Government of **Western Australia**
Development Assessment Panels

Metro Outer Joint Development Assessment Panel Agenda

Meeting Date and Time: Friday, 6 August 2021; 10:00am
Meeting Number: MOJDAP/113
Meeting Venue: City of Rockingham
Central Promenade (Cnr Contest Parade), Rockingham.

1 Table of Contents

Attendance

DAP Members

Mr Ian Birch (Presiding Member)
Ms Sheryl Chaffer (Deputy Presiding Member)
Mr Jason Hick (Third Specialist Member)

Item 8.1
Cr Phoebe Corke (Local Government Member, City of Cockburn)
Cr Chamonix Terblanche (Local Government Member, City of Cockburn)

Item 8.2
Cr Deb Hamblin (Local Government Member, City of Rockingham)
Cr Mark Jones (Local Government Member, City of Rockingham)

Officers in attendance

Item 8.1
Mr David King (City of Cockburn)

Item 8.2
Mr David Banovic (City of Rockingham)
Mr Mike Ross (City of Rockingham)
Mr Chris Parlane (City of Rockingham)
Mr Danny Sriono (City of Rockingham)

Minute Secretary

Ms Nicole Gardner (City of Rockingham)

Applicants and Submitters

Item 8.1
Mr Stefan Oh (MJA Studio)
Mr Wes Barrett (MJA Studio)
Mr Luke Reinecke (Stirling Capital)

Item 8.2
Mr Josh Watson (Planning Solutions)
Mr Benham Bordbar (Transcore)

Members of the Public / Media

Nil.

1. Opening of Meeting, Welcome and Acknowledgement

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

2. Apologies

Cr Chontelle Stone (Local Government Member, City of Cockburn)

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

Signed minutes of previous meetings are available on the DAP website.

5. Declarations of Due Consideration

The Presiding Member notes an addendum to the agenda was published to include details of a DAP request for further information and responsible authority response in relation to Item 8.1, received on 5 August 2021.

The Presiding Member notes an addendum to the agenda was published to include details of a DAP request for further information and responsible authority response in relation to Item 8.2, received on 5 August 2021.

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

6. Disclosure of Interests

Member	Item	Nature of Interest
Cr Deb Hamblin	8.2	Impartiality Interest – In accordance with section 2.4.9 of the DAP Code of Conduct 2017- DAP Members, Cr Hamblin declares that she participated in a prior Council meeting in relation to the application at item 8.2. However, under section 2.1.2 of the DAP Code of Conduct 2017, Cr Hamblin acknowledges that she is not bound by any previous decision or resolution of the local government and undertakes to exercise independent judgment in relation to any DAP application before her which will be considered on its planning merits.
Cr Mark Jones	8.2	Impartiality Interest – In accordance with section 2.4.9 of the DAP Code of Conduct 2017- DAP Members, Cr Jones declared that he participated in a prior Council meeting in relation to the application at item 8.2. However, under section 2.1.2 of the DAP Code of Conduct 2017, Cr Jones acknowledges that he is not bound by any previous decision or resolution of the local government and undertakes to exercise independent judgment in relation to any DAP application before him which will be considered on its planning merits.

7. Deputations and Presentations

7.1 Mr Stefan Oh (MJA Studio) presenting in support of the recommendation for the application at Item 8.1. The presentation will address the proposal's considered design response in regards to SPP 7.3's 10 Design Principles and the improved proposal as a result of integrating feedback from the Design Review Panel and the City of Cockburn.

7.2 Mr Benham Bordbar (Transcore) presenting against the recommendation for the application at Item 8.2. The presentation will address the merits of the proposal from a traffic perspective.

7.3 Mr Josh Watson (Planning Solutions) presenting against the recommendation for the application at Item 8.2. The presentation will address the merits of the proposal from a town planning, traffic and car parking perspective.

The City of Cockburn and City of Rockingham may be provided with the opportunity to respond to questions of the panel, as invited by the Presiding Member.

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1 Lot 1015 (1015L) Orsino Boulevard, North Coogee

Development Description:	Mixed Use Development - 61 Multiple Dwellings and One Commercial Tenancy
Applicant:	MJA Studio
Owner:	Port Coogee No 2 Pty Ltd
Responsible Authority:	City of Cockburn
DAP File No:	DAP/21/02007

8.2 Lot 10 (115) Dixon Road, East Rockingham

Development Description:	Service Station development
Applicant:	Planning Solutions
Owner:	Autoservice Pty Ltd
Responsible Authority:	City of Cockburn
DAP File No:	DAP/21/01976

9. Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval

Nil.

10. State Administrative Tribunal Applications and Supreme Court Appeals

Current SAT Applications				
File No. & SAT DR No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DAP/19/01708 DR 138/2020	City of Kwinana	Lot 108 Kwinana Beach Road, Kwinana	Proposed Bulk Liquid Storage for GrainCorp Liquid Terminals	01/07/2020
DAP/01729 DR 176/2020	City of Kalamunda	Lot 130 (74) Warlingham Drive, Lesmurdie	Aged Residential Care Facility	28/8/2020
DAP/20/01764 DR 204/2020	City of Swan	Lot 780 (46) Gaston Road, Bullsbrook	Proposed Stock Feed Grain Mill	8/09/2020
DAP/20/01829 DR 001/2021	City of Swan	Lot 1 (42) Dale Road & Lot 4 (43) Yukich Close, Middle Swan	Aged care and community purpose	08/01/2021
DAP/21/01952 DR 096/2021	City of Rockingham	Lot 265 (40) Talisker Bend, Golden Bay	Mixed commercial development	14/05/2021

11. General Business

In accordance with Section 7.3 of the DAP Standing Orders 2020 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.

12. Meeting Closure

ORSINO BOULEVARD, 1015L (LOT NO.1015) NORTH COOGEE – Mixed Use Development – 61 Multiple Dwellings and One Commercial Tenancy

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer JDAP	
Local Government Area:	City of Cockburn	
Applicant:	MJA Studio	
Owner:	Port Coogee No 2 Pty Ltd	
Value of Development:	$20 million Mandatory (Regulation 5)	
Responsible Authority:	City of Cockburn	
Authorising Officer:	David King	
LG Reference:	DAP21/003	
DAP File No:	DAP/21/02007	
Application Received Date:	6 June 2021	
Report Due Date:	28 July 2021	
Application Statutory Process Timeframe:	60 Days	
Attachment(s):	1. Original Development Plans 2. Revised Development Plans 3. Location Plan 4. Western Power Referral 5. Design Review Panel Minutes 6. Landscaping Plan 7. Revised Traffic Impact Statement; 8. Parking Management Plan and Briefing Note; 9. Waste Management Plan 10. Acoustic Report; 11. Wind Assessment	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	Yes	Complete Responsible Authority Recommendation section

Responsible Authority Recommendation

That the Metro Outer JDAP resolves to:

1. **Approve** DAP Application reference DAP/21/02007 and accompanying plans in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the City of Cockburn Town Planning Scheme No. 3, subject to the following conditions:

Conditions:

1. Pursuant to clause 26 of the Metropolitan Region Scheme, this approval is deemed to be an approval under clause 24(1) of the Metropolitan Region Scheme.

2. This decision constitutes planning approval only and is valid for a period of four years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

3. **Prior to the issue of a Building Permit application**, the landowner/applicant contributing towards development infrastructure provisions pursuant to the City's Town Planning Scheme No. 3, to the City's satisfaction.

4. **Prior to the lodgement of a Building Permit application**, a schedule of the materials, finishes and colours shall be submitted to and approved by the City. The schedule shall include details of the type of materials proposed to be used, including their colour and texture. The development shall thereafter be maintained in accordance with the approved materials schedule.

5. The Restaurant tenancy is restricted to a maximum occupancy of 38 persons at any one time.

6. **Prior to the lodgement of a Building Permit**, the owner/applicant shall:
   - submit to the City for approval a preliminary proposal for an art work designed be a professional artist at a cost of 1% of the total project cost (to a maximum of $250,000), to be to be located within the subject site as an integral part of the development;
   - submit to the City for approval an 'Application for Art Work Design';
   - enter into a contract with a professional artist/s to design and install (if appropriate) the art work approved by the City.

   The art work shall then be installed prior to occupation of the building/development and maintained thereafter to the satisfaction of the City.

7. The provisions identified in the Waste Management Plan provided by Talis Consultants dated 12 May 2021 under project number TW21036, which include recycling measures and management of commercial and residential waste, are to be implemented and maintained thereafter to the satisfaction of the City.

8. **Prior to the lodgement of a Building Permit Application**, a stormwater management plan is to be provided to the City's satisfaction.

9. A minimum of 39 bicycle stands/racks that conform to Australian Standard 2890.3 shall be provided in close proximity to the entrance of the building prior to occupation of the building. Details of the bicycle parking shall be provided prior to the lodgement of a Building Permit Application.

10. **Prior to the occupation of the buildings**, all vehicle parking, access ways, footpaths and external lighting shall be constructed and maintained in accordance with the Australian Standards AS2890 in the form and layout depicted on the approved plans to the satisfaction of the City.

11. **Prior to the lodgement of a Building Permit Application**, a revised landscaping plan shall be submitted to and approved by the City, and shall include the following:-

12. Landscaping including verge planting shall be installed, reticulated and/or irrigated in accordance with the/an approved plan and maintained thereafter to the satisfaction of the City. The landscaping shall be implemented during the first available planting season post completion of development, to the satisfaction of the City.

13. **Prior to the issue of a Building Permit**, a construction management plan (CMP) shall be submitted to and approved by the City. The CMP shall be implemented to the satisfaction of the City.

14. All noise attenuation measures, identified by the Herring Storer Acoustics Reports, "Development Application Acoustic Report" (Ref 27594-1-21146 Dated 16 April 2021) (Ref 27594-1-21146 dated 19 April 2021) and the further acoustic reports required under Conditions 19 and 20, are to be implemented prior to occupancy of the development and the requirements of the Acoustic Report are to be observed at all times.

15. **Prior to the lodgement of a Building Permit application**, a further Acoustic Report shall be submitted to and approved by the City, and implemented thereafter, to the satisfaction of the City.

16. **Prior to the submission of a Occupancy Permit Application for the café/restaurant** development, a Noise Management Plan shall be prepared to the City's satisfaction demonstrating that noise emissions will comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* (as amended). All noise attenuation measures, identified by the plan or as additionally required by the City, are to be implemented prior to occupancy of the development (or as otherwise required by the City) and the requirements of the Noise Management Plan are to be observed at all times.

17. **Prior to the issue of a Building Permit Application**, written confirmation from the builder that all recommendations made in the Acoustic Report required under Condition 17 have been incorporated into the proposed development, shall be submitted to the City.

18. **Prior to occupation of the development**, written confirmation from the builder shall be provided that the requirements of the Acoustic Report referred to in Condition 17 have been incorporated into the completed development with the Form BA7 Completion Form.

19. **Prior to the lodgement of a Building Permit Application**, a revised Parking Management Plan shall be submitted to and approved by the City, and implemented thereafter, to the satisfaction of the City.

20. Traffic control devices shall be designed and constructed in accordance with the requirements and specifications certified by a suitably qualified practicing Engineer to the satisfaction of the City.

21. **Prior to the lodgement of a Building Permit Application**, a revised Wind Assessment shall be submitted to and approved by the City.

22. All mechanical plant and related hardware must be screened from view of adjoining properties and the primary and secondary street frontages. The details in respect of which are to be provided to the City's satisfaction prior to lodgement of a Building Permit Application. The location of plant and equipment must also minimise the impact of noise on future occupants of the development and adjoining residents.

23. Crossovers are to be located and constructed to the City's specifications.

24. Clothes drying shall not occur on open balconies at any time unless behind purpose built screening approved as part of the development.

Advice Notes

a. This is a Planning Approval only and does not remove the responsibility of the applicant/owner to comply with all relevant building, health and engineering requirements of the City, or with any requirements of the City of Cockburn Town Planning Scheme No. 3 or with the requirements of any external agency.

b. The development site must be connected to the reticulated sewerage system of the Water Corporation before commencement of any use.

c. With regard to Condition 6, it is recommended the public art be located on the corner of Pantheon Avenue and Orsino Boulevard to assist in providing an iconic/gateway building.

d. The waste water from the proposed car/dog wash is to be discharged to sewer.

e. All proposed food businesses shall comply with the Food Act 2008 and Chapter 3 of the Australia New Zealand Food Standard Code (Australia Only).

f. An “Application to Construct or Alter a Food Premises” is required to be submitted to Health Services prior to construction. This is to be accompanied by detailed plans and specifications of the food preparation and storage area (including mechanical ventilation and hydraulics), sanitary conveniences and garbage room, demonstrating compliance with the mentioned legislation.

g. All toilets, ensuites and kitchen facilities in the development are to be provided with mechanical ventilation flued to the outside air, in accordance with the requirements of the National Construction Code (Building Code of Australia), the Sewerage (Lighting, Ventilation and Construction) Regulations 1971, Australian Standard S1668.2-1991 “The use of mechanical ventilation for acceptable indoor air quality” and the City of Cockburn Health Local Laws 2000. The City's Health Service further recommends that laundries without external windows and doors should be ventilated to external air and condensating clothes dryers installed.

h. With regard to Condition 11, the revised landscaping plan is requested to detail species selection on the larger roof terrace which is not shown on the revised development plans.

i. With regard to Condition 15, the acoustic report shall be prepared by a suitably qualified and recognised acoustic consultant and demonstrate that the design and location of plant, including air conditioning and mechanical exhaust, break out and operational noise from the café, and other sources of noise within the development will not exceed the assigned noise levels set out in the *Environmental Protection (Noise) Regulations 1997* (as amended).

j. With regard to Condition 16, the Noise Management Plan shall be prepared by a suitably qualified and recognised acoustic consultant and demonstrate that the development will comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* (as amended) and the City of Cockburn Noise Attenuation Policy (LPP 1.12).
    a. The Noise Management Plan is to include:
        i. Predictions of anticipated noise emissions associated with activities, music, plant or equipment (such as bin areas, exhaust canopies, refrigeration equipment etc);
        ii. Predictions of anticipated break out noise levels;
        iii. Sound proofing measures proposed to mitigate noise;
        iv. Control measures to be undertaken (including monitoring procedures); and
        v. A complaint response procedure.

k. The development shall comply with the noise pollution provisions of the *Environmental Protection Act 1986*, and more particularly with the requirements of the *Environmental Protection (Noise) Regulations 1997*. The installation of equipment within the development including air-conditioners, spas, pools and similar equipment shall not result in noise emissions to neighbouring properties exceeding those imposed by the *Environmental Protection (Noise) Regulations 1997* (as amended).

l. With regard to Condition 19, the revised Parking Management Plan is requested to update 'Revision A' to reflect the parking allocations identified in the Briefing Note.

m. The Construction Management Plan (CMP) shall be in accordance with the City's CMP guidelines accessed on the City's Website and shall address the following items:

    a. Access to and from the site;
    b. Delivery of materials and equipment to the site;
    c. Storage of materials and equipment on the site;
    d. Parking arrangements for contractors and subcontractors;
    e. Management of construction waste;
    f. Protection of existing verge trees; and
    g. Other matters likely to impact on the surrounding properties.

n. As part of transitioning Australia to the **National Broadband Network (NBN)**, developers are encouraged to engage early with **NBN**, at least six months before the required service date, to understand requirements around future connections and the timing of infrastructure provision. This will ensure a connection is ready when residents move in. For more information please refer to https://www.nbnco.com.au/develop-or-plan-with-the-nbn/new-developments or contact **NBN** on newdevelopments@nbnco.com.au or 1800 687 626.

o. With regard to Condition 21, a revised Wind Assessment report is requested to provide detail on the roof terrace measures to be required for the significantly larger roof terrace.

p. With regard to Condition 23, copies of crossover specifications are available from the City's Engineering Services or from the City's website www.cockburn.wa.gov.au. It is recommended that an alternate material/pavement be used to differentiate between the crossover and existing footpath.

q. A plan and description of any signage and advertising not exempt under Town Planning Scheme No. 3 shall be submitted to and approved by the City prior to the erection of any signage on the site/building. It is strongly advised to liaise with the City's Planning Services prior to any installation of signage to confirm what approvals, if any, are required.

r. The applicant is advised this determination does not constitute an approval for the relocation of the existing electricity infrastructure in the north-eastern corner of the site. A third party approval is required for that process.

Reasons for Responsible Authority Recommendation

There are several variations which are considered minor in nature and not likely to have an impact upon the locality. Overall, the development is in keeping with the surrounding context of existing built form and will enhance Pantheon Avenue as key pedestrian realm.

Details: outline of development application

Region Scheme	Perth Metropolitan Region Scheme
Region Scheme - Zone/Reserve	Urban Zone
Local Planning Scheme	City of Cockburn Town Planning Scheme No.3
Local Planning Scheme - Zone/Reserve	Development Zone; Development Area 22
Structure Plan/Precinct Plan	Port Coogee Revised Local Structure Plan
Structure Plan/Precinct Plan - Land Use Designation	Marina Village (Local Centre)
Use Class and permissibility:	Multiple Dwellings –'P' Permitted; Restaurant – 'P' Permitted
Lot Size:	2, 341m^2
Existing Land Use:	Vacant land (Easement to the benefit of Electricity Networks Corporation)
State Heritage Register	N/A
Local Heritage	N/A
Design Review	Yes – Port Coogee Design Review Panel
Bushfire Prone Area	No
Swan River Trust Area	No

Proposal:

Proposed Land Use	Dwellings - Multiple (R-Code) Restaurant/Cafe Three (3) Ground floor dwelling suitable for Convertible Office
Proposed No. Storeys	Five (5) and roof terrace
Proposed No. Dwellings	61

The proposal received developer's endorsement, from the Port Coogee Design Review Panel (DRP), prior to lodgement being accepted by the City. The original plans can be viewed in **Attachment 1** – Original Development Plans, following the DRP the applicant

made several changes to address DRP comments, which are the plans before the JDAP for approval (see **Attachment 2 –** Revised Development Plans). The key differences between the original and revised plans are discussed below in the DRP section.

The application proposes one (1) Mixed Use five (5) storey building, with the following details:

- 61 multiple dwellings
    - 18 One (1) Bedroom Dwellings;
    - 29 Two (2) Bedroom Dwellings;
    - 14 Three (3) Bedroom Dwellings
- 39 bicycle bays;
- 103 car parking bays;
- 1 motorcycle bay;
- Commercial & Residential bin stores;
- Gym (58m^2);
- Roof terrace (630^2);
- One (1) Restaurant 94m^2
    - Proposed 38 person capacity;
- Car and dog wash;
- Surf ski and bulk store (27m^2);
- Grease interceptor and trap
- Three (3) ground floor Residential Dwellings have the ability to be converted into Commercial premises;
- Landscaping.

Background:
The subject site is 2,341m^2 in size and has remained vacant since being titled. It is bound by roads on all four sides, a laneway (Comet Lane) to the north, Orsino Boulevard to the east, Brunswick Street to the west and Pantheon Avenue to the south. The surrounding development includes a five (5) storey multiple dwelling building directly north of the site, Aged Care with commercial ground floor to the west and a Child Care Premises and Supermarket (Woolworths) to the south. Further east of Orsino Boulevard is existing low density single residential up to Cockburn Road (**Attachment 3 –** Location Plan).

Legislation and Policy:

Legislation

Planning and Development Act 2005

Planning and Development (Local Planning Schemes) Regulations 2015

Perth Metropolitan Region Scheme

The subject site and surrounding area is zoned Urban under the Perth Metropolitan Region Scheme (MRS).

City of Cockburn Town Planning Scheme No.3

The subject site is zoned Development Zone, under the City's Town Planning Scheme No. 3 (TPS3).

Development zone has the objective:

*"To provide for **future residential**, **industrial** or **commercial** development to be guided by a comprehensive **Structure Plan** prepared under the Scheme."*

Furthermore, Development Area 22 (DA22) applies to the lot under the TPS3 of which identifies that the local government may create design guidelines and that all development shall accord to these design guidelines.

State Government Policies

State Planning Policy 7.0 – Design of Built Environment (SPP 7)

State Planning Policy 7.3 – Residential Design Codes (SPP 7.3) Vol.2

Structure Plans/Activity Centre Plans

Port Coogee revised Local Structure Plan (LSP)

Under the WAPC approved LSP, the site is designated as part of the 'Port Coogee Marina Village' and has a designated zoning of 'Local Centre'. The subject site is one of four (4) within the Port Coogee Marina Village that is identified as an alternate location for 'Hotel' or 'Community' site, this is discussed further in the *Location* section below.

Port Coogee Built Form Codes (BFC)

The BFC are applicable as per DA22, as they are design guidelines which sets criteria for development of the subject lot. The BFC provide some specific development control in the form of Local Development Plans; however they are intended to be predominantly performance based. The BFC requires each proposal to receive endorsement from the relevant DRP prior to being lodged with the City.

Site Specific Building Requirements Detailed Area Plan – Marina Village (Lots 1015-1027) – (LDP)

The LDP designates development control provisions specific to the lots bound by Brunswick Street (west), Coromandel Approach (north), Orsino Boulevard (east) and Pantheon Avenue (South).

Local Policies

Local Planning Policy 1.12 – Noise Attenuation (LPP1.12)

Local Planning Policy 1.14 – Waste Management in Multiple Unit Developments (LPP1.14)

Local Planning Policy 5.13 – Percent for Art (LPP5.13)

Local Planning Policy 5.16 – Design Review Panel (LPP5.16)

Consultation:

Public Consultation

Multiple Dwellings and Restaurant are both Permitted uses within the Local Centre location and do not require mandatory advertising. Given the proposals general compliance with the planning framework, no public consultation was undertaken.

Referrals/consultation with Government/Service Agencies

The subject site has an easement in the north-east corner to the benefit of the Electricity Networks Corporation (Western Power) for the purposes of Electricity Supply.

Comment was sought from Western Power as to the process for relocation of the electricity infrastructure (see **Attachment 4 –** Western Power referral). The proposed relocation of the electrical transformer requires approval from a third party which is discussed further in the *easement* section below.

Design Review Panel (DRP) advice

Lodgement or receipt of the application was withheld by the City pursuant to Cl 63A of the deemed provisions, pending the application being assessed by the DRP. The plans were reviewed by the DRP as per the City's LPP5.16 on 24 May 2021 and the panel made the following comments (summarised):

1. Additional detail being provided for the proposed commercial tenancy with regard to entrance and a floor plan;
2. Introduce access for ground units facing Pantheon Avenue;
3. Roof plant recommended to be relocated to north of core (roof) so as not to obscure sea views;
4. Public art should be located in a prime location;
5. Flexibility in the ground floor future commercial to be maintained;
6. Support of the proposed height.

Overall, the DRP noted a high quality proposal and the majority of items suggested for change have been amended to some degree (refer Attachment 1). Several changes have since been made to the proposal notably items 1-3 have been addressed, an additional one (1) bedroom apartment, a significantly larger roof terrace and the easement in the north-east corner which was proposed to enclose the existing electrical transformer is now proposed to be a ground floor dwelling and the infrastructure proposed to be relocated to the 'transformer room' on the south-west corner of the site.

See attachment 5 – Design Review Panel Minutes.

Planning Assessment:

Use

The LDP requires a mandatory commercial ground floor on Pantheon Avenue which is proposed through the provision of the Restaurant/Café and Residential dwellings which are convertible to future commercial. TPS 3 designates Multiple Dwellings as a Permitted Use within the Local Centre and Restaurant as an 'A' use, which would ordinarily require mandatory advertising. However, DA 22 designates Restaurant as a 'P' use and relevantly identifies through the LSP and BFC that commercial ground floor is an expectation of the site.

Location

The subject site is one of several 'icon or gateway buildings' located within the surrounding Marina Village, as identified by the LSP and BFC. Gateway buildings shall exhibit design excellence, be constructed of materials which detail high quality and scale in specific locations which *terminate a vista, frame a view, reinforce the public domain and/or define a*

hierarchy of places. In this regard, the subject development is considered an 'icon or gateway building' due to its high quality design as noted by the DRP.

The subject site is noted as one of four locations within the Marina Village for the provision of a future Hotel. The LSP and provision 19 of DA 22 require the Hotel to be provided on a site of no less than 3,500m^2. Noting the subject site size of 2, 341m^2 it is considered unsuitable for the requirements to facilitate a Hotel development.

In addition to the potential use as a 'Hotel site', the subject site is similarly identified as an alternate location for 'Community Purpose' amongst three (3) other locations within the Port Coogee Marina Village. The community purpose site is intended to include meeting rooms, history interpretation centre, art gallery and/or café which encompass an area of approximately 1,000m^2 of ground floor space of a development. Whilst the subject site is identified as a possible location for the community purpose site, the structure plan further notes that the community purpose site will likely be located toward the southern portion of the Marina Village

Built Form

The overall built form addresses all streets through its design and passive surveillance, however the key public interface is provided to Pantheon Avenue, as required through the BFC. The varied use of materials which include painted render, limestone brick, various louvres, glazing and notably curved balconies amongst the provision of landscaping provide for an attractive and well-presented building in a prominent location.

Setbacks
The proposal is generally compliant with the relevant setback provisions as provided for under the LDP. The Table below details the relevant compliance and some variations to the required setbacks.

Level	Setback required/permitted	Setback provided
Basement	Nil	Nil
Ground floor/Level 1 & Level 2 • Pantheon; • Orsino/Brunswick; • Lot boundaries	• Nil to Pantheon; • Nil to Orsino; • 2.5m minimum to Brunswick; • Nil to Lot boundaries	A nil setback is provided to all streets on the ground floor. A nil setback is proposed for the full length of the proposal where it abuts the adjoining development to the north. The proposed variation on Brunswick street is discussed in more detail below.
Level 3 and above • Pantheon; • Orsino/Brunswick; • Lot boundaries	• Nil to a maximum of 3m; • 2.5m minimum to 3.5m maximum; • Nil to lot boundaries	A maximum of 3m is proposed to Pantheon avenue, however the balconies are nil to the lot boundary; A minor variation is sought to Orsino and Brunswick street for a portion of the lot

		boundary. This variation is discussed below.

The proposal presents compliant setbacks to Pantheon Avenue in the form of nil setbacks to the street and a maximum of 3m setback to the dwellings from level 3 and above. The curvature of the balconies proposes a nil setback to the street at certain points which is permitted.

The variation to the required 2.5m setback to Brunswick Street is supported by the City as it presents uniformly with the opposing western corner of Brunswick Street and Pantheon Avenue which is also a nil setback. Furthermore, the variation is relatively minor in nature as it proposes a variation for a length of 10m out of the 28.3m lot boundary length. Similarly, upon Pantheon Avenue a variation to the required nil setback is proposed which is also supported by the City as it is likely to be less impactful due to the proposed awning.

Building height

The proposal seeks a maximum height of 22.5m, in lieu of the maximum 21m permitted under the LDP. In considering the proposed variation the City notes the following;

- The additional height being sought is the roof of the residential amenities (including gym and plant area) and is contained to the eastern boundary of the site;
- The proposed variation is setback an 4.5m from the boundary with Pantheon Avenue which exceeds the required 2.5m;
- Landscaping is proposed on the boundary of the roof top terrace which will largely assist in screening of the additional height sought;
- The DRP were supportive of the height proposed.

In light of the above, the City considers the additional 1.5m of height sought to be a minor variation. The adjoining building at Lot 1027 has a maximum height of 17.3m under the same LPD, the intent of the BFC and structure plan is to frame the development site on both ends of Orsino Boulevard (i.e. abutting Coromandel Approach) thus a greater height than what exists on Lot 1027 is to be expected.

<u>Restaurant and future commercial tenancies</u>

The BFC requires the ground floor of Pantheon Avenue be commercial in nature to provdie greater engagement with the public realm. The corner of Pantheon Avenue and Orsino Boulevard proposes a 94m^2 Restaurant tenancy which is a Permitted Use under DA 22. The tenancy is also serviced by relevant grease traps and interceptor pumps as shown on the basement parking plans.

The three (3) residential dwellings on Pantheon Avenue are proposed to be convertible into Commercial space. These dwellings have the following features which will enable an easier transition to commercial use;

- Proposed 3.2m floor to ceiling heights, however a ‘false floor’ which can be removed, to allow for a 4m floor to ceiling height and direct pedestrian access onto Pantheon Avenue is also provided;
- Each dwelling has an individual entrance from Pantheon Avenue in addition to the entrance via the Residential lobby;
- It is recommended that the Parking Management Plan be amended to ensure each of these dwellings is provided with two (2) car parking bays that will be transferable to the future commercial use. This is discussed further in the car parking section below.

The permissibility of the future commercial use will be per the relevant planning framework at the time and may require a further development application for Change of Use. It is noted however, that the applicant's intent for Office use, would be a compliant proposal and not require a change of use application.

Landscaping

SPP 7.3 designates the specific amount of Deep Soil Areas (DSA) to be provided for each development dependent upon the site area and whether existing trees are able to be retained on site. The site is clear of vegetation, although there are eight (8) street trees which are to be retained and protected during the construction stage, therefore 10% of the site area is required to be provided as DSA.

Table 3a of SPP 3.7 – Deep Soil Areas		
	Required	**Proposed**
Deep Soil Area	10% of site = 234.1m^2 *Should appropriate DSA not be provided planting on structure shall be provided to an equivalent two times the required DSA	13m^2 DSA; 514m^2 on structure planting (21.9%)
Trees	1 large tree (64m^2 DSA); 1 Medium tree (36m^2), 1 medium tree in excess 1,000m^2 for each additional 400m^2 of site area = 4 medium trees total	1 large tree in DSA planter; 1 medium tree in DSA planter; 16 small trees

The only DSA provided is on the corner of Pantheon Avenue and Orsino Boulevard, where a small tree will be provided in front of the Restaurant tenancy. The majority of landscaping has been provided on the first floor, above the ground floor parking, and abutting Comet Lane. The proposal seeks the alternate calculation method where double the required DSA area (468.2m^2) is provided via planting on structures. The proposed landscaping is suitable given the site context and creates a pleasant atmosphere, particular for the north facing dwellings which will view out to the communal open space area (**Attachment 6 –** Landscaping Plan).

The landscaping plan differs from the revised plans which identify a significantly larger roof terrace. Therefore, a revised landscaping plan is recommended to dedicate planting areas and species for the roof terrace.

Traffic and Access

The subject site is surrounded by public roads on all four boundaries. Access is sought from Comet Lane which facilitates the ground floor parking for commercial bays, future commercial bays and some residential bays. A second crossover, which leads to the basement parking, is sought from Brunswick Street and will result in the loss of two on-street car parking bays.

The Brunswick Street access point proposes a variation to the BFC which dictates the sole access is to be provided via Comet Lane. In considering the variation seeking access from Brunswick Street the City has regard to the objectives within the BFC which state the following;

- *To integrate vehicle access into a site without compromising the street character, building design, landscape or pedestrian amenity and safety;*
- *To encourage active street frontages.*

The proposed access via Brunswick Street is not considered to impact the existing streetscape and maintains Pantheon Avenue as the primary active frontage for pedestrians. Furthermore, the Traffic Impact Assessment (**Attachment 7 –** Traffic Impact Statement) provided has been assessed by the City and the proposed crossovers are not anticipated to result in implications for traffic safety. There is an existing footpath that traversers the same side of Brunswick Street as the development. A condition is recommended to be imposed for crossover approval to be sought from the City and an alternate pavement can be utilised to assist in differentiating between the vehicle access and remainder of the footpath.

Car Parking

The subject site is within the 'Location B' area as defined under SPP 7.3, it is noted that the applicants car parking calculations identified the subject site as being within Location A. Locations A and B have the following definitions and car parking ratio under SPP 7.3.

> *Location A: Within 800m walkable catchment of a train station and/or 250m of a transit stop (bus or light rail) of a high-frequency route and/or within the defined boundaries of an activity centre.*
>
> *Location B: not within Location A.*

The parking calculations for Locational Criteria under SPP 7.3 are listed below

Parking types		**Location A**	**Location B**
Car Parking	1 bedroom dwellings	0.75 bays per dwelling	1 bay per dwelling
	2+ bedroom dwellings	1 bay per dwelling	1.25 bays per dwelling

The subject site is not within 800m of a train station, 250 of a high-frequency bus/light rail route or within an activity centre as defined by State Planning Policy 4.2 – Activity Centres for Perth and Peel (SPP 4.2). Cockburn Coast is identified within SPP 4.2 as a District and Emerging Centre, however does not yet conform to the definition of an activity centre for the purposes of SPP 4.2. Notwithstanding the disagreement as to whether Location A or B applies to the site, an overall surplus of car parking bays is provided, see the car parking calculation in the below table.

Use	**Parking rate**	**Requirement**	**Provision**
Resident Parking	1 bay per one bedroom apartment; 1.25 bays per 2 or more bedroom apartments.	18 one bedroom apartments – 18 bays; 43 two or more bedroom apartments – 53.75 bays Total required = 71.75	101
Residential visitors	1 bay per 4 dwellings up to 12; 1 bay per 8 dwellings for the 13th dwelling and above	9 visitor bays required	0 *6 on-street bays
Restaurant	1:4 persons accommodated	9.5 bays (10)	2 on site bays allocated to staff
TOTAL		**90.75**	**103 bays + 6 on-street bays per LDP**

A surplus of 12.5 (12) car parking bays is proposed. The manner in which car parking bays are allocated however, seeks a variation to the requirements under SPP 7.3 for residential visitor parking and the Restaurant parking whilst providing the majority of bays for Residential use.
The applicant provided a Parking Management Plan which initially proposed a greater share of parking bays, however since provided a briefing note which proposes the above provision/allocation of bays (**Attachment 8 – Parking Management Plan and Briefing Note).**

The shortfall in visitor bays (9 required) and commercial bays (10 required) represents a reliance upon on street parking. It should be noted however, the LDP permits the subject site to utilise 6 on-street bays for visitors and 2 restaurant bays are allocated to staff within the development. Therefore, a shortfall of 11 bays is proposed.

In review of the above information, the City considers the parking shortfall can be supported for the following reasons:

- The on-site residential bays have been provided with a significant surplus of 30 bays;
- The LSP notes that a significant provision of street parking is intended to be provided, and has, throughout the Marina Village Precinct to present an active pedestrian realm;
- It further envisages that residential visitor parking is to be provided upon the street rather than solely upon the development site;
- The State Planning Operational Policy *Liveable Neighbourhoods* states 'customer parking is to be provided mainly off-site and preferably on the street. On-site parking should primarily be limited for staff and residential use;
- A significant amount of publicly available on street parking exists upon the surrounding street networks as well as a public parking lot on Chieftain Esplanade;
- Pantheon Avenue functions as a 'Main Street' type development with on-street parking and a public realm that attracts pedestrians through the uses that exist upon it (Restaurant/Cafes etc). It is highly likely that the proposed Restaurant will not increase traffic in itself but provide reciprocity amongst similar existing businesses;
- The PMP is recommended to be revised to account for the revisions from the applicants briefing note which will allow for accurate allocations in parking. Furthermore, as the PMP details it will also be able to act as a 'live' document able to be amended periodically and if parking issues arise;
    - The three (3) residential dwellings upon the Pantheon Avenue frontage are recommended to be allocated two car parking bays which can then be transferred to a future commercial tenancy, which will assist with future staff parking.

In summary, the shortfall of commercial and residential visitor bays is considered to be acceptable due to the proposed surplus of residential bays, existing on-street bays within the surrounding area and likely reciprocity of uses along Pantheon Avenue.

<u>Consideration of Waste</u>

In accordance with LPP 1.14 a Waste Management Plan (WMP) was provided by Talis Consultants upon lodgement of the planning application. The WMP accounts for both Residential and Commercial waste generated by the development, the details of which are summarised below:

- The bin store is a combined 93m^2 (33m^2 Commercial and 60m^2 Residential) and located on ground level at the corner of Brunswick Street and Comet Lane;

- Bin collection will be undertaken once per week by the City's services within the loading zone on Comet Lane;
- Suitable size to the bin store has been provided for the current proposed capacity, future commercial tenancies and future FOGO (green waste) as well as manoeuvring to allow the bin store to be washed and cleaned periodically (by the Strata bodies future caretaker).

A condition is recommended for the WMP to be complied with throughout the life of the building (see **Attachment 9 –** Waste Management Plan)

Consideration of Noise

An Acoustic Report, completed by Hering Storer Acoustics, was provided with the application in accordance with the BFC and inclusion of the Restaurant premises (**Attachment 10 –** Acoustic Report). The noise impact upon the development is largely derived from existing commercial developments nearby which include a Child Care Premises on the southern side of Pantheon Avenue (53 Pantheon Avenue, North Coogee) and a Tavern on the corner of Pantheon Avenue and Chieftain Esplanade (72 Pantheon Avenue, North Coogee). It is acknowledged that both of these premises have been approved subject to noise mitigation measures and are required to comply with the *Environmental Protection (Noise) Regulations 1997*.

As noted within Attachment 16, a more detailed acoustic report is recommended to be provided in the future which will enable the consideration of items such as alfresco dining, operating hours and anticipated breakout noise. Subsequently, a condition is recommended for a further Noise Management Plan being provided prior to occupancy of the restaurant tenancy whereby the business model can be appropriately examined.

Further conditions relating to noise include the recommendations from the existing Acoustic Report being included in the construction of the development and a further acoustic report being provided to specify particular elements of the development including design and location of plant and mechanical exhaust. The City also recommends written confirmation, from the builder that the requirements from the acoustic reports have been implemented within the build prior to lodgement of the building permit application and occupancy of the building.

Consideration of Wind

Given the sites close proximity to the Indian Ocean and per the requirements of the BFC, a Wind Assessment was submitted with the application and completed by Windtech (see **Attachment 11** – Wind Assessment). The Wind assessment details three key aspects of the proposal that will be impacted by Wind; these are detailed below.

Ground floor areas

- The existing street trees and proposed landscaping is supported as it assists in mitigating wind;
- The proposed awning provided above the ground floor on the corner of Pantheon Avenue and Orsino Boulevard is to be retained;
- Inter-tenancy screens of a minimum 2m in height are recommended the ground floor units fronting Pantheon Avenue

Private balconies

- The Dwellings facing Orsino Boulevard are unlikely to be impacted by the dominant prevailing winds;

- Full height inter-tenancy screens are recommended for balconies with a western and northern aspect on the fourth and fifth floors. It is considered the existing screens on the first three floors are acceptable.

Rooftop Terraces

- The proposed roof top planting will assist in wind mitigation;
- 1.5m – 2m high impermeable balustrade be provided to the roof top terrace to further mitigate the impacts of wind;

It is recommended that a revised Wind Assessment be undertaken to assess the larger roof top terrace which is now proposed when compared against the terrace the wind assessment actually reviewed. Noting the wind assessment was assessed against the original development plans (in Attachment 1); it is recommended a revised wind assessment be conditioned to account for the larger roof terrace.

Other Considerations

Easement

The subject site has an easement on title under Section 167 of the *Planning and Development Act 2005* to the benefit to Electricity Networks Corporation. The easement is located in the north-east corner of the subject site and contains an electricity transformer which services the surrounding area, not just the subject site itself.

Under section 167 (5) the purpose of an easement in favour of a person or authority is to be taken to be varied if –

a) The prescribed circumstances set out in the regulations occur; and
b) The person or authority gives written consent to that variation.

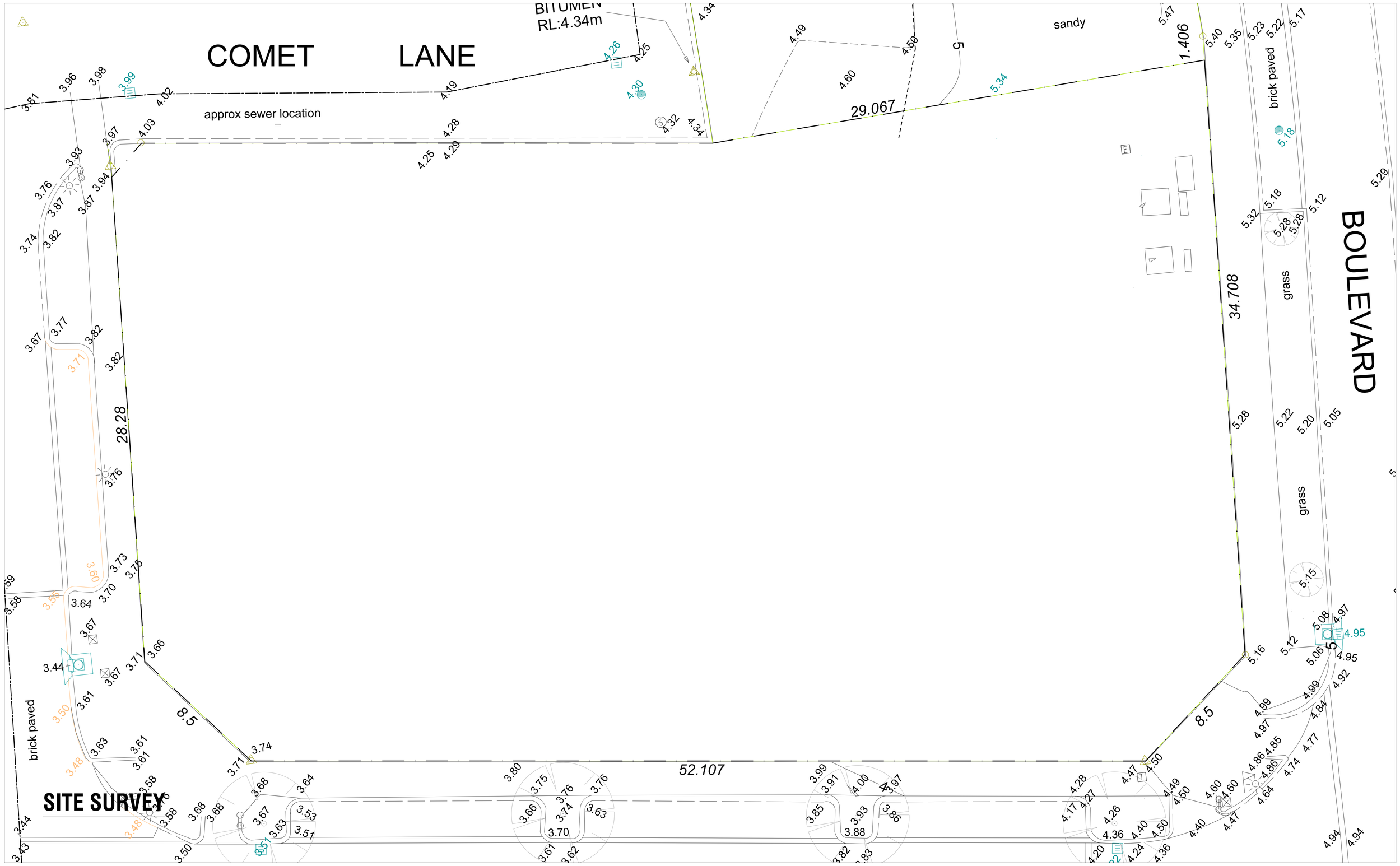
In light of the above, it is noted that the proponent has commenced the process to relocate the easement – which is proposed to be relocated to the 'transformer room' on the corner of Pantheon Avenue and Brunswick Street. The benefiter of the easement (Electricity Networks Corporation) is therefore required to consent to the removal of the easement and relocation of the existing infrastructure. However, from discussions with the benefiter of the easement an approval to relocate the electrical transformer has not yet been granted.

