ATTACHMENTS

Special Council Meeting

11 July 2016

Part 1 of 2
Attachments (a)-(k) excluding (b)

City of South Perth

ATTACHMENTS TO AGENDA ITEMS

Special Council Meeting - 11 July 2016

Contents

PROPOSED 44 STOREY MIXED USE DEVELOPMENT - LOTS 2-20 (NO. 74) MILL POINT ROAD, SOUTH PERTH

Government of **Western Australia**
Development Assessment Panels

State Administrative Tribunal Reconsideration

Responsible Authority Report
(Regulation 12)

Property Location:	Lots 2-20 (No. 74) Mill Point Road, South Perth
Application Details:	Proposed Mixed Development within a 44 Storey Building, plus 3 basement levels
DAP Name:	Metro Central JDAP
Applicant:	Hillam Architects
Owner:	Edge Holdings Pty
LG Reference:	MI3/74 – 11.2016.2
Responsible Authority:	City of South Perth
Reporting Officer:	Erik Dybdahl, Acting Senior Planning Officer, City of South Perth
Authorising Officer:	Rajiv Kapur, Manager, Development Services, City of South Perth
Department of Planning File No:	DAP/16/00974
Report Date:	7 July 2016
Application Receipt Date:	30 December 2015
Application Process Days:	106 Days
Attachment(s):	1. Agenda - JDAP Meeting 28th April 2016 (Item 8.1) – 74 Mill Point Road, South Perth 2. Minutes – JDAP Meeting 28th April 2016 (Item 8.1) – 74 Mill Point Road, South Perth 3. Proposed Floor Plans - A2-01 through A2-17 (Latest Revisions 16th March 2016). 4. Proposed Elevation Plans: A3-01 through A3-04 (Latest Revisions 16th March 2016). 5. Traffic Impact Assessment Report (Shawmac) – Version 5 – Dated 29th June 2016) 6. Cardno Micro Simulation Modelling Technical Memorandum (25% Discount Generation) – Dated 29th June 2016 7. Cardno Micro Simulation Modelling Technical Memorandum (50% Discount Generation) – Dated 29th June 2016 8. Cardno Peer Review of Shawmac Traffic Impact Assessment (Version 5) – Dated 30th June 2016

	9. Economic Impact Assessment (AEC Group) - Proposed 44 Storey Mixed Development - Dated 17th June 10. Shawmac Technical Queries on Model and Cardno Responses – Dated 5th July 2016

Recommendation:
That the Metro Central Joint Development Assessment Panel, pursuant to section 31 of the *State Administrative Tribunal Act 2004* in respect of SAT application DR 141 of 2016, resolves to:

Reconsider its decision dated 28th April 2016 and **refuse** DAP Application reference DAP/16/00974 and associated development floor plans, A2-00 through A2-17 (latest revisions 16th March 2016) and elevation plans, A3-01 through A3-04 (latest revisions 16th March 2016), in accordance with Clause 7.9 of the City of South Perth Town Planning Scheme No. 6 and Schedule 2 Part 9 of the Planning and Development (Local Planning Schemes) Regulations 2015, for the following reasons:

Reasons for Refusal:

1. Due to the high proportion of serviced apartments in this application, the proposed mix of non-residential land uses is not considered to meet the guidance statement (3(a) of Table A Schedule 9 – TPS6) which requires the land uses to make a significant contribution towards consolidation of the precinct as an employment destination.

2. It is considered that the proposed height of the development at approximately 143 metres, if approved would significantly impair the effective achievement of the approach to height (proposed height limit of 25 metres) that is contained within proposed Town Planning Scheme amendment No.46.

3. It is considered that the proposed zero street setback, if approved would significantly impair the effective achievement of the approach to street setbacks for Mill Point Road that is contained within proposed Town Planning Scheme amendment No.46.

4. It is considered that the modelling undertaken by Cardno confirms that the right turn movements out of Mill Point Road north and from Mends Street into Mill Point Road to enter the Kwinana Freeway on-ramp will result in extensive queue lengths and significant time delays and demonstrates the inability of the network to support a development of this scale in this location; further to Design Consideration 5 of Table B within Schedule 9A of the City's TPS6:

   Submit a traffic engineer's impact assessment report confirming that additional traffic and on-street parking demand resulting from the additional floor space produced by the variation of Elements 3 (plot ratio) and 5 (height) does not cause an unacceptable impact on the surrounding street network.

Important Notes

1. If you are aggrieved by aspects of this decision where discretion has been exercised, you may lodge an appeal with the State Administrative Tribunal within 28 days of the determination date recorded on this notice.

   There are no rights of appeal in relation to aspects of the decision where the discretion cannot be exercised.

An alternative recommendation has been prepared following the conclusion of this report should the DAP choose to approve the development.

Background:

Property Address:	Lots 2-20 (No. 74) Mill Point Road, South Perth
Zoning MRS:	Urban
TPS:	Special Control Area 1 – South Perth Station Precinct
Use Class:	Multiple Dwellings, Café/Restaurant, Serviced Apartments and Community Meeting Room
Strategy Policy:	N/A
Development Scheme:	City of South Perth Town Planning Scheme No. 6
Lot Size:	1,804m^2
Existing Land Use:	Vacant Site (grouped dwellings previously)
Value of Development:	$90 Million

On the 25th May of 2015, the Metro Central JDAP resolved to conditionally approve a proposed 29 storey mixed use development, on Lots 7-20 (No. 74) Mill Point Road, South Perth. Furthermore, a minor amendment application (Form 2) was conditionally approved on the 1st of December 2015 which provided an additional basement level and modification of the basement levels to accommodate the root ball of the existing street trees. However, this approval was subsequently *set aside* in a Supreme Court of Western Australia ruling *Nairn -V- Metro-Central Joint Development Assessment Panel [2016] WASC 56* (dated 26 February 2016) which concluded that "in order to vary the requirements of Element 3 in relation to plot ratio and building height, it must be demonstrated to the satisfaction of the council.....that the development consists of predominantly non-residential uses before the discretion in development requirement 13.1 is enlivened."

Following this ruling, significant amendments were made to the plot ratio, height and land use mix of the proposal for the site; providing a predominantly non-residential land use mix while the overall building design remained consistent with previous proposals (see latest development plans as per **Attachments 3 & 4** and the development summary below). The revised proposal for the site was considered at a subsequent Metro Central JDAP meeting occurring on the 28th of April 2016 and was deferred pending further information, as is the subject of this report.

Given the height and plot ratio variations sought by the applicant, the proposal is required to achieve *all* performance criteria listed in Table B of Schedule 9A within the City's Town Planning Scheme No. 6 which provides development controls for the South Perth Station Precinct. One such criterion requires the applicant to:

'submit a traffic engineer's impact assessment report confirming that additional traffic and on-street parking demand resulting from the additional floor space produced by the variation of Elements 3 (plot ratio) and 5 (height) does not cause an unacceptable impact on the surrounding street network'.

Technical advice from the City's Infrastructure Services as well as an independent peer review of the applicant's traffic impact assessment by Cardno (contained within **Attachment 1**) determined that inadequate information and data were provided in the traffic impact assessment to satisfy the abovementioned criterion and hence, formed an additional recommended reason for refusal. On this basis, the determination was deferred pending further information from the applicant in relation to the traffic impact assessment (please refer to the minutes and agenda of the JDAP meeting on the 28th of April 2016, **Attachments 1 & 2** respectively). Specifically, as per the attached minutes, the following information, on the advice of the City's Infrastructure Services, was required of the applicant by the DAP members prior to making a determination on the application:

"That the Metro Central JDAP defers consideration of the application for two (2) months (1 July 2016) to enable the applicant to review its Traffic Impact Statement, with the specific aim of adequately meeting the WAPC "checklist for transport assessment of a development", and the "South Perth Station Precinct Traffic Impact Assessment Criteria".

In this endeavour the City of South Perth is to work collaboratively with the applicant by providing available technical information to ensure all necessary criteria can be satisfactorily addressed by the applicant.

REASON: To provide the applicant with more time to address traffic management issues associated with the application. The application as presented has insufficient information to allow the Panel to properly determine this aspect".

In working with the City, the applicant and contracted traffic engineers have subsequently produced a revised traffic impact assessment (version 5, dated 29th of June 2016 – **Attachment 5).** Furthermore, in cooperation with Cardno and the City, the applicant also commissioned the modelling of two traffic scenario's for the development: one based on a 50% reduction (see **Attachment 7**) in traffic generation due to the development being considered a *transit orientated development (TOD)* by the applicant and the other based on a 25% reduction (see **Attachment 6**) which is considered a more appropriate reduction factor by the City's traffic engineers.

Recommendations and evaluation of the revised traffic impact assessment report and traffic modelling scenarios by the City's Infrastructure Services are detailed in the following sections of this report. The comment is largely consistent and derivative from the extensive independent peer review by Cardno of the traffic impact assessment report (**Attachment 8)** and the technical memorandums produced by Cardno for each micro modelling scenario (**Attachments 6 & 7**).

Given the deferral process did not involve any amendment to the development as previously proposed, simply further information, the building remains to be described as follows:

- A 44 storey (~143 metre building height) mixed use development with 3 basement levels, located at 74 Mill Point Road, South Perth, contained on a site 1,804 metres squared in area and with a 40.1m frontage to Mill Point Road.
- The development contains a Café/Restaurant, 85 residential apartments, 147 serviced apartments, associated amenities/communal areas and a community meeting room.
- Three levels of basement providing residential stores and residential parking bay allocations.
- The ground floor consists of a proposed Café/Restaurant, commercial (serviced apartments) and residential lobbies, bicycle storage, residence mail room, Telstra communication room, fire pump room, fire tanks, bin store and Western Power Sub Station.
- Levels 01 - 02 have 4 serviced apartments units facing the street with residential and non-residential car parking allocations configured behind.
- Level 3 has 14 serviced apartments across the entire floor.
- Level 4 has 3 serviced apartments, a community meeting room and amenities for the serviced apartments which includes a lounge, kitchen and dining areas, a games room and an outdoor pool.
- Levels 05 - 21 have 119 serviced apartments varying between 34 - 106 square metres.
- Level 22 has 6 serviced apartments and the pool plant and service area.
- Level 23 has communal amenities for the building's residents. A large gym, sauna and steam room, pool and sun deck. Further, the applicant is willing to open paid gym membership to the general public. There is also a resident's lounge and theatre room. The dining area has BBQ and cooking facilities both inside and out. These amenities are coupled with hard and soft landscaping to offer a break in the building form and help articulate the elevation.
- There are 15 dwelling types (single bedroom varieties through to 4+ bedroom dwellings) across the development, as summarised on page 6 of the amended DA report contained within **Attachment 1**.
- A detailed summary of the Plot Ratio and Car Parking provisions can be found within **Attachment 1** of this report.

The revised traffic information, relevant City and peer (Cardno) evaluations of these reports and assessments as well as the applicant's commissioned AEC Group economic impact assessment (**Attachment 9**) are to be discussed further in the following sections of this report.

Legislation & policy:

Legislation
Planning and Development Act 2005.
Planning and Development (Local Planning Schemes) Regulations 2015, specifically Schedule 2. [Regulations]
City of South Perth Town Planning Scheme No. 6, specifically Parts VII and IX, Schedules 1 and 9 and proposed Schedule 9A^. [TPS6]

^ *Proposed Schedule 9A (Amendment 46) was adopted by Council for public advertising on 27 October 2015 and closed on 5 February 2016. On the 26th of April, following consideration of submissions, Council endorsed the final AMD46 for Minister's review, which is currently where the amendment lies.*

State Government Policies
State Planning Policy 2.10 'Swan-Canning River System' (2006).
State Planning Policy 3.1 'Residential Design Codes' (2013), specifically Part 6 and Appendix 1. [R-Codes]

Local Policies

The following local planning policies are relevant to this application:
Council Policy P316 'Developer Contribution for Public Art'
Council Policy P350.01 'Environmentally Sustainable Building Design'
Council Policy P350.03 'Car Parking Access, Siting, and Design'
Council Policy P350.09 'Significant Views'
Council Policy P312 'Serviced Apartments'
South Perth Station Precinct Plan (WAPC, January 2011)

Further comment on compliance with policy requirements is provided in the Planning assessment section.

Consultation:

Due to the deferral of the application on the basis more information was required with respect to the traffic impact assessment only, further consultation was not deemed necessary as no actual modification(s) to the development were made; therefore, all previous consultation submissions, advice and recommended conditions detailed in the previous responsible authority report, dated 11th April 2016 (See **Attachment 1**), remain to be given full consideration and reflected in the alternative recommendation.

However, due to the technical nature of the traffic assessment reports and modelling, professional technical analysis and recommendations were sought from the City's Infrastructure services as well as a peer review of the reports and modelling performed by Cardno to evaluate the revised traffic impact assessment (**Attachment 5**).

Furthermore, in response to the City's recommended reason for refusal in relation to the proposed high proportion of Serviced Apartments (accounting for a majority of the non-residential plot ratio component) which are not expected to generate significant direct employment (when compared with other non-residential land uses); the applicant, through their own initiative, have commissioned AEC Group consultants to produce an Economic Impact Assessment (**Attachment 9**) for the proposed development. The assessment has a primary focus on direct and indirect benefit associated with the construction and operation of the development, with particular regard to the Serviced Apartment component, as discussed below.

Public Consultation:

Those of the public that were initially consulted and made formal submissions on this application (detailed within **Attachment 1**) were provided access to the revised traffic impact assessment, peer review (Cardno) reports/memorandums and applicant

commissioned economic impact assessment report (AEC Group) for information purposes.

Notwithstanding, due to the technical nature of the information/reports and the fact no modification to the proposal occurred as part of the deferral process, formal submissions were not invited ahead of the meeting resuming but the public were provided all relevant information and the chance for further deputation at the meeting, if desired. All previous comments on the proposed application are still current and remain to be given full consideration as the building design and characteristics remain unaltered as a result of the deferral process.

Cardno (External) – Peer Review of TIA and Micro Modelling Technical Memorandums:

Cardno assisted the City by providing an independent, peer evaluation of the revised traffic impact assessment report in terms of the accuracy and relevance of the traffic data and information utilised within the report (Version 5 – dated 29 June 2016 – **Attachment 5**). While improvements were noted from the initial assessment, Table 1 of Cardno's peer review within **Attachment 8** identifies and summarises the key findings identified as part of the review undertaken against the outstanding issues as well as checking that the previously agreed details have not varied from the previous version of the applicant's traffic impact assessment.

Furthermore, Cardno assisted to utilise and update the existing 2021 Station Precinct micro-simulation model to evaluate intersection delay at the intersection of Mill Point Road / Labouchere Road and Mill Point Road / Mends Street as a result of the proposed development at 74 Mill Point Road. The modelling allowed for Trip Generation of the site to be discounted in two differing scenarios, one at 25% considered appropriate by the City (**Attachment 6**) and the other 50%, suggested appropriate by the applicant as a transit orientated development (**Attachment 7**). In both situations Cardno arrived at similar conclusions and recommendations, detailed as follows:

"The impact of the proposed 74 Mill Point Road development was primarily found to be at the intersection Labouchere Road and to a lesser extent at the intersection of Mill Point Road / Mends Street.

Due to the cumulative traffic impacts by the proposed developments in the 2021 Scenarios on the key intersections within the study area and the constrained nature of the area, it is not considered feasible to adequately increase the capacity of the key intersections within the study area. It is instead recommended that the development of an area-wide Development Contribution Plan (DCP) be undertaken to include funding for the following (but not limited to) potential items:

- Promotion of alternate transport modes and provision of additional pedestrian and cycling infrastructure;
- Increase frequencies of key public transport services within the study area (including ferries);
- Undertake a parking study to ensure appropriate (reduced) parking requirements are promoted for the area; and
- Undertake area-wide transport study to maximise connectivity and safety for local residents and visitors to pass through and walk/cycle around the Precinct".

The conclusions and recommendations from Cardno's peer review have helped determine recommended conditions of approval (should the application be approved) as are contained within the alternative recommendation of this report. The conclusions also form the basis for the updated recommended reason for refusal (4) stipulated by the City's Infrastructure Services Department, as discussed in the following section.

Infrastructure Services (Internal):

Infrastructure services assisted the applicant in providing technical information and traffic data that was subsequently used in the traffic impact assessment and traffic modelling scenarios administered by Cardno. Infrastructure Services comment and advice on the traffic report and modelling scenarios is largely consistent and derivative from Cardno's comprehensive analysis, as follows:

It should be noted that the "2021 No Development Scenario" at Mill Point Road results in the morning peak having upwards of 10 vehicles queuing at a time in Mill Point Road North and 9 vehicles at a time in Mends Street. Applying the approved developments plus the "25% Discounted Traffic Generation Rates for #74 Mill Point Road" the queue lengths in 2021 will be upwards of 20 vehicles in Mill Point Road and in excess of 27 vehicles in Mends Street (at 27 vehicles the queue extends beyond the South Perth Esplanade). The queue lengths for the evening peak in all cases exceed the morning peak.

The following is an extract from the Cardno Modelling Results – "The increase in traffic volumes within the study area due to the proposed developments (particularly to the north of Mill Point Road) were found to have a substantial impact on intersection queues and delays on the southbound intersection approaches due to the limited opportunities for these vehicles to get to the Kwinana Freeway. Particularly Mends Street (north of Mill Point Road) is severely impacted, with queues regularly extending to South Perth Esplanade". It is for this reason (the inability of the network to cater for development of this scale) that it has been put forward as one of the reasons for refusal of the development.

The Cardno Peer Review of the revised Traffic Impact Assessment from ShawMac continues to identify certain unresolved issues, however there appears to be little likelihood of a consensus being reached on those aspects and in particular to the discount rate applied to trip generation.

Given the above, Infrastructure Services have modified the traffic related recommended reason for refusal to more specifically refer to the assessment and traffic modelling completed for the development (see recommended refusal reason 4). Should the DAP seek to approve the development Infrastructure Services have also recommended conditions 4 & 5 of the attached alternative recommendation which reflect Cardno's recommendation for the developer to contribute to an *area-wide Development Contribution Plan (DCP)* to fund road network upgrades and promotion of alternative transport methods.

It should also be noted, as mentioned in the above comments, consensus was not reached in some cases between the working parties upon some figures and data inputs within the traffic modelling and assessment. Once the peer review and modelling results were provided to the applicants, there were some technical queries put to Cardno on some of these inputs and results. These queries and Cardno's

responses have been summarised within **Attachment 10** of this report. However, it is Infrastructure Services advice that the responses are appropriately justified and this should not alter the City's recommendations.

AEC Group (External) – Economic Impact Assessment of Proposed Development

In the case of any proposed development exceeding the 25-metre 'basic' height limit, TPS6 Development Requirement 13.1 in Table A of Schedule 9 requires, in part, that the development must be consistent with the Guidance Statements applicable to Element 3. Guidance Statement (a) in Element 3 reads as follows:

> *(a) With the exception of the South Perth Esplanade and Stone-Melville Sub-Precincts, any comprehensive new development should consist of predominantly non-residential uses to ensure the precinct consolidates its role as an employment destination.*

Having regard to these provisions, the proposed development can only be approved if the decision-maker is satisfied that the development makes a sufficient contribution towards ensuring that the precinct consolidates its role as an employment destination. The objective is for the development to make a significant contribution towards employees in the building using public transport (bus, ferry and the proposed train station) for journeys to and from work.

In response to the previously recommended reason for refusal relating to inadequate employment generation, the applicant has submitted the attached economic impact assessment report (**Attachment 9**). However after considering the information in the economic report, it is evident that the proposed development, in particular the serviced apartment component, which provides a vast proportion of the non-residential plot ratio, will only make a minimal contribution to employment in the Precinct, and that it will not be consistent with Guidance Statement (a) in Element 3 set out above.

Although *Serviced Apartments* are identified as a *preferred* non-residential land use for the precinct and are supported, they employ the least number of people per unit of plot ratio area. The following statistics relate to the proposed number of serviced apartments (147) and the associated plot ratio area of the use, as a proportion of the developments non-residential component:

Non-Residential Uses - Plot Ratio Proportions:

- **Total Non-Res Plot Ratio:** **5.82 (10,501m^2)**
- *Serviced Apartments*: 5.65 (10,206m^2) or 97.19% proportionally
- *Café/Restaurant*: 0.163 (295m^2) or 2.8% proportionally
- *Community Meeting Room*: 0.038 (69m^2) or 0.65% proportionally

The proportion and plot ratio of serviced apartments, in the opinion of the City, is greatly excessive when considering performance against Guidance Statement 3(a) of Table A within Schedule 9. In terms of employment generation, using the figures from the economic impact report (**Attachment 9**) the ground floor café use is expected to generate 10 full time employment positions based on the plot ratio area of only 295m^2. Comparatively, the serviced apartment component, with a plot ratio area of 10,206m^2 (34.6 times that of the café) is expected to generate only 45 direct 'full time equivalent' employment positions (see section 3.2.2 of **Attachment 9**). The figure of

45 FTE employment positions for the Serviced Apartments has not been substantiated in the economic report. No details are provided regarding the number of employees allocated to specific job types (e.g administrative or cleaning) within the serviced apartments. Based on the preceding plot ratio comparison, the overall employment figures, in the opinion of the City, demonstrate the under-performance of Serviced Apartments in terms of direct employment generation.

While Serviced Apartments are designated as a preferred land use, before supporting the proposed land use mix, the decision-maker must also consider the performance of land uses in terms of satisfying the guidance statements of Table A in Schedule 9, particularly with the scale of height and plot ratio variations being sought by this development. It is the City's opinion, that the current non-residential plot ratio proportion and land use mix will significantly under-perform in terms of direct employment benefit and that a reduction in the proportion of serviced apartments, in favour of other preferred non-residential land uses, such as *Office*, which are known to generate much higher levels of direct employment, would improve the development's performance in terms of employment.

By virtue of the applicant's excessive reliance on serviced apartments and limited provision of high employment-generating land uses in the development, City officers are of the opinion that the proposed development fails to satisfy the Element 3 Guidance Statement (a).

Planning Assessment:

The deferral process and associated further traffic and economic information that has been provided for the development, have not resulted in any modification to the proposed building design or development features. Therefore, the proposed plans (**Attachments 3 & 4**) remain unaltered from the latest revisions (16th March 2016) and all relevant Schedule 9 development controls remain as previously assessed and discussed in the previous responsible authority report for this development (contained within **Attachment 1**).

All previous advice and recommendations based on the assessment of the proposals compliance with schedule 9 development controls are upheld in full as per the City's recommendation and alternative recommendation.

Note: In June 2016 Council adopted amendments to City Policy P312 'Serviced Apartments', namely Clause (d) which provides:

"In the Special Design Area of Special Control Area 1 any change of use in the premises referred to in (d) above, where discretion was used to approve additional height and plot ratio on the basis that the building was predominantly non-residential, the serviced apartment use can be replaced only by another non-residential land use".

However, assurances in this regard were already provided as part of the alternative motion recommended condition (30), should the DAP approve the development.

Conclusion:

As a result of the deferral process, comprehensive revised traffic assessment and modelling has been prepared, submitted and reviewed internally and externally peer

reviewed (Cardo). The subsequent conclusions and recommendations demonstrate an inability of the road networks to support a development of this scale in this location. As such, the additional traffic and on-street parking demand resulting from the additional floor space produced by the variation of Elements 3 (plot ratio) and 5 (height) is seen to cause an unacceptable impact on the surrounding street network. Therefore, the reasons for refusal in relation to traffic are upheld as per the City's recommendation above.

See City's Alternative Recommendation on Following Page

Alternative Recommendation

Form 1 - Responsible Authority Report
(Regulation 17)

Property Location:	Lots 2-20 (No. 74) Mill Point Road, South Perth
Application Details:	Proposed Mixed Development within a 44 Storey Building, plus 3 basement levels
DAP Name:	Metro Central JDAP
Applicant:	Hillam Architects
Owner:	Edge Holdings Pty
LG Reference:	MI3/74 – 11.2016.2
Responsible Authority:	City of South Perth
Reporting Officer:	Erik Dybdahl, Acting Senior Planning Officer, City of South Perth
Authorising Officer:	Vicki Lummer, Director Development and Community Services, City of South Perth
Department of Planning File No:	DAP/16/00974
Report Date:	7 July 2016
Application Receipt Date:	30 December 2015
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Attachment(s):	1. Agenda - JDAP Meeting 28th April 2016 (Item 8.1) – 74 Mill Point Road, South Perth 2. Minutes – JDAP Meeting 28th April 2016 (Item 8.1) – 74 Mill Point Road, South Perth 3. Proposed Floor Plans - A2-01 through A2-17 (Latest Revisions 16th March 2016). 4. Proposed Elevation Plans: A3-01 through A3-04 (Latest Revisions 16th March 2016). 5. Traffic Impact Assessment Report (Shawmac) – Version 5 – Dated 29th June 2016) 6. Cardno Micro Simulation Modelling Technical Memorandum (25% Discount Generation) – Dated 29th June 2016 7. Cardno Micro Simulation Modelling Technical Memorandum (50% Discount Generation) – Dated 29th June 2016 8. Cardno Peer Review of Shawmac Traffic Impact Assessment (Version 5) – Dated 30th June 2016 9. Economic Impact Assessment (AEC

	Group) - Proposed 44 Storey Mixed Development - Dated 17th June 10. Shawmac Technical Queries on Model and Cardno Responses – Dated 5th July 2016

Alternative Recommendation:

That the Metro Central JDAP resolves to:

Approve DAP Application reference DAP/16/00974 and associated development floor plans, A2-01 through A2-17 (latest revisions 16th March 2016) and elevation plans, A3-01 through A3-04 (latest revisions 16th March 2016), in accordance with Clause 7.9 of the City of South Perth Town Planning Scheme No. 6 and Schedule 2 Part 9 of the Planning and Development (Local Planning Schemes) Regulations 2015, subject to the following conditions and advice notes as follows:

Conditions:

(1) Provision shall be made in the design of the floor and walls of the building for adequate protection against subsoil water seepage, and **prior to the lodging of building permit**, the applicant shall:
   (i) provide the City with certification from a consulting engineer that adequate water-proofing has been achieved; and
   (ii) satisfy the City that the proposed levels are acceptable, having regard to the 100 year flood levels applicable to the lot;
   as required by Clause 6.9(3) of Town Planning Scheme No. 6. (refer also, Advice Note 2)

(2) The applicant is to provide a detailed **car parking management plan** addressing all general parking considerations. This plan is to be submitted for approval prior to the lodgement of a building permit.

(3) A **Construction Management Plan** shall be submitted and approved by the City prior to submission of Building Permit. The management plan shall include but not limited to dilapidation survey report of adjoining buildings, protection of public & adjoining buildings and traffic management, noise & vibration from demolition and construction activities, dust from demolition & construction works, stormwater runoff, removal of hazardous materials, waste water and construction traffic.

(4) The Applicant is to pay to the City an amount equal to 0.5% of the building cost towards developing an area wide Development Contribution Plan that will include (but not limited to) funding for the following:

- Promotion of alternate transport modes and provision of additional pedestrian and cycling infrastructure;
- Increase frequencies of key public transport services within the study area (including ferries);
- Undertake a parking study to ensure appropriate (reduced) parking requirements are promoted for the area;
- Undertake area-wide transport study to maximise connectivity and safety for local residents and visitors to pass through and walk/cycle around the Precinct; and

- Capital Improvements. (see advice note 3)

(5) All vehicle access to the site will be from Mill Point Road. Under no circumstance will there be direct access to Frasers Lane.

(6) In accordance with the requirements of clause 6.14 of Town Planning Scheme No. 6, no person shall occupy or use the land or any building the subject of this approval for the purpose for which this approval is given unless and until:

(i) City Environment department have approved a landscaping plan; and
(ii) The landscaping has been completed in accordance with the plan approved by the City Environment Department.

The landscaping shall be maintained in good order and condition in perpetuity. (Refer Advice Note 13)

(7) City Environment Services require a **detailed landscaping plan** to be prepared for the Ground floor as well as the 4th & 23rd level amenity areas.

(8) No street trees shall be removed, pruned or disturbed in any way without prior approval from City Environment Services. Furthermore, City Environment Services require a Significant Tree Protection Bond for each of the following tree ID numbers: 9939 ($164,229.12), 10027 ($172,440.58) and 10025 ($114,960.38) **totalling a combined bond of $451,630.08 for the City assets**. (Refer Advice Note 13)

(9) To protect the significant trees of the street, a Tree Protection Zone (TPZ) needs to be ascertained. An assessment by a qualified Arborist, agreed to by the City, is required to be undertaken by the applicant in order to record current tree details and health and to determine the required TPZ and tree management plan, and to provide advice regarding the canopy, prior to lodging a building permit application. (Refer Advice Note 6)

(10) **Revised Plans** are required to provide end of trip facilities for cyclists for the use of cafe staff and the community meeting room. The design and location of those facilities shall be to the satisfaction of the City and the facilities shall be provided at the following ratios:

(i) Minimum Number of secure clothes lockers – 10: and
(ii) Minimum Number of showers - 1 male shower required and 1 female shower in separate change rooms,

In accordance with the requirements of clause 6.4 (5) of Town Planning Scheme No. 6.

Furthermore, the level 4 communal amenity areas for the serviced apartments shall be provided toilet facilities for guests, **Revised Plans** required.

(11) Prior to the occupation of the approved development, a public art concept for the subject development, or elsewhere in the City, with a minimum value of $900,000 (1% of the development cost), shall be submitted to the City. The approved public art concept shall be implemented to the satisfaction of the City prior to the occupation of the building (Refer Advice Note 6).

(12) In accordance with written correspondence from the Department of Parks and Wildlife (DPAW), dated 17th March 2016, the following conditions are to be satisfied by the applicant:

(i) At least thirty (30) days prior to submitting the application for a building permit, the applicant shall provide details of the engineering/construction methods which will be used to the reduce the volumes of dewatering effluent, and reduce groundwater draw down impact zone radius, the satisfaction of the City of South Perth on the advice of DPAW;

(ii) At least thirty (30) days prior to submitting the application for a building permit, the applicant shall prepare a dewatering management plans to the satisfaction of the City of South Perth on the advice of DPAW, and implement (see also Advice Note 7);

(iii) At least thirty (30) days prior to submitting the application for a building permit, the applicant shall prepare plans showing how groundwater will be managed post-development to the satisfaction of the City of South Perth on the advice of the DPAW, and implement (see also Advice Note 8); and

(iv) At least thirty (30) days prior to submitting for a building permit, the applicant shall prepare a stormwater management plan to the satisfaction of the City of South Perth on the advice of DPAW, and implement (see also Advice Note 9).

(13) The comprehensive new development shall incorporate illumination in accordance with the following Australian Standards:

(a) AS 1680 regarding safe movement;

(b) AS 1158 regarding lighting of roads and public spaces; and

(c) AS 4282 Control of obtrusive effects of outdoor lighting.

(14) Waste management shall occur in accordance with the Waste Management Plan prepared by Talis for the development (latest revision March 2016) and endorsed by the City.

(15) To meet the intent of Clause 6.4.6 of the R-Codes, external fixtures such as air conditioning infrastructure, shall be integrated into the design of the building to not be visually obtrusive when viewed from the street and to protect the visual amenity of residents in neighbouring properties.

(16) The applicant shall construct a crossover between the road and the property boundary. The crossover shall be constructed in accordance with the approved drawings, associated conditions and the requirements contained within Management Practice M353, which is available at the City's website. The existing verge levels at the front property boundary shall not be altered. (Refer also to Important Note 5)

(17) The car parking bays shall be marked on site as indicated on the approved site plan, in order to comply with the requirements of clause 6.3(10)(c) of Town Planning Scheme No. 6 and such marking shall be subsequently maintained so that the delineation of parking bays remains clearly visible at all times.

(18) Hard standing areas approved for the purpose of car parking or vehicle access shall be maintained in good condition at all times, free of potholes and dust and shall be adequately drained in accordance with the requirements of Clause 6.3 (10) of *Town Planning Scheme No. 6*.

(19) The surface of the boundary wall(s) visible from the street shall be finished to be compatible with the external walls of the building to a high quality standard on the development site. Details in this respect are to be included on the plans submitted with a building permit application.

(20) The surface of the boundary wall(s) not visible from the street, on the eastern side of the lot, the applicant is to obtain the adjoining owner's agreement as to the surface finish of the wall. If the adjoining owner's agreement is not obtained, the surface finish is to be compatible with the external walls of the neighbour's dwelling to the satisfaction of the City. Details in this respect are to be included on the plans submitted with a building permit application

(21) Any required filling or excavation of the site shall be retained by embankments or walls, details of which are to be incorporated in the working drawings submitted in support of a building permit application.

(22) Any required retaining walls along lot boundaries shall be constructed immediately after excavation or filling has been carried out.

(23) External clothes drying facilities shall be screened from view from the street or any other public place.

(24) In accordance with the provisions of Clause 6.8(2) of *Town Planning Scheme No. 6*, all subsoil water and stormwater from the property shall be discharged into soak wells or sumps located on the site unless special arrangements can be made to the satisfaction of the City for discharge into the street drainage system. (Refer Advice Note 2)

(25) All plumbing fittings on external walls shall be concealed from external view as required by Clause 7.5(k) of Town Planning Scheme No. 6.

(26) Prior to the submission of a building permit, the applicant is to submit documentation from the Green Building Council of Australia certifying that the development achieves a Green Star rating of at least 4 Stars or alternatively, documentation provided from another rating tool/system that achieves equivalent or greater performance standards than required by Green Star, shall be submitted to the City. All sustainable design features proposed in the development shall be implemented.

(27) The property shall not be used for the approval hereby granted until an inspection has been carried out by a City Officer and the City is satisfied that the conditions of planning approval have been complied with.

(28) Prior to the application of a Building Permit suitable arrangements with the City of South Perth being made to ensure the legal rights granted by the easement on the titles to the subject land are either maintained or varied as appropriate to give effect to these rights.

(29) Any planning approval granted for serviced apartments will be conditional upon the applicant registering on the Certificate of Title for the lot, a notification informing prospective purchasers that serviced apartments are not permitted to be occupied by the same temporary tenant for more than 6 months within any 12 month period.

The City will not issue a building permit for proposed serviced apartments until such time as the applicants, at their cost, have registered the required notification on the Certificate of Title relating to the occupancy restriction.

If the owner wishes to extend the period of occupancy it is it the owner's responsibility to obtain approval from the City for a change of use of the premises.

(30) Once a formal Serviced Apartment operator has been appointed for the development, a revised and comprehensive Serviced Apartment management plan will be required to be developed and provided to the City for approval and be distributed to nearby landowners and occupiers for information purposes.

(31) The validity of this approval shall cease if construction is not substantially commenced within 24 months of the date of planning approval.

Advice Notes

(1) Prior to the issuing of a building permit, the applicant is required to satisfactorily address the outstanding planning matters identified in Condition Nos **1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 26 & 28**. Therefore, to avoid delay in obtaining a building permit, it is important for the Applicant to commence the related processes at the earliest.

(2) The applicant is advised of the need to comply with any relevant requirements of the City's Engineering Infrastructure Department. The applicant is also required to liaise closely with Engineering Infrastructure in relation to the water discharge for the dewatering and waterproofing process.

(3) The applicant is advised that the City's Engineering Infrastructure Department acknowledges and is supportive of the Cardno conclusion contained in the Micro Simulation Modelling Results (25% Discounted Trip Generation Rates) for 74 Mill Point Road that states:

> *"Due to the cumulative traffic impacts by the proposed developments in the 2021 Full Development Scenario on the key intersections within the study area and the constrained nature of the area, it is not considered feasible to adequately increase the capacity of the key intersections within the study area. It is instead recommended that the development of an area-wide Development Contribution Plan (DCP) be undertaken to include funding for…"* a suite of activities listed in condition 4.

(4) The applicant is advised of the need to address and comply with any relevant requirements of the City's Environmental Health Services, as detailed in the memorandum, dated 13th January 2016, attached to this approval.

(5) Planning Approval or the subsequent issuing of a Building Permit by the City is not consent for the construction of a crossing. As described in Management Practice M353 a 'Crossing Application' form must be formally submitted to Infrastructure Services for approval prior to any works being undertaken within the road reserve.

(6) In relation to Condition 8, the City will be required to give final consent for the proposed public art, including any cash-in-lieu arrangement. The public art contribution must be in line with the guidelines as indicated in the City's Developer's Toolkit. Once the developer has sourced an artist, determined the design and artwork they are to lodge an 'Artwork Concept Application' form and supporting material to the City for assessment.

(7) The applicant is advised that the DPAW preferred method of construction to reduce the volume of dewatering effluent is the "bathtub method" i.e. secant piles or similar to create impervious walls and floor prior to excavation of the site.

(8) If site-specific investigations reveal that appropriate and technically feasible dewatering options are limited, consideration may need to be given to modifying the building design and the extent of the below-ground levels/infrastructure.

(9) The applicant is advised that DPAW is unlikely to support the connection of subsoil drains, if required, to the local government stormwater system and the river without the treatment prior to discharge.

(10) The stormwater management system should be designed in a manner that will enhance the environmental quality of the river through the use of water sensitive urban design. Stormwater runoff from constructed impervious surfaces generated by up to a 15mm rainfall depth for all rainfall events should be retained and/or detained on the lot.

(11) This planning approval does not permit the display of any signage on the building or on the site. A new application for planning approval will be required if signage is proposed to be displayed.

(12) Notification of commencement of works and required management plans can be emailed to rivers.planning@dpaw.wa.go.au.

(13) The applicant is advised of the need to liaise and comply with any relevant requirements of the City of South Perth City Environment Services.

(14) Where minor variations are sought at the building permit stage from an approved set of plans, a formal request for a variation to the planning approval is to be sought by the applicant, in accordance with Council policy P689.

If supported, the variations may be granted subject to all the previous terms and conditions, or possibly with new terms and conditions. If not supported, either the building plans must be amended for a building permit to be issued, or a new application for planning approval must be lodged for consideration by Council.

(15) If you are aggrieved by aspects of the decision **where discretion has been exercised,** you may investigate the ability to lodge an appeal with the State Administrative Tribunal within 28 days of the determination date recorded on this notice.

(16) Any dewatering at the site will require approval from the Department of Water through a water abstraction permit.

(17) The applicant/developer and the owners are to comply with the requirements set out in Council Policy P352 "Final Clearance Requirements for Completed Buildings". As detailed in the policy, the applicant is to engage a licensed land surveyor to undertake survey measurements and to submit progress reports and the final report to the City for approval. The City will only issue the final clearance letter when all relevant requirements have been met.

Disclaimer:
This Alternative Motion does not represent a change of the Officer recommendation in the Responsible Authority Report dated 7 July 2016.

This Alternative Motion has been prepared on the basis that the DAP considers:

1. The traffic impact assessment demonstrates the additional plot ratio and height variations will not result in a significant impact on the road network;

2. The plot ratio and land use mix is appropriate in considering the employment objectives of the sub-precinct; and

3. The building height is appropriate in light of potential maximum building height limits proposed by AMD 46.

Government of **Western Australia**
Development Assessment Panels

Meeting No.165
28 April 2016

Metro Central Joint Development Assessment Panel Minutes

Meeting Date and Time: 28 April 2016; 10:00am
Meeting Number: MCJDAP/165
Meeting Venue: City of South Perth
Cnr Sandgate Street and South Terrace
South Perth

Attendance

DAP Members

Mr Charles Johnson (Presiding Member)
Mr Christopher Antill (Deputy Presiding Member)
Mr Lou D'Alessandro (Specialist Member) – Item 8.1 (until 1:43pm)
Mr Peter Addison (Alternate Specialist Member) – Item 8.2
Cr Colin Cala (Local Government Member, City of South Perth)
Cr Sharron Hawkins-Zeeb (Local Government Member, City of South Perth)

Officers in attendance

Ms Vicki Lummer (City of South Perth)
Mr Erik Dybdahl (City of South Perth)
Mr Rajiv Kapur (City of South Perth)
Mr Stephen Ferguson (Department of Planning) – Item 8.2

Local Government Minute Secretary

Ms Sharron Kent (City of South Perth)

Applicants and Submitters

Item 8.1

Mr George Jones
Mr Greg Carter
Mr Mal Nairn
Mr Ric Hawley
Mr Mike Allen
Mr Craig Dermer
Ms Margot Blakely
Mr Phillip Courtney
Mr Harry Anstey (Anstey & Co)
Mr Richard Lewis
Mayor Sue Doherty (City of South Perth)

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

Mr Alan Stewart (APP Corporation Pty Ltd on behalf of TK & LB Pty Ltd)
Mr Paul Plowman- Edge Visionary Living
Mr David Hillam (Hillam Architects)
Mr Dan Lees- TPG
Mr Ed Wilks- Shawmac Consulting Civil & Traffic Engineers
Mr Paul McQueen (Lavan legal)

Item 8.2
Mr Frank Oliver
Ms Cecilia Brooke
Mr Paul Ruthven
Mayor Sue Doherty (City of South Perth)
Mr Ben Doyle (Planning Solutions)
Mr Daniel Guggisberg (McDonald Jones Architects)

Members of the Public

There were approximately 45 members of the public and 2 media in attendance.

1. Declaration of Opening

The Presiding Member declared the meeting open at 10:03am and acknowledged the past and present traditional owners and custodians of the land on which the meeting is being held.

2. Apologies

Cr Glenn Cridland (Local Government Member, City of South Perth)

3. Members on Leave of Absence

Nil

4. Noting of Minutes

The Minutes of Metro Central JDAP meeting no.164 held on 27 April 2016 were not available at time of Agenda preparation.

5. Declarations of Due Consideration

Nil

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

6. Disclosure of Interests

Member/Officer	Item	Nature of Interest
Mr Luigi D'Alessandro	8.2	Proximity Interest – Owner of a property directly across the street from the application.
Cr Colin Cala	8.1	Impartiality Interest- Participated in the prior Council decision in accordance with functions as a member of a local government.
Cr Sharron Hawkins-Zeeb	8.1	Impartiality Interest- Participated in the prior Council decision in accordance with functions as a member of a local government.

In accordance with section 6.3.1 of the Standing Orders 2012, the Presiding Member determined that the Mr Luigi D'Alessandro listed above, who had disclosed a Proximity Interest, was not permitted to participate in the discussion or voting on the items.

In accordance with section 4.6.1 and 4.6.2 of the Standing Orders 2012, the Presiding Member determined that the members listed above, who have disclosed an impartiality interest, are permitted to participate in discussion and voting on the items.

7. Deputations and Presentations

7.1 Mr George Jones addressed the DAP against the application at Item 8.1.

7.2 Mr Greg Carter addressed the DAP against the application at Item 8.1.

7.3 Mr Mal Nairn addressed the DAP against the application at Item 8.1.

7.4 Mr Ric Hawley addressed the DAP against the application at Item 8.1.

7.5 Mr Mike Allen addressed the DAP against the application at Item 8.1.

7.6 Mr Craig Dermer addressed the DAP against the application at Item 8.1.

7.7 Ms Margot Blakely addressed the DAP against the application at Item 8.1.

7.8 Mr Phillip Courtney addressed the DAP against the application at Item 8.1.

7.9 Mr Harry Anstey (Anstey & Co) addressed the DAP against the application at Item 8.1.

Mr Christopher Antill
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7.10 Mr Richard Lewis addressed the DAP against the application at Item 8.1.

7.11 Mayor Sue Doherty (City of South Perth) addressed the DAP against the application at Item 8.1.

7.12 Mr Alan Stewart (APP Corporation Pty Ltd on behalf of TK & LB Pty Ltd) addressed the DAP for the application at Item 8.1.

7.13 Mr Paul Plowman (Edge Visionary Living) addressed the DAP for the application at Item 8.1.

7.14 Mr David Hillam (Hillam Architects) addressed the DAP for the application at Item 8.1.

7.15 Mr Daniel Lees (TPG Town Planning, Urban Design & Heritage) addressed the DAP for the application at Item 8.1.

7.16 Mr Ed Wilks (Shawmac Consulting Civil & Traffic Engineers) addressed the DAP for the application at Item 8.1.

7.17 Mr Paul McQueen (Lavan legal) addressed the DAP for the application at Item 8.1.
The presentation at Item 7.1 – 7.17 was heard prior to the application at Item 8.1

7.18 Mr Frank Oliver addressed the DAP against the application at Item 8.2.

7.19 Ms Cecilia Brooke addressed the DAP against the application at Item 8.2.

7.20 Mr Paul Ruthven addressed the DAP against the application at Item 8.2.

7.21 Mayor Sue Doherty addressed the DAP against the application at Item 8.2.

7.22 Mr Wes Barrat and Mr Daniel Guggisberg (MJA Studios) addressed the DAP for the application at Item 8.2.

7.23 Mr Ben Doyle (Planning Solutions) addressed the DAP for the application at item 8.2.

The presentation at Item 7.18 – 7.23 was heard prior to the application at Item 8.2

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

The Presiding Member then called that the meeting be suspended for a comfort break at 12:17pm prior to consideration of Item 8.1. The meeting resumed at 12:22pm to consider Item 8.1 *(note: the break in proceedings was not formally suspended by way of vote).*

8. Form 1 - Responsible Authority Reports – DAP Applications

8.1

Property Location:	Lots 2 – 20 (74) Mill Point Road, South Perth
Application Details:	Proposed Mixed Development within a 44 Storey Building, plus 3 basement levels
Applicant:	Hillam Architects
Owner:	Edge Holdings Pty Ltd
Responsible authority:	City of South Perth
DoP File No:	DAP/16/00974

Responsible Authority Recommendation:

Moved: Cr Colin Cala **Seconded:** Cr Sharron Hawkins-Zeeb

That the Metro Central JDAP resolves to:

Refuse DAP Application reference DAP/16/00974 and associated development floor plans, A2-00-8 and A210-17 (latest revisions 16th March 2016) and elevation plans, A3-01 through A3-04 (latest revisions 16th March 2016), in accordance with Clause 7.9 of the City of South Perth Town Planning Scheme No. 6 and Schedule 2 Part 9 of the Planning and Development (Local Planning Schemes) Regulations 2015, for the following reasons:

Reasons for Refusal:

1. The submitted comprehensive Traffic Impact Assessment does not meet all the requirements of the WAPC *'checklist for transport assessment of a development'* and the City's *South Perth Station Precinct Traffic Impact Assessment Criteria*. Therefore Town Planning Scheme No.6 , Schedule 9, Table B performance criteria is not satisfied.

2. Due to the high proportion of serviced apartments in this application, the proposed mix of non-residential land uses is not considered to meet the guidance statement which requires the land uses to make a significant contribution towards consolidation of the precinct as an employment destination.

3. It is considered that the proposed height of the development at approximately 143 metres, if approved would significantly impair the effective achievement of the approach to height (proposed height limit of 25 metres) that is contained within proposed Town Planning Scheme amendment No.46.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

4. It is considered that the proposed zero street setback, if approved would significantly impair the effective achievement of the approach to street setbacks for Mill Point Road that is contained within proposed Town Planning Scheme amendment No.46

PROCEDURAL MOTION

Moved: Mr Christopher Antill **Seconded:** Mr Lou D'Alessandro

That the Metro Central JDAP defers consideration of the application for two (2) months (1 July 2016) to enable the applicant to review its Traffic Impact Statement, with the specific aim of adequately meeting the WAPC "checklist for transport assessment of a development", and the "South Perth Station Precinct Traffic Impact Assessment Criteria".

In this endeavour the City of South Perth is to work collaboratively with the applicant by providing available technical information to ensure all necessary criteria can be satisfactorily addressed by the applicant.

REASON: To provide the applicant with more time to address traffic management issues associated with the application. The application as presented has insufficient information to allow the Panel to properly determine this aspect.

The Procedural Motion was put and CARRIED (3/2)

For: Mr Charles Johnson
Mr Chris Antill
Mr Lou D'Alessandro
Against: Cr Sharron Hawkins-Zeeb
Cr Colin Cala

PROCEDURAL MOTION AND PANEL DECISION

Moved: Cr Sharron Hawkins-Zeeb **Seconded:** Mr Lou D'Alessandro

That the meeting be suspended for 15 minutes for the purpose of a comfort break.

The Procedural Motion was put and CARRIED UNANIMOUSLY.

The meeting was suspended at 1:43pm

Mr Luigi D'Alessandro left the panel at 1:43pm

PROCEDURAL MOTION AND PANEL DECISION

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

Moved: Mr Christopher Antill **Seconded:** Mr Peter Addison

That the meeting be resumed.

The Procedural Motion was put and CARRIED UNANIMOUSLY.

The meeting was resumed at 2:01pm

8.2	Property Location:	Lots 156, 157 & 158 (Nos. 26 & 28A) Charles Street, South Perth
	Application Details:	Mixed Development within a Nine-Storey Building
	Applicant:	McDonald Jones Architects
	Owner:	Charles Street Apartments Pty Ltd ATF Charles St Apartments Trust
	Responsible authority:	City of South Perth
	DoP File No:	DAP/15/00933

Responsible Authority Recommendation:

That the Metro Central JDAP resolves to:

Moved: Cr Colin Cala **Seconded:** Mr Peter Addison

Approve DAP Application reference DAP/15/00933 and accompanying plans 15030 DA1.00 Rev. E (Site Plan), 15030 DA1.01 Rev. D (Site Survey), 15030 DA1.02 Rev. D (Overshadowing Diagram), 15030 DA1.03 Rev. F (Ground Floor Plan), 15030 DA1.04 Rev. G (First Floor Plan Carpark), 15030 DA1.05 Rev. D (Second Floor Plan Commercial), 15030 DA1.06 Rev. D (Third Floor Plan Commercial), 15030 DA1.07 Rev. D (Fourth Floor Plan Commercial), 15030 DA1.08 Rev. D (Fifth Floor Plan Residential), 15030 DA1.09 Rev. D (Sixth Floor Plan Residential), 15030 DA1.10 Rev. D (Seventh Floor Plan Residential), 15030 DA1.11 Rev. D (Eighth Floor Plan Residential), 15030 DA1.12 Rev. C (Roof Plan), 15030 DA1.13 Rev. F (Design Section AA), DA1.14 Rev. C (Design Section BB), DA1.15 Rev. C (North Elevation Charles Street), DA1.16 Rev. C (East Elevation), DA1.17 Rev. C (South Elevation), DA1.18 Rev. C (West Elevation), in accordance with Clause 7.9 of the City of South Perth Town Planning Scheme No. 6 and Schedule 2 Part 9 of the Planning and Development (Local Planning Schemes) Regulations 2015, subject to the following conditions:

Conditions

1. Whilst the proposed building incorporates a podium with a nil setback to Charles Street, as required by Schedule 9 Table A Development Requirement clauses 6.1, 6.2 and 6.6.1, the plans are to be revised prior to lodging a Building Permit application, and such plans shall incorporate the following:

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

(a) All levels of the podium of the building at the western end of the development site between the western lot boundary and in line with the eastern side of the proposed crossover, adjacent to the street setback area of the existing Multiple Dwelling development at No. 24 Charles Street, shall be setback 4 metres from the street boundary; and

(b) The portion of the site at ground level in the street setback area, between the driveway and western lot boundary, shall be landscaped;

to have sufficient regard to the planning objectives and approach of the street setback provisions of proposed Schedule 9A, contained in Amendment No. 46 to Town Planning Scheme No. 6 (as endorsed by Council on 27 October 2015 for readvertising), as per Schedule 2 clause 67(b) of the Regulations, whilst maintaining the intent of the relevant Town Planning Scheme No. 6 Schedule 9 Table A Element 6 Guidance Statements, by having the remainder of the podium at a nil (or near nil) street setback.

