**	22	11	250+ 650	M	F–G	F	Crown decline in upper parts. Declining sub-stem. Deadwood >100mm Ø.	2D	H	M	2.9	7.8	191
15	*Ligustrum lucidum* **Large-leaved Privet**				NA			Weed species		L				
16	*Grevillea robusta* **Silky Oak**	20	8	600 AB	M	F–P	F	Kinked stem. Thin, sparse crown.	3B	M	L	2.9	7.2	163
17	*Ligustrum lucidum* **Large-leaved Privet**							Weed species		L	L			
18	*Ficus decora* **Rubber Tree**	17	15	*1400	M	G	F	Introduced *Ficus* species of undesirable species traits. Vigorous growth. Notable **aerial roots**.	3B	M	L	4	15	707
19	*Jacaranda mimosifolia* **Jacaranda**	14	16	350 + 500	M	G	F–G	Heavily suppressed to N. High crown. Minor tip dieback.	2D	M	M	2.9	7.2	163
20	*Cinnamomum camphora* **Camphor Laurel**	11	11	*600 AB	EM	F–G	F?	Undesirable species. Heavily infested with ivy.	3B?	M	L	2.7	7.2	163
21	*Eucalyptus tereticornis* **Forest Red Gum**	23	17	675	M	F	F–G	Typical growth habit and branch architecture. **Co-dominant** stems @ 3.5m. Thinning crown with tip and small branch dieback. Medium volume of deadwood to 100mm Ø.	2D	H	H	3.1	8.1	206
22	*Brachychiton acerifolius* **Illawarra Flame Tree**	10	5	175 + 250	SM	G	F–P	Distinct, tightly included **compression fork** @ 1m.	3B	M	L	2.2	3.7	43
23	*Eucalyptus tereticornis* **Forest Red Gum**	25	18	1050	M	F–G	F	Co-dominant stems @ 1.8m. NE stem w/substantial wounds (old inclusion failures). Low to medium volume deadwood to 150mm Ø.	2B	H	M	3.6	12.6	499
24	*Eucalyptus tereticornis* **Forest Red Gum**	21	14	500	EM	F	F–P	Distinct stem kink to S. Poor form. Low volume dieback.	2D	H	M	2.7	6	113
25	*Eucalyptus tereticornis* **Forest Red Gum**	19	14	525	EM	G	F	Stem **sweep** to E. Crown bias to E. Low volume deadwood to 60mm Ø.	2D	H	M	2.7	6.4	129
26	*Castanospermum australe* **Blackbean**	10	10	300	SM	G	G	Some small, rubbing, crossing branches. Very minor deadwood. Young suckers/seedlings @ base.	1A	M	H	2.8	6.6	137
27	*Allocasuarina littoralis* **Black She-oak**	14	6	375	SM	F	F	Thin crown, w/notable dieback of tips and very small branches. Small Ø deadwood.	2D	M	M	2.4	4.5	64
28	*Eucalyptus tereticornis* **Forest Red Gum**	32	28	1800	M	F–G	F	Some very large Ø deadwood and old **branch failures**. Pruned in the past to W w/resulting dieback. Significant tree.	2D	H	H	4.5	15	707

Tree No.	*Genus* and *species* Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ† (m)	TPZ† (m)	TPZ (area)
29	*Brachychiton acerifolius* **Illawarra Flame Tree**	10	5	300	SM	F–G	F	Suppressed to SE. Heavy bias to W/NW. Co-dominant stems @ 3m.	3D	M	M	2.8	6.6	137
30	*Eucalyptus tereticornis* **Forest Red Gum**	15	12	575	EM	G	F–G	Slightly overtopped by T28. Low volume deadwood.	2A	M	M	2.9	7	152
31	*Hymenosporum flavum* **Native Frangipani**	13	5	275	SM	G	G	Minor, small branch dieback.	2A	M	M	2.1	3.3	35
32	*Brachychiton acerifolius* **Illawarra Flame Tree**	11	7	525 AB	M	F–G	P	A little pale. Some dieback to SE, but not serious. Co-dominant, included stems near base. SE stem also co-dominant and included.	4	M	L	2.6	6	113
33	*Eucalyptus tereticornis* **Forest Red Gum**	22	13	675	M	G	F?	Lower stem wound – decaying N side. **Decay** diagnostic testing recommended if tree retained.	2?	H	H?	3.1	8.1	206
34	*Brachychito nacerifolius* **Illawarra Flame Tree**	16	6	2 x 375	M	G	F–G	Lost leading stem in the past. Very minor volume deadwood. Co-dominant, included stems @ 1.1m.	2A	H	M	2.6	6.4	129
35	*Brachychiton acerifolius* **Illawarra Flame Tree**	9	7	350	EM	G	G	No special problems observed at time of inspection.	1A	M	H	2.3	4.2	55
36	*Eucalyptus tereticornis* **Forest Red Gum**	25	12	575	EM	G	G	Tall, narrow, typical habit and form. Very minor dieback and deadwood.	1A	H	H	2.9	7	152
37	*Brachychiton acerifolius* **Illawarra Flame Tree**	12	7	375	EM	P	F	Very distinct tip dieback overall, especially N side. Branch failures noted.	3D	M	L	2.4	4.5	64
38	*Eucalyptus tereticornis* **Forest Red Gum**	26	14	750	M	F	F	Thinning. E stem very poor. Medium volume of moderate Ø deadwood.	2D	H	M	3.1	9	255
39	*Eucalyptus amplifolia* **Cabbage Gum**	17	10	475	EM	G	F	Suppressed, w/bias to E over neighbour's. Badly 'lopped'. Deadwood to 120mm Ø. Included stems @ 4m.	2B	H	M	2.6	5.8	104
40	*Eucalyptus tereticornis* **Forest Red Gum**	22	15	700	EM	G	G	Emergent/dominant tree. Large, low, dead branch to SE, but remainder of tree pretty good.	2A	H	H	3.1	8.4	222
41	*Brachychiton acerifolius* **Illawarra Flame Tree**	17	8	525	M	G	F	Distinct stem kink @8m. 'Gap' in crown E side.	2D	H	M	2.7	6.4	129
42	*Quercus robur* **English Oak**	14	9	600	EM	G	F–G	Exotic species. Dieback of some scaffolds to N (suppressed to N). Bifurcated @ 2m.	2D	M	M	2.9	7.2	163
43	*Quercus robur* **English Oak**	14	15	700	EM	G	F–G	Crown asymmetry. 'Lopped' badly. Vines in branches.	2D	M	M	3.1	8.4	222

Tree No.	*Genus* and *species* Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ† (m)	TPZ† (m)	TPZ (area)
44	*Grevillea robusta* **Silky Oak**	22	6	775	LM	P	F–G	Straight stem, with no anomalies. Substantial dieback and overall crown decline.	4	M	L	3.1	9.3	272
45	*Eucalyptus tereticornis* **Forest Red Gum**	22	18	625	M	G	F–P	Large, old branch failure to SSE. Stem wound and *Phellinus* **bracket fungus**. Tip and small branch dieback.	3D	H	M	2.9	7.6	180
46	*Eucalyptus tereticornis* **Forest Red Gum**	16	7	450	EM	G	F–G	Slight suppression to S. No major dieback or deadwood.	2D	M	M	2.5	5.4	92
47	*Acacia decurrens* **Black Wattle**	8	8	2 x 150	M	G	F–G	'Gumming' at co-dominant stems and branch/stem junctions.	3C	L	L	1.8	2.7	23
48	*Brachychiton acerifolius* **Illawarra Flame Tree**	11	7	475	EM	F	G	Upper crown a little pale, and leaves distorted – otherwise ok.	2D	M	M	2.6	5.8	104
49	*Eucalyptus tereticornis* **Forest Red Gum**	19	16	575	EM	G	G	Low volume, moderate Ø deadwood. Minor tip dieback.	1A	H	H	2.9	7	152
50	*Jacaranda mimosifolia* **Jacaranda**	10	14	*300 + 500	M	G	F?	In adjoining property. Limited inspection. Substantial stem pruned to E. Extends over site 4 – 5m @ 6 – 8m AGL.	2D?	M?	M?	2.7	7	152
51	*Eucalyptus moluccana* **Grey Box**	19	20	*750	M	G	G?	Straddling boundary. Limited inspection. Base obscured. Low volume deadwood mainly confined to lower crown (i.e. from 'shading out').	1A	H	H?	3.1	9	255
52	*Corymbia citriodora* **Lemon-scented Gum**	24	11	600	EM	G	G	High crown. Surface roots noted 3m NE. No special problems observed at time of inspection.	1A	H	H	2.9	7.2	163
53	*Brachychiton acerifolius* **Illawarra Flame Tree**	12	7	425	EM	F–G	G	Minor stem kink. Minor dieback to S.	2A	M	M	2.5	5.1	84
54	*Grevillea robusta* **Silky Oak**	22	15	625	M	F	G	Slight suppression to N. Scattered tip dieback.	2D	H	H	2.9	7.6	180
55	*Lophostemon confertus* **Brush Box**	9	3	275	SM	G	F–P	Heavily suppressed by T55. Ivy up stem and scaffolds.	3C	L	L	2.1	3.3	35
56	*Populus ?deltoides* **Cottonwood**	21	15	675	M	G	G?	Slight stem lean to S. Mistletoe high in crown. Small branch failures noted.	2A	H	M	3.1	8.1	206
57	*Lagerstroemia indica* **Crape Myrtle**	4–5	4–5	*250 GL	SM	G	F?	Poorly pruned in the past. Basal suckering.	3B?	L	L	1.9	2.7	23
58	*Brachychiton acerifolius* **Illawarra Flame Tree**	12	9	500	M	F–G	G	Some dieback at top of crown.	2A	M	M	2.7	6	113