A footnote on the determination is recommended to advise the developer of the requirement for a third party approval.

Conclusion:

The proposal seeks approval for a Mixed Use development within a Local Centre zone of North Coogee. The proposal is consistent with the intent of the planning framework to provide for an active pedestrian interface along Pantheon Avenue and the existing high density environment within the surrounding area.

The proposal seeks the issue of discretion with regard to building height, setbacks and car parking. As noted with the planning assessment section of the above report, the variations sought are relatively minor in nature and are not considered to have a detrimental impact upon existing residents or businesses. Furthermore, the proposal received positive reviews from the Design Review Panel.



MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

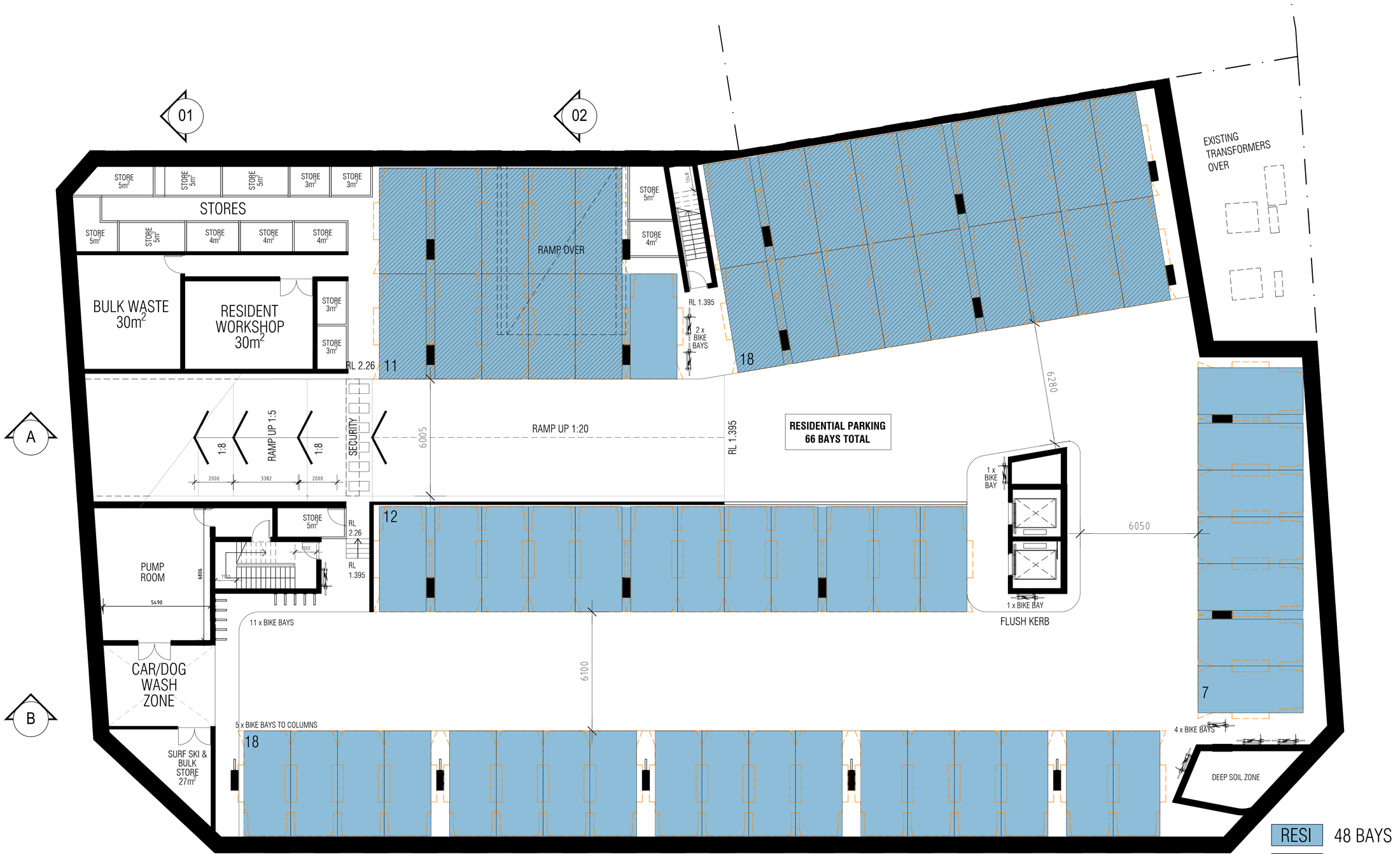
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SITE SURVEY

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.00	SO	WB	A



BASEMENT

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.01	SO	WB	A


COMET LANE
BOULEVARD
GROUND FLOOR
COMM. BIN STORE
33m2
SERVICE AREA
LOADING ZONE
RESI BIN STORE
60m2
8 x Refuse (red)
8 x Recycling (orange)
10 x Future FOGO (green)
RAMP UP 1:8
SECURITY
RL 5.28
EXISTING TRANSFORMER COMPOUND
POTENTIAL SWITCHROOM
ESCAPE
RESIDENTIAL+COMMERCIAL PARKING
37 BAYS TOTAL (+6 RECIPROCAL ON STREET)
FLUSH KERB
RAMP UP 1:20
NEW CROSSOVER TO CHYS REQS
FIRE TANKS (PUMPS BELOW)
SHARED SPACE
POTENTIAL FUTURE COMM. PARKING
MAIL ROOM
RESIDENTIAL LOBBY
Balcony
21m2
1x1
57m2
3 BED APARTMENT
to be converted into two future commercial tenancies
TOTAL AREA
96m2
2 BED APARTMENT
to be converted into two future commercial tenancies
TOTAL AREA
85m2
2 BED APARTMENT
to be converted into two future commercial tenancies
TOTAL AREA
85m2
COMMERCIAL
91m2
2 VISITOR BAYS
AWNING OVER, DASHED
52.107
29.067
34.708
28.28
COMM 2 BAYS
C.TAN 2 (4 BAYS)
RESI 13 BAYS
TAND 9 (18 BAYS)
RECIP. 6 BAYS (on street)

Residences designated for future conversion to commercial tenancies.

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.02	SO	WB	A

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

FIRST FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.03	SO	WB	A

SECOND, THIRD FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1
0 1 2 5

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.04	SO	WB	A

FOURTH, FIFTH FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

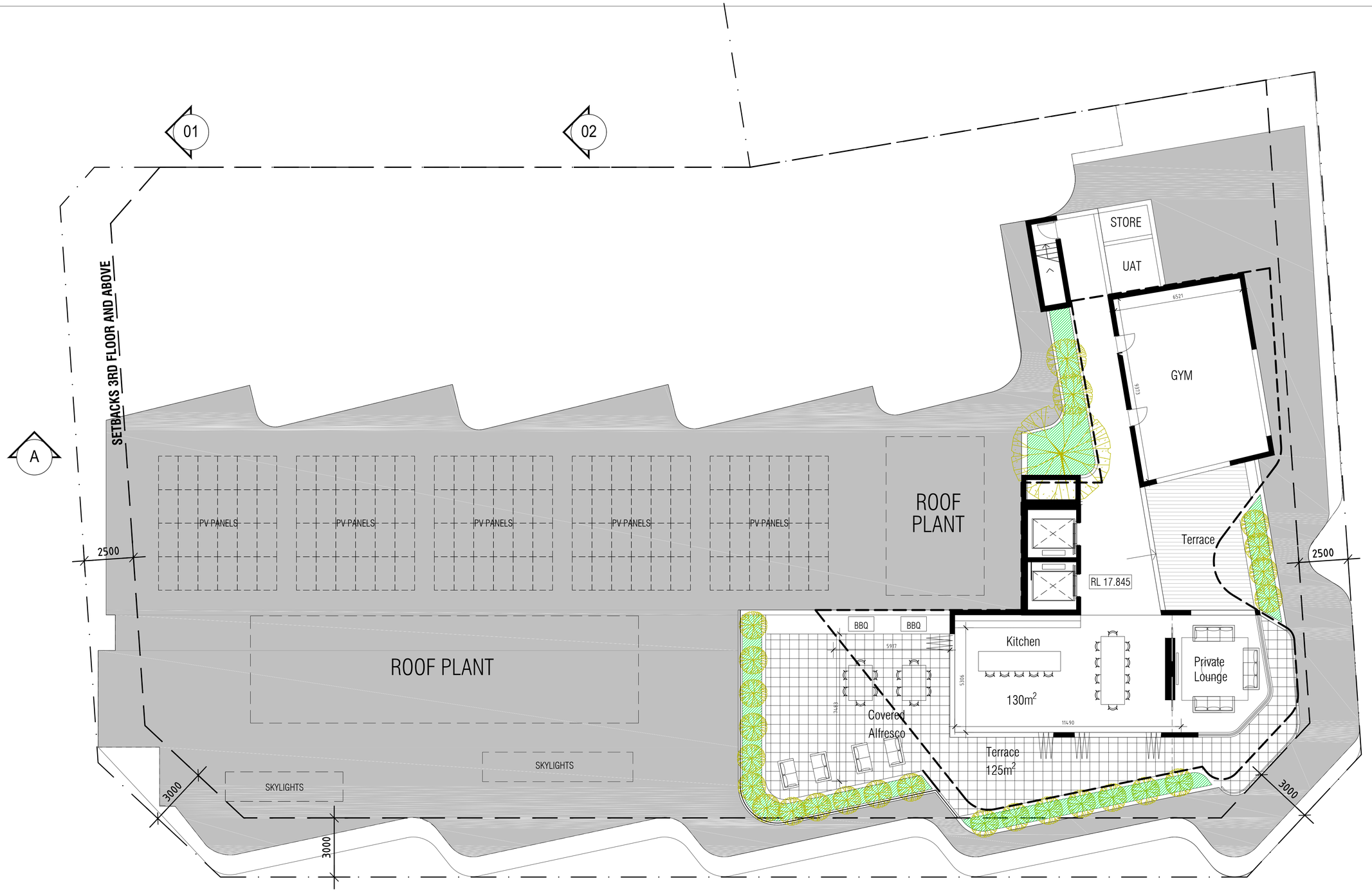
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.05	SO	WB	A



ROOFTOP AMENITY

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SO	WB	A

ROOF

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.07	SO	WB	A

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:200 @ A1

DRAWING
ELEVATIONS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SO	WB	A

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

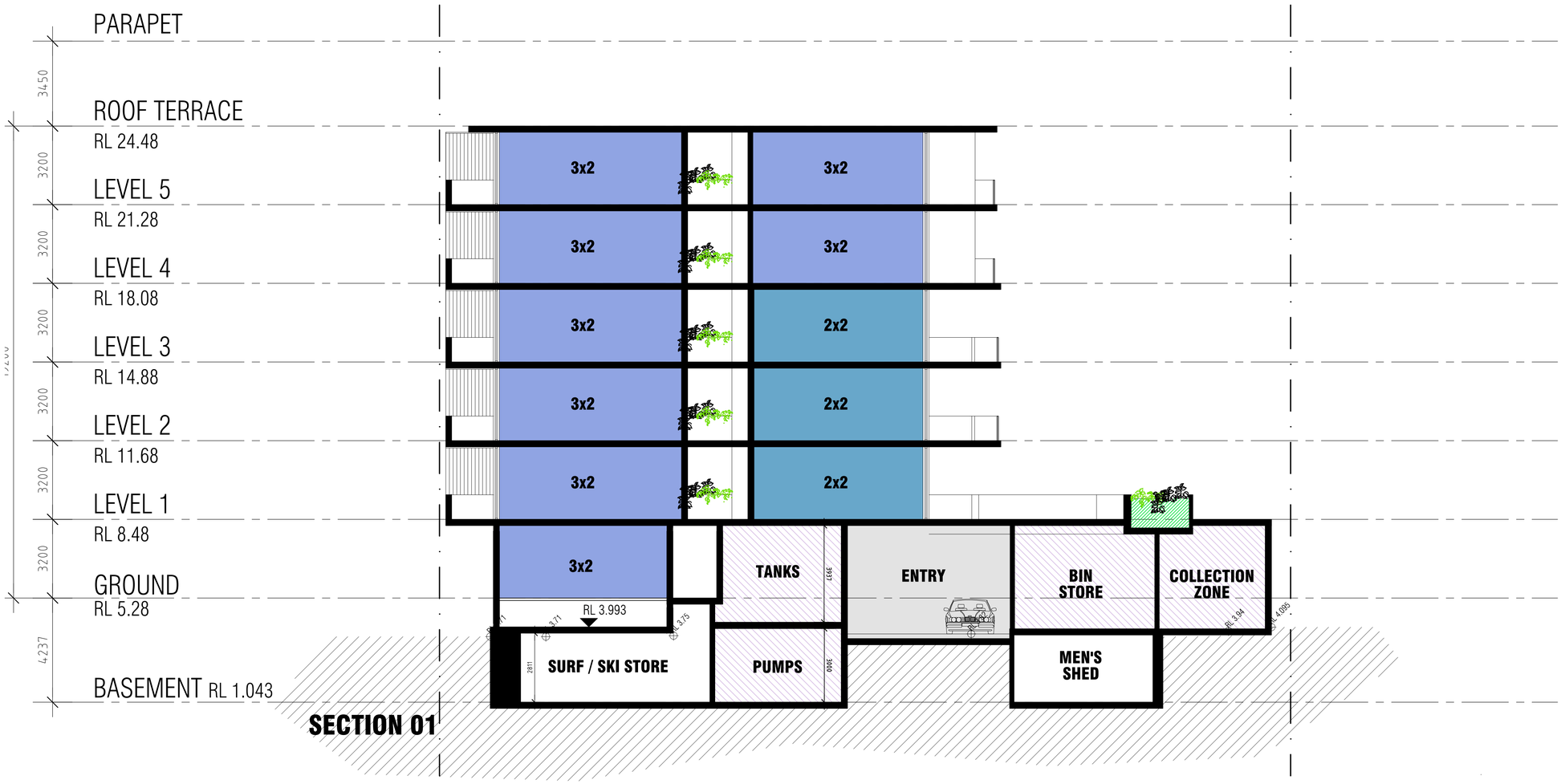
PROJECT NUMBER
15053

NORTH

SCALE
1:200 @ A1

DRAWING
ELEVATIONS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SO	WB	A



MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

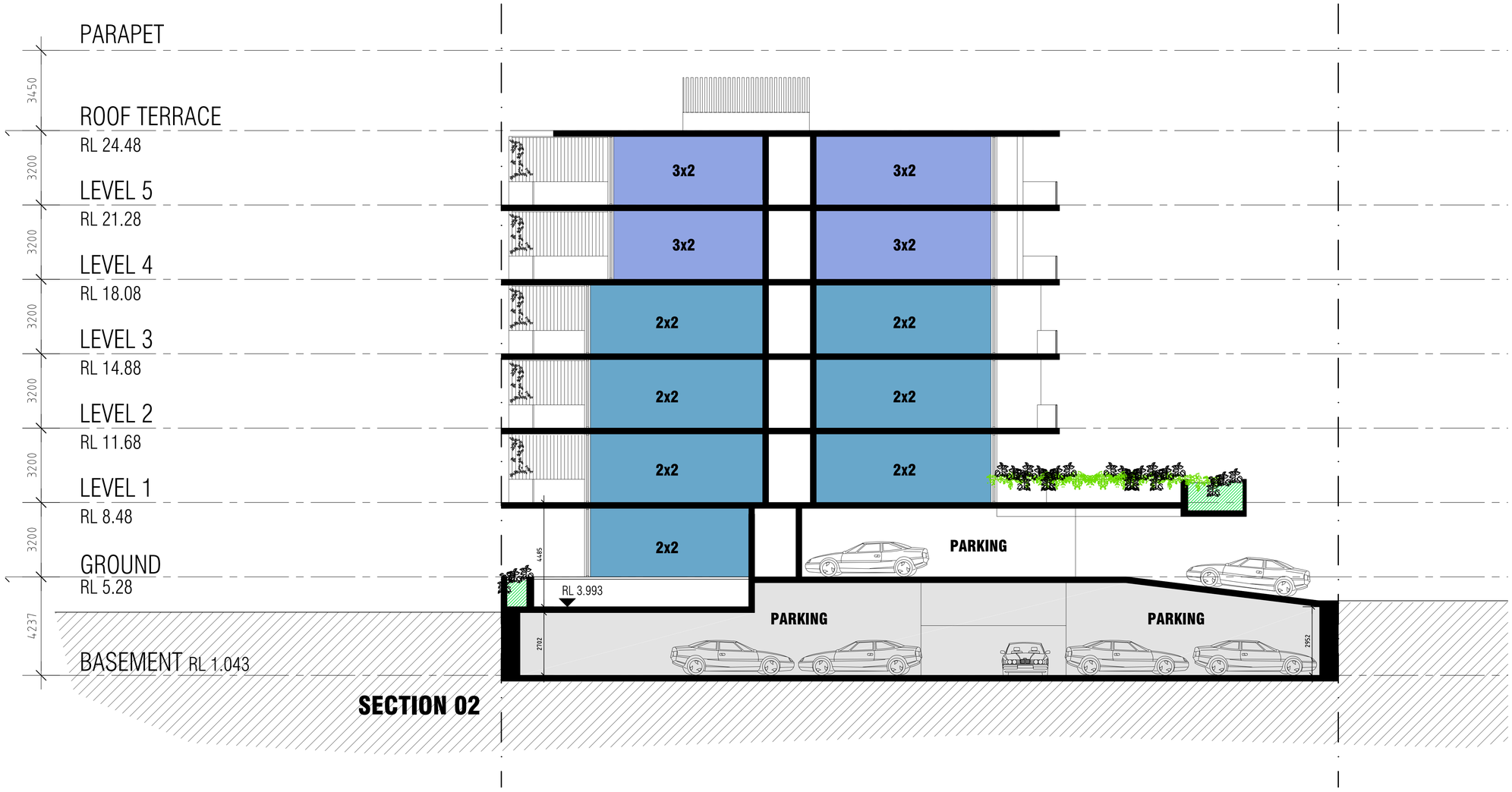
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.00	SO	WB	A



SECTION 02

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

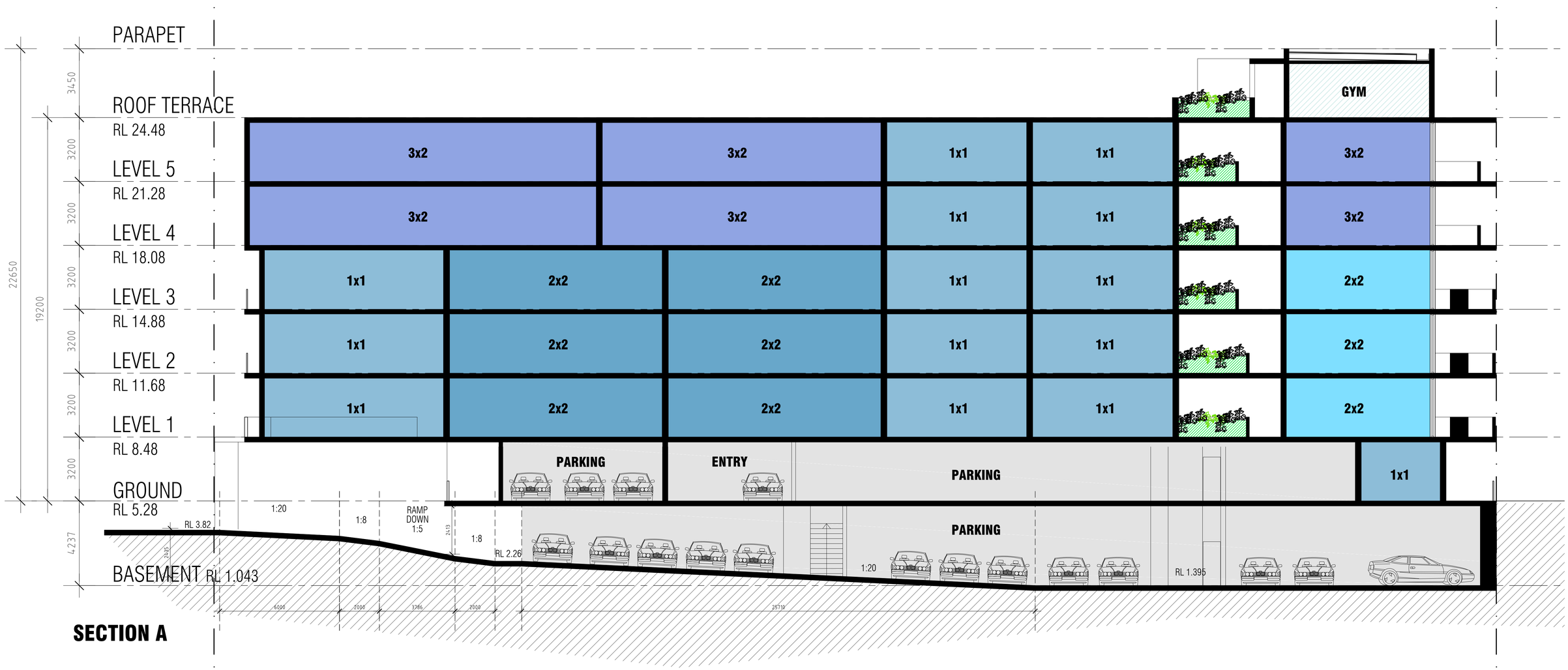
PROJECT NUMBER
15053

NORTH

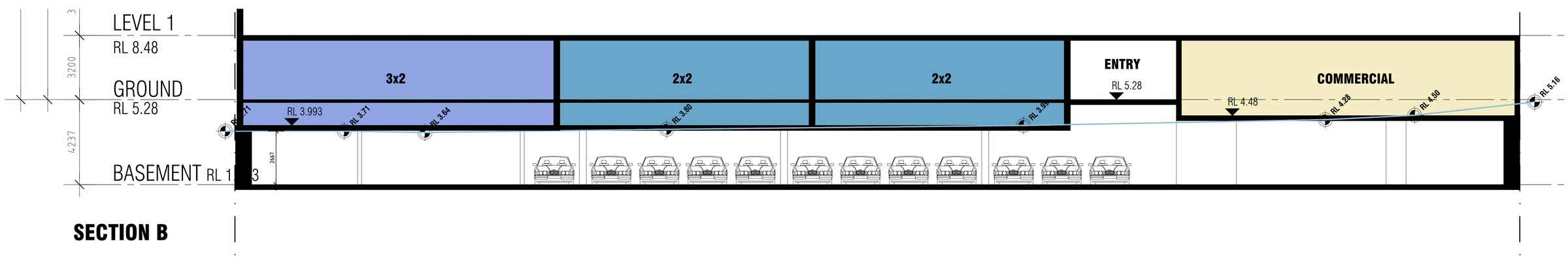
SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.01	SO	WB	A



SECTION A



SECTION B

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.02	SO	WB	A

60 APARTMENTS

	1x1	1x1	1x1	2x1	2x2	2x2 future COMM TENANCIES	2x2	2x2	3x2 future COMM TENANCIES	3x2	3x2	3x2	3x2	3x2	TOTAL	COMMERCIAL TENANCIES
	50	57	60	70	78	85	87	91	96	103	113	123	125	129		91
G		1				2			1						4	1
1	2		1	1	2		4	1		1					12	
2	2		1	1	2		4	1		1					12	
3	2		1	1	2		4	1		1					12	
4	2		1		2					1	1	1	1	1	10	
5	2		1		2					1	1	1	1	1	10	
TOTAL	10	1	5	3	10	2	12	3	1	5	2	2	2	2	60	1
	500	57	300	210	780	170	1044	273	96	515	226	246	250	258	4925	91

TOTAL AREA 5015

1x1s	2x2s	3x2s
16	30	14
26.66%	50%	23.33%

PARKING

103 BAYS TOTAL

RESIDENTIAL:	97 BAYS
COMMERCIAL/VISITOR:	6 BAYS
VISITOR (ON STREET):	6 BAYS

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

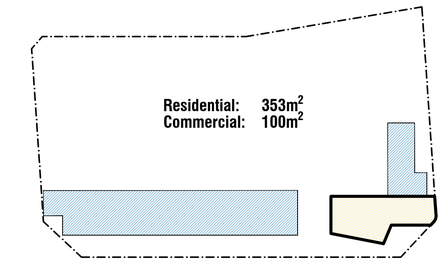
NORTH

SCALE

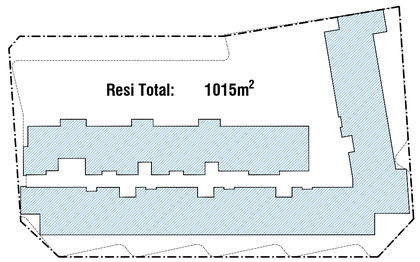
DRAWING
YIELD

DRAWING NO.	DRAFTER	CHECKED	REV.
DA4.00	SO	WB	A

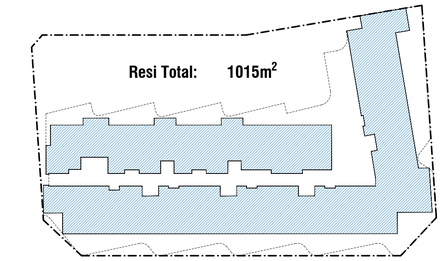
Plot Ratio Calculations



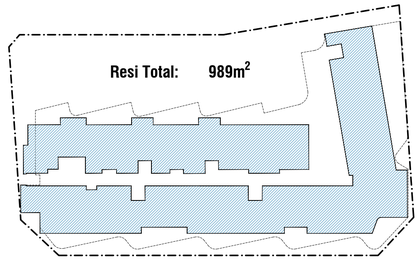
GROUND FLOOR



FIRST FLOOR



SECOND, THIRD FLOOR



FOURTH, FIFTH FLOOR

PLOT RATIO	RESIDENTIAL	COMMERCIAL	
G	353	100	
1	1015		
2	1015		
3	1015		
4	989		
5	989		
ROOF TER			
TOTAL	5376	100	5476

RESIDENTIAL PLOT RATIO (site area 2341m2)
1 : 2.29

RESIDENTIAL + COMMERCIAL PLOT RATIO
1 : 2.33

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

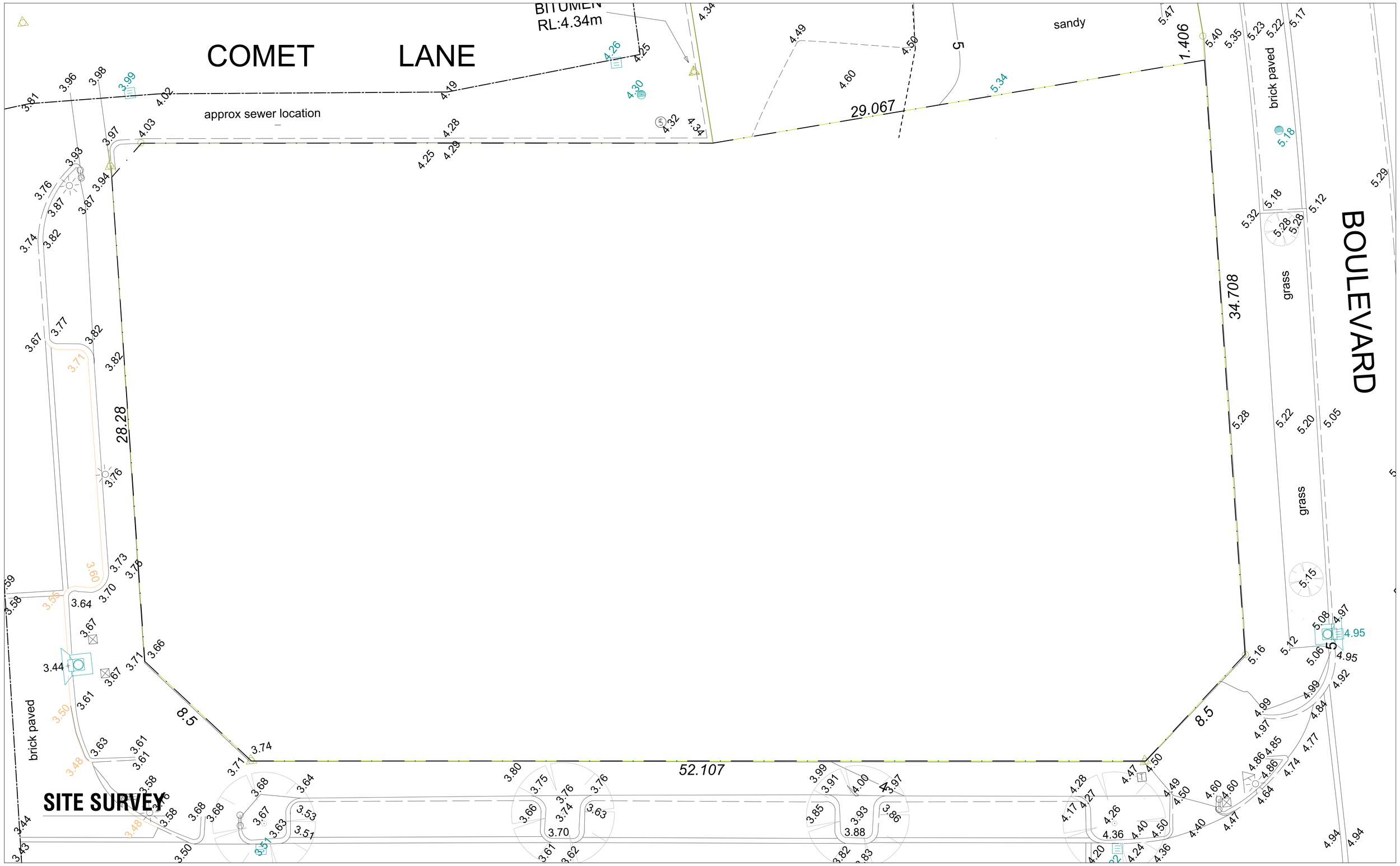
PROJECT NUMBER
15053

NORTH

SCALE
1:500 @ A1

DRAWING
DIAGRAMS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA5.00	SO	WB	A



MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

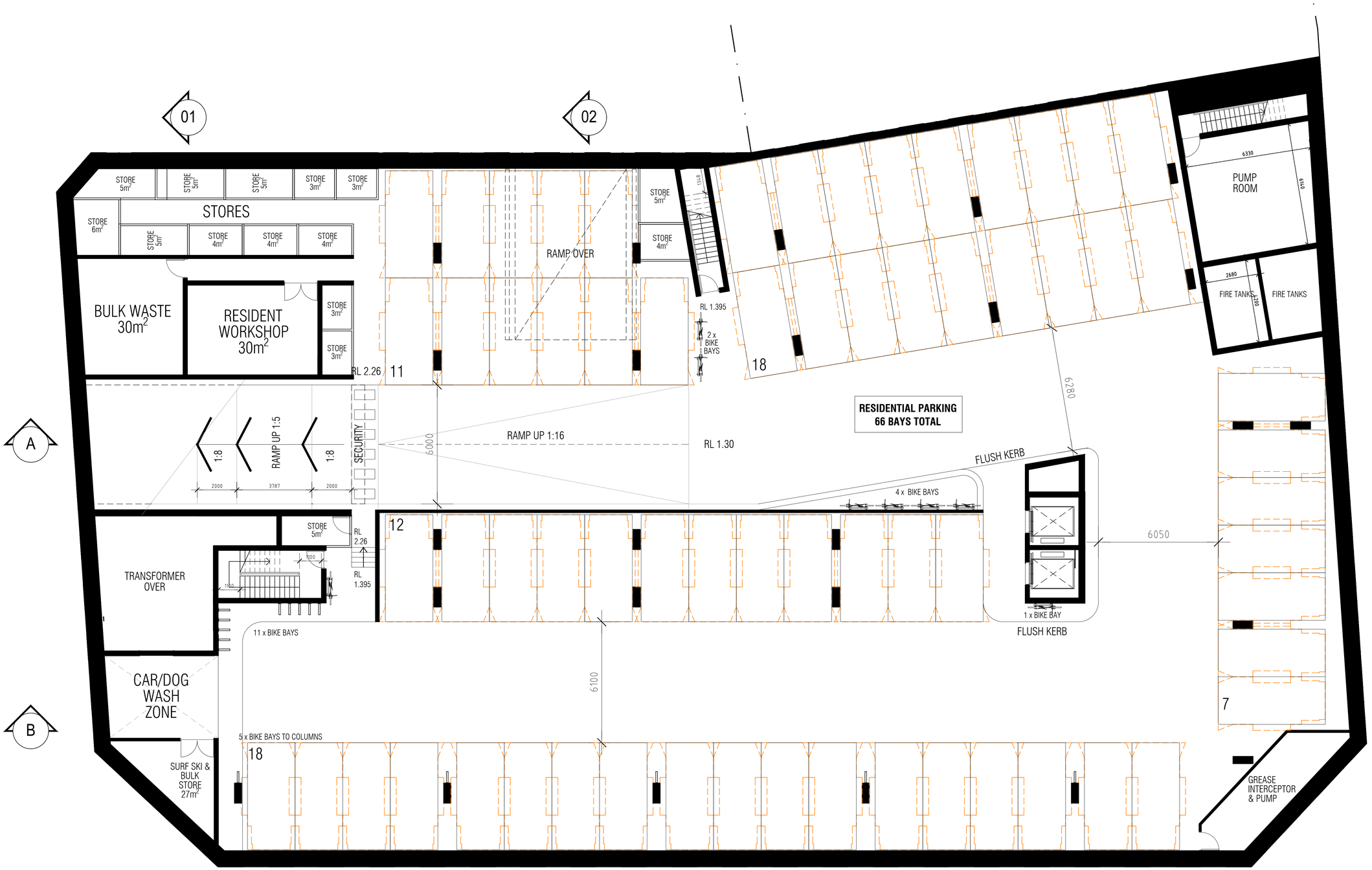
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SITE SURVEY

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.00	SO	WB	C



BASEMENT

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.01	SO	WB	C


COMET LANE
BOULEVARD
GROUND FLOOR
COMM. BIN STORE
33m2
SERVICE AREA
LOADING ZONE
RESI BIN STORE
60m2
8 x Refuse (red)
8 x Recycling (orange)
10 x Future FOGO (green)
3 x BIKE BAYS
RAMP UP 1:8
SECURITY
RL 5.28
RL 4.25
MC
FLUSH KERB
RESIDENTIAL+COMMERCIAL PARKING
37 BAYS TOTAL (+6 RECIPROCAL ON STREET)
POTENTIAL FUTURE COMM. PARKING
SHARED SPACE
TRANSFORMER ROOM
SWITCH ROOM
NEW CROSSOVER TO CITYS REQS
RESIDENTIAL LOBBY
MAIL / LOCKERS
EXHAUST DUCT OVER
STORE
ESCAPE
BIKE BAY
1 x BIKE BAY
Balcony 14m2
G06 Lot 6
1x1 55m2
Balcony 21m2
G05 Lot 5
1x1 57m2
G04 Lot 4
COMMERCIAL 94m2
RL 5.16
DSAINED 3x3m / 9m
3 BED APARTMENT to be converted into two future commercial tenancies TOTAL AREA 96m2
2 BED APARTMENT to be converted into two future commercial tenancies TOTAL AREA 85m2
2 BED APARTMENT to be converted into two future commercial tenancies TOTAL AREA 85m2
G01 Lot 1
G02 Lot 2
G03 Lot 3
2 VISITOR BAYS
2 x BIKE BAYS
AWNING OVER, DASHED
RL 4.00
RL 4.50
1:14
29.067
34.708
52.107
28.28
8.5
BITUMEN RL:4.34m
approx sewer location
sandy
brick paved
footpath
concrete
grass

Residences designated for future conversion to commercial tenancies.