The plans addressing the above revisions are to be prepared to the satisfaction of the City and incorporated into the building permit application.

2. The plans are to be revised prior to lodging a Building Permit application, and such plans shall incorporate the following:

(a) The finished floor level(s) of the building to be modified accordingly to provide at least 2.1 metres internal head height for each car bay contained within a mechanical parking device (car stacker), subject to compliance with the maximum podium and building height limit; and

in accordance with clause 8 of draft amended Policy P350.03 (as endorsed by Council on 22 March 2016 for advertising), as per Schedule 2 clause 67(b) of the Regulations.

The plans addressing the above revisions are to be prepared to the satisfaction of the City and incorporated into the building permit application.

3. At or prior to the submission of a building permit, Lots 156, 157 and 158 comprising the subject site shall be amalgamated on a compiled Diagram of Survey and application for a new Certificate of Title shall be lodged with the Land Titles Office. The building permit may not be issued until the new Certificate of Title is issued.

Alternatively, a legal agreement is to be prepared to ensure that these Lots cannot be sold or developed separately. The legal agreement is to be executed prior to the issue of a building permit to the satisfaction of the City of South Perth. The legal agreement is to be prepared at the owner's expense.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

4. At or prior to the submission of a building permit, a copy of documentation from the Green Building Council of Australia certifying that the development achieves a Green Star rating of at least 4 Stars or another rating tool that achieves equivalent or greater performance standards than required by Green Star, shall be submitted to the City. All sustainable design features proposed in the development shall be implemented.

5. At or prior to the submission of a building permit, a Waste Management Plan shall be prepared to the satisfaction of the City. The approved plan shall be implemented, unless otherwise approved by the City.

6. At or prior to the submission of a building permit, the owner is to provide to the City a detailed construction management plan. The management plan shall include details on noise, vehicle movements, dust suppression, traffic management, contractor parking, waste disposal, pedestrian safety, site security and any other construction management issues. The approved plan shall be implemented, unless otherwise approved by the City.

7. The proposed driveway gradient exceeds that which will normally be accepted by the City. The driveway gradient is acceptable if:

   (a) a letter is received from the property owner, at or prior to the submission of a building permit, which acknowledges responsibility for any access difficulties that may arise, without any future recourse to the City of South Perth; and

   (b) certification is received from a consulting traffic engineer or architect, at or prior to the submission of a building permit, confirming that the vehicle ramps comply with Australian Standard AS2890.

8. Prior to the construction of the approved development, a public art concept for the subject development, with a minimum value of $155,000, 1% of the cost of construction shall be submitted to the City. The approved public art concept shall be to the satisfaction of the City.

9. The approved public art concept or contribution shall be thereafter implemented and the artwork constructed prior to occupation of the development, and maintained for the life of the development to the satisfaction of the City.

10. For the surface of the boundary walls not visible from the street, on the southern, western and eastern sides of the lot, the applicant is to obtain the adjoining owner's agreement as to the surface finish of the wall. If the adjoining owner's agreement is not obtained, the surface finish is to be compatible with the external walls of the neighbour's main building, to the satisfaction of the City. Details in this respect are to be included on the plans submitted with a building permit application. (Refer also to the associated Advice Note)

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

11. Prior to demolition of the buildings on the development site, the applicant shall provide the City with a detailed electronic photographic record, for inclusion in the City's local heritage archive, of the following:

    (a) the exterior of the buildings, with emphasis on the street frontage and those parts of the building visible from the street;

    (b) any internal features of architectural or historic interest; and

    (c) contextual images of the buildings showing adjoining buildings in the same street.

12. Prior to the occupation of the building, a detailed landscaping plan shall be prepared to the satisfaction of the City. The approved plan shall be implemented and subsequently maintained to a high standard, unless otherwise approved by the City.

13. Prior to the occupation of the building, the owner is to provide to the City a detailed car parking management plan. The management plan shall include details on accessibility to and use of the non-residential occupier and residential parking bays, reciprocal parking arrangements, car stacker usage as well as other general parking considerations. The approved plan shall be implemented, unless otherwise approved by the City.

14. The designated visitor parking bays shall be clearly identified on site by means of a sign bearing the words "Visitors' Parking Only" in accordance with the requirements of clause 6.3(11) of Town Planning Scheme No. 6.

15. The car parking bays situated in car stackers shall be restricted to staff use and clearly identified on site by means of a sign bearing the words "Staff Parking Only".

16. The car stackers shall be able to accommodate vehicles up to 2,600kg and 2.1 metres in height at both the upper and lower levels.

17. A Section 70A notification shall be placed on the strata title of each affected lot to state that the car stacker in this development can accommodate vehicles up to 2,600kg and a maximum height of 2.1 metres.

18. The allocation of car bays on the site and the approved strata plan (if car bays are allocated to specific commercial tenancies and residential apartments) shall be:

    (a) One Bedroom Dwellings- At least 6 bays;

    (b) Two and Three Bedroom Dwellings- At least 20 bays;

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

(c)	Visitor Parking-	At least 9 bays; and
(d)	Non-Residential-	At least 56 bays (excluding bays for the exclusive use of visitors).

19. End of trip facilities for cyclists shall be provided for the use of staff. The design and location of those facilities shall be to the satisfaction of the City and the facilities shall be provided at the following ratios:

(a)	Number of secure clothes lockers-	At least thirteen; and
(b)	Number of showers-	As shown on the approved plans.

20. The approved land use of the commercial tenancies is Office. Any subsequent change to an approved land use requires the planning approval of the City.

21. The applicant shall construct crossovers between the road and the property boundary. The crossovers shall be constructed in accordance with the approved drawings, associated conditions and the requirements contained within Management Practice M353, which is available at the City's website. The existing verge levels at the front property boundary shall not be altered.

22. The height of any letterbox, electricity installation, bin enclosure, or other structure, fence, wall or hedge within 1.5 metres of any vehicle driveway where it meets a street alignment shall not exceed 0.75 metres, in accordance with clause 6.3(6) of Town Planning Scheme No. 6.

23. The existing crossovers shall be removed and the verge and kerbing shall be reinstated to the satisfaction of the City.

24. External clothes drying facilities shall be screened from view from the street or any other public place.

25. The development shall provide lighting to the City's satisfaction to pathways, communal areas and car parking areas.

26. Any required filling or excavation of the site shall be retained by embankments or walls, details of which are to be incorporated in the working drawings submitted in support of a building permit application.

27. Any required retaining walls along lot boundaries shall be constructed immediately after excavation or filling has been carried out.

28. Stormwater drainage shall be contained on site, or connected to the local stormwater drainage system, to the satisfaction of the City.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

29. The applicant/developer and the owners are to comply with the requirements set out in Council Policy P352 'Final Clearance Requirements for Completed Buildings'. Policy P352 requires the applicant to engage a licensed land surveyor, to undertake survey measurements on a floor-by-floor basis. The surveyor is to submit progressive reports to the City regarding compliance with the planning approval documents. The City will not issue final clearance certificates until satisfied that the completed building is consistent with the planning approval documents and the requirements of other relevant statutes.

30. The property shall not be used for the uses hereby granted until an inspection has been carried out by a Council Officer and the City is satisfied that the conditions of planning approval have been complied with.

31. The validity of this approval shall cease if construction is not substantially commenced within 24 months of the date of planning approval.

AMENDING MOTION

Moved: Cr Colin Cala **Seconded:** Cr Sharron Hawkins-Zeeb

That conditions 1 (a) and 1 (b) be amended as follows:

1. Whilst the proposed building incorporates a podium with a nil setback to Charles Street, as required by Schedule 9 Table A Development Requirement clauses 6.1, 6.2 and 6.6.1, the plans are to be revised prior to lodging a Building Permit application, and such plans shall incorporate the following:

   (a) All levels of the podium of the building at its western end, from the subject site's western boundary and for the full width of the ground floor carpark (equivalent to approx. 50% of the site frontage), shall be set back 4 metres from the street boundary, and

   (b) The portion of the site at ground level within the street setback area described above at 1 (a), shall be landscaped;

Reason: To provide an additional building setback in order to better safeguard the amenity of the adjoining residential property.

The Amending Motion was put and CARRIED UNANIMOUSLY.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

AMENDING MOTION

Moved: Mr Peter Addison **Seconded:** Mr Christopher Antill

That a new condition 32. be added as follows in:

32. The applicant is to prepare a revised design for the podium walls on the east and west aspects, in order to improve the visual appearance by incorporating different structural elements including the articulation of the walls in consultation with the neighbours, to the satisfaction of the City.

Reason: To improve the visual appearance of the east and west aspects of the podium to the neighbours.

The Amending Motion was put and CARRIED UNANIMOUSLY.

AMENDING MOTION

Moved: Mr Peter Addison **Seconded:** Cr Sharron Hawkins-Zeeb

That conditions 16 and 17 be amended as follows:

16. The car stackers shall be able to accommodate vehicles up to 2,600kg and 1.9 metres in height at both the upper and lower levels.

17. A Section 70A notification shall be placed on the strata title of each affected lot to state the car stackers in this development can accommodate vehicles up to 2,600kg and a maximum of 1.9 metres in height.

Reason: To more accurately reflect the capacity of the proposed car stackers.

The Amending Motion was put and CARRIED UNANIMOUSLY.

AMENDING MOTION

Moved: Cr Sharron Hawkins-Zeeb **Seconded:** Nil

That a new condition 33. be added as follows:

33. The applicant is to submit a redesign of the development to allow for setbacks to the east and west side of the property of 2m for the full length of the development, to the satisfaction of the City

MOTION LAPSED FOR WANT OF A SECONDER.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

AMENDING MOTION

Moved: Mr Charles Johnson **Seconded:** Mr Christopher Antill

That condition 2(a) be amended as follows in red:

2. The plans are to be revised prior to lodging a Building Permit application, and such plans shall incorporate the following:

   (a) The finished floor level(s) of the building to be modified accordingly to provide at least ~~2.1~~ 1.9 metres internal head height for each car bay contained within a mechanical parking device (car stacker), subject to compliance with the maximum podium and building height limit; and

   in accordance with clause 8 of draft amended Policy P350.03 (as endorsed by Council on 22 March 2016 for advertising), as per Schedule 2 clause 67(b) of the Regulations.

   The plans addressing the above revisions are to be prepared to the satisfaction of the City and incorporated into the building permit application.

Reason: To be consistent with the amendments to conditions 16 and 17.

The Amending Motion was put and CARRIED UNANIMOUSLY.

PRIMARY MOTION

That the Metro Central JDAP resolves to:

Approve DAP Application reference DAP/15/00933 and accompanying plans 15030 DA1.00 Rev. E (Site Plan), 15030 DA1.01 Rev. D (Site Survey), 15030 DA1.02 Rev. D (Overshadowing Diagram), 15030 DA1.03 Rev. F (Ground Floor Plan), 15030 DA1.04 Rev. G (First Floor Plan Carpark), 15030 DA1.05 Rev. D (Second Floor Plan Commercial), 15030 DA1.06 Rev. D (Third Floor Plan Commercial), 15030 DA1.07 Rev. D (Fourth Floor Plan Commercial), 15030 DA1.08 Rev. D (Fifth Floor Plan Residential), 15030 DA1.09 Rev. D (Sixth Floor Plan Residential), 15030 DA1.10 Rev. D (Seventh Floor Plan Residential), 15030 DA1.11 Rev. D (Eighth Floor Plan Residential), 15030 DA1.12 Rev. C (Roof Plan), 15030 DA1.13 Rev. F (Design Section AA), DA1.14 Rev. C (Design Section BB), DA1.15 Rev. C (North Elevation Charles Street), DA1.16 Rev. C (East Elevation), DA1.17 Rev. C (South Elevation), DA1.18 Rev. C (West Elevation), in accordance with Clause 7.9 of the City of South Perth Town Planning Scheme No. 6 and Schedule 2 Part 9 of the Planning and Development (Local Planning Schemes) Regulations 2015, subject to the following conditions:

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

Conditions

1. Whilst the proposed building incorporates a podium with a nil setback to Charles Street, as required by Schedule 9 Table A Development Requirement clauses 6.1, 6.2 and 6.6.1, the plans are to be revised prior to lodging a Building Permit application, and such plans shall incorporate the following:

   (a) All levels of the podium of the building at its western end, from the subject site's western boundary and for the full width of the ground floor carpark (equivalent to approx. 50% of the site frontage), shall be set back 4 metres from the street boundary, and

   (b) The portion of the site at ground level within the street setback area described above at 1 (a), shall be landscaped;

   to have sufficient regard to the planning objectives and approach of the street setback provisions of proposed Schedule 9A, contained in Amendment No. 46 to Town Planning Scheme No. 6 (as endorsed by Council on 27 October 2015 for readvertising), as per Schedule 2 clause 67(b) of the Regulations, whilst maintaining the intent of the relevant Town Planning Scheme No. 6 Schedule 9 Table A Element 6 Guidance Statements, by having the remainder of the podium at a nil (or near nil) street setback.

   The plans addressing the above revisions are to be prepared to the satisfaction of the City and incorporated into the building permit application.

2. The plans are to be revised prior to lodging a Building Permit application, and such plans shall incorporate the following:

   (a) The finished floor level(s) of the building to be modified accordingly to provide at least 1.9 metres internal head height for each car bay contained within a mechanical parking device (car stacker), subject to compliance with the maximum podium and building height limit; and

   in accordance with clause 8 of draft amended Policy P350.03 (as endorsed by Council on 22 March 2016 for advertising), as per Schedule 2 clause 67(b) of the Regulations.

   The plans addressing the above revisions are to be prepared to the satisfaction of the City and incorporated into the building permit application.

3. At or prior to the submission of a building permit, Lots 156, 157 and 158 comprising the subject site shall be amalgamated on a compiled Diagram of Survey and application for a new Certificate of Title shall be lodged with the

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

Land Titles Office. The building permit may not be issued until the new Certificate of Title is issued.

Alternatively, a legal agreement is to be prepared to ensure that these Lots cannot be sold or developed separately. The legal agreement is to be executed prior to the issue of a building permit to the satisfaction of the City of South Perth. The legal agreement is to be prepared at the owner's expense.

4. At or prior to the submission of a building permit, a copy of documentation from the Green Building Council of Australia certifying that the development achieves a Green Star rating of at least 4 Stars or another rating tool that achieves equivalent or greater performance standards than required by Green Star, shall be submitted to the City. All sustainable design features proposed in the development shall be implemented.

5. At or prior to the submission of a building permit, a Waste Management Plan shall be prepared to the satisfaction of the City. The approved plan shall be implemented, unless otherwise approved by the City.

6. At or prior to the submission of a building permit, the owner is to provide to the City a detailed construction management plan. The management plan shall include details on noise, vehicle movements, dust suppression, traffic management, contractor parking, waste disposal, pedestrian safety, site security and any other construction management issues. The approved plan shall be implemented, unless otherwise approved by the City.

7. The proposed driveway gradient exceeds that which will normally be accepted by the City. The driveway gradient is acceptable if:

   (a) a letter is received from the property owner, at or prior to the submission of a building permit, which acknowledges responsibility for any access difficulties that may arise, without any future recourse to the City of South Perth; and

   (b) certification is received from a consulting traffic engineer or architect, at or prior to the submission of a building permit, confirming that the vehicle ramps comply with Australian Standard AS2890.

8. Prior to the construction of the approved development, a public art concept for the subject development, with a minimum value of $155,000, 1% of the cost of construction shall be submitted to the City. The approved public art concept shall be to the satisfaction of the City.

9. The approved public art concept or contribution shall be thereafter implemented and the artwork constructed prior to occupation of the development, and maintained for the life of the development to the satisfaction of the City.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

10. For the surface of the boundary walls not visible from the street, on the southern, western and eastern sides of the lot, the applicant is to obtain the adjoining owner's agreement as to the surface finish of the wall. If the adjoining owner's agreement is not obtained, the surface finish is to be compatible with the external walls of the neighbour's main building, to the satisfaction of the City. Details in this respect are to be included on the plans submitted with a building permit application. (Refer also to the associated Advice Note)

11. Prior to demolition of the buildings on the development site, the applicant shall provide the City with a detailed electronic photographic record, for inclusion in the City's local heritage archive, of the following:

    (a) the exterior of the buildings, with emphasis on the street frontage and those parts of the building visible from the street;

    (b) any internal features of architectural or historic interest; and

    (c) contextual images of the buildings showing adjoining buildings in the same street.

12. Prior to the occupation of the building, a detailed landscaping plan shall be prepared to the satisfaction of the City. The approved plan shall be implemented and subsequently maintained to a high standard, unless otherwise approved by the City.

13. Prior to the occupation of the building, the owner is to provide to the City a detailed car parking management plan. The management plan shall include details on accessibility to and use of the non-residential occupier and residential parking bays, reciprocal parking arrangements, car stacker usage as well as other general parking considerations. The approved plan shall be implemented, unless otherwise approved by the City.

14. The designated visitor parking bays shall be clearly identified on site by means of a sign bearing the words "Visitors' Parking Only" in accordance with the requirements of clause 6.3(11) of Town Planning Scheme No. 6.

15. The car parking bays situated in car stackers shall be restricted to staff use and clearly identified on site by means of a sign bearing the words "Staff Parking Only".

16. The car stackers shall be able to accommodate vehicles up to 2,600kg and 1.9 metres in height at both the upper and lower levels.

17. A Section 70A notification shall be placed on the strata title of each affected lot to state the car stackers in this development can accommodate vehicles up to 2,600kg and a maximum of 1.9 metres in height

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

18. The allocation of car bays on the site and the approved strata plan (if car bays are allocated to specific commercial tenancies and residential apartments) shall be:

(a)	One Bedroom Dwellings-	At least 6 bays;
(b)	Two and Three Bedroom Dwellings-	At least 20 bays;
(c)	Visitor Parking-	At least 9 bays; and
(d)	Non-Residential-	At least 56 bays (excluding bays for the exclusive use of visitors).

19. End of trip facilities for cyclists shall be provided for the use of staff. The design and location of those facilities shall be to the satisfaction of the City and the facilities shall be provided at the following ratios:

(a)	Number of secure clothes lockers-	At least thirteen; and
(b)	Number of showers-	As shown on the approved plans.

20. The approved land use of the commercial tenancies is Office. Any subsequent change to an approved land use requires the planning approval of the City.

21. The applicant shall construct crossovers between the road and the property boundary. The crossovers shall be constructed in accordance with the approved drawings, associated conditions and the requirements contained within Management Practice M353, which is available at the City's website. The existing verge levels at the front property boundary shall not be altered.

22. The height of any letterbox, electricity installation, bin enclosure, or other structure, fence, wall or hedge within 1.5 metres of any vehicle driveway where it meets a street alignment shall not exceed 0.75 metres, in accordance with clause 6.3(6) of Town Planning Scheme No. 6.

23. The existing crossovers shall be removed and the verge and kerbing shall be reinstated to the satisfaction of the City.

24. External clothes drying facilities shall be screened from view from the street or any other public place.

25. The development shall provide lighting to the City's satisfaction to pathways, communal areas and car parking areas.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

26. Any required filling or excavation of the site shall be retained by embankments or walls, details of which are to be incorporated in the working drawings submitted in support of a building permit application.

27. Any required retaining walls along lot boundaries shall be constructed immediately after excavation or filling has been carried out.

28. Stormwater drainage shall be contained on site, or connected to the local stormwater drainage system, to the satisfaction of the City.

29. The applicant/developer and the owners are to comply with the requirements set out in Council Policy P352 'Final Clearance Requirements for Completed Buildings'. Policy P352 requires the applicant to engage a licensed land surveyor, to undertake survey measurements on a floor-by-floor basis. The surveyor is to submit progressive reports to the City regarding compliance with the planning approval documents. The City will not issue final clearance certificates until satisfied that the completed building is consistent with the planning approval documents and the requirements of other relevant statutes.

30. The property shall not be used for the uses hereby granted until an inspection has been carried out by a Council Officer and the City is satisfied that the conditions of planning approval have been complied with.

31. The validity of this approval shall cease if construction is not substantially commenced within 24 months of the date of planning approval.

32. The applicant is to prepare a revised design for the podium walls on the east and west aspects, in order to improve the visual appearance by incorporating different structural elements including the articulation of the walls in consultation with the neighbours, to the satisfaction of the City.

The Primary Motion was put and CARRIED UNANIMOUSLY

9. Form 2 – Responsible Authority Reports - Amending or cancelling DAP development approval

Nil.

10. Appeals to the State Administrative Tribunal

Nil.

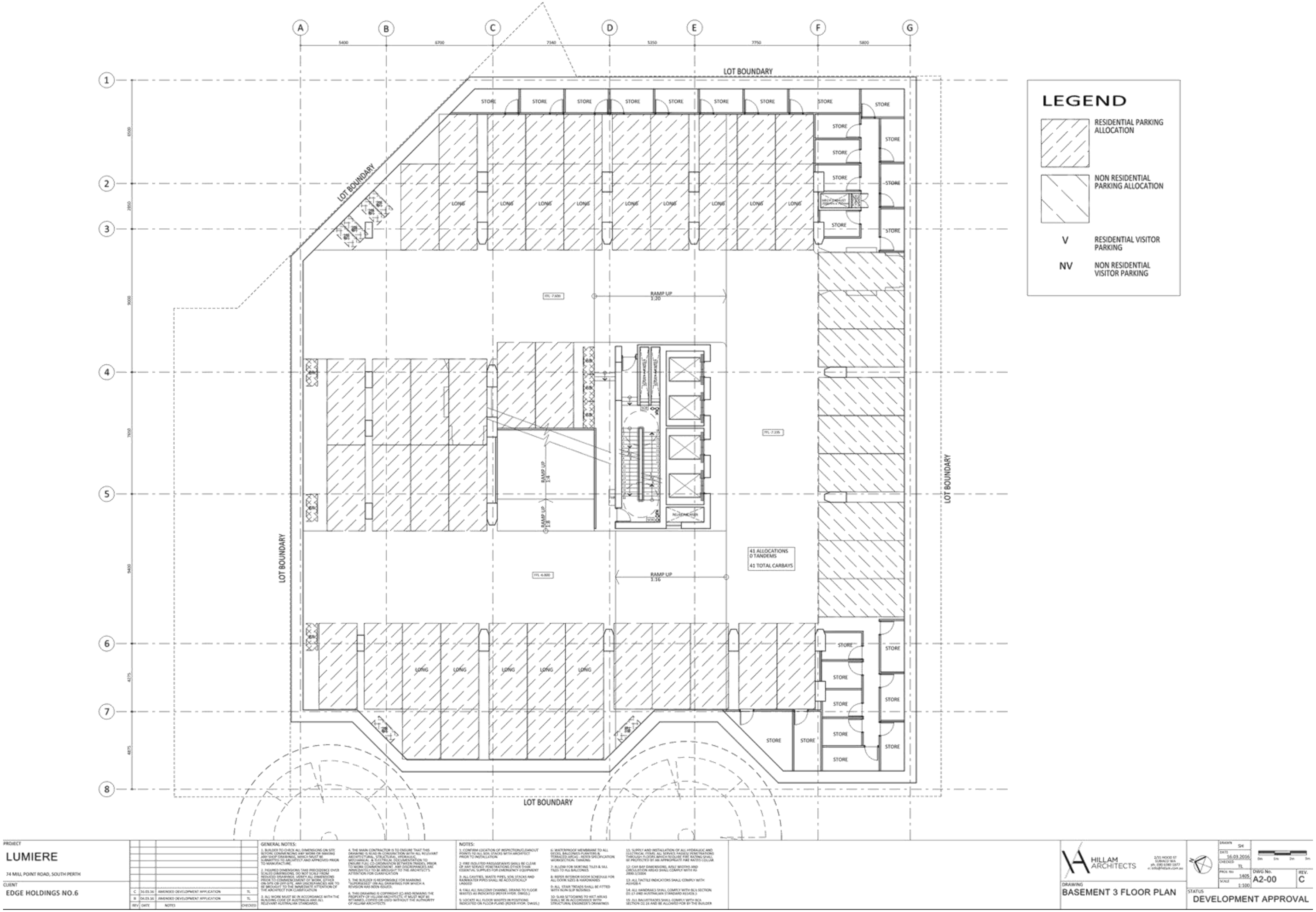
Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP

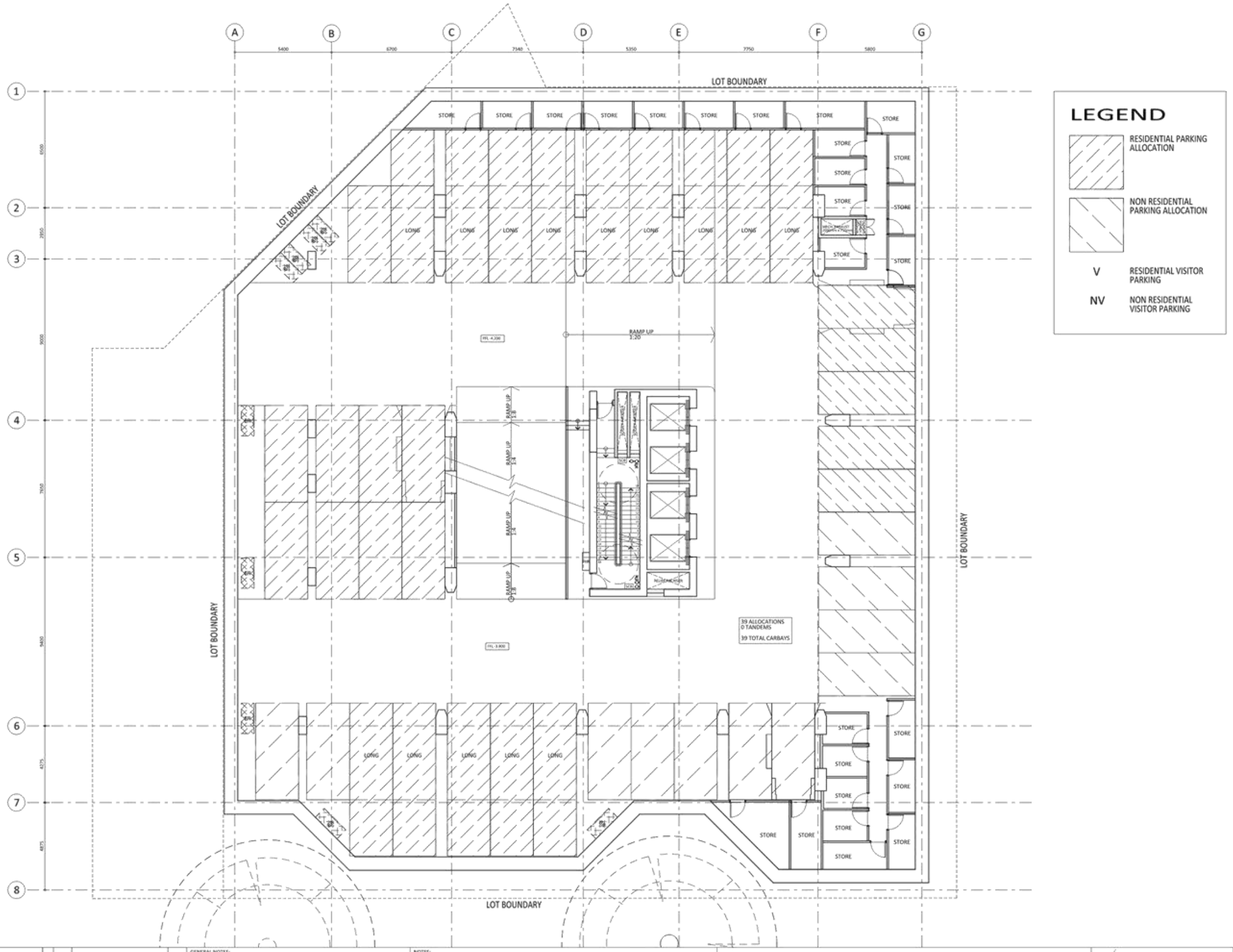
11. General Business / Meeting Closure

The Presiding Member advised that in accordance with Standing Order 7.3 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.

The Presiding Member declared the meeting closed at 3:37pm.

Mr Christopher Antill
Deputy Presiding Member, Metro Central JDAP


LOT BOUNDARY
LEGEND
RESIDENTIAL PARKING ALLOCATION
NON RESIDENTIAL PARKING ALLOCATION
V RESIDENTIAL VISITOR PARKING
NV NON RESIDENTIAL VISITOR PARKING
STORE
LONG
RAMP UP 1:20
RAMP UP 1:16
41 ALLOCATIONS
0 TANDEMS
41 TOTAL CARBAYS
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
GENERAL NOTES:
NOTES:
HILLAM ARCHITECTS
BASEMENT 3 FLOOR PLAN
A2-00
C
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:

1. BUILDER TO CHECK ALL DIMENSIONS ON SITE BEFORE COMMENCING 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 PRIOR TO COMMENCEMENT OF WORK. EITHER ON-SITE OR OFF-SITE. ANY 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 WITH HANDLE & ELECTRICAL DOCUMENTATION TO ENSURE FULL CO-ORDINATION BETWEEN TRADES, PRIOR TO WORK COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO 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 POINTS TO 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. DWG5.)

5. LOCATE ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWG5.)

6. WATERPROOF MEMBRANE TO ALL DECKS, BALCONIES PLANTERS & TERRACED AREAS - REFER SPECIFICATION WORKSECTION: TANKING

7. ALLOW 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. GLASS SETTOORING TO WET AREAS SHALL BE IN ACCORDANCE WITH STRUCTURAL ENGINEER'S DRAWINGS

11. SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL TRADES, ALL SERVICES PASSING 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 D3.3 AND AUSTRALIAN STANDARD AS1428.1

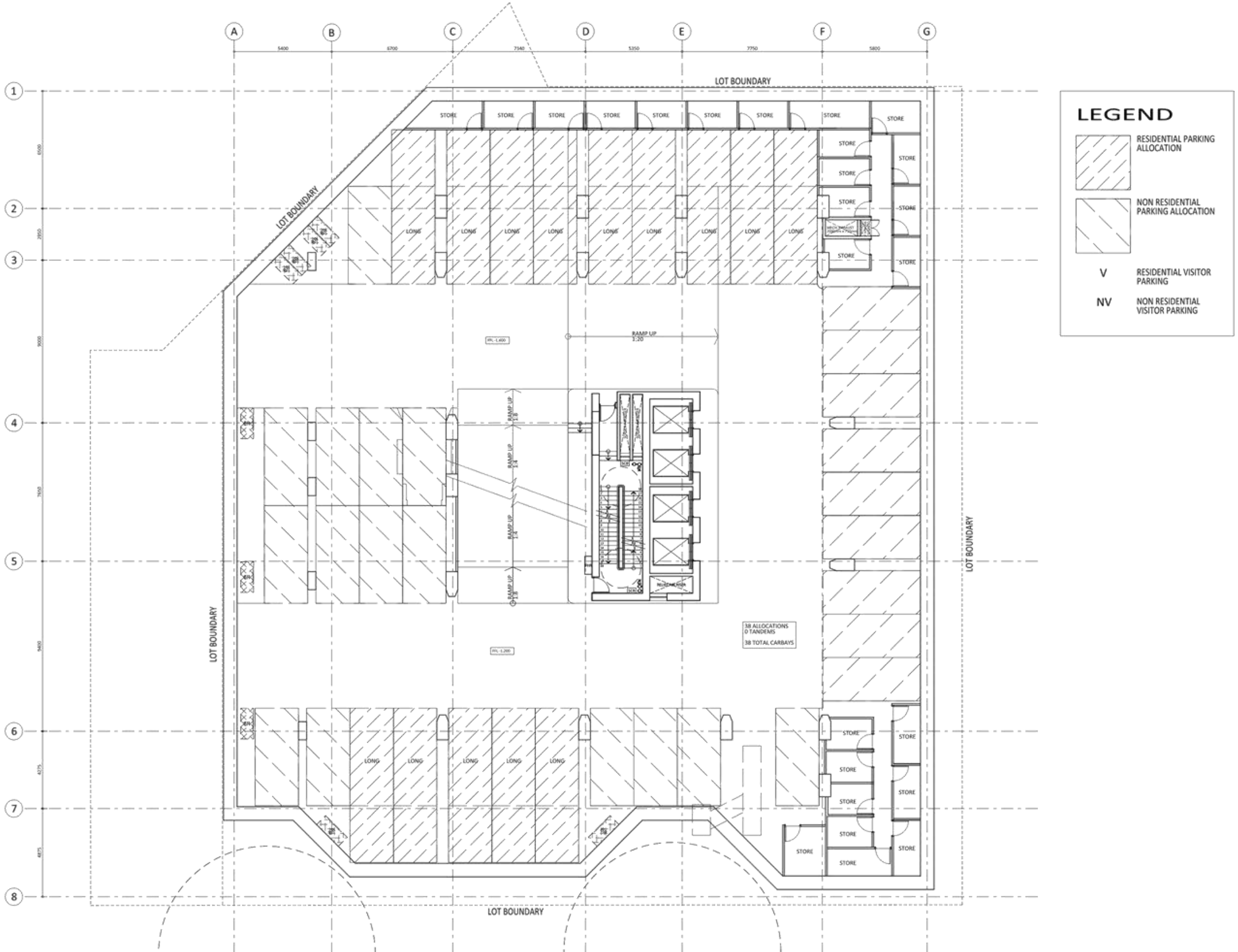
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER

HILLAM ARCHITECTS
2/55 HOOD ST SUBIACO WA
ph. (08) 6380 5877
e. info@hillam.com.au

DRAWING
BASEMENT 2 FLOOR PLAN

DRAWN SH
DATE 16.03.2016
CHECKED TL
PROJ. No. 1405
SCALE 1:100
DWG No. A2-01
REV. C

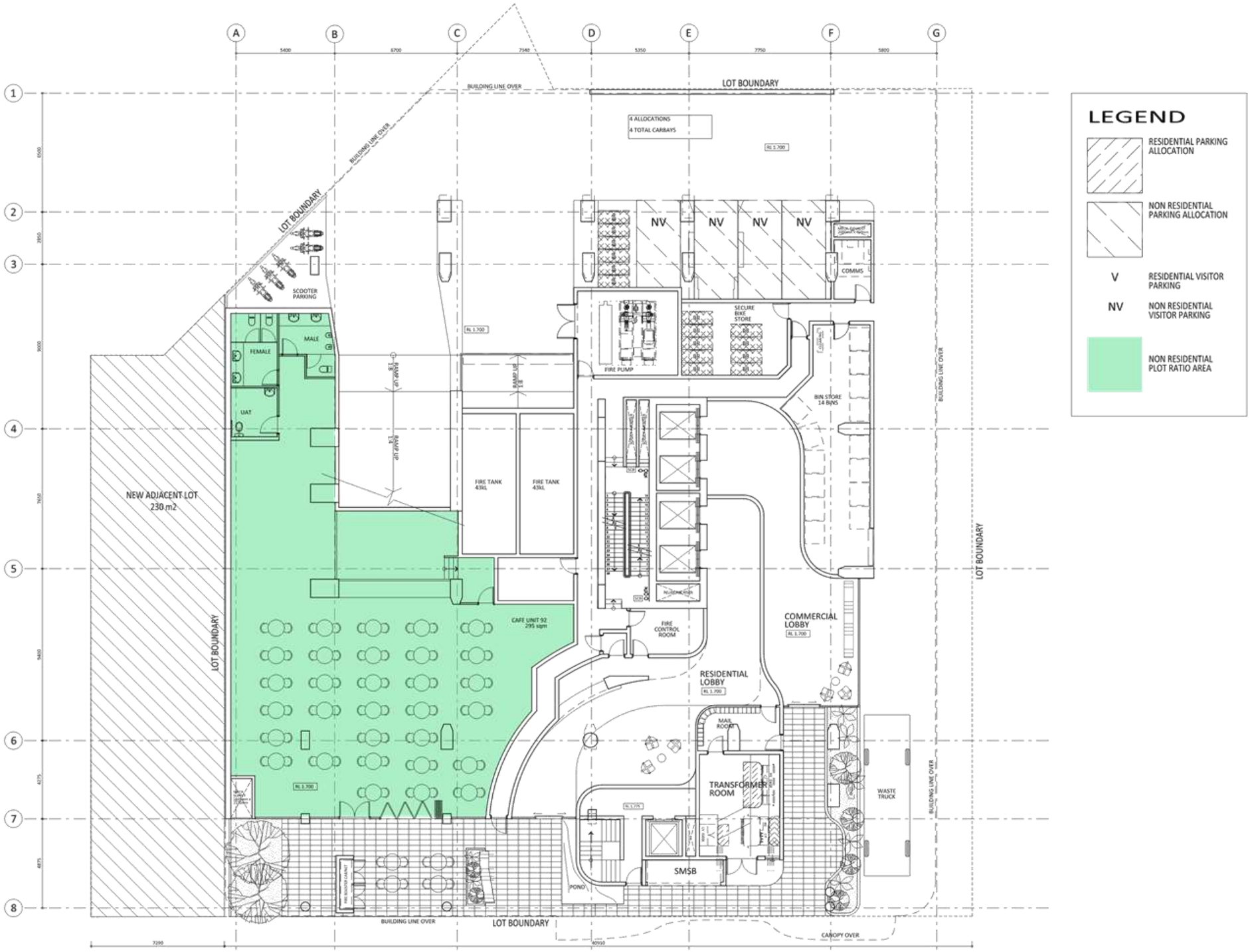
STATUS
DEVELOPMENT APPROVAL



PROJECT LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

HILLAM ARCHITECTS
DRAWING BASEMENT 1 FLOOR PLAN
DATE 16.03.2016
SCALE 1:100
DWG No. A2-02
REV. C
STATUS DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:
1. BUILDER TO CHECK ALL DIMENSIONS ON SITE PRIOR TO COMMENCING ANY WORK OR MAKING NEW SHOP DRAWINGS. WHEN DRAWINGS ARE 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 PRIOR TO COMMENCEMENT OF WORK. EITHER ON-SITE OR OFF-SITE, ANY 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 CO-ORDINATED WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, HYDRAULIC, MECHANICAL & ELECTRICAL DOCUMENTATION TO ENSURE FULL CO-ORDINATION BETWEEN TRADES, PRIOR TO WORK COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION.
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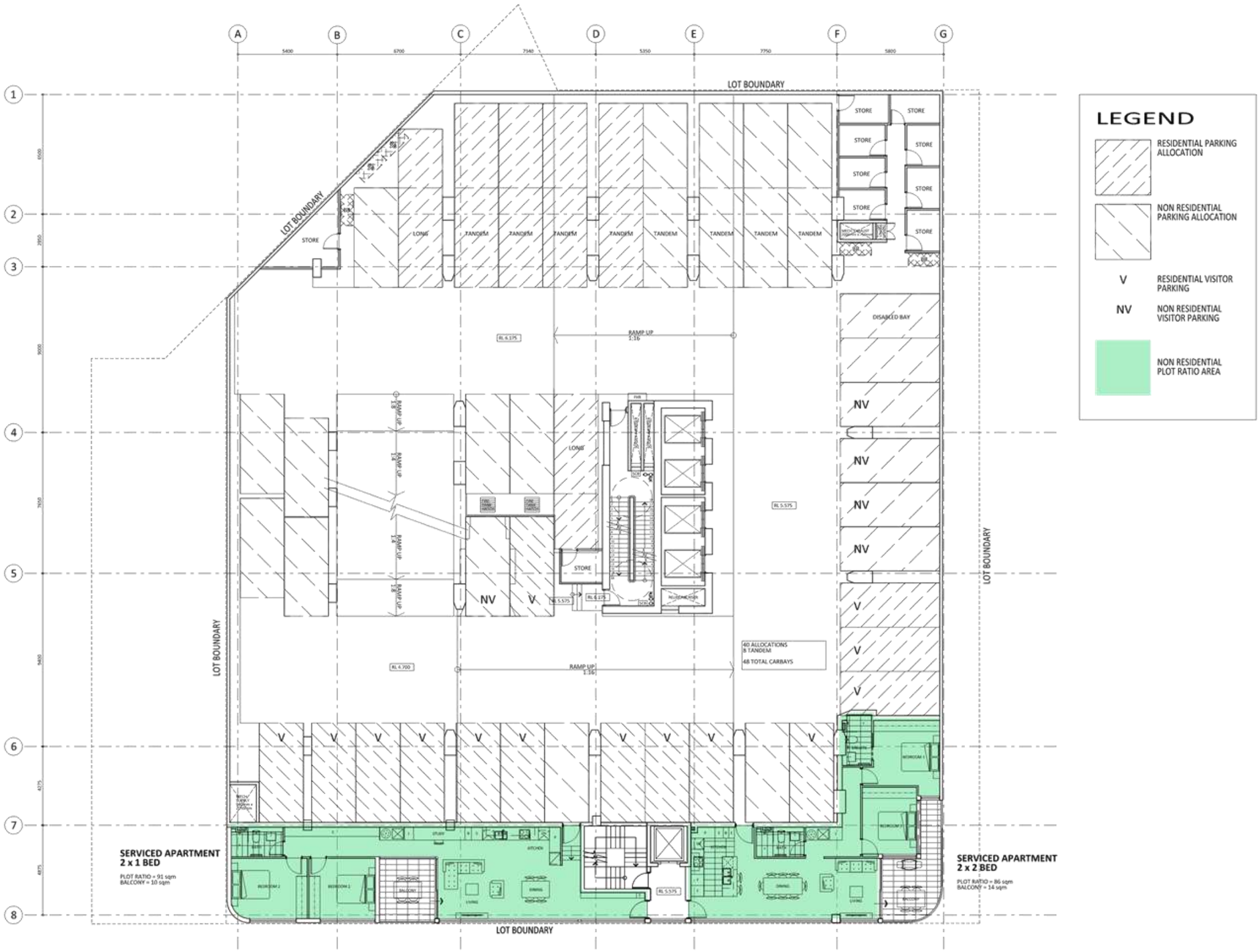
NOTES:
1. CONFIRM LOCATION OF INSPECTION/CLEANOUT POINTS TO ALL SOIL STACKS WITH ARCHITECT PRIOR TO INSTALLATION.
2. FIRE ISOLATED PASSAGEWAYS SHALL BE CLEAR OF ANY SERVICE PENETRATIONS OTHER THAN ESSENTIAL SUPPLIES FOR EMERGENCY EQUIPMENT.
3. ALL CAVITIES, WASTE PIPES, SOIL STACKS AND RAINWATER PIPES SHALL BE ACOUSTICALLY LAGGED.
4. TAIL ALL BALCONY DRAINED, DRAINS TO FLOOR WASTES AS INDICATED (REFER HYDR. DWG5.)
5. LOCATE ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWG5.)
6. WATERPROOF MEMBRANE TO ALL DECKS, BALCONIES, PLANTERS & TERRACED AREAS UNDER SPECIFICATION WORKS/TILE TANKING.
7. ALLOW 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. SLAB SETTDOWNS TO WET AREAS SHALL BE IN ACCORDANCE WITH STRUCTURAL ENGINEER'S DRAWINGS.
11. SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL ITEMS, ALL SERVICE PENETRATIONS THROUGH FIRE WALLS/FLOOR TO BE 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 D3.6 AND AUSTRALIAN STANDARD AS1428.1.
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER.

HILLAM ARCHITECTS
2/31 HOOD ST SUBIACO WA ph: (08) 6380 1577 e: info@hillam.com.au

DRAWING
GROUND FLOOR PLAN

DRAWN	SH
DATE	16.03.2016
CHECKED	TL
PROJ. NO.	1405
SCALE	1:100
DWG No.	A2-03
REV.	C

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:
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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 COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION
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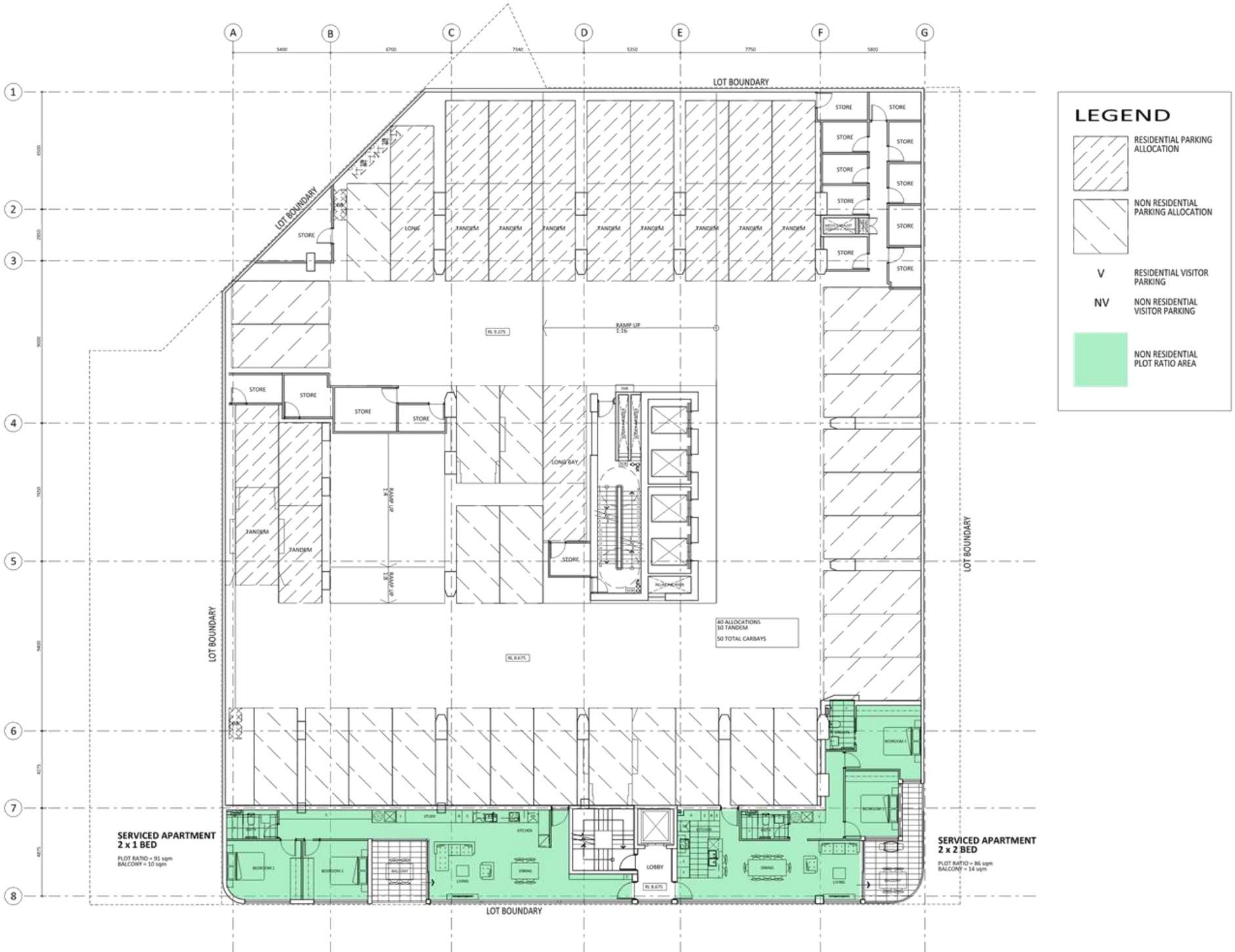
NOTES:
1. CONFIRM LOCATION OF INSPECTION/CLEANOUT EYES WITH TCE/ ALL SOIL STACKS WITH ARCHITECT PRIOR TO INSTALLATION
2. FIRE ISOLATED PASSAGEWAYS SHALL BE CLEAR OF ANY SERVICE PENETRATIONS, OTHER THAN ESSENTIAL SUPPLIES FOR EMERGENCY EQUIPMENT
3. ALL CAVITIES, WASTE PIPES, SOIL STACKS AND RAINWATER PIPES SHALL BE ACOUSTICALLY LAGGED
4. FALL ALL BALCONY DRAINAGE, 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. ALLOW FOR MORTAR 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. SLAB SETDOWNS TO WET AREAS SHALL BE IN ACCORDANCE WITH STRUCTURAL ENGINEER'S DRAWINGS
11) SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL (FOAM) ALL SERVICE PASSES/ PENETRATIONS THROUGH FLOORS &WALLS TO ACHIEVE 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 D3.3 AND AUSTRALIAN STANDARD AS1428.1
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER

HILLAM ARCHITECTS
2/31 HOOD ST SUBIACO WA ph. (08) 6380 1207 e. info@hillam.com.au

DRAWING
LEVEL 1 FLOOR PLAN

DRAWN	SH
DATE	16.03.2016
CHECKED	TL
PROJ. No	1405
SCALE	1:100
DWG No.	A2-04
REV.	C

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:
1. BUILDER TO CHECK ALL DIMENSIONS ON SITE BEFORE COMMENCING 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 PRIOR TO COMMENCEMENT OF WORK, EITHER ON-SITE OR OFF-SITE. ANY 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 WITH MANUAL & ELECTRICAL DOCUMENTATION TO ENSURE FULL CO-ORDINATION BETWEEN TRADES, PRIOR TO WORKS COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION.
5. THE BUILDER IS RESPONSIBLE FOR MARKING "SUPERVISED" 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 POINTS TO 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 DRAINAGE, DRAINS TO FLOOR WASTES AS INDICATED (REFER HYDR. DWG(S).)
5. LOCATE ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWG(S).)
6. WATERPROOF MEMBRANE TO ALL BATHS, BALCONIES PLANTERS & TERRACED AREAS - REFER SPECIFICATION WORKSECTION: TANKING.
7. ALLOW 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. SLAB SETDOWNS TO MEET AREAS SHALL BE IN ACCORDANCE WITH STRUCTURAL ENGINEER'S DRAWINGS.
11. SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL TRADES, ALL SERVICES PENETRATIONS THROUGH FLOORS WHICH REQUIRE FIRE RATING SHALL BE PROTECTED BY AN APPROPRIATELY 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 D3.3 AND AUSTRALIAN STANDARD AS1428.1.
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER.

