Stantec

BAY VIEW TERRACE - MIXED USE DEVELOPMENT

Traffic Impact Statement

06 June 2023

Prepared for:
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1 Introduction

1.1 Background and Proposal

Stantec has been engaged by JJ Leach Group and Associates to prepare a Traffic Impact Statement for the proposed mixed-use development on Bay View Terrace, Claremont.

The development has an overall site area of 3,268m^2 and is proposed to consist of seven storeys, with retail, food and beverage, and commercial and hotel use on the lower floors and residential apartments on the upper levels. Basement parking is proposed to accommodate 16 visitor spaces, and 63 secured residential spaces. An additional 6 car parking spaces are provided with direct access from Walt Drabble Lane, of which two are accessible spaces and two are hire-car (car share) spaces.

1.2 Purpose of the Report

Western Australian Planning Commission Transport Assessment Guidelines (WAPC Guidelines) provide direction on the level of assessment which is necessary to be carried out with respect to the likely traffic impact of a development proposal. Typically, any development which is expected to have a 'high' traffic impact, that is, generating more than 100 trips in the peak hour is satisfied by a Traffic Impact Assessment (TIA). Any development which is expected to generate less than 100 trips in the peak hour requires a Transport Impact Statement (TIS) to be undertaken. Both types of assessment consider the operation and layout of the site, but they differ in their assessment of external traffic impact.

In the context of this proposal, it is estimated there will be less than 100 trips generated in a given peak hour if applying 'typical' traffic generation rates and considering the proposed limitation on parking provision. In this case a TIS is appropriate. This TIS briefly outlines the transport aspects surrounding the proposed development. The intent of a TIS, as per the WAPC Guidelines, is to provide the approving authority with sufficient transport information to confirm that the Applicant has adequately considered the transport aspects of the proposed development and that it would not have an adverse transport impact on the surrounding area. On application for the development of the remaining northern areas of the site, the traffic generation of the site in its entirety will exceed 100 trips per hour and the more detailed Traffic Impact Assessment will be required.

In accordance with the WAPC Guidelines, this TIS outlines:

- Existing transport conditions proximate to the site
- Suitability of the proposed parking provision within the site
- The adequacy of the proposed site layout
- The traffic generating characteristics of the proposed development
- The anticipated impact of the proposed development on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- WAPC Transport Assessment Guidelines for Development
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2002
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- Plans for the proposed development prepared by Hames Sharley.
- Various technical data as referenced in this report.
- Town of Claremont policies and structure plans.
- Town of Claremont Planning Scheme No. 3

2 Proposed Development

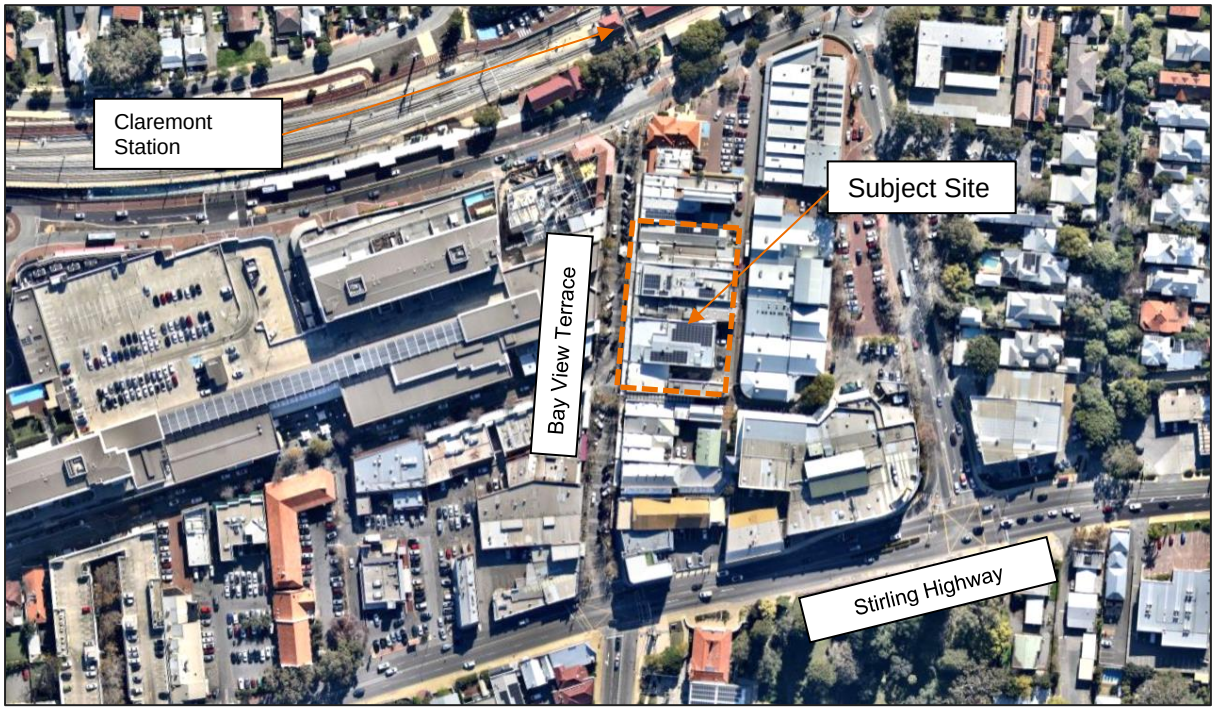
2.1 Subject Site and Surrounding Context

The subject site is located on the eastern side of Bay View Terrace in the Town of Claremont. Claremont is approximately 8km south-west of Perth and 8.2km north-east of Fremantle.

Claremont Station is located at the northern end of Bay View Terrace on the opposite side of Gugeri Street. South of the site Bay View Terrace intersects with Stirling Highway via a traffic signal-controlled intersection. Bay View Terrace is a Shared Zone, with a posted speed limit of 10km/h, allowing interaction between vehicles and pedestrians with no defined prioritised right of use.

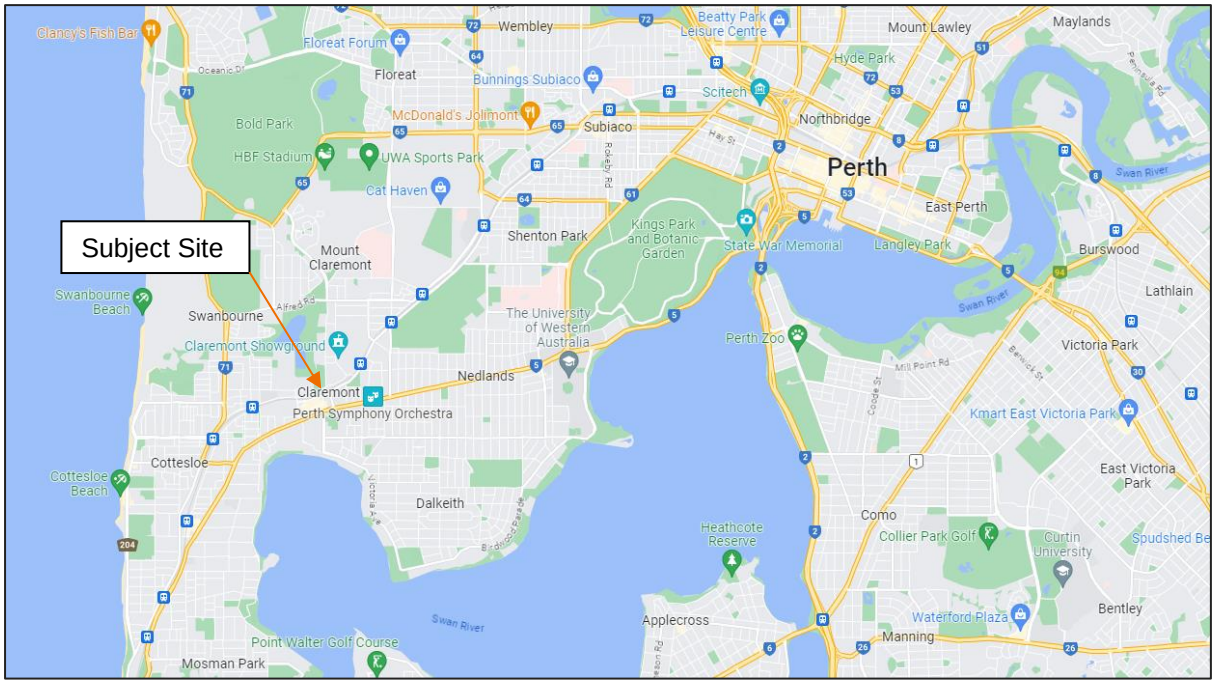
The main site frontage is along Bay View Terrace, with Walt Drabble Lane providing access to the rear of the site, including service areas and basement parking access. The Site is located within the Claremont Town Centre and is zoned as such. Surrounding land use beyond the Claremont Town Centre is predominately Residential, with Parks and Recreation and Education (Christ Church Grammar School) on the southern side of Stirling Highway. Refer Figure 1 to Figure 3.