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.02	SO	WB	C

MJASTUDIO
T +61 8 9388 0333 | www.mjastudio.net

FIRST FLOOR

MJA STUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.03	SO	WB	C

SECOND, THIRD FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.04	SO	WB	C

FOURTH, FIFTH FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.05	SO	WB	C

ROOFTOP AMENITY

MJA STUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SO	WB	C

ROOF

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.07	SO	WB	C

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:200 @ A1

DRAWING
ELEVATIONS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SO	WB	C

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

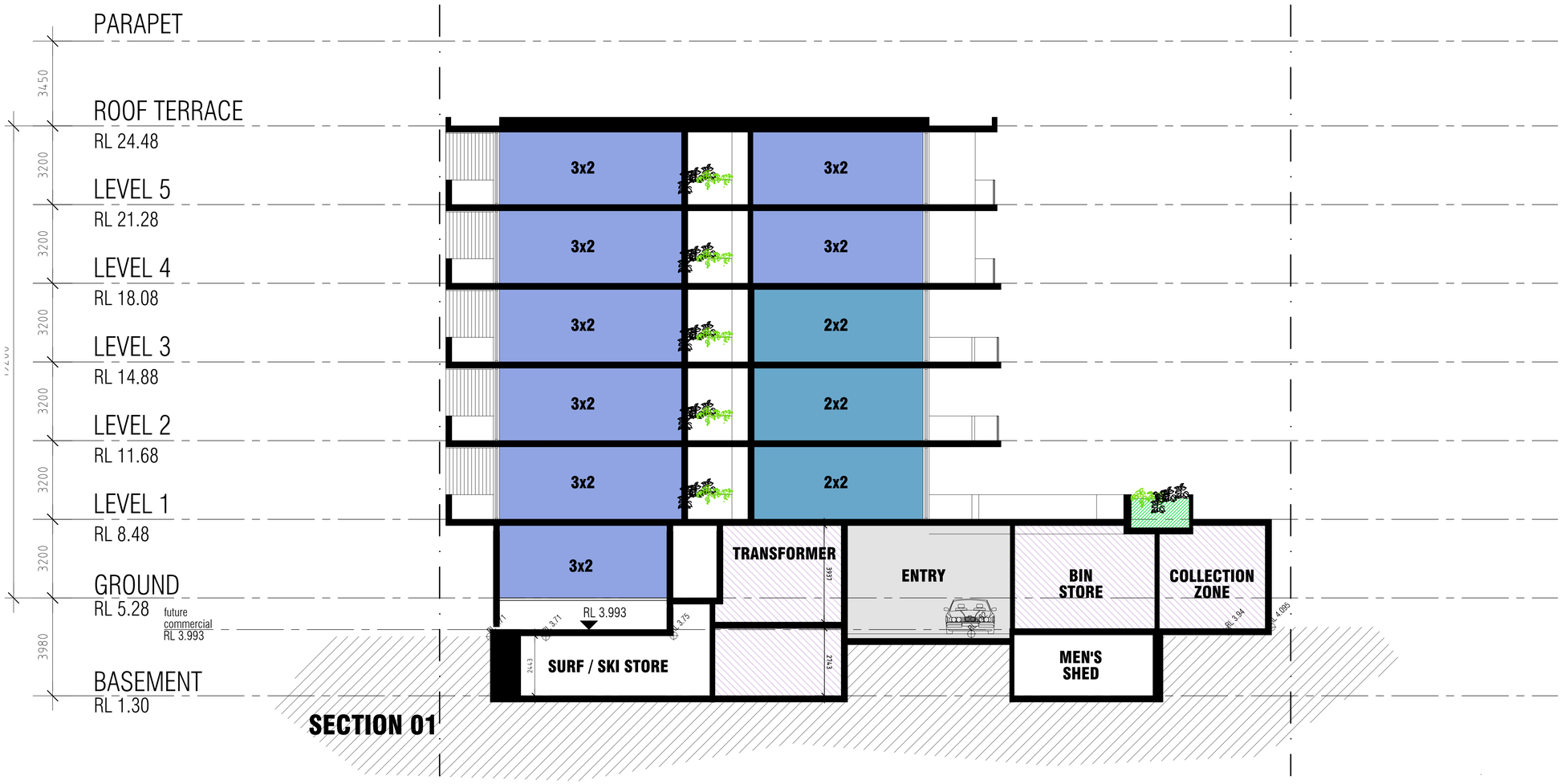
PROJECT NUMBER
15053

NORTH

SCALE
1:200 @ A1

DRAWING
ELEVATIONS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SO	WB	C



MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

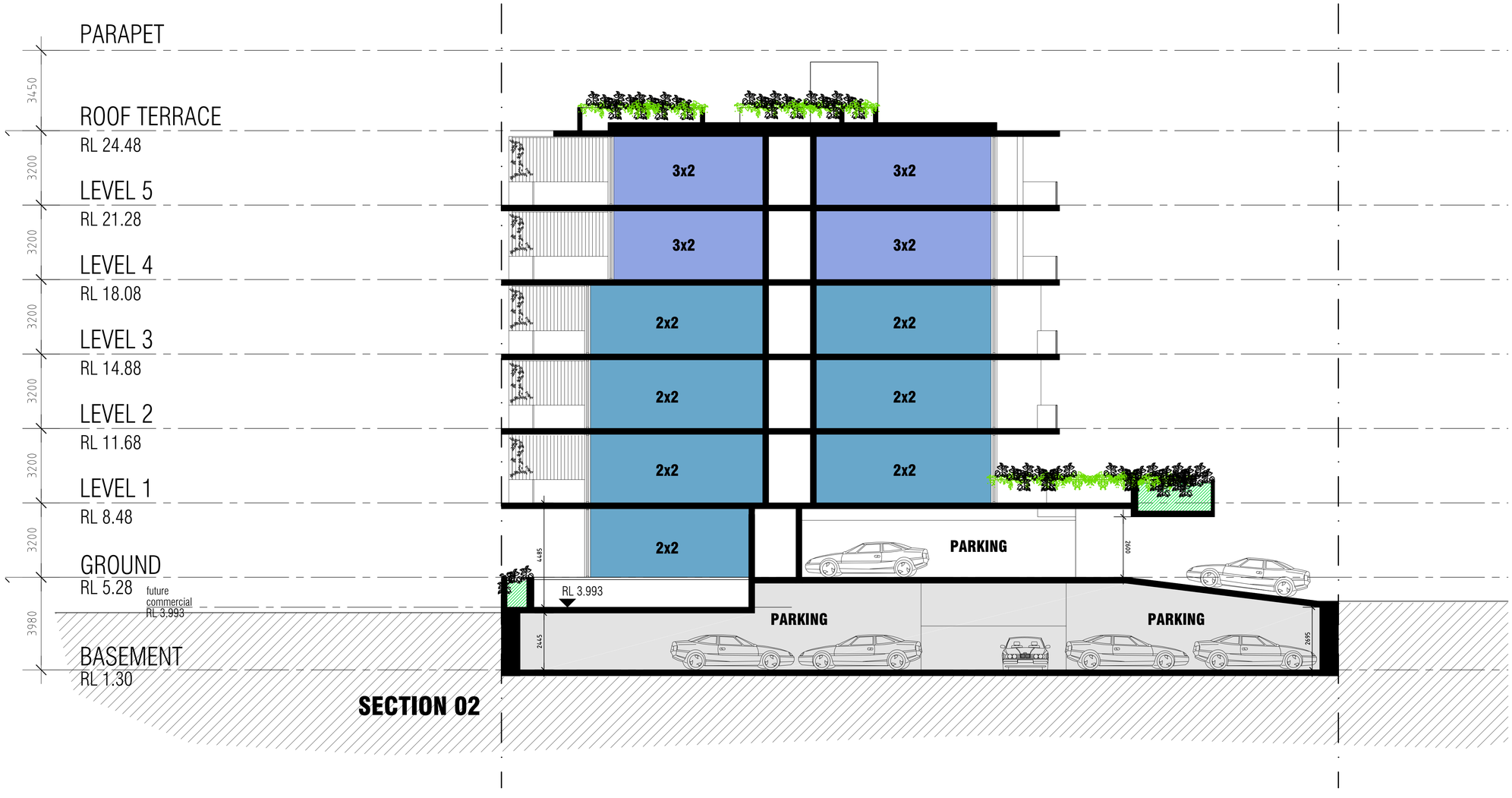
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.00	SO	WB	C



SECTION 02

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

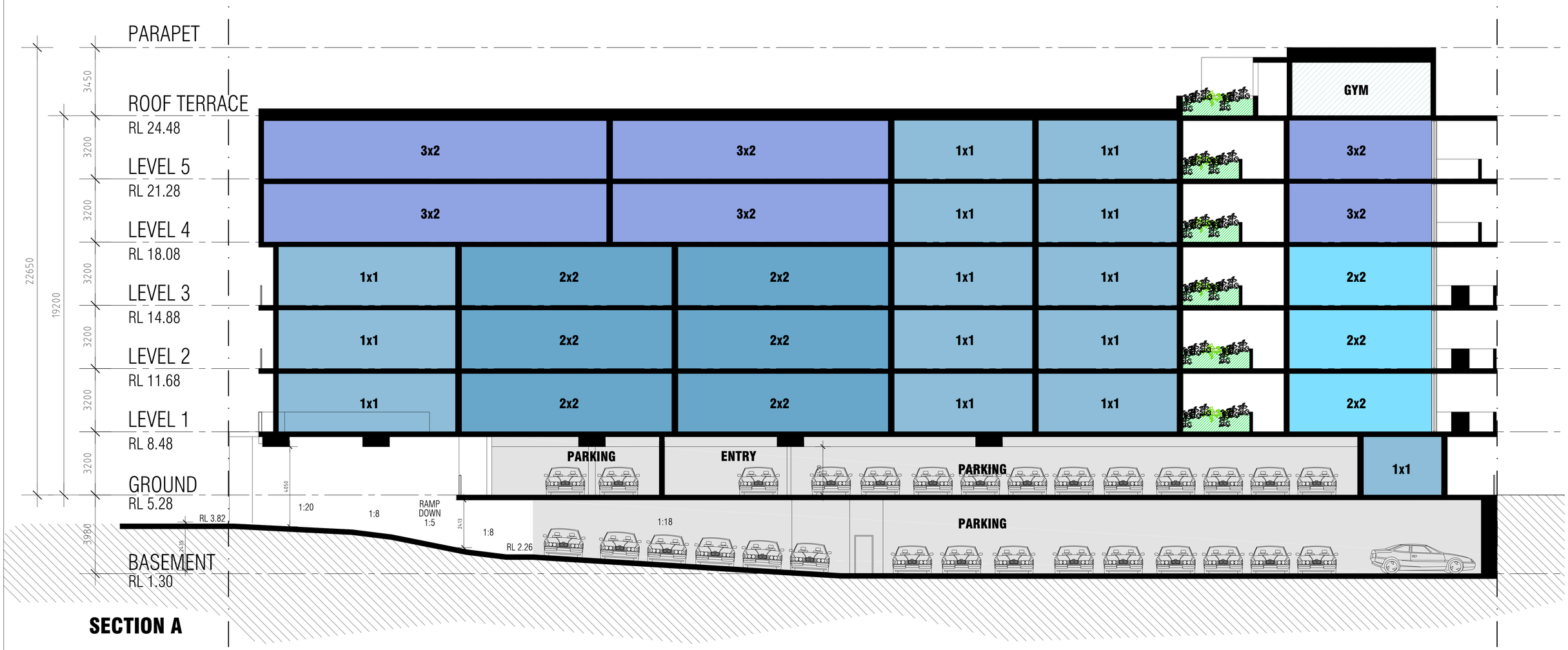
PROJECT NUMBER
15053

NORTH

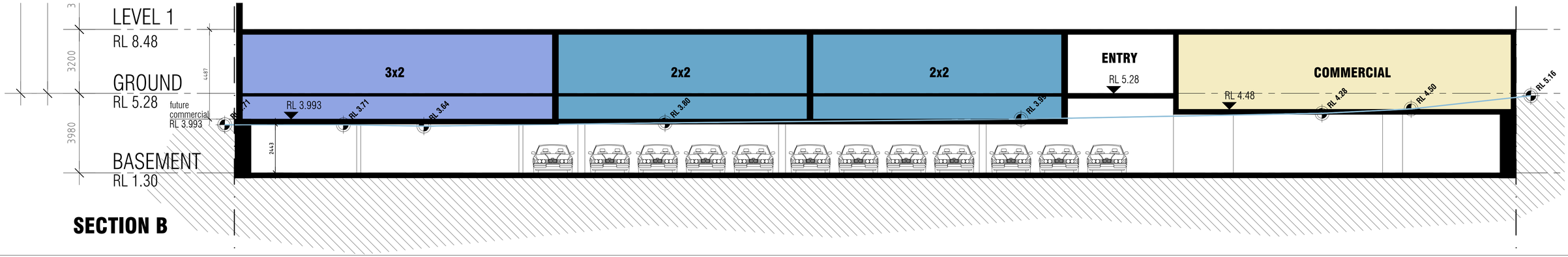
SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.01	SO	WB	C



SECTION A



SECTION B

MJA STUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.02	SO	WB	C

61 APARTMENTS

	1x1	1x1	1x1	1x1	1x1	2x2	2x2	2x2 future COMM TENANCIES	2x2	2x2	3x2 future COMM TENANCIES	3x2	3x2	3x2	3x2	3x2	TOTAL	COMMERCIAL TENANCIES
	50	55	57	60	64	70	78	85	87	91	96	103	113	123	125	129		91
G		1	1					2			1						5	1
1	2			1	1		2		4	1		1					12	
2	2			1		1	2		4	1		1					12	
3	2			1		1	2		4	1		1					12	
4	2			1			2					1	1	1	1	1	10	
5	2			1			2					1	1	1	1	1	10	
TOTAL	10	1	1	5	1	2	10	2	12	3	1	5	2	2	2	2	61	1
	500	55	57	300	64	140	780	170	1044	273	96	515	226	246	250	258	4974	91

1x1s	2x2s	3x2s
18	29	14
30%	50%	20%

PARKING

103 BAYS TOTAL

RESIDENTIAL:	97 BAYS
COMMERCIAL/VISITOR:	6 BAYS
VISITOR (ON STREET):	6 BAYS

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT: STIRLING

PROJECT: 15053 PORT COOGEE DEVELOPMENT

PROJECT ADDRESS: LOT 1015 PANTHEON AVE PORT COOGEE

PROJECT STATUS: DEVELOPMENT APPLICATION

PROJECT NUMBER: 15053

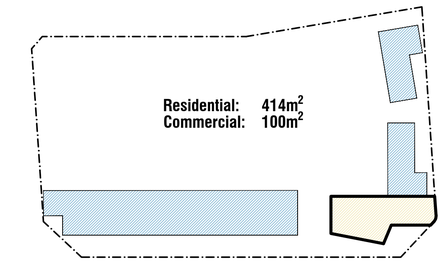
NORTH

SCALE

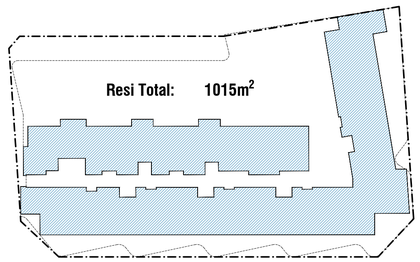
DRAWING: YIELD

DRAWING NO.	DRAFTER	CHECKED	REV.
DA4.00	SO	WB	C

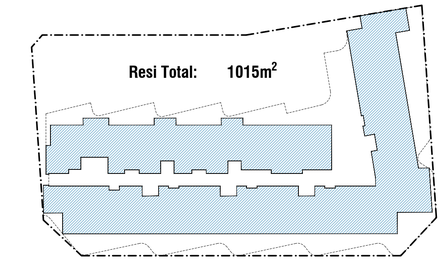
Plot Ratio Calculations



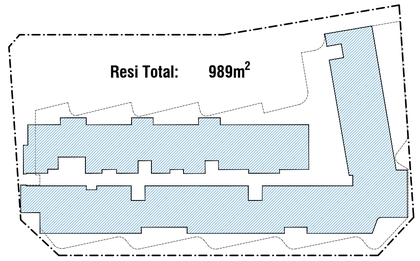
GROUND FLOOR



FIRST FLOOR



SECOND, THIRD FLOOR



FOURTH, FIFTH FLOOR

PLOT RATIO	RESIDENTIAL	COMMERCIAL	
G	414	100	
1	1015		
2	1015		
3	1015		
4	989		
5	989		
ROOF TER			
TOTAL	5425	100	5525

RESIDENTIAL PLOT RATIO (site area 2341m2)
1 : 2.31

RESIDENTIAL + COMMERCIAL PLOT RATIO
1 : 2.36

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:500 @ A1

DRAWING
DIAGRAMS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA5.00	SO	WB	C

Single Houses (Residential)

Railway

Orsino Blvd

Single Houses (Residential)

Cockburn Road

Mixed Uses & Apartments

Mixed Use & Aged Care

Subject Site

Pantheon Avenue

Woolworths

Single Houses (Residential)

David King

From: [redacted]
Sent: Thursday, 1 July 2021 4:56 PM
To: David King
Subject: RE: [EXTERNAL] DAP21/003 - Lot 1015 Orsino Boulevard, North Coogee - Proposed Mixed Use (61 Apartments) development - Request for Western Power Comment

External Email: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Hi David,

We do indeed have an application from WSP for Lot 1015 Orsino Boulevard, North Coogee. As a matter of fact I accepted their application for a "design for tender" earlier today. The design for tender will provide WSP with a detailed design drawing and +/-10% quote. Once they receive this, they will then be required to submit a "design for construction" application should they wish to proceed to the construction phase.

The solution we've been discussing is that Western Power removes the existing substation and installs a new substation within the apartment complex itself. As I'm sure you can appreciate, this is quite a complex project and I'm not really in a position to comment any further until our designers have completed their investigation. The design for tender will determine the final solution as well as the accompanying requirements and third-party approvals.

Regards,

[redacted]
Asset Engineer
Operational Asset Performance – Distribution Lines

A 363 Wellington St, Perth WA 6000 | **T** [redacted]
[redacted]

From: David King
Sent: Tuesday, 29 June 2021 4:30 PM
To: [redacted]
Subject: [EXTERNAL] DAP21/003 - Lot 1015 Orsino Boulevard, North Coogee - Proposed Mixed Use (61 Apartments) development - Request for Western Power Comment

CAUTION: This email originated from outside Western Power. Do not click links or open attachments unless you recognise the sender and know the content is safe. If you are unsure, please use the suspicious email button or contact the IT Service Desk.

Good afternoon Francois,

MEETING MINUTES

Lot 1015 Pantheon Ave, North Coogee, Design Review Meeting #1

Date	24/05/2021	Time	2pm
Location	Port Coogee Sales Office, Maraboo Loop, North Coogee		

Attendee

Patrick Andrade	PA	City of Cockburn Member of PCMV DRP	pandrade@cockburn.wa.gov.au
Daniel Arndt	DA	City of Cockburn Member of PCMV DRP	darndt@cockburn.wa.gov.au
David Barr	DB	David Barr Architects Member of PCMV DRP	david@davidbarrarchitects.com.au
Wes Barrett	WB	MJA Studio Representing the Applicant	wes@mjastudio.net
Peter Hobbs	PH	Peter Hobbs Architects Member of PCMV DRP	peter@phab.net.au
Stefan Oh	SO	MJA Studio Representing the Applicant	stefan@mjastudio.net
Ben Pervan	BP	Frasers Member of PCMV DRP	ben.pervan@frasersproperty.com.au
Luke Reineke	LR	Stirling Capital Applicant	luke@stirlingcapital.com.au
Tanya Trevisan	TT	Frasers Member of PCMV DRP	Tanya.trevisan@frasersproperty.com.au

Apologies N/A

ACRONYMS/ DEFINITIONS:

Design Review Panel ('DRP')

Port Coogee Marina Village as defined by the June 2014 approved Built Form Code ('PCMV')

City of Cockburn ('CoC')

June 2014 approved Built Form Code ('BFC')

ITEM	DESCRIPTION	ACTION DATE	WHO
1.0	**General**		
1.1	DRP and applicant introductions.	Note	All
1.2	DRP acknowledged receipt of drawing set as issued by MJA on 17 May 2021.	Note	All
2.0	Proposal		
2.1	MJA Studio presented the proposal for Lot 1015. 61 apartments and one café space plus ancillary requirements.	Note	SO
2.1.1	PH queried robust design and ability to create transition for example of only one strata Lot to non-res. LH said that this flexible approach is to mitigate risk.	Note	PH
2.1.2	DA said that the City recognises the challenges but the design needs to incorporate items that cannot be easily retrofitted for example mechanical ventilation/ vertical kitchen exhaust/ grease arrestors/ oil traps etc need to be constructed up front.	2/7/2021	WB/ SO
2.1.3	DA said that given Frasers are now looking at developing the PCMV retailers are more likely to want to be on the main street.	Note	All
2.1.4	DB queried BFC status ie 'Must Have'. DA confirmed CoC can exercise some discretion with items within the BFC.	Note	All
2.1.5	MJA to issue asap the Planning Solutions planning report to DRP with compliance matrix justifying all non-compliances / areas where discretion is sought as this hasn't been issued to the DRP as yet.	ASAP	SO/ WB
2.1.6	DB and PH comments: • cross-ventilation, queried if what is shown is realistic; • height, supported;	ASAP	SO/ WB

	• shutters cantilevering forward of façade, queried strength and concern over (i) wind impact and (ii) noise impact; • would like to see introduction of direct access into ground floor apartments (robust design area); • query relating to servicing access for rubbish etc from café space into garbage area currently through residential lobby, would prefer more direct access from café to back of house • would like to see retail likely fit out layout indicated the ground floor plan • check height of roof as structure too thin in the Section and zone for structure, insulation, drainage etc missing. • Roof plant may be better relocated to rear (north) of core so not obscuring sea view from roof terrace as is currently shown. • Acceptable laneway surveillance, landscape calculations, ground floor activation (CPTED) • Attractive façade and design, positive addition to Port Coogee Estate and to the Marina Village • Indicate locations of ventilation of future commercial spaces on roof plan and check they don't impact proposed top floor apartments' skylights.		
2.1.7	DA flexibility for the ground floor robust design needs to be preserved, ie strata plan/ strata management plan needs to recognise this. CoC permits home office use as a non-res use.	Note	SO/ WB/ LR
2.1.8	DA noted Public Art not indicated, this should be nominated if it is to be integrated into the building. CoC have a Public Art policy requiring 1% of build price as public art. Being a gateway site public art should be in a prime location.	ASAP	SO/ WB/ LR
2.1.9	Proposal to be five-star GBCA (assessed)	Note	All
2.1.10	PA asked to investigate if stairs rather than lifts can be used.	ASAP	SO/ WB
2.1.11	SO confirmed air-con plant is to be located on the roof	Note	All
2.1.12	DA queried entry point of lobby legibility from street.	ASAP	SO/ WB
2.1.13	PA requested further elaboration about the commercial floor plan, and improvement of sightlines and interaction with the lobby.	ASAP	SO/ WB
2.1.14	SO confirmed Windtech have done a wind analysis and produced a wind report. DRP requested that this be issued.	NOTE	SO

3.0	FUTURE REVIEWS/ STATUS		
3.1	DA requested circulating responses to the items raised to all attendees	ASAP	SO/ WB
3.2	Applicant was congratulated on high quality proposal.	Note	All
3.3	DRP agreed provided responses are in line with what has been discussed then no further review is required.	Note	All
3.4	Applicant confirmed that they have already lodged DA with CoC and its progress is pending this DRP.	Note	All

There being no further business the meeting closed at 330pm.

LOT 1015 PANTHEON AVE, PORT COOGEE

DEVELOPMENT APPLICATION PACKAGE

LANDSCAPE DESIGN

ISSUE FOR APPROVAL

TDL
BEYOND GREEN

INSPIRATION IMAGES AND PLANT PALETTE

PLANT PALETTE

LARGE TREE

Erythrina sykesii

MEDIUM TREE

Ulmus parvifolia

SMALL TREE

Olea europa

Eucalyptus torquata

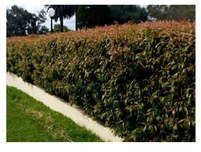
Melaleuca lanceolata

Plumeria obtusa

SMALL- MEDIUM SHRUBS

Leucophyta brownii

Pimelea ferruginea



Agonis flexuosa var. nana

Pittosporum tenuifolium
'Golf Ball'

Calothamnus quadrifidus
'Little Ripper'

Westringia
'Jervis Gem'

Scaevola nitida

Eremophila nivea 'Spring
Mist'

Westringia fruticosea 'Smokie'

Rosemarinus officinalis

Acacia truncata

Olearia axillaris 'Silver Nugget

STRAPPY AND ACCENT PLANTS

Rhapiolepis 'Orient Pearl'

Nerium oliander

Agapanthos 'Black magic'

Templetonia retusa

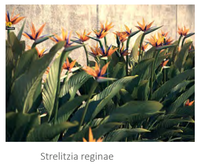
Cotyledon 'Silver Wave'

Epipremnum aureum 'Marble
Queen'

Conostylis candicans

Dianella revoluta 'Little Rev'

Lomandra longifolia 'Cassica'



Strelitzia reginae

Lepidosperma gladiatum

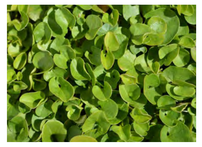
Anigozanthas 'Gold Velvet'

GROUNDCOVER & CREEPERS

Westringia mundi 'White
Rambler'

Grevilea obtusifolia
'Gin Gin Gem'

Eremophila 'Kalbarri Carpet'



Dichondra repens

Tetragonia decumbens

Trachelospermum jasminoides

Hardenbergia comptoniana

Myoporum parvifolium

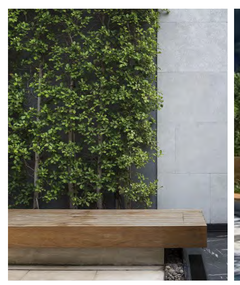
Casuarina 'Cousin It'

Dichondra 'Silver Falls'

Ophipogon japonicus

Phormium tenax

INSPIRATIONAL IMAGERY



TDL
BEYOND GREEN

AUTHOR: JR Q.A: RB PROJECT #: 12955

1015 LOT PANTHEON AVE, NORTH COOGEE

LANDSCAPE CONCEPT

SK01-A

LANDSCAPE MASTERPLAN - GROUND FLOOR

PLANT PALETTE GROUND FLOOR

LANDSCAPE DESIGN NOTE

1. MAIN PLANTERS TO BE FILLED WITH VARIOUS TYPES OF NATIVE PLANTS THAT ACCOMODATE THE PORT COOGEE AREA, CREATING A BEAUTIFUL ENTRANCE TO THE BUILDING AS WELL AS FRAMING THE PATHWAY.
2. SMALL TREES - OLEA EUROPA TREES, WITHIN THE PLANTERS TO CREATE VARYING HEIGHTS CREATE A MORE AESTHETIC WALKWAY
3. PLANTER WITH STEPS TO PROVIDE AN OUTDOOR SEATING AREA FOR RESIDENTS AND LOCALS.
4. CASCADING PLANTS DRAPING DOWN FROM THE PLANTERSTO CREATE A WELCOMING AND ENGAGIN ENTRANCE.
5. SMALL TREE- MELALEUCA LANCEOLATA, TO BRING COLOUR TO THE ENTRANCE OF THE BUILDING AND TO ENCOURAGE MOVEMENT THROUGH THE COMMERCIAL AREA.
6. GROUNDCOVER SHRUBBERY ON THE VERGE AS A CONTINUATION OF THE CURRENT STREETS.
7. EXISTING VERGE TREES

TDL
BEYOND GREEN

AUTHOR: JR Q.A: RB

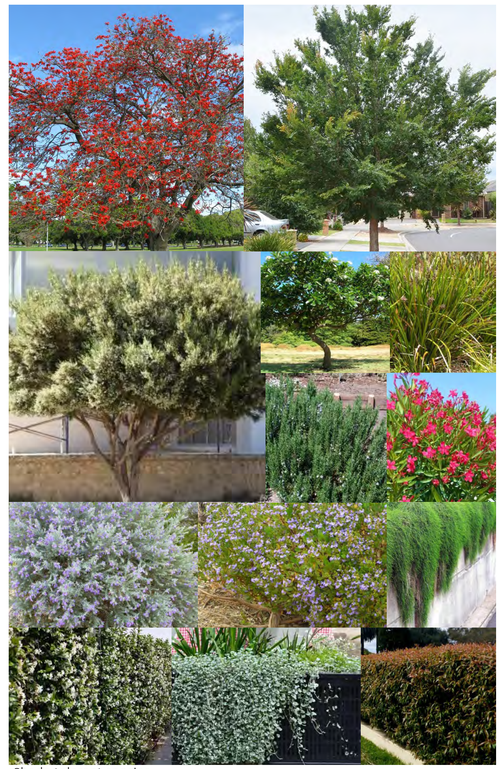
PROJECT #: 12955
1:125 @ A1

1015 LOT PANTHEON AVE, NORTH COOGEE
LANDSCAPE CONCEPT

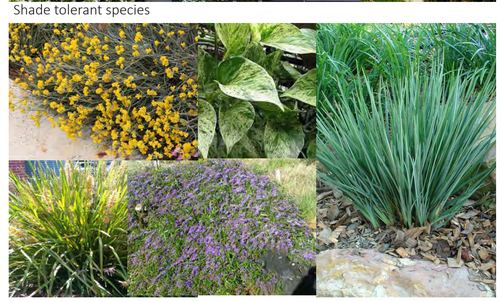
SK02-A

LANDSCAPE MASTERPLAN - FIRST FLOOR

PLANT PALETTE FIRST FLOOR



Shade tolerant species



LANDSCAPE DESIGN NOTE

1. LARGE TREE, ERYTHRINA SYKESII, PROVIDING A VISUAL BUFFER FROM ADJACENT PROPERTY AS WELL AS BRINGING COLOUR TO THE LOT.
2. PLANTING AREA TO BE FILLED WITH VARYING SIZED TREES AND NATIVE SHRUBBERY WITH MINIMAL ROOT SYSTEMS.
3. CLIMBING SHRUBS TO PLACED ALONG THE NORTH SIDE OF THE SHRUBBED AREA, WITH TRELLIS ACOMODATING THEIR GROWTH TO CREATE A GREEN WALL.
4. MEDIUM TREE, ULMUS PARVIFOLIA, TO PROVIDE PRIVACY AND VISUAL ECOLOGICAL AESTHETIC.
5. HIGH DENSE NATIVE SHRUBBERY WITH POSSIBLE SMALL TREE- PLUMERIA OBTUSA, BETWEEN ALRESCO AREAS TO CREATE PRIVACY AND A GREENER OUTDOOR SPACE FOR RESIDENCE.
6. SMALL TREES, MELALEUCA LANCEOLATA, TO PROVIDE COLOUR TO THE ADJACENT APARTMENTS AS WELL AS PROVIDING A VISUALLY AESTHETIC BACK WALL.
7. CASCADING PLANTS AND LOW SHRUBBERY TO FRAME THE COMPLEX AS WELL AS PROVIDING A GREEN OUTLOOK OFF THE BALCONY.
8. SHADE TOLERANT AND CASCADING PLANTS TO PROVIDE A GREEN SPACE WITHIN THE LOT.
9. EXISTING VERGE TREES.

TDL
BEYOND GREEN

AUTHOR: JR Q.A: RB

PROJECT #: 12955
1:125 @ A1

1015 LOT PANTHEON AVE, NORTH COOGEE
LANDSCAPE CONCEPT

SK03-A

LANDSCAPE MASTERPLAN - SECOND & THIRD FLOOR

PLANT PALETTE SECOND & THIRD FLOOR

Shade tolerant species

LANDSCAPE DESIGN NOTE

1. SHADE TOLERANT PLANTS TO PROVIDE A GREEN SPACE WITHIN THE LOT.
2. CASCAING PLANTS DROOPING OVER THE EDGE OF THE BUILDING AND NATIVE SHRUBS TO PROVIDE A ELONGATED GREEN EDGE TO THE EAST SIDE OF THE BUILDING.
3. SMALL AREA OF SHADE TOLERANT PLANTS AND CASCADING PLANTS TO CREATE A ECOLOGICAL FACADE.

TDL
BEYOND GREEN

AUTHOR: JR Q.A: RB

PROJECT #: 12955

1:125 @ A1

1015 LOT PANTHEON AVE, NORTH COOGEE

LANDSCAPE CONCEPT

SK04-A

LANDSCAPE MASTERPLAN - FOURTH & FIFTH

PLANT PALETTE FOURTH AND FIFTH FLOOR

Shade tolerant species

LANDSCAPE DESIGN NOTE

1. SHADE TOLERANT PLANTS TO PROVIDE A GREEN SPACE WITHIN THE LOT.
2. CASCAING PLANTS DROOPING OVER THE EDGE OF THE BUILDING AND NATIVE SHRUBS TO PROVIDE A GREEN CHARACTERISTIC TO THE AREA AND ITS APARTMENTS.
3. SMALL AREA OF SHADE TOLERANT PLANTS AND CASCADING PLANTS TO CREATE A ECOLOGICAL FACADE.

TDL
BEYOND GREEN

AUTHOR: JR Q.A: RB

PROJECT #: 12955
1:125 @ A1

1015 LOT PANTHEON AVE, NORTH COOGEE
LANDSCAPE CONCEPT

SK05-A

LANDSCAPE MASTERPLAN - ROOF AMENITY

PLANT PALETTE ROOF AMENITY

LANDSCAPE DESIGN NOTE

1. GREEN EDGING USING PLANTERS FILLED WITH A VARIETY OF NATIVE SHRUBBERY TO CREATE A AESTHETIC ROOF SPACE
2. CASCADING PLANTS DROOPING OVER THE EAST SIDE TO CREATE A GREEN FACADE TO THE SIDE OF THE BUILDING
3. SEATING AREA WITH BBQ AND OTHER AMENITIES TO ACCOMODATE RESIDENCE.

TDL
BEYOND GREEN

AUTHOR: JR Q.A: RB

PROJECT #: 12955
1:125 @ A1

1015 LOT PANTHEON AVE, NORTH COOGEE

LANDSCAPE CONCEPT

SK06-A

LANDSCAPE COMPLIANCE DIAGRAM

DEEP SOIL AREAS & COMMUNAL OPEN SPACE

SPP7.3 COMPLIANCE CRITERIA

SITE AREA SPP7.3	MIN. DSA SPP 7.3	MIN. TREES SPP7.3
Less than 700m2	10% OR 7% trees retained (% site area)	1 medium tree plus small trees to suit area
700-1000m2		2 medium trees OR 1 large tree and small tress to suit area
Greater than 1000m2		**1 large tree and 1 medium tree for each additional 400m2 in excess of 1000m2** OR 1 large tree for each additional 900m2 in excess of 1000m2 and small trees to suit area

DEVELOPMENT PROVISIONS

CRITERIA	SPP7.3 STANDARD	DEVELOPMENT PROPOSAL
Site Area	> 1000m2	**2341m2**
DSA	234.1m2 (10%)	**Deep Soil Area in ground - 13m2 Planting Area on structure - 514m2 Total Deep Soil Area - 13 + 257m2 (50% from planting area on structure) 270m2=12%**
Min. Trees	1 large plus 1 medium and additional small trees to suit	**1 large (proposed) 1 medium (proposed) 16 Small Trees**

LEGEND

Deep Soil Area (DSA) = 13m²

Planting Area on structure =514m²

TREE CANOPY AND DEEP SOIL AREAS

SPP7.3 COMPLIANCE CRITERIA

SITE AREA	MATURE CANOPY DIA.	MATURE HEIGHT	DSA PER TREE REQ.	MIN. DSA WIDTH	MIN. DSA WIDTH WITH ADDITIONAL RSZ	PLANTED POT SIZE
Small	4-6m	4-8m	9m2	2m	1.0m (DSA) + 1.0m (RSZ)	100L
Medium	6-9m	8-12m	36m2	3m	2.0m (DSA) + 1.0m (RSZ)	200L
Large	>9m	>12m	64m2	6m	4.5m (DSA) + 1.5m (RSZ)	500L

LEGEND

Proposed large tree

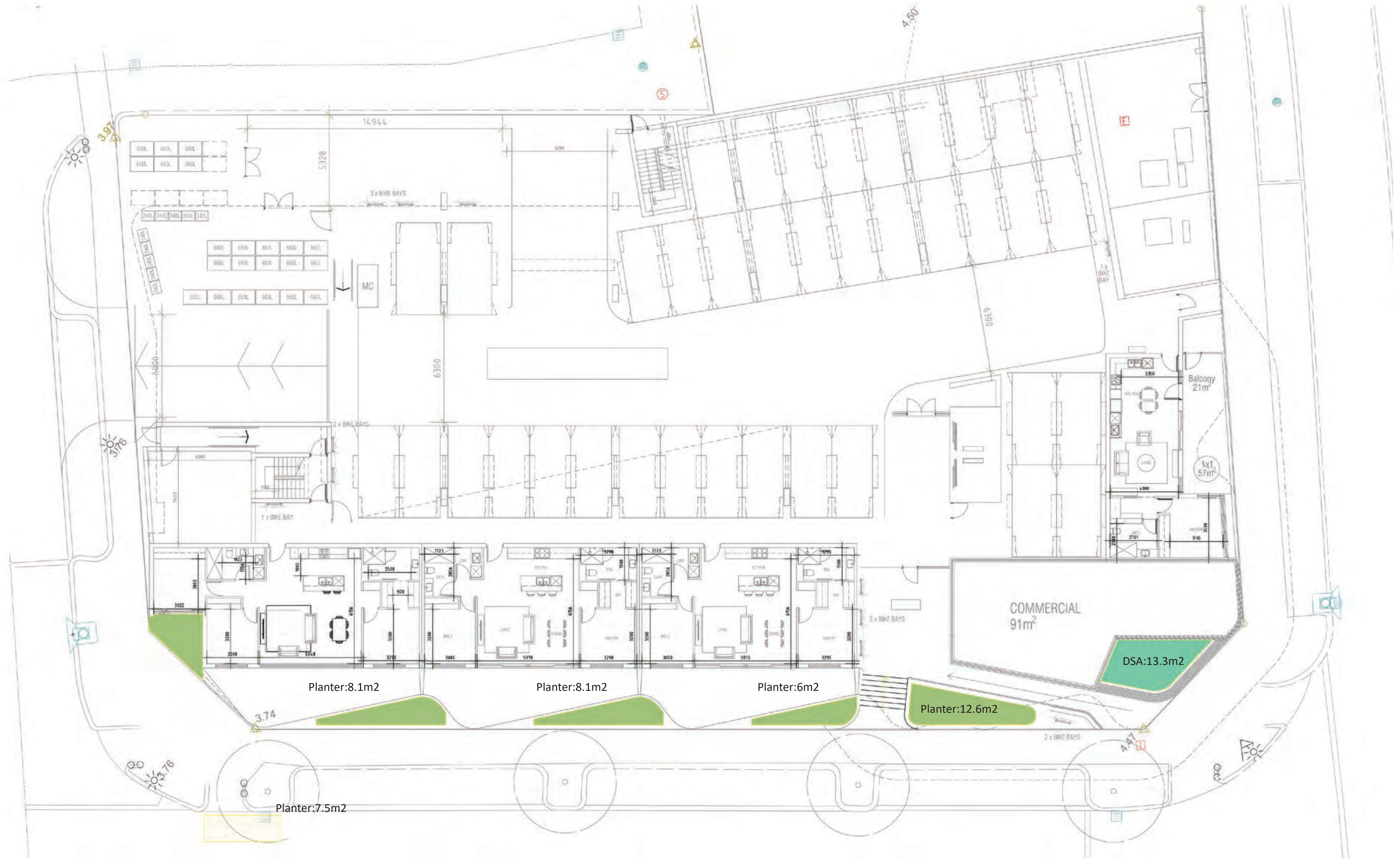
Proposed medium tree

Proposed small tree/large shrub

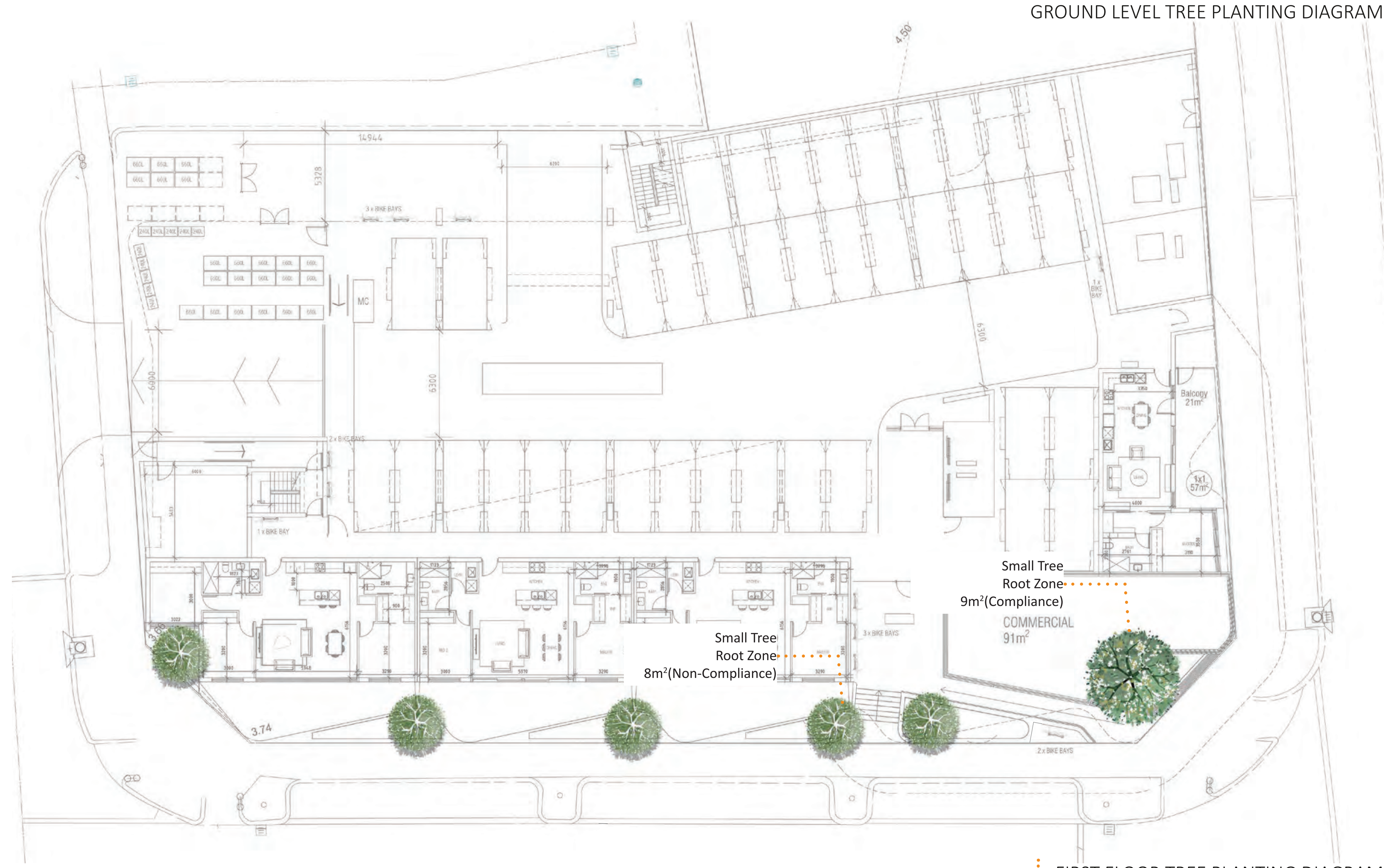
Existing tree

- All planting beds and turf areas are to be fully irrigated and operated off a timed controller with rain sensor shut-off.
- Irrigation design to comply with waterwise design principles and the City's tree policy. Detailed irrigation plan to be provided at building license stage but to include water efficient measures such as subsurface dripline and bubblers.
- Water efficient irrigation system to be installed to best WSUD practice, using hydro-zoning and water harvesting principals where appropriate.
- Additional waterwise design principles employed:
  > Low water use plant selection suited to the local soil complex.
  > Select use of water intensive turf areas.
  > Water retention soil preparation.
  > Reduction in soil water loss through prescribing course mulch.
- Proposed plant distribution rate 4 per m2.
- Proposed plant pot sizes:
  > Small Tree 100L
  > Medium 200L
  > Large Tree 500L
  > Shrubs/groundcovers 140mm-200mm

GROUND LEVEL DSA DIAGRAM



GROUND LEVEL TREE PLANTING DIAGRAM



FIRST LEVEL DSA DIAGRAM

FIRST FLOOR TREE PLANTING DIAGRAM

LANDSCAPE COMPLIANCE DIAGRAM

SECOND & THIRD LEVEL DSA DIAGRAM

FOURTH & FIFTH FLOOR DSA DIAGRAM

ROOF AMENITY LANDSCAPE DIAGRAM

TDL BEYOND GREEN

AUTHOR: JR Q.A: RB

PROJECT #: 12955

NTS @ A1

1015 LOT PANTHEON AVE, NORTH COOGEE

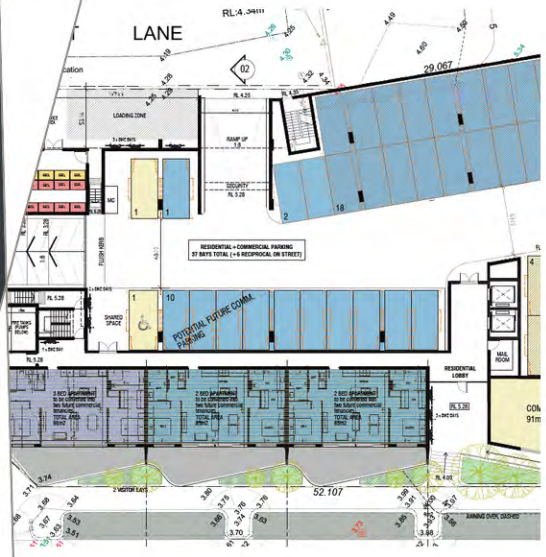
LANDSCAPE CONCEPT

SK08-A

Transport Impact Statement

Lot 1015 Pantheon Ave, Port Coogee

CW1172300



Prepared for

Port Coogee No 2 Pty Ltd

8 July 2021

Cardno

Contact Information

Cardno (WA) Pty Ltd
ABN 77 009 119 000

11 Harvest Terrace
West Perth WA 6005
PO Box 447

www.cardno.com
Phone +61 8 9273 3888
Fax +61 8 9486 8664

Document Information

Prepared for	Port Coogee No 2 Pty Ltd
Project Name	Lot 1015 Pantheon Ave, Port Coogee
File Reference	CW172300-TR-RP-001-TIS_Pantheon Avenue Port Coogee-D.docx
Job Reference	CW1172300
Date	8 July 2021
Version Number	D

Author(s):

Jireh Despabiladeras
Traffic Engineer

Effective Date 8/07/2021

Approved By:

Desmond Ho
Senior Traffic Engineer

Date Approved 8/07/2021

Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
A	15/04/2021	For Issue	JD	DH/RJC
B	20/04/2021	Parking Revisions	JD	DH/RJC
C	20/04/2021	MC Parking	JD	DH/RJC
D	08/07/2021	Swept Path Revisions	JD	DH/RJC

Table of Contents

Appendices

Tables

Figures

1 Introduction

1.1 Background

Cardno was commissioned by Port Coogee No. 2 Pty Ltd ('the Client') to prepare a Transport Impact Statement (TIS) for the proposed mixed-use development located at Lot 1015 Pantheon Avenue, Port Coogee within the City of Cockburn.

