

ratio:

Report
Prepared for
WL Newlands Pty Ltd ATF Wang
Clayton Family Trust

21 December 2021

**Proposed Mixed Use
Development**

186-192 Clayton Road, Clayton

traffic:impact

r:

ratio:consultants8 Gwynne Street
Cremorne, VIC 3121
ABN 93 983 380 225**Prepared for:**WL Newlands Pty Ltd ATF Wang
Clayton Family Trust
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1 Introduction:

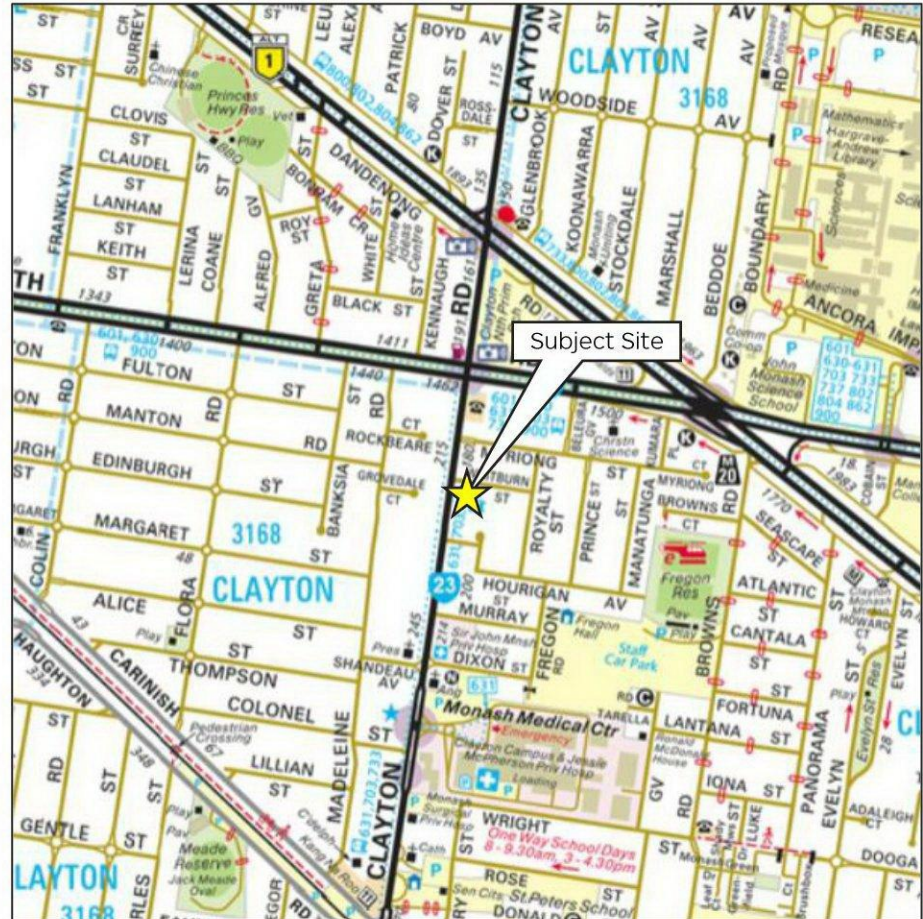
Ratio Consultants has been engaged by The Arch Deli, on behalf of the applicant WL Newlands Pty Ltd ATF Wang Clayton Family Trust to assess the traffic and parking implications of the proposed mixed-use development comprising medical centre, shop and pharmacy uses at 186-192 Clayton Road, Clayton.

This report has been prepared to address the traffic and parking needs of the proposed development and is based on surveys and observations in the vicinity of the site and on previous studies of similar developments elsewhere in Melbourne.

2.1 Location and Environment

The subject site is located at 186-192 Clayton Road, Clayton, on the southeast corner of the intersection of Clayton Road and Whitburn. The site's location relative to the surrounding network is shown in Figure 2.1.

Figure 2.1 Site Location and Surrounding Road Network



Source: online.melway.com.au/melway/

The subject site is located in a Residential Growth Zone – Schedule 3 (RGZ3) and within the Clayton Activity Centre Precinct. Surrounding land uses are primarily residential in nature, with the industrial uses to the west and northeast and the Clayton Activity Centre to the south of the site.

Some other key non-residential land uses within walking distance of the site include:

- Clayton Primary School, located approximately 350 metres north of the subject site.
- Monash Medical Centre, located approximately 450 metres southeast of the subject site.
- Monash Children's Hospital, located approximately 480 metres southeast of the subject site.
- Monash University Clayton Campus, located approximately 700 metres northeast of the subject site.
- Monash House Private Hospital, located approximately 540 metres south of the subject site.
- John Monash Science School, located approximately 600 metres northeast of the subject site.

- Clayton Railway Station, located approximately 950 metres south of the subject site.

The site is essentially rectangular in shape, with a frontage to Clayton Road of approximately 67 metres, a maximum depth of 43 metres, and overall area of approximately 2,900 square metres.

The site is currently occupied by four single storey detached dwellings in adjacent allotments.

Vehicle access to 192 Clayton Road is provided via a single-width crossover to/from Clayton Road, vehicle access to 190 and 188 Clayton Road is provided via a shared double-width crossover to/from Clayton Road, and vehicle access to 186 Clayton Road is provided via a single-width crossover to/from Whitburn Street.

Figure 2.2 shows an aerial photograph of the subject site relative to its surroundings.

Figure 2.2: Aerial Photograph of Subject Site and Surrounds



Source: maps.au.nearmap.com/

2.2 Road Network

Clayton Road is a Primary State Arterial under the care and management of the Department of Transport (formerly VicRoads). Clayton Road essentially runs in a north-south alignment between its continuation as Stephenson's Road, in Mount Waverly, and its continuation as Boundary Road, in Clarinda.

At the frontage of the site, Clayton Road has an approximate carriageway width of 12 metres, accommodating two through lanes in each direction.

Clearway restrictions are in place along both sides of the road from 7:00am to 9:30am and 3:00pm to 6:30pm, Monday to Friday. Outside of these times, parking is permitted on both sides of the road.

Clayton Road is subject to the posted speed limit of 60km/h and constructed footpaths are provided on both sides of the road.

Views of Clayton Road facing north and south are shown in Figure 2.3 and Figure 2.4, respectively.

Figure 2.3: View of Clayton Road Facing North



Figure 2.4: View of Clayton Road Facing South



Whitburn Street is classified as a municipal Local Road that runs in an east-west alignment between Clayton Road and Royalty Street. It has an approximate carriageway width of 7.2 metres accommodating two-way traffic movements, and kerbside parallel parking permitted on both sides of the road.

Whitburn Street is subject to the default speed limit of 50km/hr applicable to built-up areas and constructed footpaths are provided on both sides of the road.

Views of Whitburn Street facing east and west are shown in Figure 2.5 and Figure 2.6, respectively.

Figure 2.5: View of Whitburn Street Facing East



Figure 2.6: View of Whitburn Street Facing West

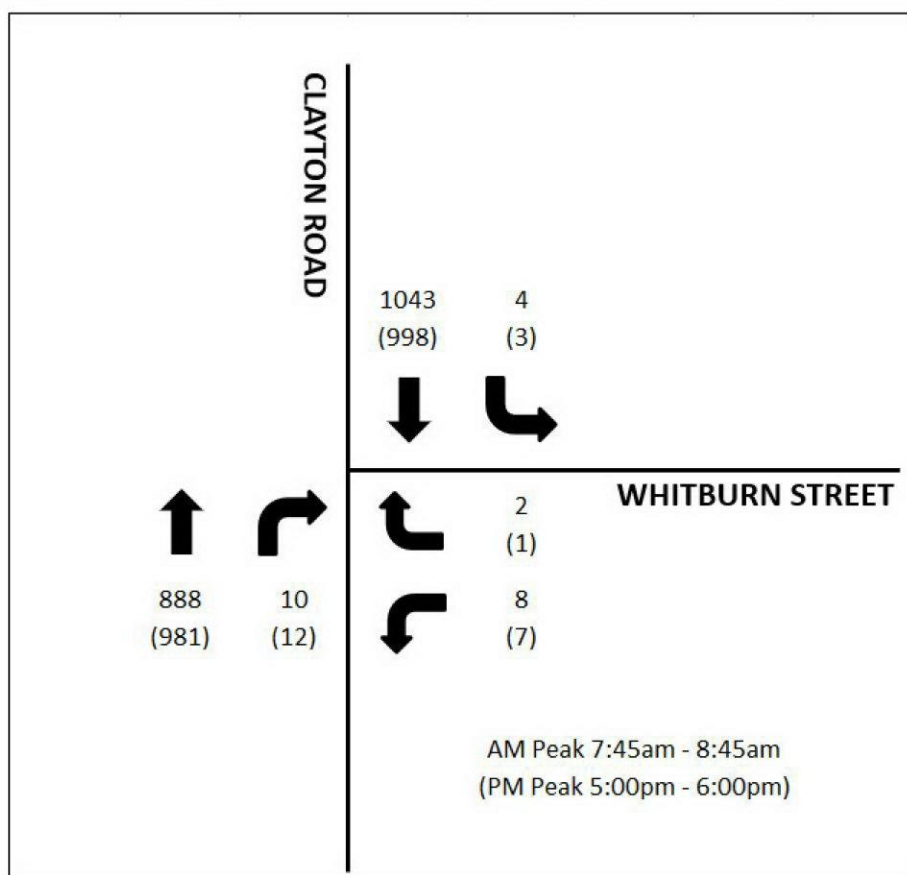


2.3 Traffic Conditions

In order to determine existing traffic conditions in the vicinity of the site, Ratio Consultants commissioned traffic turning movement counts at the intersection of Clayton Road and Whitburn Street from 7:00am to 9:30am and 3:00pm to 6:30pm on Thursday 29 April 2021.

The peak hour turning movements as recorded are shown in Figure 2.7.

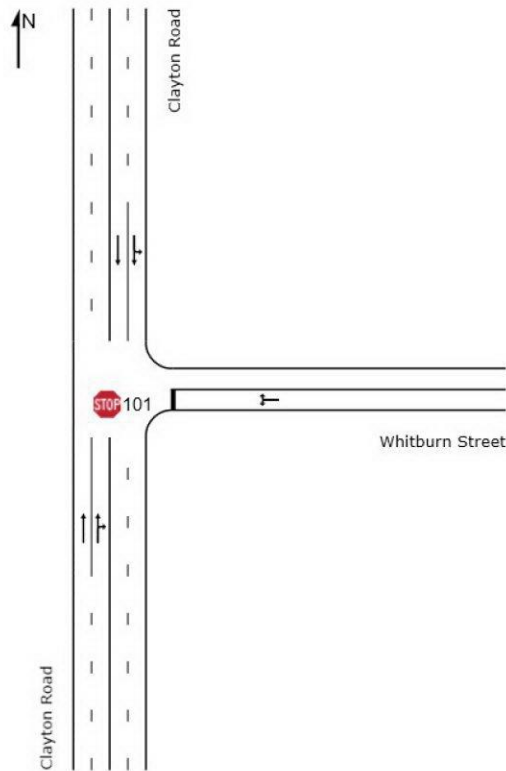
Figure 2.7: Existing Peak Hour Volumes – Clayton Road/Whitburn Street



As seen in the surveyed turning movements above, there is an existing bias to left turn movements from Whitburn Street.

A SIDRA analysis was undertaken of the volumes displayed in Figure 2.7 in order to understand the existing conditions at the intersection of Clayton Road and Whitburn Street.

The intersection layout, as analysed in SIDRA, is displayed in Figure 2.8.

Figure 2.8: SIDRA Layout Clayton Road/Whitburn Street**SIDRA Parameters**

The key parameters used to determine the operational capacity of an intersection are queue length, average delay and degree of saturation (or volume to capacity ratio).

Degree of Saturation is a ratio of arrival (or demand) flow to capacity. Degrees of saturation above 1.0 represent oversaturated conditions and degrees of saturation below 1.0 represent undersaturated conditions. The operational rating associated with the degree of saturation is summarized in Table 2.1.

Table 2.1: Ratings of Degree of Saturation

Degree of Saturation (DOS)	Rating
Up to 0.6	Excellent
0.61 – 0.70	Very Good
0.71 – 0.80	Good
0.81 – 0.90	Fair
0.91 – 1.00	Poor
Greater than 1.00	Very Poor

Although operating conditions with degrees a degree of saturation around 1.00 are undesirable, it is acknowledged that this level of congestion is typical of many metropolitan intersections during the AM and PM peak hours.

The 95th percentile queue length is an extremely conservative measure of anticipated queue length associated with each movement at the intersection. Only 5% of all queues are expected to exceed the 95th percentile queue. This parameter is used to determine the adequacy of short lanes in particular to minimise the likelihood of queued vehicles impeding the adjacent through lane.

Average delay is the average time, in seconds, that all vehicles making a particular movement can expect to wait at an intersection.

The results of the SIDRA analysis are summarised below in Table 2.2, with detailed results provided in Appendix A.

Table 2.2: SIDRA Results – Clayton Road/Whitburn Street

Approach	AM Existing Conditions			PM Existing Conditions		
	D.O.S.	95%ile Queue (m)	Avg Delay (s)	D.O.S.	95%ile Queue (m)	Avg Delay (s)
Clayton Road (South)	0.27	4	1	0.29	4	1
Whitburn Street (East)	0.13	2	46	0.07	1	33
Clayton Road (North)	0.30	0	0	0.28	0	0
All vehicles	0.30			0.29		

Review of the above results show that the intersection of Clayton Road and Whitburn Street is operating under 'excellent' conditions under existing traffic conditions.

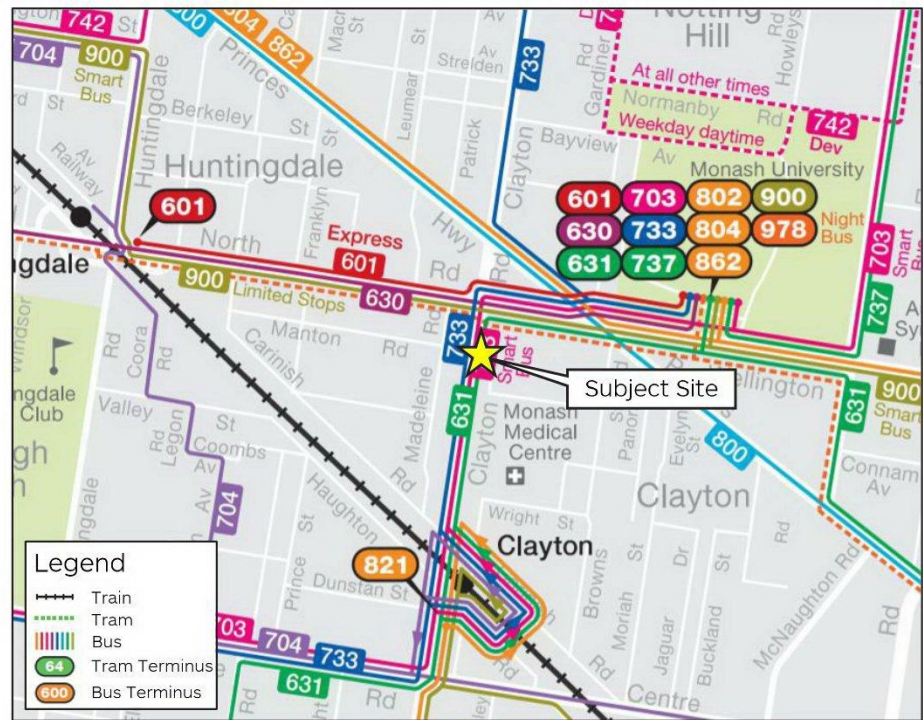
2.4 Sustainable Transport

Public Transport

The site has good access to the public transport network with bus services operating within close proximity to the subject site. Some of these bus routes in turn provide access to Clayton Train Station, approximately 1 kilometre south of the subject site.

The public transport services within vicinity of the site are shown graphically in Figure 2.9 and summarised in Table 2.3.

