

Traffix Group

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Traffic Engineering Assessment

Proposed Commercial Development
101 Cremorne Street, Cremorne

Prepared for
Case Meallin & Associates

July 2024

G32978R-01F

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1. Introduction

Traffix Group has been engaged by Case Meallin & Associates to undertake a traffic engineering assessment for a proposed commercial development at 101 Cremorne Street, Cremorne.

2. Proposal

The proposal is for a commercial development on the site as set out in the following table. A copy of the development plans prepared by CHT Architects (dated June, 2024) are attached at Appendix A.

Table 1: Development Summary

Characteristics	Description		
Uses	Size/No.	Car Parking	Notes
Office	10,917m ²	94	0.86 spaces/100m ²
Shop	596m ²	0	Shop tenancies located on ground level.
Car Parking Provision		94 car spaces	Located in a 2-level basement carpark.
Bicycle Parking Provision		136 bicycle spaces	136 within a secure room on ground level accessed via Cremorne Street
Other	Notes		
Vehicle Access	6.4m wide crossover to Kelso Street at the site's north-eastern boundary. The garage door for vehicle access will be open during business hours.		
Changes to on-street parking	Increase in 1 car space along Cremorne Street frontage. No changes along Kelso Street frontage		
Loading Provision	Loading is proposed via a dedicated loading bay, accessed via Kelso Street, to the west of the main vehicle accessway.		
Waste Collection	Within the loading bay using the 6.4m long, 2.08m high mini-waste truck.		
Electric Vehicle Charging	5 Car spaces with electric vehicle charging stations, with the ability to add additional spaces at a future stage.		

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3. Existing Conditions

3.1. Subject Site

The subject site is 101 Cremorne Street, Cremorne. The table below summarises the key characteristics of the subject site.

Table 2: Subject Site Description

Characteristic	Description
Address	101 Cremorne Street, Cremorne
Area	1,769m ²
Frontages	40m to Cremorne Street 44m to Kelso Street
Zoning	Commercial 2 Zone
Current use of site	3 storey office building
Vehicle access	double width crossover to Cremorne Street at south corner
Car parking	12 car spaces
On-street parking along site frontage	4 x 2P 7am-7pm Monday-Friday and Public Holiday frontage to Kelso Street

A locality plan, aerial photograph, photograph of the site's frontages and land use zoning map is provided at Figure 1 to Figure 5.

Significant nearby land uses include:

- **Kangan Institute** located directly north of the site.
- **Swan Street Major Activity Centre** located approximately 400m north.
- **Gosch's Paddock** located approximately 450m north-west.
- **Richmond Station** located approximately 500m north.
- **Church Street shop & commercial corridor** located approximately 750m west.
- **East Richmond Station** located approximately 800m north-east.

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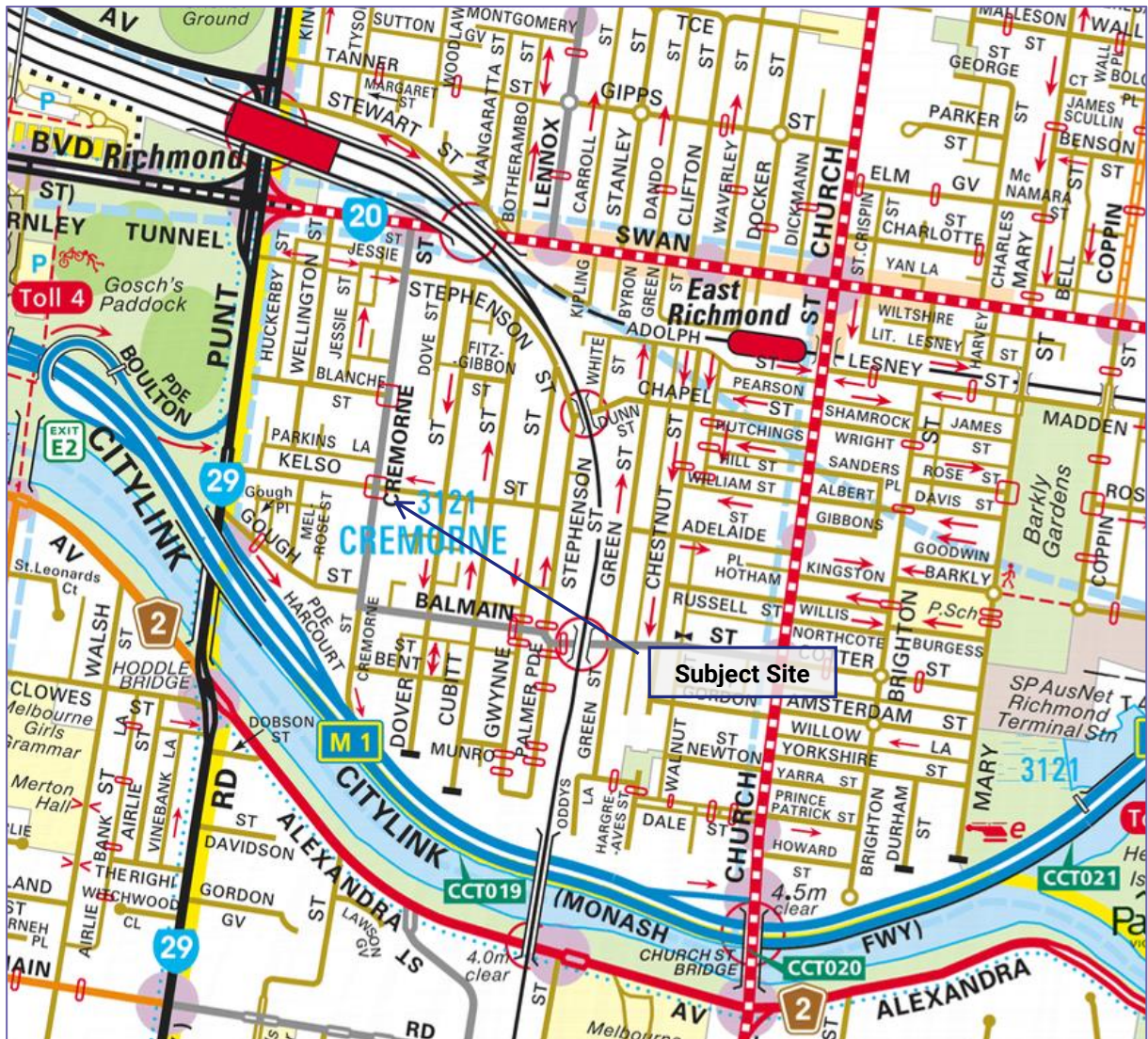


Figure 1: Locality Plan (Source: Melway)

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Figure 2: Aerial Photograph (Source: Nearmap)

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Figure 3: Subject Site (view south-east from Cremorne Street)

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Figure 4: Subject Site (view south-west from Kelso Street)

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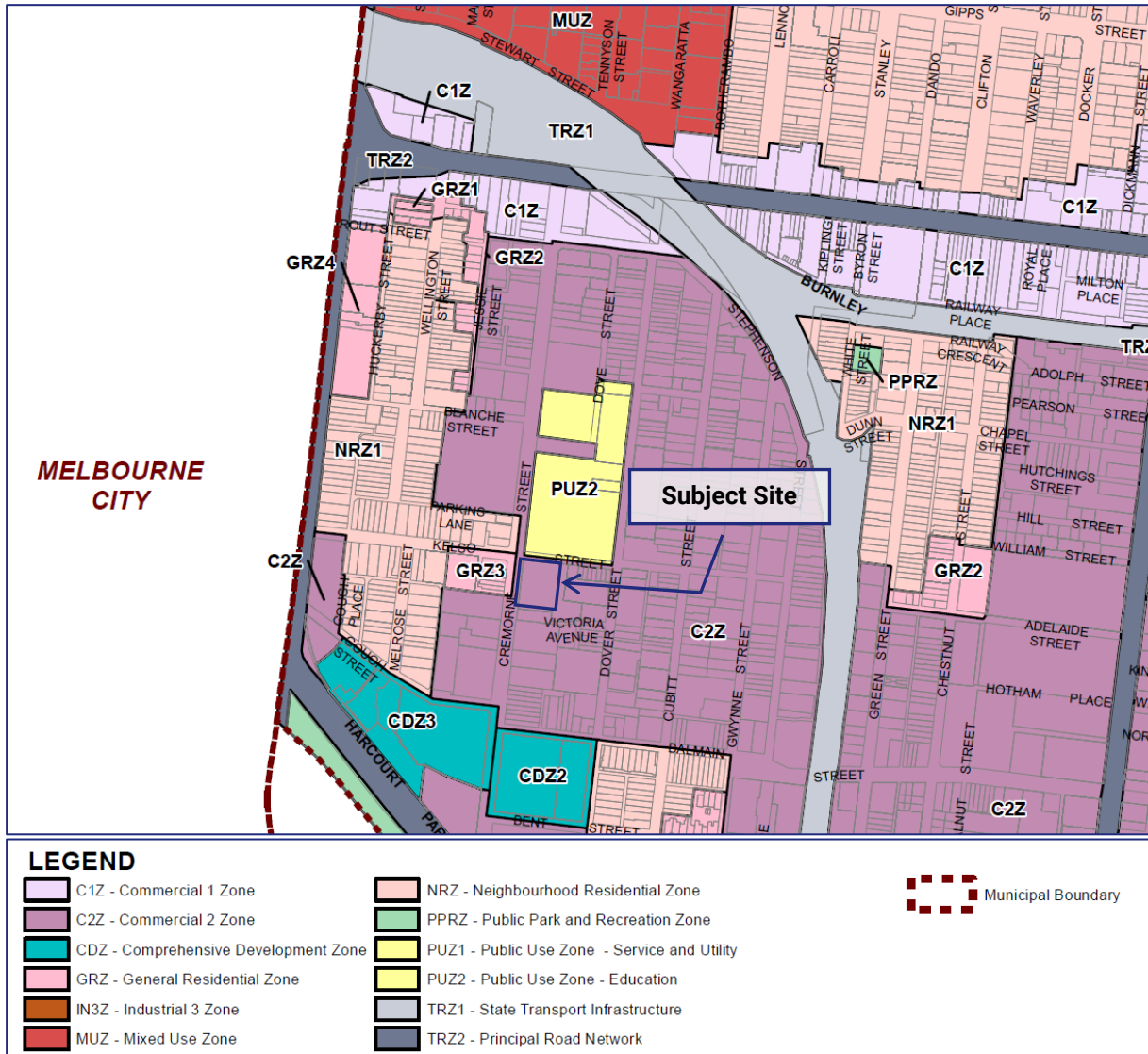


Figure 5: Land Use Zoning Map (Source: Planning Schemes Online)

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3.2. Transport Network

3.2.1. Road Network

A summary of the local road network is provided in the table below.
Photos of the surrounding road network are presented following the table.

Table 3: Local Road Network

Road Name	Agency	Classification	Transport Zone	Configuration	Speed Limit	On-Street Parking
Cremorne Street	Council	Local Road	No	Undivided carriageway	40km/h area	Mixture of short and medium term parking
Kelso Street	Council	Local Road	No	Undivided carriageway	40km/h area	No Stopping along north side of street South side, mixture of time limited and permit restricted parking

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Figure 6: Cremorne Street – view north



Figure 7: Cremorne Street – view south



Figure 8: Kelso Street – view east



Figure 9: Kelso Street – view west



Figure 10: Kelso Street/Cremorne Street intersection – view north-east



Figure 11: Kelso Street/Cremorne Street intersection – view south-west

3.2.2. Cremorne Draft Urban Design Framework

The Cremorne Draft Urban Design Framework (dated October 2022) nominates a future streetscape that significantly alters the operation of the road network within Cremorne and aims to provide enhanced pedestrian and cyclist facilities.

The future proposed road network upgrades are shown in Figure 10.

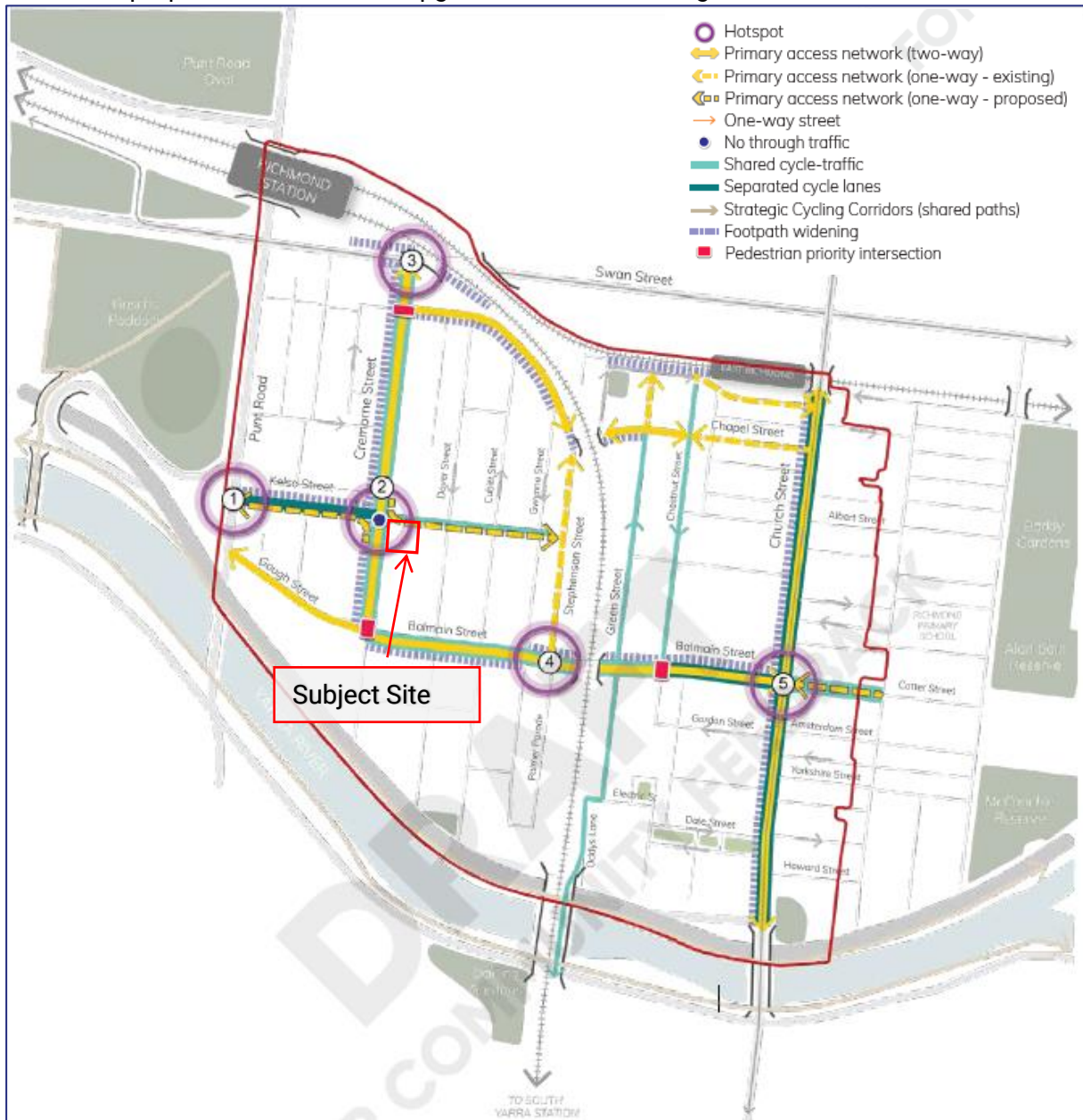


Figure 12: Cremorne Streets Implementation Plan (Source: Cremorne Draft Urban Design Framework, dated October 2022)

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The subsequent increase/improvement of cyclist and pedestrian amenities will result in a change in traffic conditions for several streets, notably a change in the Cremorne Street and Kelso Street intersection. Future changes to the traffic conditions within the area include:

- Cremorne Street closed to through traffic at the intersection of Kelso Street.
- Cremorne Street southbound access onto Kelso Street east is converted to one-way eastbound.
- Cremorne Street northbound access onto Kelso Street west is converted to one-way westbound.
- Pedestrian crossings on all legs of Cremorne Street/Kelso Street and Swan Street/Cremorne Street intersection.

The concept plan for future proposed Cremorne Street and Kelso Street intersection is shown in Figure 13.



Figure 13: Cremorne Street and Kelso Street intersection concept design (Source: Cremorne Draft Urban Design Framework, dated October 2022)

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3.3. Car Parking Conditions

Traffic Group completed an inventory of on-street parking during the site inspection on Tuesday 28th March 2023 at 3:00pm. The survey area is presented in the figure below, which comprises an area of approximately 250m around the subject site. The detailed parking survey is presented at Appendix B.

The purpose of the inventory was to ascertain the supply and management of car parking in the area, not to assess the demand for car parking. The proposal is for an office use and the inventory was assessing whether public parking would allow long-term parking by office workers (i.e. whether there was unrestricted parking in the area).

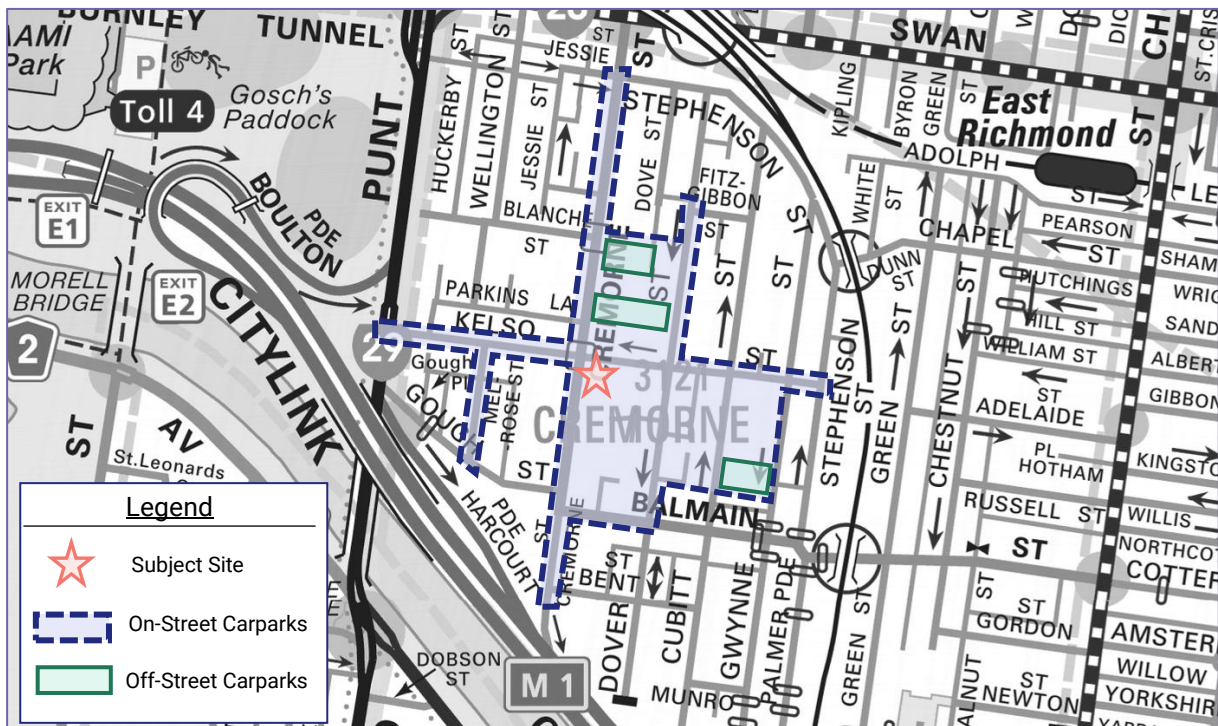


Figure 14: Parking Survey Inventory (Source: Melway)

The key findings of the inventory were:

- There are 194 publicly available¹ car spaces within approximately 250m of the subject site (146 on-street and 84 off-street).
- Parking is highly controlled, with most car spaces controlled by 2P and Permit Zone restrictions during business hours.
- There is essentially no unrestricted on-street parking in the nearby area (3 spaces only).

¹ Does not include any car spaces subject to 'No Stopping', 'Permit Zone', 'Work Zone', 'Loading Zone' spaces during the relevant enforcement time. 1/4P spaces were also not included, as this time period is considered too short for use by the proposed use on-site.

- On-street and off-street car parking was in very high demand during the time of inventory (93% and 84% occupancy respectively). This is consistent with our past experience of Cremorne, that parking demands are very high for long periods of the day.

3.4. Alternative Transport Modes

3.4.1. Public Transport

The site is well served by public transport services, with train, tram and bus services available. The site is located within the Principal Public Transport Network area (PPTN).

The diagram below illustrates the location of the nearest public transport service and the walking distance/time to these stops.

A summary is provided at Figure 6 and map of the broader services provided at Figure 16. The PPTN network map is provided at Figure 17

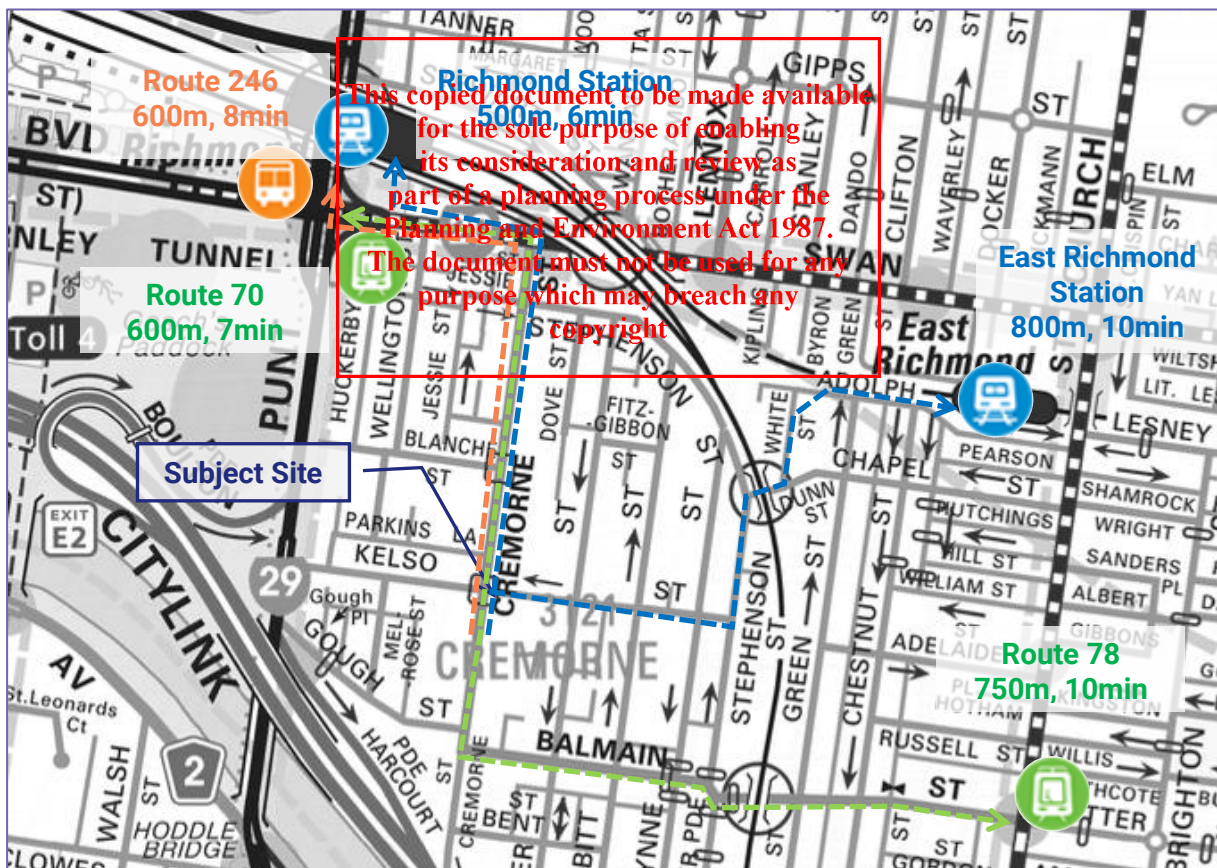


Figure 15: Walking Distance to Nearest Public Transport Stops (Source: Melway Online & PTV)

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Table 4: Summary of Public Transport Services

Service	Between	Via
Richmond Station	Cranbourne, Frankston, Pakenham, Sandringham, Bairnsdale, Traralgon, Alamein, Glen Waverley, Lilydale & Belgrave Lines	CBD and various destinations in the south and east of Melbourne
East Richmond	Alamein, Glen Waverley	Eastern suburbs
Tram Route 78	North Richmond & Balaclava	St Kilda, South Yarra & Richmond
Tram Route 70	Waterfront City Docklands & Wattle Park	Camberwell, Hawthorn & CBD
Bus Route 246	Elsternwick & Clifton Hill	St Kilda, CBD & Abbotsford