This TIS has been prepared in accordance with the Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016) and the checklist is included at **Appendix A**.

1.2 Existing Site

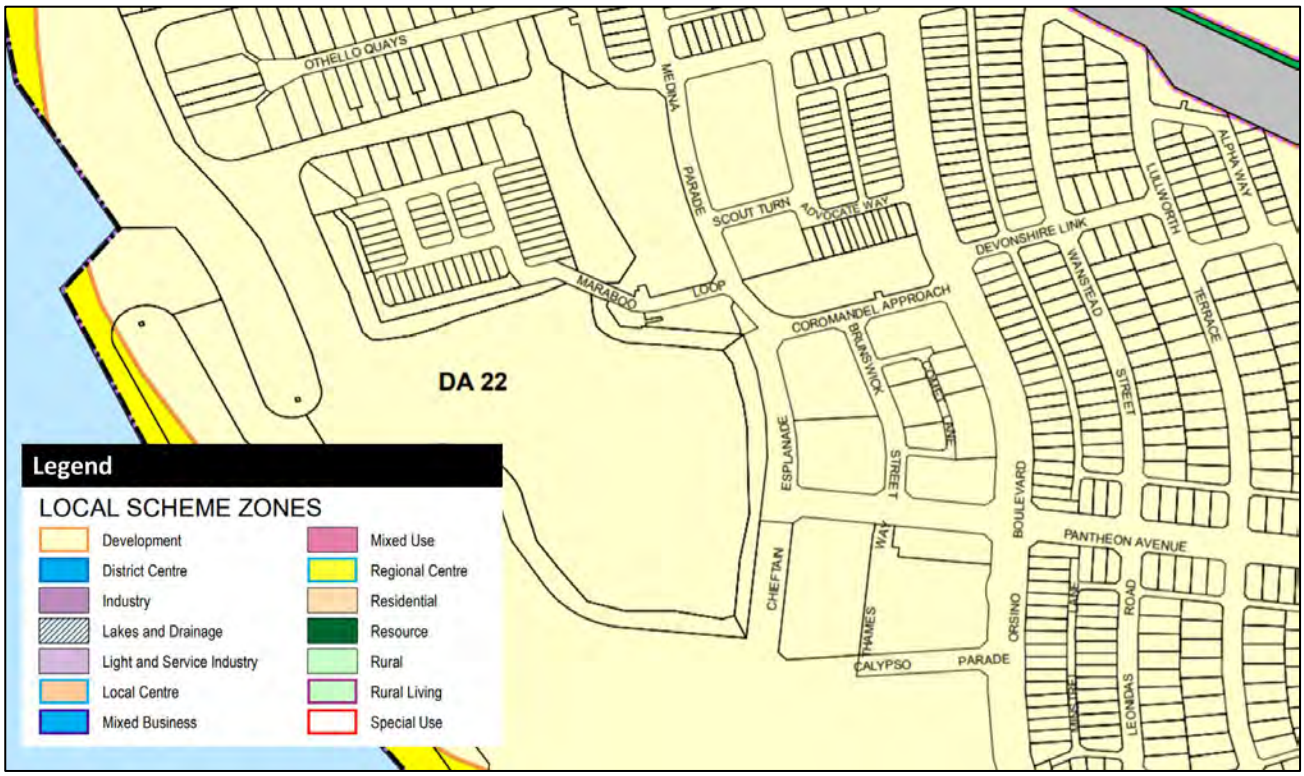
The site is located at Lot 1015 Pantheon Avenue, Port Coogee within the City of Cockburn**. Figure 1-1** shows an aerial image of the subject site. The Site is bounded by Comet Lane to the northwest, Orsino Blvd to the east, Pantheon Avenue and Brunswick Street to the west.

Figure 1-1 Aerial Image

Base Map Source: Nearmap

The Site is zoned as 'Development' under the *Local Planning Scheme No. 3 of the City of Cockburn* as shown in **Figure 1-2**

Figure 1-2 Zoning



Source: City of Cockburn Local Planning Scheme No. 3

1.3 Existing Road Network

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- Primary Distributors (light blue): Form the regional and inter-regional grid of Main Roads WA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes and all are National or State Roads WA.
- Regional Distributors (red): Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- District Distributor A (green): These carry traffic between industrial, commercial and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining properties. They are managed by Local Government.
- District Distributor B (dark blue): Perform a similar function to District Distributor A but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- Local Distributors (orange): Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local Government.
- Access Roads (grey): Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local Government.

The surrounding road network is further described in **Table 1-1** and **Figure 1-3** shows the road hierarchy as per the *Main Roads WA Road Information Mapping System.*

Table 1-1 Road Network Classification

Street Names	Road Hierarchy		Road Network			
	Road Hierarchy	Jurisdiction	No. of Lanes	No. of Footpaths	Width (m)	Posted Speed (km/h)
Orsino Boulevard	Local Distributor	Local Government	2	2	3.3m in each direction	50
Pantheon Avenue	Access Road	Local Government	2	2	3.3m in each direction	50
Comet Lane	Access Road	Local Government	1	0	5.2	50
Brunswick Street	Access Road	Local Government	2	2	6.0	50

Source: Main Roads Road Information Mapping System

Figure 1-3 Road Hierarchy

Source: Main Roads Road Information Mapping System

1.4 Traffic Volumes

Daily traffic volumes near the Site were obtained from *City of Cockburn* and are summarised in **Table 1-2** below.

Table 1-2 Traffic Volumes

Road Name	Date	Average Weekday Daily Traffic Volume
Orsino Boulevard North of Pantheon Avenue	May 2019	1,520
Pantheon Avenue West of Cockburn Road	May 2019	4,099
Pantheon Avenue East of Chieftain Esplanade	September 2020	843

Source: City of Cockburn

1.5 Crash Assessment

A crash assessment for the surrounding road network of the Subject Site has been completed using the Main Roads WA Reporting Centre. The assessment covers all the recorded accidents for the 5-year period between 1 January 2016 to 31 December 2020 for the following locations:

- Orsino Boulevard SLK 0.69 to 0.92 (Devonshire Link to Pantheon Avenue);
- Pantheon Avenue SLK 0.34 to 0.51 (Brunswick Street to Wanstead Street);
- Brunswick Street SLK 0.00 to 0.16 (Coromandel Approach to Pantheon Avenue);
- Comet Lane SLK 0.00 to 0.16;
- Intersection of Orsino Boulevard and Pantheon Avenue;
- Intersection of Pantheon Avenue and Brunswick Street; and
- Intersection of Brunswick Street and Comet Lane.

The crashes recorded are summarised in **Table 1-3** and diagrammatically presented in **Figure 1-4**.

Table 1-3 Intersection of Orsino Boulevard and Pantheon Avenue

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Right Angle	-	-	-	2	-	**2**
Total	**-**	**-**	**-**	**2**	**-**	**2**

- There were no crashes reported on the midblock of Orsino Boulevard, Pantheon Avenue, Brunswick Street and Comet Lane;
- There were no crashes reported at the intersections of Pantheon Avenue/ Brunswick Street and Brunswick Street and Comet Lane
- No fatal crashes or accidents which resulted in hospital admission or medical treatment was recorded near the Site.
- All of the crashes recorded resulted in major property damage.

The number of crashes near the subject Site is not considered to be excessive or extreme and its most likely that the construction of the proposed development would not result in any material change to road safety in the area.

Figure 1-4 Crash Map

Source: Main Roads Crash Map

2 Public Transport Facilities

2.1 Existing Public Transport Facilities

The nearest bus stop is located within 100m away from the site along Orsino Boulevard. Bus route 548 operates from this stop. Route 548 operates from Fremantle Station to Rockingham Station. **Figure 2-1** shows the nearest bus route in relation to the Site and **Table 2-1** summarises the bus routes and frequency.

Figure 2-1 Existing Bus Routes

Source: Transperth

Table 2-1 Bus Route and Frequency

Bus Routes	Route Description	Frequencies		
		Weekdays	Saturdays	Sundays and Public Holidays
548	Fremantle Station to Rockingham Station	60 minutes	60 minutes	No Service

Based on the above, the site appears to have access to poor public transport service.

2.2 Future Public Transport Facilities

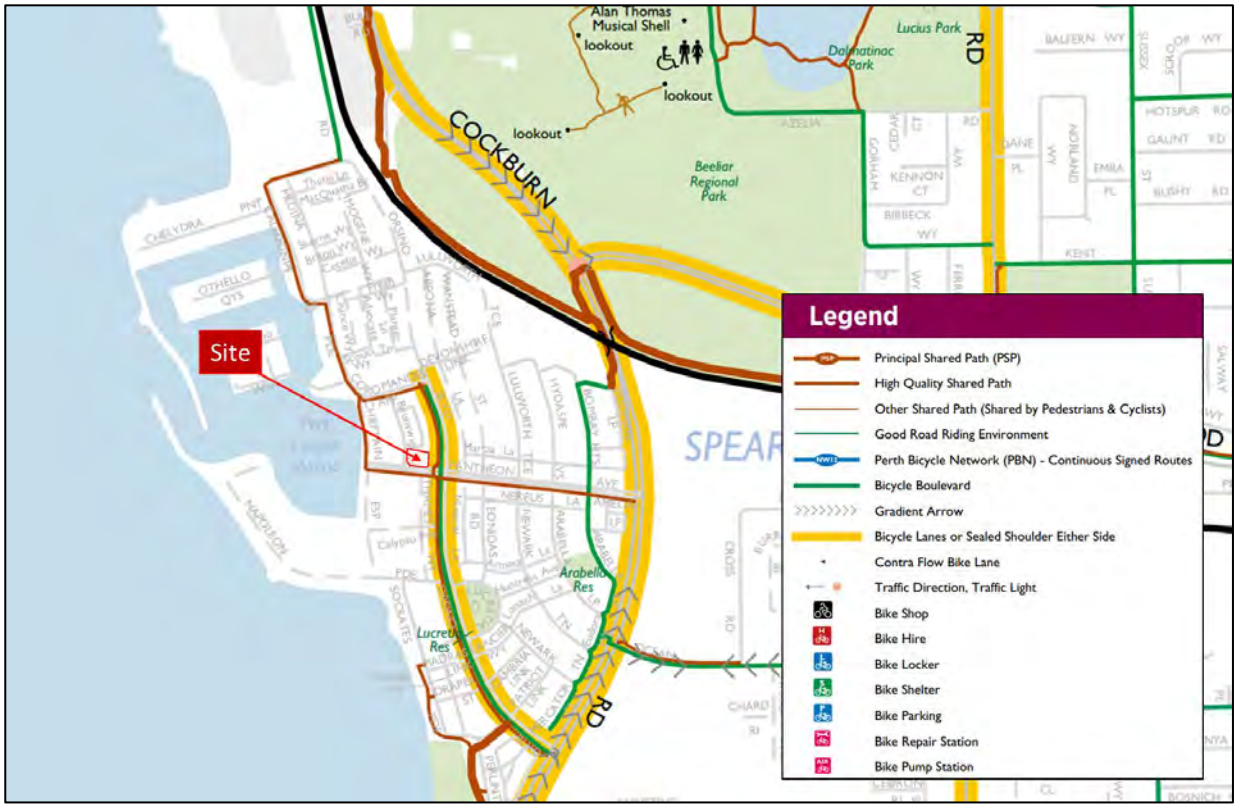
Cardno contacted the Public Transport Authority and was advised that there are no eminent changes to the network in this area in the short term. Longer term plans may include Route 512 being extended to Fremantle and could possibly travel via Port Coogee subject to Orsino Boulevard being connected to Cockburn Road further north.

3 Pedestrian/ Cycle Networks and Facilities

3.1 Existing Pedestrian/ Cycle Network Facilities

The Subject Site is connected to a wide network of bicycle and pedestrian facilities through the bicycle boulevard along Orsino Boulevard. Overall, access to the Subject Site is facilitated by good pedestrian/cycling networks. The local network of bicycle and pedestrian facilities within the vicinity of the Subject Site is shown in **Figure 3-1.**

Figure 3-1 Pedestrian and Cycling Network

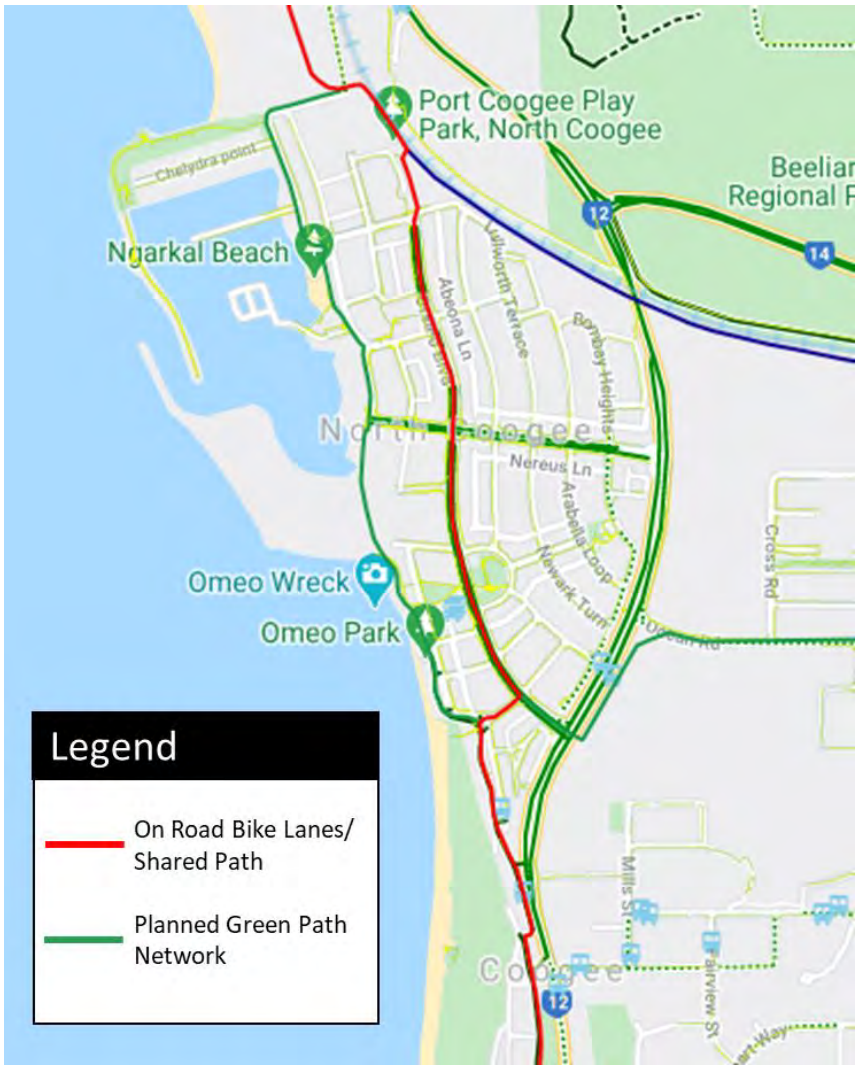


Source: Department of Transportation

3.2 Future Pedestrian/ Cycle Network Facilities

The details of the Long-Term Cycle Network near the Site are indicated in the City's intramap. The plan includes adding new cycle paths that will connect Socrates Parade to Medina Parade which will form part of the green path network as illustrated in **Figure 3-2**. It is anticipated that the cycling infrastructure will be improved when Main Roads WA upgrade Cockburn Road in the future.

Figure 3-2 Long Term Cycle Plan



Source: City of Cockburn Intramap

4 Proposed Development

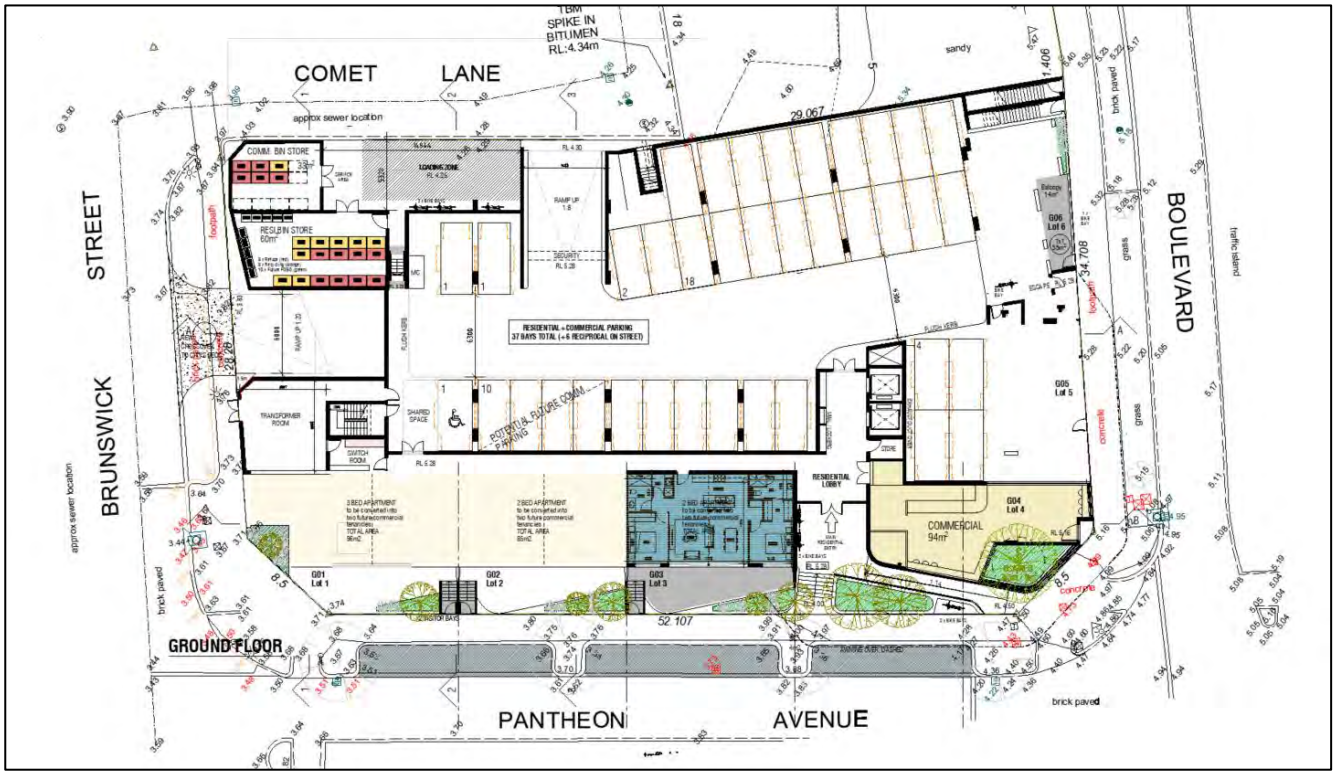
4.1 Overview

The proposal is a mixed-use development comprising of the following site-specific components:

- Fourteen (14) three-bedroom dwelling units;
- Thirty (30) two-bedroom dwelling units;
- Sixteen (16) one-bedroom dwelling units
- Commercial Tenancy intended for a cafe with a GFA of 91 sqm;
- 103 off-street parking bays;
- 1 Motorcycle space;
- 6 on-street visitor parking bays; and
- 36 bicycle bays/ spaces.

Figure 4-1 shows the ground floor plan for the proposed development.

Figure 4-1 Ground Floor Plan



Source: MJA Studio

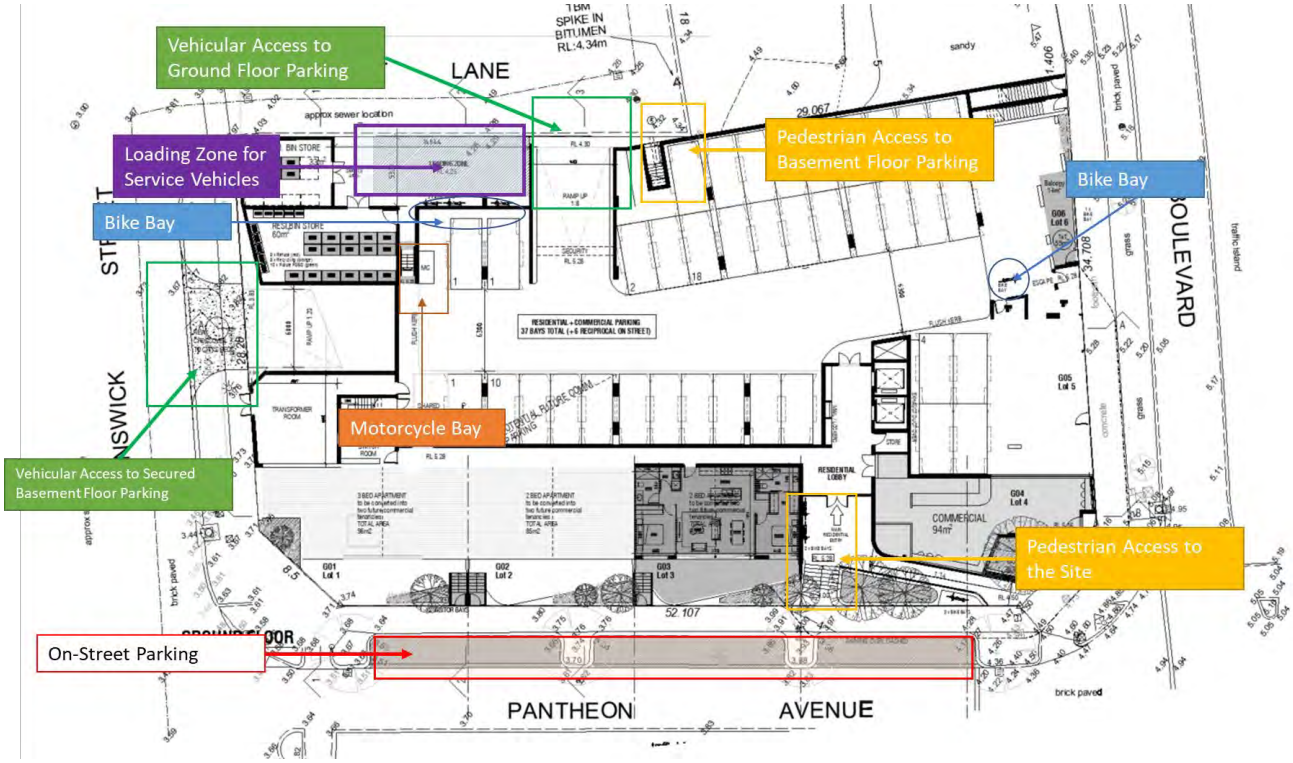
It should be noted that the apartments on the ground floor may be converted into commercial (office) tenancies in the future.

4.2 Access Arrangement

There are two vehicular accesses proposed for the subject Site. The northern access along Comet Lane is intended to lead directly into the ground floor parking while the access along Brunswick Street is proposed to access the basement parking for residential tenants. It should be noted that the location of the proposed accesses and the proposed widths have been checked against AS2890.1 requirements and no non-compliances have been identified. Two existing on-street parking bays will have to be removed to accommodate the proposed crossover on Brunswick Street.

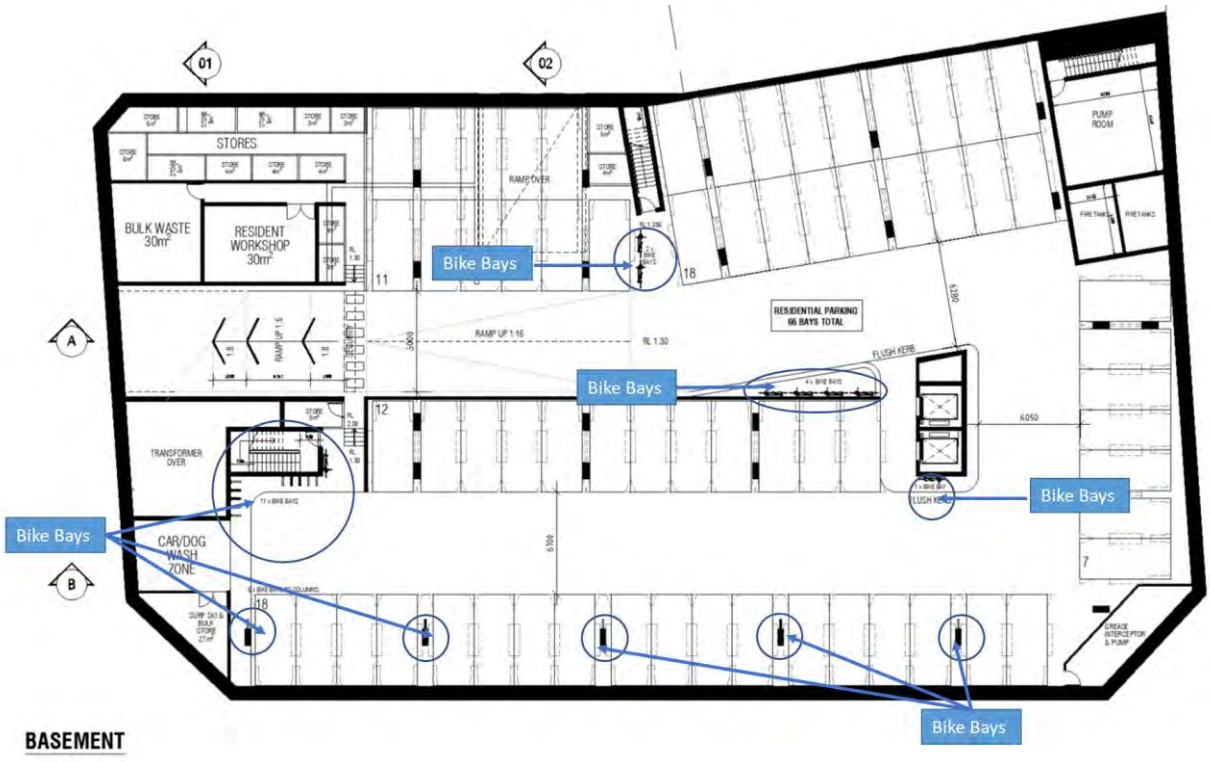
A motorcycle parking space is also proposed on the ground floor while bicycle racks are proposed both on the ground and the basement level as shown in **Figure 4-2** and **Figure 4-3**.

Figure 4-2 Development Access



Source: MJA Studio

Figure 4-3 Bicycle Racks in the Basement Level

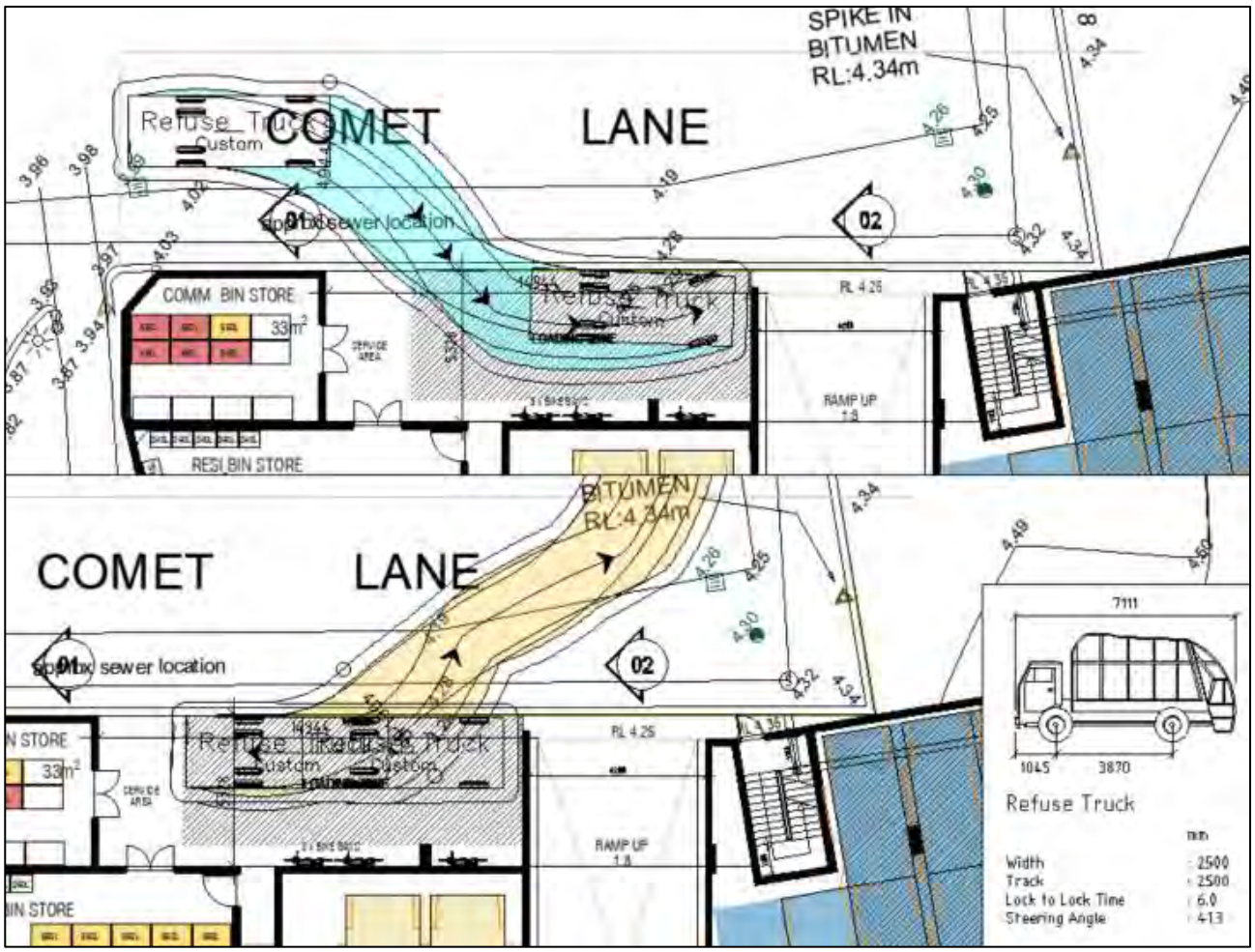


Source: MJA Studio

4.3 Provision for Service Vehicles

Waste Collection is proposed to be undertaken in a loading area proposed on Comet Lane. A swept path analysis was undertaken using a 7.1 m waste truck as advised by the waste consultant and illustrated in **Figure 4-4.** The waste truck is expected to be able to enter the loading area, undertake the waste collection and adequately exit this loading area in a forward direction.

Figure 4-4 Waste Truck Swept Path



4.4 Traffic Generation

Trip generation rates from the *Institute of Transportation Engineers (ITE) "Trip Generation" 10th* as detailed in **Table 4-1** were used to calculate the estimated trip generation for the Site. **Table 4-2** indicates the anticipated directional distribution and **Table 4-3** summarises the total expected trips to be generated by the proposed development.

Table 4-1 Trip Generation Rate – Peak Hour

Land Use	ITE Code/Source	AM Peak	PM Peak
Residential	ITE 221	0.36 trips per dwelling	0.44 trips per dwelling
Commercial	ITE 932	15.11 trips per 100sqm	18.74 trips per 100sqm

Table 4-2 Directional Distribution

Land Use	AM Peak		PM Peak	
	In	Out	In	Out
Residential	27%	73%	60%	40%
Commercial	57%	43%	52%	48%

Table 4-3 Estimated Total Trips Generated

Land Use	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Residential	5	14	15	10
Commercial	8	6	9	8
Subtotal	13	20	24	18
Total	33		42	

The Subject Site is anticipated to generate approximately 33 trips during the AM peak hour period and 42 trips in the PM peak hour period respectively. According to WAPC Transport Impact Assessment Guidelines, developments generating between 10 and 100 trips during the peak hour falls under the 'moderate impact' category and is not considered to have any substantial impact on the surrounding road network.

In the future, it is anticipated that the apartments located on the ground floor would be converted into additional commercial tenancies, most likely for office use. Converting these apartments on the ground floor to offices is expected to result in a net increase of 3 trips during the AM peak and 2 trips during the PM peak respectively. This increase in trips is expected to have a minimal impact on the surrounding road network.

Table 4-4 Trip Generation Rate – Peak Hour

Land Use	ITE Code/Source	AM Peak	PM Peak
Office	ITE 710	1.58 trips per 100sqm	1.53 trips per 100sqm

Table 4-5 Directional Distribution

Land Use	AM Peak		PM Peak	
	In	Out	In	Out
Office	88%	12%	18%	82%

Table 4-6 Estimated Total Trips Generated

Land Use	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Residential	5	13	14	9
Commercial	8	6	9	8
Office	4	1	1	3
Subtotal	16	20	24	21
Total	36		44	
Net Change	**+3**		**+2**	

5 Parking Supply

5.1 Car Parking

The statutory car-parking requirement for the proposed development is set out in the *Residential Design Codes Volume 2 - Apartments*. The residential design code specifies the parking requirements according to the following criteria:

- Location A is defined as a development located within 800m walkable catchment of a train station and/or 250m of a transit stop (bus or light rail) of a high frequency route and/or within the defined boundary of an activity centre; and
- Location B is a location not within Location A.

The subject Site is not located near a high frequency public transport route but is located within the ***Marina Village Local Activity Centre.*** Hence, the parking requirements for Location A is applicable. The parking requirements for the café tenancy (Restaurant) is specified in accordance with the City of Cockburn's Local Planning Scheme No. 3.

Furthermore, it is important to note that the Site has a specific building requirement when it comes to visitor's parking. According to the Port Coogee Marina Village Built Form (2010), *50% of the visitor parking requirement for multiple dwellings shall be allowed to be located on-street. A maximum of 18 on-street parking bays are available for inclusion within the calculation of visitor parking for multiple dwellings on Site 2.* The location of Site 2 is illustrated in **Figure 5-1**.

Figure 5-1 Site 2 Location

Source: Port Coogee Marina Village Built Form Codes

The parking requirements and provisions are presented in **Table 5-1.**

Table 5-1 Car Parking Provision and Requirements

Use	Development Yield	Requirement		Provision
Residential car parking	16 dwellings	0.75 bay per 1-bedroom dwelling	12 bays	97 bays
	44 dwellings	1 bay per 2+ bedroom dwellings	44 bays	
Residential visitor car parking	60 dwellings	1 bay per 4 dwellings up to 12th dwellings	9 bays	6 on-street bays) *
		1 bay per 8 dwellings for the 13th dwelling and above		
Commercial	Approximately 38 seats	1 bay per 4 seats	10 bays	6 (including 1 ACROD bay)
Total			75 bays	109 bays

Source: Residential Design Codes Volume 2 – Apartments, City of Cockburn Local Planning Scheme No. 3

* *Note: In respect of residential visitor car parking, Provision 14 of DA 22 in Table 9 of TPS3 states:*

> *"Despite the provisions of the Scheme, the Council may, when considering a Local Development Plan (**LDP**), impose development requirements including but not limited to vehicle parking greater than the standards prescribed under the Scheme, if in the opinion of the Council, it would result in a more desirable outcome for the use and development of the land the subject of the LDPs".*

*The relevant LDP Site Specific Building Requirements Detailed Area Plan – Marina Village (Lots 1015-1027) (**DAP**), allows six on-street bays to be included in the calculation of visitor parking for multiple dwellings.*

Based on **Table 5-1**, it is considered that the proposed residential development meets the on-site car parking requirements. However, the residential visitor car parking has a shortfall of 3 parking bays. There is however a surplus of 41 bays allocated for residential tenants. Many of the tenants will be allocated more than one bay per dwelling. This creates an opportunity for residential visitors to utilise the spare resident parking when visiting the complex. Given the large surplus in the residential parking, a small shortfall in visitor parking is considered appropriate.

In respect of commercial car parking, there is a shortfall of 4 bays. This can be accommodated with on-street car parking in the vicinity (noting six on-street bays are already credited to the Subject Site (café peak times vary from residential visitor peak times). Plentiful on-street parking exists along all streets in the area (modelling for the Marina Village identified 350 bays) which can be used for this purpose. Furthermore, in a mixed-use environment, many patrons of the commercial tenancy (assuming a café or other retail use) will walk from the local area not requiring the use of on-street parking bays.

In the future, it is anticipated that the apartments located on the ground floor would be converted into additional commercial tenancies, most likely for office use. Converting these apartments on the ground floor to offices would result in 15 commercial bays being required by the Local Planning Scheme as summarised in **Table 5-2**.

Table 5-2 Parking Provisions and Requirements (Future)

Use	Development Yield	Requirement		Provision
Residential car parking	16 dwellings	0.75 bay per 1-bedroom dwelling	12 bays	93 bays
	41 dwellings	1 bay per 2+ bedroom dwellings	41 bays	
Residential visitor car parking	60 dwellings	1 bay per 4 dwellings up to 12th dwellings	9 bays	6 bays (on-street bays) *
		1 bay per 8 dwellings for the 13th dwelling and above		
Commercial	Approximately 38 seats	1 bay per 4 seats	10 bays	10 bays
Office	266 sqm	1 bay per 50m2 GLA	5 bays	
Total			77 bays	109 bays

Source: Residential Design Codes Volume 2 – Apartments, City of Cockburn Local Planning Scheme No. 3

Site Specific Building Requirements Detailed Area Plan – Marina Village (Lots 1015-1027) (DAP**), allows six on-street bays to be included in the calculation of visitor parking for multiple dwellings.*

In the event of the future office conversion, some of the parking bays intended for the ground floor apartments are anticipated to be converted to parking bays for commercial office use. It is intended for 4 residential parking bays allocated for the residents to be converted for commercial office use.

The total parking bays available on-site for use by the proposed café and future office tenancy is 10 bays (4 new and existing 6 commercial bays). It is anticipated that there will be a shortfall of 5 commercial bays when the ground floor apartments are converted to office tenancies. However, plentiful on-street parking exists along all streets in the area (modelling for the Marina Village identified 350 bays) which can be used for this purpose.

5.2 Bicycle Parking Requirement

Similar to the car parking, the requirements for bicycle parking are indicated in the City of Cockburn's *Local Planning Scheme No. 3* as shown in **Table 5-3.**

Table 5-3 Bicycle Parking Provision and Requirements

Land Use	Yield	Requirements		Provision
Residential	60 dwellings	1 space per 4 dwelling units	15 spaces	36 spaces (24 racks located in the basement and 12 racks on the ground level
Residential Visitors	60 dwellings	1 space for 16 dwelling units	4 spaces	
Commercial	48 seats	1 space per 30 seats	2 spaces	
Total			21 spaces	36 spaces

Source: City of Cockburn Local Planning Scheme No. 3

As shown in **Table 5-3** above, the proposed bicycle parking provision for residential and commercial bicycle requirement is adequate and meets the minimum bicycle requirements for the City of Cockburn.

Similarly, the bicycle requirements are expected to increase with the proposed conversion of the ground floor apartment units to office use as shown in **Table 5-4**. It is expected that the provision of bicycle racks is still adequate with the requirements of the City of Cockburn.

Table 5-4 Bicycle Parking Provision and Requirements (Future)

Land Use	Yield	Requirements		Provision
Residential	57 dwellings	1 space per 4 dwelling units	15 spaces	36 spaces (24 racks located in the basement and 12 racks at ground level
Residential Visitors	57 dwellings	1 space for 16 dwelling units	4 spaces	
Commercial	45 seats	1 space per 30 seats	2 spaces	
Office	266 sqm	Employees: 1 space per 200m^2 of GLA Visitors: 1 space per 750m2 of GLA	3 spaces	
Total			**24 spaces**	**36 spaces**

Source: City of Cockburn Local Planning Scheme No. 3

5.3 Motorcycle Parking Requirement

Developments exceeding 20 dwellings will need to provide 1 motorcycle/ scooter space for every 10 car bays as in the *Residential Design Code Volume 2 – Apartments* as shown in **Table 5-5.**

Table 5-5 Motorcycle Parking Provision and Requirements

Land Use	Yield	Requirements		Provision
Residential	96 parking space	1 space per 10 car bays provision	9.6 space	1 space
Total				**1 space**

Source: Residential Design Codes Volume 2 – Apartments

As shown in **Table 5-5** above, only 1 motor cycle bay is being proposed which results in a shortfall of 9 bays which is not compliant to the Residential Design Code Volume 2. However, it should be noted that 4 motorcycle bays exist on Pantheon Avenue which would assist with mitigating this shortfall. In addition, given the surplus in residential car parking bays, if residents have the need to park a motorcycle or scooter, it is anticipated that the residential car bays will suitably cater for this demand.

5.4 Parking Geometry Requirements

The parking bay geometry requirements set forth by AS2890.1 User Class 1A parking facility for 90˚ angled parking bays and the corresponding provisions in the proposed development are presented in **Table 5-6**.

