ATTACHMENTS.

Special Council Meeting

19 June 2018

Part 2 of 4

City of South Perth

D-18-51740

HILLAM ARCHITECTS

Hillam Architects
1/15 Roydhouse St
Subiaco WA 6008
08 6380 1877

City of South Perth
Folder No. 11.2017.409.1
18 MAY 2018
☐BS ☐CE ☐EH ☐CCR ☐GBLC
☒PS ☐CC ☐GA ☐CEO ☐MAYOR
☐FS ☐EI ☐HR ☐RAN ☐

16 May 2018

ATTN: Mr Stevan Rodic
Manager Development Services
City of South Perth

Dear Stev,

RE: MINOR AMENDMENTS TO DAP APPLICATION 11.2017.409.1
– Lots 2-20 (72-74) Mill Point Road, South Perth

As you are aware, at mediation 15 May 2018, the State Administrative Tribunal (SAT) invited the Respondent to reconsider its decision, on or before 26 June 2018. In order to meet this tight timeframe, it was agreed that our revised documentation would be submitted to the City and filed with the SAT 17 May 2018. Please find enclosed a full set of revised plans and supporting documents.

The proposed changes to the development application specifically address the concerns of JDAP and the reasons for refusal listed at the determination meeting 7 March 2018. The amendments have been made in compliance with the provisions of Amendment 46 and Schedule 9A of the Town Planning Scheme and do not substantially deviate from the previous development application. The changes specifically reduce the height of the development, removing 7 levels of residential apartments and the associated parking. Modifications have been made to the ground and level 4 to further improve local and wider community benefit. No modifications have been made to the setbacks of the proposed development.

A summary of revisions are listed below:

a. Building Height

This has been reduced over 20 meters by removing 7 residential levels from the tower component of the development. The resulting apartment yield has been reduced by 23 apartments (3,700m² of residential plot ratio) however the overall mix of apartment sizes has remained proportionality similar to the previous application. It should be noted that the bulk, form, facade design and setbacks of the tower have not changed as the levels have been reduced.

ABN 83 115 057 371 **ACN** 115 057 371

D-18-51740

HILLAM ARCHITECTS

Hillam Architects
1/15 Roydhouse St
Subiaco WA 6008
08 6380 1877

b. Car Parking & Vehicle Management

The reduced residential component has resulted in the omission of basement level 2 and 37 parking allocations. Notwithstanding the City's latest traffic modelling results, it should be noted that the amended parking provision is completely compliant with the Vehicle Management provisions of Table B and only improves the traffic impact caused by the proposed development.

c. Community Benefits

The outdoor area at the ground floor provided for public use has been developed with Landscape Architects, CAPA to demonstrate a more substantial benefit to the community. A detailed landscape report has been included with this submission that articulates how both amended hard and soft scape elements provide an active interface with the built form and encourage the public into the development.

Of particular importance is the new 197m² public garden terrace on Level 4 (top of podium) which will be open daily for public access via the commercial lift lobby. This will incorporate a pop-up 'health café' with open access to a luxurious landscaped terrace with integrated seating, shade elements and planting.

The amended level 4 design also includes a 90m² commercial gym for public use with associated changing rooms and outdoor area. To compliment the gym and outdoor gardens, a 96m² public health spa is also planned on this level. This facility would offer relaxation, rejuvenation and energising treatments, designed to cater for men and women.

The applicant believes these facilities will work well in conjunction, offering both local and wider communities deluxe, high-end facilities that are not currently available within the precinct.

In combination with the community benefit facilities already proposed, the proposal now comprehensively addresses and exceeds the Local and Wider Community Benefit requirements.

We acknowledge the City, in its preceding Responsible Authority Report mainly supported our application with the exception of Performance Criterion 3, Vehicle Management not being satisfied. Supplementary information has since been

ABN 83 115 057 371 ACN 115 057 371

D-18-51740

HILLAM ARCHITECTS

Hillam Architects
1/15 Roydhouse St
Subiaco WA 6008
08 6380 1877

provided by the City's Network Operations Coordinator regarding an improved, optimised signal timing (refer to enclosed Technical Memorandum *South Perth – 74 Mill Point Road Traffic Signal Optimisation* 04/05/18). This report concludes the proposed development 'only contributes to minor delays' and 'the optimised signal phasing and intersection modifications result in substantial improvement to the network performance.' In light of this modelling and the reduced parking component reflected in the latest plans, we kindly ask that the City recommends this amended development application for approval.

Should you seek any further information please do not hesitate to contact us on (08) 6380 1877 or tom@hillam.com.au otherwise we look forward to your comments and support.

Yours Sincerely,

Tom Letherbarrow

Director
Hillam Architects

ABN 83 115 057 371 ACN 115 057 371

HILLAM
ARCHITECTS

DEVELOPMENT APPLICATION

PROPOSED MIXED-USE DEVELOPMENT
REVISION A

74 MILL POINT RD, SOUTH PERTH
MAY 2018

CONTENTS

1.0 INTRODUCTION

1.0 DEVELOPMENT APPLICATION

This report forms the Development Application in support of the proposed 28 storey mixed use development at 74 Mill Point Road, South Perth within the Mends Sub-Precinct.

The proposed development comprises of a large ground floor café, community meeting facilities, consulting rooms, commercial offices, serviced apartments and residential apartments together with a shared resident's pool terrace and an amenity area featuring lounge, cabana, gymnasium and pool. The development also features a public health spa, garden terrace, pop up health cafe and gym on Level 4 for the surrounding community to enjoy.

This report accompanies the design drawings and details the proposed development addressing relevant planning issues in relation to City of South Perth Town Planning Scheme No.6 with particular reference to Schedule 9A: Special Control Area SCA1- South Perth Station Precinct.

Hillam Architects have met with planning staff so as to understand council's aspirations for the precinct. Edge Visionary Living and Hillam Architects are adept to deliver an excellent project which we believe will become a benchmark for future developments in the precinct. Further to meetings with council, we have met with traffic and waste consultants to ensure these important functions are well handled with minimum impact on the streetscape.

1.1 SITE INFORMATION & PLANNING DATA

Address	74 (recently changed to 72) Mill Point Road
Developer	Edge Holdings Number 6 (Edge Visionary Living Pty Ltd)
Architect	Hillam Architects
Local Council	City of South Perth
Site Area	1827m2
Zoning	Mixed-Use
R-Coding	R100
Plot Ratio	Unlimited
Boundary Setback	As per Schedule 9A of City of Perth Town planning Scheme Ammendment 46.
Building Height	Refer to Element 5.1 of Table A, Schedule 9 of City of Perth Town Planning Scheme Ammendmanet 46.
Finished Floor Levels	Various; refer Architects Drawings in Appendix
Access & Service	Refer to Planning Requirements Section

1.2 DESIGN SUMMARY

Hillam Architects is a progressive design practice dedicated to achieving excellence in architecture.

In the design of the commercial spaces and apartments for 74 Mill Point Road we believe the project will enhance the public domain and streetscape, whilst providing a range of dwelling sizes and costs in a desired location that is close to the river, city and major transport infrastructure.

In keeping with the requirements of the South Perth Special Control Area 1, the proposed design is intended to embody the objectives set out in the South Perth Station Precinct Scheme Amendment 46.

We note the key objectives of Amendment 46 are:

(a) promote:

- (i) a diverse range of land uses within the precinct to provide greater employment self-sufficiency in the City and patronage for a future 'destination' rail station;
- (ii) more intensive non-residential land use in developments to ensure the precinct consolidates its role as an employment destination; and
- (iii) increased residential population;

(b) create a precinct that offers commercial office space, cafés, restaurants, hotels and tourist accommodation;

(c) preserve portions of the precinct for predominantly residential, retail and office uses, as appropriate, by the creation of sub-precincts;

(d) create a high quality inner-city urban character;

(e) promote a high level of pedestrian amenity with active street frontages to create a liveable and accessible environment for visitors and residents;

(f) allow buildings designed to maximise river and city views while maintaining view corridors;

(g) permit additional building height within the Special Design Area in return for meeting all relevant requirements of Table A and all Performance Criteria in Table B; and

(h) preserve and protect the integrity of heritage places within the precinct.

The project consists of some 89 one, two, and three bedroom apartments of varying designs and sizes. In addition to the residential component, meeting rooms, offices, public health spa and gym and serviced apartments will provide the non-residential plot ratio required to comply with the requirements of the City's Town Planning Scheme.

The proposed development is also provided with 166 parking allocations including one disabled bay to meet the requirements of Table B.

1.2 DESIGN SUMMARY (CONT'D)

Significant points of interest are:

Design Quality

The vision for the project is to provide the high quality of building design demonstrated in other apartment projects designed by Hillam Architects. The highly articulated building form coupled with a diverse range of materials will be a positive addition to the streetscape.

Compliance

Element 3 of Schedule 9A outlines that there is no maximum plot ratio within the precinct offering more flexibility in terms of open space, building setbacks and height than those prescribed by the R Codes. The proposed development therefore reflects the development controls and performance criteria outlined in Schedule 9A.

Diverse Housing

The provision of 89 residential apartments and 16 serviced apartments in this location is an excellent outcome given the dwelling targets set out in the State Government's 2031 Policy. There are three typical residential floor plate designs with varying mixes of apartments types incorporated into the design with an additional penthouse level. The inclusion of one and two bedroom apartments provides a diverse range of affordable housing options. The development also contains 50 three bed apartments of varying sizes that further expands the diversity and cost range of the unit mix.

Sustainability

Hillam Architects have an excellent track record in providing highly sustainable apartment buildings. Hillam designed Verde Apartments in East Perth to set a new benchmark in sustainable design and have maintained a strong focus on sustainability and energy efficiency on all projects ever since. Various progressive systems are proposed to ensure appropriate and practical sustainable outcomes are provided for this proposed development and it is the intention of the applicant to achieve equivalent 5 Green Star rating as outlined in the letter of intent and sustainability strategy attached.

1.3 PROJECT SUMMARY

The application seeks approval for a 28 storey mixed used development comprising 89 residential apartments, with parking provided on one basement level, ground, mezzanine, first, second and third levels. The proposed design provides good mix of apartment types with a primary focus on providing a diverse range of housing that is also affordable. In addition to the residential component there are also 16 serviced apartments, meeting rooms, consulting rooms, offices and a large café at ground floor.

Careful attention has been given to comply with the Performance Criteria outlined under Table B of Schedule 9A in order to achieve additional height and plot ratio. The proposed development has an overall height and plot ratio greater than that outlined under the City's Table A: Development Controls, however we ask these variations are supported by council considering the compliance with Table B.

In summary the proposed design consists of:

- One level of basement providing residential stores, services and residential parking bay allocations.

- Ground floor consists of a proposed café, a community meeting room, commercial and residential lobbies, bicycle storage, end of trip facilities, mail room, fire pump room, fire tanks, bin store and services.

- Levels 01 has a community consulting tenancy that offers a wider community benefit. This suite faces Mill Point Road with residential and non-residential car parking allocations configured behind.

- Level 2-3 has commercial offices fronting Mill Point Road with residential and car parking allocations configured behind

- Level 04 has 4 serviced apartments and also features a public Health Spa, Gym, and garden terrace for the surrounding community to enjoy.

-Levels 05 and 06 have 12 serviced apartments (combined) configured with generous balconies.

- Levels 07 - 17 are comprised of 55 residential apartments varying between 71 - 151sqm.

- Level 18 comprises of communal amenities for the building's residents. A large gym, sauna, pool and sun deck promote exercise and healthy living. Further, the applicant is willing to open paid gym membership to general public in response to the Government Architect's previous recommendation. There is also a generously sized resident's lounge and theatre room. The dining area has BBQ and cooking facilities both inside and out. These amenities are coupled with carefully designed, hard and soft landscaping to offer a break in the building form and help articulate the elevation.

- Levels 19 - 23 are comprised of 20 residential apartments varying between 108 - 432sqm.

- Levels 24 - 26 are comprised of 9 residential apartments that range between 124 - 216sqm.

- Level 27 comprises of a sub-penthouse level containing two apartments.

- Level 28 comprises of the upper penthouse level containing two apartments and high ceilings to capture the spectacular views of Perth.

There are 13 unit types across the development, refer to the adjacent summary of apartment mix table for a breakdown of type. The areas of these apartments vary significantly providing for both entry level and high end apartment buyers with many options which are both affordable and also of higher amenity.

Mix	Apt. Numbers	Percentage	Percentage>/ +200sqm
1 x 1 (>/=45sqm)	22	25%	
2 x 2	17	19%	
3 x 2 (</=200smq)	40	45%	
3 x 2 (>/=200smq)	10		11%
Total	89	89%	11%
		100%	

Table 1.1 Summary of Residential Apartme ts mix.

Level	Comm. Tenancy	Serviced Apt.	Total Area (sqm)
Ground	2		11
Level 1	1		1
Level 2	1		5
Level 3	1		3
Level 4	2	4	0
Level 5		6	0
Level 6		6	
Total	7	16	

Table 1.2 Summary of Commercial and Serviced Apartments.

2.0 SITE PLANNING

2.1 SITE CONTEXT

Figure 2.1 Transport Orientated Development (T.O.D)

The proposed development is situated within the northern boundary of the Special Control Area SCA1- South Perth Station Precinct. The site is directly accessed off Mill Point Road and a rear adjoining access way that connects through to Frasers Lane. The site has a land area of 1827m² with a significant street frontage to Mill Point Road. There were seven double storey brick townhouses on the site that don't contribute to The City's aspirations of lively street frontages and a 'thriving inner-city precinct.'

The site is ideally situated one block back from the South Perth peninsula foreshore. Only two kilometres across the Swan River from the Perth CBD it is well serviced by an excellent transport network including the freeway, bus and ferry links. The site also has the potential to benefit from planned future railway station at Richardson Street.

Adjoining properties are medium density residential and mixed use tenancies. With the objective to increase the residential population of the precinct, taller mixed use towers have recently received development approvals within close proximity. Previous versions of the design for 74 Mill Point Road were approved in May 2015 and October 2016 respectively, which received a strong market response confirming the demand for well-designed apartments. The latest development proposal aims only to improve on the previous versions.

Figure 2.2 Location Pla

LOT	VOLUME / FOLIO	AREA	LAND OWNER
2, 3	1549 / 135	354 sqm	Edge Holdings No.6
4, 5, 6	1515 / 593	247 sqm	Edge Holdings No.6
7, 8, 9	1581 / 910	218 sqm	Edge Holdings No.6
10, 11, 12	1549 / 133	254 sqm	Edge Holdings No.6
13, 14, 15	1581 / 909	272 sqm	Edge Holdings No.6
16, 17, 18	1548 / 700	272 sqm	Edge Holdings No.6
19, 20	1581 / 907	411 sqm	Edge Holdings No.6
TOTAL		2028 sqm	

Table 2.1 Lot Owners

2.0 SITE PLANNING

2.2 CONTEXT ANALYSIS PLAN

2.0 SITE PLANNING

Image 2.1 Mill Point Road frontage viewed from the South-West corner of the subject site.

Image 2.2 View south down right-of-way at east of subject site.

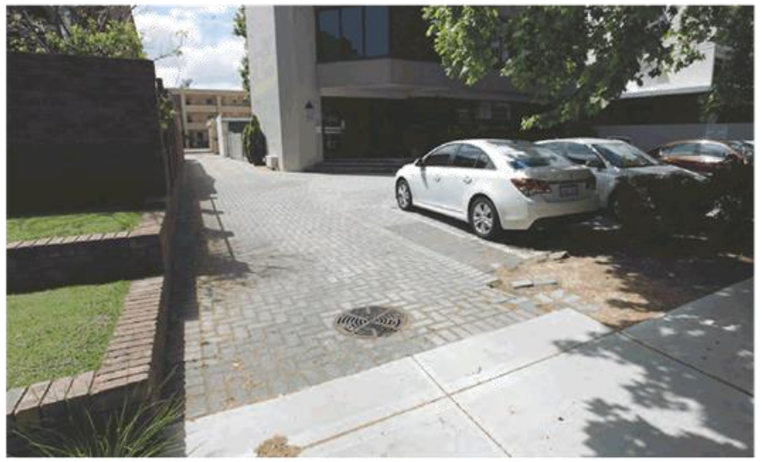


Image 2.3 Existing ehicle crossover and adjacent property to the south of the subject site.

Image 2.4 Existing adjace t property to the East of subject site.

2.3 DESIGN RESPONSE

Our design responds to the proposed identity for the precinct with a twenty eight storey mixed use tower that contains the residential and commercial entries, commercial tenancies, access to on grade parking and three levels of upper parking.

Surrounding development is generally medium density commercial and residential of varied architectural merit. The intent for the redevelopment of the South Perth Station Precinct is for mixed office and residential uses to cater for the increased residential population and provide greater employment self-sufficiency in the City. The proposed design represents an excellent opportunity to set a benchmark for a very high standard of design within the Precinct; that would also serve as a catalyst for future redevelopment elsewhere.

Streets and right-of-ways adjacent to all boundaries, mean the building has good access to natural light and ventilation. Further, the design of residential units being set back and placed above the podium create generous distances from existing and potential developments that enhances privacy and retain views. The height and position of the majority of the apartments will allow views to the Swan River and CBD with a wide northern aspect.

Access to the development's car and bicycle parking is from the southern corner of the site, directly off Mill Point Road. This allows for maximum activation of street frontage along Mill Point Road with residential and commercial lobbies along with a significant café and alfresco seating.

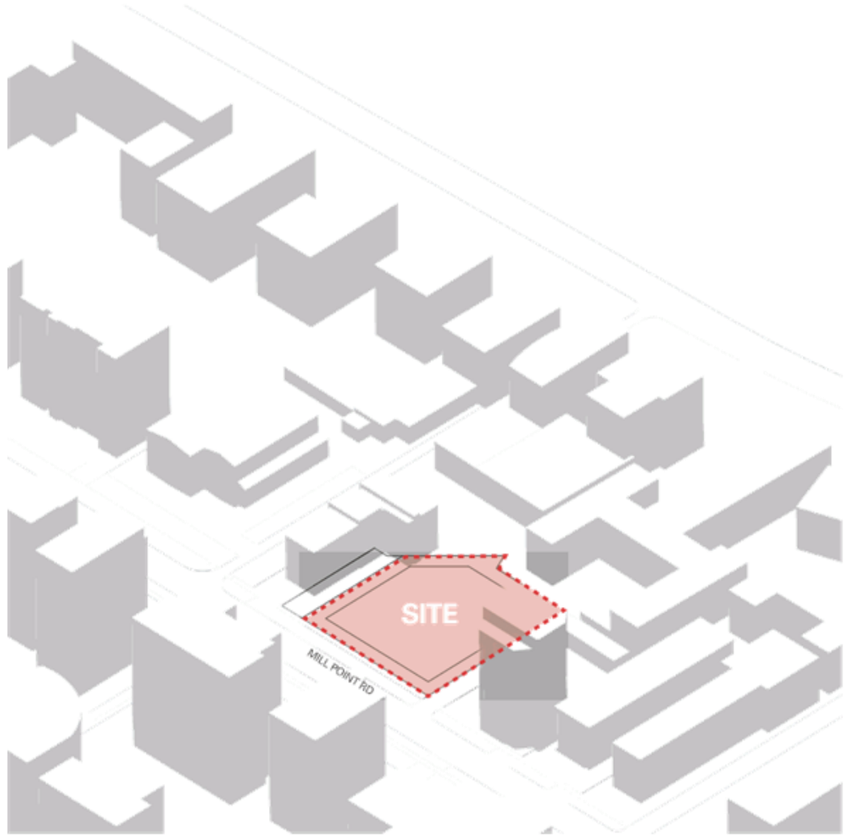
The design acknowledges the existing footpath along Mill Point Road and it is intended that existing concrete crossovers are made good and incorporated into the adjacent concrete footpath. The café fronting Mill Point Road has been articulated to give an expansive al fresco area with associated landscaping to benefit the community and is set back to encourage public use.

The existing block paved driveway to the south of the site is currently 3m wide and provides vehicle access through to Frasers Lane. The proposal will improve and upgrade this vehicle access way by widening the road to 6 meters, allowing a free flow of traffic into and around the development.

Preliminary sketch of the development

2.0 SITE PLANNING

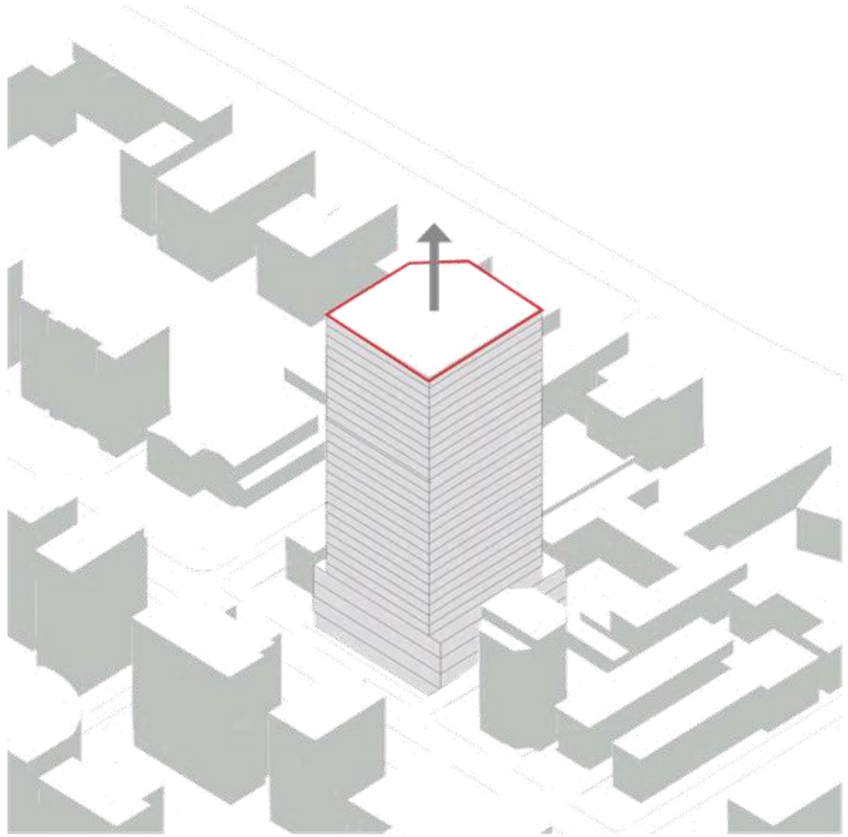
2.4 DESIGN PROCESS



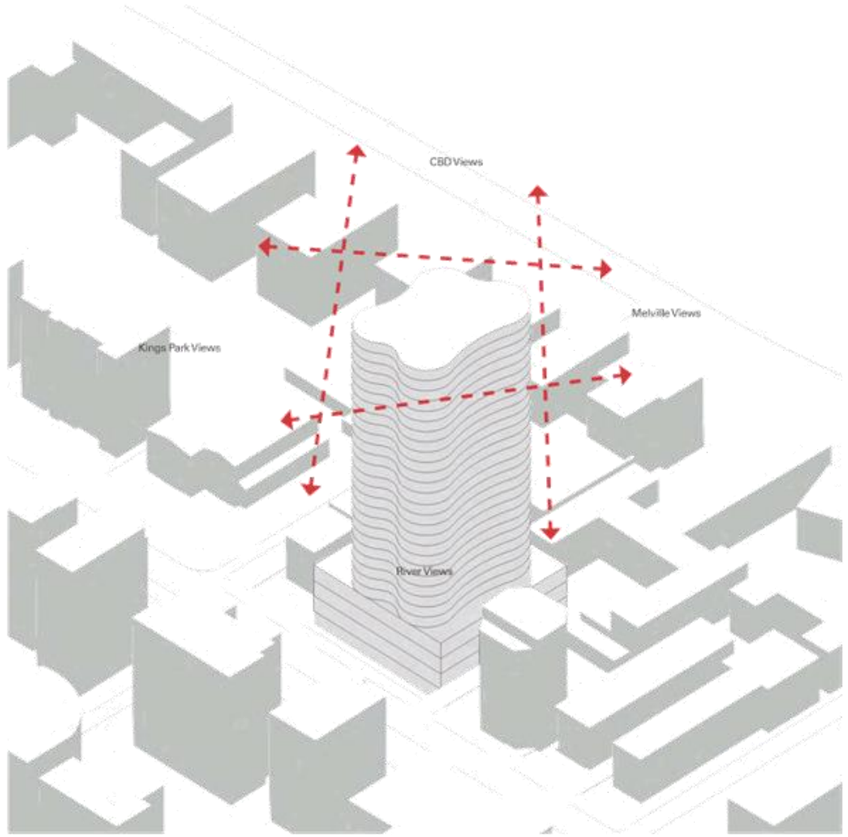
A SITE IS LOCATED AT 74 MILL POINT RD, SOUTH PERTH. THE SITE AREA IS 1827m². THE DEVELOPMENT HAS SIGNFICANT STREET FRONTAGE TO MILL POINT RD AND IS IDEALLY LOCATED 1 BLOCK BACK FROM THE SOUTH PERTH PENINSULA FORESHORE.

B MAXIMUM BUILDING ENVELOPE COMPLYING WITH THE PRECINCT GUIDELINES (SCHEDULE 9A, PLAN 3 BUILDINGS HEIGHTS)

2.4 DESIGN PROCESS

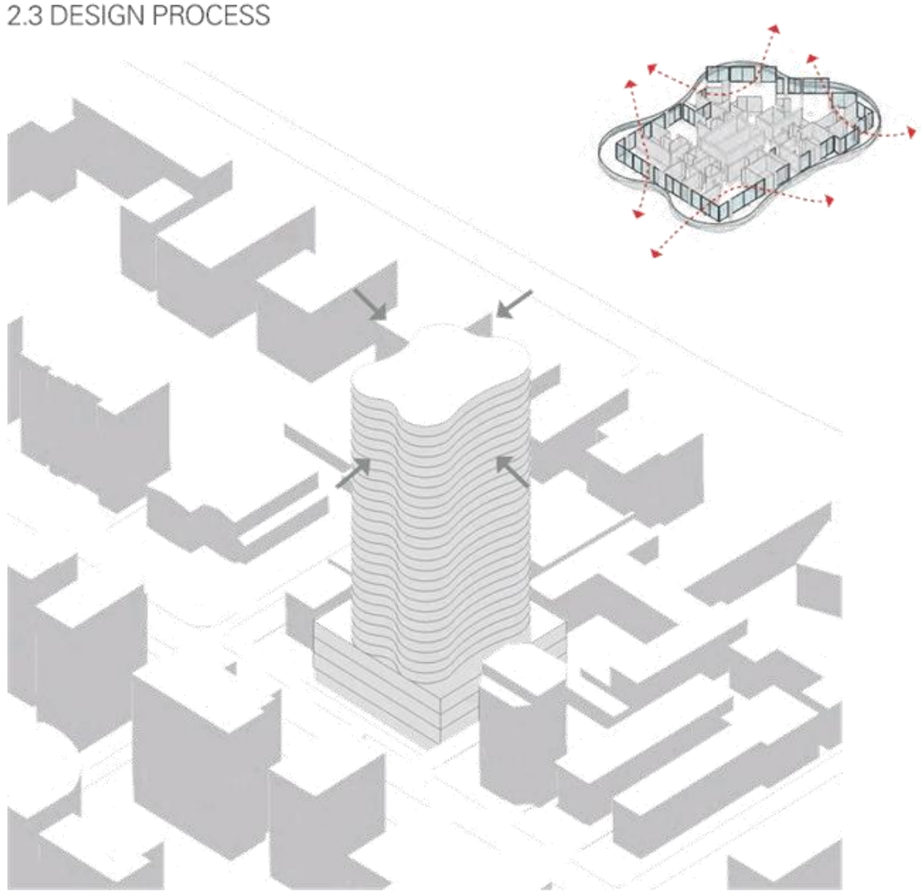


C GIVEN THE SITE'S LOCATION WITHIN THE SPECIAL DESIGN AREA, THERE IS NO LIMIT ON HEIGHT PROVIDED THE BUILDING SATISFIES THE PERFORMANCE CRITERIA SET OUT IN TABLE B.



D THE DEVELOPMENT IS FILLETED AT THE CORNERS TO IMPROVE VEIW CORRIDORS OF NEIGHBOURING BUILDINGS. DOING SO REDUCES THE BUILDING'S PERCEIVED BULK & SCALE. REFER TO SECTION 4.4.

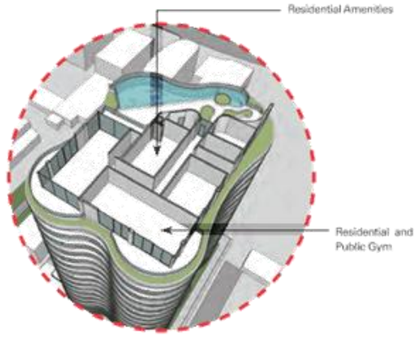
2.3 DESIGN PROCESS

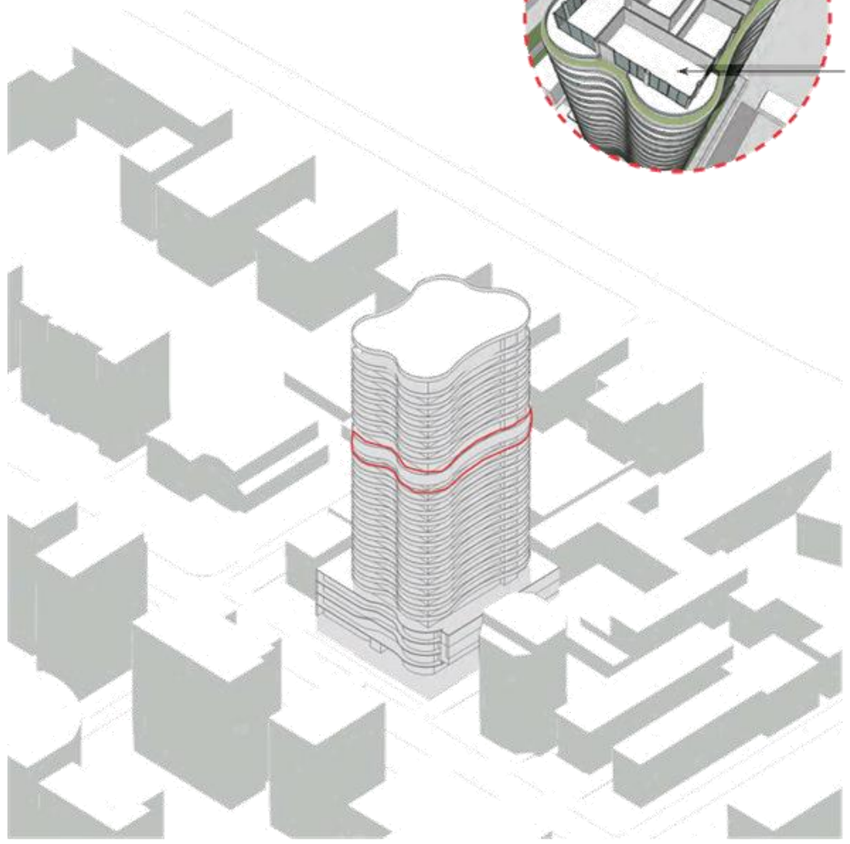


E THE BUILT FORM IS SOFTENED WITH A SERIES OF SWEPPING CURVES. THERE ARE EXPANSIVE VIEWS IN VIRTUALLY ALL DIRECTIONS. IN ADDITION, THESE DEEP CURVES REDUCE THE OVERSHADOWING, WITH INCREASED BUILDING SETBACKS. THE ARTICULATION OF THE FLOORPLATE ALSO IMPROVES CROSS-VENTILATION.

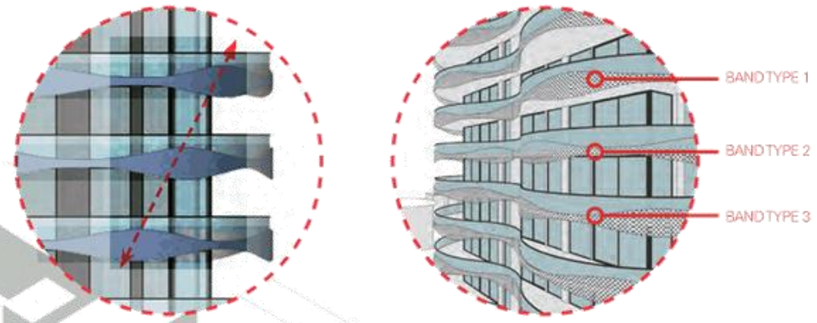
F THE CORNER OF THE SITE IS CONFIGURED BY PULLING THE TOWER TO THE GROUND. DOING SO GROUNDS THE ARCHITECTURE AND HELPS ESTABLISH A RELATIONSHIP BETWEEN THE TOWER AND THE GROUND PLANE, WHILE RESPECTING THE 4M FRONT SETBACK REQUIREMENT. THE TOWER HAS BEEN CAREFULLY ARTICULATED TO MERGE WITH THE LOWER PODIUM LEVELS AT THE FRONT FACADE. SHOWN IN GREEN IS THE SPACE THE DEVELOPMENT GIVES BACK TO THE PUBLIC REALM.

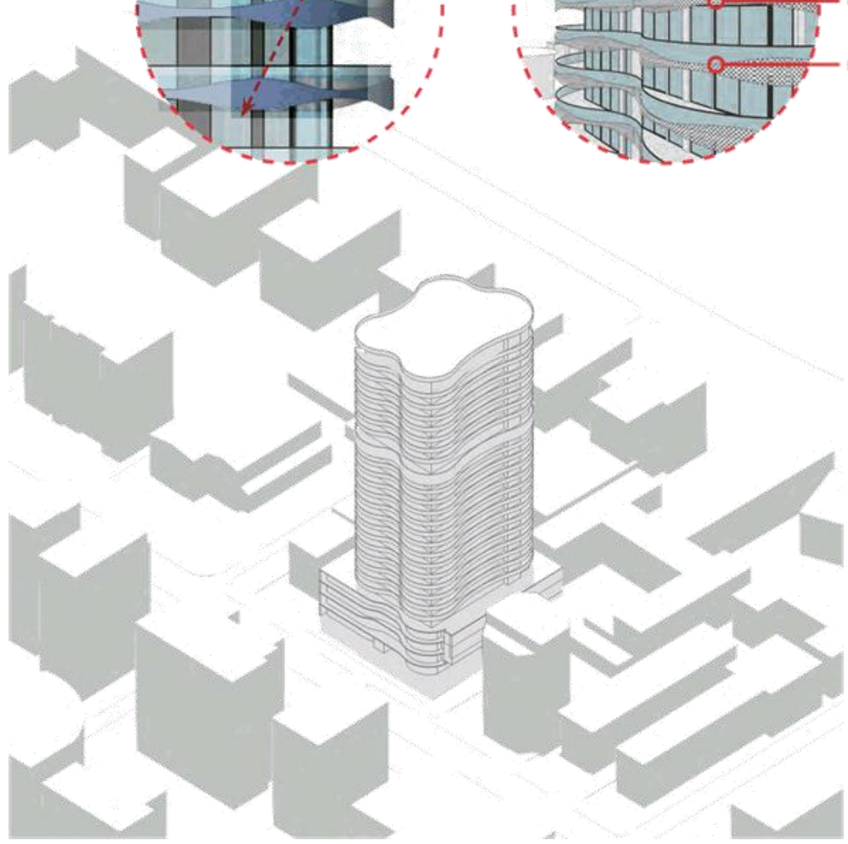
2.3 DESIGN PROCESS





G THE VERTICAL MASS OF THE BUILDING IS BROKEN BY A DOUBLE-HEIGHT AMENITIES DECK. FROM HERE, RESIDENTS WILL BE ABLE ENJOY PANORAMIC VIEWS OF THE RIVER, THE CBD AND SURROUNDS.





H THE FACADE IS FURTHER ARTICULATED BY A PERFORATED METAL SCREENING. THE SWEEPING CURVES OF THE BALUSTRADE ELEMENTS CREATE MOVEMENT ACROSS THE ELEVATION.

2.3 DESIGN PROCESS

A FLUID DESIGN PROVIDES UNIQUE VISUAL INTEREST AND COMPLIMENTARY ARCHITECTURAL LANGUAGES BETWEEN THE PODIUM AND TOWER.

3.0 PERFORMANCE CRITERIA

3.1 RESPONDING TO TABLE B

The proposed development pays close attention to Table B: Performance Criteria of Schedule 9A in the City's Town Planning Scheme. Particular care has been made to comply with each outlined design consideration and there are many references back to this performance criteria within the body of this report A detailed summary is listed below:

Design Consideration	Performance Criteria	Proposed Development Response	
1. **Design Quality**	(a) In the opinion of the Council or other responsible authority, the architectural design of the proposed building is exemplary, sensitive and sophisticated, contributing to the high quality of the inner urban environment being promoted for the precinct.	✓	(Refer to Section 3.3 Design Quality)
	(b) In arriving at the opinion referred to in (a), the Council, or other responsible authority, shall: (i) have due regard to the advice of its nominated Design Review Panel or any other suitably qualified consultants appointed for the purpose of advising on building design; (ii) be satisfied that the proposed building – (A) exhibits exemplary levels of architectural design quality, as defined by any policy or guideline of the Western Australian Planning Commission relating to architectural design quality; (B) delivers a high level of amenity within the public realm by: (I) being of a scale along the street alignment which is conducive to creating a comfortable pedestrian environment; (II) allowing for appropriate levels of sunlight penetration into key pedestrian and public spaces; (III) minimising adverse wind impacts; and (IV) minimising impact on adjoining properties, maximising space between existing and potential future development on adjoining sites and contributing to an attractive skyline and outlook from the public realm within the South Perth Station Precinct and surrounding vantage points; and (C) delivers a high level of amenity within buildings by providing for appropriate natural light access, natural ventilation, privacy and outlook; and	✓	(Refer to Section 3.3 Design Quality)
	(iii) be satisfied that the Design Review Panel has had due regard to all relevant Development Requirements and Guidance Statements in Table A that apply to the precinct.	✓	(Refer to Section 3.3 Design Quality)
2. **Overshadowing**	Shadow diagrams at noon on 21 June, are to be submitted demonstrating that the shadow cast by the portion of the proposed building above the Building Height Limit, does not cover more than 80 percent of any adjoining lot.	✓	(Refer to Section 3.4 Overshadowing & Appendix B – Architectural Diagrams).
3. **Vehicle Management**	A traffic engineer is to conduct a study of the additional traffic resulting from a building height variation above the height limit shown on Plan 3 'Building Heights' in Schedule 9A. The study is to assess the impact on traffic flow and safety, taking into account the cumulative effect of additional floor space above the Building Height Limit in: (a) the proposed building; and (b) all other buildings in SCA1 for which a building height variation has been granted, and a building permit has been issued, whether or not construction has been completed. A report on the findings of the traffic study is to be submitted with the development application verifying, to the satisfaction of the Council, that the cumulative increase in traffic resulting from the increased building height relating to buildings referred to in paragraphs (a) and (b) will not have significant adverse impacts on traffic flow and safety.	✓	(Refer to Appendix E - Consultant's Traffic Report).
4. **Car Parking**	The maximum permissible number of on-site parking bays for residential uses is as follows: (a) 1 car bay per dwelling for occupiers of 1 and 2 bedroom dwellings; (b) 2 car bays per dwelling for occupiers of dwellings containing 3 or more bedrooms.	✓	(Refer to Table 6.5 Carbay Breakdown).
5. **Sustainability**	In order to demonstrate excellence in sustainable development, the building is to achieve a 5-star rating under the relevant Green Star rating tool, or an equivalent rating tool.	✓	(Refer to Appendix G - Sustainability Consultant's Letter of Intent and Greenstar Pathway Report).
6. **Electric Car Charging Station**	An electric car charging station with capacity to recharge 6 vehicles simultaneously.	✓	(Refer to Appendix A - Ground Floor Plan).
7. **Landscaped Area**	Landscaped area comprising not less than 40% of the area of the development site. Components of the landscaped area may include ground level landscaping, planting on walls, landscaping on the roof of the podium, rooftop terraces or gardens.	✓	(Refer to Appendix D - Landscape Architects Report).

3.0 PERFORMANCE CRITERIA

8. **Benefits for Occupiers & Local Wider Communities**	**Occupier Benefits** **(a)** Each dwelling incorporates at least one balcony with a minimum floor area of 15 sq. metres and a minimum dimension of 3.0 metres not including any planter box constructed as part of the balcony, At least 50% of dwellings having access to at least 2 hours of sunlight on 21 June.	✓ ✓	(Refer to Appendix A - Architectural Plans). (Refer to Section 7.2 Solar Access/Shading & Appendix A - Architectural Plans).
	(b) A minimum of 10% of the residential units, rounded up to the next whole number of dwellings, are to have an internal floor area of 200 sq. metres or more.	✓	(Refer Table 1.1 Summary of Residential Apartment Mix. & Appendix A – Architectural Plan)
	(c) The parking bays allocated to a minimum of 20% of the total number of dwellings, rounded up to the next whole number of dwellings, shall be not less than 6.0 metres in length and 3.8 metres in width.	✓	(Refer to Table 6.1 Carbay breakdown & Appendix A - Architectural Plans).
	In addition, those dwellings are to incorporate the following core elements, designed to the 'Silver Level' of the *'Livable Housing Design Guidelines'* produced by Livable Housing Australia: i) a safe, continuous and step-free path of travel from the street entrance and / or parking area to a dwelling entrance that is level; (ii) at least one step-free, level entrance into the dwelling; (iii) internal doors and corridors that facilitate unimpeded movement between spaces; (iv) a universally accessible toilet on the ground or entry level; (v) a bathroom which contains a step-free shower recess; (vi) reinforced walls around the toilet, shower and bath to support the safe installation of grab rails at a later date; and (vii) a continuous handrail on one side of any stairway where there is a rise of more than 1 metre.	✓	(Refer to Appendix A - Architectural Plans). (Detail to be confirmed in Design Development).
	(d) At least 50% of the dwellings are to be designed to provide: (i) effective natural cross-ventilation; and (ii) significant views from more than one habitable room window or balcony, each being located on a different elevation of the building.	✓ ✓	(Refer to Section 7.3 - Cross Ventilation Principles & Appendix A - Architectural Plans).
	Local Community Benefits (e) Viewing corridors to enable as many as possible of the occupiers of neighbouring buildings to retain significant views.	✓	(Refer to Section 4.4 Views & Vistas).
	(f) One or more facilities such as a meeting room, boardroom, lecture theatre, function room, available for use by external community groups or individuals, or external businesses.	✓	(Refer to Appendix A - Architectural Plans).
	(g) Public access to the building, terraces or gardens at ground level, or on the roof of the podium or tower, for leisure, recreational or cultural activities such as, among others: (i) Café/Restaurant; (ii) Cinema/Theatre; (iii) gymnasium; (iv) a dedicated room for use as a community exhibition gallery for display of artworks or for other exhibitions; or (v) an outdoor area designed for public entertainment performances.	✓	(Refer to Appendix A - Architectural Plans).
	Wider Community Benefits (h) A commercial use with wider community benefits such as Child Day Care Centre, after school care centre, Consulting Rooms, Educational Establishment, or other use having wider community benefits.	✓	(Refer to Appendix A - Architectural Plans).
	(i) Visiting cyclists' end-of-trip facilities including secure bicycle storage facilities, change rooms, clothes lockers and showers, for use by visitors to the proposed building.	✓	(Refer to Appendix A - Architectural Plans).

3.0 PERFORMANCE CRITERIA

3.2 MINIMUM LOT AREA & FRONTAGE

The development site is to have a minimum area of 1700m2 and a minimum lot frontage of 25 metres unless otherwise approved by the Council as a minor variation.

The developer, Edge Holdings No. 6 acquired 2 adjacent lots (Lots 2 & 5, 74 Mill Pont Road) to the north of the existing site. This offers a unique opportunity for the applicant to amalgamate the lots and increase the overall site area to 1827sqm and increase the frontage to 41.6m, compared to the previous DAP approved development on the 25th May 2015 which had a site area of 1427sqm and street frontage of 33.1m. The applicants' intent to increase the lot area along the northern boundary is to allow the current design to be shifted approximately 2 meters, clear of any service easements along the right-of-carriageway.

This frontage exceeds the requirements outlined in Table A of Schedule 9A that allows for both commercial and residential entries along with extensive landscaping to the front of the development. This wider frontage has enabled the design of integrated hard and soft landscaping, public art, a water feature, both lobby entries and a generous café. The aforementioned will significantly activate this quiet pedestrian footpath. This activation will help regenerate this southern portion of Mill Point Road, improve passive surveillance, and benefit the greater South Perth community for years to come.

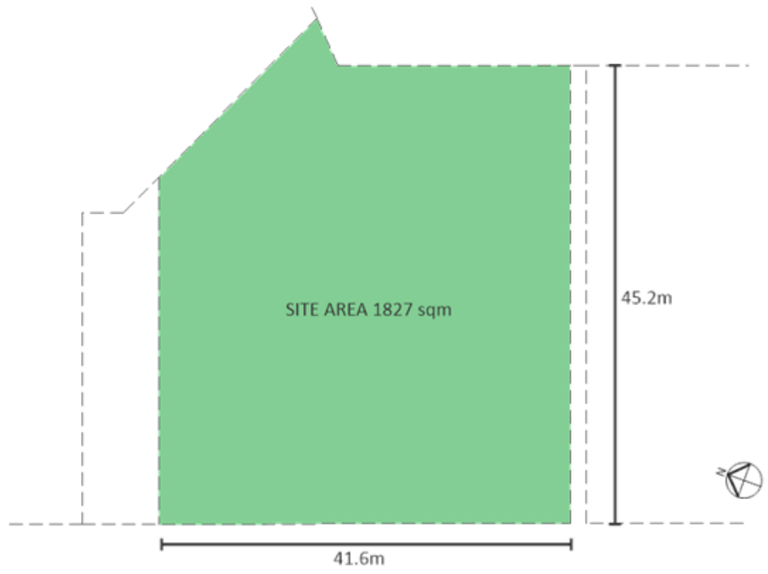


Diagram 3.2 Proposed site showing lot frontage excedding minimum required.

3.0 PERFORMANCE CRITERIA

3.3 DESIGN QUALITY

This Development Application is the third iteration from the applicant for a proposed mixed-use tower at 74 Mill Point Road. Previous versions were approved in May 2015 and November 2016 respectively, and were both accredited with 'exemplary levels of architectural design' by the City's Design Review Panel. This latest proposal is very consistent with those previous versions, with further improvements to the architectural design as summarised below.

The building has been conceived in a classic podium base and tower arrangement with all levels highly articulated to the benefit both the pedestrian experience and the views of the development in its greater context. A fluid design provides unique visual interest and complimentary architectural languages between the podium and tower. The innovative organic form and its dynamic façade have been developed to reduce bulk while creating a new benchmark for progressive design in the precinct.

Activation of the Mill Point Road frontage is integral to the design of the podium through articulation of canopies, entries and landscaping. Commercial suites are located along the podium's west elevation facing Mill Point Road in lieu of architectural screening and car parking. These boutique 'tree top' tenancies further activate the street frontage through the use of extensive full height glazing.

At the top of the podium, extensive terraces will provide a platform for soft landscaping as well as an amenities area for the serviced apartments. The urban location and density of the development has reduced the areas available for natural landscaping, however the use of extensive planter boxes and soft landscaping areas will create a dynamic natural component to the design. It is intentional that this planting will soften the view for residents looking down from balconies above. A Landscape Architect will be engaged to provide further direction on tree and planting selections.

Both podium and tower use a consistent organic architectural language that will deliver a striking façade to Perth's built environment. A mix of refined edges, an undulating perforated skin, semi frame-less balustrades and extensive glazing break down the mass of the apartment levels. Elegant curves in the building's planning merge the boundaries between elevation, further softening the overall bulk and scale.

The elevations are further expressed with a sweeping balustrade that alternates between glass and perforated screens around the perimeter of the tower. This homogeneous organic language extends the full height of the tower creating dynamic façades with movement and integrity.

Shading is achieved through deep balcony slab extensions so that apartments receive maximum daylight during the day in winter, while blocking the heat in summer. The revised design continues this reveal around the southern facade improving consistency with the tower's overall envelope and feature balustrades. Interior floor materials will be selected to increase reflection of sunlight, decreasing the use of artificial light.

The vision for the project is to deliver premium quality apartments well suited to the vision of the overall precinct. The amenity within the project is at the top end of apartment projects in Perth. The highly articulated building form coupled with a diverse range of materials will be a positive addition to the streetscape and views from adjacent areas. This refined architectural form and rich material articulation will encourage a diverse range of residents and users who will contribute to the local community.

The vision for the project is to deliver premium quality apartments well suited to the vision of the overall precinct. The amenity within the project is at the top end of apartment projects in Perth. The highly articulated building form coupled with a diverse range of materials will be a positive addition to the streetscape and views from adjacent areas.

3.0 PERFORMANCE CRITERIA

3.4 OVERSHADOWING

The proposed development has been designed with considerable regard for solar access to neighbouring properties. This takes into account ground floor outdoor living areas, major openings to habitable rooms, solar collectors and balconies.

The preceding diagrams indicate the impact of the allowable building envelope in comparison to the current proposed design. It should also be noted that the current proposed development overshadows the site at 76 Mill Point Road less than a previous DAP approved scheme due to the entire podium and tower being moved approximately 2m to the north. With this in mind, the maximum overshadowing by the portion of the proposal buidling above building height limit (25m) of any Lot by the proposed development at noon on 21 June will be 6%. (Neighbouring lot at 76 only 59%).

We have also included photos of the northern elevation of existing mixed use building on Lot 76 Mill Point Road. The proposed development will predominately be casting its shadow across this buildings northern elevation which is devoid of any major openings, windows or amenity space. All residential units on Lot 76 are oriented on an east-west axis with balconies facing east and west respectively. These balconies configured as deep recesses only receiving direct sunlight in the morning and evening when the impact of any additional overshadowing from the proposed development on Lot 74 will be negligible.

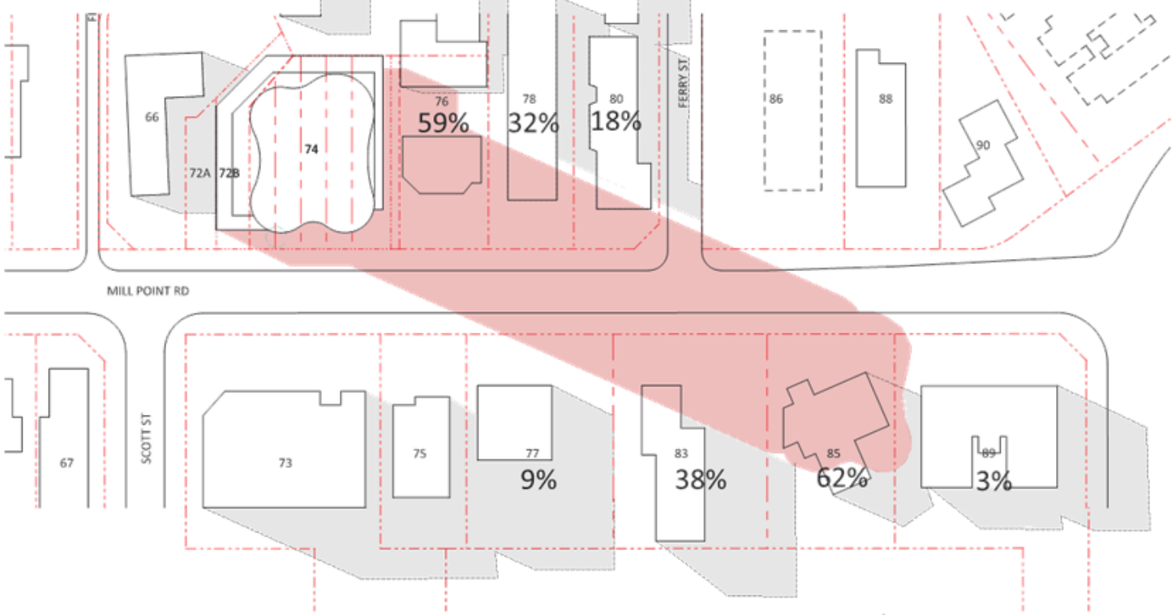


Diagram 3.4 Current development application vershadowing at 12pm June 21st.

3.0 PERFORMANCE CRITERIA

3.4 OVERSHADOWING

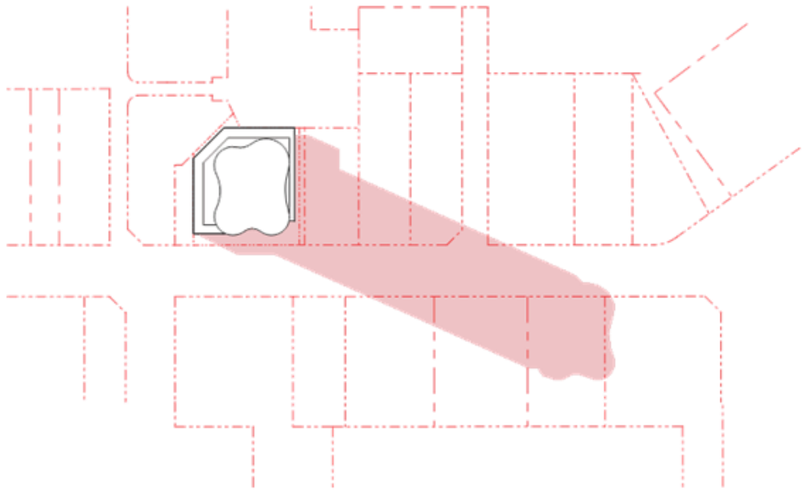


Diagram 3.5 Current development application vershadowing at 12pm June 21st.

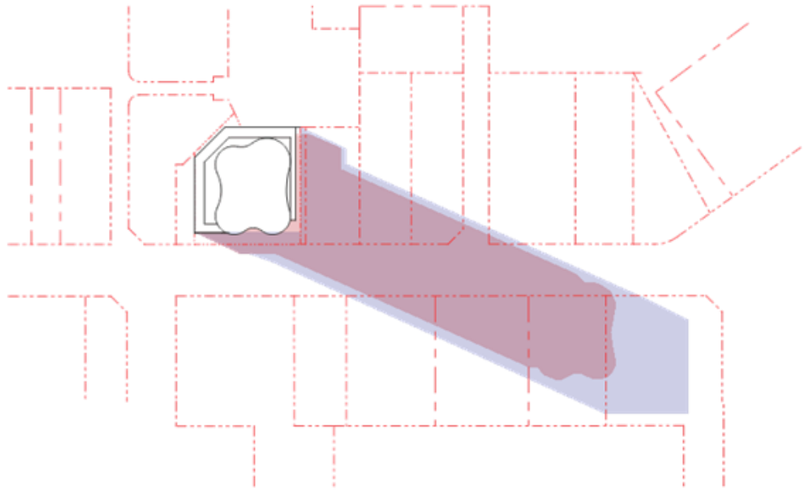


Diagram 3.6 Maximum Permi ed (TPSG, Schedule 9A) Building Envelope overshadowing at 12pm June 21st. Current Development Application scheme sh wn underlayed.

3.0 PERFORMANCE CRITERIA

3.4 OVERSHADOWING

Diagram 3.6 Proposed Tower Overshadowing AUG 22nd.

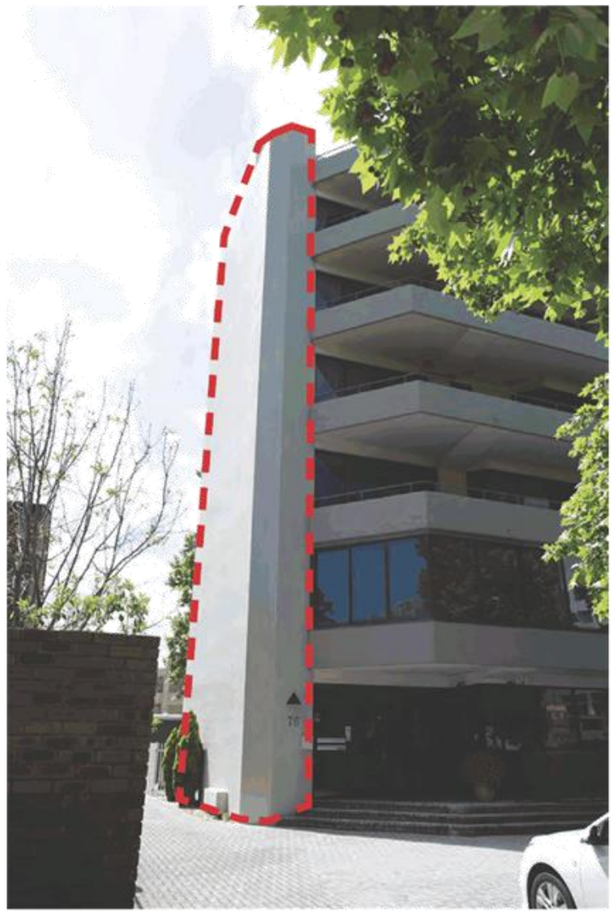
Diagram 3.7 Proposed Tower Overshadowing SEP 22nd.

Diagram 3.8 Proposed Tower Overshadowing OCT 22nd.

10am
12pm
2pm

3.4 OVERSHADOWING (CONT'D)

View of adjacent building's north-facing wall.



View of adjacent building's north-facing wall.

4.0 URBAN DESIGN

4.1 GROUND FLOOR USES & STREETSCAPE

The architectural design provides a striking tower element that will be visible from the CBD with the base of the tower addressing Mill Point Road and the vehicular access way. The building is highly articulated in a contemporary manner with a mix of solid, perforated and transparent materials composed in a cohesive manner.

The adoption of a 4m setback at ground and podium levels on Mill Point Road ensures the respect and retention of two significant street trees located on the existing verge.

Various cantilevered elements are formed to create highly attractive building façades. Careful and varied detailing between various floors provides an additional layer of articulation.

The façade at ground floor level along Mill Point Road has been designed to activate the footpath, encouraging both residents, office workers and public to interact with the development in a pedestrian friendly environment.

A highly articulated canopy wraps around the perimeter of the Mill Point Road elevation. This canopy provides an excellent degree of shelter and shade to pedestrians. The is designed to distinguish the entrances to both residential and commercial lobbies. The high soffits at ground floor with large expanses of floor to ceiling glass further open the building to the street and public. It should be noted that the deeper recesses that form entrances to both commercial and residential lobbies will be well lit with movement sensors 24 hours a day.

The entrance to the residential lobby has been deliberately set back and located at the centre of the street frontage to allow pedestrians to walk under and through an attractively landscaped area. Soft landscaping will be developed with a reputable Landscape Architect to create an urban oasis at the entrance to both entry lobbies. Sophisticated street furniture and cycle racks will further benefit the community at street level. The café has deliberately been set back inside the building envelope to provide sufficient cover for alfresco dining. This will become a new meeting place for patrons on the way to the river from the Central Station Precinct. The Commercial Lobby and Community Meeting room provide activation and passive surveilance to the southern corner of the street front, both of which are directly accessibe from Mill Point Road. The activation of the street frontage contributes to the greater improved pedestrian network and public security in the area.

A commissioned sculpture by a local artist is also proposed adjacent to the commercial lobby. Consistent with the architectural intent, this sculpture is another gesture to the broader community.

The design has been carefully developed to conform to the requirements of Table A: 2. Ground Floor Uses; 7. Relationship to the Street; 12. Landscape and Outdoor Living Areas; 14. Designing Out Crime. It should also be noted that over 60% clear glazing is prouded along the ground floor street front facade.

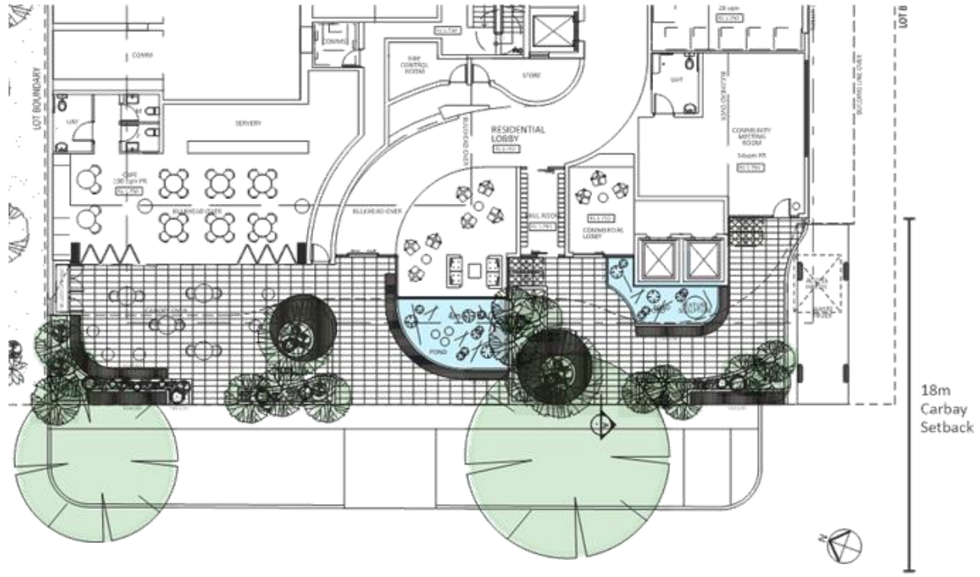


Diagram 4.1 Ground floor plan sh wing acti e street frontage & carbay setback.

Image 4.1 View of cafe and green corridor

4.2 PODIUM & TOWER TYPOLOGY

The proposal adopts a podium and tower typology with the exception of the streetfront facade. Both elements are articulated in an appropriate manner providing either horizontal or vertical emphasis. The high level of architectural expression includes the use of varied materials and form to articulate the building. It is envisaged the podium level will enhance the pedestrian experience by setting back the upper levels to diminish the perception of the building bulk. Furthermore, the podium aspect serves to mitigate unwanted wind effects whilst consolidating the intended character along Mill Point Road.