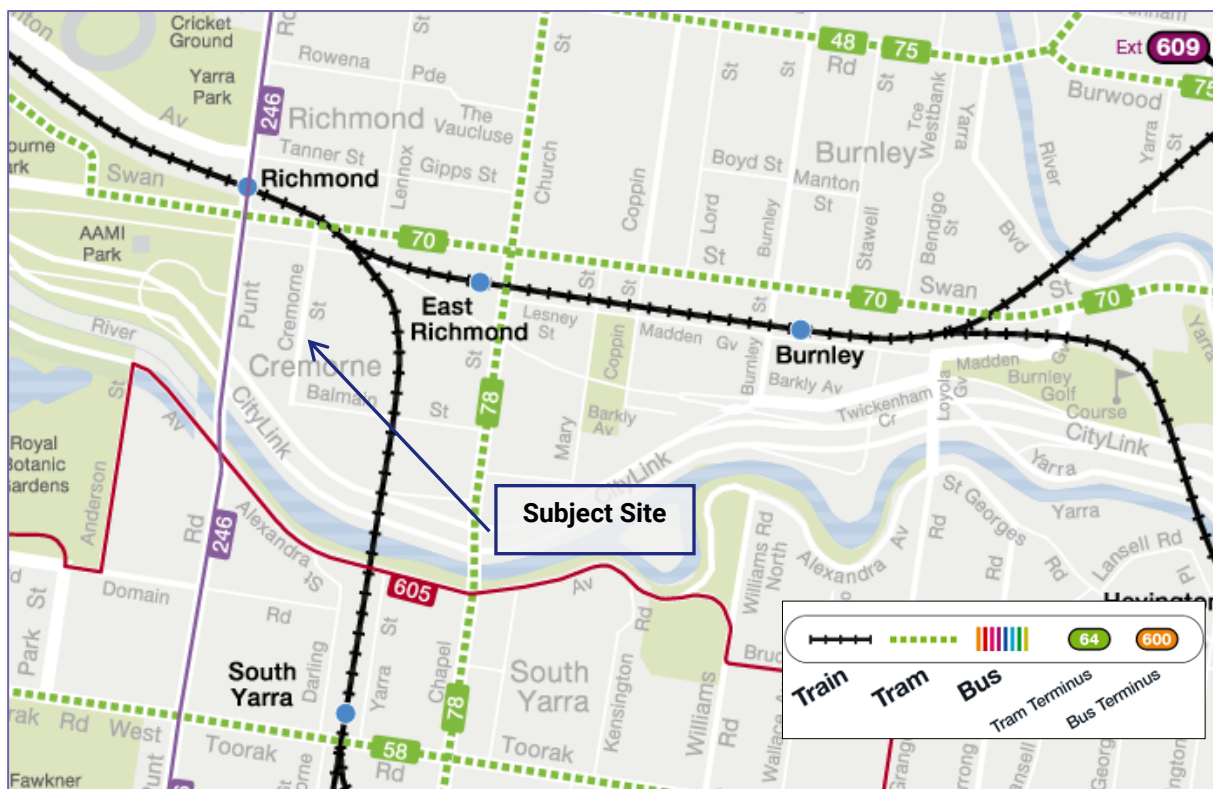


Figure 16: Public Transport Map (Source: PTV)

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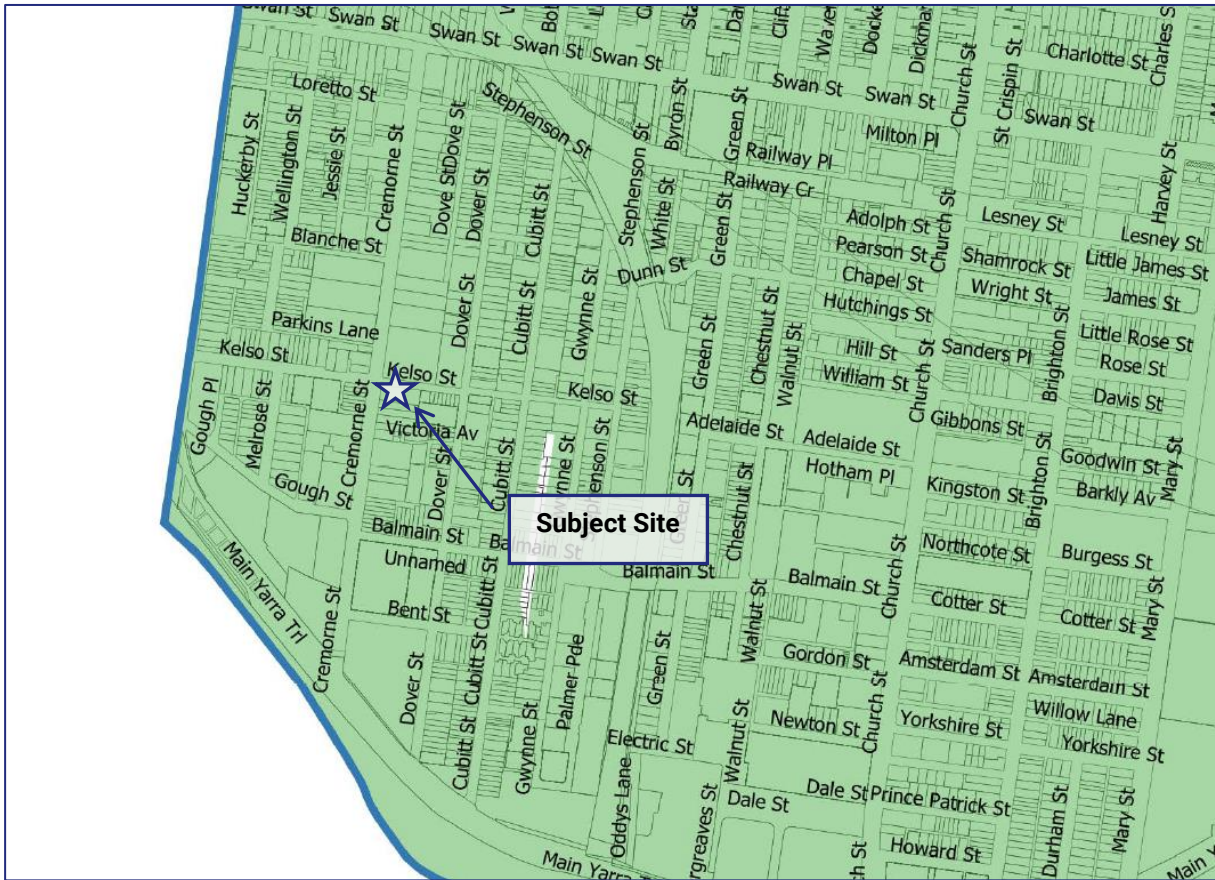


Figure 17: Principal Public Transport Network Area (Source: Vicplan)

3.4.2. Bicycle Infrastructure

The site is well served by bicycle infrastructure with off-road trails, on-road bicycle lanes, and informal bicycle routes surrounding the site, as shown in the excerpt from the City of Yarra as shown in Figure 19. Additionally, as discussed in Section 3.2.2 the pedestrian and cyclist amenities are proposed to be improved.

The off-road capital city trail, which connects to the CBD is located approximately 350m to the south. Additionally, on-street bicycle lanes are provided on Church Street and Lennox Street, and informal bicycle routes are located along Balmain Street and Cremorne Street. Figure 18 below indicates the area that is within a 20-minute bike ride of the site.

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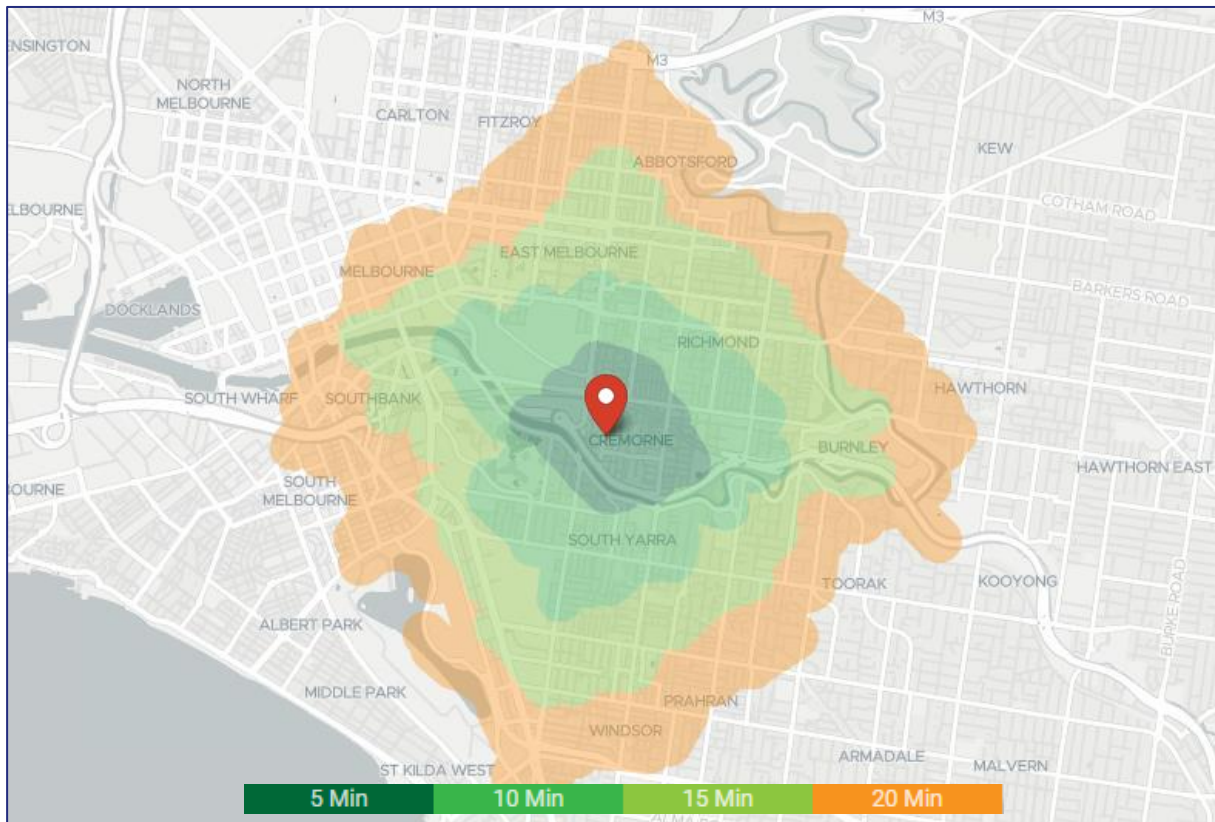


Figure 18: Map of 20-minute cycling distance (Source: Targomo.com)

3.4.3. Car Share Vehicles

Yarra City Council supports 'car sharing' schemes by allocating on-street spaces throughout the municipality for the purposes of accommodating 'car share' cars operated by Flexicar, GoGet and Green Share Car, three Council supported schemes.

There are currently six car share vehicles within 500m of the site. The nearest car share pods are located at the Cremorne Street carpark, approximately 80m to the south of the site, as detailed in Figure 19.

Car sharing schemes provide an alternative to driving to work for staff and actively encourage the use of alternate transport modes. If required, a car can be available by joining the local 'car share' schemes, which allows for work based business trips by car. The use of a non-private car for these trips allows staff to avoid drive their own car to work during the commuter peak hours, because they do not need it for business trips during the day.

The existing 'car share' schemes in this area provide a safety net (and fill a mobility gap) by providing convenient access to a car to cater for the limited number of times that staff may require a car. This car access is both convenient and cost-effective as they can hire the car on an hourly or daily basis.

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Figure 19: Sustainable Transport Infrastructure (Source: Yarra City Council)

3.4.4. Walking

The site is highly walkable, with many everyday services located within walking distance of the site. The site is located close to the Swan Street Activity Centre. Figure 20 below indicates the area that is within a 20-minute walk of the site.

The following significant uses are within this 20-minute walk:

- Richmond Railway Station
- Barkly Gardens
- Swan Street Major Activity Centre

- Church Street shop & commercial corridor
- Coles Richmond

The land uses detailed above demonstrate that there are a high level of everyday land uses in close proximity to the site, which would reduce the dependence on vehicular travel within this area.

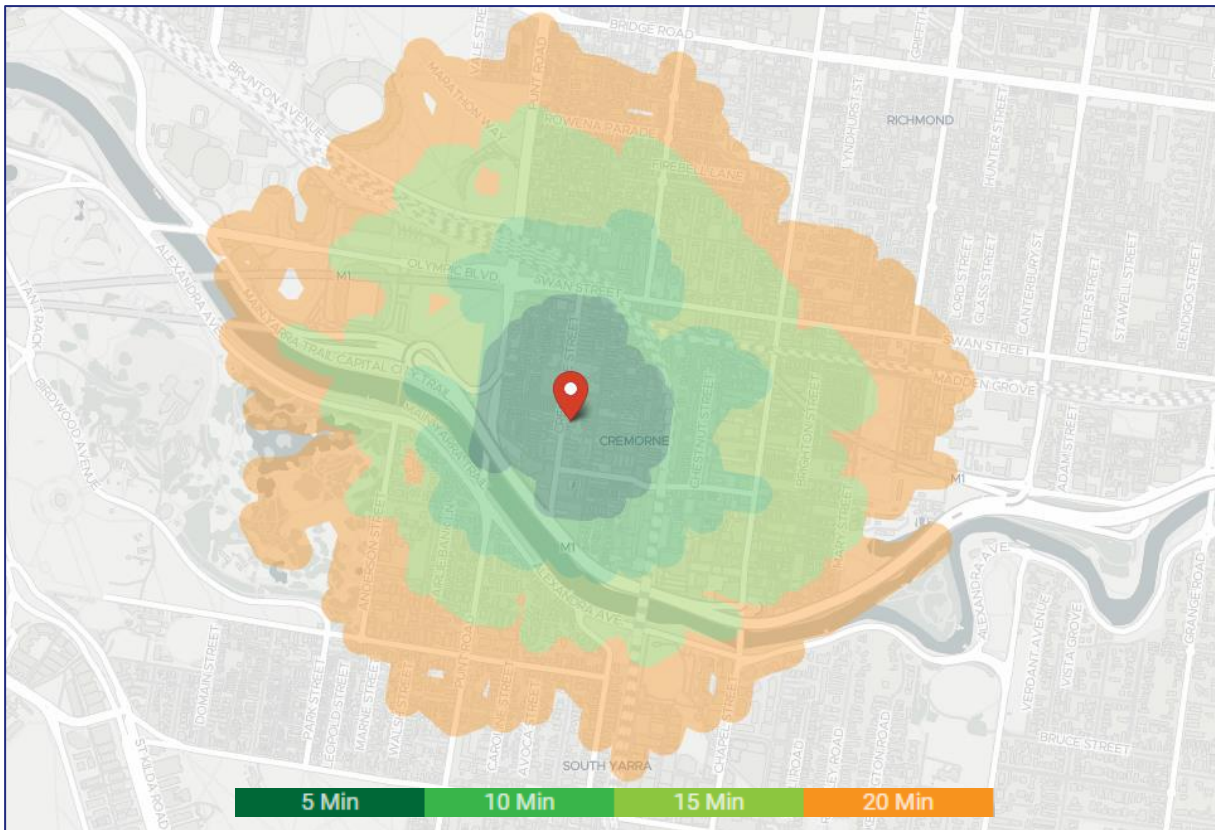


Figure 20: Map of 20-minute walking distance (Source: Targomo.com)

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4. Traffic Engineering Assessment

4.1.1. Travel Characteristics

The following graphs reviews the model of travel of existing residents within Richmond and Greater Melbourne. This data is derived from the Australian Bureau of Statistics 2016 Census. Richmond was used as a suitable comparison for Cremorne as no SA2 data has been obtained for the area and Richmond is close in the vicinity of Cremorne and are similar in amenities.

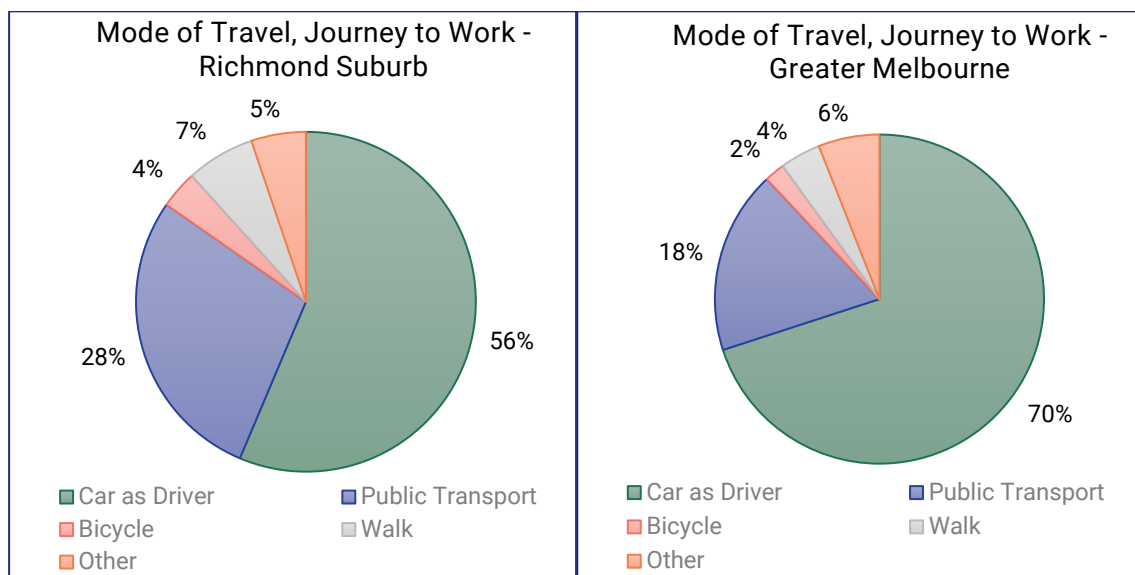


Figure 21: Review of Model of Travel (2016 Census)

The above demonstrates a lower reliance on car travel within Richmond compared to the greater Melbourne area.

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4.2. Local Policy Section

Yarra City Council supports sustainable transport and design in new and existing developments through a number of policies and initiatives. These are summarised as follows.

Sustainable Transport Policies

Clause 18.01-3L of Yarra City Council Planning Scheme has created a Hierarchy of Transport Modes. The hierarchy is as follows:

More sustainable transport modes

- *Walking.*
- *Cycling.*
- *Public transport.*
- *Commercial vehicles serving businesses and institutions.*
- *Subscription based vehicles such as car shares.*
- *Private motor vehicles.*

Support development which reduces reliance on private cars.

Encourage lower amounts of car parking within developments.

Encourage increased infrastructure for active transport in developments (such as high levels of bicycle parking and end of trip facilities).

Support the upgrade and establishment of paths and waterway crossings along the Yarra River, Merri Creek and Darebin Creek and to neighbouring municipalities as identified in clause 02.04 (Strategic Framework Plan).

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Car Parking Policies

Clause 18.02-4L-01 of Yarra City Council Planning Scheme has creates a strategy to promote sustainable transport modes by supporting a reduction in car spaces where:

- *There is appropriate public transport accessibility and the subject land is located within walking or cycling distance to shops, jobs and amenities.*
- *The use or development is unlikely to result in unreasonable impacts on existing on-street parking.*
- *Increased motor vehicle traffic from the development is likely to unreasonably impact on the amenity of nearby residents.*
- *The development uses the upper floors of existing commercial buildings in activity centres and employment areas more efficiently (where relevant).*
- *The development provides adequate bicycle parking.*

Support a reduction in the required number of car parking spaces where alternative modes of transport are available.

Encourage a reduction in the required number of car parking spaces, where car share bays are provided to reduce reliance on privately owned vehicles.

Provide efficient shared car parking in activity centres and employment areas.

Encourage the provision of parking for ride-sharing vehicles, visitors, motorcycles and scooters in large developments.

Encourage the provision of publicly accessible car share bays in major developments.

Provide illumination of car parking to improve safety without compromising the amenity of adjoining residential development.

Respond to car parking needs in precincts, through the preparation of structure plans and development plans.

Maintain high levels of pedestrian safety and sight lines.

Council's Parking Management Strategy (2013-2015 Action Plan) sets out Council's vision, goals and principles for managing parking in the City of Yarra as follows:

Vision for managing parking

Parking is managed by the City of Yarra to promote sustainable transport solutions and to optimise residents' access to homes - Council will also seek to accommodate the parking needs of visitors, businesses and community facilities in a manner that is open and clear.

The relevant principles of managing parking are:

Principle 7. Ensure that new developments are self-sufficient in meeting their parking needs - with the exception of encouraging reduced parking or no car parking developments for sites very close to public transport stops.

Principle 8. Ensure the adequate provision of bicycle and motorcycle parking.

The proposal supports the transport strategies and objectives of Yarra City Council by providing a commercial development in an area well serviced by alternative transport modes and a low level of staff car parking.

Additionally, this site represents an excellent opportunity to support Council's local policies on supporting sustainable transport modes.

If staff car parking is provided (for any commercial business), it will likely be used by staff and primarily during the commuter peak hours. Single occupant private car trips are a significant factor in peak hour road congestion. Office is one land use that is particularly conducive to encourage mode shift to alternative transport modes as public transport is readily available during the commuter peak hours. This development therefore prioritises the 5 most sustainable transport modes as defined by the City of Yarra by encouraging employees to use these modes for journey to work purposes.

4.3. Statutory Car Parking Assessment

The proposed development falls under the land-use categories of 'office' and 'shop' under Clause 73.03 of the Planning Scheme. The Planning Scheme sets out the parking requirements for new developments under Clause 52.06. The purpose of Clause 52.06 is:

- *To ensure that car parking is provided in accordance with the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*
- *To support sustainable transport alternatives to the motor car.*
- *To promote the efficient use of car parking spaces through the consolidation of car parking facilities.*
- *To ensure that car parking does not adversely affect the amenity of the locality.*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

The statutory parking requirements are set out at Clause 52.06-5 of the Planning Scheme. Clause 52.06-5 states:

Column A applies unless Column B applies.

Column B applies if:

- *any part of the land is identified as being within the Principal Public Transport Network Area as shown on the Principal Public Transport Network Area Maps (State Government of Victoria, 2018); or*

- *a schedule to the Parking Overlay or another provision of the planning scheme specifies that Column B applies.*

Given the site is located with the PPTN, the Column B rates apply.

The statutory car parking assessment of the development is set out in Table 5 below.

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Table 5: Statutory Car Parking Assessment – Column B of Clause 52.06-5

Use	Size / No.	Statutory Parking Rate (Column B)	Parking Requirement ⁽¹⁾	Parking Provision	Shortfall / Surplus
Office	10,917m ²	3.0 spaces per 100m ² of NFA	327	94	-233
Shop	596m ²	3.5 spaces per 100m ² of LFA	20	0	-20
TOTAL			347	94	-253
Notes:					
1. Clause 52.06-5 specifies that where a car parking calculation results in a requirement that is not a whole number, then number of spaces should be rounded down to the nearest whole number.					

Based on the table above, a total of 347 car spaces are required under Clause 52.06-5 of the Planning Scheme, including 327 office spaces and 20 shop tenancy spaces.

The provision of 94 car spaces on-site results in a statutory shortfall of 253 car spaces, comprising 233 office and 20 shop spaces.

Accordingly, a Car Parking Reduction is required under Clause 52.06-7.

4.3.1. Reducing the Requirement for Car Parking

Clause 52.06-7 allows for the statutory car parking requirement to be reduced (including to zero). An application to reduce (including reduce to zero) the number of car spaces required under Clause 52.06-5 or in a schedule to the Parking Overlay must be accompanied by a Car Parking Demand Assessment.

Clause 52.06-7 sets out that a Car Parking Demand Assessment must have regard to the following key factors:

- *The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.*
- *The variation of car parking demand likely to be generated by the proposed use over time.*
- *The short-stay and long-stay car parking demand likely to be generated by the proposed use.*
- *The availability of public transport in the locality of the land.*
- *The convenience of pedestrian and cyclist access to the land.*
- *The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land.*
- *The anticipated car ownership rates of likely or proposed visitors to or proposed occupants (residents or employees) of the land.*

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- *Any empirical assessment or case study.*

Planning Practice Note 22 (June, 2015) specifies that the provisions for reducing the car parking requirement draw a distinction between the assessment of likely demand for car parking spaces (the Car Parking Demand Assessment), and whether it is appropriate to allow the supply of fewer spaces than assessed by the Car Parking Demand Assessment. These are two separate considerations, one technical while the other is more strategic. Different factors are taken into account in each consideration.