Table 5-6 Parking Geometry Requirements

Parameter	Minimum Requirement	Provided	Remarks
Bay Width, m (User Class 1A)	2.4	2.4	No Non-conformances identified
Bay Width, m (User Class 3)	2.6	2.6	No Non-conformances identified
Bay Length, m	5.4	5.4	No Non-conformances identified
ACROD Bay Width, m	2.4	2.6	No Non-conformances identified
ACROD Bay Length, m	5.4	5.4	No Non-conformances identified
Shared Area Bay Width, m	2.4	2.4	No Non-conformances identified
Shared Area Bay Length, m	5.4	5.4	No Non-conformances identified
Aisle width, m	5.8	6.0	No Non-conformances identified
Blind aisle extension, m	1.0	1.0	No Non-conformances identified
Motorcycle Bay Width, m	1.2	1.2	No Non-conformances identified
Motorcycle Bay Length, m	2.5	2.5	No Non-conformances identified
Circulation roadway width, m	5.5 (Two-way)	6.0 to 6.3	No Non-conformances identified
Access width, m (Category 2)	6.0 to 9.0	6.2 to 6.6	No Non-conformances identified

5.5 Swept Path

A swept path analysis using the B85 and B99 design vehicles was undertaken for the proposed parking bays on the ground floor and basement levels. The analysis indicated that both design vehicles are able to adequately enter and exit the parking bays on the ground floor and basement levels as illustrated in **Figure 5-2** to **Figure 5-9**.

5.5.1 Ground Floor Parking

a) <u>B85 Vehicle</u>

Figure 5-2 Swept Path - B85 Passenger Vehicle

Figure 5-3 Swept Path - B85 Passenger Vehicle

b) B99 Vehicle

Figure 5-4 Swept Path – B99 Passenger Vehicle

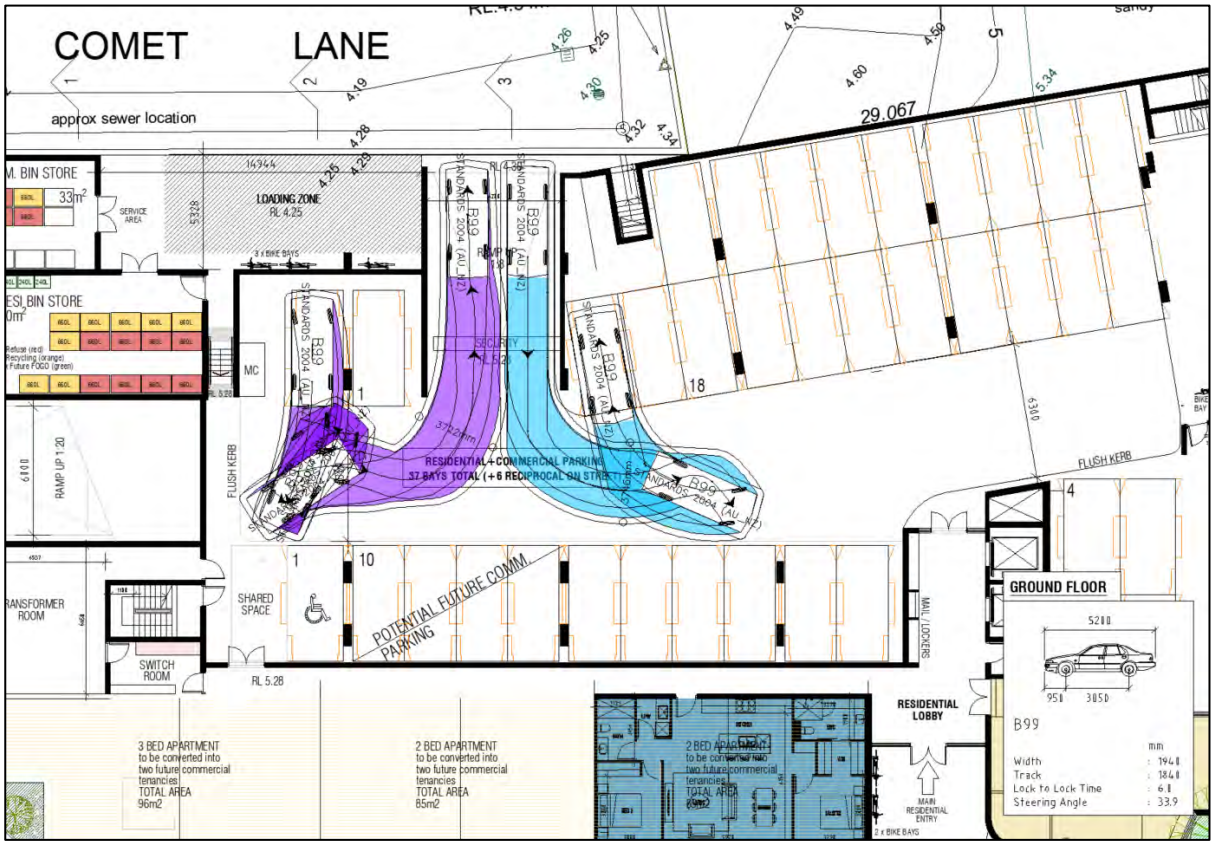
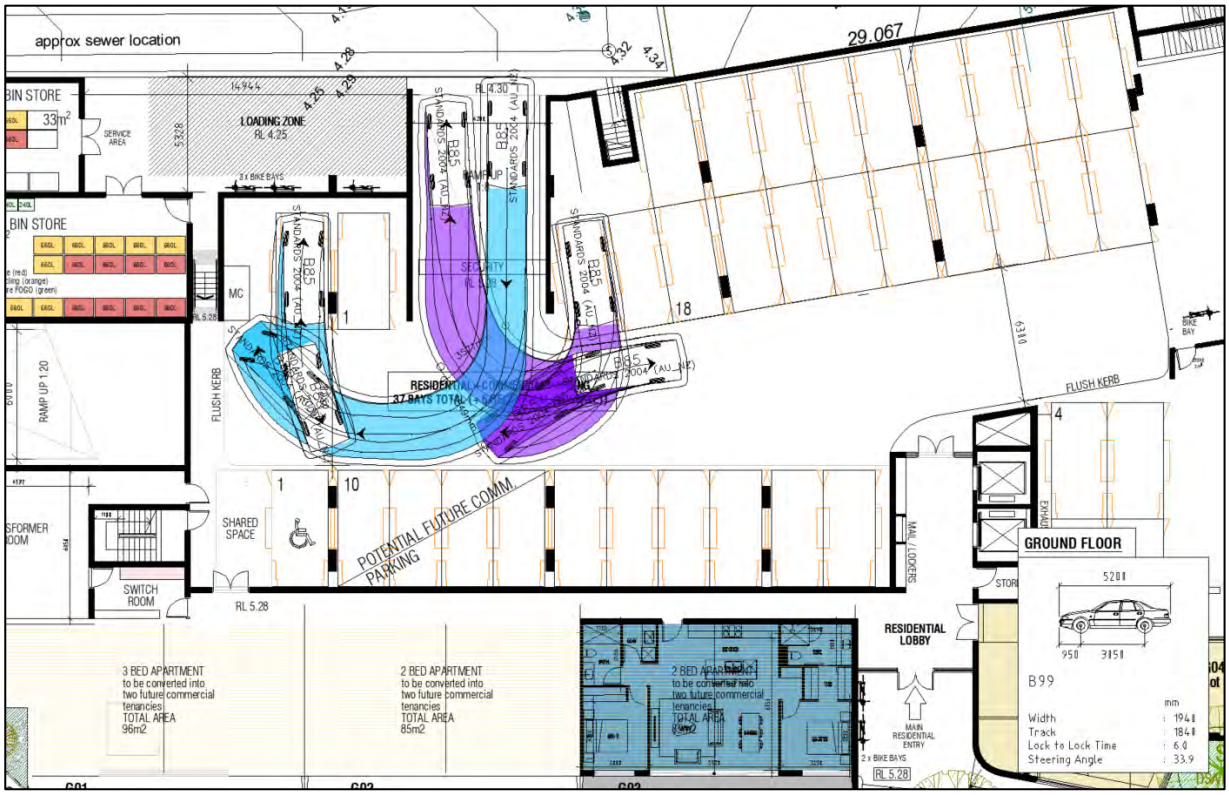


Figure 5-5 Swept Path – B99 Passenger Vehicle



5.5.2 Basement Floor Parking

a) B85 Vehicle

Figure 5-6 Swept Path - B85 Passenger Vehicle

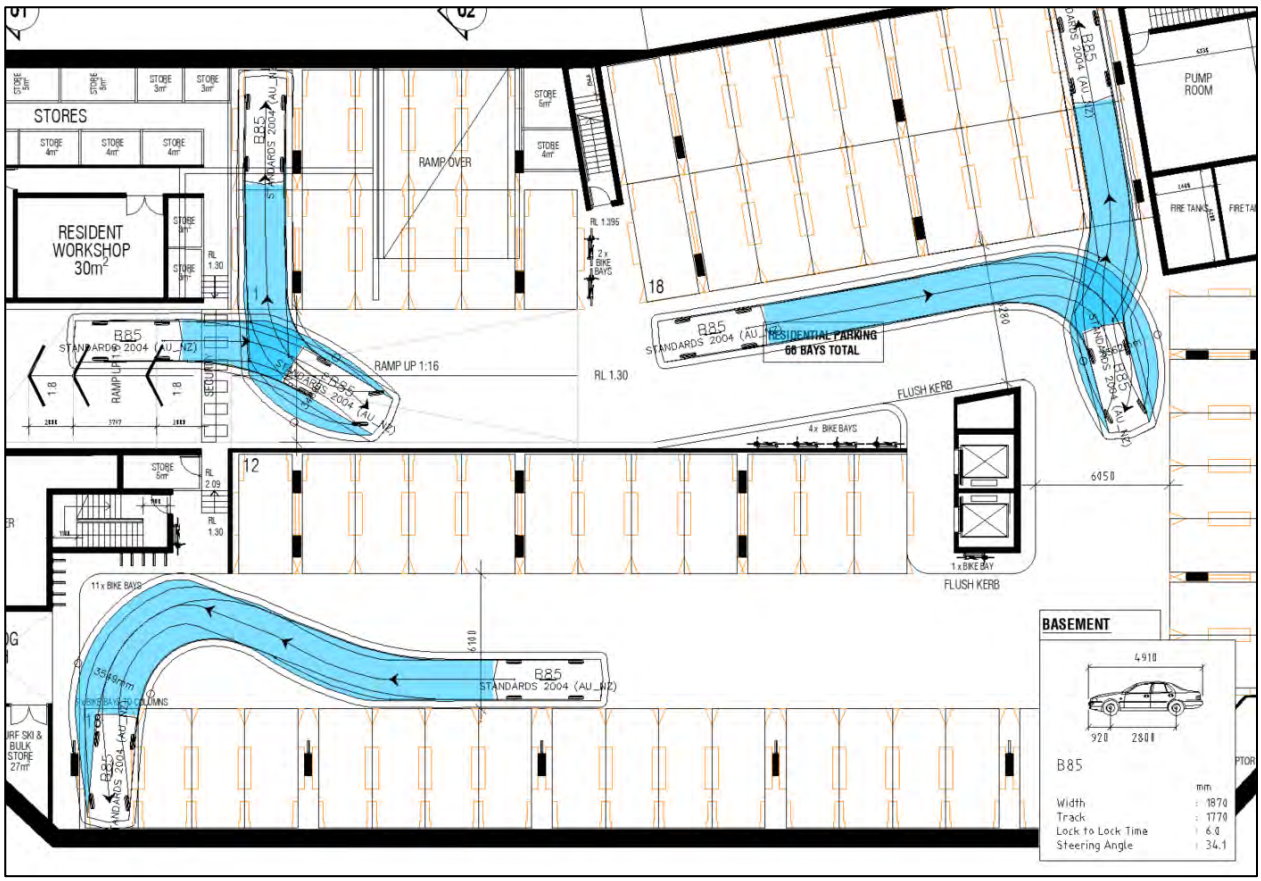
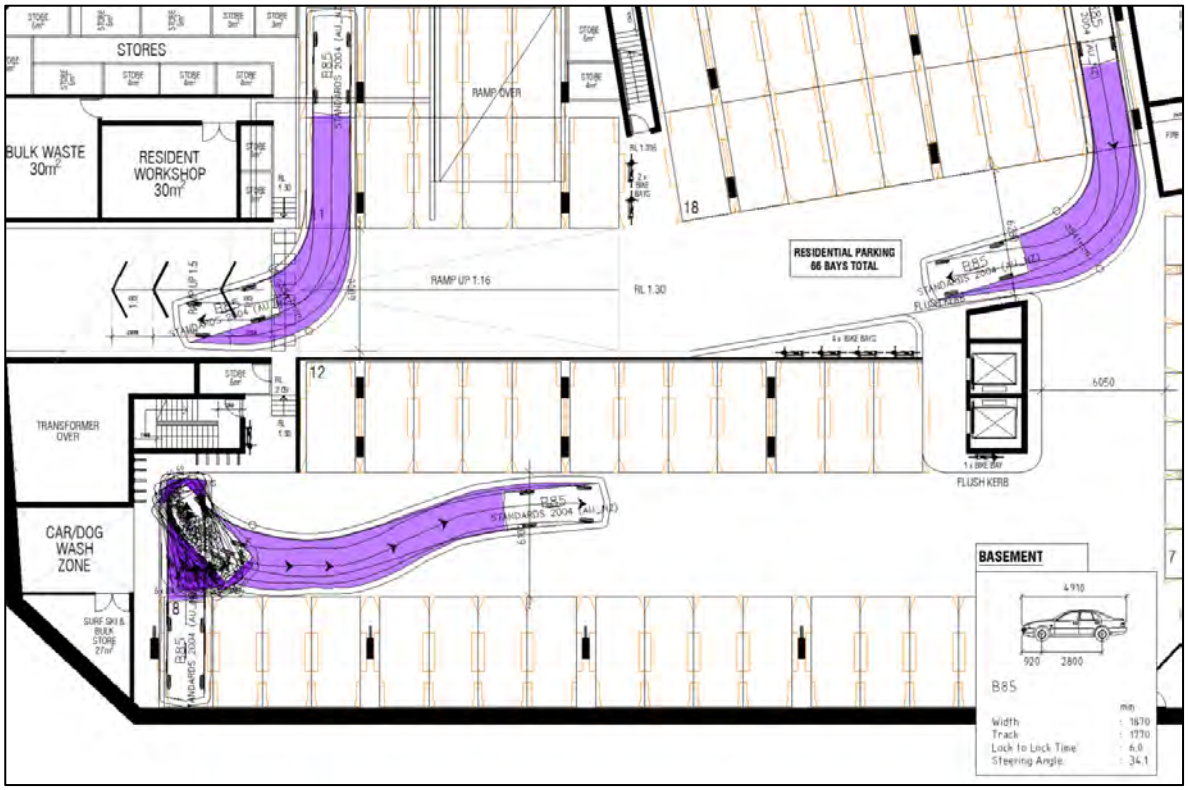


Figure 5-7 Swept Path - B85 Passenger Vehicle



b) B99 Vehicle

Figure 5-8 Swept Path – B99 Passenger Vehicle

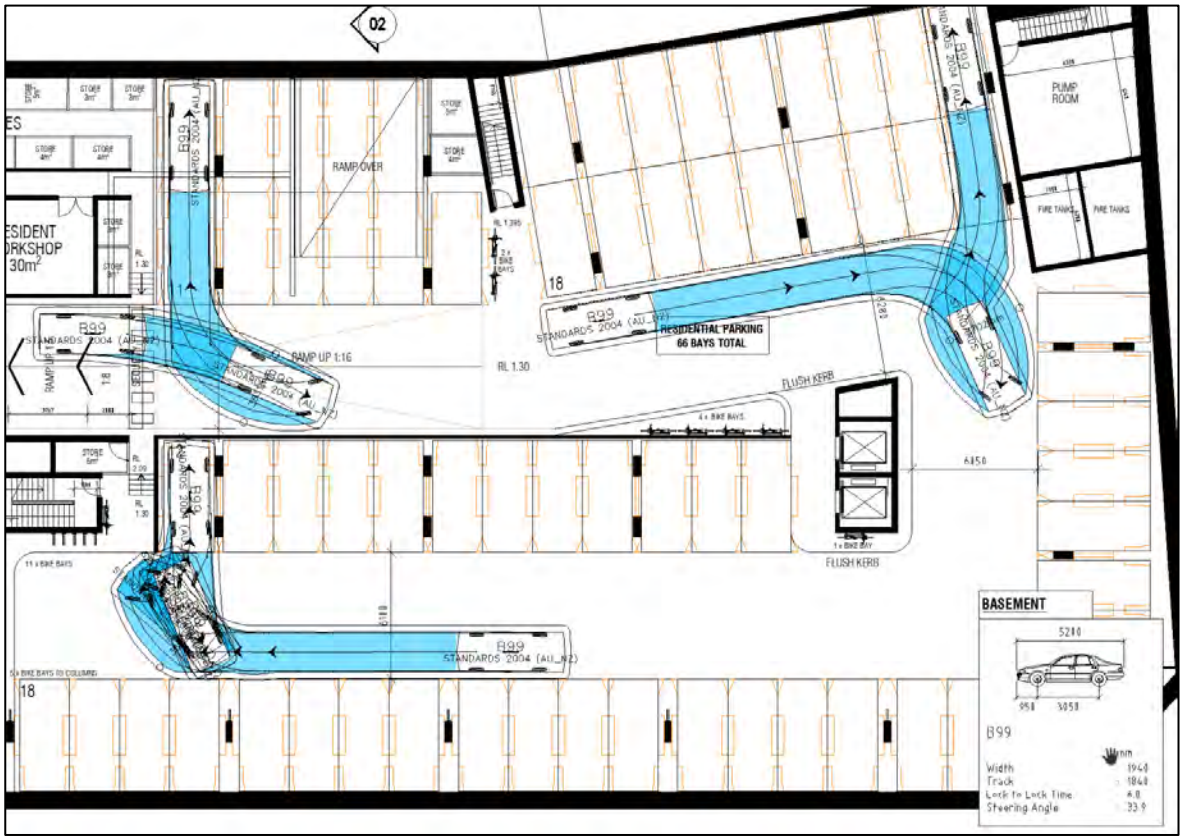


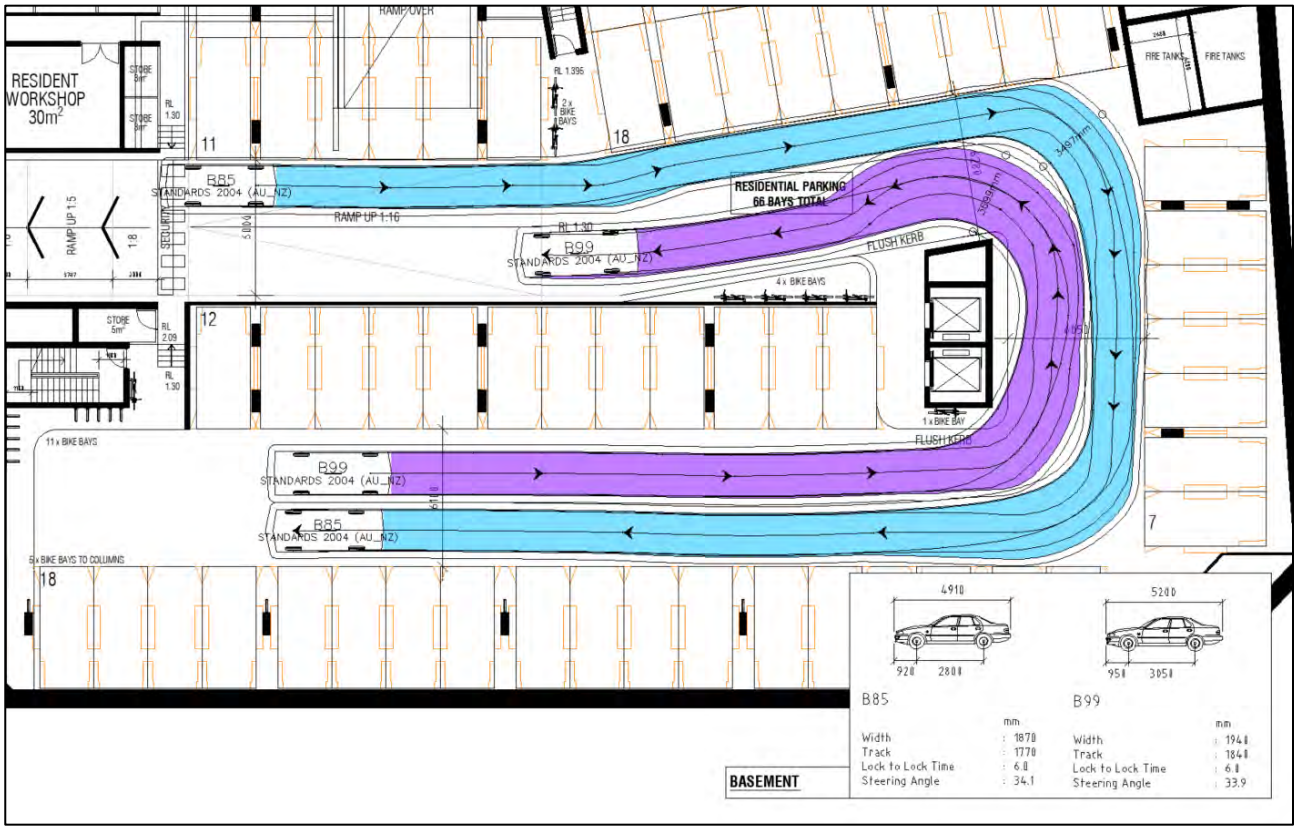
Figure 5-9 Swept Path – B99 Passenger Vehicle

c) Circulation Road

A swept path analysis was also undertaken for the circulation roadway in the basement parking level using a B85 and a B99 passenger vehicle. The swept path illustrated in **Figure 5-10** shows that both vehicles can safely pass each other along the circulation road.

It should be noted that the majority of parking in the basement are intended for residential parking and is considered to be a slow speed environment with low parking turnover. Consideration could also be given to installing mirrors at this location to mitigate against any safety concerns.

Figure 5-10 Swept Path – Circulation Swept Path



6 Summary

This Transport Impact Statement outlines the transport aspects of the proposed development focusing on traffic operations, access and provision of car parking. Included are discussions regarding pedestrian, cycle, and public transport considerations.

This statement has been prepared in accordance with the *WAPC Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016).*

The following are conclusions about the proposed development:

- The proposal is for a mixed used development comprising of 60 dwelling units and a commercial tenancy on the ground floor located at Lot 1015 Pantheon Avenue, Port Coogee, City of Cockburn;
- Access to the subject Site by cycle is good with facilities under the Perth Bicycle Network and other bicycle routes within the surrounding locality;
- The Site is accessible to a single bus route with bus stops located in close proximity.
- The volume of trips generated by the subject Site is minimal and according to WAPC Transport Impact Assessment Guidelines is anticipated to have a moderate impact on the surrounding road network.

Overall, it is considered likely that the development will not cause any material impact to the traffic safety and operation of the surrounding road network.

Lot 1015 Pantheon Ave, Port Coogee

APPENDIX A

WAPC CHECKLIST

Item	Status	Comments/Proposals
Proposed development		
proposed land use	Section 4	
existing land uses	Section 1	
context with surrounds	Section 1	
Vehicular access and parking		
access arrangements	Section 4	
public, private, disabled parking set down / pick up	Section 5	
Service vehicles (non-residential)		
access arrangements	N/A	
on/off-site loading facilities	N/A	
Service vehicles (residential)		
Rubbish collection and emergency vehicle access	Section 4	
Hours of operation (non-residential only)	N/A	
Traffic volumes		
daily or peak traffic volumes	Section 4	
type of vehicles (e.g. cars, trucks)	N/A	
Traffic management on frontage streets	N/A	
Public transport access		
nearest bus/train routes	Section 2	
nearest bus stops/train stations	Section 2	
pedestrian/cycle links to bus stops/train station	Section 2 and 3	
Pedestrian access/facilities		
existing pedestrian facilities within the development (if any)	Section 3	
proposed pedestrian facilities within development	Section 3	
existing pedestrian facilities on surrounding roads	Section 3	
proposals to improve pedestrian access	Section 3	
Cycle access/facilities		
existing cycle facilities within the development (if any)	Section 3	
proposed cycle facilities within the development	Section 3	
existing cycle facilities on surrounding roads	Section 3	
proposals to improve cycle access	N/A	
Site specific issues	N/A	
Safety issues		
identify issues	N/A	
remedial measures	N/A	

APPENDIX

B

ARCHITECTURAL PLAN

>

SITE SURVEY

COMET LANE

BOULEVARD

BITUMEN
RL:4.34m

approx sewer location

sandy

brick paved

grass

brick paved

29.067

52.107

34.708

28.28

1.406

8.5

8.5

5

5

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

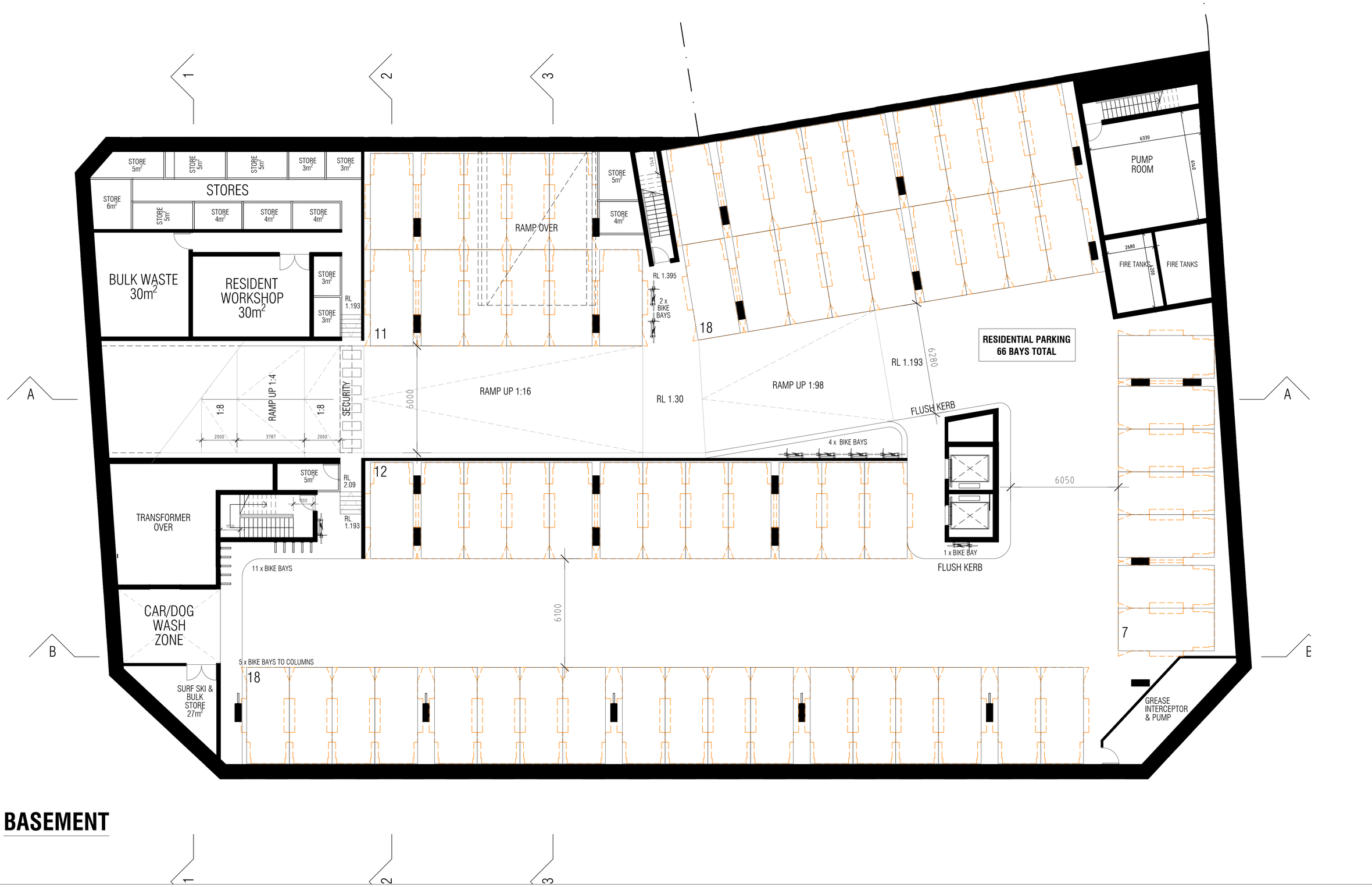
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SITE SURVEY

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.00	SO	WB	C



BASEMENT

MJA STUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.01	SO	WB	C


COMET LANE
BITUMEN
RL:4.34m
approx sewer location
sandy
BOULEVARD
brick paved
footpath
grass
concrete
COMM. BIN STORE
33m2
SERVICE AREA
LOADING ZONE
RL 4.25
3 x BIKE BAYS
RESI BIN STORE
60m2
8 x Refuse (red)
8 x Recycling (orange)
10 x Future FOGO (green)
RL 4.30
RAMP UP 1:8
SECURITY
RL 5.28
MC
RAMP UP 1:20
RL 3.83
FLUSH KERB
RESIDENTIAL+COMMERCIAL PARKING
37 BAYS TOTAL (+6 RECIPROCAL ON STREET)
NEW CROSSOVER TO CITY'S REQS
TRANSFORMER ROOM
SWITCH ROOM
SHARED SPACE
POTENTIAL FUTURE COMM. PARKING
MAIL / LOCKERS
EXHAUST DUCT OVER
STORE
RESIDENTIAL LOBBY
MAIN RESIDENTIAL ENTRY
2 x BIKE BAYS
RL 5.28
Balcony 14m2
G06
Lot 6
1x1 55m2
ESCAPE
BIKE BAY
1 x BIKE BAY
Balcony 21m2
G05
Lot 5
1x1 57m2
3 BED APARTMENT
to be converted into two future commercial tenancies.
TOTAL AREA
96m2
2 BED APARTMENT
to be converted into two future commercial tenancies.
TOTAL AREA
85m2
G01
Lot 1
G02
Lot 2
G03
Lot 3
2 VISITOR BAYS
COMMERCIAL
94m2
G04
Lot 4
RL 5.16
DSAMED 3x3m / 9m2
1:14
RL 4.00
RL 4.50
AWNING OVER, DASHED
29.067
34.708
28.28
52.107
8.5
GROUND FLOOR

Residences designated for future conversion to commercial tenancies.

REV.	DATE	AMENDMENT
A	16.04.21	DA ISSUE
B	04.06.21	POST DRP 1_DA REISSUE
C	11.06.21	MINOR UPDATE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
LOT 1015 PANTHEON AVE
PORT COOGEE

PROJECT STATUS
DEVELOPMENT APPLICATION

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.02	SO	WB	C

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

Technical Memorandum

Title	Pantheon Avenue Port Coogee Parking Management Plan	**Client**	Port Coogee No. 2 Pty Ltd
Project Number	CW1172300	**Date**	08/07/2021
Author	Edmond Hoang	**Reviewer**	Desmond Ho
Status	For Issue (Rev A)	**Discipline**	Traffic and Transport

1 Introduction

Cardno has been commissioned by Port Coogee No. 2 Pty Ltd to prepare a Parking Management Plan (PMP) for the proposed development (the Site) Lot 1015 Pantheon Avenue, Port Coogee within the City of Cockburn. This PMP aims to address the following aspects which was raised by the City of Cockburn:

> Allocations of bays to each residential apartment + visitors and the commercial tenancies and their visitors.

> The shortfall in residential visitor/commercial and commercial visitor parking for the proposed development.

> Need for justification on the proposed motorcycle/scooter bay provision for the development.

> Need for details on any recommended changes to improve parking management and/or operation.

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

2 Background

The site is located at Lot 1015 Pantheon Avenue, Port Coogee located within the City of Cockburn.

Figure 2-1 shows an aerial image of the Subject Site. The Site is bounded by Comet Lane to the north, Orsino Boulevard to the east, Pantheon Avenue to the south and Brunswick Street to the west.

Figure 2-1 Aerial Image

Base Map Source: Nearmap

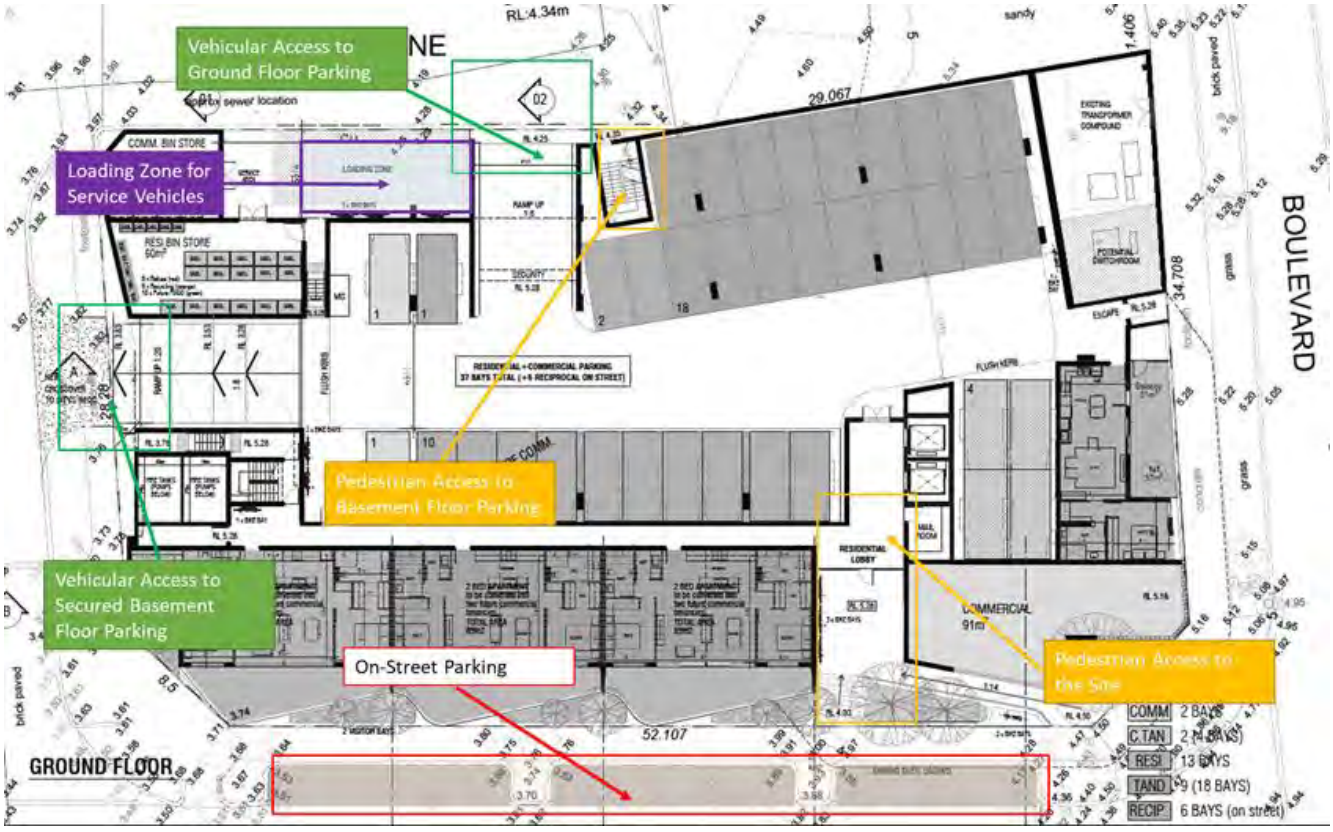
Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

3 Access Controls

Two vehicular accesses are proposed for the Subject Site as shown in **Figure 3-1**. The northern access along Comet Lane is intended to lead directly into the ground floor parking while the access along Brunswick Street is proposed to access the basement parking for residential tenants. Two existing on-street parking bays will have to be removed to accommodate the proposed crossover on Brunswick Street. Both accesses will be controlled by a security gate when entering the site.

A motorcycle parking space is also proposed on the ground floor while bicycle racks are proposed on the basement level.

Figure 3-1 Development Access



Source: MJA Studio

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

4 Parking Requirements and Provision

4.1 Car Parking Provision

The statutory car-parking requirement for the proposed development is set out in the *Residential Design Codes Volume 2 - Apartments*. The residential design code specifies the parking requirements according to the following criteria:

> Location A is defined as a development located within 800m walkable catchment of a train station and/or 250m of a transit stop (bus or light rail) of a high frequency route and/or within the defined boundary of an activity centre; and

> Location B is a location not within Location A.

The subject Site is not located near a high frequency public transport route but is located within the ***Marina Village Local Activity Centre.*** Hence, the parking requirements for Location A is applicable. The parking requirements for the café tenancy (Restaurant) is specified in accordance with the City of Cockburn's Local Planning Scheme No. 3.

Furthermore, it is important to note that the Site has a specific building requirement when it comes to visitor's parking. According to the Port Coogee Marina Village Built Form (2010), *50% of the visitor parking requirement for multiple dwellings shall be allowed to be located on-street. A maximum of 18 on-street parking bays are available for inclusion within the calculation of visitor parking for multiple dwellings on Site 2.* The location of Site 2 is illustrated in **Figure 4-1**.

Figure 4-1 Site 2 Location

Source: Port Coogee Marina Village Built Form Codes

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

The parking requirements and provisions are presented in **Table 4-1.**

Table 4-1 Car Parking Provision and Requirements

Use	Development Yield	Requirement		Provision
Residential car parking	16 dwellings	0.75 bay per 1-bedroom dwelling	12 bays	97 bays
	44 dwellings	1 bay per 2+ bedroom dwellings	44 bays	
Residential visitor car parking	60 dwellings	1 bay per 4 dwellings up to 12th dwellings	9 bays	6 on-street bays *
		1 bay per 8 dwellings for the 13th dwelling and above		
Commercial	Approximately 38 seats	1 bay per 4 seats	10 bays	6 (including 1 ACROD bay)
Total			**75 bays**	**109 bays**

Source: Residential Design Codes Volume 2 – Apartments, City of Cockburn Local Planning Scheme No. 3

** Note: In respect of residential visitor car parking, Provision 14 of DA 22 in Table 9 of TPS3 states:*

> *"Despite the provisions of the Scheme, the Council may, when considering a Local Development Plan (**LDP**), impose development requirements including but not limited to vehicle parking greater than the standards prescribed under the Scheme, if in the opinion of the Council, it would result in a more desirable outcome for the use and development of the land the subject of the LDPs".*

*The relevant LDP Site Specific Building Requirements Detailed Area Plan – Marina Village (Lots 1015-1027) (**DAP**), allows six on-street bays to be included in the calculation of visitor parking for multiple dwellings.*

Based on **Table 4-1**, it is considered that the proposed residential development meets the on-site car parking requirements. However, the residential visitor car parking has a shortfall of 3 parking bays. There is however a surplus of 41 bays allocated for residential tenants. Many of the tenants will be allocated more than one bay per dwelling. This creates an opportunity for residential visitors to utilise the spare resident parking when visiting the complex. Given the large surplus in the residential parking, a small shortfall in visitor parking is considered appropriate. Alternatively, a reciprocal parking arrangement can be implemented allowing visitors to park in the commercial bays outside of business hours.

In respect of commercial car parking, there is a shortfall of 4 bays. This can be accommodated with on-street car parking in the vicinity (noting six on-street bays are already credited to the subject site (café peak times vary from residential visitor peak times). Plentiful on-street parking exists along all streets in the area (modelling for the Marina Village identified 350 bays) which can be used for this purpose. Furthermore, in a mixed-use environment, many patrons of the commercial tenancy (assuming a café or other retail use) will walk from the local area not requiring the use of on-street parking bays.

In the future, it is anticipated that the apartments located on the ground floor would be converted into additional commercial tenancies, most likely for office use. Converting these apartments on the ground floor to offices would result in 15 commercial bays being required by the Local Planning Scheme as summarised in **Table 4-2**.

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

Table 4-2 Parking Provisions and Requirements (Future)

Use	Development Yield	Requirement		Provision
Residential car parking	16 dwellings	0.75 bay per 1-bedroom dwelling	12 bays	93 bays
	41 dwellings	1 bay per 2+ bedroom dwellings	41 bays	
Residential visitor car parking	60 dwellings	1 bay per 4 dwellings up to 12th dwellings	9 bays	* 6 bays (on-street bays)
		1 bay per 8 dwellings for the 13th dwelling and above		
Commercial	Approximately 38 seats	1 bay per 4 seats	10 bays	10 bays
Office	266 sqm	1 bay per 50m2 GLA	5 bays	
Total			**77 bays**	**109 bays**

Source: Residential Design Codes Volume 2 – Apartments, City of Cockburn Local Planning Scheme No. 3

Site Specific Building Requirements Detailed Area Plan – Marina Village (Lots 1015-1027) (DAP**), allows six on-street bays to be included in the calculation of visitor parking for multiple dwellings.*

In the event of the future office conversion, some of the parking bays intended for the ground floor apartments are anticipated to be converted to parking bays for commercial office use. It is intended for 4 residential parking bays allocated for the residents to be converted for commercial office use.

The total parking bays available on-site for use by the proposed café and future office tenancy is 10 bays (4 new and existing 6 commercial bays). It is anticipated that there will be a shortfall of 5 commercial bays when the ground floor apartments are converted to office tenancies. However, plentiful on-street parking exists along all streets in the area (modelling for the Marina Village identified 350 bays) which can be used for this purpose.

4.2 Bicycle Parking Provision

Similar to the car parking, the requirements for bicycle parking are indicated in the City of Cockburn's *Local Planning Scheme No. 3* as shown in **Table 4-3.**

Table 4-3 Bicycle Parking Provision and Requirements

Land Use	Yield	Requirements		Provision
Residential	60 dwellings	1 space per 4 dwelling units	15 spaces	36 spaces (24 racks located in the basement and 12 racks on the ground level
Residential Visitors	60 dwellings	1 space for 16 dwelling units	4 spaces	
Commercial	48 seats	1 space per 30 seats	2 spaces	
Total			**21 spaces**	**36 spaces**

Source: City of Cockburn Local Planning Scheme No. 3

As shown in **Table 4-3** above, the proposed bicycle parking provision for residential and commercial bicycle requirement is adequate and meets the minimum bicycle requirements for the City of Cockburn.