Figure 2.9: Public Transport Services Operating Within Vicinity of the Site



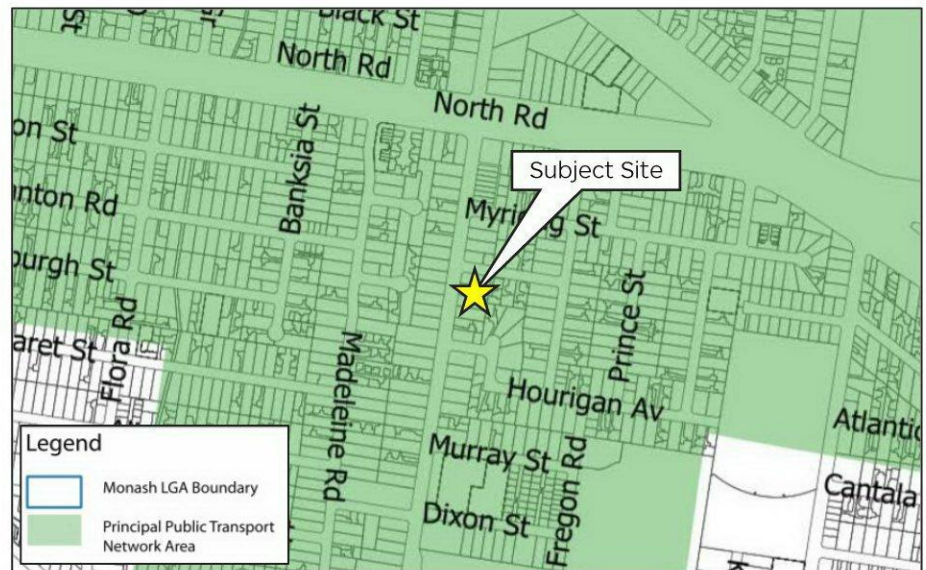
Source: www.ptv.vic.gov.au

Table 2.3: Public Transport Services

Service	Route Number	Route	Nearest Stop	Walking Distance
Bus	631	Southland - Waverley Gardens via Clayton & Monash University		
	703	Middle Brighton - Blackburn via Bentleigh & Clayton & Monash University	Myriong St/Clayton Rd	70 metres ~ 1 minute
	733	Oakleigh - Box Hill via Clayton & Monash University & Mt Waverley		
	630	Elwood - Monash University via Gardenvale & Ormond & Huntingdale	Clayton Rd/North Rd	250 metres ~ 3 minutes
	900	Stud Park SC (Rowville) - Caulfield via Monash University & Chadstone		
	800	Dandenong - Chadstone via Princes Highway & Oakleigh	North Rd/Princes Hwy	650 metres ~ 9 minutes
	862	Dandenong - Chadstone via North Dandenong & Oakleigh		

Source: www.ptv.vic.gov.au

The subject site is located within the Principal Public Transport (PPTN) Area within the Monash Planning Scheme, as shown in Figure 2.10.

Figure 2.10: Monash Principal Public Transport Network Area

Source: www.planning.vic.gov.au

Bicycle Network

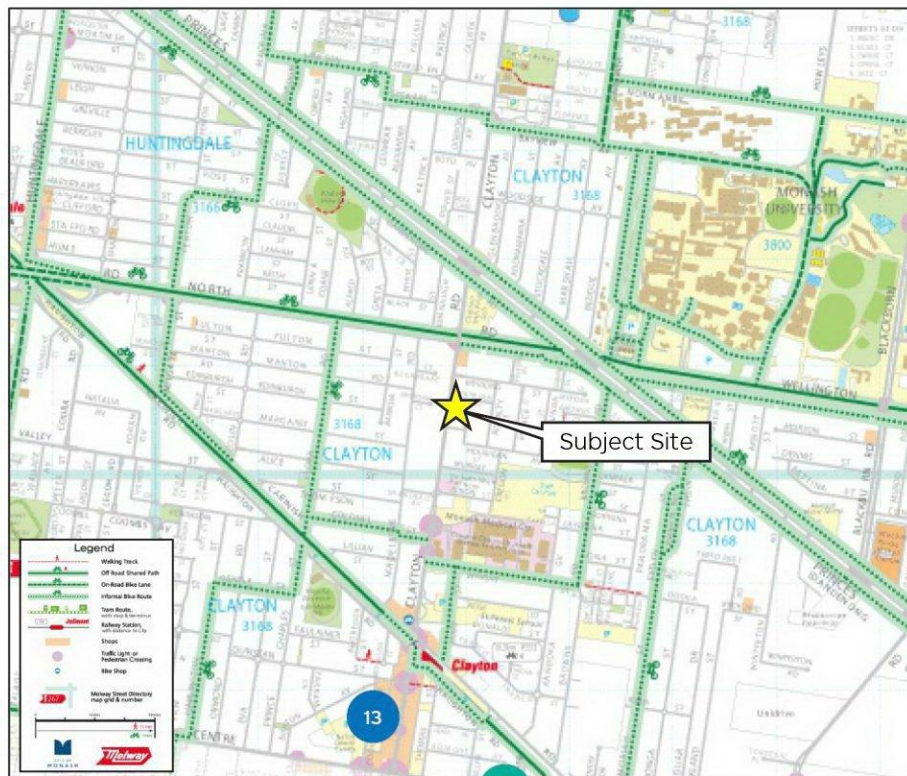
The subject site has good access to Melbourne's bicycle network with a number of on and off-road bicycle paths located nearby. Of particular note are the following:

- On-road bicycle lanes on Huntingdale Road, Forster Road, and through Monash University Clayton Campus.
- Informal bicycle routes along Princes Highway, Wellington Road, Evelyn Street, Browns Road and Flora Road.
- Off-road shared path along North Road.
- The Djerring Trail is located to the south of the site, running alongside the and Pakenham railway line, providing connection between Caulfield and Oakleigh.

The above infrastructure connects to the wider bicycle network, providing further connections across Melbourne.

The location of the subject site relative to nearby bicycle facilities is presented in Figure 2.11.

Figure 2.11: Monash TravelSmart Map



Source: www.monash.vic.gov.au

3 Planning Context:

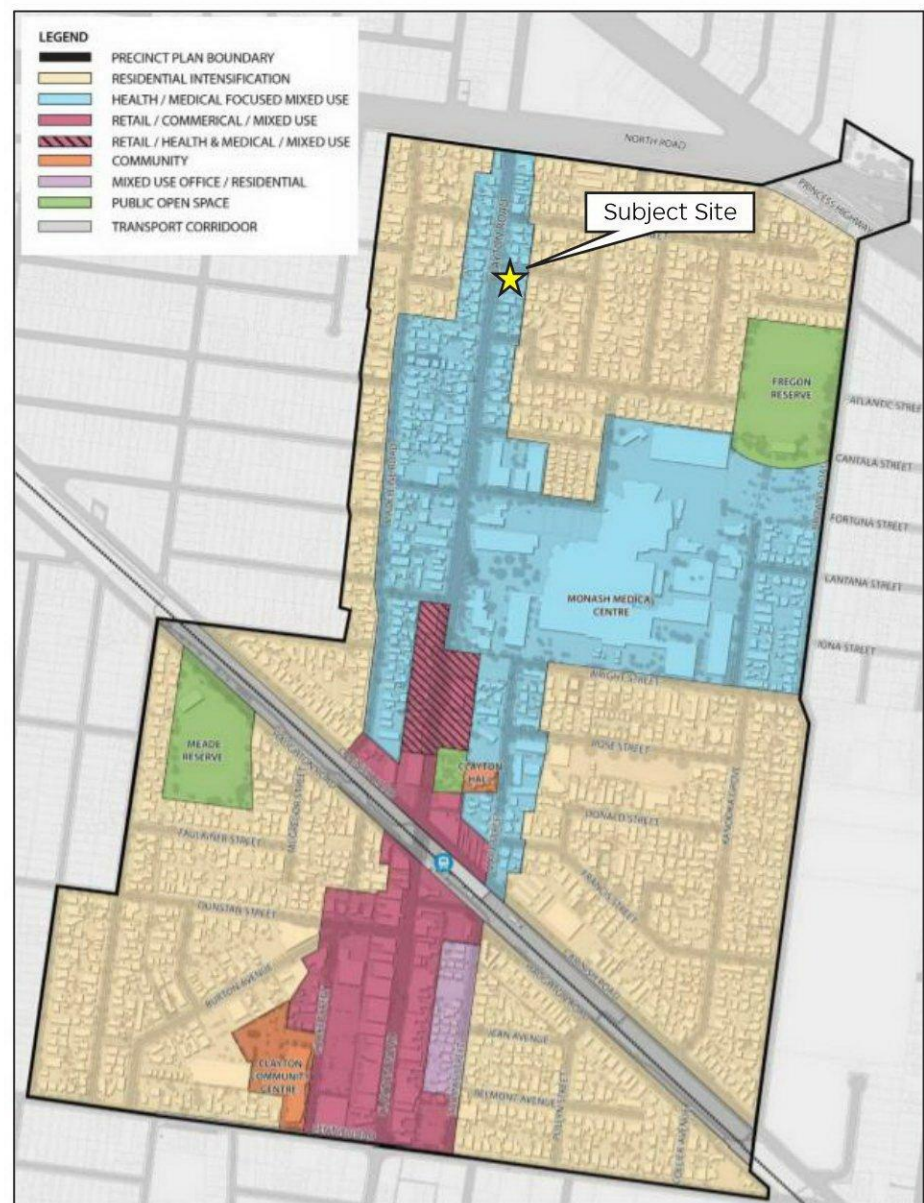
3.1 Clayton Activity Centre Precinct Plan

The subject site is located within the Clayton Activity Centre Precinct. The future development of this precinct is guided by the Clayton Activity Centre Precinct Plan.

The Precinct Plan, dated January 2020, is a long term vision for the growth of Clayton which articulates how the Active Centre should look and function, and makes recommendations for future land uses such as retail, commercial and residential. The Plan identifies key opportunities for the Activity Centre, including a specialised health and medical precinct that has strong connections to the Monash Medical Centre and Monash University.

Figure 8 of the Precinct Plan shows the “Clayton Activity Centre Activities and Land Use Plan” which outlines the desired land uses. This figure is reproduced in Figure 3.1.

Figure 3.1: Clayton Activity Centre Activities and Land Use Plan (CACPP – Figure 8)



Source: Clayton Activity Centre Precinct Plan (January 2020)

4 The Proposal:

4.1 Overview

It is proposed to construct a mixed-use development on the site located at 186-192 Clayton Road. More specifically, the development comprises the following:

- Medical Centre comprising a total of 4,177sqm,
- Pharmacy comprising 103 sqm, located at ground level,
- Café comprising 82 sqm, located at ground level,
- A total of 151 car parking spaces are provided on site, comprising:
 - 24 spaces at ground level,
 - 66 spaces at basement level, and
 - 61 spaces on Level 2.
- A total of 52 bicycle parking spaces provided, conveniently accessed from ground level, comprising:
 - 22 bicycle spaces for staff within a lockable room accessed via the Whitburn Street frontage,
 - 30 horizontal bicycle spaces across 15 hoops for visitors at the Clayton Road frontage.
- A total of 6 motorcycle spaces.

4.2 Access

Primary pedestrian access to the development will be provided to/from Clayton Road. Pedestrian access to the Café and Pharmacy is provided directly from Clayton Road. Access to bicycle parking is provided via the ground level car park, accessed via Whitburn Street.

Vehicular access to development is to be provided via a new double-width crossover to/from Whitburn Street.

The redundant vehicle crossovers to/from Clayton Road and Whitburn Street are to be removed, with the kerb and channel reinstated to the satisfaction of the responsible authority.

4.3 Waste Collection

Refuse and recycle bins will be located within the bin storage room at ground level. Waste is proposed to be collected on-site by a private contractor within the ground level car park.

A Waste Management Plan has been prepared by Ratio Consultants to accompany the town planning application.

5.1 Planning Scheme Assessment

Parking requirements for a range of developments are set out under Clause 52.06 of the Monash Planning Scheme. The purpose of the Clause, among other things, is:

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

The number of car parking spaces required for the specified uses is listed under Table 1 of Clause 52.06-5. The car parking requirement specified for a use listed in table 1 does not apply if:

- A car parking requirement for the use is specified under another provision of the Planning Scheme: or
- A schedule to the Parking Overlay specifies the number of car parking spaces required for the use.

No Parking Overlay is applicable to the subject site, and the site is located within the Principal Public Transport Network (PPTN) area, as displayed in Figure 2.10.

Therefore, the relevant rates under Column B of Table 1 of Clause 52.06-5 have been applied to the proposed development and are shown in Table 4.1.

Table 5.1: Car Parking Requirements – Clause 52.06-5

Use	Size/Number	Rate	Car Parking Requirement
Medical Centre	4,177 sqm	3.5 spaces to each 100 sqm of leasable floor area	146 spaces
Pharmacy	103 sqm	3.5 spaces to each 100 sqm of leasable floor area	3 spaces
Café (Food and Drink)	82 sqm	3.5 spaces to each 100 sqm of leasable floor area	2 spaces
Shop	167 sqm	3.5 spaces to each 100 sqm of leasable floor area	5 spaces
TOTAL			156 spaces

On the basis of the above, the proposed development has a statutory car parking requirement to provide **156** car parking spaces. As the proposal considers providing 151 car parking spaces on-site, a reduction of 5 car spaces is sought against the statutory requirement.

The proposal seeks to provide the statutory car parking rate for the medical suites on-site, as such the reduction from the statutory requirement is only associated with the pharmacy and café.

Car parking for the pharmacy, café and shop uses has been provided at a rate of 1 space per 100 sqm for staff car parking.

A total of 158 car parking spaces are proposed on-site, allocated as shown in Table 5.2.

Table 5.2: Proposed Car Parking Allocation

Use	Size/Number	Statutory Requirement	Proposed Provision	Shortfall
Medical Centre	4,177 sqm	146 spaces	146 spaces	-
Pharmacy	103 sqm	3 spaces	1 space	2 spaces
Café (Food and Drink)	82 sqm	2 spaces	1 space	1 space
Shop	167 sqm	5 spaces	3 spaces	2 spaces
TOTAL		156 spaces	151 spaces	5 spaces

An application to reduce the number of car parking spaces required under Clause 52.06-5 must be accompanied by a Car Parking Demand Assessment. A Car Parking Demand Assessment and the appropriateness of allowing a reduction of on-site parking associated with the café and pharmacy are discussed below.

5.2 Car Parking Demand Assessment

Clause 52.06-7 states that an application to reduce the number of car parking spaces required under Clause 52.06-5 must be accompanied by a Car Parking Demand Assessment which must address the following matters:

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

The Car Park Demand Assessment criteria are discussed as follows:

Likelihood of Multi-Purpose Trips

As discussed in Section 3.1, the site is located within the area of the Clayton Activity Centre Precinct. As the precinct develops, an increased number of other mixed-use and medical developments will be located within close proximity to the site. Visitors will be able to easily walk or cycle between uses whilst in the precinct, visiting the café and shop uses at ground floor whilst visiting another facility within walking distance.

Residents in the surrounding residential area may walk or cycle to the café and shops, and patients of the medical centre on site may visit the ground floor uses whilst on site.

Visitors to the pharmacy are largely anticipated to be generated by patients of the medical centre. Therefore, the pharmacy is not anticipated to generate additional car parking demand by patients.

The Variation of Car Parking Demand Over Time

Demands for car parking associated with the on-site uses will depend largely on the nature of the businesses operating on the site, including hours of operation.

Typical operation of the pharmacy will predominantly occur during weekday business hours, with the café and shop tenancies also expected to incorporate weekend trade.

Short-Stay / Long-Stay Car Parking Demand

Long-stay car parking is typically generated by staff, therefore staff parking for the pharmacy, café and shop uses accommodated for on-site.

The Availability of Public Transport

As discussed in Section 2.4, the site has very good access to a range of public transport services with bus services operating in convenient proximity to the subject site.

The bus services can also be used to gain access to Clayton Train Station, which is serviced by the Cranbourne and Pakenham lines and each provide access to the Melbourne CBD.

The range of public transport options offer a viable alternate means of transport for both staff and patrons travelling to/from the site.

The Convenience of Pedestrian and Cyclist Access

Pedestrian footpaths are provided along the majority of the roads in vicinity of the site and are generally in good condition, providing convenient access to public transport services and the surrounding residential area.

The site has good access to the surrounding bicycle network, with an off-road shared path along North Road and a number of on-road bicycle lanes in the vicinity of the site, including along Huntingdale Road and Forster Road.

These facilities provide a viable means of alternative active transport.

