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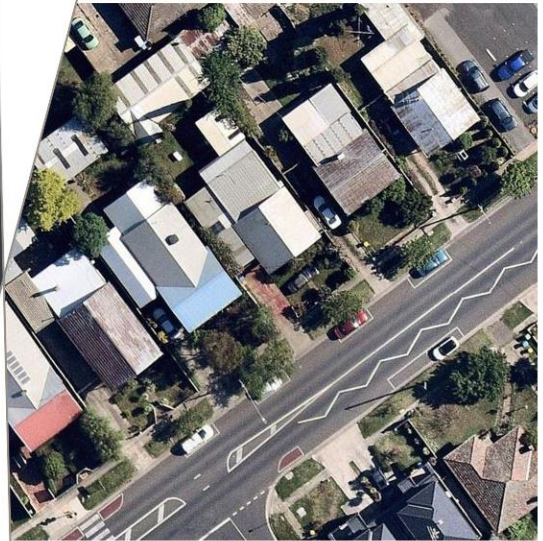
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Date Plans Provided: 30/09/2020

Traffic and Transport Assessment

18-20 Cottrell Street, Werribee

V181533



Prepared for
TM Design Group

1 September 2020

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Plan: 1 of 20

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F02	1/09/2020	Updated Final Report	James Aloï	Eric Kydd
F01	11/01/2018	Final Report	Jake Miller	Eric Kydd

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1 Introduction

Cardno has been engaged by TM Design Group to undertake a traffic and transport assessment of the proposed development at 18-20 Cottrell Street, Werribee.

The proposal incorporates a mixed-use development containing ~~nine (9) two-bedroom apartments and five (5) three-bedroom townhouses~~, plus two (2) separate commercial tenancies located on the Ground Floor. The development is proposed to be serviced by 19 on-site car parking spaces with access achieved via a modified crossover from Cottrell Street.

In the course of preparing this assessment, plans of the development (TP01-TP07 dated July-20, received 17 August 2020) have been examined.

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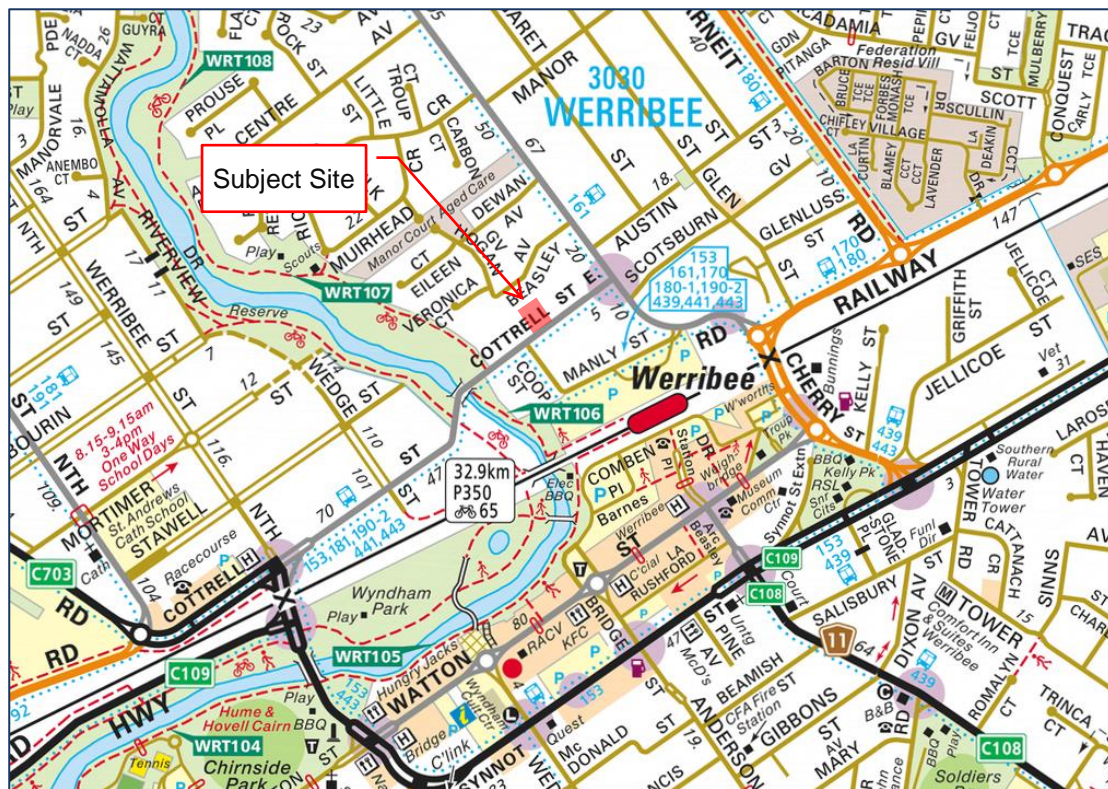
2 Background and Existing Conditions