Similarly, the bicycle requirements are expected to increase with the proposed conversion of the ground floor apartment units to office use as shown in **Table 4-4**. It is expected that the provision of bicycle racks is still adequate with the requirements of the City of Cockburn.

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

Table 4-4 Bicycle Parking Provision and Requirements (Future)

Land Use	Yield	Requirements		Provision
Residential	57 dwellings	1 space per 4 dwelling units	15 spaces	36 spaces (24 racks located in the basement and 12 racks at ground level
Residential Visitors	57 dwellings	1 space for 16 dwelling units	4 spaces	
Commercial	45 seats	1 space per 30 seats	2 spaces	
Office	266 sqm	Employees: 1 space per 200m^2 of GLA Visitors: 1 space per 750m2 of GLA	3 spaces	
Total			**24 spaces**	**36 spaces**

Source: City of Cockburn Local Planning Scheme No. 3

4.3 Motorcycle Parking Provisions

Developments exceeding 20 dwellings will need to provide 1 motorcycle/ scooter space for every 10 car bays as in the *Residential Design Code Volume 2 – Apartments* as shown in **Table 4-5.**

Table 4-5 Motorcycle Parking Provision and Requirements

Land Use	Yield	Requirements		Provision
Residential	96 parking spaces	1 space per 10 car bays provision	9.6 spaces	1 space
Total				**1 space**

Source: Residential Design Codes Volume 2 – Apartments

As shown in **Table 4-5** above, only 1 motorcycle bay is being proposed which results in a shortfall of 9 bays which is not meet the Residential Design Code Volume 2 requirements. However, it should be noted that the motorcycle parking demand is expected to be low. Additionally, 4 motorcycle bays exist on Pantheon Avenue which would assist with mitigating this shortfall. In addition, given the surplus in residential car parking bays, if residents have the need to park a motorcycle or scooter, it is anticipated that the residential car bays will suitably cater for this demand.

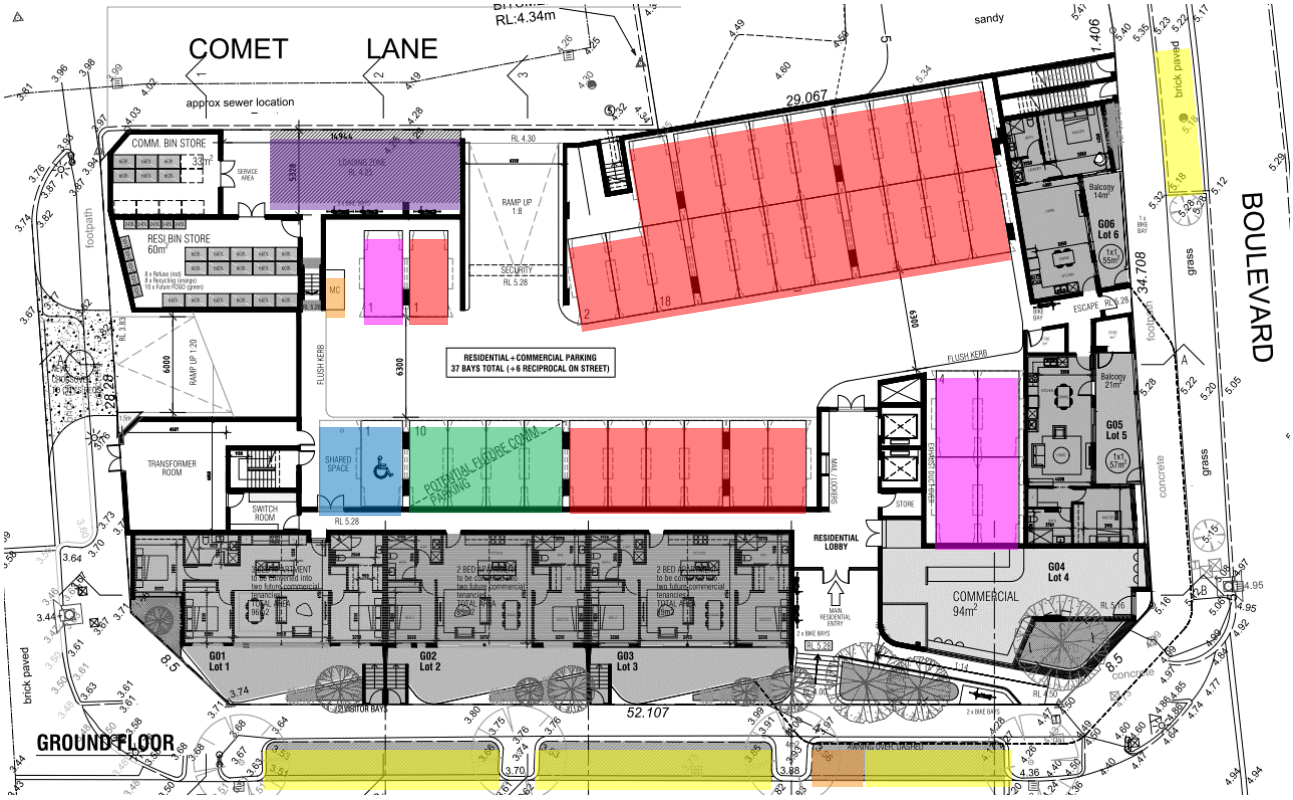
Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

5 Management and Allocation of On-Site Parking

The proposed allocation of parking for the Site is shown in **Figure 5-1** and **Figure 5-2**.

Figure 5-1 Ground Floor Parking Allocation

LEGEND	
Residential Bays	RED
Residential Bays / Potential Future Commercial Bays	GREEN
Commercial Staff Bays	PINK
Motorcycle / Scooter Bays	ORANGE
ACROD Bays	BLUE
Waste Collection / Loading Bays	PURPLE
On-Street Visitor Bays (Residential and Commercial)	YELLOW



Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

Figure 5-2 Basement Parking Allocation

5.2 Residential Bays

Residential tenant bays are located on the ground and basement floors with the number of single and tandem bays summarised as follows:

> Individual residential tenant bays – 47 individual bays (excluding residential/commercial conversion bays); and

> Tandem residential tenant bays – 23 tandem bays (46 bays total)

To ensure that there are no potential conflicts, each tandem bay shall only be assigned to individual residential units and should not be shared between other residents. As there is a mix of different users on the ground floor, residential bays on this level should be clearly line marked to indicate that these bays are for residents only.

5.3 Residential Bays/Potential Future Commercial Bays

In the event of the future office conversion, 4 bays located on the ground floor have been nominated for future office parking. To ensure ease of transition from residential to office bays in the future, these bays should only be allocated to Lot 1, 2 and 3 residents. The conversion from residential to office bays should also include the appropriate line-marking changes which indicates which commercial tenant can park in these bays.

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

5.4 Commercial Staff Bays

6 commercial staff bays are proposed and located on the ground floor. Commercial bays should be clearly line-marked to ensure that staff are aware of where they can park. Additionally, these bays can be considered to be managed in a reciprocal arrangement to allow residential visitors to also use these bays after business hours.

5.5 ACROD Bays

ACROD bays have been designed in accordance with AS2890.6. These bays shall provide appropriate signage, line-marking and symbols to be easily identified as an ACROD bay.

ACROD bays will only be available to drivers who display the relevant permit and enforced as discussed in Section 6.

5.6 Motorcycle/Scooter Bay

The motorcycle/scooter bay is located on the ground floor.

5.7 On-Street Visitor Bays

As mentioned in **Section 4.1**, 6 on-street bays can be used for the residential visitor parking. Similarly, commercial visitors can also use these on-street bays which would avoid the need for these visitors to enter the site. These bays are owned and managed by the City of Cockburn (as they are located within the public realm) and available to the general public. Therefore, no additional management or allocation measures are proposed for these bays.

5.8 Waste Collection/Loading Area

It is anticipated that commercial tenancies will be serviced by delivery vehicles and refuse trucks that are limited to a maximum length of 7.1m. All commercial deliveries and waste collection will be undertaken outside of peak parking hours.

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

6 Parking Compliance and Enforcement

6.1 Resident/Tenant/Visitor Feedback

Feedback from residents, tenants and visitors on the Site will provide a good indication of parking compliance. A reporting system shall be implemented to allow residents, tenants and visitors to easily report any parking non-compliances occurring on Site (eg. filling out a form, online reporting and/or reporting via phone/in person).

6.2 Monitoring Car Park

The building caretaker and/or security staff shall be tasked with inspecting the car park areas periodically to ensure compliance with the parking conditions and restrictions on-site and also report damaged or worn out signage.

6.3 Demonstrating Compliance

A warning will be issued to those who fail to comply with the conditions and restrictions set for the parking area. Multiple offences will incur further disciplinary action which may include having the vehicle towed off the Site or a fine issued. Any non-compliances should be kept on record and an annual/biannual review should be conducted to determine the effectiveness of the implemented parking management plan.

Modification to the Parking Management Plan should be made if further restrictions are required to ensure compliance.

6.4 Review of Parking Management Plan

The measures implemented in the PMP should be reviewed periodically (ideally once every 12-18 months) to evaluate which management measures were most/least effective. This allows for the inclusion of new measures and modifications of existing measures (including parking pricing adjustments) to improve parking management.

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

7 Safety and Security Measures

7.1 CCTV Cameras

CCTV cameras should be installed in the car park to provide an additional layer of security and surveillance throughout the car park, as required.

The placement of any CCTV cameras should cover all areas of the car park, especially entry points, and ensure that there are no blind spots.

7.2 Monitoring Car Park

The building caretaker or security staff shall be tasked with inspecting the car park areas periodically and using the CCTV system to monitor any suspicious behaviour and ensure that visitors and tenants feel safe and secure when entering and leaving the Site.

Cardno (WA) Pty Ltd | ABN 77 009 119 000
11 Harvest Terrace, West Perth
WA,6005
+61 8 9273 3888 | www.cardno.com

Briefing Note

To:	Port Coogee No 2 Pty Ltd	From:	Planning Solutions
Attention:	Luke Reinecke	Job No:	7500
Copy to:		Date:	16 July 2021
Subject:	Reallocation of car parking – Lot 1015 Orsino Boulevard, North Coogee		

This Briefing Note is prepared on behalf of Port Coogee No 2 Pty Ltd for the proposed mixed-use development at Lot 1015 Orsino Boulevard, North Coogee (subject site).

You have sought our advice on reallocating car parking bays to reassign 4 bays from the commercial tenancy to resident parking. This increases the shortfall of parking for the commercial tenancy, as shown in Table 1 below.

Table 1 – updated parking provision and requirements

Requirement	Rate	Required	Provided
Resident car parking	*As per R-Codes:* *0.75 bays per 1 bedroom dwelling (16)* *1 bay per 2+ bedroom dwelling (44)*	56	101 car bays
Residential visitor car parking	*As per R-Codes:* *1 bay per four dwellings up to 12 dwellings (12)* *1 bay per eight dwellings for the 13th and above (48)*	9	6 on-street car bays*
Commercial car parking (assume restaurant)	*1 : 4 seats OR** *1 : 4 people accommodated (approximately 38 seats)*	10	2 car bays
Total car bays		75	109 *

* Note: In respect of residential visitor car parking, Provision 14 of DA 22 in Table 9 of the City of Cockburn Town Planning Scheme No.3 (TPS3) states:

> *Despite the provisions of the Scheme, the Council may, when considering a Local Development Plan (LDP), impose development requirements including but not limited to vehicle parking greater than the standards prescribed under the Scheme, if in the opinion of the Council, it would result in a more desirable outcome for the use and development of the land the subject of the LDPs.*

The relevant LDP, being the Site Specific Building Requirements Detailed Area Plan – Marina Village (Lots 1015-1027) (DAP), allows six on-street bays to be included in the calculation of visitor parking for multiple dwellings.

It is considered the additional shortfall of 4 car parking bays for the commercial tenancy warrants approval under clause 4.6.1 of TPS3 for the following reasons:

1. The reallocation of 4 car parking does not create a shortfall of parking on-site. The development still achieves an overall surplus of 34 bays.
2. The remaining 2 on-site bays are suitable for staff, as the bays are behind a security barrier and provide sheltered and secure parking for staff. Being on-site, secured, and accessed from a laneway, it is not appropriate for cutomers to be driving and parking their cars on-site. This approach is consistent with the Western Australian Planning Commission's operational policy *Liveable Neighbourhoods*, which states under E7 R19:

> *Customer parking is to be provided mainly off-site and preferably on the street. On-site parking should primarily be limited for staff and residential use*

PLANNING SOLUTIONS
URBAN & REGIONAL PLANNING
PS
Level 1, 251 St Georges Tce, Perth WA
(08) 9227 7970
GPO Box 2709
Cloisters Square PO 6850
admin@planningsolutions.com.au
www.planningsolutions.com.au
ACN 143 573 184 ABN 23 143 573 184
Planning Solutions (Aust) Pty Ltd

3. Ample on-street car parking is available for visitors along both sides of all nearby streets, including Orsino Boulevard, Brunswick Street and Pantheon Avenue. There is also 90° parking along Chieftain Esplanade just 100m to the southwest of the subject site, and free parking for up to 4 hours with 188 bays at the Port Coogee Village Shopping Centre.
4. The future commercial tenancy (café) will likely attract customers within the immediate North Coogee locality, who can access the café by foot or bicycle, not requiring car parking.
5. Facilities are provided for people attending the café using alternative modes of transport. This includes the four on-street motorcycle bays directly opposite the entrance to the café, and the location of bicycle parking facilities near the entrance to the cafe.
6. The use of on-street parking is consistent with State Planning Policy 4.2 Activity Centres for Perth and Peel (SPP4.2) in view of the availability of on-street parking and the need for land efficiency. In this respect, on-street bays used by café customers are available for other users outside peak periods.
7. The City of Cockburn's Local Commercial & Activity Centres Strategy (December 2012) set out a strategy for the City to review its TPS3 parking provisions in light of the upper car parking requirements set out in SPP4.2. It appears, however, the parking rates have not been amended. If they had, the parking requirement for the 91m² café would have been substantially lowered to 4 on-site bays (maximum) as recommended in SPP4.2.

For the above reason, the reallocation of 4 bays from the café tenancy to residents is supported and would warrant approval.

Should you have any queries regarding the above, please do not hesitate to contact the writer.

Yours sincerely

TIMOTHY HODGE
PLANNING CONSULTANT

210715 7500 Briefing Note

Waste Management Plan

Lot 1015, 79 Orsino Boulevard, Port Coogee

Prepared for Port Coogee No 2 Pty Ltd

12 May 2021

Project Number: TW21036

Assets | Engineering | Environment | Noise | Spatial | Waste

DOCUMENT CONTROL

Version	Description	Date	Author	Reviewer	Approver
1a	First Approved Release	12/04/2021	DP	RH	RH
1b	Second Approved Release	13/04/2021	DP	RH	RH
1c	Third Approved Release	12/05/2021	DP	RH	RH

Approval for Release

Name	Position	File Reference
Rachel Hayton	Project Manager – Waste Management Consultant	TW21036 - Waste Management Plan.1c
Signature		

Executive Summary

Port Coogee No 2 Pty Ltd is seeking development approval for the proposed mixed use development located at Lot 1015, 79 Orsino Boulevard, Port Coogee (the Proposal).

To satisfy the conditions of the development application the City of Cockburn (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

A summary of the bin size, numbers, collection frequency and collection method is provided in the below table.

Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size (L)	Number of Bins	Collection Frequency	Collection
Residential Bin Storage Area					
Refuse	4,800	660	Eight	Once each week	City of Cockburn
Recycling	4,800	660	Eight	Once each week	City of Cockburn
Commercial Bin Storage Area					
Refuse	4,204	660	Seven	Once each week	City of Cockburn
Recycling	1,274	660	Two	Once each week	City of Cockburn

The City will service the Proposal onsite, directly from the Bin Storage Areas utilising the Loading Zone. The City's rear loading waste collection vehicle will approach the Proposal's Loading Zone and reverse back into the Loading Zock before departing in a forward gear via Comet Lane.

Strata/building management will oversee the relevant aspects of waste management at the Proposal.

This WMP will form part of the building management agreement and will continue to be applied in perpetuity across the life of the Proposal. Changes to this WMP may require approval by the City of Cockburn.

Should the approved Waste Management Plan fail to deliver a safe, effective and efficient waste management service, the City will liaise with the owner to review, update and approve the Waste Management Plan.

Table of Contents

Tables

Figures

1 Introduction

Port Coogee No 2 Pty Ltd is seeking development approval for the proposed mixed use development located at Lot 1015, 79 Orsino Boulevard, Port Coogee (the Proposal).

To satisfy the conditions of the development application the City of Cockburn (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

The Proposal is bordered by Comet Lane to the north, Orsino Boulevard to the east, Pantheon Avenue the south and Brunswick Street to the west, as shown in Figure 1.

1.1 Objectives and Scope

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

- Adequately cater for the anticipated volume of waste to be generated;
- Provide adequately sized Bin Storage Areas, including appropriate bins; and
- Allow for efficient collection of bins by appropriate waste collection vehicles.

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

- Section 2: Construction and Demolition;
- Section 3: Waste Generation;
- Section 4: Waste Storage;
- Section 5: Waste Collection;
- Section 6: Waste Management; and
- Section 7: Conclusion.

2 Construction and Demolition Waste

The below section presents the required communication and waste disposal considerations for Construction and Demolition waste generated during the Proposals development.

2.1 Demolition

The Proposal is currently free of buildings and structures, therefore any demolition works are unlikely to occur ensuring demolition waste is not generated at the Proposal.

2.2 Construction

Appropriate waste management procedures that aim to reduce waste and encourage recycling of excess materials should be considered as part of the construction phase of the Proposal. The tendering of the construction of the building and the tender assessment scoring should give consideration to applicants that have effective waste minimisation strategies.

3 Waste Generation

The following section shows the waste generation rates used and the estimated waste volumes to be generated at the Proposal.

3.1 Proposed Tenancies

The anticipated volume of refuse and recyclables is based on the number of apartments and the floor area (m^2) of the commercial tenancy at the Proposal. The Proposal consists of the following:

Residential:

- One Bedroom Apartments – 16;
- Two Bedroom Apartments – 30; and
- Three Bedroom Apartments – 14.

Commercial:

- Commercial Tenancy – 91m^2.

3.2 Waste Generation Rates

The anticipated volume of refuse and recyclables were based on the City's Policy LPP 1.14 with consideration given to the City of Melbourne's *Guidelines for Preparing a Waste Management Plan* (2017).

It should also be noted that a conservative approach has been taken with regards to waste generation for the commercial tenancy by overestimating the potential waste volumes. Where the final use for the tenancy is still unknown, a 'restaurant' waste generation rate has been utilised as this generation rate has the highest of all food and beverage tenancy types and is therefore overestimating the volume of waste. Additionally, seven days of operation has been assumed for the commercial tenancy. This is considered to be an over estimation as it is not uncommon for food and beverage tenancies to close operations post weekend trading therefore resulting in an over estimation of waste volumes generated.

Table 3-1 shows the waste generation rates which have been applied to the Proposal.

Table 3-1: Waste Generation Rates

Tenancy Use Type	Guideline Reference	Refuse Generation Rate	Recycling Generation Rate	Floor Area Required
Residential				
Residential Apartments	Cockburn	80L/week	80L/week	1m^2 per dwelling
Commercial				
Commercial Tenancy	Melbourne – Restaurant	660L/100m^2/day	200L/100m^2/day	1m^2/20 seats or 1m^2/100 meals served

3.3 Waste Generation Volumes

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

3.3.1 Residential Waste

Residential waste generation volumes in litres per week (L/week) adopted for this waste assessment are shown Table 3-2. It is estimated that the residential apartments at the Proposal will generate 4,800L of refuse and 4,800L of recyclables each week.

Table 3-2: Estimated Waste Generation – Residential

Residential Apartments	Number of Apartments	Waste Generation Rate (L/week)	Waste Generation (L/week)
Refuse			
Residential Apartments	60	80	4,800
		Total	**4,800**
Recyclables			
Residential Apartments	60	80	4,800
		Total	**4,800**

3.3.2 Commercial Waste

Commercial waste generation volumes in litres per week (L/week) adopted for this waste assessment are shown Table 3-3. It is estimated that the commercial tenancy at the Proposal will generate 4,204L of refuse and 1,274L of recyclables each week.

Table 3-3: Estimated Waste Generation – Commercial

Commercial Tenancy	Floor Area (m^2)	Waste Generation Rate (L/100m^2/week)	Waste Generation (L/week)
Refuse			
Commercial Tenancy – Restaurant	91	660	4,204
		Total	**4,204**
Recyclables			
Commercial Tenancy – Restaurant	91	200	1,274
		Total	**1,274**

4 Waste Storage

Waste materials generated within the Proposal will be collected in the bins located in the Bin Storage Area, as shown in Figure 2 and Figure 3, and discussed in the following sub-sections.

4.1 Internal Bins

To ensure that waste is managed appropriately at the Proposal, it is important to allow for sufficient space to accommodate the required quantity of bins within each Bin Storage Area. The transfer of bins, quantity, size and design of the Bin Storage Areas is described in the following sections.

To promote positive recycling behaviour and maximise diversion from landfill, the residential apartments will have room to accommodate two under counter/kitchen bins for the separate disposal of refuse and recyclables. The residents will then take the contents of these internal bins to the Residential Bin Storage Area and deposit the contents into the appropriate bin.

The Proposal will also have a minimum of two bins to facilitate the separate disposal of refuse and recycling within the commercial tenancy. The bins will be transferred by staff/cleaners, or their authorised representative, to the Commercial Bin Storage Area and be deposited into the appropriate bin.

All bins will be colour coded and labelled in accordance with Australian Standards (AS 4123.7) to assist residents, staff and cleaners to dispose of their separate waste materials in the correct bins.

4.2 Bin Sizes

Table 4-1 gives the typical dimensions of standard bins sizes that may utilised at the Proposal. It should be noted that these bin dimensions are approximate and can vary slightly between suppliers.

Table 4-1: Typical Bin Dimensions

Dimensions (mm)	Bin Sizes	
	240L	660L
Depth	730	780
Width	585	1,260
Height	1,060	1,200
Area (mm^2)	427	983

Reference: SULO Bin Specification Data Sheets

4.3 Residential Bin Storage Area Size

To ensure sufficient area is available for storage of the residential bins, the amount of bins required for the Residential Bin Storage Area was modelled utilising the estimated waste generation in Table 3-2, bin sizes in Table 4-1 and based on collection of refuse and recyclables once each week.

Based on the results shown in Table 4-2 the Residential Bin Storage Area has been sized to accommodate:

- Eight 660L refuse bins; and
- Eight 660L recycling bins.

Table 4-2: Bin Requirements for the Residential Bin Storage Area

Waste Stream	Waste Generation (L/week)	Number of Bins Required		Minimum Floor Area Required (m^2)	Floor Area Provided (m^2)
		240L	660L		
Refuse	4,800	20	8	$60m^2$	$60m^2$
Recycling	4,800	20	8		

The configuration of these bins within the Residential Bin Storage Area is shown in Figure 2. It is worth noting that the number of bins and corresponding placement of bins shown in Figure 2 represents the maximum requirements assuming one collection each week of refuse and recyclables.

4.3.1 Provision for Food Organics Garden Organics (FOGO)

In the near future it is expected that the City may be introducing bins for the separate collection of food organics and garden organics (FOGO) within multi-unit residential properties in line with the state government's Waste Avoidance and Resource Recovery (WARR) Strategy 2030. As such, the development has provided sufficient space to accommodate additional 240L FOGO bins, should the development be required to separate food waste for collection in the future.

Kitchen caddies may be used in each residential apartment to collect FOGO, which would then be taken by residents to the Residential Bin Storage Area for depositing into communal 240L lime green lidded FOGO bins, if required.

The City will assess the FOGO bin numbers and collections in the future, if required.

4.4 Commercial Bin Storage Area Size

To ensure sufficient area is available for storage of the commercial bins, the amount of bins required for the Commercial Bin Storage Area was modelled utilising the estimated waste generation in Table 3-3, bin sizes in Table 4-1 and based on collection of refuse and recyclables once each week.

Based on the results shown in Table 4-3 the Commercial Bin Storage Area has been sized to accommodate:

- Seven 660L refuse bins; and
- Two 660L recycling bins.

Table 4-3: Bin Requirements for the Commercial Bin Storage Area

Waste Stream	Waste Generation (L/week)	Number of Bins Required		Minimum Floor Area Required (m^2)	Floor Area Provided (m^2)
		240L	660L		
Refuse	4,204	18	7	$30m^2$	$33m^2$
Recycling	1,274	6	2		

The configuration of these bins within the Commercial Bin Storage Area is shown in Figure 3. It is worth noting that the number of bins and corresponding placement of bins shown in Figure 3 represents the maximum requirements assuming one collection each week of refuse and recyclables.

In the future, the three residential apartments on the Ground Floor may be converted into commercial office/retail tenancies. The Commercial Bin Storage Area has been sized to accommodate the future bins requirements and waste generated by these tenancies as shown in Figure 3.

4.5 Bin Storage Area Design

The Bin Storage Areas are capable of containing one weeks' worth of waste, with adequate room for residents and staff/cleaners to easily access all bins and to allow bins to be easily moved around and serviced.

In addition, the design of the Bin Storage Areas will take into consideration:

- The bin presentation area or collection point will be flat, with the travel path between the bin store and collection point/vehicle clear of steps or kerbs;
- External bin stores will be surrounded by 1.8 metre high walls or fencing with a self-closing gate;
- Bin stores will be designed and erected in a manner that has regard for the design and appearance of the development of which they are a part;
- Bin stores will have 75mm concrete floors grading to a 100mm industrial floor waste (including a charged 'water-trap' connected to sewer or an approved septic system), with a hose cock to enable bins and/or the enclosure to be washed out;
- Bin store internal walls will be cement rendered (solid and impervious) to enable easy cleaning. Ceilings in bin stores shall be finished with a smooth faced, non-absorbent material capable of being easily cleaned;
- Bin store walls and ceilings will be finished or painted in a light colour;
- Bin stores will be constructed in a manner that prevents the entry of vermin;
- Bin stores will be provided with artificial lighting, sensor or switch controlled both internal/external to the room or area. All lighting in open areas is to comply with AS4282-1997 (Control of Obtrusive Outdoor Lighting);
- Bin stores will have the following signs and/or information displayed:
    - A sign stating "NO STANDING" at the entrance to the room/area; and
    - A clearly visible "DANGER" sign in the vicinity of the entrance to the room/area.

Bin numbers and storage space within the Bin Storage Areas will be monitored by strata/building management during the operation of the Proposal to ensure that the number of bins and collection frequency is sufficient.

5 Waste Collection

The City will service the Proposal by providing the:

- Residential apartments with eight 660L bins for refuse and eight 660L bins for recyclables; and
- Commercial tenancy with seven 660L bins for refuse and two 660L bin for recyclables.

The City will collect:

- Residential refuse and recyclables once each week from the Proposal utilising its low profile rear loading waste collection vehicle; and
- Commercial refuse and recyclables once each week from the Proposal utilising its rear loading waste collection vehicle.

The City will service bins from the Loading Zone adjacent to the Bin Storage Areas and parallel to Comet Lane, as shown in Figure 4. The City's rear loading waste collection vehicle will travel with left hand lane traffic flow on Comet Lane and pull into the Proposal's Loading Zone in forward gear.

The City's waste collection staff will ferry bins to and from the rear loading waste collection vehicle and the respective Bin Storage Area during servicing. The City will be provided with key/PIN code access to the Bin Storage Areas and security access gates to facilitate servicing, if required.

Once servicing is complete the City's rear loading waste collection vehicle will exit in a forward motion, pulling out onto Comet Lane moving with traffic flow.

Noise from waste vehicles must comply with the Environmental Protection (Noise) Regulations and such vehicles should not service the site before 7.00am or after 7.00pm Monday to Saturday, or before 9.00am or after 7.00pm on Sundays and Public Holidays.

The ability for the City's low profile rear loading waste collection vehicle to access the Proposal's Loading Zone in a safe manner has been assessed by Cardno and will be included within their traffic impact statement.

5.1 Residential Bulk Waste

Strata management will arrange with the City to have bulky waste removed from the development, as required. Removal of bulk waste will be monitored by strata management, who will liaise with residents to assist with the removal of bulk waste.

Each apartment has an allocated storage room of at least $3m^2$ at the Proposal and an additional area of $30m^2$ has been allowed for the temporary storage of bulk waste on the Basement Level. This will assist with the reduction of illegal dumping of bulky wastes at the Proposal.

5.2 Commercial Bulk and Speciality Waste

Adequate space will be allocated throughout the Proposal for placement of cabinets/containers for collection and storage of bulk and specialty wastes that are unable to be disposed of within the bins. These items may include:

- Refurbishment Wastes from Fit Outs;
- Batteries and E-wastes;
- White Goods/Appliances;
- Used Cooking Oil;
- Cleaning Chemicals; and
- Commercial Light Globes.

These bulk and specialty wastes will be removed from the Proposal as sufficient volumes have been accumulated to warrant disposal. Bulk and specialty waste collection will be monitored by building management who will arrange for their transport to the appropriate waste facility, as required.

6 Waste Management

Strata/building management will be engaged to complete the following tasks:

- Monitoring and maintenance of bins and the Bin Storage Areas;
- Cleaning of bins and Bin Storage Areas, when required;
- Ensure all residents and staff/cleaners at the Proposal are made aware of this WMP and their responsibilities thereunder;
- Monitor residents and staff/cleaners behaviour and identify requirements for further education and/or signage;
- Monitor bulk and speciality waste accumulation and assist with its removal, as required;
- Regularly engage with residents and staff/cleaners to develop opportunities to reduce waste volumes and increase resource recovery; and
- Regularly engage with the City to ensure efficient and effective waste service is maintained.

7 Conclusion

As demonstrated within this WMP, the Proposal provides sufficiently sized Bin Storage Areas for storage of refuse and recyclables, based on the estimated waste generation volumes and suitable configuration of bins. This indicates that adequately designed Bin Storage Areas have been provided, and collection of refuse and recyclables can be completed from the Proposal.

The above is achieved using:

Residential –

- Eight 660L refuse bins, collected once each week; and
- Eight 660L recycling bins, collected once each week.

Commercial –

- Seven 660L refuse bins, collected once each week;
- Two 660L recycling bins, collected once each week

The City will service the Proposal onsite, directly from the Bin Storage Areas utilising the Loading Zone. The City's rear loading waste collection vehicle will approach the Proposal's Loading Zone and reverse back into the Loading Zock before departing in a forward gear via Comet Lane.

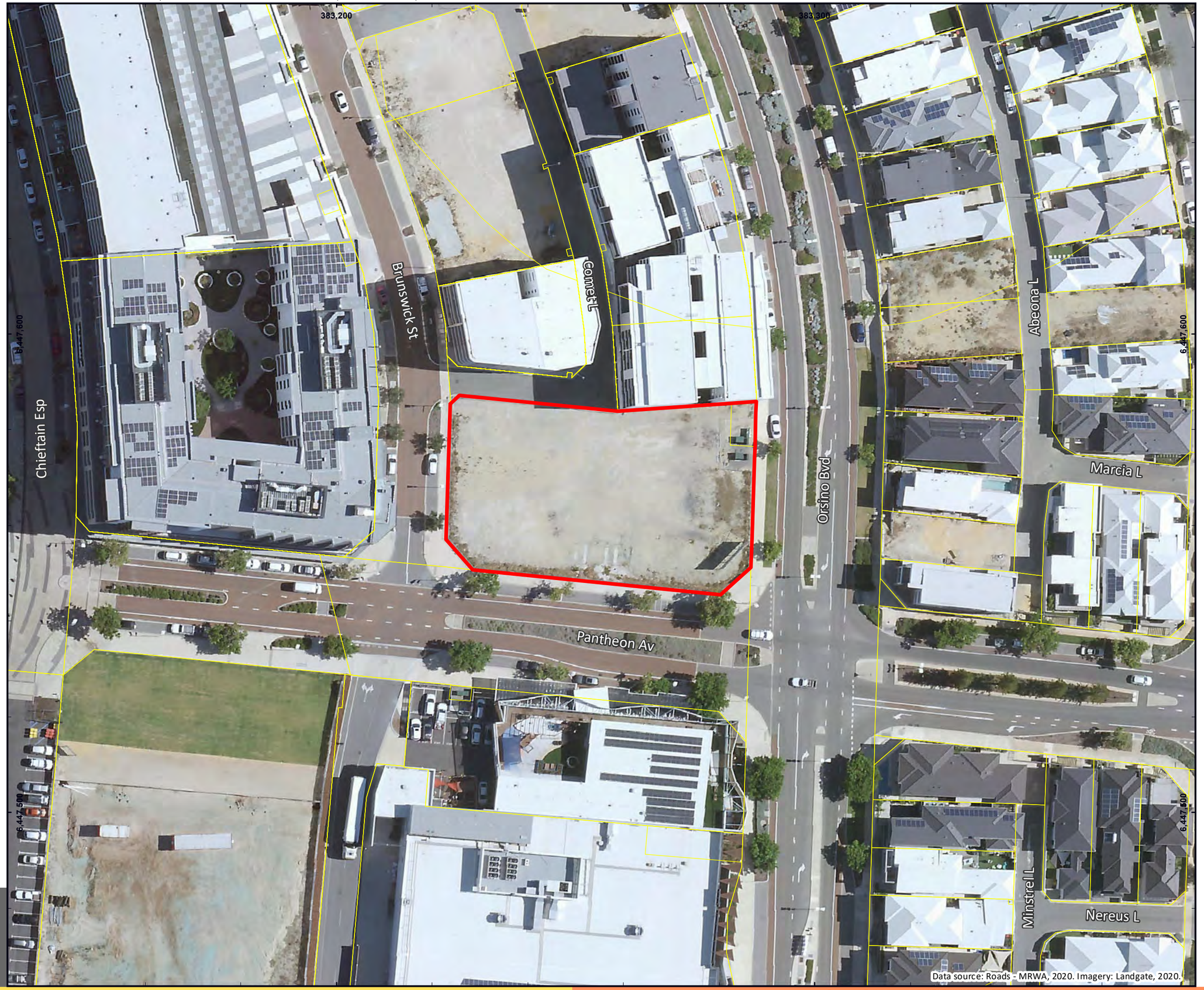
Strata/building management will oversee the relevant aspects of waste management at the Proposal.

This WMP will form part of the building management agreement and will continue to be applied in perpetuity across the life of the Proposal. Changes to this WMP may require approval by the City of Cockburn.

Should the approved Waste Management Plan fail to deliver a safe, effective and efficient waste management service, the City will liaise with the owner to review, update and approve the Waste Management Plan

Figures

P: PO Box 454, Leederville WA 6903 | A: 604 Newcastle St, Leederville WA 6007 | T: 1300 251 070 | W: www.talisconsultants.com.au

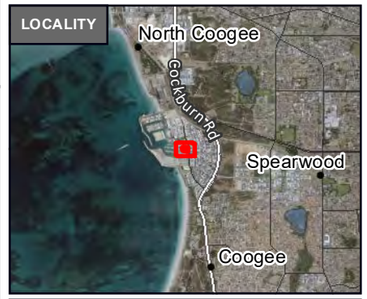


Data source: Roads - MRWA, 2020. Imagery: Landgate, 2020.

LEGEND

Site Layout

Cadastre



LOCALITY

Lot 1015, 79 Orsino Boulevard
Port Coogee, WA 6163

Stirling c/- MJA Studio

N

0 10 20 30 m

Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator, Datum: GDA 1994
Scale @ A3: 1:750

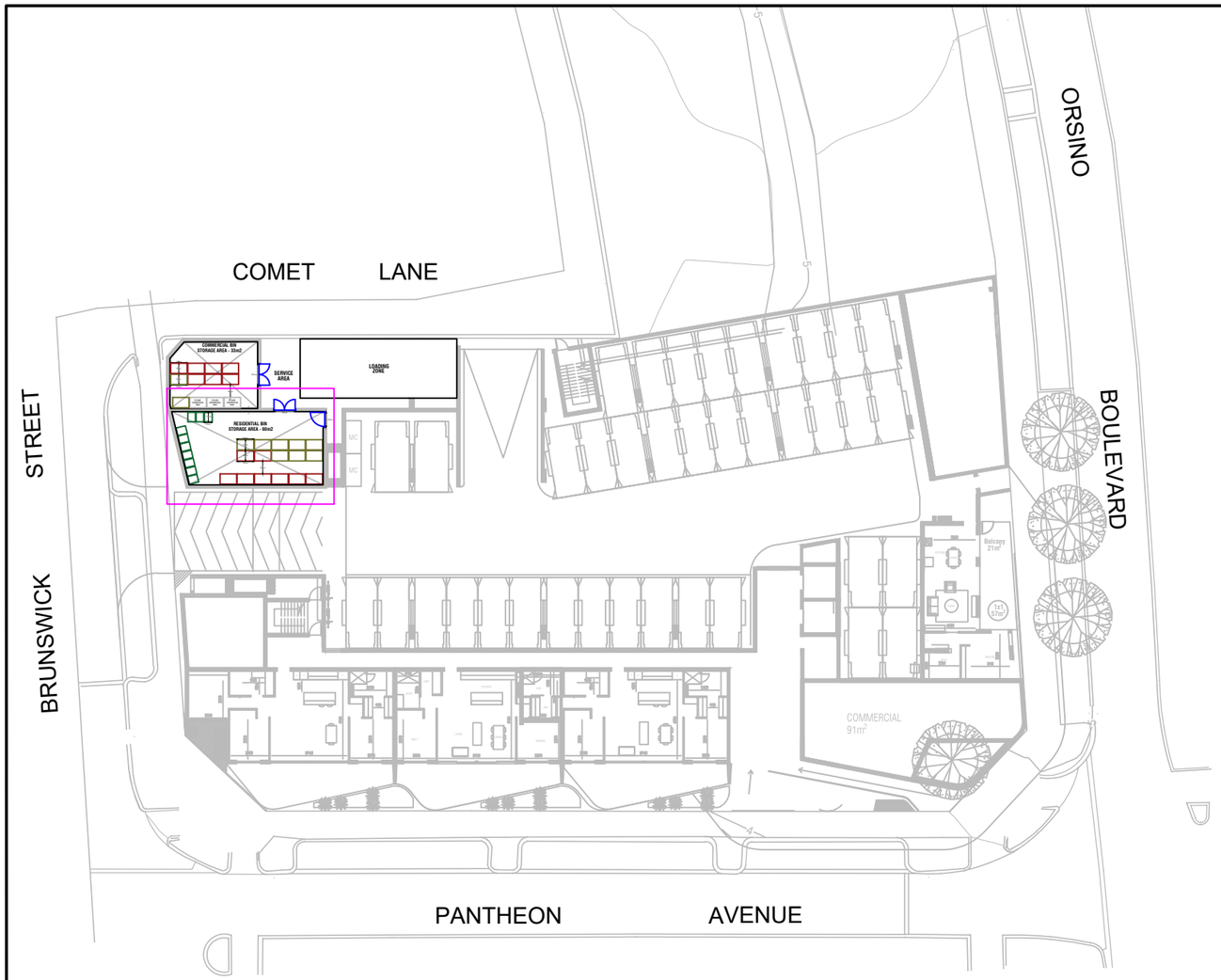
Prepared: W Robertson	Date: 30/03/2021
Reviewed: D Patel	Revision: A
Project: TW21036	

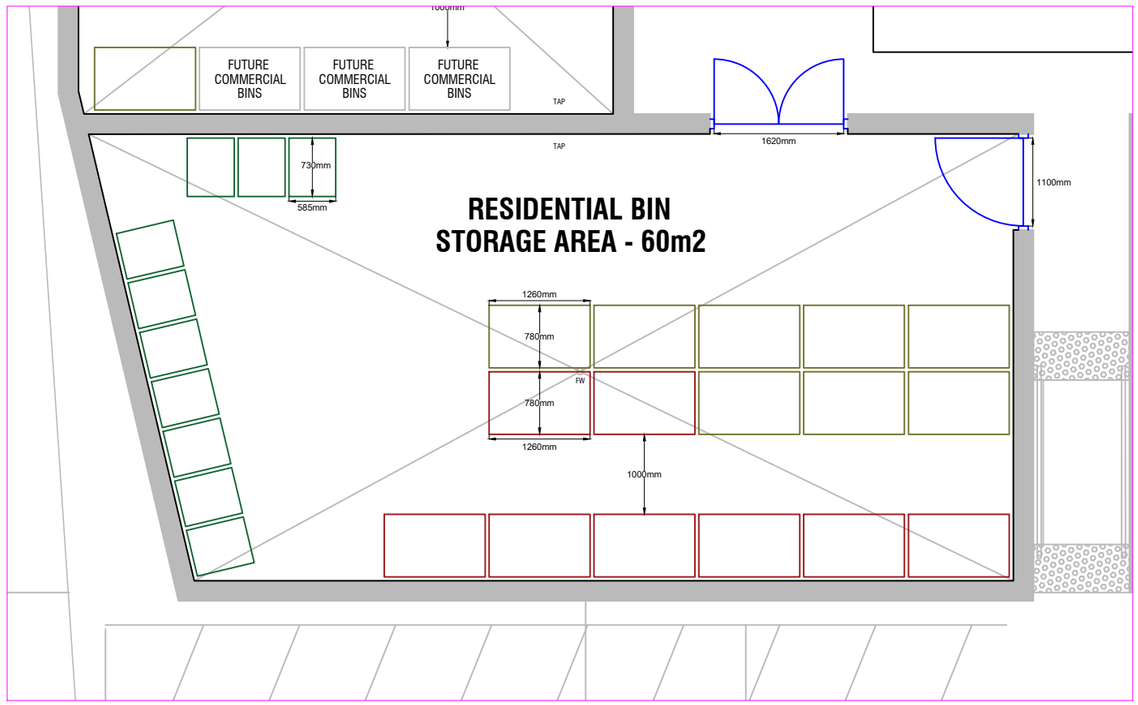
talis consultants

Figure 01

Document Path: \\server\talis\SECTIONS\Waste\PROJECTS\TW2021\TW21036 - Lot 1015, 79 Orsino Boulevard, Port Coogee WMP\GIS\Maps\TW21036_01_Locality_RevA.mxd

