Hemanote Consultants

88 HELEN STREET, SEFTON

PROPOSED SELF-STORAGE FACILITY

TRAFFIC & PARKING IMPACT ASSESSMENT

MARCH 2025

HEMANOTE CONSULTANTS PTY LTD

TRAFFIC ENGINEERING & DESIGN CONSULTANTS

PO BOX 743, MOOREBANK NSW 1875

CONTACT: 0414 251 845

EMAIL: projects@hemanote.com.au

TRAFFIC & PARKING IMPACT ASSESSMENT
88 HELEN STREET, SEFTON
PROPOSED SELF-STORAGE FACILITY
DATE: 31 MARCH 2025

DISCLAIMER

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1 INTRODUCTION

This report has been prepared by Hemanote Consultants on behalf of La Salle Group Holdings Pty Ltd, to assess the traffic and parking implications for the proposed self-storage facility development to be located at **88 Helen Street, Sefton**.

This report is to be read in conjunction with the architectural plans prepared by Gelder Group Architects (a reduced copy of the architectural plans, Issue 'O' dated 19/03/2025 is attached in *Appendix 'A'* of this report) and submitted to Canterbury-Bankstown Council as part of a Development Application.

This report is set as follows:

- Section 2: Description of the existing site location and its use;
- Section 3: Description of existing traffic conditions near the subject site;
- Section 4: Description of the proposal, vehicular access, on-site parking provision, layout and circulation;
- Section 5: Assessment of impacts on parking;
- Section 6: Assessment of impacts on traffic in the vicinity of the subject site; and
- Section 7: Outlines conclusions.

2 EXISTING SITE DESCRIPTION

➢ ***Site Location***

The subject site is located on the eastern side of Helen Street at property No. 88 (legally known as Lot X of DP420237), within the suburb of Sefton. The site has a frontage of approximately 100 metres to Sefton Street from the west.

Refer to Figure 1 for a site locality map.

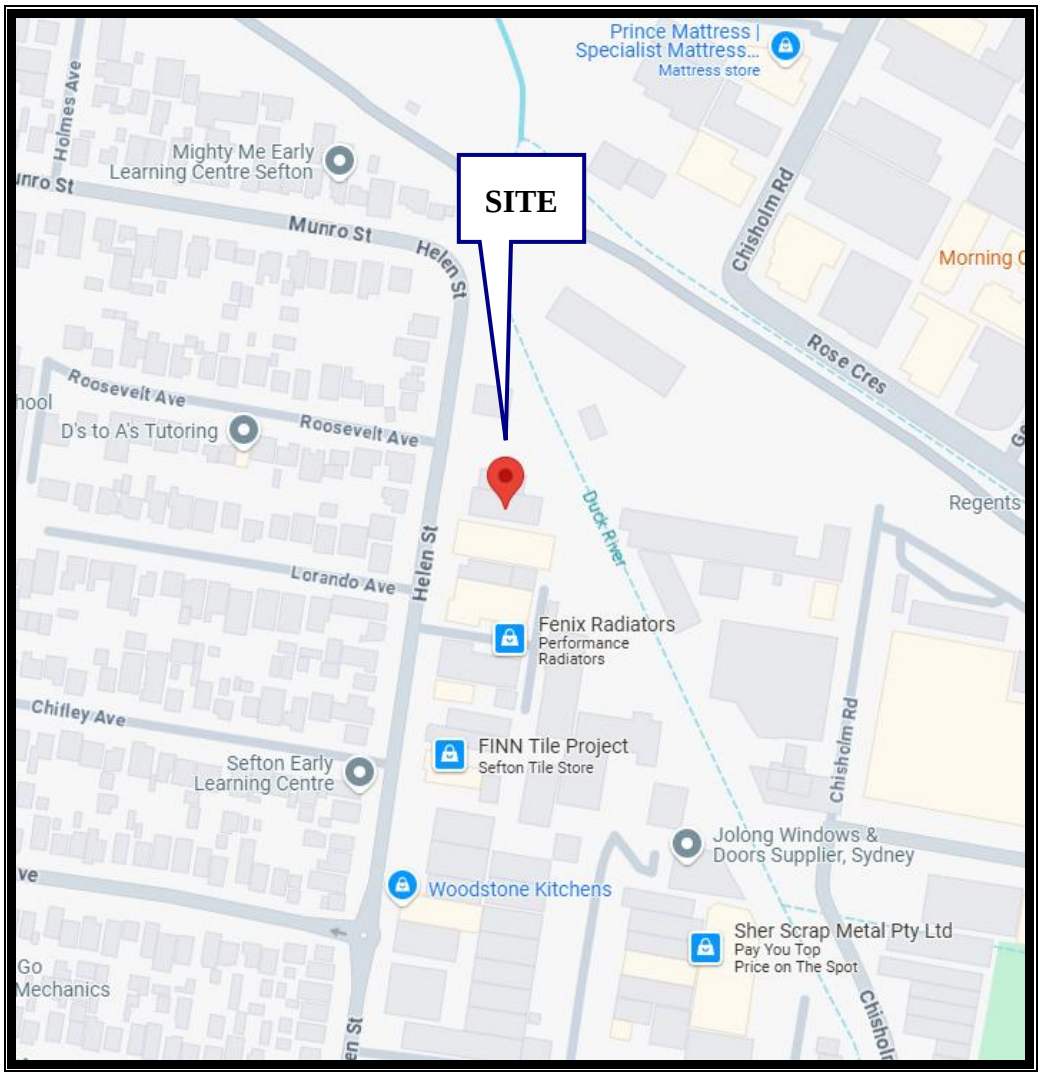


Figure 1: Site Locality Map

- ***Existing Site & Surrounding Land Use***

The subject site has an area of 5,201.8m^2 and currently used for industrial purposes. It is located in a mixed residential and commercial area, characterised by residential developments as well as commercial type sites.

The site is also located approximately 650 metres from Sefton Railway Station, 1.6 km from Regents Park Railway Station and 1.6 km from Chester Hill Railway Station.

Photo 1: Site frontage to Helen Street

3 EXISTING TRAFFIC CONDITIONS

3.1 Road Network and Classification

Helen Street is a local road that runs in a north to south direction, between its extension as Munro Street (local road) to the north and its dead-end near Sefton Railway Station to the south. Helen Street intersects with a number of local roads near the subject site, including Roosevelt Avenue, Lorando Avenue and Chifley Avenue.

3.2 Road Description and Traffic Control

Helen Street has a two-way undivided carriageway, with a width between kerbs of approximately 11 metres. At present, unrestricted parking is permitted along both sides of Helen Street (near the subject site), including the frontage of the subject site, with the exception of the signposted 'No Stopping' near close intersecting roads, and signposted 'No Parking Vehicles Under 6M Excepted' posted along some sections of the road.

The legal speed limit on Helen Street is 50km/h. Helen Street intersects with Roosevelt Avenue, Lorando Avenue and Chifley Avenue, which are all controlled by 'T-priority' traffic measures, given to traffic travelling along Helen Street.

Figure 2: Aerial photograph of the subject site and surrounding road network

Photo 2: Helen Street at the subject site – facing north

Photo 3: Helen Street at the subject site – facing south

3.3 Current Traffic Volumes

A traffic volume surveys was undertaken by Hemanote Consultants at the intersections of:

- Helen Street / Virgil Avenue
- Hector Street / Munro Street

in the vicinity of the subject site on Wednesday 20 November 2024, during morning period (7.00am to 10.00am) and afternoon period (3.00pm to 6.00pm), considering the proposed hours of operation of the subject development and traffic peak periods.

The traffic flows in the morning & afternoon peak hours are shown in Tables 1 and 2 below and in *Appendix 'C'* of this report.

Traffic movement	Morning Peak Hour (Vehicles Per Hour)	Evening Peak Hour (Vehicles Per Hour)
	8.00am – 9.00am	3.00pm – 4.00pm
Helen Street (North of Virgil Avenue)		
Northbound	203	251
Southbound	269	315
Helen Street (South of Virgil Avenue)		
Northbound	326	410
Southbound	449	507
Virgil Avenue		
Eastbound	203	215
Westbound	146	182

Table 1: Current traffic flows in the vicinity of the subject site (on a typical weekday)

Traffic movement	Morning Peak Hour (Vehicles Per Hour)	Evening Peak Hour (Vehicles Per Hour)
	8.00am – 9.00am	3.00pm – 4.00pm
Hector Street (North of Munro Street)		
Northbound	516	616
Southbound	540	628
Hector Street (South of Munro Street)		
Northbound	429	485
Southbound	427	505
Munro Street		
Eastbound	151	160
Westbound	125	168

Table 2: Current traffic flows in the vicinity of the subject site (on a typical weekday)

The results of the traffic volume surveys undertaken determined that the traffic morning peak period at the surveyed intersections, was between 8.00am to 9.00am and the afternoon peak period was between 3.00pm to 4.00pm on a typical weekday.

The existing traffic flows on Helen Street, Virgil Avenue, Munro Street and Hector Street are appropriate for three local roads and one regional road, respectively, in a mixed residential and commercial area, where traffic is well controlled without major queuing or delays at the subject site in peak hours, with spare capacity.

It is determined that the existing mid-block level of service on Munro Street and Virgil Avenue is at level 'A' in accordance with Table 4.4 of the Roads & Maritime Services' *"Guide to Traffic Generating Developments - 2002"* (shown on the following page). The existing mid-block level of service on Helen Street ranges between levels 'A' to 'B'.

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Table 4.4: Urban road peak hour flows per direction RMS Guide)

- ***Current Intersection Performance (pre-development)***

Average Vehicle Delay (AVD) and Level of Service (LOS) – The AVD and LOS provide a measure of the operational performance of an intersection, as indicated in Table 4.2 of the Roads & Maritime Services "*Guide to Traffic Generating Developments - 2002*" (shown below).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Table 4.2: Level of Service Criteria for intersections (RMS Guide)

A **pre-development** SIDRA intersection performance analysis was undertaken for the following existing intersections in the vicinity of the subject site:

- Helen Street / Virgil Avenue
- Hector Street / Munro Street

Refer to Figure 3 on the following page, showing the intersections network layout controlled by a roundabout at Helen Street / Virgil Avenue and a T-priority traffic measure with associated 'STOP' signage at Hector Street / Munro Street. Helen Street, Virgil Avenue, Munro Street and Hector Street have undivided carriageways, all with one through traffic lane in each direction.

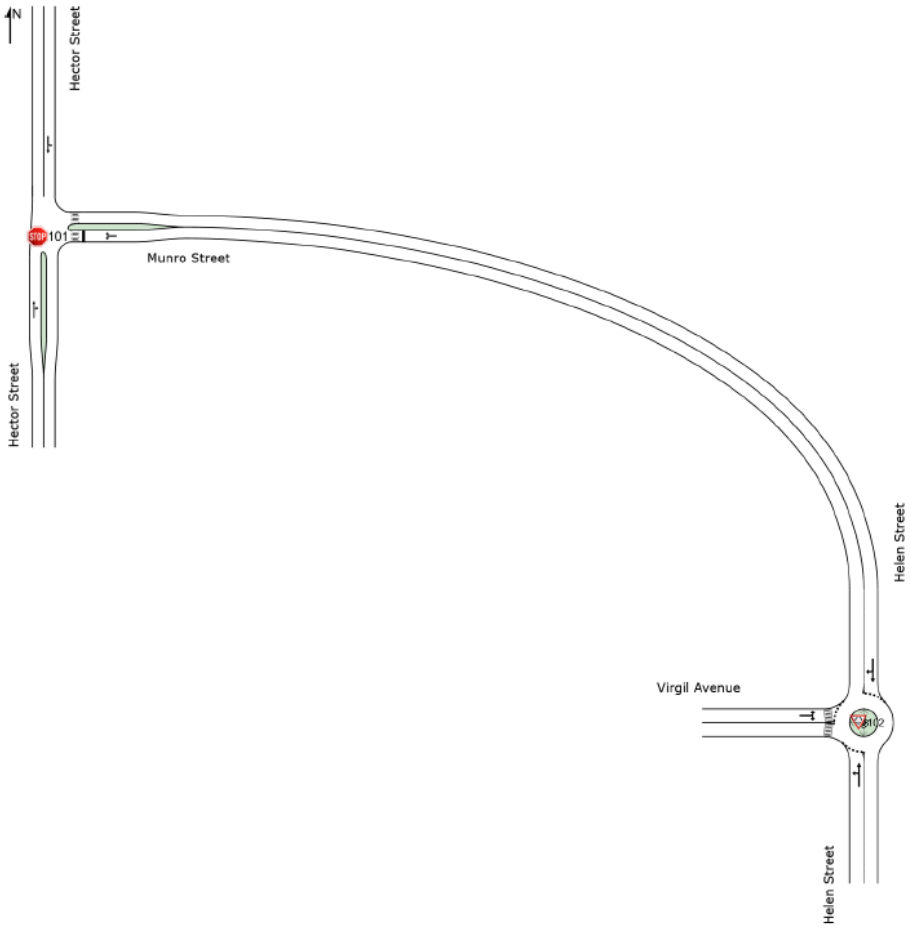


Figure 3: Existing Intersection Network Layout

The pre-development SIDRA performance analysis determined that the current operational performance of the existing intersection of Helen Street / Virgil Avenue is in good operation at a Level of Service (LOS) 'A' during AM and PM peak periods.

The pre-development SIDRA performance analysis determined that the current operational performance of the existing intersection of Hector Street / Munro Street is generally in good operation at a Level of Service (LOS) 'A' during AM and PM peak periods, with the exception of the right-turn movement into Hector Street on the east approach leg of Munro Street, which is at LOS 'B' during AM peak and LOS 'C' during PM peak. The left-turn movement into Hector Street on the east approach leg of Munro Street is at LOS 'B' during PM peak.

Refer to the summary of the results of the SIDRA intersection performance analysis attached in *Appendix 'D'* of this report.

3.4 Existing Transportation Services

The subject site has good access to public transport services in the form of trains and buses. The site is located approximately 650 metres from Sefton Railway Station, 1.6 km from Regents Park Railway Station and 1.6 km from Chester Hill Railway Station.

Frequent bus services operate along Carlingford Street, Hector Street, Elliston Street, Waldron Road, Priam Street, Bent Street, Campbell Hill Road, Wolumba Street, Chester Hill Road, Proctor Parade and Rose Street, in close proximity to the subject site (i.e. bus routes M91, N50, S2, 908, 911 and 916).

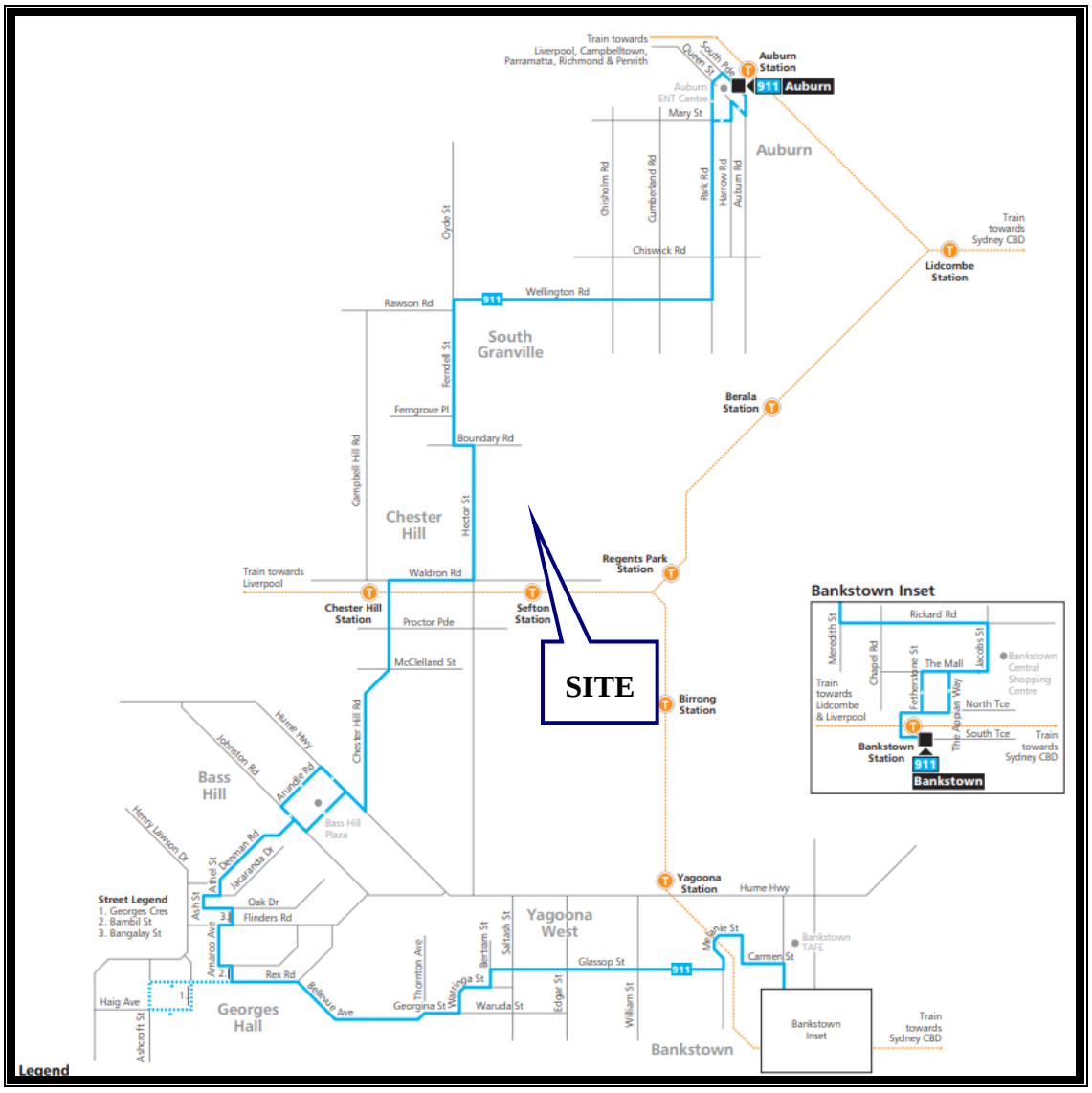


Figure 4: Bus services near the subject site (Bus Route No. 911)

4 PROPOSED DEVELOPMENT

4.1 Description of the Proposal

The proposed development seeks approval for the construction of a multi-unit self-storage facility to be located at **88 Helen Street, Sefton**.

The proposal will include the following:

- Self-storage units with a total MLA of 2,921.58m^2.
- Five (5) on-site car parking spaces (including one accessible parking space with an adjacent shared area), in addition to one (1) SRV truck loading bay and a turning area, on ground level.

Refer to ***Appendix 'A'*** for the proposed development plans.