Figure 1: Subject Site and its Environs



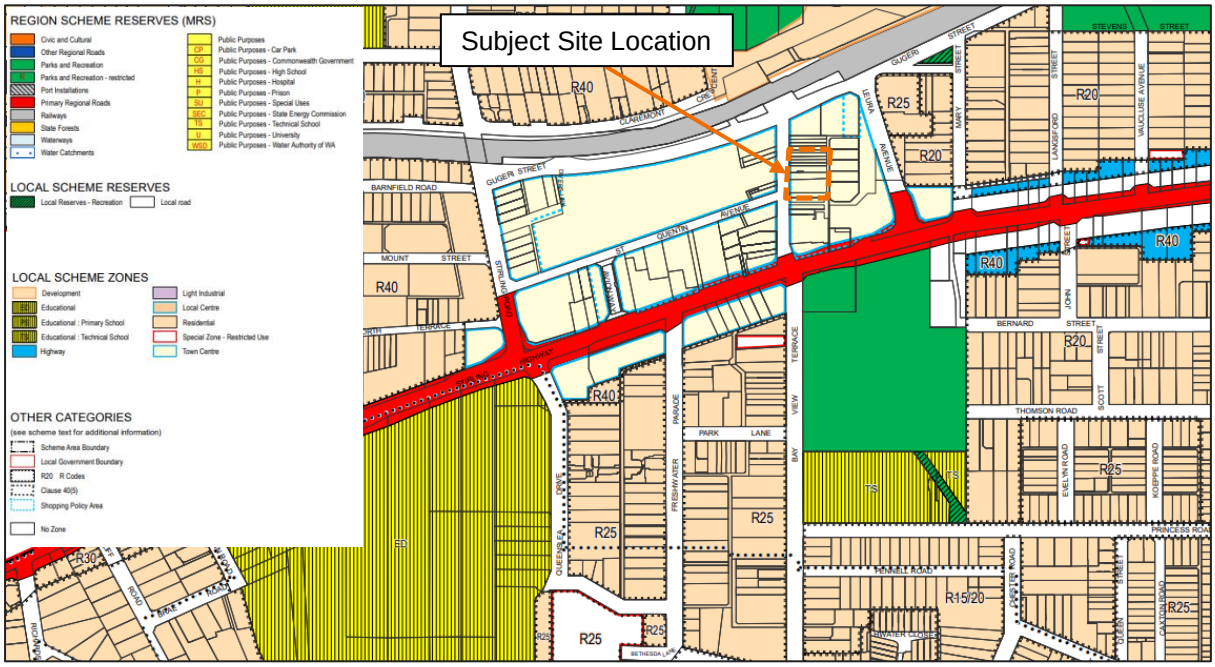
(Courtesy Nearmap)

Figure 2: Subject Site and Surrounding Context



(Courtesy of Google)

Figure 3: Subject Site and Surrounding Land Use



(Courtesy of Town of Claremont Town Planning Scheme No. 3 Maps)

2.2 Existing Land Use

The site is located within the Claremont Town Centre. There is a low-rise retail with small-scale commercial tenancies existing within the Site, which will be redeveloped as part of the proposal.

2.3 Proposed Land Use

The proposal includes the redevelopment of the existing retail area, with additional floors proposed to accommodate additional retail, commercial, short-term accommodation (hotel), and residential uses.

There will be 10 retail tenancies located on the ground floor with frontage from Bay View Terrace, a deli accessing Maude Jackson Way, and another small retail store fronting Walt Drabble Lane.

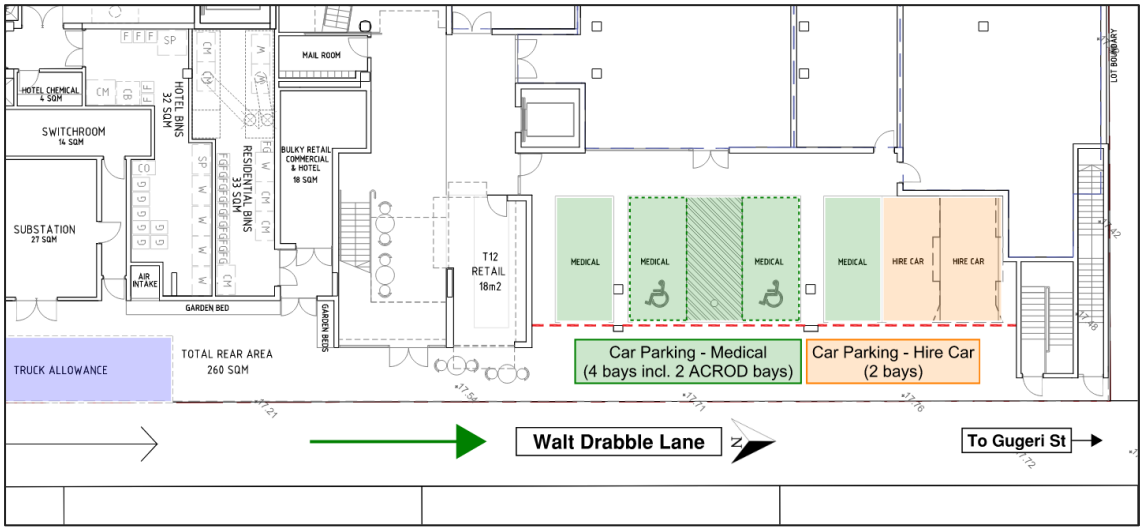
The distribution of the uses is provided in Table 1.

Table 1: Development Schedule

Floor	Retail Area (m^2)	F&B (m^2)	Commercial Area (m^2)	Hotel		Residential	
				Rooms (m^2)	Bar (m^2)	2bdrm (m^2)	3bdrm (m^2)
Ground Floor	2,074	294					
First			1,007	674 (15 rooms)			
Second			1,005	650 (15 rooms)			
Third						661 (7 units)	340 (3 units)
Fourth						661 (7 units)	340 (3 units)
Fifth						661 (7 units)	340 (3 units)
Sixth						661 (7 units)	340 (3 units)
Seventh					152m^2	100 (1 units)	625 (5 units)
Total	**2,074m^2**	**294m^2**	**2,012m^2**	**1,324m^2** (30 rooms)	**152m^2**	**2,744** (29 units)	**1,985** (17 units)

The development will also include basement level parking for a total of 79 spaces, of which 16 are allocated for visitors and 63 to the residential apartments. Of the 16 parking bays allocated for visitor parking, 8 are for residential visitors, and the other 8 are for hotel guests. An additional 6 car parking spaces are provided with direct access to Walt Drabble Lane. Of which, 2 are dedicated for ACROD spaces and 2 are hire car (car share) as shown in Figure 4.

Figure 4: Car Parking Spaces within Property along Walt Drabble Lane



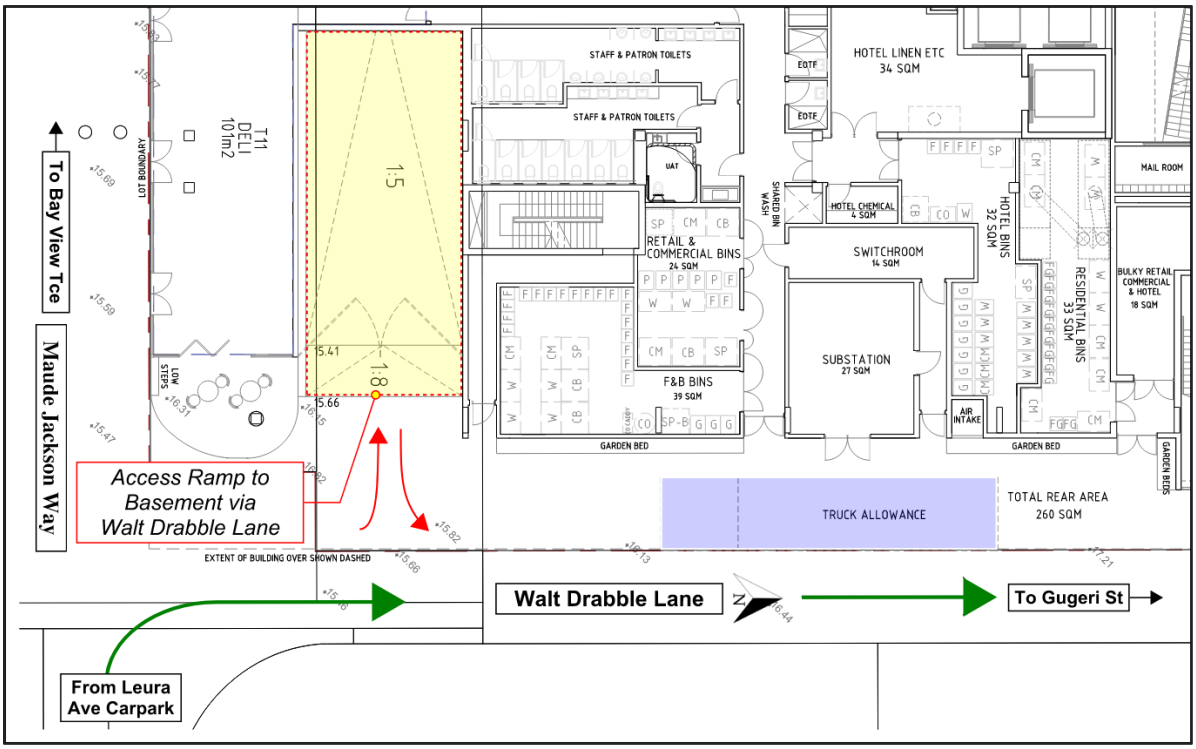
2.4 Access and Parking Layout

A review of the proposed basement car parking area and external parking area has been undertaken. The basement parking is accessed via a ramp from Walt Drabble Lane, with visitor spaces accessible to all and the residential spaces gated within two secure areas, refer to **Figure 5**.

The car parking spaces within the basement are 2.5m wide x 5.4m, with minimum aisle width of 5.8m. These dimensions adhere to the requirements of *AS/NZS 2890.1:2004 Off street car parking User Class 2* spaces. User Class 2 spaces are for use within town centre parking and as such appropriate in this development.

The residential spaces within the basement are 2.4m wide x 5.4m long with an aisle width of 5.8m, adhering to the requirements of the Standard for User Class 1; these users require all-day parking and are suited for residential and employee parking.

Figure 5: Basement Level Access Point Location



In addition to the above, the following comments relate to the car parking layout and compliance with the relevant Standards or otherwise:

- All columns are placed outside of the required clearance area of the car parking spaces
- A blind aisle extension of a minimum of 1m is provided at all necessary locations,
- Car parking spaces are offset a minimum of 300mm from walls and obstructions over 150mm in height
- Spaces A01 and A55 are adjacent to the secure access point, with sufficient offsets between what is assumed to be a gate and the car parking space to execute parking manoeuvres.
- ACROD spaces are 2.4m wide x 5.4m long with a shared space of same dimension and inclusive of a bollard, in accordance with AS2890.6 Off street parking for people with disabilities
- The driveway ramp has a gradient of 1:5 (20%), with 2m long 1:8 (12.5%) transitions with a total length of approximately 17.3m. The ramp commences 6m from the boundary line. These gradients and grade changes adhere to the requirements of AS/NZ 2890.1 for an off-street parking area accessing 25 – 100 spaces from a minor road.
- The driveway ramp is 6m wide. For a driveway providing access to User Class 1 or 2 spaces, the driveway width requirement is between 6m and 9m, therefore the proposal adheres to this requirement.