Tree No.	*Genus* and *species* Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ† (m)	TPZ† (m)	TPZ (area)
59	*Allocasuarina littoralis* **Black She-oak**	15	5	350	EM	F	F	Tip and small branch dieback.	2D	M	M	2.3	4.2	55
60	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	14	10	375 + 525	EM	F–P	F–P	Very thin, struggling. Typical stem/branch inclusions. Whole crown tip and branch dieback.	3C	M	L	2.8	7.8	191
61	*Eucalyptus sideroxylon* **Mugga Ironbark**	13	12	350	SM	G	G	Slightly overtopped. No special problems observed at time of inspection.	1A	M	H	2.3	4.2	55
62	*Corymbia citriodora* **Lemon-scented Gum**	21	13	475	EM	G	F–G	Mistletoe @ old branch failure W/SW. No major dieback or deadwood.	2A	H	H	2.6	5.8	104
63	*Eucalyptus sideroxylon* **Mugga Ironbark**	18	11	475	EM	G	F–G	Suppressed to S. Low volume deadwood to 40mm Ø.	2A	H	H	2.6	5.8	104
64	*Eucalyptus sideroxylon* **Mugga Ironbark**	19	13	625	M	G	F?	Low dead branch to N. Stem bulges @ 4m. Deadwood to 100mm Ø.	2D?	H	H?	2.9	7.6	180
65	*Corymbia citriodora* **Lemon-scented Gum**	21	12	525	EM	G	G	Mistletoe in crown. No special problems observed at time of inspection.	1A	H	H	2.7	6.4	129
66	*Corymbia maculata* **Spotted Gum**	22	14	650	EM	G	G	No special problems observed at time of inspection.	1A	H	H	2.9	7.8	191
67	*Corymbia maculata* **Spotted Gum**	20	10	450	EM	G	G	No special problems observed at time of inspection.	1A	H	H	2.5	5.4	92
68	*Nyssa sylvatica* **Tupelo**	6-7	4	200-250	SM	G	F–G	Group of 4 x small, young trees. Some rubbing/crossing branches and co-dominant leaders. Wall about 1m W.	2A	L	L	2.1	3.0	28
69	*Eucalyptus microcorys* **Tallowwood**	19	24	1050	M	G	G?	Bias to E due to line clearance pruning. No significant deadwood. No notable dieback. Should be subject to **aerial inspection** if retained.	2D	H	H?	3.6	12.6	499
70	*Eucalyptus tereticornis* **Forest Red Gum**	16	11	*750 AB	EM	G	F?	Lopped for power lines. Stem obscured by vines.	2D	H	M?	3	8.4	222
71	*Corymbia maculata* **Spotted Gum**	17	10	500	EM	G	G	Crown is clear/above power lines. Retaining wall about 1m+ W. No other special problems observed at time of inspection.	2A	H	H	2.7	6	113
72	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	6-8	2-3	*225-400	SM	G	F–P	Row of 3 x trees lopped to 2 – 4m and mainly consists of regrowth.	2D	L	L	2.5	4.8	72
73	*Melaleuca linariifolia* **Snow-in-summer**	4-6	4-5	*350-400	SM	G	F–P	Heavily lopped.	2D	L	L	2.5	4.8	72

Tree No.	*Genus* and *species* Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ† (m)	TPZ† (m)	TPZ (area)
74	*Angophora costata* **Smooth-barked Apple**	8.5	7	350	SM	G	F–P	Lopped – proliferation of **epicormic** regrowth @ pruning locations.	3D	M	L	2.3	4.2	55
75	*Eucalyptus microcorys* **Tallowwood**	25	21	1450 DAB	M	G	F?	Heavily lopped to W. Sweep and crown bias to E. Low volume deadwood up to 100mm Ø. Aerial inspection if retained.	2D?	H	H?	3.9	15	707

KEY

Trees to be retained.

Non-prescribed exotic, non-indigenous or weed trees proposed to be removed.

Prescribed trees likely to be removed.

TREE RETENTION VALUE

HIGH (Priority for Retention) —These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 *Protection of trees on development sites*. Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.

MEDIUM (Consider for Retention) —These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.

LOW (Consider for Removal) — These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

REMOVE (Priority for Removal)—These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

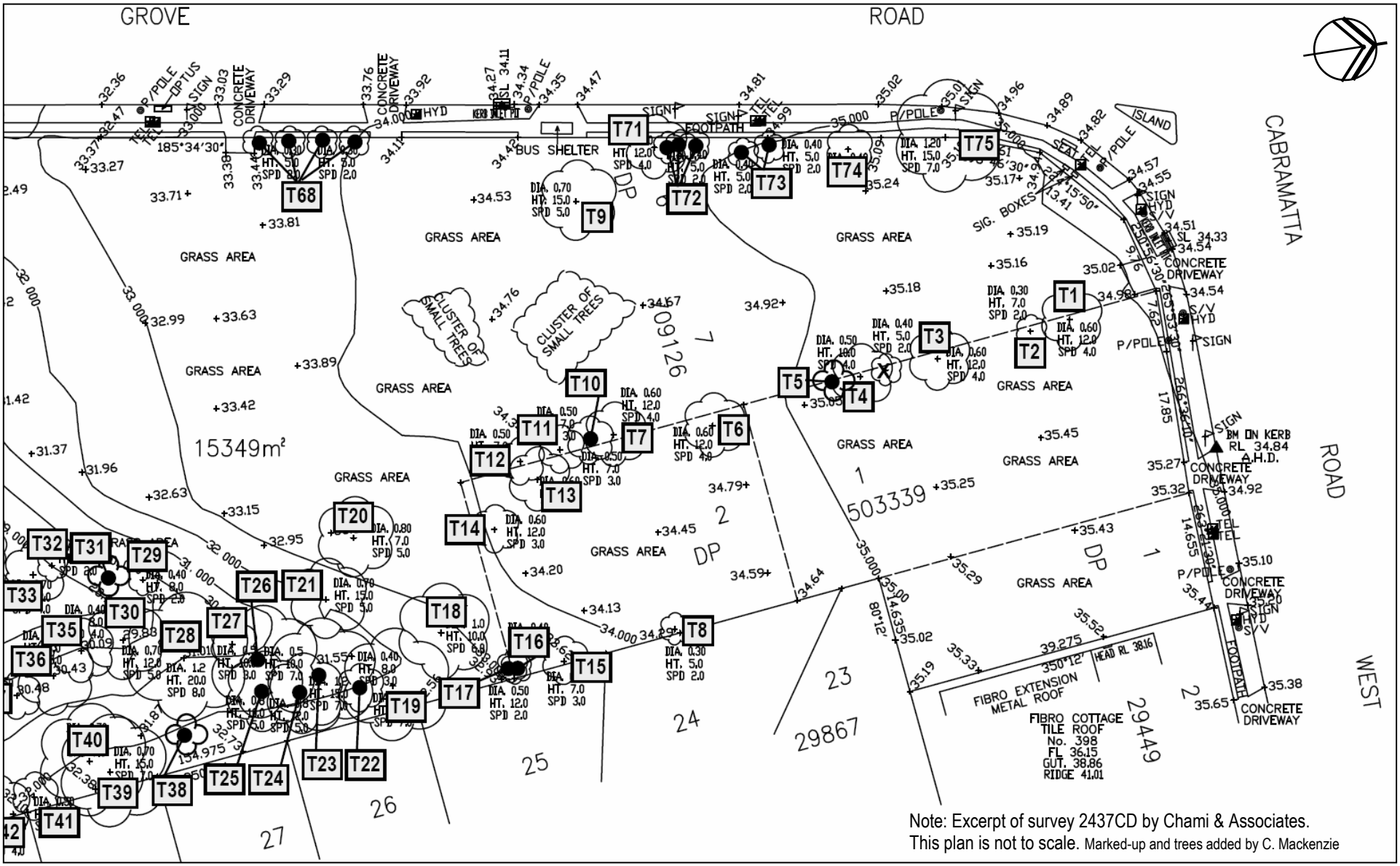
† Notional radial offset of a symmetrical, unrestricted root system – subject to change depending on site conditions affecting tree root growth.
* Visually estimated.
GL at ground level.
AGL above ground level.

LEGEND

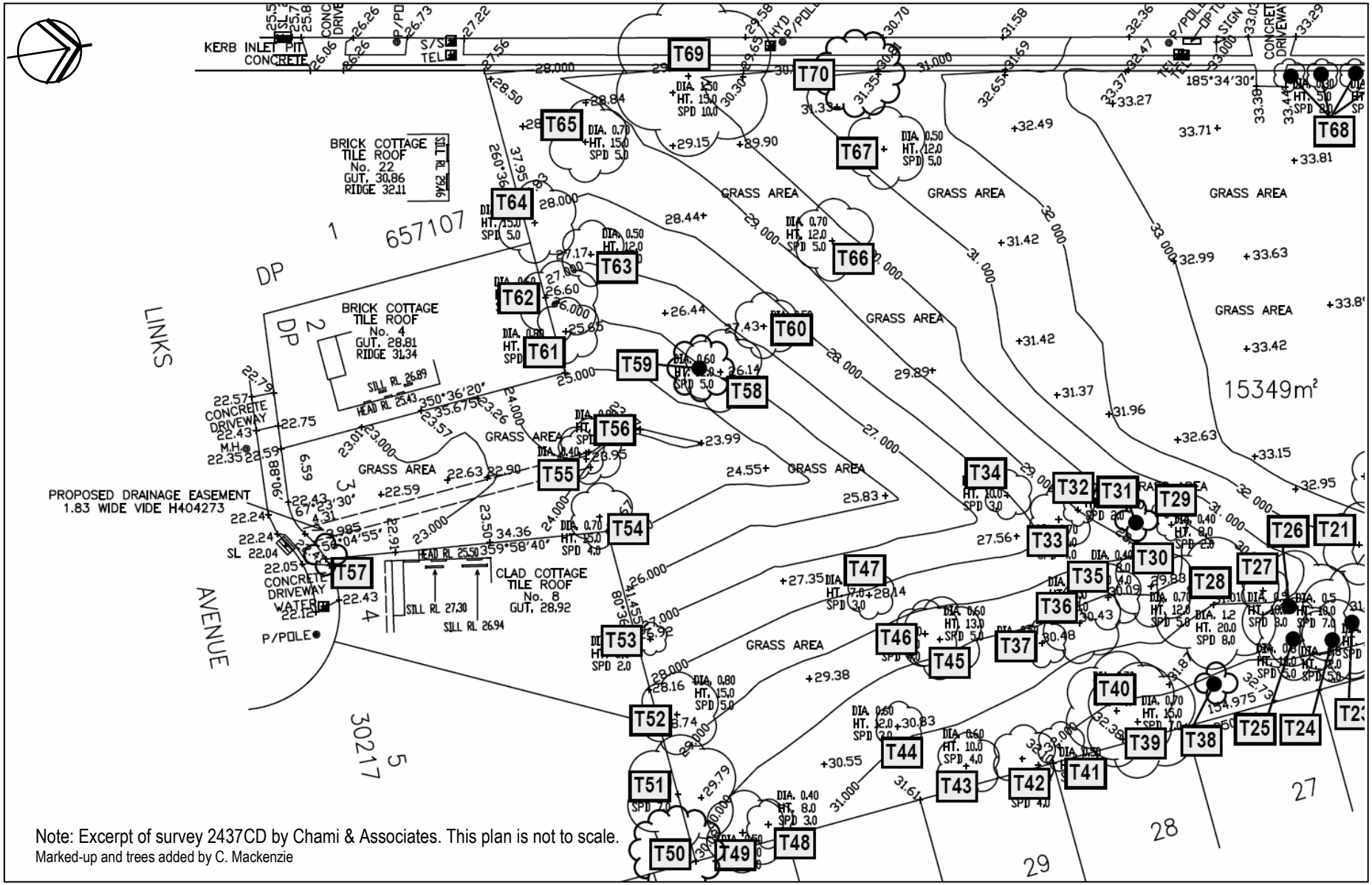
H refers to the approximate height of a tree in metres, from base of stem to top of tree crown.
Sp refers to the approximate and average spread in metres of branches/canopy (the 'crown') of a tree.
DBH refers to the approximate diameter of tree stem at breast height i.e. 1.4 metres above ground (unless otherwise noted), and expressed in millimetres.
Age refer to Appendix A -Terms and Definitions for more detail.
V refers to the tree's vigour (health). L – Low vigour, N – normal vigour, P = poor vigour. Refer to Appendix A -Terms and Definitions for more detail.
C refers to the tree's structural condition. F = fair condition, G = good condition, P = poor condition. Refer to Appendix A -Terms and Definitions for more detail.
ULE refers to the estimated *Useful Life Expectancy* of a tree. Refer to Appendices A and B for details. Where further investigation or testing of trees is required, a ULE can't be accorded until investigations have taken place.
TSR The *Tree Significance Rating* considers the importance of the tree as a result of its prominence in the landscape and its amenity value, from the point of public benefit. Refer to Appendix C –for more detail.
RV Refers to the retention value of a tree, based on the tree's ULE *and* Tree Significance. Refer to Appendix C –for more detail. Note: a RV cannot be accorded to a tree where the ULE is not provided.
SRZ† Structural Root Zone (SRZ) refers to the critical radial offset in metres from the centre of the tree's stem required to maintain stability of the tree. The SRZ is calculated on the diameter measured immediately above the root buttress or flare (DAB). Where this measurement is not taken in the field, it is calculated by adding 12.5% to the stem diameter at breast height (DBH). Refer to Appendix A -Terms and Definitions for more detail.
TPZ† Tree Protection Zone (TPZ) refers to the *tree protection zones* for trees to be retained. The measurement given is a radial offset in metres from the centre of the tree's stem. Refer to Appendix A -Terms and Definitions for more detail.