The podium is characterised by an organic undulating facade that creates a dialogue with the architectural treatment of the tower. The apartment balustrades create sweeping curves that run the length of the facade and wrap around both corners facing Mill Point Road.

Solid balustrades at podium levels create a subtle contrast to the perforated lightweight balustrades of the tower above and are more harmonious with the existing streetscape.

It should be noted that the podium height is compliant with the requirements of Schedule 9A.

Diagram 4.1 Elevation sh wing podium height & Articul tio

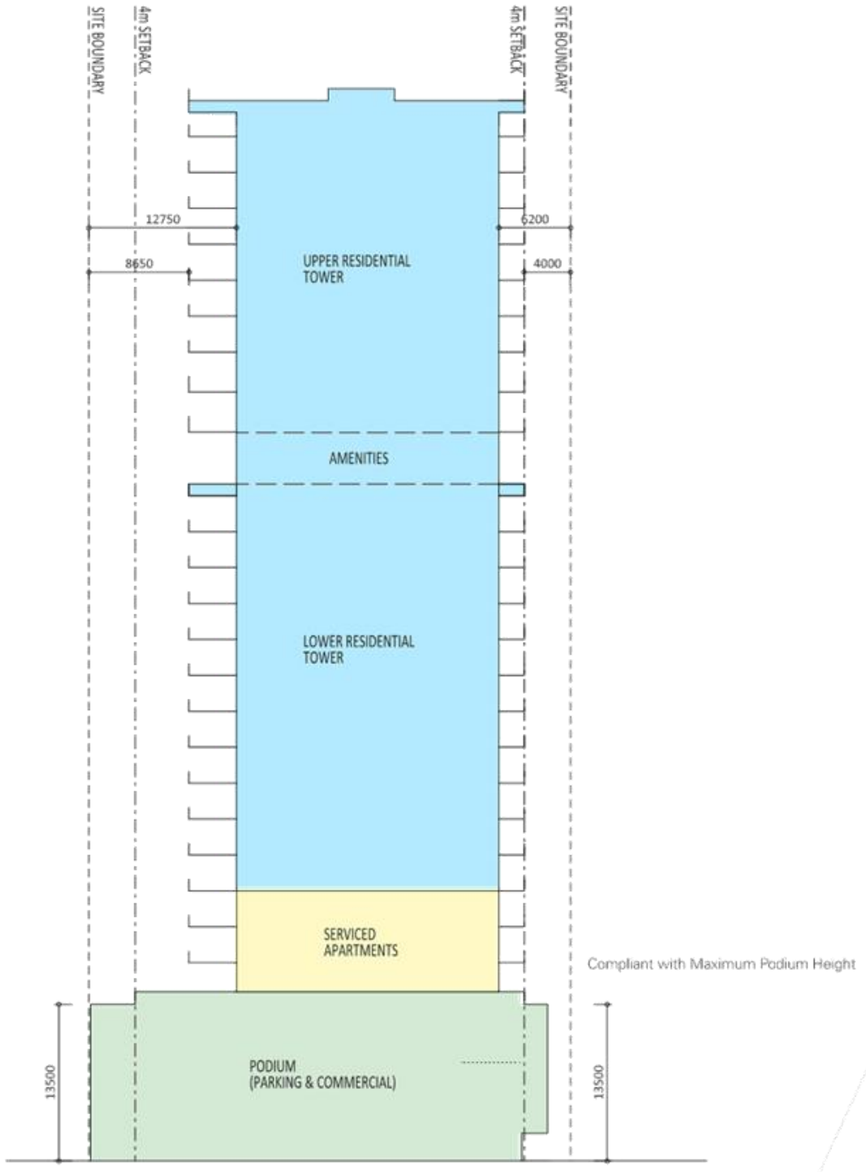


Diagram 4.2 Elevation sh wing increased setbacks above podium.

4.3 PUBLIC ART

In accordance with City of South Perth's Town Planning Scheme, Schedule 9A we support the vision for the inclusion of public art within the Central Core Precinct.

In previous apartment projects including The Foundry Apartments Subiaco and Verde Apartments in Wittenoom Street, East Perth we have successfully worked with nationally acclaimed local artist Stuart Green who has created excellent artworks integrated into the publicly visible elements of these projects.

Collaboration with artists Rick Vermey at The Collective Apartments, Rivervale and John Tarry at Fusion Apartments, Burswood have created unique responses that are reflective of each site.

In keeping with this approach we will work with an artist whose work fits with the design philosophy and who has demonstrated an appropriate understanding for the facade treatments.

It is currently envisaged that the proposed feature cladding elements to the ground floor commercial lobby provide an opportunity for a collaborative process to be established with a local artist and diminish the often overlooked lift doors visible from the street.

The screens will provide an opportunity to potentially reflect a theme which is relevant to the precinct, embracing the location's heritage and history. It is envisaged that this will enrich the pedestrian experience offering occupants, visitors and passers-by an insight into local heritage. It is also anticipated that key parts of this facade will be back lit to increase interest at night.

In addition, there will be a sculpture located between the two lobbies. This will also be designed and fabricated by a local artist that is incorporated into the landscape design of the street front. Our intention is that the sculpture responds to the contemporary aesthetic of the architecture but also has a concept that connects with the broader community.

Lastly, the podium and tower are to be wrapped in a band of perforated screens. Both the design of the curves, and the pattern within the screens, will conbribute significantly to it's street appeal. From a distance, the curves (macro) will add movement to the facade whilst passers-by will appreciate the finer detail of the screening pattern (micro).

There are no specific 'percentage for art' requirements outlined under Schedule 9A of the City's Town Planning Scheme. It should be noted that the extensive artwork to be commissioned is in addition to the statutory developer contributions outlined under Schedule 10. The proposed development encompasses artwork to engage with the community up close and in its wider context.

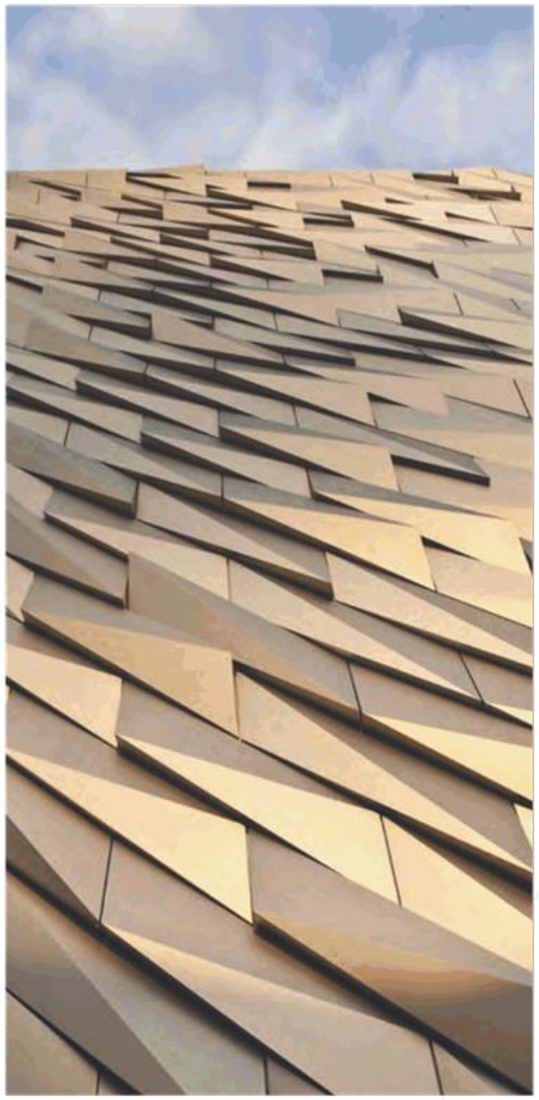
Diagram 4.3 Location of sc eens, cladding and sculpture by selected arti t.

Image 4.2 - Verde Apartments, East Perth - Hillam Architects & Stuart Green.

4.0 URBAN DESIGN

4.3 PUBLIC ART (CONT'D)

Exemplar Imagery



4.0 URBAN DESIGN

4.4 VIEWS & VISTAS

The proposed development has been designed with respect to the view corridors of neighbouring buildings and future developments. Diagram 4.4 illustrates the increased tower setbacks across both northeast, northwest and southwest elevations. The tower has been deliberately planned to reduce overall bulk with a narrower form than what is permissible under Schedule 9A.

Deep balconies, floor to ceiling glazing and extensive curved glass balustrades also contribute to a more transparent elevation. This allows for view corridors to be maintained through parts of the building envelope.

The proposed development also looks to maximise the view opportunities towards the CBD and Swan River while responding to Mill Point Road. The curved organic plan of the tower together with continuous perimeter balconies ensures the development maintains an expansive outlook in virtually all directions.

In accordance with the objectives of Scheme Amendment 26 we believe there is an opportunity to create an identity and sense of place by connecting the proposed development with the available views and vistas.

Noting the proposed development will become one of the highest buildings within the South Perth Station Precinct, there are opportunities to maximise the views and vistas:

- City views to the northeast.
- Expansive panoramic river views to the north, east & west.
- Views over Kings Park to the west.
- Potential ocean views from the highest levels.

The proposed development has also been designed with respect to the view corridors of neighbouring buildings and future developments. Diagram 4.4 illustrates the increased tower setbacks across both northeast, northwest and southwest elevations. The tower has been deliberately planned to reduce overall bulk and have a more slender form than what has been allowed for under Ammendment 46. This ensures that viewing corridors are maximised and as many as possible of the occupiers of the neighbouring buildings to retain significant views and the requirement of Table B, Item 8 (e) is met.

Deep balconies, floor to ceiling glazing and extensive glass balustrades also contribute to a more transparent elevation. This allows for view corridors to be maintained through parts of the building envelope.

Further to this, in accordance with Table B, Item 8 (d), more than 50%of the dwellings of the develpment are designed to provide significant views from more than one habitable room window or balcony, each located on a different elevation of the building. This is illustrated in Diagram 4.6. showing the typical (Levels 07-17) residential floorplate and number of significant views from each apartment. In this example 3/5 of the apartments achieve two significant views.

Image 4.6 Aerial view looking north at proposed site, Perth CBD and Kings Park.

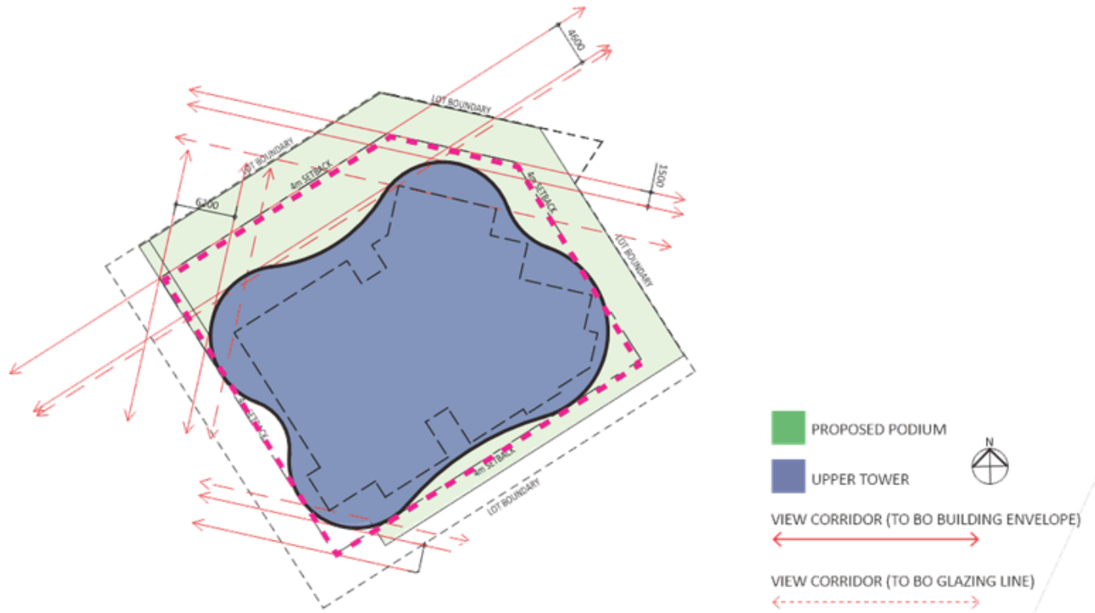


Diagram 4.4 View corridors between setback and proposed tower.

4.0 URBAN DESIGN

4.5 PROPOSED DEVELOPMENT IN CONTEXT


1. View from Mill Point RD (South)


4. View from Freeway Intersection


2. View from Mill Point RD (North)

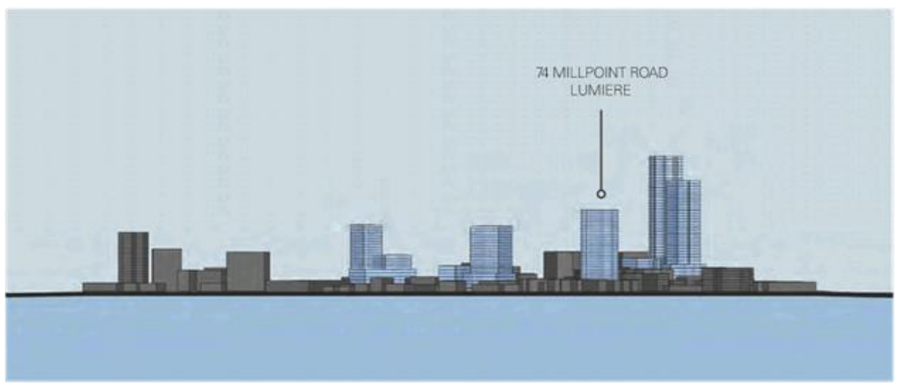

5. View from South Perth Esplanade (North)


3. View from Cnr of Melville Pde & Scott St

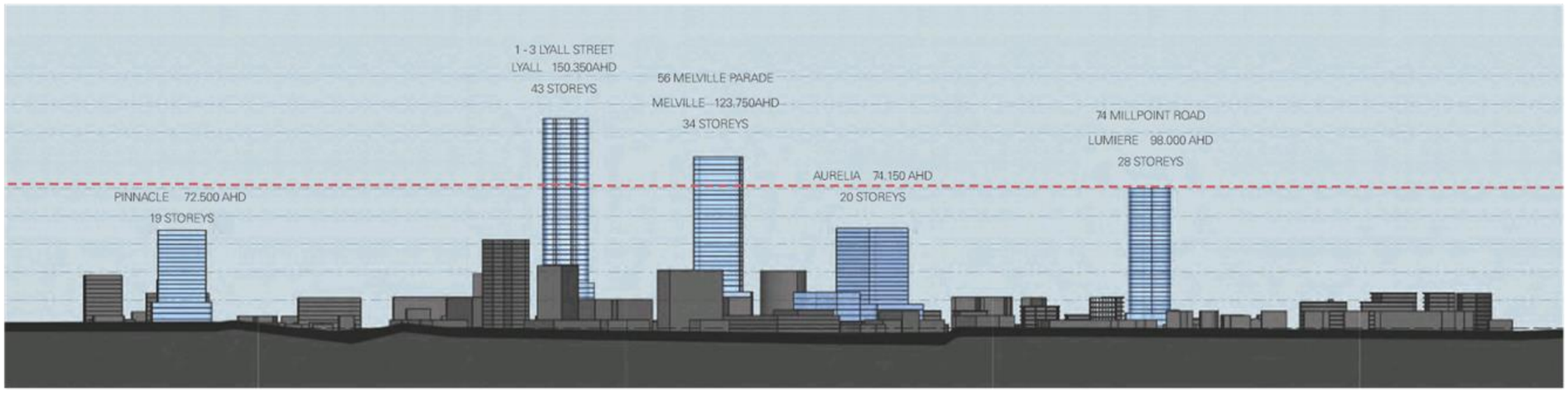

6. View from South Perth Esplanade (South)

4.0 URBAN DESIGN

4.5 PROPOSED DEVELOPMENTS IN CONTEXT



PERSPECTIVE CROM CITY NTS



EAST ELEVATION NTS

5.0 ARCHITECTURAL DESIGN

5.1 BALCONIES

In recognition of outdoor lifestyle opportunities afforded by the Perth climate, apartments are provided with generous private outdoor balconies with dimensions and areas meeting minimum requirements set out in Table 8, Item 8 (a) ,with the majority of these areas significantly orientated north.

The balconies that face the street encourage passive surveillance as well as express the sophistication of the facade by their integration into the building envelope. The cantilevered and curved balconies have been used to articulate the façade creating drama and interest.

Each residential unit in the development has a balcony depth of at least 3.0m however many units have up to 4m. This allows many units to have both dining and lounge areas on balconies, encouraging outdoor living and passive surveillance of the area. This has been illustrated with diagramatic boxes included in each of the baclonies, refer to Appendix A - Architectural Drawings. Obscurely glazed fins separate each balcony from neighbouring units to provide visual and acoustic privacy while maintaining the lightweight aesthetic of the building's façade.

5.2 MATERIALS & FINISHES

A varied pallet of materials and finishes articulates the development. A combination of light and dark renders, stone, tile, perforated metal (also incorporating artwork) and glass provide a cohesive and sophisticated mix. These materials and their subsequent finishes have been selected for their inherent beauty with particular focus being the contrast between solid, porous and transparent.

Rich and refined materials signpost the residential areas while the perforated metal and artwork around the podium provides a vibrancy to the elevations at street level. Examples of the proposed materials are shown throughout this document and the coloured elevations provided in the appendix have the proposed external materials noted.

Image 5.1 Design and material references.

5.0 ARCHITECTURAL DESIGN

5.3 POOL TERRACE

The proposed infinity pool projects out to the north of level18 and rivals the quality reserved for five-star resorts. The Pool Deck will have dedicated leisure activities additional to the infinity pool including relaxation zones, fully equipped fitness centre, sauna, private dining room, catering kitchen, lounge areas and meeting facilities.

Shaded areas will be created by the apartments above, while other areas allow direct sunlight for cooler times of the year. Balconies from several apartments directly overlook the space providing good amenity and passive surveillance, yet privacy is maintained by appropriate soft landscaping in planter boxes.

The Pool Deck Lounge incorporates river views into this exclusive space for quiet contemplation or entertaining guests whilst the Gymnasium allows you to maintain well-being and fitness, day or night, overlooking the foreshore. A generous theatre room can also be booked by residents for movie watching. Hillam Architects have a well established reputation for creating highly attractive and functional outdoor spaces within its developments and again this is the focus here.

Access will be provided by the building security system and controls in place to ensure use is within appropriate times.

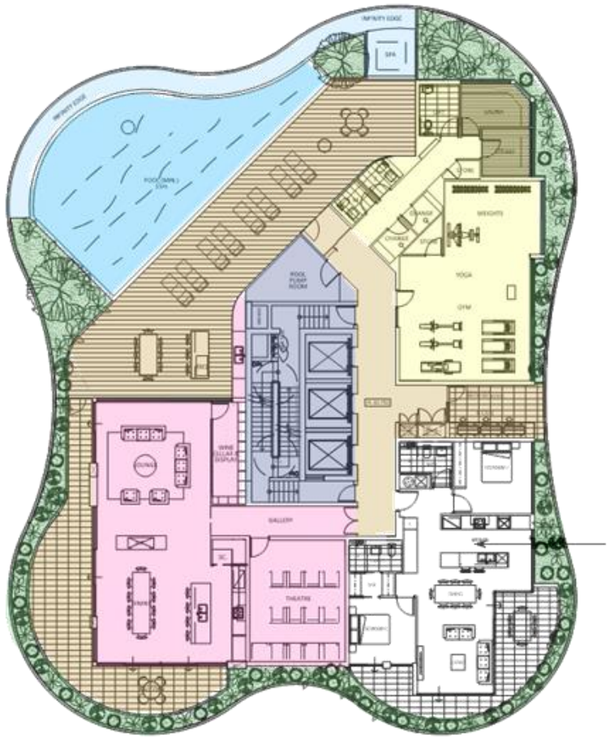


Image 5.3 Residential Amenities vel

6.0 DEVELOPMENT REQUIREMENTS

6.1 PLOT RATIO

Lot 74 Mill Point Roads falls under the Special Control Area SCA1 where there is no maximum plot ratio as per Element 3.1 of Schedule 9A of City of South Perth Town Planning Scheme Ammendment No. 46.

In accordance with the schedule, the development provides sufficient commercial plot ratio, diversity in dwellings including single bedroom dwellings and provision has been made for amenity facilities for residential dwellings.

6.2 PODIUM HEIGHT

The proposed development has a podium level set at 4 storeys or 13.5m and all of the podium building elements of the proposed development sit between the requirements outlined in Schedule 9A.

6.3 BUILDING HEIGHT

With reference to item 6.2 of Schedule 9A, *'Element 5 'Building Height' may be waived where it can be demonstrated to the satisfaction of the Council or other responsible authority that the development:(a) is consistent with the Guidance Statements applicable to those Elements; and (b) satisfies all of the Performance Criteria in Table B of this Schedule.* 'We ask council to support the variation to the height limits outlined on plan 3 of schedule 9A considering the degree of compliance with guidance statements and with Table B of the schedule.

The proposed 98m development strives to meet the objectives set out in Scheme Amendment 46 which allows for further increases in height with the inclusion of sustainable design, community benefits and exceptional quality architecture; all of which are outlined in this report.

6.4 SETBACKS

In response to Schedule 9A, Element 8.1 the proposed development incorporates NIL side and rear set back to podium levels on the North and East boundaries. The applicant proposes a 2m side setback to the southern boundary to ensure access to existing services. Also in response to Element 7.3 the proposed development has a 4m street set back to podium levels across the extent of its frontage.

For storeys above the podium the minimum street setback outlined at Element 7 of Schedule 9A is 4m; the street setback to the tower portion of the proposed development (above podium level) ranges from 4m (min) to 10.8m.

Careful attention has been given to the City's Town Planning Scheme ensuring that the proposed scheme is fully compliant with regards to setbacks. Balconies surround the development. These balconies will be completely open with glass and perforated metal balustrades and a curved plan contributing the organic form of the overall design. Furthermore, these balconies will provide sufficient shade and amenity to their respective units.

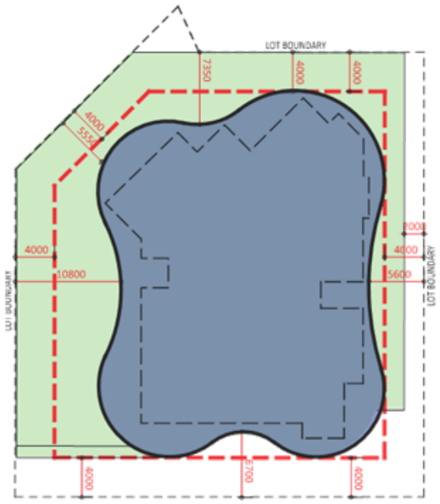


Diagram 6.4 Setbacks to Extent of Tower

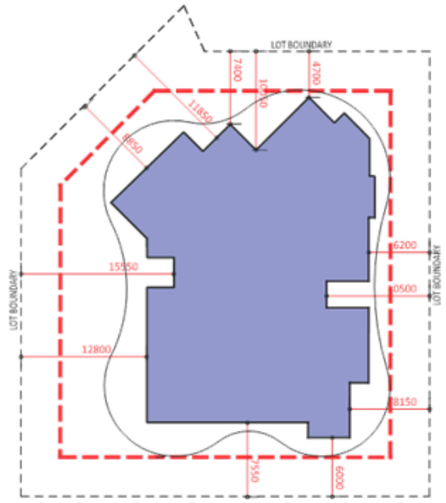


Diagram 6.4 Setbacks to Glazing Line

PROPOSED PODIUM

UPPER TOWER

MAXIMUM TOWER ENVELOPE

6.5 PARKING

The six levels of car parking are designed for efficient use and provided with adequate lighting, visibility and subsequent safety for users, drivers, cyclists and pedestrians alike. All designated visitor and commercial bays will be appropriately signposted as such with all bays located internally of the building envelope on the upper and basement levels. The parking has been allocated following Amendement 46 , Schedule 9A, Element 9 and meets the maximum permissible number of onsite parking bays set-out by Table B, Item 4.

The car parking is further divided into the following provisions:

- 122 Residential bays
- 15 Residential visitor bays
- 8 Serviced apartment bays
- 1 Serviced apartment visitor bays
- 18 Bays for the café and commercial tenancies. (incl. 1 Disabled)
- 2 Commercial visitor bays.

In accordance with our approach to promote sustainable methods of transportation and Element 9.1 of Schedule 9A a secure bike store is located on the ground floor adjacent to end of trip facilties for use of visitors and workers. Residential bike racks have been annotated on the attached development plans.

Apartment Type	Maximum Permitted No. of Bays per Apartment / Area	Number of Apartments	Required Carbays	Singles	Large Bays 6.0m x 3.8m	Tandem (2 allocations)	Long Bays	Total Carbays
1 Bed / 1 Bath	1	22	22	17	0		5	22
2 Bed / 2 Bath	1	17	17	0	1		16	17
3 Bed / 2 Bath	2	46	46	58	17		0	75
Subs	2	2	2	0	0		4	4
Pents	2	2	2	0	0		4	4
Residential Apartments		89						
Serviced Apartments	0.5 carbays per serviced apt	16	8	8				8
Non Residential Land Use - (Not Serviced Apartments)	1 per 50sqm	913	18	10		4		18
Residential Visitors	1 per 6 Dwellings		15	15				15
Serviced Apt Visitors	0.1 per number of bays required		1	1				1
Commercial Visitors	0.1 per number of bays required		2	2				2
Unallocated								0
Total			133	111	18	4	29	166
Total Allocations								
Resi Bike Bay	1 bike bay per 3 dwellings	30						
Commercial Bike bay	1 bike bay per 200 sqm	4						
Serviced Apartment Bike ba	1 bike bay per 200 sqm	9						
Total		43						

Table 6.5 Carbay breakdown

Car parking provided with the proposal is designed in accordance with Australian Standards. A traffic impact assessment is attached as an appendix to this document.

The following points are made with regard to the assessment of the proposed development by the City and the minor variance:

a) Type, number and size of dwellings

The development comprises a mix of one, two and three bedroom units with floor spaces ranging between approximately 65m² and 272m². It is proposed to provide all penthouse, sub-penthouse and three bedroom units with 2 car bay allocations. One and two bedroom units are provided with 1 allocated bay.

b) Public transport

Given the access to public transport within the immediate vicinity there is a focus on promoting pedestrian and cycle transport within the proposed design.

The sites proximity to high frequency public transport including bus and a ferry link to the CBD, the provision of end of trip facilities and on street parking all contribute to a varied parking demand during a typical day.

In accordance with our approach to sustainability, end of trip facilitates to promote sustainable methods of transportation have been included. Specifically, this includes a unisex toilet and restroom facility for commercial tenancies, with a total of 14 bike bays located in a secure store at the commerical entry.

6.0 DEVELOPMENT REQUIREMENTS

6.6 SAFETY & SECURITY: DESIGNING OUT CRIME

The ground level contains a cafe and community meeting room adjacent to the commercial lobby which provides for an appropriate level of surveillance to the south face of the building. The ground floor is generally open creating safe public spaces with clear sight-lines. The frontage is well protected from adverse weather with a continuous canopy while the transparent nature of the commercial tenancys and residential lobby enhance surveillance.

The proposed development contains high quality articulated elevations to both primary and secondary street frontages. The inclusion of major openings, balconies, varied materials and colours and detailed features in design afford activity and surveillance around the entire site and create an attractive and interesting development.

Habitable rooms and balconies address all sides of the development providing a continuous passive surveillance of the area. This passive security is further enhanced by the street-facing apartments at podium level in the revised design.

The right of way is activated with the car park entry and visitors parking. In these areas light levels will be boosted by artificial lighting activated by light level sensors. At night additional lighting will be activated by movement sensor.

Access control systems will provide secure access to apartments and parking areas. Clear signage of pathways, entrances and exits will differentiate public and private spaces.

Providing a sense of place that is responsive to CPTED (Crime Prevention Through Environmental Design) principles is critical to the design of the project.

Principles adopted are:

- Building form to visually link and create interaction, providing for informal surveillance of adjacent public areas.
- Integrated specialist lighting design that provides well illuminated spaces that create ambience while eliminating uncontrolled shadow areas.
- Selection of robust and textured materials to prevent anti-social behaviour, vandalism and graffiti.
- Areas designated for passive recreational uses to incorporate safe and accessible activities for all age groups.
- Universal accessible design.

  Vandal proof and passive security measures, robust in materials to prevent vandalism and graffiti.

6.7 OCCUPIER BENEFITS - LIVABLE HOUSING COMPLIANCE

In recognition of the need to provide versatile and adabtable housing that better meets the changing needs of occupants over the course of their lifetimes, a number of apartments have been allocated large car bays and designed achieve at least the 'Silver Level' of the *'Livable Housing Design Guidelines'*, persuant to the requirements set out in Table B, Item 8 (c).

The apartments designed to achieve 'Silver Level' are denoted on the attached architectural drawings, with the key dimensions relating to compliance noted. Further the relevant Large Car Bays are denoted on the parking levels. Table 6.7 below further deliniates the number and location of 'Silver Level' units.

Levels	No. of Units achieving Silver Level in Livable Housing Design Guildlines	Unit Types
Level 7-17	22	C2 & A2
Level 19-23	5	C3
Level 24-26		
Level 27	2	P1 & P2
Level 28	2	P3 & P4
Total	31	
%	34%	

Table 6.7 Livable Housing Design Guidelines - 'Silver Level' Units

7.0 RESOURCE EFFICIENCY & SUSTAINABILITY

Hillam Architects have an excellent track record in providing sustainable apartment buildings in Perth.

A highly successful example of this is Verde Apartments in East Perth provides various passive and active sustainable systems delivering positive environmental outcomes.

This project offers an excellent opportunity to showcase how a large mixed use building can utilise design features, materials and good quality finishes and selections to achieve a sustainable outcome. By focussing on the solar passive principles and incorporating sustainable features and systems, a strong environmental outcome will be achieved that occupants and surrounding residence will embrace.

It is the intent of the applicant to achieve the equivalent of a 5 Green Star rating to set the benchmark for future developments in the area and, further to the following summary, appendix E contains CADDS Group's letter of intent and sustainability strategy that outline how these best practices will be implemented.

7.1 ENERGY EFFICIENCY

Some measures that will be implemented as part of the proposed development include but will not be limited to the following:

- Centralised hot water system using heat pump technology.

- The building has been designed to maximise solar access, facilitate cross ventilation and reduce energy consumption.

- All landscaped areas to be designed for low water requirements in compliance with Water Corporation's Water Wise Development Criteria, a minimum of 60% local native flora will be used in any garden areas.

- Natural light and ventilation to common corridors.

- Highly insulated structure including if necessary roof, walls and slabs.

- Sensor controlled lighting to car parking and common corridors.

- Car park ventilation system controlled by CO2 sensors.

- Electrical sub-metering provided for substantial energy uses (eg major plant) to allow for the monitoring and management of significant consumption patterns.

- Electrical sub-metering of major building services to allow for effective management of power usage with a view to using off peak power where possible.

- Maximisation of natural ventilation to ground floor car park and car park ventilation systems minimised through natural ventilation and controlled by CO2 sensors.

- Deep set external facing balconies provide significant shading to glazing to living areas in apartments.

- Provision of water-wise fixtures and fittings that comply with BCA requirements for WELS star ratings.

- Implementation of low energy hot water heating services.

- High level metering strategy

- High performance glazing

- Provision of energy efficient appliances and light fittings to apartment and commercial units.

- A grid-connected solar photovoltaic (PV) system to provide the majority of energy needed for common area lighting, which includes compact fluorescent lamps and automatic movement sensors in common areas to ensure lights are not left on unnecessarily, whilst also providing security.

- Provision of bicycle storage facilities to encourage tenants to use more environmentally friendly transport alternatives and live an active lifestyle.

- Effective shading of glazed areas and increases in glazing specification where deemed necessary.

7.2 PASSIVE SOLAR DESIGN / SOLAR ACCESS & SHADING

The apartment layout minimises west facing apartments and prioritises the north south orientation.

Good solar orientation and appropriate opening sizes and locations have also been considered in determining the apartment layout with an emphasis given to the northern orientation, where the deep set external facing balconies provide significant shading to glazing to living areas in apartments.

With Reference to Table B, item 8 (a), the emphasis on northern orientation guarantees that at least 50% of the dwellings have access to at least 2 hours on 21 June. Refer to Diagram 7.3 showing 4/5 (80%) apartments with a northern aspect/winter sun on the Typical Floorplate (Levels 07-17).

Levels	No. of units with Northern Aspect	No. of units without Northern Aspect
Level 7-17	44	11
Level 18		1
Level 19-23	15	5
Level 24-26	6	3
Level 27	2	
Level 28	2	
Total	69	20
%	78%	22%

Table 7.2 Northern Aspect breakdown.

7.0 RESOURCE EFFICIENCY & SUSTAINABILITY

7.3 CROSS VENTILATION PRINCIPLES

Bedrooms are supplied with operable windows and the interior living spaces open out to the balconies.

As a fundamental requirement all habitable rooms are provided with direct access to fresh air. The overall design maximises the building perimeter, providing many corner apartments with cross ventilation.

Mechanical ventilation will be incorporated into the bathroom spaces that do not have an external facing wall. A large south facing window will provide internal circulation corridors on upper levels with great views and natural ventilation.

With reference to Table B, item 8 (d), 88% of dwellings are designed to provide effective Natural Cross ventilation. Refer to Diagram 7.3 illustrating apartments with Effective Natural Cross Ventilation on a Typical Floor Plan (Levels 07-17). Table 7.2 further defined the number of apartments acorss the development that achieve Natural Cross Ventilation.

Levels	No. of Apts. w/out effective natural ventilation	No. of Apts. with effective natural cross ventilation ventilation
Level 7-17	22	33
Level 18		1
Level 19-23		20
Level 24-26		9
Level 27		2
Level 28		2
Total	22	67
%	25%	75%

Table 7.2 Natural Ventil tion B eakdown.

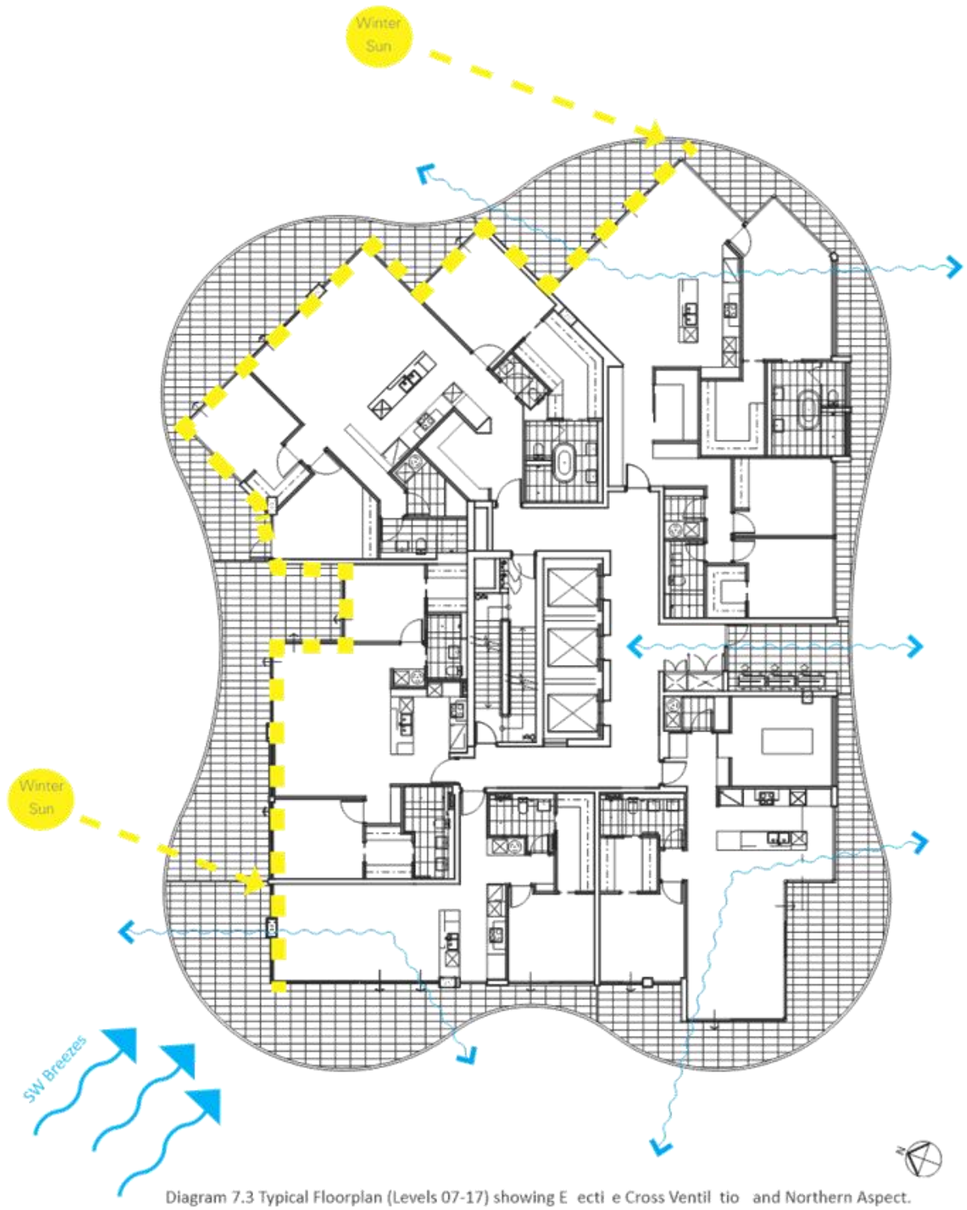


Diagram 7.3 Typical Floorplan (Levels 07-17) showing E ecti e Cross Ventil tio and Northern Aspect.

7.0 RESOURCE EFFICIENCY & SUSTAINABILITY

7.4 WATER MANAGEMENT

Each apartment will also be installed with water-wise fixtures and fittings complying with BCA requirements for WELS star ratings along with reduced waste piping runs where possible.

The swimming pool will incorporate measures to diminish evaporation and water use.

Grey water recycling will be employed in the irrigation of communal landscaped areas.

7.5 SOLAR DESIGN

A grid-connected solar photovoltaic (PV) system to provide the majority of energy needed for common area lighting, which includes compact fluorescent lamps and automatic movement sensors in common areas to ensure lights are not left on unnecessarily, whilst also providing security.

It is envisaged there will be a 20 KW photovoltaic solar energy system to provide on-site renewable power for the communal components of the building, together with the light fixtures for these spaces embodying low

7.6 TRANSPORT

This project offer high levels of parking along with cyclist facilities and scooter bays, well above the minimum requirements as set by the planning policy. The surrounding areas include abundant amenities that enable the occupants to utilise alternative transport methods such as public transport, walking or cycling along with offering a variety of social spaces including cafés, restaurants, parks and shops.

This location achieves a Walk Score of 63 and a Transit Score of 51. This denotes that numerous errands can be accomplished on foot and has good transportation options.

Outlined below are some of the copious facilities located nearby:

- South Perth Ferry Terminal;
- Perth Zoo;
- IGA Shopping centre
- Richardson Park;
- Windsor Park;
- Windsor Hotel;
- Post office; and
- Multiple bus routes.

7.7 MATERIALS

Due to the large volume of built form within this project, a detailed review of the materials, layouts and construction shall be undertaken. All materials, where applicable, shall have environmental certifications and manufacturing quality certification, shall have low VOC and formaldehyde content, shall seek to have recycled or eco preferred content and product stewardship.

By imposing these criteria to the materials of this project will vastly reduce the environmental impact this building has.

- Environmental materials selections
- Reused or recycled content
- Minimal airborne toxins

7.0 RESOURCE EFFICIENCY & SUSTAINABILITY

7.8 VEGETATION & OUTDOOR SPACE

Hillam Architects acknowledges the significant contribution quality landscaping provides to the character and amenity of a space. As such, landscaping occurs at various parts of the building. With regards to Table B, Item 7, our design includes a a generous 1300+ sqm of landscaping. It is proposed a minimum of 60% local flora will be introduced. In keeping with Hillam Architect's sustainable ethos, the design and incorporation of any irrigation and rainwater management will be inline witht he Water Corp's water Wise Development Criteria. Refer to Landscape Architect's Report for furhter details.

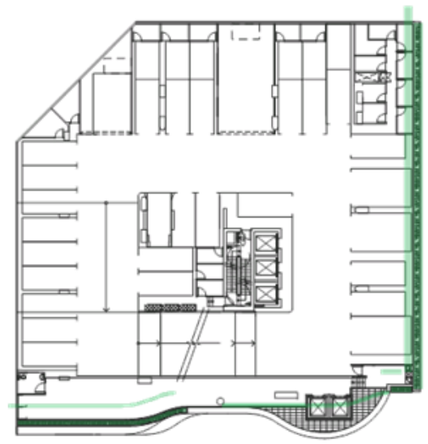
Ground Floor:
The ground floor has been designed with pedestrians in mind. Following advice from our Landscape Architect, this space has been carefully considered to encourage amenity whilst softening the edge of the development. Low planter boxes shelter the alfresco area, articulating the space whilst creating some natural screening between the seating and the street. Large gardens and a lily pond articulate the entrance and guide visitors to both the residential and commerical lobbies. The proposed landscaping is to compliment the existing London Plane trees that line Mill Point Rd.

Levels 1 - 3 (Commercial Tenancies & Green Wall Trellis)
Planterboxes sit within the sculptural form of the facade. The planting softens the podium architecture whilst providing a pleasant outlook for the occupants of the commerical tenancy. From these tennacies, the canopy of the London Plane trees will be visible. Running along the South-West boundary is a large green wall. This green wall trellis is a refreshing change from the large expanses of concrete, typical of many high-rise podiums. Living green walls are known to enhance a building's appearance, improve air quality and even absorb noise. For these reasons, we believe it's proposed location above the vehicular entry is well suited. To ensure our intent is realised, we've engaged a Landscape Architect for advise on plant selection, detailing, and reticulation maintenace.

Level 4 - (Public Amenities and Serviced Apartments)
The top of podium features a generous amount of landscaping. The gentle curves of the planter boxes compliment the sweeping ribbons that wrap the facade. Furthermore, the curves host built-in benches whilst forming intimate outdoor dining spaces. The top of the podium is to be finished with pebbles and ground cover. As well as being aesthetically pleasing, the residents will benefit fromt the privacy this green buffer will create. Whilst also creating this visual buffer, the North of the level will act as a public rooftop garden terrace accessed through a corridor that runs through the Public gym and Public Health Spa.

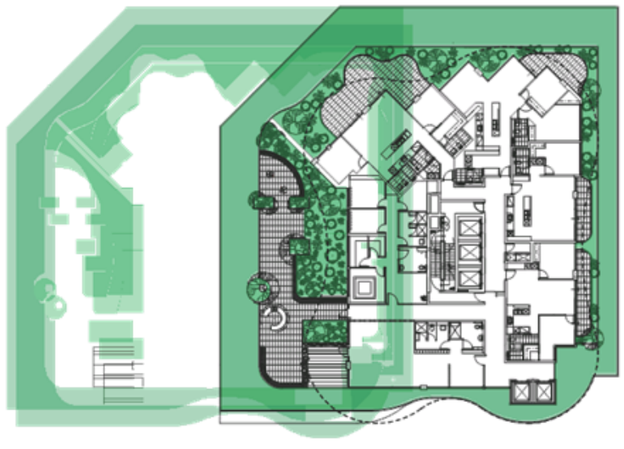
Level 20 (Residential Amenties Level)
Similar to Level 4, the residents' amenities area has been designed with a generous amount of landscaping. With the exception of the infinity pool edge, the amenities area is bordered with landscaping. These planters will add visual interest as well as buffer the wind. The outdoor area is envisioned to be a lush and tranquil space for the residents, where they can enjoy natural light, fresh air and eachother's company.

Ground Landscaping: 94 sqm

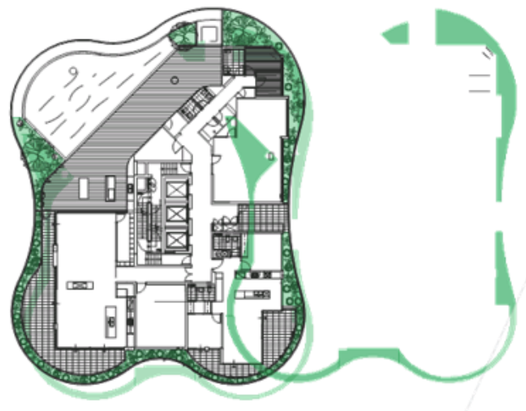


Level 1 - 3 Landscaping: 195 sqm

Green wall: 288 sqm



Level 4 Landscaping: 619 sqm



Level 18 Landscaping: 110 sqm

7.0 RESOURCE EFFICIENCY & SUSTAINABILITY

7.8 VEGETATION & OUTDOOR SPACE

Axonometric Diagram of proposed landscaping.

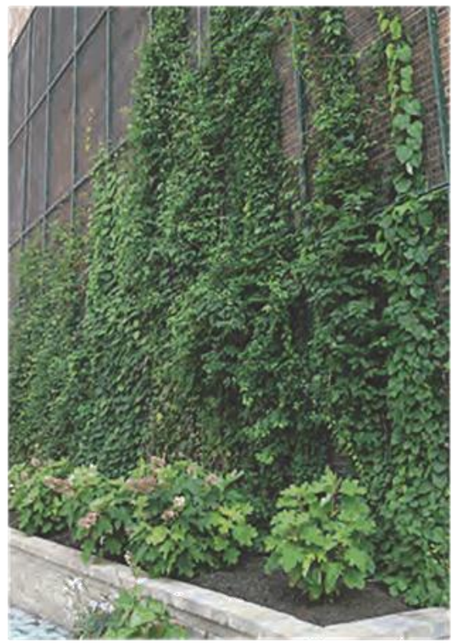


Image 7.1 Exemplar Landscape Imagery

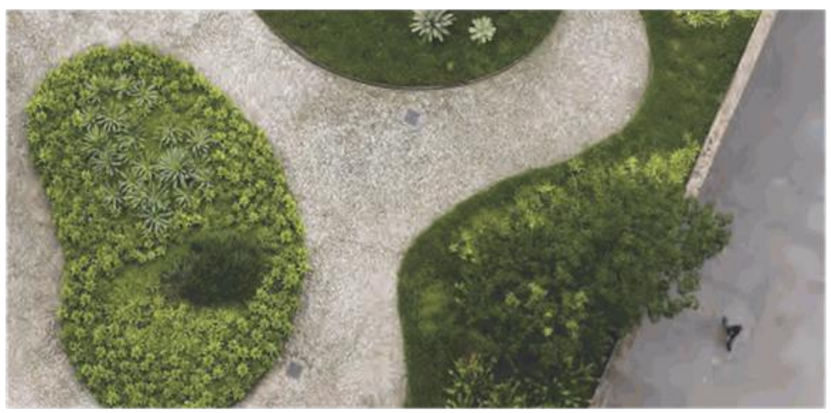


Image 7.2 Exemplar Landscape Imagery

Image 7.3 Exemplar Landscape Imagery

8.0 PRIVACY

8.1 VISUAL PRIVACY

Appropriate screening will be introduced between apartment balconies to ensure privacy without adversely impacting the architectural façade. Lightweight obscurely glazed 'fins' will be installed that provide visual and acoustic separation without adding bulk to the elevation. The details of the screening will be provided with the Building License application, with schematic planning for the screening indicated on the attached development plans.

8.2 ACOUSTIC SEPARATION

Sound attenuation treatments will be in accordance with National Construction Code Volume One and referenced Australian Standards.

State Planning Policy 5.4 'Road and rail transport noise and freight considerations in land use planning' will be adhered to prior to building license.

9.0 SITE FACILITIES

9.1 STORAGE FOR DWELLINGS

All dwellings are provided with lockable storage rooms. These spaces are located on a designated storage and services level along with parking levels throughout the development. Each apartment is provided with a functional, lockable and accessible storage satisfying the minimum 4m² requirement.

9.2 STORM WATER

Storm water will be designed to meet Australian Standards, NCC and The City of South Perth requirements.

9.3 BUILDING SERVICES

Air Conditioning and Plant

All services are positioned to ensure they provide no adverse visual impact on the overall aesthetic of the development and streetscape. On this basis air-conditioning units have been located on a services level set back within screening elements to ensure they are unobtrusive from adjacent residential developments and the public view. The screening has been intentionally articulated as a continuation of the façade pattern from the commercial tenancies below to become integrated within the overall development.

Remaining condenser units are located on a screened services deck that have been incorporated into the design of the southern elevation.

Waste Collection

Waste minimisation strategies have been developed including the provision of a large bin store located off the southern access way. The residential bin store is located at ground level that is concealed with a bin layout area that is contained within the property. Typically the transporting of bins from the bin store to the verge layout area will be addressed by the Body Corporate in accordance with the Private Waste Contractor pick-up schedule.

It is proposed the Commercial Tenancies will store waste within the individual tenancy and arrange for a private contractor collection.

Refer also to the Waste Management Plan prepared by the Consultant Talis Consultants attached.

Traffic management strategies have been developed following an assessment of the impacts associated with parking and traffic generation resulting from the proposed development.

The assessment followed the recommended outline contained in the West Australian Planning Commission draft guideline "Transport Statement Guidelines for Developments". Traffic flow from the site was estimated by applying generation rates recommended by the New South Wales Roads and Traffic Authority publication "Guide to Traffic Generating Developments" and the Institute of Transportation Engineers, "Trip Generation".

Car parking is proposed to be located on the basement, ground, first and second floor levels with at grade access proposed off Mill Point Road. Based on Schedule 9A of the City's Town Planning Scheme the car parking provisions for the proposed development are in excess of the requirements.

Vehicle access at the south western corner of the site has been widened to 6m to ensure adequate space for the waste collection vehicle can park without causing conflict with vehicles entering or exiting the site. Given the low frequency of movements by rubbish collection vehicles together with the low speed and number of movements to and from the site will result in a low likelihood of conflict.

Refer also to the Traffic Management Plan prepared by Shawmac attached.

9.0 SITE FACILITIES

9.3 BUILDING SERVICES (CONT'D)

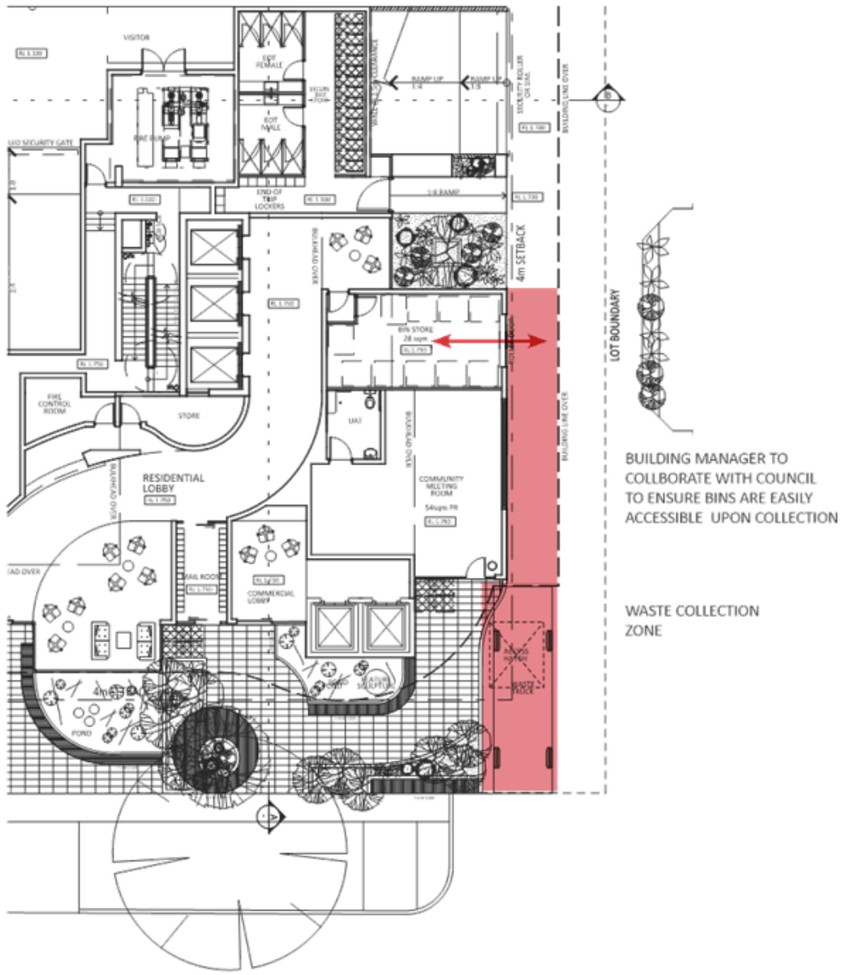


Diagram 9.3 Proposed waste truck parking for bin collection

9.4 LETTERBOXES

Letter boxes are conveniently provided in a mail room at the residential lobby entrance off Mill Point Road.

APPENDIX

A. Architectural Drawings

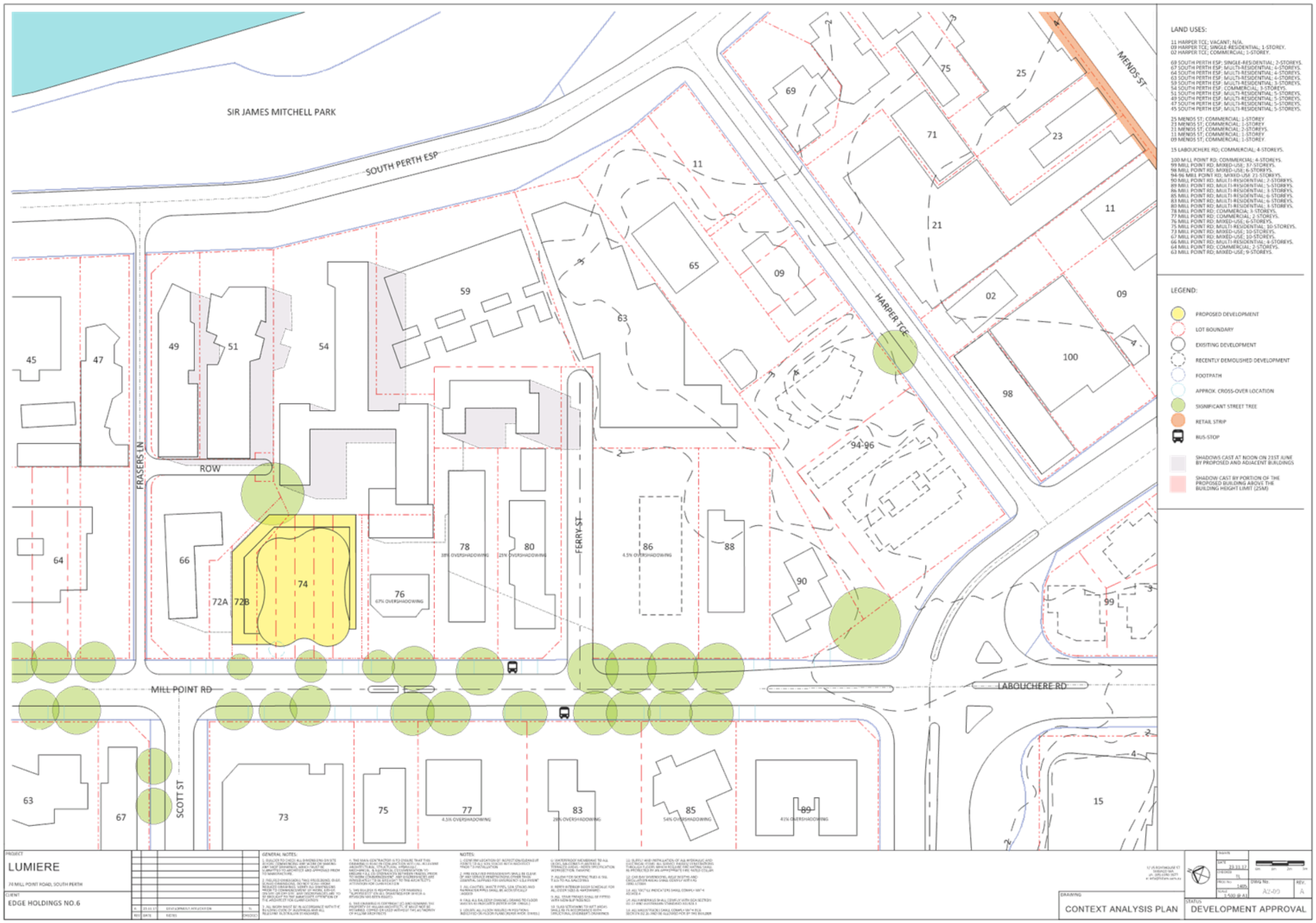
B. Perspectives

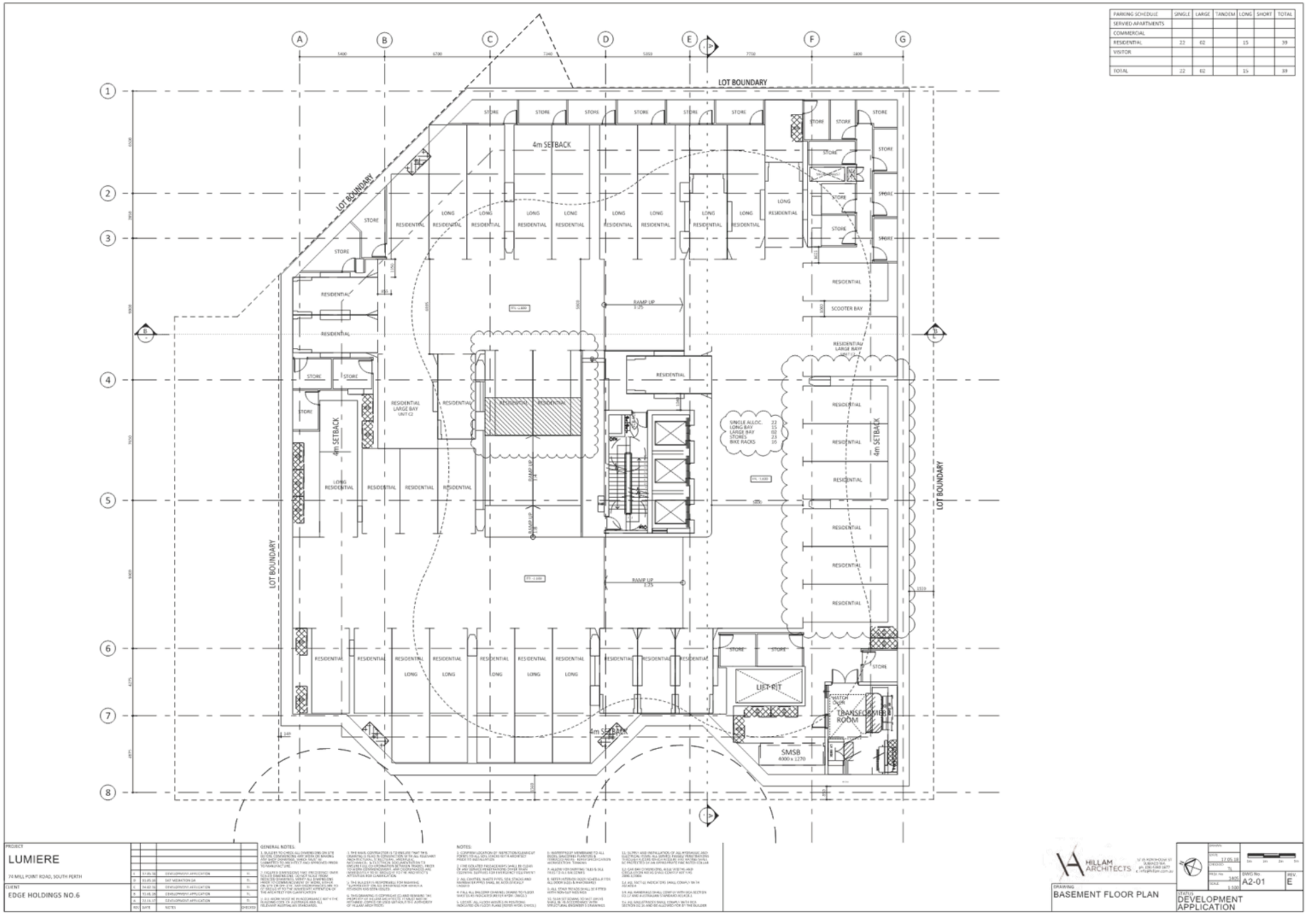
C. Landscape Architects Report

D. Waste Management Report

E. Traffic Management Report

A. ARCHITECTURAL DRAWINGS


SIR JAMES MITCHELL PARK
SOUTH PERTH ESP
MENDS ST
HARPER TCE
FERRY ST
FRASERS LN
ROW
MILL POINT RD
SCOTT ST
LABOUCHERE RD
LAND USES:
LEGEND:
PROPOSED DEVELOPMENT
LOT BOUNDARY
EXISITING DEVELOPMENT
RECENTLY DEMOLISHED DEVELOPMENT
FOOTPATH
APPROX. CROSS-OVER LOCATION
SIGNIFICANT STREET TREE
RETAIL STRIP
BUS-STOP
SHADOWS CAST AT NOON ON 21ST JUNE BY PROPOSED AND ADJACENT BUILDINGS
SHADOW CAST BY PORTION OF THE PROPOSED BUILDING ABOVE THE BUILDING HEIGHT LIMIT (25M)
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
CONTEXT ANALYSIS PLAN
DEVELOPMENT APPROVAL
A2-00
1:500 @ A1



PARKING SCHEDULE	SINGLE	LARGE	TANDEM	LONG	SHORT	TOTAL
SERVIED APARTMENTS						
COMMERCIAL						
RESIDENTIAL	22	02		15		39
VISITOR						
TOTAL	22	02		15		39

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	17.05.18	DEVELOPMENT APPLICATION	TL
B	03.05.18	DAT MEDIATION DA	TL
C	04.02.18	DEVELOPMENT APPLICATION	TL
B	31.08.18	DEVELOPMENT APPLICATION	TL
A	13.11.17	DEVELOPMENT APPLICATION	TL

GENERAL NOTES:
1. BUILDER TO CHECK ALL DIMENSIONS ON SITE SO CAN COMMENCING ANY WORK OR MAKING ANY SHOP DRAWINGS. WHICH MUST BE CHECKED BY THE ARCHITECT AND APPROVED PRIOR TO MANUFACTURE.
2. FIGURED DIMENSIONS THEY PREVAILING OVER SCALED DIMENSIONS. TO OBTAIN SCALE FROM REDUCED DIMENSIONS, VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK. ERRORS OR OMISSIONS ARE TO BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION.
3. ALL WORK MUST BE IN ACCORDANCE WITH THE BUILDING CODE OF AUSTRALIA AND ALL RELEVANT AUSTRALIAN STANDARDS.
4. THE MAIN CONTRACTOR IS TO ENSURE THAT THIS DRAWING IS READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, MECHANICAL, HYDRAULIC, ELECTRICAL, FIRE, LIFT, ACOUSTIC AND CIVIL DRAWINGS AND ANY OTHER CONSULTANTS DRAWINGS AND CO-ORDINATION BETWEEN TRADES. PRIOR TO WORKS COMMENCEMENT, ANY DISCREPANCIES ARE TO BE REPORTED IN WRITING TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION.
5. THE BUILDER IS RESPONSIBLE FOR OBTAINING "APPROVED" FOR ALL DRAWINGS FOR WORKS & DIVISION 1000 ESTIMATES.
6. THIS DRAWING IS COPYRIGHT OF HILLAM ARCHITECTS AND REMAINS THE PROPERTY OF HILLAM ARCHITECTS. IT MUST NOT BE REPRODUCED OR USED WITHOUT THE AUTHORITY OF HILLAM ARCHITECTS.