- The minimum width for a two-way straight ramp is 5.5m, offset 300mm from walls or obstructions higher than 150mm. The width provided of 6m adheres to this requirement.
- The ground floor parking spaces are 2.5m x 5.4m, offset from the opposite side of the lane way by approximately 7m, adhering to the requirement of the Standard.
- Column placement adjacent to the ground floor spaces has been reviewed and entry and exit from each car parking space is achievable without conflicting with the columns. The location of the columns will not affect the accessibility of the car parking spaces.

Swept path analysis was undertaken for any constrained car parking spaces, and from within the driveway and circulation lanes. All movements were found to be achievable, refer to **Appendix C**.

2.5 Pedestrian Facilities

Bay View Terrace is an existing Shared Zone. A Shared Zone removes vehicular priority enabling interaction within the street area between vehicles and pedestrians with vehicles travelling at very slow speeds, with a posted speed limit of 10km/h.

A pedestrian only area is provided along the site frontage. A pedestrian only connection is also provided along Maude Jackson Way, which connects Bay View Terrace to Walt Drabble Lane and forming the southern boundary of the site.

Access to the site will be via a new main corridor central to the site. This will access the main lift area. Secondary access is from Walt Drabble Lane. There are no footpaths present on Walt Drabble Lane.

Figure 6: Maude Jackson Way as viewed from Walt Drabble Lane

(Courtesy Google Streetview)

Figure 7: Maude Jackson Way as viewed from Bay View Terrace looking south

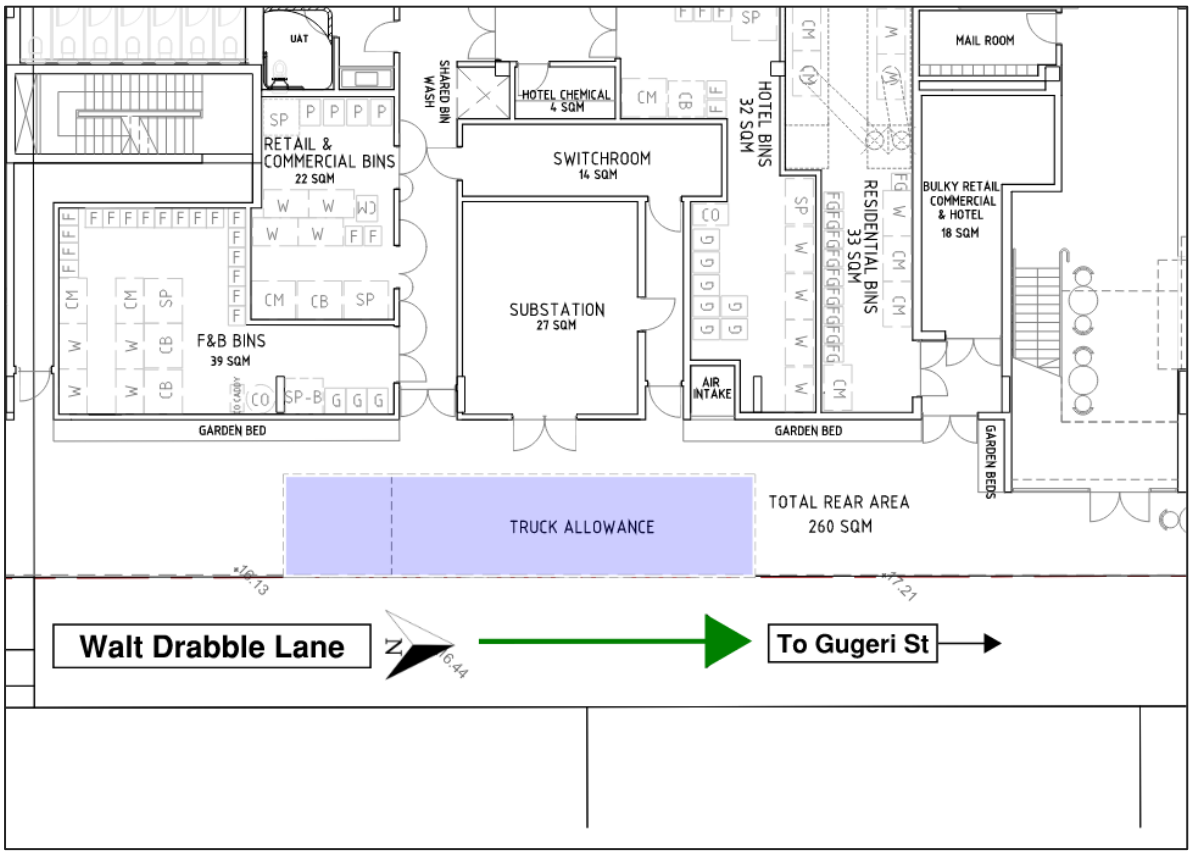
(Courtesy Google Streetview)

3 Service Vehicles

It is proposed that a service area be provided with direct access from Walt Drabble Lane, see Figure 8. The loading bay provided is 2.85m wide x 13m long, offset from the building by 1.5m. It is proposed that this loading area be available for use of all the tenants and can accommodate a vehicle up to 12.5m in length. *AS2890.2:2018 Off-street commercial vehicle facilities* requires that a loading bay for a 12.5m heavy rigid vehicle (HRV) be 3.5m x 12.5m, with vertical clearance of 4.5m. The width requirement of 3.5m is the same for all service vehicles, the marked bay is 650mm narrower than the requirement of the Standard.

Heavy vehicles frequenting the area will also include tankers servicing the grease traps, and waste collection vehicles for the development. The tankers are expected to be no longer than 10.1m in length and 2.5m wide, with the waste collection vehicles proposed to be used no more than 10.5m in length and 2.5m wide.

Figure 8: Service Vehicle Parking Space along Walt Drabble Lane



Swept path analysis was undertaken for the service vehicle parking space, and from within its access and egress along Walt Drabble Lane. All movements were found to be achievable, refer to **Appendix C**.

4 Traffic Volumes and Parking Requirements

4.1 Statutory Parking Requirements

The Town of Claremont's *Town Planning Scheme No. 3* and the *Residential Design Codes (R-Codes) Volume 2 Apartments* details the car parking space requirements for different land uses within the Town Centre – where the subject site is located.

Table 2: Town Planning Scheme No. 3 Parking Requirements

Land Use	Yield	Requirements	Bays Required	Bays Provided	Surplus / Shortfall
2- and 3-bedroom Apartments	46	1 bay / 2+ bed dwelling	46	63	*+17*
Apartment Visitors	46	1 bay / 4 dwellings up to 12 dwellings; and 1 bay / 8 dwellings for the 13th and above	7	7	*0*
		Residential Sub-Total	53	70	*17 (Surplus)*
Office	1,308m^2	1 bay / 30m^2 GLA	44	0	*-44*
Consulting Rooms	704m^2	1 bay / 20m^2 GLA	35	4	*-31*
Shop (small and intermediate)	1,619m^2	1 bay / 16.67m^2 GLA	97	0	*-97*
Small Bar	110m^2	1 for every 4 patrons calculated for which the Small Bar is licensed	17	0	*-17*
Restaurant	149m^2	1 bay / 12.5m^2 GLA	12	0	*-12*
Hotel	30 Rooms	1 bay per hotel room; and	30	11	*-19*
	90m^2	1 bay /2m^2 of bar / lounge area	45	0	*-45*
		Non-Residence Sub-Total	280	15	*265 (Shortfall)*
Total			**333**	**85**	***248 (Shortfall)***

As shown in the table above, the minimum parking requirements for residents were met, with a surplus of 17 parking bays. However, minimum parking requirements for non-residential tenancies are significantly below the requirements set by the Town's guidelines, with a shortfall of 265 parking spaces.

The following concessions as provided in Table 4 of the Town of Claremont's TPS No. 3 can be applied on the required parking provision to reduce it, depending on the below factors:

- The proposed development is within 400m of a rail station and customers/staff (including hotel guests) are likely to use the train to access the development.
- The proposed development is within 100m of a stop on a high frequency bus route and customers/staff are likely to use the bus to access the development.
- The proposed development is within 400m of several public car parks.
- The proposed development provides 10 bicycles bays or more and where 'end-of-trip facilities' are provided as recommended under a Local Planning Policy adopted under the provisions of the Scheme, customers/staff are likely to use bicycles to access the development.
- The proposed development is located within Town Centre or Local Centre zone and provides a public benefit, compliments the character of the zone, and does not adversely impact the amenity of the locality.
- Where the building/place is listed on the Town's Heritage List, Municipal Inventory, or the State Register of Heritage Places (subject to the building or place being conserved to the satisfaction of Council).
- The proposed development contains parking controls which monitor and control use through boom-gates (or similar) and ticket-issuing machines.

According to Table 4 of the Town of Claremont's TPS No. 3, a reduction of 5% per item can be applied to the non-residential parking requirement of the proposed development. All but the last of the above conditions apply to the subject site, as such an overall reduction of 30% can be applied. This will reduce the non-residential car parking space requirement from 280 to **196 spaces**. With this reduced requirement, the net shortfall will be *181 spaces* considering the 15 parking spaces provided for non-residential tenancies on Site.