2.1 Location and Land Use

The subject site is located at 18-20 Cottrell Street, Werribee as shown in Figure 2-1

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Figure 2-1 Site Location



Map courtesy of Melways Online

The subject site is generally rectangular in shape with an area in the order of 1,100 square metres and a street frontage of approximately 27 metres to Cottrell Street.

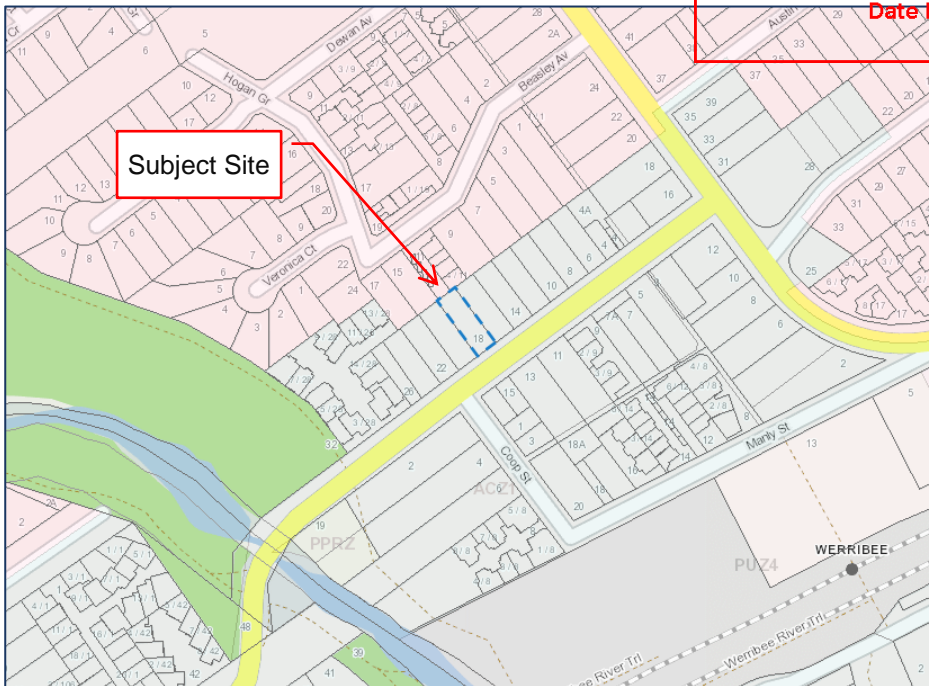
The site is located within the Werribee Principal Activity Centre Zone as outlined in the Wyndham Planning Scheme and is currently occupied by two detached residential dwellings with land use surrounding the site generally residential in nature. Further afield, Werribee Railway Station is located approximately 250 metres south-east.

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2.2 Planning Zones

The location of the subject site within the City of Wyndham is shown below in Figure 2-2. The subject site is located within an Activity Centre Zone (ACZ1), and adjacent to a General Residential Zone (GRZ1).