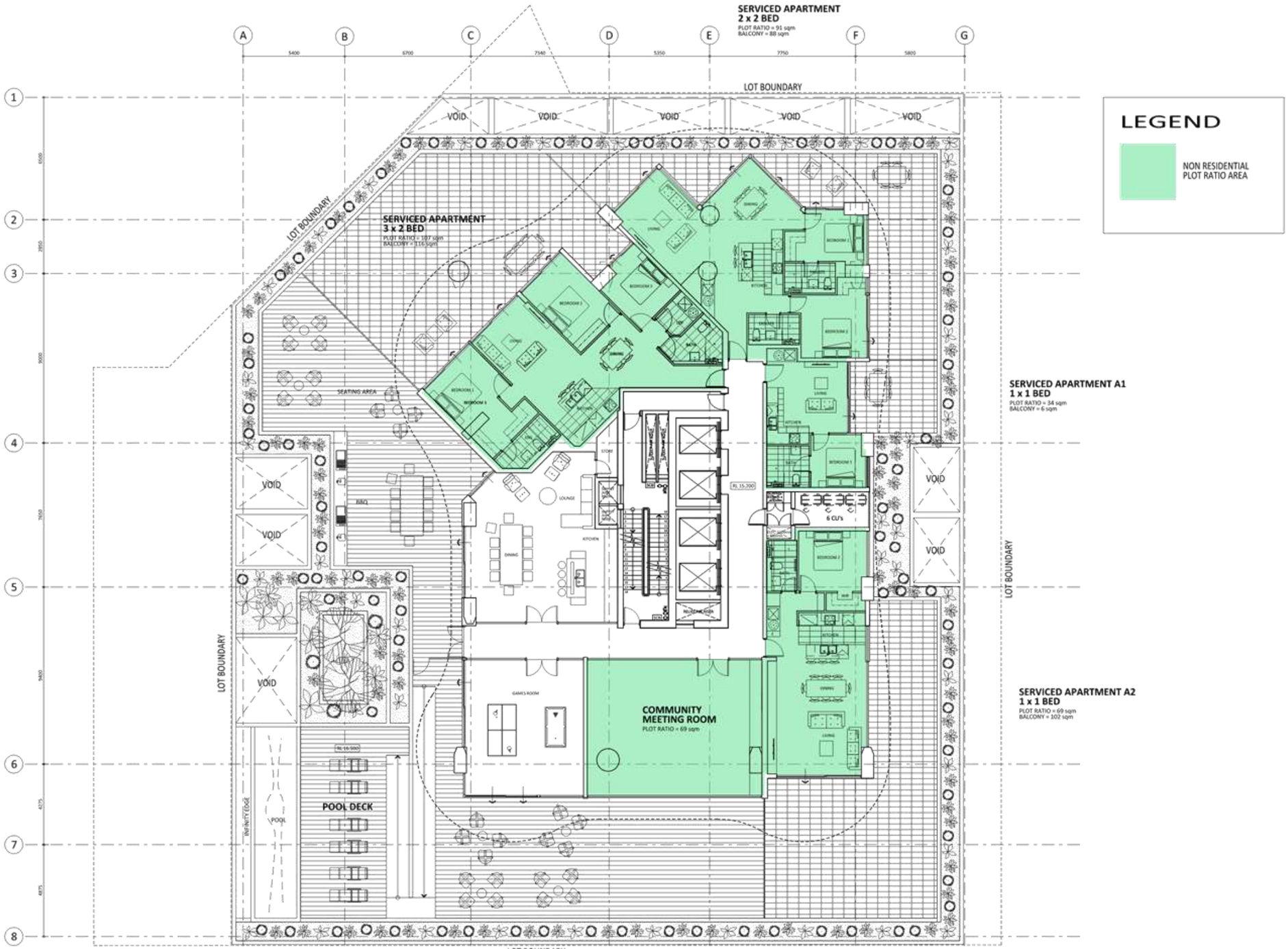
HILLAM ARCHITECTS
2/55 HOOD ST SUBIACO WA
ph. (08) 6380 1877
e. info@hillam.com.au

DRAWING
LEVEL 2 FLOOR PLAN

DRAWN	SH
DATE	16.03.2016
CHECKED	TL
PROJ. No	1405
SCALE	1:100
DWG No.	A2-05
REV.	C

STATUS
DEVELOPMENT APPROVAL


SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 59 sqm
BALCONY = 26 sqm
SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 64 sqm
BALCONY = 26 sqm
SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 64 sqm
BALCONY = 26 sqm
SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 68 sqm
BALCONY = 25 sqm
LOT BOUNDARY
SERVICED APARTMENT
3 x 2 BED
PLOT RATIO = 114 sqm
BALCONY = 10 sqm
LOT BOUNDARY
SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 75 sqm
BALCONY = 10 sqm
SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 70 sqm
BALCONY = 10 sqm
LOT BOUNDARY
SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 59 sqm
BALCONY = 9 sqm
SERVICED APARTMENT
1 x 1 BED
PLOT RATIO = 66 sqm
BALCONY = 9 sqm
SERVICED APARTMENT
2 x 2 BED
PLOT RATIO = 94 sqm
BALCONY = 23 sqm
SERVICED APARTMENT
2 x 2 BED
PLOT RATIO = 96 sqm
BALCONY = 16 sqm
SERVICED APARTMENT
2 x 2 BED
PLOT RATIO = 96 sqm
BALCONY = 16 sqm
LOT BOUNDARY
SERVICED APARTMENT
2 x 2 BED
PLOT RATIO = 96 sqm
BALCONY = 16 sqm
SERVICED APARTMENT
2 x 2 BED
PLOT RATIO = 96 sqm
BALCONY = 16 sqm
LEGEND
NON RESIDENTIAL
PLOT RATIO AREA
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
C 16.03.16 AMENDED DEVELOPMENT APPLICATION TL
B 04.03.16 AMENDED DEVELOPMENT APPLICATION TL
HILLAM ARCHITECTS
LEVEL 3 FLOOR PLAN
DEVELOPMENT APPROVAL
A2-06
C



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:

1. BUILDER TO CHECK ALL DIMENSIONS ON SITE BEFORE COMMENCING 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 DRAWINGS FOR CONSTRUCTION PURPOSES. PRIOR TO COMMENCEMENT, ALL WORK SHOWN ON SITE OR OFF-SITE, ANY 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 COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO 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 THE ARCHITECTS. IT MUST NOT BE RETAINED, COPIED 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. 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 & ARCHITECTURAL DRAWING

7. ALLOW FOR SHORTING 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. GLASS SETTOWORK TO MEET 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 FIRE RATED WALLS/FLOORS 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 D3.17 AND AUSTRALIAN STANDARD AS1428.1

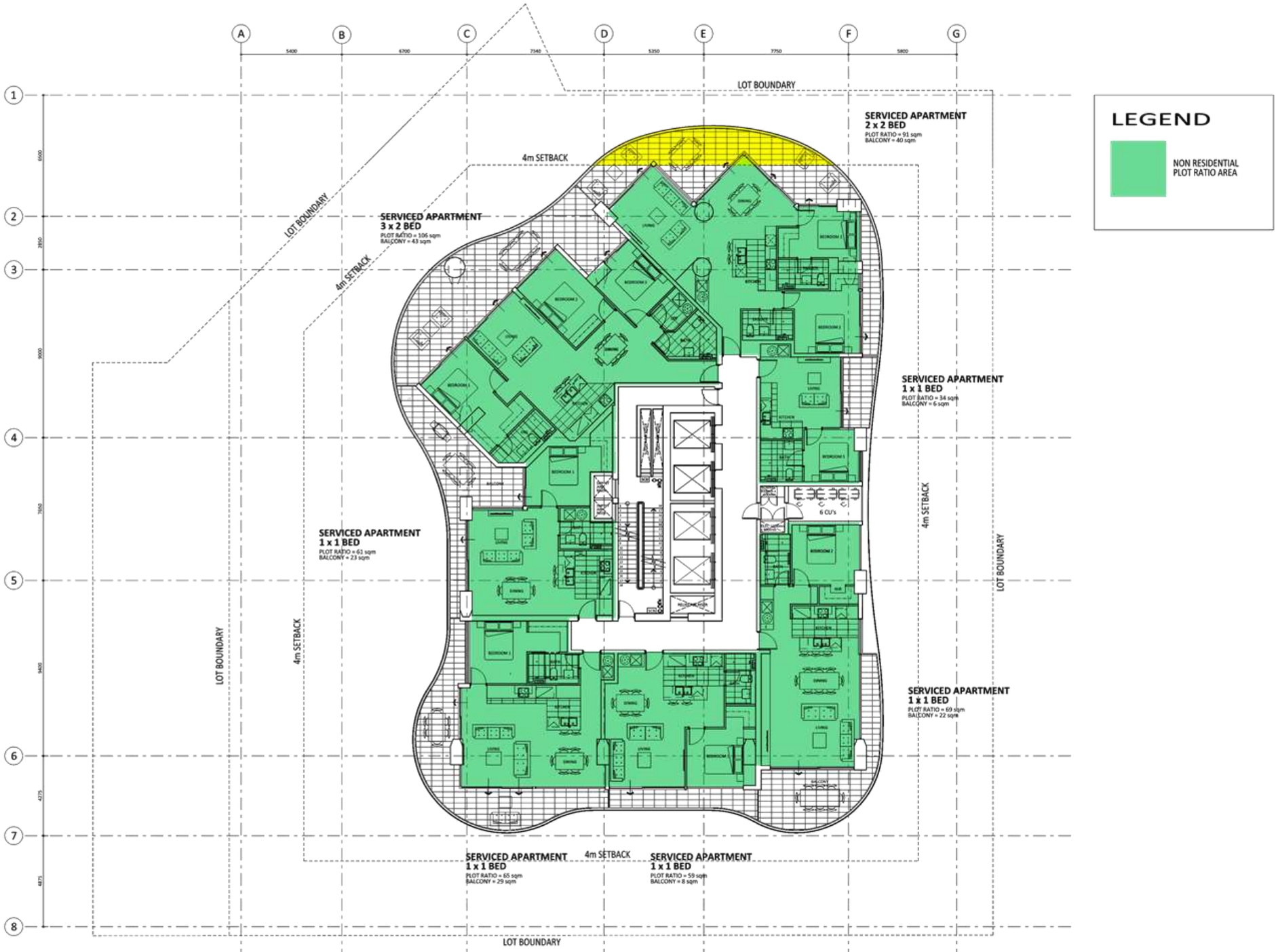
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER

HILLAM ARCHITECTS
2/31 HOOD ST SUBIACO WA
ph. (08) 6380 1877
e. info@hillam.com.au

DRAWING
LEVEL 4 FLOOR PLAN

DRAWN	SH
DATE	16.03.2016
CHECKED	TL
PROJ. No.	1405
SCALE	1:100
DWG No.	A2-07
REV.	C

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:
1. BUILDER TO CHECK ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK OR MAKING WORKSHOP DRAWINGS. ANY DISCREPANCIES TO 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 PRIOR TO COMMENCEMENT OF WORK. EITHER ON-SITE OR OFF-SITE. ANY 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 CO-ORDINATED WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, HYDRAULIC, MECHANICAL & ELECTRICAL DOCUMENTATION TO ENSURE FULL CO-ORDINATION BETWEEN TRADES, PRIOR TO WORK COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO 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

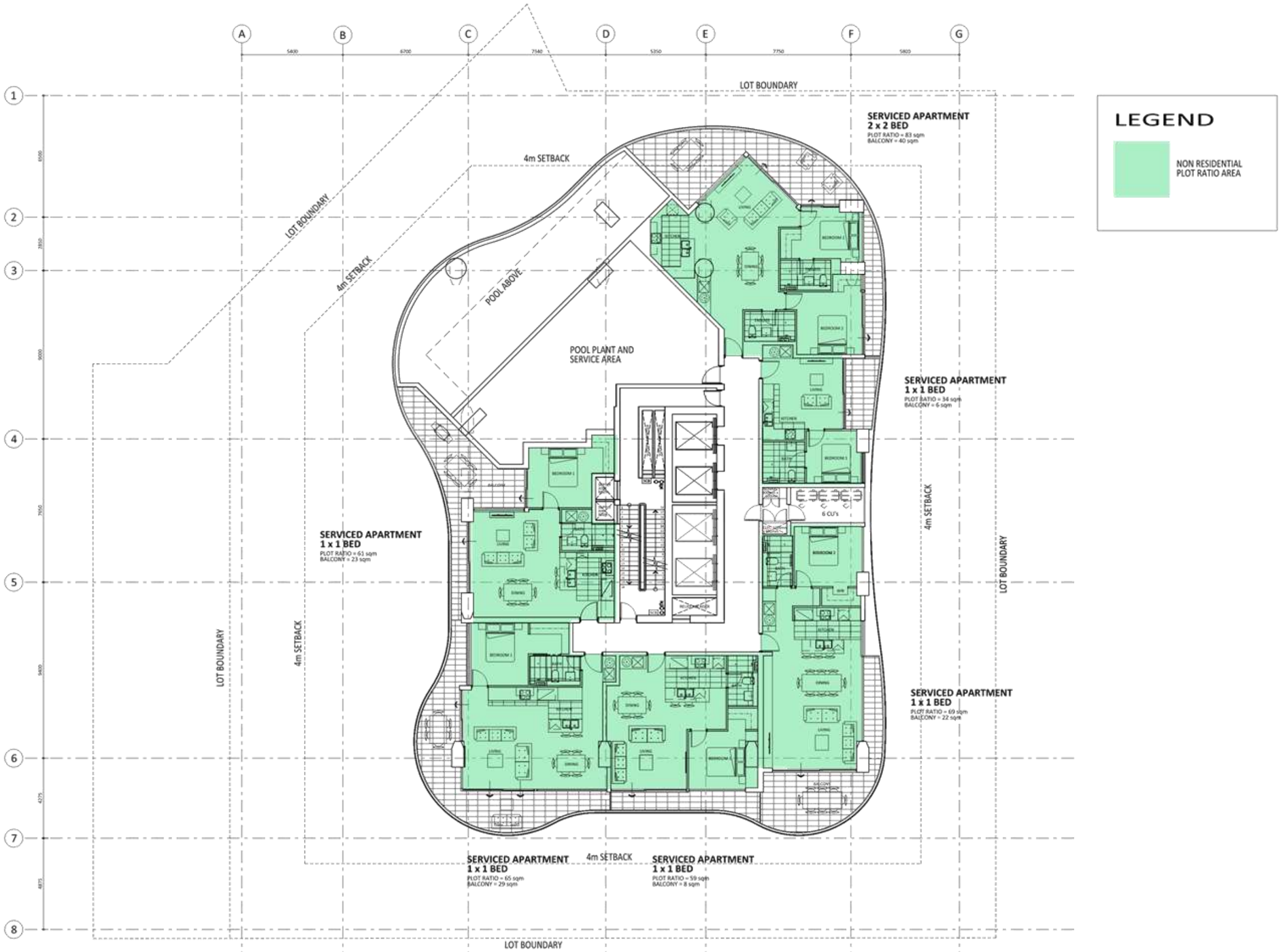
NOTES:
1. CONFIRM LOCATION OF INSPECTION/CLEANOUT POINTS TO ALL SOIL STACKS WITH ARCHITECT PRIOR TO INSTALLATION
2. FIRE ISOLATED PASSAGEWAYS SHALL BE CLEAR OF ANY SERVICE PENETRATIONS OTHER THAN ESSENTIAL SUPPLIES FOR EMERGENCY EQUIPMENT
3. ALL CAVITIES, WASTE PIPES, SOIL STACKS AND RAINWATER PIPES SHALL BE ACOUSTICALLY LAGGED
4. TAILS ALL BALCONY DRAINING, 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 & TOWNHOUSE AREAS UNDER SPECIFICATION WORKSECTION: TANKING
7. ALLOW 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. SLAB SLOTCHING TO NOT AREAS SHALL BE IN ACCORDANCE WITH STRUCTURAL ENGINEER'S DRAWINGS
11. SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL ITEMS, ALL SERVICE PIPERS PENETRATIONS THROUGH FIRE RATED CONSTRUCTION SHALL BE PROTECTED BY AN APPROPRIATE FIRE RATED COLLAR
12. CAR BAY DIMENSIONS, AISLE WIDTHS AND CIRCULATION AREAS SHALL COMPLY WITH AS 2890.1/2006
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 THIS BUILDER

HILLAM ARCHITECTS
2/31 HOOD ST SUBIACO WA ph: (08) 6380 1677 e: info@hillam.com.au

DRAWING
LEVEL 5 - 21 FLOOR PLAN

DRAWN	SH
DATE	16.03.2016
CHECKED	TL
PROJ. No	1405
SCALE	1:100
DWG No.	A2-08
REV.	C

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	03.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:

1. BUILDER TO CHECK ALL DIMENSIONS ON SITE PRIOR TO COMMENCING ANY WORK OR MAKING NEW SHOP DRAWINGS. WHERE SHOP DRAWINGS ARE 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 PRIOR TO COMMENCEMENT OF WORK. EITHER ON-SITE OR OFF-SITE. ANY 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 CO-ORDINATED WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, HYDRAULIC, MECHANICAL & ELECTRICAL DOCUMENTATION TO ENSURE FULL CO-ORDINATION BETWEEN TRADES, PRIOR TO WORK COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION.

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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 POINTS TO 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 DRAINED, DRAINS TO FLOOR WASTES AS INDICATED (REFER HYDR. DWG'S.)

5. LOCATE ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWG'S.)

6. WATERPROOF MEMBRANE TO ALL WC/SOIL BALCONIES PLANTERS & TERRACED AREAS UNDER SPECIFICATION WORKS/ACTION: TANKING.

7. ALLOW 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. SLAB SETTDOWNS TO WET AREAS SHALL BE IN ACCORDANCE WITH STRUCTURAL ENGINEER'S DRAWINGS.

11. SUPPLY AND INSTALLATION OF ALL HYDRAULIC AND ELECTRICAL ITEMS, ALL SERVICE PASSAGE PENETRATIONS THROUGH FIRE WALLS/FLOORS TO BE 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 D3.12 AND AUSTRALIAN STANDARD AS1428.1

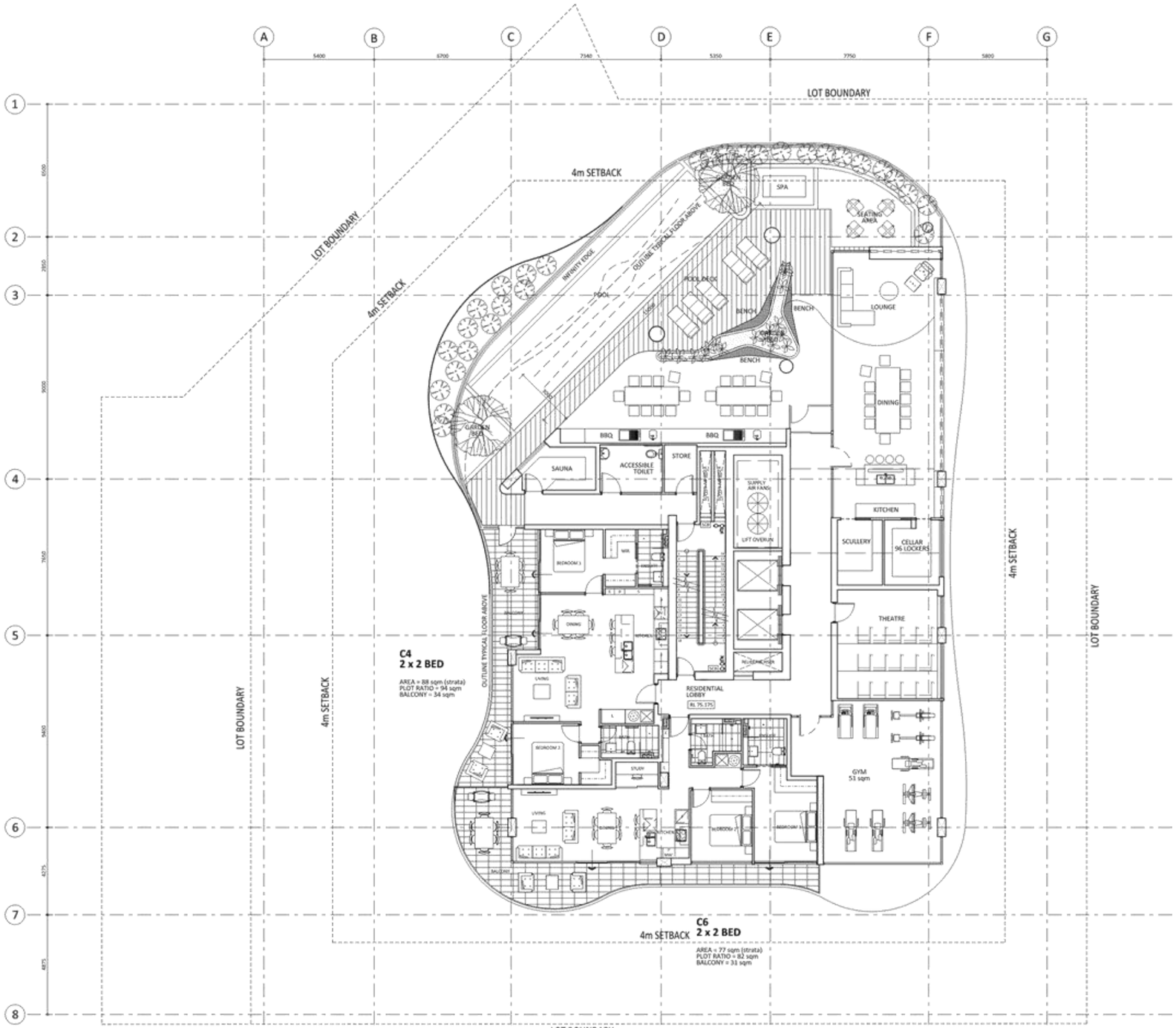
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER

HILLAM ARCHITECTS
2/31 HOOD ST SUBIACO WA
ph: (08) 6380 1577
e: info@hillam.com.au

DRAWING
LEVEL 22 FLOOR PLAN

DRAWN	SH
DATE	16.03.2016
CHECKED	TL
PROJ. No	1405
SCALE	1:100
DWG No.	A2-10
REV.	C

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:
1. BUILDER TO CHECK ALL DIMENSIONS ON SITE BEFORE COMMENCING 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 COMMENCEMENT OF WORK. EITHER OMISSIONS OR CONFLICTING INFORMATION 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 THE CONSTRUCTABILITY OF THE DESIGN, PRIOR TO WORKS COMMENCEMENT. ANY DISCREPANCIES ARE IMMEDIATELY TO BE BROUGHT TO 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.

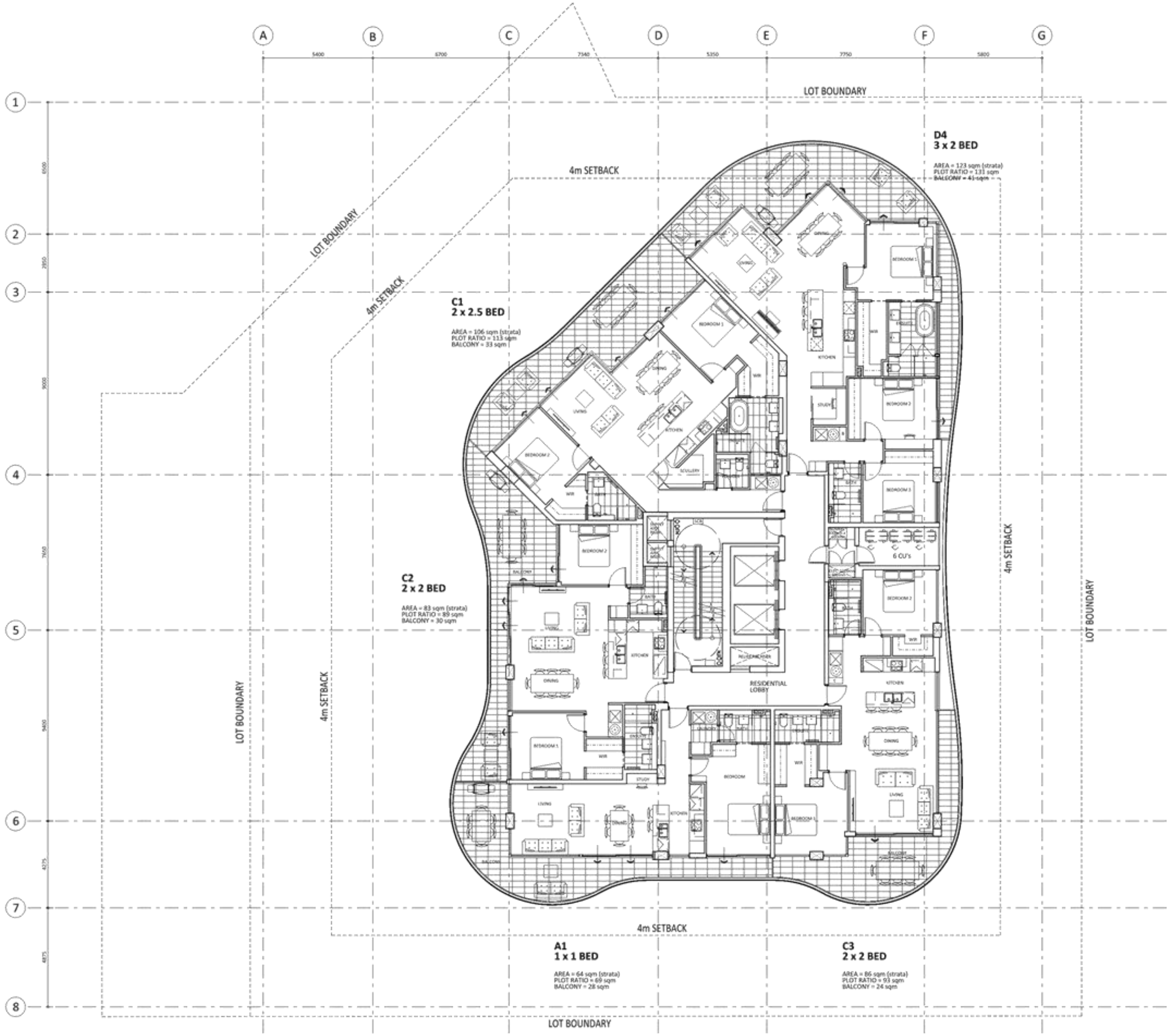
NOTES:
1. CONFIRM LOCATION OF INSPECTION/CLEANOUT POINTS TO ALL SOIL STACKS WITH ARCHITECT PRIOR TO INSTALLATION.
2. FIRE ISOLATED PASSAGEWAYS SHALL BE CLEAR OF ANY SERVICE PENETRATIONS OTHER THAN ESSENTIAL SUPPLIES FOR EMERGENCY EQUIPMENT
3. ALL CAVITIES, WASTE PIPES, SOIL STACKS AND RAINWATER PIPES SHALL BE ACOUSTICALLY LAGGED
4. TRAY ALL BALCONY CHANNEL DRAINS TO FLOOR WASTES AS INDICATED (REFER HYDR. DWGS.)
5. SOCKET ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWGS.)
6. WATERPROOF MEMBRANE TO ALL DECKS, BALCONIES, PLANTERS & TOILET/SHOWER AREAS - REFER SPECIFICATION W.PROOFING & TANKING.
7. ALLOW 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. GLASS SPTOGWING TO HOT 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 D1.12 AND AUSTRALIAN STANDARD AS1428.1
15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALIGNED FOR BY THE BUILDER

HILLAM ARCHITECTS
2/31 HOOD ST SUBIACO WA
ph. (08) 6380 1377
e. info@hillam.com.au

DRAWING
LEVEL 23 FLOOR PLAN

DRAWN SH
DATE 16.03.2016
CHECKED TL
PROJ. No 1405
SCALE 1:100
DWG No. A2-11
REV. C

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:

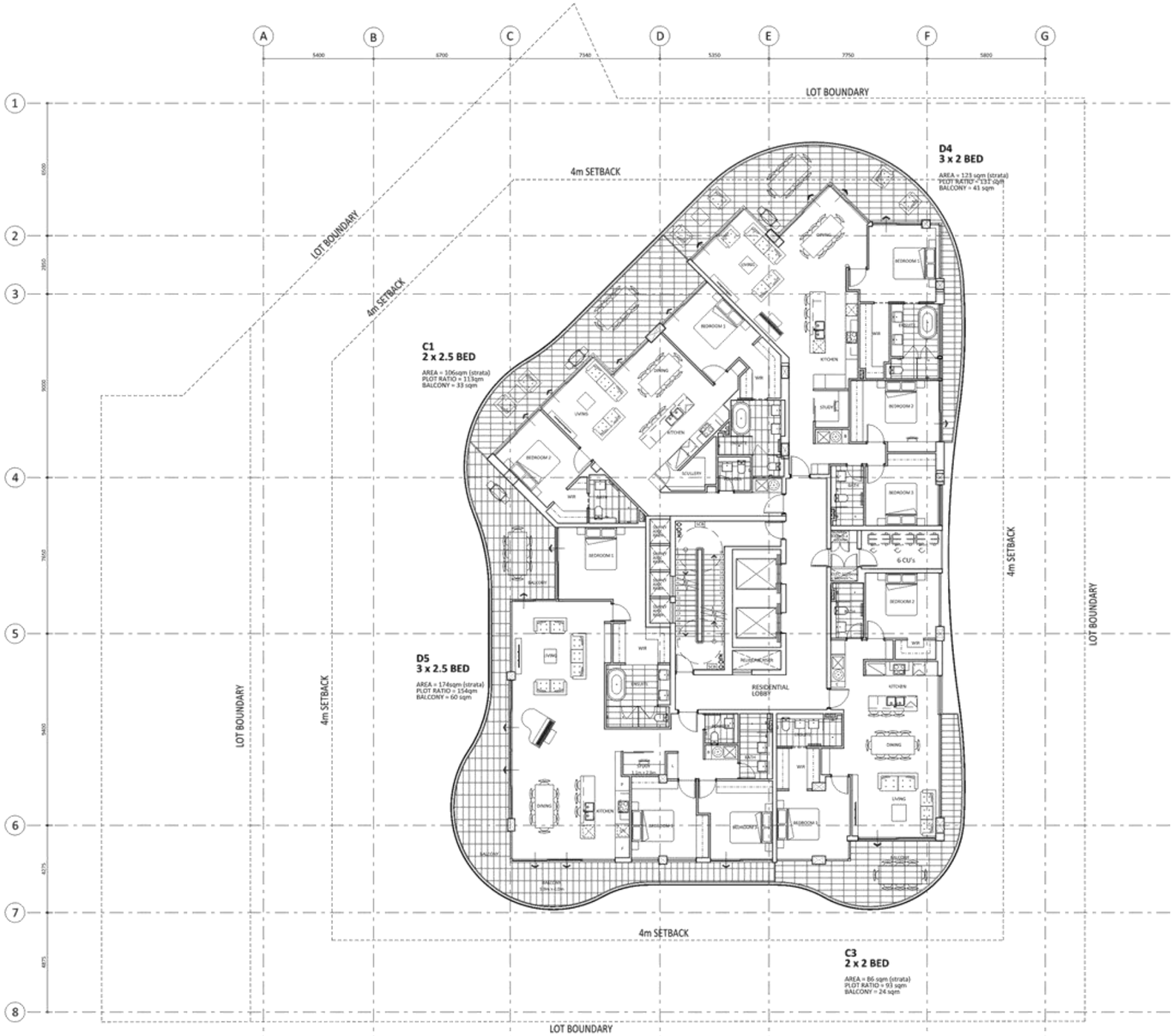
NOTES:

HILLAM ARCHITECTS

DRAWN SH
DATE 16.03.2016
CHECKED TL
PROJ. No 1405
SCALE 1:100
DWG No. A2-12
REV. C

DRAWING
LEVEL 24 - 34 FLOOR PLAN

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.03.16	AMENDED DEVELOPMENT APPLICATION	TL

GENERAL NOTES:

1. BUILDER TO CHECK ALL DIMENSIONS ON SITE BEFORE COMMENCING 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 PRIOR TO COMMENCEMENT OF WORK. EITHER DIMS SITE OR GRID LINE. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION.

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4. TILE ALL BALCONY DRAINING, DRAINS TO FLOOR WASTES AS INDICATED (REFER HYDR. DWG3.)

5. SOCKET ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWG5.)

6) WATERPROOF MEMBRANE TO ALL DECKS, BALCONIES, PLANTERS & TERRACED AREAS - REFER SPECIFICATION WORKSECTION: TANKING.

7. ALLOW FOR MORTINE TILES & SILL TILES TO ALL BALCONIES.

8. REFER INTERIOR DOOR SCHEDULE FOR ALL DOOR SIZES & HARDWARES.

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13. ALL TACTILE INDICATORS SHALL COMPLY WITH AS1428.4.

14. ALL HANDRAILS SHALL COMPLY WITH BCA SECTION D3.3 AND AUSTRALIAN STANDARD AS1428.1.

15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER.

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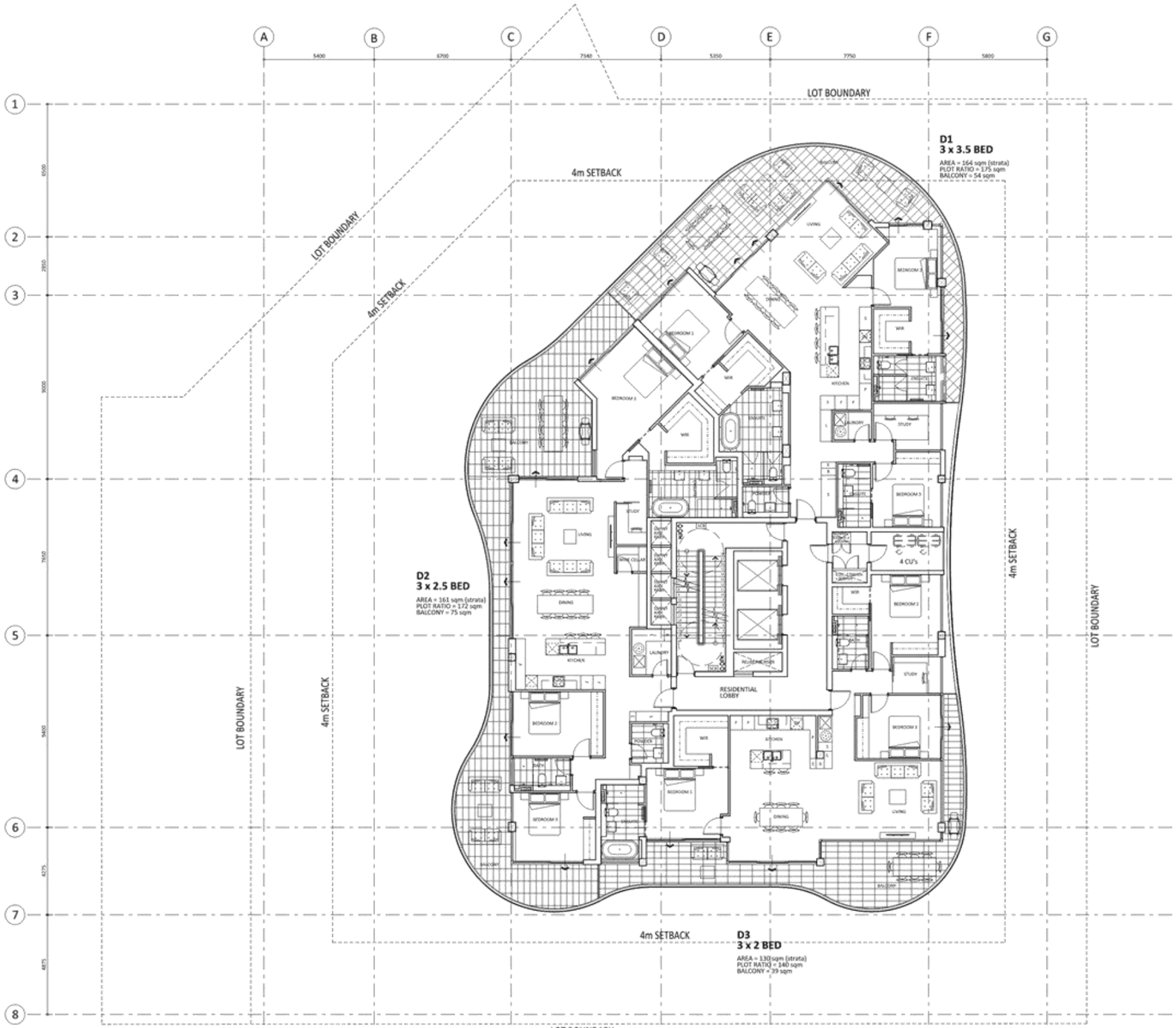
DRAWING
LEVEL 35 - 38 FLOOR PLAN

DRAWN SH
DATE 16.03.2016
CHECKED TL
PROJ. No. 1405
SCALE 1:100
DWG No. A2-13
REV. C

STATUS
DEVELOPMENT APPROVAL



PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
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15. ALL BALUSTRADES SHALL COMPLY WITH BCA SECTION D2.16 AND BE ALLOWED FOR BY THE BUILDER

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2/31 HOOD ST SUBIACO WA
ph. (08) 6380 1207
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DRAWING
LEVEL 39 - 40 FLOOR PLAN

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CHECKED: TL
PROJ. No: 1405
SCALE: 1:100
DWG No.: A2-14
REV.: C

STATUS
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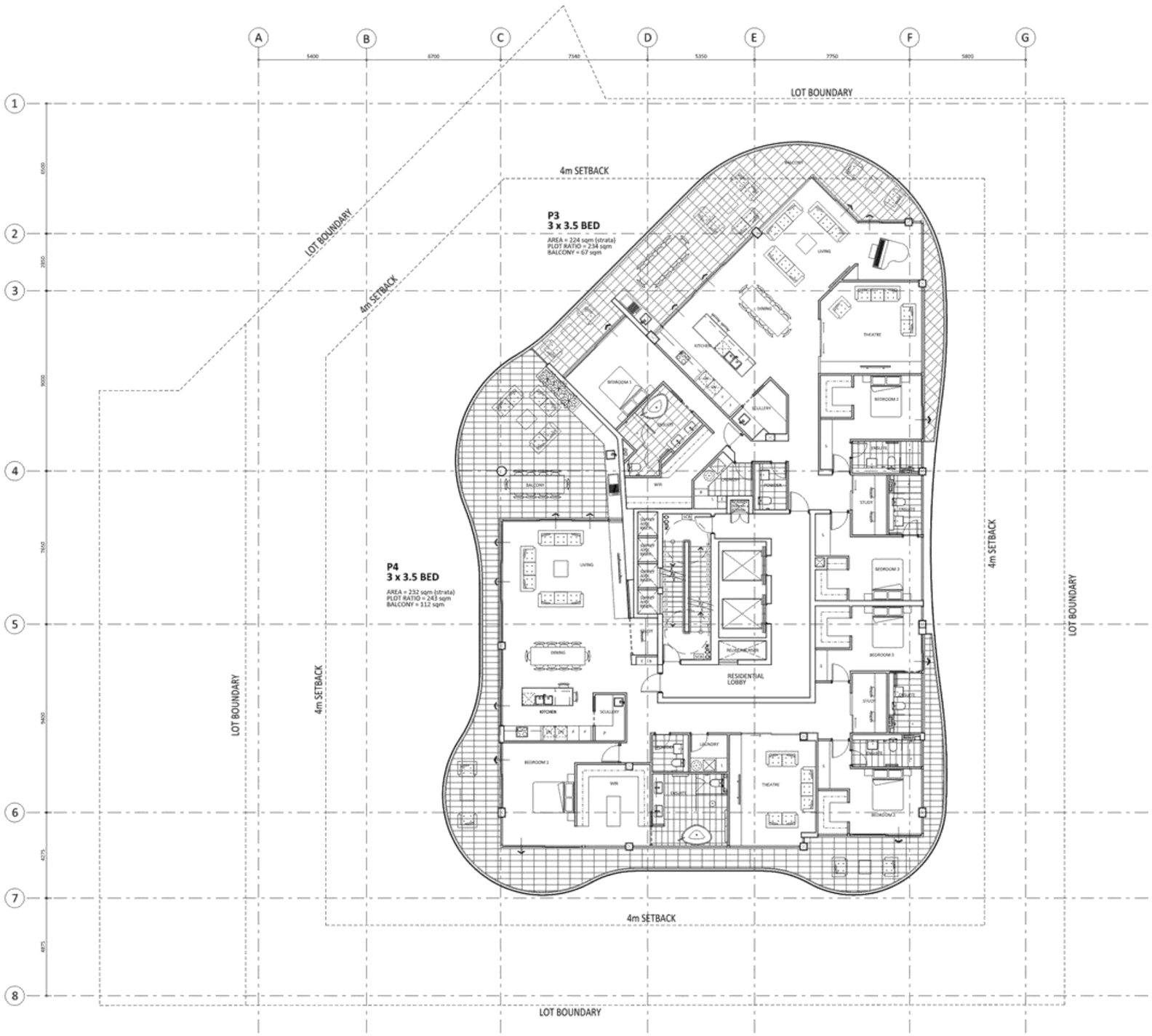

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	26.05.16	AMENDED DEVELOPMENT APPLICATION	TL
B	04.05.16	AMENDED DEVELOPMENT APPLICATION	TL

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5. SOCKET ALL FLOOR WASTES IN POSITIONS INDICATED ON FLOOR PLANS (REFER HYDR. DWG(S).)

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DRAWING
LEVEL 41 - 42 FLOOR PLAN

DRAWN	SH
DATE	16.03.2016
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PROJ. No.	1405
SCALE	1:100
DWG No.	A2-15
REV.	C

STATUS
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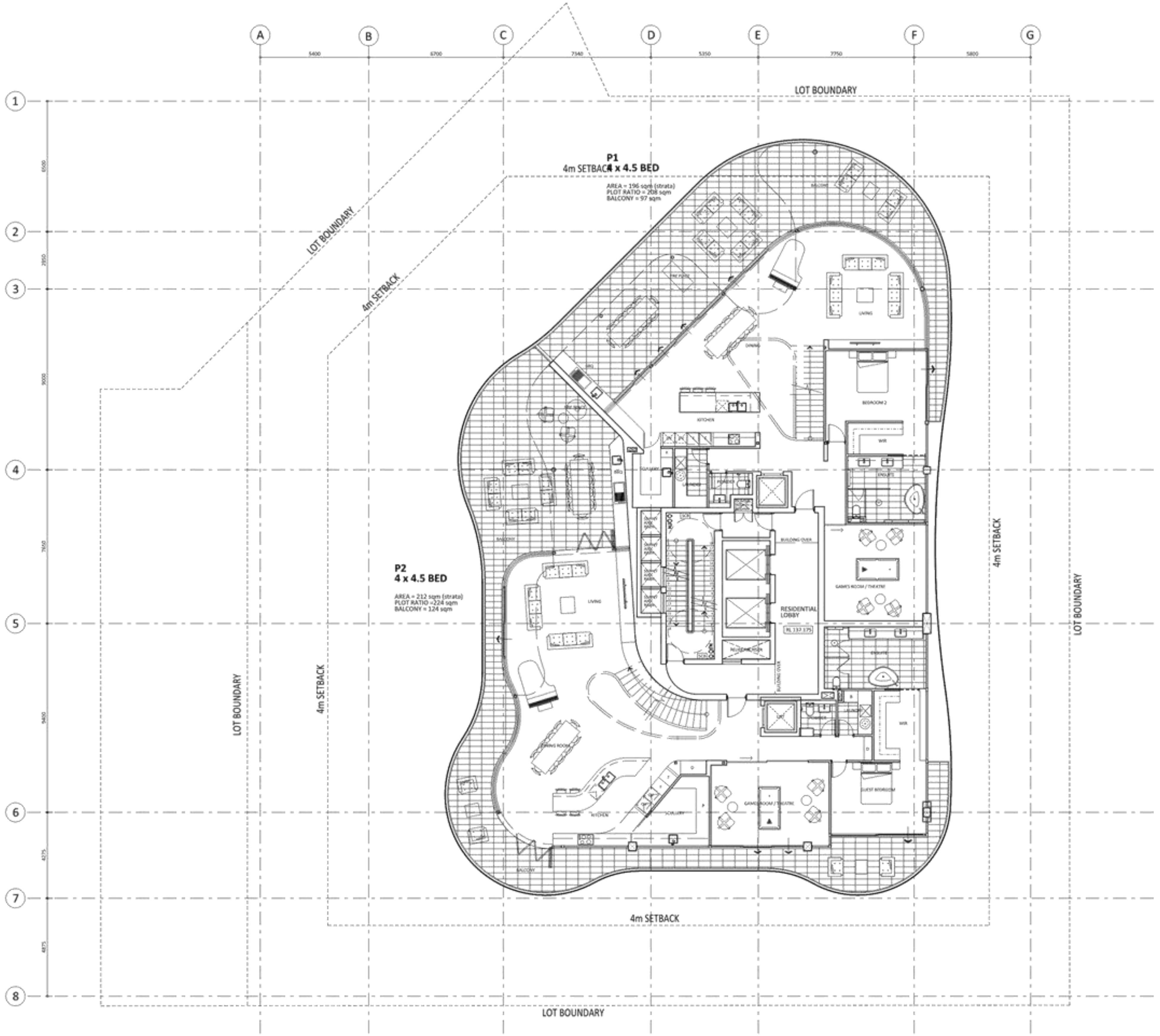

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
C	16.03.16	AMENDED DEVELOPMENT APPLICATION	TL
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DWG No.	A2-16
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LEVEL 43 FLOOR PLAN

STATUS
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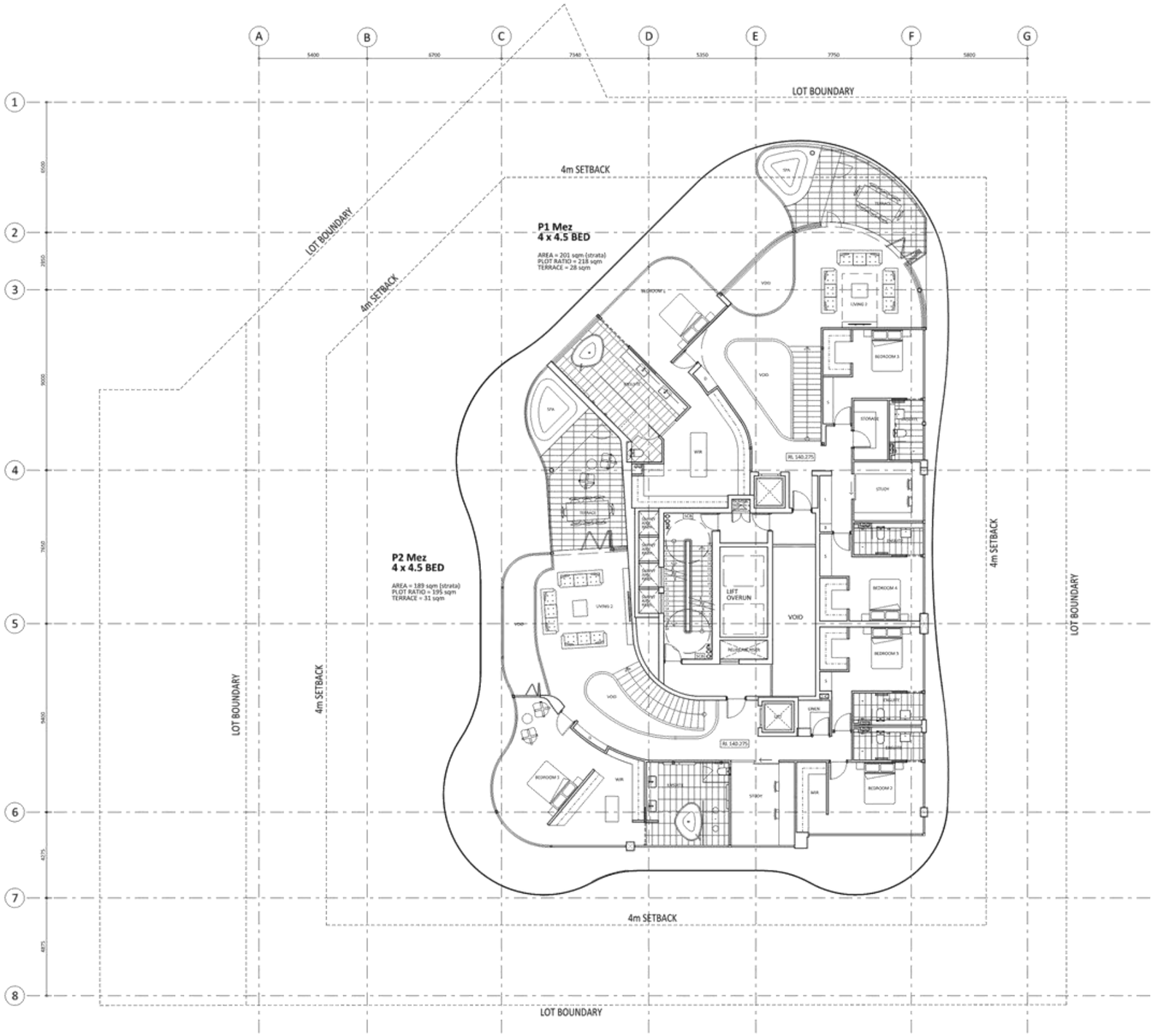

PROJECT
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH

CLIENT
EDGE HOLDINGS NO.6

REV	DATE	NOTES	CHECKED
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e. info@hillam.com.au

DRAWING
LEVEL 44 FLOOR PLAN

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STATUS
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LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.8

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SCALE	DATE ISSUED	DWG. NAME	DWG No.	REV
1:200 @ A1	16.03.16	North Elevation	A3-04	C

LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO 8

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SCALE	DATE ISSUED	DWG. NAME	DWG No.	REV
1:200 @ A3	16.03.16	West Elevation	A3-01	C


Two-storey Penthouses
Amenities Floor
Carparking
Compostie Aluminium Fascia
Weather proof louvre screen
Mid-grey rendered finish
All glazing suits to have aluminium framing with powdercoat finish.
Perforated facade cladding
Embossed Concrete
SITE BOUNDARY
SITE BOUNDARY
LUMIERE
74 MILL POINT ROAD, SOUTH PERTH
EDGE HOLDINGS NO.6
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SCALE
1:200 @ A3
DATE ISSUED
16.03.16
DWG. NAME
East Elevation
DWG No.
A3-03
REV
C


ROOF LEVEL RL 144.775
LEVEL 44 RL 140.275
LEVEL 43 RL 137.175
LEVEL 42 RL 134.075
LEVEL 41 RL 130.975
LEVEL 40 RL 127.875
LEVEL 39 RL 124.775
LEVEL 38 RL 121.675
LEVEL 37 RL 118.575
LEVEL 36 RL 115.475
LEVEL 35 RL 112.375
LEVEL 34 RL 109.275
LEVEL 33 RL 106.175
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LEVEL 29 RL 93.775
LEVEL 28 RL 90.675
LEVEL 27 RL 87.575
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LEVEL 21 RL 68.975
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LEVEL 19 RL 62.775
LEVEL 18 RL 59.675
LEVEL 17 RL 56.575
LEVEL 16 RL 53.475
LEVEL 15 RL 50.375
LEVEL 14 RL 47.275
LEVEL 13 RL 44.175
LEVEL 12 RL 41.075
LEVEL 11 RL 3.975
LEVEL 10 RL 34.675
LEVEL 9 RL 31.775
LEVEL 8 RL 28.675
LEVEL 7 RL 25.575
LEVEL 6 RL 22.175
LEVEL 5 RL 18.775
LEVEL 4
LEVEL 3
LEVEL 2
GROUND
BASEMENT RL -1.00
BASEMENT RL -4.200
BASEMENT RL -7.600
Two-storey Penthouses
Amenities Floor
Carparking & Basic Apartments
Carparking
SITE BOUNDARY
SITE BOUNDARY
Compostie Aluminium Fascia
Weather proof louvre screen
Mid-grey rendered finish
All glazing suits to have aluminium framing with powdercoat finish.
Perforated facade cladding
Embossed Concrete
Bronze metal finish or sim.
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1:200 @ A3
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16.03.16
DWG. NAME
South Elevation
DWG No.
A3-02
REV
C

SHAWMAC

CONSULTING CIVIL & TRAFFIC ENGINEERS, RISK MANAGERS.