The minimum parking requirements can be further reduced considering the reduction scheme based on offsets from Walt Drabble Lane as specified in TPS3. Applicable factors are as follows:

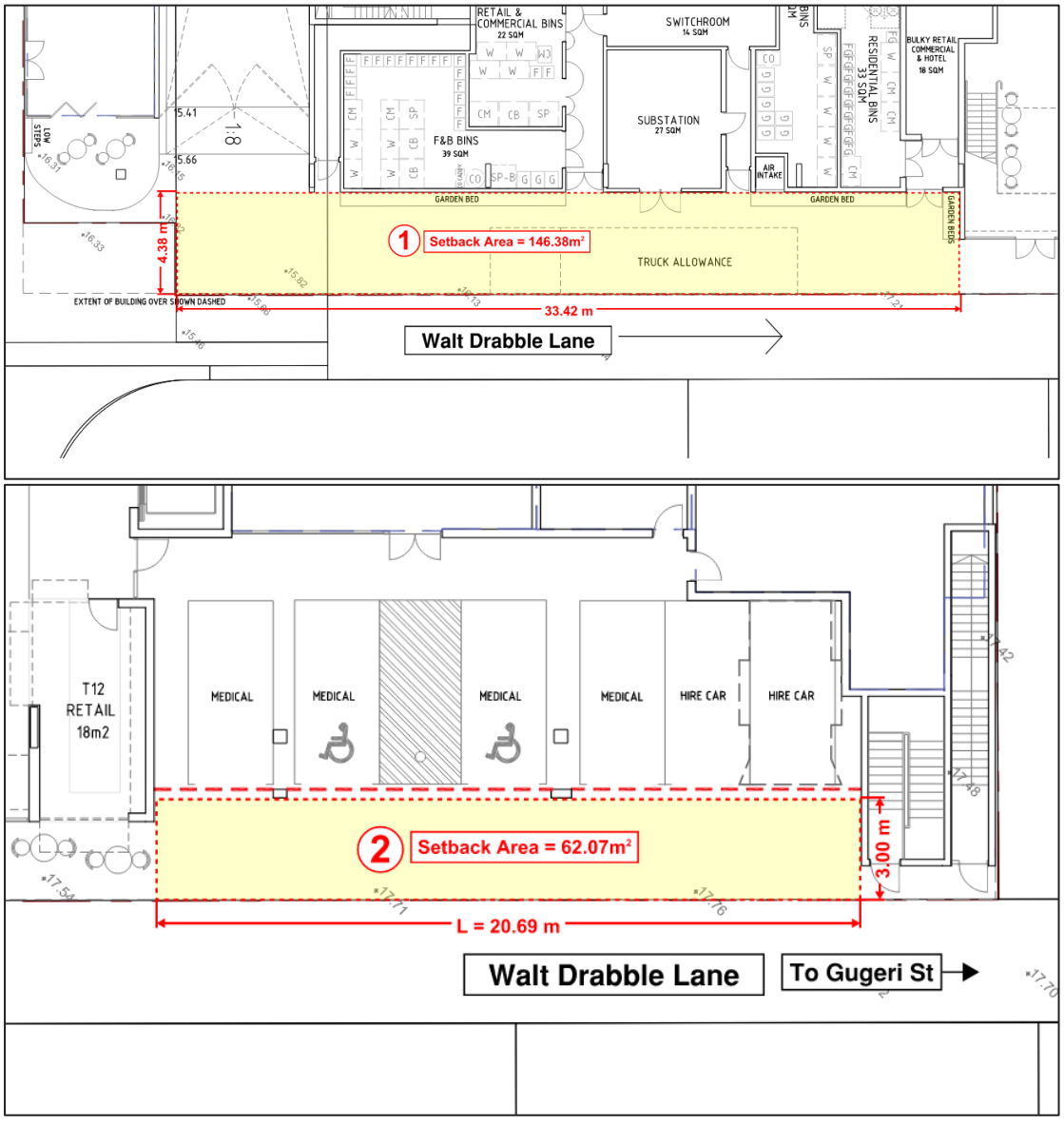
- The ground floor of any building is set back 3 metres from Walt Drabble Lane and Council may exercise discretion in requiring any first floor of the building to be setback a minimum of 4 metres.
- Where the applicant elects to cede or setback a building from Walt Drabble Lane, Council may agree to a reduction in the number of car parking bays, the reduction being no more than two carparking bay for every $3m^2$ of land ceded or setback as required by above; and
- Where the applicant elects not to cede or setback that portion of the development site that is within 3 metres of Walt Drabble Lane, carparking shall be provided in accordance with Table 2 – Development Table of Town Planning Scheme No. 3.

Given these factors, the area that can be set back from Walt Drabble Lane is estimated to be *208.45m²* as tabulated in Table 3 and as illustrated in Figure 9.

Table 3: Setback Area and Parking Reduction Calculations

No.	Dimensions, m	Setback Area, m²	Reduction Rate	Corresponding Parking Reduction
1	L = 33.42 W = 4.38	146.38	2 parking bays for every 3m² of ceded area	98
2	L = 20.69 W = 3.00	62.07		41
Total		208.45		***139***

Figure 9: Setback Area from Walt Drabble Lane



The reduction in car parking space due to offset is estimated to be approximately *139 spaces*. Along with the parking concessions suggested in Table 4 of the Town's TPS No.3 mentioned above, the net parking requirements for non-residential land use is estimated to be **57 spaces**. The total parking requirement thus far, including for residents, is **110 spaces** with a corresponding shortfall of *25 spaces* for the whole development. A summary of the parking reductions considered is provided in the table below.

Table 4: Summary of Parking Reductions Applied

	Statutory Parking Requirements ***(Claremont's TPS 3)***		**Applying Concession Reductions** ***(Reduction of 30%)***		**Applying Offset Reductions** ***(Reduction of 139 spaces)***	
	Residential	*Non-residential*	*Residential*	*Non-residential*	*Residential*	*Non-residential*
Parking Minimum/ Requirement	53	280	53 *(retained)*	196	53 *(retained)*	57
	333		**249**		**110**	
Parking Provided	70	15	70	15	70	15
	85		85		85	
Excess/Shortfall	+17 *Surplus*	-265 *Shortfall*	+17 *Surplus*	-181 *Shortfall*	+17 *Surplus*	-42 *Shortfall*
	248 bays Shortfall		***164 bays Shortfall***		***25 bays Shortfall***	

Considering all the car parking concessions mentioned above, the net car parking shortfall of the Site is approximately 25 bays. This minor shortfall in on-site parking spaces can be considered negligible due to its location within the Claremont Town Centre. The town centre in general has good public transport connection and has several existing on-street and off-street parking facilities. Given its commercial nature, it is expected that parking areas within the town centre will have a high turnover. Additionally, the visitors of the proposed development are also likely to have shared trips with other developments in the vicinity of the Site, further reducing the net parking demand and trip generation of the Site.

4.2 Concession Rate Comparison

A comparison has been done on the concession rates provided by the Town of Claremont against those allowed by nearby Local Government areas. The City of Stirling's policies include parking rate concession conditions that align with those of the Town, however significantly higher reductions are applied, as noted in Table 5.

Table 5: Concession Rate Comparison

	Town of Claremont Concession	**City of Stirling Concession**
The proposed development is within 400m of a rail station and customers/staff are likely to use the train to access the development.	5%	20%

The proposed development is within 100m of a stop on a high frequency bus route and customers/staff are likely to use the bus to access the development.	5%	15%
The proposed development is within 400m of a public car park.	5%	10%
The proposed development provides 10 bicycles bays or more and where 'end-of-trip facilities' are provided as recommended under a Local Planning Policy adopted under the provisions of the Scheme and customers/staff are likely to use bicycles to access the development.	5%	10%
The proposed development is located within Town Centre or Local Centre zone and provides a public benefit, compliments the character of the zone, and does not adversely impact the amenity of the locality.	5%	10%
Where the building/place is listed on the Town's Heritage List, Municipal Inventory, or the State Register of Heritage Places (subject to the building or place being conserved to the satisfaction of Council).	5%	10%
The proposed development contains parking controls which monitor and control use through boom-gates (or similar) and ticket issuing machines.	N/A	N/A
Total	30%	75%

As per above, applying the more generous reduction rates of the adjacent Council area will result in a 75% reduction in the statutory parking space requirements for the non-residential tenancies of the development *(i.e., 280*), therefore requiring a total of **70** car parking spaces. At this reduced parking space requirement, the development will have a shortfall of *55* spaces for non-residential visitors.

4.3 Reciprocal Use

The car parking spaces available will see reciprocal use between the uses within the site, as well as land uses near to the site. The following reciprocal use has been considered appropriate to the site, noting the walkability of the surrounding land uses:

- 75% of pharmacy patronage will also attend the medical centre;
- 25% of commercial and retail patronage will be from the hotel and residential portion of the development; and 25% from patrons already accessing the area; and
- 100% of the bar, reception, and back of house will be from the hotel uses (as confirmed by the client)

Applying these reciprocity factors to the parking space requirements following the concession reduction (of 30% reduction from Claremont) and offsetting reductions, this equates to a car parking requirement of **85** bays matching the number parking spaces provided on-site. However, these values assume no allocation of parking to units within the development. Hence, it can only be used to justify the adequacy of on-site car parking spaces for residents and visitors.

4.4 Visitor Parking Demand

An alternative way to consider the reciprocal use is to examine hours through the day in which the visitor parking demand is highest for each use. With 63 secured car parking spaces provided on-site, the residential component of the parking requirement is met (including visitor spaces), therefore excluded from the below discussion.

The proposed uses within the site will have differing peak parking periods due to the nature of the land uses. Assumptions of the peak periods and expected parking occupancy (with the concessions from the TPS3 applied) relating to each use is detailed in Table 6.

Table 6: Parking Occupancy Across the Uses

Use	Morning	Midday	Evening
Hotel Suites	60% - 7 spaces	30% - 4 spaces	100% - 12 spaces
Medical	75% - 11 spaces	100% - 14 spaces	0%
Other Commercial	75% - 8 spaces	100% - 10 spaces	0%
Retail - F&B	25% - 4 spaces	75% - 12 spaces	100% - 16 spaces
Retail - Pharmacy	75% - 6 spaces	100% - 8 spaces	0%
Retail - Other	50% - 13 spaces	100% - 25 spaces	0%
Total Parking Requirement	48 spaces	73 spaces	28 spaces

Within the site there are 22 visitor spaces, including those accessed directly from Walt Drabble Lane. With a total of 22 visitor parking spaces provided, there is a shortfall of up to **51 spaces** in the peak period being midday when up to 73 visitor spaces may be required.

4.5 Car Parking Impacts

Stantec undertook on-site spot observations of the occupancy of the car parking areas surrounding Bay View Terrace during a lunch period on Thursday 30 June 2022, and a desktop review undertaken for a Saturday lunch period. The spot checks looked at car parking areas within proximity to the site, noting that more extensive surveys are programmed to be undertaken week ending 11 September 2022.

The site review covered an area in which there were approximately 160 ground level car parking spaces, and greater than 250 spaces contained within the public parking building beneath Bunnings on the corner of Stirling Highway and Leura Avenue.