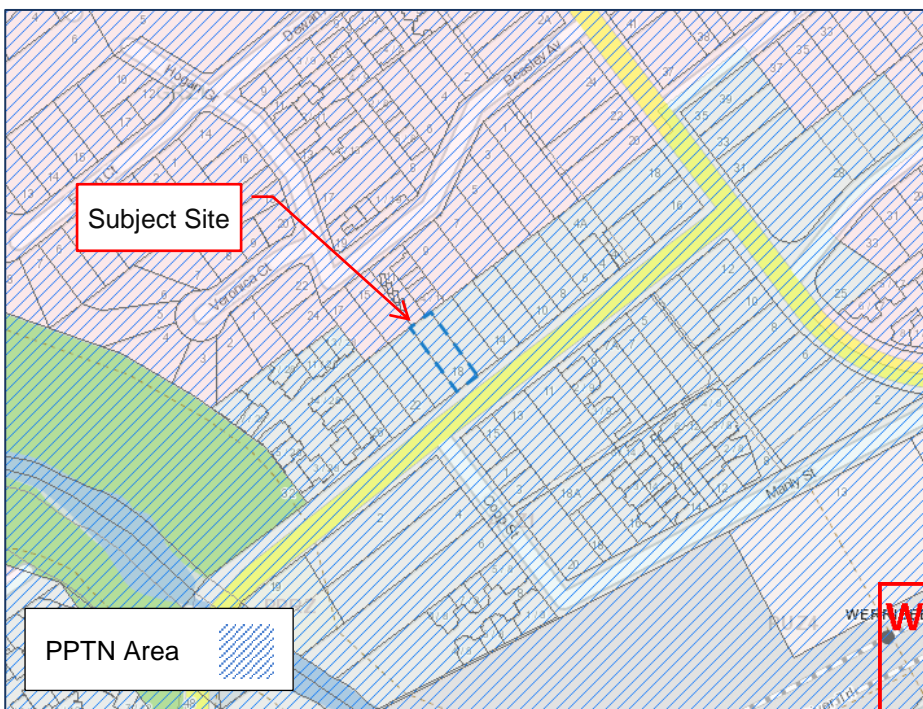
Figure 2-2 Planning Scheme Zones



Map courtesy of VicPlan Online

Further, the subject site is located within a designated Principal Public Transport Network (PPTN) Area, as shown in Figure 2-3. The PPTN reflects routes where high-quality public transport services are provided, and supports integrated transport by encouraging more diverse and dense development near high-quality public transport to help support public transport usage. As previously mentioned, the site lies within the Werribee City Centre, and therefore is subject to Schedule 1 of the Parking Overlay.

Figure 2-3 PPTN Area



Map courtesy of VicPlan Online

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2.3 Road Network

2.3.1 Cottrell Street

Cottrell Street is a local street running between Greaves Street in the west and Market Road in the east. At the site location, Cottrell Street functions as a one-lane road in each direction across its approximate 11 metre pavement width, as shown in Figure 2-4 and Figure 2-5.

Both sides of Cottrell Street accommodate on-street restricted 2P parking between the hours of 9am – 5pm Monday – Friday, with a posted speed limit of 50km/h applying to Cottrell Street in the vicinity of the site.

Figure 2-4 Cottrell Street facing east beyond the subject site



Figure 2-5 Cottrell Street facing west beyond the subject site



2.4.2 Bicycle Network

The subject site has access to formal and informal bicycle routes, as shown in Figure 2-7. The proposed site is located on a PBN route, which provides a connection to the Werribee River Trail and Federation Trail in close proximity to the site, which provides a number of on and off-street trails connecting to the surrounding bicycle network.

Figure 2-7 Principal Bicycle Network



3 Proposed Development

3.1 General

Based on plans prepared by TM Design Group, it is proposed to redevelop the site to accommodate a mixed-use development with ground-level commercial spaces, townhouses and residential apartments.