Accordingly, the applicant must satisfy the responsible authority that the provision of car parking is appropriate on the basis of a two-step process, which has regard to:

- *The car parking demand likely to be generated by the use.*
- *Whether it is appropriate to allow fewer spaces to be provided than the number likely to be generated by the site.*

An assessment of the appropriateness of reducing the car parking provision below the statutory requirement is set out below.

4.3.2. Car Parking Demand Assessment

This application requires consideration of the sustainable transport policies and attributes that apply to the site, which is consistent with the purposes of Clause 52.06 set out previously and which include “to support sustainable transport alternatives to the motor car”.

The site is suitably located to implement travel demand management strategies to reduce car dependence, increase public transport usage and walking/cycling trips and achieve the Council’s broader sustainable transport policies.

The key attributes of the site’s location are as follows:

- the site is located within walking distance of extensive public transport services and other alternative transport modes,
- there is only 3 unrestricted on-street parking available in close proximity to the site during the daytime and staff of this development will not be eligible to access parking permits, meaning that parking on-street in the nearby area is not practically possible,
- the proposed development provides bicycle parking and end of trip facilities are well in excess of the minimum Planning Scheme requirements, which will assist in encouraging alternative modes of travel, and
- the site has access to local car share vehicles.

Office

Given the availability of nearby public transport services and the ease of cycling trips to the site, we are satisfied that suitable alternatives to car-based travel exist in this locality to support a significant reduction in the on-site parking provisions for staff.

It is important to take a forward looking approach to increasing employment densities in inner areas and that public transport accessibility and access to services will continue to improve in line with government initiatives.

In practice, we do not expect workers without an on-site car space to drive to the area. This is due to the lack of public parking alternatives (no long-term car parking) and the availability of alternative transport options including public transport, walking and cycling options.

Shop Tenancies

The development includes 4 small shop tenancies, with a total area of 596m². No car parking is proposed for these tenancies.

The tenancies have a statutory car parking requirement to provide 3.5 car spaces per 100m², equating to a demand for 20 car spaces. This is a conservative rate for this locality. Given the size of the premises and location within Cremorne, accordingly we do not expect the tenancies to be significant 'self-attractor' to the area, generating trips from further afield by car. It is expected that this premises will primarily serve local employees or residents already in the area.

Given the availability of nearby public transport services and the ease of cycling trips to the site, we are satisfied that suitable alternatives to car-based travel exist in this locality to support a significant reduction in the on-site parking provisions for staff and customers.

4.3.3. Appropriateness of Providing Fewer Car Spaces than the Demand Assessment

If the number of car spaces is not met on-site under the Car Parking Demand Assessment, the second step is to consider whether it is appropriate to allow fewer spaces to be provided than the number likely to be generated by the site as assessed by the Car Parking Demand Assessment.

The car parking demand assessment concludes that staff without car parking are unlikely to drive, relying on the ample alternative transport options available. Customer parking demands are expected to be negligible, with most customers drawn locally from the nearby area.

Clause 52.06-7 sets out a series of car parking provision factors that should be considered when assessing the appropriateness of providing fewer car spaces on the site than are likely to be generated by the use. The relevant car parking provision factors are as follows:

- ***The Car Parking Demand Assessment.***
- ***Any relevant local planning policy or incorporated plan.***
- ***The availability of alternative car parking in the locality of the land, including:***
 - ***Efficiencies gained from the consolidation of shared car parking spaces.***
 - ***Public car parks intended to serve the land.***
 - ***On street parking in non residential zones.***
 - ***Streets in residential zones specifically managed for non-residential parking.***
- ***On street parking in residential zones in the locality of the land that is intended to be for residential use.***
- ***The practicality of providing car parking on the site, particularly for lots of less than 300 square metres.***

- *Any adverse economic impact a shortfall of parking may have on the economic viability of any nearby activity centre.*
- *The future growth and development of any nearby activity centre.*
- **Any car parking deficiency associated with the existing use of the land.**
- *Any credit that should be allowed for car parking spaces provided on common land or by a Special Charge Scheme or cash-in-lieu payment.*
- **Local traffic management in the locality of the land.**
- *The impact of fewer car parking spaces on local amenity, including pedestrian amenity and the amenity of nearby residential areas.*
- *The need to create safe, functional and attractive parking areas.*
- **Access to or provision of alternative transport modes to and from the land.**
- *The equity of reducing the car parking requirement having regard to any historic contributions by existing businesses.*
- *The character of the surrounding area and whether reducing the car parking provision would result in a quality/positive urban design outcome.*
- *Any other matter specified in a schedule to the Parking Overlay.*
- *Any other relevant consideration.*

These factors are considered below.

4.3.4. Local Traffic Management

As discussed previously, an 'office' use is one land-use that is particularly conducive (and important to target) in achieving a mode shift away from private cars to public transport, cycling, walking, etc. This also applies to staff parking for most commercial businesses.

This is particularly the case as journey to work trips for office uses are typically made during the commuter peak hours and predominantly involve single occupant vehicles. The timing of these trips has the greatest impact on traffic congestion on the road network and occurs when public transport services operate at high frequencies (and offer express services in some cases).

The lower provision of car parking assists in reducing the traffic impacts of the development on the local and broader road network and encourages sustainable transport choices. If provided with the full statutory office requirement, traffic generation by the development would be significantly higher than what is proposed.

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4.3.5. Availability of Alternative Transport Modes

As detailed in Section 3.3.1., the site is well served by efficient public transport services that are within an appropriate walking distance of the development site. These services include Richmond Railway Station and tram services along Swan Street and Church Street.

Bicycle parking is provided above the statutory requirements set out at Clause 52.34 of the Planning Scheme, as detailed in Section 3.3.2. This encourages the use of bicycles as a mode of transport for staff and customers. The site is well served by bicycle infrastructure and there are many local destinations that are readily accessible by bicycle.

Alternatively, there are many local destinations that are also readily accessible via a short walk.

There are several car share pods in the vicinity of the site that provide staff with the opportunity to use a car for work-based business trips (which means staff do not need to drive to work just because they needed their car for a business trip).

Given the above, the development site represents an excellent location to support the reduced rate of car parking.

4.3.6. Availability of Car Parking

As detailed in Section 3.2.2., Traffix Group has undertaken a car parking inventory of the surrounding area to establish a profile of parking restrictions in the area. The result of the inventory indicates that there is a very high demand for car parking in the area, with on-street car parking effectively fully utilised.

Importantly, there were limited unrestricted car parking spaces located within approximately 250m from the site, meaning that there would be no opportunities for staff to park their car nearby to the site during the day. Furthermore, the presence of a significant amount of 'Permit Zone' car parking in the area, protects on-street parking for existing residents of the area during evenings.

Staff will be ineligible for car parking permits to exempt them from on-street parking restrictions, and the lack of long-term on-street parking in the area means that staff will not be able to reasonably park a car on-street in the nearby area. Staff will use alternative transport modes available to the site, or alternatively pay for off-street car parking, and will not impact on the availability of on-street car parking.

4.3.7. Existing Car Parking Deficiency

The most recent use of the site is a three-storey office building.

Accordingly, there is a statutory requirement for 3 to per 100m² of leasable floor area.

Using an estimated area from aerial view for the floor area (3,650m²) the statutory parking requirement for the development is approximately 109 car spaces, currently 12 on-site car

spaces with an additional loading bay is provided. This results in a shortfall of 94 car spaces.

Accordingly, the site already has a current car parking deficiency of 94 car spaces.

4.3.8. Other Items – Council Supported Overlay

Yarra City Council previously engaged Traffix Group to undertake a detailed study of the parking constraints around the suburb of Cremorne. Given the constraints related to the Cremorne area, the following car parking rates (as part of a new Parking Overlay) were proposed to supersede the existing requirements as part of Clause 52.06-5 (Column B):

- The Office car parking rate is set at a **maximum** parking rate of 1.0 car spaces per 100m² NFA.
- A retail car parking rate will be introduced, setting a **maximum** parking rate of 1.0 car spaces per 100m² LFA.

All other uses will remain under the minimum Column B parking rates of Clause 52.06-5 which currently apply to Cremorne.

While the above parking rates have not been formally adopted, Council supports the provision of lower car parking rates for commercial uses.

Under the above assessment, the current proposal would not require a statutory car parking reduction, but rather a maximum of 104 car spaces would be required, which the site complies with.

4.3.9. Summary

Based on the decision factors of Clause 52.06-7, we are satisfied that the proposed level of car parking for this development is acceptable and that providing fewer car spaces on the site than required under Clause 52.06-7 (i.e. no car parking) is supported for the following reasons:

- The site represents an excellent opportunity to support Council's local policies that prioritise sustainable transport modes,
- The lack of provision of car parking is in line with Local Traffic Management Policies to assist with congestion in the local area,
- The site is well served by public transport and alternative transport modes and provides a high level of bicycle parking,
- Staff will not be able to drive to work using on-street parking given the local parking restrictions and inability to access parking permits,
- There is an existing car parking deficiency associated with the site, and
- The Council endorsed proposal to limit car parking in Cremorne.

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4.4. Bicycle Parking Provision

Clause 52.34 of the Planning Scheme specifies bicycle parking requirements for new developments. The purpose of Clause 52.34 is to:

- To encourage cycling as a mode of transport.
- To provide secure, accessible and convenient bicycle parking spaces and associated shower and change facilities.

The development provides bicycle parking 136 secure bicycle spaces for staff.

These spaces will be provided via horizontal Cora Bike Racks (E3DT series).

All spaces are provided in accordance with the manufacturer specification sheet, which is attached at Appendix C.

The statutory bicycle parking requirement of the development under Clause 52.34 is set out in the table below.

Table 6: Statutory Bicycle Parking Assessment – Clause 52.34

Use	Size/No.	Statutory Bicycle Parking Requirement		No. Bicycle spaces required
		Employee	Visitor/Customer	
Office	10,917m ²	1 to each 300m ² of net floor area if the net floor area exceeds 1000m ²	1 to each 1000m ² of net floor area if the net floor area exceeds 1000m ²	36 employee 11 visitor
Shop (other than specified)	596m ²	1 to each 300m ² of leasable floor area	1 to each 500m ² of leasable floor area	2 staff 1 customer
TOTAL				50 spaces

Based on the above, provision of 136 bicycle spaces satisfies the bicycle parking provision requirements of Clause 52.34.

Clause 52.34 also requires consideration of end-of-trip facilities and the design of the bicycle parking spaces. The table below reviews the design and provision of these facilities.

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Table 7: Design of Bicycle Parking

Requirement	Assessment	Design Response
End of Trip Facilities - Table 2 & 3 of Clause 52.34-5		
If 5 or more employee bicycle spaces are required, 1 one shower for the first 5 employee bicycle spaces, plus 1 to each 10 employee bicycle spaces thereafter.	✓	11 showers is required for 136 employee bicycle spaces and 11 shower/change rooms are proposed.
1 change room or direct access to a communal change room to each shower. The change room may be a combined shower and change room.	✓	The changeroom is combined with the shower.
Design of Bicycle Parking		
Does the design comply with the design requirements of Clause 52.34-6?	✓	All bicycle spaces are designed in accordance with the bicycle parking specifications.
Does the design comply with the requirements of AS2890.3-2015?	✓	

Based on the above, we are satisfied that the provision of bicycle parking accords with the requirements of Clause 52.34.

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4.5. Review of Carpark Layout and Vehicle Access Arrangements

Traffic Group has provided design advice to the project architect to achieve a satisfactory carpark layout. The proposed parking layout has been assessed under the following guidelines:

- Clause 52.06-9 of the Planning Scheme (Design Standards for car parking),
- AS2890.1-2004 – Part 1: Off-Street Car Parking (where relevant), and
- AS2890.6-2022 – Part 6: Off-Street Car Parking for People with Disabilities.

Swept path diagrams demonstrating access to all critical car spaces are attached at Appendix D.

Under the current layout of Kelso Street, two-way movements are available (i.e. northbound and southbound), with parking available on the southern side of the carriageway.

Under the UDF layout, traffic on Kelso Street will be limited to travel in the eastbound direction only, the car parking will be removed, and a bicycle lane will be provided instead on the northern side of the carriageway.

We have undertaken swept path checks of the access arrangements to and from the site under both of these conditions.

The entry and exit movements utilising the B99 Design Vehicle (as specified in AS2890.1-2004) are attached at Appendix D.

An assessment against the relevant design standards of the Planning Scheme and Australian Standards (where relevant) is provided in the table below.

Table 8: Carpark Layout and Access Assessment

Requirement	Assessment	Design Response
Clause 52.06-9 Design Standard 1 – Accessways		
Must be at least 3m wide	✓	Accessways are greater than 3m in width
Have an internal radius of at least 4m at changes of direction or intersection or be at least 4.2m wide.	✓	Accessway width exceeds 4.2m at changes in direction.
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forwards direction with one manoeuvre.	N/A	Not a public carpark.
Provide at least 2.1m headroom beneath overhead obstructions, calculated for a vehicle with a wheelbase of 2.8m.	✓	Minimum 2.2m headroom provided.

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Requirement	Assessment	Design Response
If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	✓	Complies, all cars can exit in forward direction.
Provide a passing area at the entrance at least 6.1m wide and 7m long if the accessway serves ten or more car parking spaces and is either more than 50m long or connects to a road in a Transport Zone 2 or Transport Zone 3.	✓	Complies, passing area provided at the entrance and throughout the carpark.
Have a corner splay or area at least 50% clear of visual obstructions extending at least 2m along the frontage road from the edge of an exit lane and 2.5m along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	✓	A pedestrian sight triangle is shown on west side of the accessway to Kelso Street. A pedestrian sight triangle is not strictly required on the eastern side of the accessway, given that sight lines are achieved within the accessway.
If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6m from the road carriageway.	✓	Complies.
If entry to the car space is from a road, the width of the accessway may include the road.	N/A	N/A

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Requirement	Assessment	Design Response																														
Clause 52.06-9 Design Standard 2 – Car Parking Spaces																																
<p>Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 under Clause 52.06-9.</p> <table border="1"> <thead> <tr> <th>Angle of car spaces to accessway</th> <th>Accessway width</th> <th>Car park width</th> <th>Car park length</th> </tr> </thead> <tbody> <tr> <td>Parallel</td> <td>3.6 m</td> <td>2.3 m</td> <td>6.7 m</td> </tr> <tr> <td>45°</td> <td>3.5 m</td> <td>2.6 m</td> <td>4.9 m</td> </tr> <tr> <td>60°</td> <td>4.9 m</td> <td>2.6 m</td> <td>4.9 m</td> </tr> <tr> <td rowspan="3">90°</td> <td>6.4 m</td> <td>2.6 m</td> <td>4.9 m</td> </tr> <tr> <td>5.8 m</td> <td>2.8 m</td> <td>4.9 m</td> </tr> <tr> <td>5.2 m</td> <td>3.0 m</td> <td>4.9 m</td> </tr> <tr> <td></td> <td>4.8 m</td> <td>3.2 m</td> <td>4.9 m</td> </tr> </tbody> </table> <p><i>Note to Table 2: Some dimensions in Table 2 vary from those shown in the Australian Standard AS2890.1-2004 (off street). The dimensions shown in Table 2 allocate more space to aisle widths and less to marked spaces to provide improved operation and access. The dimensions in Table 2 are to be used in preference to the Australian Standard AS2890.1-2004 (off street) except for disabled spaces which must achieve Australian Standard AS2890.6-2009 (disabled).</i></p>	Angle of car spaces to accessway	Accessway width	Car park width	Car park length	Parallel	3.6 m	2.3 m	6.7 m	45°	3.5 m	2.6 m	4.9 m	60°	4.9 m	2.6 m	4.9 m	90°	6.4 m	2.6 m	4.9 m	5.8 m	2.8 m	4.9 m	5.2 m	3.0 m	4.9 m		4.8 m	3.2 m	4.9 m	✓	<p>Car spaces are provided in accordance with Clause 52.06-9.</p> <p>Access to car spaces within the carpark has been checked for the B85 design vehicle, as shown in the swept path diagrams attached at Appendix D.</p> <p>We are satisfied that access to all car spaces can be achieved and is satisfactory.</p>
Angle of car spaces to accessway	Accessway width	Car park width	Car park length																													
Parallel	3.6 m	2.3 m	6.7 m																													
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Requirement	Assessment	Design Response
<p>A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1, other than:</p> <ul style="list-style-type: none"> • A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1. • A structure, which may project into the space if it is at least 2.1 metres above the space. <p>Diagram 1 Clearance to car parking spaces</p> <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>	<p>✓</p>	<p>Complies, required clearance to any obstruction is provided from all car spaces.</p> <p>The only exception to this is 3 car spaces, 2 of which are allocated as small car spaces, which have a clearance to one side of 150mm. This width still complies with AS2890.1-2004 for long-term staff parking (which is what these spaces will be).</p> <p>The additional space that does not comply with clearance and has not been allocated as a small car space has a clearance of 250mm rather than the required 300mm. The 50mm difference is minimal and because the car spaces are allocated for long-term staff parking, we are satisfied that access to the car spaces can be achieved and is satisfactory.</p> <p>Additionally, swept path checks have determined that these car spaces are still accessible.</p> <p>These spaces will be allocated to staff who will become familiar with these arrangements, and we consider that these arrangements are acceptable.</p>

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Traffic Engineering Assessment

101 Cremorne Street, Cremorne

Requirement	Assessment	Design Response													
Car spaces in garages/carports must be at least 6m long and 3.5m wide for a single space and 5.5m wide for a double space measured inside the garage/carport.	N/A	No garages proposed.													
Where parking spaces are provided in tandem, an additional 0.5m in length must be provided between each space.	✓	Complies, 500mm additional length provided between tandem spaces.													
Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	✓	All spaces are under cover.													
Disabled car parking spaces must be designed in accordance with AS2890.6-2009 and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 0.5m. A minimum headroom of 2.5m is to be provided above the disabled car space in accordance with AS2890.6-2009.	✓	Complies, DDA space is provided in accordance with AS2890.6-2022													
Clause 52.06-9 Design Standard 3 - Gradients															
Accessway grades must not be steeper than 1:10 (10 per cent) within 5 metres of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.	✓	The grades over the first 5m into the site do not exceed 1:10 (10%). Complies.													
Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 and be designed for vehicles travelling in a forward direction.	✓	Carpark is private, and a maximum grade of 1:4 is provided.													
<table border="1"> <thead> <tr> <th>Type of car park</th> <th>Length of ramp</th> <th>Maximum grade</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Public car parks</td> <td>20 metres or less</td> <td>1:5 (20%)</td> </tr> <tr> <td>longer than 20 metres</td> <td>1:6 (16.7%)</td> </tr> <tr> <td rowspan="2">Private or residential car parks</td> <td>20 metres or less</td> <td>1:4 (25%)</td> </tr> <tr> <td>longer than 20 metres</td> <td>1:5 (20%)</td> </tr> </tbody> </table>	Type of car park	Length of ramp	Maximum grade	Public car parks	20 metres or less	1:5 (20%)	longer than 20 metres	1:6 (16.7%)	Private or residential car parks	20 metres or less	1:4 (25%)	longer than 20 metres	1:5 (20%)		
Type of car park	Length of ramp	Maximum grade													
Public car parks	20 metres or less	1:5 (20%)													
	longer than 20 metres	1:6 (16.7%)													
Private or residential car parks	20 metres or less	1:4 (25%)													
	longer than 20 metres	1:5 (20%)													
Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5 per cent) for a summit grade change, or greater than 1:6.7 (15 per cent) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming.	✓	Transitions meet this requirement.													

Requirement	Assessment	Design Response
Plans must include an assessment of grade changes of greater than 1:5.6 (18 per cent) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority	✓	Complies.
Clause 52.06-9 Design Standard 4 – Mechanical Parking		
At least 25 per cent of the mechanical car parking spaces can accommodate a vehicle height of at least 1.8 metres.	N/A	No mechanical car parking.
Car parking spaces that require the operation of the system are not allocated to visitors unless used in a valet parking situation.	N/A	
The design and operation is to the satisfaction of the responsible authority.	N/A	
Clause 52.06-9 Design Standard 5 – Urban Design		
Ground level car parking, garage doors and accessways must not visually dominate public space.	N/A	These matters are more related to urban design, rather than specifically traffic engineering.
Car parking within buildings (including visible portions of partly submerged basements) must be screened or obscured where possible, including through the use of occupied tenancies, landscaping, architectural treatments and artworks.		
Design of car parks must take into account their use as entry points to the site.		
Design of new internal streets in developments must maximise on street parking opportunities.	N/A	No internal streets proposed.
Clause 52.06-9 Design Standard 6 – Safety		
Car parking must be well lit and clearly signed.	N/A	Lighting of the carpark can be addressed as part of the detailed design stage.
The design of car parks must maximise natural surveillance and pedestrian visibility from adjacent buildings.	✓	No at-grade carparks.

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Requirement	Assessment	Design Response
Pedestrian access to car parking areas from the street must be convenient.	✓	Pedestrian access to the site is available to Cremorne Street and Kelso Street via a separate pedestrian pathway located throughout the site's frontages.
Pedestrian routes through car parking areas and building entries and other destination points must be clearly marked and separated from traffic in high activity parking areas.	✓	Access to the separate pedestrian path is located at the midpoint of the carpark and is readily accessible.
Clause 52.06-9 Design Standard 7 - Landscaping		
The layout of car parking areas must provide for water sensitive urban design treatment and landscaping.	N/A	These requirements are not strictly related to traffic engineering matters.
Landscaping and trees must be planted to provide shade and shelter, soften the appearance of ground level car parking and aid in the clear identification of pedestrian paths.		
Ground level car parking spaces must include trees planted with flush grilles. Spacing of trees must be determined having regard to the expected size of the selected species at maturity.		

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4.6. Loading and Waste Collection Arrangements

Clause 65.01 of the Planning Scheme states that the Responsible Authority must consider a number of matters as appropriate including:

- *The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.*

4.6.1. Loading

A formal loading bay that is capable of accommodating a Small Rigid Vehicle (SRV) measuring at 6.4m long. SRV is an appropriate size to the relatively size of their respective commercial tenancies. The headroom within all areas connected to the loading bay exceed 3.5m.

Access to critical warehouses is demonstrated in the swept path diagrams attached at Appendix D.

Loading activities associated with the proposed offices will, in practice, be undertaken by smaller type vehicles, such as vans.

Given the small size of the shop tenancies, it is expected that loading activities will also be undertaken by smaller sized trucks and vans, which can easily be by the formal loading bay.

We are satisfied with the loading arrangements are acceptable.

4.6.2. Waste Collection

A Waste Management Plan has been prepared by our office (Ref: G32978-03A (WMP)), detailing the waste collection arrangements for the proposed development.

Waste collection will occur on-site, within the provided loading bay by a private contractor utilising the mini waste truck (6.4m long x 2.08m high). This vehicle will access the site, collect bins and exit the site in a forward's direction. Swept paths demonstrating this vehicle accessing the site are attached at Appendix D.

We are satisfied that the waste collection arrangements are acceptable.

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4.7. Traffic Impact Assessment

Given the reduced rate of car parking proposed for the office and the shop (i.e. 94 car spaces in total), we consider that a first-principals approach is most appropriate in this instance.

Surveys undertaken by our office and other consultants have determined that office car spaces conservatively generate 0.5 trips per peak hour period.

Based on the provision of 94 car spaces, we expect that the site will generate in the order of 47 vehicle trips during each peak hour period.

This level of traffic is low and represents 1 vehicle trip every 1-2 minutes.

Currently, Kelso Street allows for two-way traffic flow. The UDF, discussed in Section 3.2.2, nominates Kelso Street to be one-way. Due to the proposed one-way configuration of Kelso Street, all staff will be required to enter the site travelling southbound Cremorne Street turning eastbound onto Kelso Street to enter the site. Exiting traffic will have to traffic eastbound via Kelso Street and exit the precinct via either Balmain Street, , minimising any conflicts at the site access and removing complexity at the access.

In the event the operation of Kelso Street is altered, we are satisfied that staff can adjust their access routes to the site appropriately. Requiring some drivers to circulate the local road network is a natural consequence of the traffic management strategy being explored be Council and an acceptable outcome.

These arrangements are illustrated in the below diagrams.