APPENDIX F

TREE LOCATION PLAN



Note: Excerpt of survey 2437CD by Chami & Associates.
This plan is not to scale. Marked-up and trees added by C. Mackenzie



Note: Excerpt of survey 2437CD by Chami & Associates. This plan is not to scale.
Marked-up and trees added by C. Mackenzie

Mr Chris Shinn
Coordinator Strategic Planning
City Strategic Planning
Fairfield City Council
PO Box 21
Fairfield NSW 1860

8 August 2018

TREE MANAGEMENT
CONSULTING ARBORICULTURISTS
HORTICULTURISTS
LANDSCAPE DESIGNERS
ABN 48 623 390 572

Dear Mr Shinn

PLANNING PROPOSAL
400-404 Cabramatta Road West, 2-18 Orange Grove Road and 6 Links Avenue, Cabramatta

We write regarding the current Planning Proposal for the above site.

In August 2015, Urban Forestry Australia undertook an assessment of the arboricultural impacts of a previous Planning Proposal for the site (refer to **Attachment 1**). Our assessment was informed by an indicative concept design prepared by Aleksandar Design Group that proposed the following:

- 6 x buildings ranging height from 4 storeys to 8 storeys;
- Approximately 340 x 2 bedroom apartments;
- 30,780 sqm of gross floor area incorporating:
  - 29,580 sqm of residential floor area; and
  - 1,200 sqm of non-residential floor area at the corner of Cabramatta Road West and Orange Grove Road;
- Basement parking;
- Vehicular access via a new internal road connecting to Links Avenue; and
- Communal open space and landscaping including the retention of the existing trees around the perimeter of the site.

Our assessment concluded the following:

- Seventy-five (75) trees in the site were assessed to provide base arboricultural data to assist in the planning and design footprint.
- The site is not zoned E2 or E3 and is not mapped as a Riparian Land and Waterway or Biodiversity area.
- No tree species has identified conservation status under the TSC and EPBC Acts.
- Thirty-nine (39) trees would likely be removed based on the current building footprint.
- Thirty-two trees (32) could be retained if considered during the detailed design process.
- Four (4) trees are weeds or undesirable species and would be removed.

Our recommendations were:

- Liaising with an arboriculturist during development design and review will improve the retention success of trees to be retained.
- To facilitate adequate protection of tree root zones and tree crowns, separate appraisal of each development area (e.g. proposed construction and future site access points and construction areas in proximity to trees to be retained) should be carried out.
- A suitably qualified arboriculturist (i.e. a minimum Australian Qualification Framework Level 5 in arboriculture) must be advised prior to any development proposed to occur within the TPZ offset of those trees, to enable assessment and protection recommendations

We have reviewed the revised indicative design concept prepared by Aleksandar Design Group (dated August 2018) which proposes the following:

- 1 x 5 storey apartment building accommodating approximately 72 apartments;
- Approximately 63 x townhouses with at grade garage parking;
- Approximately 14,891 sqm of residential gross floor area;
- Basement parking for apartment residents and visitors;
- Vehicular access via a new internal road connecting to Links Avenue; and
- Communal open space and landscaping including the retention of the existing trees around the perimeter of the site.

The proposed changes to the built form in the current Planning Proposal changes our previous assessment.

The estimated maximum tree retention under the current Planning Proposal is estimated to be approximately twenty-three (23) trees, with detailed assessment required of at least seven (7) of these trees due to their size, age, and proximity to proposed built works.

It is our view that any adverse tree-related impacts resulting from the current Planning Proposal could be mitigated by ensuring planting of medium to large canopy trees in suitable locations through the site, where they would have a better opportunity to mature to their full dimensions within a new development.

Our previous recommendations are still applicable for this current proposal.

Please contact the undersigned via email cat@urbanforestryaustralia.com.au or phone 0414 997 417 to discuss further if required.

Yours sincerely

INSTITUTE OF AUSTRALIAN CONSULTING ARBORICULTURISTS
IACA
ACCREDITED MEMBER™

MEMBER
ISA

Catriona Mackenzie
Consulting arboriculturist, horticulturist and landscape designer.

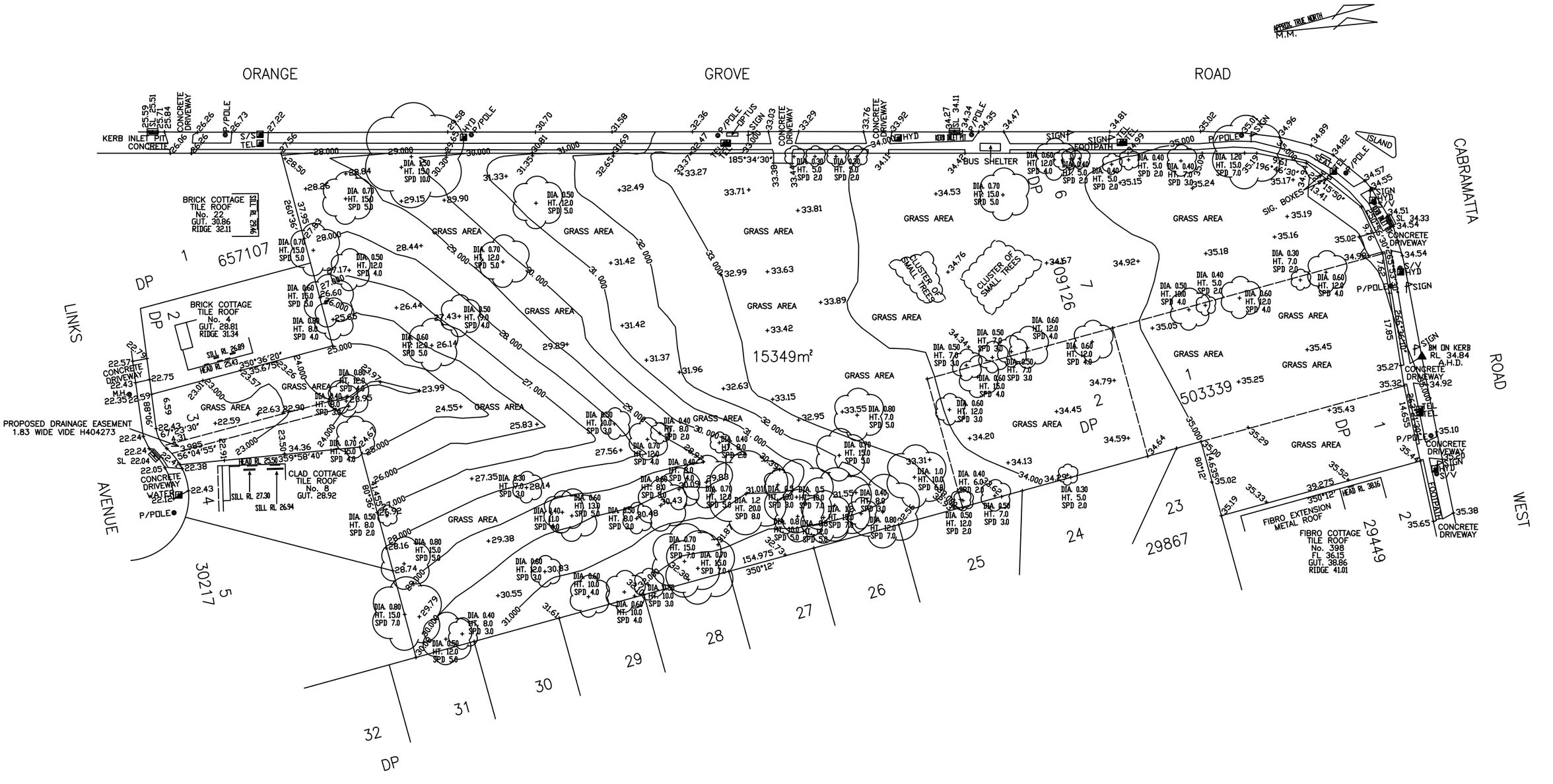
NOTES:

BOUNDARY DIMENSIONS SHOWN HEREON REFER TO PLAN DIMENSIONS ONLY AND HAVE NOT BEEN DETERMINED BY FIELD SURVEY.

SERVICES SHOWN HEREON HAVE BEEN LOCATED BY FIELD SURVEY.

PRIOR TO ANY DEMOLITION, CONSTRUCTION OR EXCAVATION A THOROUGH SEARCH OF ALL SERVICE AUTHORITIES SHOULD BE MADE TO DETERMINE THE POSSIBLE LOCATION OF FUTHER UNDERGROUND SERVICES.