Project:	74 Mill Point Road Mixed-Use Development Traffic Impact Assessment - Revised
Client:	Hillam Architects
Author:	Angela Wetton
Signature:	
Date:	29/06/2016

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 No.	Author	Reviewed by	Date	Document status	Signature	Date
0	A Wetton	P Nguyen	14/03/16	Draft		22/03/16
1	A Wetton	B Hartley	23/03/16	Revision		23/03/16
2	A Wetton	E Wilks	22/04/16	Revision		22/04/16
3	A Wetton	E Wilks	27/04/16	Revision		27/04/16
4	A Wetton	E Wilks	13/06/2016	Revision		20/06/2016
5	A Wetton	E Wilks	29/06/2016	Revision		29/06/2016

SHAWMAC PTY LTD
ABN 51 828 614 001
PO BOX 937
SOUTH PERTH WA 6951
T: + 61 8 9355 1300
F: + 61 8 9355 1922
E: admin@shawmac.com.au

Consulting Civil and Traffic Engineers, Risk Managers

CONTENTS

TABLES

FIGURES

1. Introduction

1.1. Proponent

Shawmac Pty Ltd has been commissioned by Hillam 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.**

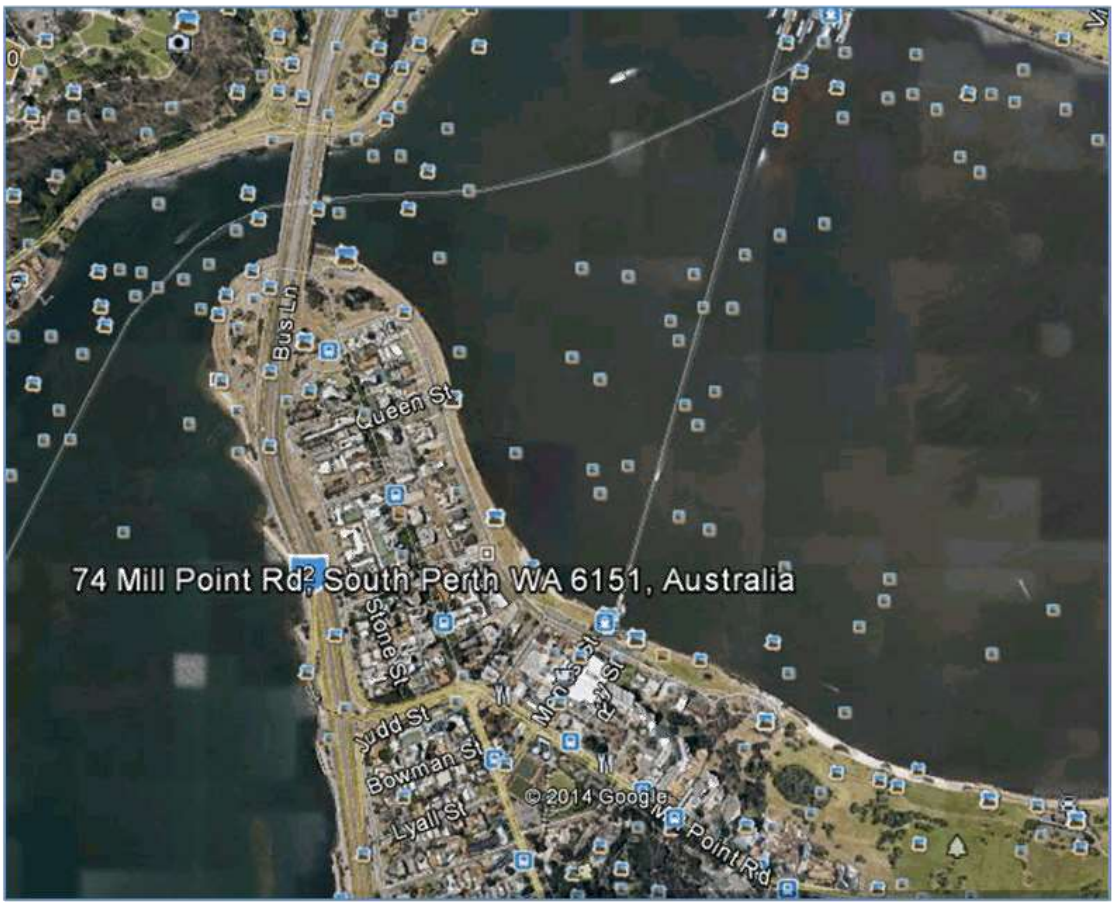

Figure 1 - Site Location

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 23rd March 2016. The subject site was previously granted planning approval; however significant modifications to the site plans have been made and this report is in support of a new planning approval application.

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.

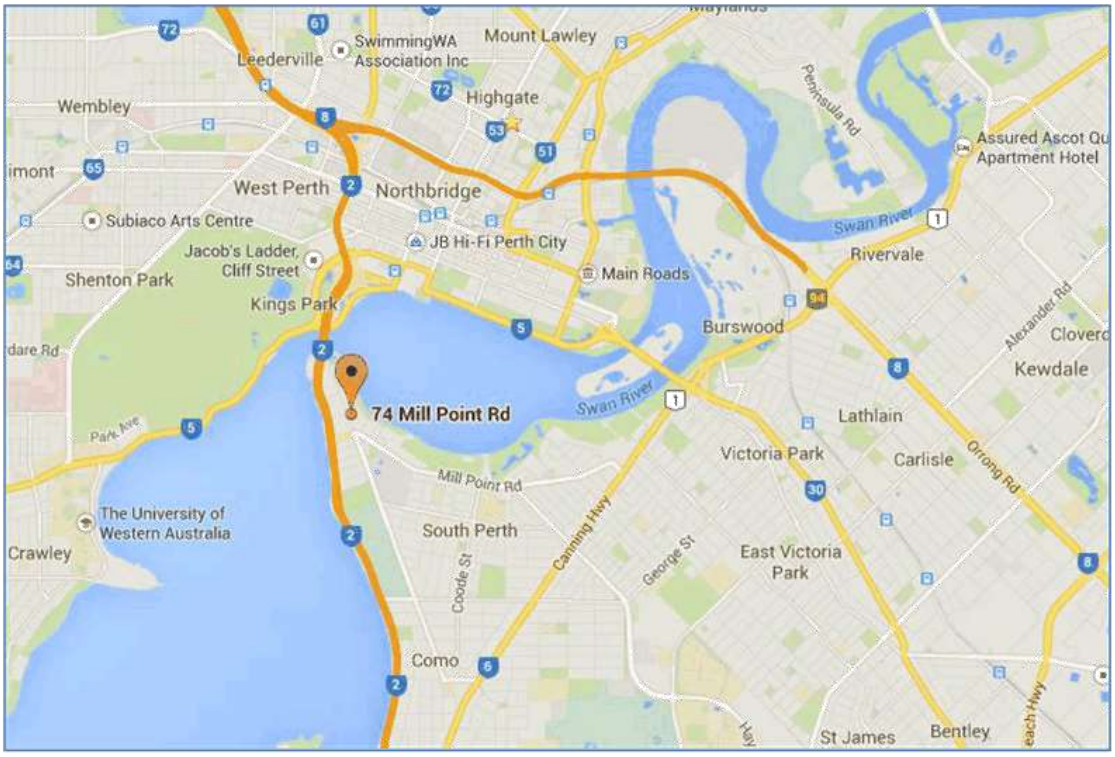

Figure 3 - Regional Context

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 44 storey mixed use development consisting of 147 serviced apartments and associated leisure facilities, a cafe, community meeting room, 85 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. Four ground level visitor parking bays are available at ground level, at the rear of the building, along with scooter parking and secure and unsecure bicycle parking. 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	147	1x1 Apartments	11
Cafe (Ground Floor)	295m²	2x2 Apartments	43
Community Meeting Room	69m²	3x2 Apartments	25
Commercial Car Parking	82 bays	Penthouse Apartments	6
Commercial Visitor Parking	9 bays	Residential Car Parking	115 bays
Scooter Parking	5 bays	Residential Visitor Parking	14 bays
Bicycle Parking	15 racks	Bicycle Parking	39 racks
Swimming Pool		Storage Rooms	
Games Room and Lounge		Swimming Pool	
		Gym	
		Resident's Lounge	

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

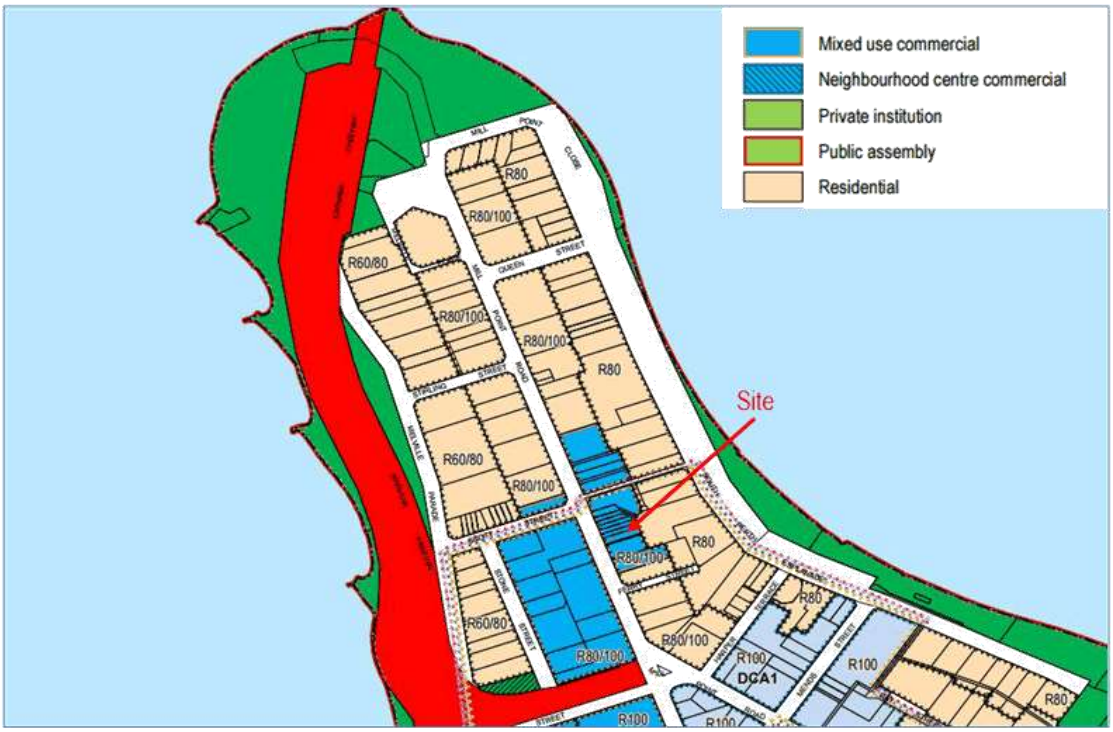

Figure 4 - Zoning

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

5

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;
- Perth Zoo;
- Perth Airport;
- Crown Perth;
- Scarborough Beach, City Beach and Floreat;
- Cottesloe Beach;
- Fremantle;
- Suburban residential areas;

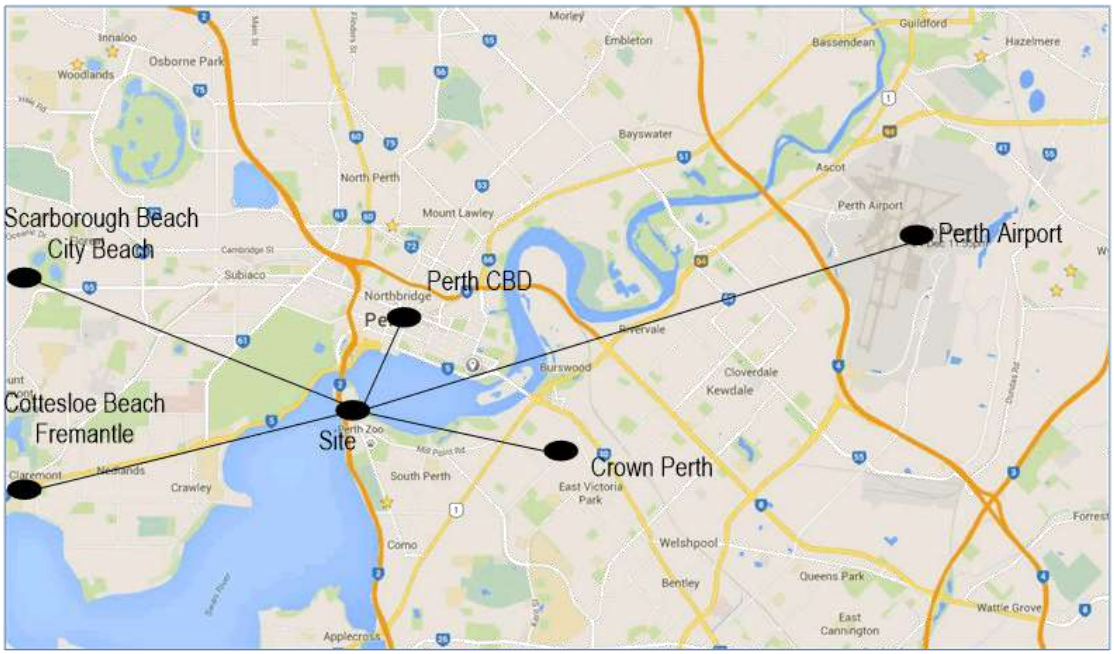

Figure 5 - Major Attractors and Generators

2.4. Integration with Surrounding Area

The Mill Point Peninsula is a largely 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.

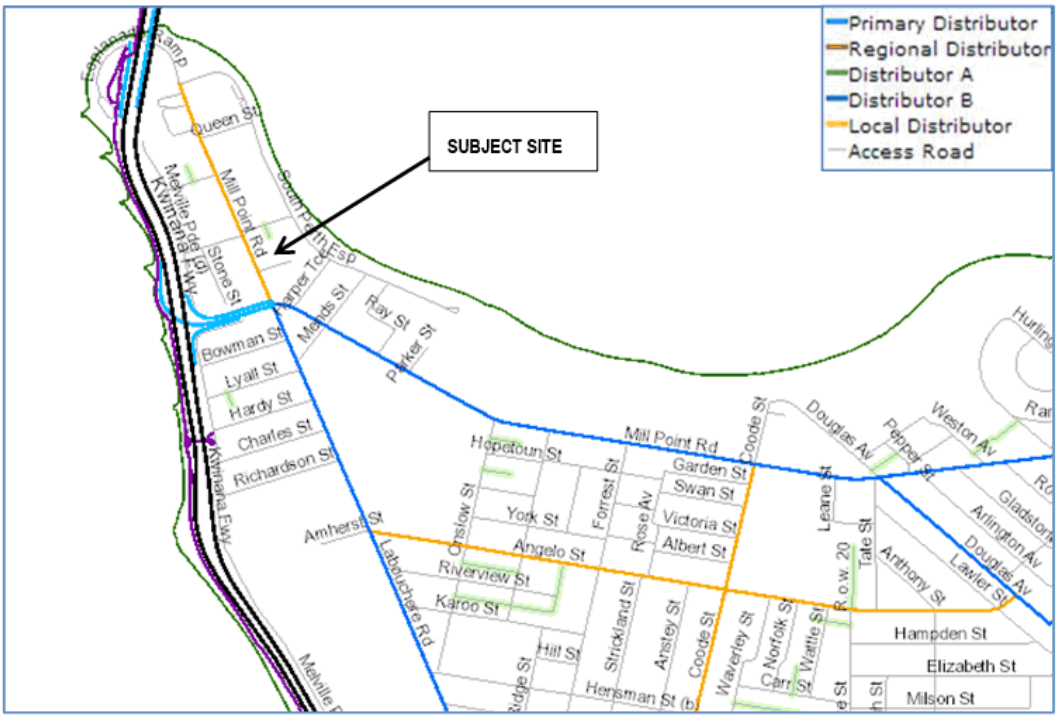

Figure 6 - Road Hierarchy

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 (March 2016) 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 above 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. Changes to the Surrounding Network

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.

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.

3.4. Crash History

A summary of the crash history (obtained from MRWA CARS database) between January 2010 and December 2014 for Mill Point Road, between Frasers Lane and Mends Street is shown in **Figure 7.** There is no history of crashes involving vehicles leaving properties along the midblock sections of Mill Point Road, however there was one recorded rear-end crash south of Frasers Lane, and one right angle crash at Ferry Street. The very low number of crashes along Mill Point Road in the context of the daily traffic volumes along the road indicates that 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 41 recorded crashes at the intersection of Mill Point Road / Labouchere Road/ Freeway Ramp, with 21 rear end crashes, 13 right-angled crashes, 3 off path crashes, 2 reversing in traffic and 2 through-through

crashes. Compared with the metropolitan averages, rear end crashes and right turn-through crashes were significantly over-represented, while right angle crashes were significantly-under represented. Of these crashes, 2 occurred during the AM Peak period, 6:00am – 8:59am, while 14 occurred in the PM Peak period, 3:00pm – 5:59pm. The development traffic is predicted as 839vpd, with 714vpd 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 7 - Crash History

It is recommended that the City initiate a safety audit of the intersection to identify any initiatives to improve the safety of the intersection.

4. Transport Assessment

4.1. Assessment Years

The development has been assessed against network conditions for its expected year of completion, taken as 2018. 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 by the City of South Perth.

4.2. Time Periods for Assessment

The assessment for 2018 is based on weekday daily traffic and both peak hour periods for the development and the signalised intersection, taken as 8-9am and 5-6pm. The existing morning roadway peak hour for Mill Point Road North, adjacent to the site is 11-12pm, however the development traffic will have more of an impact between 8-9am, and this has been assessed as a "worst case" scenario.

4.3. Development Generation and Distribution

In order to estimate the impact of traffic generated by the proposed development, the Road and Traffic Authority (RTA), NSW "Guide to Traffic Generating Developments", and the Institute of Transportation Engineers "Trip Generation 7th edition", was referenced. Generation based on these documents is shown on **Tables 3 and 4.**

Table 3 - Predicted Daily Trip Generation

Land use	Generation rate			Unit	Quantum	Estimated Generation		
	ADT	AM Peak	PM Peak			ADT	AM Peak	PM Peak
Serviced Apartments *(Motel)*	3	0.45	0.4	Units	147	441	66	59
Cafe *(Restaurant)*	60	5	5	GFA ('00m²)	295	177	15	15
Multipurpose Room *(Commercial premises)*	10	2	2	GFA ('00m²)	69	7	1	1
Residential Dwelling (1-2 BR)	4.5	0.45	0.45	Units	54	243	24	24
Residential Dwelling (>2 BR)	6	0.6	0.6	Units	31	186	19	19
Total						**1,054**	**125**	**118**

Table 4 - Predicted Peak Hour Movements

Land use	Peak Distribution			
	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Serviced Apartments *(Motel)*	24	42	32	27
Cafe *(Restaurant)*	9	6	5	10
Multipurpose Room *(Commercial premises)*	1	0	0	1
Residential Dwelling (1-2 BR)	4	20	16	8
Residential Dwelling (>2 BR)	4	15	13	6
Total	**42**	**83**	**66**	**52**

Standard trip generation guidelines indicate that the proposed development has the potential to generate approximately 1,054 vehicle trips per day with 125 vehicles per hour in the morning peak hour and 118 vehicles per hour in the afternoon peak hour.

However, based on the Western Australian Planning Commission Development Control Policy 1.6 Planning to Support Transit Use and Transit Oriented Development, the subject site falls within the indicative area of application of the policy as it is within a walkable catchment to public transport. Therefore, the development has qualities of a Transit Oriented Development (TOD). Some of the measures of TOD are:

- Permeability – with a choice of vehicle, bicycle and pedestrian routes available;
- Variety – the range of land uses available;
- Connectivity;
- Parking; and
- Public Transport.

"A transit-oriented development (TOD) is a mixed-use residential and commercial area designed to maximize access to public transport, and often incorporates features to encourage transit ridership. A TOD neighbourhood typically has a centre with a transit station or stop (train station, metro station, tram stop, or bus stop), surrounded by relatively high-density development with progressively lower-density development spreading outward from the centre. TODs generally are located within a radius of 400m to 800 m from a transit stop, as this is considered to be an appropriate scale for pedestrians."

Some of the TOD attributes related to 74 Mill Point Road are the following:

- Future train station within 800m
- Two high frequency bus services located 66m and 396m from the site with bus services running every 2 to 5 minutes during peak hours
- 390m to the Ferry which runs every 15 minutes during summer and 30 minutes during winter

- Existing retail strip in Mends Street is within 300m
- 200m to the new shopping centre to be included in Civic Heart development
- Only 600m to the Perth Zoo – a major tourist attraction.

The NZ Transport Agency Research Report 453 – Trips and parking related to land use (November 2011) report states that research and surveys of established TOD blocks have vehicle trip generation rates of around 35% - 75% of the typical database trip rates, and that the most significant reductions were those adjacent to high-quality transit stations on the fringe of the city centre, much like the proposed development site.

Recent work undertaken by the NSW Roads and Maritime Services (formerly the RTA) and reported in TDT 2013/04a 'Guide to Traffic Generating Developments, Updated traffic surveys" in 2013, indicated that based on ten surveys conducted in 2012, on developments that were close to public transport, greater than six storeys and almost exclusively residential in nature, the weekday trip generation rates were 2.1 trips daily per dwelling (compared to the standard rate of around 5.) For serviced apartments, work undertaken by Ratio Consultants in Melbourne found that generation rates for serviced apartments was as low as 0.5 trips per apartment per day (compared to the standard rate of 3.)

In order to assess the applicability of the above TOD related studies to 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 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 5.**

Table 5 - Results of Traffic Surveys

Address	# of Units / Apartments	Count Period	Trips generated		% Change
			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 5** 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.

Based on the above information regarding Transit Oriented Developments, the demographics of the unit sales to date and surveys of other properties on the Peninsula, the following discount rates are regarded as being suitable for the proposed development:

- Residential units AM 50% PM 50%
- Serviced Apartments AM 50% PM 25%
- Commercial AM 50% PM 50%

The bulk of the commercial trip generation will result from the café. As the bulk of the café's patronage is expected to be from people staying in the building, a discount rate of 50% is considered applicable.

The predicted discounted daily trip generation and peak hour distribution based on the above discount rates are shown in **Table 6** and **Table 7** and are referred to as Scenario 1.

Table 6 - Predicted Discounted Daily Trip Generation – Scenario 1

Land use	Discount Rate\ AM / PM	Estimated Generation			Discounted Generation		
		ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak
Serviced Apartments *(Motel)*	50 % / 25%	441	66	59	220.5	33	44.25
Cafe *(Restaurant)*	50% / 50%	177	15	15	88.5	7.5	7.5
Multipurpose Room *(Commercial premises)*	50% / 50%	7	1	1	3.5	0.5	0.5
Residential Dwelling (1-2 BR)	50% / 50%	243	24	24	121.5	12	12
Residential Dwelling (>2 BR)	50% / 50%	186	19	19	93	9.5	9.5
Total		**1,054**	**125**	**118**	**527**	**62.5**	**73.75**

Table 7 - Predicted Discounted Peak Hour Movements – Scenario 1

Land use	Discount Rate (AM / PM)	Estimated Peak Distribution				Discounted Peak Distribution			
		AM Peak In	AM Peak Out	PM Peak In	PM Peak Out	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Serviced Apartments *(Motel)*	50% / 25%	24	42	32	27	12	21	24	20.25
Cafe *(Restaurant)*	50% / 50%	9	6	5	10	4.5	3	2.5	5
Multipurpose Room *(Commercial premises)*	50% / 50%	1	0	0	1	0.5	0	0	0.5
Residential Dwelling (1-2 BR)	50% / 50%	4	20	16	8	2	10	8	4
Residential Dwelling (>2 BR)	50% / 50%	4	15	13	6	2	7.5	6.5	3
Total		**42**	**83**	**66**	**52**	**21**	**41.5**	**41**	**32.75**

The City of South Perth has been consulted with respect to the discount rates and the basis of their determination, as used for Scenario 1. Whilst agreeing that some discount rate is valid, they do not consider the South Perth Peninsula to be representative of a TOD and consider a 25% discount rate for all land uses to be more applicable. This has been adopted as Scenario 2 and is shown in **Tables 8 and 9**.

Table 8 - Predicted Discounted Daily Trip Generation – Scenario 2

Land use	Discount Rate	Estimated Generation			Discounted Generation		
		ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak
Serviced Apartments *(Motel)*	25%	441	66	59	330.75	49.5	44.25
Cafe *(Restaurant)*	25%	177	15	15	132.75	11.25	11.25
Multipurpose Room *(Commercial premises)*	25%	7	1	1	5.25	0.75	0.75
Residential Dwelling (1-2 BR)	25%	243	24	24	182.25	18	18
Residential Dwelling (>2 BR)	25%	186	19	19	139.5	14.25	14.25
Total		**1,054**	**125**	**118**	**791**	**94**	**89**

Table 9 - Predicted Discounted Peak Hour Movements – Scenario 2

Land use	Discount Rate	Estimated Peak Distribution				Discounted Peak Distribution			
		AM Peak In	AM Peak Out	PM Peak In	PM Peak Out	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Serviced Apartments *(Motel)*	25%	24	42	32	27	18	31.5	24	20.25
Cafe *(Restaurant)*	25%	9	6	5	10	6.75	4.5	3.75	7.5
Multipurpose Room *(Commercial premises)*	25%	1	0	0	1	0.75	0	0	0.75
Residential Dwelling (1-2 BR)	25%	4	20	16	8	3	15	12	6
Residential Dwelling (>2 BR)	25%	4	15	13	6	3	11.25	9.75	4.5
Total		**42**	**83**	**66**	**52**	32	62	50	39

4.4. 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 8**:

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

Figure 8 - Site traffic distribution

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Figures 9 and 10 illustrate the development traffic volumes based on the estimated traffic distribution for Scenarios 1 and 2, respectively.

Figure 9 - Site-generated traffic distribution – 74 Mill Point Road – Scenario 1

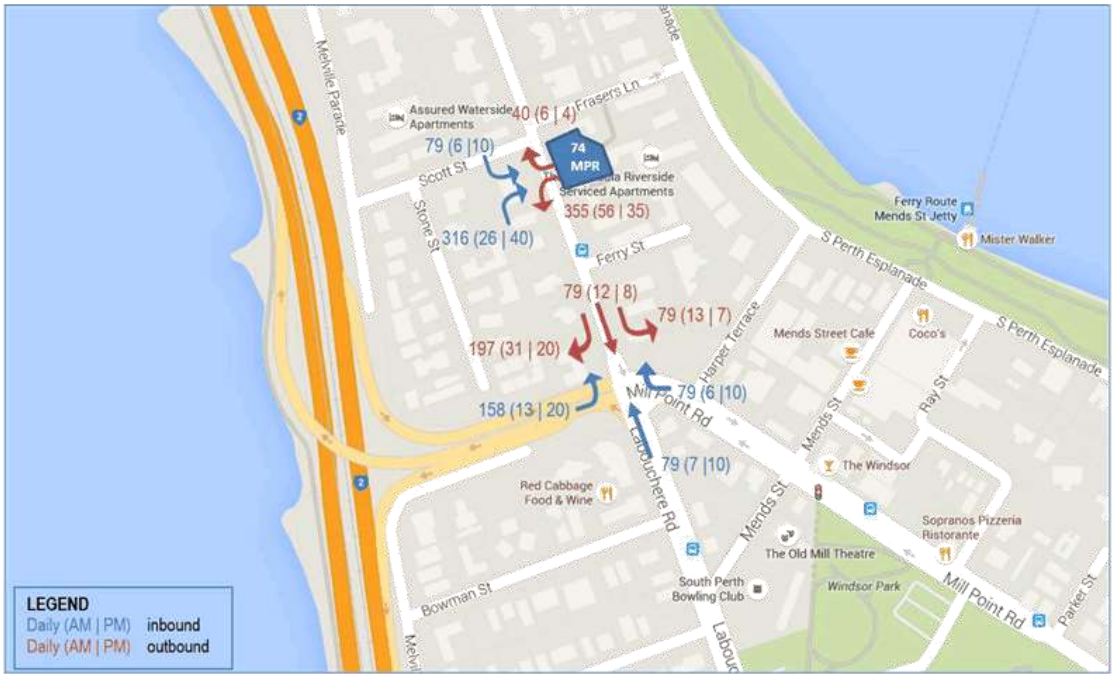


Figure 10 - Site-generated traffic distribution – 74 Mill Point Road – Scenario 2

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 **Tables 10 and 11,** for scenarios 1 and 2, respectively. The development year (2018) traffic volumes have been assumed based on a 5% p.a. compound growth rate applied to the existing (2016 year assumed) traffic volumes stated in Section 3.2.

Table 10 - Predicted site-generated traffic volumes - Development year (2018) traffic – Scenario 1

Location of Count	Predicted Increase			2018 Predicted Volumes (5% pa compound growth)			2018 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	238	29	33	42,826	3528	3791	43,064	3,557	3,824	0.56	0.82	0.87
Mill Point Road (North)	449	55	63	5,887	402	455	6,336	457	518	7.63	13.68	13.85
Mill Point Road (East)	106	12	15	23,657	1,835	1,878	23,763	1,847	1,893	0.45	0.65	0.80
Labouchere Road	106	12	16	16,596	1,274	1,703	16,702	1,286	1,719	0.64	0.94	0.94
Frasers Lane*	13	2	1	551	55	55	564	57	56	2.36	3.64	1.82

Frasers Lane predicted volumes based on assumed daily and peak hour volumes

Table 11 - Predicted site-generated traffic volumes - Development year (2018) traffic – Scenario 2

Location of Count	Predicted Increase			2018 Predicted Volumes (5% pa compound growth)			2018 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	355	44	40	42,826	3528	3791	43,181	3,572	3,801	0.83	1.25	0.26
Mill Point Road (North)	671	82	75	5,887	402	455	6,558	484	530	11.4	20	16.5
Mill Point Road (East)	158	19	17	23,657	1,835	1,878	23,815	1,854	1,895	0.67	1.04	0.91
Labouchere Road	158	19	18	16,596	1,274	1,703	16,754	1,293	1,721	0.95	1.49	1.06
Frasers Lane*	53	6	6	551	55	55	604	61	61	9.56	11.34	10.7

Frasers Lane predicted volumes based on assumed daily and peak hour volumes

4.5. Impact on Intersections

4.5.1. Development Scenarios

The intersections analysed were the site access / Mill Point Road North, and the signalised intersection with Labouchere Road and Mill Point Road East. The development traffic used for the lower-limit was the Scenario 1 volumes, as shown in **Figure 9,** in Section 4.4.

The upper limit for the development traffic was a 25% discount rate applied to all land uses as shown in **Figure 10**.

The City of South Perth also requested that the proposed mixed-use development of the adjacent site, 76 Mill Point Road, be taken into account. Although the development application for this development is currently on hold and even if it did proceed, would only be completed some time after 74 Mill Point Road, it was included in the Scenario 2 analysis to give a "worst case" scenario. (It should be noted that the development application for 76 Mill Point Road has been made by the same developer as 74 Mill Point Road and they have indicated that they would be flexible with regard to changes to that application if it created an undue impact on the surrounding traffic.) 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 combined predicted traffic generation and distribution for 74 and 76 Mill Point Road at a 25% discount rate is shown in **Figure 11,** with the 76 Mill Point Road traffic generation calculations shown in **Appendix C**.

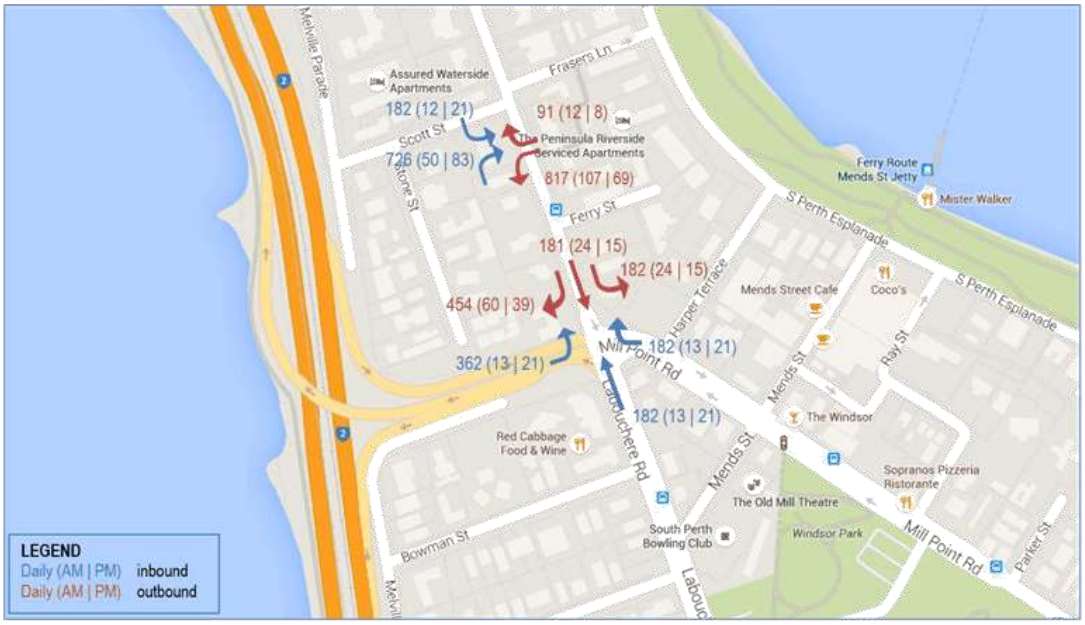


Figure 11 - Site-generated traffic distribution – 74 and 76 Mill Point Road

4.5.2. 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 6.1. Traffic volumes for 2018 were determined using SCATS counts (March 2016) and site turning surveys (April 2016) with a 5% compound growth rate applied from the year 2016. The results of the analysis are shown in **Appendix D**. Modelling confirms that the signalised intersection will continue to operate at a comparable level following development of the site and have a negligible impact on the operations at this location during weekday AM and PM peak periods under future traffic conditions. **Table 12** compares various measures for the worst value or movement of the intersection, pre vs post development, for Scenarios 1 and 2, to demonstrate the minimal impact resulting from the additional traffic.

Table 12 - Impact of additional traffic on LOS

	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)	95% back of queue 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)	95% back of queue worst movement (m)
2016	2,960	0.733	34.9	LOS C	30.2	85.2	3,189	0.811	36.5	LOS C	36.4	76
2018 no development	3,265	0.854	41.4	LOS D	38.8	106.4	3,514	0.788	36.4	LOS D	41.9	92.4
Scenario 1 - 2018 with 74 MPR development	3,318	0.844	40.8	LOS D	44.0	110.5	3,577	0.814	39.1	LOS D	47.9	94.2
Scenario 1- Δ	***53***	***-0.01***	***-0.60***	-	***5.20***	***4.10***	***63***	***0.03***	***2.70***	-	***6.00***	***1.80***
Scenario1- %Δ	***1.62%***	***-1.17%***	***-1.45%***	-	***13.40%***	***3.85%***	***1.79%***	***3.30%***	***7.42%***	-	***14.32%***	***1.95%***
Scenario 2 - 2018 with 74 & 76 MPR development	3,422	0.884	42.5	LOS D	55.4	114.2	3,666	0.818	37.0	LOS D	50.0	101.2
Scenario 2- Δ	***157***	***0.030***	***1.1***	-	***16.6***	***7.8***	***152***	***0.030***	***0.6***	-	***8.1***	***8.8***
Scenario 2 - %Δ	***4.81%***	***3.51%***	***2.66%***	-	***42.78%***	***7.33%***	***4.33%***	***3.81%***	***1.65%***	-	***19.33%***	***9.52%***

Table 12 shows for Scenario 2, during the morning peak hour, the queue length on Mill Point Road north will increase by 16.6m or the equivalent of 2.4 light vehicles. During the afternoon peak hour, the increase is 8.1m, or 1.2 light vehicles. The maximum queue length of 55.4m is not expected to extend beyond the nearest intersection which is Ferry Street, approximately 95m north of the intersection approach.

It should be noted that the above SIDRA results are based on *Optimum Cycle Times*. It is noted from the Cardno microsimulation model that maintaining the current cycle time of 120 seconds would result in a greater impact on the operation of the intersection.

4.5.3. Site Access / Mill Point Road North

The site access crossover and Mill Point Road (North) and intersections of Mends Street / Mill Point Road and Mends Street / Labouchere Road were also modelled using SIDRA 6.1 for Scenario 1 and with the combined traffic

volumes for 74 and 76 Mill Point Road as Scenario 2. 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 (8-9am, 5-6pm) for both development scenarios. The movement summary outputs are attached in **Appendix E**.

4.6. 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 micro 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. Trip generation rates for 74 Mill Point Road were based on a discount rate of 25% as discussed above and used for Scenario 2. Results of the long term modelling are included in the supplementary report.

4.7. 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.

4.8. 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 12** and illustrates the extent of the existing pedestrian/cyclist network within the vicinity of the site.

Figure 12 - 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 13** shows the location of the schools and the extent of the 40km/hr school speed zones.

Figure 13 - School Locations and 40km/h School Zones

6. Public Transport

The subject site has excellent 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 14 shows the existing public transport services in the area, while **Figure 15** and **Table 13** detail the bus and ferry stops near the site.

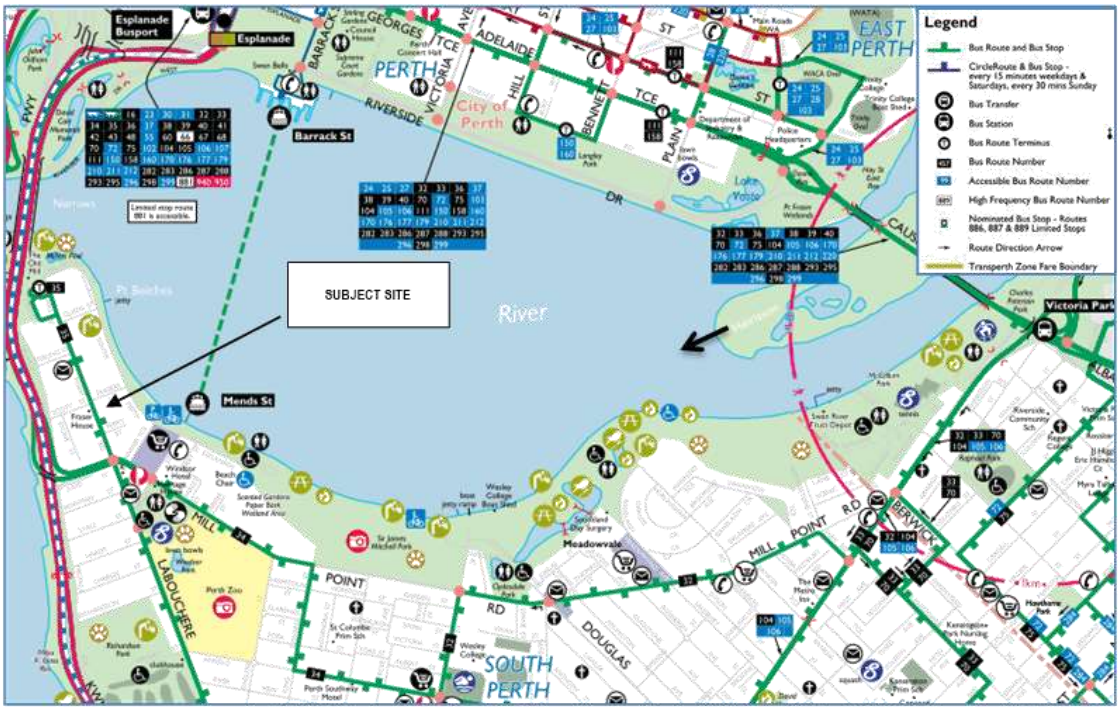


Figure 14 - Travel Smart Map: Public Transport Infrastructure in Vicinity of Site

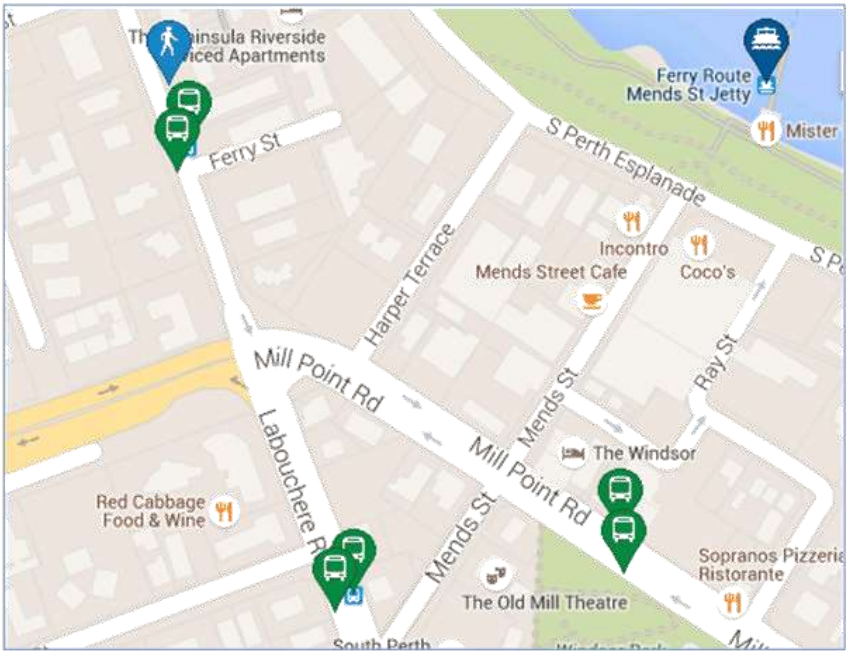


Figure 15 - Public Transport Stops Near Development Site

Table 13 - 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

The proposed on-site car parking is to be provided at ground level, within the three basements levels and within the above grade Levels 1 through 3.

The proposed car parking on the site will be allocated as shown in **Table 14.**

Table 14 - Proposed Car Parking Supply

Level	Resident Parking	Tandem	Resident Visitor	Bicycle	Commercial Parking	Commercial Tandem	Commercial visitor	Total Bays
Basement 3	41			12				41
Basement 2	28			9	11			39
Basement 1	14			9	24			38
Ground				15			4	4
Level 1	6	4	14	5	15	4	5	48
Level 2	12	10		4	28			50
Totals	**101**	**14**	**14**	**54**	**78**	**4**	**9**	**220**

The minimum on-site parking requirements as stipulated in the *South Perth Precinct Study Design Guidelines* and the proposed supply is compared in **Table 15**.

Table 15 - South Perth Parking Requirements

Level	Quantum	Rate	Required Number of Bays	Total Bays supplied
1 bed dwelling	11 dwellings	0.75 per dwelling	8	11
2+ bed dwelling	74 dwellings	1 per dwelling	74	104
Residential Visitors	85 dwellings	1 per 6 dwellings	14	14
Serviced Apartments	147 serviced apartments	0.5 per serviced apartment	74	74
Commercial (Café and Meeting Room)	364m²	1 per 50m2	8	8
Serviced Apartment Visitors	74 bays	0.1 per required bay	8	8
Commercial Visitors	8 bays	0.1 per required bay	1	1
		Totals	**187**	**220**

The proposed on-site supply of 220 standard bays including 18 tandem bays and is consistent with the statutory requirements for the site. There is also proposed parking for 5 scooters or motorcycles on the ground floor.

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 16.**

Table 16 - Parking Bay Dimensions

Bay details.	Bay dimension required.	Bay dimension provided.	Comment
Ninety degree bays	5.4 x 2.4 x 5.8 aisles.	5.4 x 2.4 x 5.8m aisles.	Complies.
Tandem bays	5.4 x 2.4 x 5.8 aisles	10.0 x 2.4 x 5.8m aisles	Complies

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 Level 1 and is required to be 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.

7.1. 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 9 secure bicycle bays and 6 public bicycle bays available on the ground floor, and an additional 39 bicycle bays provided over the parking levels.

The requirements for bicycle parking are shown in **Table 17** and determined that the 54 bicycle spaces supplied satisfies the requirements under TPS6. There is no requirement for the meeting room under TPS 6; however it is assumed that any requirement can be accommodated with the two surplus spaces supplied.

Table 17 - Bicycle Parking Requirements

Category	Quantum	TPS6 Required Rate	Required Spaces
Tourist Accommodation	147 serviced apartments	1 per 20 units	7 bicycle spaces
Cafe	295m²	1 per 40m² of dining area	7 bicycle spaces
Meeting Room	69m²	N/A	
Residential	85 dwellings	1 bicycle space to each three dwellings	29 bicycle spaces
Residential Visitors	85 dwellings	1 bicycle space to each ten dwellings	9 bicycle spaces
		Total Required	**52 bicycle spaces**
		Total Supplied	**54 bicycle spaces**

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.

An Autotrack simulation was undertaken for the site car parks and determined that all car bays were accessible using the B85 vehicle template.

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.

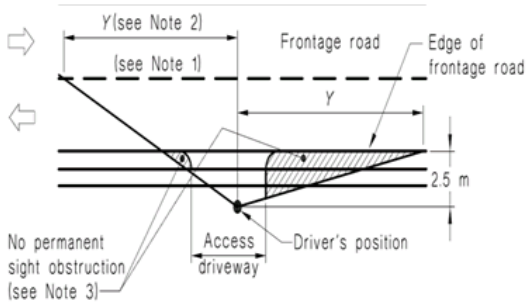
Waste collection would be undertaken outside of peak hours in order to minimise conflict with entering and exiting vehicles with this task undertaken a maximum of twice per week. A review of the site lines to Mill Point Road indicate that they are sufficient for the waste management vehicle to exit safely.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

Taxis will stop in front of the building within Mill Point Road out of peak hours. During peak hours, 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. Access Vehicle Sight Distance

Sight distance from the car park egress along the street is defined in Figure 3.2 of AS2890.1 which is reproduced in **Figure 16**.



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 16 - Sight Distance Requirements

The available sight distances from the cross over are shown in **Figures 17 and 18.**

Figure 17 - Vehicle sight distance looking north.

Figure 18 - Vehicle sight distance looking south.

8.4. 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 19**.

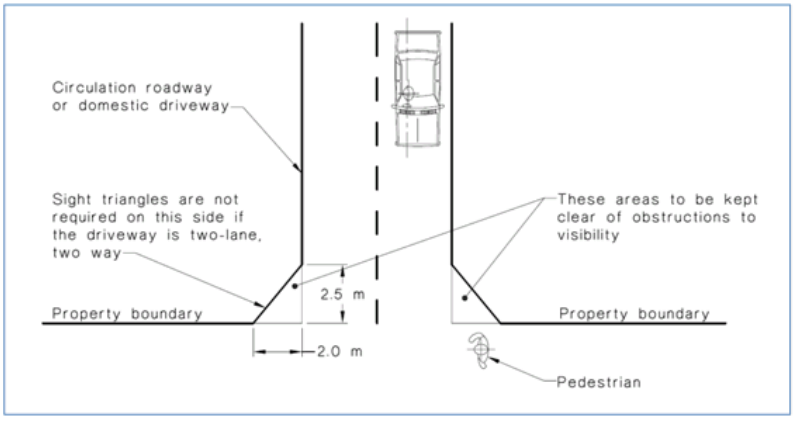


Figure 19 - AS 2890 Requirements for Pedestrian Sight Lines

The available pedestrian sight lines as per the concept plan is shown in **Figure 20**. 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.