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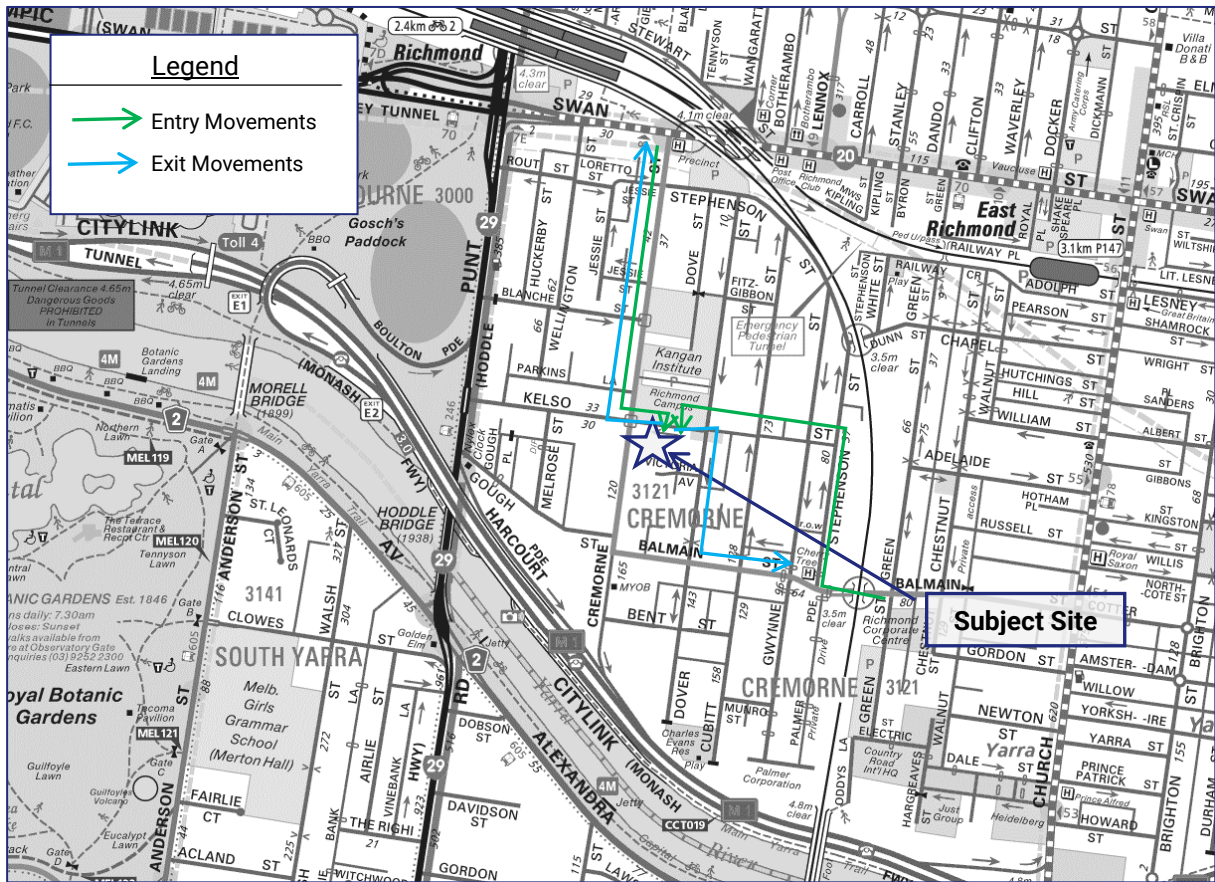


Figure 22: Access to the site under existing road network

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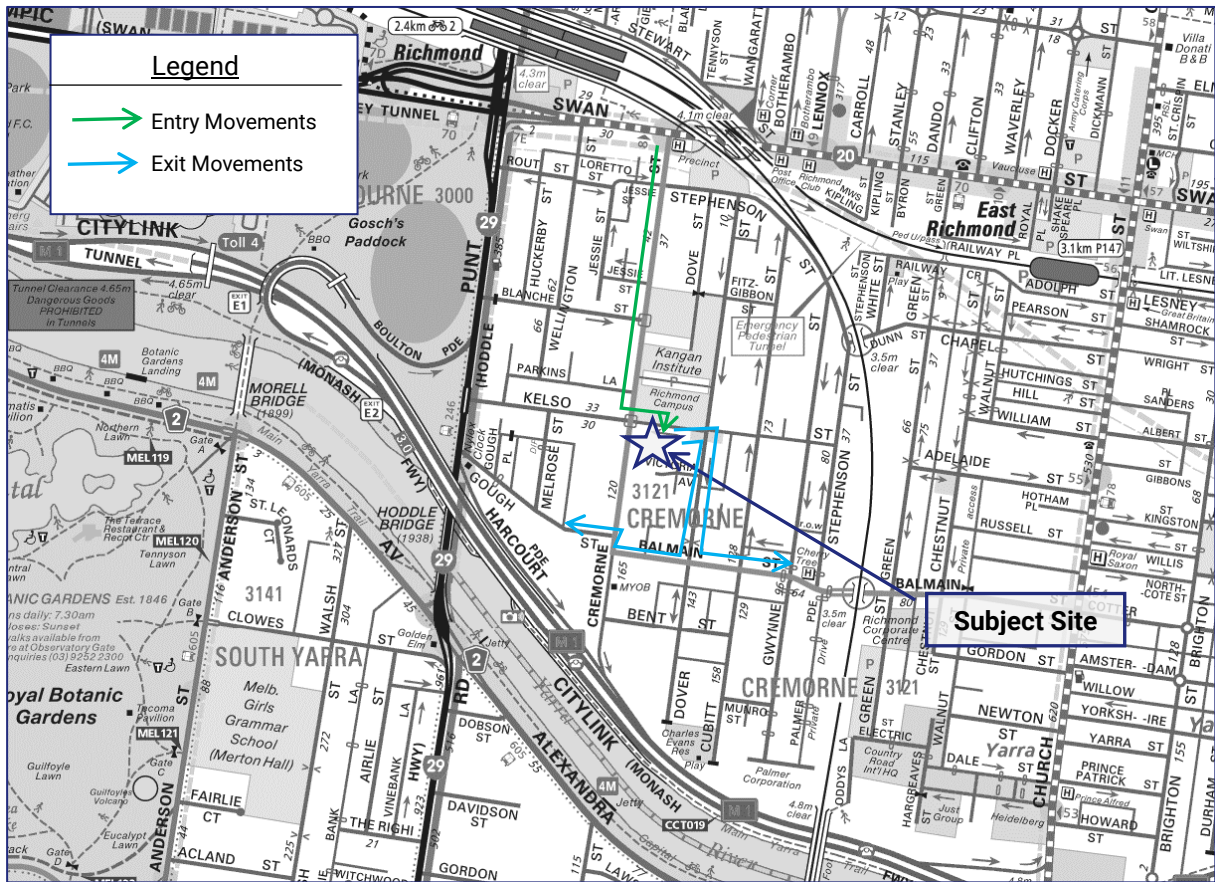


Figure 23: Access to the site under future UDF arrangements

We are satisfied that this level of traffic can be accommodate by the surrounding road network without any adverse impact to its operation.

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5. Conclusions

Having undertaken a detailed traffic engineering assessment of the proposed commercial development at 101 Cremorne Street, Cremorne, we are of the opinion that:

- a) the proposed development has a statutory car parking requirement of 347 car spaces under Clause 52.06-5 and the provision of 94 office car spaces results in a shortfall of 253 spaces (233 office spaces and 20 shop spaces),
- b) the Car Parking Demand Assessment indicates that there are very limited opportunities to use on-street parking for long-term parking during business hours and staff will be required to utilise alternative transport modes,
- c) the required reduction in parking under Clause 52.06-7 is supported on the following grounds:
 - i) the site represents an excellent opportunity to support Council's local policies that prioritise sustainable transport modes,
 - ii) the lack of provision of car parking is in line with Local Traffic Management Policies to assist with congestion in the local area,
 - iii) the site is well served by public transport and alternative transport modes and provides a high level of bicycle parking,
 - iv) staff will not be able to drive to work using on-street parking given the local parking restrictions and inability to access parking permits,
 - v) there is an existing car parking deficiency associated with the site, and
 - vi) the Council endorsed proposal to limit car parking in Cremorne.
- d) bicycle parking is provided well above the minimum requirements set out at Clause 52.34 of the Planning Scheme,
- e) the proposed parking layout and vehicle access arrangements generally accord with the requirements of the Planning Scheme, Australian Standards (where relevant) and current practice,
- f) site access arrangements are acceptable under both the existing layout of Kelso Street, and following the changes outlined in the Cremorne UDF,
- g) loading and waste collection arrangements are acceptable,
- h) the level of traffic generated by the proposal can be accommodated without any adverse impacts to the operation of the local road network, and
- i) there are no traffic engineering reasons why a planning permit for the proposed commercial development at 101 Cremorne Street, Cremorne should be refused, subject to appropriate conditions.

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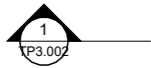
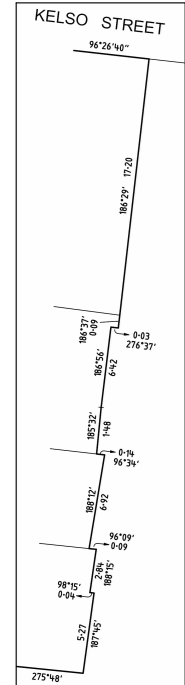


Appendix A

Development Plans

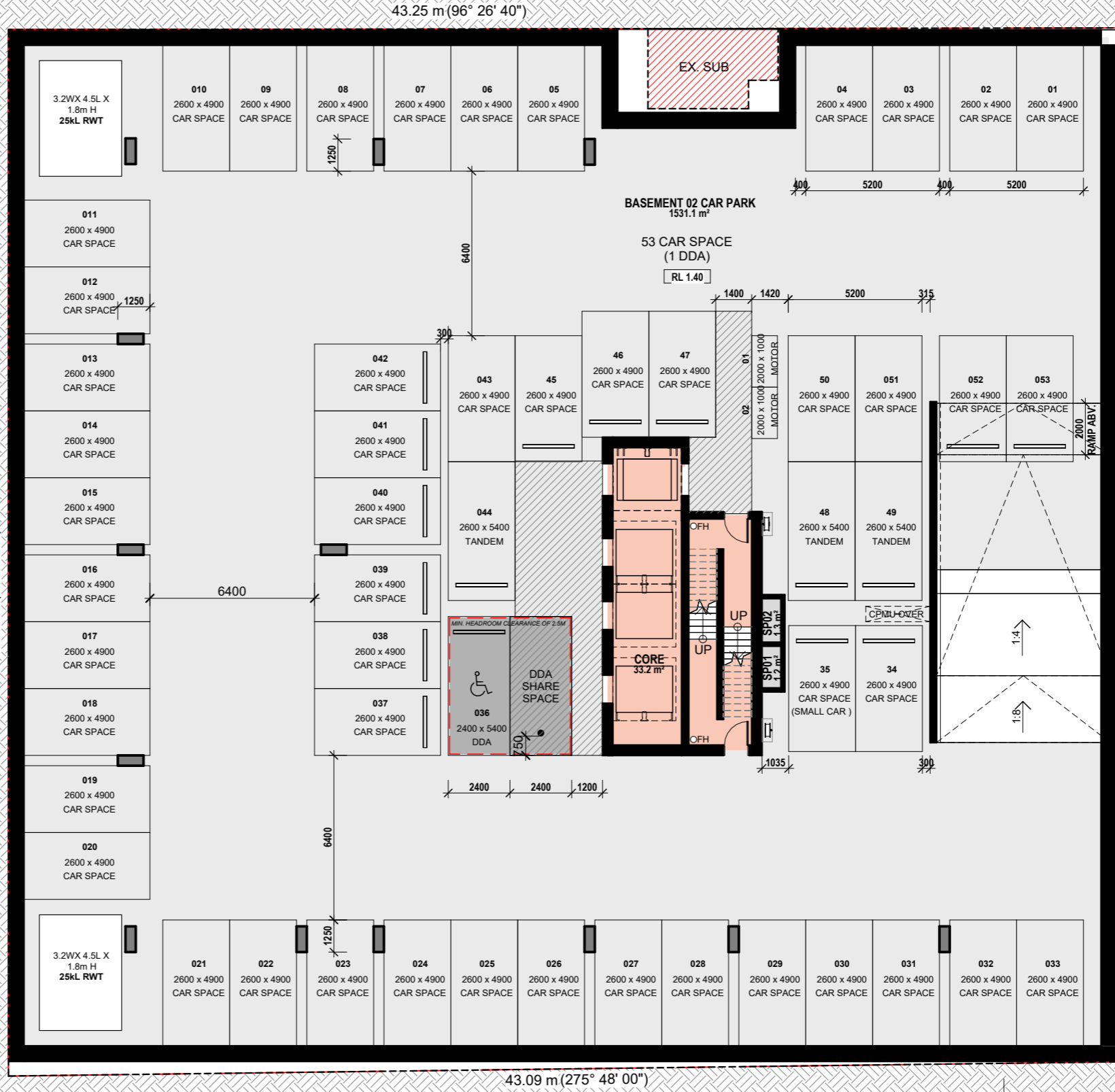
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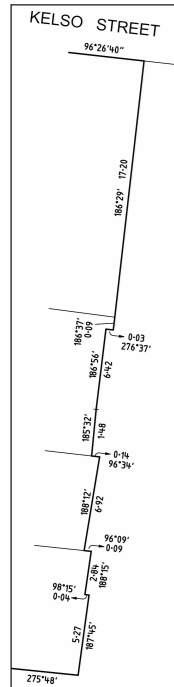


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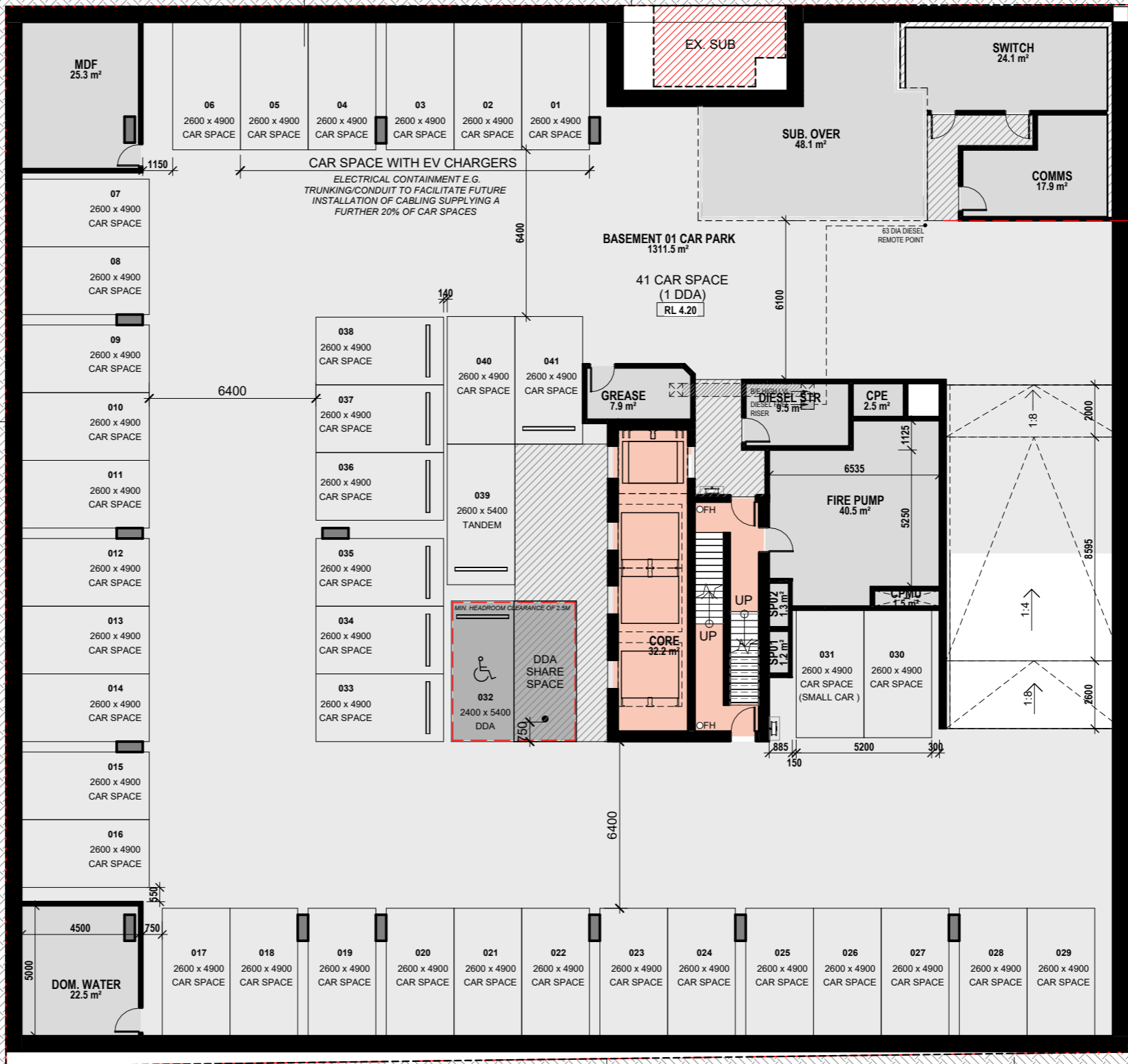
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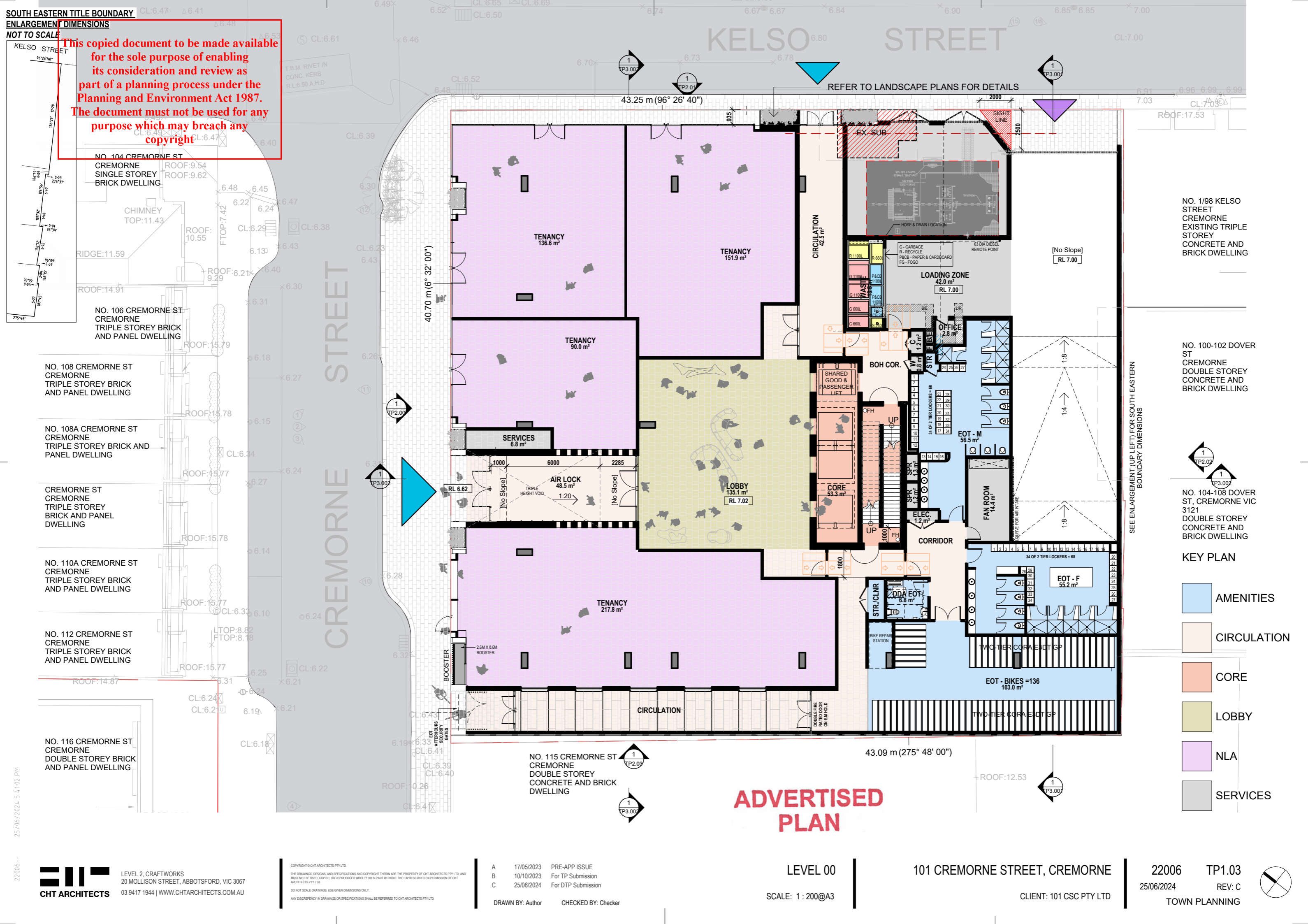


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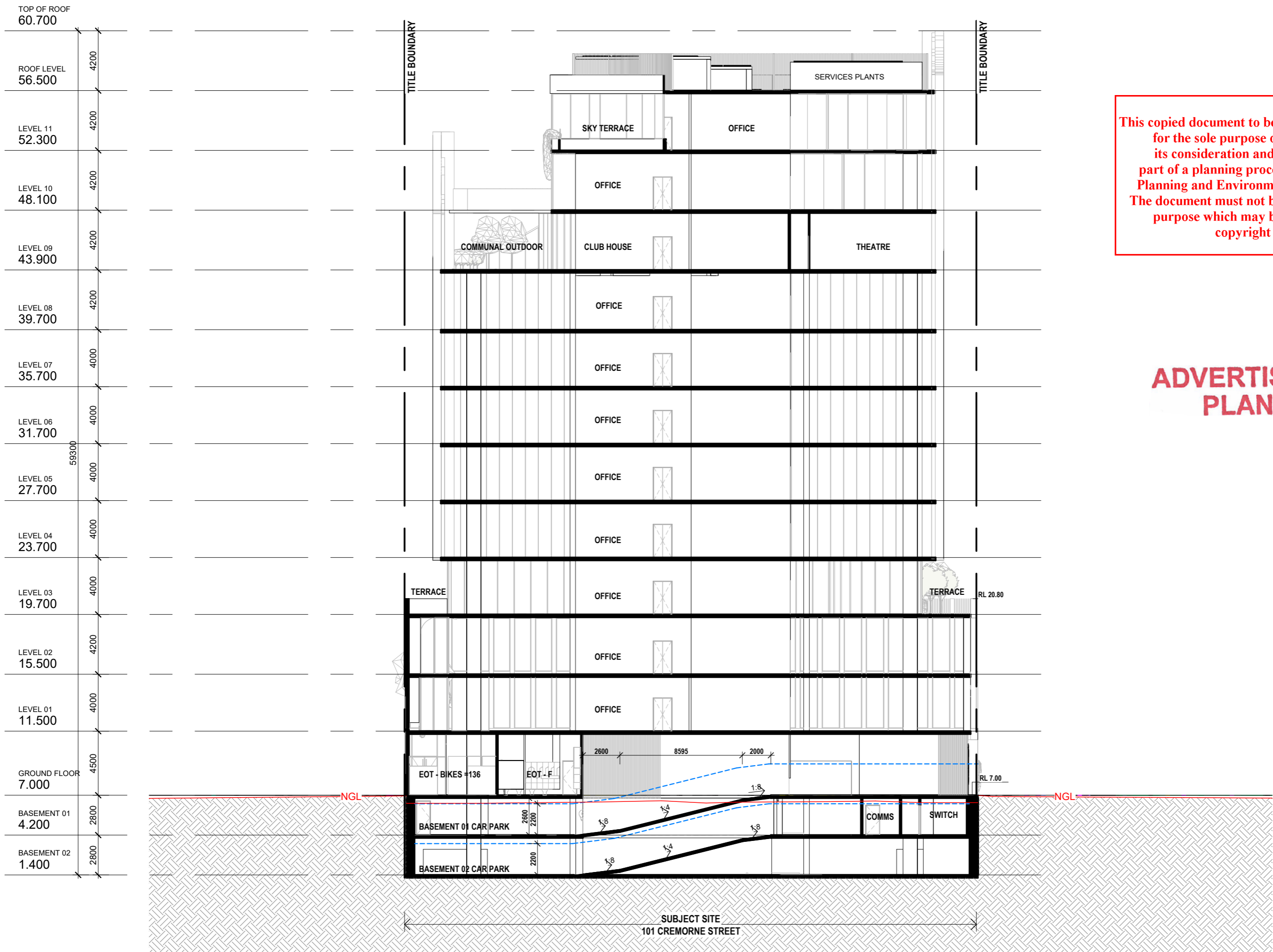