Based on the observations made on site there was approximately 25 vacant ground level spaces during the peak lunch period, increasing to more than 60 either side of the peak period. Less than 50% of the public parking area within the Bunnings building, relating to an approximate availability of 150 spaces. It should be noted that the parking relating to the existing retail uses, which do **not** currently provide associated parking, are accounted for within the site observations.

The on-site spot observations confirmed the expected shortfall of up to an absolute maximum of 42 visitor spaces in the peak lunch (midday) period can thus be readily accommodated within the public

parking areas reviewed on site. A formal parking survey was also undertaken to support the spot observations and to further confirm that there is sufficient nearby parking to accommodate the shortfall in on-site visitor parking. It should be noted in all the above assessment that all residential parking is provided for on site at the required parking rate with no need for residents to park off site.

4.6 Parking Occupancy Survey

A detailed parking occupancy survey was conducted on a Thursday (8 September 2022) and on a Saturday (10 September 2022), on the surrounding carpark areas of the proposed development. A total of thirteen (13) parking areas within the Claremont Town Centre were investigated; characteristics of each are detailed in Table 7, while locations of each site is illustrated in Figure 10.

Table 7: Carpark Site Characteristics

Site No.	Location	Carpark Type – No.	Capacity[1]
1	Langsford Street	On-street - 1	61
2	Mary Street	On-street - 2	40
3	East of Leura Avenue	Off-street - 1	77
4	West of Leura Avenue	Off-street - 2	50
5	South of Claremont Station	Off-street - 3	22
6	North of Claremont Station	Off-street - 4	57
7	West of Walt Drabble Lane	Off-street - 5	32
8	Bay View Terrace - North	On-street - 3	18
9	Bay View Terrace - South	On-street - 4	14
10	St. Quentin Avenue	On-street - 5	37
11	East of Church Lane	Off-street - 6	45
12	West of Church Lane	Off-street - 7	30
13	Typika Side Carpark	Off-street - 8	67
Total			*550*

[1] Adjusted capacity wherein loading bays and motorcycle parking spaces are not included

Figure 10: Carpark Site Survey Location Map

Source: Google Maps (base map)

Collectively, there are 550 car parking spaces within the surrounding area of the proposed development. The survey was conducted during several periods within the day, specifically at 7AM, 10AM, 1PM, 4PM, and 7:30PM. In line with the midday parking occupancy requirements of the Site, as shown in Table 6, only the occupancy rates for the 10AM (10:00) and 1PM (13:00) periods will be considered. The occupancy rates of these carpark sites are provided below in Figure 11 to Figure 14. Tabulation of occupancy rates across the survey dates are also provided in Table 8.

Figure 11: Carpark Occupancy Rates – 10:00 of 08-Sep-2022 (Thu)

Figure 12: Carpark Occupancy Rates – 13:00 of 08-Sep-2022 (Thu)

Figure 13: Carpark Occupancy Rates – 10:00 of 10-Sep-2022 (Sat)

Figure 14: Carpark Occupancy Rates – 13:00 of 10-Sep-2022 (Sat)

Table 8: Carpark Site Occupancy Rates

Site No.	Capacity[1] *(veh)*	**Occupancy Rates** (*Remaining Capacity*)				*Averages*	
		08-Sep-2023 (Thu)		*10-Sep-2023 (Sat)*			
		10:00	*13:00*	*10:00*	*13:00*	*Remaining Capacity[2]*	*Occupancy Rate*
1	61	44% (34)	33% (41)	43% (35)	30% (43)	38	38%
2	40	38% (25)	28% (29)	33% (27)	28% (29)	27	32%
3	77	49% (39)	56% (34)	80% (15)	73% (21)	27	65%
4	50	84% (8)	87% (7)	82% (9)	78% (11)	9	83%
5	22	50% (11)	58% (9)	88% (3)	75% (6)	7	68%
6	57	59% (23)	55% (26)	69% (18)	44% (32)	25	57%
7	32	53% (15)	65% (11)	76% (8)	71% (9)	11	66%
8	18	83% (3)	89% (2)	83% (3)	83% (3)	3	85%
9	14	93% (1)	71% (4)	93% (1)	86% (2)	2	86%
10	37	72% (10)	66% (13)	72% (10)	64% (13)	12	69%
11	45	70% (14)	90% (5)	88% (5)	82% (8)	8	83%
12	30	97% (1)	100% (0)	100% (0)	100% (0)	0	99%
13	67	93% (5)	87% (9)	93% (5)	90% (7)	6	91%
Total	*550*	*189*	*188*	*138*	*183*	*175*	*68%*

[1] Adjusted capacity as presented in Table 7
[2] Average remaining capacities of each survey period

The table above suggests that the existing parking areas around the Site have adequate room to accommodate the additional parking demand from the proposed development. As discussed in Section 4.1 and Table 4, the Site's net parking shortfall of *25 bays* can be shouldered by the existing parking areas around the Site. As the Site is located within a commercial district, a higher proportion of shared trips are expected to occur, which further reduces the parking demand and net traffic generation of the Site.

4.7 Bicycle and Motorcycle Parking

Bicycle and motorcycle/scooter parking should be provided at the rate specified in the Town Planning Scheme. Table 9 provides the statutory bicycle and motorcycle parking requirements for the proposed development.

Table 9: Bicycle and Motorcycle Parking Requirements

Land Use	Yield	Car Space Requirement	Parking Rates	Parking Requirement
Apartments 2- and 3-bedrooms	46 Dwelling Units	46	*Bicycle* Resident: 0.5 per dwelling Visitor: 1 per 10 dwelling	28
			Motorcycle 1 per 10 car space	5

The table above specifies that there should be at least 28 bicycle parking spaces in the development; 23 for residents and 5 for visitors. A minimum of 5 Motorcycle parking spaces should be considered for residents. Rates used to estimate parking minimums are taken from the *Residential Design Codes (R-Codes) Volume 2 – Apartments*.

4.8 Daily or Peak Hour Traffic Conditions

To determine the traffic generation of the development, reference has been made to Stantec's in-house database for both peak parking demand and traffic generation as well as the industry recognised *NSW RTA Guide to Traffic Engineering Developments* and *Institute of Transportation Engineers Trip Generation Manual 9th Edition*. The Stantec database is based on surveys undertaken at various sites located throughout Australia over a more than 30-year period.

The traffic generation rate applicable to the residential apartments is as follows:

- RTA Guide Updated Traffic Surveys 2013: High Density Dwellings
    - AM Peak: 0.19 trips per unit
    - PM Peak: 0.15 trips per unit

This equates to traffic generation of the residential portion of the development in the order of 9.1 vehicle trips in the AM peak and 7.2 vehicle trips in the PM peak.

The remaining traffic generation of the site will be limited to the availability of car parking spaces. The site currently contains retail uses, for which related traffic movements will already be occurring. It is assumed that the secured visitor spaces (8 spaces) will be used either by visitors of the hotel or employees of the tenancies, with the remaining 16 for use of the other tenancies.

The highest turnover of the visitor spaces is expected to coincide with the lunchtime peak period as observed in the parking occupancy checks done in the surrounding area, with some inbound and outbound movements associated with the AM and PM peak hours such as staff movements. Given the obscurity of the parking area with access only from the rear laneway, it is anticipated that the

majority of patrons to the retail and food and beverage uses will opt to park external to the site. Patients accessing the medical centre may be more inclined to use the on-site parking area being more regular and familiar with the parking access.

When considering the land uses proposed, the turnover of spaces associated with the publicly accessible spaces is expected to be in the order of once every 30 minutes to an hour in the peak commuter period, potentially increasing during the midday.

Based on the above anticipated turnover in the peak period and potential inbound and outbound movements of employees, the estimated traffic generation of the site is considered to be in the order of two inbound and two outbound movements per space for the unsecured (public) visitor spaces, and a single trip (inbound in the AM, outbound in the PM) per secured car parking space. This equates to:

- AM Peak: 16 – 40 vehicle trips (inbound and outbound)
- PM Peak: 16 – 40 vehicle trips (inbound and outbound)

The low-level traffic generation even in this worst-case scenario will not significantly increase congestion within Walt Drabble Lane or at the entry and exit points within the surrounding road network.

4.9 Types of Vehicles

The types of vehicles accessing the site will predominantly be private motor vehicles. Service vehicles and waste collection trucks will not enter the development building via the with a service area proposed on Walt Drabble Lane.

5 Traffic Management on Frontage Streets

The site is located within the Claremont Town Centre within the Shared Zone along Bay View Terrace. The Shared Zone has a posted speed limit of 10km/h, enabling interaction between people walking, riding, and driving.

Traffic volume information has been collected through analysis of the SCATS data available from the signalised intersection of Stirling Highway and Bay View Terrace to the south of the subject site, provided on the *Main Roads WA Traffic Map*. The traffic volumes present on a Thursday and Saturday peak periods are as presented in Table 10 with the location shown in Figure 15.

Table 10: Traffic Volumes

Detector	Thursday Volume		Saturday Volume	
	AM Peak	*PM Peak*	*AM Peak*	*PM Peak*
1	07:45 – 888	15:00 – 795	11:45 – 814	12:00 – 843
2	08:15 – 671	15:15 – 546	11:45 – 579	12:00 – 577
3	07:45 – 150	15:00 – 166	10:15 – 113	12:00 – 82
4	08:00 – 143	15:00 – 134	09:30 – 102	12:15 – 82
5	07:15 – 591	17:15 – 744	11:00 – 673	12:15 – 651
6	07:30 – 505	17:00 – 754	11:00 – 513	12:00 – 475

Figure 15: Traffic Volumes Surrounding Subject Site

Source: Metromaps (base map)

6 Public Transportation

There is excellent access to public transport from the subject site, with Claremont Train Station directly north of the subject site providing access to trains on the Fremantle line. Bus stops are located on both Leura Avenue and Stirling Highway within 80m of the subject site, providing access to routes **23, 24**, **25, 103**, **995, 998 and 999**, with routes **27**, **28**, **102** and **107** accessible from the Station. Some of these routes offer high-frequency services (these being the 900 series routes) with services every 5 minutes in peak periods for individual services and every 1-2 minutes when all routes are considered at a single stop.