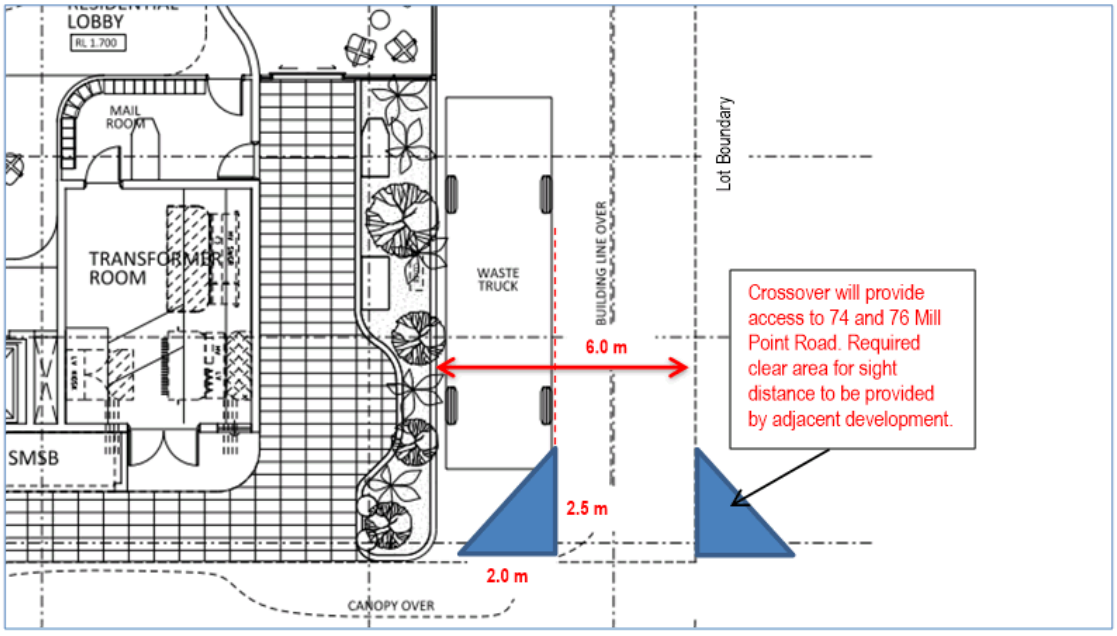


Figure 20 - Available Pedestrian Sight Lines

9. Conclusion

The Transport Impact Assessment identified that the location of the proposed development on the South Perth peninsula has all the attributes of a Transit Oriented Development (TOD) and falls within the indicative area identified in the Western Australian Planning Commission Development Control Policy 1.6 - Planning to Support Transit Use and Transit Oriented Development, as applicable to the policy. Additional information was gathered with regard to the demographics of the presale buyers and peak hour movement surveys conducted at several existing developments in the Mill Point Peninsula which confirmed this classification. The potential traffic generation from the development was determined accordingly. However City of South Perth does not regard the peninsula as a TOD precinct and considered the proposed discount rates for the trip generation to be too high. The City recommended the use of alternative discount rates and also requested the inclusion of the development proposed for the adjacent site, 76 Mill Point Road.

The impact of the proposed development on the surrounding road network was consequently assessed for 2018 (proposed year of completion) based on both scenarios, the City of South Perth scenario being regarded as a "worst case" possibility.

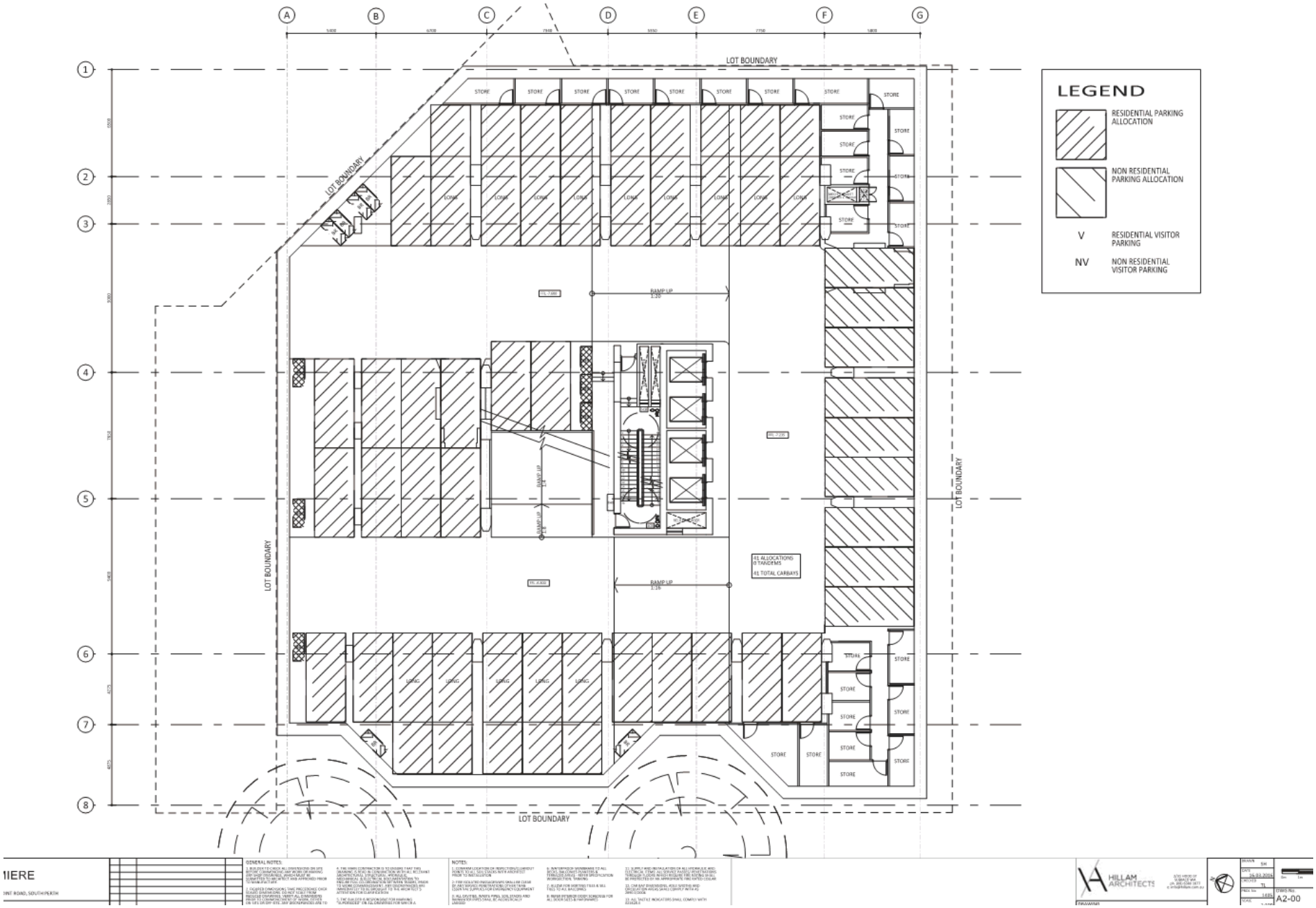
The analysis of the forecast traffic generation did not identify any unacceptable impact on the adjacent road segments based on either scenario.

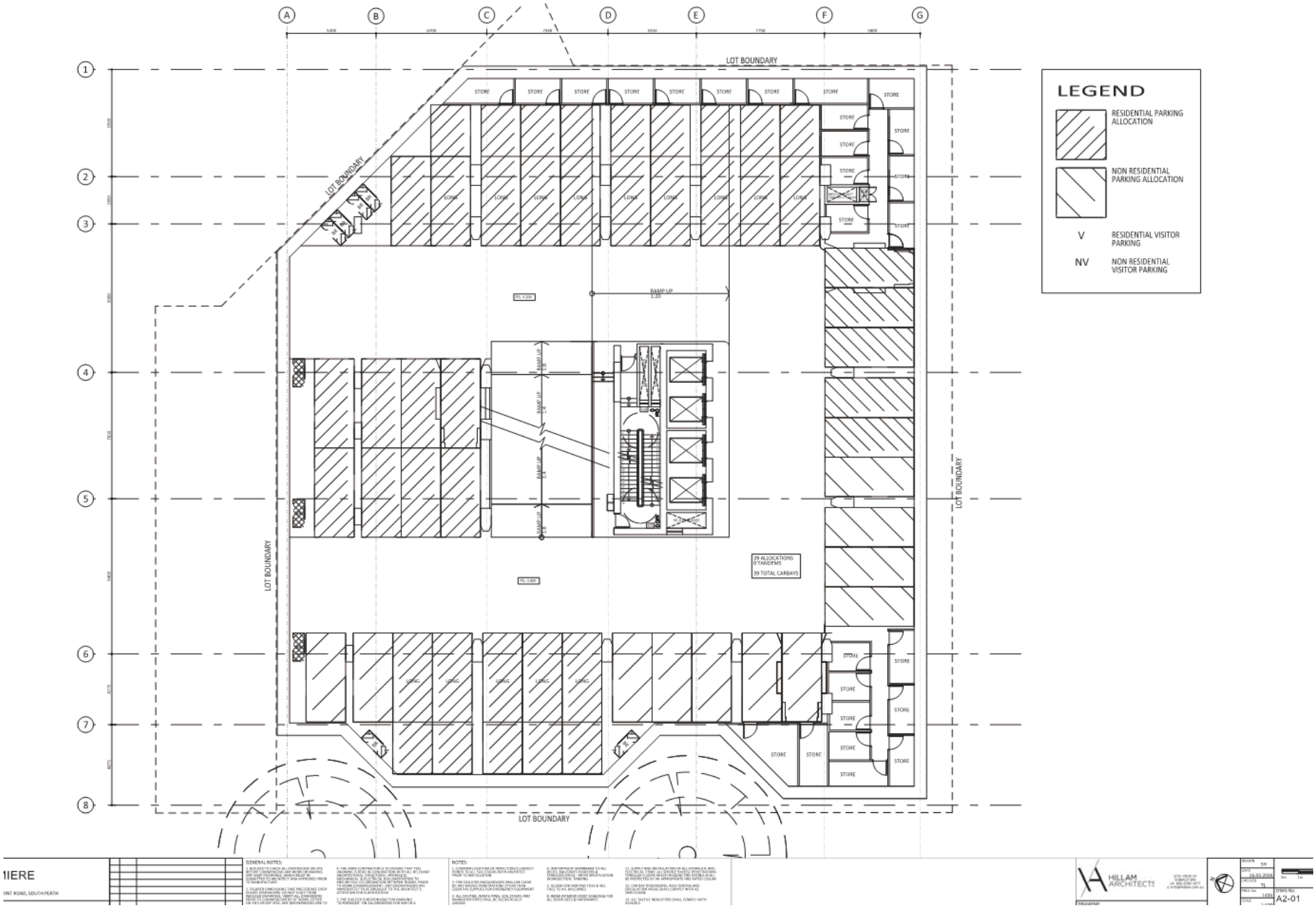
With respect to the proposed development, the following is concluded;

- 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.
- Under development scenario 1, the theoretical trip generation from the site is 527 vpd with 63 vph and 74 vph in the AM and PM peak periods.
- Under the development scenario 2, the theoretical traffic generation from the site is 791 vpd with the predicted peak AM and PM movements being estimated at 94 and 89 vph respectively.
- The adjacent road network has capacity to accommodate the additional traffic and the signalised intersection of Mill Point Road / Labouchere Road / Kwinana Freeway ramp is expected to perform satisfactorily in both the AM peak and PM peak periods.
- The proposed layout of parking bays is in accordance with AS2890 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.

Consulting Civil and Traffic Engineers, Risk Managers

Appendix A - Site Plan


LEGEND
RESIDENTIAL PARKING ALLOCATION
NON RESIDENTIAL PARKING ALLOCATION
V RESIDENTIAL VISITOR PARKING
NV NON RESIDENTIAL VISITOR PARKING
LOT BOUNDARY
STORE
LONG
RAMP UP 1:20
41 ALLOCATIONS
0 TANDEMS
41 TOTAL CARBAYS
HILLAM ARCHITECTS
A2-00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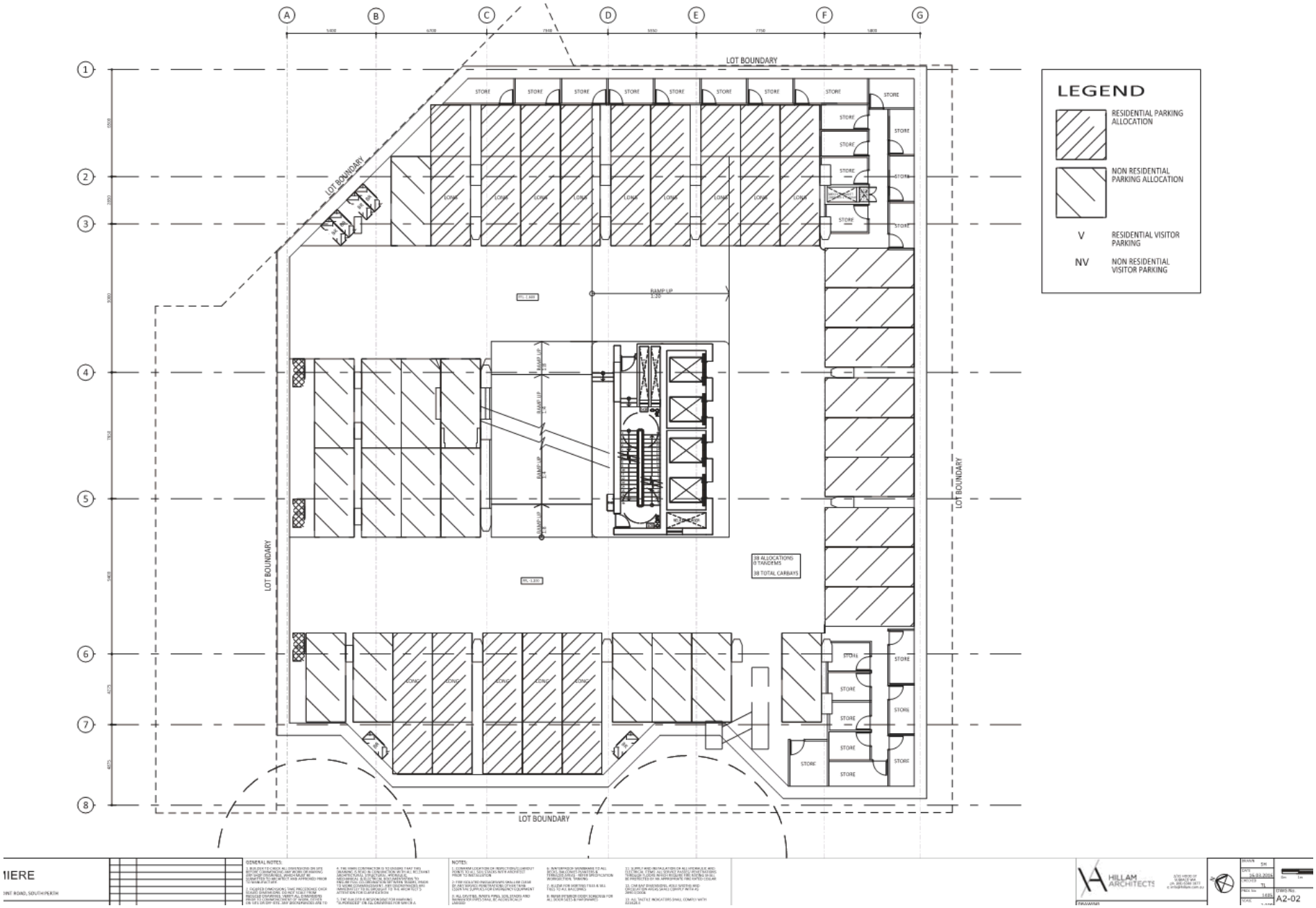
NON RESIDENTIAL PARKING ALLOCATION
V RESIDENTIAL VISITOR PARKING
NV NON RESIDENTIAL VISITOR PARKING
LOT BOUNDARY
STORE
LONG
RAMP UP
29 ALLOCATIONS
0 TANDEMS
29 TOTAL CARBAYS
HILLAM ARCHITECTS
A2-01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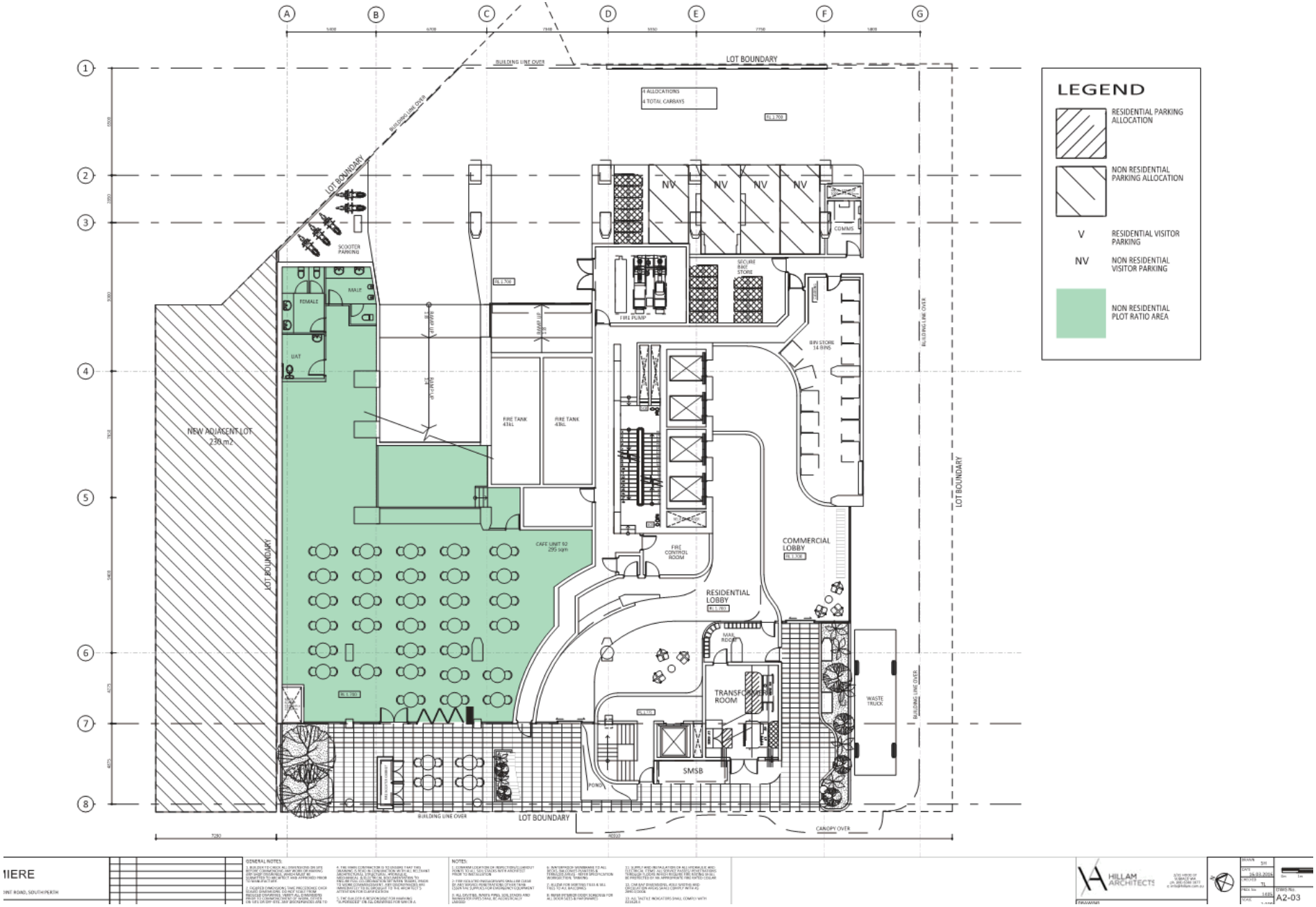
NON RESIDENTIAL PARKING ALLOCATION
V RESIDENTIAL VISITOR PARKING
NV NON RESIDENTIAL VISITOR PARKING
LOT BOUNDARY
STORE
RAMP UP
38 ALLOCATIONS
0 TANDEMS
38 TOTAL CARBAYS
HILLAM ARCHITECTS
A2-02



HILLAM ARCHITECTS
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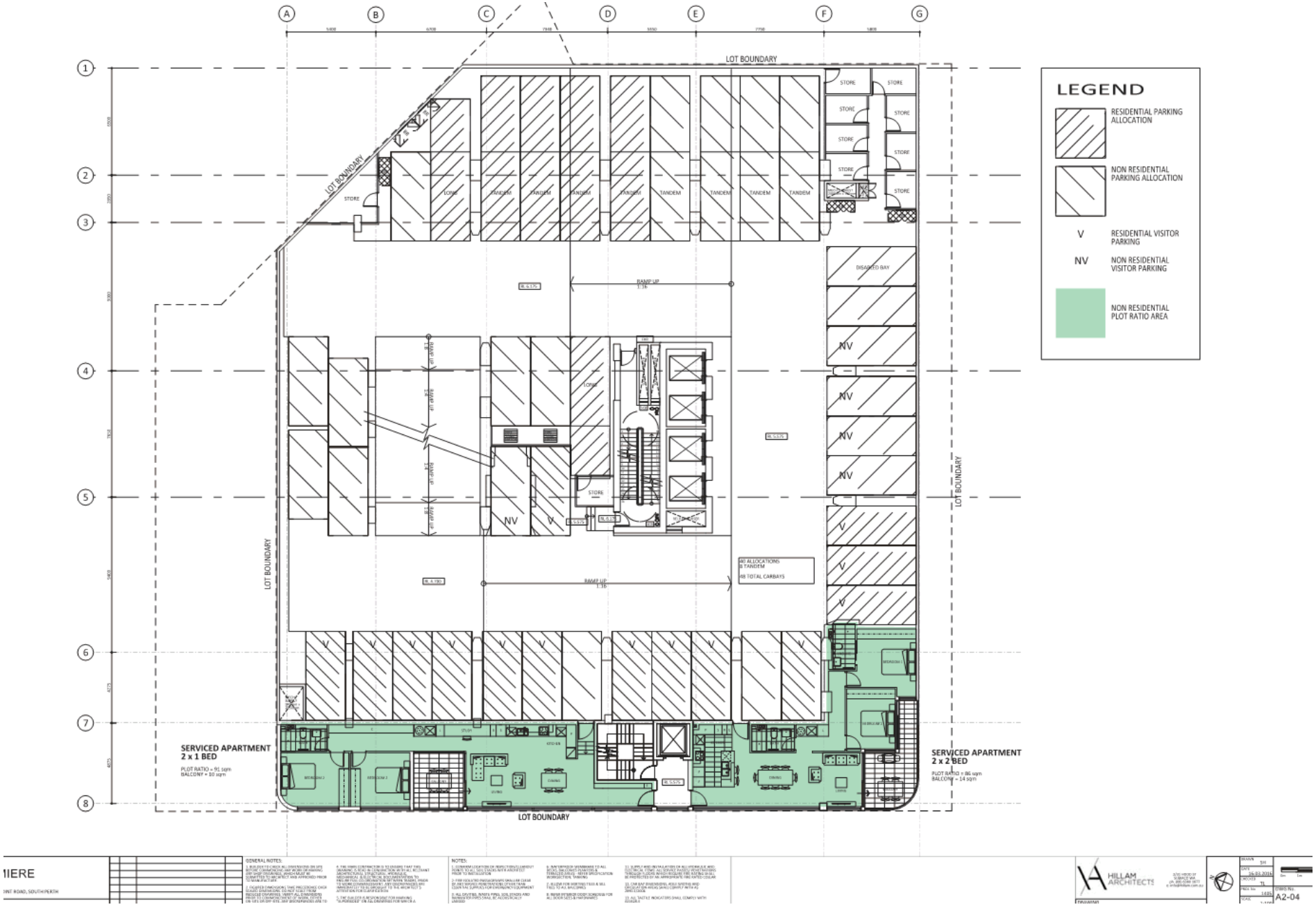
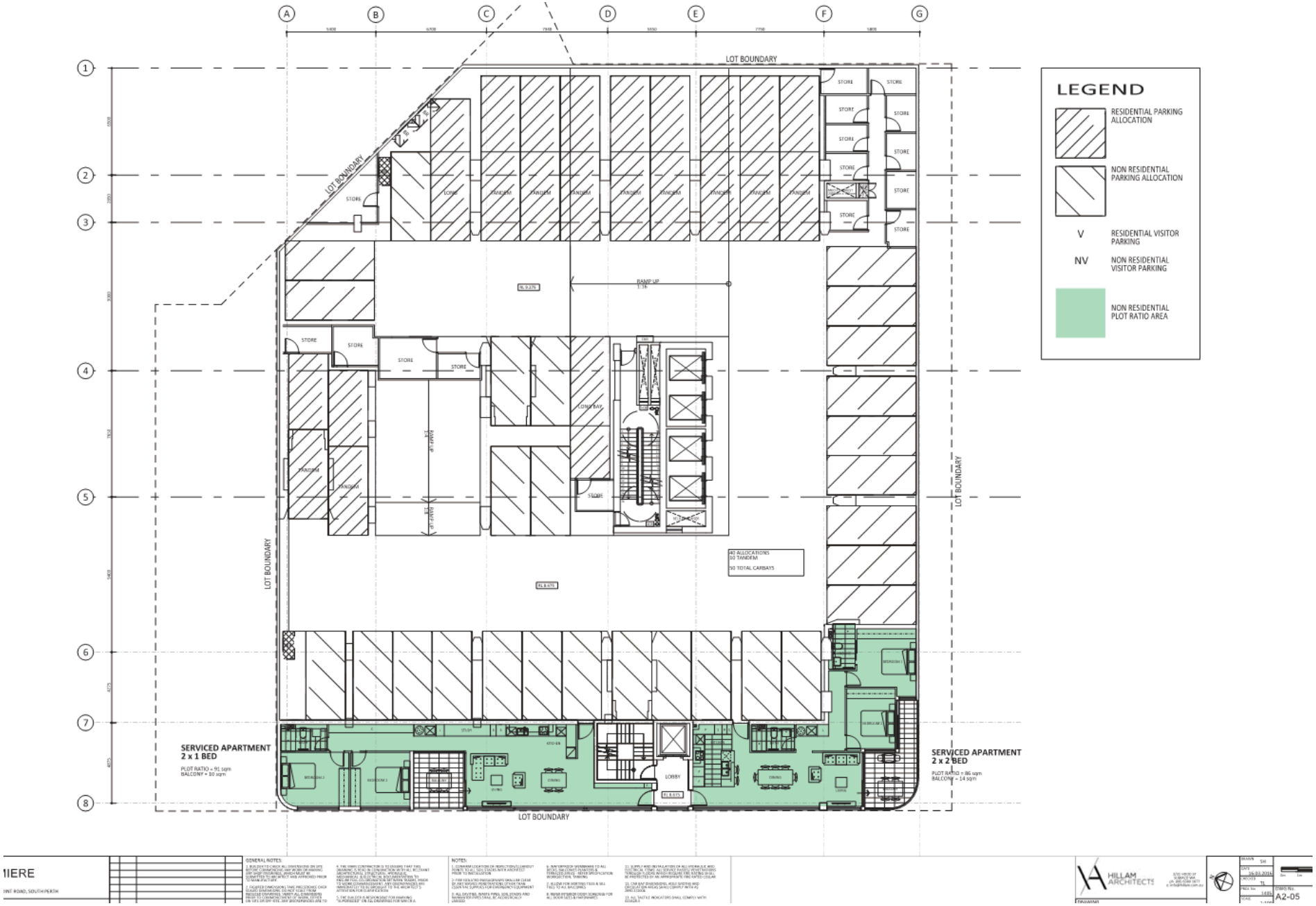

LEGEND
RESIDENTIAL PARKING ALLOCATION
NON RESIDENTIAL PARKING ALLOCATION
V RESIDENTIAL VISITOR PARKING
NV NON RESIDENTIAL VISITOR PARKING
NON RESIDENTIAL PLOT RATIO AREA
LOT BOUNDARY
SERVICED APARTMENT 2 x 1 BED
SERVICED APARTMENT 2 x 2 BED
RAMP UP 1:16
60 ALLOCATIONS 8 TANDEM
68 TOTAL CARBAYS
HILLAM ARCHITECTS
A2-04


LOT BOUNDARY
LEGEND
RESIDENTIAL PARKING ALLOCATION
NON RESIDENTIAL PARKING ALLOCATION
V
RESIDENTIAL VISITOR PARKING
NV
NON RESIDENTIAL VISITOR PARKING
NON RESIDENTIAL PLOT RATIO AREA
STORE
TANDEM
RAMP UP 1:16
40 ALLOCATIONS
30 TANDEM
50 TOTAL CARBAYS
SERVICED APARTMENT
2 x 1 BED
PLOT RATIO = 91 sqm
BALCONY = 10 sqm
SERVICED APARTMENT
2 x 2 BED
PLOT RATIO = 86 sqm
BALCONY = 14 sqm
LOBBY
HILLAM ARCHITECTS
A2-05

Appendix B - 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%)

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.

Consulting Civil and Traffic Engineers, Risk Managers

Appendix C - 76 Mill Point Road Traffic Generation

Table 18 - Predicted Daily Trip Generation – 76 Mill Point Road

Land use	Generation rate			Unit	Quantum	Estimated Generation			Source
	ADT	AM Peak	PM Peak			ADT	AM Peak	PM Peak	
Residential dwelling - Medium density residential flat building (1-2BR).	4.50	0.45	0.45	Units	62	284	28	28	RTA Guide.
Residential dwelling - Medium density flat building (>2BR).	6.00	0.60	0.60	Units	38	222	22	22	RTA Guide.
Apartment High Rise ITE	4.20	0.30	0.35	Units	147	638	46	53	ITE Guide 222
Cafe (High turnover sit down restaurant)	136.79	12.39	12.00	GFA	163	223	20	20	ITE Guide 932
Total						**1367**	**116**	**123**	

Table 19 - Predicted Peak Hour Movements – 76 Mill Point Road

Land use	Peak Distribution			
	AM Peak in	AM Peak out	PM Peak in	PM Peak out
Residential dwelling - Medium density residential flat building (1-2BR).	11	17	17	11
Residential dwelling - Medium density flat building (>2BR).	8	14	14	8
Apartment High Rise ITE	12	34	32	21
Cafe (High turnover sit down restaurant)	9	11	9	11
Total	**40**	**76**	**72**	**51**

Table 20 - Predicted Discounted Daily Trip Generation – 76 Mill Point Road

Land use	Discount Rate	Estimated Generation			Discounted Generation		
		ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak
Residential dwelling - Medium density residential flat building (1-2BR).	25%	284	28	28	213	21	21
Residential dwelling - Medium density flat building (>2BR).	25%	222	22	22	166.5	16.5	16.5
Apartment High Rise ITE	25%	638	46	53	478.5	34.5	39.75
Cafe (High turnover sit down restaurant)	25%	223	20	20	167.25	15	15
	TOTAL	**1367**	**116**	**123**	**213**	**21**	**21**

Table 21 - Predicted Discounted Peak Hour Movements – 76 Mill Point Road

Land use	Discount Rate	Estimated Peak Distribution				Discounted Peak Distribution			
		AM Peak In	AM Peak Out	PM Peak In	PM Peak Out	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Residential dwelling - Medium density residential flat building (1-2BR).	25%	11	17	17	11	8.25	12.75	12.75	8.25
Residential dwelling - Medium density flat building (>2BR).	25%	8	14	14	8	6	10.5	10.5	6
Apartment High Rise ITE	25%	12	34	32	21	9	25.5	24	15.75
Cafe (High turnover sit down restaurant)	25%	9	11	9	11	6.75	8.25	6.75	8.25
TOTAL	25%	**40**	**76**	**72**	**51**	30	57	54	38.25

Consulting Civil and Traffic Engineers, Risk Managers

Appendix D - SIDRA Analysis – Signalised Intersection

MOVEMENT SUMMARY

Site: 2016 - AM Peak no development traffic

New Site
Signals - Fixed Time Isolated Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	921	3.0	0.733	24.9	LOS C	11.9	85.2	0.93	0.89	42.2
2	T1	25	3.0	0.160	25.6	LOS C	0.9	6.2	0.94	0.69	41.7
3	R2	8	3.0	0.160	31.2	LOS C	0.9	6.2	0.94	0.69	41.1
Approach		954	3.0	0.733	25.0	LOS C	11.9	85.2	0.94	0.88	42.2
East: Mill Point Road											
4	L2	113	3.0	0.717	24.9	LOS C	7.0	50.3	0.96	0.89	44.0
5	T1	731	3.0	0.717	22.6	LOS C	8.2	58.6	0.96	0.88	43.5
6	R2	19	3.0	0.079	25.1	LOS C	0.4	3.1	0.82	0.70	41.6
Approach		863	3.0	0.717	23.0	LOS C	8.2	58.6	0.96	0.87	43.5
North: Mill Point Road											
7	L2	55	3.0	0.574	33.1	LOS C	3.3	23.5	0.99	0.80	39.4
8	T1	62	3.0	0.574	27.5	LOS C	3.3	23.5	0.99	0.80	40.2
9	R2	143	3.0	0.721	34.9	LOS C	4.2	30.2	1.00	0.88	37.6
Approach		260	3.0	0.721	32.8	LOS C	4.2	30.2	1.00	0.84	38.6
West: Mill Point Road											
10	L2	104	3.0	0.431	16.7	LOS B	6.8	49.1	0.72	0.67	48.5
11	T1	640	3.0	0.431	11.1	LOS B	6.9	49.7	0.72	0.64	50.3
12	R2	139	3.0	0.601	32.4	LOS C	3.9	27.7	0.99	0.82	38.7
Approach		883	3.0	0.601	15.1	LOS B	6.9	49.7	0.76	0.67	47.8
All Vehicles		2960	3.0	0.733	22.1	LOS C	11.9	85.2	0.90	0.81	43.8

MOVEMENT SUMMARY

Site: 2016 - PM Peak no development traffic

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	804	3.0	0.577	21.8	LOS C	9.5	68.4	0.84	0.81	43.8
2	T1	37	3.0	0.364	29.3	LOS C	2.0	14.4	0.97	0.74	39.5
3	R2	31	3.0	0.364	34.9	LOS C	2.0	14.4	0.97	0.74	39.0
Approach		872	3.0	0.577	22.6	LOS C	9.5	68.4	0.85	0.81	43.4
East: Mill Point Road											
4	L2	90	3.0	0.687	27.9	LOS C	6.7	47.8	0.98	0.88	42.5
5	T1	614	3.0	0.687	25.5	LOS C	7.2	51.4	0.98	0.86	42.1
6	R2	31	3.0	0.170	29.6	LOS C	0.8	5.9	0.88	0.73	39.6
Approach		735	3.0	0.687	26.0	LOS C	7.2	51.4	0.97	0.86	42.0
North: Mill Point Road											
7	L2	102	3.0	0.676	35.1	LOS D	5.1	36.8	1.00	0.86	38.2
8	T1	65	3.0	0.676	29.5	LOS C	5.1	36.8	1.00	0.86	39.0
9	R2	160	3.0	0.660	35.0	LOS C	4.9	35.1	1.00	0.85	37.6
Approach		327	3.0	0.676	33.9	LOS C	5.1	36.8	1.00	0.85	38.1
West: Mill Point Road											
10	L2	89	3.0	0.580	18.3	LOS B	11.1	79.9	0.78	0.71	47.8
11	T1	941	3.0	0.580	12.8	LOS B	11.2	80.6	0.78	0.70	49.4
12	R2	225	3.0	0.675	32.5	LOS C	6.7	47.9	0.98	0.86	38.7
Approach		1255	3.0	0.675	16.7	LOS B	11.2	80.6	0.82	0.73	46.9
All Vehicles		3189	3.0	0.687	22.2	LOS C	11.2	80.6	0.88	0.79	43.7

Consulting Civil and Traffic Engineers, Risk Managers

MOVEMENT SUMMARY

Site: 2018 - AM Peak no development traffic

New Site
Signals - Fixed Time Isolated Cycle Time = 59 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	1016	3.0	0.785	27.8	LOS C	14.8	106.4	0.96	0.93	40.9
2	T1	28	3.0	0.193	28.0	LOS C	1.0	7.5	0.95	0.70	40.6
3	R2	9	3.0	0.193	33.6	LOS C	1.0	7.5	0.95	0.70	40.1
Approach		1053	3.0	0.785	27.8	LOS C	14.8	106.4	0.95	0.92	40.9
East: Mill Point Road											
4	L2	124	3.0	0.781	28.0	LOS C	8.7	62.3	0.95	0.93	42.4
5	T1	806	3.0	0.781	25.4	LOS C	10.5	75.3	0.96	0.93	42.2
6	R2	21	3.0	0.090	25.6	LOS C	0.5	3.6	0.81	0.70	41.4
Approach		951	3.0	0.781	25.7	LOS C	10.5	75.3	0.96	0.92	42.2
North: Mill Point Road											
7	L2	61	3.0	0.679	36.5	LOS D	4.0	28.7	1.00	0.85	38.0
8	T1	68	3.0	0.679	30.9	LOS C	4.0	28.7	1.00	0.85	38.7
9	R2	158	3.0	0.854	41.4	LOS D	5.4	38.8	1.00	1.00	35.2
Approach		287	3.0	0.854	37.9	LOS D	5.4	38.8	1.00	0.93	36.6
West: Mill Point Road											
10	L2	115	3.0	0.440	16.2	LOS B	7.7	55.2	0.69	0.65	48.8
11	T1	706	3.0	0.440	10.6	LOS B	7.8	56.0	0.69	0.62	50.7
12	R2	153	3.0	0.552	32.2	LOS C	4.3	31.2	0.97	0.80	38.8
Approach		974	3.0	0.552	14.6	LOS B	7.8	56.0	0.74	0.65	48.2
All Vehicles		3265	3.0	0.854	24.2	LOS C	14.8	106.4	0.89	0.84	42.7

MOVEMENT SUMMARY

Site: 2018 - PM Peak no development traffic

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	886	3.0	0.636	22.3	LOS C	10.8	77.7	0.87	0.83	43.5
2	T1	41	3.0	0.401	29.5	LOS C	2.2	16.0	0.98	0.75	39.4
3	R2	34	3.0	0.401	35.1	LOS D	2.2	16.0	0.98	0.75	38.9
Approach		961	3.0	0.636	23.0	LOS C	10.8	77.7	0.88	0.82	43.2
East: Mill Point Road											
4	L2	99	3.0	0.788	31.5	LOS C	8.0	57.1	0.99	0.97	40.8
5	T1	677	3.0	0.788	28.5	LOS C	8.7	62.3	0.99	0.95	40.7
6	R2	34	3.0	0.195	29.8	LOS C	0.9	6.6	0.88	0.73	39.5
Approach		810	3.0	0.788	28.9	LOS C	8.7	62.3	0.99	0.94	40.6
North: Mill Point Road											
7	L2	112	3.0	0.744	36.4	LOS D	5.8	41.9	1.00	0.90	37.7
8	T1	72	3.0	0.744	30.8	LOS C	5.8	41.9	1.00	0.90	38.5
9	R2	176	3.0	0.726	36.1	LOS D	5.5	39.7	1.00	0.89	37.1
Approach		360	3.0	0.744	35.1	LOS D	5.8	41.9	1.00	0.90	37.6
West: Mill Point Road											
10	L2	98	3.0	0.639	18.9	LOS B	12.8	91.6	0.81	0.74	47.5
11	T1	1037	3.0	0.639	13.3	LOS B	12.9	92.4	0.81	0.73	49.0
12	R2	248	3.0	0.744	34.1	LOS C	7.7	55.0	1.00	0.91	38.1
Approach		1383	3.0	0.744	17.4	LOS B	12.9	92.4	0.85	0.76	46.5
All Vehicles		3514	3.0	0.788	23.4	LOS C	12.9	92.4	0.90	0.83	43.1

Consulting Civil and Traffic Engineers, Risk Managers

MOVEMENT SUMMARY

Site: 2018 - AM Peak with 74 MPR - Scenario 1

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	1016	3.0	0.798	29.0	LOS C	15.4	110.5	0.96	0.94	40.3
2	T1	32	3.0	0.217	28.7	LOS C	1.2	8.5	0.95	0.70	40.4
3	R2	9	3.0	0.217	34.3	LOS C	1.2	8.5	0.95	0.70	39.8
Approach		1057	3.0	0.798	29.1	LOS C	15.4	110.5	0.96	0.93	40.3
East: Mill Point Road											
4	L2	124	3.0	0.804	29.6	LOS C	9.1	65.1	0.96	0.96	41.6
5	T1	806	3.0	0.804	27.0	LOS C	11.0	78.8	0.97	0.95	41.4
6	R2	25	3.0	0.110	26.3	LOS C	0.6	4.4	0.82	0.71	41.1
Approach		955	3.0	0.804	27.3	LOS C	11.0	78.8	0.96	0.95	41.4
North: Mill Point Road											
7	L2	69	3.0	0.666	35.9	LOS D	4.5	32.2	1.00	0.85	38.2
8	T1	76	3.0	0.666	30.3	LOS C	4.5	32.2	1.00	0.85	39.0
9	R2	179	3.0	0.844	40.8	LOS D	6.1	44.0	1.00	1.00	35.5
Approach		324	3.0	0.844	37.3	LOS D	6.1	44.0	1.00	0.93	36.8
West: Mill Point Road											
10	L2	123	3.0	0.452	16.7	LOS B	8.0	57.8	0.71	0.66	48.4
11	T1	706	3.0	0.452	11.1	LOS B	8.2	58.6	0.71	0.63	50.3
12	R2	153	3.0	0.561	32.8	LOS C	4.4	31.9	0.97	0.80	38.5
Approach		982	3.0	0.561	15.2	LOS B	8.2	58.6	0.75	0.66	47.8
All Vehicles		3318	3.0	0.844	25.3	LOS C	15.4	110.5	0.90	0.86	42.2

MOVEMENT SUMMARY

Site: 2018 - PM Peak with 74 MPR - Scenario 1

New Site
Signals - Fixed Time Isolated Cycle Time = 61 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	886	3.0	0.646	22.9	LOS C	11.1	79.8	0.88	0.83	43.2
2	T1	49	3.0	0.451	30.2	LOS C	2.5	18.1	0.98	0.75	39.2
3	R2	34	3.0	0.451	35.9	LOS D	2.5	18.1	0.98	0.75	38.7
Approach		969	3.0	0.646	23.7	LOS C	11.1	79.8	0.89	0.82	42.8
East: Mill Point Road											
4	L2	99	3.0	0.731	29.7	LOS C	7.9	56.6	0.98	0.92	41.7
5	T1	677	3.0	0.731	26.5	LOS C	8.4	60.0	0.98	0.89	41.6
6	R2	42	3.0	0.239	29.8	LOS C	1.1	8.2	0.88	0.74	39.5
Approach		818	3.0	0.731	27.0	LOS C	8.4	60.0	0.97	0.89	41.5
North: Mill Point Road											
7	L2	119	3.0	0.814	39.2	LOS D	6.7	47.9	1.00	0.97	36.7
8	T1	79	3.0	0.814	33.6	LOS C	6.7	47.9	1.00	0.97	37.4
9	R2	193	3.0	0.809	39.1	LOS D	6.5	46.6	1.00	0.96	36.0
Approach		391	3.0	0.814	38.0	LOS D	6.7	47.9	1.00	0.96	36.5
West: Mill Point Road											
10	L2	114	3.0	0.636	18.7	LOS B	13.0	93.3	0.81	0.74	47.5
11	T1	1037	3.0	0.636	13.1	LOS B	13.1	94.2	0.81	0.72	49.1
12	R2	248	3.0	0.756	35.0	LOS C	7.9	56.4	1.00	0.92	37.7
Approach		1399	3.0	0.756	17.5	LOS B	13.1	94.2	0.84	0.76	46.5
All Vehicles		3577	3.0	0.814	23.6	LOS C	13.1	94.2	0.90	0.83	43.0

Consulting Civil and Traffic Engineers, Risk Managers

MOVEMENT SUMMARY

Site: 2018 - AM Peak with 74 & 76 MPR development traffic

New Site
Signals - Fixed Time Isolated Cycle Time = 59 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	1016	3.0	0.824	30.8	LOS C	15.9	114.2	0.98	0.97	39.5
2	T1	41	3.0	0.259	28.3	LOS C	1.4	10.2	0.96	0.71	40.6
3	R2	9	3.0	0.259	33.9	LOS C	1.4	10.2	0.96	0.71	40.1
Approach		1066	3.0	0.824	30.7	LOS C	15.9	114.2	0.98	0.96	39.6
East: Mill Point Road											
4	L2	124	3.0	0.850	33.2	LOS C	9.9	70.8	0.98	1.03	40.0
5	T1	806	3.0	0.850	30.1	LOS C	11.4	81.8	0.98	1.02	40.0
6	R2	33	3.0	0.150	26.9	LOS C	0.8	5.9	0.84	0.72	40.8
Approach		963	3.0	0.850	30.4	LOS C	11.4	81.8	0.97	1.01	40.0
North: Mill Point Road											
7	L2	85	3.0	0.696	34.8	LOS C	5.4	38.4	1.00	0.87	38.6
8	T1	91	3.0	0.696	29.3	LOS C	5.4	38.4	1.00	0.87	39.4
9	R2	218	3.0	0.884	42.5	LOS D	7.7	55.4	1.00	1.07	34.9
Approach		394	3.0	0.884	37.8	LOS D	7.7	55.4	1.00	0.98	36.6
West: Mill Point Road											
10	L2	140	3.0	0.487	17.8	LOS B	8.5	61.4	0.75	0.70	47.6
11	T1	706	3.0	0.487	12.2	LOS B	8.7	62.4	0.75	0.67	49.5
12	R2	153	3.0	0.621	33.9	LOS C	4.5	32.5	0.99	0.83	38.1
Approach		999	3.0	0.621	16.3	LOS B	8.7	62.4	0.78	0.70	47.1
All Vehicles		3422	3.0	0.884	27.2	LOS C	15.9	114.2	0.92	0.90	41.2

MOVEMENT SUMMARY

Site: 2018 - PM Peak with 74 & 76 MPR development traffic

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Labouchere Road											
1	L2	886	3.0	0.664	23.4	LOS C	11.2	80.7	0.89	0.84	42.9
2	T1	62	3.0	0.511	29.9	LOS C	2.9	20.8	0.99	0.77	39.5
3	R2	34	3.0	0.511	35.6	LOS D	2.9	20.8	0.99	0.77	39.0
Approach		982	3.0	0.664	24.3	LOS C	11.2	80.7	0.90	0.83	42.6
East: Mill Point Road											
4	L2	99	3.0	0.784	31.7	LOS C	8.3	59.3	1.00	0.97	40.7
5	T1	677	3.0	0.784	28.4	LOS C	8.6	62.0	0.99	0.95	40.7
6	R2	54	3.0	0.316	30.6	LOS C	1.5	10.8	0.90	0.76	39.2
Approach		830	3.0	0.784	28.9	LOS C	8.6	62.0	0.99	0.94	40.6
North: Mill Point Road											
7	L2	127	3.0	0.769	36.2	LOS D	6.8	49.0	1.00	0.93	37.8
8	T1	87	3.0	0.769	30.7	LOS C	6.8	49.0	1.00	0.93	38.6
9	R2	215	3.0	0.788	37.0	LOS D	7.0	50.0	1.00	0.94	36.8
Approach		429	3.0	0.788	35.5	LOS D	7.0	50.0	1.00	0.94	37.5
West: Mill Point Road											
10	L2	140	3.0	0.688	20.1	LOS C	13.9	100.2	0.85	0.78	46.5
11	T1	1037	3.0	0.688	14.5	LOS B	14.1	101.2	0.85	0.77	48.1
12	R2	248	3.0	0.818	37.5	LOS D	8.2	58.9	1.00	0.98	36.7
Approach		1425	3.0	0.818	19.1	LOS B	14.1	101.2	0.88	0.81	45.5
All Vehicles		3666	3.0	0.818	24.6	LOS C	14.1	101.2	0.92	0.86	42.5

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

MOVEMENT SUMMARY

▽ Site: Mill Point Road Crossover - Future A.M. Peak Hour Scenario 1

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

Movement Performance - Vehicles

Mov ID	ODMov	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	82	0.0	0.055	0.2	LOS A	0.1	0.9	0.15	0.11	58.4
3	R2	18	0.0	0.055	6.3	LOS A	0.1	0.9	0.15	0.11	56.3
Approach		100	0.0	0.055	1.3	NA	0.1	0.9	0.15	0.11	58.0
East: Site Crossover East											
4	L2	40	0.0	0.035	6.4	LOS A	0.1	0.9	0.33	0.58	52.6
6	R2	4	0.0	0.035	6.9	LOS A	0.1	0.9	0.33	0.58	52.1
Approach		44	0.0	0.035	6.4	LOS A	0.1	0.9	0.33	0.58	52.5
North: Mill Point Road North											
7	L2	4	0.0	0.135	5.6	LOS A	0.0	0.0	0.00	0.01	58.3
8	T1	262	0.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		266	0.0	0.135	0.1	NA	0.0	0.0	0.00	0.01	59.9
All Vehicles		411	0.0	0.135	1.1	NA	0.1	0.9	0.07	0.10	58.5

MOVEMENT SUMMARY

▽ Site: Mill Point Road Crossover - Future P.M. Peak Hour Scenario 1

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

Movement Performance - Vehicles

Mov ID	ODMov	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	138	0.0	0.096	0.3	LOS A	0.3	1.9	0.18	0.12	58.2
3	R2	35	0.0	0.096	6.5	LOS A	0.3	1.9	0.18	0.12	56.1
Approach		173	0.0	0.096	1.6	NA	0.3	1.9	0.18	0.12	57.8
East: Site Crossover East											
4	L2	32	0.0	0.029	6.5	LOS A	0.1	0.8	0.35	0.59	52.5
6	R2	3	0.0	0.029	7.3	LOS A	0.1	0.8	0.35	0.59	52.0
Approach		35	0.0	0.029	6.5	LOS A	0.1	0.8	0.35	0.59	52.5
North: Mill Point Road North											
7	L2	8	0.0	0.151	5.6	LOS A	0.0	0.0	0.00	0.02	58.2
8	T1	288	0.0	0.151	0.0	LOS A	0.0	0.0	0.00	0.02	59.8
Approach		297	0.0	0.151	0.2	NA	0.0	0.0	0.00	0.02	59.8
All Vehicles		504	0.0	0.151	1.1	NA	0.3	1.9	0.09	0.09	58.5

Consulting Civil and Traffic Engineers, Risk Managers

MOVEMENT SUMMARY

Site: Mill Point Road Crossover - Future A.M. Peak Hour – Scenario 2

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

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Mill Point Road South											
2	T1	82	0.0	0.080	0.6	LOS A	0.3	2.3	0.29	0.24	56.9
3	R2	53	0.0	0.080	6.4	LOS A	0.3	2.3	0.29	0.24	54.8
Approach		135	0.0	0.080	2.8	NA	0.3	2.3	0.29	0.24	56.1
East: Site Crossover East											
4	L2	113	0.0	0.101	6.4	LOS A	0.4	2.8	0.35	0.60	52.6
6	R2	13	0.0	0.101	7.2	LOS A	0.4	2.8	0.35	0.60	52.0
Approach		125	0.0	0.101	6.5	LOS A	0.4	2.8	0.35	0.60	52.5
North: Mill Point Road North											
7	L2	13	0.0	0.140	5.6	LOS A	0.0	0.0	0.00	0.03	58.1
8	T1	262	0.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		275	0.0	0.140	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		535	0.0	0.140	2.4	NA	0.4	2.8	0.15	0.22	56.9

MOVEMENT SUMMARY

Site: Mill Point Road Crossover - Future P.M. Peak Hour – Scenario 2

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

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Mill Point Road South											
2	T1	138	0.0	0.136	0.7	LOS A	0.6	4.2	0.32	0.25	56.8
3	R2	87	0.0	0.136	6.6	LOS A	0.6	4.2	0.32	0.25	54.7
Approach		225	0.0	0.136	3.0	NA	0.6	4.2	0.32	0.25	56.0
East: Site Crossover East											
4	L2	73	0.0	0.068	6.5	LOS A	0.3	1.8	0.36	0.61	52.5
6	R2	8	0.0	0.068	7.8	LOS A	0.3	1.8	0.36	0.61	52.0
Approach		81	0.0	0.068	6.6	LOS A	0.3	1.8	0.36	0.61	52.5
North: Mill Point Road North											
7	L2	22	0.0	0.158	5.6	LOS A	0.0	0.0	0.00	0.04	58.0
8	T1	288	0.0	0.158	0.0	LOS A	0.0	0.0	0.00	0.04	59.6
Approach		311	0.0	0.158	0.4	NA	0.0	0.0	0.00	0.04	59.5
All Vehicles		617	0.0	0.158	2.2	NA	0.6	4.2	0.16	0.19	57.2

Technical Memorandum

Title	**74 Mill Point Road Development – Micro Simulation Modelling Results 25% Discounted Trip Generation Rates for 74 Mill Point Road**		
Client	City of South Perth	**Project No**	CW961800
Date	29/06/2016	**Status**	Rev E
Author	Andreas Wang	**Discipline**	Traffic and Transport
Reviewer	Ray Cook	**Office**	Perth

Introduction

Cardno have been engaged by the City of South Perth to utilise and update the existing 2021 Station Precinct micro-simulation model to evaluate intersection delay at the intersection of Mill Point Road / Labouchere Road and Mill Point Road / Mends Street as a result of the proposed development at 74 Mill Point Road, but allowing for the Trip Generation of the site being discounted by 25% due to various criteria being met.