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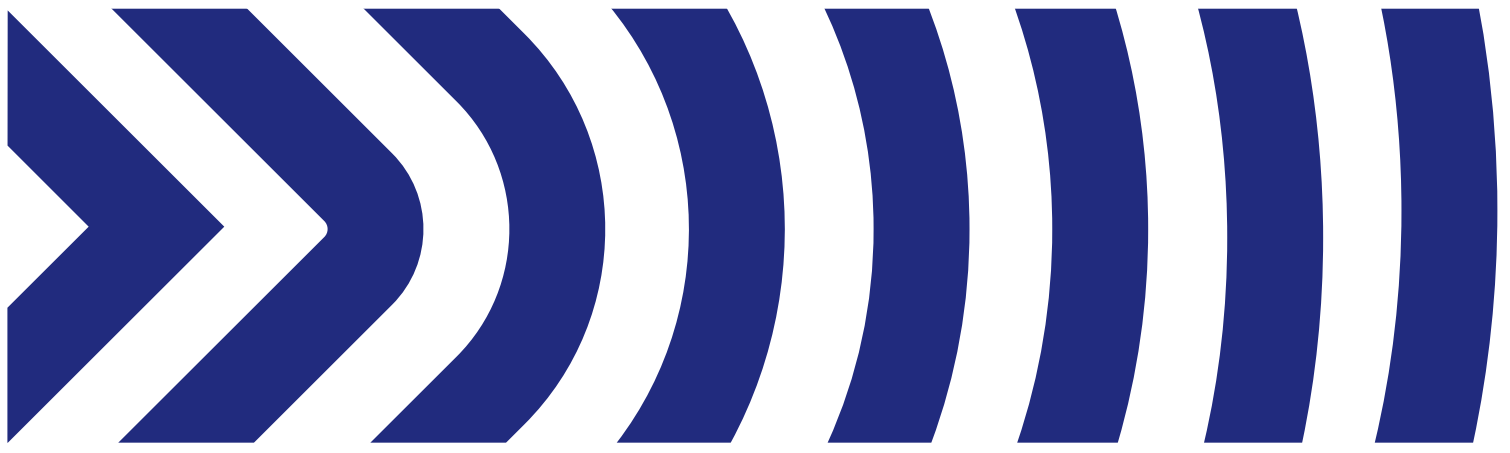




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Appendix B

Car Parking Inventory

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Survey Dates & Times: See below

Location		Restriction	Capacity Min - Max	Tuesday 28th March, 2023
				3pm
ON-STREET CARPARKING				
Map Ref.	CREMORNE STREET			
	East Side			
A	Stephenson Street to Opposite Jessie Street	No Stopping	-	0
		2P 7am-7pm	4	6
		No Stopping	-	0
		4P 7am-7pm	2	2
	Opposite Jessie Street to Kelso Street	No Stopping Authorised Car Share Vehicles Excepted	1	1
		4P 7am-7pm	6	5
		No Stopping	-	0
		4P 7am-7pm	6	6
		No Stopping	-	0
	B	Kelso Street to NB #115 (Subject Site)	No Stopping	-
NB #115 to Balmain Street		4P 7am-7pm	3	3
		No Stopping	-	0
		4P 7am-7pm	2	2
		No Stopping	-	0
		Loading Zone 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holidays	1	0
		2P 7am-9pm Monday-Saturday and Public Holiday	3	3
No Stopping	-	0		
C	Balmain Street to Bent Street	No Stopping	-	0
		1/4P 7am-7pm	1	0
		4P 7am-7pm	8	8
		No Stopping	-	0

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Survey Dates & Times: See below

Location		Restriction	Capacity Min - Max	Tuesday 28th March, 2023
				3pm
Map Ref.	CREMORNE STREET			
	West Side			
D	Opposite Bent Street to Gough Place	4P 7am-7pm	7	7
		DDA Only	2	2
		No Stopping	-	0
E	Gough Place to Kelso Street	No Stopping	-	0
		No Stopping Authorised Car Share Vehicles Excepted	1	1
		2P 7am-9pm Monday-Saturday and Public Holiday	2	0
		No Stopping	-	0
		2P 7am-9pm Monday-Saturday and Public Holiday	3	3
		2P 7am-5pm Monday-Saturday, Permit Zone All Other Times and Public Holiday	4	4
		No Stopping	-	0
F	Kelso Street to Parkins Lane	No Stopping	-	0
		2P 7am-5pm Monday-Saturday, Permit Zone All Other Times and Public Holiday	3	3
		No Stopping	-	0
	Parkins Lane to Blanche Street	No Stopping	-	0
		2P 7am-9pm Monday-Saturday and Public Holiday	5	4
		1/4P Monday-Friday 7am-7pm, 2P 7am-9pm Saturday	1	0
		No Stopping	-	0
G	Blanche Street to Jessie Street	No Stopping	-	0
		1P 7am-7pm Monday-Saturday and Public Holiday	3	3
		No Stopping Authorised Car Share Vehicles Excepted	1	1
		No Stopping	-	0
H	Jessie Street to Jessie Street	No Stopping	-	0
		1P 7am-7pm Monday-Saturday and Public Holiday	3	3
		No Stopping	-	0
		1/4P Monday-Friday 7am-4pm, 2P 4pm-9pm Monday-Friday, 7am-9pm Saturday	1	1
		2P 7am-9pm Monday-Saturday	2	2
		No Stopping	-	0
CREMORNE STREET		Capacity	70 - 70	70
		Total Number of Cars Parked		67
		Total Number of Vacant Spaces		3
		Percentage Occupancy		96%

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Survey Dates & Times: See below

Location		Restriction	Capacity Min - Max	Tuesday 28th March, 2023
				3pm
Map Ref.	KELSO STREET			
	South Side			
I	Punt Road to Melrose Street	No Stopping	-	0
		2P 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holiday	3	3
		Work Zone 7am-6pm Monday-Friday, 9am-3pm Saturday	1	1
		2P 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holiday	3	3
		DDA Only	1	0
		2P 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holiday	2	2
		No Stopping	-	0
		2P 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holiday	3	3
		No Stopping	-	0
J	Melrose Street to Cremorne Street	No Stopping	-	0
		2P 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holiday	12	12
		No Stopping	-	0
K	Cremorne Street to WB #98 (Subject Site)	No Stopping	-	0
		2P 7am-7pm Monday-Friday and Public Holiday	4	4
	WB #98 to Dover Street	No Stopping	-	0
L	Dover Street to Cubitt Street	No Stopping	-	0
		2P 7am-7pm Monday-Friday and Public Holiday	7	2
		No Stopping	-	0
		Permit Zone	2	2
		No Stopping	-	0
North Side				
M	Punt Road to Cubitt Street	No Stopping	-	0
KELSO STREET			Capacity	35 - 35
			Total Number of Cars Parked	29
			Total Number of Vacant Spaces	6
			Percentage Occupancy	83%

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Survey Dates & Times: See below

Location		Restriction	Capacity Min - Max	Tuesday 28th March, 2023
				3pm
Map Ref.	MELROSE STREET			
	East Side			
N	Kelso Street to Gough Street	No Stopping	-	0
		1P 7:30am-9pm	17	16
		No Stopping	-	0
West Side				
O	Gough Street to Kelso Street	No Stopping	-	0
		Permit Zone	6	6
		DDA Only	1	1
		Permit Zone	7	7
		No Stopping	-	0
MELROSE STREET			Capacity	18 - 18
			Total Number of Cars Parked	17
			Total Number of Vacant Spaces	1
			Percentage Occupancy	94%
Map Ref.	BALMAIN STREET			
	South Side			
P	Dover Street to Cremorne Street	No Stopping	-	0
Side of Road				
Q	Dover Street to Cremorne Street	No Stopping	-	0
		Works Zone 7am-6pm Monday-Friday, 9am-3pm Saturday, Permit Zone All Other Times and Public Holidays	1	1
		2P 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holiday	2	2
		No Stopping	-	0
BALMAIN STREET			Capacity	2 - 2
			Total Number of Cars Parked	2
			Total Number of Vacant Spaces	0
			Percentage Occupancy	100%

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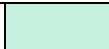



Location		Restriction	Capacity Min - Max	Tuesday 28th March, 2023
				3pm
Map Ref.	DOVER STREET			
	East Side			
R	SB #81 to Balmain Street	No Stopping	-	0
West Side				
S	Kangan Institute carpark entrance to Kelso Street	No Stopping	-	0
		2P 7am-5pm Monday-Friday, Permit Zone All Other Times and Public Holiday	9	9
		No Stopping	-	0
T	Kelso Street to Victoria Avenue	No Stopping	-	0
		2P 7:30am-9pm	5	5
		No Stopping	-	0
	Victoria Avenue to Balmain Street	No Stopping	-	0
		2P 7:30am-9pm	4	4
		No Stopping	-	0
		Unrestricted	3	3
		No Stopping	-	0
	DOVER STREET		Capacity	21 - 21
		Total Number of Cars Parked		21
		Total Number of Vacant Spaces		0
		Percentage Occupancy		100%
SUMMARY => ON-STREET CARPARKING				
Car Parking Supply			146 - 146	146
Total Number of Cars Parked				136
Total Number of Vacant Spaces				10
Percentage Occupancy				93%

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Surveyed By: Sarah Stephenson

Survey Dates & Times: See below

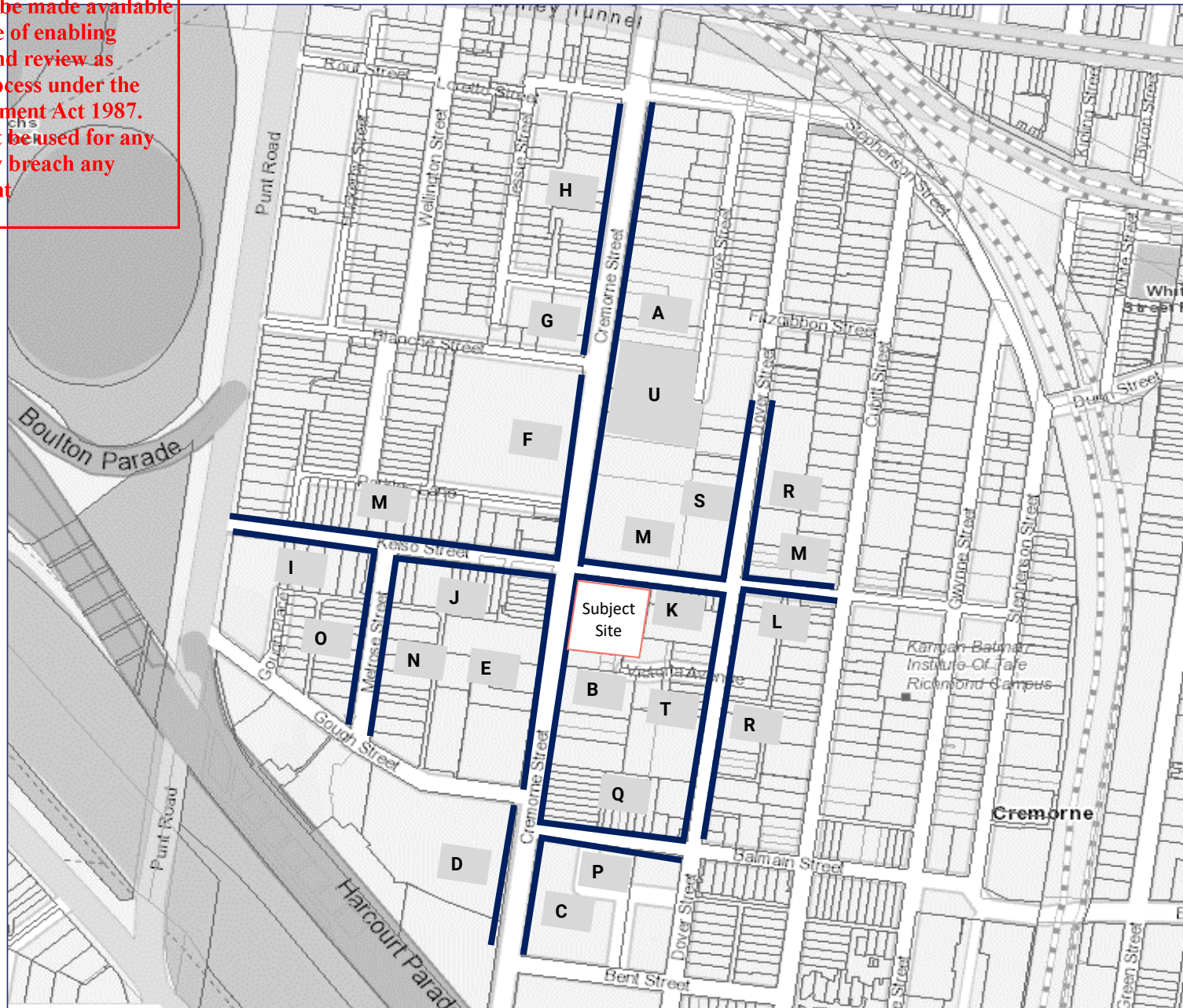
Location		Restriction	Capacity Min - Max	Tuesday 28th March, 2023 3pm	
OFF-STREET CARPARKING					
Map Ref.	CREMORNE STREET				
	North Block				
U	Southern block	Unrestricted (ticketed)	2	2	
		Permit Zone, Kangan Institute parking only 8am-4pm Mon-Fri Schools Days	9	8	
		Permit Zone, Kangan Institute parking only 8am-4pm Mon-Fri Schools Days	11	11	
	Western row	Unrestricted (ticketed)	13	11	
	Northern row	Unrestricted (ticketed)	22	17	
		Unrestricted (ticketed)	10	10	
	Eastern row	Permit Zone, Kangan Institute parking only 8am-4pm Mon-Fri Schools Days	8	8	
	South Block				
	Northern row	Permit Zone, Kangan Institute Staff parking only 8am-5pm Mon-Fri Schools Days	14	13	
		DDA Only	1	1	
Permit Zone, Kangan Institute Staff parking only 8am-5pm Mon-Fri Schools Days		5	0		
South row	Permit Zone BKI Pool Vehicles Only	1	1		
	Permit Zone, Kangan Institute Staff parking only 8am-5pm Mon-Fri Schools Days	16	11		
	Loading Zone (15 minute)	1	0		
SUMMARY => OFF-STREET CARPARKING					
Car Parking Supply			48 - 48	48	
Total Number of Cars Parked				41	
Total Number of Vacant Spaces				7	
Percentage Occupancy				85%	
Note: Public parking includes spaces that are available to the general public and excludes 'No Stopping', 'Loading Zones' and '1/4P' areas, etc., during the relevant enforcement periods					
LEGEND: Public Parking Not available to the general public Not Available, illegally parked cars included in analysis No Stopping/ Other No Parking			   		

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Appendix C

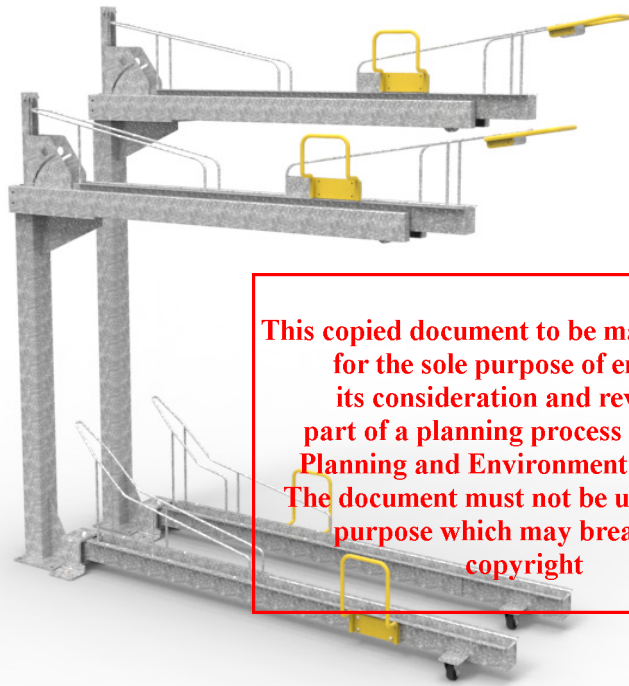
Bicycle Rack Specifications

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CORA BIKE RACK

PRODUCT SPECIFICATION SHEET



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E3DT SERIES

E3DT-GP

DYNAMIC UPPER TIER
DYNAMIC LOWER TIER

Australia's ONLY fully dynamic 2 tier system to provide reduced AS2890.3 compliant spacing of 400mm on both tiers. A Dynamic upper tier combined with a dynamic lower tier provides the maximum capacity possible. Upper tier includes gas assist lift for ease of use and is available in alternating heights. Lower tier uses the E3GP bike ground pivot rack that allows users to move the rack left or right for ease of access.

Capacity

- E3ST-H: 1 bike
- E3ST-L: 1 bike
- E3GP-F: 1 bike
- E3GP-B: 1 bike

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Construction

- Heavy duty high quality steel

Fixings

M10 anchor bolts with security nuts

Finishes

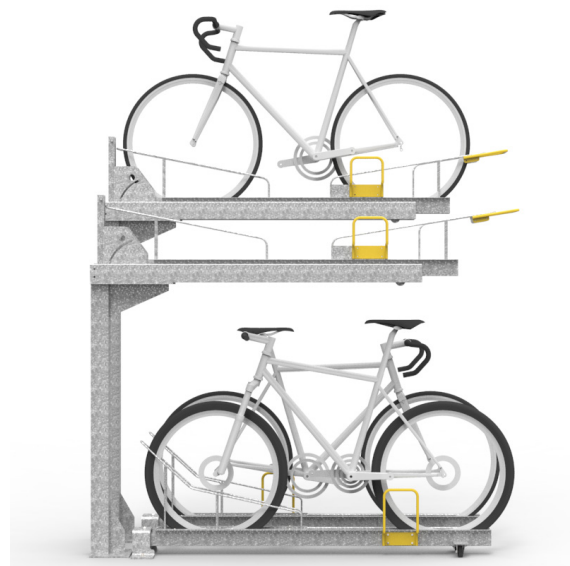
- Galvanised with powder coated accents on handles
- Option - Colour Powder Coat (Cora standard colour range)

Assembly

- Supplied partially assembled for assembly and mounting on site

Compliance

- Rack is AS2890.3 (2015) compliant

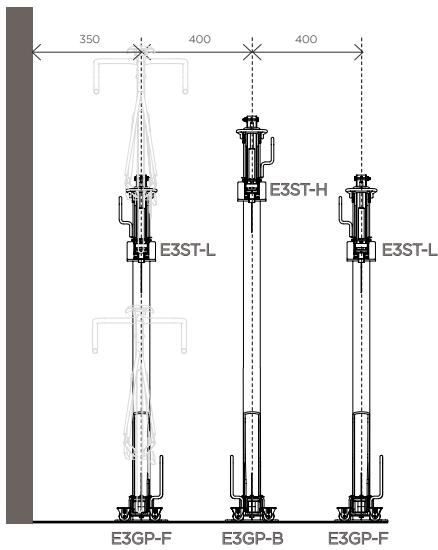


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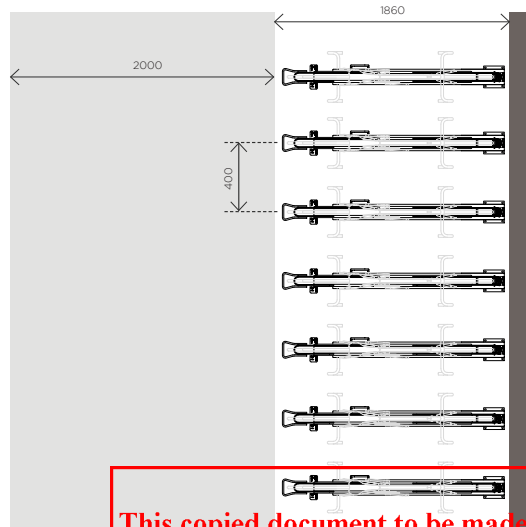
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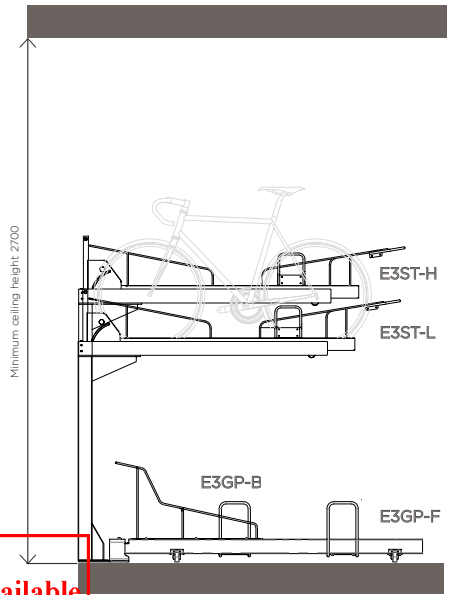
STAGGERED LAYOUT



Front view



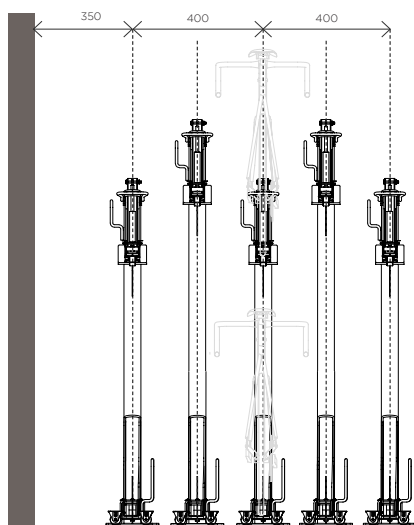
Top view



Side view

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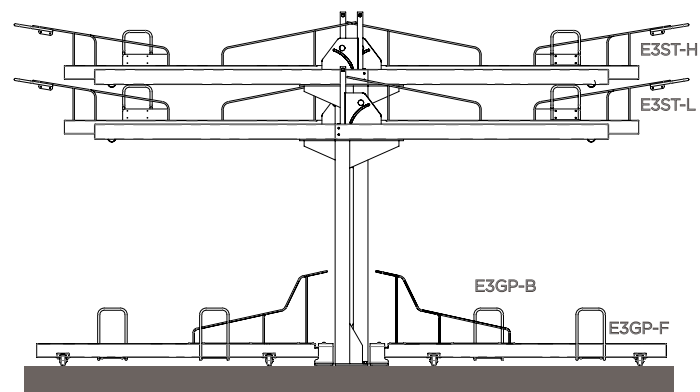
NESTED LAYOUT



Front view



Top view



Side view

E3DT-GP DYNAMIC UPPER AND LOWER TIER LAYOUT GUIDE

For specific assembly and installation instructions relating to E3DT-GP series racks, please refer to individual instruction information sheets.

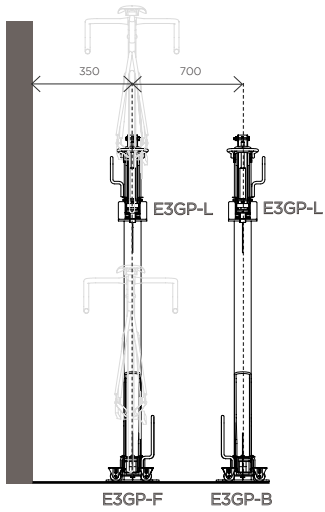
Racks should not be installed, based on the information on this sheet alone.

CORA BIKE RACK

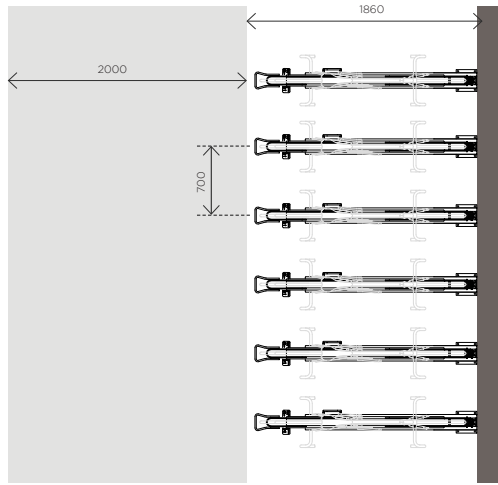
PRODUCT SPECIFICATION SHEET

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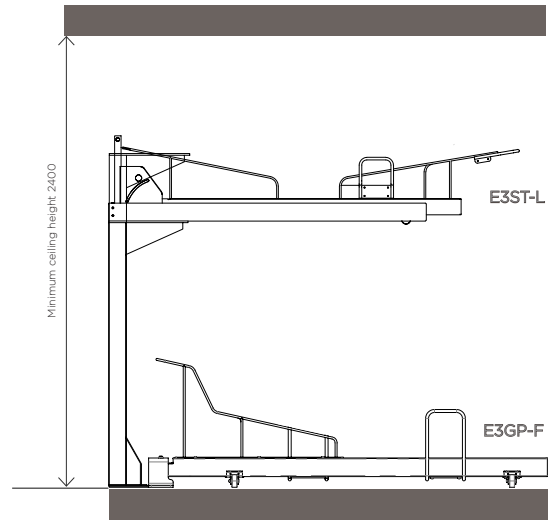
SINGLE LEVEL LAYOUT



Front view



Top view



Side view

E3DT-GP DYNAMIC UPPER AND LOWER TIER LAYOUT GUIDE

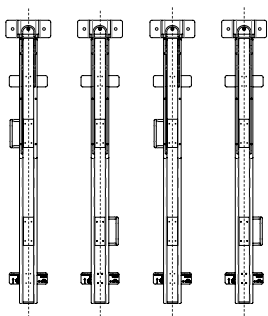
For specific assembly and installation instructions relating to E3DT-GP series racks, please refer to individual instruction information sheets.