A summary of the proposed development is provided in Table 3-1.

Table 3-1 Proposed Development Schedule

Component		No. / Size
Commercial	Space 1	65 sq m
	Space 2	85 sq m
Residential	2 Bedroom Apartment	9 no.
	3 Bedroom Townhouse	5 no.

3.2 Car Parking and Access

A new crossover is proposed via Cottrell Street at the frontage of the site providing two-way vehicle access. As a result of the proposed crossover changes, an additional on-street car parking space is proposed as shown in the attached swept path sketch V181533-TR-SK-0003-1 attached as Appendix A.

The on-site car parking area is proposed to provide a further 19 at-grade car parking spaces.

3.3 Bicycle Parking

A total of 18 bicycle parking spaces in the form of 18 vertical 'Ned Kelly' parking rails are proposed either within the residential Ground Floor lobby or just outside next to the car park access.

3.4 Loading and Waste Collection

A Waste Management Plan has been prepared by Leigh Design dated 11 August 2020.

A Waste Room has been provided in the centre of the Ground Floor car park, located just outside the residential lobby and north of the commercial tenancies. This Waste Room will house 2 x 660L garbage bins and 2 x 660L recycling bins to be used by the nine (9) apartments and commercial tenancies. Each townhouse will have a 120L garbage bin and a 240L recycling bin. All bins are to be collected on a weekly basis, except for the 240L townhouse recycling bins which are to be collected fortnightly.

It has been proposed that the private collection of these bins be conducted within the car park. As such, a Wastewise Mini collection vehicle (or similar) has been used as the design vehicle for swept path analysis, provided in Appendix A.

Swept path analysis confirms this method of waste collection is acceptable. It is noted that the Waste Wise Mini standard height is 2,080mm. The height clearance through the car park, or within the loading area, must be at least 2.3m high to accommodate rear loading activities. It is anticipated that the private contractor will position the waste collection vehicle in a manner that facilitates the safest method of bin collection.

4 Design Considerations

4.1 Design Standard 1 – Accessways

Design Standard 1 of Clause 52.06-9 of the Wyndham Planning Scheme lists a number of design requirements in relation to accessways. These requirements are assessed against the proposed development in Table 4-1.

Table 4-1 Design Standard 1 - Accessways

Requirement	Comments
Be at least 3 metres wide.	Satisfied – the accessway is 6m wide and is capable of facilitating simultaneous two-way movements. The modified crossover to Cottrell Street is proposed to be 6 metres wide and is designed in accordance with City of Wyndham Standards.
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide.	Satisfied – the access aisle is 6040mm at its narrowest point.
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	Satisfied – 1m from the end of the parking spaces is provided.
Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres.	Satisfied – a minimum headroom of no less than 3 metres is to be provided throughout the car parking areas.
If the accessway serves four or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction.	Satisfied.
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a Road Zone.	N/A – nonetheless, the site access is capable of facilitating simultaneous two-way movements, as shown in the swept path diagram attached as Appendix A.
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road.	Satisfied.

As demonstrated in Table 4-1, the proposed accessways are considered to be compliant with the requirements of Design Standard 1 of Clause 52.06-9 of the Wyndham Planning Scheme.

4.2 Design Standard 2 – Car Parking Spaces

The design requirements relating to the dimensions of car parking spaces are stipulated in Design Standard 2 of Clause 52.06-9 of the Wyndham Planning Scheme. The subject development provisions in terms of car parking spaces are assessed in Table 4-2.