The Provision of Bicycle Parking and End of Trip Facilities for Cyclists

The development proposes to provide a generous provision of bicycle parking, with a total of 52 bicycle parking spaces at ground level. 22 of the spaces are provided within a lockable compound for use by staff, with end of trip facilities provided in connection to the bicycle room, allowing staff to shower and change on arrival.

30 bicycle spaces are provided across 15 horizontal hoops across the Clayton Road frontage for use by visitors to the development.

All bicycle parking is located at ground level, making it easy for both staff and visitors to locate and access the bicycle parking spaces.

Empirical Assessment

Staff car parking demand generated by the café, pharmacy and shop are estimated to generate car parking demand at a rate of 1 space per 100sqm. As such, the provision of 1 space for the 82sqm café, 1 space for the 103sqm pharmacy and 3 spaces for the 167sqm of shop uses is anticipated to meet the staff car parking demand generated by each use.

5.3 Allowing Fewer Spaces to be Provided

Clause 52.06-6 sets out the factors to be considered when determining the appropriateness of allowing fewer car parking spaces to be provided than the assessed parking demand. Some of the relevant factors are:

- The Car Parking Demand Assessment;
- The Availability of Alternative Car Parking in the Locality of the Land;
- Any Relevant Local Planning Policy or Incorporated Plan; and
- Any other relevant consideration.

Those factors directly relevant to this assessment are discussed in more detail below:

Availability of Car Parking

As discussed in the Car Parking Demand Assessment above, the development is anticipated to generate minimal car parking demand in excess of the car parking that is provided on-site, and they will be short-term demands.

In the event that visitors to the café and pharmacy require a car parking space on-street, the car parking demand generated by these visitors is anticipated to be accommodated within nearby kerbside parking. Parking along Whitburn Street is subject to ½ hour parking restrictions 8am-6pm Monday to Friday.

Access to Provision of Alternative Transport Modes

The site has good access to a range of public transport services, with bus services operating within convenient proximity to the site. These facilities are detailed within Section 2.4. Additionally, the site has good access to the nearby bicycle and pedestrian network.

Given the site's access to sustainable transport options, some staff and customers are expected to be able to travel to and from the site without relying on the use of a private motor vehicle.

Any Relevant Local Planning Policy or Incorporated Plan

CLAYTON ACTIVITY CENTRE PRECINCT PLAN

As discussed in Section 3.1, the Clayton Activity Centre Precinct Plan has been prepared to guide the future growth of the precinct.

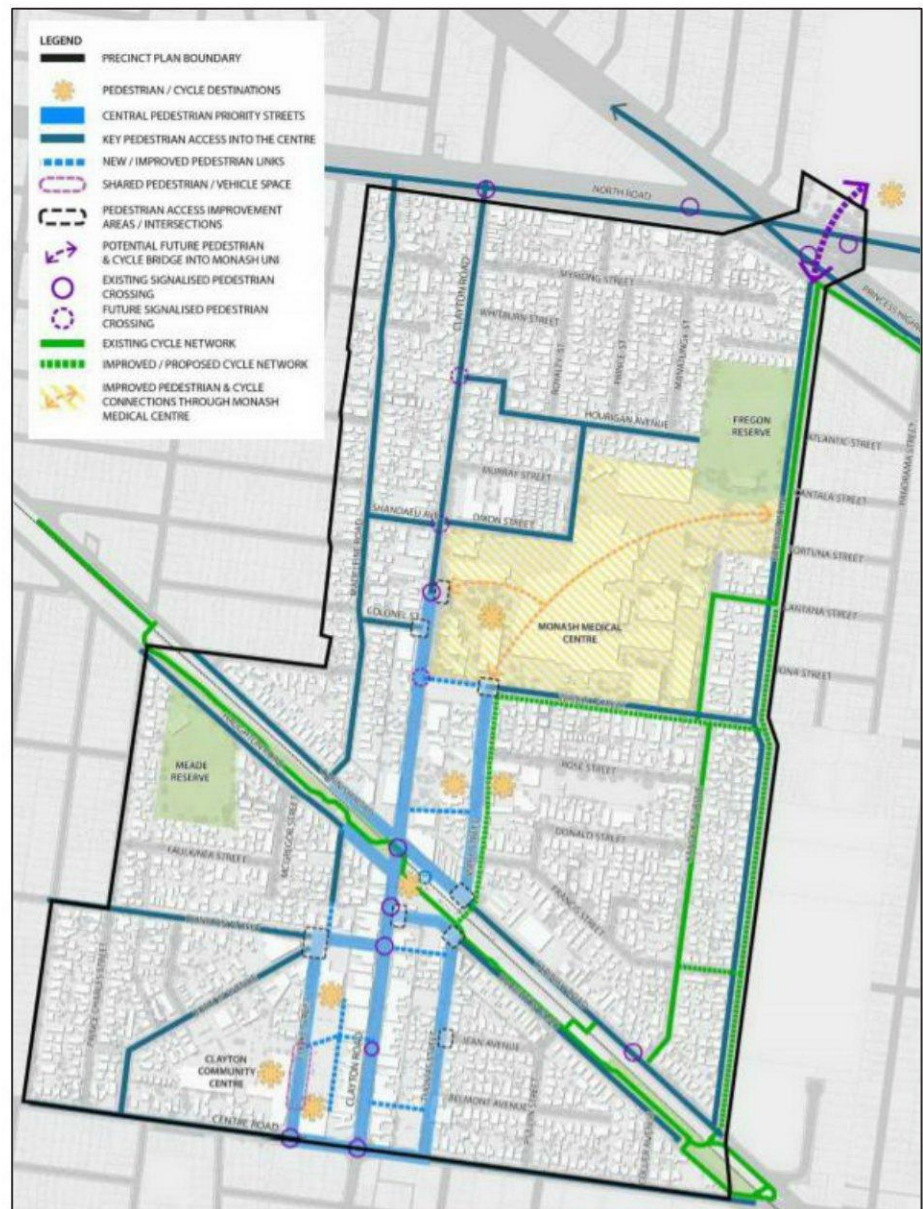
The Precinct Plan outlines the desire to reduce the traffic volumes on Clayton Road and promote a more pedestrian centered experience.

The vision for 'Movement and Transport' within the Precinct Plan is to:

"Transform Clayton into a regional transport hub with excellent public transport access to Melbourne and the wider regions, which connects seamlessly into a comprehensive walking and cycling network."

Figure 13 of the Precinct Plan shows the Pedestrian and Cyclist Movement Plan and is reproduced in Figure 5.1.

Figure 5.1: Pedestrian and Cyclist Movement Plan (CACPP – Figure 13)



Source: Clayton Activity Centre Precinct Plan (January 2020)

PLAN MELBOURNE

Plan Melbourne provides a strategic plan for the development of Greater Melbourne up until the year 2050.

Plan Melbourne's vision is guided by nine principles, with Principle 5 of Plan Melbourne listed as "Living Locally – 20 minute neighbourhoods"

As outlined with Plan Melbourne, the 20-minute neighbourhood is all about 'living locally'— giving people the ability to meet most of their everyday needs within a 20-minute walk, cycle or local public transport trip of their home.

The document prepared by the Victoria State Government as part of Plan Melbourne '20 Minute Neighbourhoods – Creating a more liveable Melbourne' specifies a walkable catchment radius of 800m associated with a 20-minute walkable journey, said to be the maximum time people are willing to walk to meet their daily needs locally.

As such, the proposal seeks to align with the objectives of Plan Melbourne by accommodating visitors and staff to travel to and from the site via sustainable travel modes.

5.4 Appropriateness of the Proposed Car Parking Supply

It is proposed to provide 151 on-site car parking spaces to meet the parking demands of the mixed-use development. This level of parking provision is considered adequate for the following reasons:

- The provision of 146 car parking spaces for the medical suites of the development meet the statutory requirements of Clause 52.06 of the Monash Planning Scheme.
- The proposed supply of 5 on-site car parking spaces for the café, pharmacy and shop uses are expected to meet the long-term parking demands of employees.
- The site is well serviced by public transport, with several bus services all provided within convenient walking distance of the site. The variety of services provide a viable means of alternate transport modes to the private vehicle for both visitors to travel to/from the site.
- The provision of a high quantity, easily accessible bicycle parking at ground level, together with end of trip facilities will support staff and visitors to cycle to the site.
- A good level of pedestrian and cycling connectivity will encourage and facilitate an increase in walking, cycling and public transport modes to and from the site.
- The proposal seeks to align with the objectives of Plan Melbourne and Clayton Activity Centre Precinct Plan by accommodating visitors to travel to and from the site via sustainable travel modes.

Based on the above factors, the proposed provision of car parking is considered appropriate and satisfactory.

6 Access and Car Parking Layout:

6.1 Clause 52.06-9 Design Standard Assessment

Design Standard 1 – Accessways

Design Standard 1 of Clause 52.06-9 relates to the design of accessways. The requirements of Design Standard 1 are assessed against the proposal in Table 6.1.

Table 6.1: Design Standard 1 Assessment - Accessways

Requirement	Comments
Must be at least 3m wide.	Satisfied – Accessway has been designed with a width of 6.58 metres, accommodating two-way access. An island separates inbound and outbound traffic at the boundary with Whitburn Street.
Have an internal radius of at least 4m at changes of direction or intersection or be at least 4.2m wide.	Satisfied – The internal accessway has been provided excess of 4.2 metres at all changes in direction, with a minimum width of 5.5 metres along the internal ramps.
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.	N/A – No dead-end spaces included in proposal.
Provide at least 2.1m headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8m.	Satisfied – A minimum headroom clearance of 2.1 metres is provided throughout the site and above all internal ramps.
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 – All cars can enter and exit the site in a forward direction.
Provide a passing area at the entrance at least 6.1m wide and 7m long if the accessway serves ten or more car parking spaces and is either more than 50m long or connects to a road in a Road Zone.	Satisfied – The accessway accommodates two-way access.
Have a corner splay or area at least 50% clear of visual obstructions extending at least 2m along the frontage road from the edge of an exit lane and 2.5m along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	Satisfied – Pedestrian sight triangles measuring 2.0 metres along the site frontage and 2.5 metres along the exit lane, have been provided on both sides of the exit lane of the car park.
If an accessway to four or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6m from the road carriageway.	N/A – Access to car park is not from a Road Zone.
If entry to the car space is from a road, the width of the accessway may include the road.	N/A – Entry to the car spaces is not accessed directly from a road.

Design Standard 2 Assessment – Car Parking Spaces

Design Standard 2 of Clause 52.06-9 relates to the design of car parking spaces. The requirements of Design Standard 2 are assessed against the proposal in Table 6.2.

Table 6.2: Design Standard 2 Assessment - Car Parking Spaces

Requirement	Comments
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Design Standard 2.	<p>Considered Satisfied – Car parking spaces are typically provided at 2.6 metres wide and accessed from at least a 6.4 metre aisle.</p> <p>Four spaces throughout the development are provided at a width of 2.4 metres, and provided with 300mm clearance to an adjacent wall. These spaces are provided for use by Staff Only. The Australian Standards allows for frequent users to be provided with a car parking space at 2.4 metres in width, allowing sufficient space for a driver to manoeuvre into the space and open their driver's door to alight the vehicle.</p>
<p>A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 of Design Standard 2, other than:</p> <ul style="list-style-type: none"> - A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1. - A structure, which may project into the space if it is at least 2.1m above the space. 	<p>Satisfied – Car parking spaces located next to a wall or object that impact on the car parking envelope have been provided with an additional 300mm clearance to that object.</p>
Car spaces in garages or carports must be at least 6m long and 3.5m wide for a single space and 5.5m wide for a double space measured inside the garage or carport.	<p>N/A – There are no garages or carports proposed.</p>
Where parking spaces are provided in tandem (one space behind the other) an additional 500mm in length must be provided between each space.	<p>Satisfied – Tandem spaces have been provided with 500mm spacing between them.</p>
Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	<p>N/A – No dwellings are proposed.</p>
Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500mm.	<p>Satisfied – The accessible space and adjacent shared zone have been provided with dimensions in accordance with AS2890.6-2009, with a width of 2.4 metres and a length of 5.4 metres, 500mm of which encroaches into the accessway, as is allowed by Clause 52.06 of the Glen Eira Planning Scheme.</p> <p>The accessible spaces and shared zone will be line-marked in accordance with AS2890.6-2009.</p>

Design Standard 3 - Gradients

Design Standard 3 of Clause 52.06-9 relates to the design of gradients. The requirements of Design Standard 3 are assessed against the proposal in Table 6.3.

Table 6.3: Design Standard 3 Assessment - Gradients

Requirement	Comments
Accessway grades must not be steeper than 1:10 (10%) within 5m of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.	Satisfied – The proposed access into the site is not provided with a gradient.
Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 of Design Standard 3 and be designed for vehicles travelling in a forward direction.	Satisfied - The proposed grades are in accordance with Table 3 of Design Standard 3, with grades no steeper than 1:5.
Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5%) for a summit grade change, or greater than 1:6.7 (15%) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming. Plans must include an assessment of grade changes of greater than 1:5.6 (18%) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.	Satisfied – Appropriate transition sections have been provided to prevent scraping or bottoming. 1:8 transition sections for 2.0 metres have been provided to the top and bottom of the 1:5 ramp.

6.2 Swept Path Assessment

An assessment (refer to Appendix B) of the accessibility to/from the site using the 'Autodesk Vehicle Tracking' software has been conducted. The B99 (99.8th percentile car) was used in the assessment and it was found that vehicles could access the site satisfactory manner and that cars will be able to enter/exit the site in a forward direction.

An assessment of the accessibility to/from the critical parking bays was also undertaken using the B85 (85th percentile car) and it was found that each parking space could be accessed (ingress and egress) in a satisfactory manner.

Some corrective manoeuvres may be required for 'staff only' spaces, which is in accordance with AS/NZS2890.1:2004 (Table 1.1), which specifies that the three-point turn movements to enter and exit 90-degree parking spaces are permitted for regular users.

The assessment indicates that the access arrangements and car parking layout have been designed appropriately and in accordance with the requirements of the Monash Planning Scheme and/or AS/NZS 2890.1:2004.

7 Bicycle Facilities:

7.1 Clause 52.34 Assessment

The provisions set out under Clause 52.34-3 of the Monash Planning Scheme require that bicycle parking be provided at the following rates, as shown in Table 7.1.

It is estimated that the proposal will ultimately comprise in the order of 100 medical consulting rooms. Medical centres of this size will often have assigned rooms to each practitioner, such that a practitioner will work from one consulting room and when that practitioner is not rostered, their consulting room will be vacant. Therefore, on a typical day it can be expected that a maximum of approximately 70% of consulting rooms would be occupied.

Based on the above, it is anticipated that a maximum of 70 practitioners will be practising from the site on a typical day.

Table 7.1: Bicycle Parking Statutory Requirements

Use	Type	Size	Statutory Parking Rate	Statutory Requirement
Medical Centre	Staff bicycle parking	70 practitioners	1 to each 8 practitioners	9 spaces
	Visitor bicycle parking		1 to each 4 practitioners	18 spaces
Pharmacy (Retail premises other than specified in this table)	Staff bicycle parking	103 sqm	1 to each 300 sqm of leasable floor area	0 spaces
	Customer bicycle parking		1 to each 500 sqm of leasable floor area	0 spaces
Café (Retail premises other than specified in this table)	Staff bicycle parking	82 sqm	1 to each 300 sqm of leasable floor area	0 space
	Customer bicycle parking		1 to each 500 sqm of leasable floor area	0 space
Shop (Retail premises other than specified in this table)	Staff bicycle parking	167 sqm	1 to each 300 sqm of leasable floor area	1 space
	Customer bicycle parking		1 to each 500 sqm of leasable floor area	0 space
Subtotal Staff				10 spaces
Subtotal Visitors				18 spaces
TOTAL				28 spaces

Application of the above rates produce a requirement for 28 bicycle parking spaces (10 staff bicycle parking spaces and 18 visitor bicycle parking spaces).

The development proposed to provide a total of **52** bicycle parking spaces:

- 22 wall-mounted spaces within a lockable compound for use by staff;
- 30 horizontal spaces across 15 floor mounted hoops in an 'Arc de Triomphe' arrangement at the Clayton Road frontage for use by visitors to the development.

The development therefore exceeds the requirements of the Monash Planning Scheme for both employees and visitors. This will act to encourage cycling as a travel mode for all users of the development.