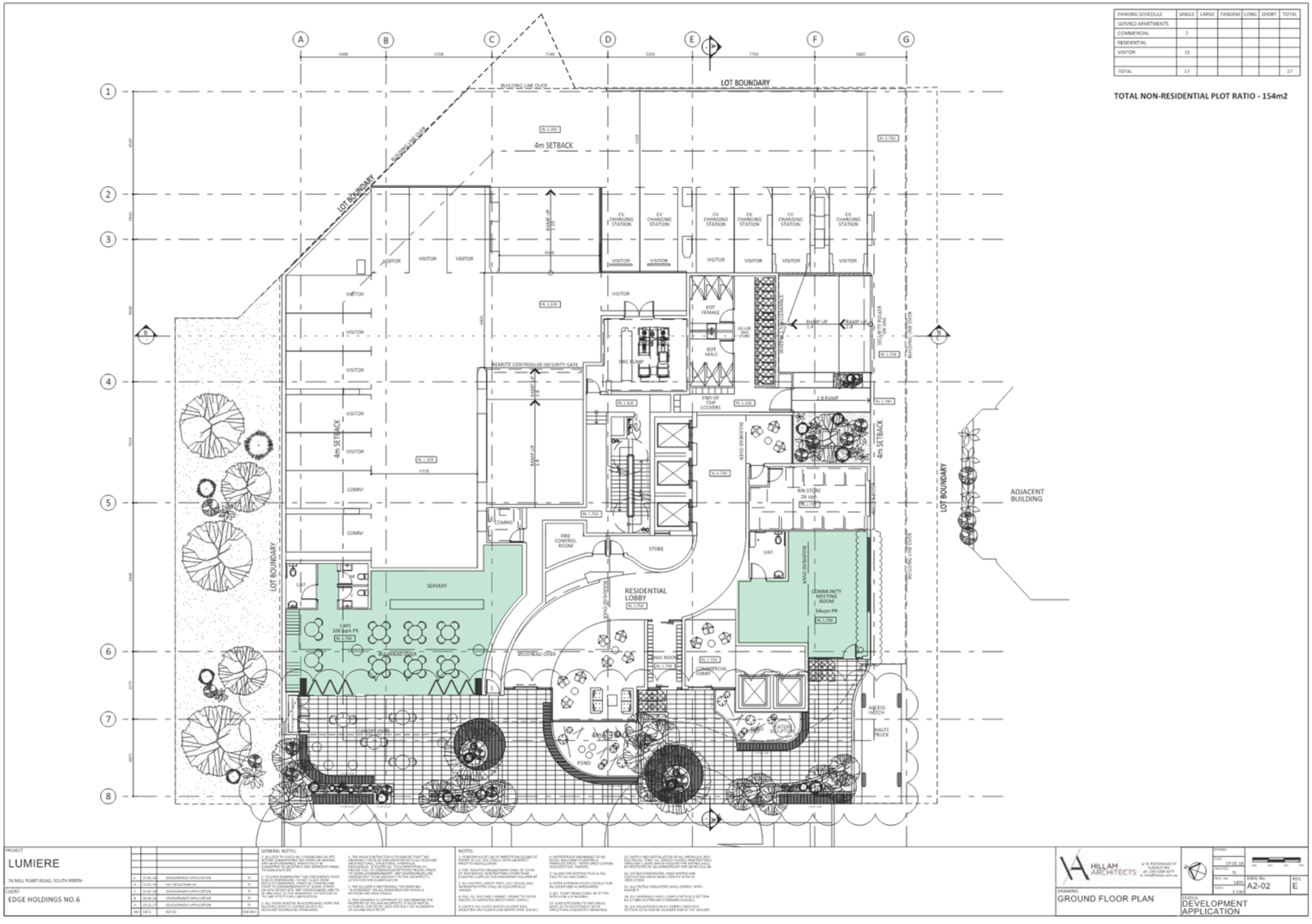
NOTES:
1. CONFIRM LOCATION OF INSPECTION/CLEANOUT POINTS TO ALL SOIL STACKS WITH ARCHITECT PRIOR TO INSTALLATION
2. ALL CAPTIVE, WASTE PIPES, SOIL STACKS AND RAINWATER PIPES SHALL BE ACOUSTICALLY LAGGED
3. FINAL ALL BALCONY DRAINS TO FLOOR WASTES AS PER ARCHITECTURAL DRAWINGS
4. LOCATE ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWGS.)
5. WATERPROOF MEMBRANE TO ALL BOOMS, BALCONIES PLANTERS & TERRACES AS PER ARCHITECTURAL SPECIFICATION
6. ALLOW FOR SHAVING SLABS & SILL TILES TO ALL BATHROOMS
7. REFER ARCHITECTURAL DOOR SCHEDULE FOR ALL DOOR SIZES & MANOEUVRABILITY
8. ALL STAIR TREADS SHALL BE 4 PIPES WITH NON-SLIP NOSINGS
9. SEWER DOWNS TO WET AREAS SHALL BE 'BLACK' PIPING WITH STRUCTURAL ENGINEER'S DRAWINGS
10. SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL ITEMS ALL SERVICE PIPING PENETRATIONS THROUGH FLOORS SHOULD BE SLEEVED AND WATER PROOFED AS PER DETAILS BY OTHERS
11. GAS GAS CONNECTIONS, METER AND REGULATION AS PER ARCHITECTURAL DRAWINGS
12. ALL TACTILE INDICATORS SHALL COMPLY WITH AS1428.4
13. ALL HANDRAILS SHALL COMPLY WITH AS1428.1 CLAUSE 10.2 AND AUSTRALIAN STANDARD AS1428.1
14. ALL INSULATION SHALL COMPLY WITH BCA SECTION 3.12.1 AND AUSTRALIAN STANDARD AS1428.1
15. ALL INSULATION TO BE INSTALLED AS PER BCA SECTION 3.12.5 AND BE ALLOWED FOR BY THE BUILDER

HILLAM ARCHITECTS
57 IS HOWTHORNE ST SUBIACO WA
ph: (08) 9388 3877
e: info@hillam.com.au

DRAWING
BASEMENT FLOOR PLAN

DRAWN	
DATE	17.05.18
CHECKED	TL
PLOT No	1400
SCALE	1:100
DWG No	A2-01
REV	E

STATUS
DEVELOPMENT APPLICATION



PARKING SCHEDULE	SINGLE	LARGE	TANDEM	LONG	SHORT	TOTAL
SERVIED APARTMENTS						
COMMERCIAL	2					
RESIDENTIAL						
VISITOR	15					
TOTAL	17					17

TOTAL NON-RESIDENTIAL PLOT RATIO - 154m2

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

A	17.05.18	DEVELOPMENT APPLICATION	TL
B	31.05.18	KEY NEGOTIATION	TL
C	14.12.18	DEVELOPMENT APPLICATION	TL
D	31.01.19	DEVELOPMENT APPLICATION	TL
E	23.11.17	DEVELOPMENT APPLICATION	TL
REV	DATE	NOTES	CHECKED

GENERAL NOTES:

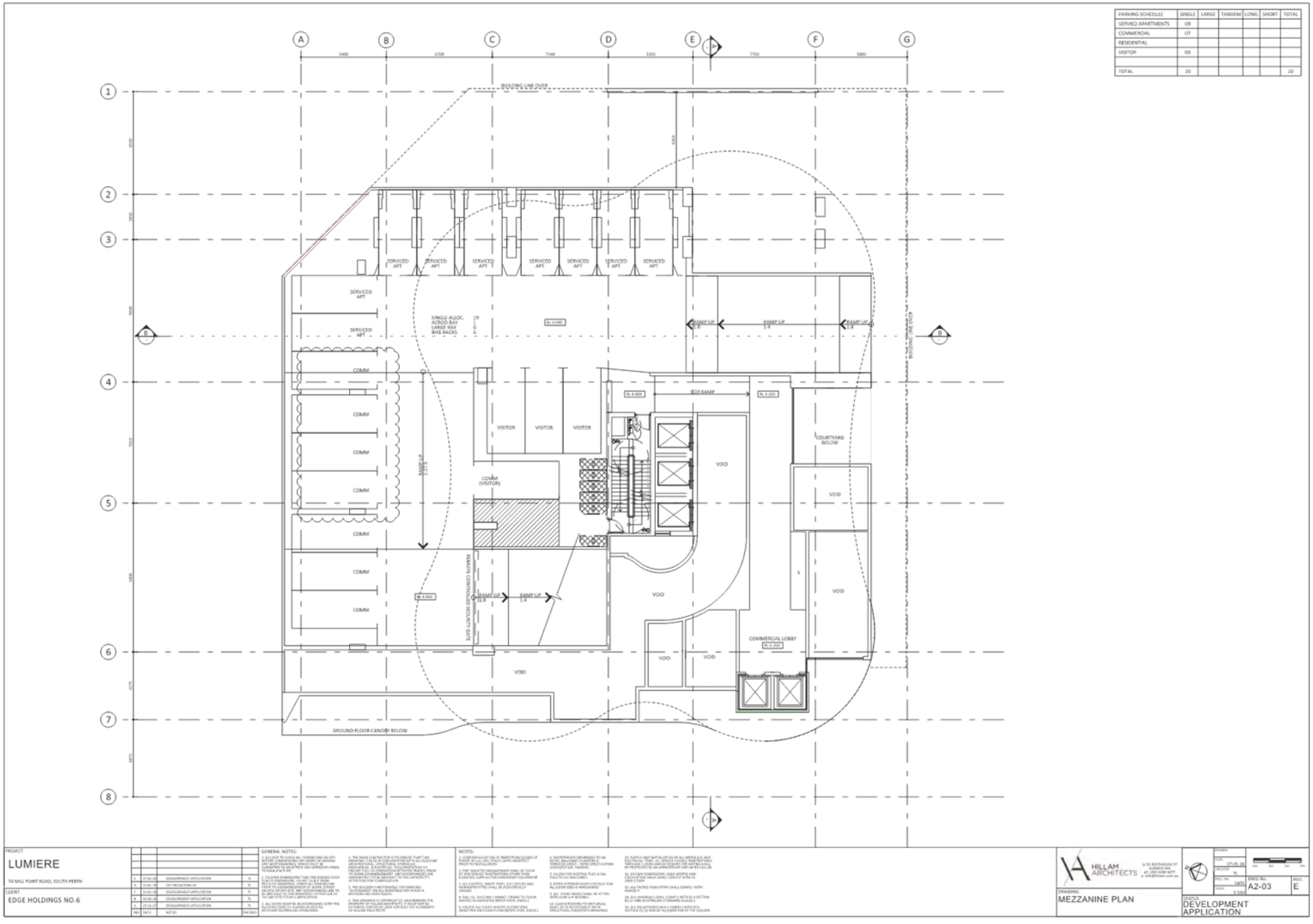
NOTES:

HILLAM ARCHITECTS
12 ST. KEVERNE ST SUBIACO WA
ph. (08) 9388 8077
e. info@hillam.com.au

DRAWING
GROUND FLOOR PLAN

DRAWN	
DATE	17.05.18
CHECKED	TL
PROJ. No	1405
SCALE	1:100
DWG No.	A2-02
REV	E

STATUS
DEVELOPMENT APPLICATION



PARKING SCHEDULE	SINGLE	LARGE	TANDEM	LONG	SHORT	TOTAL
SERVICED APARTMENTS	09					
COMMERCIAL	07					
RESIDENTIAL						
VISITOR	03					
TOTAL	20					20

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

E	17.05.18	DEVELOPMENT APPLICATION	TL
D	15.05.18	ISSUE FOR REVIEW	TL
C	19.02.18	DEVELOPMENT APPLICATION	TL
B	31.01.18	DEVELOPMENT APPLICATION	TL
A	28.11.17	DEVELOPMENT APPLICATION	TL
REV	DATE	NOTES	DRAWN

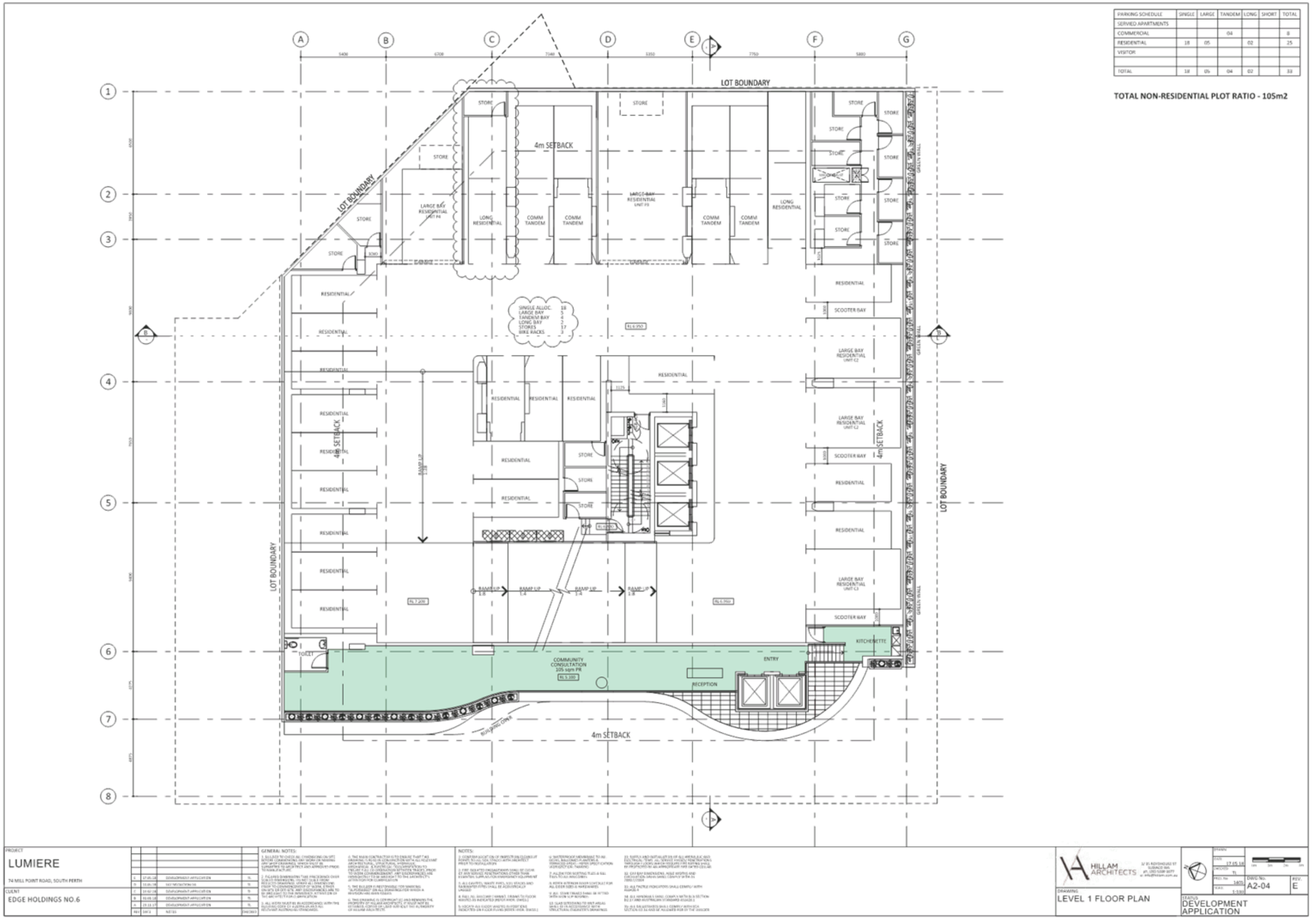
GENERAL NOTES:

NOTES:

HILLAM ARCHITECTS
DRAWING
MEZZANINE PLAN

DRAWN	
DATE	17.05.18
CHECKED	TL
PROJ. No	1405
SCALE	1:100
DWG No.	A2-03
REV.	E

STATUS
DEVELOPMENT APPLICATION



PARKING SCHEDULE	SINGLE	LARGE	TANDEM	LONG	SHORT	TOTAL
SERVIED APARTMENTS						
COMMERCIAL			04			8
RESIDENTIAL	18	05		02		25
VISITOR						
TOTAL	18	05	04	02		33

TOTAL NON-RESIDENTIAL PLOT RATIO - 105m2

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	DRAWN
A	22.11.17	DEVELOPMENT APPLICATION	TL
B	15.02.18	DEVELOPMENT APPLICATION	TL
C	16.03.18	DEVELOPMENT APPLICATION	TL
D	17.05.18	DEVELOPMENT APPLICATION	TL

GENERAL NOTES:

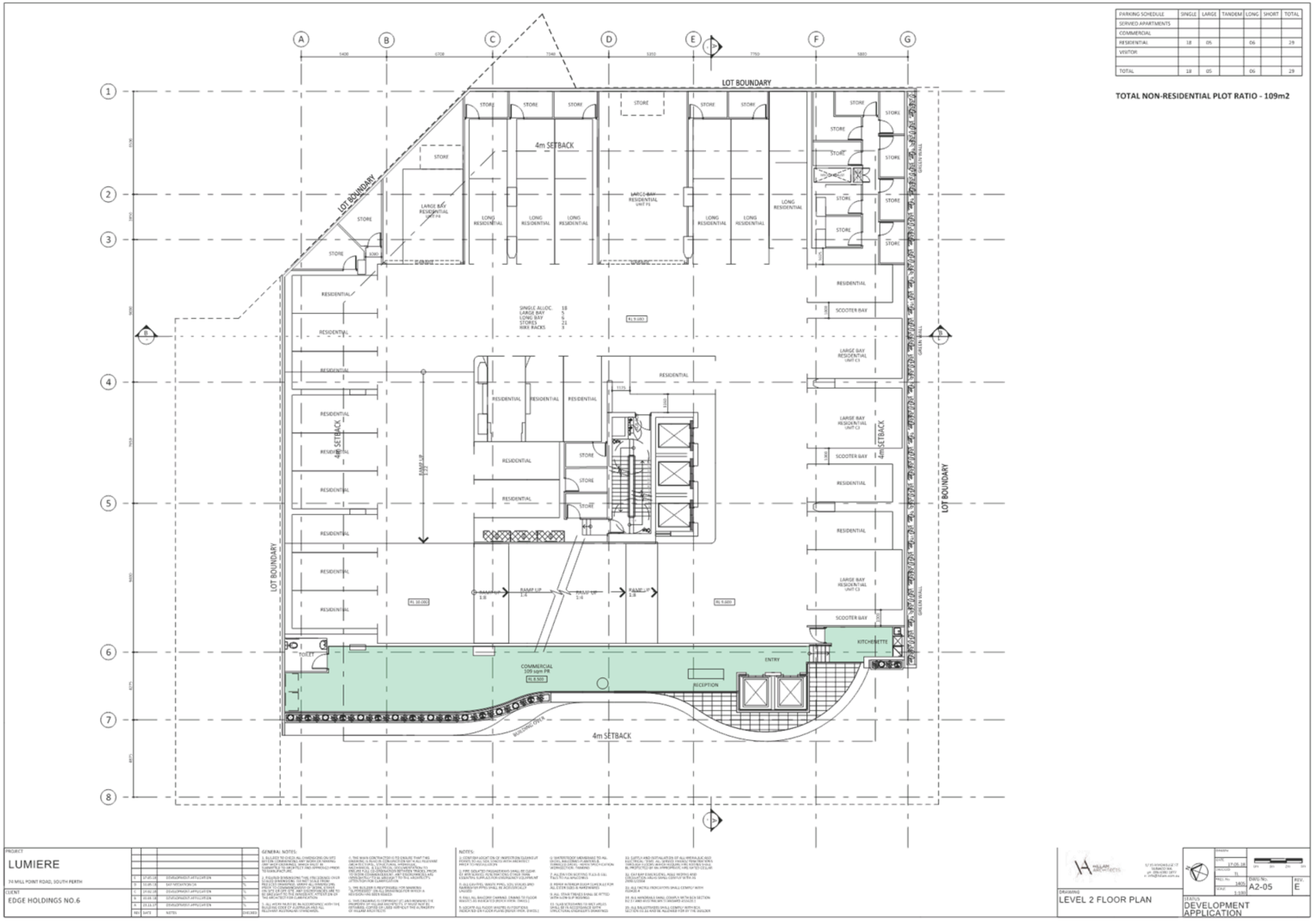
NOTES:

HILLAM ARCHITECTS
32 ST. ROYSTONS ST SUBIACO 6008
PT. (08) 9388 8077
e: info@hillam.com.au

DRAWING
LEVEL 1 FLOOR PLAN

DRAWN TL
DATE 17.05.18
PROJECT No. 1409
SCALE 1:100
DWG No. A2-04
REV. E

STATUS
DEVELOPMENT APPLICATION



PARKING SCHEDULE	SINGLE	LARGE	TANDEM	LONG	SHORT	TOTAL
SERVICED APARTMENTS						
COMMERCIAL						
RESIDENTIAL	18	05		06		29
VISITOR						
TOTAL	18	05		06		29

TOTAL NON-RESIDENTIAL PLOT RATIO - 109m2

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
E	17.05.18	DEVELOPMENT APPLICATION	TL
D	10.05.18	SKETCH DESIGN	TL
C	19.02.18	DEVELOPMENT APPLICATION	TL
B	10.08.17	DEVELOPMENT APPLICATION	TL
A	23.11.17	DEVELOPMENT APPLICATION	TL

GENERAL NOTES:

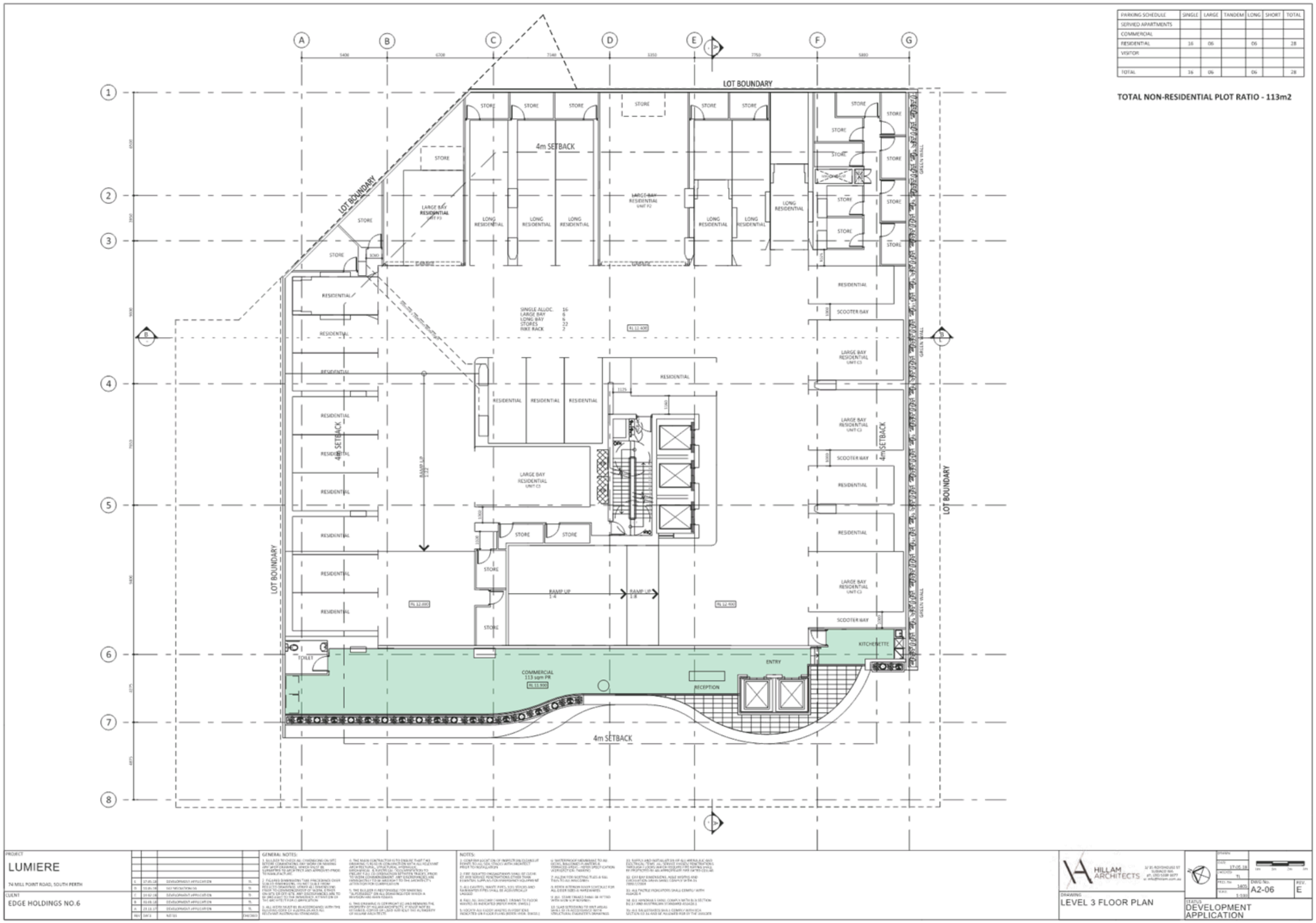
NOTES:

WILLIAM ARCHITECTS
57 ST HYACINTHE ST
TARCO WA
ph: (08) 6382 1872
e: info@william.com.au

DRAWING
LEVEL 2 FLOOR PLAN

DRAWN
DATE 17.05.18
CHECKED TL
PROJ. No. 1405
SCALE 1:100
DWG No. A2-05
REV. E

STATUS
DEVELOPMENT APPLICATION



PARKING SCHEDULE	SINGLE	LARGE	TANDEM	LONG	SHORT	TOTAL
SERVIED APARTMENTS						
COMMERCIAL						
RESIDENTIAL	16	06		06		28
VISITOR						
TOTAL	16	06		06		28

TOTAL NON-RESIDENTIAL PLOT RATIO - 113m2

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES
E	17.05.18	DEVELOPMENT APPLICATION
D	15.05.18	DEV NEGOTIATION 06
C	10.02.18	DEVELOPMENT APPLICATION
B	31.08.17	DEVELOPMENT APPLICATION
A	23.11.17	DEVELOPMENT APPLICATION

GENERAL NOTES:

NOTES:

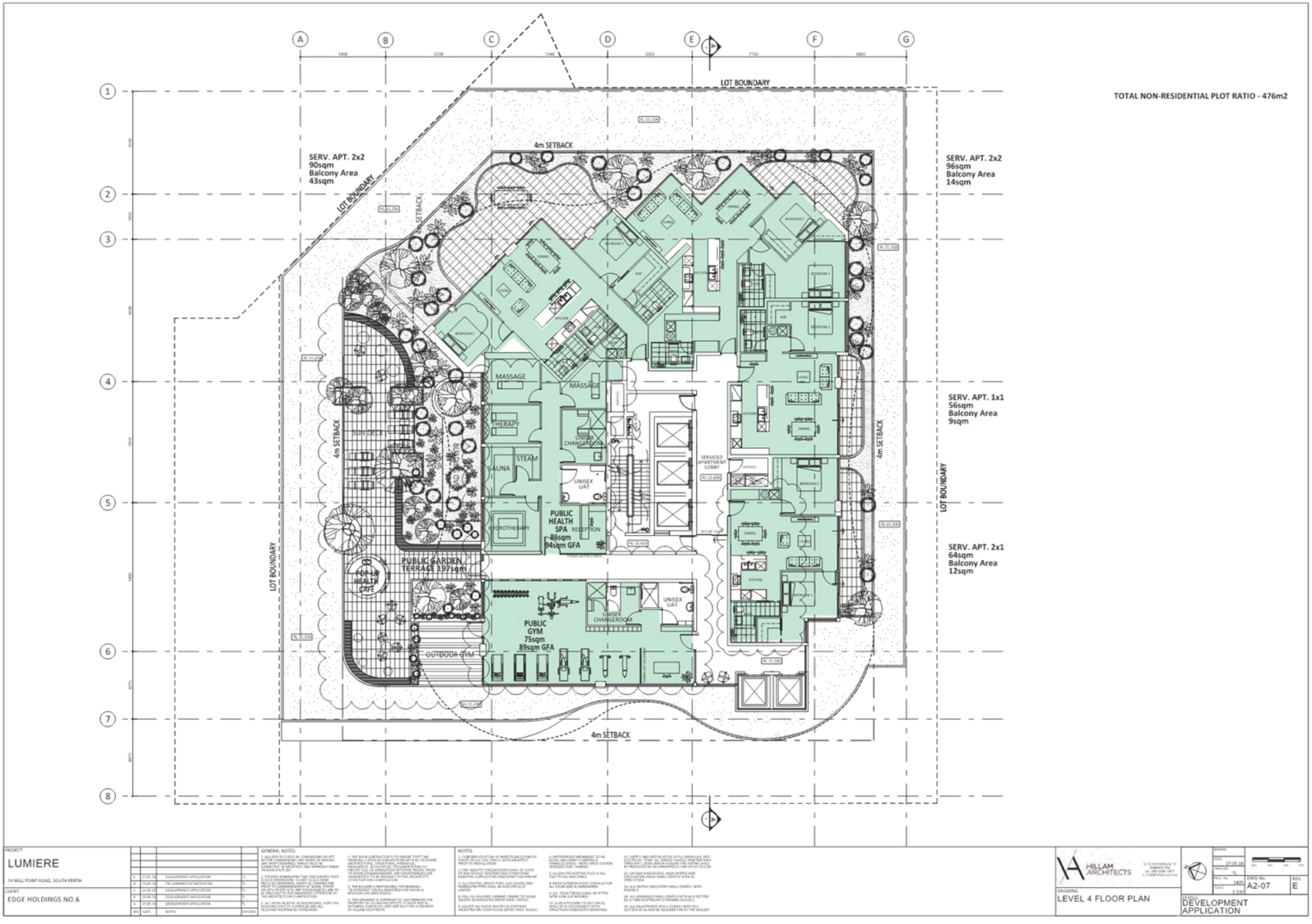
HILLAM ARCHITECTS
3/ 35 ROYSTON ST SUBIACO WA
ph. (08) 6388 8070
w. info@hillam.com.au

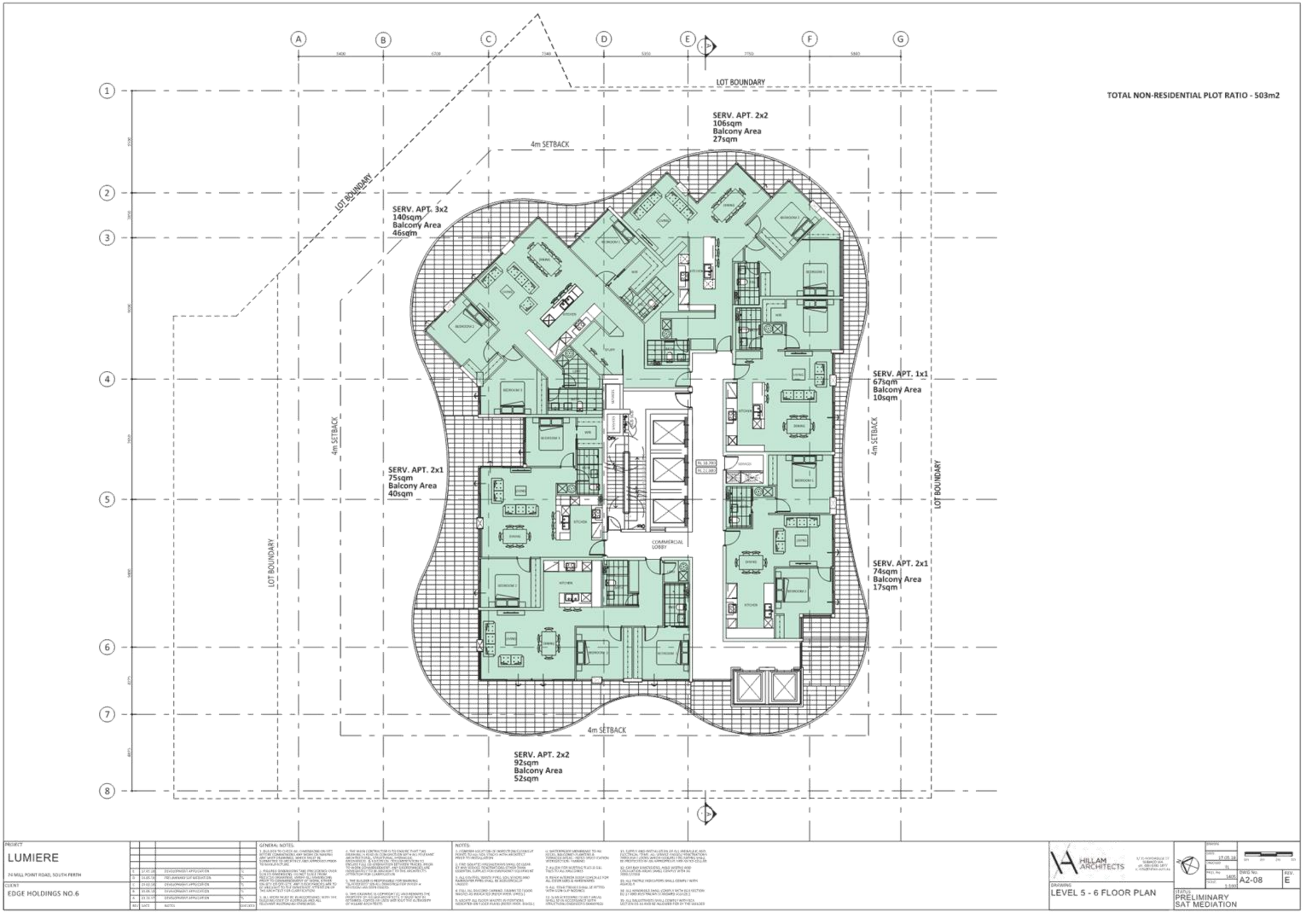
DRAWING
LEVEL 3 FLOOR PLAN

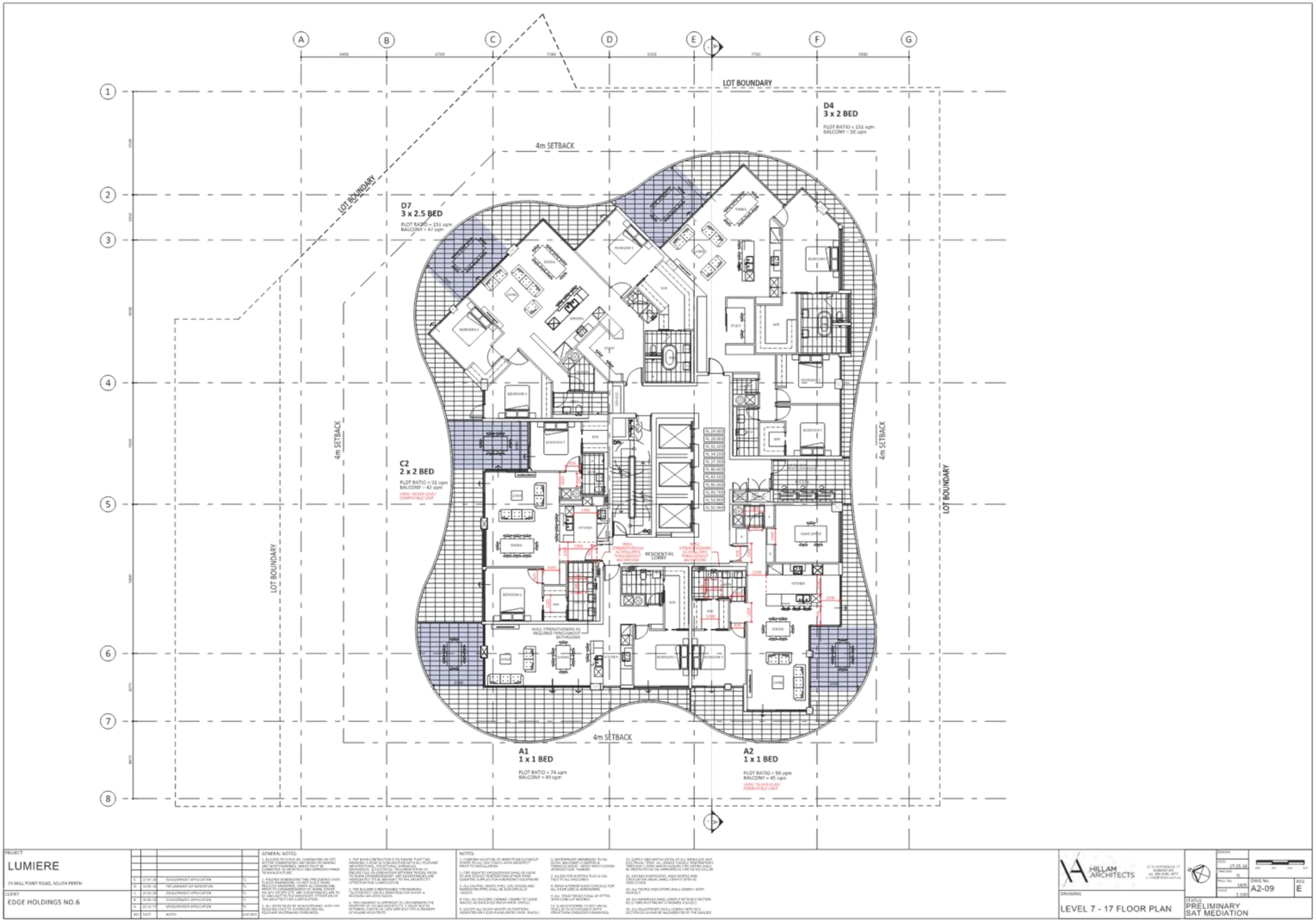
DRAWN
DATE 17.05.18
CHECKED
PLOT No. 3405
SCALE 1:100

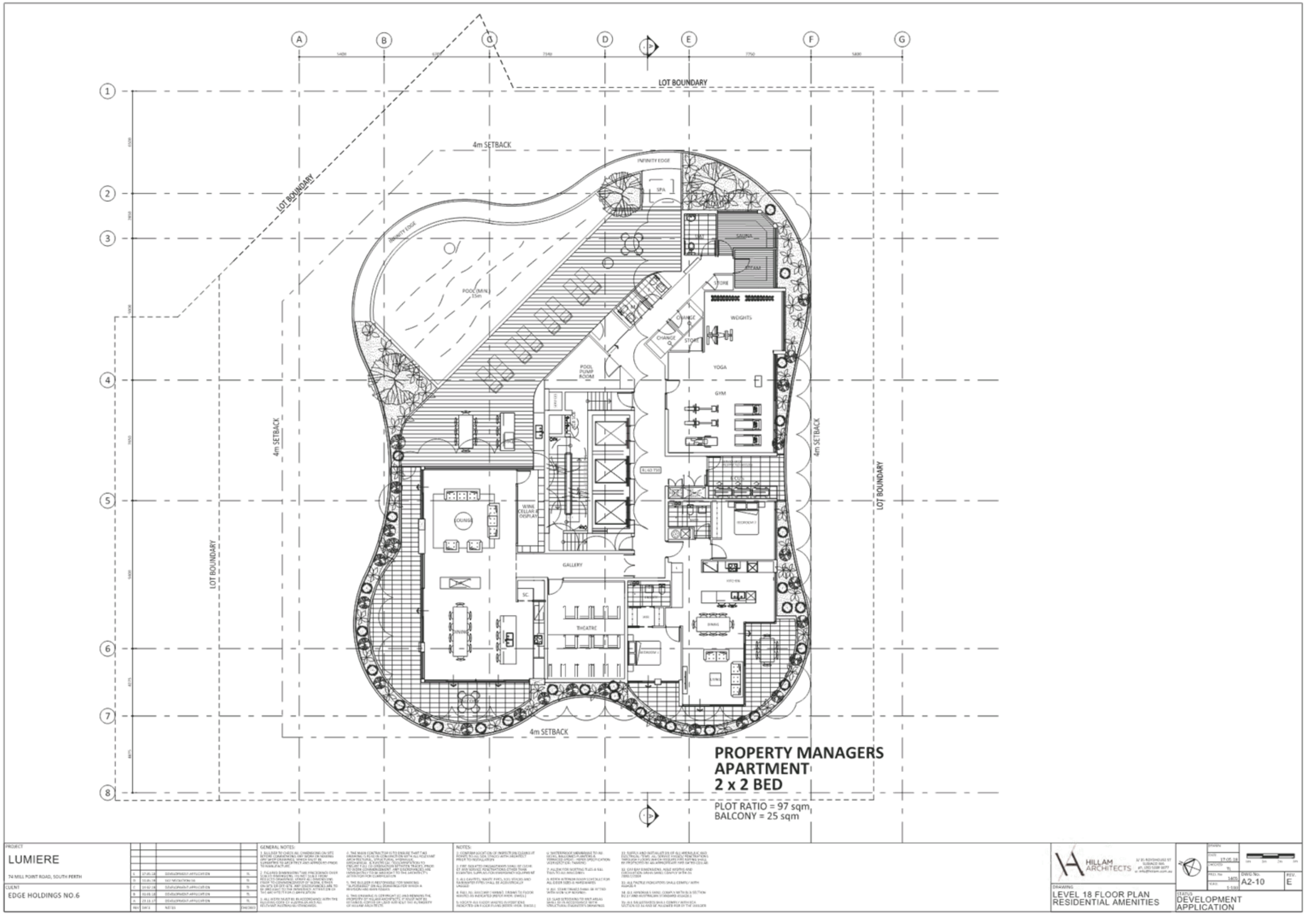
DWG No. A2-06
REV E

STATUS
DEVELOPMENT APPLICATION

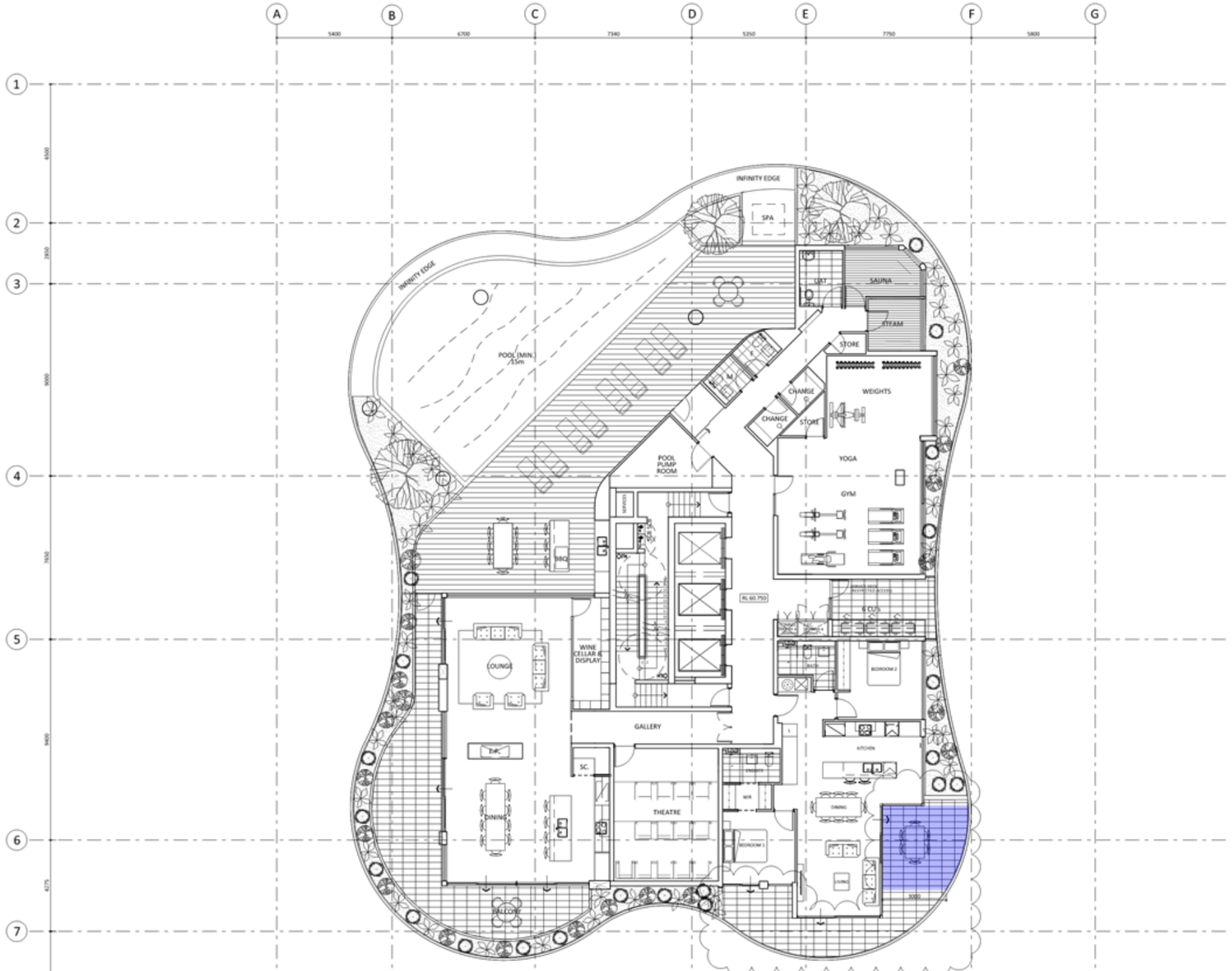

TOTAL NON-RESIDENTIAL PLOT RATIO - 476m2
LOT BOUNDARY
4m SETBACK
SERV. APT. 2x2
90sqm
Balcony Area
43sqm
SERV. APT. 2x2
96sqm
Balcony Area
14sqm
SERV. APT. 1x1
56sqm
Balcony Area
9sqm
SERV. APT. 2x1
64sqm
Balcony Area
12sqm
MASSAGE
THERAPY
SUN DECK
STEAM
SAUNA
UNISEX CHANGEROOM
UNISEX UAT
SERVICED APARTMENT LOBBY
PUBLIC HEALTH SPA
RECEPTION
86sqm
94sqm GFA
HYDROTHERAPY
PUBLIC GARDEN / TERRACE 197sqm
PUBLIC HEALTH CAFE
PUBLIC GYM
75sqm
89sqm GFA
OUTDOOR GYM
4m SETBACK
LOT BOUNDARY
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
DRAWING
LEVEL 4 FLOOR PLAN
DRAWN
DATE 17.05.18
CHECKED FL
PROJ. No 1405
SCALE 1:100
DWG No. A2-07
REV. E
STATUS
DEVELOPMENT APPLICATION


TOTAL NON-RESIDENTIAL PLOT RATIO - 503m2
LOT BOUNDARY
4m SETBACK
SERV. APT. 2x2
106sqm
Balcony Area
27sqm
SERV. APT. 3x2
140sqm
Balcony Area
46sqm
SERV. APT. 1x1
67sqm
Balcony Area
10sqm
SERV. APT. 2x1
75sqm
Balcony Area
40sqm
SERV. APT. 2x1
74sqm
Balcony Area
17sqm
SERV. APT. 2x2
92sqm
Balcony Area
52sqm
COMMERCIAL LOBBY
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
DRAWING
LEVEL 5 - 6 FLOOR PLAN
DRAWN
DATE 17.05.18
CHECKED
PROJ. No 1405
SCALE 1:100
DWG No. A2-08
REV E
STATUS
PRELIMINARY
SAT MEDIATION


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
LOT BOUNDARY
4m SETBACK
D4
3 x 2 BED
PLOT RATIO = 151 sqm
BALCONY = 50 sqm
D7
3 x 2.5 BED
PLOT RATIO = 151 sqm
BALCONY = 67 sqm
C2
2 x 2 BED
PLOT RATIO = 95 sqm
BALCONY = 42 sqm
A1
1 x 1 BED
PLOT RATIO = 74 sqm
BALCONY = 49 sqm
A2
1 x 1 BED
PLOT RATIO = 99 sqm
BALCONY = 45 sqm
RESIDENTIAL LOBBY
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
DRAWING
LEVEL 7 - 17 FLOOR PLAN
DRAWN
DATE
17.05.18
CHECKED
JL
PROJ. No.
1405
SCALE
1:100
DWG No.
A2-09
REV.
E
STATUS
PRELIMINARY
SAT MEDIATION


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
LOT BOUNDARY
4m SETBACK
INFINITY EDGE
SPA
SAUNA
STEAM
SHOWER
CHANGE
CHANGE
STORE
WEIGHTS
YOGA
GYM
POOL PUMP ROOM
POOL (MIN. 15m)
WINE CELLAR & DISPLAY
LOUNGE
GALLERY
SC
THEATRE
KITCHEN
DINING
LIVING
BEDROOM 1
BEDROOM 2
PROPERTY MANAGERS
APARTMENT
2 x 2 BED
PLOT RATIO = 97 sqm
BALCONY = 25 sqm
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
GENERAL NOTES:
NOTES:
HILLAM ARCHITECTS
DRAWING
LEVEL 18 FLOOR PLAN
RESIDENTIAL AMENITIES
DRAWN
DATE
17.05.18
CHECKED
SCALE
1:100
DWG No.
A2-10
REV
E
STATUS
DEVELOPMENT APPLICATION

Amended Plan: 12 June 2018



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
F	12.06.18	DEVELOPMENT APPLICATION	TL
E	17.05.18	DEVELOPMENT APPLICATION	TL
D	15.05.18	SAT MEDIATION DA	TL
C	14.02.18	DEVELOPMENT APPLICATION	TL
B	10.01.18	DEVELOPMENT APPLICATION	TL
A	23.11.17	DEVELOPMENT APPLICATION	TL

GENERAL NOTES:
1. BUILDER TO CHECK ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF ANY WORK OR MAKING ANY SHOP DRAWINGS, WHICH MUST BE SUBMITTED TO ARCHITECT AND APPROVED PRIOR TO MANUFACTURE.
2. FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. DO NOT SCALE FROM REDUCED DRAWINGS. VERIFY ALL DIMENSIONS ON SITE BEFORE PROCEEDING WITH WORK OR ON-SITE OR OFF-SITE, AND DISCREPANCIES ARE TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT FOR CLARIFICATION
3. ALL WORK MUST BE IN ACCORDANCE WITH THE BUILDING CODE OF AUSTRALIA AND ALL RELEVANT AUSTRALIAN STANDARDS.
4. THE MAIN CONTRACTOR IS TO ENSURE THAT THIS DRAWING IS READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, HYDRAULIC, MECHANICAL & ELECTRICAL DOCUMENTATION TO ENSURE FULL CO-ORDINATION BETWEEN TRADES, PRIOR TO WORK COMMENCING. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT'S ATTENTION FOR CLARIFICATION
5. THE BUILDER IS RESPONSIBLE FOR MARKING "SUPERSEDED" ON ALL DRAWINGS FOR WHICH A REVISION HAS BEEN ISSUED.
6. THIS DRAWING IS COPYRIGHT (C) AND REMAINS THE PROPERTY OF HILLAM ARCHITECTS. IT MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE AUTHORITY OF HILLAM ARCHITECTS

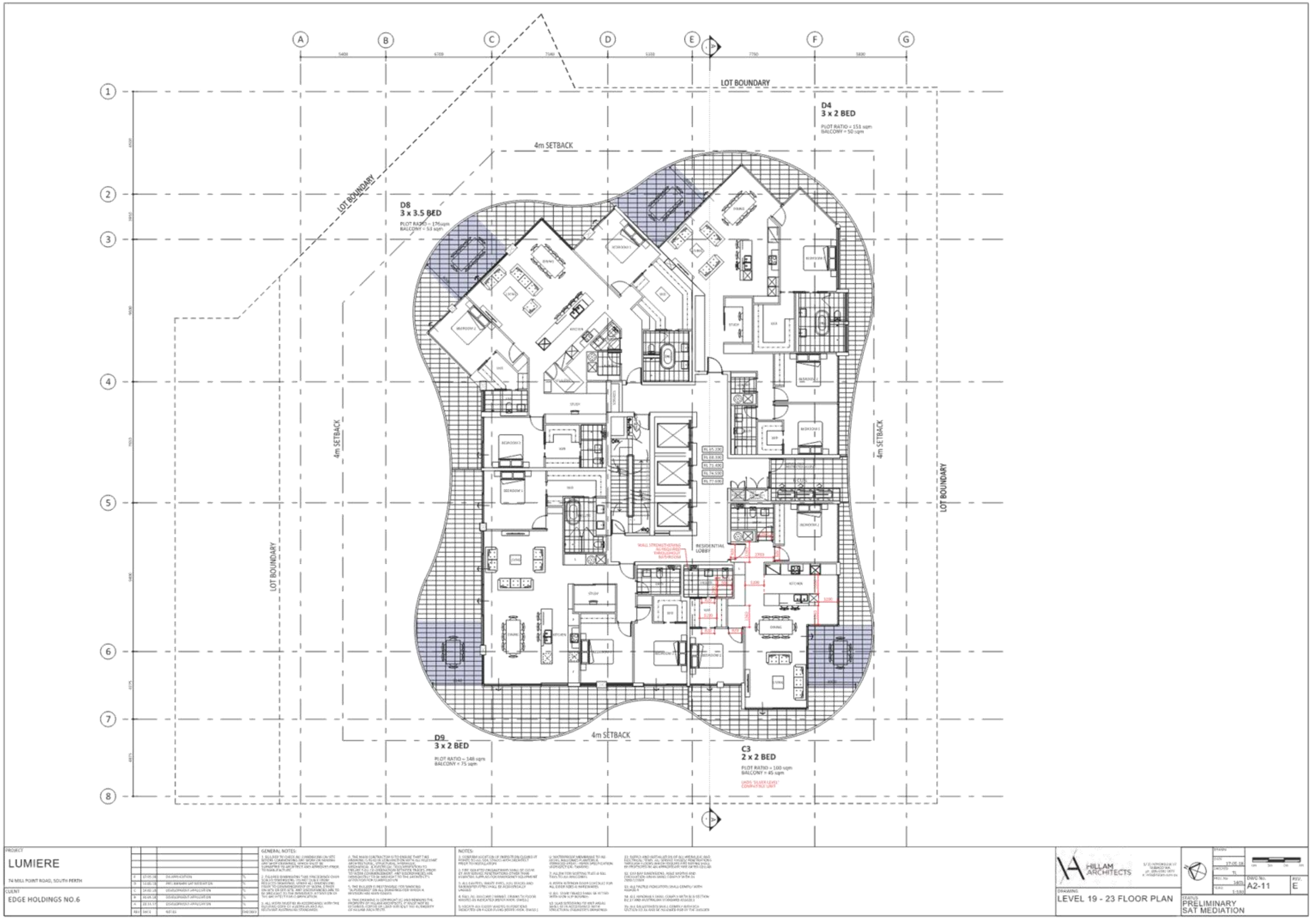
NOTES:
1. CONFIRM LOCATION OF INSPECTION/CLEANOUT OPENINGS WITH ALL SOIL STACKS WITH ARCHITECT PRIOR TO INSTALLATION
2. FIRE ISOLATED PASSAGEWAYS SHALL BE CLEAR OF ANY SERVICE PENETRATIONS OTHER THAN ESSENTIAL SUPPLIES FOR EMERGENCY EQUIPMENT
3. ALL CAVITIES, WASTE PIPES, SOIL STACKS AND RAINWATER PIPES SHALL BE ACOUSTICALLY LAGGED
4. FALL ALL BALCONY CHANNEL DRAINS TO FLOOR WASTES AS INDICATED (REFER HYDR. DWGS.)
5. LOCATE ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWGS.)
6. WATERPROOF MEMBRANE TO ALL DECKS, BALCONIES, PLANTERS & TERRACED AREAS - REFER SPECIFICATION WORKSECTION: TANKING
7. ALIGN FOR SKIRTING TILES & SILL TILES TO ALL BALCONIES
8. REFER INTERIOR DOOR SCHEDULE FOR ALL DOOR SIZES & HARDWARES
9. ALL STAIR TREADS SHALL BE FITTED WITH NON SLIP NOSINGS
10. SUB SETDOWNS TO WET AREAS SHALL BE IN ACCORDANCE WITH STRUCTURAL ENGINEER'S DRAWINGS
11. SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL ITEMS, ALL SERVICE PASSES/ PENETRATIONS THROUGH FLOORS WHICH REQUIRE FIRE RATING SHALL BE PROTECTED BY AN APPROPRIATE FIRE RATED COLLAR
12. CAR BAY DIMENSIONS, AISLE WIDTHS AND CIRCULATION AREAS SHALL COMPLY WITH AS 2890.1/2004
13. ALL TACTILE INDICATORS SHALL COMPLY WITH AS1428.4
14. ALL HANDRAILS SHALL COMPLY WITH BCA SECTION D2.17 AND AUSTRALIAN STANDARD AS1428.1
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER

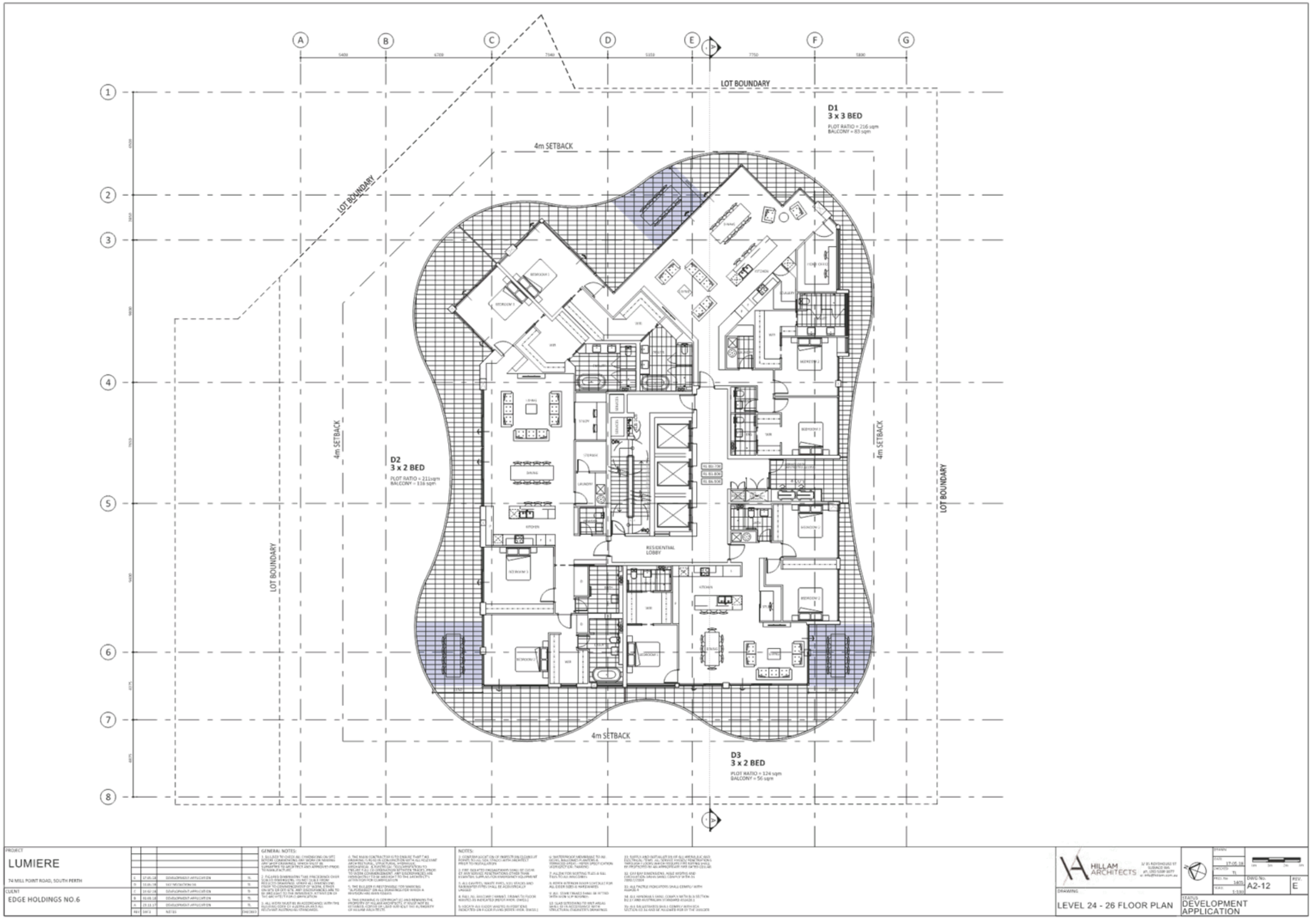
HILLAM ARCHITECTS
1/ 15 ROWHOUSE ST SUBIACO WA ph. (08) 6380 1877 e. info@hillam.com.au