Figure 16: Public Transport Connections

(Courtesy of Transperth)

7 Active Transport

7.1 Pedestrian Access

7.1.1 PEDESTRIAN FACILITIES WITHIN THE DEVELOPMENT

Bay View Terrace is a Shared Zone, removing all priority and enabling safe interaction between people walking, riding, and driving. There are vehicle free/pedestrian only zones along the building frontages on Bay View Terrace. The retail tenancies are proposed to have direct access from Bay View Terrace.

Maude Jackson Way is a pedestrian only connection between Bay View Terrace and Walt Drabble Lane which will be retained and utilised to access some of the tenancies. Note that this pedestrian connection is only accessible during work hours.

7.1.2 EXISTING PEDESTRIAN FACILITIES ON SURROUNDING ROADS

Bay View Terrace is a Shared Zone, removing all priority and enabling safe interaction between people walking, riding, and driving. There are vehicle free/pedestrian only zones along the building frontages on Bay View Terrace. The retail tenancies are proposed to have direct access from Bay View Terrace.

Maude Jackson Way is a pedestrian only connection between Bay View Terrace and Walt Drabble Lane which will be retained and utilised to access some of the tenancies.

The Shared Zone terminated at Stirling Highway to the south and Gugeri Street to the north. There are footpaths present on both sides of both connecting roads, as well as along St Quentin Avenue which intersects Bay View Terrace midway.

There is direct pedestrian access to Claremont Station via a network of paths from Bay View Terrace and Leura Avenue.

There are no footpaths existing on Walt Drabble Lane, noting this lane is only 3m in width and limited to vehicles traveling in one direction (south to north past the subject site).

7.1.3 PROPOSALS TO IMPROVE PEDESTRIAN ACCESS

It is proposed that pedestrians are able to access the site via a main entrance off Bay View Terrace, and a secondary rear access from Walt Drabble Lane. No improvements are proposed to pedestrian access beyond what is provided within the site.

7.2 Cycling Access/Facilities

7.2.1 CYCLE FACILITIES WITHIN THE DEVELOPMENT

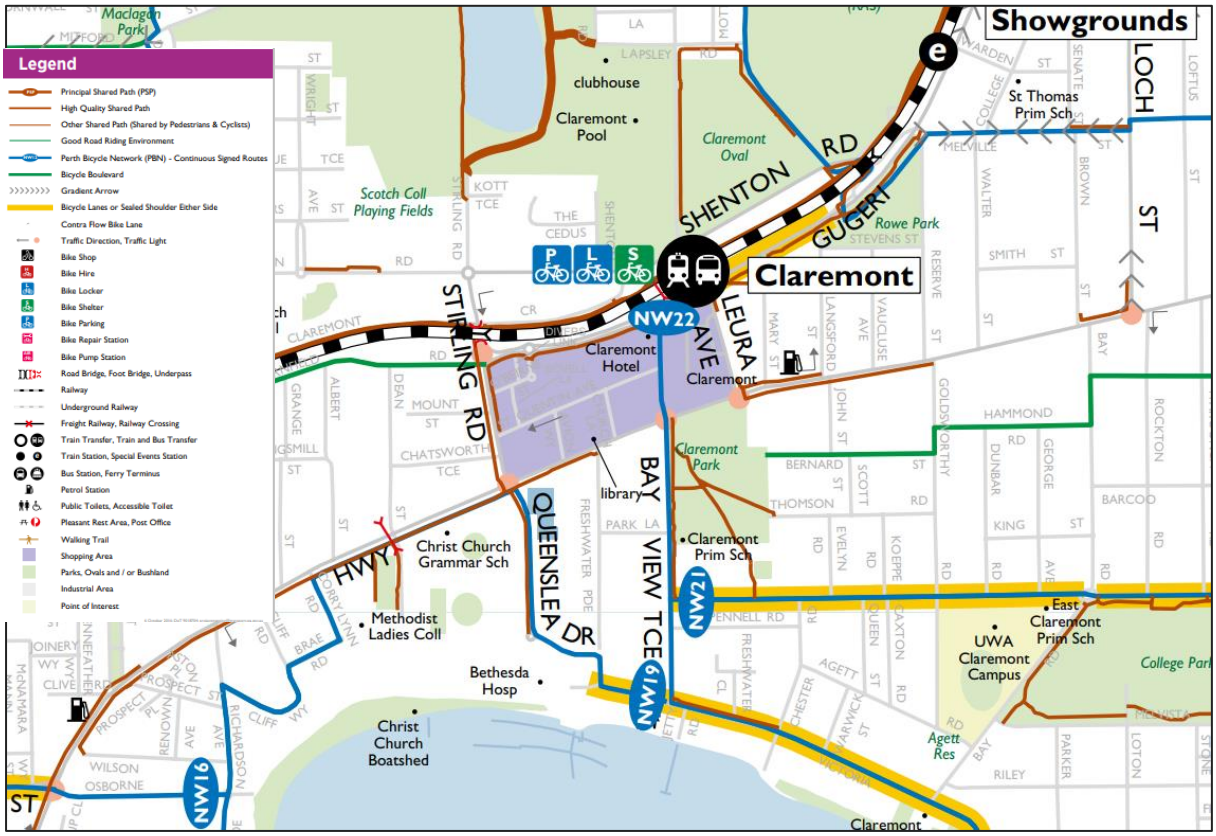
The existing cycling facilities within the subject site are unknown.

7.2.2 EXISTING CYCLE FACILITIES ON SURROUNDING ROADS

Bay View Terrace being a Shared Zone enables the use of the road by all modes of travel. Bay View Terrace forms part of the *NW22 Perth Bicycle Network* route which travels south toward Freshwater Bay and north to the station. A Principal Shared Path runs parallel to the railway line on the northern side.

Additionally, High Quality Shared Paths and Bicycle Boulevards are provided on Bay View Terrace, Stirling Highway and Gugeri Street.

Figure 17: Claremont Bike Map



(Source: Department of Transport)

7.2.3 PROPOSALS TO IMPROVE CYCLE ACCESS

There are no changes proposed to the cycle access and facilities as part of the development.

8 Site Specific Issues

8.1 Identified Issues

Due to the location of the service bay, there is potential that a parked service vehicle may obstruct the visibility to the lane way from a car parked within the external parking spaces.

As the entry toward the service area and parking spaces requires navigating a right hand 90-degree curve, and the laneway is only 3m in width, it is expected that drivers will be travelling at very low speeds, as such the potential for conflict is low and no remedial measures are recommended.

9 Safety Issues

9.1 Identified Issues

Within the five-year period 2017 – 2021 there were eight injury crashes on in the vicinity of the subject site, considering Bay View Terrace, Gugeri Street, Leura Avenue, Stirling Highway and the intersections or access points connecting each.

Of the eight crashes, five required medical attention, two resulted in hospitalisation and there was one fatality.

All bar two crashes occurred at the traffic signal intersection of Stirring Highway and Bay View Terrace, including one of the hospitalisations and the fatality. Three crashes (including the fatality) involved right turning movements, and three were rear end type crashes. The fatality involved a motorcyclist crashing into a turning vehicle.

One crash occurred on Bay View Terrace, also involving a motorcyclist which left the roadway and crashed into a pedestrian resulting in hospitalisation. A single crash occurred on Gugeri Street which involved a rear end type crash resulting in medical treatment being required.

No injury crashes were recorded on Leura Avenue between Gugeri Street and Stirling Highway, although 11 intersection injury crashes did occur at either end of the road.

It is expected that the increase in vehicle movements, particularly at the locations in which the vehicles enter the lane way may result in an increased risk due to the turning movements required and the traffic volumes present. However, given the low travel speeds it is not expected that these crashes will be of high severity and the risk of occurrence is low.

10 Conclusions

As a result of the traffic analysis undertaken for the proposed mixed-use development on Bay View Terrace in Claremont, the following findings have been made:

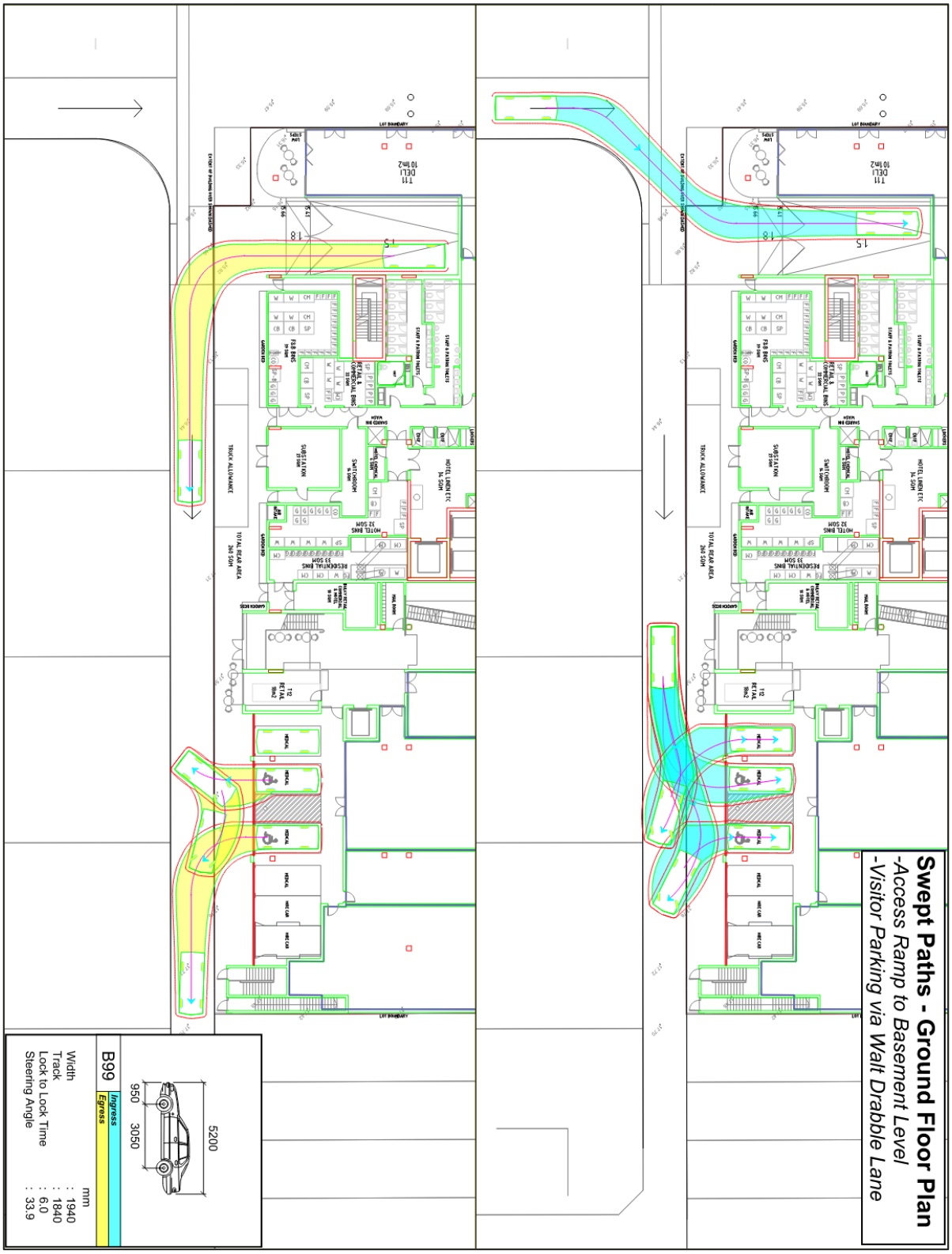
- The proposed development is not expected to generate significant vehicular trips due to the limited car parking supply.
- The impacts of the traffic volumes associated with the development on the road network are low and are considered acceptable.
- The development will provide sufficient on-site parking for all residential uses, with some potential overflow of visitor parking. This overflow can be readily accommodated in nearby public parking areas.
- Peak parking demand of the Site is able to be accommodated in the car parking spaces with some minor overflow into nearby public parking areas. The parking supply provided considers the Town's parking rates, applicable concessions, and varying peak occupancy across the uses.
- The proposed car park layout conforms to *AS/NZS 2890.1:2004*, *AS2890.2* and *AS2890.6*.
- The required WAPC checklist for this transport impact statement is at **Appendix A**.