7.2 Bicycle Parking Layout

Each horizontal bicycle parking space has been provided with a depth of 1.8 metres, with hoops spaced at 1.0 metre centres, accessed via an aisle of 1.5 metres in width.

Each bicycle parking space has therefore been designed in accordance with AS2890.3:2015. Details of the bicycle parking specifications have been included in Appendix C of this report.

30 of the 52 bicycle parking spaces have been provided in horizontal arrangement, accounting for 58% of the total provision. As such, the AS2890.3:2015 minimum requirement of 20% spaces to be provided in horizontal arrangement has been satisfied.

7.3 End of Trip Facilities

Table 2 and 3 of Clause 52.34-3 of the Glen Eira Planning Scheme specifies that shower and change room facilities should be provided at the following rates:

- Shower: If five or more employee bicycle spaces are required, one shower for the first five employee bicycle spaces, plus one to each 10 employee bicycle spaces thereafter.
- Change Rooms: One change room or direct access to a communal change room to each shower. The change room may be a combined shower and change room.

Table 7.2 outlines the shower and change room facility requirements of the proposed development.

Table 7.2: Shower and Change Room Requirements

Statutory Requirement of Staff Bicycle Parking Spaces	Statutory Shower Requirement	Statutory Change Room Requirement
10 spaces	2 showers	2 change rooms
TOTAL		2 shower and change room

The proposed development has a statutory requirement to provide two showers and change rooms. This requirement is met with the provision of two showers at ground level, accessed via the ground level bicycle storage room.

8 Loading Arrangements:

8.1 Loading and Unloading Arrangements

Regular loading activity to the development is will largely be associated with the following activities:

- Café and Shop use via small vans and trucks,
- Delivery of medical supplies to the medical centre.

Loading is to be carried out within the on-street car parking spaces on Whitburn Street, outside of peak times. Deliveries carried out by smaller vehicles, such as vans, may be undertaken within the ground level car park outside of peak times, subject car parking space availability.

Accordingly, the loading arrangements are considered satisfactory.

8.2 Waste Collection

A Waste Management Plan has been prepared by Ratio Consultants to accompany the town planning application. Waste is to be collected on-site within the ground level car park, by a private waste collection service with a 6.4 metre long mini-rear loader.

A swept path assessment for the mini rear-loader is included within Appendix B, showing that the waste collection vehicle is able to enter the site in a forward direction, manoeuvre within the car park, and egress the site in a forward direction in a satisfactory manner.

For further information on collection and storage requirements, please refer to the Waste Management Plan prepared by Ratio Consultants that accompanies the planning permit application.

9.1 Traffic Generation

Traffic generated by the development is estimated to be associated with each of the component uses as outlined in the following sections.

Medical Centre

Vehicle movements associated with the medical centre are anticipated to predominantly be generated by patients arriving and departing from the site. Case study data collected by Roads and Maritime Services NSW and published in the Guide to Traffic Generating Developments indicates that patients across their case study surveys had a mean average length of stay of 27 minutes.

On the basis of a typical practitioner seeing a patient for 27 minutes on average, one practitioner is estimated to generate approximately 4 vehicle movements per hour evenly split between ingress and egress movements.

Application of this rate to the maximum number of practitioners typically anticipated to be on site at any one time, 70 practitioners, results in a total peak hour traffic generation of 280 movements generated by the medical centre (140 inbound and 140 outbound).

The estimated traffic generation of the medical centre is as shown in Table 9.1

Table 9.1: Medical Centre Traffic Generation

	AM Peak	PM Peak
Arriving Trips	140	140
Departing Trips	140	140
Total Trips	280	280

Café, Pharmacy & Shop

It is estimated that the café, pharmacy and shop could be expected to generate one direct trip at a rate of 1 movement per 100sqm for staff during the AM and PM peak hours. A total of 4 vehicle movements are estimated to be generated by the café, pharmacy and shop tenancies in each of the AM and PM peak hours. The anticipated traffic generation of the medical centre is as shown in Table 9.2.

Table 9.2: Café Traffic Generation

	AM Peak	PM Peak
Arriving Trips	4	0
Departing Trips	0	4
Total Trips	4	4

Overall

A summary of the overall peak hour traffic generation is presented in Table 9.3 (noting that this excludes any customer vehicles on the wider road network).

Table 9.3: Overall Site Traffic Generation

	AM Peak	PM Peak
Arriving Trips	144	140
Departing Trips	140	144
Total Trips	284	284

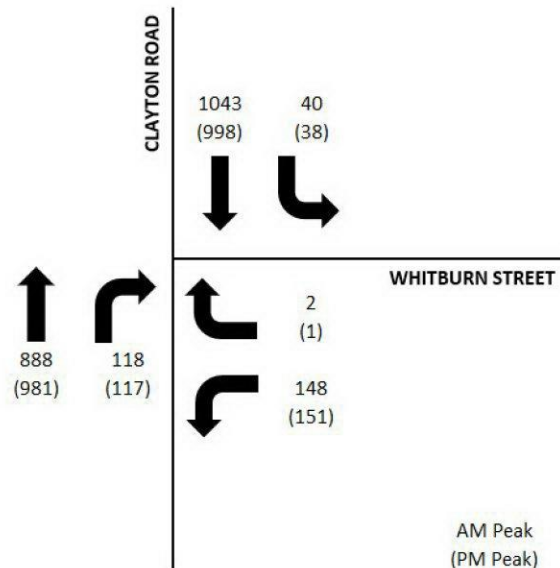
9.2 Traffic Distribution and Impacts

The traffic generated from the subject site will flow directly onto Whitburn Street, Clayton Road and the surrounding road network. Whilst some visitors to the site may choose to travel east from the site on Whitburn Street, it has been conservatively assumed for the purpose of this assessment that all traffic generated by the proposal will travel to the site via Clayton Road.

On the basis of the surrounding residential area, the locality of Monash Health to the south of the site, and having regard to the existing distribution of turning movements to/from Whitburn Street, traffic generated by the medical centre is anticipated to be distributed as follows:

- Inbound
 - 25% from the north
 - 75% from the south
- Outbound
 - 100% to the south

The resulting post development peak hour movements at the site access point are displayed in Figure 9.1.

Figure 9.1: Post Development Peak Hour Movements – Clayton Road/Whitburn Street

Due to the quantum of through movements on Clayton Road during the peak hours, it is acknowledged that lengthy delays will be experienced by drivers should they nominate to turn right from Whitburn Street. It is therefore anticipated that drivers will naturally seek to turn left and reroute through the road network should they wish to travel towards the

north. The wider surrounding road network is considered to be sufficiently permeable to accommodate movements to and from the site from all directions.

A SIDRA analysis of the volumes displayed in Figure 9.1 was undertaken in order to understand the traffic characteristics associated with the proposed access point.

The results of the analysis, displayed in Table 9.4, show that the intersection is anticipated to operate under 'Excellent' conditions with minimal delays and queueing.

Table 9.4: SIDRA Results – Clayton Road/Whitburn Street

Approach	AM Post Development Conditions			PM Post Development Conditions		
	D.O.S.	95%ile Queue (m)	Avg Delay (s)	D.O.S.	95%ile Queue (m)	Avg Delay (s)
Clayton Road (South)	0.43	24	4	0.44	29	4
Whitburn Street (East)	0.37	11	17	0.40	12	18
Clayton Road (North)	0.30	0	0	0.29	0	0
All vehicles	0.43			0.44		

As stated above, it is anticipated that drivers will naturally seek to turn left from Whitburn Street in order to avoid delays in turning right. If in future there are found to be a high number of drivers turning right at the intersection and causing delays for other drivers, the right turn movement could be formally banned through signage and installation of a central median.

Should the right turn be formally banned at the Whitburn Street approach, the ban is anticipated to have minimal impact to the existing residents in the immediate area on the basis of very few vehicles were surveyed to undertake the right turn movement during the peak hours. The surrounding road network provides permeability throughout the surrounding area to enable residents to travel to and from dwellings in each direction.

10 Conclusion:

The proposed mixed-use development at 186-192 Clayton Road, Clayton comprises 4,177sqm of Medical Centre, 103sqm of Pharmacy, 82sqm of Café. A total of 151 car parking spaces and 52 bicycle parking spaces.

Based on the above assessment, it is considered that:

- The provision of 146 car parking spaces for the medical centre component of the development meets the statutory requirements of Clause 52.06 of the Monash Planning Scheme.
- The proposed supply of 1 on-site car parking space for the pharmacy, 1 on-site spaces for the café and 3 on-site spaces for the shop are expected to meet the long-term parking demands of employees.
- The site is located within the Clayton Activity Centre Precinct Plan. Visitors in the short term are anticipated to be drawn to the café and shop from the surrounding area on foot or bicycle.
- Customers of the pharmacy are anticipated to be drawn from patients of the medical centre on site. Therefore the pharmacy is largely considered to be ancillary to the medical centre use.
- The site is provided with a generous provision of bicycle parking exceeding the minimum statutory requirements. All bicycle parking is provided at ground level so that it is easy for both visitors and staff to access spaces. End of trip facilities are provided for staff to support them cycling to and from site.
- The site is well serviced by public transport, with several bus services all provided within convenient walking distance of the site. The variety of services provide a viable means of alternate transport modes to the private vehicle for both visitors to travel to/from the site.
- The proposed car park and access arrangements are suitably designed and are in general accordance with the requirements of the Monash Planning Scheme and/or AS/NZS2890.1:2004.
- Waste is to be collected on site via a private contractor within the ground level car park.
- The development is expected to generate up to 284 vehicle movements to/from the site during the AM and PM peak hour period. It is anticipated that most of the traffic generated by the site will gain access via the intersection of Clayton Road and Whitburn Street. Due to the quantum of existing through movements on Clayton Road, it is anticipated that most drivers will nominate to turn left from Whitburn Street and navigate through the permeable road network surrounding the site to their destination. The intersection is anticipated to function within capacity.

Appendix A Existing Conditions SIDRA Results

SITE LAYOUT

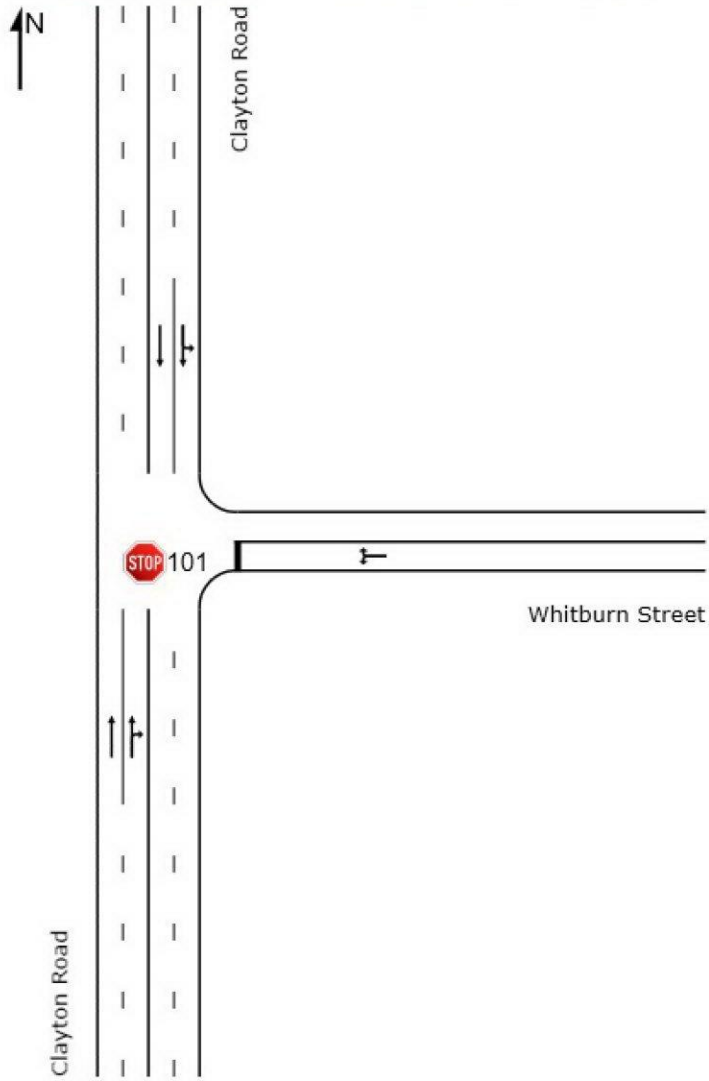
 Site: 101 [EX AM Clayton Road/Whitburn Street (Site Folder: General)]

Clayton Road/Whitburn Street

Site Category: (None)

Stop (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [EX AM Clayton Road/Whitburn Street (Site Folder: General)]

Clayton Road/Whitburn Street
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	HV] %	[Total veh/h]	HV] %				[Veh.]	Dist] m				
South: Clayton Road														
2	T1	888	5.9	935	5.9	0.267	0.5	LOS A	0.6	4.1	0.05	0.01	0.05	56.4
3	R2	10	0.0	11	0.0	0.267	18.3	LOS C	0.6	4.1	0.10	0.02	0.12	49.0
Approach		898	5.8	945	5.8	0.267	0.7	NA	0.6	4.1	0.05	0.01	0.06	56.3
East: Whitburn Street														
4	L2	8	0.0	8	0.0	0.129	11.1	LOS B	0.3	2.4	0.87	0.98	0.87	14.7
6	R2	2	0.0	2	0.0	0.129	187.6	LOS F	0.3	2.4	0.87	0.98	0.87	13.3
Approach		10	0.0	11	0.0	0.129	46.4	LOS E	0.3	2.4	0.87	0.98	0.87	14.4
North: Clayton Road														
7	L2	4	0.0	4	0.0	0.295	4.8	LOS A	0.0	0.0	0.00	0.00	0.00	53.2
8	T1	1043	4.0	1098	4.0	0.295	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		1047	4.0	1102	4.0	0.295	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles		1955	4.8	2058	4.8	0.295	0.6	NA	0.6	4.1	0.03	0.01	0.03	56.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [EX PM Clayton Road/Whitburn Street (Site Folder: General)]

Clayton Road/Whitburn Street
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	HV] %	[Total veh/h]	HV] %				[Veh.]	Dist] m				
South: Clayton Road														
2	T1	981	1.5	1033	1.5	0.287	0.5	LOS A	0.6	4.4	0.05	0.01	0.06	56.5
3	R2	12	0.0	13	0.0	0.287	17.1	LOS C	0.6	4.4	0.10	0.02	0.12	49.1
Approach		993	1.5	1045	1.5	0.287	0.7	NA	0.6	4.4	0.05	0.01	0.06	56.4
East: Whitburn Street														
4	L2	7	0.0	7	0.0	0.070	10.8	LOS B	0.2	1.3	0.81	0.93	0.81	16.3
6	R2	1	0.0	1	0.0	0.070	191.0	LOS F	0.2	1.3	0.81	0.93	0.81	16.8
Approach		8	0.0	8	0.0	0.070	33.3	LOS D	0.2	1.3	0.81	0.93	0.81	16.1
North: Clayton Road														
7	L2	3	0.0	3	0.0	0.278	4.8	LOS A	0.0	0.0	0.00	0.00	0.00	53.3
8	T1	998	2.0	1051	2.0	0.278	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1001	2.0	1054	2.0	0.278	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles		2002	1.7	2107	1.7	0.287	0.5	NA	0.6	4.4	0.03	0.01	0.03	57.3