Typically, the majority of customers using the self-storage facility are private users, who will be accessing the site by standard passenger cars, station wagons or vans/utes, which is equivalent to a B99 vehicle, with the largest size vehicle to access the site being a Small Rigid Vehicle (SRV – 6.4 metres long small truck).

It is important to note that self-storage facilities typically reflect a very low level of land use in terms of car parking and traffic generation. Customers of such facilities are mostly domestic private users and visits to the storage facility are infrequent and generally brief, thus regular visits by the same users are not expected daily.

4.2 Vehicular & Pedestrian Access

The vehicular access to and from the off-street parking facilities will be via a new access driveway crossing to be located in Helen Street. The access driveway is to have a width of 6.1 metres, which is adequate for a low volume (Category 2) access driveway in accordance with AS2890.1:2004 – Table 3.2 and SRV access in accordance with AS2890.2:2018.

The access driveway is to provide two-way vehicular movements, where two vehicles can pass each other at the same time without causing delays or congestion to traffic on the street. The proposed access driveway is located more than 6 metres from the tangent point of the adjacent kerbline, in accordance with Figure 3.1 of AS2890.1:2004.

Vehicular access is to be located and constructed in accordance with the requirements of AS2890.1:2004, where vehicles enter and exit the site in a forward direction at all times.

The existing vehicular crossing located in Helen Street is to be removed and replaced with new kerb, gutter and footpath, to be constructed to Council specifications.

The clear sight line triangle (2.5m x 2m) between the driver's eye view and pedestrians is to be provided on the exit side of the driveway, as per Figure 3.3 of AS2890.1:2004 and Figure 3.4 of AS2890.2:2018.

A separate pedestrian access gate is also provided at the front of the site in Helen Street, to segregate pedestrians and vehicles and improve safety within the site.

4.3 On-site Parking Provision

The Self Storage Association of Australia (SSAA) commissioned a Parking and Traffic Study which was prepared by Stantec in 2022/2023, to assist local government and traffic engineers in determining the appropriate parking demand for new self-storage facilities.

The updated 2022/2023 Parking and Traffic Study indicates that five (5) car parking spaces are required for facilities under 3,000m² MLA. Given that the proposed development has an MLA of 2,921.58m^2, it necessitates the provision of five (5) on-site car parking spaces.

The proposed on-site car parking area provides five (5) on-site car parking spaces (including one accessible parking space with an adjacent shared area), in addition to one (1) SRV truck loading bay and a turning area, on ground level.

Therefore, the proposed on-site parking is adequate for the proposed development use and in accordance with the findings of the SSAA Parking and Traffic Study 2022/2023.

4.4 On-site Parking Layout and Circulation

The layout of the on-site car parking area and manoeuvring arrangements has been designed to enhance vehicular access, through the provision of adequate internal traffic aisle width and turning space.

AS2890.1:2004 Parking facilities Part 1: Off-street car parking requires a minimum parking space width of 2.5 meters and a minimum length of 5.4 meters (User Class 2). The proposed off-street car parking spaces have a minimum width of 2.5 metres and a length of 5.4 meters each, which is adequate.

The accessible car parking space has a width of 2.7 metres, in addition to an adjacent 2.4 metres wide shared area, which is adequate in accordance with AS2890.6:2009 (and the updated AS2890.6:2022).

The loading bay has a clear width of 3.5 metres and a length of 6.5 metres, in addition to unobstructed clearance for loading/unloading purposes, which is adequate for SRV access in accordance with AS2890.2:2018.

Car parking spaces adjacent to walls or obstructions have been made wider than the minimum width, to accommodate full door opening in accordance with Clause 2.4.2(d) of AS2890.1:2004.

Clause 2.4.2 of AS2890.1:2004 requires a minimum aisle width of 5.8 metres for one-way aisles. The proposed internal aisles have a minimum width of 6.1 metres, which is adequate for one-way traffic and for vehicles to manoeuvre into and out of the parking spaces.

A wide turning area is provided towards the rear of the car parking area, to allow vehicles to turn around and exit in a forward direction, if all other car parking spaces are occupied.

A minimum 2.2 metres (for passenger vehicles) and 3.5 metres (for SRV truck) headroom clearance is to be provided from the car park level to the underside of all services conduits and suspended stormwater pipelines, in accordance with Clause 5.3.1 of AS2890.1:2004 and Table 2.1 of AS2890.2:2018, respectively.

The largest size vehicle to access the subject site is a Small Rigid Vehicle (SRV 6.4 metres in length).

All vehicular manoeuvring within the site has been designed and checked using the SRV, B99 and B85 standard design vehicle turning paths from AS2890.1:2004, AS2890.2:2018 and Austroads. Refer to the vehicle swept paths diagrams attached in Appendix ‘B’ of this report.

Therefore, the on-site parking layout, vehicular manoeuvring and circulation arrangements are adequate for the proposed development and in compliance with AS2890.1:2004, AS2890.2:2018 and AS2890.6:2009 (and the updated AS2890.6:2022), where vehicles are to enter and exit the site in a forward direction at all times.

5 ON-STREET PARKING PROVISION

5.1 Existing Parking Controls

The subject site is located in a mixed residential and commercial area, where unrestricted parking is permitted along both sides of Helen Street (near the subject site), including the frontage of the subject site, with the exception of the signposted 'No Stopping' near close intersecting roads, and signposted 'No Parking Vehicles Under 6M Excepted' posted along some sections of the road.

5.2 Impacts of Proposed Development on Parking

The parking demand resulting from the proposed self-storage facility can be accommodated within the proposed adequate and compliant on-site car parking. **Therefore, the proposed development will not have adverse impacts on parking in the surrounding area.**

6 EXTERNAL TRAFFIC IMPACT

6.1 Estimated Future Traffic Generation

The "***Guide to Transport Impact Assessment - 2024***" does not provide a traffic generation rate for self-storage facilities.

The Self Storage Association of Australia (SSAA) commissioned a Parking and Traffic Study which was prepared by Stantec in 2022/2023, to assist local government and traffic engineers in determining the appropriate traffic generation rates for new self-storage facilities.

The Parking and Traffic Study estimates the following trip generation for facilities under 3,000m^2 MLA:

- **6.6 trips per weekday peak hour** and **5.5 trips per weekend peak hour**.
- 63 daily trips per weekday and 47.2 daily trips per weekend.

The proposed development has an MLA of 2,921.58m^2 and therefore is estimated to have a **peak hour** traffic generation of **6.6 vehicle trips** on a weekday and 5.5 vehicle trips on the weekend.

6.2 Projected Intersection Performance (Post Development)

Average Vehicle Delay (AVD) and Level of Service (LOS) – The AVD and LOS provides a measure of the operational performance of an intersection, as indicated in Table 4.2 of the Roads & Maritime Services "*Guide to Traffic Generating Developments - 2002*" (shown below).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Table 4.2: Level of Service Criteria for intersections (RMS Guide)

A **post-development** SIDRA intersection performance modelling analysis was undertaken for the intersections of Helen Street / Virgil Avenue and Hector Street / Munro Street, in the vicinity of the subject site, and it was modelled as the proposed network layout as shown in Figure 5 below.

Refer to the summary of the results of the SIDRA intersection performance analysis (undertaken for pre & post development, including the 10-year future growth) attached in *Appendix 'D'* of this report.

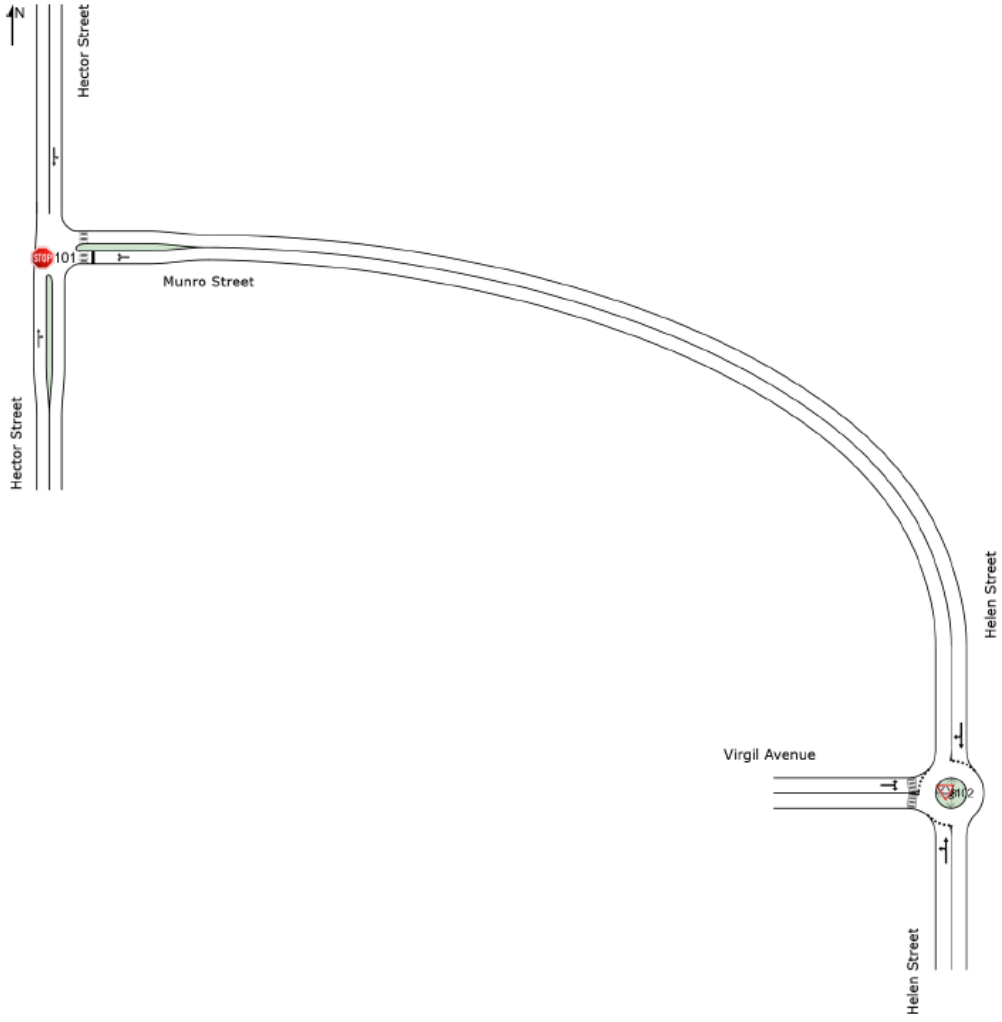


Figure 5: Intersection Network Layout

The following assumptions have been considered and adopted in the SIDRA Network Intersection modelling for the post-development conditions considering that the main access to and from the subject site is through Helen Street:

- Morning and afternoon peak traffic generation from *RMS Guide to Traffic Generating Developments* has been used, as outlined in Section 6.1 of this report.
- AM & PM Traffic generated by the development was equally adopted for inbound and outbound traffic.
- The distribution of traffic generated from the development at the **modelled intersections** has been assigned based on existing traffic patterns at the approaching and departing legs of these intersections, as well as observed driver behaviour.
- Pre-development network analysis is modelled for the base year (2024) and 10 years of future growth (2034) in surrounding traffic. The annual traffic growth rate for the 10-year future period was based on the SIDRA intersection analysis software, which allows for future analysis of surrounding traffic by applying a uniform growth rate of 2% for each year over the 10-year period.
- Post-development network analysis is modelled for when the self-storage facility development is in operation and after 10 years of future growth in surrounding traffic.

These assumptions will result in the development trip distribution shown in Figure 6 for relevant traffic movement and modelled intersections.

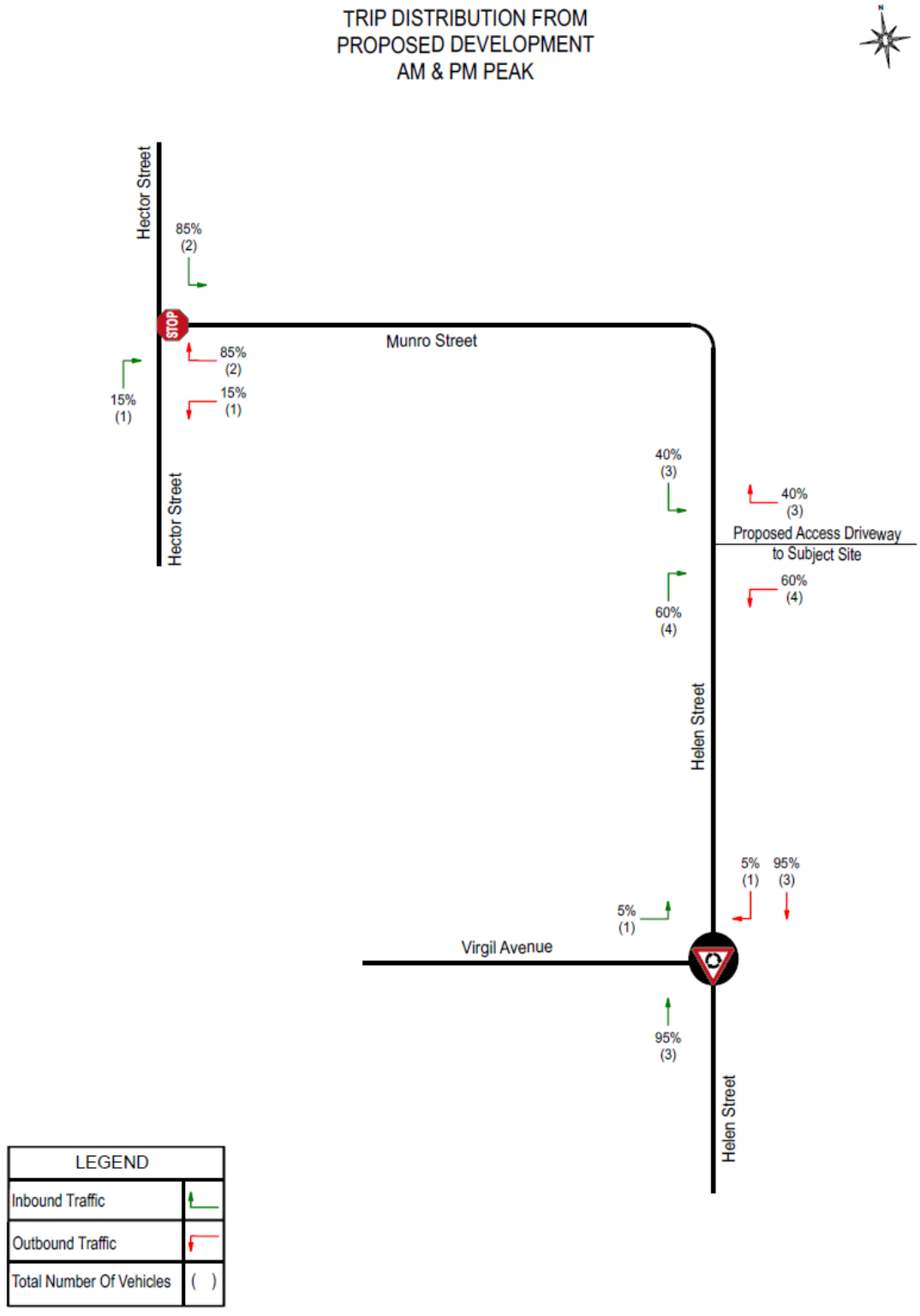


Figure 6: Development Traffic Distribution on Surrounding Road Network – **AM & PM Peak**

The outcome of the SIDRA modelling

A summary of the results of the SIDRA intersection performance analysis has been provided in Tables 3 to 6 below, as well as the SIDRA Movement Summary Tables attached in *Appendix 'D'* of this report.

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2024 – Pre-Development	A	6.4	0.299
Base Year 2024 – Post Development	A	6.4	0.304
Future Year 2034 – Pre-Development	A	6.7	0.375
Future Year 2034 – Post Development	A	6.7	0.380

Table 3: Network SIDRA Modelling – Helen St / Virgil Ave – 8.00am – 9.00am

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2024 – Pre-Development	A	6.6	0.366
Base Year 2024 – Post Development	A	6.6	0.366
Future Year 2034 – Pre-Development	A	7.0	0.461
Future Year 2034 – Post Development	A	7.0	0.461

Table 4: Network SIDRA Modelling – Helen St / Virgil Ave – 3.00pm – 4.00pm

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2024 – Pre-Development	A	2.8	0.366
Base Year 2024 – Post Development	A	2.8	0.374
Future Year 2034 – Pre-Development	A	4.0	0.619
Future Year 2034 – Post Development	A	4.1	0.634

Table 5: Network SIDRA Modelling – Hector St / Munro St – 8.00am – 9.00am

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2024 – Pre-Development	A	4.2	0.640
Base Year 2024 – Post Development	A	4.3	0.651
Future Year 2034 – Pre-Development	A*	31.3	1.204
Future Year 2034 – Post Development	A*	34.2	1.226

Table 6: Network SIDRA Modelling – Hector St / Munro St – 3.00pm – 4.00pm

*The overall average LOS is at 'A', with the exception of the east approach leg of Munro Street, which is at LOS 'F'.

The SIDRA analysis results indicated that the proposed development will have minimal impact on the operational performance of key intersections in the study area, both in the base year and the 10-year future scenario.

Base Year findings:

- The proposed self-storage facility (post-development) will not alter the current LOS (pre-development) at the subject intersection of Helen Street / Virgil Avenue and Hector Street / Munro Street as outlined earlier in Section 3.3 of this report, and will continue to operate at its current level of service during weekday AM and PM peak periods.

Future Year findings:

- In the 10-year scenario without development, the subject intersection of Helen Street / Virgil Avenue is predicted to continue to operate at an overall LOS 'A', during the AM and PM peak periods. The overall performance of Hector Street / Munro Street intersection is anticipated to operate at its current LOS during the AM peak period, however it is anticipated that the east approach leg of Munro Street will deteriorate to LOS 'F' during the PM peak period (regardless of the subject proposed development being in operation or not). It would be recommended to provide future traffic measures by Council to improve the overall performance of this intersection
- Notably, the proposed development is not expected to alter these future LOS outcomes, with intersections maintaining the same levels of service as projected in the pre-development scenario.

Therefore, the estimated traffic generation from the proposed development will have a low impact on current traffic flows on Helen Street and surrounding streets, ensuring that the operational performance of existing key intersections remains at acceptable levels without adverse effects.

7 CONCLUSION

It can be concluded from the traffic and parking impact assessment that the proposed self-storage facility development at **88 Helen Street, Sefton**, will not have adverse impacts on existing traffic or parking conditions and is worthy of Council's support in its present form.

- The existing traffic flows on Helen Street, Virgil Avenue, Munro Street and Hector Street are appropriate for three local roads and one regional road, respectively, in a mixed residential and commercial area, where traffic is well controlled without major queuing or delays at the subject site in peak hours, with spare capacity.