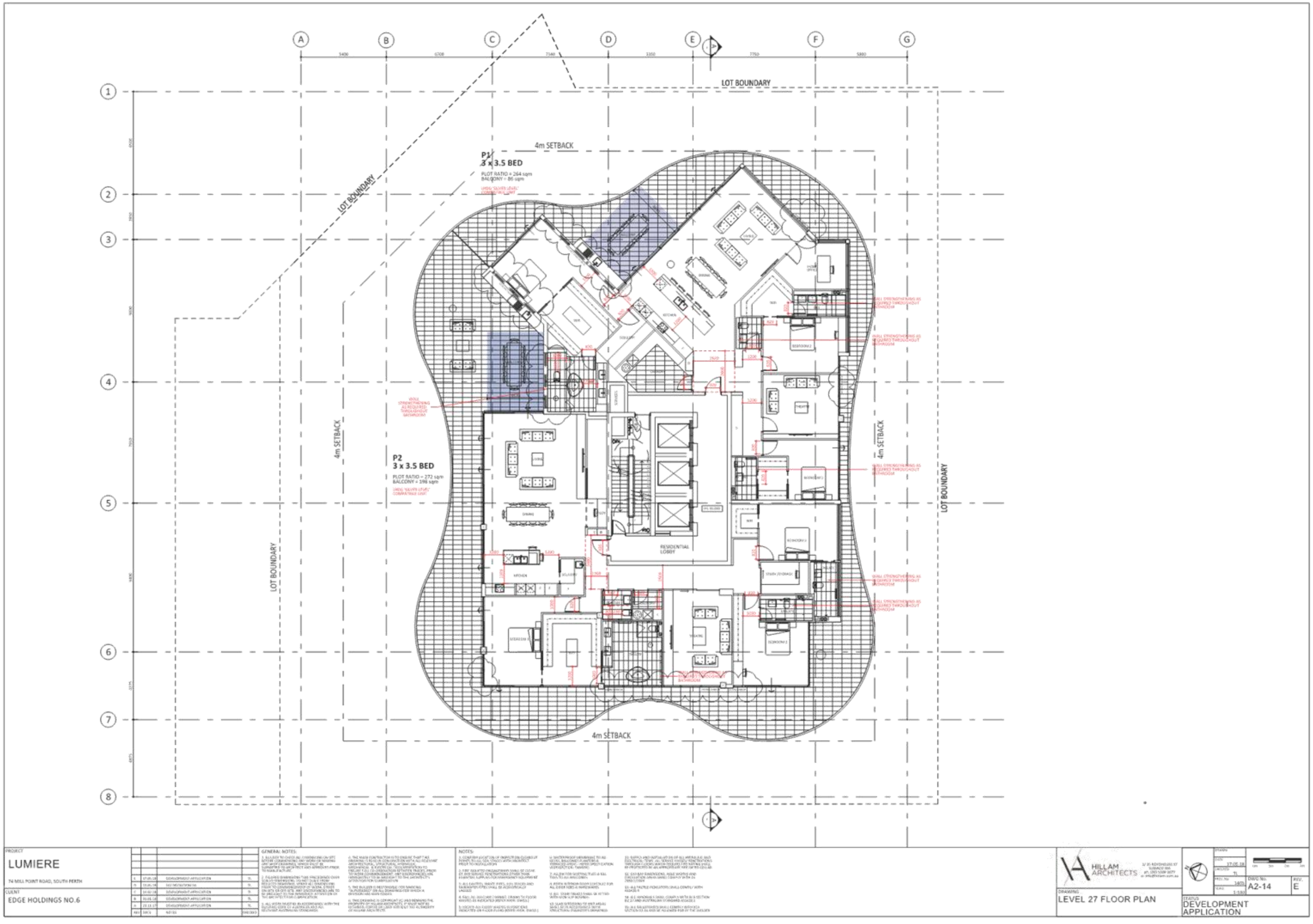
DRAWING
LEVEL 18 FLOOR PLAN
RESIDENTIAL AMENITIES

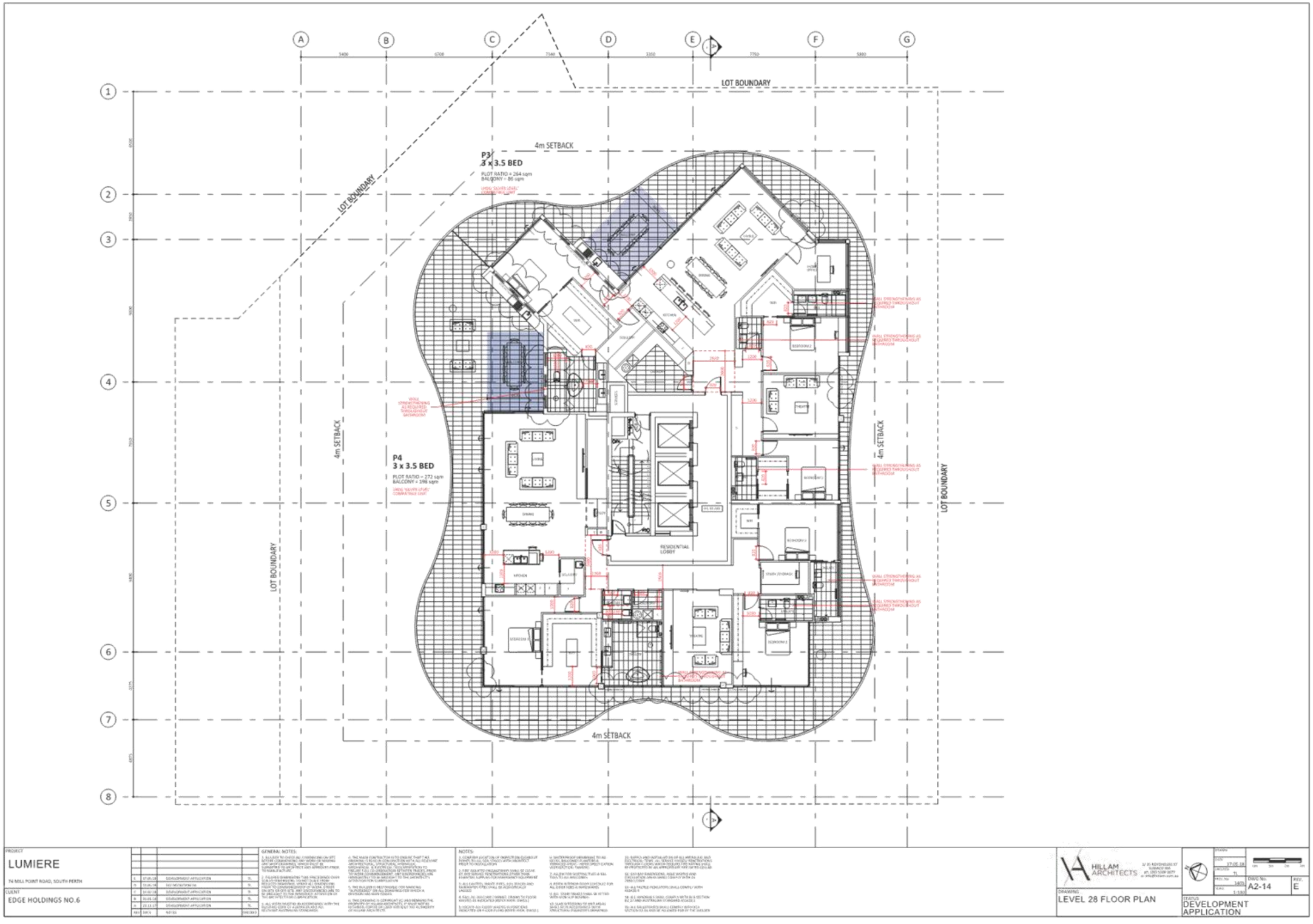
DRAWN:
DATE: 12.06.18
CHECKED: TL
PROJ. No: 1405
SCALE: 1:100
DWG No. A2-10
REV. F

STATUS
DEVELOPMENT APPLICATION


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
LOT BOUNDARY
4m SETBACK
D4
3 x 2 BED
PLOT RATIO = 151 sqm
BALCONY = 50 sqm
D8
3 x 3.5 BED
PLOT RATIO = 176sqm
BALCONY = 53 sqm
D9
3 x 2 BED
PLOT RATIO = 146 sqm
BALCONY = 75 sqm
C3
2 x 2 BED
PLOT RATIO = 100 sqm
BALCONY = 45 sqm
RESIDENTIAL LOBBY
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
GENERAL NOTES:
NOTES:
HILLAM ARCHITECTS
DRAWING
LEVEL 19 - 23 FLOOR PLAN
DATE
17.05.18
SCALE
1:100
DWG No.
A2-11
REV.
E
STATUS
PRELIMINARY
SAT MEDIATION


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
LOT BOUNDARY
4m SETBACK
D1
3 x 3 BED
PLOT RATIO = 216 sqm
BALCONY = 83 sqm
D2
3 x 2 BED
PLOT RATIO = 211sqm
BALCONY = 116 sqm
D3
3 x 2 BED
PLOT RATIO = 124 sqm
BALCONY = 56 sqm
RESIDENTIAL LOBBY
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
GENERAL NOTES:
HILLAM ARCHITECTS
DRAWING
LEVEL 24 - 26 FLOOR PLAN
DRAWN
DATE 17.05.18
CHECKED
PROJ. No 1405
DWG No. A2-12
REV E
STATUS
DEVELOPMENT APPLICATION


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
LOT BOUNDARY
4m SETBACK
P1
3 x 3.5 BED
PLOT RATIO = 264 sqm
BALCONY = 86 sqm
P2
3 x 3.5 BED
PLOT RATIO = 272 sqm
BALCONY = 196 sqm
RESIDENTIAL LOBBY
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
LEVEL 27 FLOOR PLAN
17.05.18
1:100
A2-14
E
DEVELOPMENT APPLICATION


LOT BOUNDARY
4m SETBACK
P3
3 x 3.5 BED
PLOT RATIO = 264 sqm
BALCONY = 86 sqm
P4
3 x 3.5 BED
PLOT RATIO = 272 sqm
BALCONY = 196 sqm
RESIDENTIAL LOBBY
4m SETBACK
4m SETBACK
LOT BOUNDARY
LOT BOUNDARY
4m SETBACK
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
DRAWING
LEVEL 28 FLOOR PLAN
DRAWN
17.05.18
CHECKED
JL
PROJ. No
1405
SCALE
1:100
DWG No.
A2-14
REV.
E
STATUS
DEVELOPMENT APPLICATION

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTE	DRAWN
A	01.03.18	STATEMENT APPLICATION	EC
B	10.03.18	1ST INITIATION DS	EC
C	04.05.18	DEVELOPMENT APPLICATION	EC
D	15.05.18	DEVELOPMENT APPLICATION	EC
E	05.11.18	DEVELOPMENT APPLICATION	EC

GENERAL NOTES:
1. DO NOT SCALE DRAWINGS. ANY WORK OR SHOP DRAWINGS MUST BE CHECKED AND APPROVED PRIOR TO WORK COMMENCEMENT. ANY DISCREPANCIES ARE TO BE REPORTED TO THE DESIGNER TO THE ARCHITECT'S SATISFACTION PRIOR TO CONSTRUCTION.
2. FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. DO NOT SCALE FROM DRAWINGS. ALL DIMENSIONS ARE TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK, SHOP DRAWINGS OR THE MANUFACTURE OF ANY COMPONENTS.
3. ALL WORK SHALL BE IN ACCORDANCE WITH THE BUILDING CODE OF AUSTRALIA AND ALL RELEVANT AUSTRALIAN STANDARDS.
4. THIS WORK CONTRACTOR'S TO CHECK ALL "AS" BUILT DIMENSIONS, LEVELS & CONSTRUCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, HYDRAULIC & MECHANICAL DRAWINGS & SPECIFICATIONS PRIOR TO THE COMMENCEMENT OF ANY WORK, SHOP DRAWINGS OR THE MANUFACTURE OF ANY COMPONENTS.
5. THIS WORK IS COPYRIGHT (C) AND REMAINS THE PROPERTY OF HILLAM ARCHITECTS. IT MAY NOT BE RETAINED, COPIED OR USED WITHOUT THE AUTHORITY OF THE HILLAM ARCHITECTS.

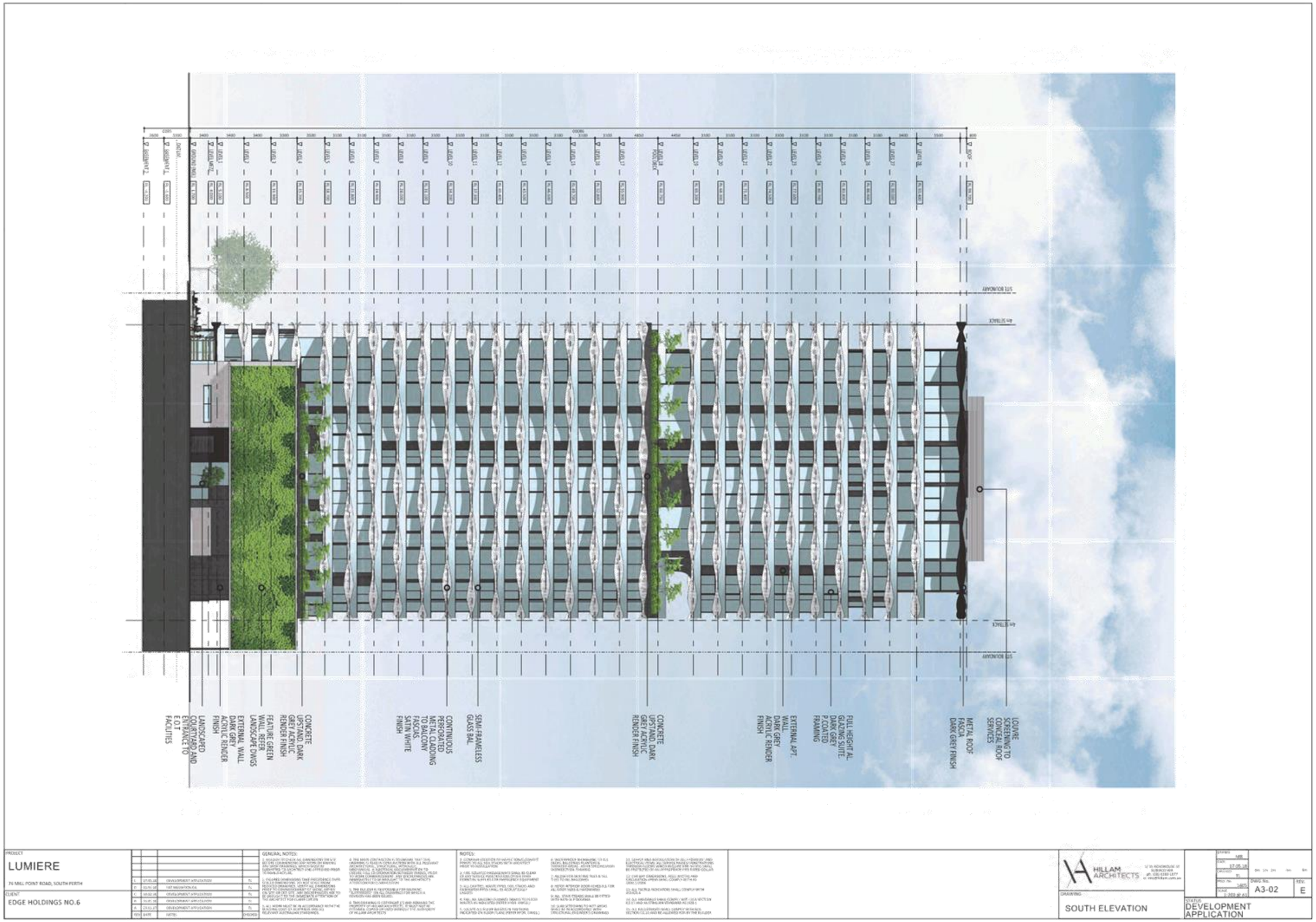
NOTES:
1. CONFIRM LOCATION OF INDICATED CLOSED OR EXISTING OPEN SIDES WITH HILLAM ARCHITECTS PRIOR TO INSTALLATION.
2. ALL CASTERS, WHERE PIPES, SOIL STACKS AND DOWNPIPES PENETRATE ACCESSIBLE OR OCCUPIED AREAS TO BE SEALED.
3. ALL GLAZING TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
4. ALL GLASS BALUSTRADES TO BE FIXED WITH NON-CORROSIVE FIXINGS.
5. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
6. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
7. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
8. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
9. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
10. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
11. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
12. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
13. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
14. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
15. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
16. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
17. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
18. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
19. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
20. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
21. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
22. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.
23. ALL GLASS BALUSTRADES TO BE IN ACCORDANCE WITH AS 1288 AND AS 2047.

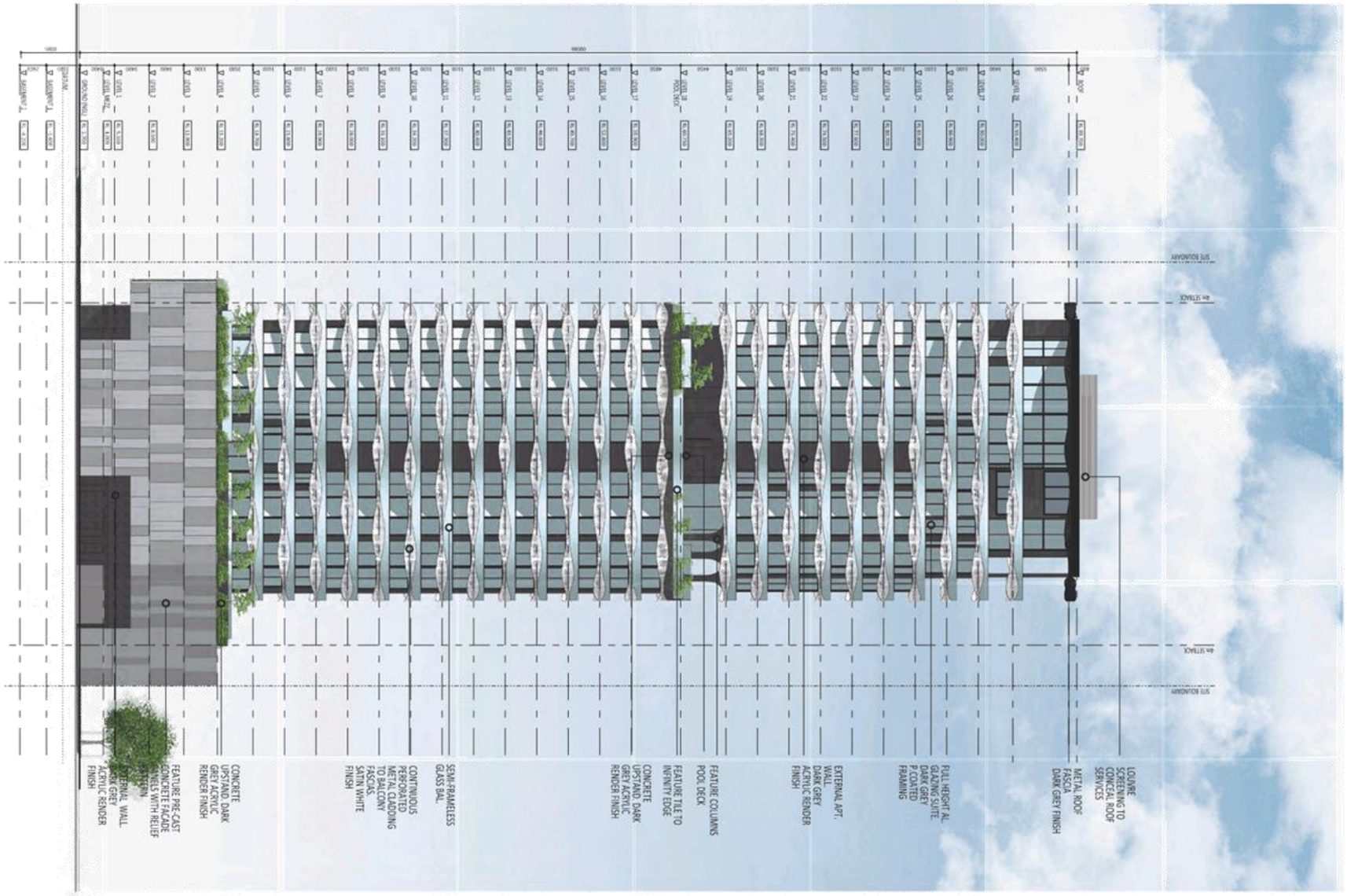
HILLAM ARCHITECTS
17 ST. KILDA HOUSE ST SUBIACO WA
ph: 08 6383 9577
e: info@hillam.com.au

DRAWING
NORTH ELEVATION

DRAWN	MB
DATE	17.05.18
CHECKED	JL
PROJ. No	1429
SCALE	1:200 @ A1
DWG No.	A3-01
REV.	E

STATUS
DEVELOPMENT APPLICATION


SITE BOUNDARY
6m SETBACK
CONCRETE UPSTAND DARK GREY ACRYLIC RENDER FINISH
FEATURE GREEN WALL REFER LANDSCAPE DWGS
EXTERNAL WALL DARK GREY ACRYLIC RENDER FINISH
LANDSCAPED COURTYARD AND ENTRANCE TO E.O.T FACILITIES
CONTINUOUS PERFORATED METAL CLADDING TO BALCONY FASCIAS SATIN WHITE FINISH
SEMI-FRAMELESS GLASS BAL
CONCRETE UPSTAND DARK GREY ACRYLIC RENDER FINISH
EXTERNAL APT. WALL DARK GREY ACRYLIC RENDER FINISH
FULL HEIGHT AL GLAZING SUITE DARK GREY P.COATED FRAMING
METAL ROOF FASCIA DARK GREY FINISH
LOUVRE SCREENING TO CONCEAL ROOF SERVICES
PROJECT
LUMIERE
70 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
GENERAL NOTES:
NOTES:
HILLAM ARCHITECTS
DRAWING
SOUTH ELEVATION
DRAWN MR
DATE 17.05.18
PROJECT No. 1460
SCALE @ A3 1:200
DRWG No. A3-02
REV. E
STATUS DEVELOPMENT APPLICATION



PROJECT
LUMIERE
76 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

L	17.05.18	DEVELOPMENT APPLICATION	EL
D	10.01.18	TAT MODIFICATION	EL
C	19.12.17	DEVELOPMENT APPLICATION	EL
B	11.01.17	DEVELOPMENT APPLICATION	EL
A	23.11.17	DEVELOPMENT APPLICATION	EL
REV	DATE	NOTES	DRAWN

GENERAL NOTES:

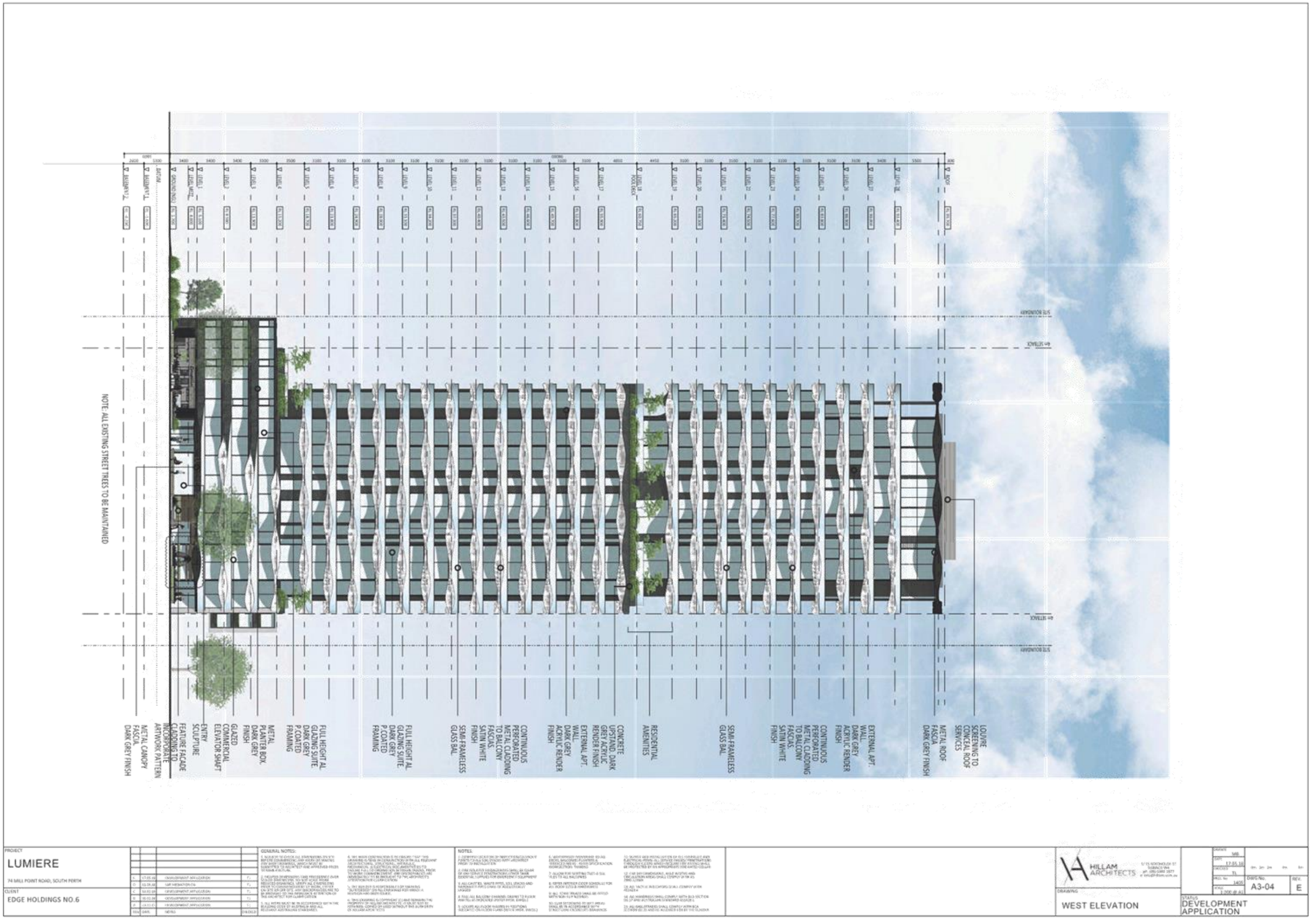
NOTES:

HILLAM ARCHITECTS

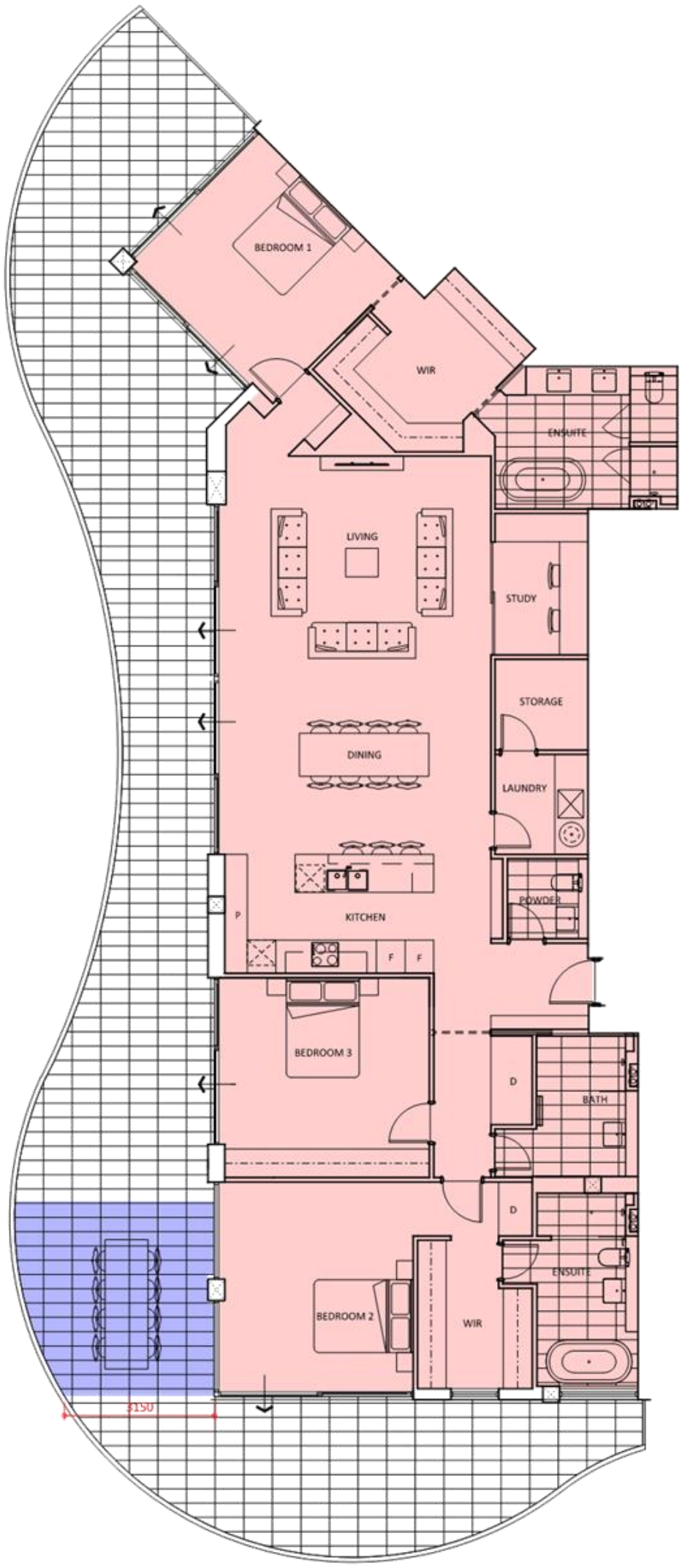
DRAWN: MB
DATE: 17.05.18
SCALE: 1:200 @ A3
PROJ. No: 1605
DWG No: A3-03
REV: E

DRAWING
EAST ELEVATION

STATUS
DEVELOPMENT APPLICATION


NOTE: ALL EXISTING STREET TREES TO BE MAINTAINED
METAL CANOPY FASCIA DARK GREY FINISH
FEATURE FACADE CLADDING TO INCORPORATE ARTWORK PATTERN
ENTRY SCULPTURE
GLAZED COMMERCIAL ELEVATOR SHAFT
METAL PLANTER BOX. DARK GREY FINISH
FULL HEIGHT ALGLAZING SUITE. DARK GREY P.COATED FRAMING
FULL HEIGHT ALGLAZING SUITE. DARK GREY P.COATED FRAMING
SEMI-FRAMELESS GLASS BAL
CONTINUOUS PERFORATED METAL CLADDING TO BALCONY FASCIAS SATIN WHITE FINISH
CONTINUOUS PERFORATED METAL CLADDING TO BALCONY FASCIAS SATIN WHITE FINISH
EXTERNAL APT. WALL DARK GREY ACRYLIC RENDER FINISH
CONCRETE LOOK BAND DARK GREY ACRYLIC RENDER FINISH
EXTERNAL APT. WALL DARK GREY ACRYLIC RENDER FINISH
RESIDENTIAL AMENITIES
SEMI-FRAMELESS GLASS BAL
METAL ROOF FASCIA DARK GREY FINISH
LOUVRE SCREENING TO CONCEAL ROOF SERVICES
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
GENERAL NOTES:
NOTES:
HILLAM ARCHITECTS
DRAWING
WEST ELEVATION
DRAWN MB
DATE 17.05.18
CHECKED TL
PROJ. No 1405
SCALE 1:200 @ A1
DWG No. A3-04
REV. E
STATUS
DEVELOPMENT APPLICATION

Additional Information: 12 June 2018



DISCLAIMER

VARIATIONS FROM STRATA PLANS MAY APPLY. LOOSE FURNITURE IS INDICIATIVE ONLY. SHAPE AND CONFIGURATION OF LIVING AREAS, BALCONIES, WALL STRUCTURE, DOORS, WINDOWS, COLUMNS, AIR-CONDITIONING CONDENSERS AND DUCTS MAY DIFFER FROM THOSE ILLUSTRATED. APARTMENT AREAS GIVEN ARE BASED ON ARCHITECTURAL MEASUREMENTS WHICH MAY VARY FROM STRATA AREAS AS DIFFERENT METHODS OF MEASUREMENT ARE APPLIED.

APARTMENT TYPE D2

No. OFF	
B x b	3x3
APT. No.	
ADDITIONAL FEATURES	Store Laundry Study
STRATA AREA	200 sqm
ARCHITECTURAL	211 sqm
BALCONY	116 sqm
TOTAL AREA	327 sqm
STORE AREA	4 sqm
CAR BAYS #	2 Bays

SCALE
1:100 @ A3

COPYRIGHT

THIS DRAWING IS COPYRIGHT © AND REMAINS THE PROPERTY OF HILLAM ARCHITECTS. IT MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE AUTHORITY OF HILLAM ARCHITECTS

74 MILL POINT ROAD SOUTH PERTH
MIXED-USE DEVELOPMENT

HILLAM ARCHITECTS

DATE ISSUED	REV
12.06.18	A

B. PERSPECTIVES

View from Scott St eet

View from Scott St eet

View inside residential lob y

View along Mill Point Road

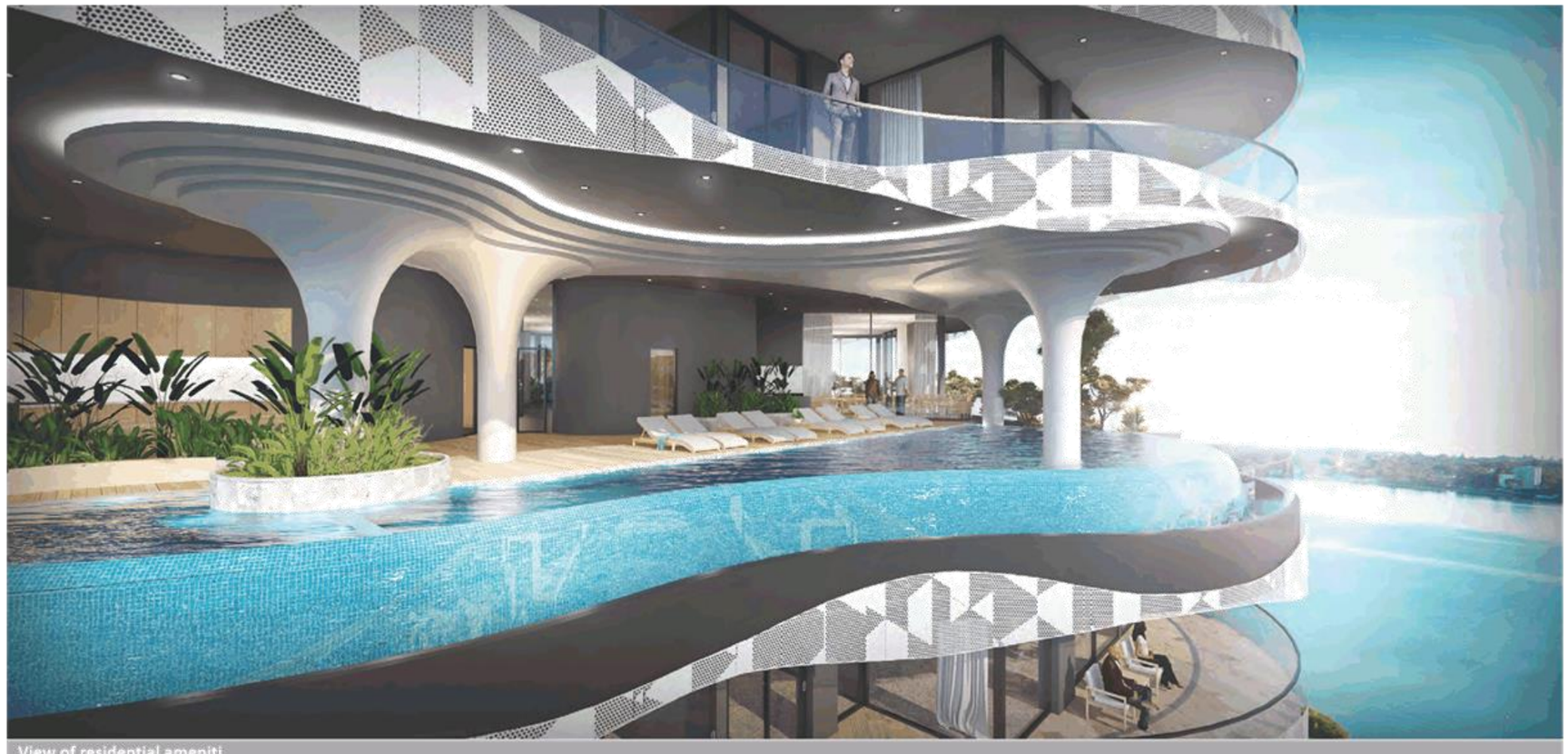
View along Mill Point Road

View along Mill Point Road

View along Mill Point Road

Balcony view facing North

View from pool deck



View of residential ameniti

View inside residential amenitie

C. LANDSCAPE ARCHITECTS REPORT

74 MILLPOINT RD
South Perth

Landscape Design Proposal
Council Submission

CAPA

Ground Level Plan - Overall

LANDSCAPE - Ground Level

The Millpoint Rd Landscape will provide an active interface with the built form and street and public and private residents.

Integrated with the building's sculptural walls and columns, the landscape with its softscape plantings and hard scape elements will provide a considered base for the architecture.

A raised water feature provides a central focus to the landscape forecourt, with low water bubblers providing quiet, shimmering movement in the water. A generous stone seating edge follows the curvature of the water feature and sits just above the water level to provide seating for both contemplative and gathering opportunities.

Various seating disk elements which relate to the curvaceous form of the proposed building are placed within the different spaces, and are positioned to allow flexibility of use for commercial tenants and public users. Within the CAFÉ area, a small disk within allows seating for short-stay patrons awaiting their coffee order while a larger disk is positioned as a divider between the CAFÉ and the Residential Lobby allowing access yet providing some division between the two spaces.

Two disks are placed within the Commercial Lobby entry area, one with feature planting and a shade tree while a larger disk connects physically with the building and provides further seating and an opportunity for housing a sculptural element set within lush, low planting. Two additional seating benches set at either end of the development and are aligned with the existing footpath and provide a direct connection with the footpath and pedestrian traffic.

The forecourt will allow the CAFÉ to extend their activity into the space and provide a visible area of vitality from the street. The landscape provides a permeability for multiple access points and visual openness.

The soft scape design considers the importance of the existing street scape, verge area, basement footprint below and the need for the building to address the street at ground level. The forecourt areas will be in significant shade for extended periods throughout the year, with portions at the street edge exposed to the late afternoon summer sun. Plantings that will thrive in both shade and sun have been selected for these areas. Low height and densely planted, they will provide a consistent green carpet.

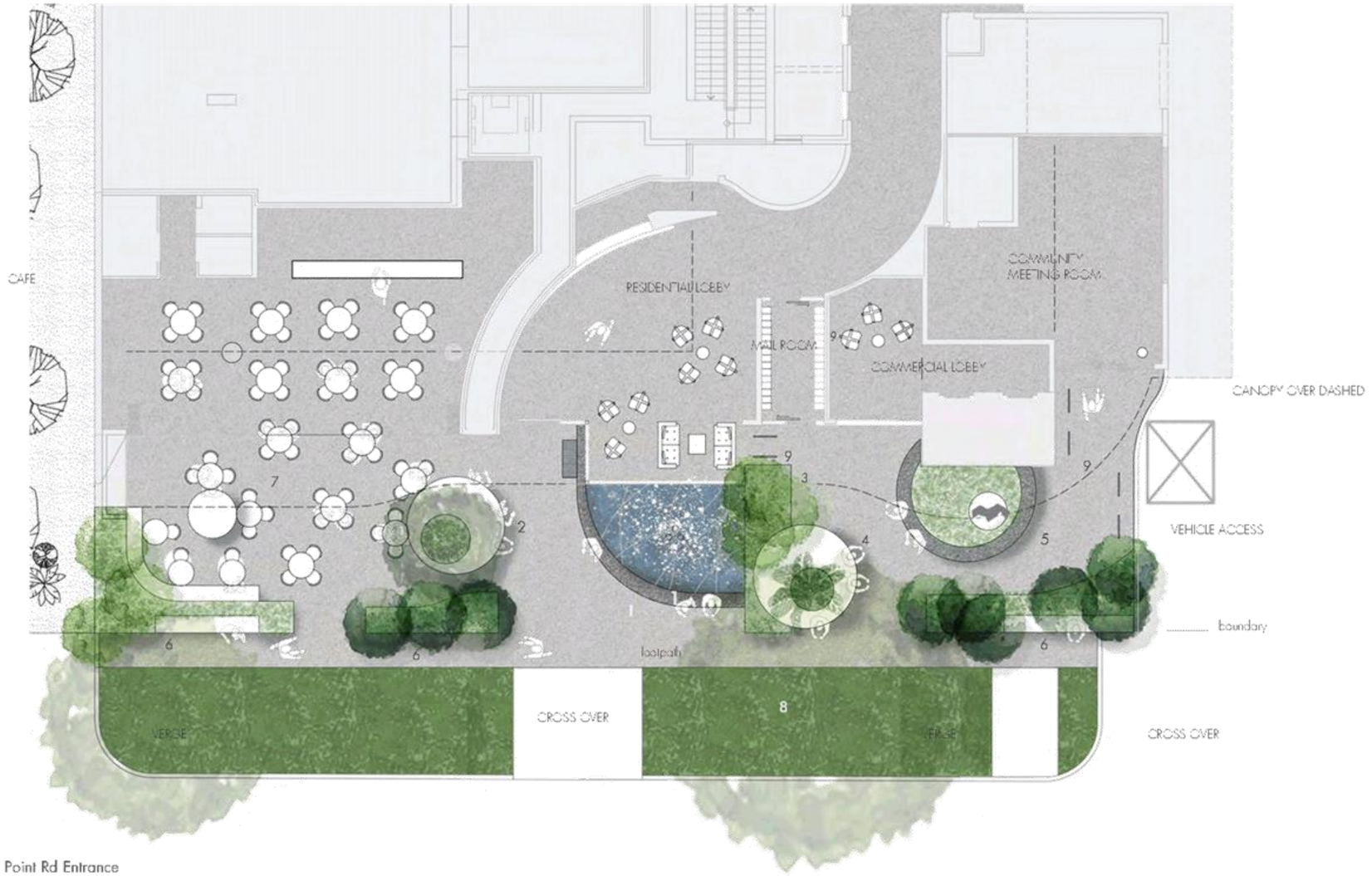
Ground planting and high quality crossover points to the verge have been proposed for consideration by the City Of South Perth. The intent is to provide a quality base to the existing street trees, with planting to cover to the roots, ameliorate the sloping verge levels and be integrated with the proposed development's landscape.

Integrated bicycle stands and associated hardstand areas have been provided to the street boundary, encouraging local engagement and a visible promotion of local activity.


SOFT WELCOMING


TREASURED RIVER


RELIEF SPACES + SOCIAL



Ground Level Plan - Mill Point Rd Entrance

1. WATER FEATURE + SEATING
Entry statement with feature bubblers. Shimmering water and subtle background noise providing welcome invite for residential lobby. Opportunity for public seating considered as well.

2. ENTRANCE DISCS WITH FEATURE TREE/PLANT INFILL
Disk located providing a comfortable, generous and integrated waiting zone for commercial tenants and public users. Feature Entrance Tree and planting within circular disk

3. CLUSTER OF SMALL AROMATIC TREES +TALL PLANTER
Tall planter to provide a filtered division and green backdrop between 2 different entry (commercial and residential) functions of building.

4. CIRCULAR PLANTER + SEATING
Generous seating with considered native selections.

5. SCULPTURAL PLINTH
Artwork location in raised plinth, surrounded by plants. Entry marker

6. CURVED STREET EDGE PLANTERS
Raised planters reflect ribbon form of building's facade but inverted in colour (dark). Integrated public seating as shown, planter as backrest. Clusters of small flower trees for shade.

7. LOOSE FURNITURE
Loose cafe furniture to be arranged around integrated furniture

8. VERGE
Existing Verge Trees remaining and new consolidated ground planting.

9. BICYCLE RACKS

CAPA LLAMIERE 74 Millpoint Rd, South Perth CONCEPT STAGE scale:1:150@a3 GROUND FLOOR LANDSCAPE PLAN PAGE 3

LANDSCAPE - Level 4 Amenities

Landscape Level 4 - Overall

CONSISTENT PROJECT LANDSCAPE IDENTITY

RELAXED SEATING

SHADE - Pavillions

LANDSCAPE FOR PRIVACY

CAPA LAVIERE 74 Millpoint Rd, South Perth CONCEPT STAGE scale:1:200@a3 LEVEL 4 LANDSCAPE PLAN PAGE 4

Landscape Level 4 - Amenities

1. PUBLIC HEALTH CENTRE
   Massage, therapy,sauna and hydrotherapy rooms.
2. LANDSCAPE BUFFER
   Generous and lush landscaping to provide privacy screening buffer between apartment terraces and public podium
3. PLANTING DISCS + POP UP HEALTH CENTRE
4. LOUNGE PAVILION
   Sun lounges with awning shelter above.
5. QUIET SPACE
   Opportunities for group seating looking out to view of Swan River. Massage chairs as amenities.
6. STONE BALLAST
   Gravel to zones outside of 4m setback as response to sunset height requirements

MEDIUM SIZE TREES - GROUND FLOOR

Gleditsia triacanthos inermis 'Shademaster''
Graceful and pendulous style tree forming into an open rounded tree. The golden tips create a lovely contrast against a green background.
Height: 8-10m x 6-8m wide.

SMALL TREES - GROUND FLOOR

Lagerstroemia indica x L. fauriei 'Natchez (Crepe Myrtle)
Upright multirstemmed specimen tree with a broad spreading crown, and masses of flowers. It has red-bronze autumn foliage colour and exfoliating bark which reveals a pinkish-brown underbark.
Height: 5-6m x 5m wide.
Flower: White crepe flowers in summer.

Cercis canadensis 'Forest Pansy'
Purple elegant foliage. Open and low branching, forming a flat-topped canopy. The young branches have a distinct 'zig-zag' habit.
Height at maturity: 5m high x 5m wide
Habit: Oval
Flower: Masses of small, pink, 'pea'-like flowers borne in groups along the branches before the leaves appear in spring.

Bauhinia alba 'White Hong Kong Orchid'
Medium sized orchid tree. Butterfly shaped leaf with only 2 broad leaflets.
Height: 5-6m x 4m wide.
Flower: large white flowers in Spring

FEATURE TREES - GROUND FLOOR

Eucalyptus macrocarpa "Mottlecah"
Large shrub with attractive large grey leaves
Height: 3m high x 2m wide.
Flower: Large red flowers in spring and summer

Acacia Cognata 'Emerald Curl'
Small Tree - Australian native with curling feathery leaf
Soil: light to heavy soils Irrigation: can withstand drought
Height at maturity: 3-5m high x 3-3.5m wide

FEATURE PLANTINGS - RESIDENTIAL ENTRY

Feature grouped plantings of Alpinia coerulea (Red Backed Ginger, Shade Ginger) shade plantings
Height 2m

FEATURE PLANTINGS - RESIDENTIAL ENTRY

Feature grouped plantings of Alocasia macrorrhiza (Elephant Ears)
Height: 1-2m

GROUND PLANTINGS - SEATING AREA

Mass plantings of Arthropodium cirratum 'Matapouri Bay' (Rock Lily). for shade plantings.
60cm high

Ficinia Nodosa (Knobby Rush) (Australian Endemic)
Slight weeping sedge
Full sun to light shaded position.
Soil: Well drained. Irrigation: Can tolerate dryness.
Height: 80cm high x 60-80cm wide
Flower: brown flower in spring and summer
Maintenance: Low

PROPOSED VERGE +ENTRY GROUND PLANTINGS

Mass Plantings of Liriope Muscari 'Just Right' to verge and under trees.
Waterwise, tuft forming spreading evergreen perennial with dark leaves with purple flowers
45cm wide + high

PROPOSED VERGE + ENTRY GROUND PLANTINGS
(Alternative Option)

Low mass plantings "rachelaspermum jasminoides (Star Jasmine)' 20-30cm high with white flowers and fragrance.

Lomandra longifolia 'tanika
Compact tufted low height grass
Environment: full sun to part shade
Soil: adaptable to most well drained soils
Height: 50-60cm cm high x wide.

FEATURE PLANTINGS - RESIDENTIAL ENTRY

Feature grouped plantings of Crinum Pedunculatum (Spider Lily) for shade plantings
1.5 - 2m high + width with fragrant white flowers.

Pittaspermum tobira
Evergreen, low compact shrub with tight foliage. Dwarf variety
Environment: Full sun to part-shade in temperate/subtropical climate
Soil: Well drained with humus. Irrigation: adequate water in Spring
Height: 1m high x 2m wide
Maintenance: Low.

Myoporum parvifolium 'Yareena' (Australian Native)
A prostrate cascade planting with clean foliage.
Environment: Full sun to light shaded position.
Soil: Well drained. Irrigation: Can tolerate dryness.
Height: 10cm high x 1m wide
Flower: White flower in Spring/Early summer.
Maintenance: Low

D. WASTE CONSULTANT REPORT

talis
delivering solutions

Assets | Engineering | Environment | Noise | Spatial | Waste

Waste Management Plan

74 Mill Point Road, South Perth

Prepared for Hillam Architects

May 2018

Project Number: TW14016

talis
delivering solutions

DOCUMENT CONTROL

Version	Description	Date	Author	Reviewer
1a	Released to Client	22/10/2014	BC	RC
1b	Released to Client	03/02/2015	BC	RC
1c	Released to Client	06/05/2015	PG	RC
1d	Released to Client	09/12/2015	RC	RC
1e	Released to Client	17/02/2015	CF	RC
1f	Released to Client	21/03/2016	CF	RPC
1g	Released to Client	24/08/2016	CF	GW
1h	Released to Client	01/02/2017	EP	RPC
1i	Released to Client	17/03/2017	EP	RPC
1j	Released to Client	04/05/2017	CF	RPC
1k	Internal Review	13/11/2017	JW	CF
1k	Released to Client	13/11/2017	JW	Client
1l	Internal Review	17/11/2017	JW	RPC
1l	Released to Client	17/11/2017	JW	Client
2a	Internal Review	14/02/2018	JW	RPC
2a	Released to Client	14/02/2018	JW	Client
2b	Released to Client	15/05/2018	JW	Client

Approval for Release

Name	Position	File Reference
Ronan Cullen	Director	TW14016 - Waste Management Plan.2b
Signature		

Executive Summary

Hillam Architects is currently involved with the Development Application for the mixed use development at 74 Mill Point Road, South Perth (the Proposal). To satisfy the conditions of the amended Development Application for the project, the City of South Perth (the City) requires a Waste Management Plan (WMP) to be submitted.

The estimated waste generated, receptacle size, number of receptacles, collection frequency and collection method for the Proposal is outlined in the table below. The anticipated quantities of refuse and recyclables for the proposal were based upon the City of South Perth Draft Waste Guidelines for New Developments (2015).

Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size (L)	Number of Bins	Collection Frequency	Collection
Refuse	12,397	1,100	4	3 x per week	Private Contractor
Recycling	12,037	1,100	4	3 x per week	Private Contractor

The collection vehicle will access the Proposal from Mill Point Road and reverse into the laneway to be in close proximity to the Bin Storage Area. As the vehicle is not able to collect the receptacles directly from the Bin Storage Area, the receptacles will be ferried to and from the waiting collection vehicle. The collection vehicle will exit the laneway after servicing in forward gear via Mill Point Road.

A suitably qualified Strata Manager will be engaged to oversee relevant aspects of waste management at the Proposal.

Table of Contents

Tables

Figures

1 Introduction

Hillam Architects is currently involved with the Development Application for the mixed use development at 74 Mill Point Road, South Perth (the Proposal). The Proposal is located in the South Perth Peninsula area to the east of Mill Point Road and south of Fraser Lane, as shown in Figure 1.

To satisfy the conditions of Development Application for the project, the City of South Perth (the City) requires a Waste Management Plan (WMP) to be submitted. As part of this process, the City requires the WMP to identify how waste is to be stored and collected from the Proposal. Hillam Architects has therefore engaged Talis Consultants Pty Ltd (Talis) to prepare this WMP to satisfy the City's requirements.

1.1 Objectives and Scope

The objective of this WMP is to outline the equipment and procedures that will be adopted to manage all waste (both refuse and recycling) at the Proposal. Specifically, the WMP demonstrates that the Proposal should be designed to:

- Adequately cater for the anticipated quantities of waste and recyclables to be generated;
- Provide suitable Bin Storage Area(s) including appropriate receptacles; and
- Allow for efficient collection of receptacles by appropriate waste collection vehicles.

To achieve the objective, the scope of the WMP comprises:

- Section 2: Waste Generation;
- Section 3: Waste Storage;
- Section 4: Waste Collection;
- Section 5: Strata Management Activities; and
- Section 6: Conclusion.

2 Waste Generation

This section outlines the waste generation rates used and the estimated volumes to be generated at the Proposal.

2.1 Proposed Tenancies

The anticipated quantities of refuse and recyclables were estimated on the number of residential apartments and the floor area of the proposed commercial tenancies, as follows:

- Residential:
  - 1 Bedroom Apartments – 22;
  - 2 Bedroom Apartments – 17; and
  - 3 Bedroom Apartments – 50.

- Commercial:
  - Serviced Apartments – 16;
  - Café – 100m^2;
  - Community Meeting Room – 54m^2;
  - Community Consultation Space - 105m^2;
  - Commercial Office Space - 222m^2;
  - Gym - 90m^2; and
  - Health Centre - 96m^2.

2.2 Waste Generation Rates

The anticipated quantities of refuse and recyclables for the proposal were based upon the City of South Perth *Draft Waste Guidelines for New Developments* (2015).

Consideration was also given to Western Australian Local Government Association's (WALGA) *Multiple Dwelling Waste Management Plan Guidelines* (2014), City of Sydney's *Policy for Waste Minimisation in New Developments* (2005), the City of Melbourne's *Guidelines for Preparing a Waste Management Plan* (2014) and Randwick City Council's Waste Management *Guidelines for Proposed Developments* (2004).

Where a range of values were provided for a particular waste source, a conservative approach was adopted and the largest value was taken to ensure that sufficient receptacle volumes will be provided.

Waste generation is estimated by volume in litres (L) as this is generally the influencing factor when considering receptacle size, numbers and storage space required.

2.3 Residential Waste Generation

The residential waste generation volumes in litres per week (L/week) of refuse and recyclables adopted for this waste assessment are shown in Table 2-1.

Table 2-1: Estimated Residential Waste Generation

Residential Apartments	Number of Apartments	Waste Generation Rate (L/week)	Waste Generation (L/week)
Refuse			
One bedroom apartments	22	80	1,760
Two bedroom apartments	17	100	1,700
Three bedroom apartments	50	120	6,000
		Total	**9,460**
Recycling			
One bedroom apartments	22	80	1,760
Two bedroom apartments	17	120	2,040
Three bedroom apartments	50	120	6,000
		Total	**9,800**

As shown in Table 2-1, it is anticipated that the apartments at the Proposal will generate a total of 9,460L of refuse and of 9,800L recyclables per week.

2.4 Commercial Waste Generation

The commercial waste generation volumes in litres per week (L/week) of refuse and recyclables adopted for this waste assessment are shown in Table 2-2.

Table 2-2: Estimated Commercial Waste Generation

Tenancies	Apartments/Floor area (m2)	Waste Generation Rate (L/week)	Waste Generation (L/week)
Refuse			
Serviced Apartments	16	35	560
Café	100	300	2,100
Community Meeting Room;	54	10	27
Community Consultation Space	105	10	53
Commercial Office Space	222	10	111
Gym	90	10	45
Health Centre	96	10	48
		Total	**2,944**
Recycling			
Serviced Apartments	16	35	560
Café	100	200	1,400

Tenancies	Apartments/Floor area (m2)	Waste Generation Rate (L/week)	Waste Generation (L/week)
Community Meeting Room;	54	10	27
Community Consultation Space	105	10	53
Commercial Office Space	222	10	111
Gym	90	10	45
Health Centre	96	10	48
		Total	**2,244**

As shown in Table 2-2, it is anticipated that the commercial tenancies at the Proposal will generate a total of 2,944L of refuse and 2,244L of recyclables per week.

2.5 Combined Waste Generation

The combined estimated waste generation for both residential and commercial tenancies are shown in Table 2-3.

Table 2-3: Estimated Combined Waste Generation

Apartments and Tenancies	Waste Generation (L/week)
Refuse	
Residential	9,460
Commercial	2,944
Total	**12,397**
Recycling	
Apartments	9,800
Commercial	2,246
Total	**12,046**

Table 2-3 shows that a total of 12,397L of refuse and 12,037L of recyclables will be generated at the Proposal per week.

3 Waste Storage

To ensure that waste is managed appropriately at the Proposal, it is important to allow for sufficient space to house the required receptacles within the designated Bin Storage Area. The procedure and receptacles to be used in these areas are described in the following sections.

3.1 Internal Receptacles

To promote positive recycling behaviour and maximise diversion from landfill, the Proposal will have two receptacles for the disposal of refuse and recycling separately within each apartment. Waste materials from apartments will be placed in these receptacles and transferred by the Resident, or their authorised representative, to the Proposals Bin Storage Area and placed in 1,100L refuse and recycling receptacles located in the Bin Storage Area.

3.2 Bin Storage Area

Refuse and recyclable materials generated within the Proposal will be collected in receptacles located in the Bin Storage Area as shown in Figure 2.

3.2.1 Receptacle Sizes

The information in **Table 3-1 be**low presents the dimensions of receptacle sizes ranging from 240L to 1,100L. It should be noted that these receptacle dimensions are approximate and can vary slightly between suppliers.

Table 3-1: Typical Receptacle Dimensions

Bin Size (L)	Depth (m)	Width (m)	Height (m)	Area (m2)
240	0.730	0.585	1.060	0.427
360	0.848	0.680	1.100	0.577
1,100	1.070	1.240	1.330	1.327

Reference: SULO Bin Specification Data Sheets

3.2.2 Bin Storage Area Size

To ensure sufficient area is available for storage of the waste receptacles, the quantity of receptacles required for the Bin Storage Area was modelled utilising a range of receptacle sizes from 240L to 1,100L as shown in Table 3-2. This was based on three collections per week of refuse and recyclables.

Table 3-2: Receptacle Requirements for Bin Storage Area

Waste Stream	Waste Generation (L/week)	Number of Receptacles Required		
		240L	360L	1,100L
Refuse	12,937	18	7	4
Recycling	12,037	17	7	4

Based on receptacle dimensions specified in Table 3-2, the Bin Storage Area will accommodate the following receptacles:

- Four (4) 1,100L refuse receptacles; and
- Four (4) 1,100L recycling receptacles.

The configuration of these receptacles within the Bin Storage Area is shown in Figure 2.

The larger 1,100L receptacles will be used at the Proposal to ensure that the space available within the Bin Storage Area is sufficient and to reduce the collection/ferrying time on collection days. Bins will be monitored by the Strata Manager and receptacles will be rotated to ensure uniform access when required.

3.2.3 Design

The Bin Storage Area will be located at ground level of the Proposal. The design of the Bin Storage Area should consider the following:

- Impervious floors draining to the sewer;
- A tap for washing of receptacles and Bin Storage Area as required;
- Adequate aisle width for easy manoeuvring of receptacles;
- No double stacking of receptacles;
- Doors to the Bin Storage Area must be self-closing and are proposed to be vermin proof;
- Doors to the Bin Storage Area must be wide enough to fit bins through;
- Ventilated to a suitable standard;
- Appropriate signage;
- Bin Storage Area should be undercover where possible and be designed to not permit stormwater to enter into the drain;
- The Bin Storage Area shall be located behind the building setback line;
- Receptacles are not visible from the property boundary or areas trafficable by the public; and
- Receptacles are reasonably secured from theft and vandalism.

It is worth noting that the number of receptacles and corresponding placement of receptacles as shown in Figure 2 represents the maximum requirements assuming three collections per week of refuse and recyclables. Increased collection frequencies would reduce the required number of receptacles.

Receptacle and storage space within the Bin Storage Area will be monitored during the operation of the Proposal to ensure that the receptacles are sufficient.

4 Waste Collection

A Private Contractor will service the Proposal by providing four (4) 1,100L receptacles for refuse and four (4) 1,100L receptacles for recyclables, which are to be collected by a rear lift collection vehicle.

As the vehicle is unable to collect the receptacles directly from the Bin Storage Area, the receptacles will be ferried to and from the waiting collection vehicle by the Strata Manager so that they can be emptied by the Private Contractor. The Strata Manager will ferry receptacles to the waiting collection vehicle on the ground level of the Proposal. Depending on the services agreement, this could be undertaken by the Private Contractor.