Racks should not be installed, based on the information on this sheet alone.

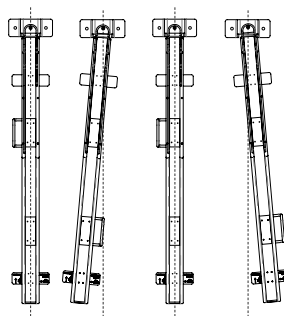
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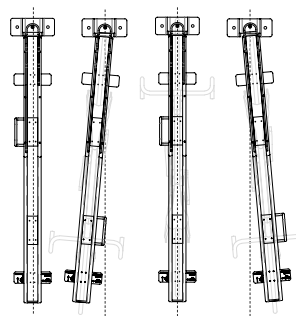
Dynamic side to side movement of lower rack



Racks in neutral position



Racks Pivoted
Racks either side of free rack, can be pivoted, to increase access for racking or removal



Bike placed in rack
Bike is wheeled in to rack, either front or rear wheel-in first depending on rack type



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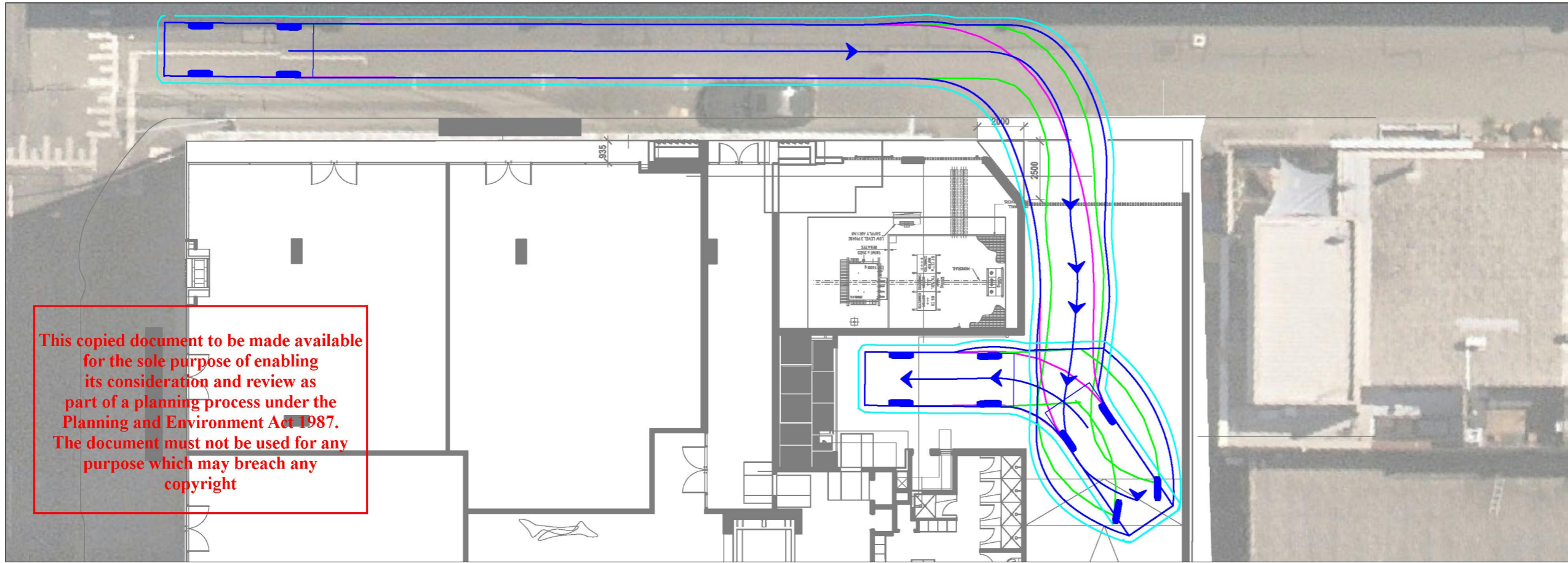
Appendix D

Swept Path Diagrams

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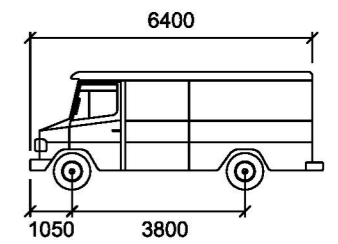
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6.4m SRV LOADING BAY - INGRESS



VEHICLE PROFILE

VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5KM/H)

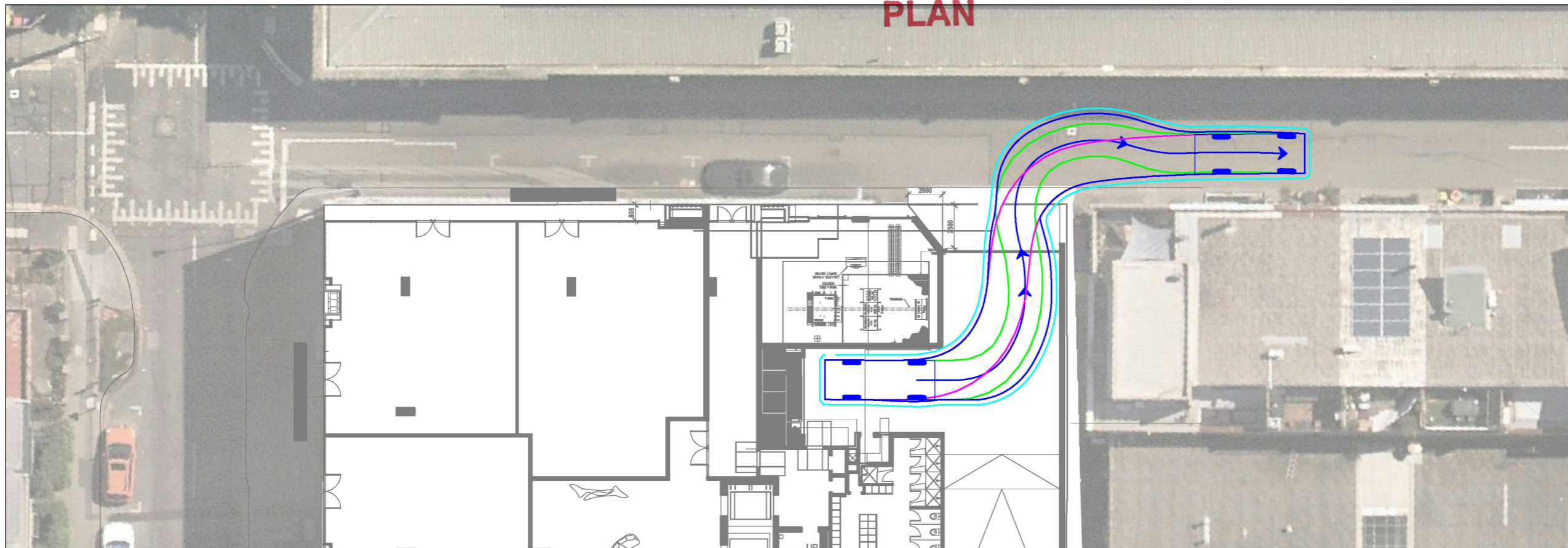


SRV (AS 2890.2) mm
 Width : 2300
 Track : 2300
 Lock to Lock Time : 6.0
 Steering Angle : 38.0

LEGEND
 REAR WHEELS (purple line)
 FRONT WHEELS (green line)
 VEHICLE BODY (blue line)
 BODY CLEARANCE (cyan line)

ADVERTISED PLAN

6.4m SRV LOADING BAY - EGRESS



REV	DATE	NOTES
A	05/10/2023	TOWN PLANNING
B	10/11/2023	UPDATED PLANS
C	28/11/2023	UPDATED PLANS
D	03/07/2024	UPDATED PLANS

101 CREMORNE STREET, CREMORNE
 PROPOSED COMMERCIAL DEVELOPMENT

GENERAL NOTES:
 BASE INFORMATION FROM:
 FloorPlan-GROUND FLOOR.dwg
 DRAWINGS BY: CHT Architects

FILE NAME: G32978-01D
 SHEET NO.: 01



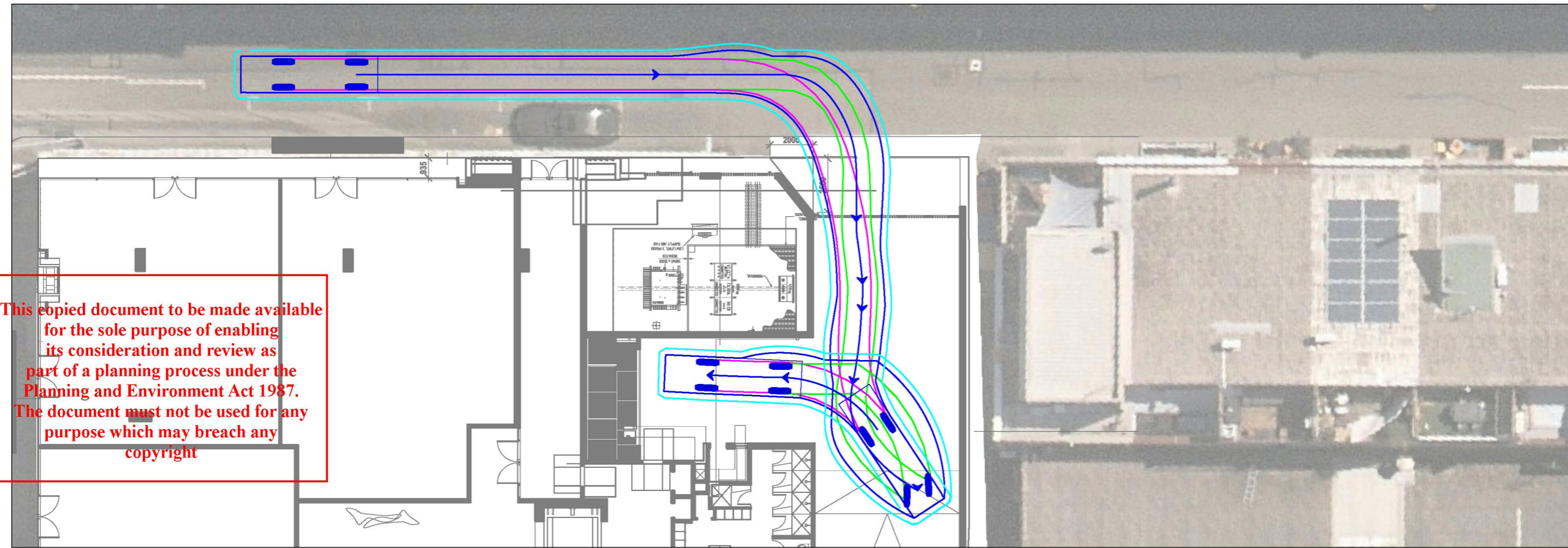
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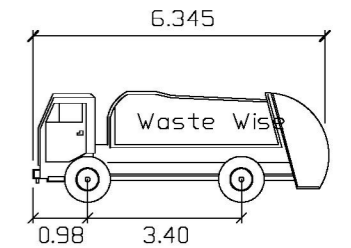
6.4m WASTE TRUCK - INGRESS



VEHICLE PROFILE

VEHICLE USED IN SIMULATION

(VEHICLE SPEED - 5KM/H)



Waste Wise Mini (Hino 300)

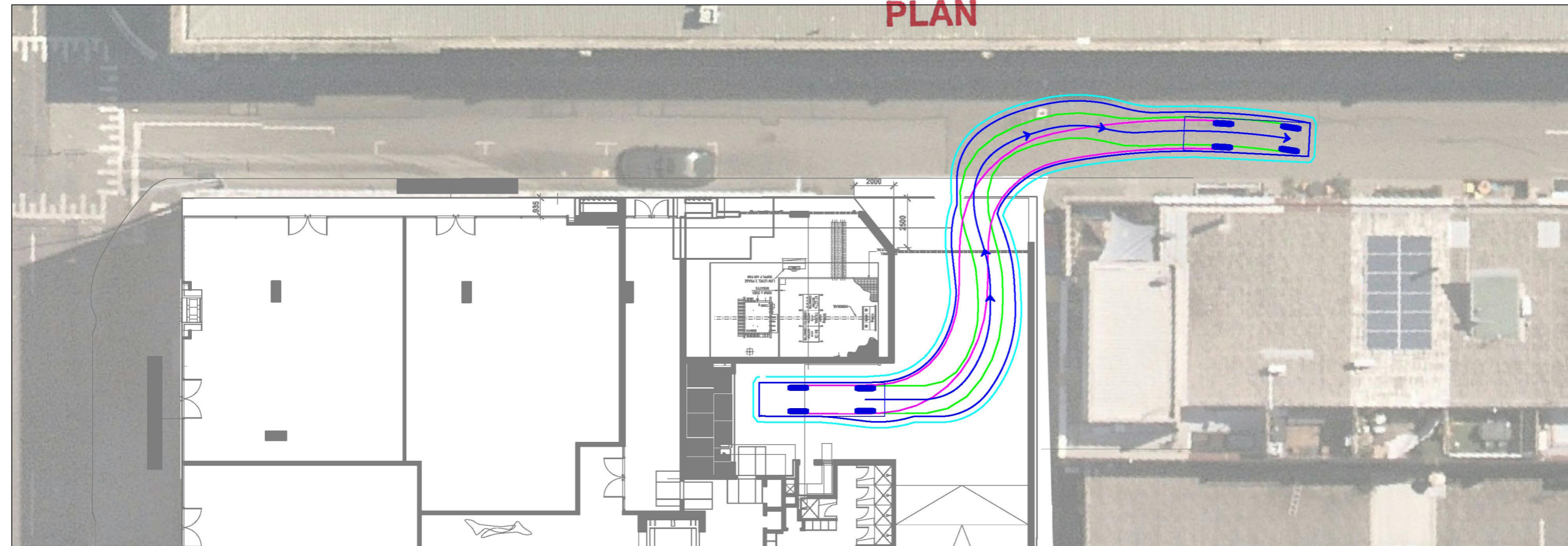
Width : 1.7m
 Front Track : 1.4m
 Rear Track : 1.44m
 Kerb to Kerb Radius 12.4m

LEGEND

REAR WHEELS	VEHICLE BODY
FRONT WHEELS	BODY CLEARANCE

ADVERTISED PLAN

6.4m WASTE TRUCK - EGRESS



REV	DATE	NOTES
A	05/10/2023	TOWN PLANNING
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C	28/11/2023	UPDATED PLANS
D	03/07/2024	UPDATED PLANS

101 CREMORNE STREET, CREMORNE
 PROPOSED COMMERCIAL DEVELOPMENT

GENERAL NOTES:
 BASE INFORMATION FROM:
 FloorPlan-GROUND FLOOR.dwg
 DRAWINGS BY: CHT Architects

FILE NAME: G32978-01D
 SHEET NO.: 02



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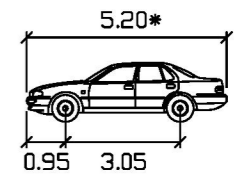
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VEHICLE USED IN SIMULATION

(VEHICLE SPEED - 5KM/H)



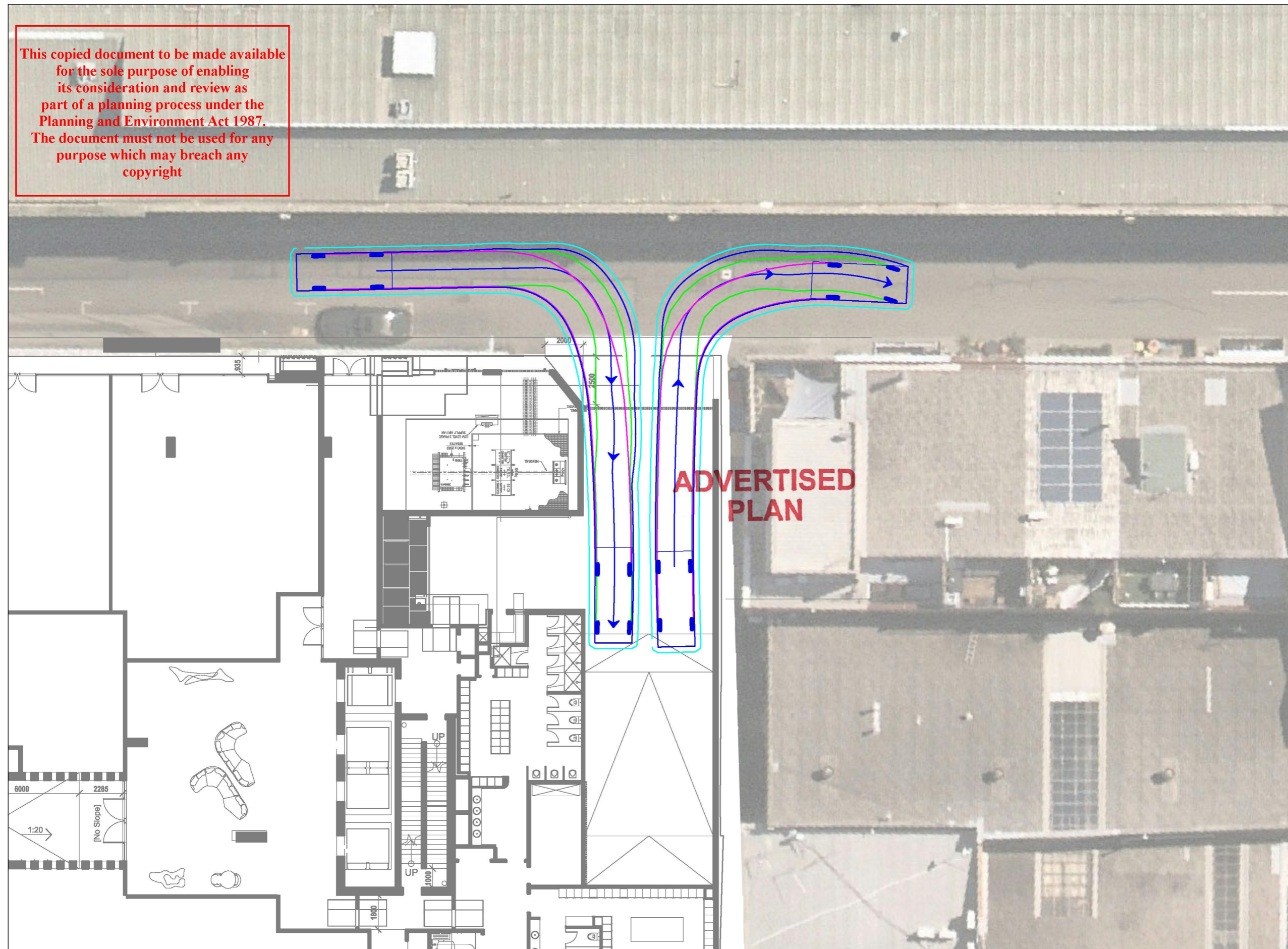
99th percentile (AS/NZS 2890.1:2004)

Width : 1.94
Track : 1.84
Kerb to Kerb Radius 12.5m

* actual template based on 'relevant longitudinal dimensions that affect swept path' as set out in Section B21 of AS/NZS 2890.1:2004

LEGEND

- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE



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101 CREMORNE STREET, CREMORNE
PROPOSED COMMERCIAL DEVELOPMENT

GENERAL NOTES:
BASE INFORMATION FROM:
FloorPlan-GROUND FLOOR.dwg
DRAWINGS BY: CHT Architects

FILE NAME: G32978-01D
SHEET NO.: 03



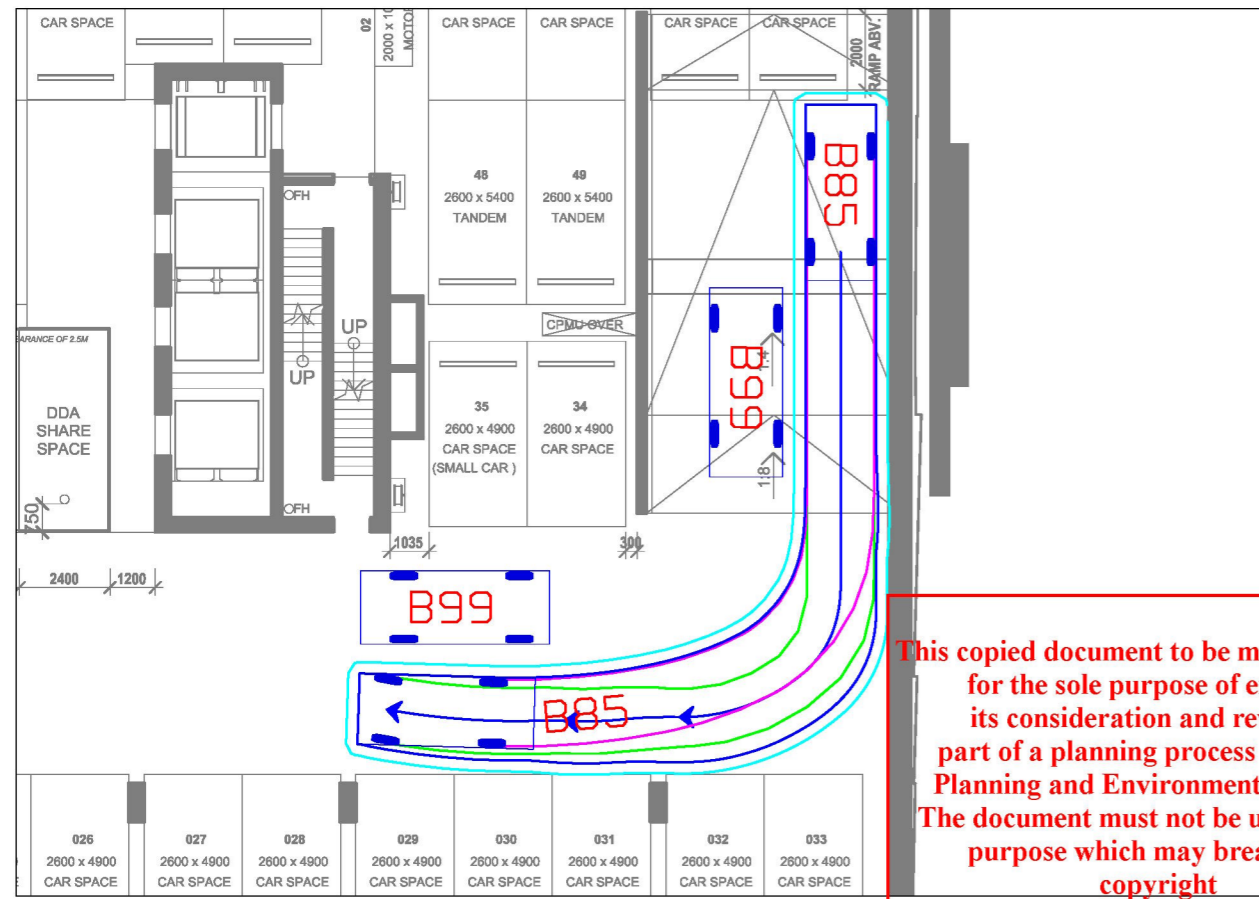
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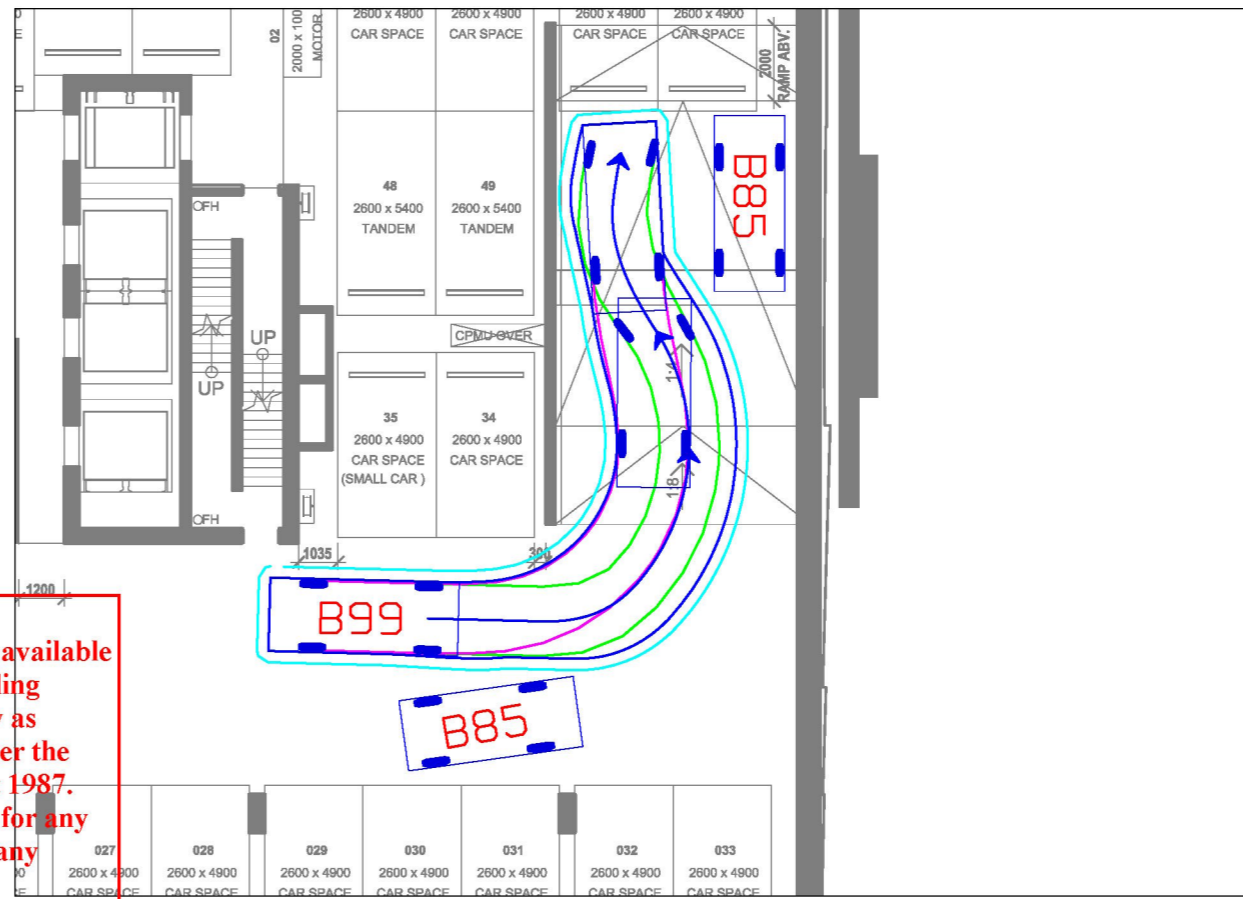