CONTOURS SHOWN HEREON ARE INDICATIVE ONLY AND ARE SUITABLE FOR MAPPING AT A SCALE OF 1 : 400 OR SMALLER, PREFERENCE SHOULD BE GIVEN TO SPOT HEIGHTS AS SHOWN.



Rev	DATE	REVISIONS	Drn	Chk

DESIGNED: I.C.
DRAWN: I.C.
CHECKED: I.C.
RECOMMENDED: PROJ. MAN.
APPROVED: PROJ. DIR.
A1 DATUM: A.H.D.
SCALE 1:400

CHAMI & ASSOCIATES
IBRAHIM CHAMI
BE (Surveying & SIS)
Registered Surveyor
PH: 0403 231 515
FAX: (02) 9644 7484
PO BOX 699 Chester Hill NSW 2162
E-mail: i_chami@hotmail.com

DETAIL SURVEY
LOTS 6&7 DP 709126, LOT 3 DP 30217, LOTS 1&2 DP 503339 & LOT 1 DP 29449
400-404 CABRAMATTA ROAD WEST
CABRAMATTA

DATE: 24-03-2015 Rev
DRAWING No:
2437CD

Appendix C

Council Report and Resolution

WARREN, PATRICK - SENIOR STRATEGIC LAND USE PLANNER **FOR ACTION**

Subject: Planning Proposal and associated Site Specific Development Control Plan
File Reference A3142610
Meeting Date: 26/03/2019
Target Date: 9/04/2019
Notes:

15: SUBJECT: Planning Proposal and associated Site Specific Development Control Plan
Premises: 400, 402, 402A, 404 Cabramatta Road West, 2 Orange Grove Road and 6 Links Avenue Cabramatta
Applicant/Owner: TCON Constructions Pty Ltd (Director - Ahmed Taleb)
Zoning: R2 Low Density Residential
File Number: 16/02059

Councillor	Type of Interest	Nature of Interest	Action Taken/ Explanation Given
Mayor Carbone	Significant Non-Pecuniary	I was a member of the Joint Regional Planning Panel when this item came to it so I won't take part.	Mayor Carbone left and took no further part in debate or discussion.
Khoshaba	Significant Non-Pecuniary	I may have been a member of the Joint Regional Planning Panel when this item came to it so I won't take part.	Councillor Khoshaba left and took no further part in debate or discussion.

Mayor Carbone vacated (7.45pm) the Chair and left the meeting.

Deputy Mayor, Councillor Yilmaz assumed (7.45pm) the Chair.

Councillor Khoshaba left (7.46pm) the meeting.

MOTION: (Wong/Le)

That:

1. Council endorse the Planning Proposal (Attachment A of the report) to amend Fairfield Local Environmental Plan (LEP) 2013 in relation to 400-404 Cabramatta Road West, 2 Orange Grove Road and 6 Links Avenue

Cabramatta as follows:

1.1 Amend the Land Zoning Map from R2 Low Density Residential to part R4 High Density Residential and part R3 Medium Density Residential
1.2 Amend the Height of Building Map from 9 metres to part 17 metres and part 10 metres
1.3 Amend the Floor Space Ratio Map from 0.45:1 to part 1.7:1 and part 0.7:1
1.4 Remove the development standards shown on the Minimum Lot Size for Dual Occupancy Map and the Minimum Lot Size Map
1.5 Remove Item 3 from Schedule 1 – Additional Permitted Uses
1.6 Remove Item 3 from the Key Sites Map.

2. Council inform the Department of Planning and Environment (DPE) that it wishes to commence the Gateway process to amend Fairfield LEP 2013.

3. In requesting the Gateway Determination, Council advise the DPE that it seeks to utilise the delegation for LEP Plan Making (delegated by the Minister under Section 2.4 of the Environmental Planning and Assessment Act 1979).

4. Council endorse the draft Site Specific Development Control Plan (Attachment B of the report) to amend the Fairfield City Wide Development Control Plan 2013 to introduce development objectives and controls to guide the future development of land at 400-404 Cabramatta Road West, 2 Orange Grove Road and 6 Links Avenue Cabramatta.

5. Council upon receipt of a Gateway Determination from NSW DPE, concurrently exhibit the Planning Proposal and draft Site Specific Development Control Plan for a period of 28 days.

6. Council receive a further report on the Planning Proposal and draft DCP at the conclusion of the public consultation period.

A division was taken with the following results:

Aye	**Nay**

Councillor Azzo
Councillor Bennett
Councillor Grippaudo
Councillor Kazi
Councillor Le
Councillor Ly
Councillor Molluso
Councillor Rohan
Councillor Saliba
Councillor Wong
Councillor Yilmaz

Total=(11) Total=(0)

CARRIED UNANIMOUSLY

ACTION TAKEN BY OFFICER

Please update any action taken, or the finalisation of this Item, in InfoCouncil by clicking 

in the Infocouncil tab, to Add/Edit Notes.

OUTCOMES COMMITTEE

Meeting Date 12 March 2019 **Item Number. 15**

SUBJECT:	Planning Proposal and associated Site Specific Development Control Plan
Premises:	400, 402, 402A, 404 Cabramatta Road West, 2 Orange Grove Road and 6 Links Avenue Cabramatta
Applicant/Owner:	TCON Constructions Pty Ltd (Director - Ahmed Taleb)
Zoning:	R2 Low Density Residential

FILE NUMBER: 16/02059

REPORT BY: Patrick Warren, Senior Strategic Land Use Planner; Chris Shinn, Coordinator Strategic Planning

RECOMMENDATION:

That:

1. Council endorse the Planning Proposal (Attachment A of the report) to amend Fairfield Local Environmental Plan (LEP) 2013 in relation to 400-404 Cabramatta Road West, 2 Orange Grove Road and 6 Links Avenue Cabramatta as follows:

    1.1 Amend the Land Zoning Map from R2 Low Density Residential to part R4 High Density Residential and part R3 Medium Density Residential
    1.2 Amend the Height of Building Map from 9 metres to part 17 metres and part 10 metres
    1.3 Amend the Floor Space Ratio Map from 0.45:1 to part 1.7:1 and part 0.7:1
    1.4 Remove the development standards shown on the Minimum Lot Size for Dual Occupancy Map and the Minimum Lot Size Map
    1.5 Remove Item 3 from Schedule 1 – Additional Permitted Uses
    1.6 Remove Item 3 from the Key Sites Map.

2. Council inform the Department of Planning and Environment (DPE) that it wishes to commence the Gateway process to amend Fairfield LEP 2013.

3. In requesting the Gateway Determination, Council advise the DPE that it seeks to utilise the delegation for LEP Plan Making (delegated by the Minister under Section 2.4 of the Environmental Planning and Assessment Act 1979).

4. Council endorse the draft Site Specific Development Control Plan (Attachment B of the report) to amend the Fairfield City Wide Development Control Plan 2013 to introduce development objectives and controls to guide the future development of land at 400-404 Cabramatta Road West, 2 Orange Grove Road and 6 Links Avenue Cabramatta.

5. Council upon receipt of a Gateway Determination from NSW DPE, concurrently exhibit the Planning Proposal and draft Site Specific Development Control Plan for a period of 28 days.

6. Council receive a further report on the Planning Proposal and draft DCP at the conclusion of the public consultation period.

Note: This report deals with a planning decision made in the exercise of a function of Council under the EP&A Act and a division needs to be called.

SUPPORTING DOCUMENTS:

AT-A	Planning Proposal 400-404 Cabramatta Road West Cabramatta	162 Pages
AT-B	Draft Site Specific Development Control Plan - 400-404 Cabramatta Road Cabramatta	10 Pages
AT-C	Fairfield Local Planning Panel Meeting Minutes - 400-404 Cabramatta Road West Cabramatta	4 Pages

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CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY

Council is in receipt of a Planning Proposal (**Attachment A**) for multiple lots located at the intersection of Cabramatta Road West and Orange Grove Road (also known as Cumberland Highway). The subject site consists of 6 privately owned lots and has a total site area of 15,349m^2.

The Planning Proposal seeks to amend the following provisions of Fairfield LEP 2013:

- Zoning map;
- Height of Buildings map;
- Floor Space Ratio (FSR) map;
- Minimum Lot Size map;
- Minimum Lot Size Dual Occupancy map;
- Key Sites map; and
- Schedule 1 – Additional Permitted Use

The Planning Proposal is seeking amendment to the land zoning map by rezoning the northern portion of the site from R2 Low Density Residential to R4 High Density Residential to facilitate a 4 storey apartment building with a smaller 5 storey component. The Planning Proposal is also seeking to rezone the southern portion of the site from R2 Low Density Residential to R3 Medium Density Residential to facilitate townhouse/terrace style development. The Planning Proposal also seeks to amend the relevant development standards map to facilitate the redevelopment.

THE SITE

The site consists of 6 privately owned lots (Figure 1) and has a total site area of 15,349m^2. The site is currently zoned R2 Low Density Residential and has a maximum FSR of 0.45:1 and a maximum building height of 9 metres. The site currently contains a Minimum Lot Size provision of 450m^2 and a Minimum Lot Size for Dual Occupancy provision of 600m^2.

The site is currently identified on Council's Key Sites Map and within Schedule 1 Additional Permitted Use of Fairfield LEP 2013 for the purpose of multi dwelling housing.