This servicing method will reduce the number of receptacles on the verge, maintain the amenity of the area and remove the requirement for a lay down area to temporarily store receptacles on the verge before the collection vehicle arrives.

Collection vehicle movements to service the Proposal are outlined in Transport Statement for the Development of 74 Mill Point Road, South Perth including proposed modification to the existing laneway. The collection vehicle will access the Proposal from Mill Point Road and reverse into the laneway to be in close proximity to the Bin Storage Area. The collection vehicle will exit the laneway after servicing in forward gear via Mill Point Road.

The Private Contractor engaged to service the Proposal will be required to service the building with a rear lift collection vehicle that can operate with an overhead clearance of 3.5 metres. During preparation of this WMP, several Waste Collection Contractors were contacted. A number of those contacted have rear lift collection vehicles which can meet this requirement

4.1 Bulk Verge Collection

Given the streetscape adjacent to the Proposal, no bulk or green waste collection will be offered by the City. Instead bulk waste material will be removed from the Proposal as it is generated. Removal of bulk waste material will be the responsibility of each tenant or resident at the Proposal.

City of South Perth Recycling Centre accepts self-hauled material from residential properties. As part of the annual rubbish levy, ratepayers receive three entry vouchers for the Recycling Centre. The Recycling Centre also accepts various items for free. Information regarding this service can be obtained from the City's website.

Removal of bulk waste will be monitored by Strata Management who will provide assistance, if required.

The above will be communicated to residents at the Proposal by the Strata Manager and information sheets distributed to new owners.

5 Strata Management Activities

A Strata Manager will be engaged to complete the following tasks:

- Monitoring of receptacles and Bin Storage Area;
- Cleaning and maintenance of receptacles and Bin Storage Area;
- Ferrying of receptacles to and from the Bin Storage Area and collection vehicle on collection days, if required;
- Regularly engage with waste contractors to ensure an efficient and effective waste service is maintained;
- Regularly engage with tenants to develop opportunities to reduce waste volumes and increase resource recovery; and
- Ensure the occupants of the Proposal will be made aware of the WMP and their responsibilities under the Plan.

6 Conclusion

As demonstrated within this WMP, the Proposal provides a sufficiently large Bin Storage Area for refuse and recycling based on a suitable configuration of receptacles. This indicates that a satisfactorily designed Bin Storage Area has been provided and the collection of refuse and recycling receptacles can be completed from the Proposal.

The above is achieved using:

- Four (4) 1,100L refuse receptacles collected three (3) times per week; and
- Four (4) 1,100L recycling receptacles collected three (3) times per week.

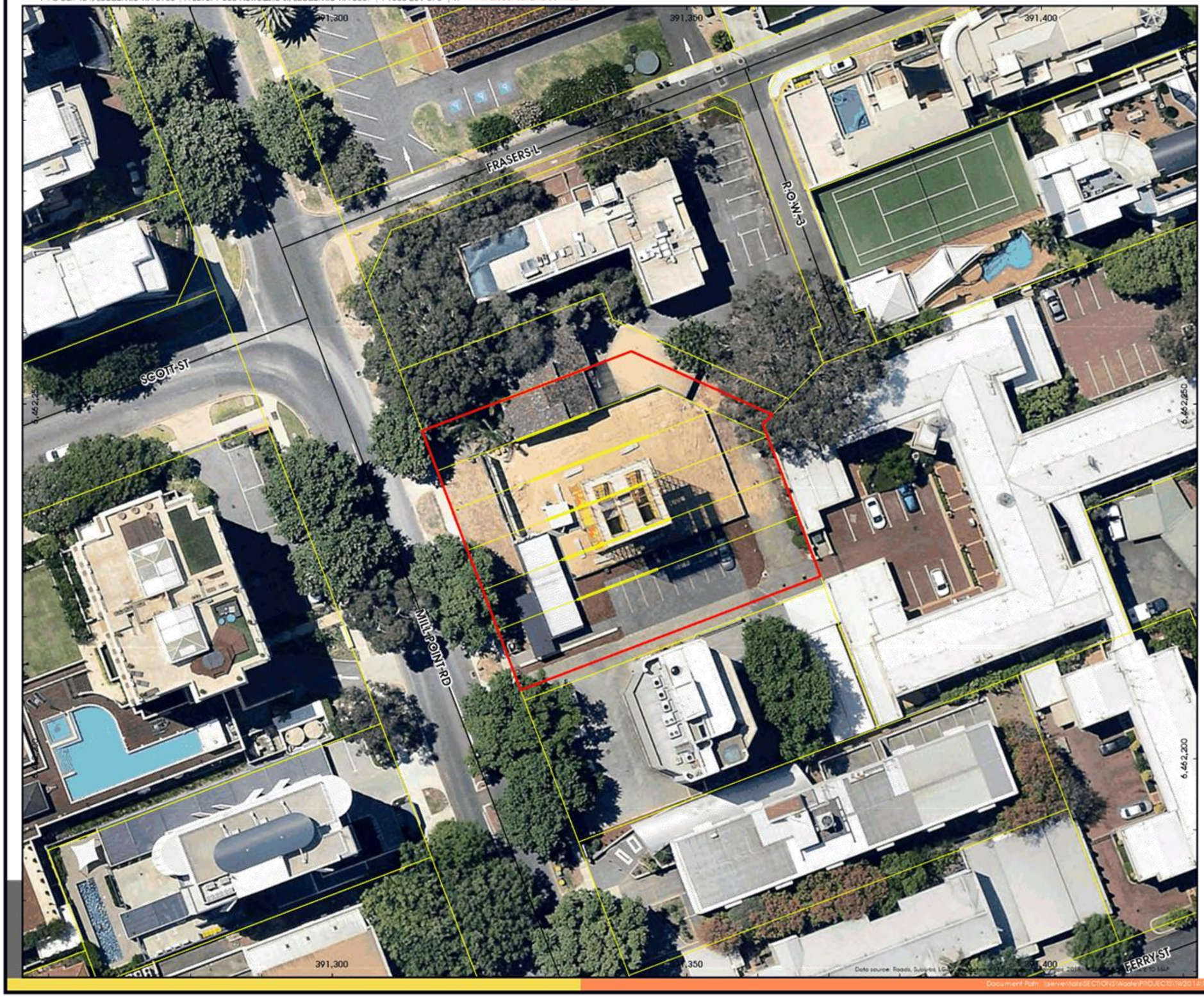
The rear lift collection vehicle will access the Proposal from Mill Point Road and reverse into the laneway to be in close proximity to the Bin Storage Area. As the vehicle is not able to collect the receptacles directly from the Bin Storage Area, the receptacles will be ferried to and from the waiting collection vehicle. The collection vehicle will exit the laneway after servicing in forward gear via Mill Point Road.

Bulk waste material generated at the Proposal will be taken to Collier Park for disposal as it is generated.

A suitably qualified Strata Manager will be engaged to oversee relevant aspects of waste management at the Proposal.

Figures

P PO Box 454, Leederville WA 6903 | A Level 1 660 Newcastle St, Leederville WA 6007 | T 1300 251 070 | W www.talisconsultants.com.au



LEGEND

- Site Boundary
- Cadastral Boundary
- Road Network (MRWA)

SITE AERIAL

74 Mill Point Road Waste Management Plan

0 2.5 5 10 15 20 metres

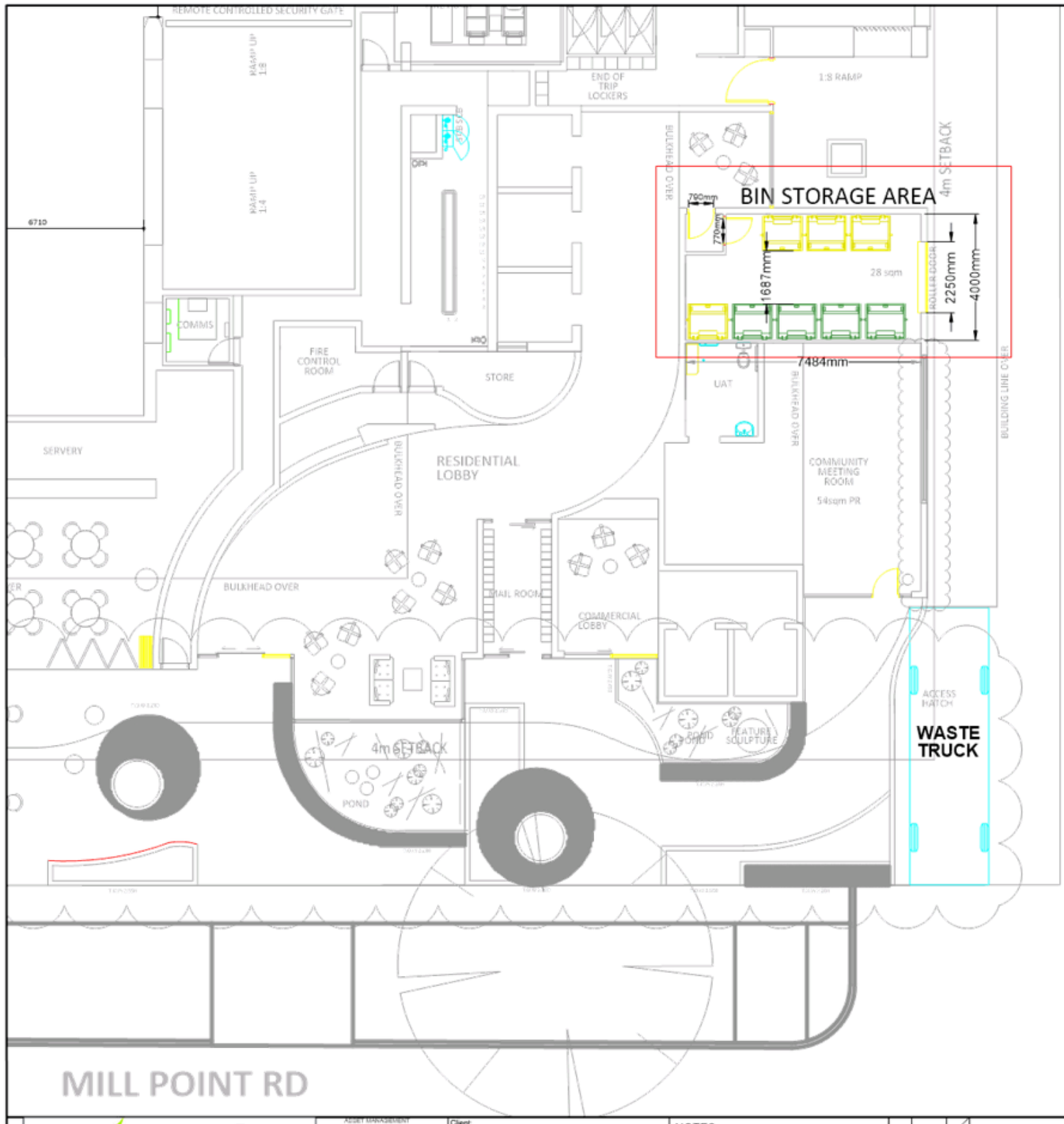
Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator, Datum: GDA 1994
Scale @ A3 1:500

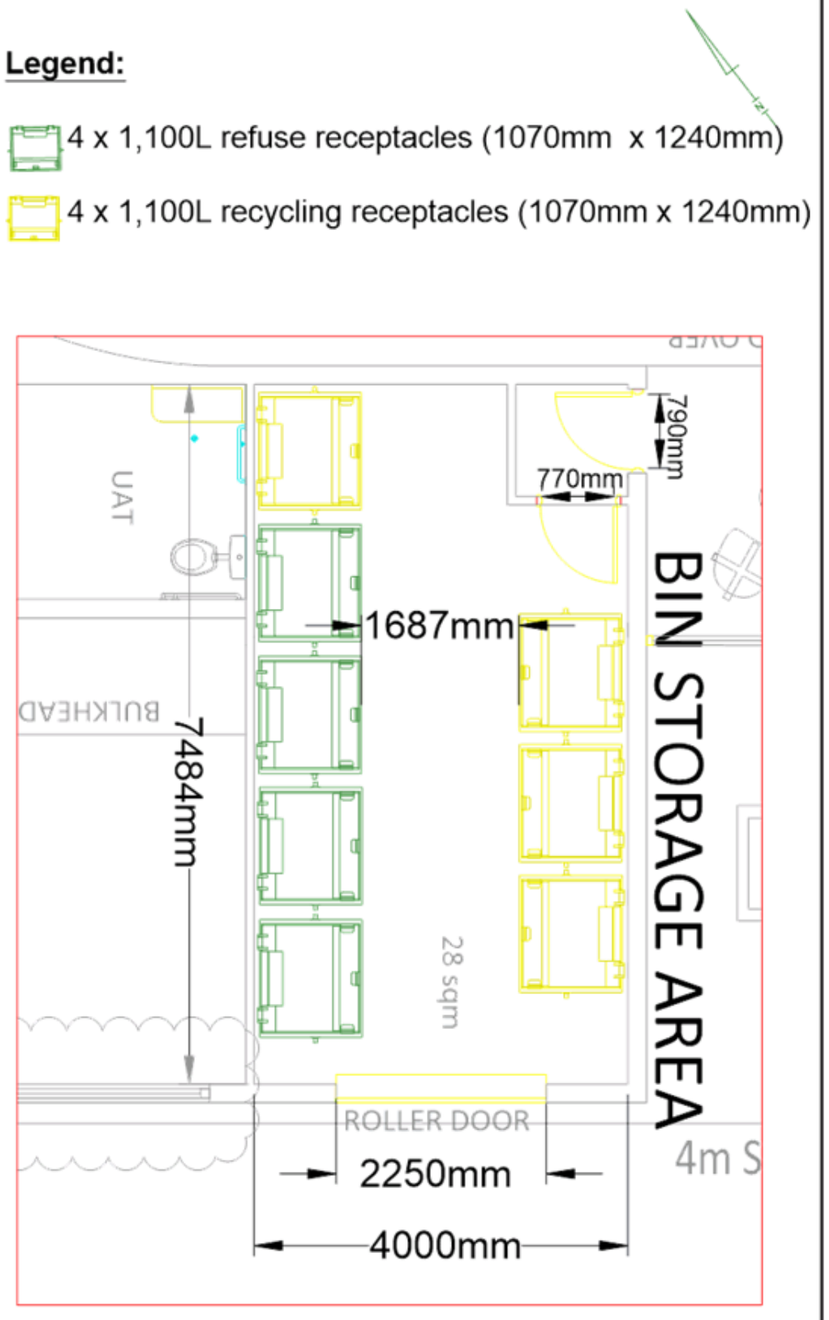
Prepared: RPC	Date: 22/10/2014
Checked: CF	Project No: TW14016
Reviewed: NK	Revision: A

talis delivering solutions

Figure 01

Document Path: \\server\talis\SECTOR3\Waste\PROJECTS\TW2014\TW14016 - Mill Point Road WMP\GIS\Maps\TW14016_001_Aerial.mxd





talis delivering solutions
www.talisconsultants.com.au T: 1300 251 070
ASSET MANAGEMENT
CIVIL ENGINEERING
ENVIRONMENTAL SERVICES
SPATIAL INTELLIGENCE
WASTE MANAGEMENT
NOISE MANAGEMENT
Level 1 660 Newcastle Street, Leederville WA 6007
PO Box 454, Leederville WA 6903

Client: Hillam Architects

NOTES
1. This drawing is the property of Talis Consultants Pty Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
2. All levels refer to Australian Height Datum.
3. DO NOT SCALE, use figured dimensions only, if in doubt please contact Talis Consultants.

No.	Date		Amendment / Issue	App
I	15/05/18	SW	NINTH ISSUE	RC
H	13/02/18	SW	EIGTH ISSUE	RC
G	13/11/17	SW	SEVENTH ISSUE	RC

Project: 74 Mill Point Road Waste Management Plan

Title: Bin Storage Area

Drawn by:	JW	Job No:	TW14016
Checked by:	RC	File No:	TW14016DG001
Approved by:	RC	Fig. No:	002
Scale:	NTS	Rev:	I
Date:	15/05/2018		


Talis Consultants
Level 1, 660 Newcastle Street,
Leederville,
Western Australia 6007
PO Box 454,
Leederville,
Western Australia 6903
Phone: 1300 251 070
Email: info@talisconsultants.com.au

E. TRAFFIC CONSULTANT REPORT

Project:	74 Mill Point Road Mixed-Use Development Revised
Client:	Edge Holdings No.6 Pty Ltd c/o Hillam Architects
Author:	Keli Li
Version:	15
Document #:	1407014-TIA-001

CONSULTING CIVIL AND TRAFFIC ENGINEERS
1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101.
PHONE|+61 8 9355 1300
FACSIMILE| +61 8 9355 1922
EMAIL| admin@ shawmac.com.au

Consulting Civil and Traffic Engineers, Risk Managers

Document Status

Version	Document Status	Prepared By	Reviewed By	Approved By	Date
0	Draft	A Wetton	P Nguyen	E Wilks	22/03/16
1	Revision	A Wetton	B Hartley	E Wilks	23/03/16
2	Revision	A Wetton	E Wilks	E Wilks	22/04/16
3	Revision	A Wetton	E Wilks	E Wilks	27/04/16
4	Revision	A Wetton	E Wilks	E Wilks	20/06/2016
5	Revision	A Wetton	E Wilks	E Wilks	29/06/2016
6	Design Change	A Wetton	E Wilks	E Wilks	29/08/2016
7	Design Change	K Li	E Wilks	E Wilks	03/02/2017
8	Design Change	K Li	E Wilks	E Wilks	23/03/2017
9	Design Change	K Li	E Wilks	E Wilks	04/05/2017
10	Design Change	K Li	L Dawson	L Dawson	28/11/2017
11	Client Comment	K Li	L Dawson	L Dawson	29/11/2017
12	City's Comments	K Li	L Dawson	L Dawson	30/01/2018
13	City's Comments	K Li		L Dawson	01/02/2018
14	Final	K Li	L Dawson	L Dawson	13/02/2018
15	Design Change	K Li	L Dawson	L Dawson	17/05/2018

File Reference: Z:\Jobs Active 2014\T&T Transport and Parking Studies\Hillam_74 Mill Point Road_1407014\2018 Report\TIA - 74 Mill Point Road_V15.docx

CONTENTS

TABLES

FIGURES

1. Introduction

1.1. Proponent

Shawmac Pty Ltd has been commissioned by Hilliam Architects to review the proposed mixed-use development at 74 Mill Point Road, South Perth in the City of South Perth.

1.2. Site Location and Land Use

The site is located on the northern leg of Mill Point Road (north of Mill Point Road East/Labouchere Road/Kwinana Freeway signalised intersection) in a *Mixed-Use Commercial Centre*. The site location is shown in **Figure 1.**

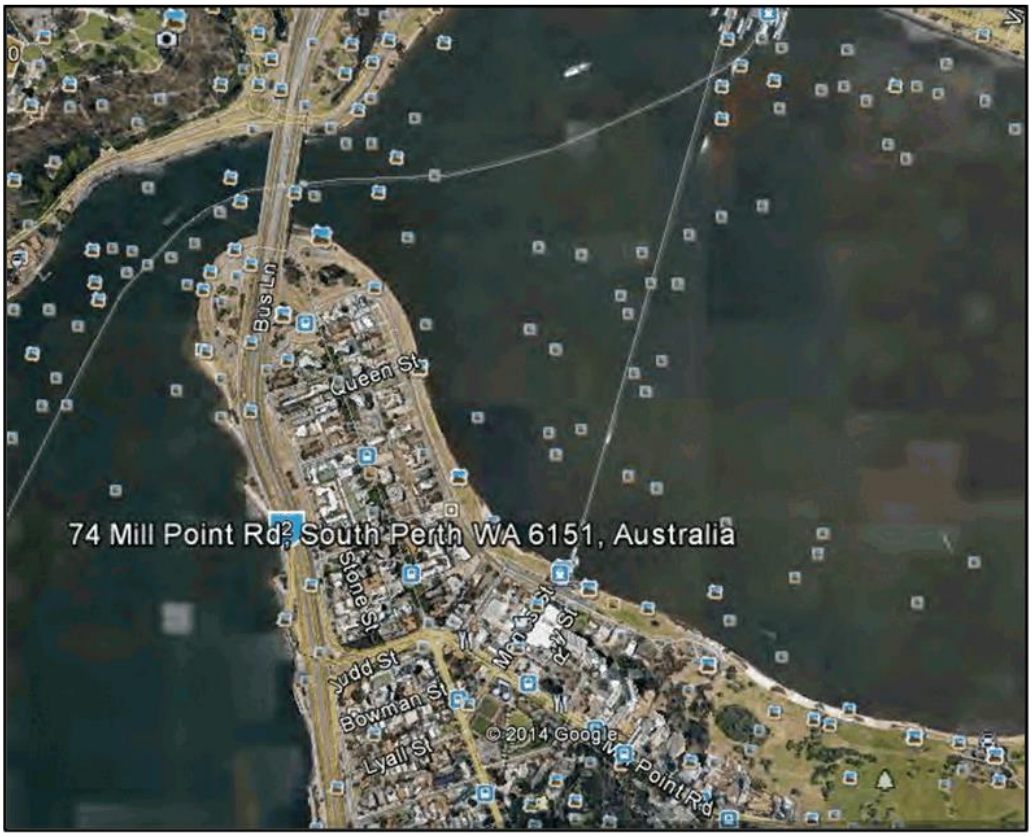


Figure 1 - Site Location

The study site was previously occupied by grouped dwellings and is currently vacant. The proposal is for the redevelopment of the site as a short-stay accommodation and residential apartment building with a cafe. The existing site together with the surrounding area is shown on the aerial photograph on **Figure 2.**

Figure 2 - Local Context

1.3. Background

This report is a revision of a previous report dated 13th Feb 2018. Modifications to the site plans have been made including the reduction of total residential apartments from 112 to 89, reduction of serviced apartments from 18 to 16, change in area of commercial land uses and corresponding parking allocation.

In this revision, parking and access aspect of the development (**Section 7** and **Section 8**) have been updated, however, traffic generation, distribution and intersection analysis have not been updated (**Section 4**). Considering the proposed change to the development will result in a reduction in traffic generation, the potential traffic impact to the external network will be less than the previously proposed development size. Therefore, the SIDRA analysis for the previously proposed development is considered conservative for the purpose of this assessment. Also note that the City of South Perth have engaged Cardno to undertaker microsimulation for South Perth Station Precinct. The latest microsimulation model introduced intersection modification and optimised signal timing scenarios for Mill Point Road / Labouchere Road / Freeway Ramp intersection and the results of the modelling indicated a substantial improvement to the network performance and a reduced impact (delay) of the proposed development at 74 Mill Point Road on the intersection. The latest microsimulation report is attached in **Appendix H**.

1.4. Key Issues

Key issues centre on the level of traffic likely to be generated by the development and the ability of the adjacent road network to accommodate flows both mid-block and through existing intersections. Other concerns raised by the City of South Perth and via community feedback are based on the cumulative impact that ongoing development within the precinct will have on traffic flow on the existing road network.

1.5. Reference Information

In undertaking the study, the information listed below was referenced.

- MRWA Functional Hierarchy Criteria;
- Livable Neighborhoods Guidelines 2009;
- Austroads *Guide to Road Design, Part 4A;*
- Austroads *Guide to Engineering Practice, Part 2, Roadway Capacity*;
- WAPC R-Codes;
- Guide to Traffic Generating Developments Version 2.2, October 2002 – Roads and Traffic Authority, New South Wales;
- City of South Perth – Town Planning Scheme No 6; and
- Department of Planning – South Perth Station Precinct Plan, January 2011.
- Trip Generation 7th edition, 2003 - Institute of Transportation Engineers, Washington, USA.

2. Site Proposal

2.1. Regional Context

The site is located within the South Perth Peninsula. **Figure 3** shows the site location in a regional context.

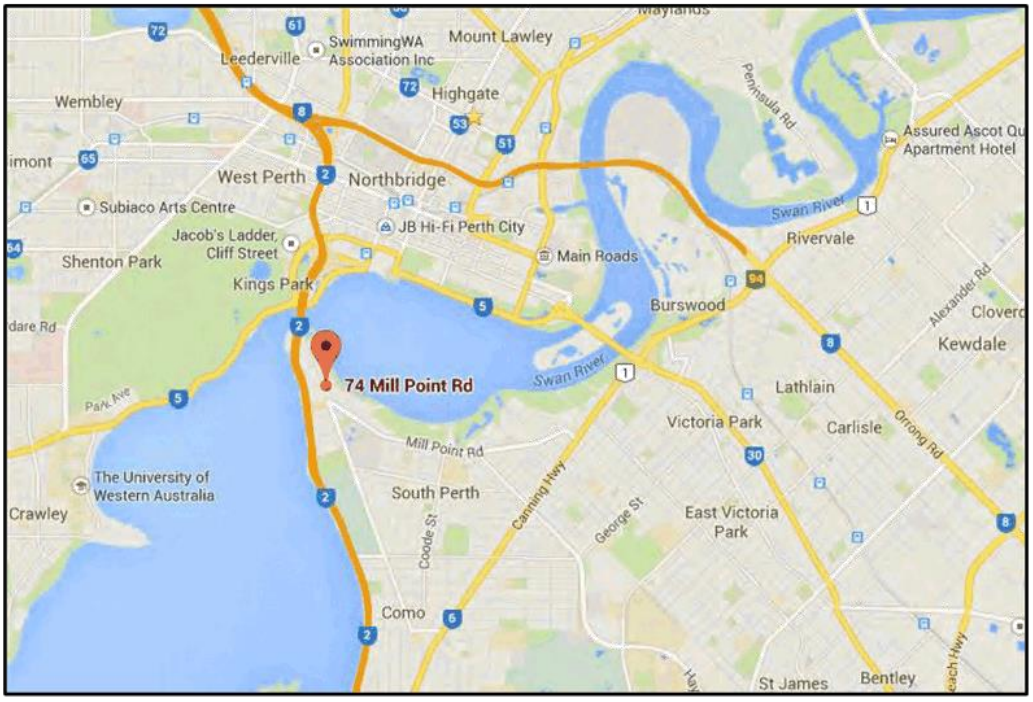


Figure 3 - Regional Context

2.2. Proposed Land Use

The application proposes redevelopment of the subject site. The subject site is within the *Mixed-Use Commercial Centre* under the City of South Perth *Town Planning Scheme 6 (TPS6).*

The development proposal is for a 28-storey mixed use development consisting of 16 serviced apartments, 3 commercial tenancies, a cafe, community meeting room, 89 residential apartments and associated communal residential leisure facilities. Pedestrian access to the site from the Mill Point Road frontage, with ground level accesses to the cafe, residential lobby and commercial lobby. Vehicular access is proposed via a crossover to Mill Point Road, along the southern boundary of the site. Fourteen ground level visitor parking bays are available at ground level, at the rear of the building. From the rear of the site, ramps are available to the basement and above ground level parking areas. **Table 1** outlines the land use of the proposed development.

Table 1 - Land Use

Commercial		Residential	
Land Use	Quantity	Land Use	Quantity
Serviced Apartments	16	1x1 Apartments	26
Cafe (Ground Floor)	100m²	2x2 Apartments	17
Community Meeting Room	54m²	3x2 Apartments	50
Commercial Tenancies	327m²	4x2 Apartments	0
Commercial Car Parking	18 bays	Residential Car Parking	122 bays
Commercial Visitor Parking	2 bays	Service Apartment Car Parking	8 bays
Motorcycle/Scooter Parking	9 bays	Residential Visitor Parking	15 bays
		Service Apartment Visitor Parking	1 bay
		Storage Rooms	82

The development is zoned *Mixed Use Commercial* under the City of South Perth TPS6. See **Figure 4.**

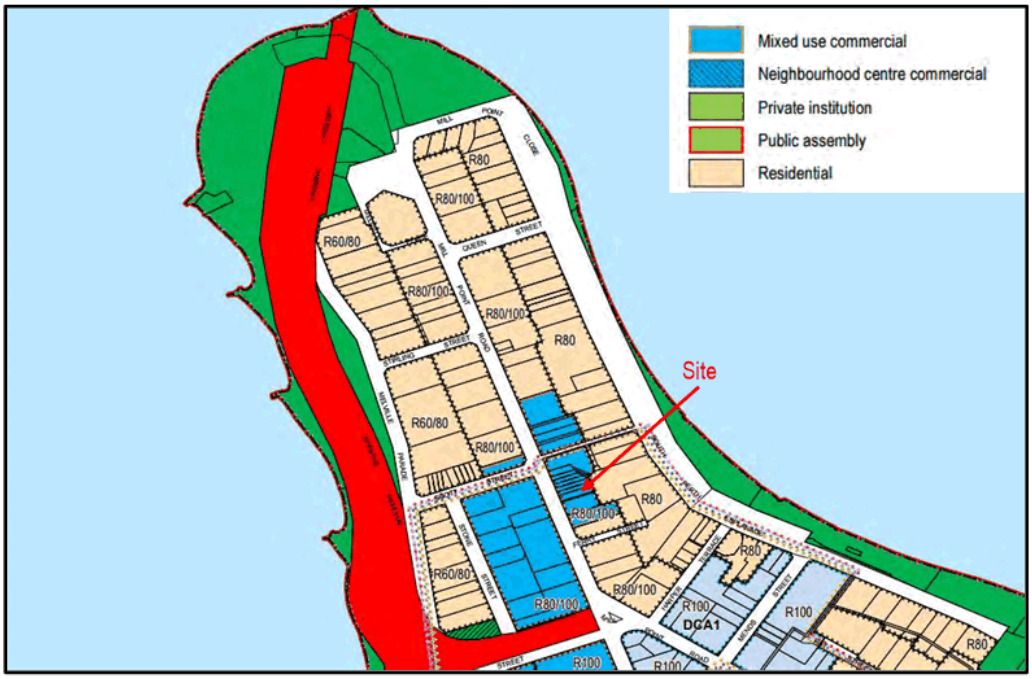


Figure 4 - Zoning

An extract of the development ground floor site layout and parking level layouts are shown in **Appendix A.**

2.3. Major Attractors and Generators of Traffic

The major generators in the area include the South Perth Commercial Precinct and the Mends Street Commercial Precinct in close walking distance to the site. The site is located within a *Mixed Commercial Centre* according to the City of South Perth's *Town Planning Scheme No. 6* and is within the *South Perth Station Precinct.* The proposed land use generally conforms to the existing and proposed land uses in the surrounding area and consequently the proposed development is expected to integrate well with the surrounding area.

The main attractors and generators expected to influence traffic flows to and from the site are shown in **Figure 5** include:

- The Perth CBD and associated employment and retail centres;
- The South Perth Commercial Precinct and Mend Street Commercial Precinct;
- Freeway North and South;
- Stirling Highway and Fremantle;
- Albany Highway and Victoria Park;
- Suburban residential areas.

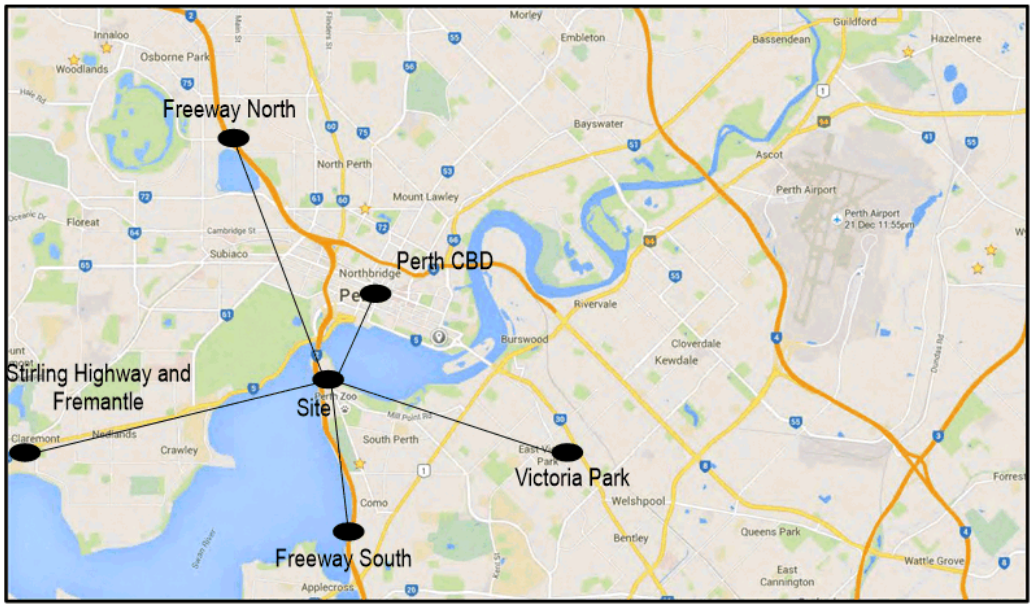


Figure 5 - Major Attractors and Generators

2.4. Integration with Surrounding Area

The Mill Point Peninsula is a large residential area, with a commercial precinct along Mill Point Road, south of Frasers Lane. There are other short-term accommodation developments on Mill Point Road and South Perth Esplanade.

Several new developments are proposed for South Perth, with the Aurelia development and Civic Heart mixed use developments currently under construction on Harper Terrace and Mill Point Road, respectively. These developments are within walking distance to the proposed site and are unlikely to be major attractors of vehicular traffic.

3. Existing Situation

3.1. Existing Roads

Kwinana Freeway

The Kwinana Freeway is an 8-lane divided *Control of Access* freeway located to the south-west of the site with direct access provided via the existing signalised intersection with Mill Point Road/Labouchere Road. It has been classified as a *Primary Distributor* road under the Main Roads *Functional Road Hierarchy* (road hierarchy).

The Kwinana Freeway operates under a posted speed limit of 100kph in the vicinity of the site transitioning to 80kph on approach to the Narrows Bridge and carries in the range of 85,000 to 90,000 vehicles per day

Mill Point Road

Mill Point Road, east of the signalised intersection of Mill Point Road/Labouchere Road/Kwinana Freeway, is classified as a *District Distributor B Road* under the MRWA road hierarchy. Mill Point Road (East) has a dual divided carriageway and operates under a 60kph speed limit.

North of the signalised intersection, Mill Point Road is a *Local Distributor Road* under the MRWA road hierarchy. Mill Point Road (North) has been constructed as a single undivided carriageway with a 9m wide seal with on-street parking permitted on both sides in the vicinity of the subject site and operates under a 50kph speed limit.

Mill Point Road is owned, operated and maintained by the City of South Perth.

Labouchere Road

Labouchere Road is classified as a *District Distributor B Road* under the MRWA road hierarchy and is operated and controlled by the City of South Perth. Labouchere Road is described as having a dual divided carriageway in the vicinity of the signalised intersection.

Labouchere Road operates under a posted speed limit of 60kph.

Frasers Lane

Frasers Lane is an *Access Road* under the MRWA road hierarchy. Frasers Lane functions as a one-way access street (west to east only) with a seal of approximately 3m along the western boundary of the site. It has been constructed as a single undivided carriageway across the frontage of the site. Frasers Lane currently operates under a posted speed limit of 50 km/h.

Figure 6 shows the existing road classification under the MRWA *Road Information Mapping System* for roads in the vicinity of the site.

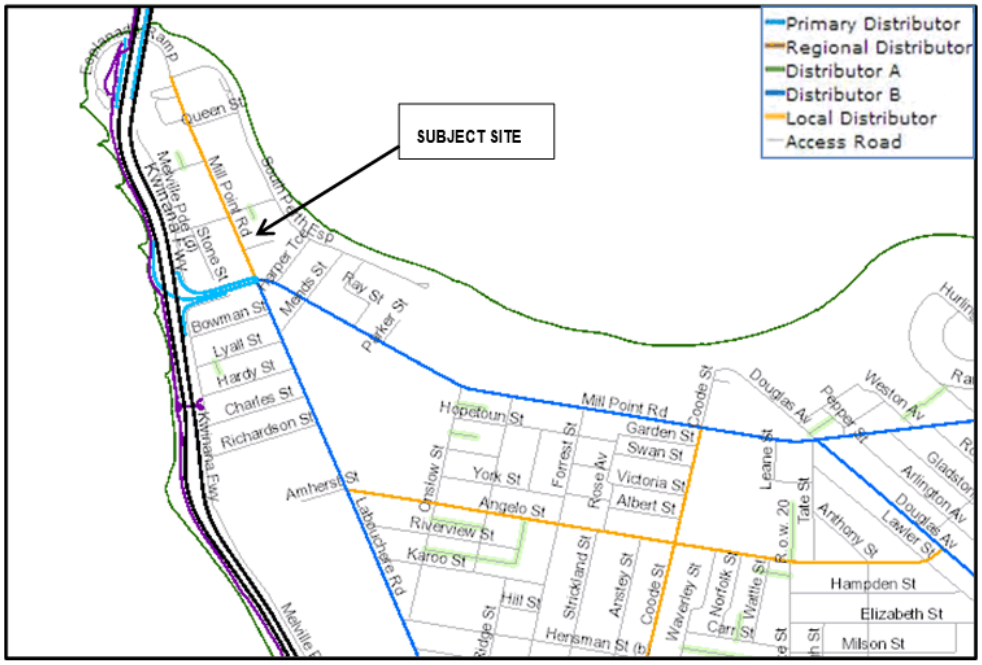


Figure 6 - Road Hierarchy

3.2. Road Hierarchy vs Actual Flows

Table 2 details the comparison of current traffic volumes against the maximum desirable volumes provided within the MRWA Functional Hierarchy and Liveable Neighbourhoods criteria.

Table 2 - Road Classification and Indicative Maximum Traffic Volumes

Location of Count	MRWA Classification	Liveable Neighbourhoods Indicative Traffic Volume (vpd)	Traffic Volume (vpd)	AM Peak Hour Volume	PM Peak Hour Volume	Source	Date
Mill Point Road (East)	District Distributor B	15,000	21,458)	8-9AM 1,664	5-6PM 1,703	CoSP	Feb 2016
Mill Point Road (North)	Local Distributor	7,000	5,340 (1,630 NB 3,710 SB)	11-12PM 365 (107 NB 258 SB)	5-6PM 413 (139 NB 274 SB	CoSP	May 2016
Labouchere Road (south of signalised intersection)	District Distributor B	15,000	15,053	8-9AM 1,156	5-6PM 1,545	CoSP	Feb 2016
Kwinana Freeway On/ Off-Ramp	Primary Distributor	>35,000	38,844 (16,709 off FWY 22,135 on FWY)	8-9AM 3,200 (1,029 off FWY 2,171 on FWY)	5-6PM 3,439 (1,712 off FWY 1,727 on FWY)	MRWA	Sep 2014 March 2015
Frasers Lane	Access Road	<3,000	<500			No data available	

Traffic count data was compared to recent SCATS data (31st of July to 4th of August 2017) for the intersection of Mill Point Road / Labouchere Road / Freeway Ramp and indicated similar or smaller volumes to those listed in **Table 2**. It was therefore assumed that the volumes stated in **Table 2** were indicative of present day volumes.

The table indicates that Mill Point Road and Frasers Lane, adjacent to the site are currently operating in accordance with their respective classifications. Mill Point Road East and Labouchere Road are operating at levels greater than the Liveable Neighbourhoods guidelines, however the construction of both of these roads as divided dual carriageways means that they still have spare capacity.

3.3. Existing Intersection Volume

The existing peak hour traffic volumes at the Mill Point Road / Labouchere Road / Freeway Ramp intersection were obtained from Main Roads WA SCATS data (31st July - 4th August 2017) as shown in **Figure 7**. For lanes with shared movements, the proportion of each movement was derived from manual peak hour traffic counts undertaken in previous transport assessments. A SIDRA analysis of the existing intersection operation is attached in **Appendix E**.

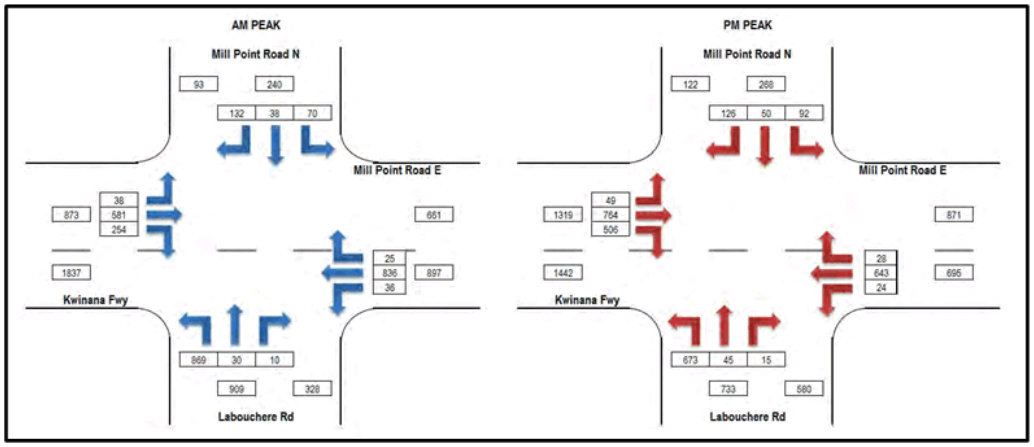


Figure 7 - Existing Intersection Traffic Volumes - Mill Point Road / Labouchere Road / Freeway Ramp

In order to validate the results of SIDRA analysis using SCATS traffic count, an additional traffic survey was conducted on 23rd of January 2018. The survey includes manual count of approaching traffic from Mill Pont Road North and Labouchere Road during AM and PM peak and observation of queue length and delay at these two approaches. A comparison between SIDRA analysis and onsite observation of Mill Point Road / Labouchere Road / Freeway Ramp intersection is shown below in **Table 3**.

Table 3 - Validation of SIDRA Analysis

	Traffic Survey	SCATS Traffic Count and SIDRA Analysis
Mill Point Road North Approach Traffic Count	AM Peak: 335 vph PM Peak: 368 vph	AM Peak: 240 vph PM Peak: 268 vph
Labouchere Road Approach Traffic Count	AM Peak: 989 vph PM Peak: 786 vph	AM Peak: 909 vph PM Peak: 733 vph
Mill Point Road North Queue Distance	AM Peak: approximately 55m PM Peak: approximately 65m	AM Peak: 53.4m PM Peak: 61.8m
Labouchere Road Queue Distance	AM Peak: approximately 120m. PM Peak: approximately 100m.	AM Peak: 158.2m PM Peak: 105.0m
Mill Point Road North Average Delay	AM Peak: no vehicles waited more than 1 cycle PM Peak: about 5 vehicles (over the peak hour) waited more than 1 cycle	AM Peak Left: 58.5 seconds AM Peak Through: 52.9 seconds AM Peak Right: 59.5 seconds PM Peak Left: 63.1 seconds PM Peak Through: 57.6 seconds PM Peak Right: 62.7 seconds
Labouchere Road Average Delay	AM Peak: no vehicles waited more than 1 cycle PM Peak: no vehicles waited more than 1 cycle	AM Peak Left: 39.5 seconds AM Peak Through: 57.6 seconds AM Peak Right: 63.3 seconds PM Peak Left: 28.8 seconds PM Peak Through: 59.0 seconds PM Peak Right: 64.7 seconds

As shown, despite the higher counted traffic, the realistic queue length and average delay are comparable to the SIDRA outputs. As such, the SIDRA results are considered to be conservative for the purpose of this assessment. It is also noted that based on the SIDRA results and survey observations, the Mill Point Road / Labouchere Road / Freeway Ramp intersection is considered having capacity to accommodate extra traffic.

3.4. Committed Developments and Other Transport Proposals

Cardno was commissioned by the City of South Perth to develop a micro-simulation traffic model of the South Perth Station Precinct which could be used to evaluate the impact of development proposals within the precinct. In order to determine the cumulative effect of the ongoing development in the precinct, the model included numerous planned developments with building permits as well as recently completed developments. These developments are listed below:

Approved Developments with Building Permits:

- One Richardson (1-3 Richardson Street)
- Southstone Apartments (1 Stone Street)
- Aurelia (96 Mill Point Road)
- 13 Stone Street
- Echelon (77-79 South Perth Esplanade)
- 5-7 Harper Terrace
- 20 Harper Terrace
- Millstream Arcade (21-23 Mends Street)
- 11 Melville Parade
- 26-28A Charles Street

Recently Completed Developments:

- 7 Lyall Street
- 6 Lyall Street
- Pinnacles South Perth (30-34 Charles Street)
- South Bank (98 Mill Point Road)

3.5. Projected Intersection Volume

Taking into consideration of other approved developments with building permits in the South Perth Station Precinct the annual linear growth rates for each approach of Mill Point Road / Labouchere Road / Freeway Ramp intersection from 2016 to 2021 were determined by Cardno in their Microsimulation modelling for South Perth Station Precinct and given in **Figure 8**. With these growth rates, the projected 2021 intersection volumes are shown in **Figure 9**.

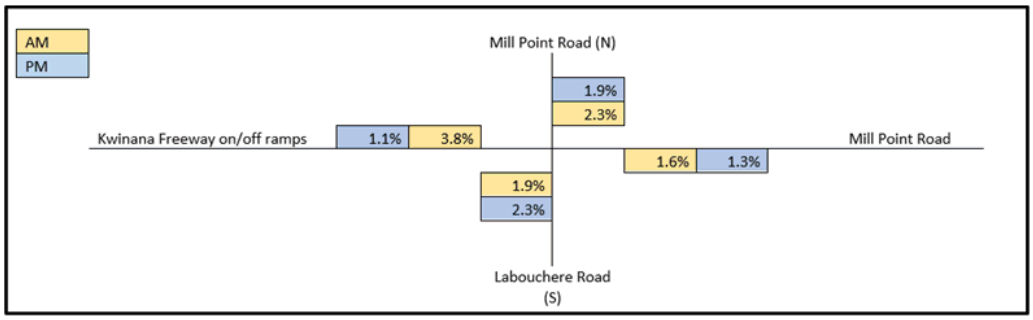


Figure 8 - Annual Growth Rate at Mill Point Road / Labouchere Road / Freeway Ramp Intersection

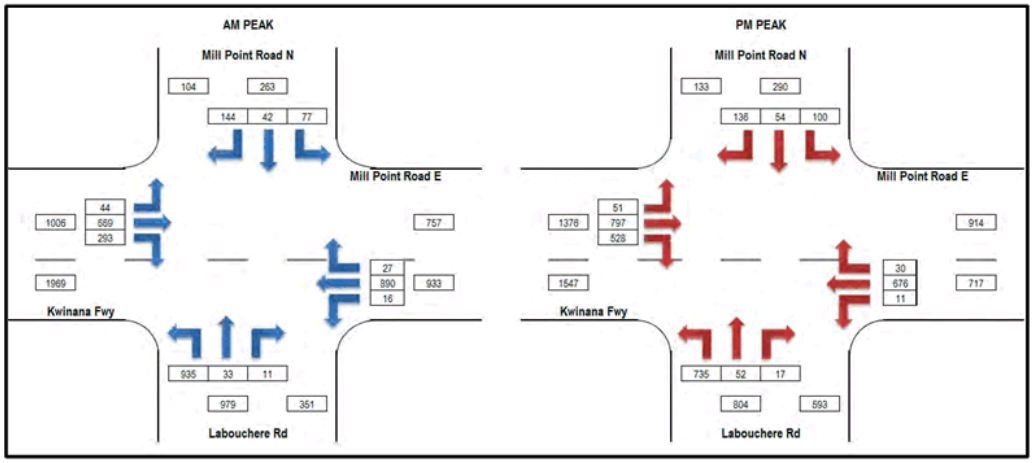


Figure 9 - 2021 Intersection Traffic Volumes - Mill Point Road / Labouchere Road / Freeway Ramp

3.6. Potential Deficiencies and Areas for Improvement

The traffic survey conducted on 23rd of January 2018 have also noted difficulties for pedestrians to cross Mill Point Road / Labouchere Road / Freeway Ramp intersection due to the lack of designated crossing time for pedestrians and the crossing facilities are not compliant with DDA requirements.

It is recommended for the City to investigate and identify the needs to improve the pedestrian crossings of this intersection.

Figure 10 - Non-Compliant Pedestrian Crossing Facility 1

Figure 11 - Non-Compliant Pedestrian Crossing Facility 2

3.7. Changes to the Surrounding Transport Networks

No major programmed/funded changes or upgrades were identified for the surrounding road network in the vicinity of the subject site, however the City of South Perth and Main Roads Western Australia are in discussion over the

growing traffic volumes accessing the Kwinana Freeway from Mill Point Road and Canning Highway. Planning for increased public transport services in the area includes the construction of a second-stage railway station at South Perth near Judd Street along the existing Southern Suburbs Railway Line.

A review of the *South Perth Station Precinct Transport and Access Strategy* (GHD, 2012) indicates that the localised improvements in the broader area surrounding the proposed railway station are recommended with the only improvement to the Kwinana Freeway On/Off Ramp/Mill Point Road East/Mill Point Road North/Labouchere Road signalised intersection consisting of a bus queue jump lane from Labouchere Road to the Kwinana Freeway on-ramp.

A review of the City of South Perth Bike Plan 2012-2017 indicates short-term changes are necessary for a number of routes and upgrades for 7 routes are proposed to be undertaken in the 5-year time frame of the plan. A map of the proposed network is shown in **Figure 12**.

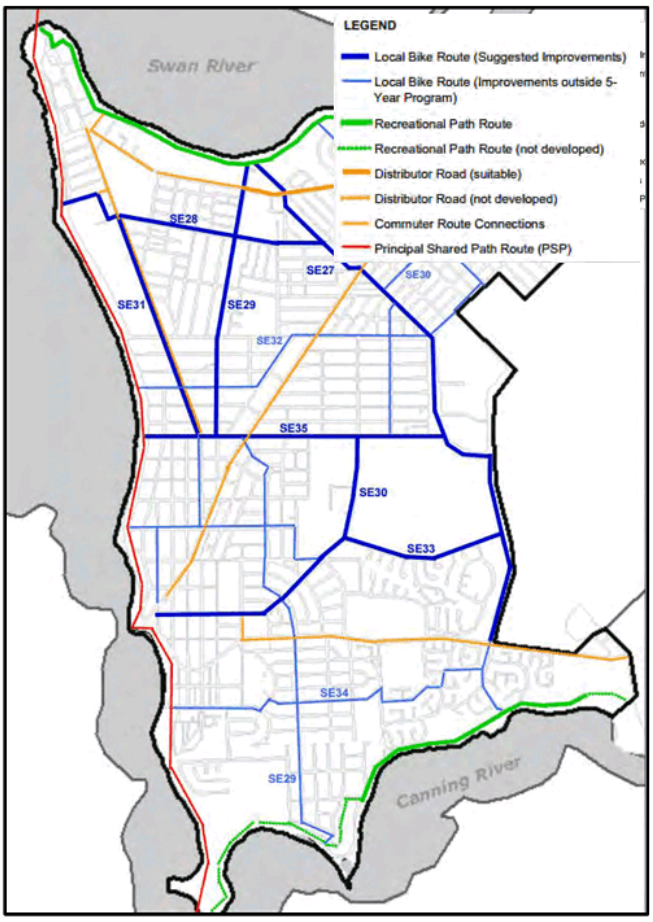


Figure 12 - South Perth Bicycle Network (Proposed Vision 2017)

No other road improvements are noted for the area in the vicinity of the subject site. It is also noted in this study that due to the nature of the transit-oriented development proposed within the precinct that a limited amount of additional vehicular traffic is expected to be generated with the majority of transport movements to be accommodated by public transport and walking/cycling.

3.8. Crash History

A summary of the crash history (obtained from MRWA CARS database) between January 2012 and December 2016 for surrounding intersections and road midblock is shown in **Figure 13** and a summary of crash severity is given in **Table 4.** The very low number of crashes along Mill Point Road in the context of the daily traffic volumes along the road indicates that there would be minimal risk associated with entering and exiting the site crossover to Mill Point Road and the existing risk profile would not be impacted along this section of road.

There were 38 recorded crashes at the intersection of Mill Point Road / Labouchere Road/ Freeway Ramp. Compared with the metropolitan averages, rear end crashes and right turn-through crashes were significantly over-represented. Of these crashes, 3 occurred during the AM Peak period, 6:00am – 8:59am, while 11 occurred in the PM Peak period, 3:00pm – 5:59pm and the majority of these crashes are property damage only (89.5%). The development traffic is predicted as 757 vpd, with 681vpd travelling to and from the site via the signalised intersection. This traffic accounts for a less than 2% increase of traffic travelling through the intersection which is not significant enough to change the existing crash profile of the intersection.

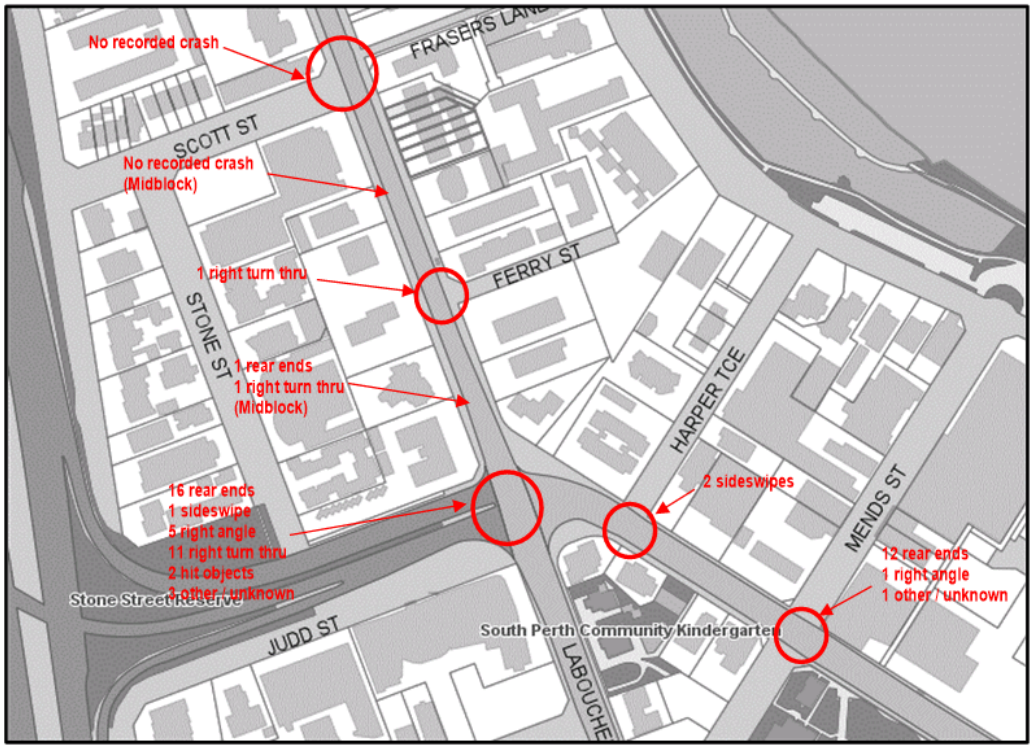


Figure 13 - Crash Location

Table 4 - Crash Severity

Crash Location	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage
Mill Point Rd / Labouchere Rd / Freeway Ramp intersection	0	0	4	23	11
Mill Point Rd / Harper Tce intersection	0	0	0	2	0
Mill Point Rd / Mend St intersection	0	0	3	5	6
Mill Point Rd North From Freeway Ramp / Labouchere Rd intersection to Fraser Ave	0	0	0	3	0

It is recommended that the City initiate a safety audit of the intersection of Mill Point Road / Labouchere Road/ Freeway Ramp to identify any initiatives to improve the safety of this intersection.

4. Transport Assessment

4.1. Assessment Years

The development has been assessed against network conditions for the expected year when all proposed land uses will be occupied, assumed as 2021. The assessment of the cumulative impact of development in the area on the surrounding road network has been carried out by the City of South Perth using their purpose built micro model of the South Perth precinct. The results of the cumulative assessment are included in a supplementary report prepared on behalf of the City of South Perth. As the existing traffic is steady over the last 7 years the growth in traffic is represented by the approved and planned development traffic included in the analysis. For Mill Point Road / Labouchere Road / Kwinana Freeway Ramp intersection, assessment of impacts after full opening (assumed to be 2031) is also included for comparison purpose.

4.2. Time Periods for Assessment

The peak periods for the proposed residential use are estimated to be 8:00 to 9:00 (AM Peak) and 17:00 to 18:00 (PM Peak) and are correspond with the AM and PM peak hours for Mill Point Road / Labouchere Road/ Freeway Ramp, intersection.

4.3. Development Generation and Distribution

In order to estimate the impact of traffic generated by the proposed development, peak hour trip generation rates in the Cardno Microsimulation Report "74 Mill Point Road Development - Micro Simulation Modelling Results *(Dec 2017)* was referenced in order to provide a consistent approach with other developments in the area. Daily trip generation was based on the Road and Traffic Authority (RTA), NSW "Guide to Traffic Generating Developments", and the Institute of Transportation Engineers "Trip Generation 7th Edition" as used in the previous revision of this report. Note that the traffic generation is based on the previous version of the development and is therefore conservative. Generation based on these documents is shown on **Table 5** and **Table 6.**

Table 5 - Predicted Daily Trip Generation

	Generation rate					Estimated Generation		
Land use	ADT	AM Peak	PM Peak	Unit	Quantum	ADT	AM Peak	PM Peak
Serviced Apartments *(Motel)*	3	0.30	0.30	Units	18	54	5	5
Cafe *(Restaurant)*	60	8.68	8.23	GFA ('00m²)	1.00	60	9	8
Commercial Tenancies and Meeting Room *(Offices)*	10	1.38	1.33	GFA ('00m²)	4.12	41	5	5
Residential Dwelling (1-2 BR)	4.5	0.28	0.39	Units	47	212	13	18
Residential Dwelling (>2 BR)	6	0.28	0.39	Units	65	390	18	25
Total						**757**	**50**	**61**

Table 6 - Predicted Peak Hour Movements

Land use	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Serviced Apartments *(Motel)*	39%	61%	54%	46%
	2	3	3	2
Cafe *(Restaurant)*	52%	48%	61%	39%
	5	4	5	3
Commercial Tenancies and Meeting Room	88%	12%	17%	83%
(Offices)	4	1	1	4
Residential Dwellings	22%	78%	62%	38%
	7	24	27	16
Total	**18**	**32**	**36**	**25**

As shown, the proposed development has the potential to generate approximately 757 vehicle trips per day with 50 vehicles per hour in the morning peak hour and 61 vehicles per hour in the afternoon peak hour.

As the proposed development exceeds the height limit as prescribed in TPS6 and in order to assess the traffic impact due to the additional floor space, the traffic generation of a compliance comparative 9-storey plan for 74 Mill Point Road provided by the client was calculated in **Table 7** and **Table 8**. The 9-storey plan complies with the building height requirement of TPS6 and it incorporates 65 one-to-two-bedroom apartments, 10 three-bedroom apartments and 2,038m2 of commercial areas. The site plans of the 9-storey development are included in **Appendix B**.

Table 7 - Daily Trip Generation - 9-Storey Plan

	Generation rate					Estimated Generation		
Land use	ADT	AM Peak	PM Peak	Unit	Quantum	ADT	AM Peak	PM Peak
Commercial Tenancies *(Offices)*	10	1.38	1.33	GFA ('00m²)	20.38	204	28	27
Residential Dwelling (1-2 BR)	4.5	0.28	0.39	Units	65	293	18	25
Residential Dwelling (>2 BR)	6	0.28	0.39	Units	10	60	3	4
Total						**556**	**49**	**56**

Table 8 - Predicted Peak Hour Movements- 9-Storey Plan

Land use	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Commercial Tenancies *(Offices)*	88%	12%	17%	83%
	25	3	5	22
Residential Dwellings	22%	78%	62%	38%
	5	16	18	11
Total	**30**	**19**	**23**	**33**

A comparison of predicted trip generation between the currently proposed 36-storey plan and the compliance comparative 9-storey plan indicates that although the 36-storey development generates higher daily vehicle trips, the peak hour generation is comparable with the 9-storey development. This is mainly due to the 9-storey development has higher proportion of commercial land use which generates higher peak hour traffic than residential dwellings. A comparison of traffic distribution between the two scenarios is outlined in **Figure 15** and **Figure 16**. It can be concluded that the land uses of the currently proposed 36-storey development are predominantly low traffic generating land uses and there is minor difference in terms of peak hour traffic generation when compared to the traffic generation of the 9-storey development. Thus, the traffic impact of the currently proposed 36-storey plan and the compliance comparative 9-storey development is considered similar and if the proposed development is assessed to be acceptable, the traffic generation due to additional floorspace is not considered to have adverse impact on the surrounding network.

4.4. Validation of Development Traffic Generation

In order to validate the trip generation of 74 Mill Point Road, a demographic survey of the buyers of the residential apartments in the proposed development was conducted to identify further travel patterns. Of the 62 presale apartments, the following features were identified for 52 respondents.

- 18 owners, or 29% were retired
- 2 owners identified as local investors
- 17 owners, or 27% identified as foreign investors, of which approximately 50% would rent out the property, the remaining 50% remaining predominantly vacant and only used for occasional trips by the owners.
- 8 owners, or 13% expressed an interest in catching the Transperth ferry to and from the CBD for work
- 3 owners, or 5% identified as working away
- 1 owner identified as working in South Perth
- 1 owner indicated that the property would be used as their holiday home

The results of the survey indicated that 63.5% of apartment owners or renters would be likely to travel via public transport, active travel, avoid travel during these times or the dwellings would remain vacant for the majority of the time. The remaining 36.5% of owners were unavailable at the time of the survey.