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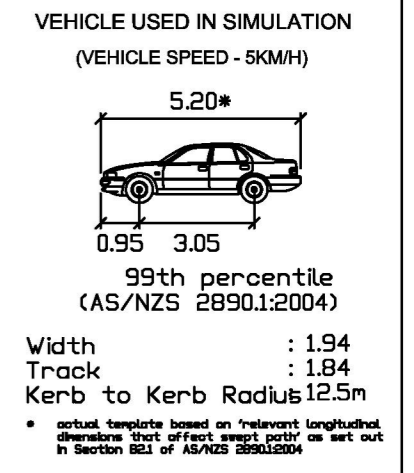
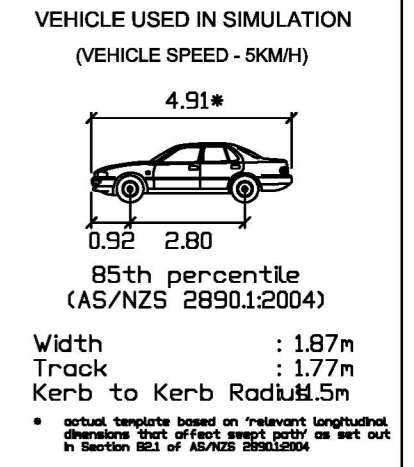
BASEMENT CIRCULATION - PROP AND PASS - ENTRY MOVEMENT



BASEMENT CIRCULATION - PROP AND PASS - EXIT MOVEMENT



VEHICLE PROFILE

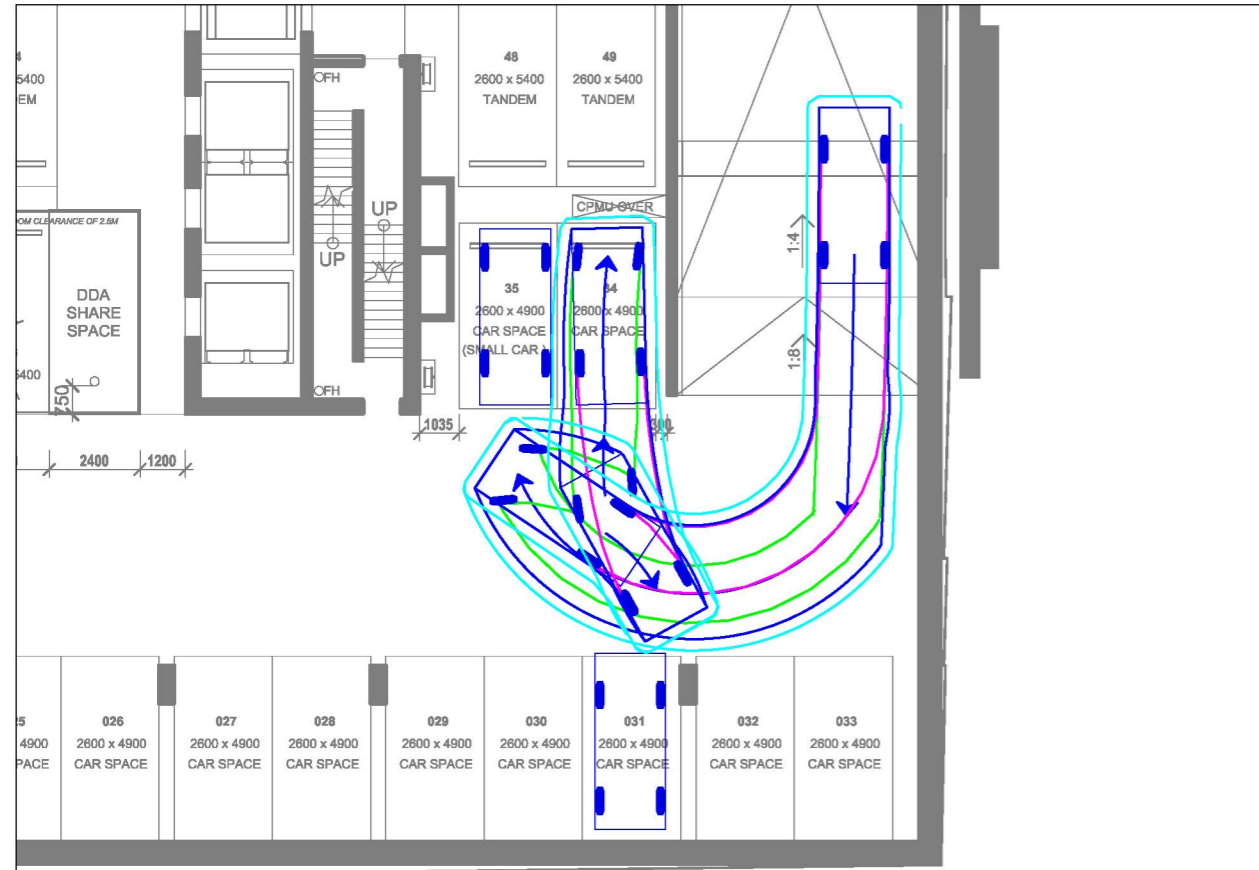


LEGEND

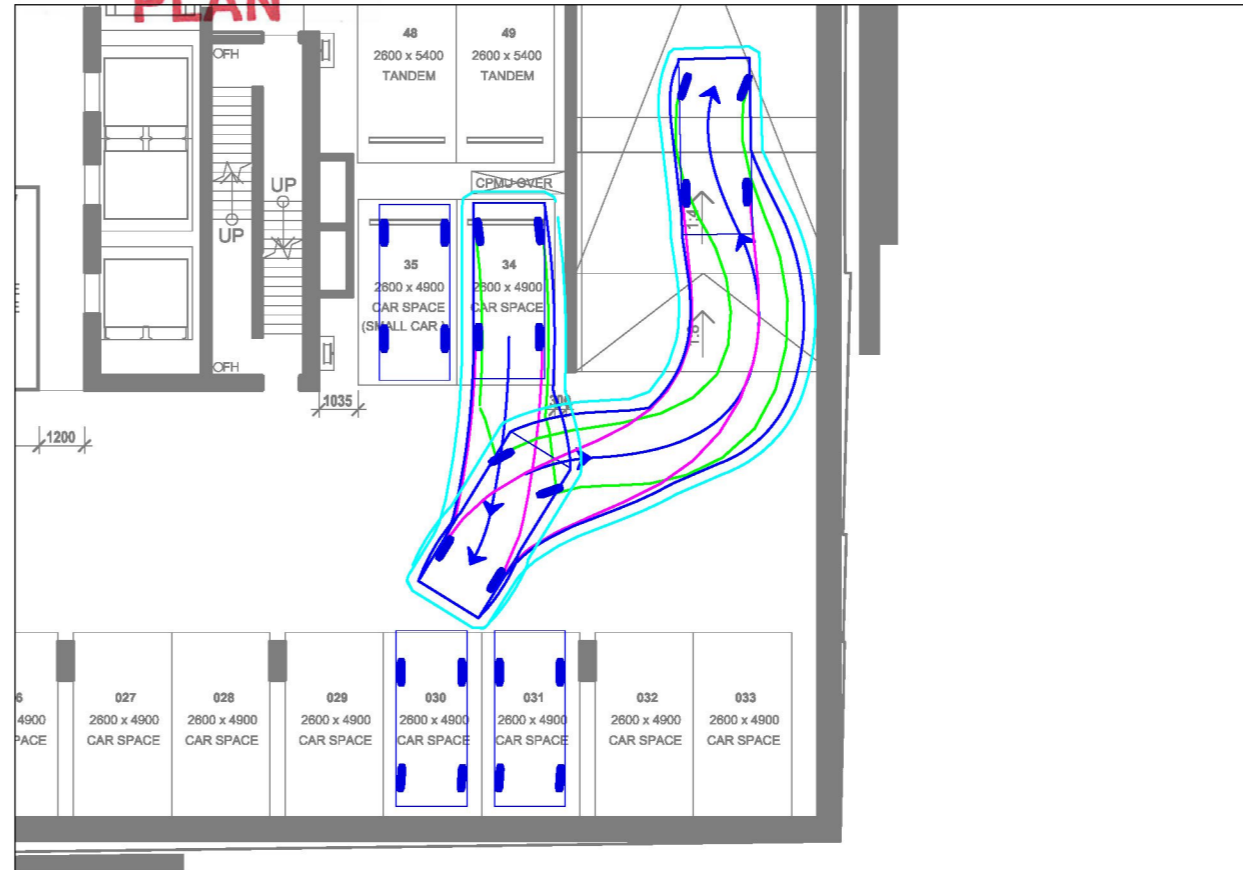
- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE

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CAR SPACE 01 - INGRESS



CAR SPACE 01 - EGRESS



ADVERTISED PLAN

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101 CREMORNE STREET, CREMORNE
PROPOSED COMMERCIAL DEVELOPMENT

GENERAL NOTES:
BASE INFORMATION FROM:
FloorPlan-BASEMENT02.dwg
DRAWINGS BY: CHT Architects

FILE NAME: G32978-01D
SHEET NO.: 04

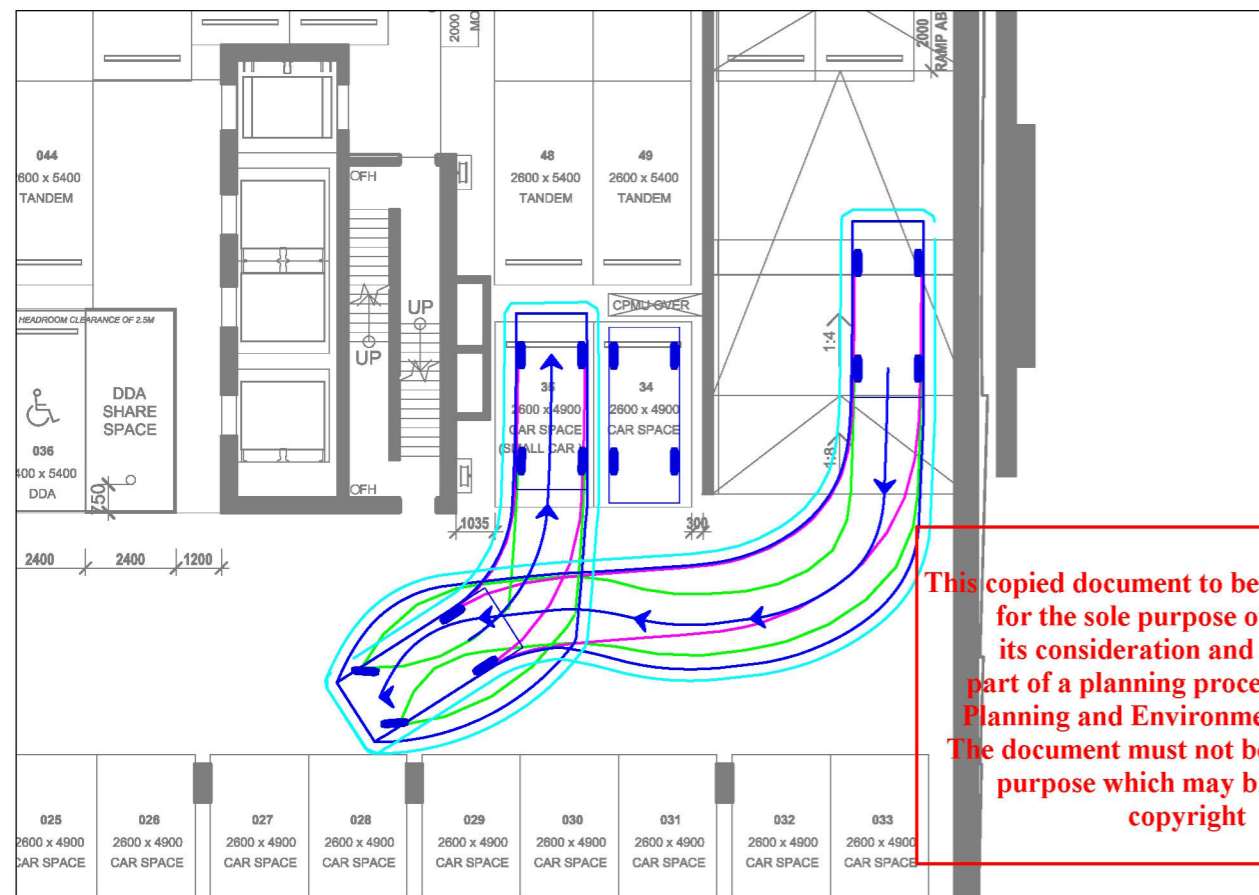


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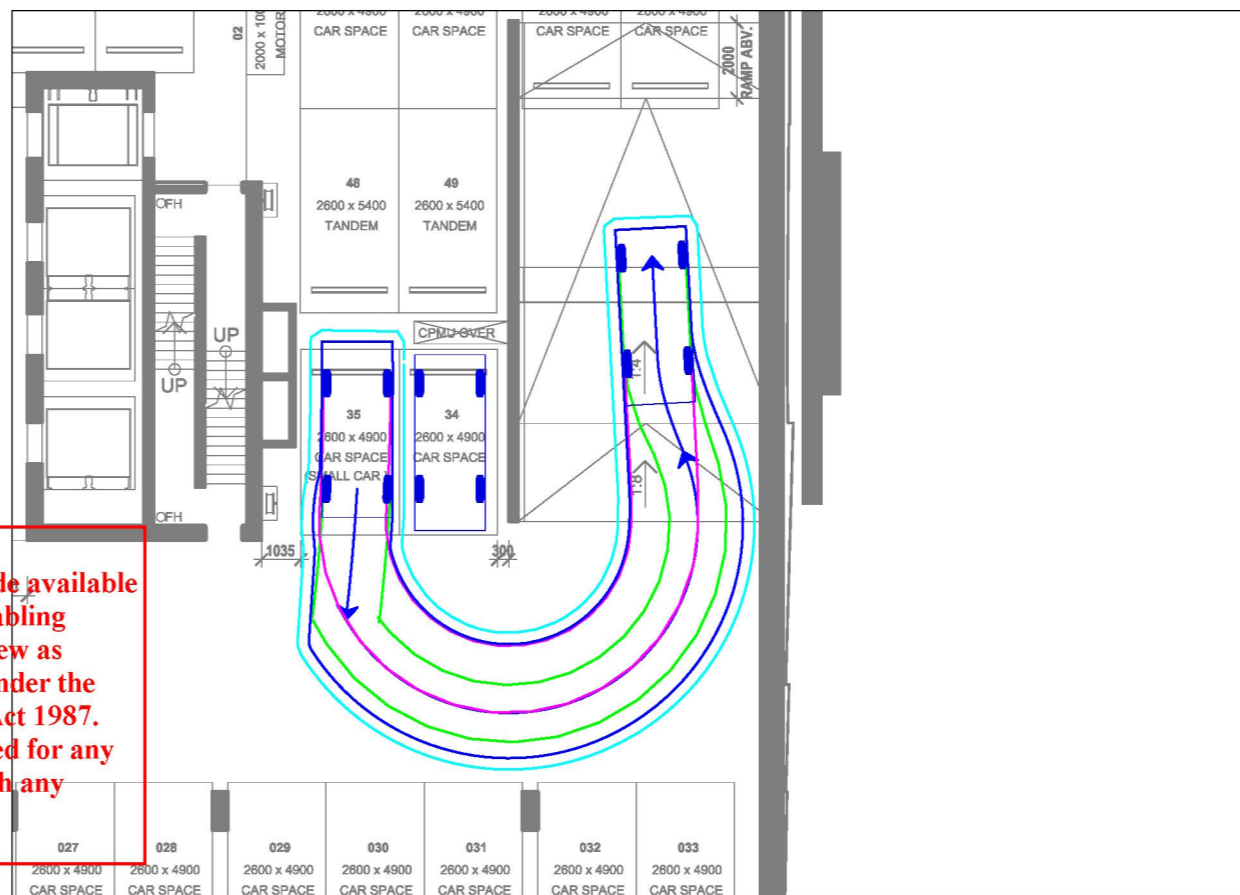
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CAR SPACE 02 - INGRESS



CAR SPACE 02 - EGRESS



VEHICLE PROFILE

VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5KM/H)

85th percentile
(AS/NZS 2890.1:2004)

Width : 1.87m
Track : 1.77m
Kerb to Kerb Radius: 4.5m

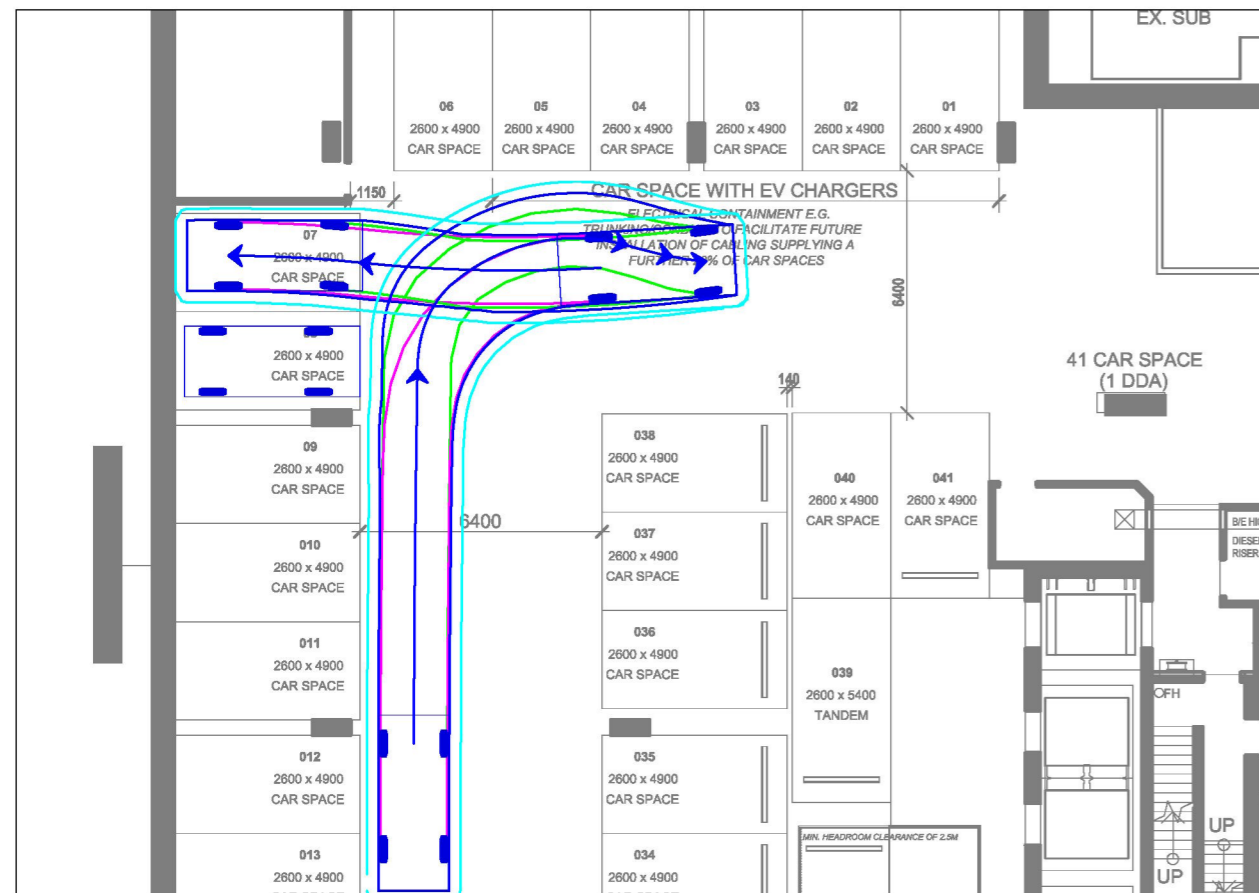
• actual template based on 'relevant longitudinal dimensions that affect swept path' as set out in Section B2.1 of AS/NZS 2890.1:2004

LEGEND

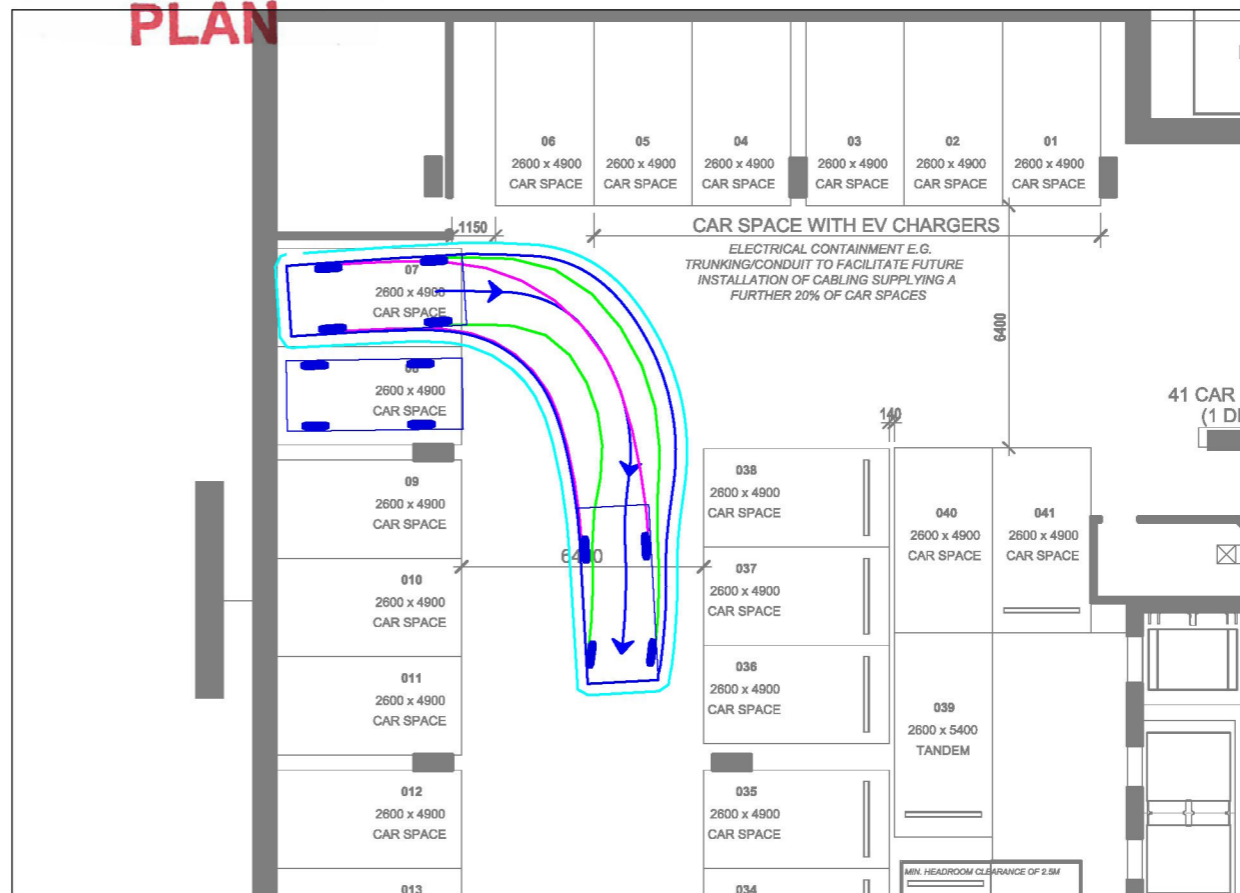
- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE