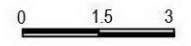
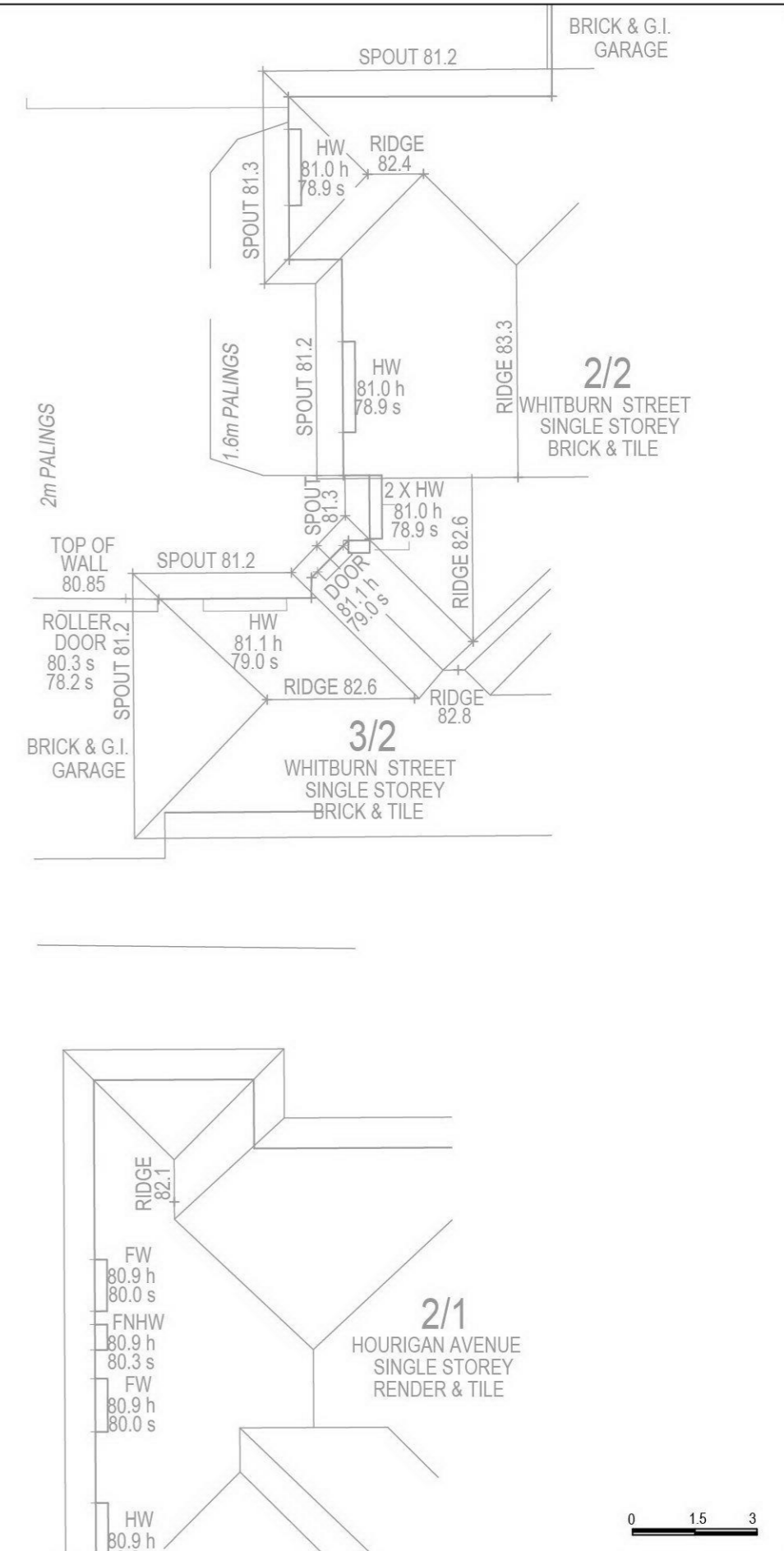
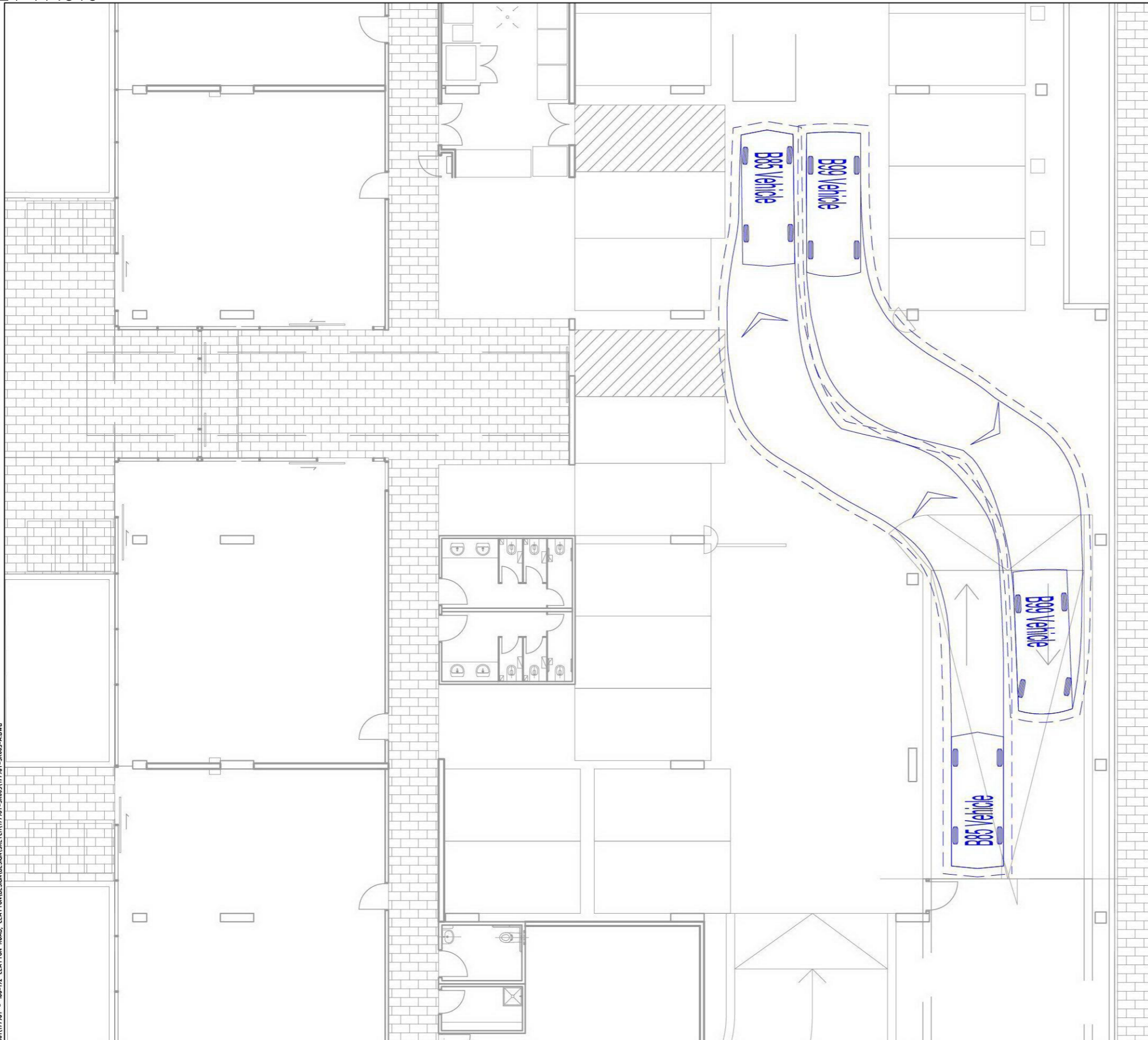
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Appendix B Swept Path Assessment



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ratio:

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 FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1:2004)

	<p>VEHICLE ENVELOPE (FORWARD)</p> <p>300mm CLEARANCE (FORWARD)</p> <p>VEHICLE ENVELOPE (REVERSE)</p> <p>300mm CLEARANCE (REVERSE)</p>
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

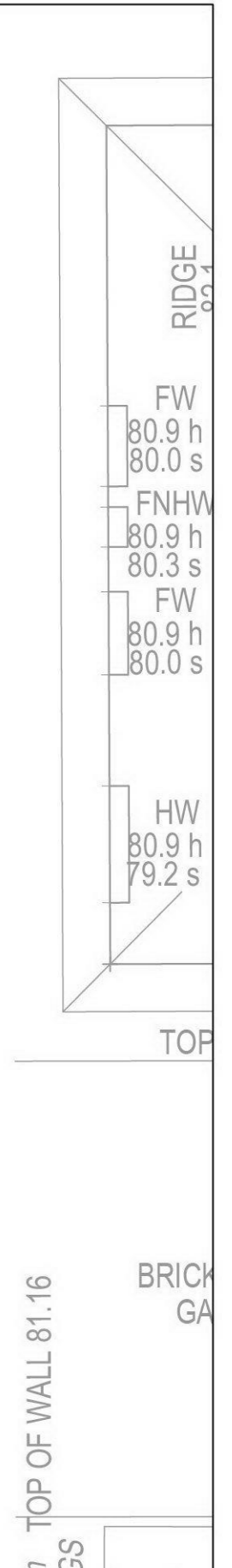
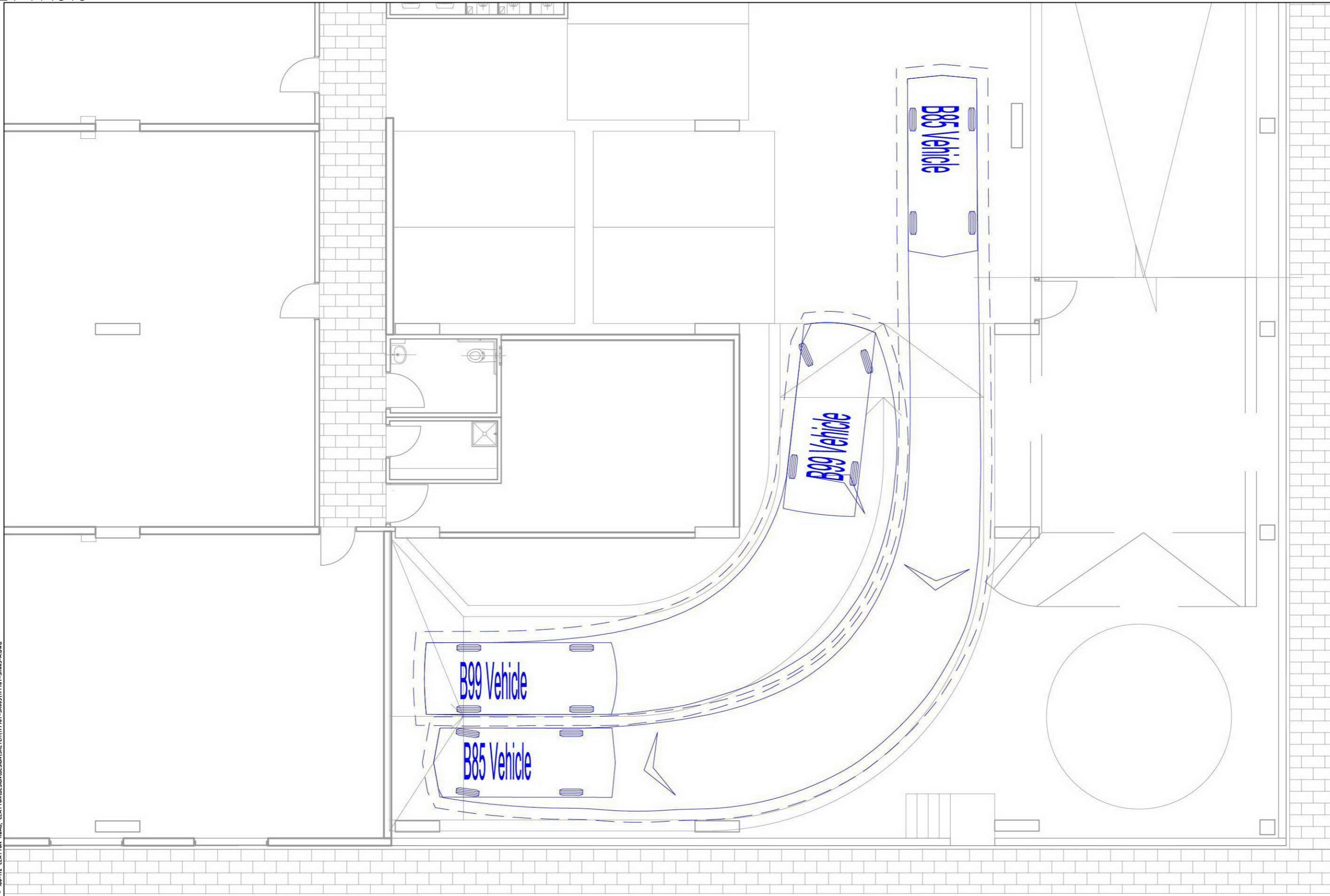
Medical Centre 186-192 Clayton Road, Clayton Swept Path Diagrams

NOTE:
 1) Base Plan Supplied By HATZ
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 177961-SK005-A	SHEET No. 1 of 7	PREPARED BY C.L.H.	SCALE 1:150@A3	DATE 21/12/21
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B99 Vehicle (AS/NZS2890.1:2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

VEHICLE ENVELOPE (FORWARD)
 300mm CLEARANCE (FORWARD)
 VEHICLE ENVELOPE (REVERSE)
 300mm CLEARANCE (REVERSE)

Medical Centre 186-192 Clayton Road, Clayton Swept Path Diagrams

NOTE:
 1) Base Plan Supplied By HATZ
 2) Maximum Design Speed 10km/h

RATIO REFERENCE
 17796T-SK005-A

SHEET No.
 2 of 7

PREPARED BY
 C.L.H.

SCALE
 1:100@A3

DATE
 21/12/21





ratio:

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 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)

	<p>VEHICLE ENVELOPE (FORWARD)</p> <p>300mm CLEARANCE (FORWARD)</p> <p>VEHICLE ENVELOPE (REVERSE)</p> <p>300mm CLEARANCE (REVERSE)</p>
Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

Medical Centre
 186-192 Clayton Road, Clayton
 Swept Path Diagrams

NOTE:
 1) Base Plan Supplied By HATZ
 2) Maximum Design Speed 10km/h

RATIO REFERENCE
 17796T-SK005-A

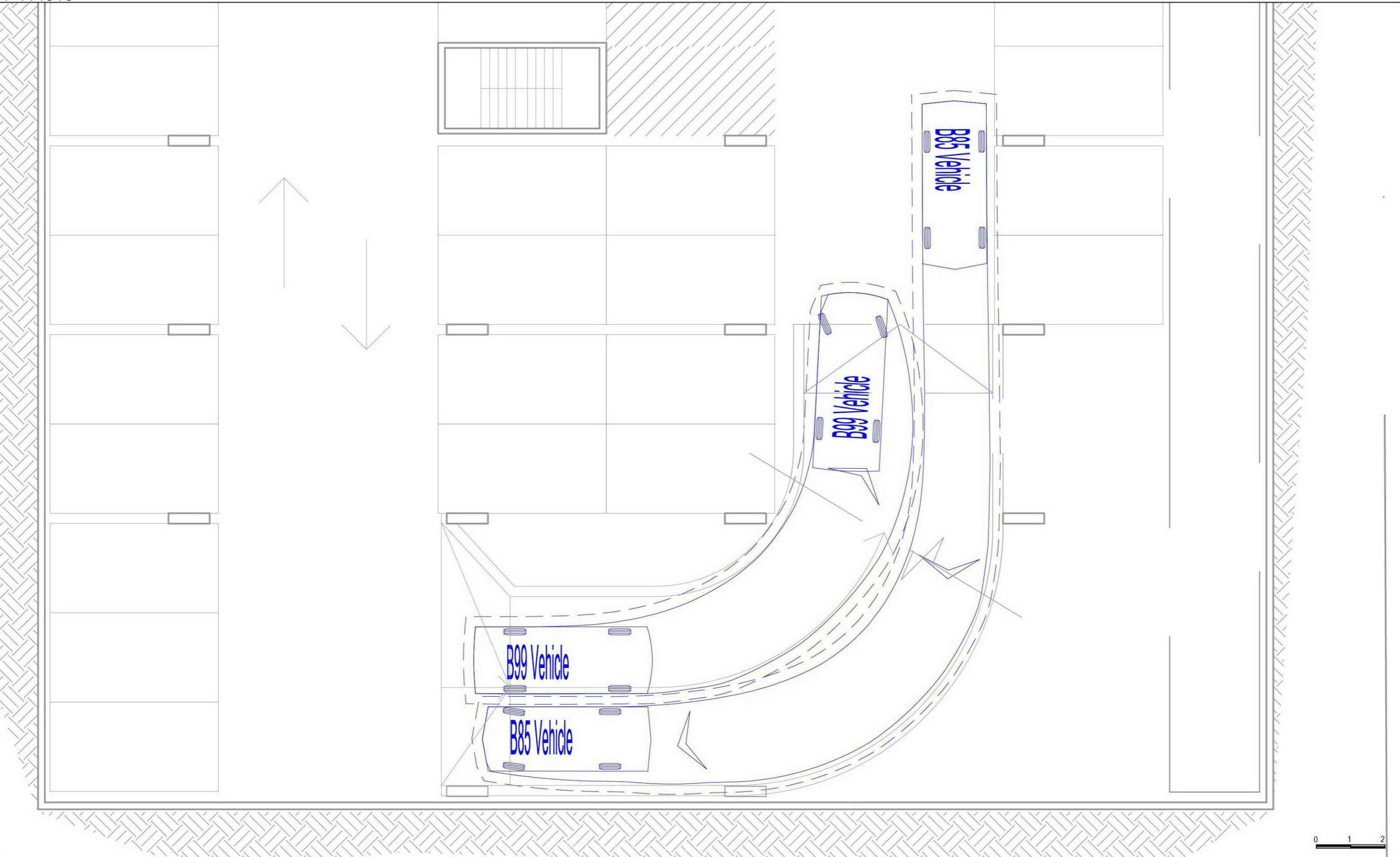
SHEET No.
 3 of 7

PREPARED BY
 C.L.H.