- The estimated traffic generation from the proposed development is of low impact on existing flows on Helen Street and surrounding streets and will not have adverse impacts on the current operational performance of the subject existing intersections, which will continue to operate at the same levels of service. The traffic generated by the proposed self-storage facility can be readily accommodated within the existing road network.

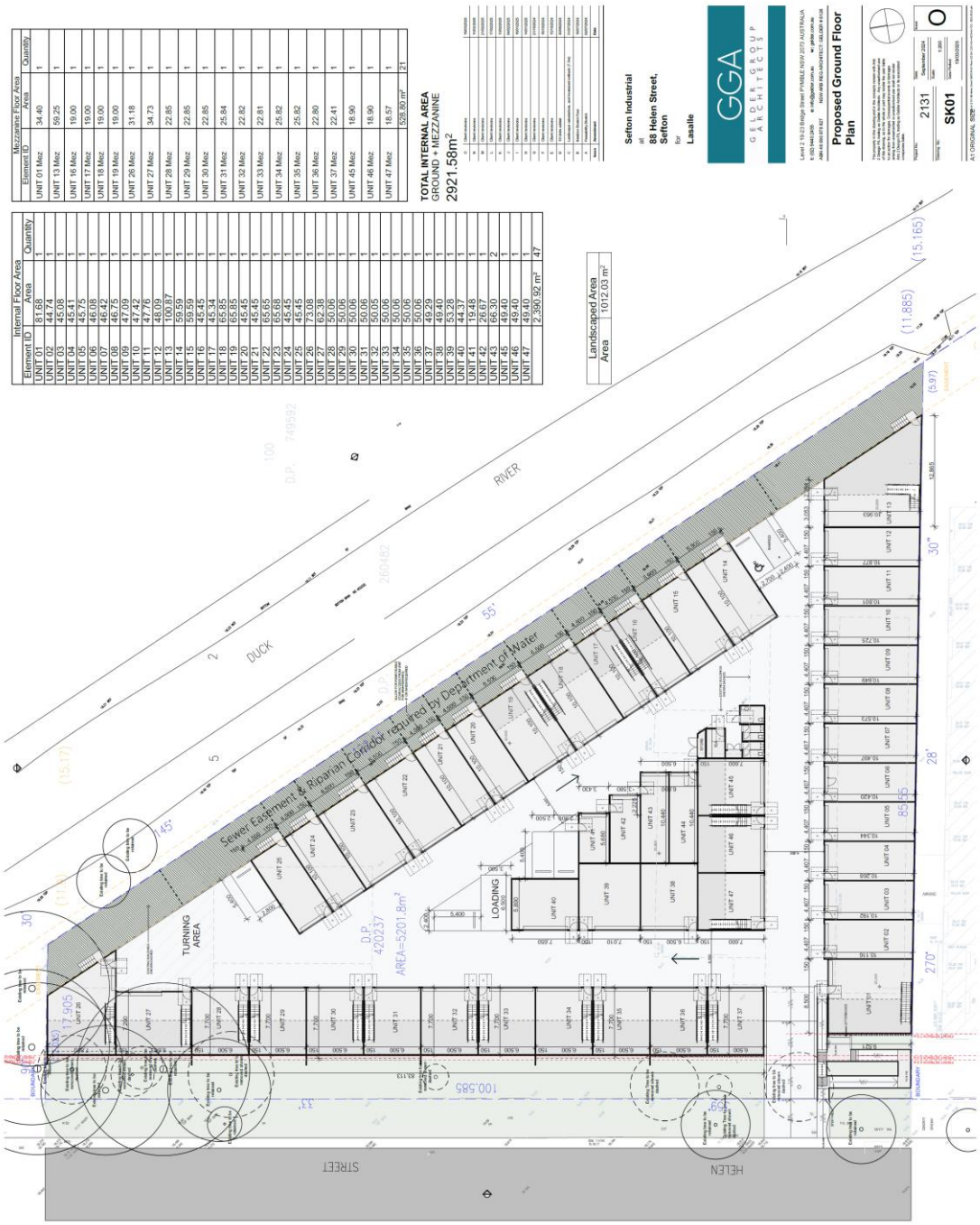
- The parking demand for the proposed self-storage facility can be accommodated within the proposed adequate on-site parking facilities, which is in compliance with the findings of the SSAA Parking and Traffic Study 2022/2023.

- The on-site vehicular access, car parking layout and vehicular circulation is adequate for the proposed development and in accordance with AS2890.1:2004, AS2890.2:2018 and AS2890.6:2009 (and the updated AS2890.6:2022), where all vehicles are to enter and exit the site in a forward direction.

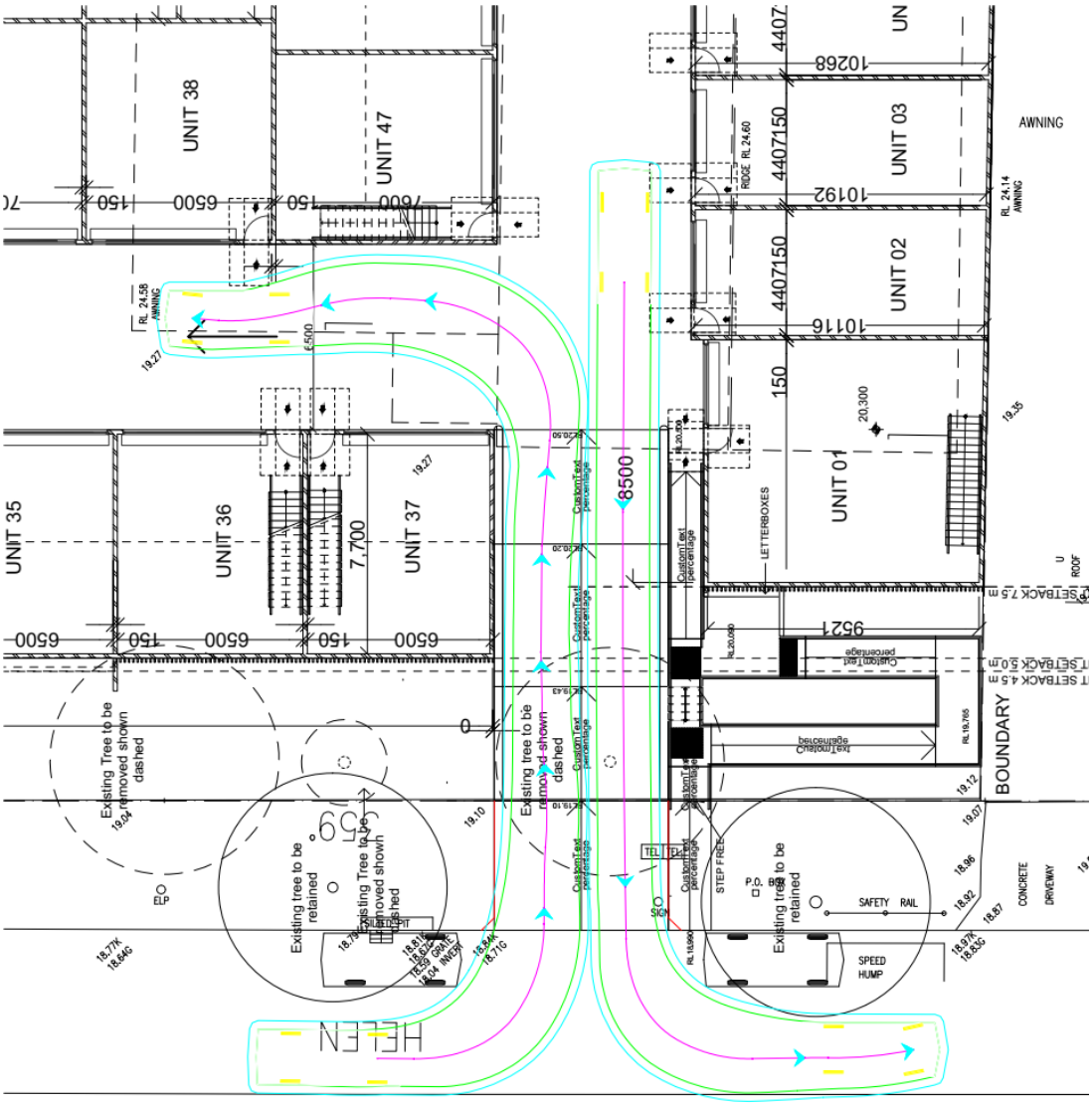
- The subject site has good access to existing public transport services.

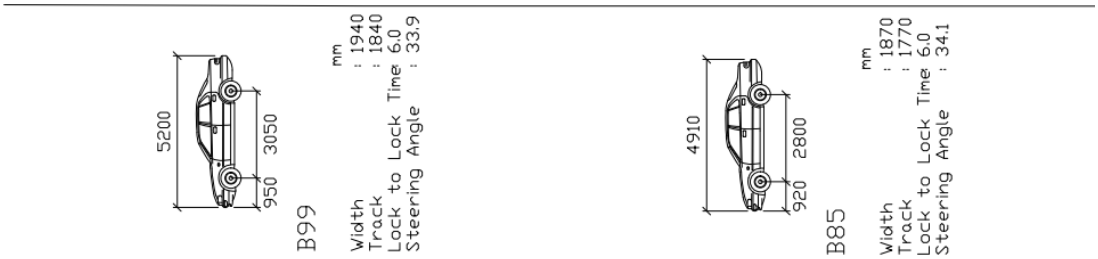
- The proposed development will not have adverse impacts on parking in the surrounding area.

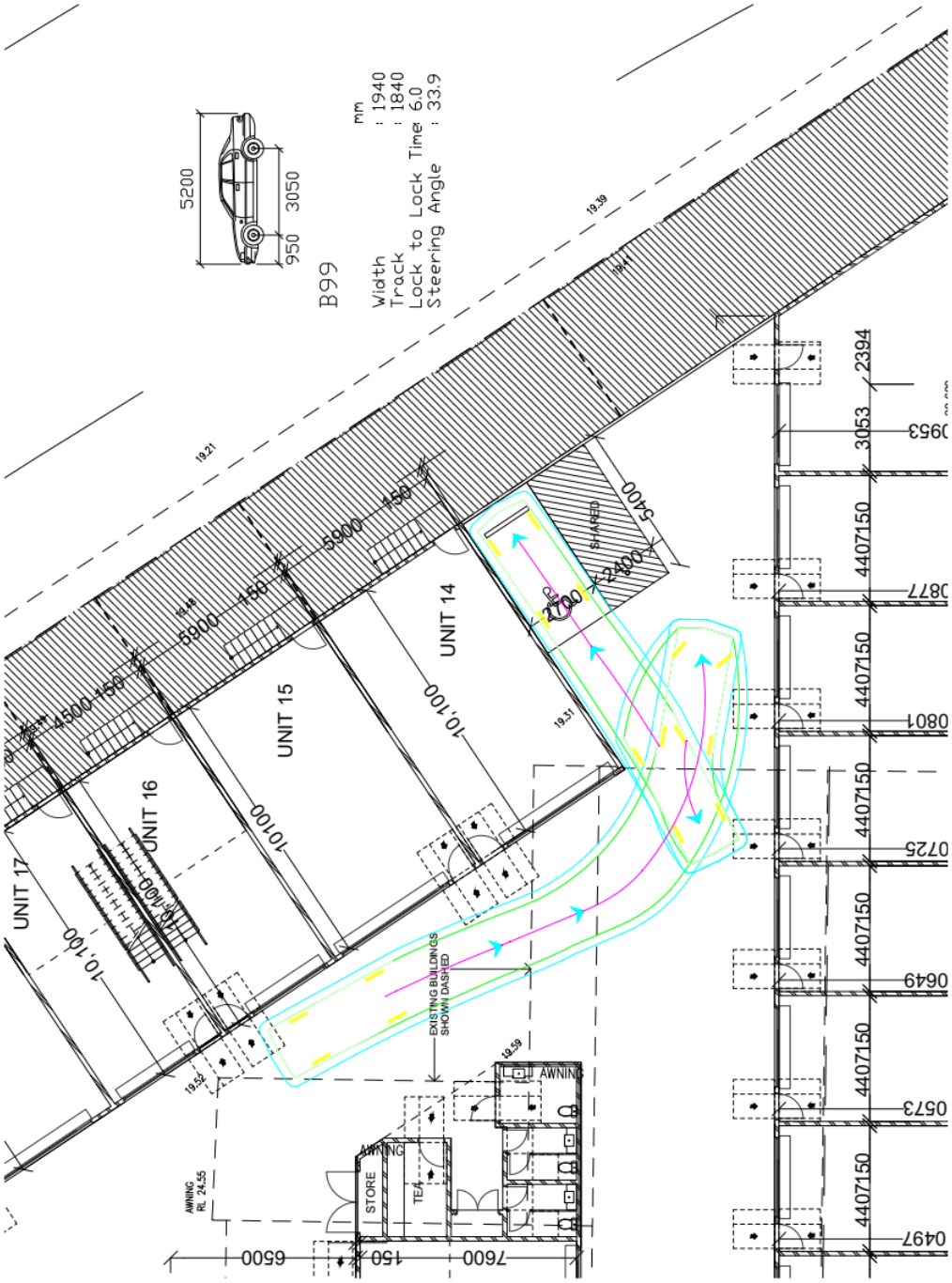
Appendix 'A' – Proposed Development Plans

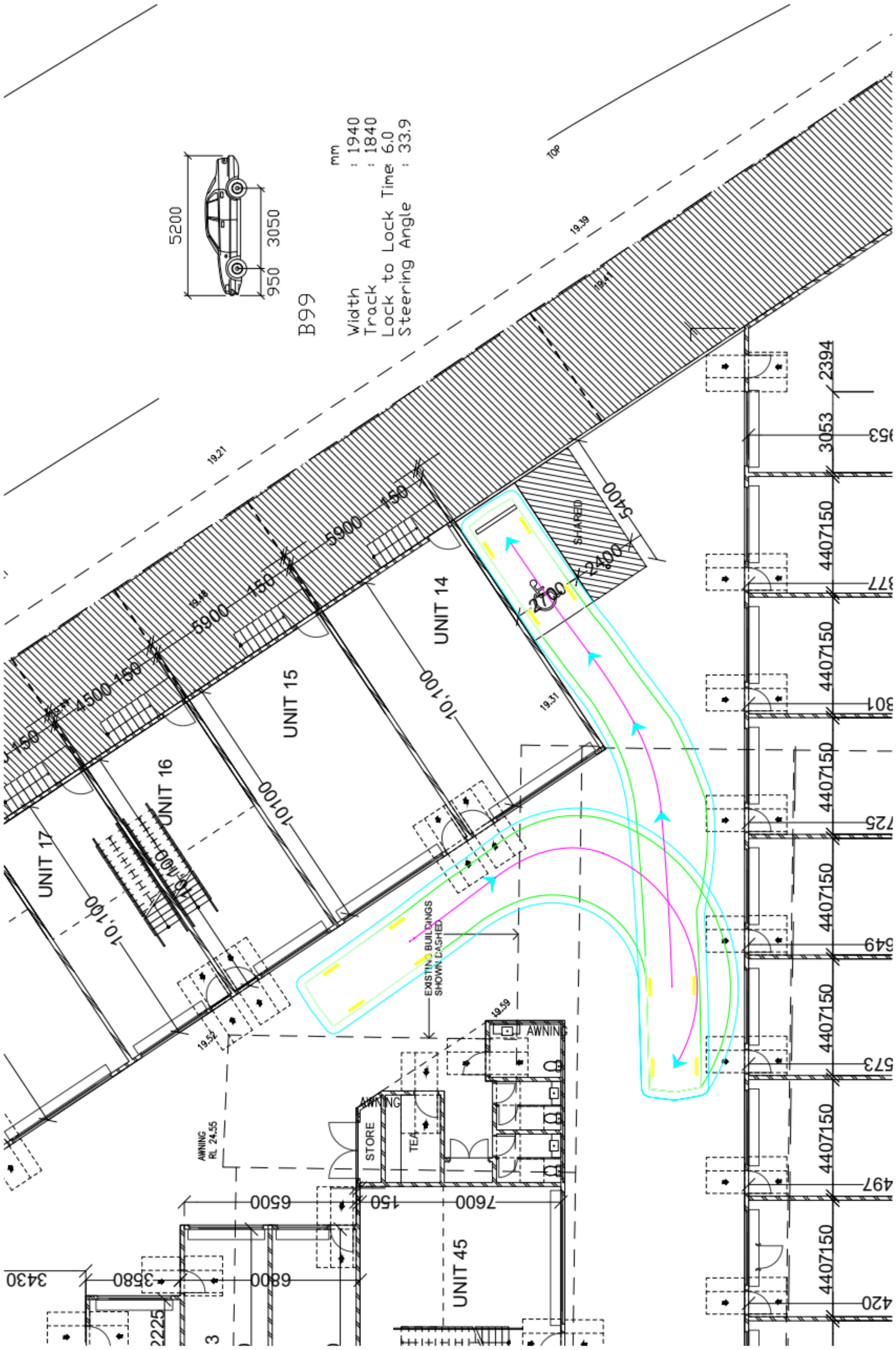

Mezzanine Floor Area
Element ID | Area | Quantity
UNIT 01 Mez | 34.40 | 1
UNIT 13 Mez | 59.25 | 1
UNIT 16 Mez | 19.00 | 1
UNIT 17 Mez | 19.00 | 1
UNIT 18 Mez | 19.00 | 1
UNIT 19 Mez | 19.00 | 1
UNIT 26 Mez | 31.18 | 1
UNIT 27 Mez | 34.73 | 1
UNIT 28 Mez | 22.85 | 1
UNIT 29 Mez | 22.85 | 1
UNIT 30 Mez | 22.85 | 1
UNIT 31 Mez | 25.84 | 1
UNIT 32 Mez | 22.82 | 1
UNIT 33 Mez | 22.81 | 1
UNIT 34 Mez | 25.82 | 1
UNIT 35 Mez | 25.82 | 1
UNIT 36 Mez | 22.80 | 1
UNIT 37 Mez | 22.41 | 1
UNIT 45 Mez | 18.90 | 1
UNIT 46 Mez | 18.90 | 1
UNIT 47 Mez | 18.57 | 1
528.80 m² | 21
Internal Floor Area
Element ID | Area | Quantity
UNIT 01 | 81.68 | 1
UNIT 02 | 44.74 | 1
UNIT 03 | 45.08 | 1
UNIT 04 | 45.41 | 1
UNIT 05 | 45.75 | 1
UNIT 06 | 46.08 | 1
UNIT 07 | 46.42 | 1
UNIT 08 | 46.75 | 1
UNIT 09 | 47.09 | 1
UNIT 10 | 47.42 | 1
UNIT 11 | 47.76 | 1
UNIT 12 | 48.09 | 1
UNIT 13 | 100.87 | 1
UNIT 14 | 59.59 | 1
UNIT 15 | 59.59 | 1
UNIT 16 | 45.45 | 1
UNIT 17 | 45.34 | 1
UNIT 18 | 65.85 | 1
UNIT 19 | 65.45 | 1
UNIT 20 | 45.45 | 1
UNIT 21 | 45.45 | 1
UNIT 22 | 65.65 | 1
UNIT 23 | 65.68 | 1
UNIT 24 | 45.45 | 1
UNIT 25 | 45.45 | 1
UNIT 26 | 63.08 | 1
UNIT 27 | 72.38 | 1
UNIT 28 | 50.06 | 1
UNIT 29 | 50.06 | 1
UNIT 30 | 50.06 | 1
UNIT 31 | 50.06 | 1
UNIT 32 | 50.05 | 1
UNIT 33 | 50.06 | 1
UNIT 34 | 50.06 | 1
UNIT 35 | 50.06 | 1
UNIT 36 | 50.06 | 1
UNIT 37 | 49.29 | 1
UNIT 38 | 49.40 | 1
UNIT 39 | 53.28 | 1
UNIT 40 | 44.37 | 1
UNIT 41 | 44.44 | 1
UNIT 42 | 26.87 | 1
UNIT 43 | 66.30 | 2
UNIT 45 | 49.40 | 1
UNIT 46 | 49.40 | 1
UNIT 47 | 49.40 | 1
2,390.92 m² | 47
Landscaped Area
Area | 1012.03 m²
TOTAL INTERNAL AREA
GROUND + MEZZANINE
2921.58m²
Sefton Industrial
at
88 Helen Street,
Sefton
for
Lasalle
GGA
GARCHITECTUS GROUP
Proposed Ground Floor Plan
2131
SK01
RIVER
DUCK
Sewer Easement & Riparian Corridor required by Department of Water
TURNING AREA
LOADING
AREA=5201.8m²
D.P. 420237
STREET
HELEN