In order to further assist with the determination of suitable generation rates for the proposed development, traffic surveys (May 2016) were carried out on a number of properties within the South Perth peninsula. Counts of vehicle movements in and out of the properties were carried out in the morning and late afternoon/evening. Results are shown in **Table 9.**

Table 9 - Results of Traffic Surveys

Address	# of Units / Apartments	Count Period	Trips generated		% Change
			(RTA) Theoretical	Actual	Act v Theor
12 Stone Str	26	AM	16	4	25%
Residential		PM	16	8	50%
39 South Str	34	AM	20	8	40%
Residential		PM	20	7	35%
73 Mill Point Rd	32	AM	19	5	26%
Residential		PM	19	11	58%
53 South Perth Espl	73	AM	33	13	39%
Serviced Apartments		PM	29	20	69%

The actual trip generations for the residential apartments show actual trips being on average 30% of theoretical figures for AM peak and 48% for the PM peak. For an assessment of actual trip generation for serviced apartments, 53 South Perth Esplanade was selected as it has a high number of apartments in the complex. The figures in **Table 9** show actual trip generation to be 39% of theoretical forecasts for AM peak and 69% for PM peak.

The standard theoretical site generated traffic volumes are therefore regarded as conservative for the location of the proposed development and in practice it is anticipated that the actual trip generation will be significantly discounted. This has been taken into account by utilising the lower peak hour generation rates, noted by Cardno in **Table 5** as opposed to the previously adopted RTA rates for medium density dwellings.

4.5. Distribution

Main desire lines are expected to be between the site and the Kwinana Freeway to the higher-order road network, and between the site and Mill Point Road to the East and Labouchere Road to the south to local attractors and towards Canning Highway.

Traffic to and from the site is expected to be distributed as shown below and in **Figure 14**:

Inbound:	20% from the north	Outbound	10% to the north
	80% from the south		90% to the south

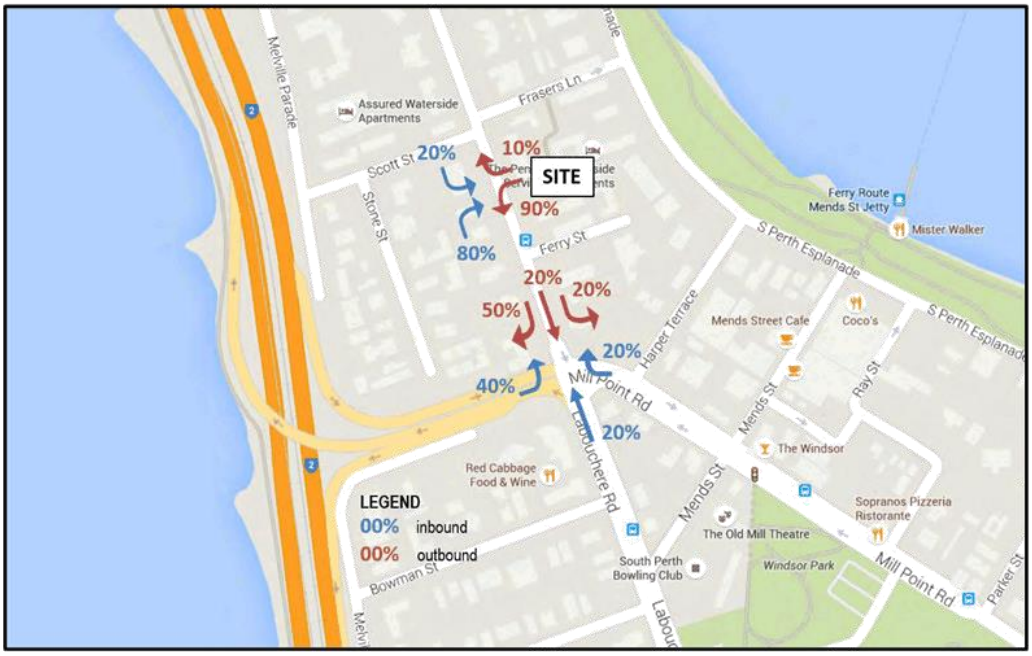


Figure 14 - Site Traffic Distribution

Figure 15 illustrates the development traffic volumes based on the estimated traffic distribution. For comparison purpose, the distribution of the traffic based on the 9-storey plan is shown in **Figure 16**.

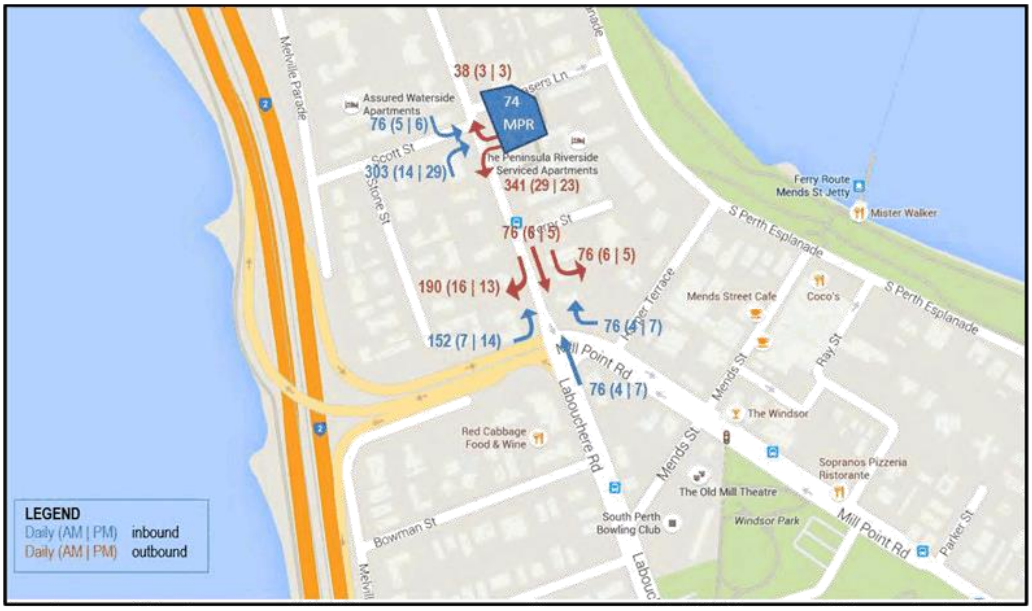


Figure 15 - Site-Generated Traffic Distribution – 74 Mill Point Road

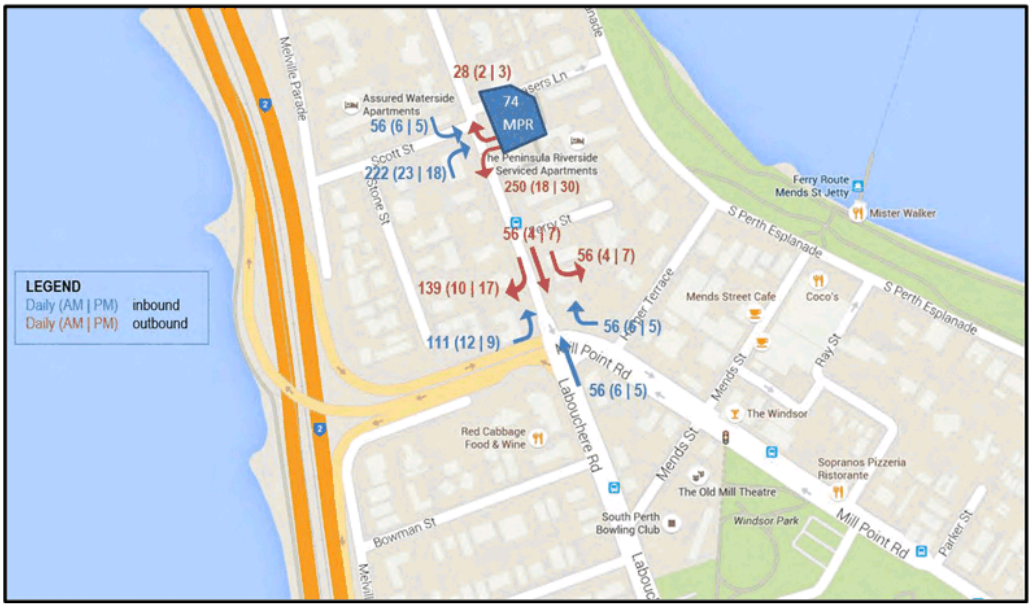


Figure 16 - Site-Generated Traffic Distribution – 9-Storey Plan

The anticipated site-generated traffic has been assigned onto the boundary road system based upon the assumptions above and the resultant increases in weekday daily and peak hour traffic on the boundary roads associated with the proposed development are shown in **Table 10.** The development year (2021) traffic volumes have been assumed based on Cardno's linear growth rates applied to the existing (2017) traffic volumes stated in **Section 3.5**. Note: daily rates were based on the average of the AM and PM rates.

Table 10 - Predicted Site-Generated Traffic Volumes - Development Year (2021) Traffic

Location of Count	Predicted Increase			2021 Predicted Volumes			2021 Predicted Volumes with Development Traffic			Predicted Traffic increase (%)		
	Week day (vpd)	AM Peak (vph)	PM Peak (vpd)	Week day (vpd)	AM Peak (vph)	PM Peak (vph)	Week day (vpd)	AM Peak (vph)	PM Peak (vph)	Week day (vpd)	AM Peak (vph)	PM Peak (vph)
Kwinana Freeway Ramp	342	23	29	42,651	3,686	3,590	42,993	3,709	3,619	0.80	0.62	0.81
Mill Point Road (North)	644	44	55	5,789	399	444	6,433	443	499	11.13	11.04	12.38
Mill Point Road (East)	152	10	12	22,703	1,238	1,792	22,855	1,248	1,804	0.67	0.81	0.67
Labouchere Road	152	10	12	16,317	1,244	1,687	16,469	1,254	1,699	0.93	0.80	0.71

4.6. Impact on Intersections

4.6.1. Development Scenario

The intersections analysed were the Site Access / Mill Point Road North, and the signalised intersection with Labouchere Road and Mill Point Road East.

The City of South Perth requested that the proposed mixed-use development of the adjacent site, 76 Mill Point Road, be taken into account. It is noted that the application for 76 Mill Point Road is not currently approved and their plans are constantly changing. Even if the application for 76 Mill Point Road proceed, it would only be completed after 74 Mill Point Road. Access for 76 Mill Point Road is proposed via a common right of way with 74 Mill Point Road. For this reason, the traffic volumes for 76 Mill Point Road have been calculated and assigned to the road network in the same manner as the subject site, and included in the SIDRA analysis of the site access / Mill Point Road North and the signalised intersection at Mill Point Road / Labouchere Road / Freeway. The traffic generation from 76 Mill Point Road is calculated in **Appendix D** and the distribution was assumed the same as 74 Mill Pont Road.

4.6.2. Mill Point Road / Labouchere Road / Kwinana Freeway Intersection Analysis

The signalised intersection at Mill Point Road / Labouchere Road / Kwinana Freeway Ramp was modelled using Sidra Intersection 7 and the results of the analysis are shown in **Appendix E**. Intersection volumes for 2021 were determined based on Cardno's linear growth rates as calculated in **Section 3.5**. 2031 scenarios were modelled and the intersection volumes were also based on these growth rates.

Average fixed phase times were applied to all scenarios, as determined from Main Roads WA IDM recordings, however it should be noted that SCATS-operated signals change in order to accommodate additional flows within each cycle. **Table 11** and **Table 12** compares various measures for the worst value or movement of the intersection, pre-vs-post development, considering development at 74 Mill Point Road only, and 74 and 76 Mill Point Road.

Table 11 - Impact of Additional Traffic on LOS - 2021 AM and PM Peak

	AM Peak						PM Peak					
	Intersection Volume (vph)	Degree of Saturation - worst	Average Delay worst movement (s)	Level of Service worst movement	MPR North Queue length (m)	Queue length worst movement (m)	Intersection Volume (vph)	Degree of Saturation – worst)	Average Delay worst movement (s)	Level of Service worst movement	MPR North Queue length (m)	Queue length worst movement (m)
2021 no development	3,180	0.724	59.9	LOS E	58.7	174.8	3,182	0.899	64.9	LOS E	67.0	267.8
2021 with 74 MPR	3,232	0.727	63.6	LOS E	66.5	175.5	3,232	0.899	65.2	LOS E	72.0	267.8
Δ	**52.0**	**0.003**	**3.7**	**-**	**7.8**	**0.7**	**50.0**	**0.0**	**0.3**	**-**	**5.0**	**0.0**
%Δ	**1.6%**	**0.4%**	**6.2%**	**-**	**13.3%**	**0.4%**	**1.6%**	**0.0%**	**0.5%**	**-**	**7.5%**	**0.0%**
2021 no development	3,180	0.724	59.9	LOS E	58.7	174.8	3,182	0.899	64.9	LOS E	67.0	267.8
2021 with 74 & 76 MPR	3,306	0.775	64.5	LOS E	82.1	176.5	3,321	0.899	65.6	LOS E	83.2	267.8
Δ	**126.0**	**0.051**	**4.6**		**23.4**	**1.7**	**139.0**	**0.0**	**0.7**		**16.2**	**0.0**
%Δ	**4.0%**	**7.0%**	**7.7%**		**39.9%**	**1.0%**	**4.4%**	**0.0%**	**1.1%**		**24.2%**	**0.0%**

As shown, the Mill Point Road / Labouchere Road / Freeway Ramp intersection is predicted to be slightly affected and will continue to operate satisfactorily under both development scenarios.

The maximum queue length on Mill Point Road North occurs during the afternoon peak hour. For the development scenario (74 MPR only), the increase in maximum queue is approximately 5.0m and the maximum queue distance (72.0 m) will extend to approximately 92.0m south of the site access. For the combined development scenario, the maximum queue distance (83.2 m) will extend to approximately 81.0m south of the site access. Therefore, as concerned by the City's infrastructure services, the intersection queue extends further north of the site access is considered to be an extremely unlikely event as the shared access driveway of 74 & 76 MPR is approximately 164m from the intersection stop-line.

Table 12 - Impact of Additional Traffic on LOS - 2031 AM and PM Peak

	AM Peak						PM Peak					
	Intersection Volume (vph)	Degree of Saturation - worst	Average Delay worst movement (s)	Level of Service worst movement	MPR North Queue length (m)	Queue length worst movement (m)	Intersection Volume (vph)	Degree of Saturation – worst)	Average Delay worst movement (s)	Level of Service worst movement	MPR North Queue length (m)	Queue length worst movement (m)
2031 no development	3,878	0.917	71.5	LOS E	73.9	238.6	3,636	0.999	102.9	LOS F	81.5	384.6
2031 with 74 MPR	3,930	0.917	71.5	LOS E	83.4	239.8	3,686	0.999	103.0	LOS F	87.5	384.6
Δ	**52.0**	**0.0**	**0.0**	**-**	**10.0**	**1.0**	**50.0**	**0.0**	**0.0**	**-**	**6.0**	**0.0**
%Δ	**1.34%**	**0.0%**	**0.0%**	**-**	**12.9%**	**0.5%**	**1.38%**	**0.0%**	**0.10%**	**-**	**7.36%**	**0.0%**
2031 no development	3,878	0.917	71.5	LOS E	73.9	238.6	3,636	0.999	102.9	LOS F	81.5	384.6
2031 with 74 & 76 MPR	4,004	0.917	71.5	LOS E	105.9	241.6	3,787	0.999	103.0	LOS F	101.1	384.7
Δ	**126.0**	**0.0**	**0.0**		**32**	**3.0**	**151.0**	**0.0**	**0.0**		**20.0**	**0.0**
%Δ	**32.5%**	**0.0%**	**0.0%**		**43.3%**	**1.26%**	**4.15%**	**0.0%**	**0.10%**		**24.1%**	**0.03%**

For the 2031 scenarios, only one movement (right-turn from freeway to Labouchere Road) of the intersection is predicted to be unsatisfactory with a LOS of F during the PM Peak (with and without development traffic). The proposed development is located on Mill Point Road North and will have negligible impact to the congestion of this movement and therefore the impact due to the proposed development is considered acceptable. It is recommended for the City to continue monitor the performance of this movement and identify the need for improvement. Analysis indicates that reduced cycle time to 90 seconds would benefit the intersection performance, resulting satisfactory performance for all movements of 2031 scenarios.

For comparison purpose, the SIDRA results of the currently proposed plan are compared with the 9-storey plan scenario as shown in **Table 13** and no significant difference in terms of intersection performance is revealed. Thus, it can be concluded that the traffic impact due to additional building height is minimal.

Table 13 - Intersection Performance Comparison - 9-Storey Plan vs with 36-Storey Plan

	AM Peak						PM Peak					
	Intersection Volume (vph)	Degree of Saturation - worst	Average Delay worst movement (s)	Level of Service worst movement	MPR North Queue length (m)	Queue length worst movement (m)	Intersection Volume (vph)	Degree of Saturation – worst)	Average Delay worst movement (s)	Level of Service worst movement	MPR North Queue length (m)	Queue length worst movement (m)
2021 with 9-Storey	3,222	0.728	63.7	LOS E	63.5	175.8	3,232	0.899	65.1	LOS E	74.2	267.8
2021 with 74 MPR	3,232	0.727	63.6	LOS E	66.5	175.5	3,232	0.899	65.2	LOS E	72.0	267.8

4.6.3. Site Access / Mill Point Road North

The site access crossover and Mill Point Road (North) was modelled using SIDRA 7 for the 74 Mill Point Road development scenario and with the combined traffic volumes for 74 and 76 Mill Point Road. The existing common right of way (ROW) is used as a secondary access for the Peninsula Serviced Apartments (53 South Perth Esplanade), however a site survey taken on the 19th May 2016 indicated that only one vehicle exited the 10-bay car park during a 3-hour period from 7-10am, and no vehicles entered or exited the site during the period from 3-6pm. The impact of this existing development is minimal and has been excluded from the SIDRA analysis.

The results of the analysis showed that the intersection will operate at a LOS A for all movements during the morning and afternoon development peak hours (9-10am, 5-6pm) for both development scenarios. The movement summary outputs are attached in **Appendix F**.

4.7. Cumulative Impact of Currently Approved Developments in South Perth Precinct

The WAPC Transport Assessment Guidelines provides for the inclusion of a 10-year assessment of the impact of the additional traffic generated by a development to assist the approving authority in planning and prioritising macro improvements to the road network. An extract from the guidelines is included below:

"The post full development assessment, (10-year after opening or similar), will determine the medium to longer term impacts of the proposed development on the surrounding road network, ie. it will provide a measure of the ability of the transport infrastructure to accommodate development flows plus further growth in the surrounding traffic. It will therefore provide the approving authority with advice on whether or not the development is likely to trigger the need for additional improvements to the transport networks over the next ten years or so, or bring forward any planned improvements".

As noted above in Section 4.1, the City of South Perth has developed a microsimulation model of the surrounding road network and traffic flow in order to get a more comprehensive assessment of the cumulative impact of all future development in the area. The City has undertaken long term modelling of the road network which would

include the impending growth within the South Perth precinct and increase in traffic passing through the area. Results of the long-term modelling are included in the supplementary report prepared by City of South Perth.

4.8. Traffic Noise and Vibration

Given the location of the site adjacent to the Kwinana Freeway, the impact from noise and vibration is not expected to be measurable.

4.9. Road Safety

While the development will result in more traffic on the road network, it is not expected that the increase will change the risk profile to an unacceptable level.

5. Pedestrian and Cycle Networks

5.1. Pedestrian and Cycling Infrastructure

Existing pedestrian infrastructure in the vicinity of the site includes:

- A footpath on both sides of Mill Point Road adjacent to and opposite the site;
- A shared path on the South Perth Foreshore along The Esplanade east of the site;
- A Principal Shared Path along the Kwinana Freeway to the west of the site; and
- Mill Point Road designated as a *Walking Trail* adjacent to the site.

An extract from the Department of Transport (DoT) TravelSmart Walk and Cycle Map – City of South Perth (West) is shown in **Figure 10** and illustrates the extent of the existing pedestrian/cyclist network within the vicinity of the site.

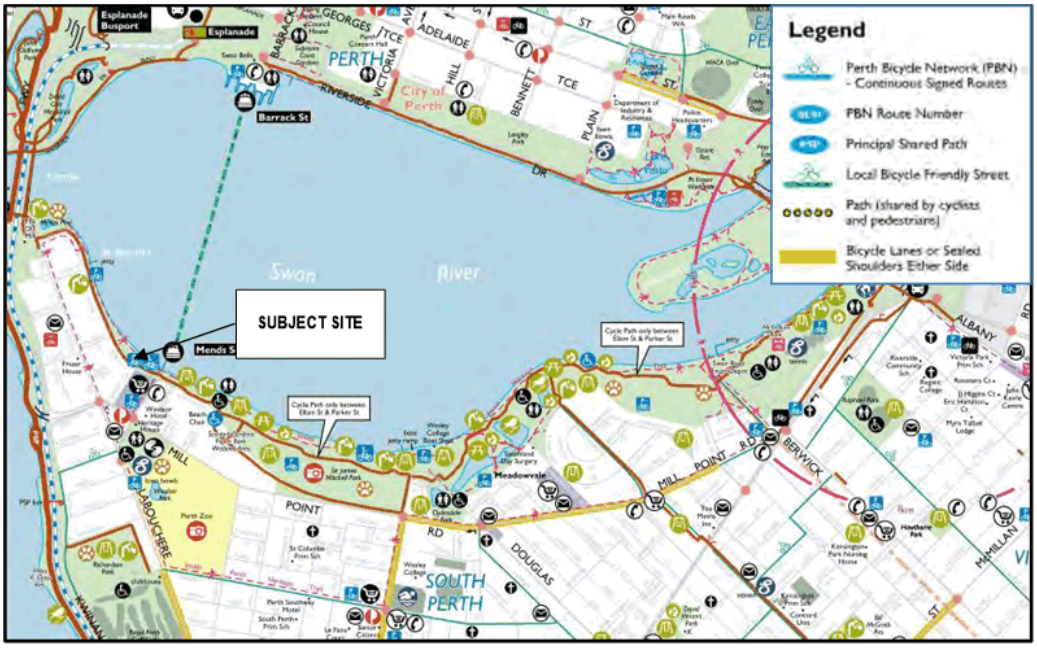


Figure 17 - Existing Cycling and Pedestrian Infrastructure

5.2. Safe Walk and Ride to School

The nearest schools to the development site are South Perth Primary School, St. Columba's Catholic Primary School and Wesley College. All are accessible from Mill Point Road, with footpaths on both sides on the road. Each school is then accessible via the local road network which has footpaths on at least one side of all roads. **Figure 11** shows the location of the schools and the extent of the 40km/hr school speed zones.

Figure 18 - School Locations and 40km/h School Zones

6. Public Transport

The subject site has adequate access to the public transport network and is located within short walking distance of an existing bus Route 35 (Perth-South Perth) on Mill Point Road adjacent to the site. Bus stops are in place on both sides of the road within close walking distance, respectively, and located approximately every 300m along Mill Point Road north. This existing service provides 15-minute service during the weekday a.m. and p.m. peak periods, respectively, and half hourly service during the midday and hourly service during the evening off-peak and weekend periods.

There are also frequent services between Labouchere Road and Mill Point Road East to the Perth CBD with Routes 30, 31 and 34 operating approximately 400m from the site. These services also provide access to Curtin University and nearby Salter Point and Como. During the morning and afternoon peak hours, there are services to and from the Perth CBD approximately every 5 to 10 minutes.

The existing TransPerth ferry services from the Mends Street Jetty are also within a 5-minute walk from the subject site providing direct service to the Perth CBD with services every 15-30 minutes during the summer months and every 30 minutes on during the winter months.

Figure 19 shows the existing public transport services in the area, while **Figure 20** and **Table 14** detail the bus and ferry stops near the site.

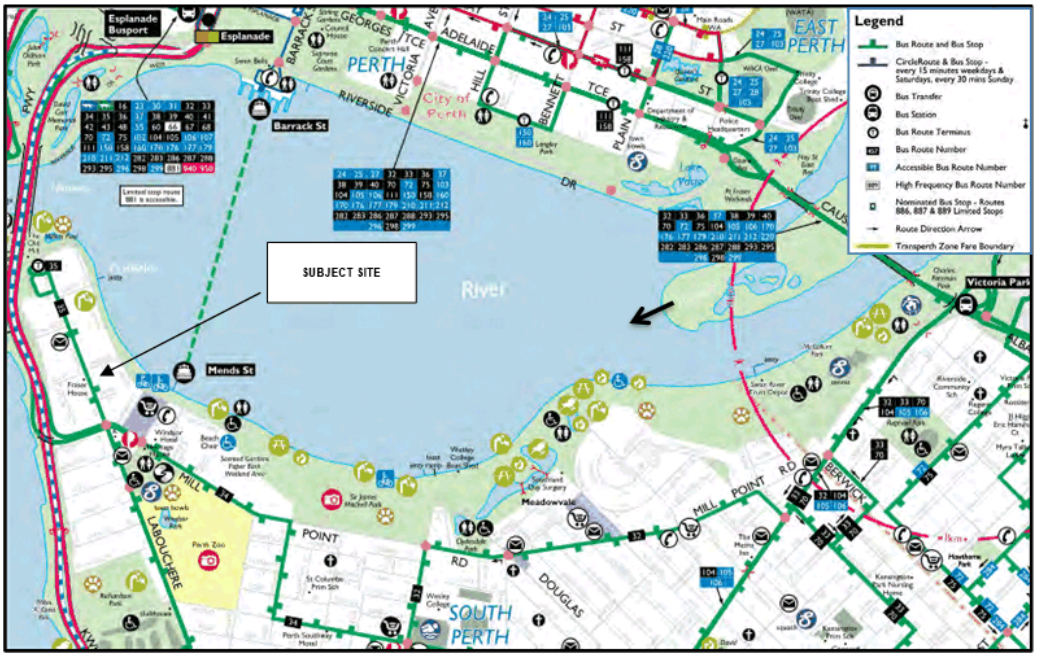


Figure 19 - Travel Smart Map: Public Transport Infrastructure in the Vicinity of Site

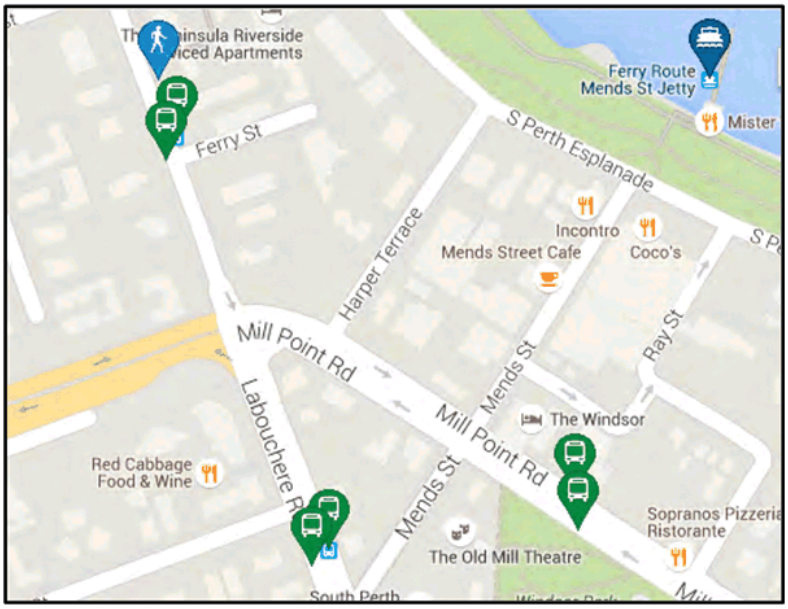


Figure 20 - Public Transport Stops Near Development Site

Table 14 - Public Transport Stops and Services Near Development Site

Bus / Ferry Stop ID	Location	Walking Distance From Site	Direction (To / From Perth CBD)	Services / Frequency
11826	Mill Point Road (SB), before Ferry Street	66m	To CBD	**35 – Old Mill to Elizabeth Quay** On-Peak 15 mins Off-Peak 30 mins
11844	Mill Point Road (NB), before Scott Street	99m	From CBD	**35 – Elizabeth Quay to Old Mill** On-Peak 15 mins Off-Peak 30 mins
11866	Labouchere Road after Mends Street	396m	To CBD	**30 – Curtin University to Elizabeth Quay** On-Peak 10 mins Off-Peak 30 mins **30 – Salter Point to Elizabeth Quay** On-Peak 10 mins Off-Peak 30 mins (bus services to CBD in AM Peak approximately every 5 minutes)
11846	Labouchere Road After Mill Point Road	363m	From CBD	**30 – Elizabeth Quay to Curtin University** On-Peak 10 mins Off-Peak 30 mins **31 – Elizabeth Quay to Salter Point** On-Peak 10 mins Off-Peak 30 mins (bus services from CBD in PM Peak approximately every 5 minutes)
11843	Mill Point Road before Mends Street	528m	To CBD	**34 – Cannington Station to Elizabeth Quay (via Curtin University and Como)** On-Peak 10 mins Off-Peak 15 mins
11827	Mill Point Road after Mends Street	495m	From CBD	**34 –Elizabeth Quay to Cannington Station (via Como and Curtin University)** On-Peak 10 mins Off-Peak 15 mins
99998	Mends St Jetty	660m	To / From CBD	**Ferry to / from Elizabeth Quay** On-Peak 15 mins Off-Peak 30 mins

7. Parking

7.1. Car Parking

The proposed on-site car parking is to be provided at ground level, within the two basements levels, mezzanine level and Level 1 to Level 3. The proposed car parking on the site will be allocated as shown in **Table 15.**

Table 15 - Proposed Car Parking Supply

Level	Residential Single and Short	Residential Large	Residential Long	Service Apartment Parking	Commercial Parking	Residential Visitor	Commercial and Service Apartment Visitor	Total Bays
Basement	22	2	15					39
Ground					2	15		17
Mezzanine				9	7		4	20
Level 1	18	5	2		8 (4 Tandem bays)			33
Level 2	18	5	6					29
Level 3	16	6	6					28
Totals		**121**		**9**	**17**	**15**	**4**	**166**

The on-site parking requirements as stipulated in the City of South Perth Town Planning Scheme No.6 and the proposed supply is compared in **Table 16**.

Table 16 - South Perth Parking Requirements

Level	Quantum	Standard Minimum (TPS6)	Standard Maximum (TPS6 Amendment 46)	Bays Required Minimum	Bays Required Maximum	Total Bays Supplied
1 bed dwelling	22 dwellings	0.75 bay / dwelling	1 bay / dwelling	17	22	121
2 bed dwelling	17 dwellings	1 bay / dwelling	1 bay / dwelling	17	17	
3-4 bed dwelling	50 dwellings	1 bay / dwelling	2 bays / dwelling	50	100	
Total Residential				**84**	**139**	**121**
Serviced Apartments	16 serviced apartments	0.5 bay / serviced apartment	N/A	8	N/A	8
Commercial (Café, Meeting Room and Tenancies)	481 m²	1 bay / 50m2	N/A	10	N/A	18
Residential Visitors	89 dwellings	1 bay / 6 dwellings	N/A	15	N/A	15
Serviced Apartment Visitors	8 bays	0.1 bay / required bay	N/A	1	N/A	3
Commercial Visitors	10 bays	Greater of 2 bays or 0.1 bay / required commercial bay	N/A	2	N/A	
Grand Total				**119**	**175**	**166**

The proposed on-site supply of 166 car bays is consistent with the statutory minimum requirements for the site. The proposed supply of 121 residential bays is also below the maximum required bays in accordance with TPS 6

Amendment 46. The supply of commercial bays is just above the minimum requirement and even if a maximum requirement is applied in future, the proposed number of bays is unlikely to exceed the potential requirement.

The site is classed as a 1A parking facility (residential, domestic and employee parking) and comparison of the required dimensions versus the bay dimensions assessed from the drawing are summarised in **Table 17.**

Table 17 - Parking Bay Dimensions

Bay details.	Bay Dimension Required.	Bay Dimension Provided. (Minimum)	Comment
Ninety degree bays	5.4 x 2.4 x 5.8 aisles.	Length: 5.4m Width: 2.4m Aisles: 5.8m	Complies.
Long bays	5.4 x 2.4 x 5.8 aisles.	Length: Varies, but always less than 10m Width: 2.4m Aisles: 5.8m	Not suitable for two B85 cars. The purpose is to accommodate a car and a scooter / bicycle.
Large bays	5.4 x 2.4 x 5.8 aisles.	Length: 6.0m Width: 3.8m Aisle: 5.8m	The purpose is to accommodate a car and a scooter / bicycle.
Tandem Bay	10.0 x 2.4 x 5.8 aisles.	Length: 10.0m Width: 2.4m Aisle: 5.8m	Suitable for two B85 cars

Bay dimensions and parking area layout complies with the requirements of AS 2890.1 – Parking Facilities: Off Street Car Parking.

One accessible parking bay is shown on mezzanine and a shared space is provided adjacent to the space in accordance with Australian Standard AS 2890.6 *Parking Facilities Part 6: Off-street Parking for People with Disabilities*. The number of accessible parking bays is compliant with the Building Code of Australia (BCA) requirements for the commercial component of the building which is one bay per 100 bays provided. There is no requirement for the residential component of the building.

7.2. Bicycle Parking

The proposed development includes individual secure storage facilities for personal effects including bicycles within the car parking levels of the development for each residential dwelling unit.

Dedicated bicycle storage is also available for the commercial and residential tenants and visitors with 15 secure bicycle bays and 4 public bicycle bays available on the ground floor, and an additional 30 bicycle bays provided over the parking levels.

The requirements for bicycle parking and End-of-Trip facilities are shown in **Table 18** and determined that the supply of 49 bicycle spaces and associated End-of-Trip facilities exceeds the requirements under TPS6 Schedule 9. The latest site plans also indicate 9 scooter/motorcycle parking space over the parking floors.

Table 18 - Bicycle Parking Requirements

Bicycle Parking and End-of-Trip Facilities					
	Rate	Quantity	Required	Supplied	Comment
Residential	1 bays per 3 dwellings	89 dwellings + 16 serviced apartments	35	49	Compliant
Residential Visitor	1 bays per 10 dwellings		11		Compliant
Commercial	1 bay per 200 sqm	481 m²	3		Compliant
End of Trip Facilities	1 Locker per commercial bike bay	3	3	10	Compliant
	1 male shower per 10 commercial bike bays	3	1	3	Compliant
	1 female shower per 10 commercial bike bays	3	1	3	Compliant

8. Site Access

8.1. Development Accesses

The Australian Standard AS2890.1:2004 Parking Facilities Part 1 Off-Street Parking Facilities recommends the crossover gradients to be 1 in 20 as specified in Section 3.3(a) -

> **3.3 GRADIENTS OF ACCESS DRIVEWAYS**
>
> At entry and exit points, the access driveway should be graded to minimize problems associated with crossing the footpath and entering the traffic in the frontage road.
>
> Maximum gradients on and near access driveways, other than at domestic properties (see Clause 2.6), shall be as follows:
>
> (a) *Property line/building alignment/pedestrian path*—max. 1 in 20 (5%) between edge of frontage road and the property line, building alignment or pedestrian path (except as provided in Item (d)), and for at least the first 6 m into the car park (except as provided below).
>
> The grade of the first 6 m into the car park may be increased to 1 in 8 (12.5%) under the following conditions:
>
> (i) The grade is a downgrade for traffic leaving the property and entering the frontage road.
>
> (ii) The user class is Class 1, 1A or 2 only.
>
> (iii) The maximum car park size is—
>
> (1) for entry into an arterial road—25 car spaces, or
>
> (2) for entry onto a local road—100 car spaces.
>
> The maximum grade across the property line shall remain at 1 in 20 (5%).

Based on the concept design crossover gradients are likely to comply with AS2890.1.

The proposed layout of the car parking within the undercroft area is appropriate and consistent with Australian Standard *AS 2890.1: Off-Street Parking* and relevant traffic engineering standards.

All vehicles will be able to enter and exit the site in forward gear.

74 Mill Point Road currently has access to Frasers Lane via a rear laneway. This rear access will be kept closed by means of a locked gate and only used in event of an emergency.

8.2. Service Vehicles

A bin storage room is located on the ground floor, adjacent to the site access laneway running along the southern boundary of the site.

The development waste will be collected by a private contractor, with a standard waste collection vehicle reversing from Mill Point Road into the ROW to collect the bins which will be pushed out to the laneway. The waste collection vehicle will exit in forward gear to Mill Point Road on completion of the collection.

Waste collection would be undertaken outside of peak hours in order to minimise conflict with entering and exiting vehicles with this task undertaken a maximum of twice per week. A review of the site lines to Mill Point Road indicate that they are sufficient for the waste management vehicle to exit safely. A Waste Management Plan has been prepared separately in consultation with the City of South Perth.

Taxis will be able to pull into the loading bay to pick up or set down passengers.

The development has made no provision for tour buses as their services are not anticipated. This is similar to other serviced apartments in the area.

8.3. Vehicle Circulation

A swept path analysis using a standard B85 car manoeuvring on the ground level was conducted and confirmed the proposed driveway is sufficiently wide to accommodate two-way manoeuvring to and from the basement carpark. The swept path diagram is included in **Appendix G**. Note: the proposed driveway will be shared with 76 Mill Point Road and Peninsula Serviced Apartments (53 South Perth Esplanade) and the swept paths are contained within the proposed 6.0m wide driveway.

The revised ground floor layout indicates the ramp to the podium level carparks is via the shared driveway. As advised by the client, the ramp walls to the podium levels are proposed to be open screening which allows vehicles exiting from the podium level carpark be able to observe and give-way to vehicles travelling along the access driveway as indicated in **Figure 21**. The ground floor layout is considered acceptable. To further reduce conflict, it is recommended to install give-way signs and associated line-marking at the podium carpark exit.

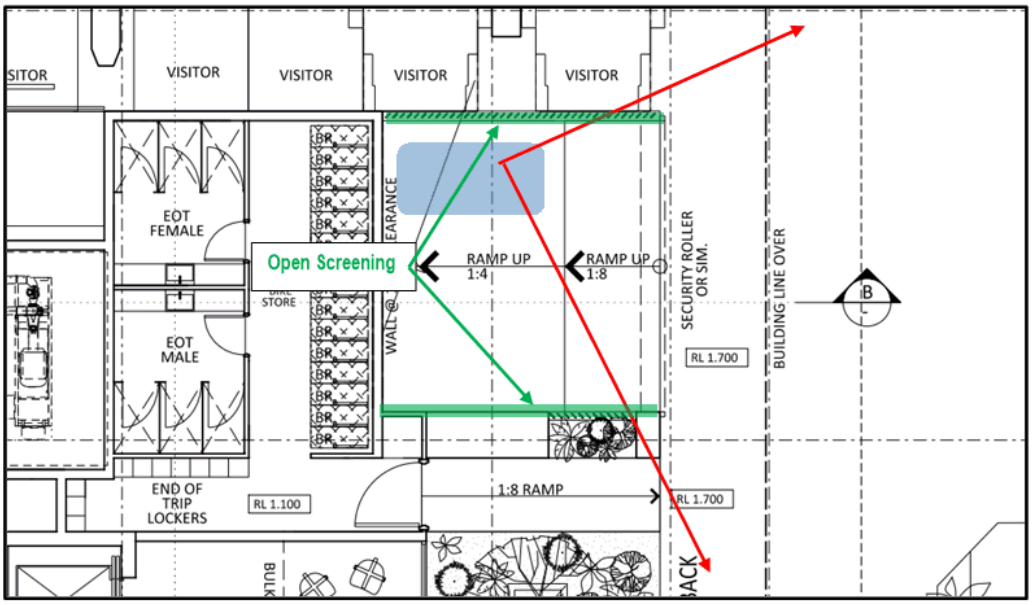
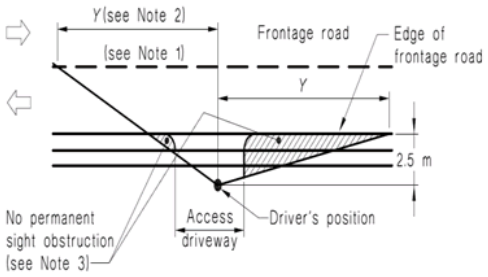


Figure 21 - Sightlines from Podium Carpark Exit

8.4. Access Vehicle Sight Distance

Sight distance from the site crossover egress along the street is defined in Figure 3.2 of AS2890.1 which is reproduced in **Figure 22**.



Frontage road speed	Km/h	Desirable gap (m)	Minimum gap (m)
	50	69	45

NOTES:
1 Centre-line or centre of road (undivided road), or right hand edge of right hand through lane (divided road)
2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the driveway.
3 Parking on this side of the frontage road may need to be restricted on either side of the driveway so that the sight distance required by the above table to an approaching vehicle is not obstructed.

Figure 22 - Sight Distance Requirements

The available sight distances from the cross over are shown in **Figure 23** and **Figure 24.**

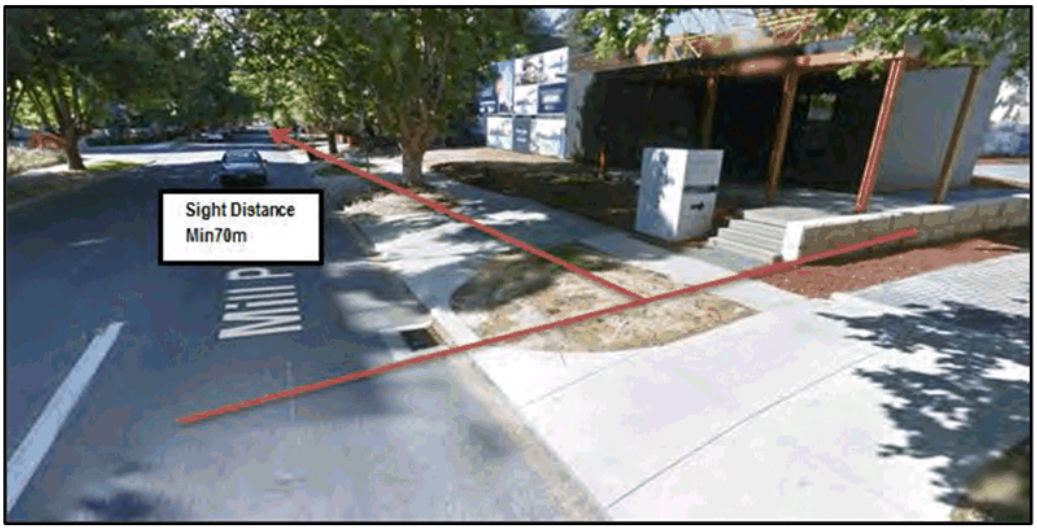


Figure 23 - Vehicle Sight Distance Looking North.

Figure 24 - Vehicle Sight Distance Looking South.

8.5. Access Pedestrian Sight Distance

The Australian Standard AS2890.1:2004 also provides details for sight lines and distances for pedestrian movements across an access to a car park. Those details are shown in the AS2890.1 Figure 3.3 extract on **Figure 25**.

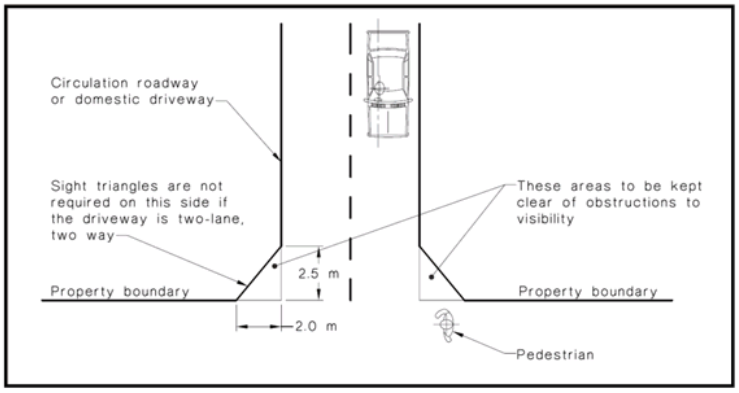


Figure 25 - AS 2890 Requirements for Pedestrian Sight Lines

The available pedestrian sight lines as per the concept plan is shown in **Figure 26**. The required sight distance is available to the north, however the sight distance to the south will need to be provided for in the design of 76 Mill Point Road. The crossover will provide access to both 74 and 76 Mill Point Road.

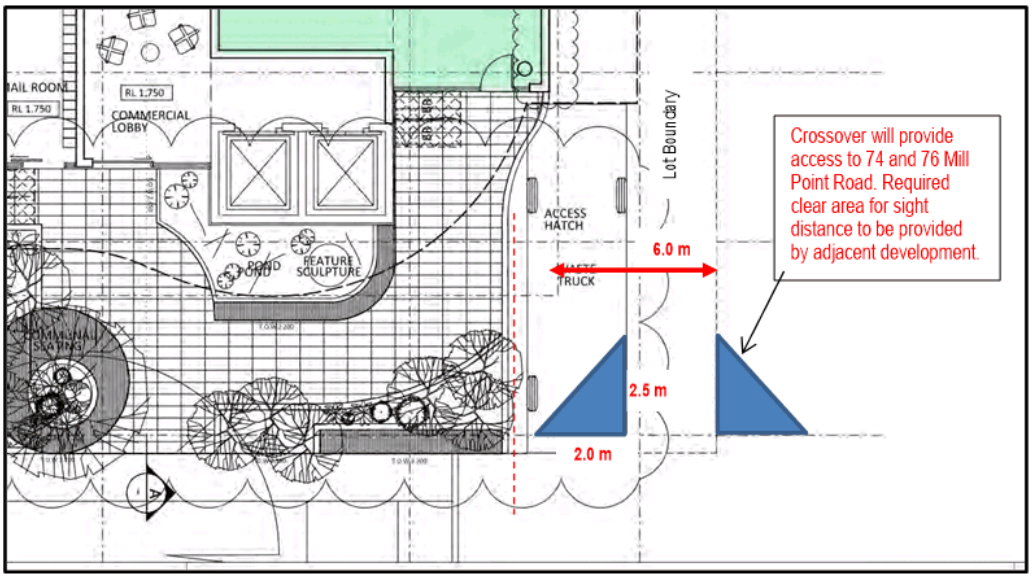


Figure 26 - Available Pedestrian Sight Lines

9. Conclusion

The impact of the proposed development on the surrounding road network was assessed for 2021 (when all land uses will be occupied) including the subject site development traffic and with the proposed development at 76 Mill Point Road.

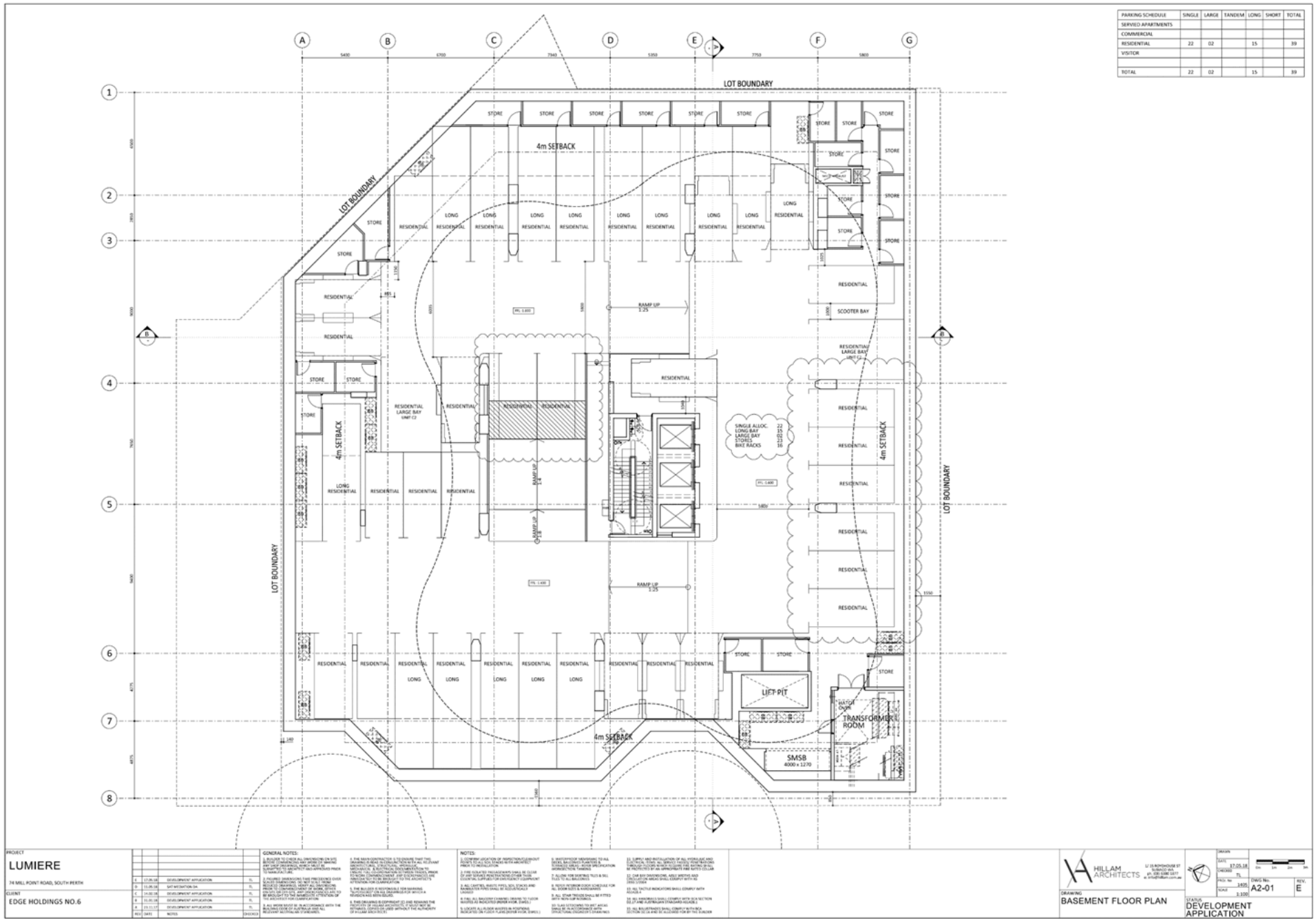
The analysis of the forecast traffic generation did not identify any unacceptable impact on the adjacent road segments based on either scenario.

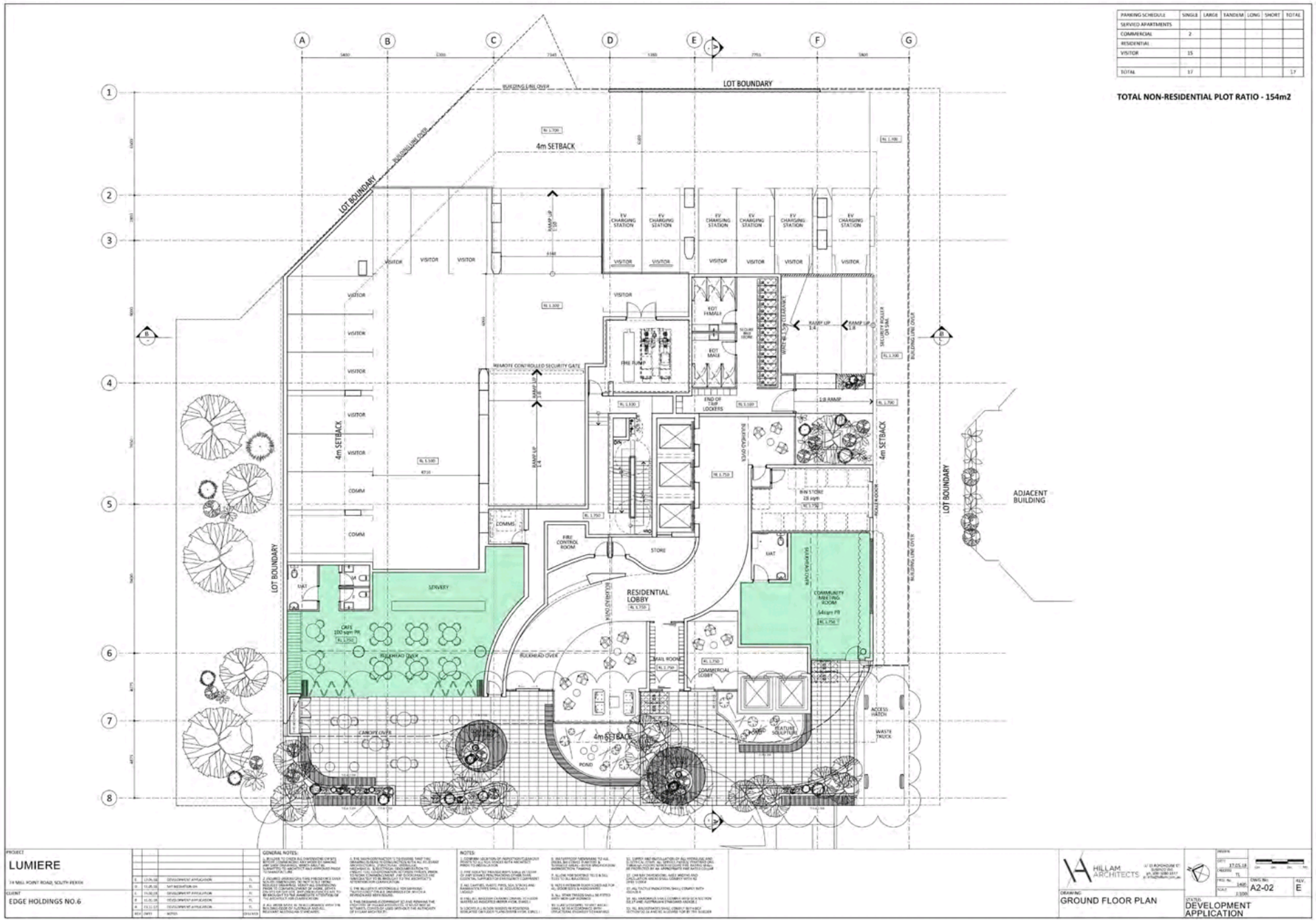
With respect to the proposed development, the following is concluded;

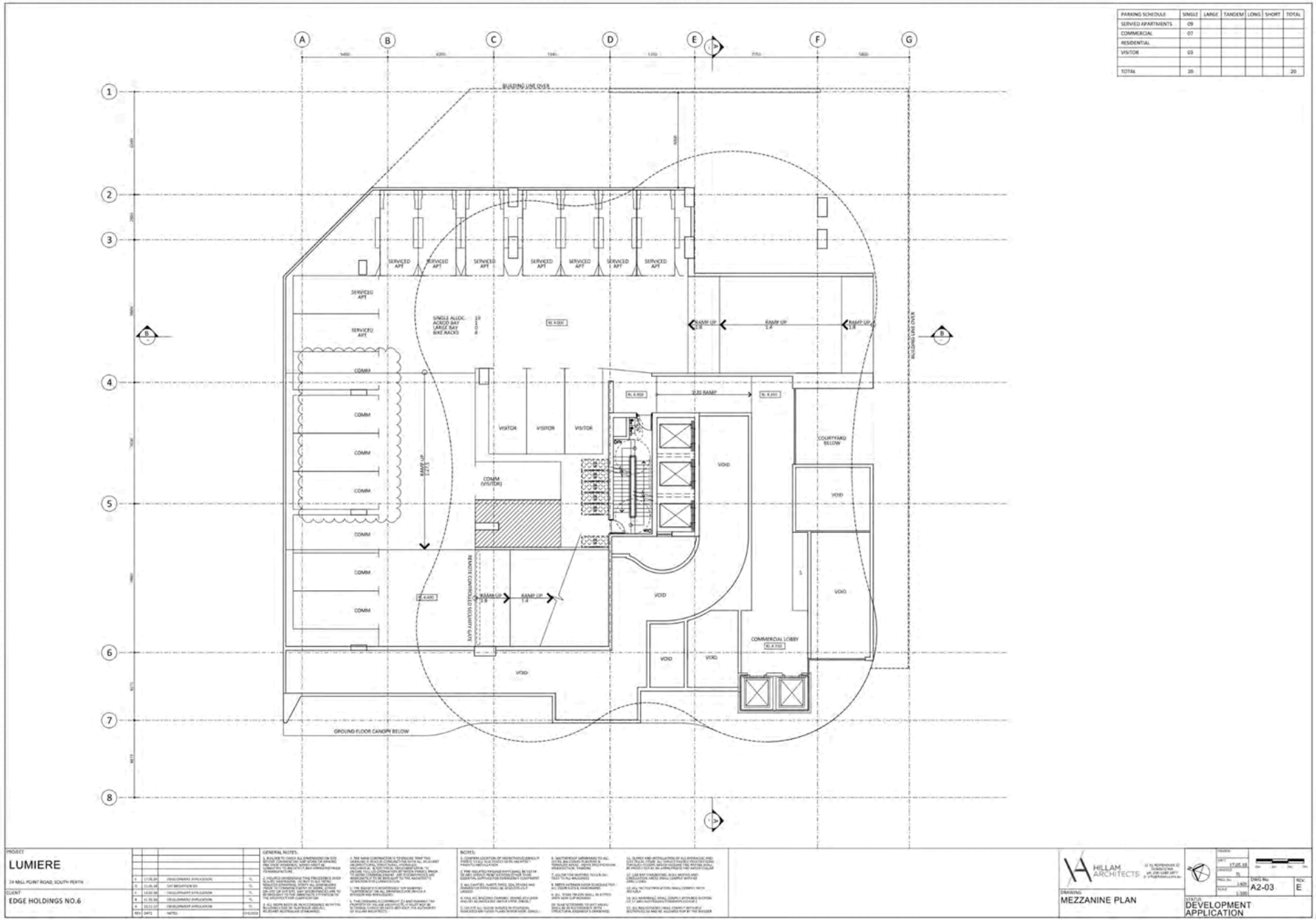
- The location of the proposed access onto Mill Point Road north is considered acceptable and no adverse impacts associated with the access are identified. No increased risk to pedestrian safety along this section of Mill Point Road was identified.
- The theoretical trip generation from the site is 757 vpd with 50 vph and 61 vph in the AM and PM peak periods, respectively.
- Based on the SIDRA analysis, the Mill Point Road / Labouchere Road / Freeway Ramp intersection is predicted to be slightly affected and will continue to operate satisfactorily under both 2021 development scenarios
- The proposed layout of parking bays is in accordance with AS2890.1 and the number of parking bays provided is compliant with the City of South Perth TPS6.
- Bicycle Parking provided on site is compliant with the City of South Perth TPS6 and the WAPC R-Codes.
- Waste removal and taxi services have been accommodated.
- The revised ground floor layout enables adequate movement to and from the basement and podium level carpark. Give-way signage and line-markings are recommended to be installed at the podium carpark exit.