Residential Bin Storage Area





Legend:

Residential Bin Storage Area

- 8 x 660L refuse (780mm x 1,260mm)
- 8 x 660L recycling (780mm x 1,260mm)
- 10 x 240L FOGO (730mm x 585mm)

N

talis delivering solutions
www.talisconsultants.com.au T: 1300 251 070

ASSET MANAGEMENT
CIVIL ENGINEERING
ENVIRONMENTAL SERVICES
SPATIAL INTELLIGENCE
WASTE MANAGEMENT
NOISE MANAGEMENT

Level 1 604 Newcastle Street, Leederville WA 6007
PO Box 454, Leederville WA 6903

Client: Port Coogee No 2 Pty Ltd

NOTES

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

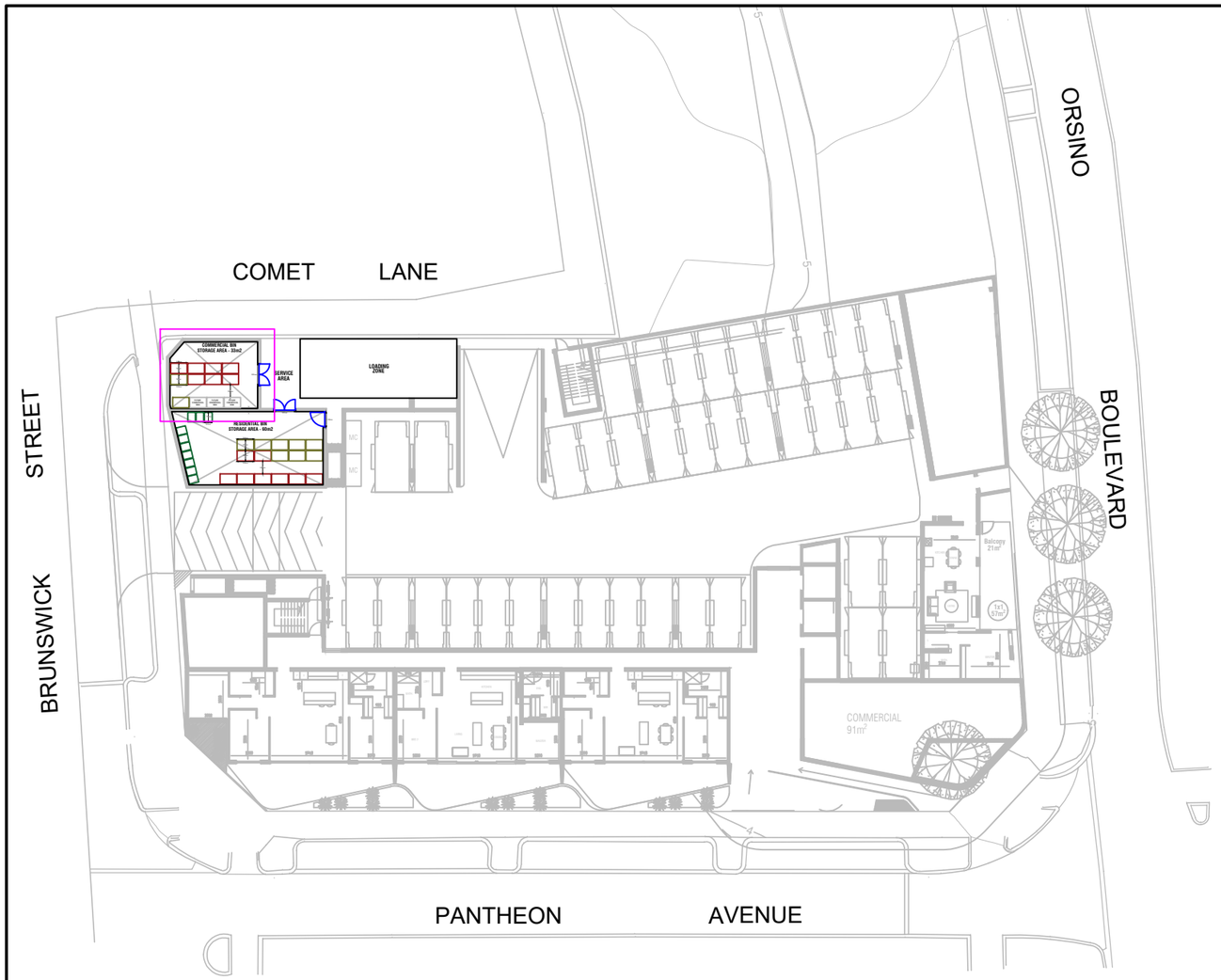
No.	Date	Drawn / Chkd	Amendment / Issue	App.
B	13/04/21	DP / RH	SECOND ISSUE	DP
A	09/04/21	DP / RH	FIRST ISSUE	DP

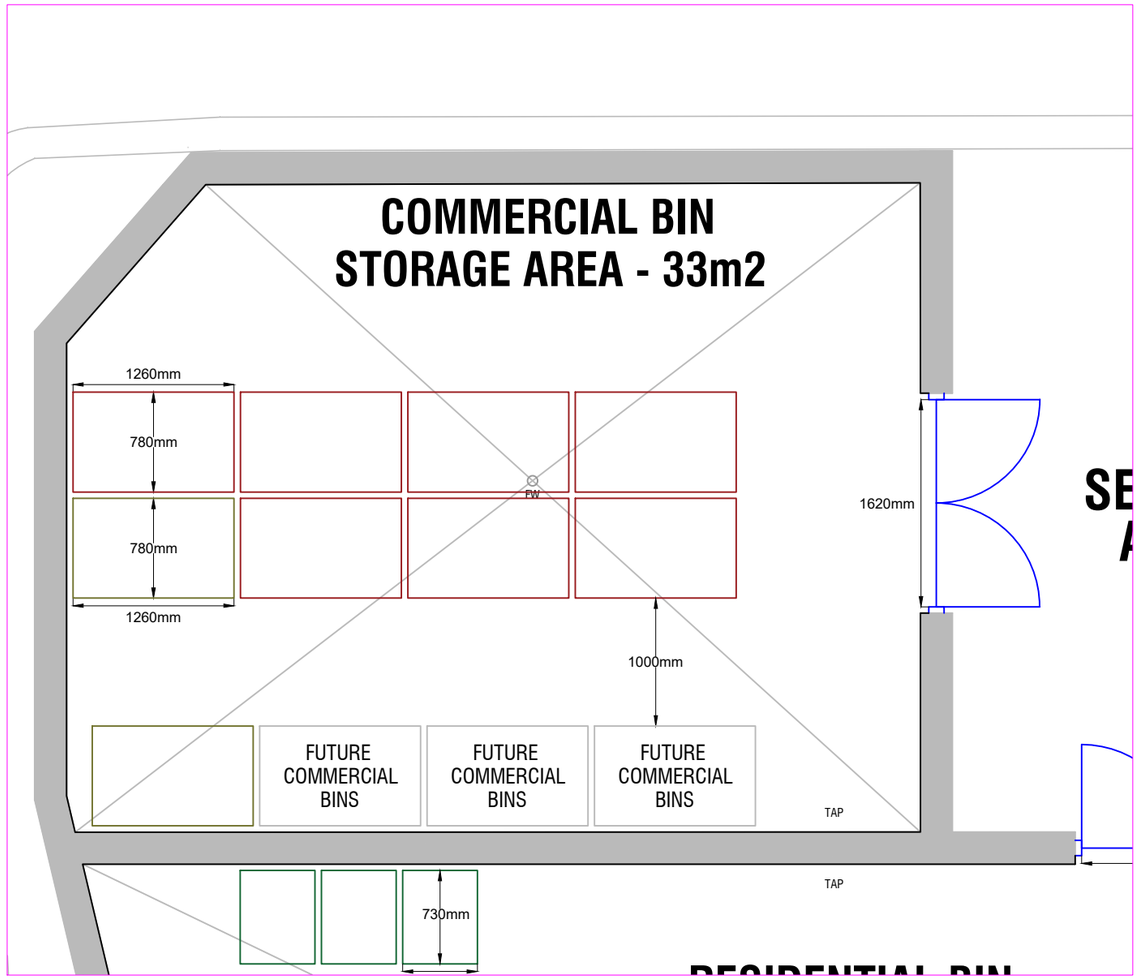
Project: Lot 1015, 79 Orsino Boulevard, Port Coogee

Title: Residential Bin Storage Area

Drawn by:	DP	Job No:	TW21036
Checked by:	RH	File No:	TW21036DWG001
Approved by:	RH	Fig. No:	002
Scale:	NTS	Rev:	B
Date:	13/04/21		

Commercial Bin Storage Area





Legend:

Commercial Bin Storage Area

- 7 x 660L refuse (780mm x 1,260mm)
- 2 x 660L recycling (780mm x 1,260mm)

N

talis delivering solutions
www.talisconsultants.com.au T: 1300 251 070

ASSET MANAGEMENT
CIVIL ENGINEERING
ENVIRONMENTAL SERVICES
SPATIAL INTELLIGENCE
WASTE MANAGEMENT
NOISE MANAGEMENT

Level 1 604 Newcastle Street,
Leederville WA 6007
PO Box 454, Leederville WA 6903

Client: Port Coogee No 2 Pty Ltd

NOTES

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

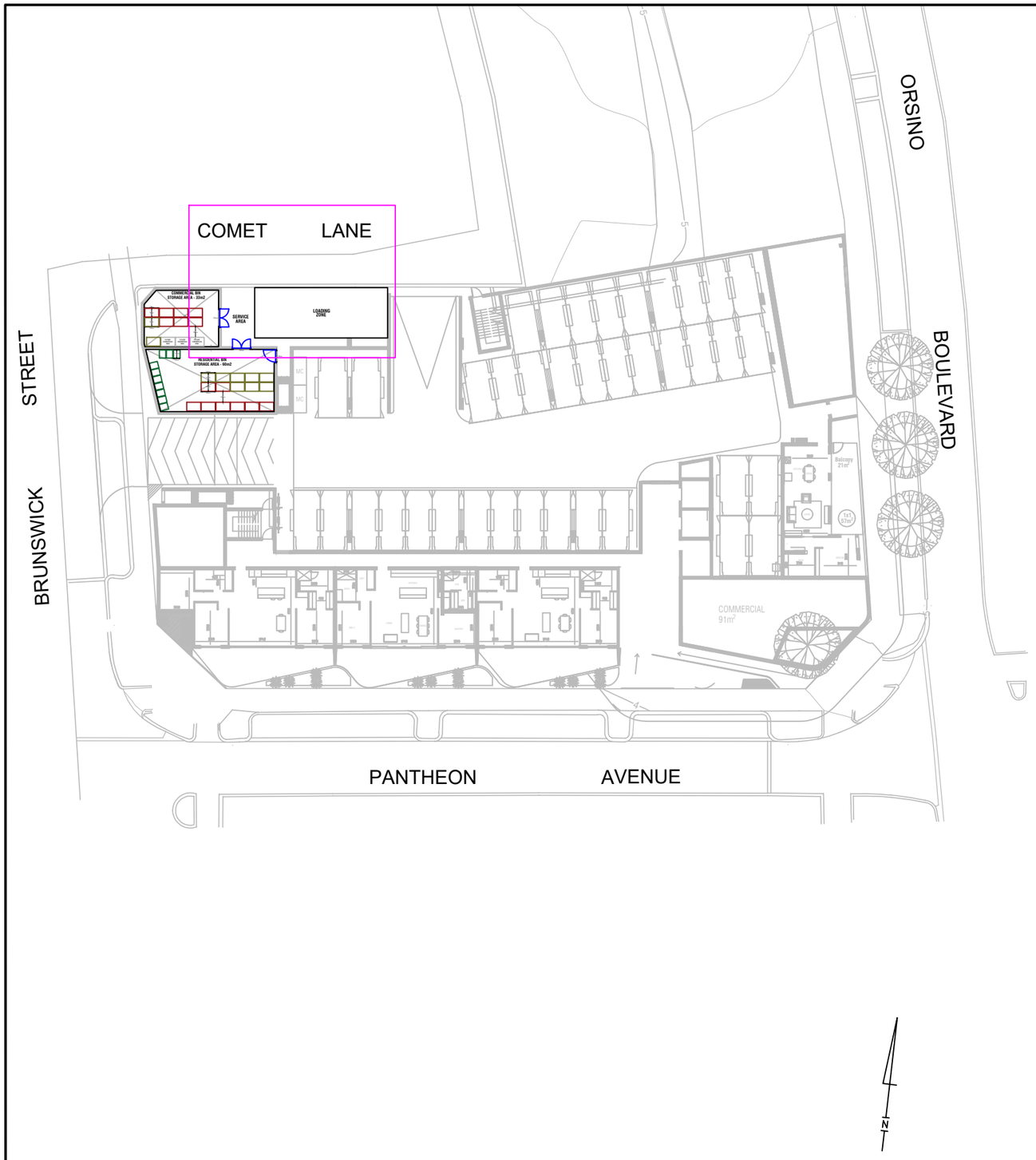
No.	Date	Drawn / Chkr	Amendment / Issue	App.
B	13/04/21	DP / RH	SECOND ISSUE	DP
A	09/04/21	DP / RH	FIRST ISSUE	DP

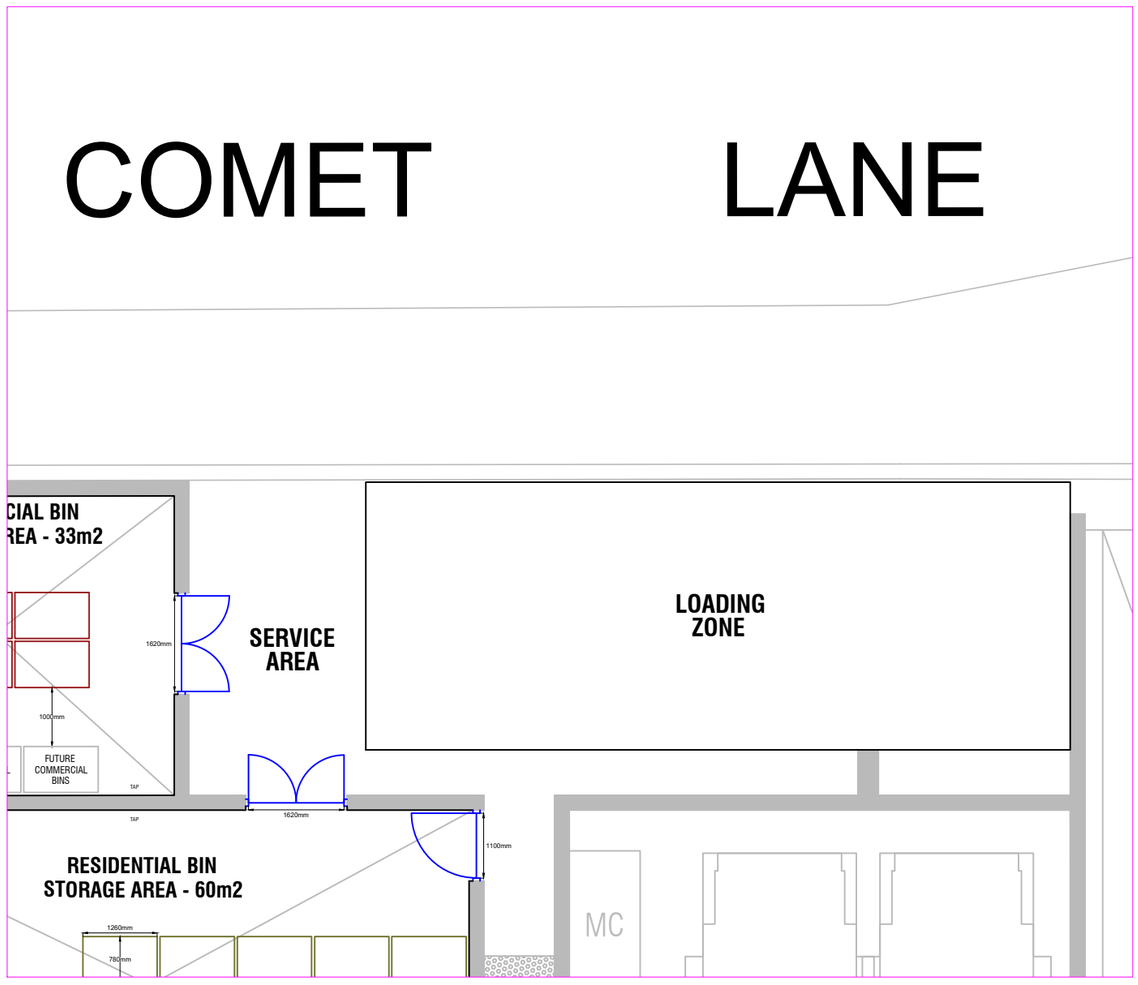
Project: Lot 1015, 79 Orsino Boulevard, Port Coogee

Title: Commercial Bin Storage Area

Drawn by:	DP	Job No:	TW21036
Checked by:	RH	File No:	TW21036DWG001
Approved by:	RH	Fig. No: 003	Rev: B
Scale:	NTS		
Date:	13/04/21		

Loading Zone





talis delivering solutions
www.talisconsultants.com.au T: 1300 251 070

ASSET MANAGEMENT
CIVIL ENGINEERING
ENVIRONMENTAL SERVICES
SPATIAL INTELLIGENCE
WASTE MANAGEMENT
NOISE MANAGEMENT

Level 1 604 Newcastle Street,
Leederville WA 6007
PO Box 454, Leederville WA 6903

Client: Port Coogee No 2 Pty Ltd

NOTES

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

No.	Date	Drawn / Chk	Amendment / Issue	App.
B	13/04/21	DP / RH	SECOND ISSUE	DP
A	09/04/21	DP / RH	FIRST ISSUE	DP

Project: Lot 1015, 79 Orsino Boulevard, Port Coogee

Title: Loading Zone

Drawn by:	DP	Job No:	TW21036
Checked by:	RH	File No:	TW21036DWG001
Approved by:	RH	Fig. No: 004	Rev: B
Scale:	NTS		
Date:	13/04/21		

Assets | Engineering | Environment | Noise | Spatial | Waste

Talis Consultants

Head Office
Level 1, 604 Newcastle Street,
Leederville
Western Australia 6007

PO Box 454,
Leederville
Western Australia 6903

NSW Office
5/62 North Street, Nowra
New South Wales, 2541

PO Box 1189, Nowra
New South Wales, 2541

P: 1300 251 070
E: info@talisconsultants.com.au

MJA STUDIO

79 ORSINO BLVD
PORT COOGEE

DEVELOPMENT APPLICATION
ACOUSTIC REPORT

APRIL 2021

OUR REFERENCE: 27579-2-21146

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
P.O. Box 219, Como, W.A. 6952
(08) 9367 6200
hsa@hsacoustics.com.au

DOCUMENT CONTROL PAGE

DA ACOUSTIC REPORT

79 ORSINO BLVD, PORT COOGEE

Job No: 21146

Document Reference : 27579-2-21146

FOR

MJA STUDIO

DOCUMENT INFORMATION			
Author:	George Watts	**Checked :**	Tim Reynolds
Date of Issue :	16 April 2021		

REVISION HISTORY				
Revision	**Description**	**Date**	**Author**	**Checked**
1	Revision to include commentary on commercial premises	8/7/2021	GW	TR

DOCUMENT DISTRIBUTION				
Copy No.	**Version No.**	**Destination**	**Hard Copy**	**Electronic Copy**
1	1	MJA Studio Attn : Stefan Oh Email: stefan@mjastudio.net		✓
1	2	MJA Studio Attn : Stefan Oh Email: stefan@mjastudio.net		✓

CONTENTS

APPENDICES

1.0 INTRODUCTION

Herring Storer Acoustics was commissioned to conduct a preliminary review of the proposed development at 79 Orsino Boulevard, Port Coogee.

This report has been based on the Development Application drawings provided.

2.0 PROPOSED DEVELOPMENT

The proposed development site is located at 79 Orsino Boulevard, Port Coogee.

The development consists of a five floor apartment building with basement and ground floor parking and rooftop amenities.

Commercial tenancies are to be located on the ground floor fronting Pantheon Avenue.

3.0 CRITERIA

3.1 BCA PROVISIONS

For Class 2 or 3 buildings, Part F5 of the National Construction Code (NCC), outlines the minimum acoustic isolation of apartments. The following summarises the acoustic criteria:

3.1.1 Walls

Wet to wet	$R_W + C_{tr}$ not less than 50 dB.
Living to living	$R_W + C_{tr}$ not less than 50 dB.
Wet to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous
Kitchens to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous

Note: Where kitchens are part of an open living area, we consider the kitchen to be part of the living area and in these cases a discontinuous construction is required. This also includes cases where kitchens are back-to-back, however, discontinuous construction is only required on one side.

3.1.2 Floors

Floors	$R_W + C_{tr}$ not less than 50 dB.
Impact Isolation	$L_{n,w}$ not more than 55 dB is recommended.

Note: The impact isolation criteria under the BCA is an $L_{n,w}$ of not more than 62 dB. However, as a member firm of the Association of Australasian Acoustic Consultants, (AAAC) we recommend a criteria of an $L_{n,w}$ of not more than 55 dB be adopted for a development of this type.

3.1.3 Service Risers

to Habitable Rooms $R_W + C_{tr}$ not less than 40 dB.

to Non-Habitable Rooms $R_W + C_{tr}$ not less than 25 dB.

3.1.4 Hydraulics

The above requirements also apply to storm water down pipes.

3.1.5 Doors

Door (Connecting) R_W not less than 30 dB.

The development will be designed to comply with the requirements of Part F5 of the BCA.

3.2 ENVIRONMENTAL PROTECTION (NOISE) REGULATIONS 1997

The *Environmental Protection (Noise) Regulations 1997* stipulate the allowable noise levels at any noise sensitive premises from other premises. The allowable or assigned noise levels for noise sensitive premises are determined by the calculation of an influencing factor, which is added to the baseline criteria set out in Table 1 of the Regulations. The baseline assigned noise levels are listed in Table 3.1. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern.

TABLE 3.1 – ASSIGNED NOISE LEVELS

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF

Note: The L_{A10} noise level is the noise that is exceeded for 10% of the time.
The L_{A1} noise level is the noise that is exceeded for 1% of the time.
The L_{Amax} noise level is the maximum noise level recorded.

It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at other premises, defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3dB $L_{A\ Fast}$ in any one-third octave band;
(b) is present for more at least 10% of the representative assessment period; and
(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and
(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at other premises.

TABLE 3.2 – ADJUSTMENTS FOR ANNOYING CHARACTERISTICS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

Figure 1 below shows the apartment development location and the surrounding noise sensitive premises. Representative locations have been shown for these noise sensitive premises.

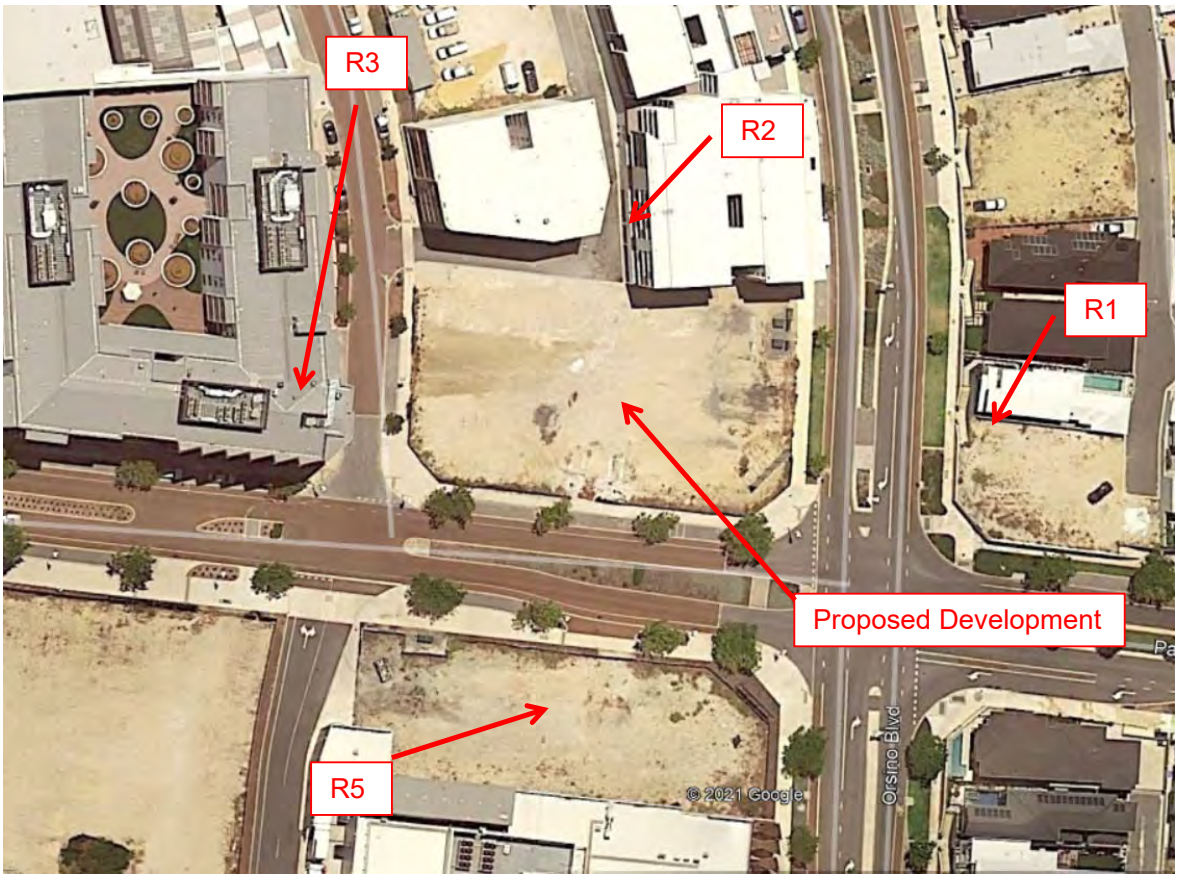


FIGURE 1 – LOCATION PLAN

From a review of the development, the influencing factor for the premises identified in proximity to the development would be 6 dB, based on the following :

Major Roads within outer circle;
Cockburn Road + 2 dB

Commercial Premises within the inner circle;
60 % + 3 dB

Commercial Premises within the outer circle;
20 % + 1 dB

Total IF + 6 dB

Hence the influencing factor would be + 6 dB and the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday	51	61	71
	0900 - 1900 hours Sunday and Public Holidays	46	56	71
	1900 - 2200 hours all days	46	56	61
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	41	51	61

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

We note that noise emissions from the premises need to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*. In this instance the noise sources where the regulations are applicable are considered to be limited to mechanical services (ie air conditioning systems and carpark exhaust).

3.3 NOISE INGRESS

Inbound Noise Levels

It is proposed to adopt an internal noise level design criteria, similar to other areas within the Perth metropolitan area. The aim of the criteria is to design the residential building façade to achieve the following internal sound levels :

- L_{eq} 35 dB(A) in sleeping areas (bedrooms); and
- L_{eq} 40 dB(A) in living/work areas and other habitable rooms.

It is noted that these internal design sound levels are congruent with other noise ingress policies such as the WAPC State Planning Policy 5.4 and the Town of Vincent Sound Attenuation Policy, and whilst these policies are not applicable at this location, it is inferred from the City of Cockburn Local Planning Policy 1.12 “Noise Attenuation” that this is the intent.

4.0 BCA REQUIRMENTS

The proposed development will be constructed to comply with the requirements of Part F5 of the NCC. During the design process to comply with the NCC/BCA requirements, the criteria would be exceeded, to ensure that the conditions are met.

5.0 NOISE INGRESS

5.1 NOISE SOURCE IDENTIFICATION

The area of the proposed development was examined to ascertain the applicable noise sources.

A noise logger was established on site between 15th April 2021 and 19th April 2021.

The purpose of the monitoring was to ascertain any street breakout noise (ambient noise) in the area associated with the mixed-use environment in the area.

Residual breakout noise from entertainment venues were identified and quantified as a part of this process.

The result of this work is included in a separate report that will accompany the development application.

6.0 NOISE FROM DEVELOPMENT

The main source of noise from the proposed development will be from mechanical services consisting of air-conditioning condenser units. Noise received at neighbouring premises from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

6.1 MECHANICAL SERVICES

The main source of noise from the proposed development will be from mechanical services consisting of condenser units associated with air-conditioning plant. Noise received at noise sensitive premises (premises in the vicinity) from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

As the mechanical services could operate during the night, noise emissions from the development needs to comply with the assigned L_{A10} night period noise level of 41 dB(A) at noise sensitive premises. Potentially, noise emissions from mechanical services could be tonal, in which case an +5 dB(A) penalty for a tonal component could be applied to the resultant noise levels. Therefore, the design level at the neighbouring residential premises would be 36 L_{A10} dB.

6.1.1 Air Conditioning

The air conditioning system proposed for the development is not resolved at this point in time, however, it appears likely that the bulk of the equipment would be located either in the basement or roof top. Given the barrier effect that would be afforded by the building to the surrounds, and the high influencing factor in the area, compliance with the applicable assigned noise levels is not considered to be onerous.

6.1.2 Car Park Exhaust Fans

Noise emissions from the carpark exhaust fans, will also need to comply with the Regulatory requirements. From previous projects, we believe that with careful fan selection and the incorporation of either 1D or 2D unpodded silencers, compliance with the *Environmental Protection (Noise) Regulations 1997* is normally achieved.

6.2 WASTE COLLECTION

Noise emissions from waste collection are exempt from requiring to comply with the *Environmental Protection (Noise) Regulations 1997*, under Regulation 14A.

Regulation 14A exempts waste collection from being required to meet the Assigned Noise Levels stipulated by the *Environmental Protection (Noise) Regulations 1997* provided the works are either carried out during the day period, or under a noise management plan.

It appears that bin compounds is designed to incorporate larger style bins to service the apartment building, the provision of a noise management plan (if collections are to occur outside the day period) would be the responsibility of the City of Cockburn to provide, and would be no different to any other typical residential premise in the area.

In the event that a private contractor is utilised for bin collection, the responsibility of a noise management plan (if required) would fall to the contractor.

Regardless of which method is utilised above, the end result would be no different – in terms of noise impact – to a normal residence in the area.

6.3 GROUND FLOOR CAFE

A commercial premises is noted on the south east corner of the ground floor.

It is understood that a café/restaurant tenancy may be proposed at this location, however, the tenant and manner of operation within the tenancy is not known at this stage in the development.

The façade of the commercial premises is understood to be constructed (as a minimum) of 10mm thick laminated glass.

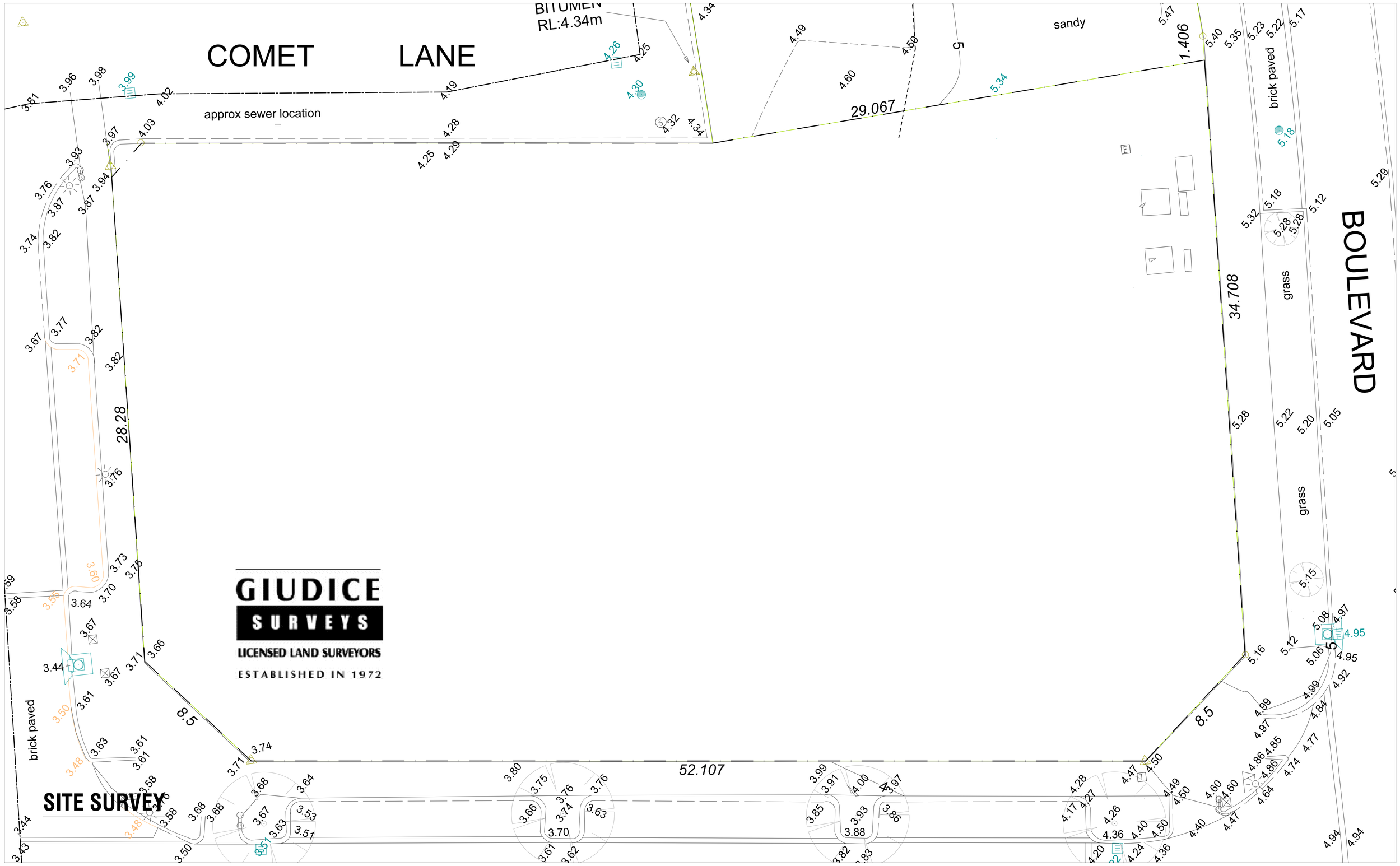
Assuming typical café/restaurant use within the tenancy, which would include low key background music - below conversation level, and patrons talking, the construction of the premises is considered sufficient to attenuate the use of the tenancy such that noise impacts at nearby noise sensitive premises would be negligible and compliant with the *Environmental Protection (Noise) Regulations 1997* at all hours.

A more detailed assessment of noise impacts of the use of the tenancy is considered appropriate to be undertaken by the future tenant of the commercial premises during their development application process with the relevant local planning authorities.

This may include considerations such as alfresco seating, proposed opening hours and whether some external doors to the tenancy need to be considered “normally closed” (i.e. not propped open) during some of the assessable time periods.

APPENDIX A

DRAWINGS



MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

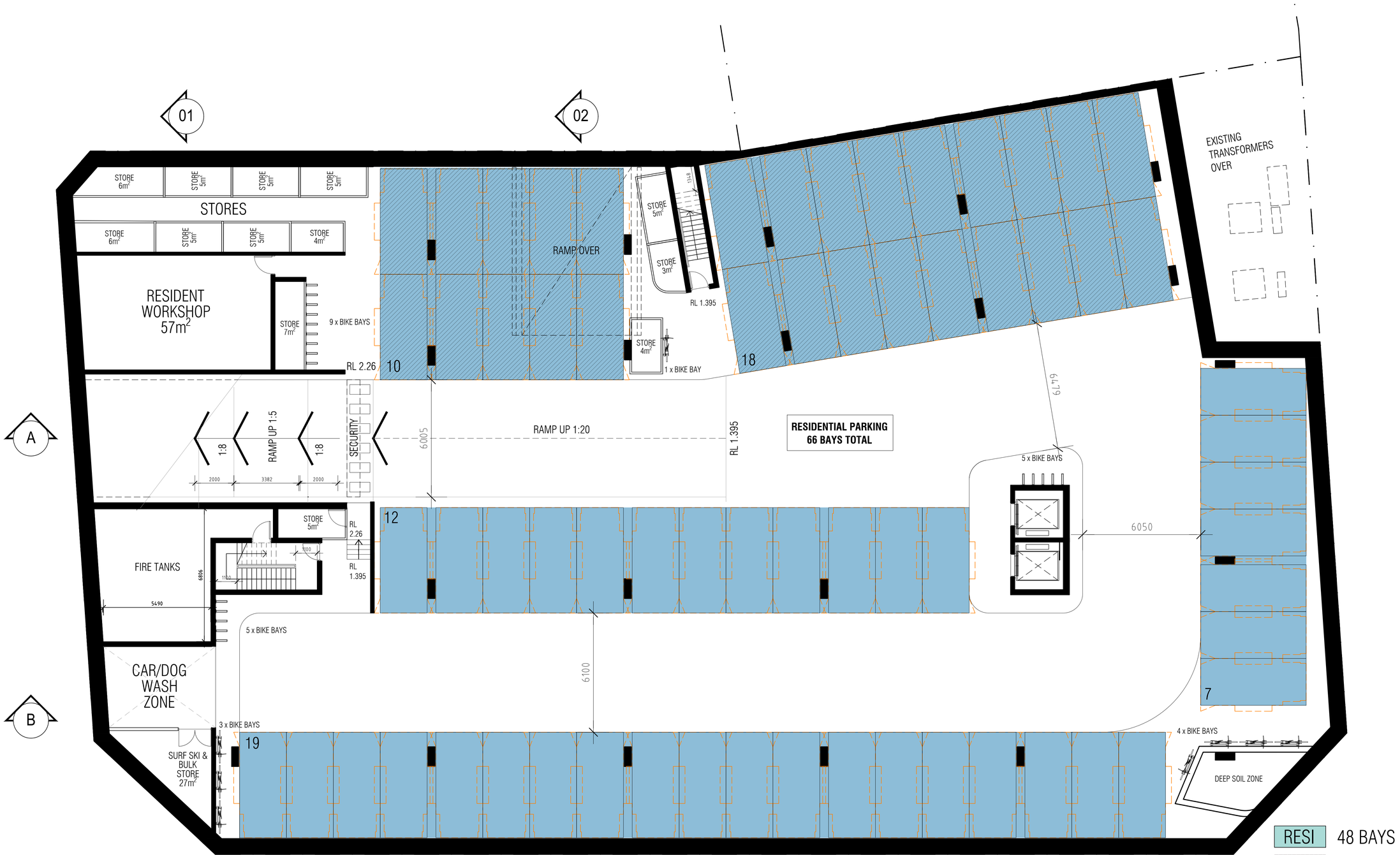
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SITE SURVEY

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.00	SO	WB	A



RESI 48 BAYS

TAND 18 BAYS

BASEMENT

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.01	SO	WB	A

COMET LANE

BITUMEN
RL:4.34m

sandy

brick paved

grass

BOULEVARD

footpath

concrete

approx sewer location

01

02

COMM. BIN STORE

BIN COLLECTION ZONE

RL 4.03

660L

RESI BIN STORE + BULK WASTE AREA
56m²

RL 4.25

RL 4.35

RAMP UP 1:8

SECURITY
RL 5.28

STORE 5m²

29.067

EXISTING TRANSFORMER COMPOUND

ESCAPE — RL 5.28

34.708

STORE 6m²

RESIDENTIAL+COMMERCIAL PARKING
38 BAYS TOTAL (+6 RECIPROCAL ON STREET)

RAMP UP 1:20

RL 3.83

RL 3.53

RL 3.28

1:8

6000

6326

6301

NEW CROSSOVER TO CITY S REQS.

28.28

1.5m

2 x BIKE BAYS

RL 3.76

RL 5.28

PUMPS (TANKS BELOW)

SERVICES

POTENTIAL FUTURE COMM. PARKING

1 BED APARTMENT
TOTAL AREA
54m2

Balcony
21m²

1x1
54m²

MAIL ROOM

3 BED APARTMENT
to be converted into
two future commercial
tenancies
TOTAL AREA
96m2

2 BED APARTMENT
to be converted into
two future commercial
tenancies
TOTAL AREA
85m2

2 BED APARTMENT
to be converted into
two future commercial
tenancies
TOTAL AREA
85m2

RL 5.28

COMMERCIAL
91m²

RL 5.16

RL 4.00

RL 4.50

bench

1:14

2 VISITOR BAYS

52.107

2 VISITOR BAYS

2 VISITOR BAYS (incorporate on street accessible bay)

COMM 6 BAYS

RESI 12 BAYS

TAND 10 (+2 BAYS)

RESIP. 6 BAYS (on street)

GROUND FLOOR

Residences designated for future conversion to commercial tenancies.