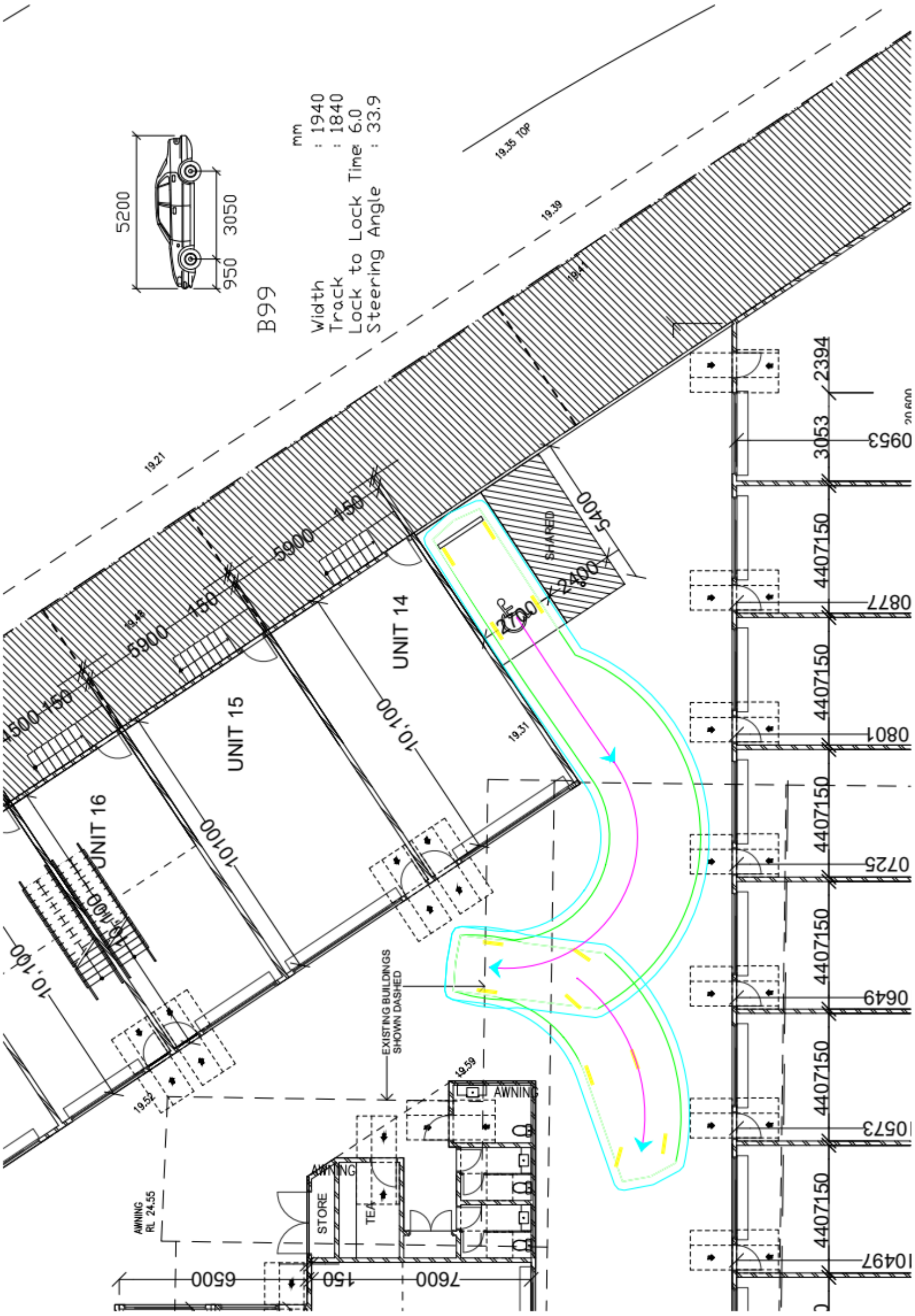
Appendix 'B' – Vehicle Swept Paths

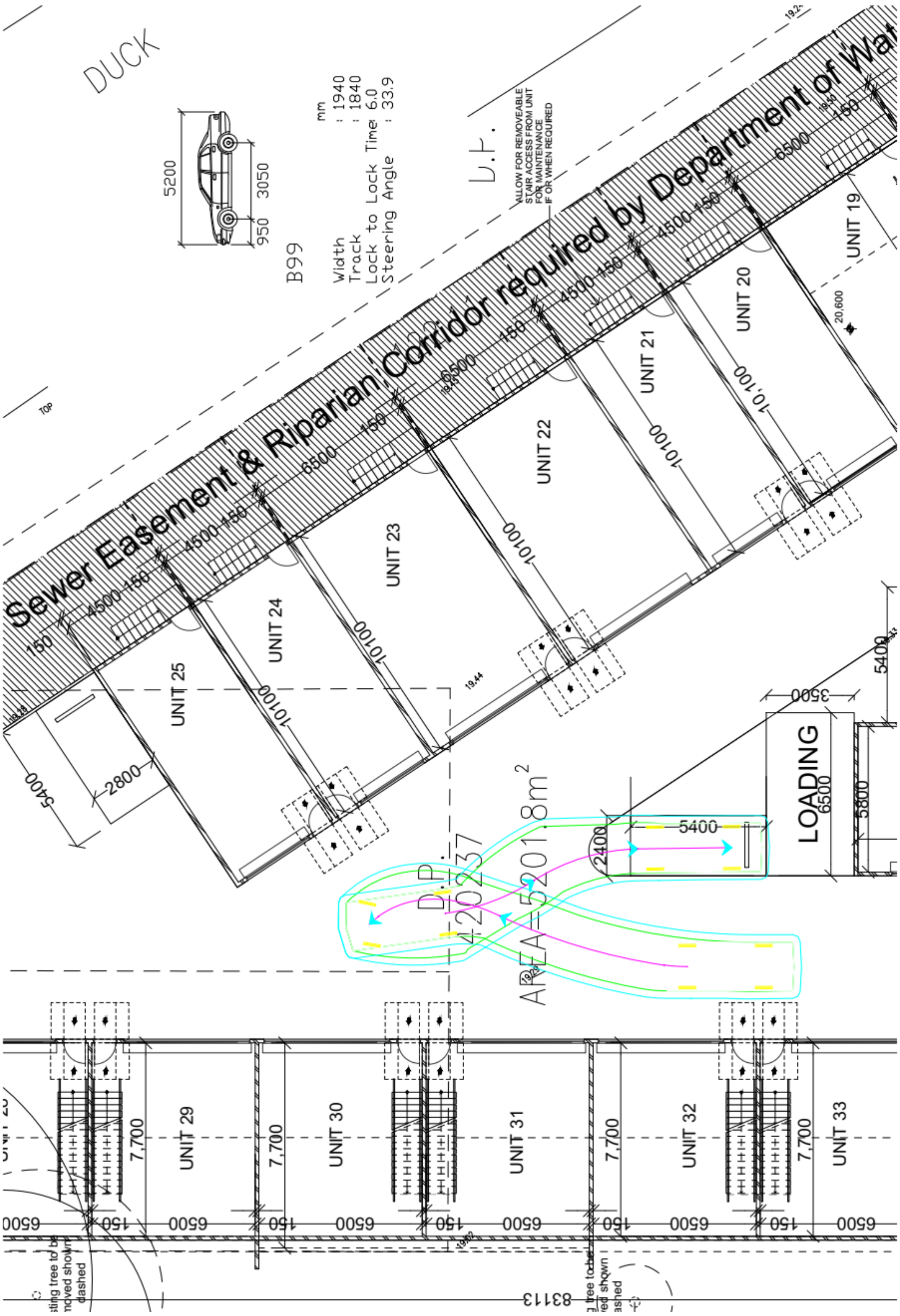

UNIT 38
UNIT 47
UNIT 35
UNIT 36
UNIT 37
UNIT 03
UNIT 02
UNIT 01
AWNING
BOUNDARY
LETTERBOXES
SAFETY RAIL
SPEED HUMP
CONCRETE DRIVEWAY
Existing Tree to be removed shown dashed
Existing tree to be retained
HELEN

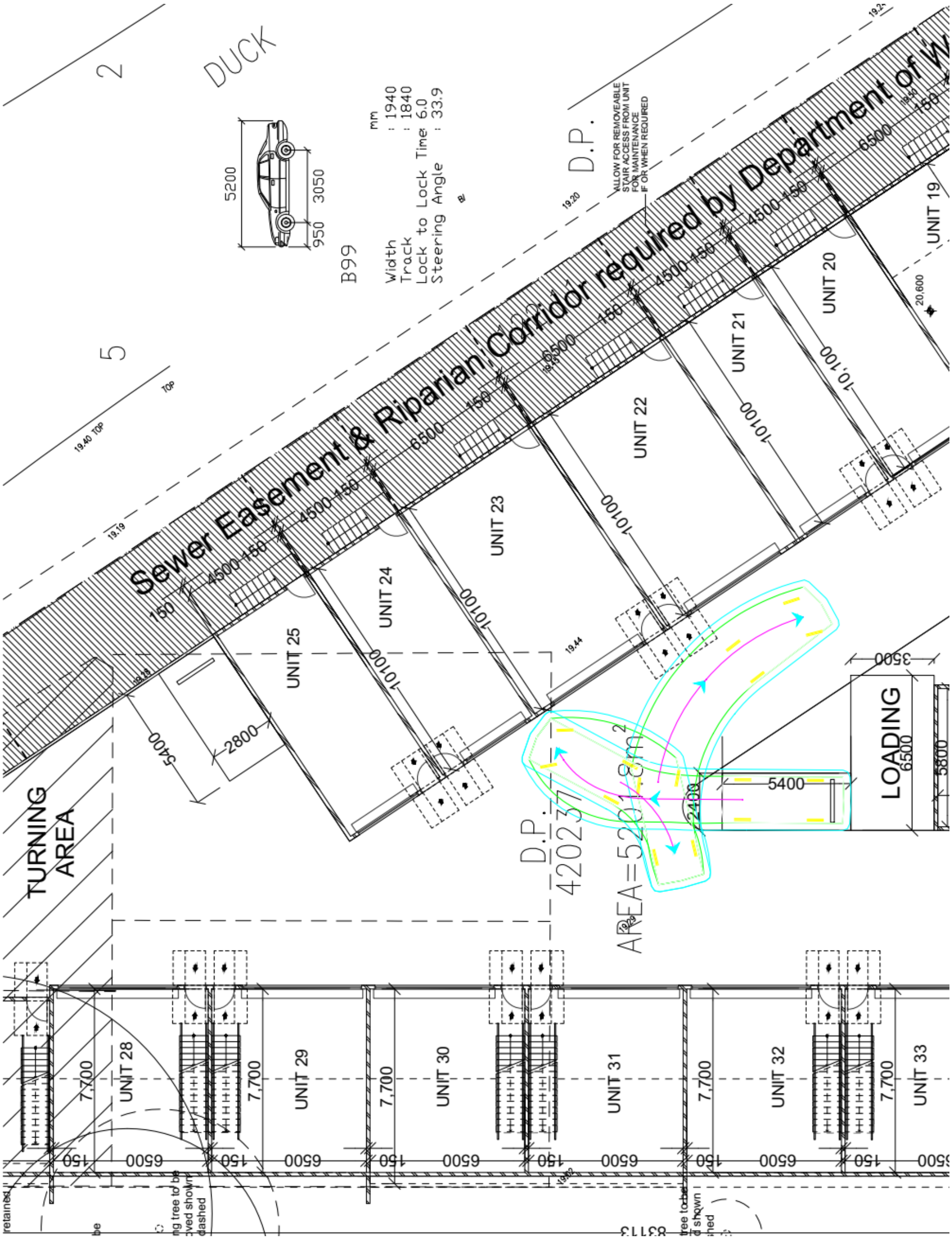

5200
950
3050
B99
mm
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
4910
920
2800
B85
mm
Width : 1870
Track : 1770
Lock to Lock Time 6.0
Steering Angle : 34.1

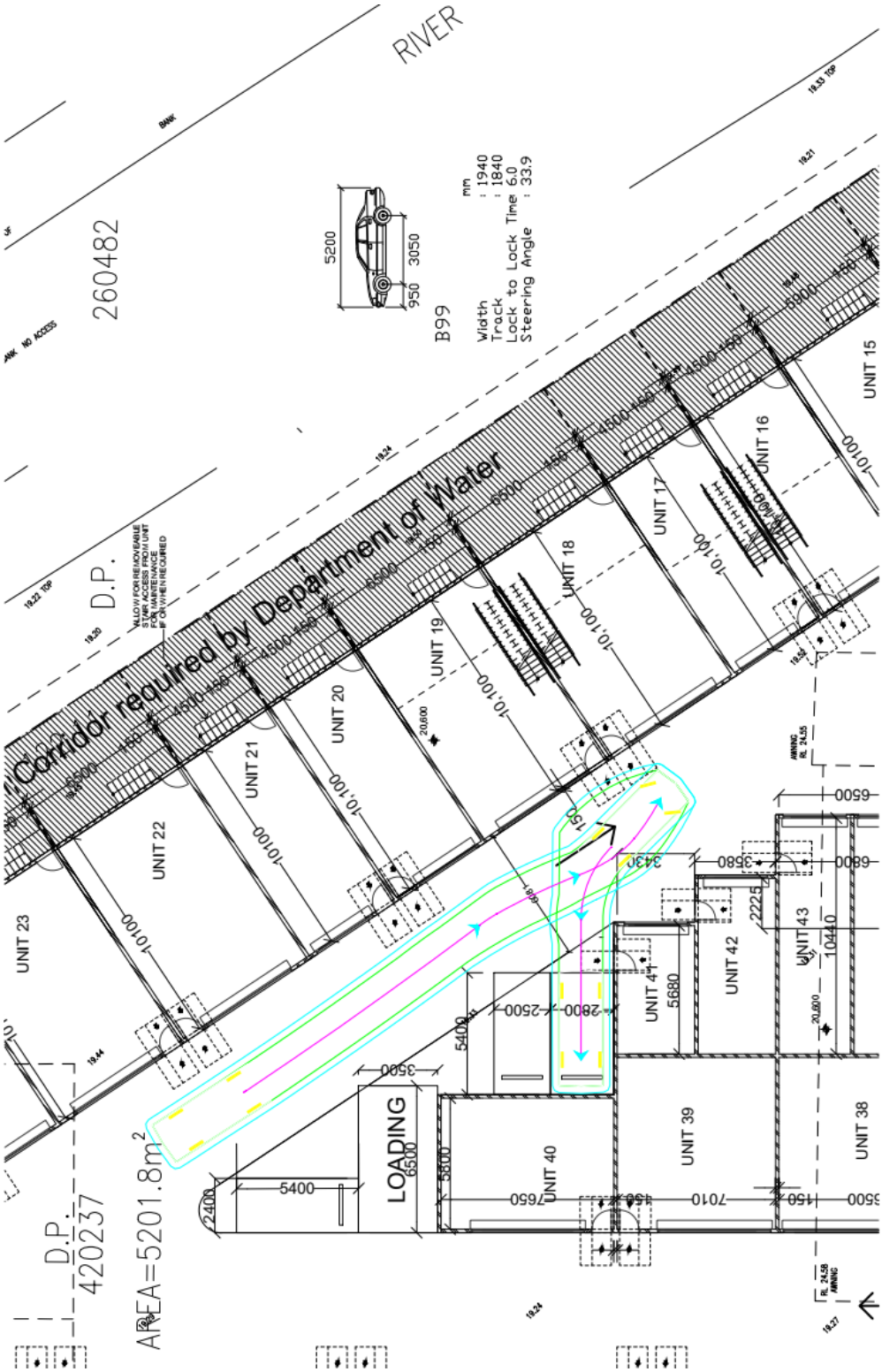

B99
mm
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
5200
3050
950
UNIT 14
UNIT 15
UNIT 16
UNIT 17
SHARED
5400
2400
2700
5900
4500
10,100
EXISTING BUILDINGS SHOWN DASHED
AWNING
STORE
TEA
AWNING RL 24.55
6500
150
7600
2394
3053
4407150
0877
0801
0725
0649
0573
0497