Table 4-2 Design Standard 2 – Car Parking Spaces

Requirement	Comments
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Clause 52.06-9.	Satisfied – all car parking spaces meet the minimum dimension requirement of the Wyndham Planning Scheme, being at least 2.6m wide and 4.9m long, with an aisle of at least 6.4m. Access aisles are in excess of this minimum requirement, allowing comfortable vehicle maneuvering.
A wall, tree or tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 within Clause 52.06-9 other than: <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' of Diagram 1 of the design standard; and > A structure, which may project into the space if it is at least 2.1 metres above the space. 	Satisfied – all car parking spaces are designed to satisfy the clearance requirements shown in Diagram 1.
Disabled car spaces must be designed in accordance with AS 2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500mm.	N/A
Car spaces in garages or carports must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage or carport	N/A.

As demonstrated in Table 4-2, the dimensions of the car parking spaces proposed for the development are considered to be compliant with the requirements of Design Standard 2 of Clause 52.06-9 of the Wyndham Planning Scheme.

4.3 Design Standard 3 - Gradients

The design requirements relating to the gradients of the car park are stipulated in Design Standard 3 of Clause 52.06-9 of the Wyndham Planning Scheme. These requirements are assessed against the proposed development in Table 4-3.

Table 4-3 Design Standard 3 - Gradients

Requirement	Comments
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 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.	Satisfied – no significant grading proposed at the frontage.
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.	N/A – no ramps contained within the site.

5 Bicycle Considerations

5.1 Statutory Bicycle Parking Requirements – Clause 52.34

Clause 52.34 of the Wyndham Planning Scheme specifies the following bicycle parking provision requirements with regard to the proposed development.

It is noted that the commercial tenancies may be either office or retail tenancies. However, in both instances, the requirement for bicycle parking is only triggered if the combined net floor area exceeds 300 sq m. Thus, the commercial tenancies require no bicycle parking, and has been left out of the below table.

Table 5-1 Planning Scheme Bicycle Parking Requirements – Clause 52.34-5

Use	Area / No.	Requirement Rate	Total
Dwelling	14 no.	In developments of four or more storeys, 1 to each 5 dwellings for residents, and	5
		In developments of four or more storeys, 1 to each 10 dwellings for visitors	

The above assessment indicates that the proposed development has a statutory bicycle parking requirement for five (5) spaces. In this instance, the bicycle parking provision of 18 on-site bicycle spaces well-exceeds statutory requirements, and is therefore considered more than acceptable.

Since the commercial tenancies does not trigger a requirement for bicycle parking, there is no requirement for end of trip facilities.

6 Car Parking Considerations

6.1 Statutory Car Parking Requirements

Whilst Clause 52.06-5 of the Wyndham Planning Scheme provides the base rates for parking provision within the PPTN (Column B), the site is also subject to Schedule 1 to the Parking Overlay which outlines a lower rate for dwellings than Column B.

It is noted that the commercial tenancies may be either office or retail tenancies, and is not subject to Schedule 1 of the Parking Overlay depending on the final type of tenant. A conservative analysis assumes that the rate taken is specified in Column B, which is 3.5 parking spaces to each 100 sq m of net floor area, in line with a number of different commercial and retail uses provided in Table 1 of Clause 52.06 of the Wyndham Planning Scheme.

The rates applicable to each development use is provided in Table 6-1.

Table 6-1 Planning Scheme Car Parking Requirements – Clause 52.06-5 & Schedule 1 to the Parking Overlay

Use	Rate	Car Parking Measure	No. / Area	Requirement
Commercial	3.5	To each 100 sqm of leasable floor area	150 sq m	5 spaces
Dwelling	1	To each one or two bedroom dwelling, plus	9	9 spaces
	1	To each three or more bedroom dwelling, plus	5	5 spaces
	0	For visitors to every 5 dwellings for developments of 5 or more dwellings	14	-

Considering the Wyndham Planning Scheme requirements, whilst noting the subject sites location is subject to Schedule 1 to the Parking Overlay, the proposed development attracts a statutory requirement of 19 car parking spaces.

6.2 Proposed Car Parking Provision

The proposed development provides 19 car parking spaces, which meets the requirements of the Wyndham Planning Scheme. The car parking spaces are allocated in line with the statutory requirements, that is, 14 residential spaces at one space per dwelling, and five (5) commercial spaces.