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.02	SO	WB	A

MJA STUDIO
T +61 8 9388 0333 | www.mjastudio.net

FIRST FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1
0 1 2 5

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.03	SO	WB	A

SECOND, THIRD FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

NORTH

SCALE
1:100 @ A1
0 1 2 5

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.04	SO	WB	A

FOURTH, FIFTH FLOOR

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.05	SO	WB	A

ROOFTOP AMENITY

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

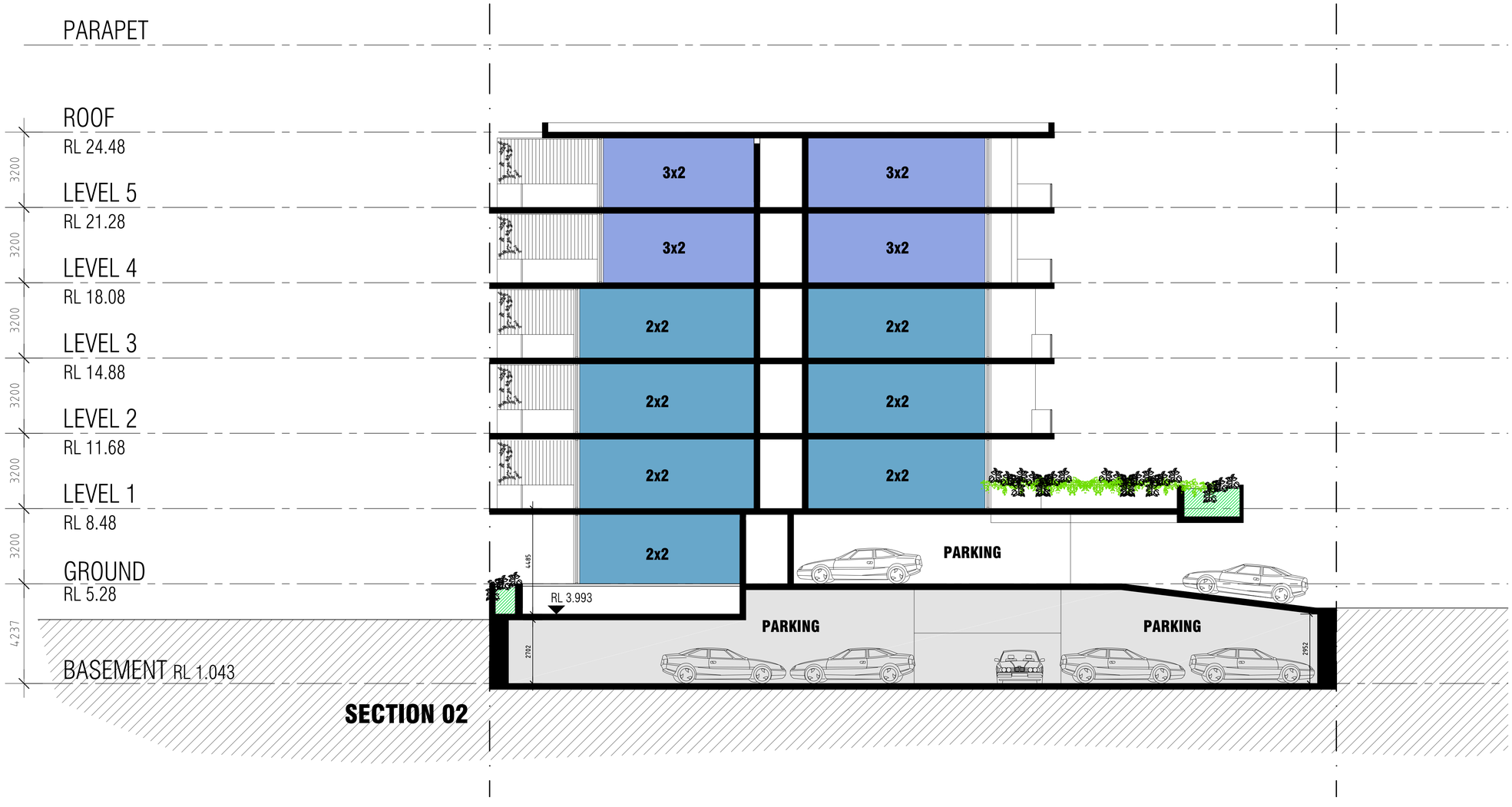
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
FLOOR PLANS:
AS SHOWN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SO	WB	A



SECTION 02

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

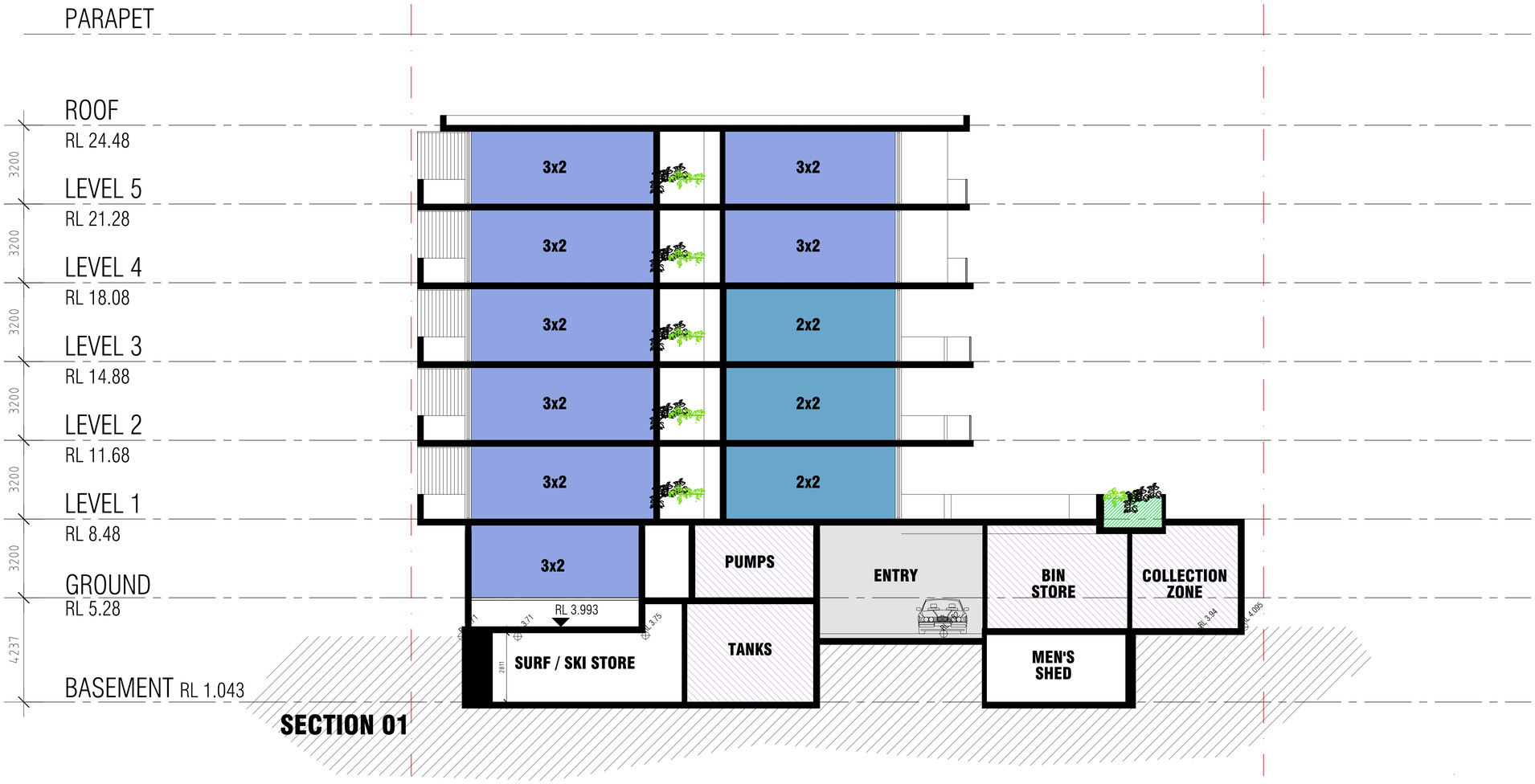
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.00	SO	WB	A



SECTION 01

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

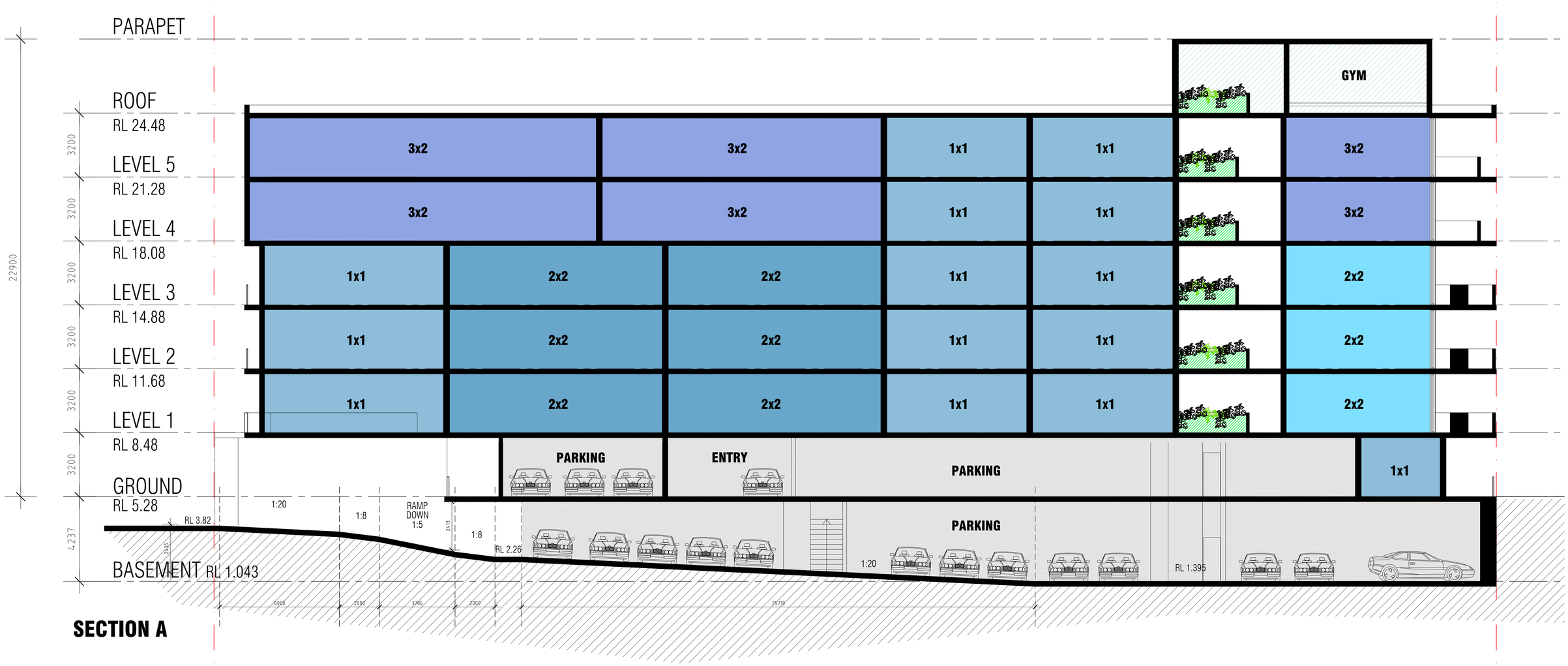
PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.01	SO	WB	A



SECTION A

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

NORTH

SCALE
0 1 2 5
1:100 @ A1

DRAWING
SECTIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA3.02	SO	WB	A

60 APARTMENTS

	1x1	1x1	1x1	2x1	2x2	2x2 future COMM TENANCIES	2x2	2x2	3x2 future COMM TENANCIES	3x2	3x2	3x2	3x2	TOTAL	COMMERCIAL TENANCIES
	50	54	60	70	78	85	87	91	96	103	113	118	123		91
G		1				2			1					4	1
1	2		1	1	2		4	1		1				12	
2	2		1	1	2		4	1		1				12	
3	2		1	1	2		4	1		1				12	
4	2		1		2					1	1	2	1	10	
5	2		1		2					1	1	2	1	10	
TOTAL	10	1	5	3	10	2	12	3	1	5	2	4	2	60	1
	500	54	300	210	780	170	1044	273	96	515	226	472	246	4886	91

TOTAL AREA 4977

1x1s	2x2s	3x2s
16	30	14
26.66%	50%	23.33%

PARKING

104 BAYS TOTAL

RESIDENTIAL:	98 BAYS
COMMERCIAL/VISITOR:	6 BAYS
VISITOR (ON STREET):	6 BAYS

MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

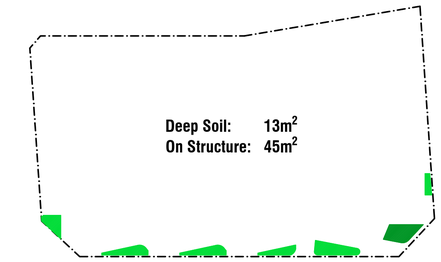
NORTH

SCALE

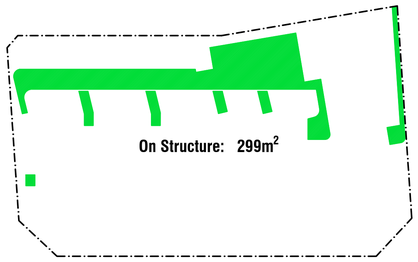
DRAWING
YIELD

DRAWING NO.	DRAFTER	CHECKED	REV.
DA4.00	SO	WB	A

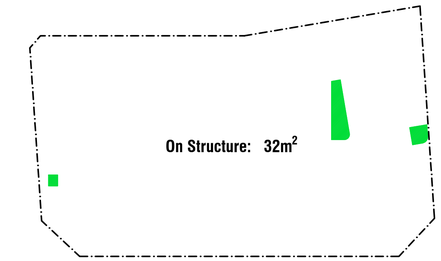
Landscaping Calculations



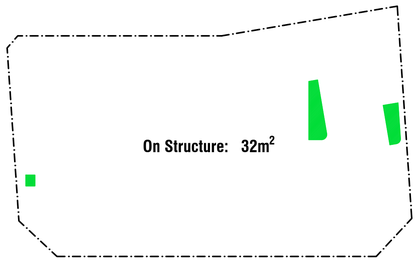
GROUND FLOOR



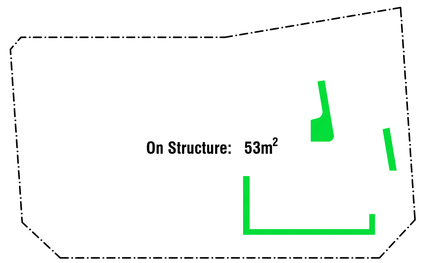
FIRST FLOOR



SECOND, THIRD FLOOR



FOURTH, FIFTH FLOOR



ROOFTOP AMENITY

LANDSCAPING AREAS	DEEP SOIL	ON STRUCTURE
G	13	45
1		299
2		32
3		32
4		32
5		32
ROOF TER		53
TOTAL	13	473

DEEP SOIL (site area 2341m²)
Required (10% site area) 234m²
Proposed 13m²

ON STRUCTURE
Required (2 x DSA shortfall) 442m²
Proposed 525m²

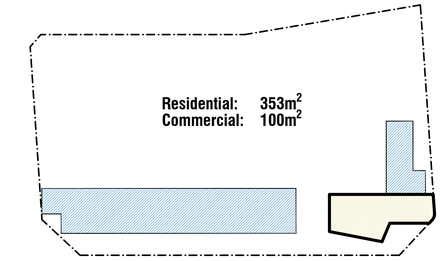
SURPLUS 83m² (OR

quired)

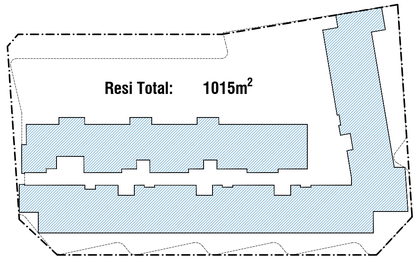
Provided Trees

1 x Large 1 x Medium 7 x Small

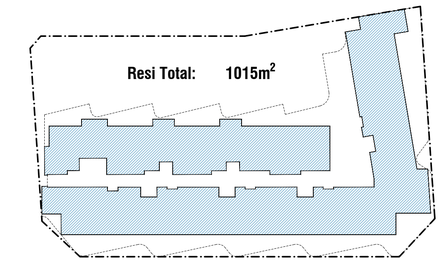
Plot Ratio Calculations



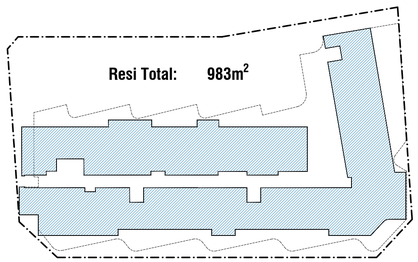
GROUND FLOOR



FIRST FLOOR



SECOND, THIRD FLOOR



FOURTH, FIFTH FLOOR

PLOT RATIO	RESIDENTIAL	COMMERCIAL	
G	353	100	
1	1015		
2	1015		
3	1015		
4	983		
5	983		
ROOF TER			
TOTAL	5364	100	5464

RESIDENTIAL PLOT RATIO (site area 2341m²)
1 : 2.29

RESIDENTIAL + COMMERCIAL PLOT RATIO
1 : 2.33

MJA STUDIO

T +61 8 9388 0333 | www.mjastudio.net

REV.	DATE	AMENDMENT
A	12.03.21	PRE-LODGEMENT ISSUE

BCA COMPLIANCE:
STRUCTURAL:
HYDRAULIC:
ELECTRICAL:
MECHANICAL:
ENERGY:
FIRE:

CLIENT
STIRLING

PROJECT
15053
PORT COOGEE DEVELOPMENT

PROJECT ADDRESS
79 ORSINO BLVD
PORT COOGEE

PROJECT STATUS
PRELIMINARY

PROJECT NUMBER
15053

NORTH

SCALE
1:500 @ A1

DRAWING
DIAGRAMS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA5.00	SO	WB	A

WINDTECH

PEDESTRIAN WIND ENVIRONMENT STATEMENT

LOT 1015 PANTHEON AVE, PORT COOGEE

WC792-02F02(REV2)- WS REPORT

JUNE 9, 2021

Prepared for:

Port Coogee No.2 Pty Ltd

301/26 Charles Street, South Perth WA 6166

DOCUMENT CONTROL

Date	Revision History	Issued Revision	Prepared By (initials)	Instructed By (initials)	Reviewed & Authorised by (initials)
April 13, 2021	Initial.	0	PT	SWR	HK
April 20, 2021	Update to title.	1	PT	SWR	HK
June 9, 2021	Assessment criteria.	2	HK	SWR	TR

EXECUTIVE SUMMARY

This report presents an opinion on the likely impact of the development located at Lot 1015 Pantheon Avenue, Port Coogee, on the local wind environment at the critical outdoor areas within and around the subject site. The effect of wind activity has been examined for the three predominant wind directions for the region, namely the easterly, south-westerly and westerly winds. The analysis of the wind effects relating to the proposed development have been carried out in the context of the local wind climate, building morphology and land topography.

The conclusions of this report are drawn from our extensive experience in this field and are based on an examination of the latest architectural drawings. No wind tunnel testing has been undertaken for the subject development, and hence this report addresses only the general wind effects and any localised effects that are identifiable by visual inspection of the architectural drawings provided (received 12 April 2021). Any recommendations in this report are made only in-principle and are based on our extensive experience in the study of wind environment effects.

The results of this assessment indicate that the development has incorporated several design features and wind mitigating strategies and is expected to be suitable for the intended use for the majority of the outdoor trafficable areas. However, there are some areas that are likely to be exposed to stronger winds. It is expected that the wind effects identified in the report can be ameliorated with the consideration of the following treatment strategies into the design of the development:

- Ground level trafficable areas:
    - Retention of the existing trees along Orsino Boulevard, Pantheon Avenue and Palladium Terrace.
    - Inclusion of the proposed trees and planting in the final design. All trees and planting should be of a densely foliating evergreen species and have interlocking canopies.
    - Retentions of minimum 2 metre high inter-tenancy screens along the southern aspects of the southern-most tenancies.
    - Retention of the awning that wraps around the south-eastern corner of the development.
- Private Balconies:
    - Retention of the full-height inter-tenancy screens for the balconies along the eastern aspect of the development on the first second and third floors.
    - Inclusion of full-height end-screens along the northern perimeters of the balconies on the eastern aspect of the development on the fourth and fifth floors.
    - Retention of the full-height inter-tenancy screens for the balconies along the southern aspect of the development
    - Retention of the porous and impermeable outer screening for the balconies along the southern aspect of the development.

- Inclusion of the proposed planting along the western aspect of the western-most balcony on the northern aspect of the development on the first floor.
- Inclusion of full-height screening along the western aspect of the western-most balconies on the northern aspect of the development on the second, third, fourth and fifth floors.

- Rooftop Terraces:
  - Inclusion of the proposed planting and trees in the final design.
  - Inclusion of 1.5-2 metre high impermeable balustrades along the western, southern and eastern perimeters of the rooftop terrace area.

With the inclusion of the abovementioned recommendations in the final design, it is expected that wind conditions for the various trafficable outdoor areas within and around the development will be suitable for their intended uses, and that the wind speeds will satisfy the applicable criteria for pedestrian comfort and safety.

CONTENTS

1 INTRODUCTION

An opinion on the likely impact of the proposed design on the local wind environment affecting pedestrians within the critical outdoor areas within and around the subject development is presented in this report. The analysis of wind effects relating to the proposed development has been carried out in the context of the predominant wind directions for the region, building morphology of the development and nearby buildings, and local land topography. The conclusions of this report are drawn from our extensive experience in the field of wind engineering and studies of wind environment effects.

No wind tunnel testing has been undertaken for this assessment. Hence this report addresses only the general wind effects and any localised effects that are identifiable by visual inspection, and any recommendations in this report are made only in-principle.

2 DESCRIPTION OF DEVELOPMENT AND SURROUNDINGS

The site is located at Lot 1015 Pantheon Avenue, Port Coogee, and is bounded by Pantheon Avenue to the south, Orsino Boulevard to the east, Palladium Terrace to the west, and mid-rise apartment blocks of approximately 5-storeys in height to the north. Further afar, low-rise residential houses stretch eastward, while a mid-rise apartment block sits to west, followed by the Coogee Port Marina.

A survey of the land topography indicates a gradual slope up towards the east, however, there are no major elevation changes in the area immediately surrounding the site that would significantly affect the winds approaching the site.

An aerial image of the subject site and the local surroundings is shown in Figure 1, with the frequency and magnitude of the prevailing winds is superimposed for each wind direction.

The subject development is approximately 5 storeys in height, with retail and commercial spaces on Ground Level, and residential apartments and terraces above.

The critical outdoor trafficable areas associated with the proposed development, which are the focus of this assessment with regards to wind effects, are listed as follows:

- Ground Level areas and pedestrian footpaths along Orsino Boulevard, Pantheon Avenue and Palladium Terrace.
- The private balconies.
- The rooftop terraces.

Figure 1: Aerial Image of the Site Location and Prevailing Wind Directions

3 REGIONAL WIND

The Perth region is governed by three principal wind directions, and these can potentially affect the subject development. These winds prevail from the east, south-west and west. A summary of the principal time of occurrence of these winds throughout the year is presented in Table 1 below. This summary is based on an analysis of wind rose data obtained by the Bureau of Meteorology from the meteorological recording station located at Perth Airport, with the data having been recorded from 1944 to 2006.

Table 1: Principal Time of Occurrence of Winds for Perth

Month	Wind Direction		
	Easterly	South-Westerly	Westerly
January	X	X	
February	X	X	
March	X	X	X
April	X	X	X
May	X		X
June			X
July			X
August		X	X
September	X	X	X
October	X	X	X
November	X	X	X
December	X	X	

A directional plot of the annual and 5% exceedance winds for the Perth region, and the frequency of the winds are shown in Figure 2, which has also been produced based on the analysis of recorded wind speed data obtained from the meteorological recording station located at Perth Airport.

As shown in Figure 2, the easterly winds are the most frequent for the Perth region, and are also the strongest. The south-westerly winds occur most frequently during the warmer months of the year for the Perth region, and hence are usually welcomed within outdoor areas. South-westerly winds are also similar strength to the westerly winds, but not as strong as the easterly events. The south-westerly and westerly winds typically occur during the afternoon periods.

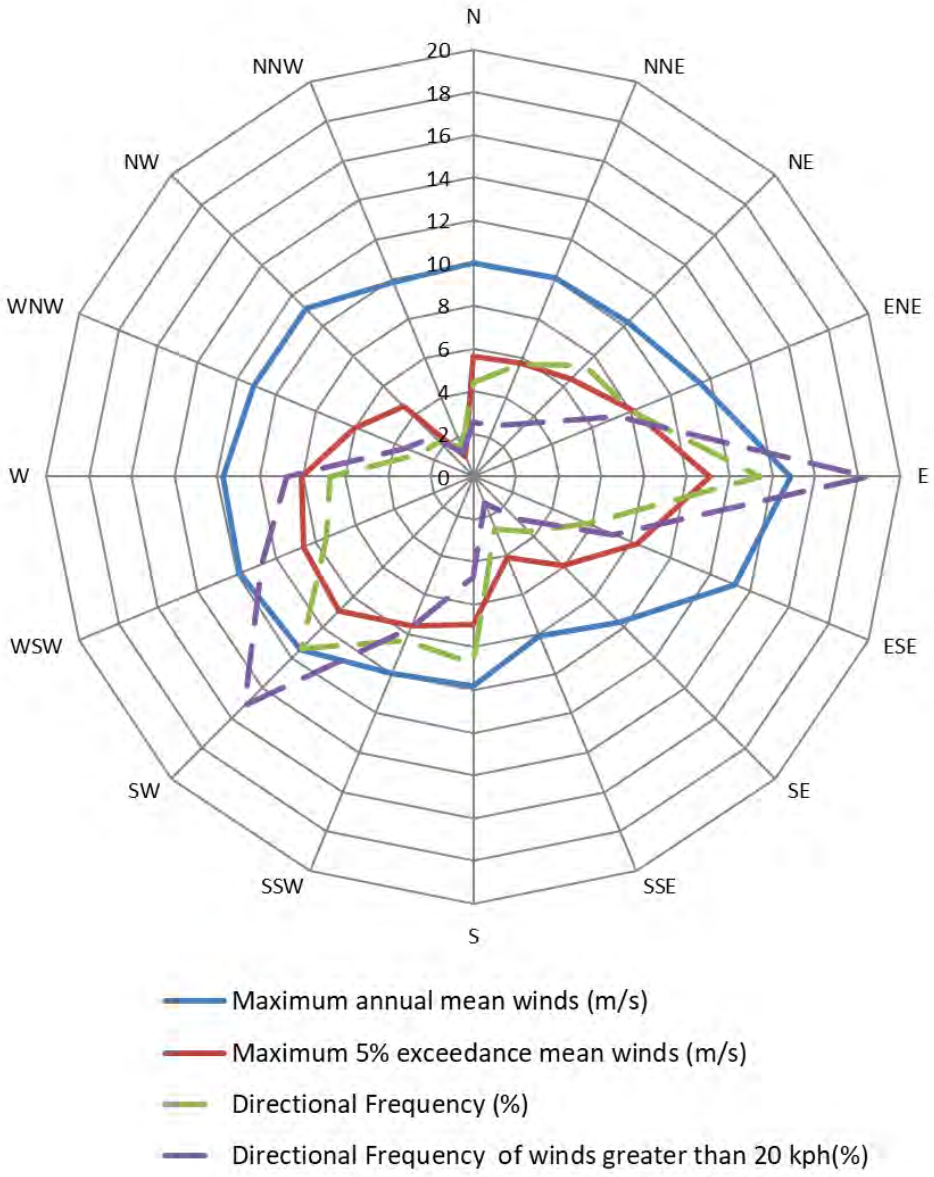


Figure 2: Annual and 5% Exceedance Hourly Mean Wind Speeds, and Frequencies of Occurrence, for the Perth Region (referenced to 10m above ground in standard open terrain)

4 WIND EFFECTS ON PEOPLE

The acceptability of wind in any area is dependent upon its use. For example, people walking, or window-shopping will tolerate higher wind speeds than those seated at an outdoor restaurant. Various other researchers, such as A.G. Davenport, T.V. Lawson, W.H. Melbourne, and A.D. Penwarden, have published criteria for pedestrian comfort for pedestrians in outdoor spaces for various types of activities. Some Councils and Local Government Authorities have adopted elements of some of these into their planning control requirements.

For example, A.D. Penwarden (1973) developed a modified version of the Beaufort scale which describes the effects of various wind intensities on people. Table 2 presents the modified Beaufort scale. Note that the effects listed in this table refers to wind conditions occurring frequently over the averaging time (a probability of occurrence exceeding 5%). Higher ranges of wind speeds can be tolerated for rarer events.

Table 2: Summary of Wind Effects on People (A.D. Penwarden, 1973)

Type of Winds	Beaufort Number	Mean Wind Speed (m/s)	Effects
Calm	0	Less than 0.3	Negligible.
Calm, light air	1	0.3 – 1.6	No noticeable wind.
Light breeze	2	1.6 – 3.4	Wind felt on face.
Gentle breeze	3	3.4 – 5.5	Hair is disturbed, clothing flaps, newspapers difficult to read.
Moderate breeze	4	5.5 – 8.0	Raises dust, dry soil and loose paper, hair disarranged.
Fresh breeze	5	8.0 – 10.8	Force of wind felt on body, danger of stumbling
Strong breeze	6	10.8 – 13.9	Umbrellas used with difficulty, hair blown straight, difficult to walk steadily, wind noise on ears unpleasant.
Near gale	7	13.9 – 17.2	Inconvenience felt when walking.
Gale	8	17.2 – 20.8	Generally impedes progress, difficulty balancing in gusts.
Strong gale	9	Greater than 20.8	People blown over.

It should be noted that wind speeds affecting this particular development can only be accurately quantified with a wind tunnel study. This assessment addresses only the general wind effects and any localised effects that are identifiable by visual inspection and the acceptability of the conditions for outdoor areas are determined based on their intended use. Any recommendations in this report are made only in-principle and are based on our extensive experience in the study of wind environment effects.

5 RESULTS AND DISCUSSION

The expected wind conditions affecting the development are discussed in the following sub-sections of this report for the various outdoor areas within and around the subject development. The interaction between the wind and the building morphology in the area is considered and important features taken into account including the distances between the surrounding buildings and the proposed building form, as well as the surrounding landform. Note that only the potentially critical wind effects are discussed in this report. A glossary of the different wind effects described in this report included in Appendix A.

The wind criteria applicable for this area is based on the Port Coogee Marina Village Built Form Codes (2014) by the City of Cockburn. This criteria is based on the annual gust wind speeds, and is intended to ensure areas are safe and comfortable for use, and has been considered in this assessment.

Note that assessing wind comfort based on the annual gust criteria has proven to be an inaccurate prediction of the wind comfort due to the lower background turbulence intensity assumption, and has in practice lead to wind comfort issues. Therefore, for this assessment, Windtech have also considered the Gust Equivalent Mean (GEM) criteria for pedestrian comfort, which is current best practice. Field observations have demonstrated that this GEM criteria far more accurately reflects wind comfort when compared against the gust criteria (Rofail, 2017). This criteria is as follows:

- Comfortable Walking Criterion (7.5m/s with a 5% probability of exceedance)
  for general circulation and pedestrian thoroughfares, e.g. footpaths, private balconies/terraces, through-site links etc.

- Short Exposure Criterion (5.5m/s with a 5% probability of exceedance)
  for stationary activities generally less than an hour, e.g. waiting areas, communal terraces, main entries, café seating etc.

- Long Exposure Criterion (3.5m/s with a 5% probability of exceedance)
  for stationary activities longer than an hour, e.g. outdoor cinemas, outdoor fine dining etc.

Although this assessment is qualitative in nature, the abovementioned criteria for pedestrian comfort are considered when assessing the wind environment impacts. However, all areas are also assessed with consideration to a pedestrian safety criterion of 23m/s for the annual maximum gust.

5.1 Ground Level Areas

Orsino Boulevard, which runs north-south, will be largely shielded from the westerly and easterly winds by the subject development and neighbouring houses respectively. However, the predominant south-westerly winds are expected to accelerate around the south-eastern corner of the subject development, before continuing to funnel northward along the street. It is expected that the recent low-rise development immediately opposite Pantheon Avenue will only provide a minimal amount of shielding. The footpath to the western side of the street will be impacted by winds side streaming along the eastern façade of the development.

Pantheon Avenue, which runs east-west, is directly aligned with the predominant easterly and westerly winds, which will funnel along the street. This is expected to lead to these winds side streaming along the southern

façade of the subject development and the footpaths along Pantheon Avenue. South-easterly winds will impact the southern façade on an angle before side streaming eastward. South-easterly winds will also accelerate around the south-eastern corner of the development, before continuing northward.

Similarly to Orsino Boulevard, Palladium Terrace is aligned north-south and will therefore be largely shielded from the westerly and easterly winds. South-easterly winds are expected to funnel along the street and affect the footpath.

The existing trees that border the subject development along Orsino Boulevard, Pantheon Avenue and Palladium Terrace are recommended to be retained. The proposed trees and planter boxes and shrubs are recommended to be included in the final design. All vegetation should be densely foliating, evergreen and have interlocking canopies where possible, particularly for the westerly winter winds.

The inter-tenancy screens at the southern tenancies are recommended to be retained with a minimum height of 2 metres. The awning that wraps around the south-eastern corner of the development is also recommended to be retained. For retail or commercial areas where short-exposure or long-exposure activities are anticipated, portable screening can be utilised to improve comfort conditions. The above treatments recommendations are shown in Figure 3.

Future developments to the south-west of the site is expected to improve the wind conditions from the south-westerly prevailing wind direction through direct shielding.

Figure 3: Recommended Treatment for the Ground Level

5.2 Private Balconies

The private balconies along the eastern aspect of the development will be largely shielded from the predominant westerly and south-westerly winds. Easterly winds will impact the balconies directly, however, the abutting existing development to the north will prevent corner accelerations from these winds for the first, second and third floors. It is recommended that the proposed full-height inter-tenancy screens on the first, second and third floors be retained. The balconies on the fourth and fifth floors are recommended to have full height end-screens along their northern aspects. The proposed planting can be retained to further improve comfort conditions.

The private balconies along the southern aspect of the development will be exposed to side streaming easterly, westerly and south-westerly winds. The eastern-most balcony will be subject to corner accelerations from south-westerly and easterly winds, while the western-most balcony will be subject to corner accelerations from westerly winds. It is recommended that the proposed full-height inter-tenancy screening and porous and impermeable outer screening be retained in the final design.

The private balconies along the northern aspect of the development will be generally shielded from the easterly winds, while the development to the west will provide shielding from westerly winds. South-easterly winds, which are expected to funnel northward along Palladium Terrace, may accelerate around the north-western corner of the development and affect the western-most balconies. On the first floor, it is recommended that the proposed planting along the western aspect of the western-most balcony be included in the final design. This planting should be of a densely foliating evergreen species and have interlocking canopies if possible. For the second, third, fourth and fifth floors, it is recommended that full-height screening be included along the western aspect of the western-most balconies. The proposed planting on all floors can be retained to further improve comfort conditions.

Future developments to the south-west of the site can improve the wind conditions from the south-westerly prevailing wind direction through direct shielding, depending on its height and overall massing.

5.3 Rooftop Terraces

The rooftop terraces will be exposed to directly impacting easterly, westerly and south-westerly winds. Corner accelerations are expected to occur at the south-eastern corner of the Gym and at the north-eastern and south western corners of the Kitchen/Private Lounge block. The awning over the communal terrace is expected to be beneficial in preventing the upwashed winds from reattaching onto the trafficable areas. The wall to the north of the BBQ area is also beneficial in reducing the south-westerly prevailing wind's effect on the Covered Alfresco area.

It is recommended that the proposed planting and trees be included in the final design. All planting and trees should be of a densely foliating evergreen species and have interlocking canopies where possible. It is also recommended to retain the 1.5-2 metre high impermeable balustrades along the western edge, and include on the southern and eastern aspects of the rooftop terrace area. The abovementioned treatment recommendations are shown in Figure 4.

Figure 4: Recommended Treatment for the Rooftop Terraces

6 REFERENCES

Davenport, A.G., 1972, "An approach to human comfort criteria for environmental conditions". Colloquium on Building Climatology, Stockholm.

Lawson, T.V., 1973, "The wind environment of buildings: a logical approach to the establishment of criteria". Bristol University, Department of Aeronautical Engineering.

Lawson, T.V., 1975, "The determination of the wind environment of a building complex before construction". Bristol University, Department of Aeronautical Engineering.

Lawson, T.V., 1980, "Wind Effects on Buildings - Volume 1, Design Applications". Applied Science Publishers Ltd, Ripple Road, Barking, Essex, England.

Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions". *Journal of Wind Engineering and Industrial Aerodynamics*, vol. 3, pp241-249.

Penwarden, A.D. (1973). "Acceptable Wind Speeds in Towns", Building Science, vol. 8: pp259–267.

Penwarden, A.D., Wise A.F.E., 1975, "Wind Environment Around Buildings". Building Research Establishment Report, London.

APPENDIX A WIND EFFECTS GLOSSARY

A.1 Downwash and Upwash Effects

The downwash wind effect occurs when wind is deflected down the windward face of a building, causing accelerated winds at pedestrian level. This can lead to other adverse effects as corner acceleration as the wind attempts to flow around the building, as seen in Figure A.1.

This can also lead to recirculating flow in the presence of a shorter upstream building, causing local ground level winds to move back into the prevailing wind.

The upwash effect occurs near upper level edge of a building form as the wind flows over the top of the building. This has the potential to cause acceleration of winds near the leading edge, as well as potentially reattaching onto the roof area. This effect causes wind issues particularly near the leading edges of tall building and on the rooftop areas if there is sufficient depth along the wind direction. Upwash is more apparent in taller towers and podia.

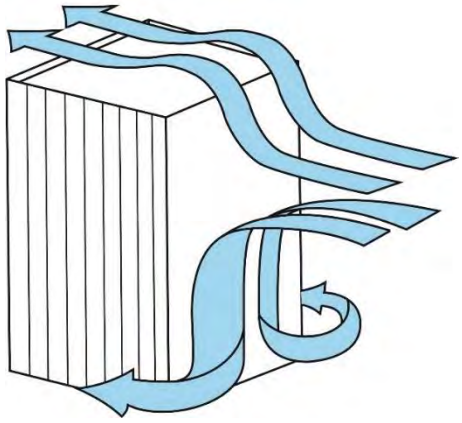


Figure A.1: Downwash Leading to Corner Wind Effect, and Upwash Effects

A.2 Funnelling/Venturi Effect

Funnelling occurs when the wind interacts with two or more buildings which are located adjacent to each other, which results in a bottleneck, as shown in Figure A.2. This causes the wind to be accelerated through the gap between the buildings, resulting in adverse wind conditions and pedestrian discomfort within the constricted space. Funnelling effects are common along pedestrian links and thoroughfares generally located between neighbouring buildings that have moderate gaps between them.

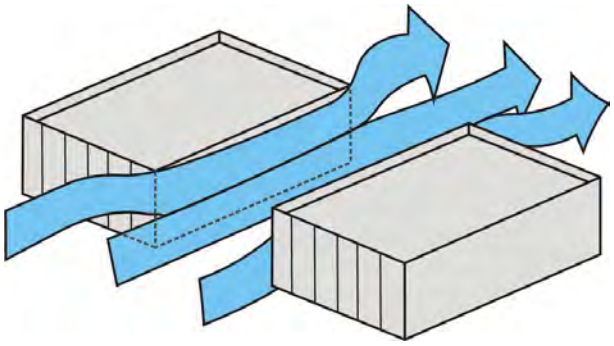


Figure A.2: Funnelling/Venturi Wind Effect

A.3 Gap Effect

The gap effect occurs in small openings in the façade that are open to wind on opposite faces, as seen in Figure A.3. This can involve a combination of funnelling and downwash effects. Presenting a small gap in the façade on the windward aspect as the easiest means through which the wind can flow through can result in wind acceleration through this gap. The pressure difference between the windward façade and the leeward façade also tends to exacerbate the wind flow through this gap.

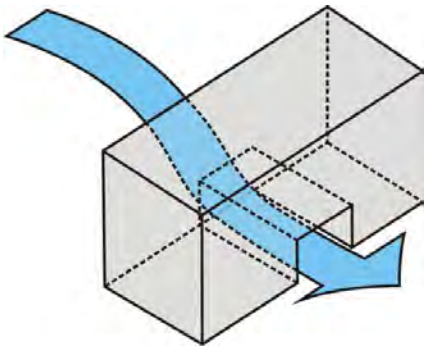


Figure A.3: Gap Wind Effect

A.4 Sidestream and Corner Effects

The sidestream effect is due to a gradual accumulation of wind shearing along the building façade that eventuates in an acceleration corner effect. The flow is parallel to the façade and can be exacerbated by downwash effects as well, or due to corner effect winds reattaching on the façade.

This is shown in Figure A.4. The corner refers to the acceleration of wind at the exterior vertical edge of a building, caused by the interaction of a large building massing with the incident wind, with the flow at the corner being accelerated due to high pressure differentials sets up between the windward façade and the orthogonal aspects. It can be further exacerbated by downwash effects that build up as the flow shears down the façade.

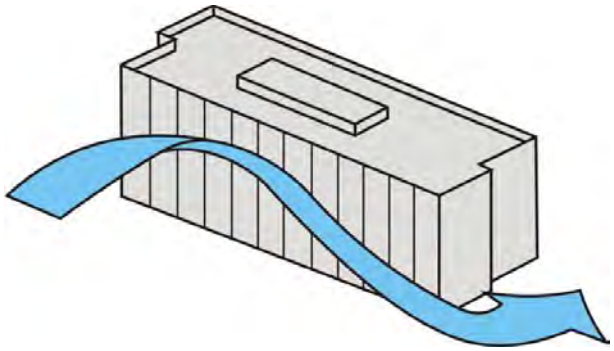


Figure A.4: Sidestream and Corner Wind Effect

A.5 Stagnation

Stagnation in a region refers to an area where the wind velocity is significantly reduced due to the effect of the flow being impeded by the bluff body. For a particular prevailing wind direction, this is typically located near the middle of the windward face of the building form or over a short distance in front of the windward face of a screen or fence. Concave building shapes tend to create an area of stagnation within the cavity, and wind speeds are generally low in these areas.