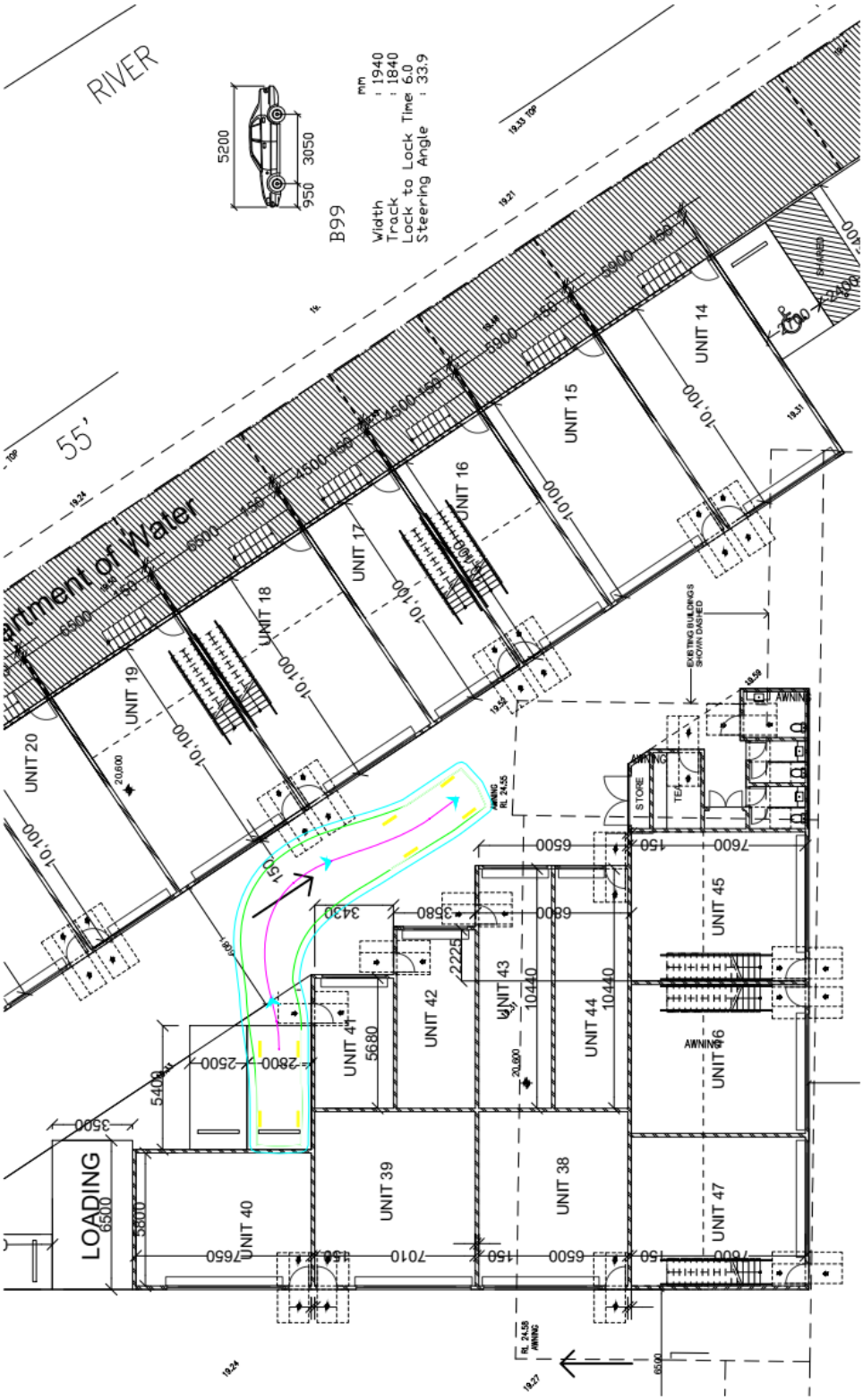

B99
5200
3050
950
mm
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
UNIT 14
UNIT 15
UNIT 16
UNIT 17
UNIT 45
SHARED
EXISTING BUILDINGS SHOWN DASHED
AWNING
STORE
TEA
AWNING RL 24.55
5400
2400
2700
10,100
10100
5900
4500
150
6500
7600
6800
3580
3430
2225
2394
3053
4407150

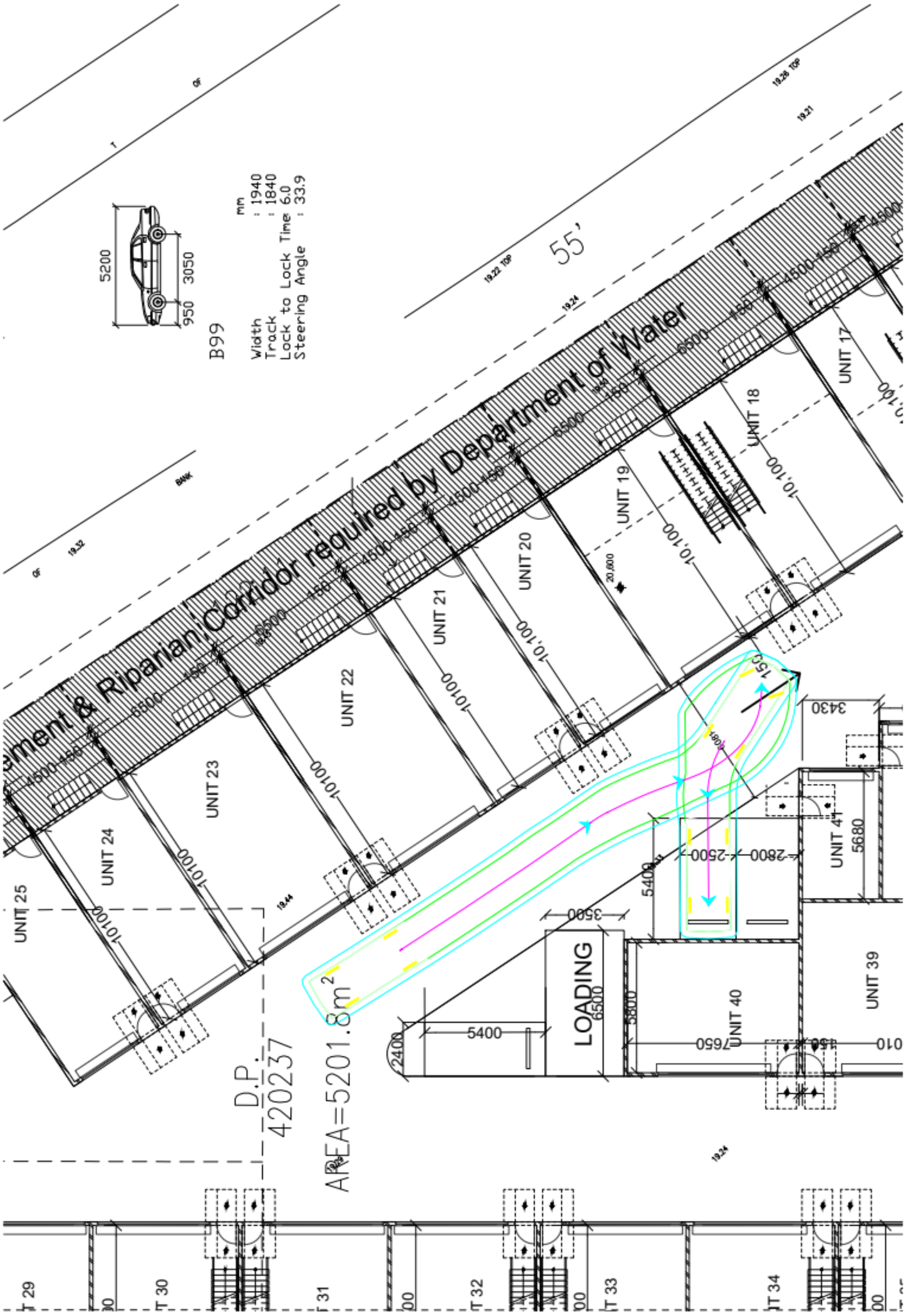

B99
Width : 1940
Track : 1840
Lock to Lock Time : 6.0
Steering Angle : 33.9
UNIT 14
UNIT 15
UNIT 16
SHARED
EXISTING BUILDINGS SHOWN DASHED
AWNING
STORE
TEA

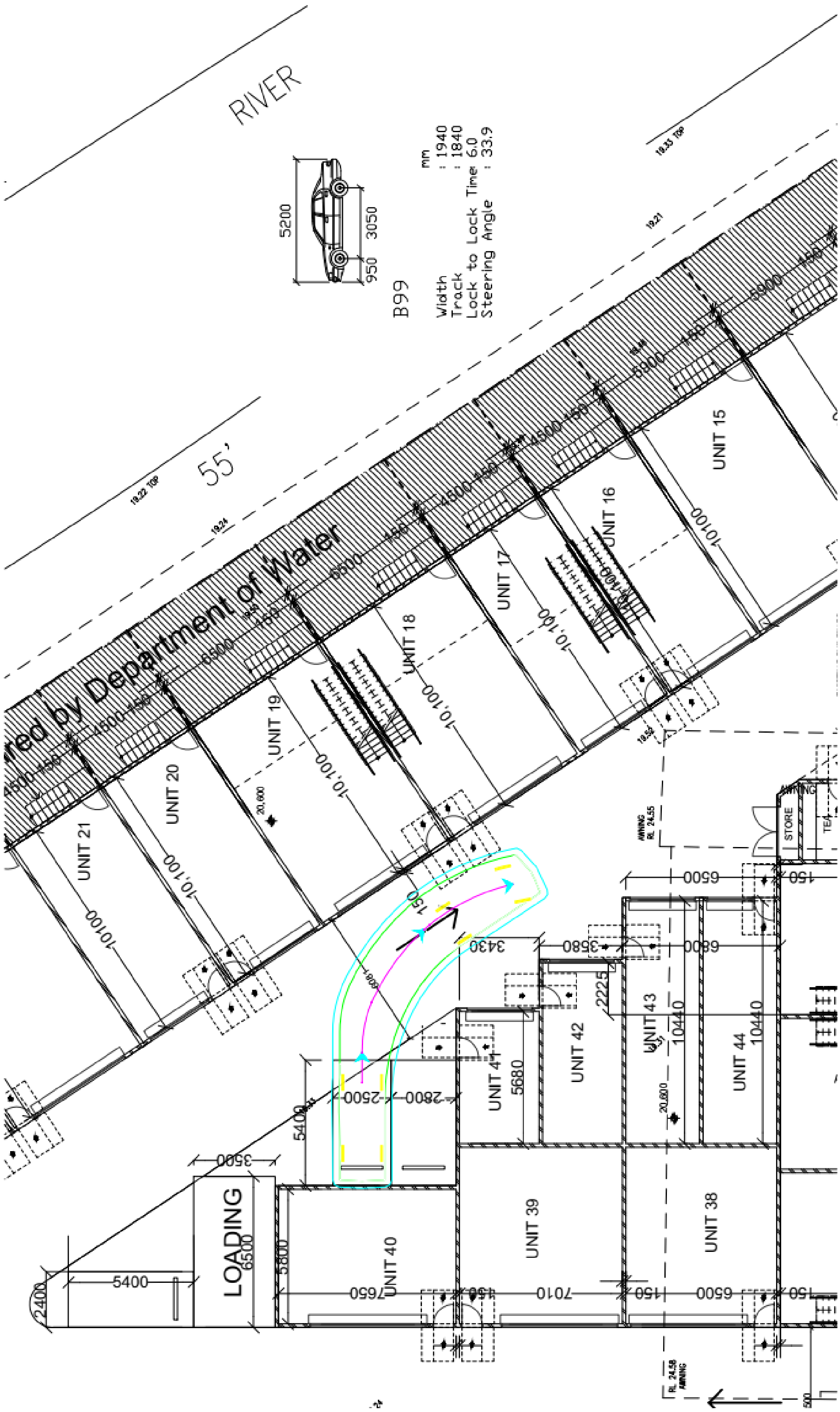

DUCK
B99
mm
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
5200
950
3050
ALLOW FOR REMOVEABLE STAIR ACCESS FROM UNIT FOR MAINTENANCE IF OR WHEN REQUIRED
Sewer Easement & Riparian Corridor required by Department of
UNIT 19
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 24
UNIT 25
UNIT 29
UNIT 30
UNIT 31
UNIT 32
UNIT 33
LOADING
6500
5400
3500
2400
D.P. 420237
AREA=5201.8m²

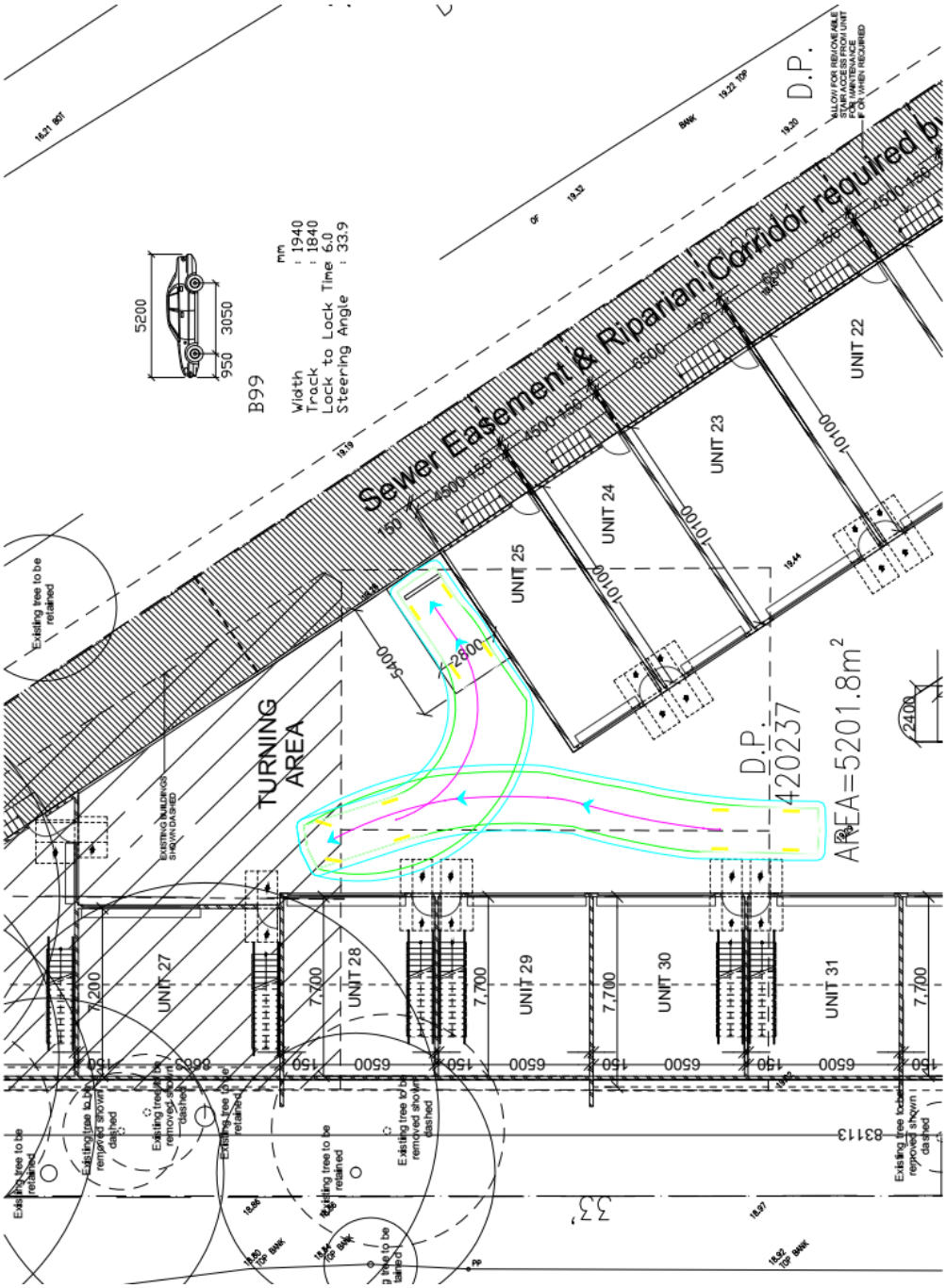

Sewer Easement & Riparian Corridor required by Department of W
B99
Width : 1940
Track : 1840
Lock to Lock Time : 6.0
Steering Angle : 33.9
5200
3050
950
DUCK
ALLOW FOR REMOVEABLE STAIR ACCESS FROM UNIT FOR MAINTENANCE IF OR WHEN REQUIRED
UNIT 19
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 24
UNIT 25
UNIT 28
UNIT 29
UNIT 30
UNIT 31
UNIT 32
UNIT 33
TURNING AREA
LOADING
5400
2400
3500
2800
AREA=5201.8m²
D.P. 420237
7,700
6500
150
10100

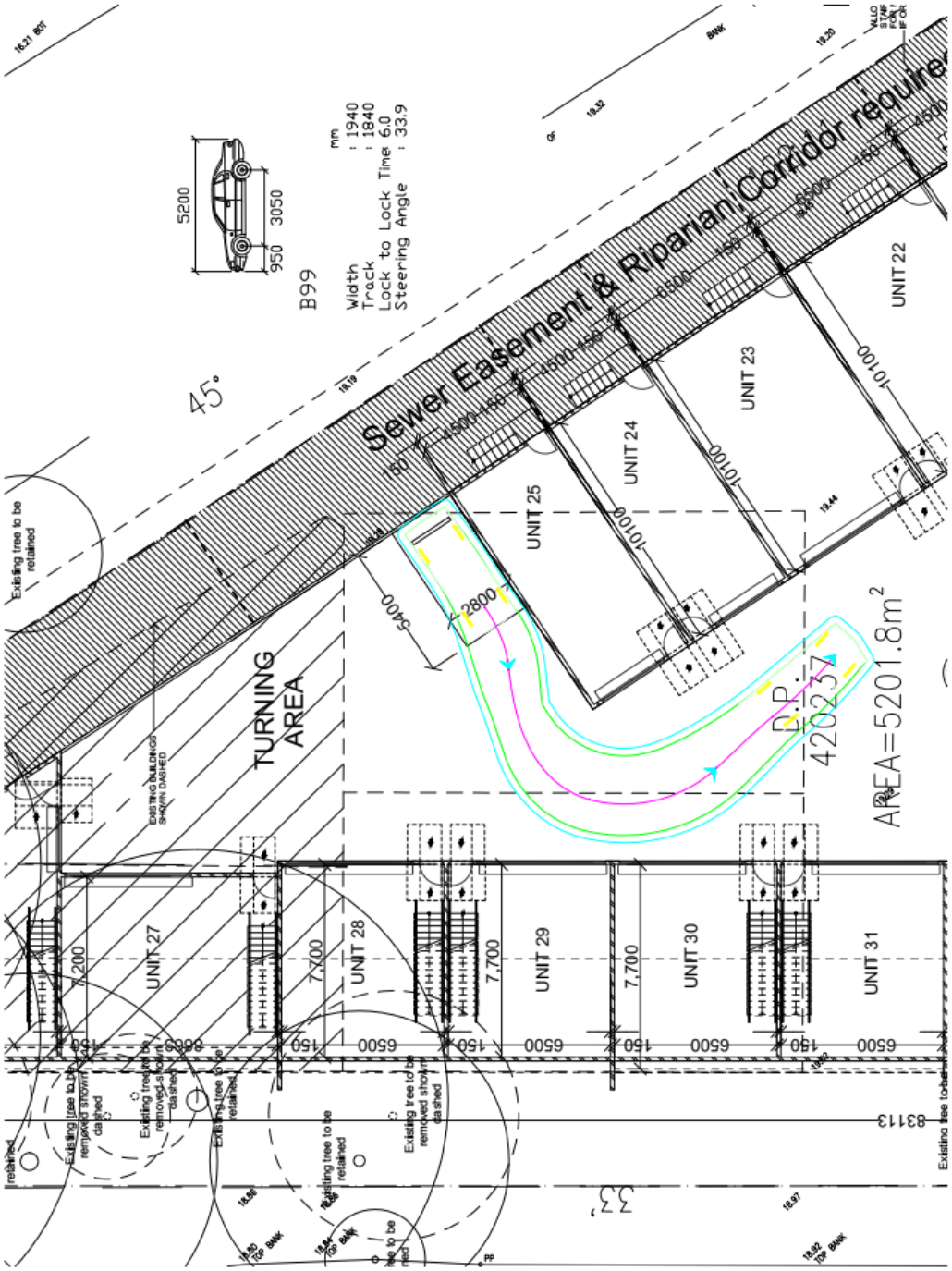

RIVER
BANK
260482
D.P.
Corridor required by Department of Water
B99
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
UNIT 15
UNIT 16
UNIT 17
UNIT 18
UNIT 19
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 38
UNIT 39
UNIT 40
UNIT 41
UNIT 42
UNIT 43
LOADING
AREA=5201.8m²
D.P. 420237