SCALE
 1:100@A3

DATE
 21/12/21





ratio:
 RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

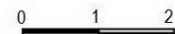
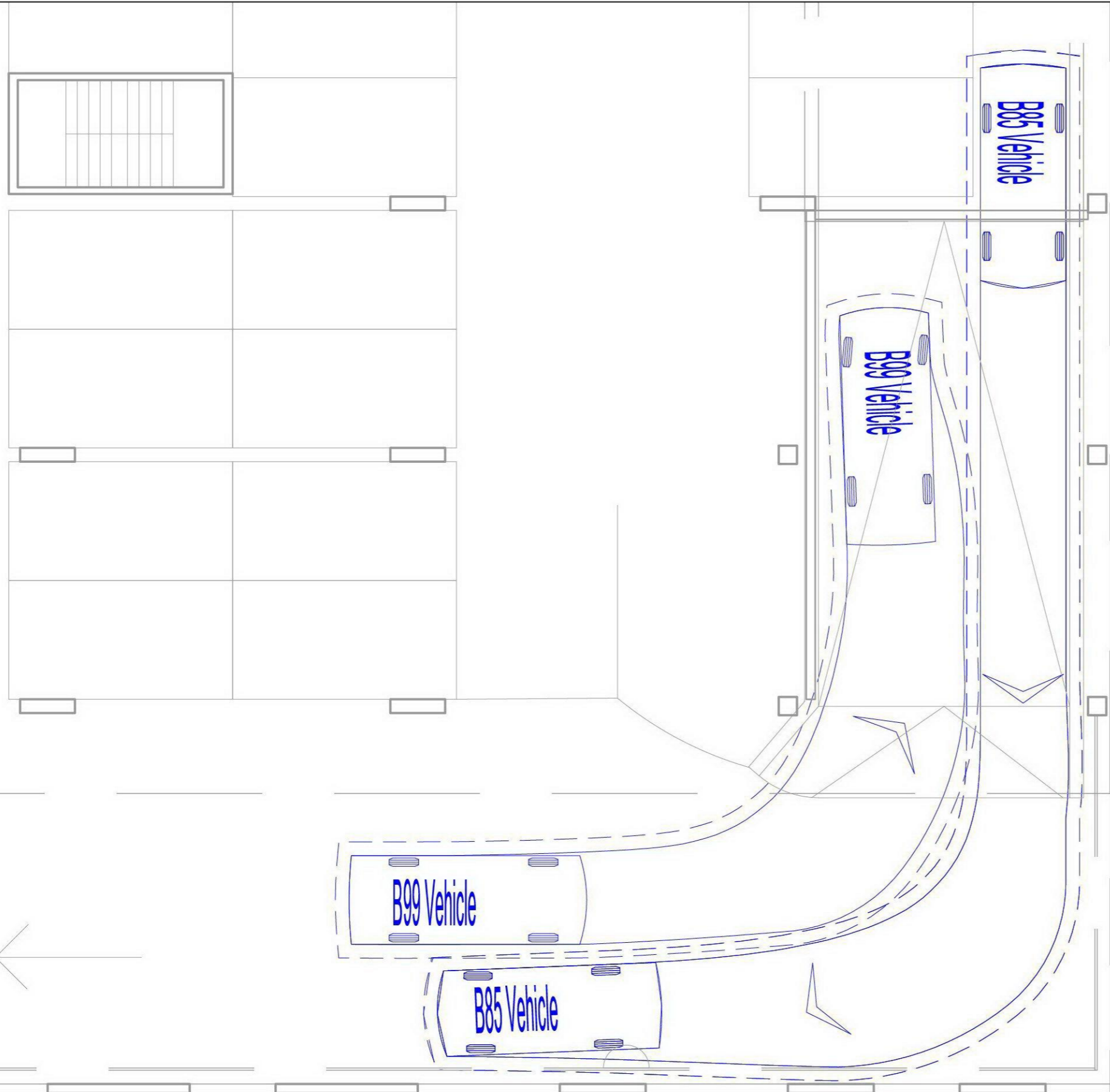
B99 Vehicle (AS/NZS2890.1:2004)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m
VEHICLE ENVELOPE (FORWARD)	
300mm CLEARANCE (FORWARD)	
VEHICLE ENVELOPE (REVERSE)	
300mm CLEARANCE (REVERSE)	

Medical Centre
 186-192 Clayton Road, Clayton
 Swept Path Diagrams

NOTE:
 1) Base Plan Supplied By HATZ
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 17796T-SK005-A	SHEET No. 4 of 7	PREPARED BY C.L.H.	SCALE 1:100@A3	DATE 21/12/21
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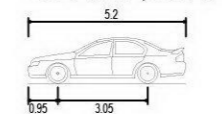




ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1:2004)



Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

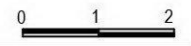
Medical Centre 186-192 Clayton Road, Clayton Swept Path Diagrams

NOTE:
 1) Base Plan Supplied By HATZ
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 17796T-SK005-A	SHEET No. 5 of 7	PREPARED BY C.L.H.	SCALE 1:100@A3	DATE 21/12/21
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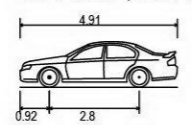
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21/12/2021 15:43 PM



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)



Overall Length 4.91m
 Overall Width 1.870m
 Overall Body Height 1.421m
 Min Body Ground Clearance 0.159m
 Track Width 1.770m
 Lock to Lock Time 4.00 sec
 Curb to Curb Turning Radius 5.80m

VEHICLE ENVELOPE (FORWARD)
 300mm CLEARANCE (FORWARD)
 VEHICLE ENVELOPE (REVERSE)
 300mm CLEARANCE (REVERSE)

Medical Centre
 186-192 Clayton Road, Clayton
 Swept Path Diagrams

NOTE:
 1) Base Plan Supplied By HATZ
 2) Maximum Design Speed 10km/h

RATIO REFERENCE
 17796T-SK005-A

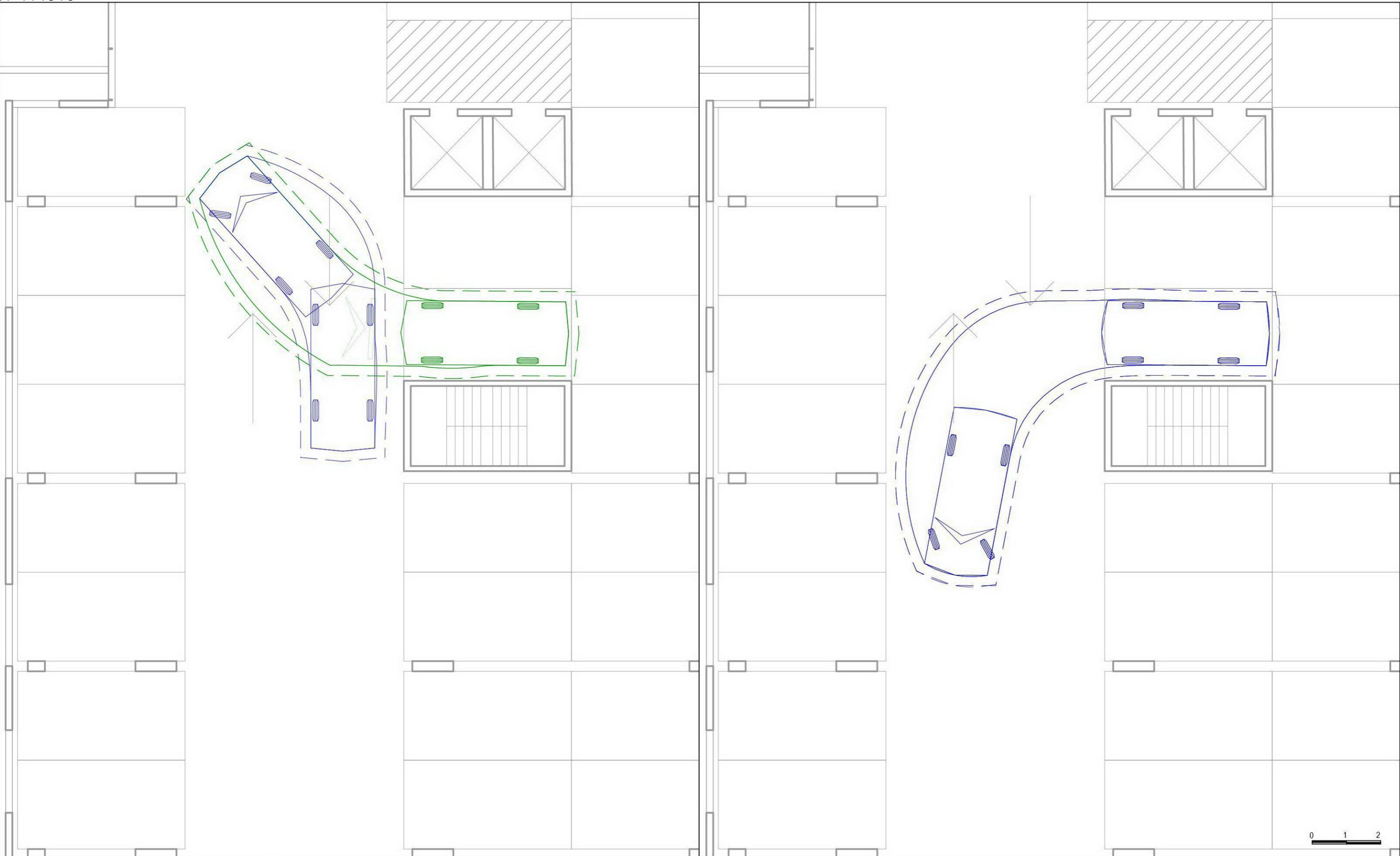
SHEET No.
 6 of 7

PREPARED BY
 C.L.H.

SCALE
 1:100@A3

DATE
 21/12/21





ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)

	<p>VEHICLE ENVELOPE (FORWARD)</p> <p>300mm CLEARANCE (FORWARD)</p> <p>VEHICLE ENVELOPE (REVERSE)</p> <p>300mm CLEARANCE (REVERSE)</p>
Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

Medical Centre
 186-192 Clayton Road, Clayton
 Swept Path Diagrams

NOTE:
 1) Base Plan Supplied By HATZ
 2) Maximum Design Speed 10km/h

RATIO REFERENCE
 17796T-SK005-A

SHEET No.
 7 of 7

PREPARED BY
 C.L.H.

SCALE
 1:100@A3

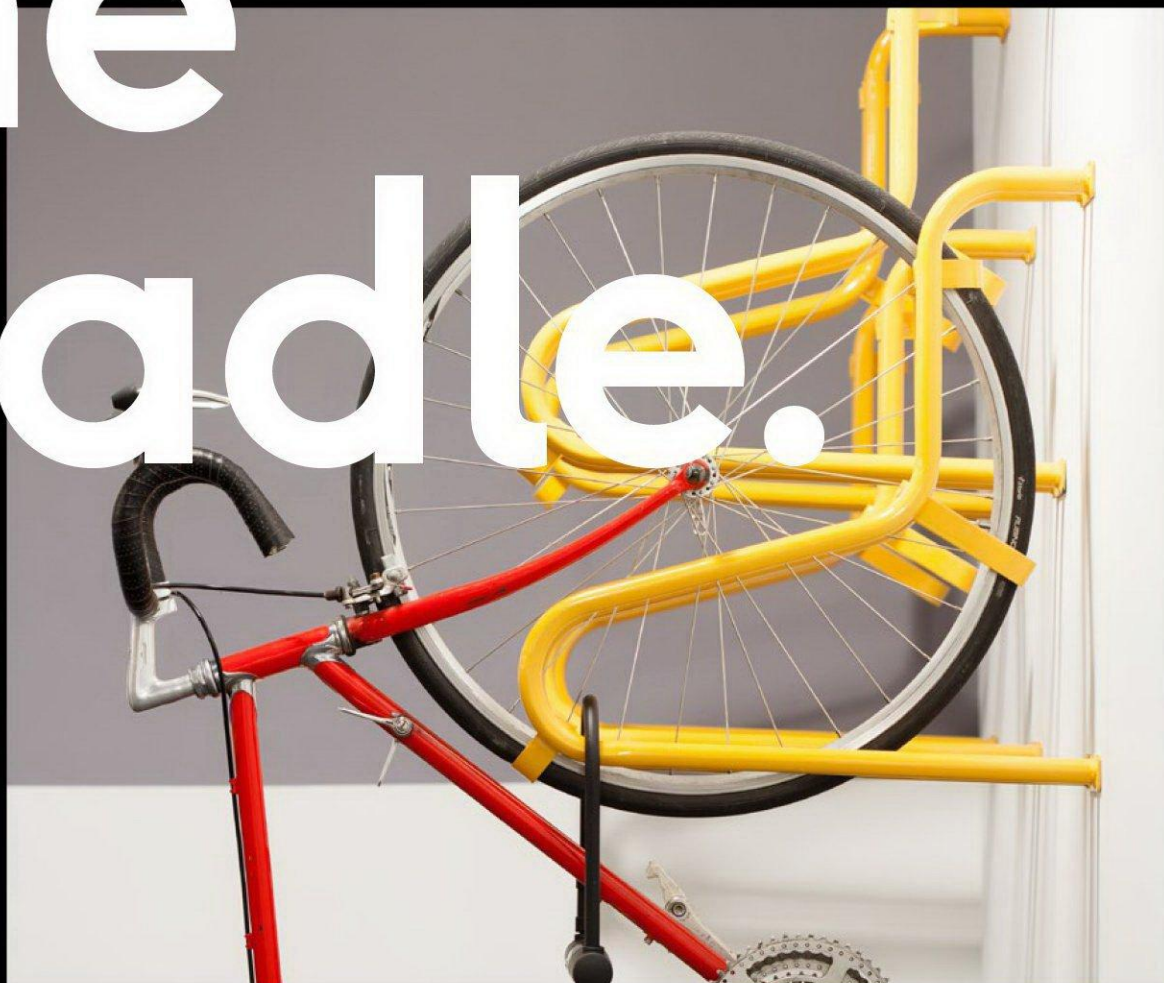
DATE
 21/12/21



Appendix C Indicative Bicycle Parking Specifications



The Cradle.