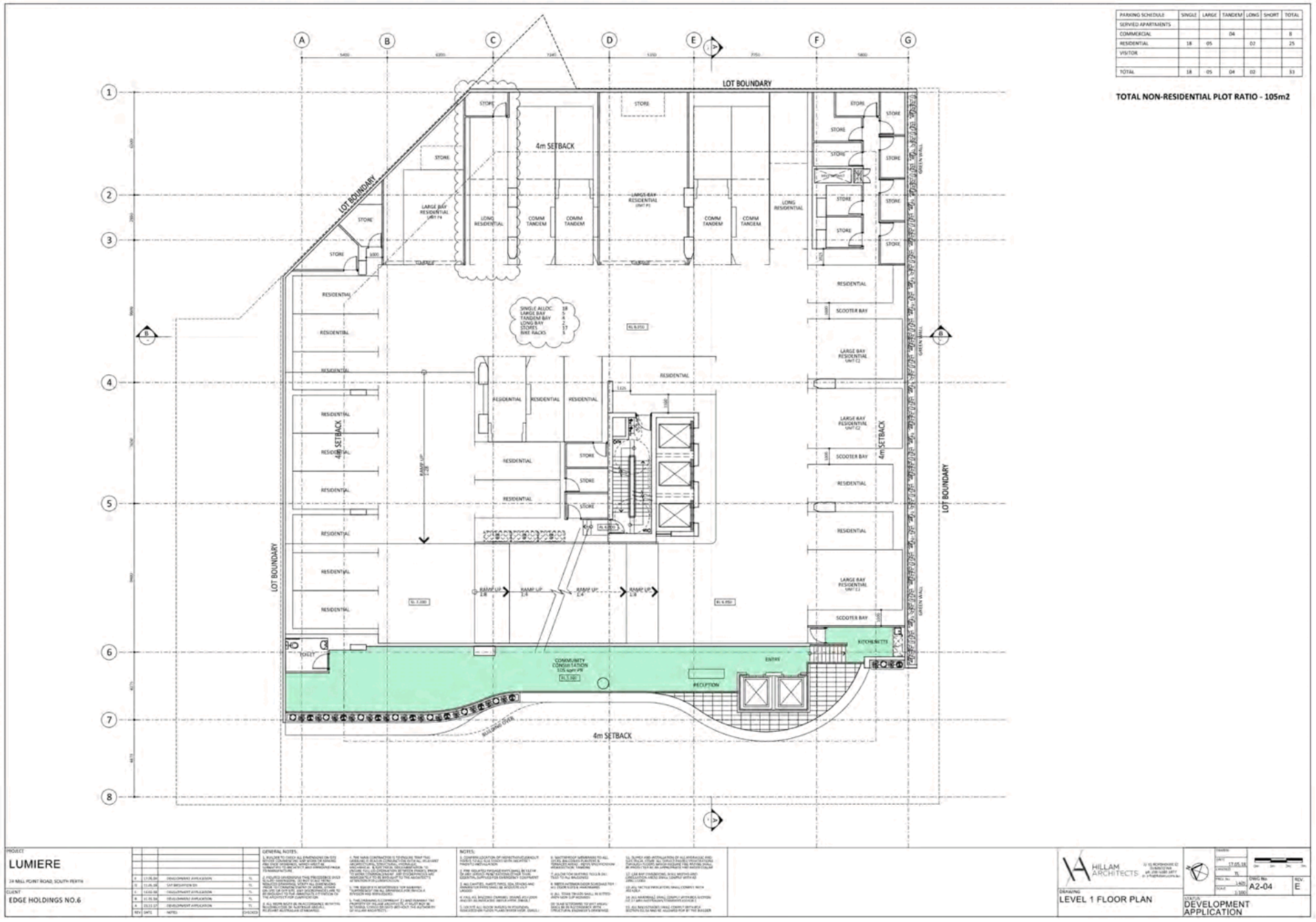
Consulting Civil and Traffic Engineers, Risk Managers

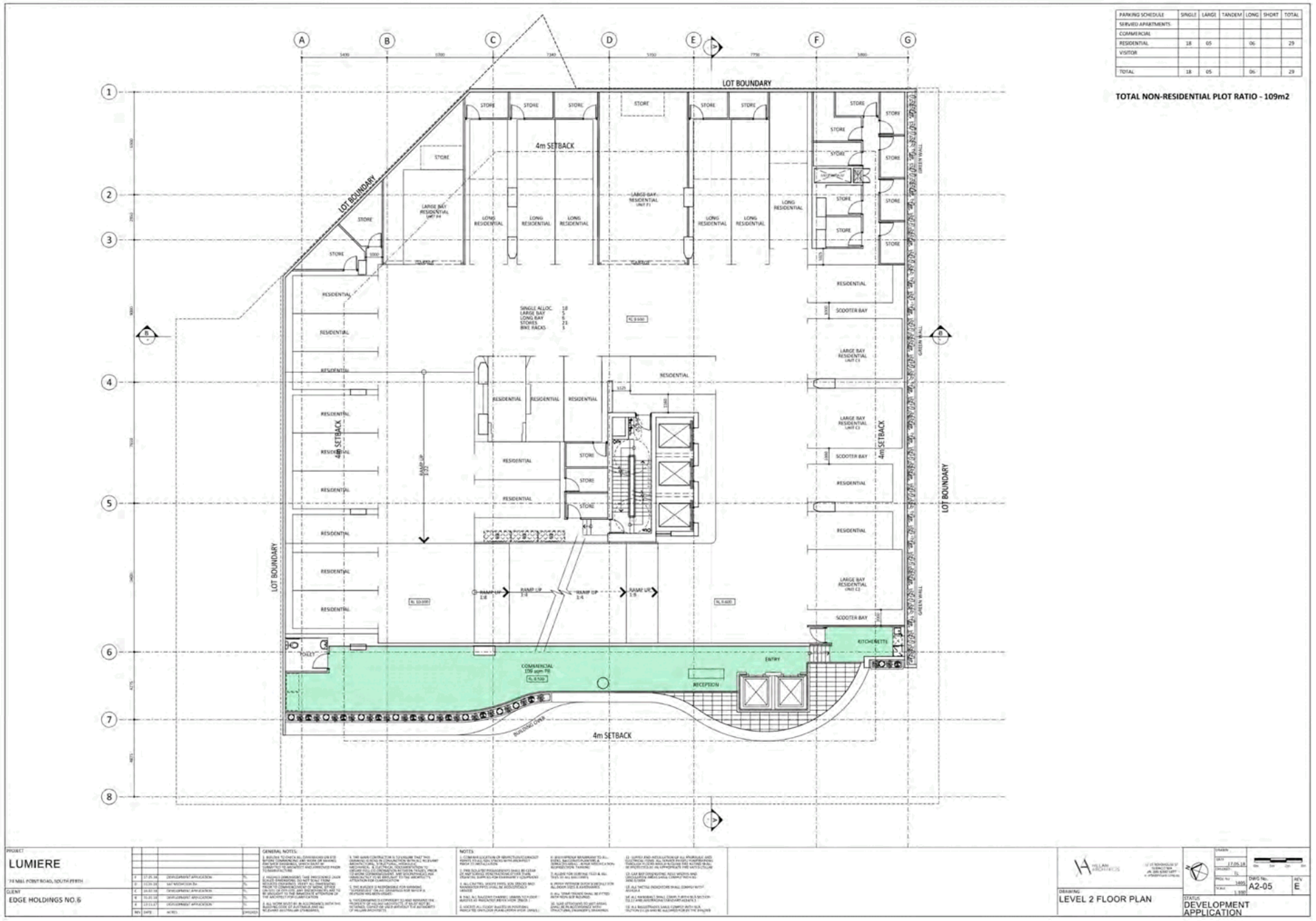
Appendix A - Site Plan - Proposed development

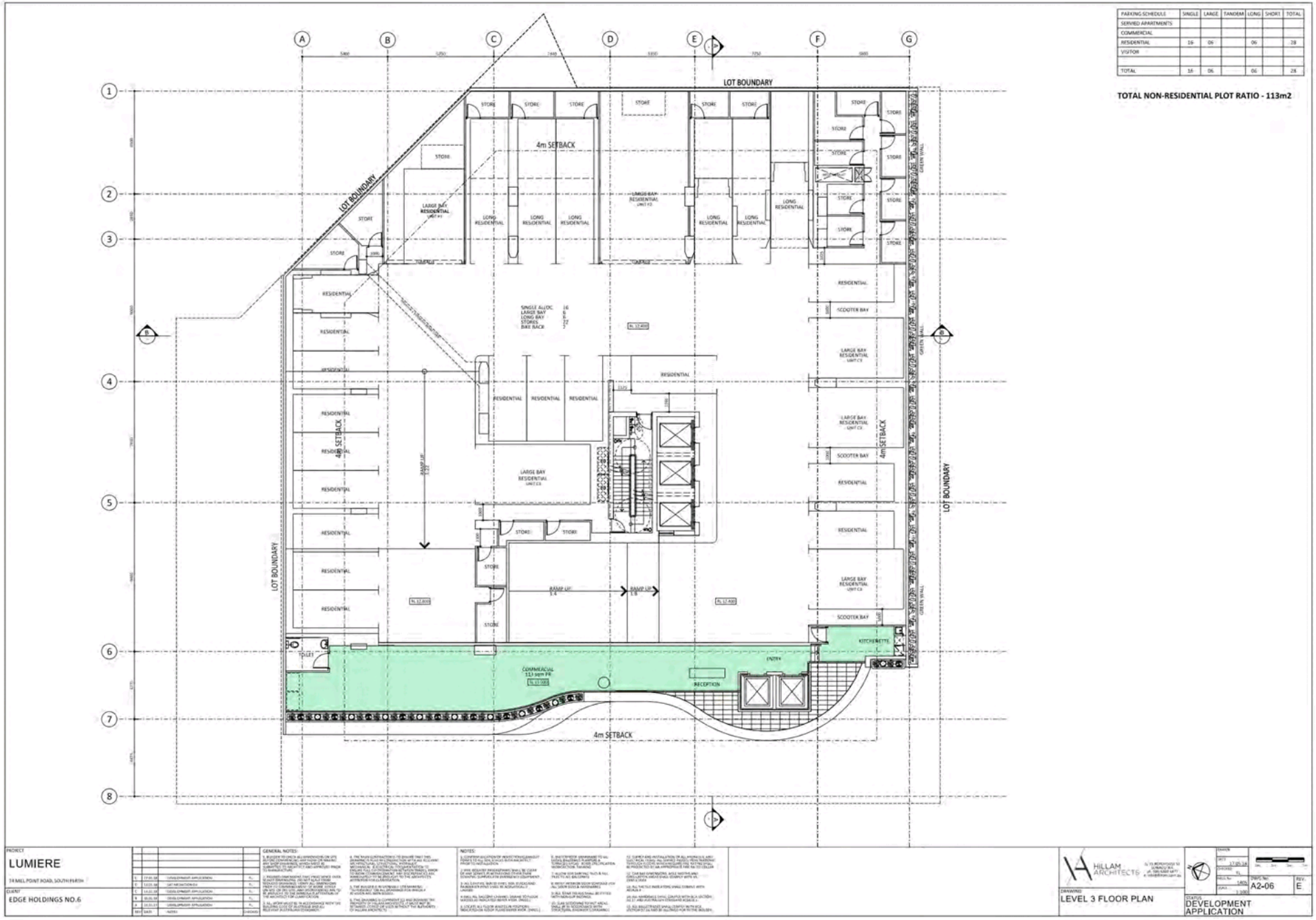

LOT BOUNDARY
4m SETBACK
RESIDENTIAL
LONG RESIDENTIAL
STORE
RAMP UP 1:14
RAMP UP 1:20
RAMP UP 1:25
SCOOTER BAY
RESIDENTIAL LARGE BAY UNIT C2
SINGLE ALLOC. LONG BAY LARGE BAY STORES BIKE RACKS
LIFT PIT
TRANSFORMER ROOM
SMSB 4000 x 1270
PARKING SCHEDULE
SERVICED APARTMENTS
COMMERCIAL
RESIDENTIAL 22 02 15 39
VISITOR
TOTAL 22 02 15 39
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
BASEMENT FLOOR PLAN
A2-01
E
DEVELOPMENT APPLICATION


LOT BOUNDARY
4m SETBACK
BUILDING LINE OVER
RESIDENTIAL LOBBY
COMMUNITY MEETING ROOM
COMMERCIAL LOBBY
ADJACENT BUILDING
TOTAL NON-RESIDENTIAL PLOT RATIO - 154m2
LUMIERE
EDGE HOLDINGS NO.6
GROUND FLOOR PLAN
A2-02
DEVELOPMENT APPLICATION


PARKING SCHEDULE
SERVICED APARTMENTS 09
COMMERCIAL 07
RESIDENTIAL
VISITOR 03
TOTAL 20
BUILDING LINE OVER
SERVICED APT
COMM
VISITOR
COMM (VISITOR)
RAMP UP
RAMP DOWN
VOID
COURTYARD BELOW
COMMERCIAL LOBBY
GROUND FLOOR CANOPY BELOW
LUMIERE
24 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
MEZZANINE PLAN
DEVELOPMENT APPLICATION
A2-03
E

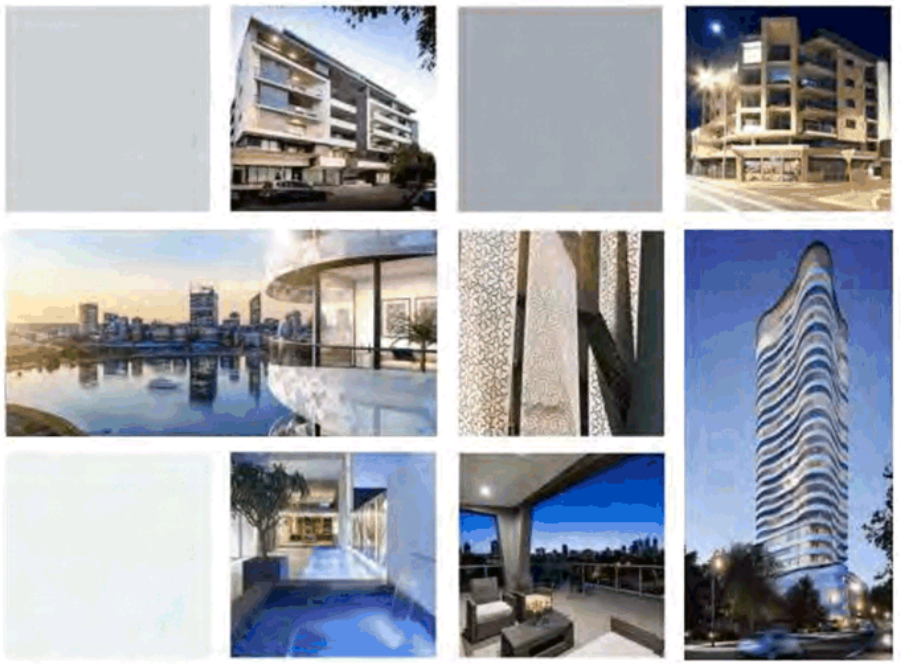

LOT BOUNDARY
4m SETBACK
LOT BOUNDARY
LOT BOUNDARY
4m SETBACK
4m SETBACK
RESIDENTIAL
SCOOTER BAY
LARGE BAY RESIDENTIAL UNIT C2
LARGE BAY RESIDENTIAL UNIT C3
COMMUNITY CONSULTATION 105 sqm PR
RECEPTION
KITCHENETTE
ENTRY
TOILET
RAMP UP
STORE
COMM TANDEM
LONG RESIDENTIAL
LARGE BAY RESIDENTIAL
PARKING SCHEDULE
SERVICED APARTMENTS
COMMERCIAL
RESIDENTIAL
VISITOR
TOTAL
TOTAL NON-RESIDENTIAL PLOT RATIO - 105m2
LUMIERE
29 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
HILLAM ARCHITECTS
LEVEL 1 FLOOR PLAN
A2-04
DEVELOPMENT APPLICATION


LOT BOUNDARY
4m SETBACK
LOT BOUNDARY
4m SETBACK
LOT BOUNDARY
4m SETBACK
RESIDENTIAL
STORE
LONG RESIDENTIAL
LARGE BAY RESIDENTIAL
SCOOTER BAY
RAMP UP
COMMERCIAL
ENTRY
RECEPTION
KITCHENETTE
PARKING SCHEDULE
SINGLE
LARGE
TANDEM
LONG
SHORT
TOTAL
SERVICED APARTMENTS
COMMERCIAL
RESIDENTIAL 18 05 06 29
VISITOR
TOTAL 18 05 06 29
TOTAL NON-RESIDENTIAL PLOT RATIO - 109m2
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
DRAWING
LEVEL 2 FLOOR PLAN
DWG No.
A2-05
REV
E
STATUS
DEVELOPMENT APPLICATION


LOT BOUNDARY
4m SETBACK
LOT BOUNDARY
4m SETBACK
LOT BOUNDARY
4m SETBACK
RESIDENTIAL
STORE
LONG RESIDENTIAL
LARGE BAY RESIDENTIAL
SCOOTER BAY
COMMERCIAL
113 sqm PR
RECEPTION
ENTRY
KITCHENETTE
TOILET
RAMP UP
SINGLE AU/OC 16
LARGE BAY 6
LONG BAY 6
STORES 27
BIKE RACK 27
PARKING SCHEDULE | SINGLE | LARGE | TANDEM | LONG | SHORT | TOTAL
SERVED APARTMENTS
COMMERCIAL
RESIDENTIAL 16 06 06 28
VISITOR
TOTAL 16 06 06 28
TOTAL NON-RESIDENTIAL PLOT RATIO - 113m2
PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6
GENERAL NOTES:
NOTES:
HILLAM ARCHITECTS
DRAWING
LEVEL 3 FLOOR PLAN
DRAWN
DATE 17.05.18
CHECKED
SCALE 1:100
JOB No. 1605
DWG No. A2-06
REV. E
STATUS
DEVELOPMENT APPLICATION

Consulting Civil and Traffic Engineers, Risk Managers

Appendix B - Site Plan - Compliance Comparative 9-Storey Development



DEVELOPMENT OPTION

74 MILL POINT ROAD, SOUTH PERTH

Multi-Residential Works

1/15 Roydhouse Street, Subiaco
WA 6008
(08) 6380 1877
info@hillam.com.au

hillam.com.au

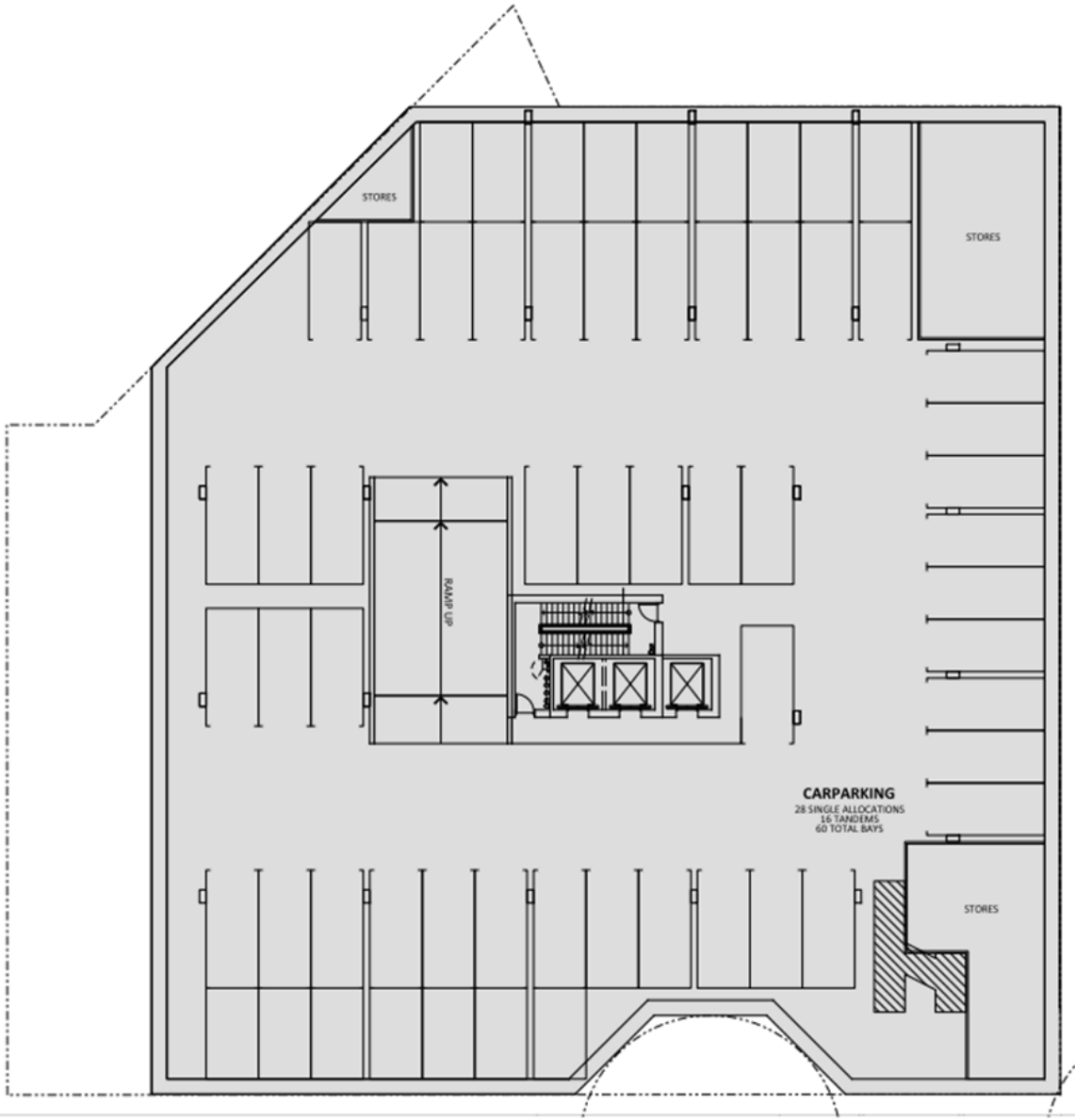
HILLAM ARCHITECTS

74 Mill Point Road - 9 Storey Compliant Scheme w/ Amendment 46												*Rev A - 22.01.2018*
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Basement 2	28	34	62	30								
Basement 1	28	32	60	29								0
Ground	17	10	27		150							0
Level 1					1270							0
Level 2					618	545		5	2	0		7
Level 3						756		5	4	1		10
Level 4						878		6	5	1		12
Level 5						878		6	5	1		12
Level 6						878		6	5	1		12
Level 7						890		4	4	1		11
Level 8						890		3	4	1		11
Sub Total	***73***	***76***	***149***	***59***	***2038***	***5715***	***0***	***36***	***29***	***10***	***0***	***75***
Total Percentage (%)							***0%***	***48%***	***39%***	***13%***	***0%***	
[illegible]					***1.00***	***2.81***						
[illegible]					***2033***							
								36	*29*	*10*		*75*
Required Commercial Bays (1 per 50sqm commercial plot ratio)					*41*							
Required visitor bays (10% Commercial 1 per 6 Residential units)					*4*							*19*
TOTAL CARBAYS REQUIRED					*45*							*133*
Disabled Bay												
Bike rack (1 per 3 dwellings and 1 per 200sqm commercial plot ratio)					*35*							

HILLAM ARCHITECTS

Lumiere: 74 Mill Point Road : Parking Summary					***22.01.2018***			
1 Bed / 1 Bath	1	36	36	36				36
2 Bed / 2 Bath	2	29	29	35				35
3 Bed / 2 Bath	2	10	10	20				20
Residential Apartments		75						
Non Residential Land Use - (Not Serviced Apartments)	1 per 50sqm	2038	41	3		38		41
Residential Visitors	1 per 6 Dwellings		13	13				13
Commercial Visitors	0.1 per number of bays required		4	4				4
Total			133	111	0	38	0	149
Total Allocations								
Resi Bike Bay	1 bike bay per 3 dwellings	25						
Commercial Bike bay	1 bike bay per 200 sqm	10						
Total		35						

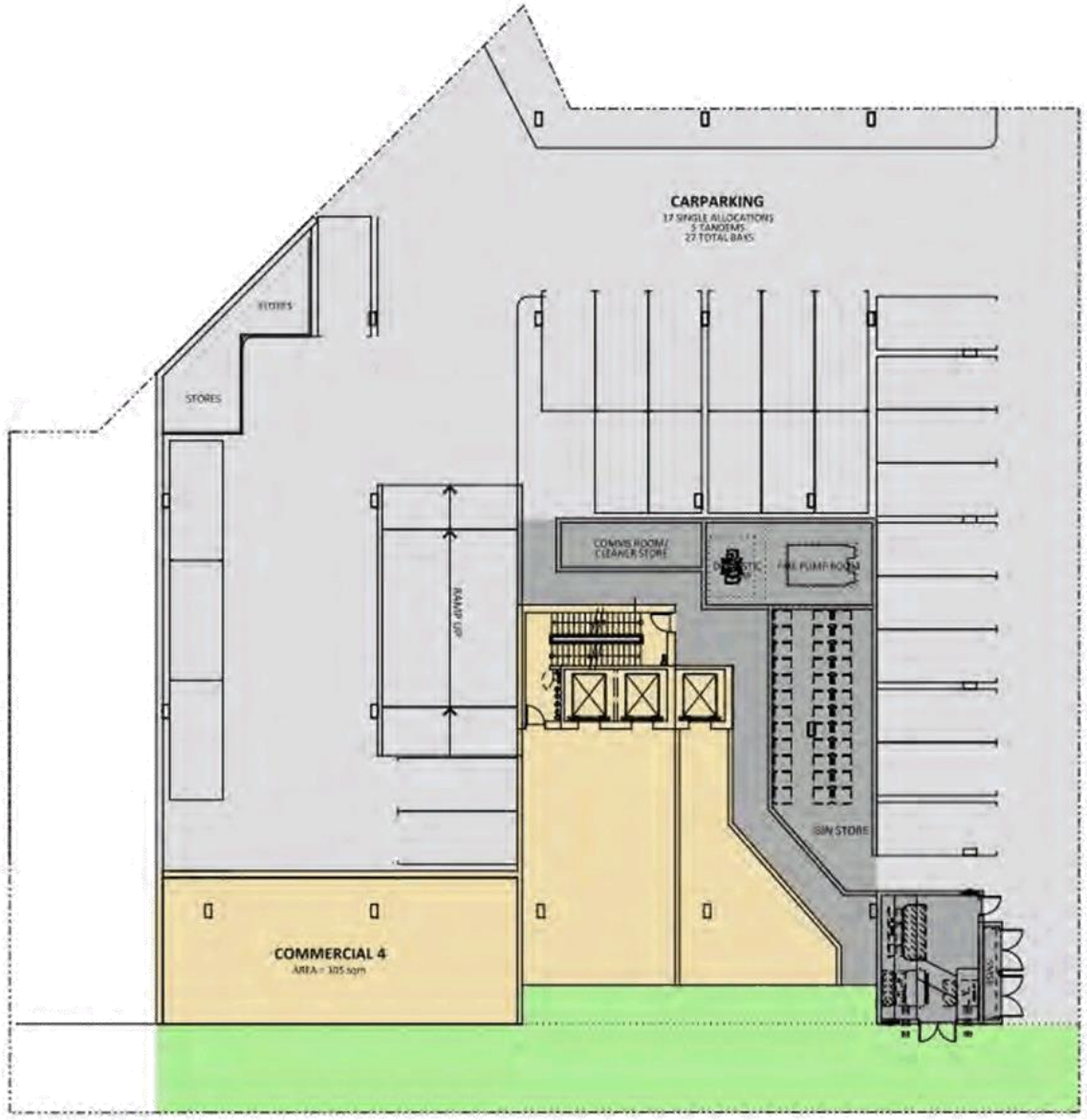

STORES
STORES
RAMP UP
CARPARKING
28 SINGLE ALLOCATIONS
17 TANDEMS
62 TOTAL BAYS
STORES
MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS
CLIENT NAME / COMPANY
HILLAM ARCHITECTS
COPYRIGHT
THIS DRAWING IS COPYRIGHT © AND REMAINS THE PROPERTY OF HILLAM ARCHITECTS. IT MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE AUTHORITY OF HILLAM ARCHITECTS
SCALE
1:200 @ A3
NP
DATE ISSUED
22.01.18
DWG. NAME
BASEMENT 2
DWG No.
FS01-07
REV
A



MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS
CLIENT NAME / COMPANY

HILLAM ARCHITECTS

SCALE	NP	DATE ISSUED	DWG. NAME	DWG No.	REV
1:200 @ A3		22.01.18	BASEMENT 1	FS01-07	A



MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS

HILLAM ARCHITECTS

COPYRIGHT

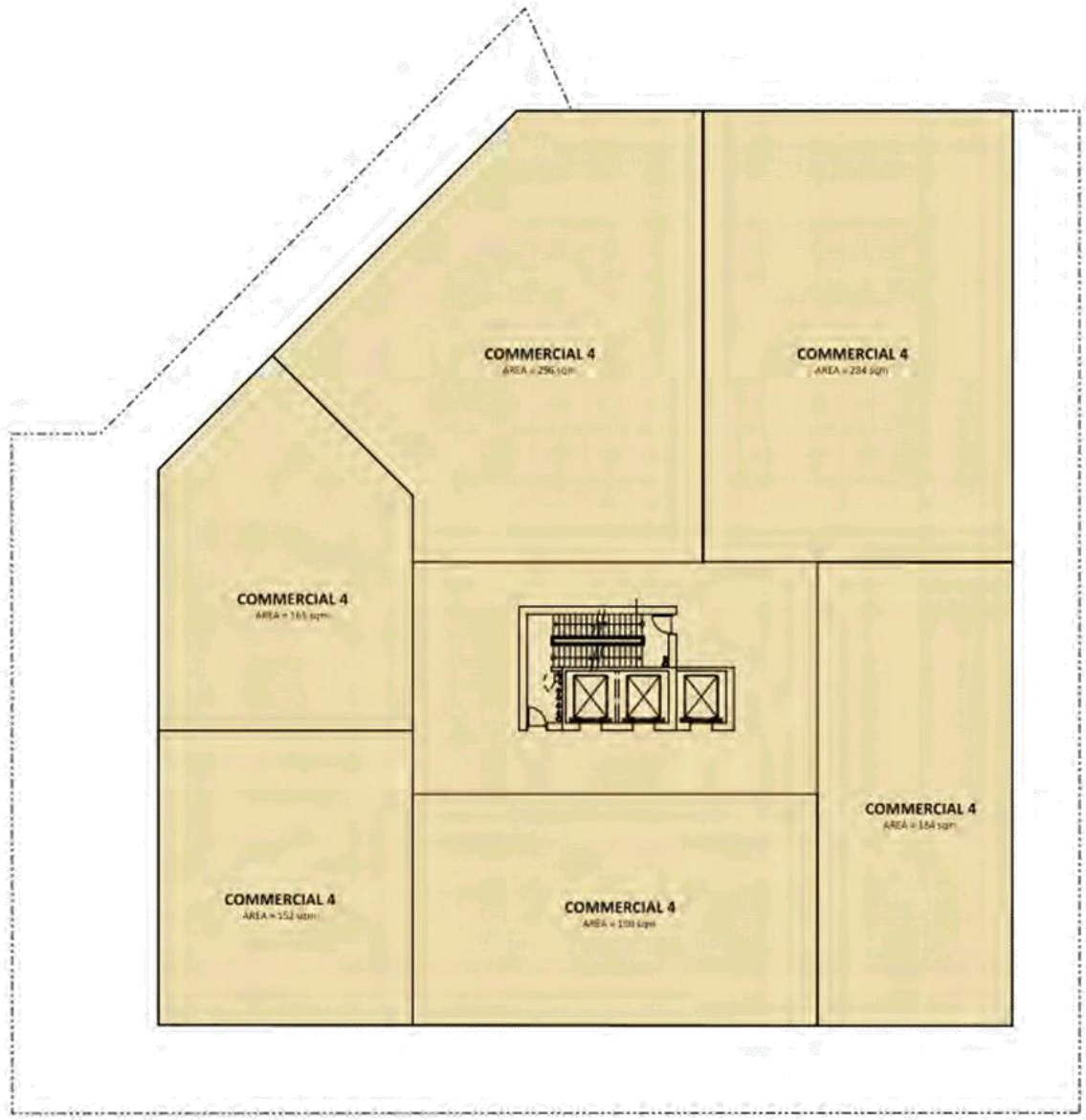
SCALE
1:200 @ A3

DATE ISSUED
22.01.18

DWG NAME
GROUND

DWG No.
FS01-07

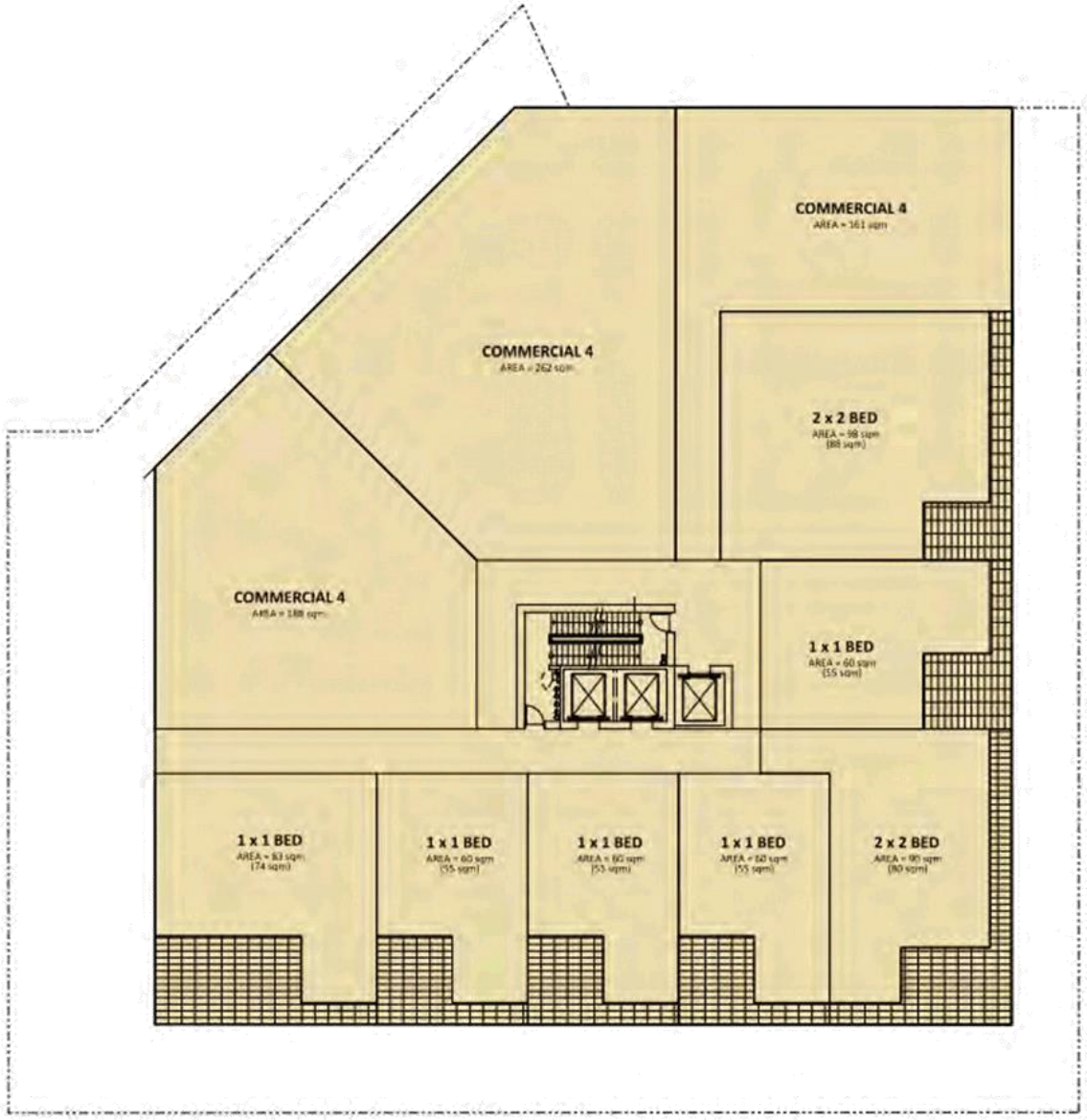
REV.
A



MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS

HILLAM ARCHITECTS

SCALE 1:200 @ A1 | DATE ISSUED 22.01.19 | DWG NAME LEVEL 1 | DWG No. S01-07 | REV A



MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS

HILLAM ARCHITECTS

COPYRIGHT

SCALE
1:200 @ A3

NP

DATE ISSUED
22.01.18

DWG NAME
LEVEL 7

DWG No.
FS01-07

REV
A


2 x 2 BED
3 x 2 BED
AMENITIES
1 x 1 BED
1 x 1 BED
2 x 2 BED
2 x 2 BED
1 x 1 BED
1 x 1 BED
1 x 1 BED
2 x 2 BED
MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS
HILLAM ARCHITECTS
SCALE
1:200 @ A3
DATE ISSUED
22.01.18
DWG NAME
LEVEL 3
FS01-07
A

MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS

HILLAM ARCHITECTS

COPYRIGHT

SCALE
1:200 @ A3

NP

DATE ISSUED
22.01.18

DWG NAME
LEVEL 4-6

DWG NO.
FS01-07

REV
A


3 x 2 BED
3 x 2 BED
1 x 1 BED
3 x 2 BED
1 x 1 BED
2 x 2 BED
SERVICES
2 x 2 BED
2 x 2 BED
1 x 1 BED
1 x 1 BED
2 x 2 BED
MULTI-RESIDENTIAL DEVELOPMENT
PROJECT ADDRESS
HILLAM ARCHITECTS
COPYRIGHT
SCALE
1:200 @ A3
NP
DATE ISSUED
22.01.18
DWG NAME
LEVEL 7-8
DWG No.
FS01-07
REV
A

Appendix C - Traffic Counts

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-317 -- English (ENA)

Datasets:

Site:	**[COSP195] Mill Point Rd, mid Scott St and Frasers Lane <50> (no 73)**
Attribute:	[-31.970790 +115.849837]
Direction:	1 - North bound, A trigger first. **Lane:** 1
Survey Duration:	10:46 Tuesday, 10 May 2016 => 10:17 Tuesday, 24 May 2016,
Zone:	
File:	COSP195 0 2016-05-24 1017.EC1 (Plus)
Identifier:	A994N1ZG MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**10:47 Tuesday, 10 May 2016 => 0:00 Friday, 20 May 2016 (9.55069)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North (bound), P = North
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 15877 / 53282 (29.80%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-317

Site: COSP195.1.0N
Description: **Mill Point Rd, mid Scott St and Frasers Lane <50> (no 73)**
Filter time: **10:47 Tuesday, 10 May 2016 => 0:00 Friday, 20 May 2016**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(N) Sp(10,160) Headway(>0) Span(0 - 100)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	11.0	8.0	10.0	9.0	12.0	30.0	36.0	9.9	15.0
0100-0200	6.0	4.0	4.5	8.5	10.0	22.0	21.0	6.6	9.9
0200-0300	2.0	4.0	2.5	5.5	5.0	23.0	10.0	3.9	6.7
0300-0400	4.0	3.0	3.5	2.5	5.0	6.0	17.0	3.4	5.2
0400-0500	9.0	3.0	3.0	4.5	1.0	9.0	5.0	4.0	4.7
0500-0600	13.0	25.0	22.0	18.0	18.0	8.0	12.0	19.4	17.3
0600-0700	68.0	52.0	71.5	59.5	59.0	34.0	31.0	63.0	56.2
0700-0800	78.0	87.0	72.5	71.5	82.0	47.0	43.0	76.4	69.4
0800-0900	72.0	70.0	81.0	76.0	88.0	55.0	62.0	77.7	73.4
0900-1000	92.0	93.0	93.5	101.0	87.0	79.0	79.0	94.4	91.0
1000-1100	98.0	50.5	89.5	89.5	**109.0**	**116.0**	**106.0**	83.3	88.8
1100-1200	**108.0**	**112.5**	**105.5**	**111.0**	92.0	102.0	90.0	**107.3**	**105.0**
1200-1300	105.0	97.0	97.5	97.0	107.0	117.0	120.0	99.4	103.2
1300-1400	95.0	100.0	100.0	98.0	97.0	120.0	111.0	98.5	101.9
1400-1500	110.0	100.0	94.5	88.0	106.0	135.0	**121.0**	97.6	103.7
1500-1600	124.0	120.0	110.5	127.0	98.0	120.0	99.0	117.1	115.6
1600-1700	105.0	122.5	113.0	121.0	114.0	127.0	110.0	116.5	116.9
1700-1800	**158.0**	**130.5**	**139.0**	**127.0**	**162.0**	**143.0**	96.0	**139.1**	**135.2**
1800-1900	131.0	129.0	127.5	117.5	138.0	114.0	105.0	127.1	123.6
1900-2000	78.0	93.0	90.0	96.5	102.0	83.0	57.0	92.4	87.9
2000-2100	71.0	66.5	74.5	63.0	76.0	62.0	52.0	69.4	66.9
2100-2200	53.0	54.5	55.0	62.5	83.0	59.0	61.0	60.0	60.0
2200-2300	30.0	32.5	37.5	48.0	61.0	53.0	23.0	40.9	40.3
2300-2400	11.0	18.0	23.0	29.5	35.0	41.0	19.0	23.4	24.7
Totals									
0700-1900	1276.0	1212.0	1224.0	1224.5	1280.0	1275.0	1142.0	1234.4	1227.8
0600-2200	1546.0	1478.0	1515.0	1506.0	1600.0	1513.0	1343.0	1519.2	1498.8
0600-0000	1587.0	1528.5	1575.5	1583.5	1696.0	1607.0	1385.0	1583.4	1563.8
0000-0000	1632.0	1575.5	1621.0	1631.5	1747.0	1705.0	1486.0	1630.6	1622.6
AM Peak	1100	1100	1100	1100	1000	1000	1000		
	108.0	112.5	105.5	111.0	109.0	116.0	106.0		
PM Peak	1700	1700	1700	1700	1700	1700	1400		
	158.0	130.5	139.0	127.0	162.0	143.0	121.0		

* - No data.

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-318 -- English (ENA)

Datasets:

Site:	**[COSP195] Mill Point Rd, mid Scott St and Frasers Lane <50> (no 73)**
Attribute:	[-31.970790 +115.849837]
Direction:	1 - North bound, A trigger first. **Lane:** 1
Survey Duration:	10:46 Tuesday, 10 May 2016 => 10:17 Tuesday, 24 May 2016,
Zone:	
File:	COSP195 0 2016-05-24 1017.EC1 (Plus)
Identifier:	A994N1ZG MC56-1 [MC55] (c)Microcom 07/06/99
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**10:47 Tuesday, 10 May 2016 => 0:00 Friday, 20 May 2016 (9.55069)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	South (bound), P = North
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 36481 / 53282 (68.47%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-318
Site: COSP195.1.0N
Description: **Mill Point Rd, mid Scott St and Frasers Lane <50> (no 73)**
Filter time: **10:47 Tuesday, 10 May 2016 => 0:00 Friday, 20 May 2016**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(S) Sp(10,160) Headway(>0) Span(0 - 100)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	10.0	6.0	19.0	17.5	15.0	49.0	58.0	14.9	23.4
0100-0200	8.0	8.0	9.5	9.5	16.0	35.0	38.0	10.0	15.9
0200-0300	12.0	6.0	6.0	6.5	4.0	14.0	30.0	6.7	10.1
0300-0400	8.0	8.0	5.0	7.0	16.0	13.0	21.0	8.0	10.0
0400-0500	9.0	10.0	10.0	15.0	9.0	16.0	16.0	11.1	12.2
0500-0600	76.0	64.0	65.5	70.0	69.0	26.0	19.0	68.6	58.3
0600-0700	118.0	153.0	127.5	132.5	147.0	83.0	68.0	134.0	121.0
0700-0800	191.0	215.0	204.0	216.5	204.0	143.0	104.0	207.3	188.7
0800-0900	229.0	249.0	258.0	239.5	270.0	212.0	233.0	249.0	243.1
0900-1000	250.0	**254.0**	**271.0**	257.0	307.0	341.0	163.0	**266.7**	263.4
1000-1100	257.0	123.0	266.0	252.5	**328.0**	**372.0**	305.0	233.5	254.5
1100-1200	**257.0**	228.5	265.5	**285.0**	250.0	343.0	**353.0**	258.1	**276.1**
1200-1300	248.0	265.0	258.0	**274.0**	**281.0**	**313.0**	**339.0**	265.4	**277.5**
1300-1400	218.0	254.5	264.5	231.5	253.0	270.0	294.0	246.5	253.6
1400-1500	**257.0**	268.0	249.5	261.0	273.0	265.0	254.0	260.9	260.6
1500-1600	245.0	264.0	255.0	242.0	228.0	278.0	218.0	249.4	249.1
1600-1700	211.0	214.5	229.0	233.5	253.0	261.0	223.0	227.3	230.2
1700-1800	245.0	**275.0**	**302.5**	266.0	256.0	298.0	200.0	**273.5**	268.6
1800-1900	225.0	229.0	246.5	253.5	278.0	290.0	174.0	245.1	242.5
1900-2000	136.0	153.0	153.0	162.0	198.0	202.0	120.0	158.8	159.2
2000-2100	131.0	109.5	114.0	112.0	129.0	140.0	84.0	116.4	115.5
2100-2200	73.0	95.5	106.5	85.0	130.0	106.0	94.0	97.1	97.7
2200-2300	49.0	55.5	56.0	68.5	105.0	136.0	58.0	64.3	70.8
2300-2400	22.0	25.5	30.5	44.5	75.0	82.0	26.0	37.3	40.6
Totals									
0700-1900	2833.0	2839.5	3069.5	3012.0	3181.0	3386.0	2860.0	2982.6	3007.9
0600-2200	3291.0	3350.5	3570.5	3503.5	3785.0	3917.0	3226.0	3488.9	3501.3
0600-0000	3362.0	3431.5	3657.0	3616.5	3965.0	4135.0	3310.0	3590.4	3612.7
0000-0000	3485.0	3533.5	3772.0	3742.0	4094.0	4288.0	3492.0	3709.7	3742.7
AM Peak	1100	0900	0900	1100	1000	1000	1100		
	257.0	254.0	271.0	285.0	328.0	372.0	353.0		
PM Peak	1400	1700	1700	1200	1200	1200	1200		
	257.0	275.0	302.5	274.0	281.0	313.0	339.0		

* - No data.

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-422 -- English (ENA)

Datasets:

Site:	**[COSP03] Labouchere Rd Between Judd & Bowman St**
Attribute:	[-31.973252 +115.850837]
Direction:	1 - North bound, A trigger first. **Lane:** 1
Survey Duration:	12:11 Tuesday, 2 February 2016 => 8:05 Wednesday, 10 February 2016,
Zone:	
File:	COSP03 0 2016-02-10 0805.EC1 (Plus)
Identifier:	V449REGR MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Site:	**[COSP03] Labouchere Rd Between Judd & Bowman St**
Attribute:	[-31.973252 +115.850837]
Direction:	3 - South bound, A trigger first. **Lane:** 3
Survey Duration:	12:10 Tuesday, 2 February 2016 => 8:08 Wednesday, 10 February 2016,
Zone:	
File:	COSP03 0 2016-02-10 0807.EC3 (Plus)
Identifier:	V303FRGV MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Site:	**[COSP03] Labouchere Rd Between Judd & Bowman St**
Attribute:	[-31.973252 +115.850837]
Direction:	1 - North bound, A trigger first. **Lane:** 2
Survey Duration:	12:11 Tuesday, 2 February 2016 => 8:01 Wednesday, 10 February 2016,
Zone:	
File:	COSP03 0 2016-02-10 0801.EC2 (Plus)
Identifier:	V307ZE2N MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**12:11 Tuesday, 2 February 2016 => 8:08 Wednesday, 10 February 2016 (7.83164)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, South, West (bound), P = North
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 107980 / 108392 (99.62%)

Consulting Civil and Traffic Engineers, Risk Managers

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-422

Site: COSP03.1.0N COSP03.3.0S COSP03.2.0N
Description: **Multiple sites - See Header sheet for site descriptions.**
Filter time: **12:11 Tuesday, 2 February 2016 => 8:08 Wednesday, 10 February 2016**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0) Span(0 - 100)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	39.0	37.0	60.5	93.0	41.0	118.0	167.0	55.2	77.0
0100-0200	17.0	12.0	26.0	24.0	24.0	81.0	98.0	21.5	38.5
0200-0300	15.0	11.0	19.5	17.0	17.0	54.0	83.0	16.5	29.5
0300-0400	15.0	18.0	23.5	20.0	14.0	37.0	34.0	19.0	23.1
0400-0500	31.0	33.0	40.5	26.0	32.0	28.0	38.0	33.8	33.6
0500-0600	179.0	180.0	194.5	214.0	170.0	85.0	71.0	188.7	161.0
0600-0700	556.0	586.0	597.0	614.0	559.0	311.0	187.0	584.8	500.9
0700-0800	1118.0	1154.0	**1136.5**	1142.0	1066.0	453.0	269.0	1125.5	934.4
0800-0900	**1356.0**	**1420.0**	673.0	**1417.0**	**1394.0**	742.0	521.0	**1155.5**	**1024.5**
0900-1000	819.0	964.0	1071.0	986.0	1047.0	751.0	579.0	977.4	888.1
1000-1100	793.0	863.0	846.0	793.0	856.0	871.0	671.0	830.2	813.3
1100-1200	781.0	792.0	901.0	877.0	939.0	**939.0**	**751.0**	858.0	854.3
1200-1300	830.0	785.5	853.0	941.0	919.0	**913.0**	**699.0**	852.3	840.8
1300-1400	748.0	804.0	853.0	834.0	874.0	816.0	629.0	819.5	795.3
1400-1500	809.0	841.5	884.0	924.0	1029.0	753.0	605.0	888.2	835.9
1500-1600	960.0	1063.5	1143.0	1244.0	1228.0	744.0	629.0	1117.0	1009.4
1600-1700	1217.0	1389.0	1348.0	1427.0	1374.0	651.0	571.0	1357.3	1170.8
1700-1800	**1389.0**	**1591.5**	**1667.0**	**1613.0**	**1419.0**	743.0	567.0	**1545.2**	**1322.6**
1800-1900	766.0	861.0	963.0	986.0	896.0	722.0	489.0	888.8	818.0
1900-2000	443.0	537.0	510.0	551.0	537.0	512.0	389.0	519.2	502.0
2000-2100	389.0	352.5	344.0	360.0	367.0	371.0	279.0	360.8	351.9
2100-2200	265.0	417.0	687.0	326.0	333.0	344.0	248.0	407.5	379.6
2200-2300	154.0	303.0	466.0	200.0	275.0	280.0	150.0	283.5	266.4
2300-2400	83.0	123.0	242.0	120.0	194.0	201.0	84.0	147.5	146.3
Totals									
0700-1900	11586.0	12529.0	12338.5	13184.0	13041.0	9098.0	6980.0	12414.9	11307.2
0600-2200	13239.0	14421.5	14476.5	15035.0	14837.0	10636.0	8083.0	14287.3	13041.6
0600-0000	13476.0	14847.5	15184.5	15355.0	15306.0	11117.0	8317.0	14718.3	13454.2
0000-0000	13772.0	15138.5	15549.0	15749.0	15604.0	11520.0	8808.0	15052.9	13817.0
AM Peak	0800	0800	0700	0800	0800	1100	1100		
	1356.0	1420.0	1136.5	1417.0	1394.0	939.0	751.0		
PM Peak	1700	1700	1700	1700	1700	1200	1200		
	1389.0	1591.5	1667.0	1613.0	1419.0	913.0	699.0		

* - No data.

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-428 -- English (ENA)

Datasets:

Site:	**[COSP01] Mill Point Rd Between Mends & Labouchere Rd**
Attribute:	[-31.972765 +115.851260]
Direction:	4 - West bound, A trigger first. **Lane:** 1
Survey Duration:	21:36 Tuesday, 2 February 2016 => 12:33 Monday, 15 February 2016,
Zone:	
File:	COSP01 0 2016-02-15 1233.EC1 (Plus B)
Identifier:	KC04HF5H MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Site:	**[COSP01] Mill Point Rd Between Mends & Labouchere Rd**
Attribute:	[-31.972765 +115.851260]
Direction:	4 - West bound, A trigger first. **Lane:** 2
Survey Duration:	21:38 Tuesday, 2 February 2016 => 12:28 Monday, 15 February 2016,
Zone:	
File:	COSP01 0 2016-02-15 1229.EC2 (Plus)
Identifier:	DS34XCP3 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Site:	**[COSP01] Mill Point Rd Between Mends St & Labouchere Rd**
Attribute:	[-31.972783 +115.851260]
Direction:	2 - East bound, A trigger first. **Lane:** 1
Survey Duration:	21:28 Tuesday, 2 February 2016 => 12:43 Monday, 15 February 2016,
Zone:	
File:	COSP01 0 2016-02-15 1243.EC1 (Plus)
Identifier:	V446Z9Q5 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Site:	**[COSP01] Mill Point Rd Between Mends St & Labouchere Rd**
Attribute:	[-31.972783 +115.851260]
Direction:	2 - East bound, A trigger first. **Lane:** 2
Survey Duration:	7:51 Wednesday, 10 February 2016 => 12:36 Monday, 15 February 2016,
Zone:	
File:	COSP01 0 2016-02-15 1237.EC2 (Plus B)
Identifier:	FS883FVN MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Site:	**[COSP01] Mill Point Rd Between Mends St & Labouchere Rd**
Attribute:	[-31.972783 +115.851260]
Direction:	2 - East bound, A trigger first. **Lane:** 2
Survey Duration:	21:28 Tuesday, 2 February 2016 => 7:33 Wednesday, 10 February 2016,
Zone:	
File:	COSP01 0 2016-02-10 0733.EC2 (Plus B)
Identifier:	FS883FVN MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v4.05)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**21:29 Tuesday, 2 February 2016 => 12:43 Monday, 15 February 2016 (12.6351)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.

Direction:	North, East, South, West (bound), P = East
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 258759 / 260861 (99.19%)

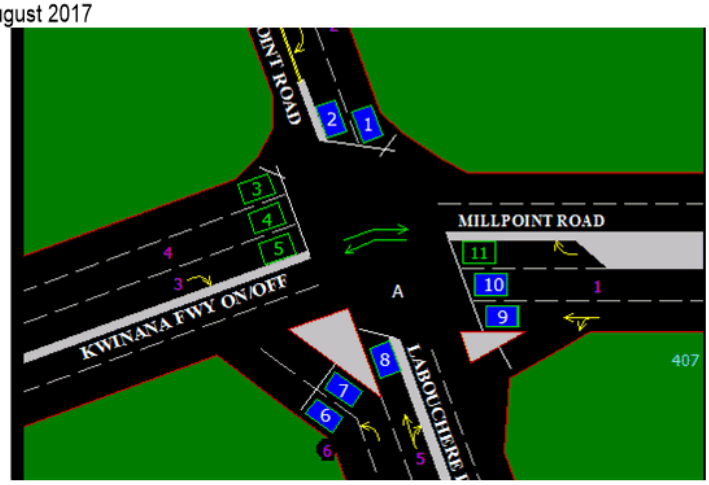
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-428
Site: COSP01.1.0W COSP01.2.0W COSP01.1.0E COSP01.2.0E COSP01.2.0E
Description: **Multiple sites - See Header sheet for site descriptions.**
Filter time: **21:29 Tuesday, 2 February 2016 => 12:43 Monday, 15 February 2016**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0) Span(0 - 100)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	113.5	72.0	90.5	125.5	136.5	299.0	440.0	111.6	190.9
0100-0200	51.5	30.0	40.0	53.5	64.0	159.5	243.0	49.8	96.4
0200-0300	44.0	18.0	31.5	44.5	40.0	112.5	148.0	37.6	66.1
0300-0400	34.5	31.0	32.0	32.5	44.0	86.0	84.5	35.2	50.6
0400-0500	65.0	75.0	54.0	52.0	61.5	86.5	68.0	60.0	65.3
0500-0600	328.5	355.0	315.0	331.5	323.0	180.0	139.0	327.9	276.1
0600-0700	833.5	823.0	802.5	881.5	911.5	489.0	294.0	853.4	711.3
0700-0800	1508.0	1217.0	1340.0	1536.0	1448.5	655.0	449.5	1431.3	1160.8
0800-0900	**1604.0**	**1634.0**	**1634.0**	**1724.0**	**1709.0**	998.0	739.0	**1664.0**	**1419.2**
0900-1000	1244.5	1392.0	1353.0	1311.0	1397.0	1185.0	995.0	1333.7	1258.7
1000-1100	1091.0	1176.0	1170.0	1180.5	1213.5	1355.0	1139.5	1165.1	1190.4
1100-1200	1121.5	953.0	1209.5	1216.5	1331.5	**1439.0**	**1252.0**	1190.1	1237.9
1200-1300	928.0	952.0	1310.5	1275.5	1420.5	**1469.0**	**1298.5**	1202.3	1258.2
1300-1400	1074.0	818.0	1214.0	1210.0	1304.5	1274.0	1118.0	1168.6	1177.8
1400-1500	1206.0	894.0	1326.0	1329.5	1491.5	1255.0	1158.0	1299.3	1268.3
1500-1600	1429.0	1101.0	1625.5	1696.0	1644.0	1283.5	1154.0	1557.6	1444.7
1600-1700	1522.0	1142.0	1707.0	1656.5	1668.0	1254.5	1113.5	1590.9	1455.3
1700-1800	**1655.0**	**1279.0**	**1784.0**	**1795.5**	**1766.5**	1328.0	1182.0	**1703.3**	**1553.8**
1800-1900	1177.0	928.0	1451.5	1431.0	1402.5	1312.0	1017.0	1334.4	1277.8
1900-2000	861.0	595.0	974.0	997.5	1066.0	1105.5	884.5	941.4	959.3
2000-2100	741.0	548.0	781.0	851.5	938.5	993.5	854.0	803.9	843.8
2100-2200	524.0	394.5	881.0	762.0	832.5	912.5	701.5	696.0	730.2
2200-2300	376.0	466.5	669.0	542.5	761.5	939.0	480.0	583.9	622.5
2300-2400	157.0	223.0	302.5	267.5	554.0	676.5	218.5	316.8	357.0
Totals									
0700-1900	15560.0	13486.0	17125.0	17362.0	17797.0	14808.0	12616.0	16640.6	15702.8
0600-2200	18519.5	15846.5	20563.5	20854.5	21545.5	18308.5	15350.0	19935.3	18947.4
0600-0000	19052.5	16536.0	21535.0	21664.5	22861.0	19924.0	16048.5	20835.9	19926.9
0000-0000	19689.5	17117.0	22098.0	22304.0	23530.0	20847.5	17171.0	21457.9	20672.3
AM Peak	0800	0800	0800	0800	0800	1100	1100		
	1604.0	1634.0	1634.0	1724.0	1709.0	1439.0	1252.0		
PM Peak	1700	1700	1700	1700	1700	1200	1200		
	1655.0	1279.0	1784.0	1795.5	1766.5	1469.0	1298.5		

* - No data.