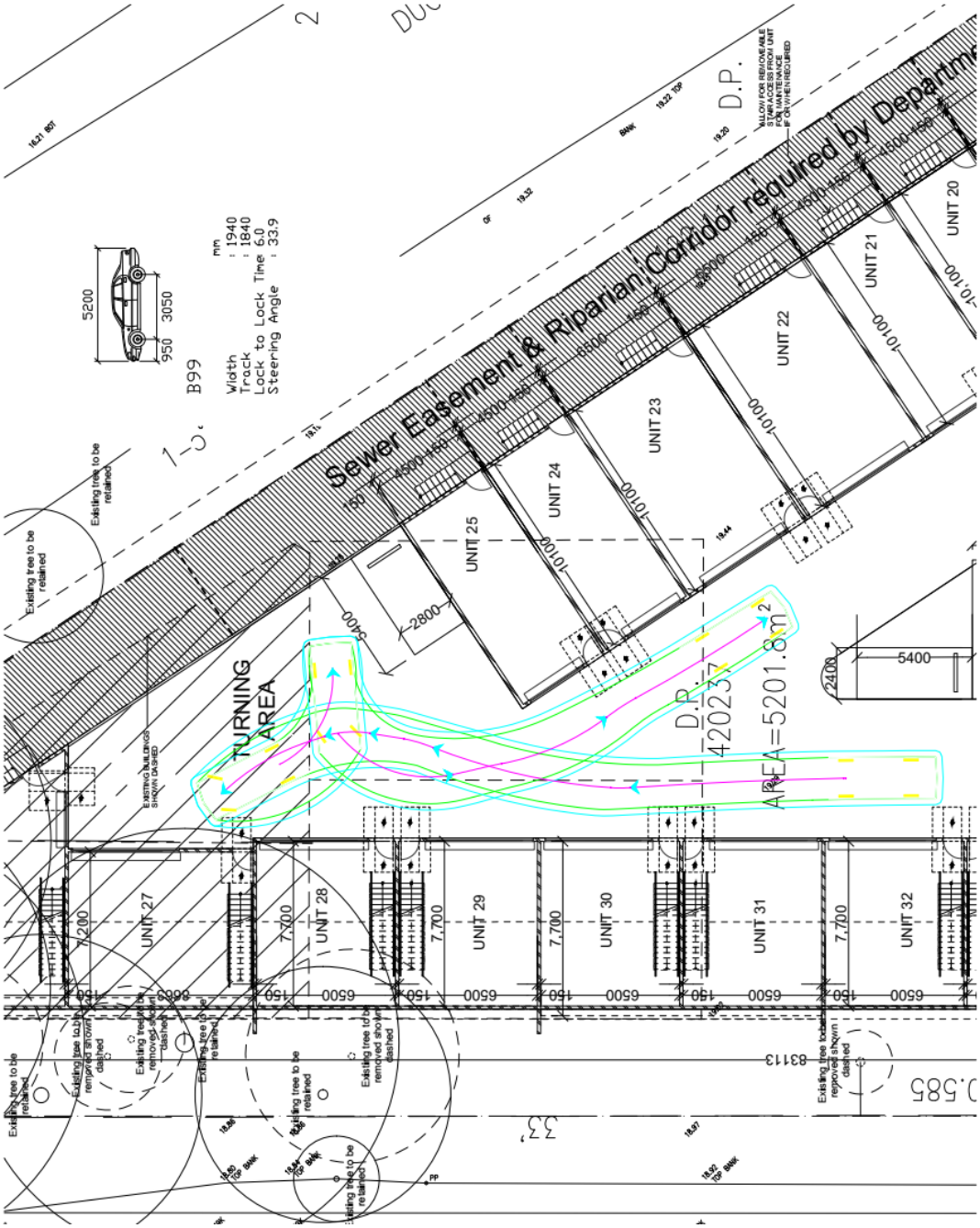

RIVER
55'
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
B99
5200
3050
950
UNIT 14
UNIT 15
UNIT 16
UNIT 17
UNIT 18
UNIT 19
UNIT 20
UNIT 45
UNIT 43
UNIT 42
UNIT 44
UNIT 46
UNIT 41
UNIT 40
UNIT 39
UNIT 38
UNIT 47
LOADING
STORE
TEA
AWNING
EXISTING BUILDINGS SHOWN DASHED

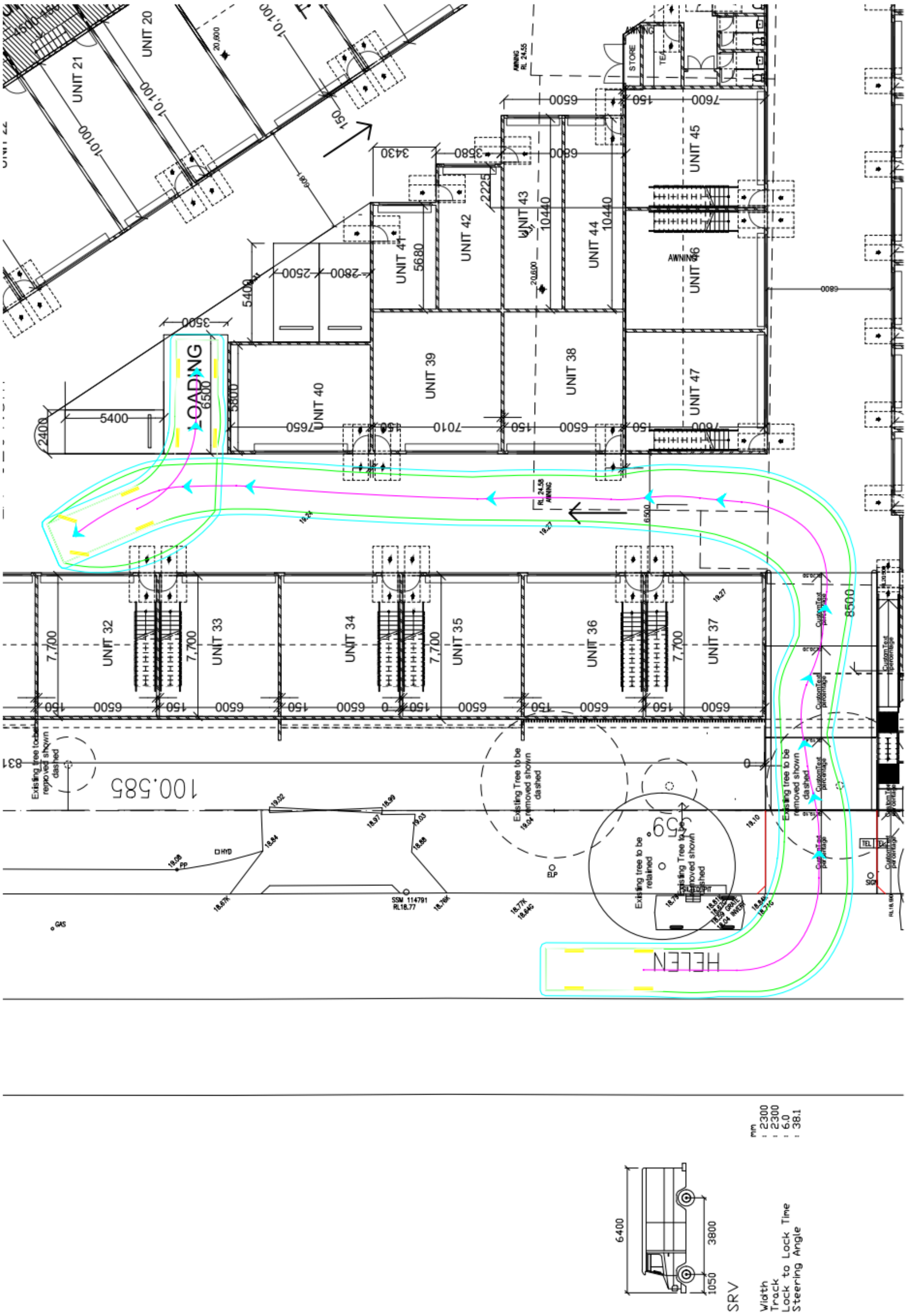

B99
mm
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
5200
950
3050
55'
Riparian Corridor required by Department of Water
UNIT 17
UNIT 18
UNIT 19
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 24
UNIT 25
UNIT 39
UNIT 40
UNIT 41
LOADING
D.P. 420237
AREA=5201.8m²

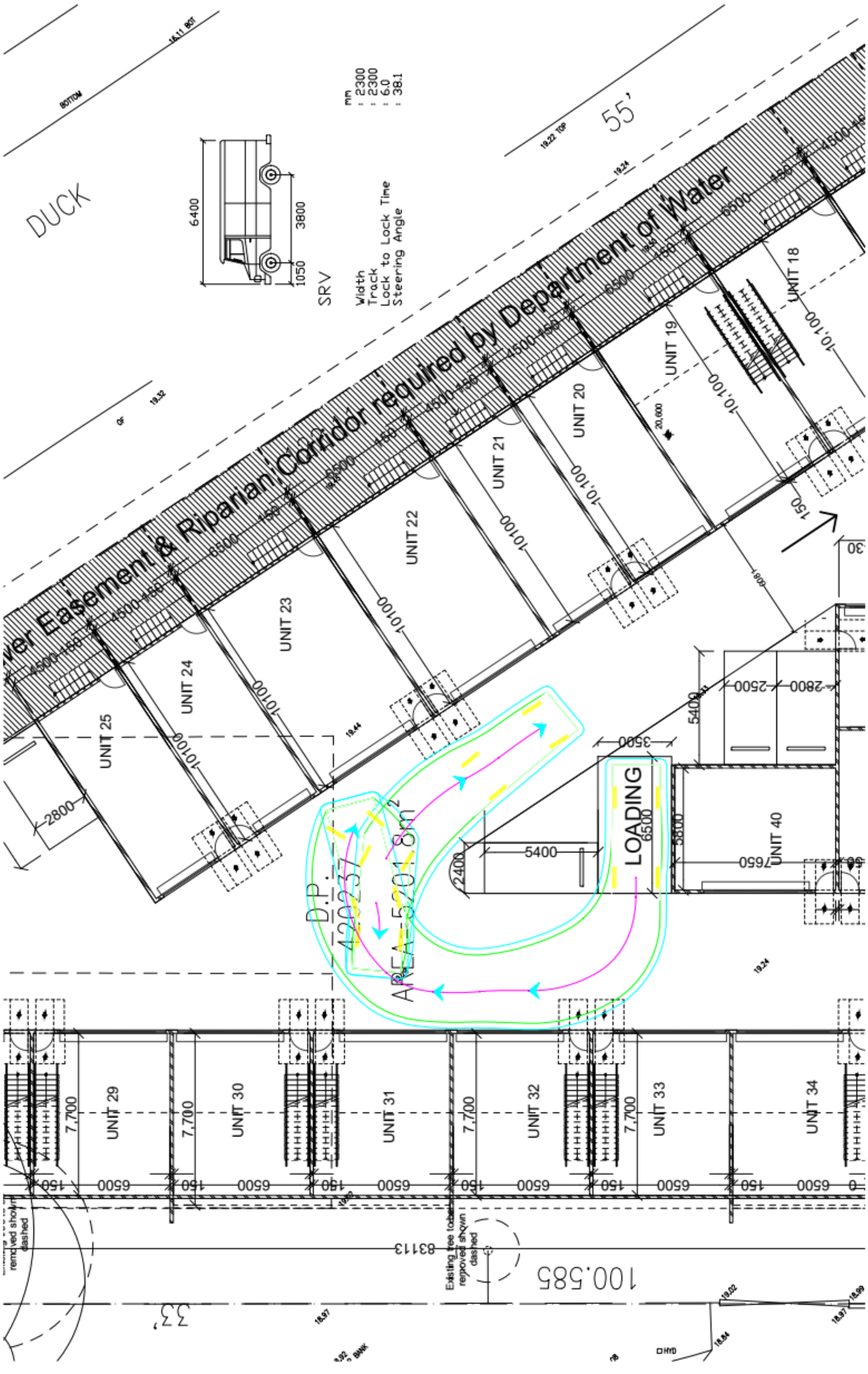

RIVER
55'
B99
5200
3050
950
mm
Width : 1940
Track : 1840
Lock to Lock Time : 6.0
Steering Angle : 33.9
UNIT 15
UNIT 16
UNIT 17
UNIT 18
UNIT 19
UNIT 20
UNIT 21
UNIT 38
UNIT 39
UNIT 40
UNIT 41
UNIT 42
UNIT 43
UNIT 44
STORE
LOADING
6500
5400
2400
3500
2500
2800
5680
10440
3430
3580
6800
2225
7650
7010
10,100
10100

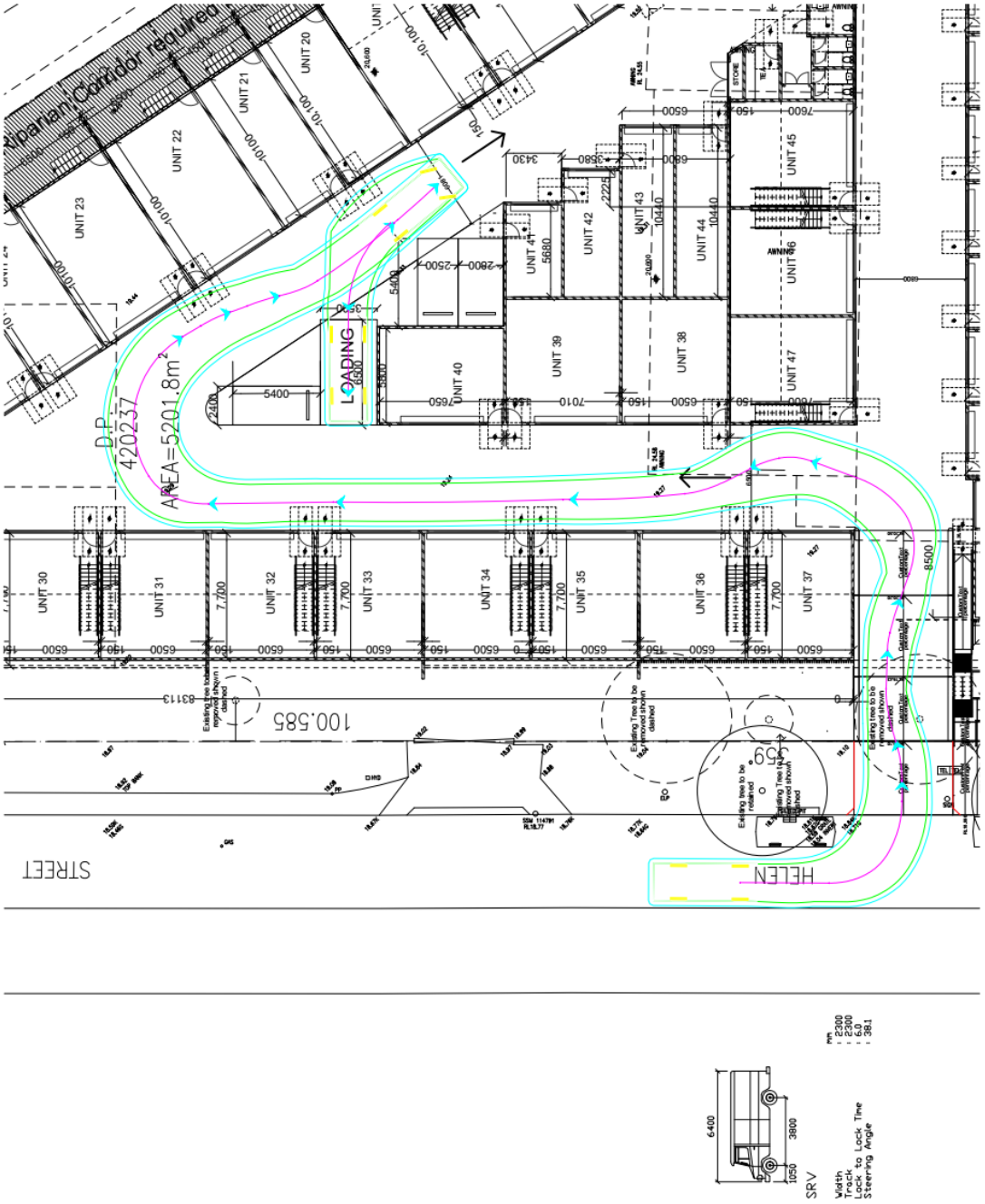

Sewer Easement & Riparian Corridor required b
D.P.
UNIT 22
UNIT 23
UNIT 24
UNIT 25
TURNING AREA
D.P. 420237
AREA=5201.8m²
UNIT 27
UNIT 28
UNIT 29
UNIT 30
UNIT 31
B99
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
5200
3050
950
Existing tree to be retained
Existing tree to be removed shown dashed
8313