Spec Sheet

Five
At
Heart

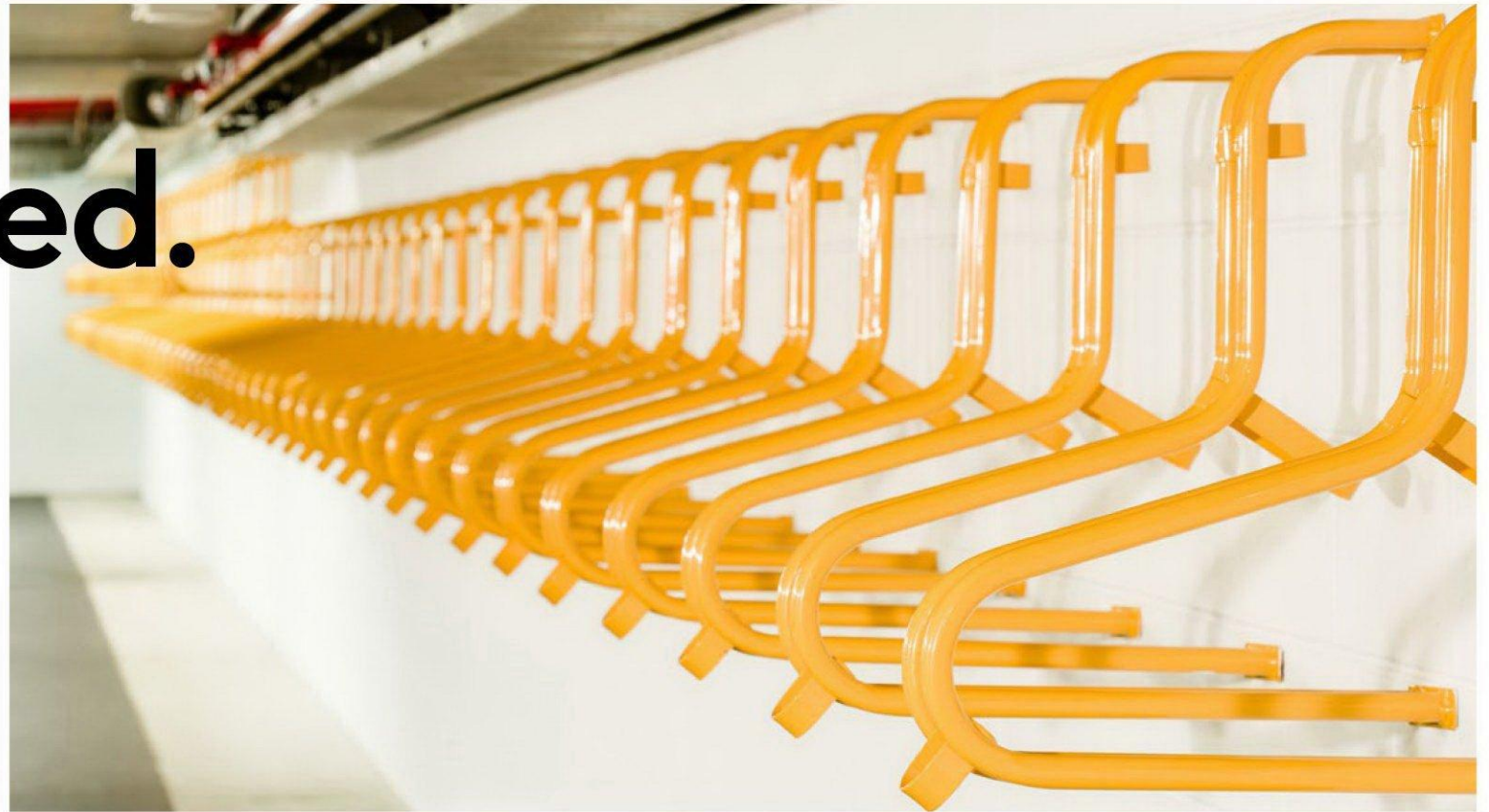
No more struggling to lift your bike onto a hook... easy on both you and your bike.



**Five
At
Heart**

The logo for 'Five At Heart' features the text 'Five At Heart' in a bold, black, sans-serif font. To the right of the text is a stylized heart shape composed of a black circle with five red lines radiating from its center, resembling a target or a compass rose.

Wall Mounted.



Material

Mild Steel

Powder coated finish (custom colours available, minimum order 20)

Specification

(X) Centre Spacing

AUS Standard (2890.3) 500mm (1'8")

Manufacturer Recommended 400mm (1'4")

USA, Portland (OR) Standard 600mm (2') or 450mm (1'6") with approval

USA, San Francisco (CA) Standard 400mm (1'4")

*Note – Single Level Option (No Stagger) – requires minimum ceiling of 1900mm

Manufacturer Recommended 600mm (2')

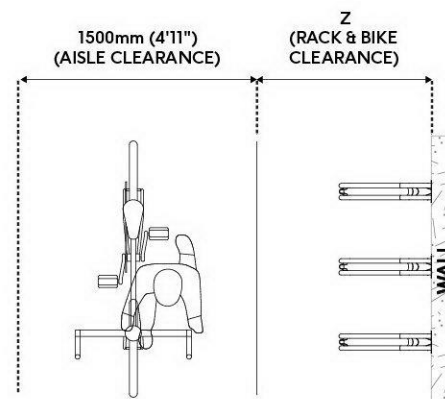
AUS Standard (2890.3) 700mm (2'4")

(Z) Bike & Rack

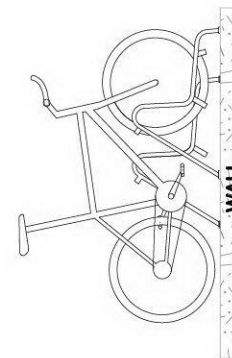
AUS Standard (2890.3) 1200mm (3'11")

Manufacturer Recommended 1100mm (3'7")

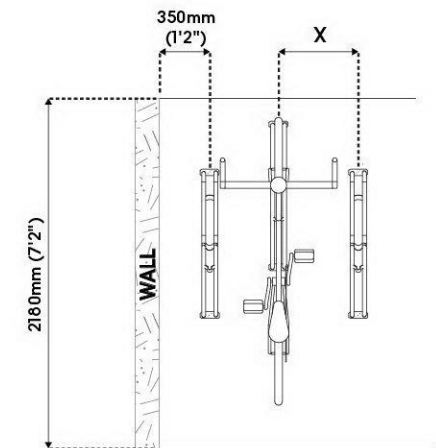
TOP VIEW



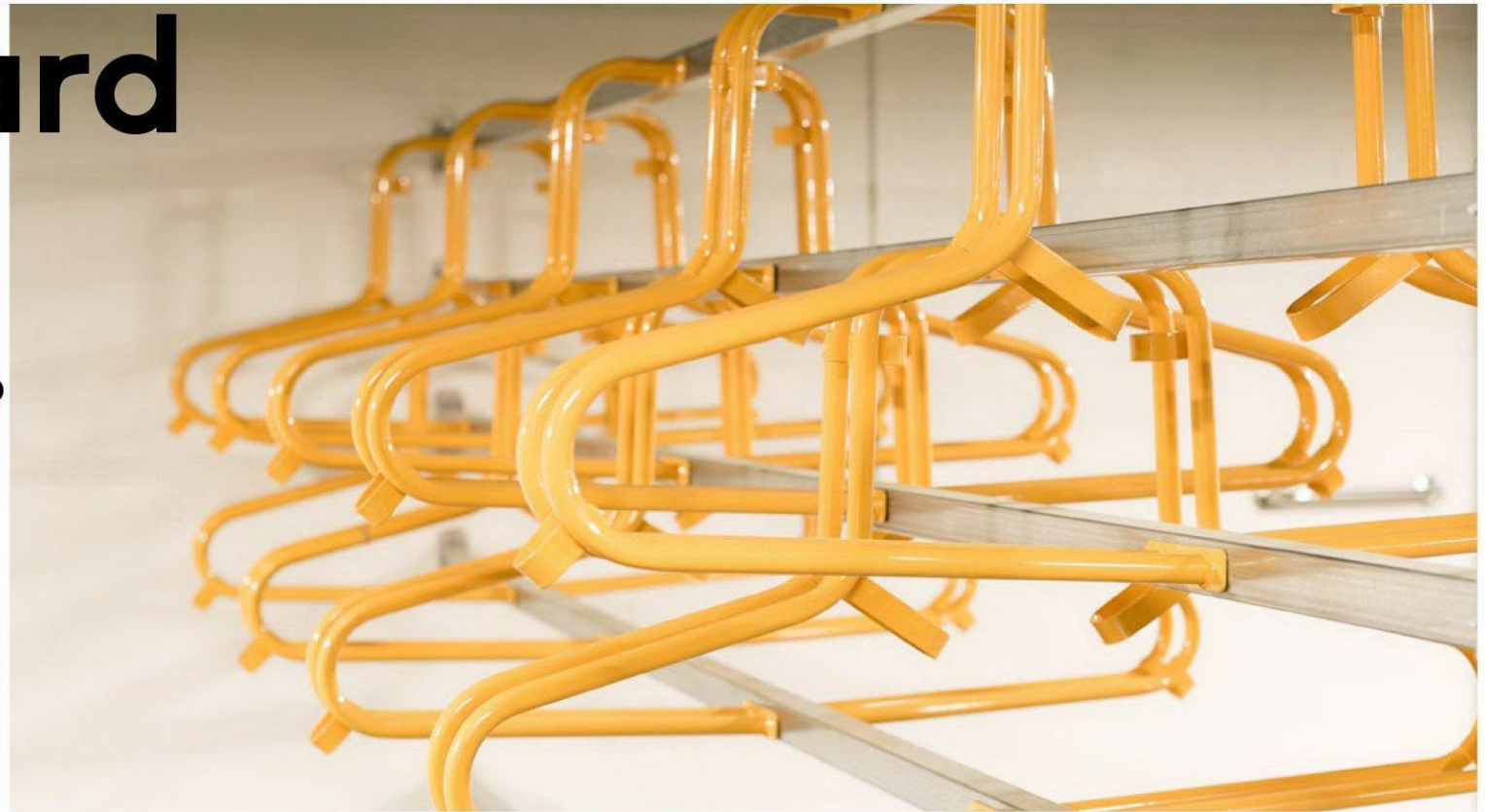
SIDE VIEW



FRONT VIEW



Standard Steel Frame.



The Cradle

Five At Heart

Material

Mild Steel

Powder coated finish (custom colours available, minimum order 20)

Steel frame implemented for area with no existing walls (Custom colours available for horizontal and vertical members)

*Note brackets and fixings not colour treated

Specification

(X) Centre Spacing

AUS Standard (2890.3) 500mm (1'8")

Manufacturer Recommended 400mm (1'4")

USA, Portland (OR) Standard 600mm (2') or 450mm (1'6") with approval

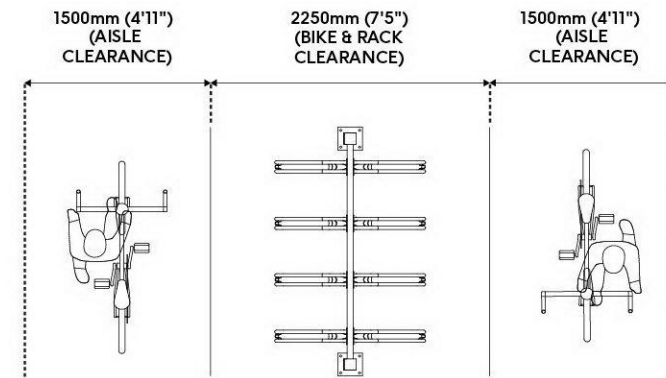
USA, San Francisco (CA) Standard 400mm (1'4")

*Note - Single Level Option (No Stagger) - requires minimum ceiling of 1900mm

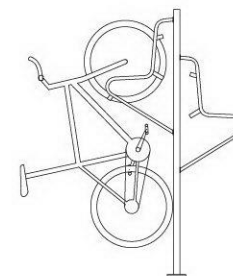
Manufacturer Recommended 600mm (2')

AUS Standard (2890.3) 700mm (2'4")

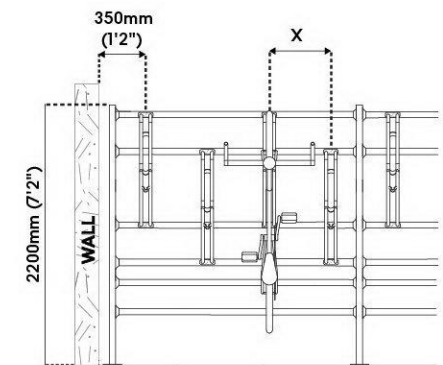
TOP VIEW



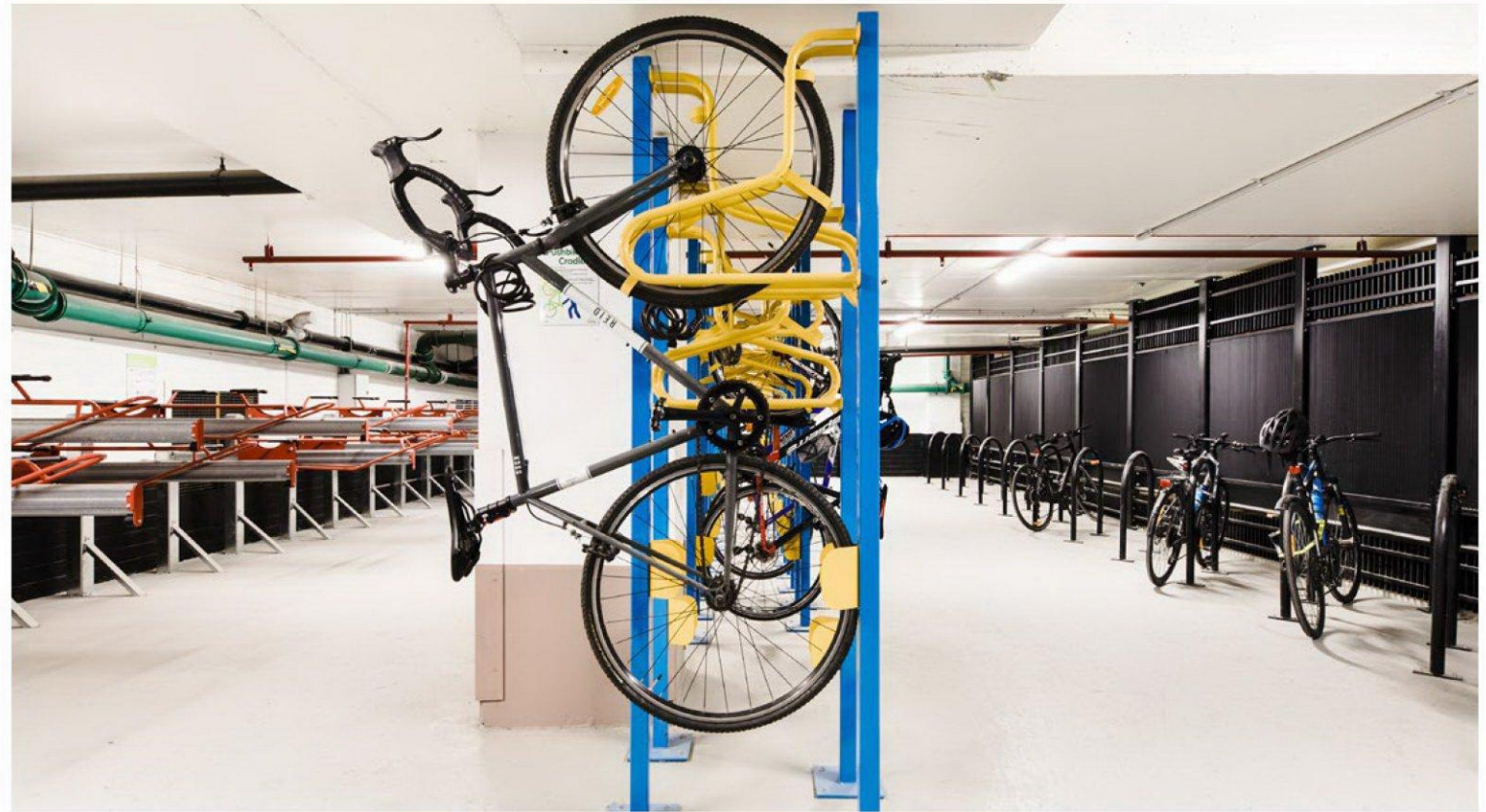
SIDE VIEW



FRONT VIEW



Silver Bullet.