Locality Map

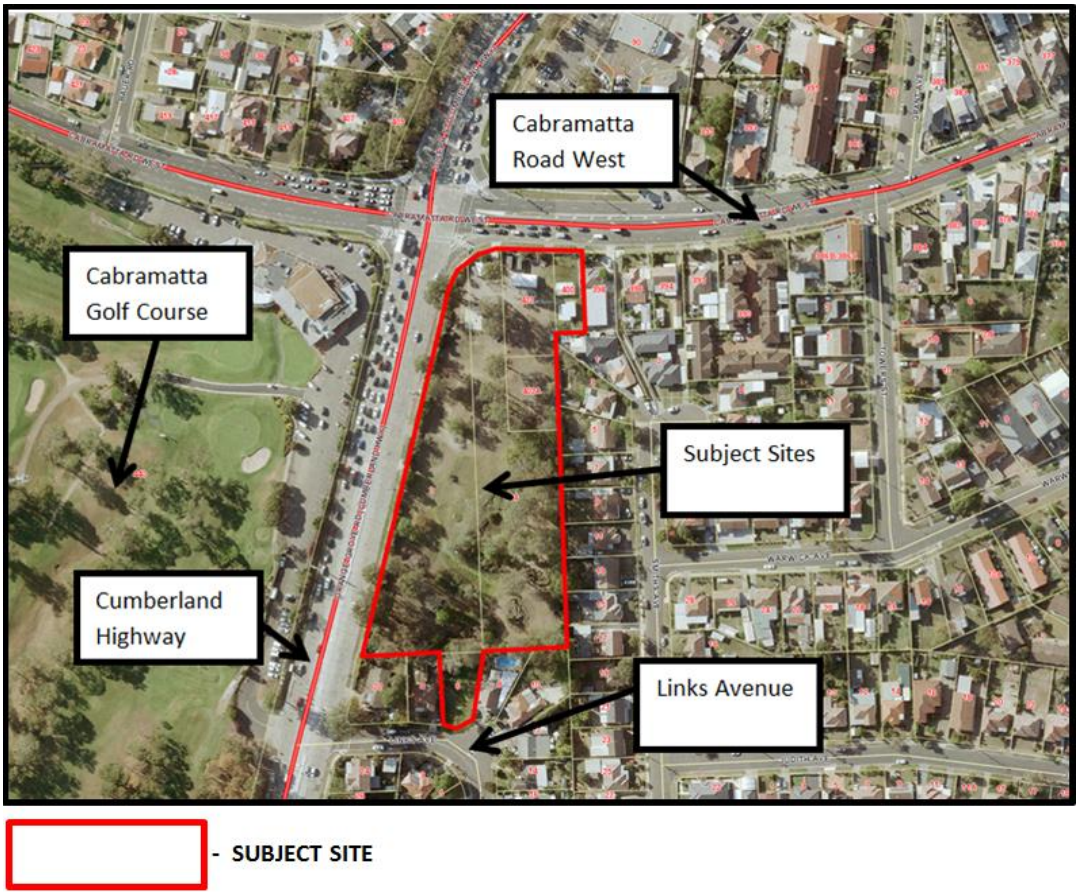

Figure 1. Location Map

The site is zoned R2 Low Density Residential and currently has access from Orange Grove Road and Links Avenue. The site is bounded by:

- R2 Low Density Residential zoned land to the east;
- R2 Low Density Residential zoned land to the south;
- Orange Grove Road and Cabramatta Golf Course (zoned RE2 Private Recreation) to the west; and
- Cabramatta Road West and an existing service station and takeaway food and drinks premises to the north.

The site is currently vacant land and contains small clusters of mature trees to the centre and south east of the site. The north of the site contains a small portable gazebo and demountable building. The site is characterised by a slight slope to the south, with a much more significant drop in elevation towards Links Avenue with a gradient change of up to 10 metres. The site is under single ownership (TCON Constructions Pty Ltd).

The western side of the site is currently serviced by the 819 bus service traveling north to Cabramatta Station and south to Liverpool Station. North of the site there is a current bus stop for the 815 bus service that travels west to Bonnyrigg.

BACKGROUND

A previous iteration of a Planning Proposal for the subject site was lodged with Council in 2016. The Proposal was not supported by Council Officers due to what would have resulted in significant over development of the site. The previous proposal proposed the following:

- R1 General Residential Zoning across the entire site;
- Increased height of buildings to part 14 metres (4 storeys) and part 27 metres (8 storeys);
- Increase the maximum floor space ratio for the site to 2:1;
- Allow “Office Premises” and “Business Premises” as additional permitted uses on the site.

Council at its meeting on 12 September 2017 resolved to not proceed with the Planning Proposal. The Applicant chose to submit the Planning Proposal to the Department of Planning and Environment for a pre Gateway rezoning review. On 11 April 2018, the Sydney Western City Planning Panel considered the proposal and determined that the Application should not proceed to Gateway Determination as the proposal had not demonstrated site specific strategic merit.

While the Proposal had demonstrated strategic merit at the District level by adding to the supply of housing it was inconsistent with the Fairfield Residential Development Strategy which constitutes the strategic framework developed by Fairfield Council to deliver its housing supply.

It was further suggested by the panel that a more appropriately scaled form of medium density residential development be discussed.

As a result, the Applicant submitted the present amended Planning Proposal to Council on 20 August 2018 which sought to address the previous reasons for refusal by Council and the panel.

REPORT

A. THE PROPOSAL

The Proposal relates to 6 subject lots outlined in Table 1 below:

Property Address	Title Description
400 Cabramatta Road West Cabramatta	Lot: 1 DP: 29449
402 Cabramatta Road West Cabramatta	Lot: 1 DP: 503339
402A Cabramatta Road West Cabramatta	Lot: 2 DP: 503339
404 Cabramatta Road West Cabramatta	Lot: 7 DP: 709126
2 Orange Grove Road Cabramatta	Lot: 6 DP: 709126
6 Links Avenue Cabramatta	Lot: 3 DP: 30217

Table 1. Subject lots

The proposed changes to Fairfield LEP 2013 are summarised in Table 2 below:

Use/Development Standard	Existing	Proposed
Retail Floor Space	None	None
Commercial Floor Space	None	None
Number of Dwellings	None	• 69 units • 63 town houses Total 132 dwellings
Dwelling Mix (approximate)	None	Residential apartments • 22x1 bedroom units • 46x2 bedroom units • 1x3 bedroom Terrace/townhouses • 63x3 bedroom townhouses
Zoning	R2	• R4 for the northern portion of the site • R3 for the centre and southern portion of the site
FSR	0.45:1	• 1.7:1 for the R4 zoned portion of the site • 0.7:1 for the R3 zoned portion of the site
Height of Building	9 metres	• 17 metres for the R4 zoned portion of the site • 10 metres for the R3 zoned portion of the site
Car Parking	None	• 85 x residential and 17 x visitors parking to the R4 portion of the site • 91 x town house resident spaces and 16 x visitor spaces to the R3 portion of the site
Minimum Lot Size	450m^2	To be removed
Minimum Lot Size Dual Occupancy	600m^2	To be removed
Additional Permitted Use	Multi dwelling housing	To be removed as the proposed zoning change will make multi dwelling housing a permissible land use,

Use/Development Standard	Existing	Proposed
		and therefore there is no need for the additional permitted use.

Table 2. Summary of development and required LEP Amendments

No retail or commercial floor space is proposed on the land. No additional permitted use for any purpose is proposed on the subject site.

Figure 2 below provides a visual perspective of the proposal looking east from the Cabramatta Golf Club.

Figure 2. Visual Perspective of the Proposal looking east from Cabramatta Golf Club

Additional concept plans and development design illustrations are included within **Attachment A** of this report and are intended to give an indication of the proposed design and scale of future development under the provisions of the planning proposal. The Applicant would be required to further refine the concepts for the development application stage.

B. PROPOSED AMENDMENTS TO FAIRFIELD LEP 2013

The zoning and development standards proposed for the site are separated into 2 distinct sectors. The following figures illustrate how the key LEP maps are proposed to be amended:

Proposed Zoning Map

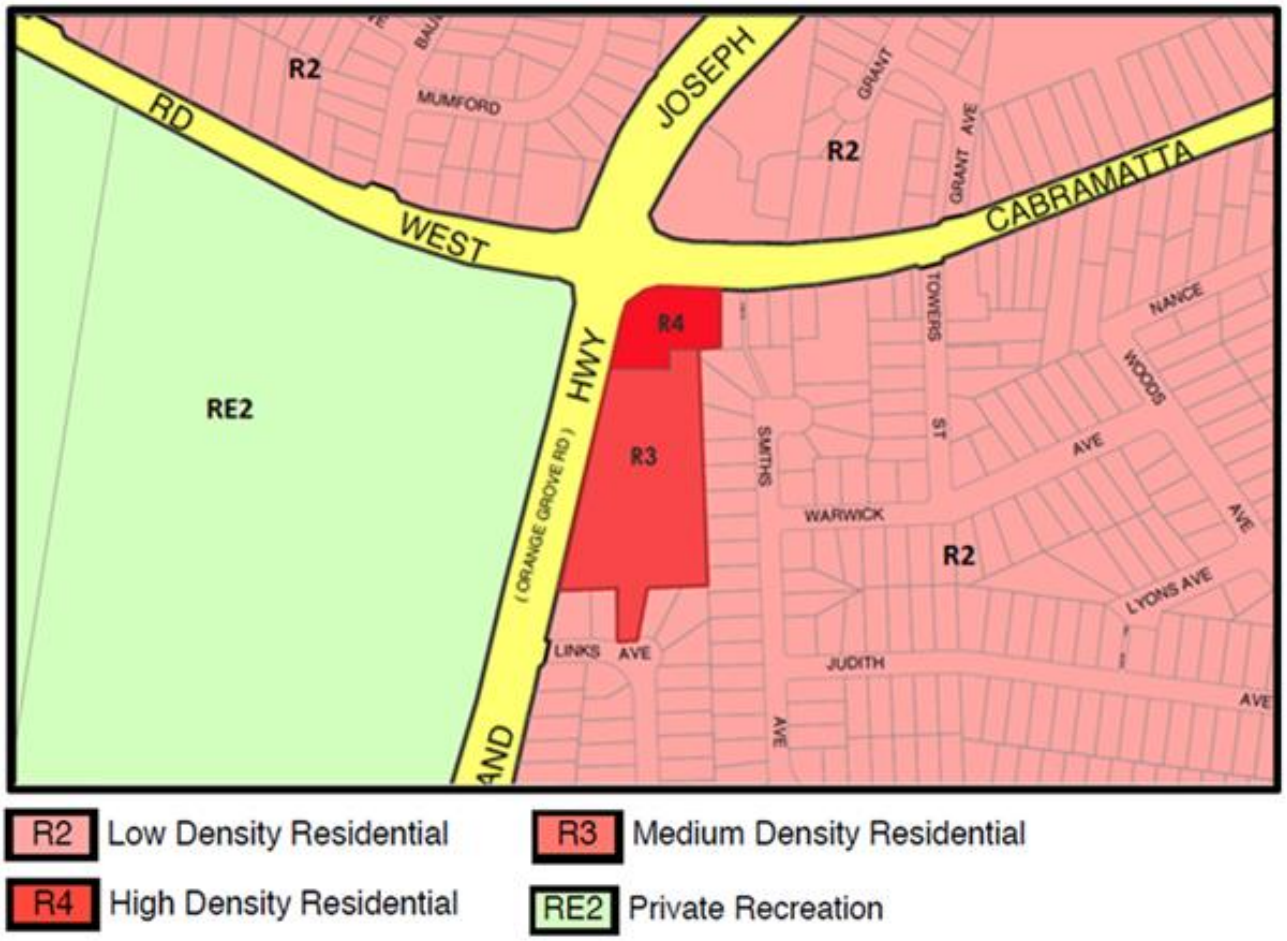

Figure 3. Proposed land zoning map

Proposed Height of Building Map

Figure 4. Proposed height of building map

Proposed Floor Space Ratio map

Figure 5. Proposed floor space ratio map

C. STRATEGIES AND STUDIES

The Proposal is a significant residential rezoning which requires it to be assessed against a number of Council strategies and studies as well as relevant State government strategic documents.