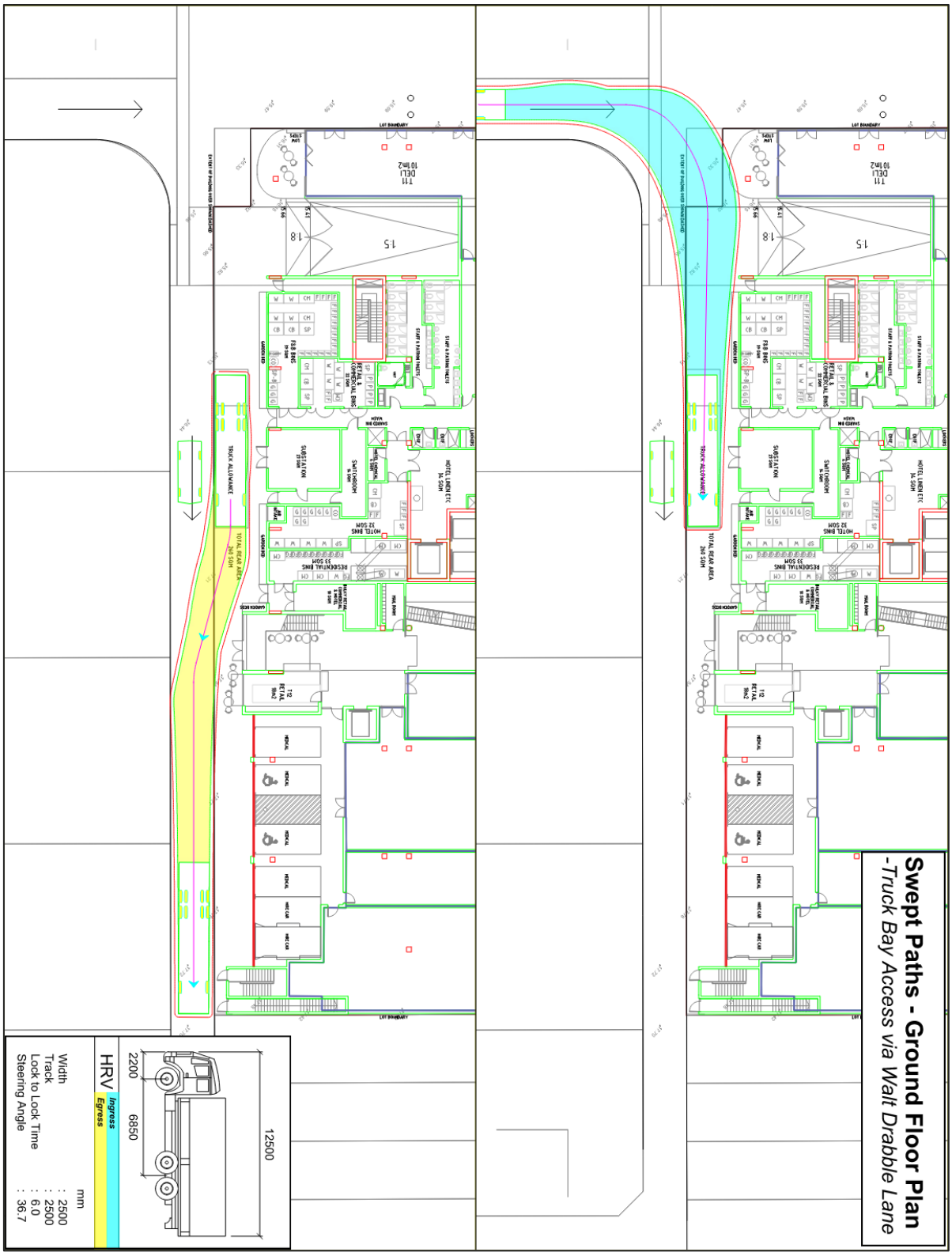
Appendix A WAPC Checklist

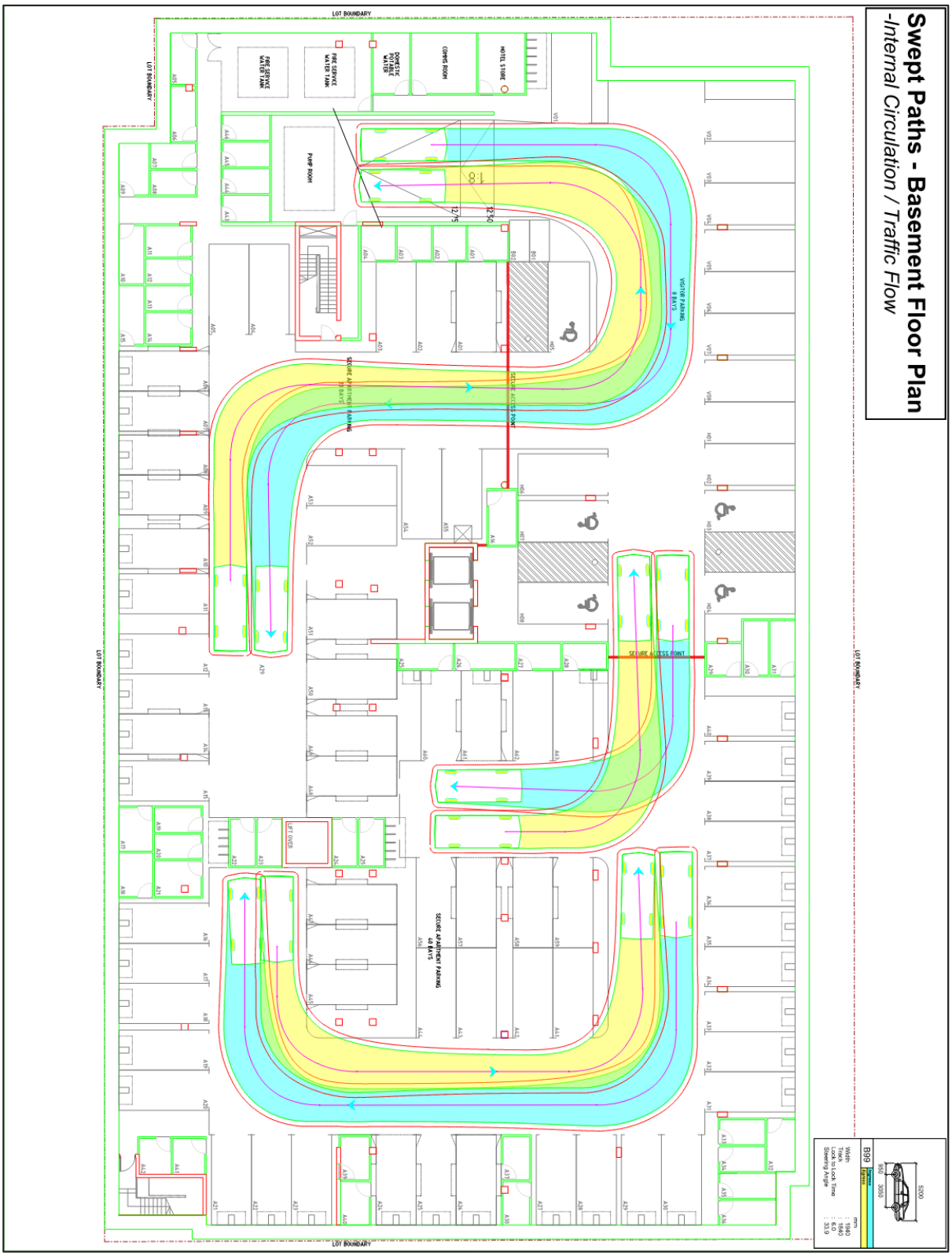
Item	Provided	Comments/Proposals
Proposed Development		
Existing Land Uses	X	
Proposed Land Use	X	
Context with Surrounds	X	
Vehicular Access and Parking		
Access Arrangements	X	
Public, Private, Disabled Parking Set Down/Pick Up	X	
Service Vehicle (Non-Residential)		
Access Arrangements	X	
On/Off-Site Loading Facilities	X	
Service Vehicles (Residential)		
Rubbish Collection and Emergency Vehicle Access	X	
Hours of Operation (Non-Residential Only)		
Traffic Volumes		
Daily or Peak Hour Traffic Volumes	X	
Type of Vehicles (E.G. Cars, Trucks)	X	
Traffic Management on Frontage Streets		
Public Transport Access		
Nearest Bus/Train Routes	X	
Nearest Bus Stops/Train Stations	X	
Pedestrian/Cycle Links to Bus Stops/Train Station	X	
Pedestrian Access/Facilities		
Existing Pedestrian Facilities Within the Development (If Any)	X	
Proposed Pedestrian Facilities Within Development	X	
Existing Pedestrian Facilities on Surrounding Roads	X	
Proposals to Improve Pedestrian Access	X	
Cycle Access/Facilities		
Existing Cycle Facilities Within the Development (If Any)	X	
Proposed Cycle Facilities Within Development	X	
Existing Cycle Facilities on Surrounding Roads	X	
Proposals to Improve Cycle Access	X	
Site Specific Issues		
Safety Issues		
Identify Issues	X	
Remedial Measures	X	