Five At Heart

The Cradle

Material

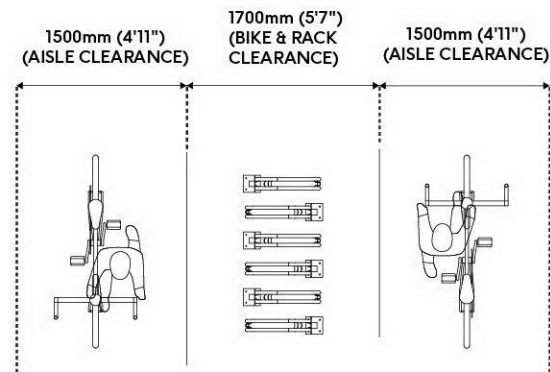
Mild Steel

Powder coated finish (custom colours available, minimum order 20)

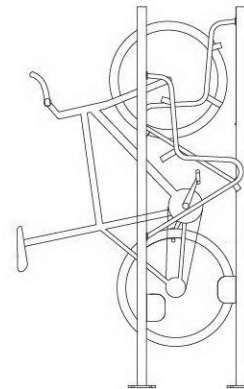
Steel frame implemented for area with no existing walls (Custom colours available for horizontal and vertical members)

*Note brackets and fixings not colour treated

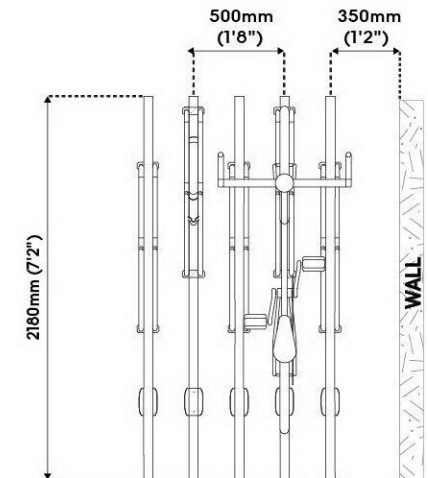
TOP VIEW



SIDE VIEW



FRONT VIEW



Cradle Warranty and Technical Data

Warranty Information

Five At Heart products come with a standard 2 year warranty, effective from the handover date.

For the warranty period, we warrant that the equipment (and any materials) we supply will comply with the relevant standards at the date of installation.

This warranty is limited and may be excluded in part or in full in light of user damage or failure to install to Five At Heart specification.

We recommend a monthly visual inspection for signs of damage or need for cleaning.

Contact Five At Heart in the event of product damage.

Fixing options/ and details

Fig 1/ Into Concrete Wall – M10/50mm galvanised sleeve anchor

Fig 2/ Into Masonry Block work – Bugle screw and ram plug

Fig 3/ Into Timber Nogging – Bugle screw

Fig 4/ Into Steel Framing – 22mm, 14 gauge metal tek screw

Product Weight

4kg

Substrate Requirements

- Concrete – 100mm thick and in good condition
- Cinder block
- Timber nogging
- Steel framing

(any other surface must be approved by Five At Heart design team)

Maintenance Requirements

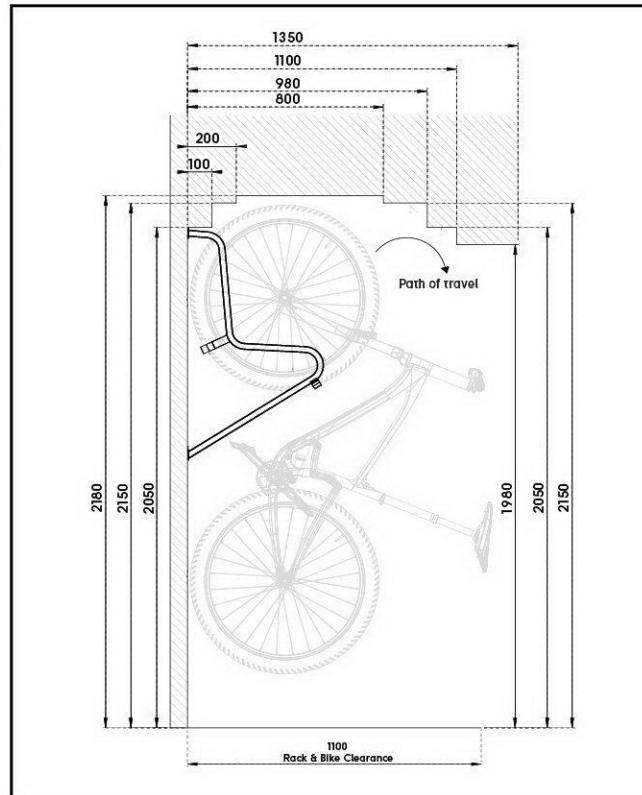
If any moving parts appear to be malfunctioning, discontinue use and contact Five At Heart.

Cleaning

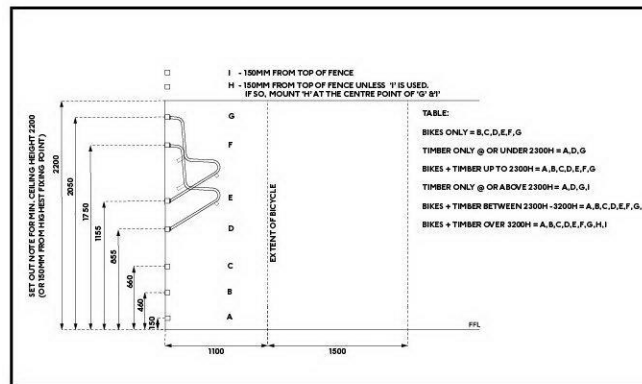
Cleaning should start at the time the products are installed, ensuring that construction materials such as concrete, plaster and paint splashes are removed before they have a chance to dry. Failure to remove these materials will require aggressive cleaning in the future, that may be harmful to the products.

Wipe with a damp cloth for surface cleaning. Regular cleaning may be done with a solution of warm water and a non-abrasive, pH neutral detergent solution. Surfaces should be thoroughly rinsed after cleaning to remove all residues.

WARNING: DO NOT UNDER ANY CIRCUMSTANCES USE STRONG SOLVENTS SUCH AS THINNERS OR SOLUTIONS CONTAINING CHLORINATED HYDROCARBONS, ESTERS OR KETONES. ABRASIVE CLEANERS OR CUTTING COMPOUNDS SHOULD NOT BE USED.



Service Clearance Map



Mounting Heights

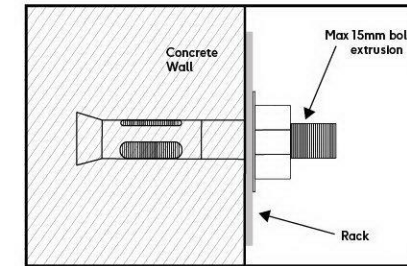


Fig 1/ Concrete Wall

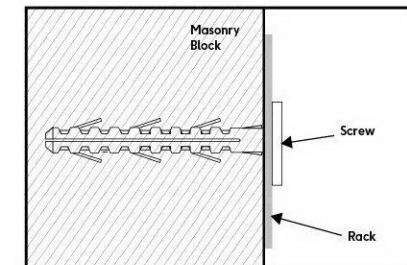


Fig 2/ Masonry Block

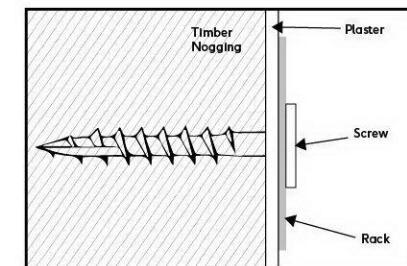


Fig 3/ Timber Nogging

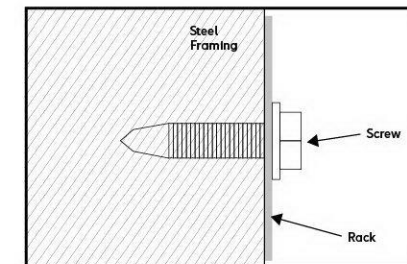


Fig 4/ Steel Framing

Five At Heart



Creating
spaces
for however
you Roll...



fiveatheart.com

Australia

1300 769 332 or au_info@fiveatheart.com

North America

1888 218 3433 or na_info@fiveatheart.com

Europe

(+44) 7565 357342 or eu_info@fiveatheart.com

'Arc de Triomphe' bicycle parking rail

Arc de Triomphe - Dimensions

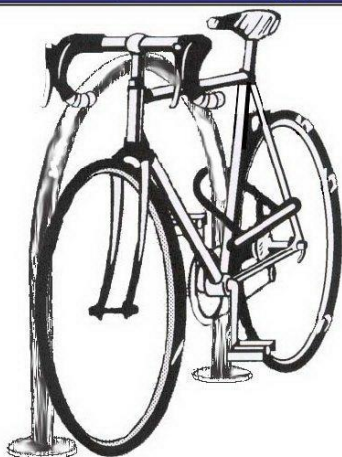


Arc de Triomphe - Specifications

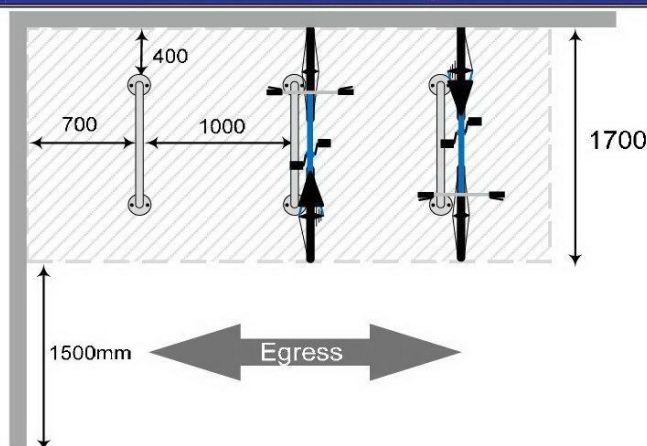
Material Options
Duragal / Hot Dipped Steel
Powder Coat over Duragal - Hot Dipped Steel
304 Grade - Stainless Steel
316 Grade - Stainless Steel*
Recommended fasteners
Zinc plated dynabolts M12 x 70mm
Stainless Steel dynabolts M12 x 70mm
Fixing Options
Bolt On*
Clamp On
In Situ (requires cement footings)

* indicates most common designation

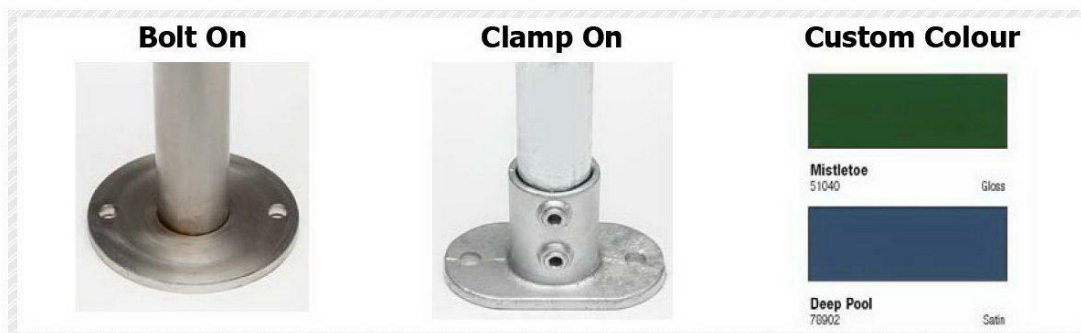
Arc de Triomphe - Locking points



Arc de Triomphe - Layout Guidelines



Options and base plate detail



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Collins St West Vic 8007

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Sales (03) 8636 8820
Fax (03) 8636 8800

Email - Web
parking@bv.com.au
bikeparking.com.au

Company Details
Bicycle Victoria Inc
ABN 41 026 835 903

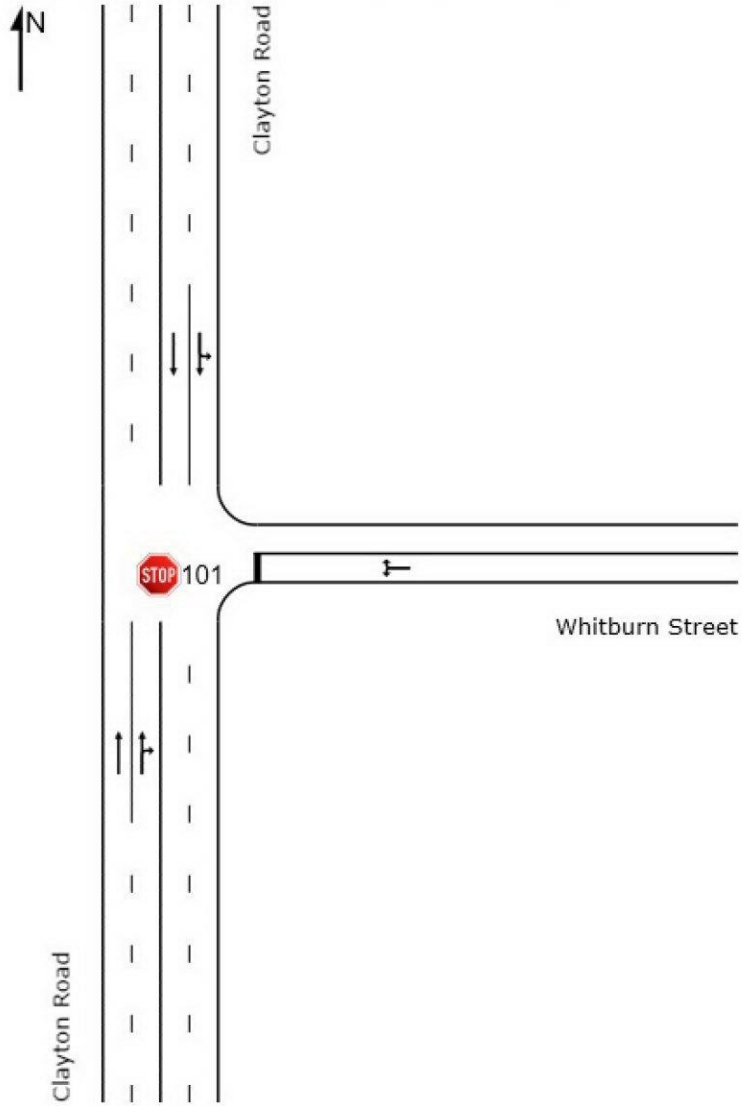
Appendix D Future Conditions SIDRA Results

SITE LAYOUT

 Site: 101 [FU AM (Site Folder: General)]

New Site
Site Category: (None)
Stop (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [FU AM (Site Folder: General)]

New Site
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Clayton Road														
2	T1	888	4.0	935	4.0	0.427	2.0	LOS A	3.4	24.4	0.12	0.07	0.16	57.7
3	R2	118	4.0	124	4.0	0.427	20.5	LOS C	3.4	24.4	0.88	0.52	1.23	45.4
Approach		1006	4.0	1059	4.0	0.427	4.2	NA	3.4	24.4	0.21	0.12	0.29	55.9
East: Whitburn Street														
4	L2	148	4.0	156	4.0	0.371	14.1	LOS B	1.6	11.4	0.66	1.07	0.87	46.7
6	R2	1	4.0	1	4.0	0.371	433.2	LOS F	1.6	11.4	0.66	1.07	0.87	46.6
Approach		149	4.0	157	4.0	0.371	16.9	LOS C	1.6	11.4	0.66	1.07	0.87	46.7
North: Clayton Road														
7	L2	40	4.0	42	4.0	0.300	5.7	LOS A	0.0	0.0	0.00	0.04	0.00	57.6
8	T1	1043	4.0	1098	4.0	0.300	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach		1083	4.0	1140	4.0	0.300	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		2238	4.0	2356	4.0	0.427	3.1	NA	3.4	24.4	0.14	0.14	0.19	56.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [FU PM (Site Folder: General)]

New Site
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Clayton Road														
2	T1	981	4.0	1033	4.0	0.438	2.5	LOS A	4.0	29.3	0.16	0.08	0.23	57.1
3	R2	117	4.0	123	4.0	0.438	19.6	LOS C	4.0	29.3	0.83	0.39	1.20	46.8
Approach		1098	4.0	1156	4.0	0.438	4.3	NA	4.0	29.3	0.23	0.11	0.34	55.8
East: Whitburn Street														
4	L2	151	4.0	159	4.0	0.395	14.2	LOS B	1.7	12.4	0.66	1.08	0.91	46.3
6	R2	1	4.0	1	4.0	0.395	537.4	LOS F	1.7	12.4	0.66	1.08	0.91	46.1
Approach		152	4.0	160	4.0	0.395	17.7	LOS C	1.7	12.4	0.66	1.08	0.91	46.3
North: Clayton Road														
7	L2	38	4.0	40	4.0	0.287	5.7	LOS A	0.0	0.0	0.00	0.04	0.00	57.6
8	T1	998	4.0	1051	4.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach		1036	4.0	1091	4.0	0.287	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		2286	4.0	2406	4.0	0.438	3.4	NA	4.0	29.3	0.16	0.13	0.22	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