<u>Environmental Planning and Assessment Act 1979</u>

The Environmental Planning and Assessment Act 1979 (the EP&A Act) and the Environmental Planning and Assessment Regulation 2000 (EPA Reg) set out:

- Requirements for rezoning land;
- Requirements regarding the preparation of a local environmental study as part of the rezoning process;
- Matters for consideration when determining a development application; and
- Approval permits and/or licences required from other authorities under other legislation.

This Planning Proposal has been prepared in accordance with the requirements set out in Section 3.33 of the EP&A Act, in that it explains the intended outcomes of the proposed instrument. The Planning Proposal also provides justification and an environmental analysis of the Proposal.

Metropolis of Three Cities – A vision to 2056

The Metropolis of Three Cities – A Vision to 2056 is the overarching strategic land use plan for the Greater Sydney metropolitan area. It outlines the strategic vision for managing growth in Sydney to 2056. The vision seeks to transform Greater Sydney into a metropolis of three cities.

- The Western Parkland City – the site is located within the Western Parklands City;
- The Central River City; and
- The Eastern Harbour City.

The strategy for Greater Sydney is underpinned by ten strategic directions each with specific objectives designed to deliver the plan. Table 3 summarises the Planning Proposal's consistency with the relevant directions.

Directions	Comments
A city supported by infrastructure	Cabramatta and Liverpool are a short bus ride from the site and the Orange Grove MegaCenta (which is being considered for a planning proposal by Liverpool Council) is within walking distance. The planning proposal will facilitate a reasonable increase in housing density which will increase the local community's capacity to live within 30 minutes of the nearest strategic centres of Fairfield and Liverpool. Further, the planning proposal will not compromise the delivery of any planned metropolitan infrastructure projects.
A collaborative city	The planning proposal will not compromise the co-ordination and delivery of the Western City Deal or the proposed Liverpool collaboration area. The planning proposal is a result of ongoing consultation between the landowner and Council; it will also be publicly exhibited to allow the wider community and authorities to provide their views on the proposal.
Housing the city	The planning proposal will facilitate the provision of approximately 130 new dwellings in a variety of typologies, within walking distance of the Orange Grove MegaCenta, and adjacent to bus stops that connect to Cabramatta and Liverpool. The planning proposal will increase housing diversity and supply in an appropriate location.
A well-connected city	As outlined above, the planning proposal is close to surrounding strategic centres and will not prevent the delivery of metropolitan transport infrastructure projects.

Jobs and skills for the city	The planning proposal seeks to increase the density of existing residentially zoned land within reasonable limits. It does not seek to rezone industrial or urban services land.
A city in its landscape	The Plan does not identify the site as having any significant ecological or biodiversity significance. While it is noted that the site contains a number of stands of trees, the 1943 aerial photo shows that the site was cleared of any significant vegetation. The current vegetation on site is likely to be have been planted since that time. The site's existing landscape is highly modified and degraded and it is bounded by two high volume major arterial roads and existing urban development. Notwithstanding, the planning proposal seeks to retain many of the mature trees on-site and provides a significant area of communal open space. The planning proposal does not propose to rezone any environmentally zoned land.

Table 3. Summary consistency with planning directions

Western City District Plan

The Greater Sydney Commission's overarching vision for the Western City is to provide a 30-minute city. This means that residents in the Western City District will have quicker and easier access to a wider range of jobs, housing types and activities. The Western City District Plan sets out 20 strategic planning priorities to achieve the vision. The table below sets out the key planning priorities applicable to this proposal and justification of consistency.

Planning Priority	Consistency
Planning Priority W5 – "Providing housing supply, choice and affordability with access to jobs, services and public transport"	The Planning Proposal will boost housing supply within the established neighbourhood of Cabramatta, close to Liverpool which is consistent with the Western City District Plan and will also enable the existing community to remain in place. The site is unique and represents one of the largest single residential landholdings in the LGA. It has the capacity to provide a range of smaller affordable dwelling types to suit the change in housing demand for smaller dwellings. It has been acknowledged that the delivery of smaller housing types needs to be prioritised to meet the changing needs of the local community. The site is within walking distance of the Orange Grove MegaCenta and within 30 minutes travel time on public transport to Liverpool CBD, Cabramatta and Fairfield. Therefore, it is in a strategically appropriate location to deliver the '30-minute City' by taking advantage of the amenity, services and employment opportunities provided by the surrounding strategic centres.

Planning Priority W14 "Protecting and enhancing bushland and biodiversity"	The site does contain a small amount of remnant vegetation. However, is not identified on the Fairfield LEP "Terrestrial Biodiversity Map" or "Riparian Lands and Watercourses Map". Further, it is not subject to any additional local environmental protection provisions in the LEP. The ecological assessment undertaken and submitted with the planning proposal concluded that: • The site is located within a significant area of existing urban development and has been substantially cleared and developed in the past. The existing vegetation on the site is described as 'synthetic' and is dominated by introduced species and horticultural plantings. • The development area is not considered critical or important for the survival of a viable local population of any threatened biota or threatened or migratory species. Notwithstanding the above, the applicant has worked with Council to demonstrate that the majority of larger trees and the key stand of remnant vegetation to the south east can be maintained as provide for the residential communal open space.

Table 4. Key planning priorities of the Western City District Plan

SEPP 65 – Principle 1 "Context and Neighbourhood Character" – Addressing the Sydney Western City Planning Panel comments on the original proposal

On 11 April 2018, the Sydney Western City Planning Panel determined that the original application not proceed to Gateway Determination as the proposal had not demonstrated site specific strategic merit.

In considering the original iteration of the Planning Proposal, the Panel determined that the Proposal would result in a development that would contrast with the character of the immediate urban precinct. The Panel wrote that:

> "*The proposal is considered to lack site specific merit as it would result in an isolated medium/high density development distinctly contrasting with the character of the immediate urban precinct in which is located. That immediate precinct constitutes low density detached dwellings adjoining the common eastern and southern boundaries of the site. Significant open space and vistas are provided by the golf course located opposite on Orange Grove Road. This element of the proposal's setting is unlikely to undergo significant change in the medium term.*

There is no development with similar form or height to the development that is proposed in the area surrounding the Orange Grove development and surrounding commercial development.
Given those matters, the resulting development is considered to be incompatible with the surrounding urban context, and would result in development in conflict with State Environmental Planning Policy (SEPP) 65 Design Quality of Residential Apartments, Principle 1: Context and Neighbourhood Character. "

The indicative concept design submitted with the current Planning Proposal has been prepared to be more compatible with the surrounding urban context and allow the efficient and orderly development of the site. The current Planning Proposal seeks to primarily facilitate medium density townhouses of a scale and form that is compatible with the adjacent detached dwellings. The mass and scale of the single residential flat building is significantly lower than the mass and scale of the residential flat buildings previously considered by the Sydney Western City Planning Panel. This section of the report demonstrates that the Planning Proposal and the future built form of the proposed residential flat building is consistent with the Principle 1. Principle 1 is reproduced below:

"Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood.
Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change."

The proposed residential flat building is consistent with Principle 1 for the following reasons:

- The site is large and currently vacant; it is located on a major arterial road intersection on a prominent ridgeline at the southern gateway to the Fairfield LGA. It is a unique location. The immediate surrounding context comprises a range of uses including a highway service centre, fast food outlet, golf club and course, low density detached dwellings and multi dwelling houses. The existing maximum height limit on the immediately adjoining land is 9m.
- The indicative concept for the residential flat building responds to the surrounding context in the following manner. The proposal is setback 6m from the public domain which is consistent with the front building line setback established by the lower density dwellings to the east. The Cabramatta Road West building façade at the ground plane and upper levels can be broken down vertically and horizontally to respond to and reflect the scale of the adjacent low-density dwellings. By implementing these mechanisms, the Proposal can respond and contributes to the existing streetscape.

- The Proposal is setback 18m from the adjoining low density at the fifth storey, and 9m from the adjoining low density at the fourth storey. These distances allow the form and scale to transition between the 9m low density zone to the four storey (12m) component without resulting in an abrupt change in the streetscape. The addition of a detailed landscaping strategy at the DCP or development application stage will further soften the transition between the two zones.
- The recessive fifth storey 'pop-up' element is set back 3m from the building's street façade (9m from the street boundary) and between 18m – 14m from the side facades. The proposed built form will read as a four-storey building from the immediate surrounds, and it will create a landmark that addresses the corner, which will improve geographical legibility and create a distinct identity for the immediate area.

In summary, the proposed location, height, mass and scale of the residential flat building has been scaled back per the recommendations of the Sydney South West Local Planning Panel.

2016 – 2026 Fairfield City Plan

The Planning Proposal is consistent with a number of themes and goals within the Fairfield City Plan 2016 – 2026. The table below illustrates how the Planning Proposal aims to achieve the outcome of these themes and goals.

Relevant FCCSP Outcome within the theme	**Outcome**	**How the Planning Proposal achieves the outcome**
Theme 2 – Places and Infrastructure **Goal A.**	High quality development that meets the community's needs.	The Planning Proposal seeks to encourage development of different housing types to meet the varied needs of the community.
Theme 4 – Local Economy and Employment **Goal C.**	A variety of job and training opportunities available in the city	The Planning Proposal will generate full time short term employment through the construction of the project. The ongoing maintenance of the development will generate employment for the local economy.