The models have previously been developed for the AM and PM peak hour periods, defined as:

- Weekday AM peak hour: 07:30 – 08:30
- Weekday PM peak hour: 16:30 – 17:30

74 Mill Point Road

As described in the Transport Assessment for 74 Mill Point Road (dated 20 June 2016), the proposed development is to include the following yields:

- 147 Serviced apartments
- 295 m^2 café
- 69 m^2 Commercial (community centre)
- 11 residential apartments (1-2 bedrooms)
- 74 residential apartments (2+ bedrooms)

Traffic Generation

Based on surveys and research undertaken for similar developments in similar locations, the following trip generation rates summarised in **Table 1** have been adopted for the purpose of this study.

Table 1 Adopted Trip Generation Rates

Land Use	AM Generation Rate		PM Generation Rate	
	City	Developer	City	Developer
Serviced Apartments	0.30 trips / apartment	0.45 trips / apartments	0.30 trips / apartment	0.45 trips / apartments
Café	8.68 trips / 100 m^2	5 trips / 100 m^2	8.23 trips / 100 m^2	5 trips / 100 m^2
Commercial / Office	1.38 trips / 100 m^2 GFA	2 trips / 100 m^2 GFA	1.33 trips / 100 m^2 GFA	2 trips / 100 m^2 GFA
Residential Apartments (1-2 bedrooms)	0.28 trips / apartment	0.45 trips / apartment	0.39 trips / apartment	0.45 trips / apartment
Residential Apartments (2-3 bedrooms)		0.60 trips / apartment		0.60 trips / apartment

It is noted that the trip rates listed by the Developer are the non-discounted trip rates and that the Developer believes that a 50% discount should be applied to the trip rates to account for the proposed development being located within a Transit Oriented Development (TOD). While the City agrees that a discount factor may be applicable to account for the public transport connections within the Station Precinct, the 50% discount factor does not appear to be warranted and a 25% discount factor is considered to be more appropriate for the area.

This assessment has therefore been undertaken for the 25% discount factor applied to the trip generation rates.

Comments on IDM Data

Intersection Diagnostics Monitor (IDM) data can be collected by any signalised intersection controlled by the Sydney Coordinated Adaptive Traffic System (SCATS) and includes information pertaining to signal phasing and timing.

As westbound vehicles (to the Kwinana Freeway) that originate to the north of Mill Point Road can only reach the Kwinana Freeway by turning right at either of the 2 signalised intersections, limited route choice is available for these vehicles.

A summary of the average cycle times for these signalised intersections is shown in **Table 2**, along with information pertaining to the relevant phase lengths. It is noted that advice from Main Roads WA indicates that any increase to the amount of green time allocated to these phases will not be supported by Main Roads WA.

Table 2 Intersection Cycle Times and Phase Lengths

Intersection	Average Cycle Time (s)		Average Right-Turn Phase Time (Northern Approach) (s)	
	AM	PM	AM	PM
Mill Point Road / Labouchere Road	120	130	22	22*
Mill Point Road / Mends Street	120	126	23	30*

* Filtered right turn; no right turn arrow

Model Scenarios

As part of this modelling exercise, the following scenarios have been modelled:

- Base 2021 (including all approved / committed developments, excluding 74 Mill Point Road)
- 2021 with development at 74 Mill Point Road and application of a 25% Discounted Generation Rate for the site

Approved / Committed Developments

The following committed or approved developments have been accounted for in the Base 2021 model demands:

- 12-16 Charles Street
- 7 Lyall Street
- One Richardson (1-3 Richardson Street)
- 6 Lyall Street
- Pinnacles South Perth (30-34 Charles Street)
- South Bank (98 Mill Point Road)
- Southstone Apartments (1 Stone Street)
- Aurelia (96 Mill Point Road)
- 14-18 Hardy Street
- Glasshouse (31 Labouchere Road and 24 Lyall Street)
- 13 Stone Street
- Civic Heart
- Echelon (77-79 South Perth Esplanade)
- 5-7 Harper Terrace
- 26-28A Charles Street
- 2 Harper Terrace
- 152B Mill Point Road

Model Results

Model outputs, in terms of Link Volume Plots (LVPs) and Link Delay Plots (LDPs) are have been extracted and shown in **Figure 1** - **Figure 4** for the 2021 AM scenarios and in **Figure 5** - **Figure 8** for the 2021 PM scenarios.

It is noted that as the models have been set up to allow for dynamic feedback intervals every 15 minutes, increases in model demands can potentially result in localised improvements at some network locations (e.g. northbound on Harper Road) as the travel times for different routes are updated several times over the model period. It is therefore emphasised that the LDPs should be interpreted in conjunction with the LVPs to identify where the overall network times have been primarily impacted by the proposed development.

Figure 1 2021 AM Link Delay Plot (seconds) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 2 2021 AM Link Delay Plot (seconds) – Committed Developments and 74 Mill Point Road

Figure 3 2021 AM Link Volume Plot (vehicles) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 4 2021 AM Link Volume Plot (vehicles) – Committed Developments and 74 Mill Point Road

Figure 5 2021 PM Link Delay Plot (seconds) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 6 2021 PM Link Delay Plot (seconds) – Committed Developments and 74 Mill Point Road

Figure 7 2021 PM Link Volume Plot (vehicles) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 8 2021 PM Link Volume Plot (vehicles) – Committed Developments and 74 Mill Point Road

Table 3 Intersection Average Delays – 2021

Scenario		Southbound Delay (s)	
		Mill Point Road / Labouchere Road	Mill Point Road / Mends Street
2021 Committed Developments Only (excluding 74 MPR)	AM	68	324*
	PM	88	186*
2021 Committed Developments including 74 MPR	AM	116	300*
	PM	127	266*

* Queue lengths occasionally extending to South Perth Esplanade and therefore exceed the delay times in the above table

Queue Lengths

The maximum modelled southbound queue lengths for the 2021 scenarios for the intersections of Mill Point Road / Labouchere Road and Mill Point Road / Mends Street are summarised in **Table 4**.

Table 4 Intersection Maximum Queue Lengths – 2021

Scenario		Maximum Queue Length (vehicles)	
		Mill Point Road / Labouchere Road	Mill Point Road / Mends Street
2021 Committed Developments Only (excluding 74 MPR)	AM	14	27*
	PM	17	27*
2021 Committed Developments including 74 MPR	AM	20	27*
	PM	26	27*

* Queue lengths occasionally extending to South Perth Esplanade and therefore exceed the delay times in the above table

Screenshots of vehicle positions and queue lengths are shown in **Figure 9** and **Figure 10** for the 2021 AM scenarios and in **Figure 11** and **Figure 12** for the 2021 PM scenarios. It is noted that the queue lengths shown in these screenshots do not represent the maximum queue lengths and are included for comparison purposes only.

Figure 9 2021 AM - Committed Developments Only (Excluding 74 Mill Point Road) - End of Run Screenshot of Replication 1129

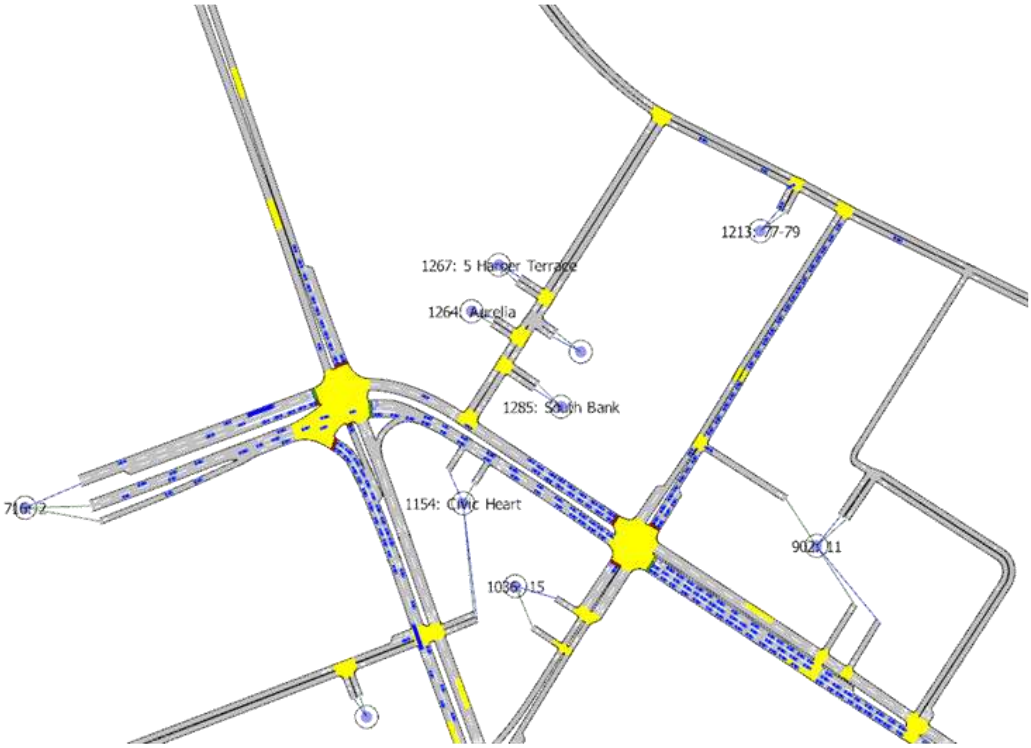


Figure 10 2021 AM - Committed Developments and 74 Mill Point Road - End of Run Screenshot of Replication 1129

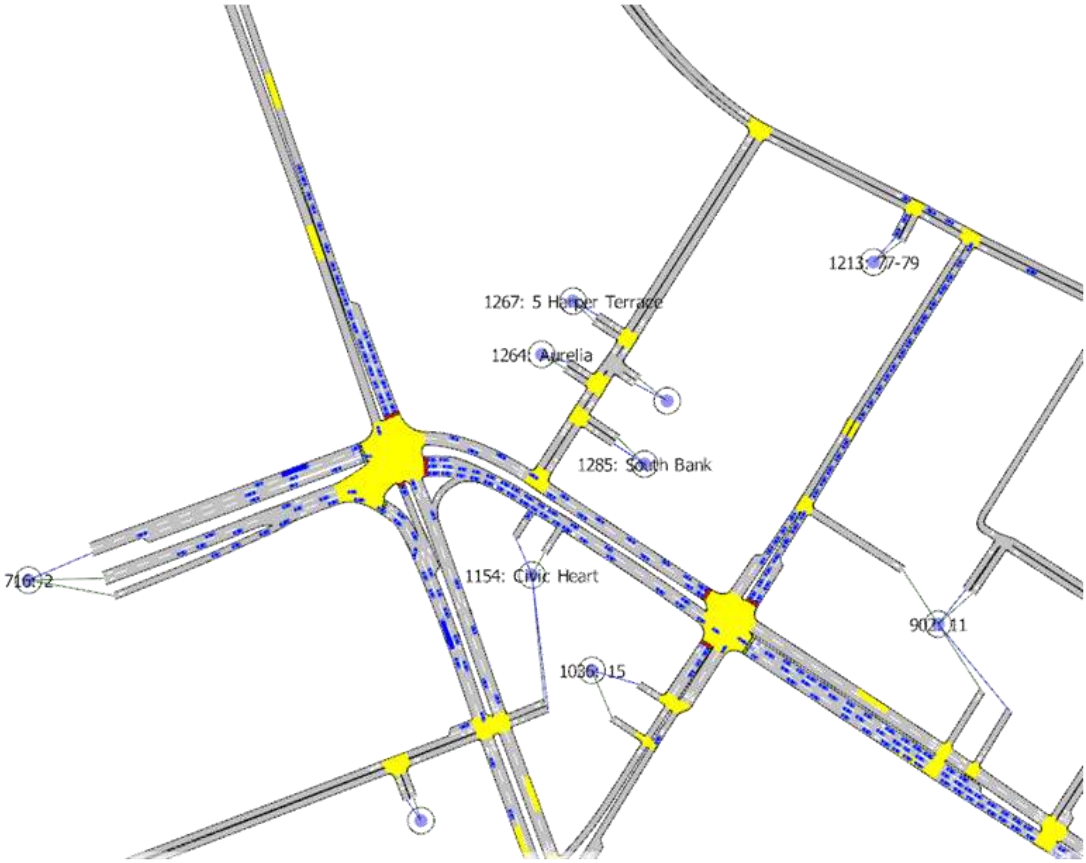


Figure 11 2021 PM - Committed Developments Only (Excluding 74 Mill Point Road) - End of Run Screenshot of Replication 1129

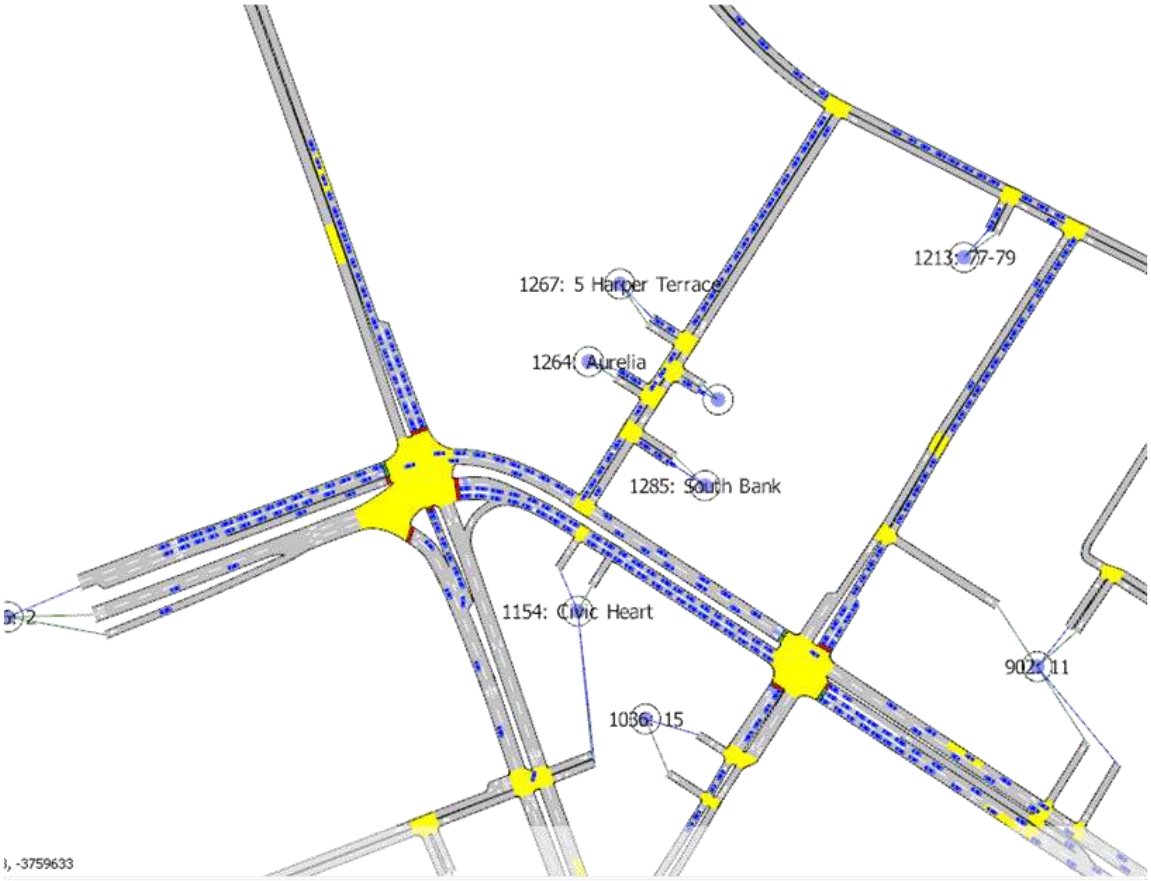
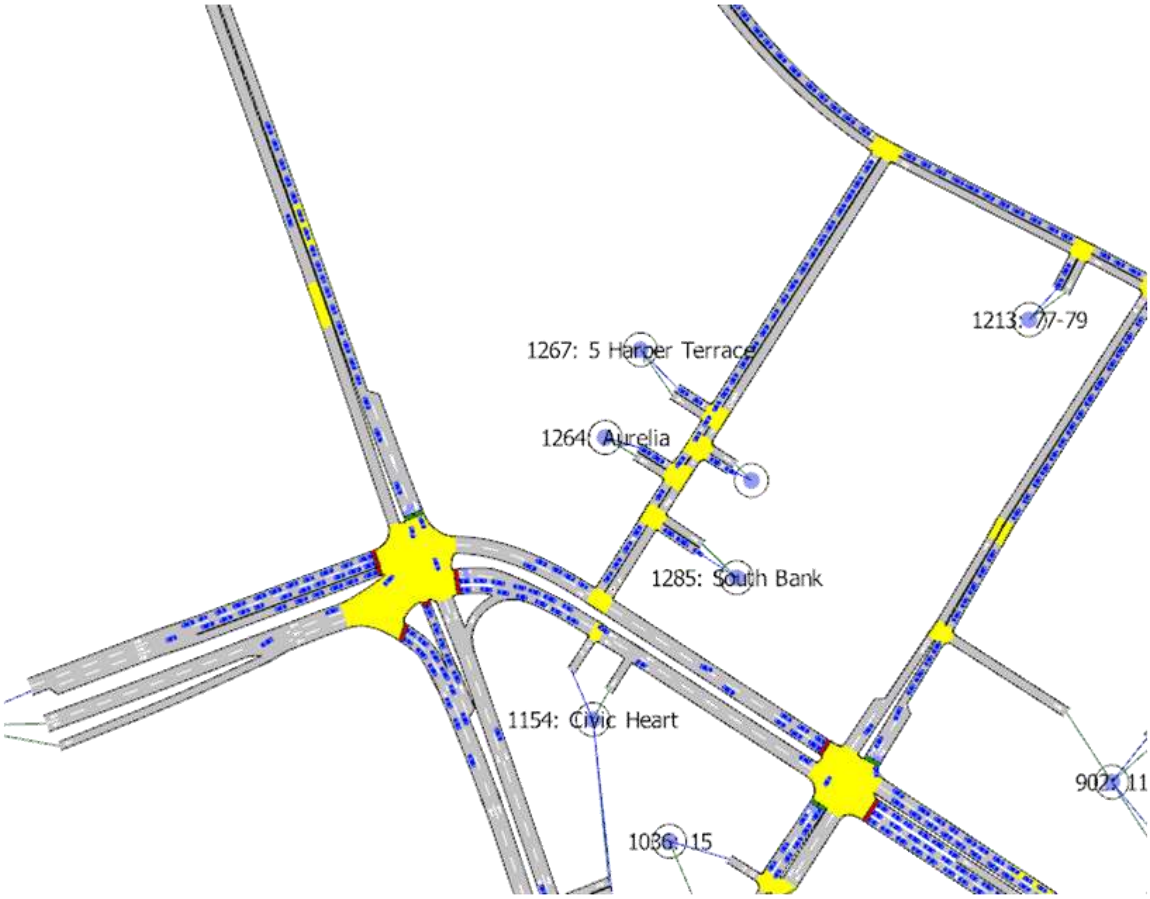


Figure 12 2021 PM - Committed Developments and 74 Mill Point Road - End of Run Screenshot of Replication 1129



Discussion of Results

The increase in traffic volumes within the study area due to the proposed development of 74 Mill Point Road were found to have a substantial impact on queues and delays on the southbound intersection approach for the intersection of Mill Point Road / Labouchere Road due to the limited opportunities for these vehicles to get to the Kwinana Freeway. While the intersection of Mill Point Road / Mends Street is also impacted, this intersection is not impacted to the same extent of the intersection of Mill Point Road / Labouchere Road.

It is noted that the link volume plots do not show a substantial increase in traffic on South Perth Esplanade and Mends Street. This indicates that traffic from 74 Mill Point Road is not likely to use South Perth Esplanade, primarily due to a substantial volume of traffic generated by other developments to the north of Mill Point Road 'forced' to use South Perth Esplanade and Mends Street to get to the Kwinana Freeway.

Conclusion

The impact of the proposed 74 Mill Point Road development was primarily found to be at the intersection of Mill Point Road / Labouchere Road and to a lesser extent at the intersection of Mill Point Road / Mends Street.

Due to the cumulative traffic impacts by the proposed developments in the 2021 Scenarios on the key intersections within the study area and the constrained nature of the area, it is not considered feasible to adequately increase the capacity of the key intersections within the study area. It is instead recommended that the development of an area-wide Development Contribution Plan (DCP) be undertaken to include funding for the following (but not limited to) potential items:

- Promotion of alternate transport modes and provision of additional pedestrian and cycling infrastructure
- Increase frequencies of key public transport services within the study area (including ferries)
- Undertake a parking study to ensure appropriate (reduced) parking requirements are promoted for the area
- Undertake area-wide transport study to maximise connectivity and safety for local residents and visitors to pass through and walk/cycle around the Precinct.

Cardno
Shaping the Future

Technical Memorandum

Title	**74 Mill Point Road Development – Micro Simulation Modelling Results 50% Discounted Trip Generation Rates for 74 Mill Point Road**		
Client	City of South Perth	Project No	CW961800
Date	29/06/2016	Status	Rev E
Author	Andreas Wang	Discipline	Traffic and Transport
Reviewer	Ray Cook	Office	Perth

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The models have previously been developed for the AM and PM peak hour periods, defined as:

- Weekday AM peak hour: 07:30 – 08:30
- Weekday PM peak hour: 16:30 – 17:30

74 Mill Point Road

As described in the Transport Assessment for 74 Mill Point Road (dated 20 June 2016), the proposed development is to include the following yields:

- 147 Serviced apartments
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- 11 residential apartments (1-2 bedrooms)
- 74 residential apartments (2+ bedrooms)

Traffic Generation

Based on surveys and research undertaken for similar developments in similar locations, the following trip generation rates summarised in **Table 1** have been adopted for the purpose of this study.

Table 1 Adopted Trip Generation Rates

Land Use	AM Generation Rate		PM Generation Rate	
	City	Developer	City	Developer
Serviced Apartments	0.30 trips / apartment	0.45 trips / apartments	0.30 trips / apartment	0.45 trips / apartments
Café	8.68 trips / 100 m^2	5 trips / 100 m^2	8.23 trips / 100 m^2	5 trips / 100 m^2
Commercial / Office	1.38 trips / 100 m^2 GFA	2 trips / 100 m^2 GFA	1.33 trips / 100 m^2 GFA	2 trips / 100 m^2 GFA
Residential Apartments (1-2 bedrooms)	0.28 trips / apartment	0.45 trips / apartment	0.39 trips / apartment	0.45 trips / apartment
Residential Apartments (2-3 bedrooms)		0.60 trips / apartment		0.60 trips / apartment

It is noted that the trip rates listed by the Developer are the non-discounted trip rates and that the Developer believes that a 50% discount should be applied to the trip rates to account for the proposed development being located within a Transit Oriented Development (TOD). While the City agrees that a discount factor may be applicable to account for the public transport connections within the Station Precinct, the 50% discount factor does not appear to be warranted and a 25% discount factor is considered to be more appropriate for the area.

As described above, the 50% discount factor to the trip generation does not appear to be warranted. However, this assessment has been undertaken for the 50% discount factor applied to the trip generation rates.

Comments on IDM Data

Intersection Diagnostics Monitor (IDM) data can be collected by any signalised intersection controlled by the Sydney Coordinated Adaptive Traffic System (SCATS) and includes information pertaining to signal phasing and timing.

As westbound vehicles (to the Kwinana Freeway) that originate to the north of Mill Point Road can only reach the Kwinana Freeway by turning right at either of the 2 signalised intersections, limited route choice is available for these vehicles.

A summary of the average cycle times for these signalised intersections is shown in **Table 2**, along with information pertaining to the relevant phase lengths. It is noted that advice from Main Roads WA indicates that any increase to the amount of green time allocated to these phases will not be supported by Main Roads WA.

Table 2 Intersection Cycle Times and Phase Lengths

Intersection	Average Cycle Time (s)		Average Right-Turn Phase Time (Northern Approach) (s)	
	AM	PM	AM	PM
Mill Point Road / Labouchere Road	120	130	22	22*
Mill Point Road / Mends Street	120	126	23	30*

* Filtered right turn; no right turn arrow

Model Scenarios

As part of this modelling exercise, the following scenarios have been modelled:

- Base 2021 (including all approved / committed developments, excluding 74 Mill Point Road)
- 2021 with development at 74 Mill Point Road and application of a 50% Discounted Generation Rate for the site

Approved / Committed Developments

The following committed or approved developments have been accounted for in the Base 2021 model demands:

- 12-16 Charles Street
- 7 Lyall Street
- One Richardson (1-3 Richardson Street)
- 6 Lyall Street
- Pinnacles South Perth (30-34 Charles Street)
- South Bank (98 Mill Point Road)
- Southstone Apartments (1 Stone Street)
- Aurelia (96 Mill Point Road)
- 14-18 Hardy Street
- Glasshouse (31 Labouchere Road and 24 Lyall Street)
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- Civic Heart
- Echelon (77-79 South Perth Esplanade)
- 5-7 Harper Terrace
- 26-28A Charles Street
- 2 Harper Terrace
- 152B Mill Point Road

Model Results

Model outputs, in terms of Link Volume Plots (LVPs) and Link Delay Plots (LDPs) are have been extracted and shown in **Figure 1** - **Figure 4** for the 2021 AM scenarios and in **Figure 5** - **Figure 8** for the 2021 PM scenarios.

It is noted that as the models have been set up to allow for dynamic feedback intervals every 15 minutes, increases in model demands can potentially result in localised improvements at some network locations (e.g. northbound on Harper Road) as the travel times for different routes are updated several times over the model period. It is therefore emphasised that the LDPs should be interpreted in conjunction with the LVPs to identify where the overall network times have been impacted by the proposed development.

Figure 1 2021 AM Link Delay Plot (seconds) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 2 2021 AM Link Delay Plot (seconds) – Committed Developments and 74 Mill Point Road

Figure 3 2021 AM Link Volume Plot (vehicles) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 4 2021 AM Link Volume Plot (vehicles) – Committed Developments and 74 Mill Point Road

Figure 5 2021 PM Link Delay Plot (seconds) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 6 2021 PM Link Delay Plot (seconds) – Committed Developments and 74 Mill Point Road

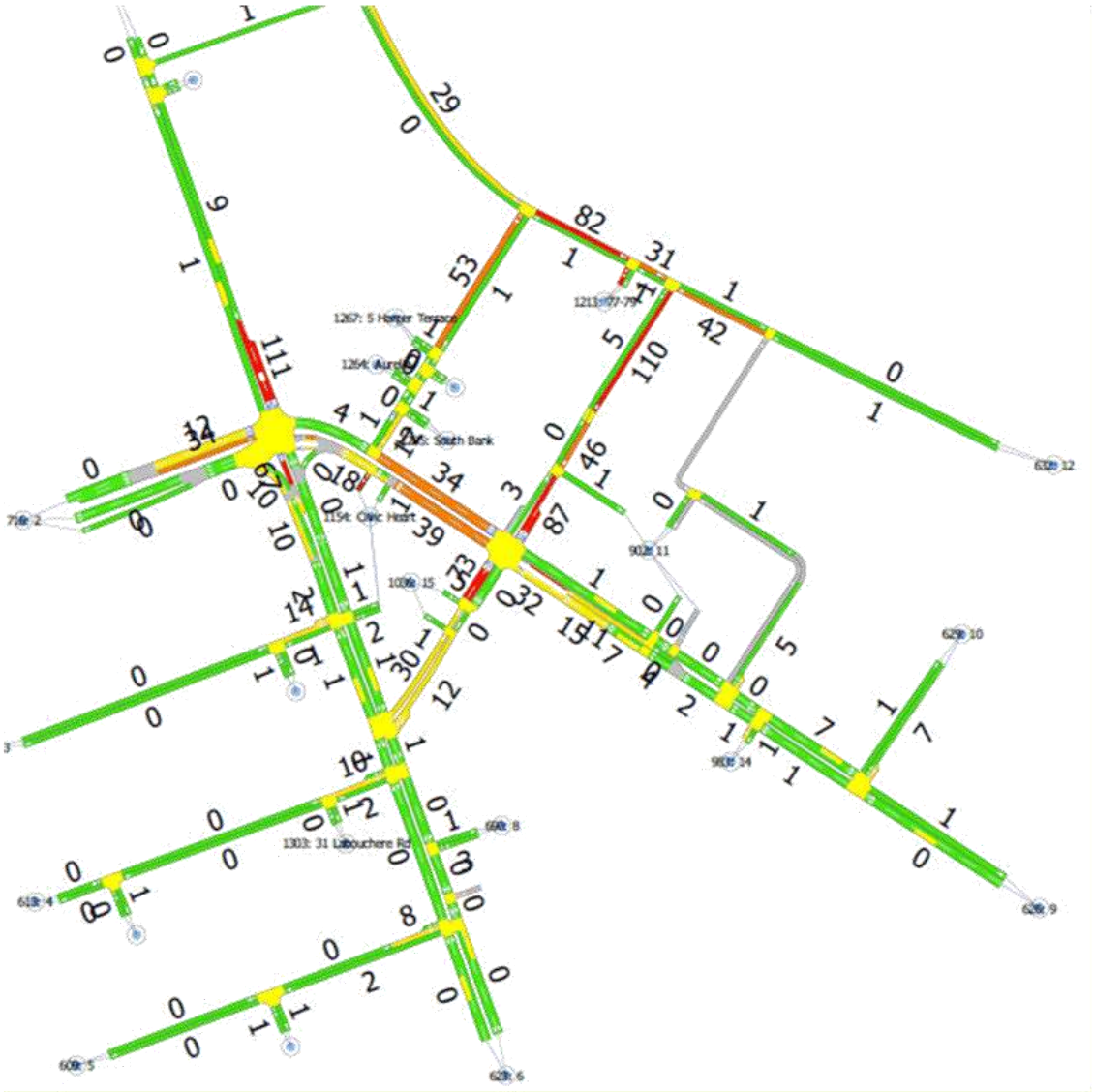


Figure 7 2021 PM Link Volume Plot (vehicles) – Committed Developments Only (Excluding 74 Mill Point Road)

Figure 8 2021 PM Link Volume Plot (vehicles) – Committed Developments and 74 Mill Point Road

Table 3 Intersection Average Delays – 2021

Scenario		Southbound Delay (s)	
		Mill Point Road / Labouchere Road	Mill Point Road / Mends Street
2021 Committed Developments Only (excluding 74 MPR)	AM	68	324*
	PM	88	186*
2021 Committed Developments including 74 MPR	AM	81	322*
	PM	120	243*

* Queue lengths occasionally extending to South Perth Esplanade and therefore exceed the delay times in the above table

Queue Lengths

The maximum modelled southbound queue lengths for the 2021 scenarios for the intersections of Mill Point Road / Labouchere Road and Mill Point Road / Mends Street are summarised in **Table 4**.

Table 4 Intersection Maximum Queue Lengths – 2021

Scenario		Maximum Queue Length (vehicles)	
		Mill Point Road / Labouchere Road	Mill Point Road / Mends Street
2021 Committed Developments Only (excluding 74 MPR)	AM	14	27*
	PM	17	27*
2021 Committed Developments including 74 MPR	AM	18	27*
	PM	24	27*

* Queue lengths occasionally extending to South Perth Esplanade and therefore exceed the delay times in the above table

Screenshots of vehicle positions and queue lengths are shown in **Figure 9** and **Figure 10** for the 2021 AM scenarios and in **Figure 11** and **Figure 12** for the 2021 PM scenarios. It is noted that the queue lengths shown in these screenshots do not represent the maximum queue lengths and are included for comparison purposes only.

Figure 9 2021 AM - Committed Developments Only (Excluding 74 Mill Point Road) - End of Run Screenshot of Replication 1129

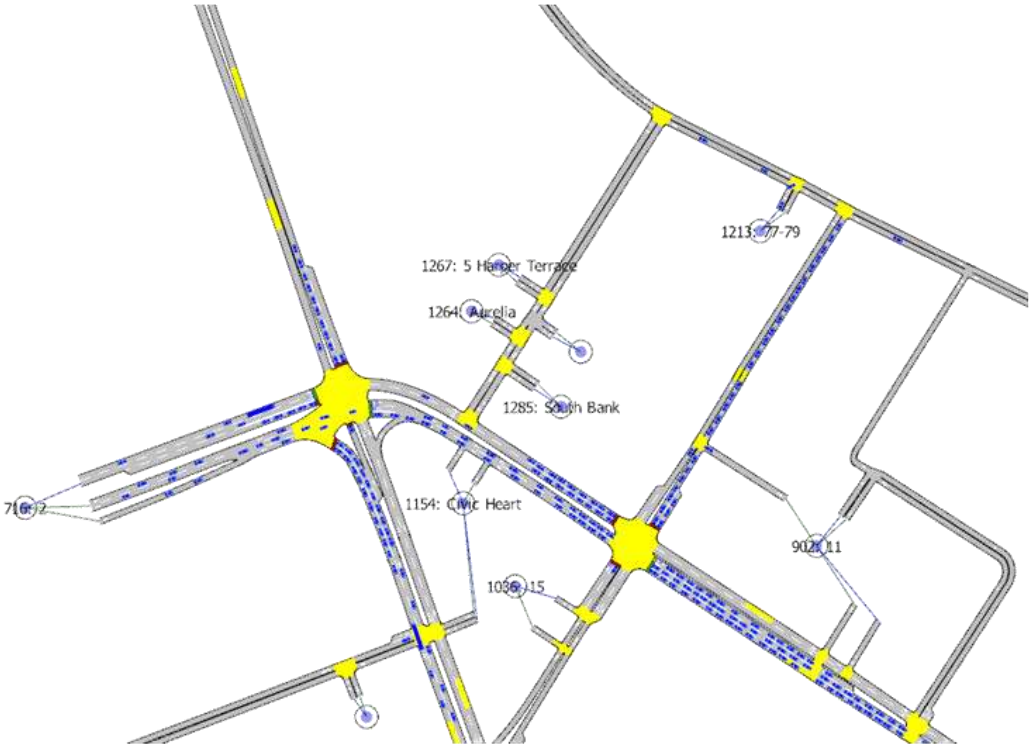


Figure 10 2021 AM - Committed Developments and 74 Mill Point Road - End of Run Screenshot of Replication 1129

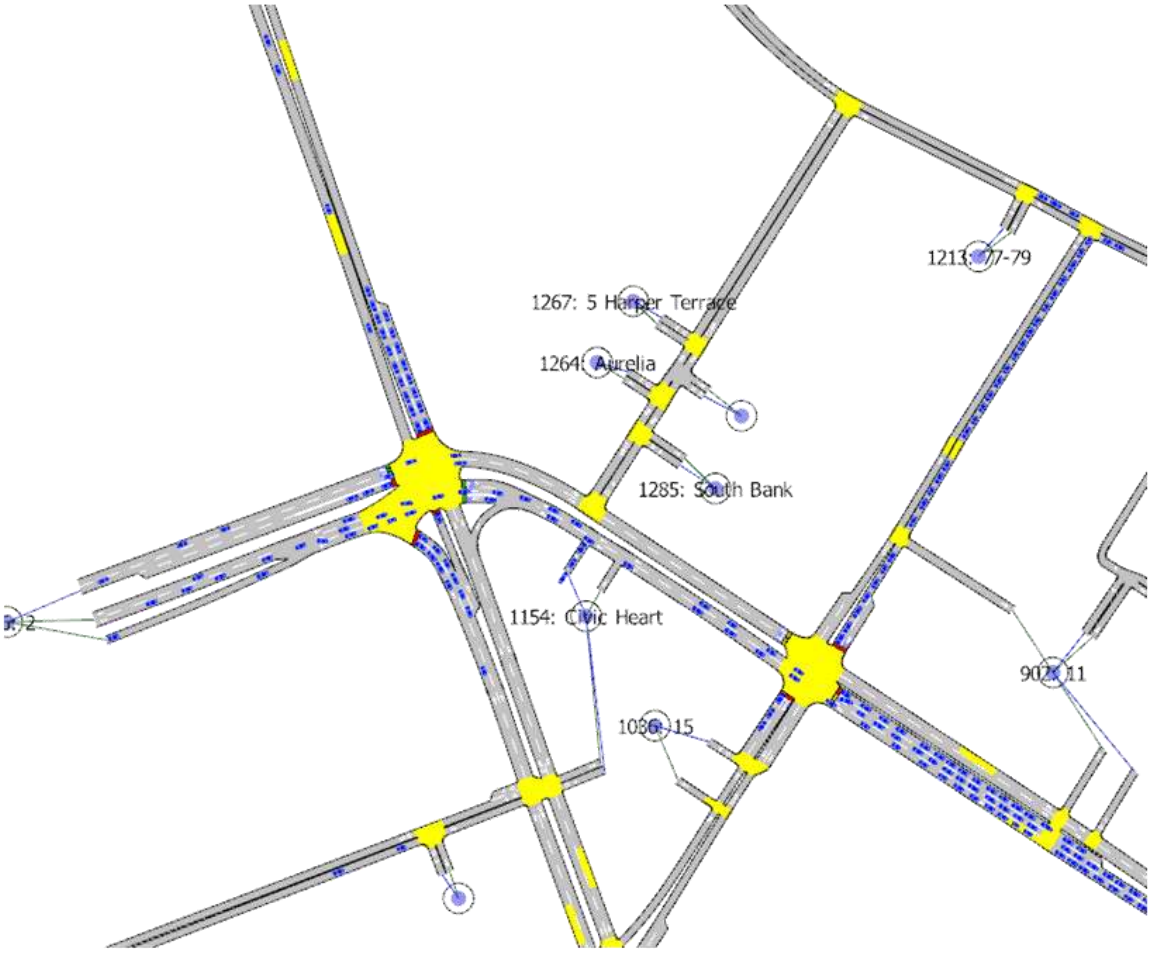


Figure 11 2021 PM - Committed Developments Only (Excluding 74 Mill Point Road) - End of Run Screenshot of Replication 1129

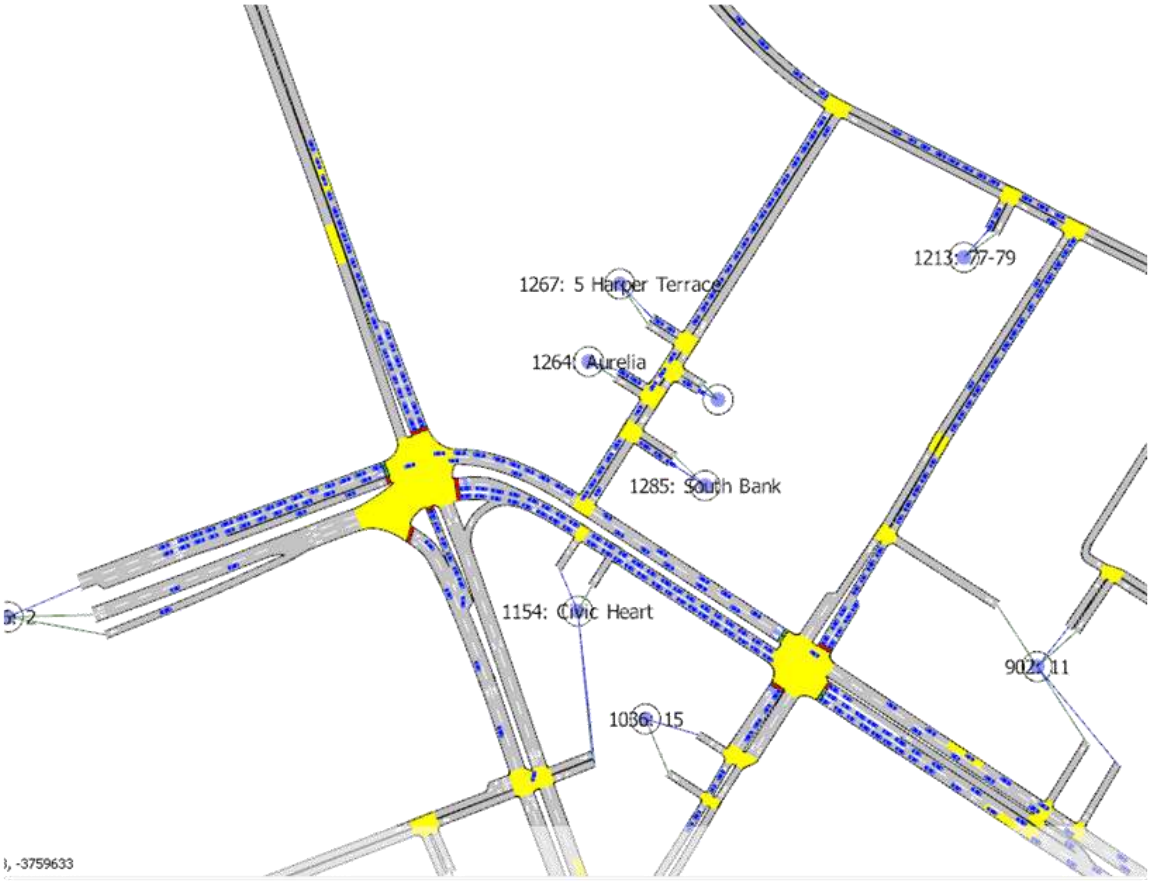
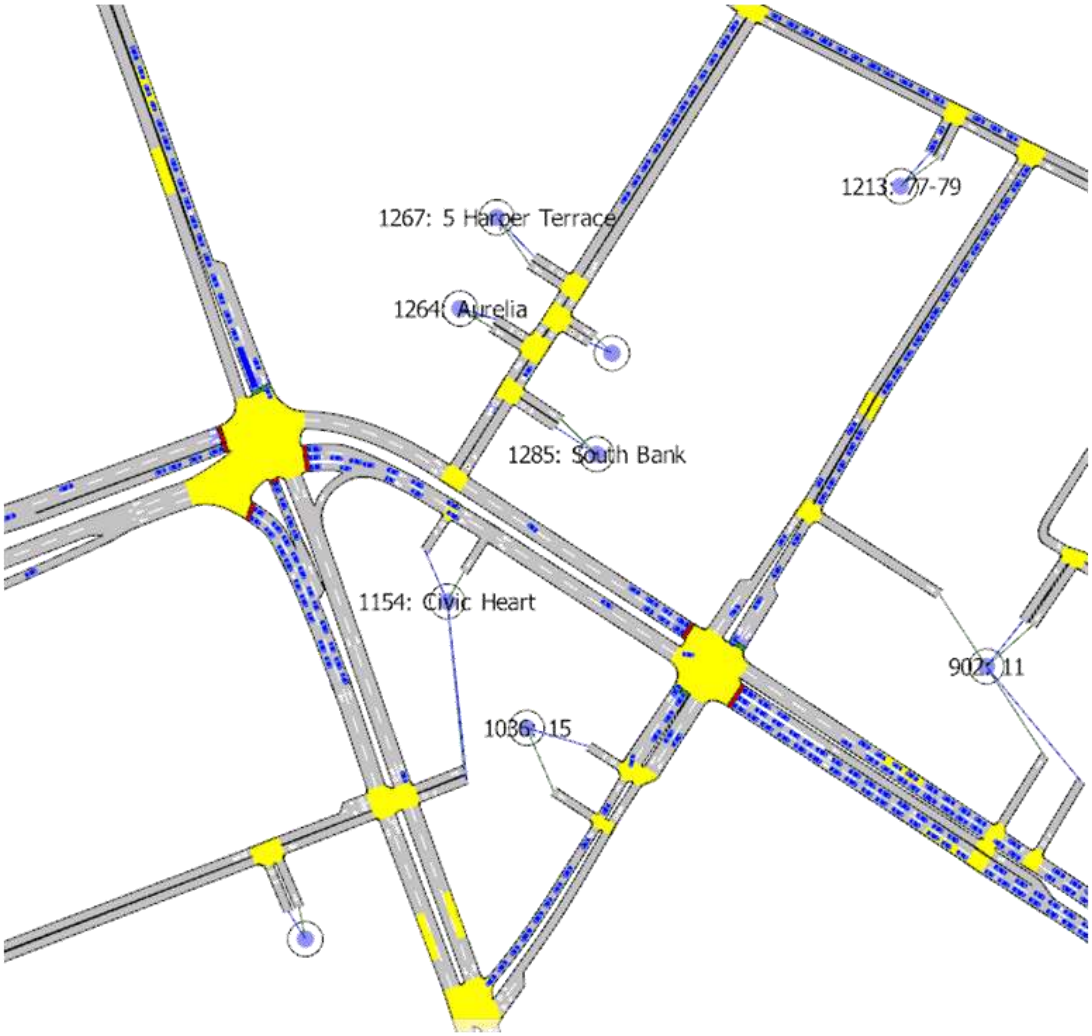


Figure 12 2021 PM - Committed Developments and 74 Mill Point Road - End of Run Screenshot of Replication 1129



Discussion of Results

The increase in traffic volumes within the study area due to the proposed development of 74 Mill Point Road were found to have a substantial impact on queues and delays on the southbound intersection approach for the intersection of Mill Point Road / Labouchere Road due to the limited opportunities for these vehicles to get to the Kwinana Freeway. While the intersection of Mill Point Road / Mends Street is also impacted, this intersection is not impacted to the same extent of the intersection of Mill Point Road / Labouchere Road.

It is noted that the link volume plots do not show a substantial increase in traffic on South Perth Esplanade and Mends Street. This indicates that traffic from 74 Mill Point Road is not likely to use South Perth Esplanade, primarily due to a substantial volume of traffic generated by other developments to the north of Mill Point Road that are 'forced' to use South Perth Esplanade and Mends Street to get to the Kwinana Freeway.

Conclusion

The impact of the proposed 74 Mill Point Road development was primarily found to be at the intersection of Mill Point Road / Labouchere Road and to a lesser extent at the intersection of Mill Point Road / Mends Street.

Due to the cumulative traffic impacts by the proposed developments in the 2021 Scenarios on the key intersections within the study area and the constrained nature of the area, it is not considered feasible to adequately increase the capacity of the key intersections within the study area. It is instead recommended that the development of an area-wide Development Contribution Plan (DCP) be undertaken to include funding for the following (but not limited to) potential items:

- Promotion of alternate transport modes and provision of additional pedestrian and cycling infrastructure
- Increase frequencies of key public transport services within the study area (including ferries)
- Undertake a parking study to ensure appropriate (reduced) parking requirements are promoted for the area
- Undertake area-wide transport study to maximise connectivity and safety for local residents and visitors to pass through and walk/cycle around the Precinct.