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CAR SPACE 03 - INGRESS



ADVERTISED PLAN
CAR SPACE 03 - EGRESS

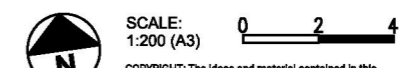


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101 CREMORNE STREET, CREMORNE
PROPOSED COMMERCIAL DEVELOPMENT

GENERAL NOTES:
BASE INFORMATION FROM:
FloorPlan-BASEMENT01.dwg &
FloorPlan-BASEMENT02.dwg
DRAWINGS BY: CHT Architects

FILE NAME: G32978-01D
SHEET NO.: 05



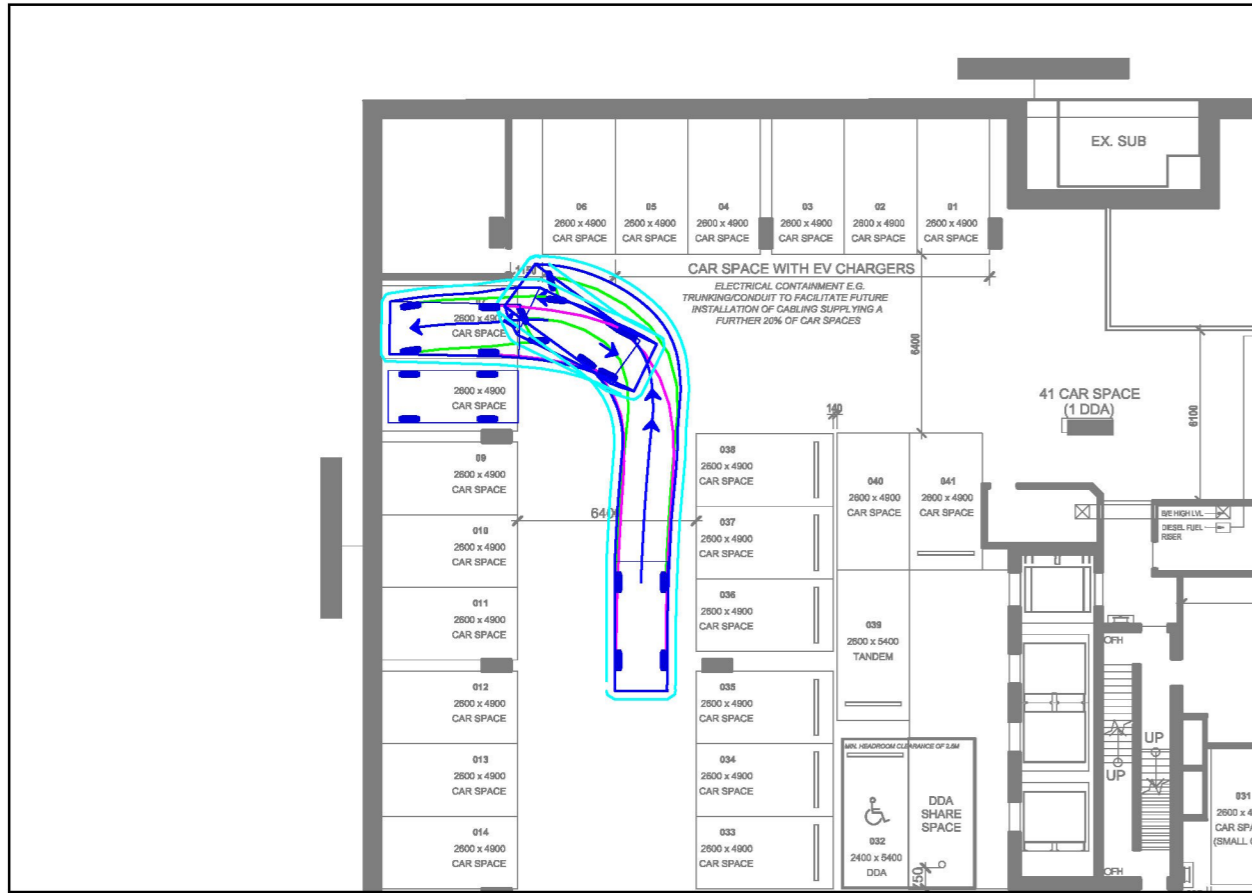
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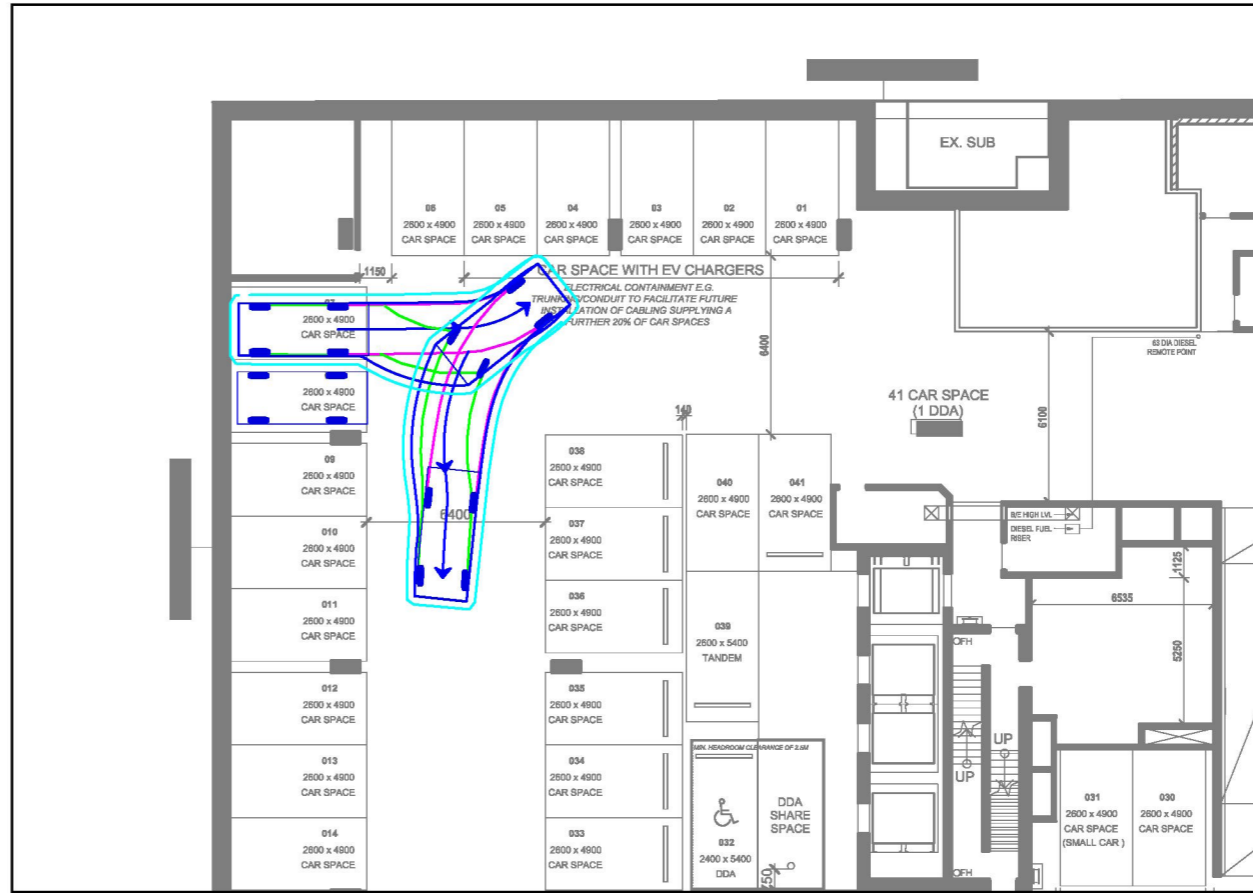
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CAR SPACE 03 - INGRESS



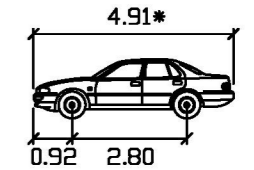
CAR SPACE 03 - EGRESS



VEHICLE PROFILE

VEHICLE USED IN SIMULATION

(VEHICLE SPEED - 5KM/H)



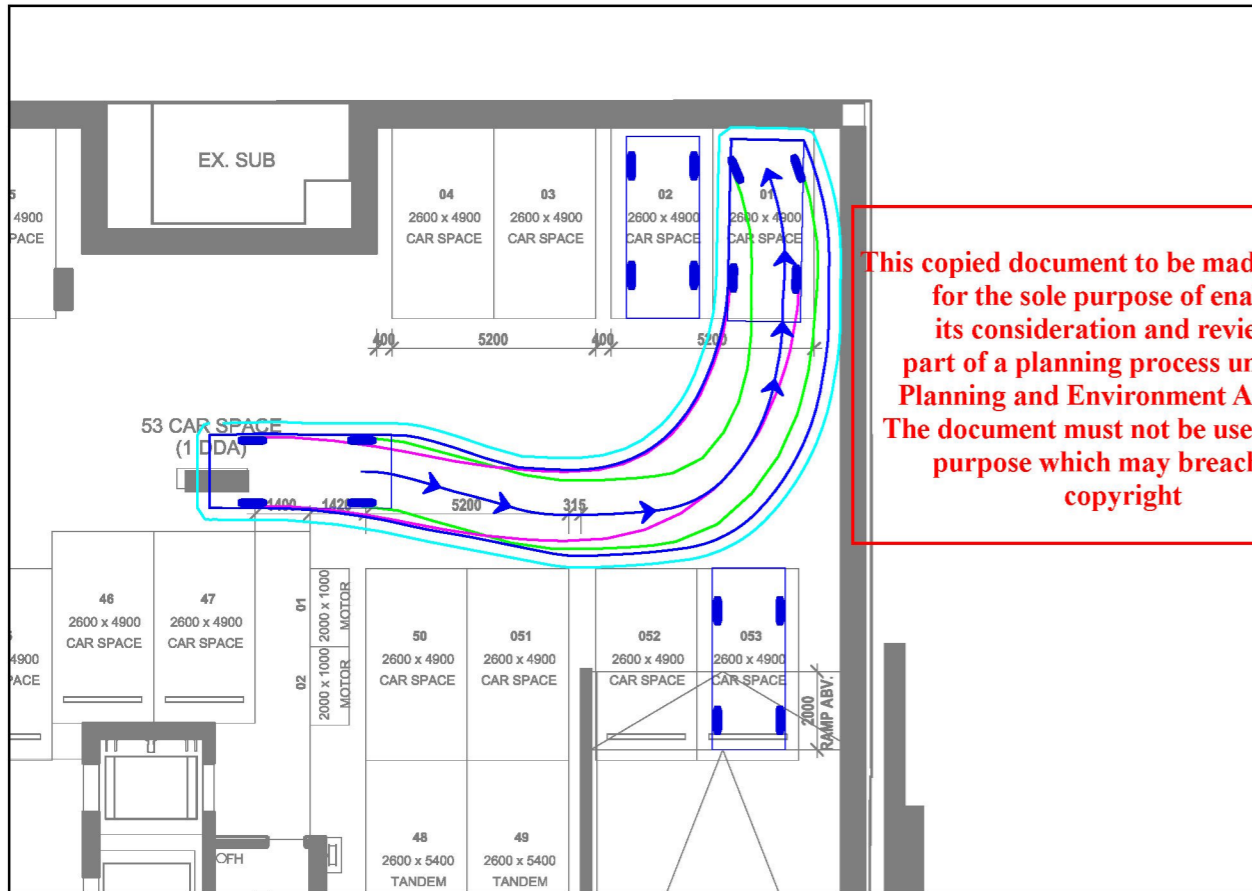
85th percentile
(AS/NZS 2890.1:2004)

Width : 1.87m
Track : 1.77m
Kerb to Kerb Radius 1.5m

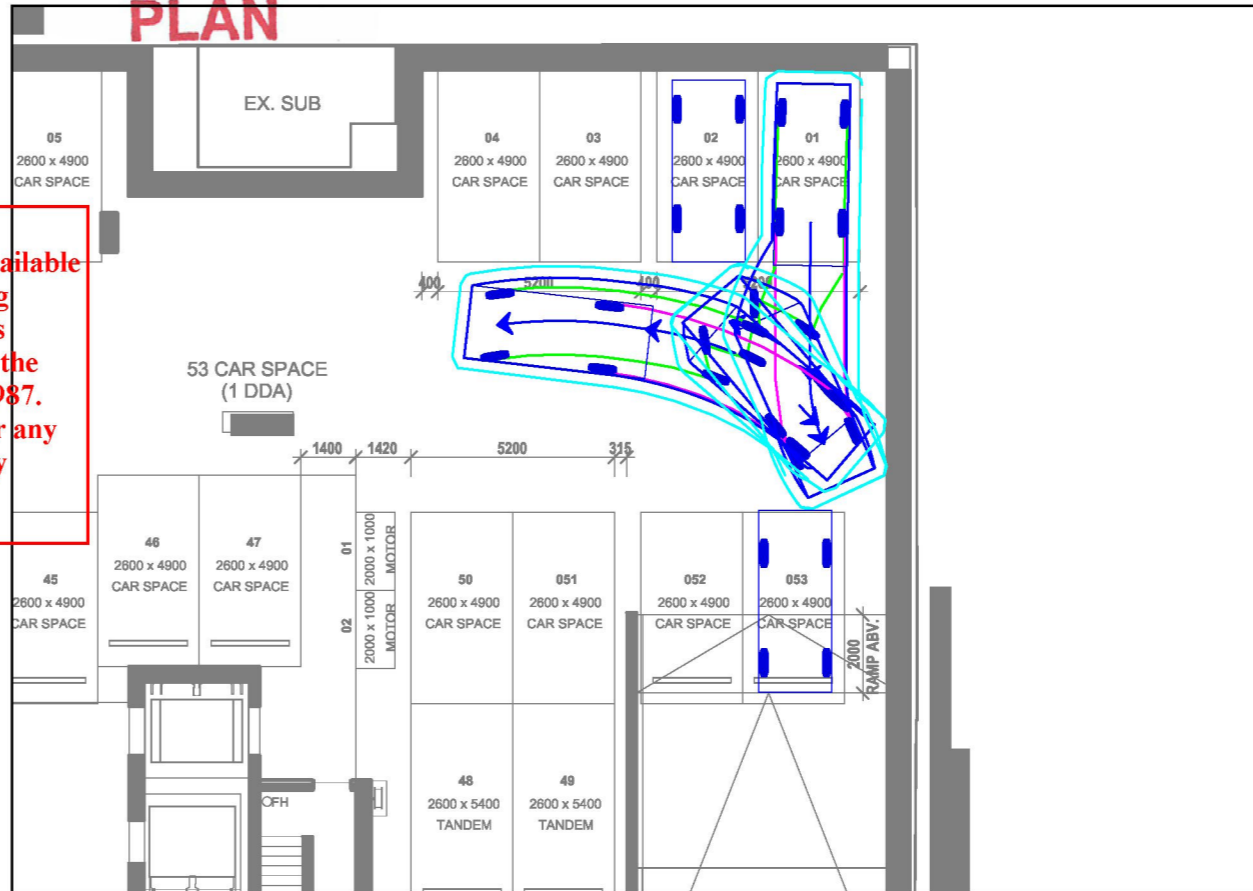
* actual template based on 'relevant longitudinal dimensions that affect swept path' as set out in Section B2.1 of AS/NZS 2890.1:2004

LEGEND
 REAR WHEELS (blue line)
 FRONT WHEELS (green line)
 VEHICLE BODY (purple line)
 BODY CLEARANCE (cyan line)

CAR SPACE 04 - INGRESS



ADVERTISED
PLAN
 CAR SPACE 04 EGRESS



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101 CREMORNE STREET, CREMORNE
 PROPOSED COMMERCIAL DEVELOPMENT

GENERAL NOTES:
 BASE INFORMATION FROM:
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 FloorPlan-BASEMENT02.dwg
 DRAWINGS BY: CHT Architects

FILE NAME: G32978-01D
 SHEET NO.: 06

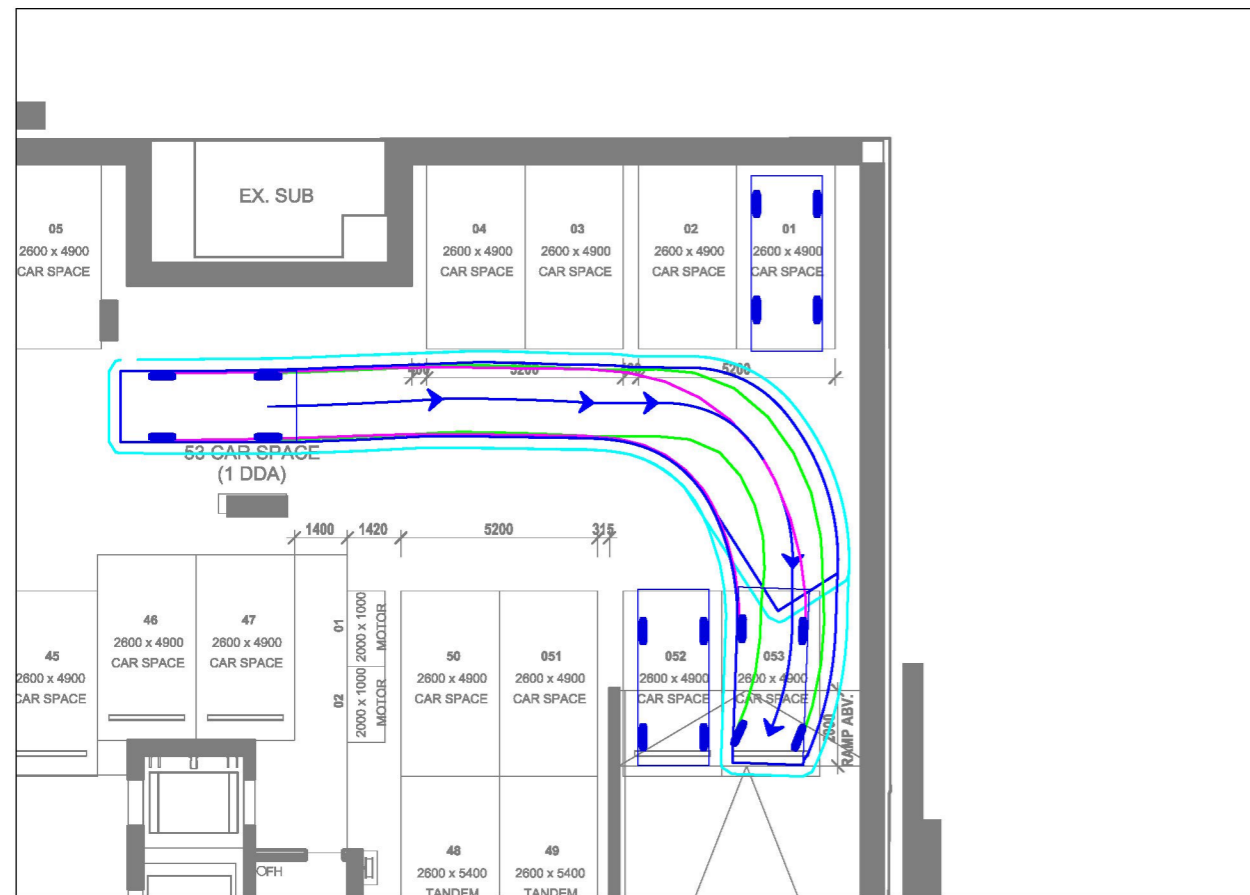


SCALE: 1:200 (A3)

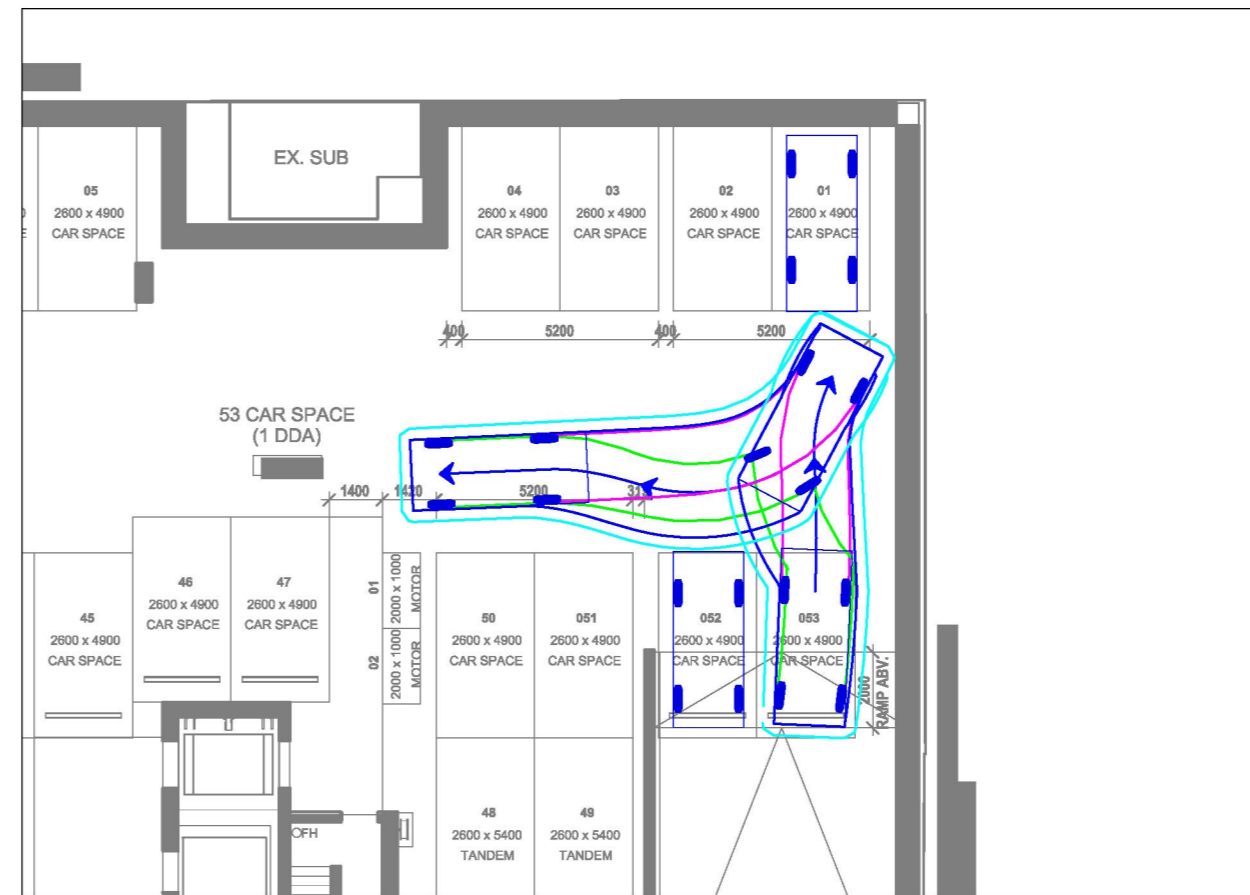
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CAR SPACE 08 - INGRESS



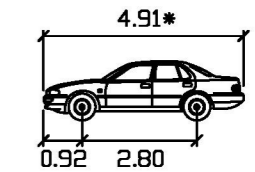
CAR SPACE 08 - EGRESS



VEHICLE PROFILE

VEHICLE USED IN SIMULATION

(VEHICLE SPEED - 5KM/H)



85th percentile
(AS/NZS 2890.1:2004)

Width : 1.87m
Track : 1.77m
Kerb to Kerb Radius 1.5m

* actual template based on 'relevant longitudinal dimensions that affect swept path' as set out in Section B2.1 of AS/NZS 2890.1:2004

LEGEND

- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE

ADVERTISED PLAN

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101 CREMORNE STREET, CREMORNE
PROPOSED COMMERCIAL DEVELOPMENT

GENERAL NOTES:
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