Table 5. Consistency with Fairfield City Plan Themes

Fairfield Local Environmental Plan 2013 (Fairfield LEP 2013)

The Fairfield LEP is the key environmental planning instrument that applies to the site. In summary the Planning Proposal will endeavour to:

- Provide appropriate and diverse housing types to meet a range of lifestyles and cultures, and;
- Provide a built form that is sensitive to the existing character of the surrounding residential properties and will not generate any unacceptable impacts on the amenity of the neighbouring dwellings

Objective FLEP 2013	**Proposal Compliance**
To ensure that appropriate housing opportunities are provided for all existing and future residents and that those housing opportunities accommodate different lifestyles, incomes and cultures,	The Planning Proposal is consistent as it seeks to increase the number of dwellings permitted on the site. This will increase the range and diversity of housing opportunities the LGA.
To ensure that the economic, employment and educational needs of the existing and future community are appropriately planned for,	The Planning Proposal is related to residential land uses in a residential area. It will not undermine the achievement of this objective.
To conserve the environmental heritage of Fairfield,	The Planning Proposal is consistent as it will not have any impact on the preservation of the environmental heritage of Fairfield.
To protect and manage areas of remnant bushland, natural watercourses and threatened species.	The Planning Proposal is consistent as it will not have any adverse impact on the sensitive ecological systems located in Fairfield. The vegetation on-site is identified as low environmental significance, with the 1943 aerial photograph showing that the site was historically cleared of vegetation. However, the site specific DCP will seek to maintain as much of the significant vegetation and tree canopy as possible, creating a canopy link from the site south to Cabramatta Creek riparian corridor by ensuring that the communal open space centres around the significant trees.
Objectives of R4 Zone	**Proposal Compliance**
To provide for the housing needs of the community within a high density residential environment.	The Planning Proposal will facilitate the development of a modest residential flat building with approximately 69 apartments adjacent to public transport and within proximity of the Orange Grove MegaCenta.
To provide for a variety of housing types within a high density residential environment.	The Planning Proposal will facilitate a variety of one, two and three bedroom apartments.
To enable other land uses that provide facilities or services to meet the day to day needs of residents.	The residential flat building is not incompatible with other land uses that are permissible in the R4 zone.
To maximise opportunities for increased development on all land by encouraging site amalgamations.	The Planning Proposal seeks to facilitate a reasonable residential development on an amalgamated site.
Objectives of R3 Zone	**Proposal Compliance**
To provide for the housing needs of the community within a medium density residential environment.	The Planning Proposal will facilitate the development of approximately 63 multi-dwelling houses (townhouses) adjacent to public transport and within proximity to Orange Grove MegaCenta.
To provide a variety of housing types within a medium density residential environment.	The Planning Proposal will facilitate the development of a variety of two and three bedroom townhouses.
To enable other land uses that provide facilities or services to meet the day to day needs of residents.	The proposed townhouses are not incompatible with other land uses that are permissible in the R3 zone.

Table 6. Consistency with objectives of the proposed zones within the Fairfield LEP 2013

Fairfield Residential Development Strategy 2009

The Fairfield Residential Development Strategy (RDS) identifies areas within Fairfield City that should be investigated for future increases in residential density. The key principle for the increase in density within the City outlined by the RDS is density around centres and along corridors. This was reflected in the initial RDS which proposed residential density increase in and around the Cabramatta Town Centre.

Whilst the Proposal is outside the areas identified for increased residential density by the RDS, the site is a uniquely large site (approximately 1.5HA) that can accommodate greater residential density with limited impacts on adjoining residential land uses.

The Planning Proposal provides an opportunity to implement urban renewal to the south west of Cabramatta and increase diversity in housing typology. The site is serviced by regular bus services running south to Liverpool Station and east to Cabramatta Station.

Fairfield City Wide Development Control Plan 2013

The Proposal was considered against objectives and desired character of Chapter 6A Multi Dwelling Housing and Chapter 7 Residential Flat Buildings.

Specifically, the Planning Proposal generally satisfies the following objectives and desired character outcomes of chapter 6A:

- To provide for the housing needs of the community within a medium density residential environment, meeting the needs of families and households that require smaller dwelling units and more affordable housing choices;
- To ensure the development makes a positive contribution to the streetscape and neighbourhood.

Concerning Chapter 7 the Planning Proposal satisfies the following objectives and desired character outcomes:

- Visually integrate new development with neighbouring housing via compatible dwelling form;
- Maximise access to sunlight for dwellings in and around the development;
- Maximise the effective use of the site including front and side setbacks.

Whilst the Proposal is generally consistent with the desired future character of the locality, the scale of development proposed is considerably greater than that provided for under the controls of the existing DCP. Consequently, a draft Site Specific DCP has been prepared for the site. Details of the draft SSDCP are discussed in further detail later in this report.

D. FAIRFIELD LOCAL PLANNING PANEL REFERRAL

Planning Proposals are required to be referred to the Local Planning Panel for advice prior to being reported to Council, as set out by the Local Planning Panels (LPP) Direction – Planning Proposals under Section 9.1 of the Environmental Planning and Assessment Act 1979.

The Planning Proposal was referred to the Fairfield Local Planning Panel (FLPP) for advice at its meeting of the 21 November 2018.

FLPP Comments and Recommendation

On the 21 November 2018 the FLPP met to consider the matter and adopt a recommendation. A pre-meeting inspection was held on site with Council Officers.

In considering the Proposal, the Fairfield Local Planning Panel (FLPP) raised a number of issues with the Proposal and recommended that the issues be addressed before the Planning Proposal is forwarded to the Department of Planning and Environment for Gateway Determination. The FLPP minutes form **Attachment C** of this report and the main points have been summarised below.

Notwithstanding the issues raised, the recommendation by the panel was that it supported the Proposal in principle, subject to the Proposal being amended to adequately address a number of concerns which it believes Council Officers should take into account prior to reporting the matter to Council. A summary of the matters raised by the panel and how they were addressed are outlined below:

- **Site Specific Development Control Plan**

The panel was of the view that a Site Specific Development Control Plan should be developed in conjunction with the Proposal.

Council Officer comment and further action taken:
The Applicant has subsequently submitted a draft site specific Development Control Plan, which has been reviewed and amended by Council Officers to ensure consistency with the FLPP comments. The site specific DCP forms **Attachment B** of this report.

- **Further address the environmental constraints on site**

The panel felt that the environmental constraints of the site had not been dealt with effectively and that the DCP should specifically consider the need to protect the Cumberland Plain Woodland (Ecologically Endangered Communities) and the manner in which this vegetation links with other local and similar vegetation within the immediate vicinity. Such an assessment should also strategically consider the opportunities for off-setting should it be determined that some degree of loss of vegetation is unavoidable.

Council Officer comment and further action taken:
The Applicant has included provisions within the draft site specific DCP which seek to address the environmental issues. The concept proposal has also been redesigned so that more of the larger mature trees are not disturbed.

- **Traffic noise attenuation**

That the Applicant be requested to provide advice on how it intends to attenuate traffic noise, particularly along the Cumberland Highway.

Council Officer comment and further action taken:
The Applicant has included provisions within the draft site specific DCP which would require the development include noise attenuation measures for the buildings addressing Cabramatta Road and Cumberland Highway.

- **Affordable Housing**

That the panel was of the view that the Proposal ought to have an element of affordable housing which it singularly lacks at this stage.

Council Officer comment and further action taken:
Council currently does not have an affordable housing policy or an agreement with a local affordable housing provider, however, Council does have a Voluntary Planning Agreement Policy should the Applicant wish to enter into an affordable housing arrangement. This would need to be further discussed with the Applicant should the Proposal receive Gateway Determination.

- **Isolation of 22 Orange Grove Road and 4 Links Avenue**

The panel was concerned about the diminished development potential on the two contiguous sites on the corner of Links Avenue and Cumberland Highway, and believed that this needed to be properly addressed prior to a planning proposal proceeding any further including the Applicant being asked to provide evidence of a genuine attempt to purchase the property and / or clearly showing that the site could accommodate redevelopment in the future.

Council Officer comment and further action taken:
The Applicant has provided a concept of how the two sites at the corner of Links Avenue and Cumberland Highway can be developed should they choose to pursue their own planning proposal in the future.

It is considered that the matters raised by the FLPP have been adequately addressed by the Applicant and reviewed by Council Officers for the Planning Proposal to progress to Gateway Determination.

E. INTERNAL REFERRALS

The Planning Proposal and associated supporting material was referred to the relevant Council departments for review and comment. The following provides a summary of the relevant feedback and issues raised. Many of the comments provided by internal stakeholders are specific to a future development application, and as such would be required to be dealt with at that stage.

Traffic and Parking

The Applicant has provided a Traffic Impact Assessment report (the same submitted with the previous proposal) prepared by Asongroup. The report concluded that the existing road network can accommodate the additional trip generation arising from the scale of development from original planning proposal and future broader precinct uplift without significant impacts.

Council's Traffic Engineers reviewed the Proposal and provided the following comments.

1. The number of trips generated by the current Planning Proposal during peak hours is 63, and is significantly lower when compared with the original proposal.
2. The Planning Proposal shall be referred to the Roads and Maritime Services for comments.
3. The number of parking spaces proposed shall comply with Chapter 12 of Fairfield City Wide Development Control Plan 2013.
4. Bicycle parking spaces shall be provided to encourage active transport.
5. The proposed access driveway shall be designed to cater for the largest vehicle servicing the development. The proposed location of the driveway shall comply with sight distance requirements.
6. The proposed car parking spaces and ramp grades shall comply with AS 2890.1:2004.
7. The proposed cul-de-sac shall be designed to ensure Council's waste collection vehicle could turn around and egress the site in a forward direction.
8. The Applicant shall assess the traffic impact of the proposed development on the intersection of Cumberland Highway/Links Avenue.
9. The waste collection is to be undertaken by Council's waste collection vehicles at the street level on the internal access road connecting from Links Avenue. This requires the dedication of internal access road to Council.
10. A preliminary two way road analysis be undertaken by the Applicant.

<u>Council Officer comment</u>

The comments above are noted. A number of the comments are specific in detail which would relate directly the draft site specific development control plan and / or a development application.

The key strategic planning issues that would be required to be addressed prior to submitting the Application to the Department of Planning and Environment for Gateway Determination are as follows:

- The Planning Proposal will be forwarded to the NSW Roads and Maritime Services for comment.
- To address the issues outlined in points 3 to 6 above, such as car and bike parking and detailed design of the access ways, a draft site specific DCP has be prepared by the Applicant. The draft site specific DCP will supplement the controls within the Fairfield City Wide DCP given the unique development and proposed varied floor space ratio across the site. Outstanding issues regarding carriage way width and road network have been addressed in the site specific DCP.
- Council's Traffic Engineers requested that the Applicant provide swept path diagrams to show that Council's waste service vehicles could manoeuvre inside the proposed internal access road. It was important that this be proven at concept plan stage as any change to the road network may impact dwelling numbers and configuration. The Applicant lodged swept path diagrams as additional information. The swept path diagrams where analysed by Council's waste service and traffic engineers and no further issues were raised.
- The Applicant provided the original traffic assessment supplied with the original, more dense proposal. This traffic assessment concluded that the surrounding road network and intersection at Links Avenue could accommodate the proposed density at that time and it was acceptable. It could not be justified to request the re analysis of trip generation at a much lower trip generation rate.
- Proposed parallel parking spaces close to the property boundary resulting in conflict between motorists entering/exiting from the development, and motorists trying to park in parallel parking spaces. This will need to be further addressed post exhibition and during the development application stage of the development.
- SIDRA files shall be submitted to assess the existing and proposed traffic conditions associated with the development for Cumberland Highway/Link Avenue intersection.
- It was advised by Council's traffic engineers that the Roads and Maritime Services (RMS) will not support the 10km/h speed limit for a public road as outlined in the pedestrian safety assessment. Therefore, the status of the proposed road whether private or dedicated to Council needs to be resolved. At this early stage it is anticipated that the road will remain privately owned.
- The Applicant has addressed the issue of vehicular circulation, waste access and dwelling separation by designing a development with two way access, which has been incorporated within the site specific DCP.