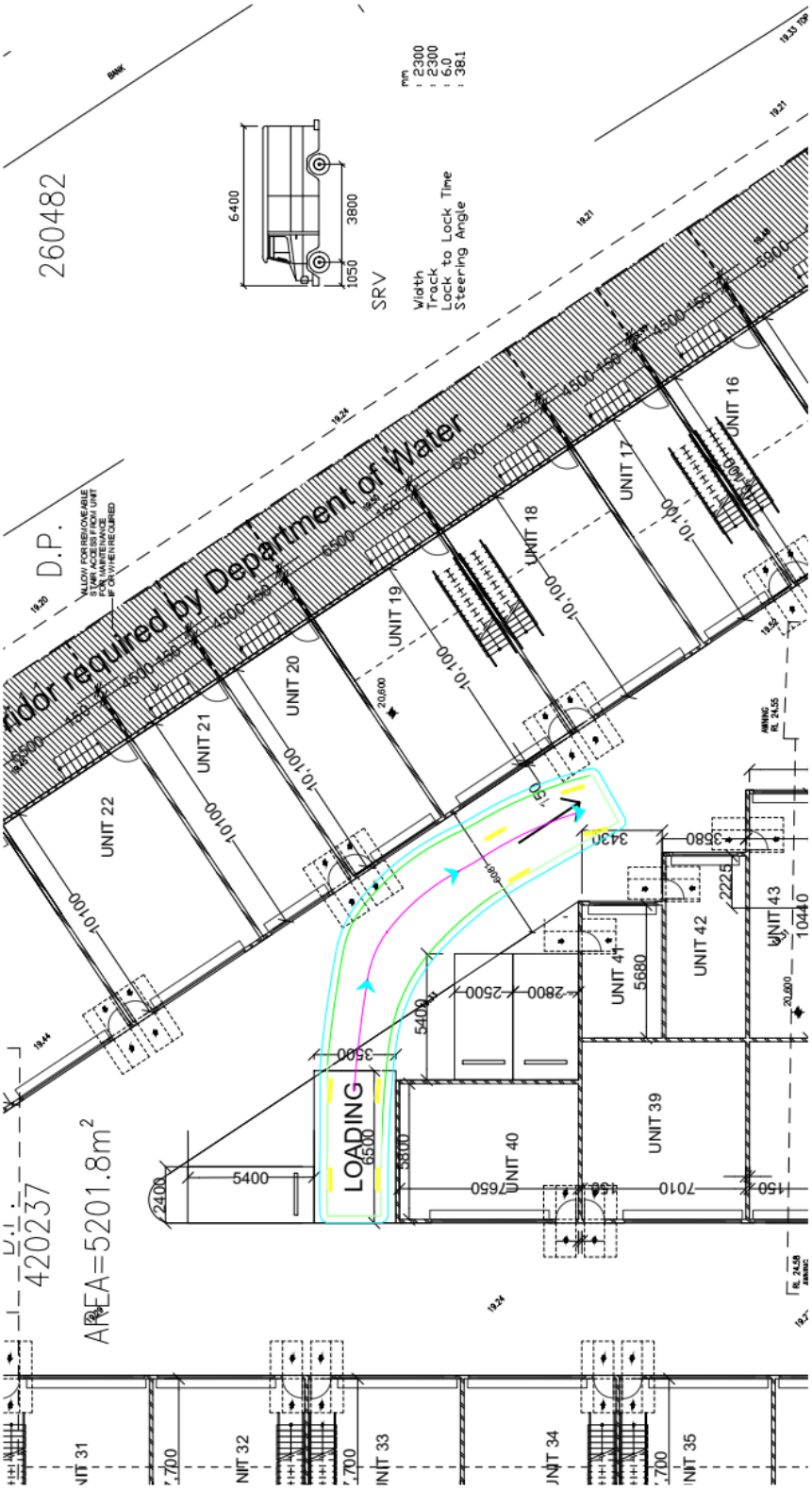

Sewer Easement & Riparian Corridor require
TURNING AREA
AREA=5201.8m²
D.P. 420237
UNIT 22
UNIT 23
UNIT 24
UNIT 25
UNIT 27
UNIT 28
UNIT 29
UNIT 30
UNIT 31
B99
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
45°
Existing tree to be retained
EXISTING BUILDINGS SHOWN DASHED


Sewer Easement & Riparian Corridor required by Departm
TURNING AREA
AREA=5201.8m²
D.P. 420237
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 24
UNIT 25
UNIT 27
UNIT 28
UNIT 29
UNIT 30
UNIT 31
UNIT 32
B99
Width : 1940
Track : 1840
Lock to Lock Time 6.0
Steering Angle : 33.9
5400
2800
7,200
7,700
6500

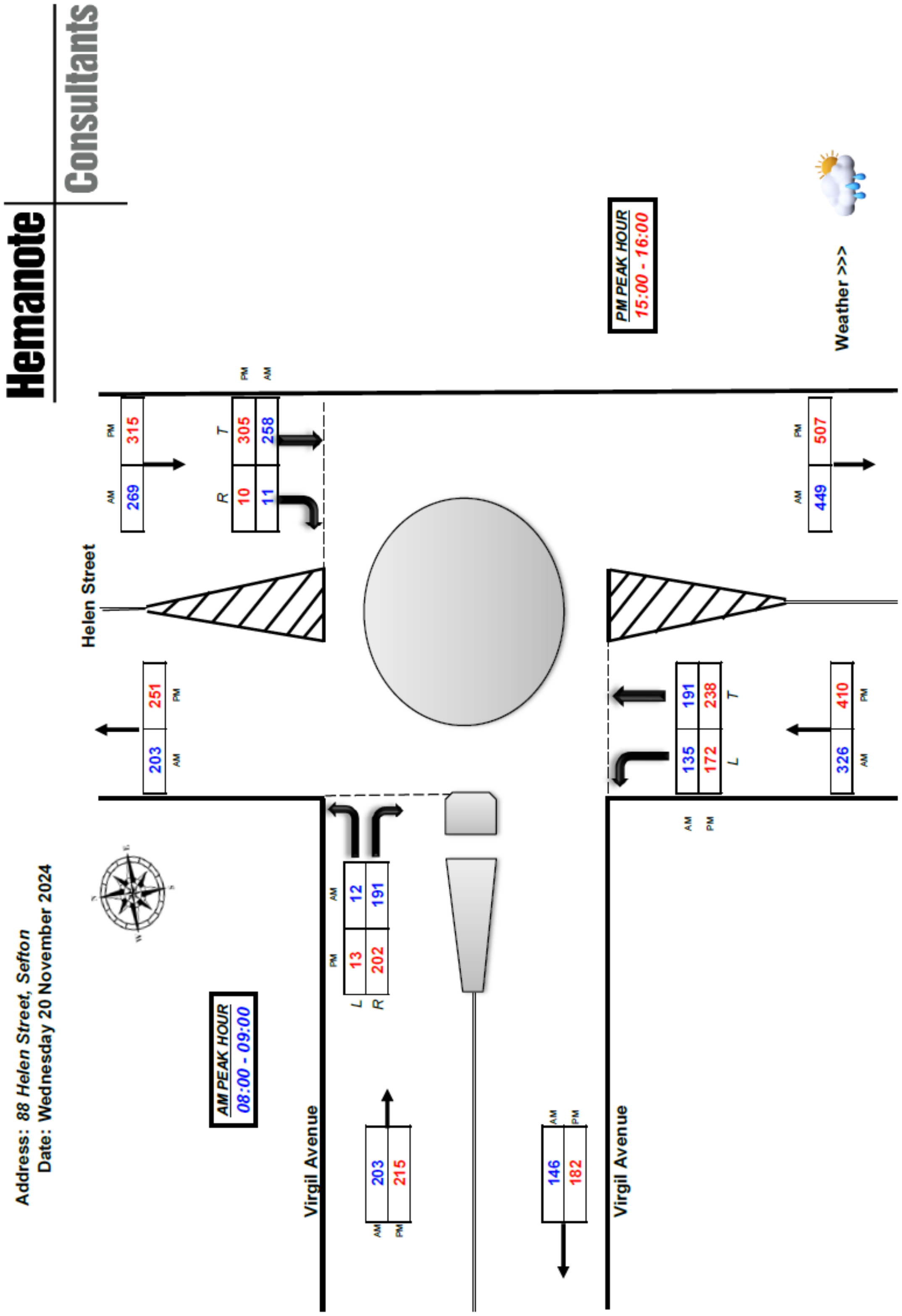

UNIT 20
UNIT 21
UNIT 38
UNIT 39
UNIT 40
UNIT 41
UNIT 42
UNIT 43
UNIT 44
UNIT 45
UNIT 46
UNIT 47
LOADING
UNIT 32
UNIT 33
UNIT 34
UNIT 35
UNIT 36
UNIT 37
STORE
AWNING
HELEN
100.585
SRV
Width
Track
Lock to Lock Time
Steering Angle
mm
2300
2300
6.0
38.1
6400
3800
1050

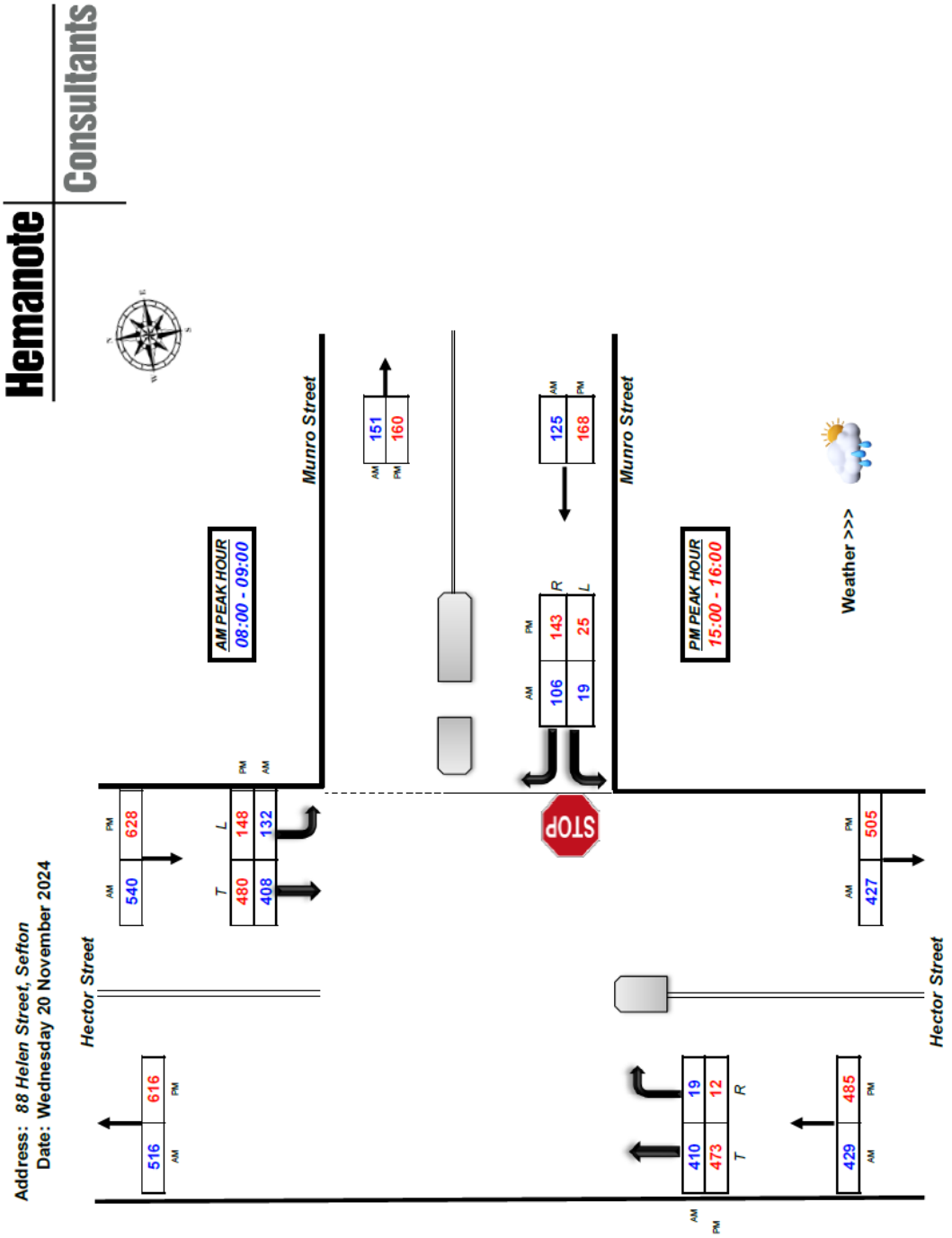

DUCK
SRV
6400
3800
1050
Width : 2300
Track : 2300
Lock to Lock Time : 6.0
Steering Angle : 38.1
River Easement & Riparian Corridor required by Department of Water
UNIT 18
UNIT 19
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 24
UNIT 25
UNIT 29
UNIT 30
UNIT 31
UNIT 32
UNIT 33
UNIT 34
UNIT 40
LOADING
D.P. 420257
AREA 5201.8m²
100.585
55'
33'


Riparian Corridor required
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 30
UNIT 31
UNIT 32
UNIT 33
UNIT 34
UNIT 35
UNIT 36
UNIT 37
UNIT 38
UNIT 39
UNIT 40
UNIT 41
UNIT 42
UNIT 43
UNIT 44
UNIT 45
UNIT 46
UNIT 47
LOADING
D.P. 420237
AREA=5201.8m²
100.585
STREET
HELEN
SRV


floor required by Department of Water
260482
D.P.
420237
AREA=5201.8m²
LOADING
SRV
Width 2300
Track 2300
Lock to Lock Time 6.0
Steering Angle 38.1
UNIT 16
UNIT 17
UNIT 18
UNIT 19
UNIT 20
UNIT 21
UNIT 22
UNIT 39
UNIT 40
UNIT 41
UNIT 42
UNIT 43
UNIT 31
UNIT 32
UNIT 33
UNIT 34
UNIT 35

Appendix 'C' – Traffic Volume Surveys


Hemanote Consultants
Address: 88 Helen Street, Sefton
Date: Wednesday 20 November 2024
AM PEAK HOUR
08:00 - 09:00
PM PEAK HOUR
15:00 - 16:00
Helen Street
Virgil Avenue
Virgil Avenue
Weather >>>
AM 269 PM 315
R 10 11
T 305 258
AM 203 PM 251
L 135 172
T 191 238
AM 326 PM 410
AM 449 PM 507
L 13 12
R 202 191
AM 203 PM 215
AM 146 PM 182


Hemanote Consultants
Address: 88 Helen Street, Sefton
Date: Wednesday 20 November 2024
Munro Street
Hector Street
AM PEAK HOUR
08:00 - 09:00
PM PEAK HOUR
15:00 - 16:00
STOP
Weather >>>

Appendix 'D' – SIDRA Intersection Analysis

MOVEMENT SUMMARY – 8.00am – 9.00am – Base Year 2024 – Helen Street / Virgil Avenue

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h]	HV %	Arrival Flows [Total veh/h]	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh]	[Dist m]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	145	0.0	145	0.0	0.237	5.1	LOS A	0.6	4.3	0.09	0.51	0.09	48.4
2	T1	All MCs	201	0.0	201	0.0	0.237	4.7	LOS A	0.6	4.3	0.09	0.51	0.09	33.8
Approach			346	0.0	346	0.0	0.237	4.9	LOS A	0.6	4.3	0.09	0.51	0.09	44.2
North: Helen Street															
8	T1	All MCs	272	0.0	272	0.0	0.299	6.3	LOS A	0.7	5.2	0.48	0.56	0.48	51.9
9	R2	All MCs	12	0.0	12	0.0	0.299	9.2	LOS A	0.7	5.2	0.48	0.56	0.48	53.2
Approach			283	0.0	283	0.0	0.299	6.4	LOS A	0.7	5.2	0.48	0.56	0.48	52.0
West: Virgil Avenue															
10	L2	All MCs	13	0.0	13	0.0	0.227	6.6	LOS A	0.5	3.4	0.43	0.65	0.43	45.4
12	R2	All MCs	201	0.0	201	0.0	0.227	9.1	LOS A	0.5	3.4	0.43	0.65	0.43	44.3
Approach			214	0.0	214	0.0	0.227	8.9	LOS A	0.5	3.4	0.43	0.65	0.43	44.3
All Vehicles			843	0.0	843	0.0	0.299	6.4	LOS A	0.7	5.2	0.31	0.56	0.31	48.3

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h]	HV %	Arrival Flows [Total veh/h]	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh]	[Dist m]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	145	0.0	145	0.0	0.241	5.1	LOS A	0.6	4.4	0.10	0.51	0.10	48.3
2	T1	All MCs	204	0.0	204	0.0	0.241	4.7	LOS A	0.6	4.4	0.10	0.51	0.10	33.8
Approach			349	0.0	349	0.0	0.241	4.9	LOS A	0.6	4.4	0.10	0.51	0.10	44.1
North: Helen Street															
8	T1	All MCs	275	0.0	275	0.0	0.304	6.3	LOS A	0.8	5.3	0.48	0.56	0.48	51.9
9	R2	All MCs	13	0.0	13	0.0	0.304	9.2	LOS A	0.8	5.3	0.48	0.56	0.48	53.2
Approach			287	0.0	287	0.0	0.304	6.4	LOS A	0.8	5.3	0.48	0.56	0.48	52.0
West: Virgil Avenue															
10	L2	All MCs	14	0.0	14	0.0	0.229	6.7	LOS A	0.5	3.5	0.43	0.65	0.43	46.4
12	R2	All MCs	201	0.0	201	0.0	0.229	9.1	LOS A	0.5	3.5	0.43	0.65	0.43	44.2
Approach			215	0.0	215	0.0	0.229	9.0	LOS A	0.5	3.5	0.43	0.65	0.43	44.3
All Vehicles			852	0.0	852	0.0	0.304	6.4	LOS A	0.8	5.3	0.31	0.56	0.31	48.3

MOVEMENT SUMMARY – 8.00am – 9.00am – Base Year 2024 – Hector Street / Munro Street

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	432	5.0	432	5.0	0.251	0.3	LOS A	0.1	0.8	0.07	0.09	0.07	56.9
3	R2	All MCs	20	5.0	20	5.0	0.251	8.7	LOS A	0.1	0.8	0.07	0.09	0.07	56.4
Approach			452	5.0	452	5.0	0.251	0.6	NA	0.1	0.8	0.07	0.09	0.07	56.9
East: Munro Street															
4	L2	All MCs	20	5.0	20	5.0	0.366	12.2	LOS A	0.6	4.1	0.75	1.07	0.98	45.2
6	R2	All MCs	112	5.0	112	5.0	0.366	19.8	LOS B	0.6	4.1	0.75	1.07	0.98	42.1
Approach			132	5.0	132	5.0	0.366	18.7	LOS B	0.6	4.1	0.75	1.07	0.98	42.6
North: Hector Street															
7	L2	All MCs	139	5.0	139	5.0	0.305	3.1	LOS A	0.0	0.0	0.00	0.14	0.00	46.1
8	T1	All MCs	429	5.0	429	5.0	0.305	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.2
Approach			568	5.0	568	5.0	0.305	0.8	NA	0.0	0.0	0.00	0.14	0.00	55.4
All Vehicles			1152	5.0	1152	5.0	0.366	2.8	NA	0.6	4.1	0.11	0.22	0.14	49.7