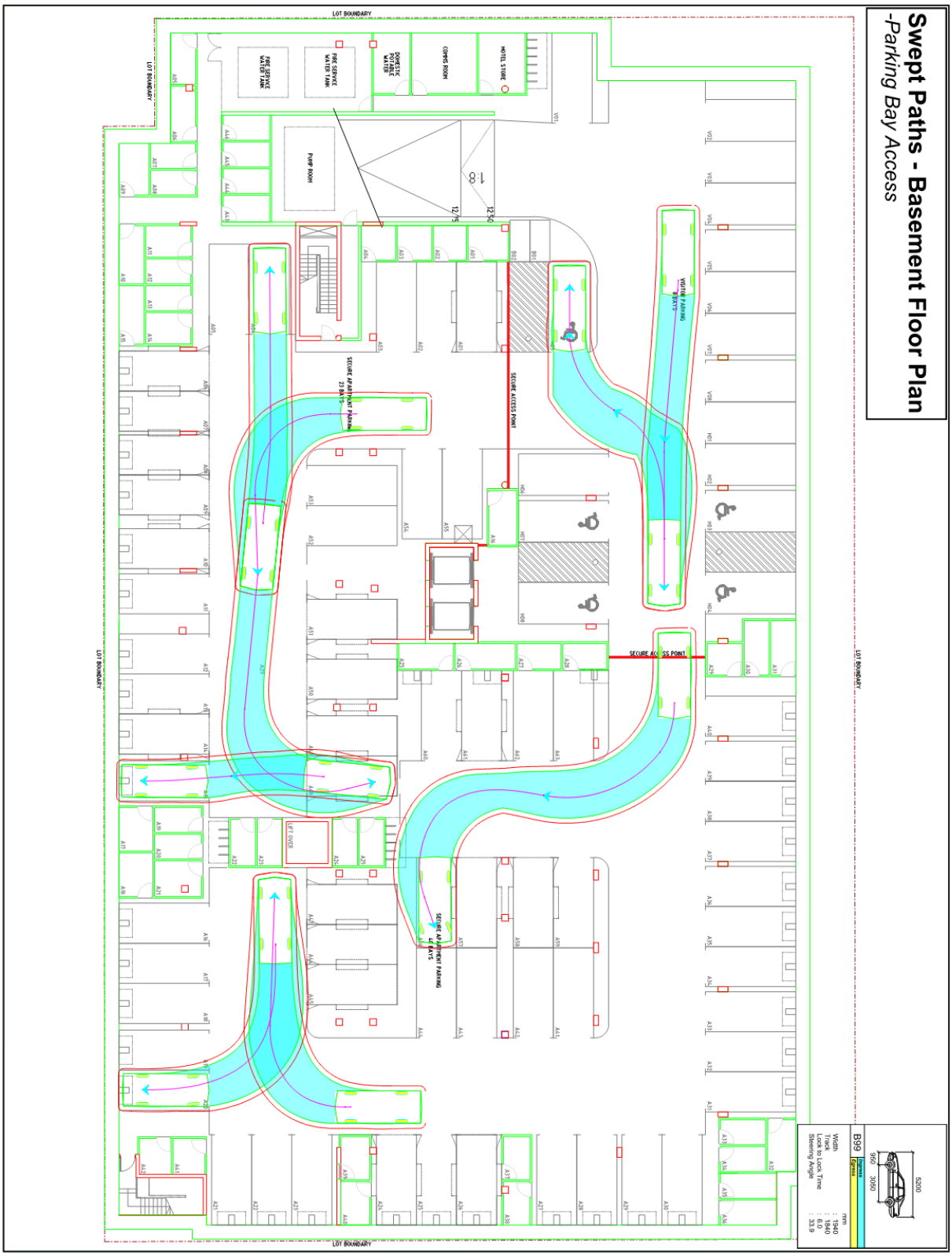
Appendix B Development Plans

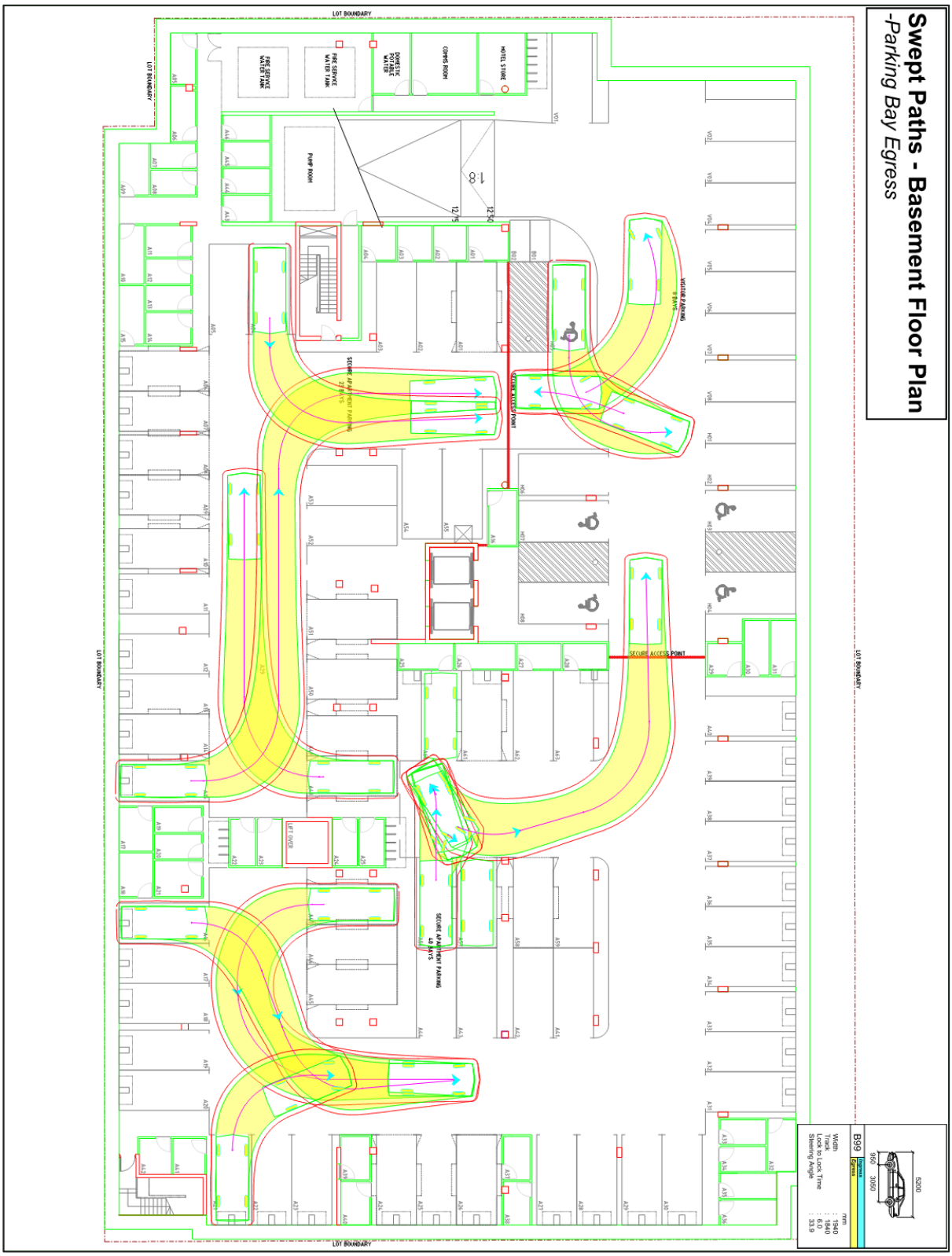
Appendix C Swept Paths




Swept Paths - Ground Floor Plan
-Truck Bay Access via Walt Drabble Lane
HRV
Ingress
Egress
2200
6850
12500
Width : 2500 mm
Track : 2500
Lock to Lock Time : 6.0
Steering Angle : 36.7


Swept Paths - Basement Floor Plan
-Internal Circulation / Traffic Flow
LOT BOUNDARY
PUMP ROOM
COMMS ROOM
HOTEL STORE
SECURE ACCESS POINT
VISITOR PARKING
SECURE APARTMENT PARKING
B99
Width
Track
Lock to Lock Time
Steering Angle
1940
1960
6.0
33.9


Swept Paths - Basement Floor Plan
-Parking Bay Access
LOT BOUNDARY
FIRE SERVICE WATER TANK
DOMESTIC WATER TANK
COMMS ROOM
HOTEL STORE
PUMP ROOM
VISITOR PARKING 9 BAYS
SECURE APARTMENT PARKING 23 BAYS
SECURE ACCESS POINT
SECURE APARTMENT PARKING 47 BAYS
LIFT OVER
B99
Width : 1940
Track : 1940
Lock to Lock Time : 6.0
Steering Angle : 33.9
mm
900
3060
5200


Swept Paths - Basement Floor Plan
-Parking Bay Egress
LOT BOUNDARY
PUMP ROOM
COMMS ROOM
HOTEL STORE
SECURE ACCESS POINT
B99
5200
1940
1840
33.9