Further consultation and refinement of the site specific DCP may occur after the public exhibition stage.

Natural Resources

The Applicant submitted an ecological issue and assessment report and an ecological considerations report. The reports concluded that no ecologically endangered species or critically endangered wildlife existed onsite. The report did note that some vegetation onsite was listed as having a low Conservation Significance under Fairfield City Council's Biodiversity Strategy.

Council's Natural Resources Branch raised 15 matters to be resolved or discussed as part of the assessment.

Council Officer Comment

The matters raised by the Natural Resources team are within the scope of a development application. As a result, appropriate controls have been included within the draft site specific development control plan to facilitate compliance with the above matters.

Catchment Planning

The Applicant submitted a Flood Assessment Report prepared by ANA Civil P/L Rev 3. The report concluded that the site was not flood affected. Council's Catchment Branch agreed with this assessment.

Catchment Planning also noted that the proponent will be required to undertake On Site Detention (OSD) of stormwater as the development may result in overland flow issues to sites downstream of the development.

Council Officer comments

An indicative OSD plan was submitted by the Applicant on 5 November 2018. It is anticipated that the indicative location of OSD storage location can be resolved within the development application stage of the Proposal.

Further consultation and refinement of the site specific DCP regarding on-site detention may occur during the public exhibition stage.

Development Engineering

The Application was referred to Council's Development Engineering branch for comment. The major issue raised was in relation to the parking, access and manoeuvring of waste vehicles and safety of pedestrians within the development. Swept path analysis diagrams and a Traffic and Safety Assessment authored by Asongroup were provided as additional information.

The safety assessment concluded that the one-way nature of the system also provides an improved walking environment for pedestrians.

- Traffic is approaching from one direction only and therefore simplifies the 'awareness' required for pedestrians walking within the aisle;
- Wider roadway so that the vehicles can drive pass pedestrians more easily, and
- Provides opportunity of reduced carriageway widths (using landscaped blisters when clear of garages); reducing the crossing distance for pedestrians.

Council Officer comments

The Applicant has addressed the above issues by designing a development with two way access, which has been incorporated within the site specific DCP.

Waste Management

Council's Waste Management branch reviewed the Proposal's urban design report and concept plan and determined the following:

1. There will need to be significant number of garbage and recycling bins for collection. (ie. approximately 98 of 240L garbage bins and 86 of 240L recycling bins). There shall be sufficient space for bins to be presented at ground level for collection. This is critical for the residential flat building.
2. Design of internal road of one-way will create issues for waste collection, especially collecting from both sides of the road as side-loader truck can only collect from the left hand side of the truck. One-way road makes it impossible for collection with side-loader trucks.
3. The width of the road needs to be designed for big trucks.
4. The curve of the road need to be designed for big trucks to make turn. This can be done by following guideline in the MUD guideline published by the NSW EPA.
5. There shall be sufficient space for bulky waste to be presented and collected at kerbside of the internal road.
6. There should be a dedicated space for other recycling systems beside normal kerbside collection, such as separate bins for cloths, e-waste, house hold batteries, mobile phones.
7. Organic waste could be reduced by providing community garden within the area.
8. Townhouses should be designed to minimise noise from the internal road, especially noise from garage trucks during collection. Since the collection may be done in early morning.

Council Officer comments

The matters raised by the Waste Management branch are within the scope of a development application, however, the Applicant has addressed the majority of the above issues by designing a development with two way access, which has been incorporated within the site specific DCP

Further consultation and refinement of the site specific DCP regarding waste and waste vehicle access may occur during the public exhibition stage.

Strategic Land Use Planning

Strategic Land Use Planning required a number of issues be acknowledged in the Planning Proposal documentation prior to being forwarded to DPE for Gateway Determination, namely:

1. Addressing a "Metropolis of Three Cities – A vision to 2056" in the strategic merit test;
2. Addressing proximity to Heritage Item I11 "Red Gums";
3. Addressing Planning Priority W14 "Protecting and enhancing bushland and biodiversity"

Council Officer comments

The above points where addressed in the additional information package provided to council on 5 November 2018.

F. ASSESSMENT OF CONSISTENCY WITH MINISTERIAL DIRECTION UNDER SECTION 117

Planning Proposals are required to demonstrate consistency with Section 117 Ministerial Directions under the NSW Environmental Planning and Assessment Act and also satisfactorily justify any inconsistencies. The Planning Proposal document (**Attachment A**) contains a detailed review of the Proposal against all the relevant Section 117 Directions. Below is a summary of the key directions that are relevant to the Planning Proposal.

Direction 3. Housing and Urban Development, 3.1 Residential Zones

Aim of the Direction – This direction is relevant as it also applies to any zone in which significant residential development is permitted or proposed to be permitted. The direction aims to encourage a variety and choice of housing types to provide for existing and future housing needs and to make efficient use of existing infrastructure and services and ensure that new housing has appropriate access to infrastructure and services.

Assessment of Consistency – The site is proposed to be rezoned part R3 Medium Density Residential and part R4 High Density Residential. The Planning Proposal is consistent with this direction as it seeks to increase the residential density on the site which will make better use of infrastructure and proximity to services. The Planning Proposal will also increase the choice of building and housing types, in an area that is located close to transport, opens space, schools, services, and employment in Cabramatta, the Liverpool CBD and Fairfield.

Direction 3. Housing, Infrastructure and Urban Development, 3.4 Integrating Land Use and Transport

Aim of the Direction – This direction aims to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts achieve the following planning objectives:

a) Improving access to housing, jobs and services by walking, cycling and public transport, and
b) Increasing the choice of available transport and reducing dependence on cars, and
c) Reducing travel demand including the number of trips generated by development and the distances travelled, especially by car, and
d) Supporting the efficient and viable operation of public transport services, and
e) Providing for the efficient movement of freight.

Assessment of Consistency – The Planning Proposal will facilitate a medium to high density residential development to support the existing bus routes connecting the site, and improve access to housing, jobs and services by walking, cycling and public transport.

Direction 7. Metropolitan Planning, 7.1 Implementation of A Plan for Growing Sydney

Aim of the Direction - This direction aims to give legal effect to the planning principles; directions; and priorities for subregions, strategic centres and transport gateways contained in A Plan for Growing Sydney – A Metropolis of Three Cities.

Assessment of consistency – See a metropolis of 3 cities above.

G. ADDITIONAL CONSIDERATIONS

Incorporation of 4 Links Avenue and 22 Orange Grove Road

In an additional information letter to the Applicant on 25 October 2018 Council Officers stated that additional analysis should be undertaken to the possibility 4 Links Avenue and 22 Orange Grove being able to be redeveloped in the future. Further consideration should be undertaken as to the future potential of 4 Links Avenue and 22 Orange Grove Road.

As a result, Council Officers required the Applicant to provide a concept plan for 2 Links Avenue and 22 Orange Grove Road, Cabramatta, showing that the lots would not be affected by isolation and how they could be redeveloped in the future should the land owners choose to do so. This concept shows that should the land owners seek to pursue a redevelopment and planning proposal in the future, they could achieve redevelopment in isolation.

Removal of additional permitted use applying to the site

Currently additional permitted use for the purpose of Multi Dwelling Housing applies to the site. It is recommended that as part of this proposal the additional permitted use be removed as multi dwelling housing is a permissible use under the R3 Medium Density Residential and R4 High Density Residential zone of Fairfield LEP 2013.

H. SITE SPECIFIC DEVELOPMENT CONTROL PLAN

As outlined earlier in this report, the Fairfield Local Planning Panel recommended that a site specific DCP be prepared to accompany the Planning Proposal.

The site specific DCP has been prepared address the issues outlined by the FLPP and the relevant internal stakeholders.

The site specific DCP responds to the issues raised and provides objectives and development controls as listed below:

- Site design and layout
- Building height (storeys)
- Building separation and setbacks
- Residential flat building design
- Development controls for multi dwelling housing
- Vehicular and pedestrian access
- Parking
- Traffic noise attenuation
- Tree protection
- Solar access and natural ventilation
- Communal and private open space
- Mix of units
- Units per site area
- Cut and fill
- Indicative concept plans

It is noted that further refinement of the site specific DCP may be required post exhibition depending on the nature of submissions received from relevant internal Council stakeholders/subject matter experts and external resident and land owner submissions.

Should the Planning Proposal receive a favourable Gateway Determination, it is recommended that the draft site specific DCP be publicly exhibit concurrently with the planning proposal.

NEXT STEPS

Subject to Council's endorsement to the recommendations to this report, the Planning Proposal included in **Attachment A** would be referred to the DPE requesting a Gateway Determination.

If the Department is satisfied with the contents of the Planning Proposal, it is anticipated that Council would be issued with a Gateway Determination in approximately 2-3 months' time authorising public exhibition of the document.

Following issue of the Gateway Determination, the Planning Proposal would be placed on public exhibition concurrently with the draft site specific DCP.

CONSULTATION STRATEGY

Generally, public exhibition of a Planning Proposal of this significance and scale will be required for a minimum statutory period of 28 days and would involve:

- Notification to landowners both within and directly adjoining the land affected by the Planning Proposal;
- Notice in the local newspaper;
- Publication of all relevant information on Council's website; and
- If the timing coincides with statutory public exhibition, information on the Planning Proposal will be included in a future edition of Council's newsletter CityLife.

The Gateway Determination will also require Council to undertake consultation with a number of State Government Agencies and utility providers.

Following public exhibition, a report will be presented to Council to consider the outcomes of the public exhibition, including submissions received as a result of public exhibition and consultation with the State Agencies and utility providers.

In addition to the above, delegated authority for Council to finalise the Planning Proposal will be requested given that Council does not own any land subject to the proposal. If delegation is granted, the finalisation process will be undertaken by Fairfield City Council.

CONCLUSION

As a result of the assessment undertaken above, Council Officers support the Planning Proposal subject to the matters discussed above being resolved post Gateway Determination. It is recommended that Council support the Planning Proposal for 400-404 Cabramatta Road West, Cabramatta as outlined in this report.

Once the matter has been considered by Council, the Planning Proposal will be forwarded to the Department of Planning and Environment to proceed for Gateway Determination.

A further report will be submitted to Council at the conclusion of the public consultation period.

Patrick Warren
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Authorisation:
Manager Strategic Land Use & Catchment Planning
Group Manager City Strategic Planning

Outcomes Committee - 12 March 2019

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***** END OF ITEM 15 *****