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	432	5.0	432	5.0	0.252	0.3	LOS A	0.1	0.8	0.08	0.10	0.08	56.7
3	R2	All MCs	21	4.8	21	4.8	0.252	8.7	LOS A	0.1	0.8	0.08	0.10	0.08	56.2
Approach			453	5.0	453	5.0	0.252	0.7	NA	0.1	0.8	0.08	0.10	0.08	56.7
East: Munro Street															
4	L2	All MCs	21	4.8	21	4.8	0.374	12.3	LOS A	0.6	4.3	0.76	1.07	0.99	45.2
6	R2	All MCs	114	4.9	114	4.9	0.374	20.0	LOS B	0.6	4.3	0.76	1.07	0.99	42.1
Approach			135	4.9	135	4.9	0.374	18.8	LOS B	0.6	4.3	0.76	1.07	0.99	42.6
North: Hector Street															
7	L2	All MCs	141	4.9	141	4.9	0.306	3.1	LOS A	0.0	0.0	0.00	0.14	0.00	46.0
8	T1	All MCs	429	5.0	429	5.0	0.306	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.2
Approach			571	5.0	571	5.0	0.306	0.8	NA	0.0	0.0	0.00	0.14	0.00	55.4
All Vehicles			1158	5.0	1158	5.0	0.374	2.8	NA	0.6	4.3	0.12	0.23	0.16	49.6

MOVEMENT SUMMARY – 3.00pm – 4.00pm – Base Year 2024 – Helen Street / Virgil Avenue

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV %]	Arrival Flows [Total veh/h	HV %]	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist m]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	181	5.0	181	5.0	0.297	5.1	LOS A	0.8	6.2	0.10	0.51	0.10	48.0
2	T1	All MCs	251	5.0	251	5.0	0.297	4.7	LOS A	0.8	6.2	0.10	0.51	0.10	33.8
Approach			432	5.0	432	5.0	0.297	4.9	LOS A	0.8	6.2	0.10	0.51	0.10	44.0
North: Helen Street															
8	T1	All MCs	321	5.0	321	5.0	0.366	6.7	LOS A	1.0	7.0	0.54	0.58	0.54	51.7
9	R2	All MCs	11	5.0	11	5.0	0.366	9.6	LOS A	1.0	7.0	0.54	0.58	0.54	52.9
Approach			332	5.0	332	5.0	0.366	6.8	LOS A	1.0	7.0	0.54	0.58	0.54	51.7
West: Virgil Avenue															
10	L2	All MCs	14	5.0	14	5.0	0.262	7.3	LOS A	0.6	4.2	0.49	0.67	0.49	44.7
12	R2	All MCs	213	5.0	213	5.0	0.262	9.7	LOS A	0.6	4.2	0.49	0.67	0.49	43.5
Approach			226	5.0	226	5.0	0.262	9.6	LOS A	0.6	4.2	0.49	0.67	0.49	43.6
All Vehicles			989	5.0	989	5.0	0.366	6.6	LOS A	1.0	7.0	0.33	0.57	0.33	47.9

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV %]	Arrival Flows [Total veh/h	HV %]	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist m]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	181	5.0	181	5.0	0.297	5.1	LOS A	0.8	6.2	0.10	0.51	0.10	48.0
2	T1	All MCs	251	5.0	251	5.0	0.297	4.7	LOS A	0.8	6.2	0.10	0.51	0.10	33.8
Approach			432	5.0	432	5.0	0.297	4.9	LOS A	0.8	6.2	0.10	0.51	0.10	44.0
North: Helen Street															
8	T1	All MCs	321	5.0	321	5.0	0.366	6.7	LOS A	1.0	7.0	0.54	0.58	0.54	51.7
9	R2	All MCs	11	5.0	11	5.0	0.366	9.6	LOS A	1.0	7.0	0.54	0.58	0.54	52.9
Approach			332	5.0	332	5.0	0.366	6.8	LOS A	1.0	7.0	0.54	0.58	0.54	51.7
West: Virgil Avenue															
10	L2	All MCs	14	5.0	14	5.0	0.262	7.3	LOS A	0.6	4.2	0.49	0.67	0.49	44.7
12	R2	All MCs	213	5.0	213	5.0	0.262	9.7	LOS A	0.6	4.2	0.49	0.67	0.49	43.5
Approach			226	5.0	226	5.0	0.262	9.6	LOS A	0.6	4.2	0.49	0.67	0.49	43.6
All Vehicles			989	5.0	989	5.0	0.366	6.6	LOS A	1.0	7.0	0.33	0.57	0.33	47.9

MOVEMENT SUMMARY – 3.00pm – 4.00pm – Base Year 2024 – Hector Street / Munro Street

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	498	5.0	498	5.0	0.280	0.2	LOS A	0.1	0.6	0.05	0.06	0.05	57.8
3	R2	All MCs	13	5.0	13	5.0	0.280	9.7	LOS A	0.1	0.6	0.05	0.06	0.05	57.5
Approach			511	5.0	511	5.0	0.280	0.4	NA	0.1	0.6	0.05	0.06	0.05	57.8
East: Munro Street															
4	L2	All MCs	26	5.0	26	5.0	0.640	17.8	LOS B	1.2	8.6	0.88	1.18	1.55	40.8
6	R2	All MCs	151	5.0	151	5.0	0.640	29.5	LOS C	1.2	8.6	0.88	1.18	1.55	37.8
Approach			177	5.0	177	5.0	0.640	27.8	LOS B	1.2	8.6	0.88	1.18	1.55	38.2
North: Hector Street															
7	L2	All MCs	156	5.0	156	5.0	0.354	3.1	LOS A	0.0	0.0	0.00	0.13	0.00	46.5
8	T1	All MCs	505	5.0	505	5.0	0.354	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	56.3
Approach			661	5.0	661	5.0	0.354	0.7	NA	0.0	0.0	0.00	0.13	0.00	55.6
All Vehicles			1348	5.0	1348	5.0	0.640	4.2	NA	1.2	8.6	0.13	0.24	0.22	46.7

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	498	5.0	498	5.0	0.281	0.2	LOS A	0.1	0.6	0.05	0.06	0.05	57.7
3	R2	All MCs	14	4.6	14	4.6	0.281	9.7	LOS A	0.1	0.6	0.05	0.06	0.05	57.3
Approach			512	5.0	512	5.0	0.281	0.5	NA	0.1	0.6	0.05	0.06	0.05	57.6
East: Munro Street															
4	L2	All MCs	27	4.8	27	4.8	0.651	18.0	LOS B	1.2	8.9	0.89	1.19	1.59	40.6
6	R2	All MCs	153	4.9	153	4.9	0.651	29.9	LOS C	1.2	8.9	0.89	1.19	1.59	37.6
Approach			180	4.9	180	4.9	0.651	28.1	LOS B	1.2	8.9	0.89	1.19	1.59	38.1
North: Hector Street															
7	L2	All MCs	158	4.9	158	4.9	0.356	3.1	LOS A	0.0	0.0	0.00	0.13	0.00	46.4
8	T1	All MCs	505	5.0	505	5.0	0.356	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	56.3
Approach			663	5.0	663	5.0	0.356	0.7	NA	0.0	0.0	0.00	0.13	0.00	55.5
All Vehicles			1355	5.0	1355	5.0	0.651	4.3	NA	1.2	8.9	0.14	0.25	0.23	46.4

MOVEMENT SUMMARY – 8.00am – 9.00am – Future Year 2034 – Helen Street / Virgil Avenue

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h]	HV %	Arrival Flows [Total veh/h]	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh]	Dist m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	174	0.0	174	0.0	0.286	5.1	LOS A	0.8	5.7	0.11	0.50	0.11	48.3
2	T1	All MCs	241	0.0	241	0.0	0.286	4.8	LOS A	0.8	5.7	0.11	0.50	0.11	33.6
Approach			416	0.0	416	0.0	0.286	4.9	LOS A	0.8	5.7	0.11	0.50	0.11	44.1
North: Helen Street															
8	T1	All MCs	326	0.0	326	0.0	0.375	6.8	LOS A	1.0	6.9	0.56	0.59	0.56	51.7
9	R2	All MCs	14	0.0	14	0.0	0.375	9.6	LOS A	1.0	6.9	0.56	0.59	0.56	53.0
Approach			340	0.0	340	0.0	0.375	6.9	LOS A	1.0	6.9	0.56	0.59	0.56	51.7
West: Virgil Avenue															
10	L2	All MCs	15	0.0	15	0.0	0.283	7.0	LOS A	0.6	4.5	0.49	0.66	0.49	44.9
12	R2	All MCs	241	0.0	241	0.0	0.283	9.5	LOS A	0.6	4.5	0.49	0.66	0.49	43.9
Approach			256	0.0	256	0.0	0.283	9.4	LOS A	0.6	4.5	0.49	0.66	0.49	43.9
All Vehicles			1012	0.0	1012	0.0	0.375	6.7	LOS A	1.0	6.9	0.36	0.57	0.36	48.0

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h]	HV %	Arrival Flows [Total veh/h]	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh]	Dist m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	174	0.0	174	0.0	0.290	5.2	LOS A	0.8	5.8	0.12	0.50	0.12	48.3
2	T1	All MCs	245	0.0	245	0.0	0.290	4.8	LOS A	0.8	5.8	0.12	0.50	0.12	33.6
Approach			419	0.0	419	0.0	0.290	4.9	LOS A	0.8	5.8	0.12	0.50	0.12	44.0
North: Helen Street															
8	T1	All MCs	330	0.0	330	0.0	0.380	6.8	LOS A	1.0	7.1	0.56	0.59	0.56	51.7
9	R2	All MCs	15	0.0	15	0.0	0.380	9.7	LOS A	1.0	7.1	0.56	0.59	0.56	53.0
Approach			345	0.0	345	0.0	0.380	6.9	LOS A	1.0	7.1	0.56	0.59	0.56	51.7
West: Virgil Avenue															
10	L2	All MCs	16	0.0	16	0.0	0.286	7.1	LOS A	0.6	4.5	0.49	0.66	0.49	44.9
12	R2	All MCs	241	0.0	241	0.0	0.286	9.5	LOS A	0.6	4.5	0.49	0.66	0.49	43.8
Approach			258	0.0	258	0.0	0.286	9.4	LOS A	0.6	4.5	0.49	0.66	0.49	43.9
All Vehicles			1022	0.0	1022	0.0	0.380	6.7	LOS A	1.0	7.1	0.36	0.57	0.36	48.0

MOVEMENT SUMMARY – 8.00am – 9.00am – Future Year 2034 – Hector Street / Munro Street

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	518	5.0	518	5.0	0.306	0.4	LOS A	0.2	1.1	0.08	0.11	0.08	56.0
3	R2	All MCs	24	5.0	24	5.0	0.306	9.9	LOS A	0.2	1.1	0.08	0.11	0.08	55.4
Approach			542	5.0	542	5.0	0.306	0.8	NA	0.2	1.1	0.08	0.11	0.08	56.0
East: Munro Street															
4	L2	All MCs	24	5.0	24	5.0	0.619	17.8	LOS B	1.1	7.9	0.89	1.16	1.50	40.3
6	R2	All MCs	134	5.0	134	5.0	0.619	30.8	LOS C	1.1	7.9	0.89	1.16	1.50	37.3
Approach			158	5.0	158	5.0	0.619	28.8	LOS C	1.1	7.9	0.89	1.16	1.50	37.8
North: Hector Street															
7	L2	All MCs	167	5.0	167	5.0	0.366	3.1	LOS A	0.0	0.0	0.00	0.14	0.00	46.1
8	T1	All MCs	515	5.0	515	5.0	0.366	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.2
Approach			682	5.0	682	5.0	0.366	0.8	NA	0.0	0.0	0.00	0.14	0.00	55.4
All Vehicles			1382	5.0	1382	5.0	0.619	4.0	NA	1.1	7.9	0.13	0.24	0.20	46.7

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	518	5.0	518	5.0	0.308	0.4	LOS A	0.2	1.2	0.09	0.11	0.09	55.9
3	R2	All MCs	25	4.8	25	4.8	0.308	10.0	LOS A	0.2	1.2	0.09	0.11	0.09	55.2
Approach			543	5.0	543	5.0	0.308	0.9	NA	0.2	1.2	0.09	0.11	0.09	55.8
East: Munro Street															
4	L2	All MCs	25	4.8	25	4.8	0.634	18.1	LOS B	1.1	8.2	0.89	1.17	1.54	40.1
6	R2	All MCs	136	4.9	136	4.9	0.634	31.3	LOS C	1.1	8.2	0.89	1.17	1.54	37.1
Approach			162	4.9	162	4.9	0.634	29.2	LOS C	1.1	8.2	0.89	1.17	1.54	37.6
North: Hector Street															
7	L2	All MCs	169	4.9	169	4.9	0.367	3.1	LOS A	0.0	0.0	0.00	0.14	0.00	46.0
8	T1	All MCs	515	5.0	515	5.0	0.367	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.1
Approach			685	5.0	685	5.0	0.367	0.8	NA	0.0	0.0	0.00	0.14	0.00	55.3
All Vehicles			1389	5.0	1389	5.0	0.634	4.1	NA	1.1	8.2	0.14	0.25	0.21	46.4

MOVEMENT SUMMARY – 3.00pm – 4.00pm – Future Year 2034 – Helen Street / Virgil Avenue

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	217	5.0	217	5.0	0.358	5.2	LOS A	1.1	8.3	0.12	0.50	0.12	47.9
2	T1	All MCs	301	5.0	301	5.0	0.358	4.8	LOS A	1.1	8.3	0.12	0.50	0.12	33.5
Approach			518	5.0	518	5.0	0.358	4.9	LOS A	1.1	8.3	0.12	0.50	0.12	43.8
North: Helen Street															
8	T1	All MCs	385	5.0	385	5.0	0.461	7.3	LOS A	1.3	9.6	0.63	0.61	0.63	51.3
9	R2	All MCs	13	5.0	13	5.0	0.461	10.2	LOS A	1.3	9.6	0.63	0.61	0.63	52.7
Approach			398	5.0	398	5.0	0.461	7.4	LOS A	1.3	9.6	0.63	0.61	0.63	51.4
West: Virgil Avenue															
10	L2	All MCs	16	5.0	16	5.0	0.330	7.9	LOS A	0.8	5.6	0.56	0.69	0.56	44.0
12	R2	All MCs	256	5.0	256	5.0	0.330	10.3	LOS A	0.8	5.6	0.56	0.69	0.56	43.0
Approach			272	5.0	272	5.0	0.330	10.2	LOS A	0.8	5.6	0.56	0.69	0.56	43.0
All Vehicles			1187	5.0	1187	5.0	0.461	7.0	LOS A	1.3	9.6	0.39	0.58	0.39	47.5

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Helen Street															
1	L2	All MCs	217	5.0	217	5.0	0.358	5.2	LOS A	1.1	8.3	0.12	0.50	0.12	47.9
2	T1	All MCs	301	5.0	301	5.0	0.358	4.8	LOS A	1.1	8.3	0.12	0.50	0.12	33.5
Approach			518	5.0	518	5.0	0.358	4.9	LOS A	1.1	8.3	0.12	0.50	0.12	43.8
North: Helen Street															
8	T1	All MCs	385	5.0	385	5.0	0.461	7.3	LOS A	1.3	9.6	0.63	0.61	0.63	51.3
9	R2	All MCs	13	5.0	13	5.0	0.461	10.2	LOS A	1.3	9.6	0.63	0.61	0.63	52.7
Approach			398	5.0	398	5.0	0.461	7.4	LOS A	1.3	9.6	0.63	0.61	0.63	51.4
West: Virgil Avenue															
10	L2	All MCs	16	5.0	16	5.0	0.330	7.9	LOS A	0.8	5.6	0.56	0.69	0.56	44.0
12	R2	All MCs	256	5.0	256	5.0	0.330	10.3	LOS A	0.8	5.6	0.56	0.69	0.56	43.0
Approach			272	5.0	272	5.0	0.330	10.2	LOS A	0.8	5.6	0.56	0.69	0.56	43.0
All Vehicles			1187	5.0	1187	5.0	0.461	7.0	LOS A	1.3	9.6	0.39	0.58	0.39	47.5

MOVEMENT SUMMARY – 3.00pm – 4.00pm – Future Year 2034 – Hector Street / Munro Street

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h]	HV [HV %]	Arrival Flows [Total veh/h]	HV [HV %]	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh]	[Dist m]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	597	5.0	597	5.0	0.341	0.3	LOS A	0.1	0.9	0.06	0.07	0.06	57.0
3	R2	All MCs	15	5.0	15	5.0	0.341	11.4	LOS A	0.1	0.9	0.06	0.07	0.06	56.5
Approach			613	5.0	613	5.0	0.341	0.6	NA	0.1	0.9	0.06	0.07	0.06	57.0
East: Munro Street															
4	L2	All MCs	32	5.0	32	5.0	1.204	216.3	LOS F[1]	11.0	80.4	1.00	3.06	9.09	12.4
6	R2	All MCs	181	5.0	181	5.0	1.204	237.5	LOS F[1]	11.0	80.4	1.00	3.06	9.09	11.1
Approach			212	5.0	212	5.0	1.204	234.3	LOS F[1]	11.0	80.4	1.00	3.06	9.09	11.3
North: Hector Street															
7	L2	All MCs	187	5.0	187	5.0	0.425	3.1	LOS A	0.0	0.0	0.00	0.13	0.00	46.4
8	T1	All MCs	606	5.0	606	5.0	0.425	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	56.2
Approach			793	5.0	793	5.0	0.425	0.7	NA	0.0	0.0	0.00	0.13	0.00	55.5
All Vehicles			1618	5.0	1618	5.0	1.204	31.3	NA	11.0	80.4	0.15	0.49	1.21	20.3

Post-Development

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h]	HV [HV %]	Arrival Flows [Total veh/h]	HV [HV %]	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh]	[Dist m]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hector Street															
2	T1	All MCs	597	5.0	597	5.0	0.343	0.4	LOS A	0.1	0.9	0.06	0.08	0.06	56.8
3	R2	All MCs	16	4.6	16	4.6	0.343	11.4	LOS A	0.1	0.9	0.06	0.08	0.06	56.2
Approach			614	5.0	614	5.0	0.343	0.7	NA	0.1	0.9	0.06	0.08	0.06	56.8
East: Munro Street															
4	L2	All MCs	33	4.8	33	4.8	1.226	234.6	LOS F[1]	11.9	87.0	1.00	3.19	9.61	11.7
6	R2	All MCs	183	4.9	183	4.9	1.226	255.9	LOS F[1]	11.9	87.0	1.00	3.19	9.61	10.4
Approach			216	4.9	216	4.9	1.226	252.7	LOS F[1]	11.9	87.0	1.00	3.19	9.61	10.6
North: Hector Street															
7	L2	All MCs	189	4.9	189	4.9	0.427	3.1	LOS A	0.0	0.0	0.00	0.13	0.00	46.3
8	T1	All MCs	606	5.0	606	5.0	0.427	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	56.2
Approach			796	5.0	796	5.0	0.427	0.7	NA	0.0	0.0	0.00	0.13	0.00	55.4
All Vehicles			1626	5.0	1626	5.0	1.226	34.2	NA	11.9	87.0	0.16	0.52	1.30	19.2