Cardno
Shaping the Future

Technical Memorandum

Title	**74, Mill Point Road, Development Proposal** **Peer Review of 2nd Update of Traffic Report Version 5**		
Client	City of South Perth	**Project No**	CW951000
Date	30/06/2016	**Status**	Rev B
Author	Daniel Jenkins	**Discipline**	Traffic and Transport
Reviewer	Ray Cook	**Office**	Perth

Introduction

Cardno have been engaged by the City of South Perth (the City) to undertake a peer review of the "*74 Mill Point Road Mixed-Use Development Traffic Impact Assessment - Revised*" ("the Report") prepared by Shawmac and dated 29 June 2016. The Report is an update to previous versions of the report dated 23 March, 27 April and 20 June 2016; those reports were reviewed by Cardno and comments were issued to the City and to Shawmac. This Report is the latest version.

This review addresses the outstanding issues (while also ensuring that agreed details have not varied from the previous version).

The Report describes the proposed development as a 44-storey mixed use development, comprising the following:

- 147 serviced apartments;
- 85 residential apartments;
- 295m^2 café;
- 69m^2 Community Meeting Room;
- Car, scooter and bicycle parking;
- Leisure facilities for the commercial uses;
- Residential leisure facilities;
- Storage rooms.

Vehicular access is proposed to and from Mill Point Road. These development details are the same as those in the previous 27 April and 20 June 2016 reports.

Outstanding Issues prior to 20 and 29 June Reports

Following the review of the 27 April report and various discussions, the following issues remained outstanding:

- Use of more current traffic counts for background traffic.
- Trip generation of the non-residential elements, i.e. the serviced apartments (motel) and the café.
- Assignment of development traffic.

- SIDRA results for all movements, not just worst-performing movements, to show difference between base and development scenarios.
- Crash data.
- Committed developments in the vicinity of the proposed development.
- Various design-related issues will need to be checked for compliance with Australian Standards during the DA process.

A large number of new developments will be taking place in this Precinct, and each development will have its own impacts. The accumulated effect on traffic operations could be significant and it is therefore important to present as accurate a picture as practicable of each development's own impact, but set in the context of overall changes in the Precinct.

Peer-Review Findings, of 29 June Report

Table 1 summarises the key review findings identified as part of the review undertaken against the outstanding issues as well as checking that the previously agreed details have not varied from the previous version.

Where the review has found that the relevant sections have been sufficiently addressed or no issues have been identified, the text has been coloured in **green**, while **orange** text has been used for sections where non-critical improvements can be made to the report, and **red** text has been used for sections that have been omitted or insufficiently addressed in the report.

Table 1 Peer-Review Findings, 20 June 2016 Report

	Peer-Review Commentary
Crash data	**Included; however, while the Report acknowledges the over-representation of certain types of crash, compared to the metropolitan averages, at the Mill Point Road/Labouchere Road intersection, there is no response to the identified problem.** **The Report does reasonably point out that the proportional impact of the development traffic on this intersection is less than 2% in terms of vehicles per day; however, in Cardno's previous peer-review, we stated that:** ***"While it is not the entire responsibility of this developer to address an existing crash problem, it is a concern that the proposal will intensify usage of the intersection without any recommendation for improvements to address the issue.*** ***It is suggested to the City that the applicant (and all subsequent DAs that impact on this area) be required to contribute a reasonable proportion to a safety audit and remedial works."*** **This comment still stands; it is not expected that the developer pay the entire cost of improving the safety of this intersection; however, this development and all subsequent DAs that impact on this area should be required to contribute a reasonable proportion towards improvement; the accumulated impacts of several future developments on a sub-standard intersection is clearly a concern. It is therefore recommended that the City set up an area-wide Development Contribution Plan (DCP).**
Background traffic data	**The Report uses up-to-date recent data: 2014, 2015 and 2016.**
Proposed changes to land uses within 1,200 metres	**This aspect of the assessment is flagged as something that will need to be addressed in the near future as soon as microsimulation outputs are available.** **Several committed developments need to be accounted for in the assessment of future traffic and intersection analysis. However, it is acknowledged that the City's microsimulation outputs being developed for the year 2021 are yet to undergo final examination and therefore the City can only provide "indicative" volumes by the way of examples.**

	Peer-Review Commentary
	(The Report does mention the City's microsimulation modelling and then says that the *"results of the long-term modelling are included in the supplementary report"*. However, we have not been provided with this supplementary report.)
Development generated traffic	**Following various discussions on the trip generation rates to apply, the Report now includes 2 scenarios, one of which applies a discount of only 25% to the trip generation (rather than the previous 50% which the City and Cardno disagreed with).** **However, the Report also includes the 50% discount scenario as well; so any results and conclusions associated with that scenario must be treated with caution. While there may be minimal difference in the traffic of this specific development, the cumulative impact of under-estimated traffic generation over a large number of new developments could be significant.** **This peer-review assesses the conclusions of the 25% discount scenario.**
Distribution and assignment of generated traffic	**The Report has amended the distribution as discussed and agreed.**
SIDRA results, difference between base and development scenarios	**The results show minimal differences between the base and development scenarios for 2018.** **However, the following concerns need to be considered:** **1. The accumulated impacts of several developments will result in a significant impact. While this is not the sole responsibility of the developer of this site, it is recommended that the City set up an area-wide Development Contribution Plan (DCP) to ensure that all developers contribute proportionally to future transport improvements. Such improvements are likely to be measures to reduce car usage by providing more viable alternatives.** **2. It is important to ensure that the SIDRA modelled timings reflect the actual timings as MRWA have stated that they will not change the signal timings at this intersection.**
Miscellaneous	Public transport frequencies and locations of stops, as quoted in the Report, have been checked against the Transperth website: the ferry frequency is every 30 minutes, not 15 minutes as stated. Otherwise, these are correct. Various design-related issues, such as compliance with Australian Standards, and swept paths, have not been reviewed as we do not have the CAD files. However, it is acknowledged that the previous report included reference to these in PDF form and they appeared satisfactory in the concept plans. Compliance with these should be checked throughout the design process also, however these assessments are beyond the scope of a TA peer-review. These design checks also need to include various other elements of AS2890.1 and AS2890.6, which are not mentioned in the Report currently – as one example, the Report mentions gradient, but omits reference to Section 2.5.3 of AS2890.1.

LUMIERE SOUTH PERTH

EDGE VISIONARY LIVING
JUNE 2016

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Job ID:	18538BNE
Job Name:	Lumiere South Perth
Client:	Edge Visionary Living
Client Contact:	Paul Plowman
Project Manager:	John Syme
Email:	john.syme@aecgroupltd.com
Telephone:	0412 167 294
Document Name:	Lumiere EIA
Last Saved:	17/6/2016 1:59 PM

Version	Date	Reviewed	Approved
Draft v1.0	31 May, 2015	HL, KL	JS
Draft v2.0	3 June 2016	HL	AP
Draft v3.0	16 June 2016	HL	AP
Final	17 June 2016	HL	AP

EXECUTIVE SUMMARY

BACKGROUND

Lumiere is a luxury mixed use development located at 74 Mill Point Road, South Perth. Developer, Edge Visionary Living, has teamed with Hillam Architects to create a modern high-end and architecturally striking development with panoramic views of the Perth skyline and Swan River. The proposed development will incorporate a mix of boutique residential apartments, serviced apartments (aparthotel), café/restaurant and open public spaces that will transform the site into a modern day landmark on the south bank of the Swan River.

Lumiere has an unparalleled geographic position on the South Perth peninsula and will offer a high specification and quality product offering. In South Perth, where both land and river views are at a premium, and where the residential, commercial and tourism markets are sophisticated in their desires and expectations, the mixed-use development presented by Lumiere ticks many boxes from whichever angle it is examined.

PURPOSE & APPROACH

The overriding purpose of this report is to present a high level economic analysis outlining how the proposed Lumiere development in South Perth may impact on the local (City of South Perth Local Government Area) and Western Australia economies over the construction and operation of the development.

Input-Output modelling has been used in this study to assess the contribution of the construction and operation phases of the West Village development. A description of the Input-Output model used and limitations is provided in **Appendix A**. Assumptions and model drivers used in conducting the economic modelling are outlined in Section 3.

Particular focus has been directed towards the contribution that the proposed (147 keys) serviced apartment element will deliver to the South Perth visitor (tourism) economy. A high level market demand for the serviced apartment element of this project has been estimated using existing and future anticipated trends in visitor demand, and short stay accommodation supply and demand dynamics within the South Perth market.

KEY FINDINGS

SERVICED APARTMENT MARKET

From a product perspective, serviced apartments typically include limited services, public areas and back of house support, with the main focus on maximising the number of potential rentable units within a property. Whereas hotels attract guests with extensive ancillary facilities and personalised service, serviced apartment properties typically capture their guests through larger unit sizes and cheaper prices for the amount of space provided.

Over the past seven years, the number of serviced apartments has grown by 80% and now totals more than 750,000 properties worldwide, with 61% of them being in the US and 17% in Europe. Australasia currently accounts of 7.3% of global share. Within Australia, growth in supply (i.e. number of units) within the serviced apartment market was up 14% over the period 2015 to 2016 (Knight Frank, 2016).

As a business model, serviced apartments carry less risk than hotels. For this reason, several global hotel brands have extended their portfolio to now include serviced apartments. By way of example, Accor and Hyatt have both entered the serviced apartment market overseas by acquiring pre-existing properties and rebranding them as Adagio and Hyatt House respectively. By diversifying their business model, accommodation operators aim to increase their profitability and global visibility.

Within the Australian serviced apartment market, Mantra, Meriton and Quest are the market leaders in terms of supply, with other operators such as Fraser Hospitality gaining momentum. Within the Perth visitor accommodation market, new supply has been primarily concentrated in around the Perth CBD with a total of 512 rooms entering the market since 2012. The opening of Fraser Suites and Bailey Serviced Apartments in the CBD collectively accounted for 51% of new rooms entering the market. No other new developments have taken place or are planned

to take place in South Perth: the proposed serviced apartment development at Lumiere will represent the first new visitor accommodation development in the local market for many years.

The luxury product offering at Lumiere, and which will be echoed in the proposed service apartment units, will satisfy potential demand for high quality accommodation in the local visitor accommodation market. With more than 50% of all new rooms entering (and planned for future development) within the Perth CBD, the upscale development proposed at Lumiere may further serve to complement the Perth City offering. Our research into the size, scale and composition of the local tourism market current, together with recognised demand drivers (market segments) for serviced apartment accommodation (i.e. relocation of corporates, corporate travellers, VFR associated with international students, leisure travellers, millennials, digital nomads) are all factors pointing towards potential incremental activation of the local visitor economy in South Perth.

ECONOMIC IMPACT

The study examines the potential economic contribution of the proposed Lumiere development to the local (South Perth Local Government Area) economy over the construction and operation of the development. In undertaking the assessment, Input-Output modelling is used.

Economic impact will arise from the two main project elements:

1 **Construction activity -** For the purposes of modelling and clarity of reporting, the construction phase is examined in terms of economic activity supported overall rather than on an annual basis.

2 **Operations -** Key operational phase activities associated with the Lumiere project will include the operations of the short stay accommodation and the café/ restaurant, as well as induced visitor spend of those staying in the serviced apartments.

Economic Benefit during Construction

Total project cost is estimated to be $150.4 million. During construction of Lumiere, there will be significant **economic benefits to the local South Perth LGA economy**, with the majority of expenditure captured elsewhere in the Perth and Western Australian economies:

- Injection of **$57.8 million** in industry output into the South Perth LGA economy
- Contribution of **$24.7 million** to South Perth LGA's Gross Regional Product (GRP)
- Provision of **161 additional full time equivalent (FTE) jobs** in South Perth LGA, providing **$12.1 million** in wages and salaries.

Table ES.1. Economic Activity Supported by Construction Phase (Total), South Perth LGA

Impact	Output ($M)	GRP ($M)	Incomes ($M)	Employment (FTEs)
Direct	$28.7	$8.7	$4.4	55
Type I Flow-On	$15.3	$7.3	$4.2	54
Type II Flow-On	$13.8	$8.7	$3.5	52
Total	**$57.8**	**$24.7**	**$12.1**	**161**

Note: Totals may not sum due to rounding.
Source: ABS (2015), ABS (2016), ABS (2012a), Donald Cant Watts Corke (2016), AEC.

Economic Benefit during Operations

A key area of interest for this study is the effect the short-stay accommodation will have on the local economy. This will have the effect of increasing the tourist sector in South Perth, with consequent increased economic activity and a net job increase.

Ongoing benefits once operational will be derived through the operation of the short-stay accommodation and café/ restaurant components of the development, as well as through the induced visitation and visitor spend of those staying at the Lumiere serviced apartments.

Once fully built, the Lumiere project will provide significant **annual economic benefits to the South Perth LGA economy** (both direct ad indirect), including:

- An increase in industry output of **$22.9 million** in the South Perth LGA economy each year.
- Contribution of **$12.9 million** to South Perth LGA's Gross Regional Product each year.
- Provision of **109 additional long term FTE jobs** in South Perth LGA providing **$6.3 million** in wages and salaries each year.

Table ES.2. Economic Activity Supported by Operations Phase (Average Annual), South Perth LGA

Impact	Output ($M)	GRP ($M)	Incomes ($M)	Employment (FTEs)
Direct	$12.4	$6.7	$3.6	69
Type I Flow-On	$3.4	$1.7	$1.0	12
Type II Flow-On	$7.1	$4.5	$1.8	27
Total	**$22.9**	**$12.9**	**$6.3**	**109**

Note: Totals may not sum due to rounding.
Source: ABS (2015), ABS (2016), ABS (2012a), TRA (2016), AEC.

Additional Benefits

In addition to the economic impacts outlined above, the following benefits are anticipated:

- The Lumiere development will provide dwellings for an additional 85 households to live in South Perth LGA. These additional households will bring additional household incomes, much of which can be expected to be spent at local shops in Mends Street and the broader South Perth area. These 85 additional households expected to deliver **$5.2 million in household expenditure** each year (though not all of this expenditure would be expected to be captured within the South Perth LGA economy).
- Attraction of visitors and new households to Lumiere is expected to **support café, restaurant and tourism/ leisure-related activities**. Any increase in activity will further serve to boost local investor confidence, which will ultimately flow on to drive local growth and activation-related activities.
- **Generation of Local and State Government revenues** through items such as transfer duties, land tax, payroll taxes and rates revenues. South Perth City Council will also benefit through increased rates revenues and charges.

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1. PROJECT DESCRIPTION & MODEL DRIVERS

1.1 OVERVIEW OF DEVELOPMENT

Designed by Hillam Architects, Lumiere strives to set a new benchmark in luxury living in Perth. The site, on the South Perth peninsula, is uniquely positioned to take advantage of the panoramic vistas afforded by Kings Park to the north-west and the Perth Esplanade, foreshore and city skyline to the north and east. Lumiere's position will offer unparalleled views of the Swan River from all aspects.

It is envisaged that Lumiere will create a vibrant community hub that will add a dynamic new element and level of sophistication into the wider Mill Point Road precinct that will create sustainable employment opportunities directly associated with the commercial aspects of the development (i.e. serviced apartments and café/restaurant) and inject incremental visitor (tourist) expenditure into the local area that would otherwise not have been generated in the absence of Lumiere.

1.2 PROPOSED DEVELOPMENT

The proposed development ('Lumiere') at 74 Mill Point Road, South Perth is a 44 storey mixed use development with 3 basement levels, contained on a site of 1,804 m² in area. It includes:

- A **Café/Restaurant** of 295m², 85 residential apartments, 147 serviced apartments, associated amenities/communal areas and a community meeting room.
- Three levels of basement providing residential stores and residential parking bay allocations.
- The ground floor consists of a Café/Restaurant, commercial (serviced apartments) and residential lobbies, bicycle storage, residence mail room, Telstra communication room, fire pump room, fire tanks, bin store and Western Power Sub Station.
- **Levels 1 - 2** have 4 serviced apartments units facing the street with residential and non-residential car parking allocations configured behind.
- **Level 3** has 14 serviced apartments across the entire floor.
- **Level 4** has 3 serviced apartments, a community meeting room and amenities for the serviced apartments, which includes a lounge, kitchen and dining areas, a games room and an outdoor pool.
- **Levels 5 - 21** have 119 serviced apartments varying between 34 and 106 square metres.
- **Level 22** has 6 serviced apartments and the pool plant and service area.
- **Level 23** has communal amenities for the building's residents. A large gym, sauna and steam room, pool and sun deck. There is also a resident's lounge and theatre room. The dining area has BBQ and cooking facilities both inside and out. These amenities are coupled with hard and soft landscaping to offer a break in the building form and help articulate the elevation.
- There are multiple (15) dwelling types across the development.

This report investigates the economic impact that this development will have on the City of South Perth.

1.3 DEVELOPMENT BACKGROUND

The proposed development is located within the Scott-Richardson Sub-Precinct of the Special Control Area SCA1 – South Perth Station Precinct ('the Precinct'). In Schedule 9 of the City of South Perth Town Planning Scheme No. 6 preferred land uses for the Scott-Richardson Sub-Precinct include:

- Café/Restaurant
- Mixed Development
- Office

- Take Away Food Outlet
- Tourist Accommodation
- Multiple Dwelling, Grouped Dwelling, Single Bedroom Dwelling, Aged or Dependent Persons Dwellings
- Residential Building.

The City's intentions for the precinct are contained in the Guidance Statement in Table A of the City of South Perth Town Planning Scheme No. 6 Amendment No. 25:

a) *It is intended that this development area is to consolidate its role as an employment destination.*

b) *Non-residential uses should predominantly comprise office and commercial land uses, educational establishments, tourist oriented development and small scale and specialty retail.*

The project therefore fits within the overall planning intentions for the precinct.

These intentions arose from the precinct planning program undertaken by the City, which included extensive public consultation that was undertaken between 2008 and 2010, with the report adopted by the Council and the WAPC in 2010. A key economic issue that informed the study was the need to increase employment in the Precinct area for two main reasons:

- To increase the type of activity that would make a new rail station servicing the Precinct a destination station (with a surplus of people getting off the train over those boarding in the morning peak and the reverse in the evening peak).
- To improve employment self-sufficiency and self-containment in the City – these are very low: the City was noted as having an employment self-sufficiency ratio of 56 per cent (compared with, for example, 234% in Subiaco and 103% in Vincent) and a self-containment ratio of 16 per cent, compared to the self-containment ratios of Subiaco of 23.1 per cent and Leederville of 25.3 per cent respectively (ABS, 2006). An update of the data indicates that these numbers are still low: South Perth in 2011 had an employment self-sufficiency ratio of 67% (ABS, 2011).

2. OPPORTUNITY FOR SERVICED APARTMENTS IN SOUTH PERTH

2.1 OVERVIEW

The mixing of asset classes at Lumiere will create an opportunity to enhance the site's amenities and goes a long way towards satisfying the demand of different population groups. The incorporation of short stay accommodation in the form of serviced apartments on levels 1 to 22 at Lumiere will:

- Help to activate the site through an increased flow of persons both inside the building and on the precinct outside the building;
- Satisfy potential demand for serviced apartment accommodation in South Perth;
- Satisfy anticipated demand from domestic and international travellers for luxury overnight serviced accommodation in South Perth;
- Help to mitigate the solar and ventilation criteria on the lower levels of Lumiere which can't be met for residential uses.
- Maximise the views of the Perth skyline and Swan River to residential apartments.

This section outlines the keys trends and market forces supporting the demand and drivers influencing the future success of the Lumiere mixed-use development. Particular focus in this section is placed on the opportunity to expand related tourism infrastructure in South Perth through the incorporation of 147 serviced apartments. The serviced apartments will satisfy potential demand for short stay (tourist) accommodation in South Perth, as well as support additional tourism expenditure in the South Perth economy – both direct and indirect. The incremental revenue arising from increased tourist expenditure (through increased visitor nights) is revenue that would otherwise not be delivered to South Perth if additional short stay accommodation such as the proposed serviced apartment element of Lumiere was not developed.

2.2 DEFINTION OF SERVICED APARTMENTS

The Serviced Apartments industry comprises establishments that operate self-contained apartments for short-term (one to six nights), medium-term (seven nights to one month) and long-term (longer than one month but less than 90 days (BCA)) stays. Serviced apartments contain a kitchen or kitchenette and sometimes have separate lounge or dining facilities. Serviced apartments are generally cheaper than equivalent hotel rooms due to fewer complex facilities and fewer services provided (IBIS, 2016).

Over the last fifteen years in Australia there has been an increase in the number, scale, standard and product offerings of serviced apartments to a point where distinguishable serviced apartment brands with associated star ratings have emerged much akin to the star ratings/brands associated with the hotel industry.

Benefits of serviced apartments:

Space - Serviced apartments offer more than just a room. Serviced apartments have separate areas for cooking, dining, living and sleeping offering a better home from home experience. Guests have more space to live and work in. Having more space also means guests can entertain friends/clients a lot easier.

Better value than hotels: Valued consumer feedback sites such as TripAdvisor typically rate serviced apartments and 5-star hotels above 3- and 4-star hotels when considering value-for-money.

Serviced apartments and 5-star hotels in the Experience Perth region have high ratings in terms of value.

Privacy: Having more space means guests can enjoy enhanced privacy, especially if they are travelling with family because they have the space to socialise together and space to retreat to individually.

Risk: As a business model, serviced apartments carry less risk that hotels – typically achieving similar occupancy rates and suffering less from seasonal swings. Several indicators point towards this sector growing in popularity in

Australia (refer to Section 2.3.2), and expect that in the next few years we will see an increasing number of global hotel brands moving into the space.

Implications for Lumiere

By virtue of the overall design of Lumiere, the proposed serviced apartment element should appeal strongly to luxury operators. The scale and design of the proposed serviced apartment element is arguably the most important aspect in securing an internationally branded luxury serviced apartment operator. Targeting an operator who is seeking to enter the South Perth visitor accommodation market and/or increase their market penetration within the wider Perth area will be key.

By way of example, although not yet seen in Australia, 2015 and the early part of 2016 have so far seen a number of initiatives by serviced apartment operators to partner with luxury brands or designers.

The introduction of Skye Suites (Crown Group), which will open its first property in Parramatta, West Sydney in early 2017 as part of the 29-storey V development (Crown Group, 2016), is testament to the demand for a luxury serviced apartment product offering in Australia.

Frasers Hospitality's partnership with Mercedes Benz is one such example. The exclusive collaboration between Fraser Suites and Mercedes Benz was launched in London in November 2015 with the opening of the 'Mercedes-Benz Living@Fraser' residence. This was followed shortly after by another property in Singapore. A further eight more Mercedes-Benz serviced apartments are to follow at Fraser Suites Singapore by mid-2016 (Re:Locate, 2016). The idea behind 'Mercedes-Benz Living@Fraser' is to indulge astute business and leisure travellers with stylish modern luxury and comfort, with the essence of the luxury Mercedes-Benz brand is echoed through high-quality furnishings, clean lines and state-of-the-art media and entertainment technologies (Frasers Hospitality, 2015).

2.3 TRENDS IN SERVICED APARTMENTS

2.3.1 Global Trends

Demand from companies wanting short-term accommodation – particularly serviced apartments - for overseas assignees has soared in recent years and shows no signs of abating (Knight Frank, 2016). Over the past seven years, the number of serviced apartments has grown by 80% and now totals more than 750,000 properties worldwide, with 61% of them being in the US and 17% in Europe. Australasia currently accounts of 7.3% of global share. The upward trend is set to continue, with the number of serviced apartments in the marketplace doubling over the last 12 years. Between 2015 and 2016 alone, supply has increased by 14% (Knight Frank, 2016).

There are two compelling factors driving global demand for serviced apartment accommodation:

1 Companies have become more cost conscious after the financial crisis and are now curbing their expenses and altering the nature of overseas assignments.

2 There is a new generation of younger employees used to more flexible business and leisure travel, which is encouraging companies to deploy people around the world for shorter periods.

Supply, however, is struggling to match fast growing demand in many established overseas markets, for what is a relatively new form of accommodation. This situation is further compounded by the fact that short-term lets often fall into a legal grey area, despite the rise of online providers such as Airbnb.

The fact that demand exceeds supply puts upwards pressure on occupancy levels, with nearly 75% of operators overseas reporting a year-on-year increase (Knight Frank, 2016). With such strong occupancy rates, it comes as no surprise that more hotel chains are expanding their portfolios to now include serviced apartment offerings as well. In fact, there is a growing trend for operators to locate serviced apartments and hotels on the same site, producing savings during both development and operation since they co-share back-of-house facilities. The co-location of brands such as InterContinental Hotels Group Crown Plaza hotel brand with Staybridge serviced apartment brand in the USA is one such example.

2.3.2 Australian Trends

Growth in serviced apartments in Australia has been largely driven by consumer eagerness to trade location for space, if offered at a similar price point. The combination of Australia's ageing hotel stock, low levels of domestic travel and a high Australian dollar over the last five years amidst a period of global economic uncertainty have also contributed to growth in the serviced apartment industry. As a result, in the five years through 2015-16, industry revenue is expected to increase by an annualised 5.8% to $3.0 billion, with growth of 5.6% anticipated in the current year (IBIS, 2016).

The spread of serviced apartment operators has generally followed Australia's population distribution and tourism patterns. As a result, serviced apartments are largely concentrated in business hubs and holiday destinations, which consequently house a high concentration of population. New South Wales, Victoria and Queensland are Australia's busiest business locations and have the highest concentrations of serviced apartments, collectively accounting for more than 75% of establishment locations (IBIS, 2016).

Australia's three most successful home-grown serviced apartment operators include the Mantra Group, Quest Apartments (which has almost 7,300 apartments across 115 properties throughout Australia) and Meriton Apartments which have just over 3,600 rooms across 14 properties (including Sydney, Brisbane and Gold Coast) (JLL, 2016). Of the top 30 accommodation operators in Australia, serviced apartments currently account for 36,262 rooms (equating to 28%) of the total number of serviced accommodation rooms available (JJL, 2016).

2.3.3 Perth Trends

Current Trends

- The size of the serviced apartment market in Perth has grown significantly over the last five years, with demand being largely driven by a growing trend of companies favouring the use of "home away from home" accommodation for their employees – especially those on FIFO (fly-in-fly-out) arrangements.
- Although stock remains primarily concentrated in and around the Perth CBD (with Quest being the market leader in terms of units available), there has been a surge in the number of serviced apartment property openings taking place outside of the CBD over the last 18 months. The opening of Quest Rockingham and Quest West Perth which opened in September 2015 and May 2016 respectively are two such examples.

Future Trends

- The planning pipeline for new serviced apartment properties remains strong, with a further eight properties (564 units) planned for development in the next three years. A further two properties namely: Quest Mounts Bay Road and Quest Adelaide Terrace are currently under construction and will deliver a further 201 serviced apartments into the Perth CBD short stay market before the end of 2016. This increase in supply is forecast to reduce overall occupancy in the Perth Experience region and may also impact average rate and RevPAR. Besides the proposed serviced apartments at Lumiere, we are unaware of any new hotel or serviced apartments planned for future development in South Perth.
- Confidence in serviced apartments as an asset class remains an attractive investment proposition, and is likely to continue to encourage increased supply in the market. The ever-increasing and evolving diversity of scale and standard amongst new and established serviced apartment operators is also likely to continue.
- Continued foreign investment in tourism infrastructure in Perth, together with improvements and diversification in the city's visitor offering, recovering local economy and continued growth in education-related travel (refer to Section 2.4.5) are all likely to bolstered demand for overnight accommodation in Perth.

2.3.4 Implications for Lumiere

The growth in demand for serviced apartment short stay accommodation both internationally, across Australia and in Perth has experienced significant growth over the last five years. With 564 serviced apartments currently in the planning stages in the Perth metro area, and a further 210 units under construction (TWA, 2015 and Tourism Council, 2016), there exists high levels of market confidence for this type of accommodation. In addition, with there being no future serviced apartment developments currently planned for or under construction in South Perth in the

short term, the proposed serviced apartment development at Lumiere will serve to extend visitor choice and diversify the product offering in the South Perth short stay accommodation market.

With so many large scale urban projects in the pipeline, under construction and/or due for imminent completion, the City of Perth is likely to experience a dramatic transformation over the next ten years. Recovering economic conditions and continued foreign investment (particularly from China and South East Asia) are both likely to boost commercial activity, expand the workforce and elevate Perth's status as an international city. With expansion in tourism infrastructure being an essential ingredient to support growth, investment in the short-stay accommodation market (such as serviced apartments) is already well advanced with 1900 rooms in the Perth pipeline.

2.4 SERVICED APARTMENT CUSTOMERS AND CLIENTELE

Demand for serviced apartments is growing faster than new supply in many international markets, as an increasingly mobile, global workforce drives business travel and relocation activity. In addition, leisure travellers are also now more actively seeking the additional space and amenities which serviced apartments provide as opposed to conventional hotels.

Demand for serviced apartments is no longer being generated by just long-stay guests such as relocating expatriate families, but also, short-stay guests who are visiting a destination with their families for leisure purposes. In order to attract this sizeable market away from hotels, serviced apartment operators need to ensure that they are offering the highest levels of cleanliness and service, while also offering value to their guests.

The potential source market for serviced apartments is therefore wide and includes:

- Relocation of corporates
- Corporate travelers
- Leisure travelers
- Asian markets
- VFR associated with international students
- Millennials
- Digital nomads.

2.4.1 Relocation of Corporates:

Influenced by cost management, there is an increasing trend by companies to increase their reliance on short-term assignments and use serviced apartments rather than hotels during the initial stages of a relocation. Staying in serviced apartments saves employees (and companies) taking trips to scope out an area before they relocate full time and, unlike with hotels, extra costs like food and laundry do not tend to build up quickly. Serviced apartments also have the ability to offer guests flexibility, and a genuine sense of freedom, but with security, so that companies who send their employees abroad/interstate know that they are fulfilling their duty of care.

In addition, preference for serviced apartment usage over corporate housing for example, reflects part of a fundamental shift in the way companies manage their real estate. Previously, companies used to lease or buy buildings, but this is capital intensive and, for the most part, companies are not in the business of real estate and property maintenance.

2.4.2 Corporate Travellers

Serviced apartments have grown in popularity amongst senior and executive corporate travelers who tend to travel and do business at all hours of the day. Given that business travel can be unpredictable: flights can be delayed, meetings protracted etc. once travelers reach their accommodation, they don't want to be bound by the rules of a hotel - they may want to eat late, or early and they want privacy; serviced apartments, by virtue of their product offering, are able to satisfy all of these demands.

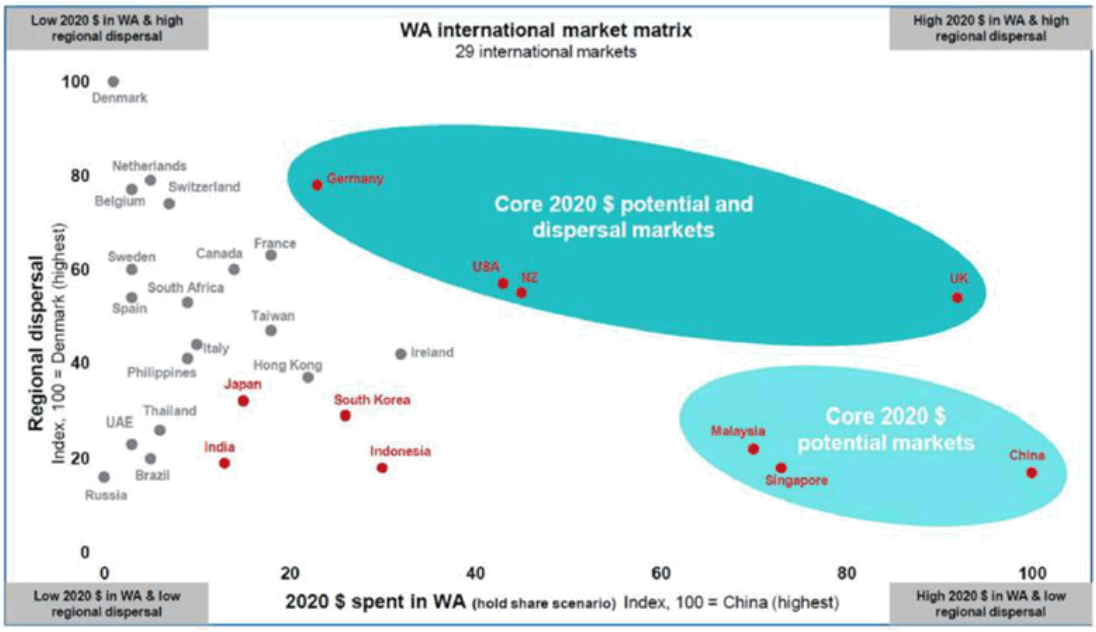
2.4.3 LeisureTravelers

Leisure travellers sometimes blend business and leisure activities during their overnight stay. These types of travellers typically extend their business trip to partake in the unique leisure opportunities presented by a destination. Many business travellers no longer want to be disconnected with their location in a hotel; they want to feel part of a place (BridgeStreet Global, 2015); once again, serviced apartments are able to accommodate these demands for flexible and extended travel opportunities.

2.4.4 Asian Markets

Asian markets remained the driving force behind the strong growth in international tourism in 2015 at both a national and regional level. Figure 2.1 provides an overview of the international markets that are most likely to stay overnight in Perth for the duration of their trip rather than travel to regions outside of the Perth metro. This figure clearly indicates that China, Singapore and Malaysia are less likely to travel to areas outside of Perth; they also have a higher visitor spending when compared to other nationalities. This combination of factors, together with the growth in serviced apartments in their home markets (particularly Singapore) bodes positively for the proposed luxury serviced apartments at Lumiere.

Figure 2.1: Regional Dispersal and Visitor Spending for 2020



Source: TWA, 2016

2.4.5 VFR associated with International Students

Each year Perth attracts 140,000 visitors for education purposes ranging from formal tertiary studies through to language schools and short informal courses. Education tourism is Perth's highest yield visitor market, where 1.1% of visitors account for 11.3% of Perth visitor spending (Tourism Council, 2014). Murdoch University and Curtin University in particular both have high student populations, with 50% of students reportedly being from overseas (http://studentcities.com.au/study-perth/). The opportunity for growth in education-related travel whilst recognised in the recently released *National Strategy for International Education 2025*, remains relatively untapped. The VFR market associated with visiting international students has potential to be a strong driver of demand for serviced apartments due to the product's ability to offer flexibility, size to accommodate family (and extended family) members, and security of being in a foreign country.

2.4.6 Millennials

The growth in a defined Millennial market sector (i.e. those born between the years spanning 1980 to 2000) have fundamentally different drivers around living, working and connecting compared to previous generations. Millennials characteristically tradeoff for smaller, private living space, provided it is accessible to shared space and public amenities. In this regard, mixed-used developments, with the right design, canhave a particular appeal for millennials, who value social interaction and who are primary instigators and users of the "sharing economy" (Urbis, 2015).

2.4.7 Digital Nomads

By definition, digital nomads are people who use telecommunications technologies to earn a living and, more generally, conduct their life in a nomadic manner. Such workers typically work remotely—generally from foreign countries - to accomplish tasks and goals that traditionally took place in a single, stationary workplace (Wikipedia, 2016). While unclassified short stay rental accommodation commonly found through sites such as Airbnb or Roomorama are likely to remain popular amongst international digital nomads in the short-term, there are a growing number of travellers who crave community and wish to experience the local flavour of a destination. BridgeStreet Global Hospitality has responded to these changes by recently extending their portfolio to include a new brand "Mode" which focuses on social and experiential travel through the provision of community spaces such as a cafe, bar or restaurant product offering and concierge services so that guests can partake in local and unique destination offerings (BridgeStreet Global, 2016).

2.4.8 Implications for Lumiere

The high-end luxury product provided at Lumiere may resonate with upmarket corporate clients, millennials with high levels of disposable income, international leisure travellers and digital nomads who are seeking a high quality reliable product with good public and social facilities, in close proximity to their place of business or close to leisure action and attraction.

People will pay more for an experience. This is increasingly true today as affluence is buoyed by a rising global middle class. To provide it, the hospitality sector is working overtime to be informal and welcoming; see-and-be-seen lobbies work sit well with millennials, and relaxing yet sophisticated environments resonate well with digital nomads. Where possible (particularly with new-builds) hotels are integrating local culture and inviting the community in. Travel trends, such as vacationing with extended family (popular with families from south-east Asia) are through the provision of multi-room serviced apartments. Properties that replicate "home away from home" environments are popular and emphasis on well-being is becoming a priority: fitness, healthy food, and wellness options are attractors.

2.5 ASSESSING DEMAND FOR A SERVICED APARTMENT PRODUCT IN SOUTH PERTH

In order to assess demand for the proposed serviced apartment product in South Perth, it is necessary to examine the current and future anticipated demand for short-stay accommodation in the local area. Demand for accommodation will be driven by the business and leisure markets, thus, an examination of the current and future anticipated performance of the tourism and overnight visitor markets is necessary to establish a baseline for future demand for paid accommodation at Lumiere (refer to Section 3.1.2).

Given that in the short-term at least, and until the South Perth establishes itself more firmly in the economic landscape as a significant commercial centre, it is envisaged South Perth will compete directly for corporate nights generated by activities associated with the Perth CBD. The pleasant riverside setting and surrounds of South Perth, together with the area's local visitor amenities and attractions (e.g. Zoo) will continue to be an important driver of overnight leisure accommodation. The easy connection to Perth's newest visitor attraction – Elizabeth Quay - via a regular ferry service, together with several other riverside and city attractions planned for the future, makes South Perth a viable possibility as an overnight (or extended stay) accommodation option.

2.5.1 South Perth Tourism Market

Trends in tourism patterns, preferences and visitor profiles are all strong indicators of the likely demand for short-stay accommodation. The trend data compiled by Tourism Research Australia (TRA) provides an indication of the change in overnight travel within both LGA and tourism regions. The visitor profile, purpose of visit and source markets within South Perth tourism economy all have a direct relationship on the demand, take-up (occupancy levels) and tourism expenditure levels emanating both directly and indirectly from the serviced apartments development component at Lumiere. A high level overview of the tourism market in South Perth is provided in Table 2.1 below. We have also included a tourism overview of the Perth City[1] market as an indicator of the future tourism mix that could potentially be attracted to South Perth. The tourism mix of the Perth City market has been taken into account, as a point of reference, for the purposes of our projections of estimated rooms revenue and room occupancy (refer to Section Operation3.1.2) at the proposed Lumiere serviced apartments.

Table 2.1: South Perth and Perth City Tourism Overview

		South Perth				Perth City
		2014		2015		2015
		Number	% of total overnight visitors	Number	% of total overnight visitors	% of total overnight visitors
Overnight visitors						
Domestic	Interstate	16,987	25%	10,554	13%	35%
	Intrastate	37,438	56%	58,562	74%	39%
International		13,002	19%	9,963	13%	26%
Total		67,427	100%	79,079	100%	100%
Visitor Nights						
Domestic		197,520	28%	227,510	41%	35%
International		510,185	72%	326,908	59%	64%
Total		707,705	100%	554,418	100%	100%
Ave length of stay (days)						
Domestic		3.6 days		3.3 days		3.1 days
International		39.2 days		32.8 days		16.7 days
Purpose of visit						
Domestic	Holiday	42%		31%		25%
	VFR	44%		45%		25%
	Business	14%		24%		39%
	Other	0%		0%		11%
International	Holiday	26%		15%		55%
	VFR	13%		28%		21%
	Business	44%		31%		16%
	Other	18% (education = 12%)		9% (education = 17%)		11%

Source: TRA (2016), TWA (2016c)

Comments and observations surrounding the above data include:

- **Strong day visitor economy**: South Perth benefits from a strong visitor economy with day visitors and domestic overnight visitors fuelling the majority of this demand. Perth Zoo, the Swan River foreshore and the café and restaurant strip are along Mends Street are all important drawcards for the local area. The regular ferry service operating between Barrack Street Jetty in Perth CBD and Mends Street in South Perth is an important service connecting both sides of the river and enables and encourages movement of visitors.

[1] including West Perth, East Perth, Kings Park and Highgate

- **Comparably higher levels of visitation by domestic overnights visitors than international visitors:** Although the domestic market dominates in terms of overnight visitation demand, accounting for 87% of all overnight visitors to South Perth in 2015, this proportion has decreased when compared with the 'mining boom' years, when demand from the domestic market accounted for close to 95%.
- **International visitors account for around 60% of all visitor nights in South Perth:** Although in absolute terms, the international visitor market accounted for 13% of all overnight visitors to South Perth, the long average stay by this market sector translates into significant demand for visitor nights, and accounted for 59% of all visitor nights in South Perth in 2015. This compares with Perth City for which international visitor nights accounted for 64% of the total.
- **Variations in purpose of visit:** Within the domestic overnight market, the majority (over 75%) of visitors stay in South Perth for holiday and VFR purposes. In contrast, demand from international business and education-related travel is stronger, and accounted for almost half of all international overnights stays in South Perth in 2015.
- **Long average length of stay by international visitors** to South Perth at 32.8 days in 2015 exceeds that of Perth City (at an average of 16.7 days for the same period). We attribute this to be a strong indicator of the preference of long-stay visitors to stay outside the Perth CBD in search of a work-life-balance during extended stays. The close proximity of South Perth to Curtin University and the University of Western Australia may also have some influence over the average length of stay through VFR education-related travel. Additionally, long stay VFR market, staying in private accommodation, contributes significantly to this segment.

2.5.2 South Perth Short Stay Accommodation Market

The Perth hotel industry has been subject to significant change over the last five years. During the height of the mining boom, there was insufficient hotel bedspace in the City. This prompted the West Australian government to launch a tourism strategy which set a target of 1,900 new Perth hotel rooms by 2020. This in turn, resulted in a surge in hotel developments; some have been completed while other are under construction or planned for future construction. In terms of geographic distribution, the majority of new developments have taken (taking) place in and around the Perth CBD and Fremantle. No new hotels or serviced apartments have opened in (or have development approvals for) in South Perth.

The South Perth short stay accommodation market is characterised by the following:

- **Limited number of hotel rooms:** There are only two properties i.e. Metro Hotel (147 bedrooms) and Pagoda Resort[2] (101) rooms have been identified. The Windsor Hotel advertises hotel rooms, however the main business is driver for this property is the pub/restaurant offering. Of the hotel properties available, none of these have an international brand presence. The Metro Hotel is owned and operated by Metro Hospitality Group who also own and operate a further 15 hotels across other Australian capital cities.
- **Limited number of serviced apartments:** There is a total of 102 serviced apartments available in the South Perth market. The 70-apartment Peninsula Riverside Apartments (53 South Perth Esplanade) is rated four-star on TripAdvisor and is independently owned and operated. This property offers a mix of 1, 2 and 3-bedroom apartments spread across 10 levels. The Quest South Perth is a 32-apartment three-star rated serviced apartment offering a mix of 1 and 2-bedroom apartments.
- **High number of individually rented apartments for short-stay use:** Booking websites such as Airbnb, Stayz.com and Booking.com promote lettable "serviced apartments". Based on the definition in Section **Error! Reference source not found.** these are not true serviced apartments – rather, they are individually owned properties that are available for corporate and leisure visitors at variable rates. These lettable units are highly diverse in terms of their quality offering i.e. finishes and furnishings, and none offer café/restaurant amenities that are commensurable with a luxury branded serviced apartment. Table 2.3 shows the preference for overnight visitors – particularly international visitors – to stay in privately let accommodation. While the latter is

[2] Pagoda Resort is located outside South Perth in the adjacent suburb of Como, however it is deemed worthy of mention due the relative close proximity to the proposed Lumiere serviced apartments.

a consequence of a limited supply of 'formally' recognised tourist accommodation (i.e. hotels, motels and serviced apartments) it is also an indication of the type of accommodation typically adopted by international visitors who stay on average for more than a month, and who prefer to stay in a "home-away-from-home" environment.

Table 2.2: Accommodation Preferences by Overnight Visitors to South Perth (Visitor Nights)

	2014			2015		
Type of accommodation	**Domestic**	**International**	**Overall**	**Domestic**	**International**	**Overall**
Hotels, motels, serviced apart.	24%	11%	19%	25%	10%	19%
Other commercial[1]	20%	47%	31%	20%	47%	32%
Private acoomodation[2]	53%	40%	48%	49%	40%	45%
Other accommodation	2%	2%	2%	6%	3%	4%

Notes:
Other commercial accommodation includes: bed and breakfasts, guesthouses, backpacker hostels, camping and caravan or rented house, apartment, flat or unit.
Private accommodation includes: staying in own property or property of a friend or relative.
Source: TRA (2016)

- **Current operating performance suggests room for additional tourist accommodation provision in South Perth:** Table 2.3 provides a summary of achieved room occupancy, ADR (average daily rate) and RevPAR (revenue per available room) for tourist accommodation establishments in South Perth for the periods 2013/2014 and 2014/2015 (latest available statistics)[3]. Although room occupancy is below that achieved for the Perth City market (which has achieved levels around 80% over the last three years – TWA, 2016), the trend for overnight visitors to stay in other commercial accommodation (which is not included in the performance results in Table 2.3) suggests that a significant number of roomnights are being captured by individual apartments that are available for let through other booking channels.

Table 2.3: Performance Indicators for the South Perth Tourist Accommodation Market[1]

Description	2013/14	2014/15
Hotel occupancy performance	66.3%	72.0%
Hotel ADR performance	217.30	$197.28
Hotel RevPAR	139.82	$139.28

Notes:
1Tourist accommodation performance data only includes hotels, motels and serviced apartments with 15 or more rooms.
Source: ABS (2016)

Whilst somewhat dated, the data in the above table highlights the serviced apartment offering will have to deliver a niche product to achieve success.

2.5.3 Implications for Lumiere

Internationally or nationally branded hotel operators in the South Perth short-stay accommodation market are currently under-represented when compared to the Perth CBD. Whilst there has been an increase in the supply of mid- to high quality serviced apartments in Perth CBD (predominately by Fraser Hospitality and Quest operators), we are unaware of any current or future planned hotel or serviced apartment developments in South Perth. The strong take-up for *other commercial accommodation*' by overnight domestic and international visitors to South Perth suggests that there is scope in the market for additional styles of '*tourist accommodation'* provision in South Perth.

The opportunity to develop serviced apartments as part of the Lumiere development is positive on the proviso that the apartments are operated by a national (and preferably international) brand. The power of an internationally recognised brand has the potential to attract an above-fair-share of international corporate and leisure visitors. Brand strength in itself is a strong driver of serviced apartment demand with global distribution systems (GDS), direct bookings and hotel website bookings often accounting for a significant proportion of roomnights sold.

[3] The Australian Bureau of Statistics (ABS) has conducted a quarterly accommodation survey for many years. This survey tracks accommodation establishments with 15 or more rooms and represents the most current, significant and accurate source for accommodation statistics in Australia. However, the ABS survey only considers establishments with 15 or more rooms and often undercounts the available supply.

Significant and distinct marketing activity will be required to stimulate new demand for the South Perth Tourism market to ensure the additional 147 serviced apartments (42% increase) does not impact on South Perth occupancy.

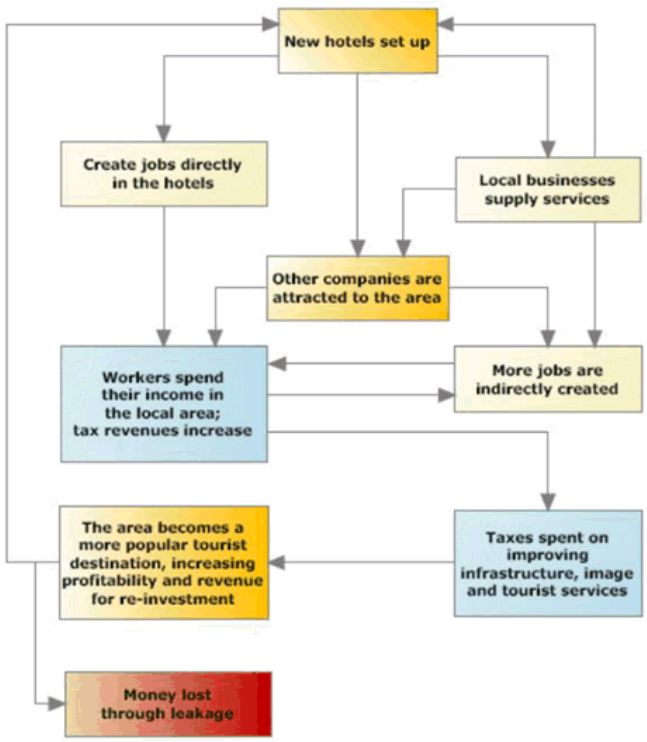
2.6 ROLE OF SHORT STAY ACCOMMODATION IN THE TOURISM ECONOMY AND AS A COMMERCIAL ENTERPRISE

2.6.1 Tourism as an Economic Sector and Tourism Multipliers

Tourism's role in the economy is often perceived as being limited to the hospitality industry (cafes, hotels and restaurants) and outbound and inbound travel agencies and carriers, which form the leading service sector in many countries. However, the economic impact of tourism is much greater, since many inputs are needed in order to produce tourism and leisure services, spanning the whole range of farm, agrifood and industrial production, including the production of capital goods as well as construction and public works. This is known as the multiplier effect which in its simplest form is how many times money spent by a tourist circulates through a country's economy.

Figure 2.2 provides a high level summary of how money associated with the serviced apartment development at Lumiere will circulate within the local South Perth economy.