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7 Traffic Considerations

7.1 Traffic Generation

Traffic generated by the proposed development will predominantly consist of the arrivals and departures of residents and staff in the AM and PM peaks.

The traffic generation characteristics of each component of the development is discussed below.

7.1.1 Office Component

In order to provide a conservative assessment, it is assumed that each of the five (5) car parking spaces allocated to the office component will fill and empty in the AM and PM peaks respectively.

This translates to five (5) inbound movements in the AM peak, and a further five (5) outbound movements in the PM Peak.

7.1.2 Residential Dwellings

For the purposes of this assessment, the traffic generation rate for a Residential land use set out in the NSW Road and Traffic Authority's *Guide to Generating Developments (RTA Guide)* has been adopted for the residential component of the development.

For the purposes of the assessment, the traffic generation rate for a Medium Density Residential Flat Building has been adopted.

The RTA Guide specifies the following rates outlined in Table 7-1.

Table 7-1 Residential Traffic Generation Rates

Dwelling Type	Rate
Smaller units and flats (up to two bedrooms)	0.4 – 0.5 peak hour trips per dwelling
Larger units and townhouses (three or more bedrooms)	0.5 – 0.65 peak hour trips per dwelling

To provide a conservative assessment, it is assumed that traffic generation will reflect that of larger units and townhouses, therefore the following is anticipated:

- > Apartments 4.5 vehicle trips per peak hour
- > Townhouses 3.25 vehicle trips per peak hour

Overall, it is expected that approximately 8 trips will be generated in each of the AM and PM peaks.

7.2 Traffic Considerations and Impact

The overall volume of traffic expected to be generated by the proposed development uses is not considered high in traffic engineering terms, with the proposal generating approximately 13 traffic movements within the peak periods. This equates to approximately one (1) vehicle movement every 4.5 minutes (combined arrivals and departures), and is expected to be assimilated into the surrounding road network.

8 Summary and Conclusions

Based on the review of the plans provided by TM Design Group, it is proposed to develop the site at 18-20 Cottrell Street, Werribee for the purpose of a mixed use development comprising of two (2) Ground Floor commercial spaces and residential apartments and townhouses from the First Floor up.

The residential component of the development is understood to include a total of 14 apartments and townhouses, consisting of nine (9) two-bedroom apartments and five (5) three-bedroom townhouses. The proposed development is to be serviced by 19 car parking spaces.

Based on the foregoing analysis, it is concluded that:

- > The car park and access are generally designed in accordance with the requirements of the Wyndham Planning Scheme and Australian Standard for off-street car parking (AS 2890.1:2004);
- > The proposed development attracts and satisfies a statutory car parking requirement of 19 car parking spaces based on Schedule 1 to the Parking Overlay of the Wyndham Planning Scheme, providing exactly 19 parking spaces;
- > The proposed development attracts and exceeds a statutory bicycle parking requirements of 5 bicycle parking spaces based on Clause 52.34 of the Wyndham Planning Scheme, providing 18 vertical bicycle rails; and
- > The level of traffic expected to be generated by the proposed development is expected to be accommodated within the existing road network, and is not anticipated to have any adverse impacts on the existing amenity of the surrounding roads.