SCATS
Mill Point Road / Labouchere Road / Kwinana Freeway Intersection
31st July - 04th August 2017



	1	2	3	4	5	6	7	8	9	10	11	
1:00	7	8	26	9	10	11	8	2	8	22	3	116
2:00	5	5	13	5	6	7	4	1	3	10	1	61
3:00	5	5	12	4	4	5	3	2	4	6	2	52
4:00	4	2	9	3	3	5	2	3	5	7	2	45
5:00	7	7	13	2	7	12	10	3	8	20	3	91
6:00	29	22	56	21	23	42	40	5	40	69	5	353
7:00	64	61	209	96	82	131	154	11	114	192	23	1137
8:00	90	106	315	204	167	322	387	22	346	347	19	2324
9:00	108	132	382	237	254	417	452	40	444	392	25	2883
10:00	105	92	331	186	212	243	262	41	261	266	36	2036
11:00	112	97	303	162	177	168	198	52	201	174	34	1678
12:00	108	99	320	168	184	172	208	49	207	204	36	1754
13:00	107	100	350	183	179	180	209	48	208	204	31	1798
14:00	105	91	330	170	172	180	202	44	203	194	28	1719
15:00	101	95	378	214	223	201	219	45	237	300	30	2044
16:00	120	99	436	251	338	228	263	52	325	318	34	2463
17:00	110	112	438	278	431	292	323	64	313	330	37	2727
18:00	142	126	492	321	506	324	350	60	330	313	28	2991
19:00	117	108	430	241	293	223	221	48	201	267	34	2183
20:00	80	60	243	133	99	126	118	40	103	158	27	1187
21:00	52	44	180	89	67	89	68	25	75	114	15	820
22:00	44	40	184	95	69	84	68	22	79	128	14	826
23:00	36	33	132	63	46	65	45	14	59	110	9	613
24:00:00	22	18	67	29	22	30	22	6	24	51	5	297

Appendix D - 76 Mill Point Road Traffic Generation

Table 19 - Predicted Peak Hour Trip Generation – 76 Mill Point Road

Land use	Generation rate		Unit	Quantum	Estimated Generation		Source
	AM Peak	PM Peak			AM Peak	PM Peak	
Residential Dwelling (1-2 BR)	0.28	0.39	Units	62	17	24	Cardno SPSP
Residential Dwelling (>2BR)	0.28	0.39	Units	38	11	15	Cardno SPSP
Service Apartment	0.3	0.3	Units	147	44	44	Cardno SPSP
Cafe	8.68	8.23	GFA (100m2)	163	14	13	Cardno SPSP
Total					**86**	**96**	

Table 20 - Predicted Peak Hour Distribution – 76 Mill Point Road

Land use	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
	%	%	%	%
	No. of Trips	No. of Trips	No. of Trips	No. of Trips
Residential Dwellings	22%	78%	62%	38%
	6	22	24	15
Serviced Apartments	39%	61%	54%	46%
	17	27	24	20
Cafe *(Restaurant)*	52%	48%	61%	39%
	7	7	8	5
Total	**30**	**56**	**56**	**50**

Consulting Civil and Traffic Engineers, Risk Managers

Appendix E - SIDRA Analysis – Mill Point Road / Labouchere Road / Freeway Ramp

MOVEMENT SUMMARY

Site: 1 [2017 - Existing AM Peak]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	869	3.0	0.673	39.6	LOS D	22.0	158.2	0.89	0.84	36.1
2	T1	30	3.0	0.254	57.6	LOS E	2.3	16.4	0.97	0.72	30.6
3	R2	10	3.0	0.254	63.3	LOS E	2.3	16.4	0.97	0.72	30.3
Approach		909	3.0	0.673	40.5	LOS D	22.0	158.2	0.90	0.84	35.8
East: Mill Point Road											
4	L2	36	3.0	0.584	38.2	LOS D	12.2	87.7	0.81	0.72	38.5
5	T1	836	3.0	0.584	32.4	LOS C	16.7	119.9	0.82	0.71	39.1
6	R2	25	3.0	0.086	34.1	LOS C	1.0	7.1	0.70	0.71	37.8
Approach		897	3.0	0.584	32.7	LOS C	16.7	119.9	0.82	0.71	39.1
North: Mill Point Road											
7	L2	70	3.0	0.438	58.5	LOS E	6.0	42.9	0.97	0.78	30.7
8	T1	38	3.0	0.438	52.9	LOS D	6.0	42.9	0.97	0.78	31.2
9	R2	132	3.0	0.544	59.5	LOS E	7.4	53.4	0.98	0.80	30.0
Approach		240	3.0	0.544	58.1	LOS E	7.4	53.4	0.97	0.79	30.4
West: Mill Point Road											
10	L2	38	3.0	0.256	15.7	LOS B	7.7	55.5	0.47	0.45	49.7
11	T1	581	3.0	0.256	10.1	LOS B	7.8	55.9	0.47	0.43	51.2
12	R2	254	3.0	0.599	50.2	LOS D	13.4	96.1	0.95	0.83	32.6
Approach		873	3.0	0.599	22.0	LOS C	13.4	96.1	0.61	0.54	43.9
All Vehicles		2919	3.0	0.673	34.0	LOS C	22.0	158.2	0.79	0.71	38.3

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

MOVEMENT SUMMARY

Site: 1 [2017 - Existing PM Peak]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	673	3.0	0.414	28.8	LOS C	14.6	105.0	0.69	0.77	40.4
2	T1	45	3.0	0.295	59.0	LOS E	3.6	25.8	0.96	0.74	30.2
3	R2	15	3.0	0.295	64.7	LOS E	3.6	25.8	0.96	0.74	29.9
Approach		733	3.0	0.414	31.4	LOS C	14.6	105.0	0.71	0.77	39.3
East: Mill Point Road											
4	L2	24	3.0	0.622	55.9	LOS E	12.7	91.1	0.91	0.80	32.5
5	T1	643	3.0	0.622	46.8	LOS D	14.2	102.2	0.91	0.77	33.9
6	R2	28	3.0	0.155	48.3	LOS D	1.4	10.3	0.82	0.73	32.9
Approach		695	3.0	0.622	47.2	LOS D	14.2	102.2	0.90	0.77	33.6
North: Mill Point Road											
7	L2	92	3.0	0.554	63.1	LOS E	8.6	61.8	0.98	0.80	29.5
8	T1	50	3.0	0.554	57.6	LOS E	8.6	61.8	0.98	0.80	30.0
9	R2	126	3.0	0.500	62.7	LOS E	7.6	54.4	0.97	0.80	29.2
Approach		268	3.0	0.554	61.9	LOS E	8.6	61.8	0.98	0.80	29.5
West: Mill Point Road											
10	L2	49	3.0	0.346	18.4	LOS B	12.3	88.2	0.53	0.50	47.9
11	T1	764	3.0	0.346	12.9	LOS B	12.4	88.8	0.53	0.48	49.4
12	R2	506	3.0	0.861	57.9	LOS E	33.3	239.1	1.00	0.94	30.5
Approach		1319	3.0	0.861	30.3	LOS C	33.3	239.1	0.71	0.66	39.9
All Vehicles		3015	3.0	0.861	37.3	LOS D	33.3	239.1	0.78	0.72	37.1

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

MOVEMENT SUMMARY

Site: 1 [2021 - AM Peak no development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	935	3.0	0.724	40.5	LOS D	24.3	174.8	0.92	0.85	35.8
2	T1	33	3.0	0.280	57.8	LOS E	2.5	18.1	0.98	0.73	30.5
3	R2	11	3.0	0.280	63.4	LOS E	2.5	18.1	0.98	0.73	30.2
Approach		979	3.0	0.724	41.3	LOS D	24.3	174.8	0.92	0.85	35.6
East: Mill Point Road											
4	L2	16	3.0	0.613	39.9	LOS D	13.2	94.5	0.82	0.72	38.0
5	T1	890	3.0	0.613	33.1	LOS C	17.4	125.0	0.83	0.71	38.9
6	R2	27	3.0	0.101	34.4	LOS C	1.1	7.8	0.70	0.71	37.6
Approach		933	3.0	0.613	33.3	LOS C	17.4	125.0	0.83	0.71	38.8
North: Mill Point Road											
7	L2	77	3.0	0.478	58.8	LOS E	6.6	47.2	0.97	0.78	30.6
8	T1	41	3.0	0.478	53.2	LOS D	6.6	47.2	0.97	0.78	31.1
9	R2	144	3.0	0.594	59.9	LOS E	8.2	58.7	0.99	0.80	29.9
Approach		262	3.0	0.594	58.5	LOS E	8.2	58.7	0.98	0.79	30.3
West: Mill Point Road											
10	L2	44	3.0	0.295	16.0	LOS B	9.2	65.9	0.48	0.46	49.5
11	T1	669	3.0	0.295	10.5	LOS B	9.2	66.4	0.48	0.44	51.0
12	R2	293	3.0	0.691	51.6	LOS D	15.9	114.3	0.97	0.85	32.2
Approach		1006	3.0	0.691	22.7	LOS C	15.9	114.3	0.63	0.56	43.5
All Vehicles		3180	3.0	0.724	34.5	LOS C	24.3	174.8	0.80	0.71	38.2

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

MOVEMENT SUMMARY

Site: 1 [2021 - PM Peak no development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	735	3.0	0.453	29.3	LOS C	16.4	117.5	0.70	0.78	40.2
2	T1	49	3.0	0.320	59.2	LOS E	3.9	28.1	0.96	0.74	30.2
3	R2	16	3.0	0.320	64.9	LOS E	3.9	28.1	0.96	0.74	29.9
Approach		800	3.0	0.453	31.9	LOS C	16.4	117.5	0.72	0.78	39.1
East: Mill Point Road											
4	L2	11	3.0	0.648	57.6	LOS E	13.4	96.1	0.92	0.79	32.1
5	T1	676	3.0	0.648	47.7	LOS D	14.7	105.3	0.91	0.77	33.7
6	R2	30	3.0	0.172	48.6	LOS D	1.6	11.2	0.82	0.74	32.8
Approach		717	3.0	0.648	47.9	LOS D	14.7	105.3	0.91	0.77	33.6
North: Mill Point Road											
7	L2	99	3.0	0.597	63.6	LOS E	9.3	67.0	0.99	0.81	29.4
8	T1	54	3.0	0.597	58.0	LOS E	9.3	67.0	0.99	0.81	29.9
9	R2	136	3.0	0.540	63.1	LOS E	8.2	59.1	0.98	0.80	29.2
Approach		289	3.0	0.597	62.3	LOS E	9.3	67.0	0.98	0.80	29.4
West: Mill Point Road											
10	L2	51	3.0	0.361	18.6	LOS B	13.0	93.1	0.53	0.51	47.8
11	T1	797	3.0	0.361	13.0	LOS B	13.1	93.7	0.53	0.49	49.3
12	R2	528	3.0	0.899	64.3	LOS E	37.3	267.8	1.00	0.98	29.0
Approach		1376	3.0	0.899	32.9	LOS C	37.3	267.8	0.71	0.68	38.8
All Vehicles		3182	3.0	0.899	38.7	LOS D	37.3	267.8	0.78	0.73	36.5

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

MOVEMENT SUMMARY

Site: 1 [2021 - AM Peak with development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	935	3.0	0.727	40.5	LOS D	24.4	175.5	0.92	0.85	35.8
2	T1	37	3.0	0.305	58.0	LOS E	2.8	19.8	0.98	0.73	30.5
3	R2	11	3.0	0.305	63.6	LOS E	2.8	19.8	0.98	0.73	30.2
Approach		983	3.0	0.727	41.4	LOS D	24.4	175.5	0.92	0.85	35.5
East: Mill Point Road											
4	L2	16	3.0	0.618	39.9	LOS D	13.3	95.2	0.82	0.72	38.0
5	T1	890	3.0	0.618	33.1	LOS C	17.2	123.7	0.83	0.71	38.9
6	R2	31	3.0	0.118	34.6	LOS C	1.3	9.0	0.71	0.72	37.5
Approach		937	3.0	0.618	33.3	LOS C	17.2	123.7	0.82	0.71	38.8
North: Mill Point Road											
7	L2	83	3.0	0.527	59.2	LOS E	7.3	52.4	0.98	0.79	30.5
8	T1	47	3.0	0.527	53.7	LOS D	7.3	52.4	0.98	0.79	31.0
9	R2	160	3.0	0.660	61.0	LOS E	9.3	66.5	1.00	0.83	29.7
Approach		290	3.0	0.660	59.3	LOS E	9.3	66.5	0.99	0.81	30.1
West: Mill Point Road											
10	L2	60	3.0	0.302	16.1	LOS B	9.4	67.7	0.49	0.48	49.3
11	T1	669	3.0	0.302	10.5	LOS B	9.5	68.3	0.49	0.45	50.9
12	R2	293	3.0	0.691	51.6	LOS D	15.9	114.3	0.97	0.85	32.2
Approach		1022	3.0	0.691	22.6	LOS C	15.9	114.3	0.63	0.56	43.6
All Vehicles		3232	3.0	0.727	34.7	LOS C	24.4	175.5	0.80	0.72	38.1

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

MOVEMENT SUMMARY

Site: 1 [2021 - PM Peak with development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	735	3.0	0.455	29.3	LOS C	16.5	118.5	0.70	0.78	40.2
2	T1	56	3.0	0.354	59.5	LOS E	4.4	31.3	0.97	0.75	30.1
3	R2	16	3.0	0.354	65.2	LOS E	4.4	31.3	0.97	0.75	29.8
Approach		807	3.0	0.455	32.1	LOS C	16.5	118.5	0.73	0.78	39.0
East: Mill Point Road											
4	L2	11	3.0	0.658	57.7	LOS E	13.6	97.4	0.92	0.79	32.1
5	T1	676	3.0	0.658	47.7	LOS D	14.4	103.2	0.91	0.77	33.7
6	R2	37	3.0	0.215	49.2	LOS D	1.9	13.9	0.83	0.75	32.6
Approach		724	3.0	0.658	48.0	LOS D	14.4	103.2	0.91	0.77	33.6
North: Mill Point Road											
7	L2	104	3.0	0.636	64.1	LOS E	10.0	72.0	1.00	0.82	29.3
8	T1	59	3.0	0.636	58.5	LOS E	10.0	72.0	1.00	0.82	29.8
9	R2	149	3.0	0.592	63.6	LOS E	9.1	65.3	0.98	0.81	29.0
Approach		312	3.0	0.636	62.8	LOS E	10.0	72.0	0.99	0.81	29.3
West: Mill Point Road											
10	L2	64	3.0	0.367	18.7	LOS B	13.2	94.9	0.53	0.52	47.7
11	T1	797	3.0	0.367	13.1	LOS B	13.3	95.7	0.53	0.49	49.2
12	R2	528	3.0	0.899	64.3	LOS E	37.3	267.8	1.00	0.98	29.0
Approach		1389	3.0	0.899	32.8	LOS C	37.3	267.8	0.71	0.68	38.8
All Vehicles		3232	3.0	0.899	38.9	LOS D	37.3	267.8	0.79	0.74	36.5

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

MOVEMENT SUMMARY

Site: 1 [2021 - AM Peak with development traffic & 76 MPR]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	935	3.0	0.730	40.5	LOS D	24.6	176.5	0.92	0.85	35.8
2	T1	43	3.0	0.342	58.2	LOS E	3.1	22.3	0.98	0.74	30.5
3	R2	11	3.0	0.342	63.9	LOS E	3.1	22.3	0.98	0.74	30.2
Approach		989	3.0	0.730	41.5	LOS D	24.6	176.5	0.92	0.85	35.5
East: Mill Point Road											
4	L2	16	3.0	0.625	40.2	LOS D	13.5	96.8	0.82	0.72	37.8
5	T1	890	3.0	0.625	33.2	LOS C	16.9	121.6	0.83	0.71	38.9
6	R2	37	3.0	0.143	35.0	LOS C	1.5	10.9	0.72	0.73	37.4
Approach		943	3.0	0.625	33.4	LOS C	16.9	121.6	0.82	0.71	38.8
North: Mill Point Road											
7	L2	94	3.0	0.615	60.0	LOS E	8.7	62.2	0.99	0.81	30.3
8	T1	58	3.0	0.615	54.5	LOS D	8.7	62.2	0.99	0.81	30.8
9	R2	188	3.0	0.775	64.5	LOS E	11.4	82.1	1.00	0.88	28.8
Approach		340	3.0	0.775	61.6	LOS E	11.4	82.1	1.00	0.85	29.6
West: Mill Point Road											
10	L2	72	3.0	0.307	16.1	LOS B	9.6	69.1	0.49	0.49	49.1
11	T1	669	3.0	0.307	10.6	LOS B	9.7	69.8	0.49	0.46	50.8
12	R2	293	3.0	0.691	51.6	LOS D	15.9	114.3	0.97	0.85	32.2
Approach		1034	3.0	0.691	22.6	LOS C	15.9	114.3	0.63	0.57	43.6
All Vehicles		3306	3.0	0.775	35.3	LOS D	24.6	176.5	0.81	0.72	37.8

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

MOVEMENT SUMMARY

Site: 1 [2021 - PM Peak with development traffic & 76 MPR]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	735	3.0	0.460	29.3	LOS C	16.7	120.1	0.70	0.78	40.2
2	T1	67	3.0	0.407	60.0	LOS E	5.1	36.3	0.98	0.76	30.1
3	R2	16	3.0	0.407	65.6	LOS E	5.1	36.3	0.98	0.76	29.8
Approach		818	3.0	0.460	32.6	LOS C	16.7	120.1	0.73	0.78	38.8
East: Mill Point Road											
4	L2	11	3.0	0.674	58.2	LOS E	13.9	99.9	0.92	0.80	31.9
5	T1	676	3.0	0.674	48.0	LOS D	13.9	99.9	0.91	0.77	33.6
6	R2	48	3.0	0.284	50.2	LOS D	2.6	18.5	0.85	0.76	32.4
Approach		735	3.0	0.674	48.3	LOS D	13.9	99.9	0.91	0.77	33.5
North: Mill Point Road											
7	L2	114	3.0	0.713	65.9	LOS E	11.6	83.2	1.00	0.86	28.9
8	T1	69	3.0	0.713	60.4	LOS E	11.6	83.2	1.00	0.86	29.3
9	R2	174	3.0	0.691	65.4	LOS E	10.9	78.5	1.00	0.84	28.6
Approach		357	3.0	0.713	64.6	LOS E	11.6	83.2	1.00	0.85	28.9
West: Mill Point Road											
10	L2	86	3.0	0.377	18.8	LOS B	13.7	98.0	0.54	0.53	47.5
11	T1	797	3.0	0.377	13.2	LOS B	13.8	99.0	0.54	0.50	49.0
12	R2	528	3.0	0.899	64.3	LOS E	37.3	267.8	1.00	0.98	29.0
Approach		1411	3.0	0.899	32.7	LOS C	37.3	267.8	0.71	0.68	38.9
All Vehicles		3321	3.0	0.899	39.5	LOS D	37.3	267.8	0.79	0.74	36.2

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

MOVEMENT SUMMARY

Site: 1 [2021 - AM Peak + 9 Storey Dev]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total Veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	935	3.0	0.728	40.5	LOS D	24.5	175.8	0.92	0.85	35.8
2	T1	39	3.0	0.317	58.1	LOS E	2.9	20.6	0.98	0.74	30.5
3	R2	11	3.0	0.317	63.7	LOS E	2.9	20.6	0.98	0.74	30.2
Approach		985	3.0	0.728	41.4	LOS D	24.5	175.8	0.92	0.85	35.5
East: Mill Point Road											
4	L2	16	3.0	0.621	39.9	LOS D	13.3	95.5	0.82	0.72	37.9
5	T1	890	3.0	0.621	33.1	LOS C	17.2	123.2	0.83	0.71	38.9
6	R2	33	3.0	0.126	34.7	LOS C	1.3	9.6	0.71	0.72	37.5
Approach		939	3.0	0.621	33.3	LOS C	17.2	123.2	0.82	0.71	38.8
North: Mill Point Road											
7	L2	81	3.0	0.511	59.1	LOS E	7.1	50.6	0.98	0.79	30.5
8	T1	45	3.0	0.511	53.5	LOS D	7.1	50.6	0.98	0.79	31.0
9	R2	154	3.0	0.635	60.5	LOS E	8.8	63.5	1.00	0.82	29.8
Approach		280	3.0	0.635	59.0	LOS E	8.8	63.5	0.99	0.80	30.2
West: Mill Point Road											
10	L2	56	3.0	0.300	16.1	LOS B	9.4	67.3	0.49	0.47	49.3
11	T1	669	3.0	0.300	10.5	LOS B	9.4	67.8	0.49	0.45	50.9
12	R2	293	3.0	0.691	51.6	LOS D	15.9	114.3	0.97	0.85	32.2
Approach		1018	3.0	0.691	22.6	LOS C	15.9	114.3	0.63	0.56	43.6
All Vehicles		3222	3.0	0.728	34.6	LOS C	24.5	175.8	0.80	0.72	38.1

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

MOVEMENT SUMMARY

Site: 1 [2021 - PM Peak + 9 Storey Dev]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	735	3.0	0.455	29.3	LOS C	16.5	118.2	0.70	0.78	40.2
2	T1	54	3.0	0.344	59.4	LOS E	4.2	30.4	0.97	0.75	30.2
3	R2	16	3.0	0.344	65.1	LOS E	4.2	30.4	0.97	0.75	29.9
Approach		805	3.0	0.455	32.1	LOS C	16.5	118.2	0.73	0.78	39.0
East: Mill Point Road											
4	L2	11	3.0	0.655	57.7	LOS E	13.5	97.0	0.92	0.79	32.1
5	T1	676	3.0	0.655	47.7	LOS D	14.5	103.8	0.91	0.77	33.7
6	R2	35	3.0	0.202	49.1	LOS D	1.8	13.1	0.83	0.75	32.7
Approach		722	3.0	0.655	47.9	LOS D	14.5	103.8	0.91	0.77	33.6
North: Mill Point Road											
7	L2	106	3.0	0.651	64.4	LOS E	10.3	74.2	1.00	0.82	29.3
8	T1	61	3.0	0.651	58.8	LOS E	10.3	74.2	1.00	0.82	29.7
9	R2	153	3.0	0.608	63.7	LOS E	9.4	67.2	0.99	0.81	29.0
Approach		320	3.0	0.651	63.0	LOS E	10.3	74.2	0.99	0.82	29.2
West: Mill Point Road											
10	L2	60	3.0	0.365	18.6	LOS B	13.1	94.4	0.53	0.51	47.7
11	T1	797	3.0	0.365	13.1	LOS B	13.2	95.1	0.53	0.49	49.2
12	R2	528	3.0	0.899	64.3	LOS E	37.3	267.8	1.00	0.98	29.0
Approach		1385	3.0	0.899	32.8	LOS C	37.3	267.8	0.71	0.68	38.8
All Vehicles		3232	3.0	0.899	39.0	LOS D	37.3	267.8	0.79	0.74	36.4

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

MOVEMENT SUMMARY

Site: 1 [2031 - AM Peak no development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	1100	3.0	0.847	49.1	LOS D	33.2	238.6	0.98	0.93	33.0
2	T1	38	3.0	0.324	58.1	LOS E	2.9	21.1	0.98	0.74	30.4
3	R2	13	3.0	0.324	63.8	LOS E	2.9	21.1	0.98	0.74	30.1
Approach		1151	3.0	0.847	49.6	LOS D	33.2	238.6	0.98	0.92	32.9
East: Mill Point Road											
4	L2	18	3.0	0.732	43.7	LOS D	16.7	119.6	0.85	0.77	36.5
5	T1	1024	3.0	0.732	35.8	LOS D	20.8	149.3	0.86	0.76	37.8
6	R2	31	3.0	0.148	35.3	LOS D	1.3	9.2	0.72	0.72	37.3
Approach		1073	3.0	0.732	36.0	LOS D	20.8	149.3	0.85	0.76	37.8
North: Mill Point Road											
7	L2	93	3.0	0.580	59.7	LOS E	8.1	58.1	0.99	0.80	30.4
8	T1	50	3.0	0.580	54.1	LOS D	8.1	58.1	0.99	0.80	30.9
9	R2	174	3.0	0.718	62.4	LOS E	10.3	73.9	1.00	0.85	29.3
Approach		317	3.0	0.718	60.3	LOS E	10.3	73.9	0.99	0.83	29.9
West: Mill Point Road											
10	L2	58	3.0	0.393	16.9	LOS B	13.2	95.0	0.53	0.50	48.9
11	T1	890	3.0	0.393	11.3	LOS B	13.3	95.6	0.53	0.48	50.4
12	R2	389	3.0	0.917	71.5	LOS E	27.0	194.2	1.00	1.01	27.4
Approach		1337	3.0	0.917	29.1	LOS C	27.0	194.2	0.66	0.64	40.5
All Vehicles		3878	3.0	0.917	39.6	LOS D	33.2	238.6	0.84	0.77	36.2

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

MOVEMENT SUMMARY

Site: 1 [2031 - PM Peak no development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	890	3.0	0.544	30.7	LOS C	20.9	149.7	0.75	0.80	39.6
2	T1	59	3.0	0.389	59.8	LOS E	4.8	34.5	0.97	0.76	30.0
3	R2	20	3.0	0.389	65.4	LOS E	4.8	34.5	0.97	0.76	29.7
Approach		969	3.0	0.544	33.2	LOS C	20.9	149.7	0.76	0.80	38.6
East: Mill Point Road											
4	L2	12	3.0	0.752	62.8	LOS E	16.4	117.6	0.94	0.86	30.7
5	T1	760	3.0	0.752	51.7	LOS D	17.3	124.5	0.93	0.84	32.5
6	R2	34	3.0	0.212	49.4	LOS D	1.8	12.9	0.83	0.75	32.6
Approach		806	3.0	0.752	51.8	LOS D	17.3	124.5	0.93	0.83	32.5
North: Mill Point Road											
7	L2	117	3.0	0.703	65.6	LOS E	11.3	81.5	1.00	0.85	29.0
8	T1	63	3.0	0.703	60.1	LOS E	11.3	81.5	1.00	0.85	29.4
9	R2	160	3.0	0.636	64.1	LOS E	9.9	70.8	1.00	0.82	28.9
Approach		340	3.0	0.703	63.9	LOS E	11.3	81.5	1.00	0.83	29.0
West: Mill Point Road											
10	L2	57	3.0	0.400	19.0	LOS B	14.8	106.3	0.55	0.52	47.6
11	T1	881	3.0	0.400	13.4	LOS B	14.9	107.0	0.55	0.51	49.0
12	R2	583	3.0	0.999	102.9	LOS F	53.6	384.6	1.00	1.12	22.2
Approach		1521	3.0	0.999	47.9	LOS D	53.6	384.6	0.72	0.74	33.5
All Vehicles		3636	3.0	0.999	46.4	LOS D	53.6	384.6	0.80	0.79	34.6

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

MOVEMENT SUMMARY

Site: 1 [2031 - AM Peak with development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	1100	3.0	0.849	49.3	LOS D	33.4	239.8	0.98	0.93	33.0
2	T1	42	3.0	0.349	58.3	LOS E	3.2	22.8	0.98	0.74	30.4
3	R2	13	3.0	0.349	63.9	LOS E	3.2	22.8	0.98	0.74	30.1
Approach		1155	3.0	0.849	49.8	LOS D	33.4	239.8	0.98	0.92	32.9
East: Mill Point Road											
4	L2	18	3.0	0.738	44.3	LOS D	17.0	122.0	0.85	0.78	36.3
5	T1	1024	3.0	0.738	36.2	LOS D	20.6	147.8	0.86	0.77	37.7
6	R2	35	3.0	0.170	35.6	LOS D	1.5	10.5	0.72	0.73	37.1
Approach		1077	3.0	0.738	36.3	LOS D	20.6	147.8	0.85	0.77	37.6
North: Mill Point Road											
7	L2	99	3.0	0.628	60.3	LOS E	8.9	63.7	1.00	0.81	30.2
8	T1	56	3.0	0.628	54.7	LOS D	8.9	63.7	1.00	0.81	30.7
9	R2	190	3.0	0.784	64.9	LOS E	11.6	83.4	1.00	0.89	28.8
Approach		345	3.0	0.784	61.9	LOS E	11.6	83.4	1.00	0.85	29.5
West: Mill Point Road											
10	L2	74	3.0	0.399	17.0	LOS B	13.5	97.1	0.53	0.51	48.7
11	T1	890	3.0	0.399	11.4	LOS B	13.6	97.9	0.53	0.49	50.3
12	R2	389	3.0	0.917	71.5	LOS E	27.0	194.2	1.00	1.01	27.4
Approach		1353	3.0	0.917	29.0	LOS C	27.0	194.2	0.66	0.64	40.5
All Vehicles		3930	3.0	0.917	40.0	LOS D	33.4	239.8	0.84	0.78	36.1

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

MOVEMENT SUMMARY

Site: 1 [2031 - PM Peak with development traffic]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	890	3.0	0.546	30.7	LOS C	21.0	150.7	0.75	0.80	39.6
2	T1	66	3.0	0.423	60.1	LOS E	5.3	37.7	0.98	0.76	30.0
3	R2	20	3.0	0.423	65.7	LOS E	5.3	37.7	0.98	0.76	29.7
Approach		976	3.0	0.546	33.4	LOS C	21.0	150.7	0.77	0.80	38.5
East: Mill Point Road											
4	L2	12	3.0	0.765	63.5	LOS E	16.7	120.2	0.94	0.87	30.5
5	T1	760	3.0	0.765	52.4	LOS D	17.1	122.8	0.93	0.85	32.3
6	R2	41	3.0	0.259	50.0	LOS D	2.2	15.7	0.84	0.76	32.4
Approach		813	3.0	0.765	52.5	LOS D	17.1	122.8	0.93	0.84	32.3
North: Mill Point Road											
7	L2	122	3.0	0.741	66.9	LOS E	12.2	87.5	1.00	0.87	28.7
8	T1	68	3.0	0.741	61.3	LOS E	12.2	87.5	1.00	0.87	29.1
9	R2	173	3.0	0.687	65.3	LOS E	10.9	77.9	1.00	0.84	28.7
Approach		363	3.0	0.741	65.1	LOS E	12.2	87.5	1.00	0.86	28.7
West: Mill Point Road											
10	L2	70	3.0	0.406	19.1	LOS B	15.1	108.2	0.55	0.53	47.4
11	T1	881	3.0	0.406	13.5	LOS B	15.2	109.0	0.55	0.51	48.9
12	R2	583	3.0	0.999	103.0	LOS F	53.6	384.6	1.00	1.12	22.2
Approach		1534	3.0	0.999	47.8	LOS D	53.6	384.6	0.72	0.74	33.5
All Vehicles		3686	3.0	0.999	46.7	LOS D	53.6	384.6	0.81	0.79	33.8

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

MOVEMENT SUMMARY

Site: 1 [2031 - AM Peak with development traffic & 76 MPR]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	1100	3.0	0.851	49.6	LOS D	33.6	241.6	0.98	0.94	32.9
2	T1	48	3.0	0.387	58.5	LOS E	3.5	25.4	0.99	0.75	30.4
3	R2	13	3.0	0.387	64.2	LOS E	3.5	25.4	0.99	0.75	30.1
Approach		1161	3.0	0.851	50.2	LOS D	33.6	241.6	0.98	0.93	32.8
East: Mill Point Road											
4	L2	18	3.0	0.748	45.1	LOS D	17.5	125.4	0.86	0.79	36.0
5	T1	1024	3.0	0.748	36.7	LOS D	20.3	145.9	0.86	0.77	37.5
6	R2	41	3.0	0.202	36.1	LOS D	1.7	12.5	0.73	0.74	37.0
Approach		1083	3.0	0.748	36.8	LOS D	20.3	145.9	0.85	0.77	37.4
North: Mill Point Road											
7	L2	110	3.0	0.716	62.3	LOS E	10.5	75.1	1.00	0.86	29.8
8	T1	67	3.0	0.716	56.7	LOS E	10.5	75.1	1.00	0.86	30.2
9	R2	218	3.0	0.899	74.6	LOS E	14.7	105.9	1.00	0.99	26.7
Approach		395	3.0	0.899	68.2	LOS E	14.7	105.9	1.00	0.93	28.1
West: Mill Point Road											
10	L2	86	3.0	0.405	17.0	LOS B	13.7	98.7	0.53	0.52	48.6
11	T1	890	3.0	0.405	11.4	LOS B	13.9	99.6	0.53	0.50	50.2
12	R2	389	3.0	0.917	71.5	LOS E	27.0	194.2	1.00	1.01	27.4
Approach		1365	3.0	0.917	28.9	LOS C	27.0	194.2	0.66	0.64	40.5
All Vehicles		4004	3.0	0.917	41.1	LOS D	33.6	241.6	0.84	0.79	35.7

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

MOVEMENT SUMMARY

Site: 1 [2031 - PM Peak with development traffic & 76 MPR]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Labouchere Road											
1	L2	890	3.0	0.562	30.7	LOS C	21.8	156.6	0.75	0.80	39.6
2	T1	77	3.0	0.639	62.3	LOS E	8.2	58.6	1.00	0.81	29.2
3	R2	52	3.0	0.639	67.9	LOS E	8.2	58.6	1.00	0.81	29.0
Approach		1019	3.0	0.639	35.0	LOS D	21.8	156.6	0.78	0.80	37.9
East: Mill Point Road											
4	L2	12	3.0	0.748	63.0	LOS E	16.4	117.9	0.94	0.86	30.6
5	T1	760	3.0	0.748	51.7	LOS D	17.3	124.3	0.93	0.84	32.5
6	R2	32	3.0	0.206	49.4	LOS D	1.7	12.1	0.83	0.74	32.6
Approach		804	3.0	0.748	51.8	LOS D	17.3	124.3	0.93	0.83	32.5
North: Mill Point Road											
7	L2	132	3.0	0.819	70.6	LOS E	14.1	101.1	1.00	0.93	27.9
8	T1	78	3.0	0.819	65.0	LOS E	14.1	101.1	1.00	0.93	28.3
9	R2	198	3.0	0.786	68.9	LOS E	13.0	93.5	1.00	0.89	27.9
Approach		408	3.0	0.819	68.7	LOS E	14.1	101.1	1.00	0.91	28.0
West: Mill Point Road											
10	L2	92	3.0	0.415	19.2	LOS B	15.5	111.5	0.56	0.55	47.2
11	T1	881	3.0	0.415	13.6	LOS B	15.7	112.6	0.56	0.52	48.8
12	R2	583	3.0	0.999	103.0	LOS F	53.6	384.7	1.00	1.12	22.2
Approach		1556	3.0	0.999	47.4	LOS D	53.6	384.7	0.72	0.75	33.6
All Vehicles		3787	3.0	0.999	47.3	LOS D	53.6	384.7	0.81	0.80	33.6

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

Appendix F - SIDRA Analysis – Site Crossover / Mill Point Road North

MOVEMENT SUMMARY

▽ **Site: 1 [Mill Point Road Crossover - Future A.M. Peak Hour with 74 MPR]**

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mill Point Road South											
2	T1	126	3.0	0.078	0.2	LOS A	0.1	0.9	0.11	0.07	59.0
3	R2	15	3.0	0.078	6.9	LOS A	0.1	0.9	0.11	0.07	56.6
Approach		141	3.0	0.078	0.9	NA	0.1	0.9	0.11	0.07	58.7
East: Site Crossover East											
4	L2	31	0.0	0.030	6.8	LOS A	0.1	0.8	0.40	0.61	52.4
6	R2	3	0.0	0.030	7.6	LOS A	0.1	0.8	0.40	0.61	51.9
Approach		34	0.0	0.030	6.8	LOS A	0.1	0.8	0.40	0.61	52.3
North: Mill Point Road North											
7	L2	5	3.0	0.189	5.6	LOS A	0.0	0.0	0.00	0.01	58.1
8	T1	359	3.0	0.189	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		364	3.0	0.189	0.1	NA	0.0	0.0	0.00	0.01	59.9
All Vehicles		539	2.8	0.189	0.7	NA	0.1	0.9	0.05	0.06	59.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation

MOVEMENT SUMMARY

▽ **Site: 1 [Mill Point Road Crossover - Future A.M. Peak Hour with 74 & 76 MPR]**

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mill Point Road South											
2	T1	126	3.0	0.099	0.6	LOS A	0.3	2.4	0.25	0.15	57.8
3	R2	40	3.0	0.099	7.0	LOS A	0.3	2.4	0.25	0.15	55.5
Approach		166	3.0	0.099	2.1	NA	0.3	2.4	0.25	0.15	57.2
East: Site Crossover East											
4	L2	83	0.0	0.084	6.8	LOS A	0.3	2.2	0.41	0.64	52.4
6	R2	9	0.0	0.084	8.0	LOS A	0.3	2.2	0.41	0.64	51.8
Approach		93	0.0	0.084	7.0	LOS A	0.3	2.2	0.41	0.64	52.3
North: Mill Point Road North											
7	L2	12	3.0	0.192	5.6	LOS A	0.0	0.0	0.00	0.02	58.0
8	T1	359	3.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.02	59.8
Approach		371	3.0	0.192	0.2	NA	0.0	0.0	0.00	0.02	59.7
All Vehicles		629	2.6	0.192	1.7	NA	0.3	2.4	0.13	0.15	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ **Site: 1 [Mill Point Road Crossover - Future P.M. Peak Hour with 74 MPR]**

Future P.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mill Point Road South											
2	T1	186	3.0	0.122	0.4	LOS A	0.3	2.0	0.16	0.09	58.6
3	R2	31	3.0	0.122	7.0	LOS A	0.3	2.0	0.16	0.09	56.3
Approach		217	3.0	0.122	1.3	NA	0.3	2.0	0.16	0.09	58.3
East: Site Crossover East											
4	L2	24	0.0	0.025	6.8	LOS A	0.1	0.7	0.41	0.61	52.4
6	R2	3	0.0	0.025	8.1	LOS A	0.1	0.7	0.41	0.61	51.9
Approach		27	0.0	0.025	7.0	LOS A	0.1	0.7	0.41	0.61	52.3
North: Mill Point Road North											
7	L2	6	3.0	0.194	5.6	LOS A	0.0	0.0	0.00	0.01	58.1
8	T1	368	3.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		375	3.0	0.194	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		619	2.9	0.194	0.8	NA	0.3	2.0	0.07	0.06	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ **Site: 1 [Mill Point Road Crossover - Future P.M. Peak Hour with 74 & 76 MPR]**

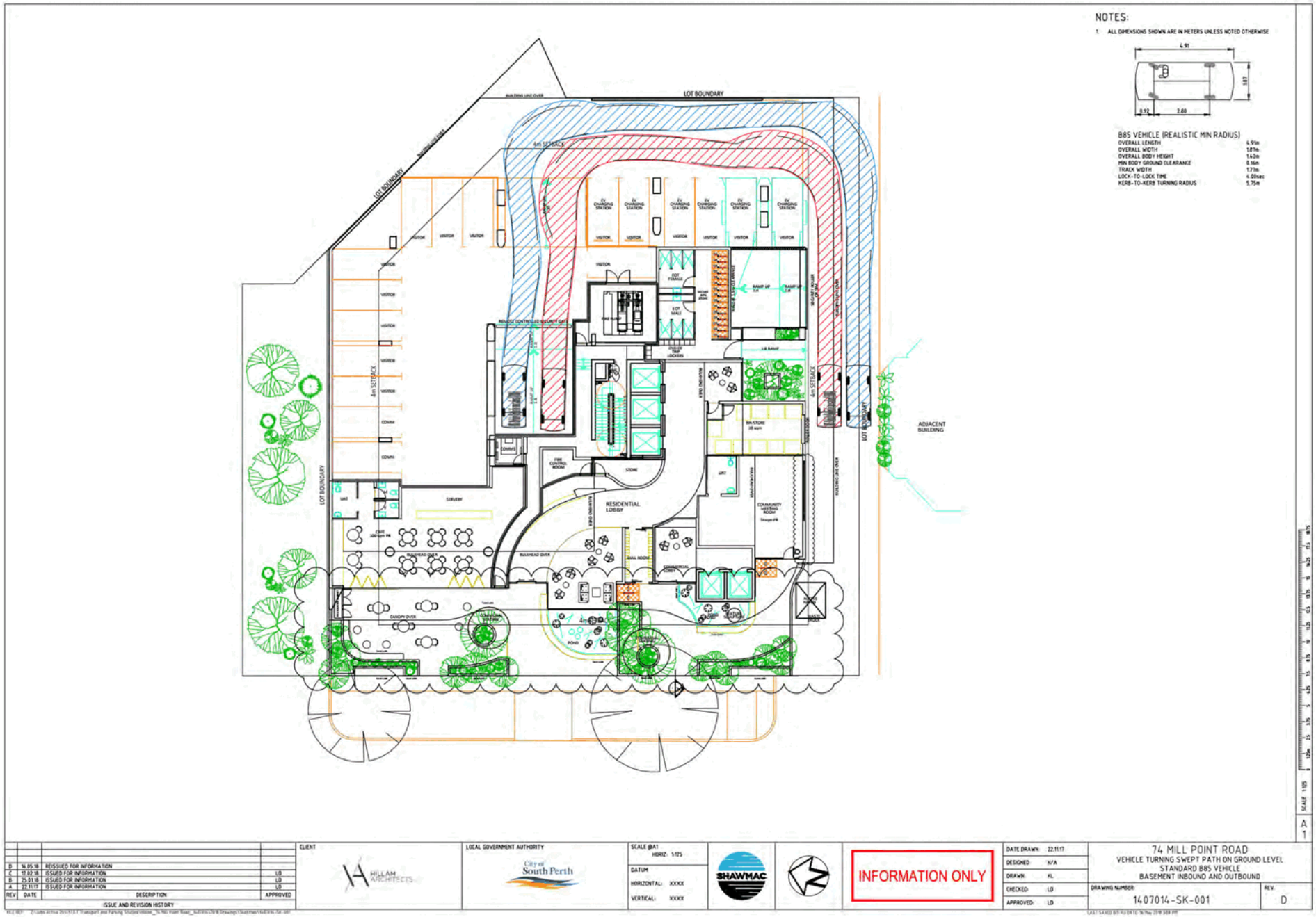
Future P.M. Peak Hour
Giveway / Yield (Two-Way)

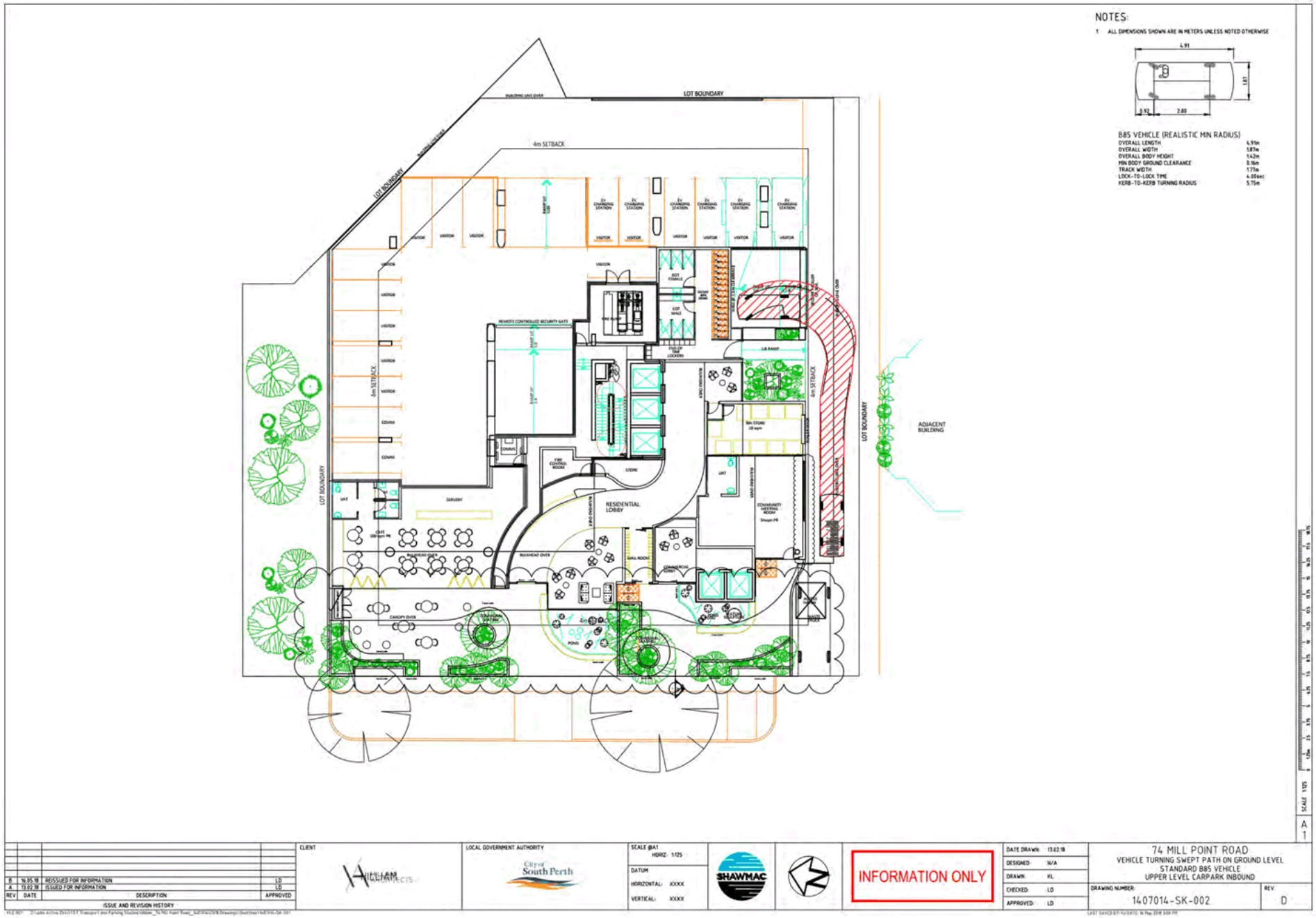
Movement Performance - Vehicles

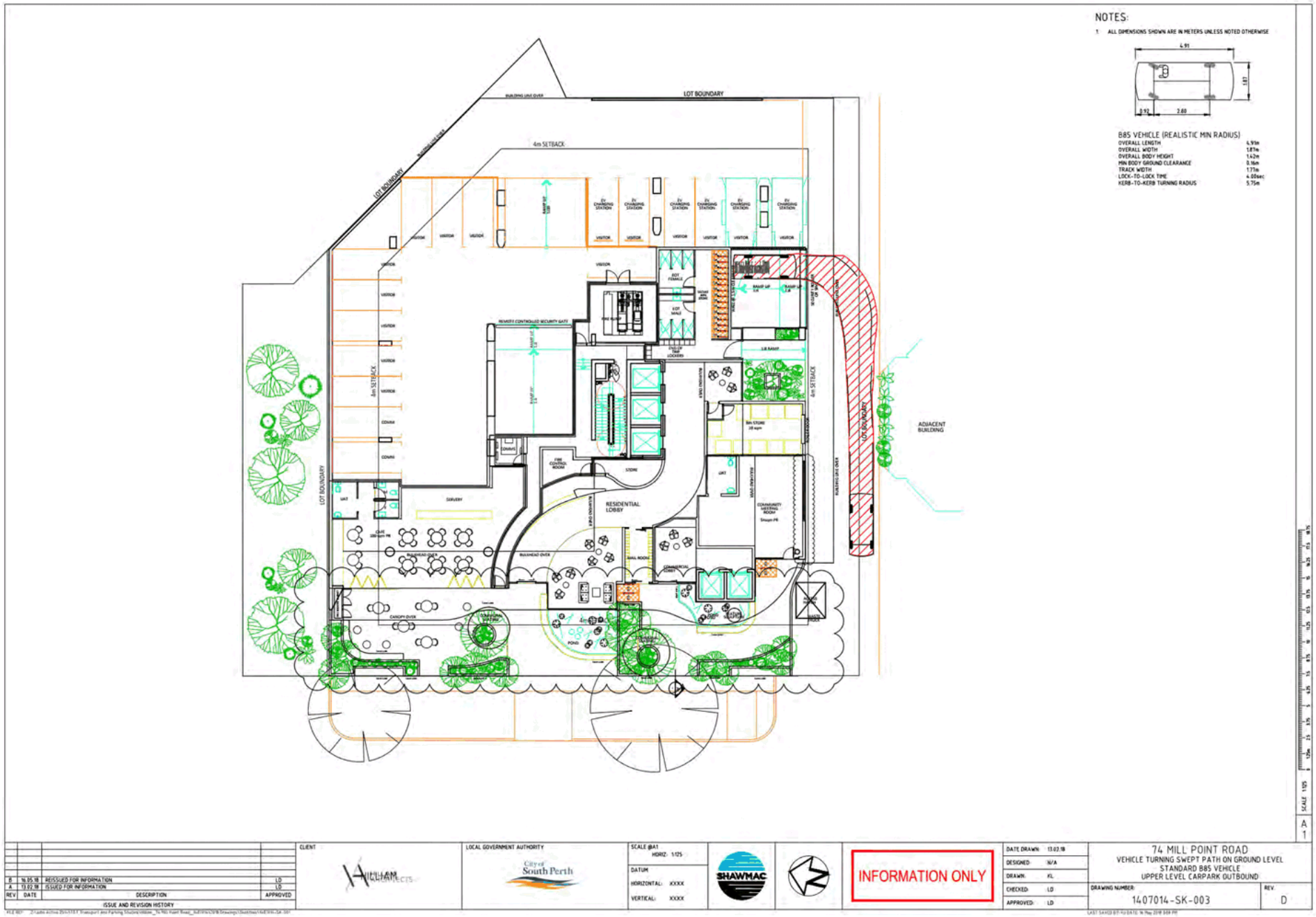
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Mill Point Road South											
2	T1	186	3.0	0.163	0.8	LOS A	0.7	4.8	0.31	0.20	57.2
3	R2	78	3.0	0.163	7.2	LOS A	0.7	4.8	0.31	0.20	55.0
Approach		264	3.0	0.163	2.7	NA	0.7	4.8	0.31	0.20	56.6
East: Site Crossover East											
4	L2	72	0.0	0.074	6.9	LOS A	0.3	2.0	0.42	0.65	52.3
6	R2	8	0.0	0.074	8.7	LOS A	0.3	2.0	0.42	0.65	51.8
Approach		80	0.0	0.074	7.1	LOS A	0.3	2.0	0.42	0.65	52.3
North: Mill Point Road North											
7	L2	18	3.0	0.200	5.6	LOS A	0.0	0.0	0.00	0.03	57.9
8	T1	368	3.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		386	3.0	0.200	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		731	2.7	0.200	1.9	NA	0.7	4.8	0.16	0.16	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix G - Swept Path Diagrams


NOTES:
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS NOTED OTHERWISE
B85 VEHICLE (REALISTIC MIN RADIUS)
OVERALL LENGTH 4.91m
OVERALL WIDTH 1.87m
OVERALL BODY HEIGHT 1.42m
MIN BODY GROUND CLEARANCE 0.16m
TRACK WIDTH 1.77m
LOCK-TO-LOCK TIME 4.00sec
KERB-TO-KERB TURNING RADIUS 5.75m
LOT BOUNDARY
ADJACENT BUILDING
RESIDENTIAL LOBBY
INFORMATION ONLY
74 MILL POINT ROAD
VEHICLE TURNING SWEPT PATH ON GROUND LEVEL
STANDARD B85 VEHICLE
BASEMENT INBOUND AND OUTBOUND
1407014-SK-001
D
SHAWMAC
City of South Perth


NOTES:
1 ALL DIMENSIONS SHOWN ARE IN METERS UNLESS NOTED OTHERWISE
B85 VEHICLE (REALISTIC MIN RADIUS)
OVERALL LENGTH 6.91m
OVERALL WIDTH 1.87m
OVERALL BODY HEIGHT 1.42m
MIN BODY GROUND CLEARANCE 0.16m
TRACK WIDTH 1.77m
LOCK-TO-LOCK TIME 4.00sec
KERB-TO-KERB TURNING RADIUS 5.75m
LOT BOUNDARY
4m SETBACK
RESIDENTIAL LOBBY
ADJACENT BUILDING
INFORMATION ONLY
74 MILL POINT ROAD
VEHICLE TURNING SWEPT PATH ON GROUND LEVEL
STANDARD B85 VEHICLE
UPPER LEVEL CARPARK INBOUND
1407014-SK-002
D


NOTES:
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS NOTED OTHERWISE
B85 VEHICLE (REALISTIC MIN RADIUS)
OVERALL LENGTH 4.91m
OVERALL WIDTH 1.87m
OVERALL BODY HEIGHT 1.42m
MIN BODY GROUND CLEARANCE 0.16m
TRACK WIDTH 1.77m
LOCK-TO-LOCK TIME 4.00sec
KERB-TO-KERB TURNING RADIUS 5.75m
LOT BOUNDARY
4m SETBACK
RESIDENTIAL LOBBY
ADJACENT BUILDING
INFORMATION ONLY
74 MILL POINT ROAD
VEHICLE TURNING SWEPT PATH ON GROUND LEVEL
STANDARD B85 VEHICLE
UPPER LEVEL CARPARK OUTBOUND
1407014-SK-003
D
SCALE 1:125
A1

Consulting Civil and Traffic Engineers, Risk Managers

Appendix H - 74 Mill Point Road Microsimulation Modelling Report with Traffic Signal Optimisation

Cardno
Shaping the Future

Technical Memorandum

Title	**South Perth – 74 Mill Point Road Traffic Signal Optimisation**		
Client	City of South Perth	Project No	CW1018600
Date	4/05/18	Status	Rev A
Author	Andreas Wang	Discipline	Traffic and Transport
Reviewer	Ray Cook	Office	Perth

Introduction

Cardno has previously been engaged by the City of South Perth ("the City") to undertake a transport modelling exercise for the intersection of Mill Point Road / Labouchere Road in relation to the likely impact of the proposed development at 74 Mill Point Road.

The City has subsequently undertaken a collaboration with Main Roads WA to improve the intersection operation, with revisions to the existing signal phase times recently implemented by Main Roads (https://www.communitynews.com.au/southern-gazette/news/south-perth-traffic-delays-expected-to-reduce-after-signal-modifications/).

The City are currently investigating additional potential intersection modifications to further improve the operation of the intersection.

Purpose

The purpose of this technical memorandum is to document the operation of the intersection of Mill Point Road / Labouchere Road for the following 4 scenarios:

- Scenario 1 - Existing signal timing without 74 Mill Point;
- Scenario 2 - Existing signal timing with 74 Mill Point;
- Scenario 3 - Optimised signal timing without 74 Mill Point; and
- Scenario 4 - Optimised signal timing with 74 Mill Point.

The above scenarios have been modelled in the 2021 Station Precinct Micro-Simulation Model (Version 1.4).

Aimsun Modelling

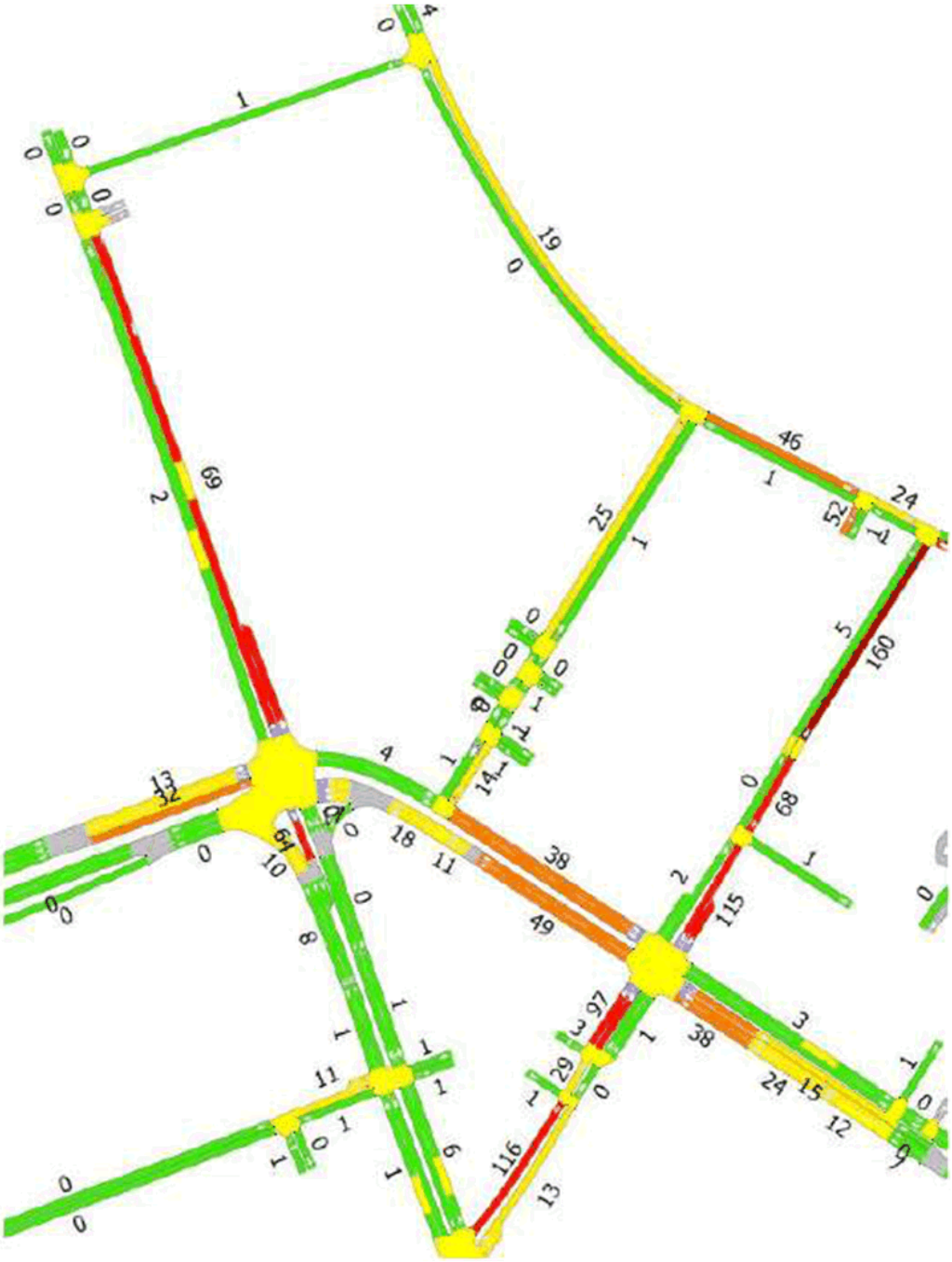
Model outputs in terms of Link Delay Plots (LDPs) have been prepared for each of the scenario

Scenario 1 - Existing signal timing without 74 Mill Point

The LDPs for Scenario 1 are shown in **Figure 1** and **Figure 2** for the AM and PM peak hours respectively.

Figure 1 LDP - Existing Signal Timing without 74 Mill Point Road – 2021 AM Peak Hour

Figure 2 LDP - Existing Signal Timing without 74 Mill Point Road – 2021 PM Peak Hour



Scenario 2 - Existing signal timing with 74 Mill Point

The LDPs for Scenario 2 are shown in **Figure 3** and **Figure 4** for the AM and PM peak hours respectively.

Figure 3 LDP - Existing Signal Timing with 74 Mill Point Road – 2021 AM Peak Hour

Figure 4 LDP - Existing Signal Timing with 74 Mill Point Road – 2021 PM Peak Hour

Scenario 3 - Optimised signal timing without 74 Mill Point

The LDPs for Scenario 3 are shown in **Figure 5** and **Figure 6** for the AM and PM peak hours respectively.

Figure 5 LDP – Optimised Signal Timing without 74 Mill Point Road – 2021 AM Peak Hour

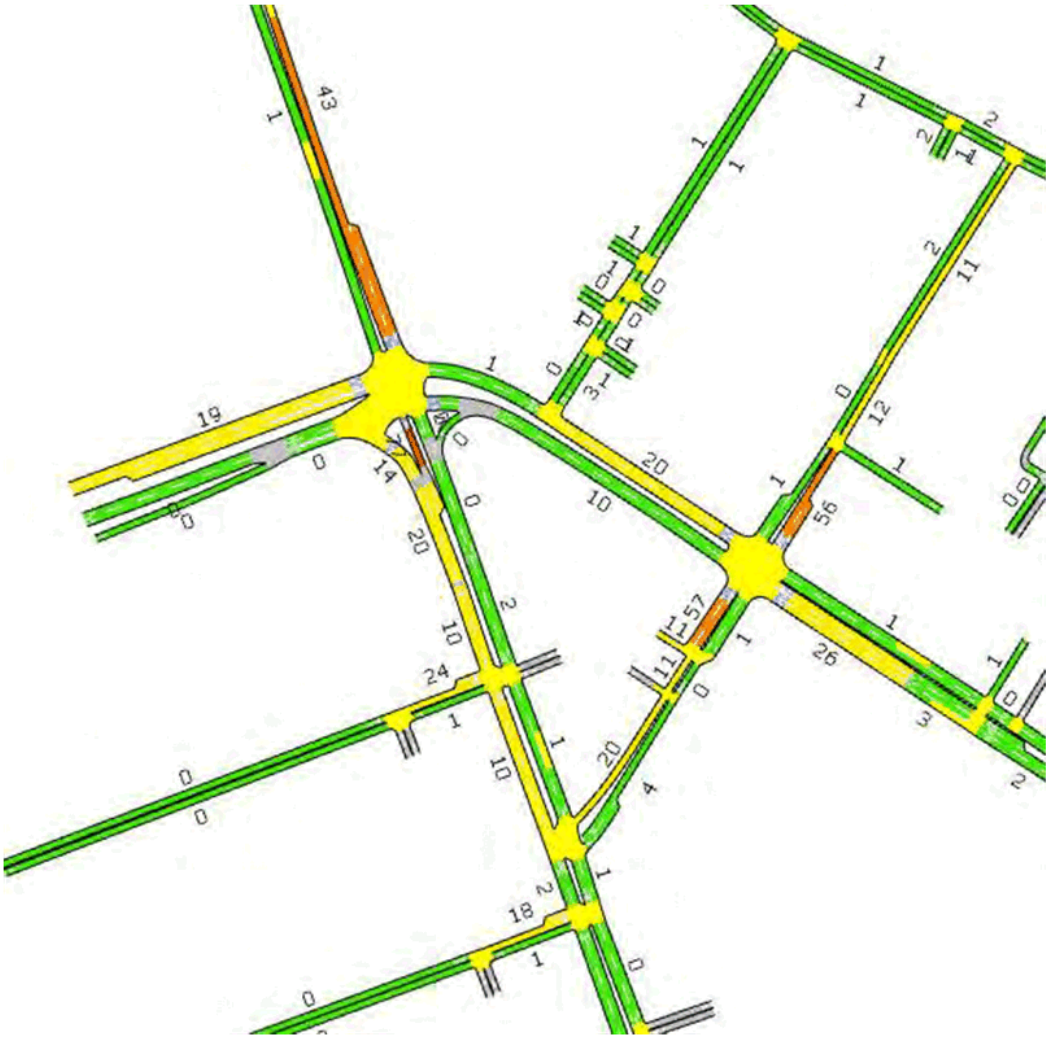


Figure 6 LDP – Optimised Signal Timing without 74 Mill Point Road – 2021 PM Peak Hour

Scenario 4 - Optimised signal timing with 74 Mill Point

The LDPs for Scenario 4 are shown in **Figure 7** and **Figure 8** for the AM and PM peak hours respectively.

Figure 7 LDP – Optimised Signal Timing with 74 Mill Point Road – 2021 AM Peak Hour

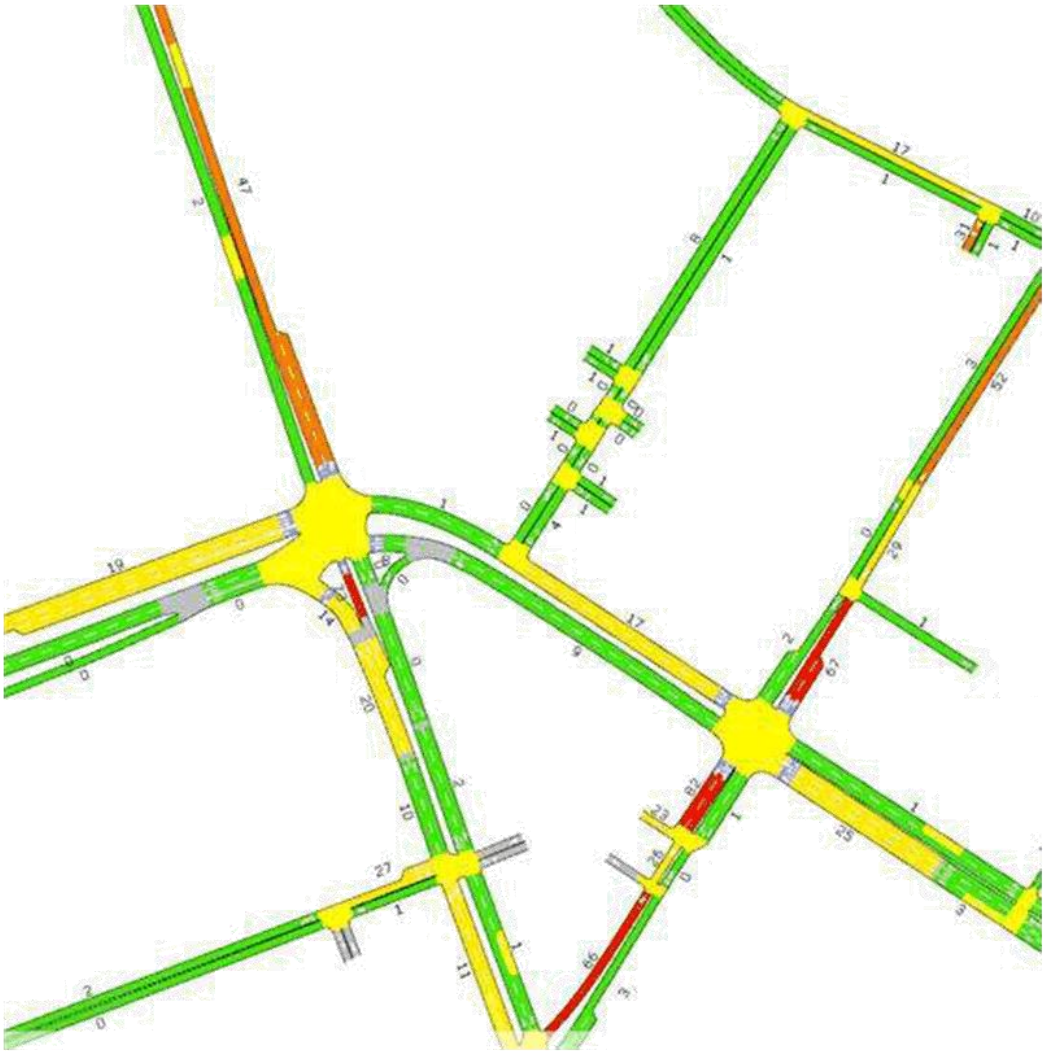


Figure 8 LDP – Optimised Signal Timing with 74 Mill Point Road – 2021 PM Peak Hour

Summary

The model results show that the optimised signal phasing and intersection modifications result in substantial improvement to the network performance; the average delays on MPR (westbound) are shown to decrease substantially as a result of better signal coordination, which in turn also reduces the average delays on MPR southbound (north of Labouchere Road).

The signal optimisation is also shown to reduce the impact of the proposed development at 74 Mill Point Road such that it only contributes to minor delays to the southbound movement on Mill Point Road.