Figure 2.2: Tourism Multiplier and Tourism Expenditure Flow through the Local Economy



Leakage is the way in which revenue generated by tourism is lost to other countries' economies. Leakage may be so significant in some developing countries that it partially neutralises the money generated by tourism.
Source: www.geographyfieldwork.com

2.6.2 The Importance of Tourism at a National and Regional (Experience Perth) Level

2.6.2.1 National Level

Tourism is a significant industry for Australia. During the period June 2014/15 tourism generated $107 billion in visitor expenditure, directly employed around half a million Australians and is Australia's number one services export (TA, 2015). Tourism helps to fund critical infrastructure such as airports, roads and hotels, and plays an important role in the economic development of regional Australia, with 46 cents of every tourist dollar spent in regional Australia (TA, 2015). Every dollar spent on tourism generates 87 cents in other parts of the economy, which is a higher multiplier than those achieved for mining, agriculture and financial services. Recognising the important role of tourism, the Australian Government has identified tourism as one of five National Investment Priorities, with a particular emphasis on leveraging international demand and investment to help further grow the industry.

2.6.2.2 Experience Perth[4] Level

Perth plays a major role in facilitating tourism activity throughout the state. Western Australia's geographic isolation relative to the east coast population, coupled with the large land mass the state occupies, means aviation plays a central role in facilitating tourism and business activity. Perth is a hub for the state's activity and the point of dispersion for the state's interstate and international visitors.

For the year ending December 2015, visitors to Western Australia spent an estimated $9 billion on tourism activities. Total expenditure by overnight visitors (including international, interstate and intrastate visitors) was $7.2 billion (TWA, 2016a). The day trip market accounted for the balance. In comparison, visitors to the Experience Perth region delivered $5 billion into the local economy over the same period (accounting for almost 70% of total tourism expenditure in the State), with overnight visitors accounting for around 77% ($3.8 billion) of this (TWA, 2016b).

With Perth assuming a more prominent position in Australia as an emerging centre for resources and medical research and development, tourism and education, the number of visitors to Perth is likely to increase even further. Having the appropriate mix and level of tourism infrastructure to support this will be critical to the overall growth of tourism as an economic sector and employment creation.

2.6.3 Implications for Lumiere

The opportunity to incorporate high-quality branded serviced apartments as part of the Lumiere development is positive from both a supply and demand perspective. The growth in visitor numbers to the local area over the last two years, together with the increase in the number of visitors to Perth generally and the recognition of tourism as an important economic driver of employment and GDP contribution, all supports the case for the development of serviced apartments at Lumiere. The ongoing (operational) economic contribution of the Lumiere serviced apartment element will boost the visitor economy directly (through increased visitor spend on overnight accommodation, spend on food and beverage items at the café/restaurant located on-site) and support and sustain the visitor economy indirectly (e.g. transportation and retail outlets). Direct and indirect expenditure associated with the Lumiere serviced apartments, as well as the employment opportunities created are all considered to be incremental to the South Perth economy: i.e. it is expenditure revenue that would not otherwise be delivered if the serviced apartments are not built.

[4] Experience Perth as a tourism region encompasses the following tourism precincts: Perth, Fremantle and Rottnest, Peel and Rockingham, Sunset Coast, Swan Valley and Darling Ranges and Avon Valley

3. ECONOMIC IMPACT ASSESSMENT

Economic modelling in this section estimates the economic activity supported by construction and operational activity of the project. Input-Output modelling is used to examine the direct and flow-on[5] activity expected to be supported within the South Perth LGA economy. Modelling drivers used in the assessment are described in Section 3.1. A description of the Input-Output modelling framework used is provided in **Appendix A**.

Input-output modelling describes economic activity by examining four types of impacts:

- **Output:** Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.
- **Gross Regional Product (GRP):** Refers to the value of output after deducting the cost of goods and services inputs in the production process. GRP defines the true net contribution and is subsequently the preferred measure for assessing economic impacts.
- **Income:** Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.
- **Employment:** Refers to the part-time and full-time employment positions generated by the economic stimulus, both directly and indirectly through flow-on activity, expressed in full time equivalent (FTE) positions6.

3.1 ECONOMIC MODELLING DRIVERS

3.1.1 Construction

Construction of the project is indicatively estimated to cost approximately $150.4 million (Donald Cant Watts Corke, 2016), including preliminaries, design, building construction, fit-out and completion.

For the purposes of modelling and clarity of reporting, the construction phase has been examined in terms of economic activity supported overall rather than on an annual basis. A breakdown of development costs is presented below.

For modelling purposes, the capital outlay for the project was disaggregated into relevant industries represented in the Input-Output model (based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) categories). A summary of expenditure for development of the project is outlined in the table below, broken down by relevant industry.

Table 3.1. Construction Costs by Industry

Industry	Total ($M)
Non-Residential Building Construction	$116.47
Construction Services	$20.28
Professional, Scientific and Technical Services	$13.67
Total	**$150.42**

Note: Totals may not equal the sum of individual items due to rounding.
Source: Donald Cant Watts Corke (2016), AEC.

Of the above capital outlay, not all activity will be undertaken within the South Perth LGA economy. For example, a large proportion of professional services and marketing activities for the project are likely to be undertaken

[5] Both Type I and Type II flow-on impacts have been presented in this report. Refer to **Appendix A** for a description of each type of flow-on impact.

[6] Where one FTE is equivalent to one person working full time for a period of one year.

elsewhere in the Perth Metropolitan Area (e.g. Perth CBD) or interstate, given the high end nature of the project and typical locations of these businesses.

The following table outlines assumptions used in the modelling to identify where relevant activity is anticipated occur.

Table 3.2. Location of Construction Phase Activity by Industry

Industry	Percent Local Activity
Non-Residential Building Construction	100%
Construction Services	100%
Professional, Scientific and Technical Services	10%

Source: Donald Cant Watts Corke (2016), AEC.

In interpreting the above table, it is important to recognise the location of where activity occurs can differ from where the labour or services used to undertake the activity are sourced from. For example, construction activity will (effectively) all occur on site. However, given the highly mobile nature of construction workers, it is likely that a large proportion of this labour will reside elsewhere in the Perth Metropolitan Area or potentially further afield.

The following table outlines the assumptions used in the modelling regarding the location where goods and services are sourced.

Table 3.3. Source of Construction Phase Activity by Industry

Industry	Precent Sourced Locally
Non-Residential Building Construction	20%
Construction Services	20%
Professional, Scientific and Technical Services	10%

Source: Donald Cant Watts Corke (2016), AEC.

In undertaking economic modelling, the direct activity associated with the construction phase is based on where activity occurs (Table 3.2) rather than strictly where labour for these services is sourced from (Table 3.3). However, the amount of activity that is retained in the South Perth LGA economy is best considered in terms of where labour, goods and services are sourced, rather than where the activities they undertake are located. This refers to a 'retention' of incomes and profits within an economy, and reflects that labour and companies sourced from outside the South Perth LGA economy are more likely to spend incomes earned within their local area than within South Perth.

For the purposes of modelling, it has been assumed construction companies and sub-contractors sourced from outside South Perth LGA will contribute approximately one quarter (25%) of the level of Type I (production induced) flow-on activity within the economy that a locally sourced company does, and approximately 5% of Type II (consumption induced) flow-on activity. This reflects that construction companies working on site but sourced from outside South Perth LGA will contribute to local supply chains in terms of sourcing some goods and services they require locally (Type I), as well as spending some wages and salaries locally on items such as food, drink and accommodation (Type II).

3.1.2 Operation

Additional activities anticipated to be observed following the delivery of this project on an ongoing annual basis as a result of its operation are outlined below.

Facility Operation – Serviced Apartments

The project will result in the development of 147 serviced apartments available for short stay accommodation purposes, comprised of a mix of 1-bedroom (102 apartments), 2-bedroom (26 apartments) and 3-bedroom (19 apartments) units.

The assumptions outlined in Table 3.4 have been used in estimating the total revenue anticipated to be generated by the serviced apartments. High level demand and market analysis has been undertaken for this project, and these *prima facie* assumptions are based on an understanding of the current local market in consideration of the premium offering the development would provide. Specifically:

- Average occupancy assumptions have been based on an understanding of the serviced apartment industry and demand drivers influencing the local market. In line with hotel and serviced apartment industry norms, 1 bedroom units typically attract higher levels of demand. 3-bedroom units are more popular with groups or families which are either relocating or on holiday and, as such they are typically less utilised than 1 bedroom apartments.
- Average occupancy of 65% represents the achieved average room occupancy across the entire serviced apartment property. This is broadly in line with that currently achieved by the South Perth.
- Average room rate is based on comparable rack rates for upper-scale serviced apartments currently operating in the outer Perth CBD. A discount rate of 15%, 20% and 35% has been applied respectively to each of the 1-, 2- and 3-bedroom apartments to reflect market discount conditions.
- These assumptions reflect an estimate of average annual activity once developed and fully operational.

Table 3.4. Assumptions Used for Estimating Revenue from Serviced Apartments

Item	1 Bed	2 Bed	3 Bed	Total
Number of Units	102	26	19	147
Room Nights Available	37,230	9,490	6,935	53,655
Occupancy	75%	65%	50%	Ave 65%*
Room Nights Sold	27,923	6,169	3,468	37,559
Ave People per Room Night	1.2	3.2	4.5	Ave 1.5*
Visitor Nights	33,507	19,739	15,604	68,850
Average Room Rate	$191.25	$360.00	$422.50	-
Total Revenue ($M)	**$5.34**	**$2.22**	**$1.47**	**$9.03**

Notes:
*across the entire property
Source: AEC.

Total revenue of $9.03 million through takings from accommodation has been modelled through the 'Accommodation' industry in the Input-Output model to estimate the direct and flow-on impacts of the serviced apartments.

Facility Operation – Café/ Restaurant

The project will deliver 295 sqm of commercial space expected to be used for café/ restaurant purposes. Estimates of annual economic activity generated by this space have been developed using the following assumptions:

- An average of 30 sqm per FTE employee (i.e., approximately 10 FTE employees).
- A ratio of output generated per FTE employee of $0.127 million, based on Input-Output multipliers for the 'Food and Beverage Services' industry.

This provides an estimate of approximately $1.27 million in output for the café/ restaurant. This value has been modelled through the 'Food and Beverage Services' industry in the Input-Output model to estimate the direct and flow-on impacts of the café/ restaurant space.

Induced Visitor Spend

A total of 68,850 visitor nights are anticipated to be attracted to stay in South Perth LGA as a result of the development (as outlined in Table 3.4). It is expected effectively all of these visitors would represent net new visitor nights in South Perth LGA, given the premium and superior quality of the serviced apartment product to be developed and compared to other facilities in the LGA (i.e., the Lumiere apartments are considered more likely to compete for custom with luxury apartments/ hotel located elsewhere in the Perth Metropolitan Area, rather than existing accommodation providers in South Perth LGA).

It is assumed approximately 40% of visitor nights will be generated by domestic overnight visitors, and 60% of visitor nights will be generated by international visitors. This is in line with current tourism market performance in South Perth (refer to Section 2.5.1 and Table 2.3).

Data from Tourism Research Australia's National and International Visitor Surveys (TRA, 2016) were used to identify average expenditure per visitor night for domestic overnight and international visitors to Australia, as well as relevant splits of expenditure between specific expenditure items within the categories of accommodation, transport and other items. Average expenditure estimates per visitor night by expenditure item were then rounded to the nearest $0.50, and are summarised in Table 3.5. **Appendix B** provides a summary on the methodology used to collect visitor expenditure data.

Table 3.5. Average Expenditure per Visitor Night by Expenditure Item

Expenditure Item	Domestic Overnight	International
Airfares	$29.00	$4.00
Tours	$7.50	$3.00
Rental vehicles	$3.50	$2.00
Petrol	$18.50	$1.50
Vehicle maintenance and repairs	$0.50	$3.50
Taxi and public transport	$5.00	$3.50
Accommodation	$48.50	$22.00
Groceries and alcohol	$23.00	$10.00
Takeaways and restaurants	$29.50	$12.50
Shopping	$16.00	$15.00
Entertainment	$5.50	$2.00
Gambling	$1.00	$0.50
Education and conferences	$1.50	$18.00
Other expenditure	$1.50	$2.50
Total	**$190.50**	**$100.00**

Source: TRA (2016), AEC.

Expenditure items were allocated to their most relevant industry in the Input-Output modelling. Some items were excluded for the following reasons:

- Not all of the visitor spend is expected to be spent in South Perth LGA. Some expenditure (e.g. flights) is expected to occur almost entirely outside the South Perth LGA, while much of the expenditure will occur elsewhere in the Perth Metropolitan Area as visitors undertake activities. For the purposes of this assessment:
  - 100% of visitor expenditure on accommodation was assumed to occur in the South Perth LGA.
  - 50% of visitor expenditure on retail trade (e.g. shopping, groceries and alcohol) and food and beverage services (e.g. takeaways and restaurants) related activities were assumed to occur within the South Perth LGA.
  - All visitor expenditure on airfares and higher education services was assumed to occur outside the South Perth LGA and was therefore excluded from the assessment. Expenditure on higher education services was excluded in consideration of where these institutions are located within the Perth Metropolitan Area.
  - 25% of visitor expenditure on all other activities was assumed to occur within the South Perth LGA.
- All expenditure by visitors on accommodation is assumed to occur at the Lumiere serviced apartments, which is already examined separately. To include this expenditure would double count these impacts. As such, expenditure on accommodation by visitors was excluded.
- Some expenditure on takeaways and restaurants is likely to occur at the café/ restaurant developed as part of the project. Expenditure on takeaways and restaurants was reduced by 50% to reflect this, and avoid double counting.

The annual additional visitor spend by industry in South Perth LGA as a result of the project, accounting for expenditure outside of the South Perth LGA and expenditure already captured through operation of the serviced apartments and café/ restaurant, is presented in Table 3.6.

Table 3.6. Annual Additional Visitor Spend in South Perth LGA ($M)

Industry	Domestic Overnight	International	Total
Retail Trade	$0.79	$0.55	$1.34
Food and Beverage Services	$0.20	$0.13	$0.33
Road Transport	$0.03	$0.03	$0.06
Rail Transport	$0.00	$0.00	$0.01
Water, Pipeline and Other Transport	$0.05	$0.03	$0.08
Rental and Hiring Services (except Real Estate)	$0.02	$0.02	$0.04
Professional, Scientific and Technical Services	$0.01	$0.01	$0.01
Arts, Sports, Adult and Other Education Services	$0.00	$0.05	$0.05
Heritage, Creative and Performing Arts	$0.02	$0.01	$0.03
Sports and Recreation	$0.02	$0.01	$0.03
Gambling	$0.01	$0.01	$0.01
Automotive Repair and Maintenance	$0.00	$0.04	$0.04
Personal Services	$0.01	$0.03	$0.04
Total	$1.17	$0.90	$2.07

Note: Totals may not sum due to rounding.
Source: TRA (2016), AEC.

3.2 ECONOMIC MODELLING RESULTS

3.2.1 Construction

It is estimated the approximately $150.4 million capital investment in the project will directly inject approximately $28.7 million in industry output to the South Perth LGA economy in total over the construction period. A further $29.1 million in industry output is estimated to support in the South Perth LGA economy through flow-on activity.

A total of $24.7 million in Gross Regional Product (GRP) is estimated to be supported within the South Perth LGA economy over the construction phase in total, including direct and flow-on activity. Around 161 FTE jobs for South Perth workers are also estimated to be supported as a result of construction, providing $12.1 million in wages and salaries.

A summary of economic activity supported by the project in aggregate throughout the construction phase in South Perth LGA is provided in the table below.

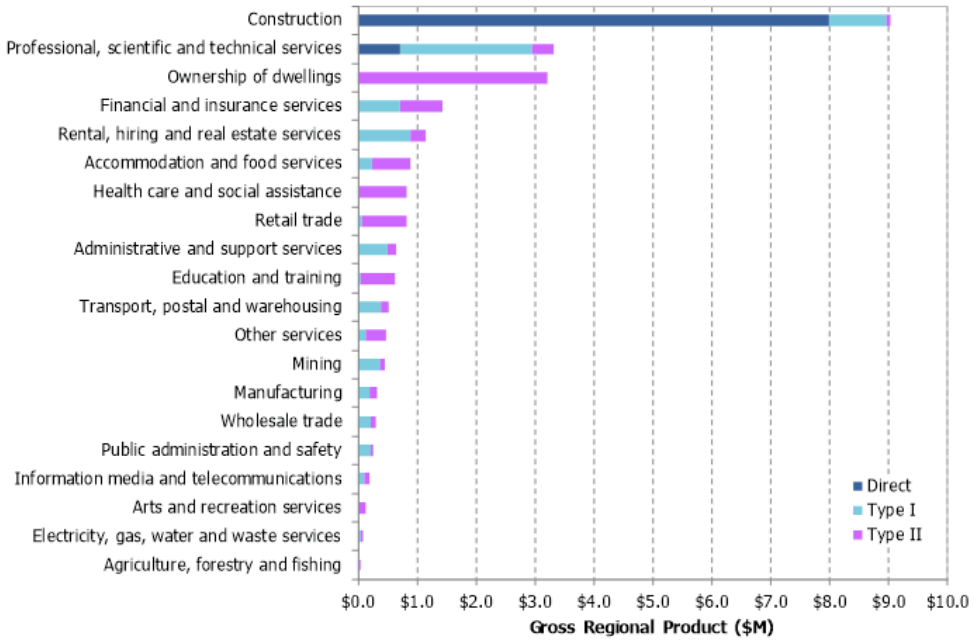
Table 3.7. Economic Activity Supported by Construction Phase (Total), South Perth LGA

Impact	Output ($M)	GRP ($M)	Incomes ($M)	Employment (FTEs)
Direct	$28.7	$8.7	$4.4	55
Type I Flow-On	$15.3	$7.3	$4.2	54
Type II Flow-On	$13.8	$8.7	$3.5	52
Total	**$57.8**	**$24.7**	**$12.1**	**161**

Note: Totals may not sum due to rounding.
Source: ABS (2015), ABS (2016), ABS (2012a), Donald Cant Watts Corke (2016), AEC.

A breakdown of GRP supported by industry in the South Perth LGA economy during the construction phase is outlined in Figure 3.1 below. The construction industry is estimated to contribute more than $9.0 million to GRP during the construction period. Over $3.0 million in GRP contribution is also estimated to be supported in the professional, scientific and technical services industry, as well as the sector of ownership of dwellings.

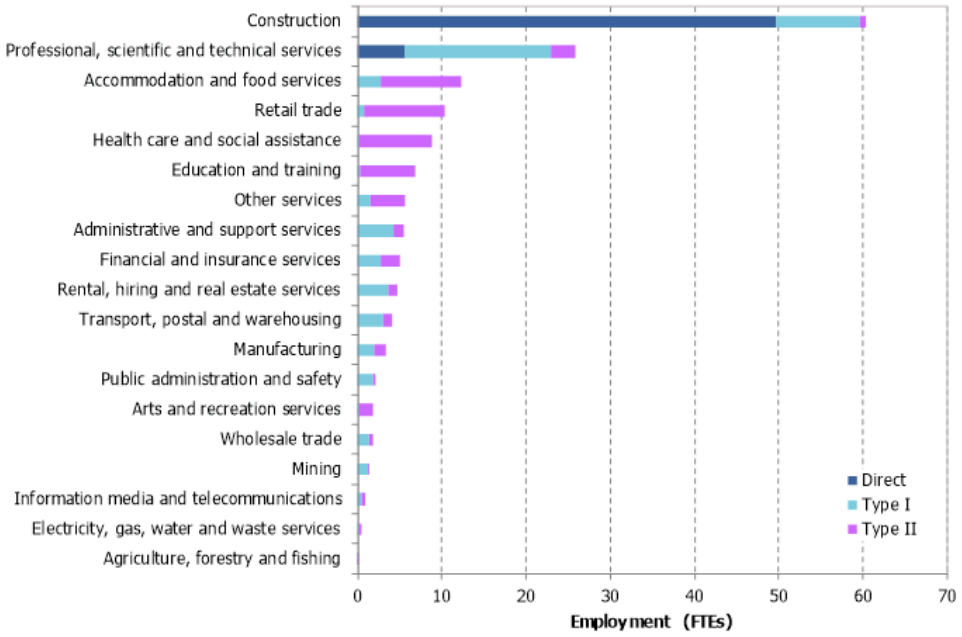
Figure 3.1. GRP Supported by Industry, Construction Phase (Total), South Perth LGA ($M)



Source: ABS (2015), ABS (2016), ABS (2012a), Donald Cant Watts Corke (2016), AEC.

A breakdown of FTE employment supported by industry during construction is presented in Figure 3.2. The construction industry is estimated to have more than 60 FTE jobs supported within South Perth LGA during the construction phase of the project.

Figure 3.2. Employment Supported by Industry, Construction Phase (Total), South Perth LGA (FTEs)



Source: ABS (2015), ABS (2016), ABS (2012a), Donald Cant Watts Corke (2016), AEC.

3.2.2 Operation

Modelling of operations phase activity has been undertaken based on the average annual economic contribution of the serviced apartments and café/ restaurant components of the development, as well as additional tourism visitor spend attracted to the South Perth LGA by those staying at the serviced apartments, once in steady state operation.

Operation of the serviced apartments and café/ restaurant, as well as expenditure of visitors attracted to South Perth LGA staying at the serviced apartments, is estimated to directly produce industry output of around $12.4 million within the South Perth LGA economy each year once in steady state operations. A total of 69 FTE jobs are estimated to be directly supported by this activity, including 45 direct FTE jobs at the serviced apartments and 10 FTE jobs at the café/ restaurant (with the remainder supported directly through visitor expenditure).

Economic modelling indicates this level of direct activity would support $22.9 million in total industry output for South Perth LGA businesses each year (including direct and flow-on activity), and $12.9 million in GRP in the South Perth LGA economy. Approximately 109 FTE jobs are estimated to be supported each year (including both direct and flow-on activity), paying around $6.3 million in wages and salaries to workers in South Perth LGA.

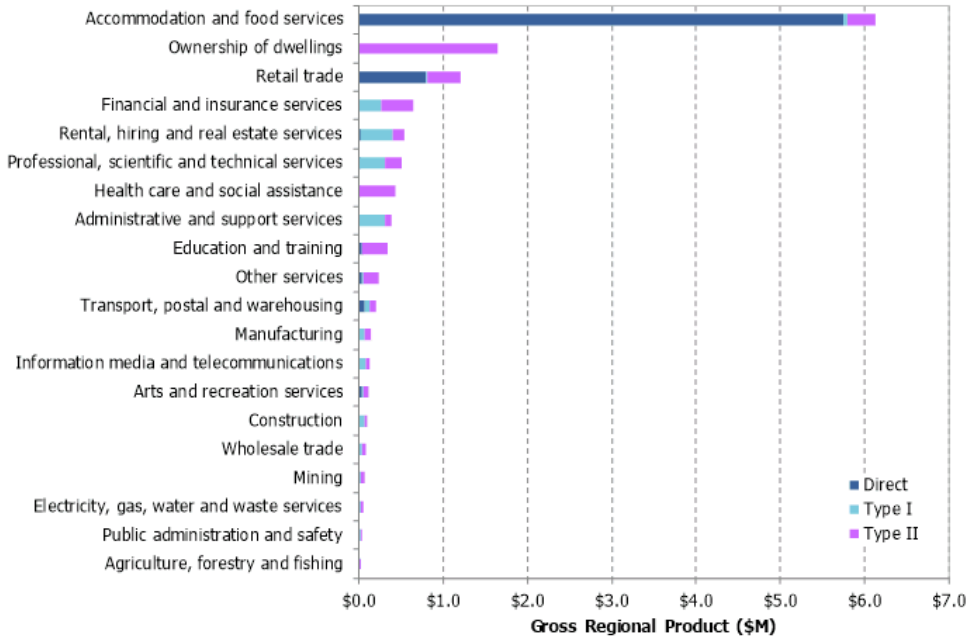
Table 3.8. Economic Activity Supported by Operations Phase (Average Annual), South Perth LGA

Impact	Output ($M)	GRP ($M)	Incomes ($M)	Employment (FTEs)
Direct	$12.4	$6.7	$3.6	69
Type I Flow-On	$3.4	$1.7	$1.0	12
Type II Flow-On	$7.1	$4.5	$1.8	27
Total	**$22.9**	**$12.9**	**$6.3**	**109**

Note: Totals may not sum due to rounding.
Source: ABS (2015), ABS (2016), ABS (2012a), TRA (2016), AEC.

A breakdown of average GRP supported by industry in the South Perth LGA economy once in steady state operations through operational phase activity is outlined in Figure 3.3. More than $6 million in GRP is estimated to be supported by the industry of accommodation and food services, and more than $1 million by the industry of retail trade and the sector of ownership of dwellings.

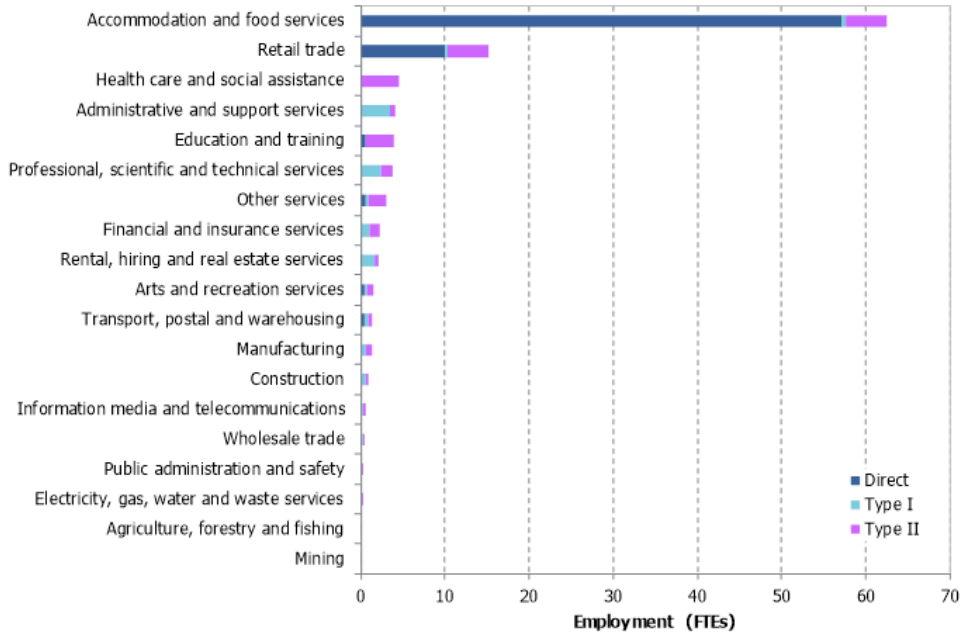
Figure 3.3. GRP Supported by Industry, Operations Phase (Average Annual), South Perth LGA ($M)



Source: ABS (2015), ABS (2016), ABS (2012a), TRA (2016), AEC.

The majority of employment supported by the project once operational will be in the industries of accommodation and food services and retail trade.

Figure 3.4. Employment Supported by Industry, Operations Phase (Average Annual), South Perth LGA (FTEs)



Source: ABS (2015), ABS (2016), ABS (2012a), TRA (2016), AEC.

3.3 ADDITIONAL HOUSEHOLD SPEND

The project will provide 85 residential dwellings for additional households to South Perth LGA. These additional households will bring additional household incomes, much of which can be expected to be spent at local shops in South Perth LGA.

The median household income in South Perth LGA was $1,606 per week in 2011 (ABS, 2012b). On average, Western Australian household expenditure was approximately 67% of income. Inflating to current dollar prices (ABS, 2016) this equates to a median household income of approximately $90,500 per annum, and a median household expenditure of approximately $60,750 per annum. With 85 new households in South Perth LGA as a result of the project, this could equate to approximately $5.2 million in household spend (though not all of this household expenditure would be captured within the South Perth LGA).

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APPENDIX A: INPUT-OUTPUT METHODOLOGY

INPUT-OUTPUT MODEL OVERVIEW

Input-Output analysis demonstrates inter-industry relationships in an economy, depicting how the output of one industry is purchased by other industries, households, the government and external parties (i.e. exports), as well as expenditure on other factors of production such as labour, capital and imports. Input-Output analysis shows the direct and indirect (flow-on) effects of one sector on other sectors and the general economy. As such, Input-Output modelling can be used to demonstrate the economic contribution of a sector on the overall economy and how much the economy relies on this sector or to examine a change in final demand of any one sector and the resultant change in activity of its supporting sectors.

The economic contribution can be traced through the economic system via:

- **Direct impacts**, which are the first round of effects from direct operational expenditure on goods and services.
- **Flow-on impacts**, which comprise the second and subsequent round effects of increased purchases by suppliers in response to increased sales. Flow-on impacts can be disaggregated to:
    - **Industry Support Effects (Type I)**, which represent the production induced support activity as a result of additional expenditure by the industry experiencing the stimulus on goods and services in the intermediate usage quadrant, and subsequent round effects of increased purchases by suppliers in response to increased sales.
    - **Household Consumption Effects (Type II)**, which represent the consumption induced activity from additional household expenditure on goods and services resulting from additional wages and salaries being paid within the economic system.

These effects can be identified through the examination of four types of impacts:

- **Output**: Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.
- **Value added**: Refers to the value of output after deducting the cost of goods and services inputs in the production process. Value added defines the true net contribution and is subsequently the preferred measure for assessing economic impacts.
- **Income**: Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.
- **Employment**: Refers to the part-time and full-time employment positions generated by the economic shock, both directly and indirectly through flow-on activity, and is expressed in terms of full time equivalent (FTE) positions.

Input-Output multipliers can be derived from open (Type I) Input-Output models or closed (Type II) models. Open models show the direct effects of spending in a particular industry as well as the indirect or flow-on (industrial support) effects of additional activities undertaken by industries increasing their activity in response to the direct spending.

Closed models re-circulate the labour income earned as a result of the initial spending through other industry and commodity groups to estimate consumption induced effects (or impacts from increased household consumption).

MODEL DEVELOPMENT

Multipliers used in this assessment are derived from sub-regional transaction tables developed specifically for this project. The process of developing a sub-regional transaction table involves developing regional estimates of gross production and purchasing patterns based on a parent table, in this case, the 2009-10 Australian transaction table (ABS, 2013a).

Estimates of gross production (by industry) in the study area were developed based on the percent contribution to employment (by place of work) of the study area to the Australian economy (ABS, 2012), and applied to Australian gross output identified in the 2009-10 Australian table.

Industry purchasing patterns within the study area were estimated using a process of cross industry location quotients and demand-supply pool production functions as described in West (1993).

Where appropriate, values were rebased from 2009-10 (as used in the Australian national IO transaction tables) to 2014 values using the Consumer Price Index (ABS, 2015).

MODELLING ASSUMPTIONS

The key assumptions and limitations of Input-Output analysis include:

- **Lack of supply-side constraints**: The most significant limitation of economic impact analysis using Input-Output multipliers is the implicit assumption that the economy has no supply-side constraints so the supply of each good is perfectly elastic. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
- **Fixed prices**: Constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using Input-Output multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. The system is in equilibrium at given prices, and prices are assumed to be unaffected by policy and any crowding out effects are not captured. This is not the case in an economic system subject to external influences.
- **Fixed ratios for intermediate inputs and production (linear production function)**: Economic impact analysis using Input-Output multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. That is, the input function is generally assumed linear and homogenous of degree one (which implies constant returns to scale and no substitution between inputs). As such, impact analysis using Input-Output multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount. Further, it is assumed each commodity (or group of commodities) is supplied by a single industry or sector of production. This implies there is only one method used to produce each commodity and that each sector has only one primary output.
- **No allowance for economies of scope**: The total effect of carrying on several types of production is the sum of the separate effects. This rules out external economies and diseconomies and is known simply as the "additivity assumption". This generally does not reflect real world operations.
- **No allowance for purchasers' marginal responses to change**: Economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production.
- **Absence of budget constraints**: Assessments of economic impacts using multipliers that consider consumption induced effects (type two multipliers) implicitly assume that household and government consumption is not subject to budget constraints.

Despite these limitations, Input-Output techniques provide a solid approach for taking account of the inter-relationships between the various sectors of the economy in the short-term and provide useful insight into the quantum of final demand for goods and services, both directly and indirectly, likely to be generated by a project.

In addition to the general limitations of Input-Output Analysis, there are two other factors that need to be considered when assessing the outputs of sub-regional transaction table developed using this approach, namely:

- It is assumed the sub-region has similar technology and demand/ consumption patterns as the parent (Australia) table (e.g. the ratio of employee compensation to employees for each industry is held constant).

- Intra-regional cross-industry purchasing patterns for a given sector vary from the national tables depending on the prominence of the sector in the regional economy compared to its input sectors. Typically, sectors that are more prominent in the region (compared to the national economy) will be assessed as purchasing a higher proportion of imports from input sectors than at the national level, and vice versa.

APPENDIX B: TOURISM EXPENDITURE DATA

DATA SOURCE: TOURISM RESEARCH AUSTRALIA (TRA)

TRA Online accesses Tourism Research Australia's data via the internet. TRA Online (http://traonline.tra.gov.au) contains a range of functions and tools to assist the user to explore tourism data in an online environment.

NATIONAL VISITOR SURVEY (NVS) DATA

The National Visitor Survey (NVS) commenced in January 1998. The aim of the survey is to gather data relating to the demographics, travel behaviour and attitudes of Australian residents towards tourism and to monitor changes and trends in these characteristics. In 2014 TRA introduced mobile phone interviewing where half of the sample are interviewed on mobile phones. This has changed some of the travel characteristics in the time series and data from 2014 onwards should be used with caution when comparing with earlier results.

Data is collected on recent travel of residents including:

- Overnight trips
- Day trips
- Outbound (International) trips
- Demographics (including those who did not travel recently).

The NVS has the following limitations:

- Respondents are 15 years of age or over
- Overnight – a trip where they stayed a night at least 40km from home.
- Daytrips - a round trip of at least 50km

Expenditure in the NVS is collected for the respondent's entire journey. As such, it is not possible to present expenditure for individual locations that may have been visited by a respondent, as this would give an inaccurate measure of tourism expenditure for individual States, Territories and regions. Expenditure amounts reported include expenditure by and on behalf of respondents during a trip, airfares and other transport costs such as bus and train fares, and amounts spent on trip related items before and after the trip. Expenditure on capital goods is not included in the estimates, as this is not regarded as tourism expenditure. Expenditure should NEVER be cross tabulated by location, region or state. TRA provides regional expenditure estimates on a quarterly basis, separate to the IVS and NVS.

This is the expenditure counting variable that is most commonly used. TRA publishes this figure in its quarterly publication for the National Visitor Survey (NVS). As with all expenditure this cannot be used to assess spend for states or regions. For information on spend at these levels please consult TRAs 'Regional Expenditure Estimates".

INTERNATIONAL VISITOR SURVEY

The International Visitor Survey (IVS) represents the most comprehensive source of information on international visitors to Australia. It has been operating since the early 1970s and is jointly funded by the Commonwealth, State and Territory Governments under the guidance of the Australian Standing Committee on Tourism (ASCOT).

Every year, the International Visitor Survey samples 40,000 departing, short-term international travellers aged 15 years and over who have been visiting Australia. The survey is conducted by Computer Assisted Personal Interviewing (CAPI) in the departure lounges of the eight major international airports; Sydney, Melbourne, Brisbane, Cairns, Perth, Adelaide, Darwin and the Gold Coast.

The IVS has the following limitations:

- Respondents are 15 years of age or over

- Overseas visitors coming to Australia for a period of less than twelve months
- International visitors departing by sea are not interviewed; however they
- comprise less than 1% of the total visitors to Australia.
- TRA is unable to interview visitors in airline business lounges.

Further research conducted by TRA suggests that this has little to no effect on the estimates.

Expenditure is collected at the national (trip) level and cannot be used for State or regional estimates. For state or regional estimates the user is referred to TRA's regional expenditure estimates on the TRA website. This has been undertaken for Experience Perth tourism region.

DETERMINING INTERNATIONAL VISITOR EXPENDITURE

There are varying levels in which an international visitor's total trip expenditure may impact on the tourism destination of Australia and its regions. TRA results present three main types of direct tourism expenditure impacts that are the result of the collection of trip spend details from international visitors as they depart Australia. These three direct expenditure classifications are specifically:

- Total trip expenditure
- Spend in Australia
- Regional expenditure.

There are subtle differences between each of these spend classifications.

Total trip expenditure

When an international visitor pays for their trip to Australia they are spending money which impacts on the world economy. Total trip expenditure is all monies spent so that the respondent could undertake their trip to Australia. For example, this may include airfares, package tour expenditure, food and beverages and payment for all accommodation, leisure activities, conventions and schooling while in Australia.

Spend in Australia

While international visitors may spend a lot of money on their entire trip, not all of this is spent in Australia. The international visitor is asked to separate the money they have spent in Australia from their total trip expenditure in the IVS. This is in order to determine the amount of money that is being spent by the visitor in the Australian destination. This may be on items such as food and beverages, accommodation, activities, school books, motor vehicles and shopping.

Regional expenditure

The IVS provides information on travel activity and expenditure by international visitors. Information on expenditure by these visitors is only collected for whole trips; it is not regionally specific. In order to determine the impact that the visitor activity is having on a particular region, TRA uses a model based approach to allocate visitor expenditure to the various tourism regions.

Regional expenditure allocation methodology

A very brief summary of the process by which expenditure by international visitors is allocated to regions is given below. Two types of expenditure data are collected in the IVS:

- expenditure for the respondent's entire journey
- expenditure at a randomly selected location.

A 'location' is a more specific spatial unit than a Statistical Area Level 2 (SA2). For example, the location Bondi is in the 'Bondi - Tamarama - Bronte' SA2. A sub-sampling approach (selection of a single location for further study)

is adopted as a starting point for regional expenditure estimation. This is because of the need for interviews to be done quickly and because it is unreasonable to expect an interviewee to remember expenditure at every stop. It is entirely feasible for a visitor to visit the same location more than once, but expenditure data are collected only if the randomly selected location has been visited only once.

Four major sub-components of total IVS expenditure are identified:

- expenditure on domestic airfares
- expenditure on travel packages
- expenditure on accommodation, food and beverages
- all other expenditure.

Domestic airfares

Note: regional airfares have been excluded from our analysis for the purposes of this project.

Wherever air travel is indicated, airfare expenditure is allocated equally between the departure region and the arrival region. In cases where there is no major airport in the departure and/or arrival region, the share of airfare expenditure is allocated to the nearest region with a major airport. If air travel is specified for the first leg of the trip, the departure airport is assumed to be the airport where the visitor arrived in Australia.

Package expenditure

A major part of any package for travel within Australia is taken up by airfares and other long distance travel fares. A series of studies by the ABS(1995, 1996), Australian Tourism Export Council (2000), Bureau of Tourism Research (Bonnet et al. 1994 and Skene, 1995) and Office of Economic and Statistical Research (2001) estimated the proportion of travel packages spent on things other than long distance fares to be between 26% and 35%. Based on these results, it has been decided that total package expenditure should be split with 30% being attributed to items other than long distance fares. The remaining 70% is assumed to be spent in the visitor's home country.

The non-fare component is distributed among the regions using the iterative process.

Expenditure on accommodation, food and beverages, and other expenditure

Expenditure on accommodation, food and beverages (AFB) and other expenditure are obtained by summing expenditure on the relevant items. The total expenditure for each item group is allocated to the regions by the iterative process.

During the iteration procedure, expenditure at the randomly selected location for which there is expenditure information is treated as a known value, and is held constant. The amount actually distributed among the remaining regions in the trip is known as net expenditure, which is equal to total expenditure minus random expenditure. If there is no expenditure at a randomly selected location (either by the interviewer failing to ask, or the interviewee failing to reply) net expenditure is equal to total expenditure.

Domestic Regional expenditure allocation methodology

A brief summary of the process by which expenditure by domestic visitors is allocated to regions is given below. Further explanation of expenditure allocation methods can be found in *Travel expenditure by domestic and international visitors in Australia's regions, 1999-2010, Tourism Research Australia, Canberra*. Expenditure in the NVS is collected for the respondent's entire journey, not for individual stops. For both overnight and day visitors, information is collected on the following three types of expenditure:

- expenditure by respondent during the trip
- expenditure by respondent before or after the trip
- expenditure paid by employer or other who is not travelling.

For each of these three types of expenditure, information is collected on the amount spent on each of the following expenditure items:

- Packages
- Taxis (including to/from airport)
- Airline fares
- Organised tours/side trips
- Car hire costs (rental, leasing)
- Fuel (petrol, diesel)
- Vehicle maintenance or repairs
- Any other long distance transport costs (train, coach, ship etc.)
- Any other local transport costs (bus, train, ferry, etc.)
- Accommodation (not relevant for domestic day trips)
- Takeaways and restaurant meals
- Groceries etc. for self-catering
- Alcohol, drinks (not already reported with food above)
- Shopping, gifts, souvenirs
- Entertainment, museums, movies, zoos etc.
- Horse racing, gambling, casinos
- Conference fees
- Education, course fees
- Purchase of motor vehicles or any other major equipment
- Other (phone, postage, medical expenses, repairs, dry cleaning etc.).

Expenditure on capital goods (for example, motor vehicles, and property and office equipment) is not included in the published NVS estimates, as it is not regarded as tourism expenditure. All the other expenditure items in the above list are included in the expenditure estimates for domestic day and overnight visitors.

Overnight trips expenditure allocation process

As discussed above, expenditure information in the NVS is collected for entire trips, not for individual stops. A method has been developed by which this amount can be distributed over all the stops on the trip.

The process of allocating money spent on overnight trips begins with the identification of four major sub-components of total expenditure:

- expenditure attributable to the respondent's home region
- expenditure on airfares and other long distance fares (excluded from our analysis)
- expenditure attributable to the destination region or regions
- expenditure on long trips.

The 'home region' is the region where the survey respondent lives and home region expenditure, by definition, applies to a single region. In taking a trip a traveller may spend some money in the region where they live; this expenditure is identified as home region expenditure. For example, expenditure on taxi fares, fuel and groceries paid for before or after the trip are assigned wholly to the traveller's home region. Fuel expenses paid by someone

other than the respondent and meals paid for before or after the trip are assigned to the home region in the proportion:

1 / (number of stops +1) – with the remainder going to destination regions

In allocating package expenditure using the iteration method, the 'regional cost indicator' is average package expenditure per night. The end result of iteration is an estimate of package expenditure at each stop on each trip.

Destination region expenditure excludes expenditure on capital items and includes 40% of package expenditure. Sixteen expenditure items and package expenditure are grouped into nine major expenditure types, which are:

- Packages
- Local transport
- Entertainment
- Fuel
- Food
- Shopping
- Accommodation
- Conference fees
- Any other expenditure.

Each of these expenditure types is allocated by the iterative process.

For expenditure on long trips (trips with more than 21 stops) a single expenditure figure is collected for these trips, which is equal to total expenditure for the entire trip. This amount is allocated to regions in proportion to the nights spent at each stop.

BRISBANE
Level 5, 131 Leichhardt Street
Spring Hill QLD 4000
Australia
T: +61 (0)7 3831 0577

MELBOURNE
Level 13, 200 Queen Street
Melbourne VIC 3000
Australia
T: +61 (0)3 8648 6586

SYDNEY
Level 3, 507 Kent Street
Sydney NSW 2000
Australia
T: +61 (0) 2 9283 8400

BANGKOK
2024/129-130 Sukhumvit 50
Prakanong Klongtoey,
Bangkok, Thailand 10260
T: +66 2 107 0189

DARWIN
Level 1, 48-50 Smith Street
Darwin NT 0800
Australia
T: 1300 799 343

PERTH
Level 2, 580 Hay Street
Perth WA 6000
Australia
T: +61 (0) 8 6555 4940

TOWNSVILLE
233 Flinders Street East
Townsville QLD 4810
Australia
T: +61 (0)7 4771 5550

SHANGHAI
46F Hongkong New World Tower
300 Huahai Road Central
200021 China
T: +8621 6135 2310

aecgroupltd.com

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CW951000 - 74 Mill Point Road TA Review **5/07/2016**

Comment #	Technical Queries on Model to be directed to Cardno:	Cardno Response
1	AM link delay plots (seconds) Fig 1 and Fig 2. With the addition of 74 MPR, why does the delay reduce for traffic on S Perth Esplanade, Harper Tce and Mends Str?	The model is set up to include a warm-up period prior to the simulation period itself to ensure that traffic is not loaded on to an 'empty' network as this would result in misleading results. After the warm-up period is completed, and before the main simulation period commences, the travel times for each origin/destination (OD) pair are automatically recalculated within the model based on the amount of congestion on each of the roads within the study area and applied to the main simulation period. Due to the model consisting of a combination of existing traffic volumes on South Perth Esplanade, Harper Terrace and Mends Street and the additional traffic generated by the developments to the north of Mill Point Road, this results in very high levels of congestion on these roads. For the scenario where 74 MPR is included, it's possible that during the model warm-up period, the additional traffic from 74 MPR increases the "cost" of travel along South Perth Esplanade above the "cost" of alternative routes (such as southbound on Mill Point Road) and at the start of the simulation period, less traffic will utilise these routes and instead use other routes.
2	For the PM link delay plots Figs 5 and 6. The delay on MPR north (south bound) increases from 88 sec to 115 sec, however the delay on the route from Frasers Lane along S Perth Esplanade and Mends Str to MPR increases from 280 sec to 427 sec? What is that attributable to? The delay along MPR East (north bound) remains fairly constant (128 sec without 74 MPR and 143 sec with 74 MPR.)	Addressed in response to Comment 1
3	The AM delay along MPR east (north bound) is 300 sec without 74 MPR and 304 sec with 74 MPR. Whereas it is much less in the PM peak (128 and 143.) However the delay on MPR north is unchanged (116 AM vs 115 PM.)	As the element of 'randomness' in micro-simulation models is, to varying degrees, influenced by all simulation inputs, the dynamic traffic assignment algorithms for each scenario will result in minor variations within the model outputs.
4	There appears to be very little delay along Labouchere Road. Is this correct? Could the cycle time at the intersection be modified to increase the delay on Labouchere while improving it for MPR North and East?	As part of the development of the base models, a model validation exercise was undertaken in the form of travel time surveys to validate the travel times and delays for this route and found to be within the acceptable tolerances. Advice from Main Roads WA suggests that no additional green time can be allocated to the northern intersection approach and have therefore not been included in the model.
5	If Ferry St was included as a node in the model for MPR North, could the time delay between Ferry St and Frasers Lane be more appropriately shown as "green". ?	The delay times (and corresponding colour) are only displayed for the section of the link where the delay occurs. If the queue length does not extend up to Ferry Street, the southbound link on MPR between 74 MPR and Ferry Street would show up as "green" and display a delay of zero seconds.
6	AM peak delay increasing from 68 seconds to 116 seconds on Mill Point Road southbound. This appears very high based on the 2 vehicles per cycle increase and needs explaining.	As shown in Table 2, the duration of the green phase for Mill Point Road (southbound) at the traffic signal controlled intersection of Mill Point Road / Labouchere Road is 22 seconds. The model outputs suggests that the 22 second phase is not always sufficient to clear the queue on MPR southbound and the additional 2 vehicles during every phase is likely to, at times, have a cumulative impact on the modelled delays and queue lengths.
7	Harper Terrace shows a reduction in delay of -176s but the demand increases by 7 vehicles. This does not appear logical.	Addressed in response to Comments 1 and 3
8	Mends Street to Mill Point Road has a reduced delay of -6 seconds, but traffic increases by 5 vehicles.	The minor variation is likely to be due to the actuated signal coding at this intersection. Due to the combination of existing traffic volumes on South Perth Esplanade, Harper Terrace and Mends Street and the additional traffic generated by the developments to the north of Mill Point RoadFor both scenarios, the queue length on Mends Street consistently exceeds the length of Mends Street and carries over on South Perth Esplanade.
9	Delays on the Esplanade also increase significantly at Harper Terrace	Addressed in response to Comment 1
10	The PM peak increase to delay for Mill Point Road southbound is also higher than would be expected.	Addressed in response to Comment 6
11	The Esplanade has an increase in delay, but no change to traffic demand.	The link volumes only show vehicles that have 'passed through' the link and does not include vehicles queued on the link at the end of the simulation period, while the delays are reported for all vehicles on the link over the entire simulation period.
12	Harper Terrace has 2 extra vehicles but 23 second more delay	Addressed in response to Comments 1 and 6
13	Mends Street has 35 less vehicles, but the delay increases by 16 seconds	Addressed in response to Comment 8
14	It would be expected that Harper Terrace would not be affected by the proposed development.	The model outputs indicate that the impact on Harper Terrace is due to the cumulative increase in traffic generated by the developments approved along Harper Terrace, Mends Street and South Perth Esplanade.
	Key matters that go to Report's conclusions:	
16	We would request a review of the conclusion of adopting a 25% reduction in the conclusions reached. As you are aware we have provided what we consider as compelling evidence as to the TOD nature of our location. This has incorporated 3 separate studies of buildings located within the Mill Point North precinct. All these studies support discounts of at least 50% in this precinct. In addition to these independent studies, we have also performed a survey of our own buyers within the development, and again this analysis supports at least a 50% discount. Moreover these findings are wholly consistent with view of WAPC that this this section of MPR is a transport orientated area.	This is a matter for the City to provide instruction on. Cardno takes direction from the City in relation to trip generation rates adopted for the modelling.
17	I also note that in our meeting this morning, Daniel from Cardno noted that he had in fact accepted a 50% discount in the residential component and a 25% discount with regard to serviced apartments in the modelling. We are accepting of this position and would like to see it flow through in their reports.	This is a matter for the City to provide instruction on. Cardno takes direction from the City in relation to trip generation rates adopted for the modelling.
18	We would also like to question the reporting of the incremental movements in queue lengths and waiting times, as well as the associated conclusions reached, in relation to the impact of our development on Mill Point Rd waiting times. (as per 6. Above)	The report presents the maximum queue lengths and therefore represent the 'worst case' results as this is the greatest concern for the City.
19	This is perhaps best reviewed by looking at one of the examples within the report. Table 4, peak PM traffic. Outbound traffic PM peak hour (using 25% reduction) is 39 vehicles. ie. An average of 1 vehicle per every 1.54 mins. Average PM signal cycle time is stated as 126 seconds, which translates to 39 cycles per hour. This implies that an average increase of only 1.3 vehicles per cycle should occur on average if the traffic movement is spread through the hour? Clearly the impact would be even significantly less if the 50% discount to the residential component was applied.	Addressed in response to Comment 6