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APPENDIX

A

SWEPT PATH DIAGRAMS

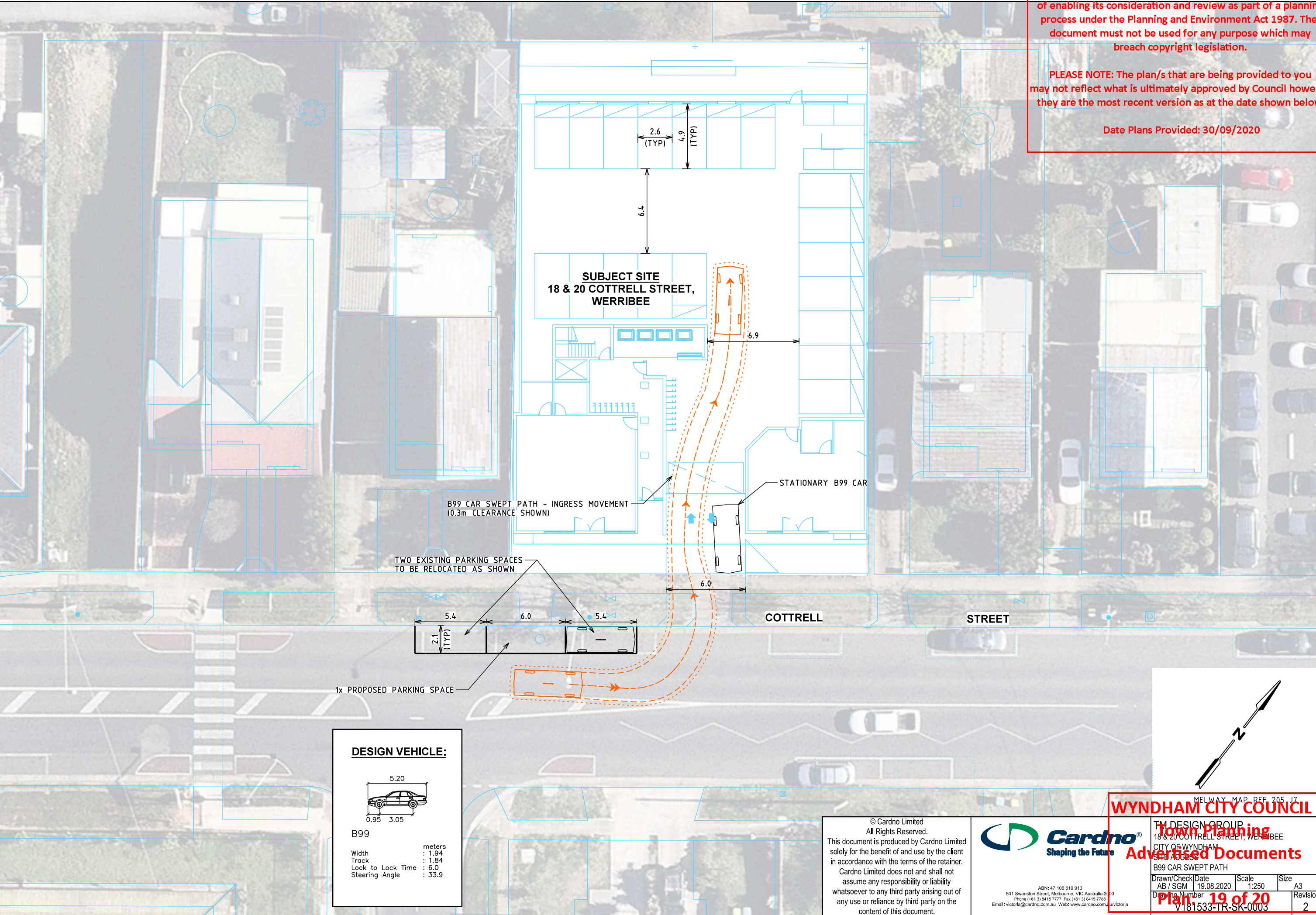
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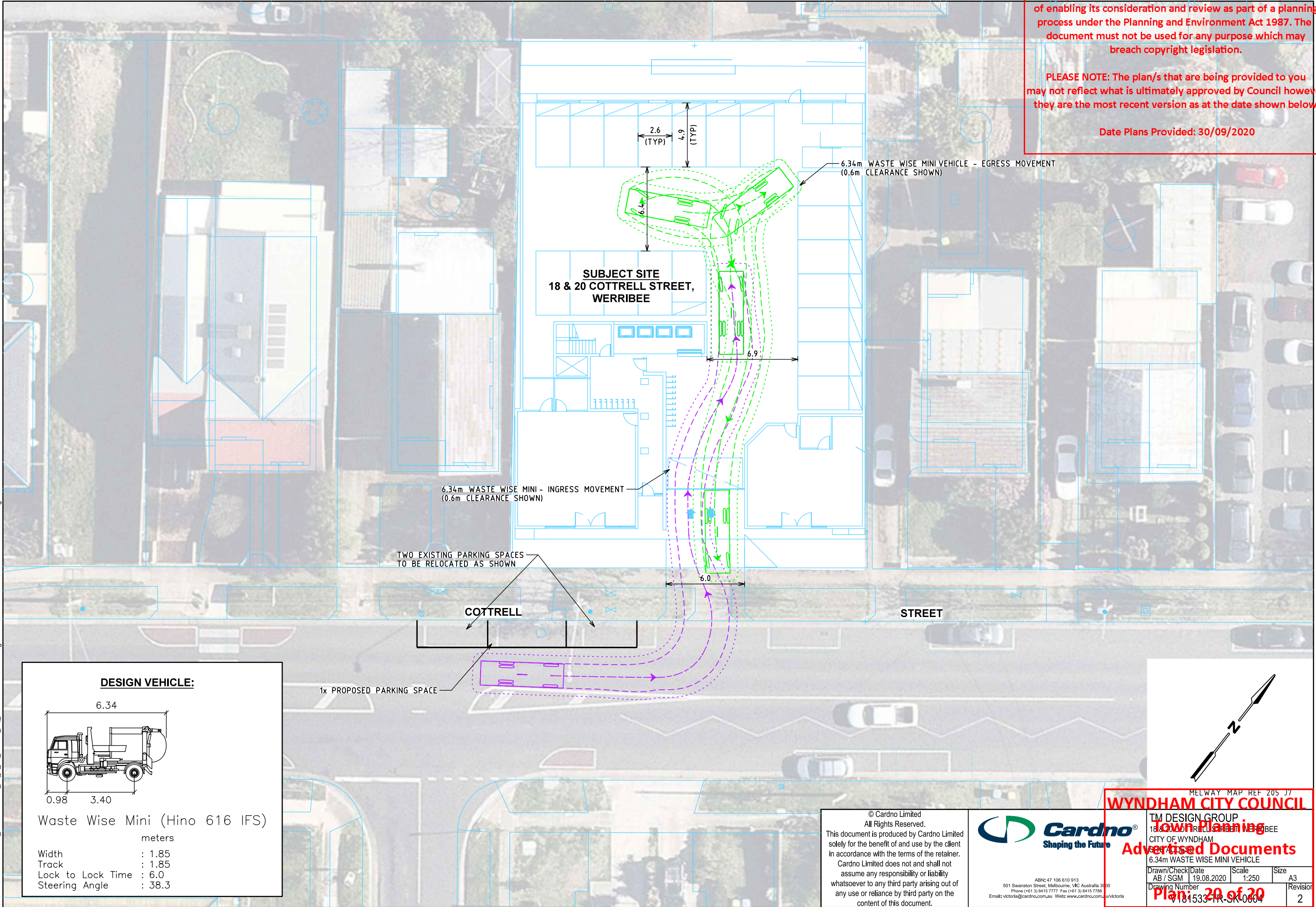
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DESIGN VEHICLE:

Waste Wise Mini (Hino 616 IFS)

	units
Width	: 1.85 meters
Track	: 1.85
Lock to Lock Time	: 6.0
Steering Angle	: 38.3

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TM DESIGN GROUP
18 & 20 COTTRELL STREET, WERRIBEE
CITY OF WYNDHAM

6.34m WASTE WISE MINI VEHICLE

Drawn/Check/Date	AB / SGM	19.08.2020	Scale	1:250	Size	A3	
Drawing Number	181533-TR-SK-0004					Revision	2

Plan: 20 of 20