Traffix Group
Traffic Engineers and Transport Planners

Our Reference: 16211let004

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1 April 2015

Federation Centres
Level 28, 35 Collins Street
MELBOURNE VIC 3000

Attention: Mr Jonathan Bradhurst

Dear Jonathan,

THE GLEN REDEVELOPMENT, 227-235 SPRINGVALE ROAD, GLEN WAVERLEY ADDITIONAL INFORMATION (COUNCIL ITEMS)

Further to our recent discussions regarding The Glen Shopping Centre expansion application and our preliminary meeting with Council, please find following our response to the traffic related items raised within Council's correspondence of 5 March 2015.

This response should be read in conjunction with the traffic report (Ref 16211R9692 dated 21 January 2015) submitted as part of the application.

Council requirement - Traffic Impact Assessment further modified to provide the following detail:

- *Connectivity between residential buildings and residential visitor parking within the shopping centre car parking areas, including consideration of continuous accessible paths of travel.*

Parking for residential visitors is proposed within the retail car parking areas to take advantage of the temporal demands of the different uses.

Residential visitors will have the opportunity to park within any area of the car park, however the residential towers address the south end of the site and pedestrian access to the residential lobbies for residential visitors will be available from O'Sullivan Road.

It is therefore expected that residential visitors will take advantage of the parking at the southern end of the site, once parked within the car park, visitors will utilise the travelators running between the levels to access Level 2 (Street Level) where they will be able to access the residential lobbies.

After hours, when the centre is closed, security gates will restrict pedestrian access to the rest of the centre such that pedestrians will continue to be able to access the corridor between the travelator and O'Sullivan Road / Snedden Drive external mall.

- *Justification of the circular ramp and swept path assessments having regard to the requirements of AS2890.1*

The circular ramp is located adjacent the southern access to Snedden Drive (Green Level). This southern Snedden Drive access caters for access to Level 1 of The Glen, which includes shopping centre parking, direct pedestrian access to the supermarket mall level, and access to the department store and residential loading dock.

The circular ramp has been designed in accordance with the requirements of AS/NZS2890.1:2004 with the following dimensions:

- an inside radius (R_I) 4.0 metres (inclusive of 300mm of kerb on the inside - C_I);
- an outside radius (R_O) of 11.8 metres plus an additional 500mm of kerb on the outside for clearance (C_o); and
- A maximum grade of 1:8 is provided on this ramp.

The swept paths, included as Attachment A, demonstrate that the circular ramp can comfortably accommodate two-way movements utilising two 99th percentile vehicles which is in fact in excess of the requirements of AS/NZS2890.1:2004. A minimum separation between vehicles in excess of 600 mm is provided as shown in Figure 1.

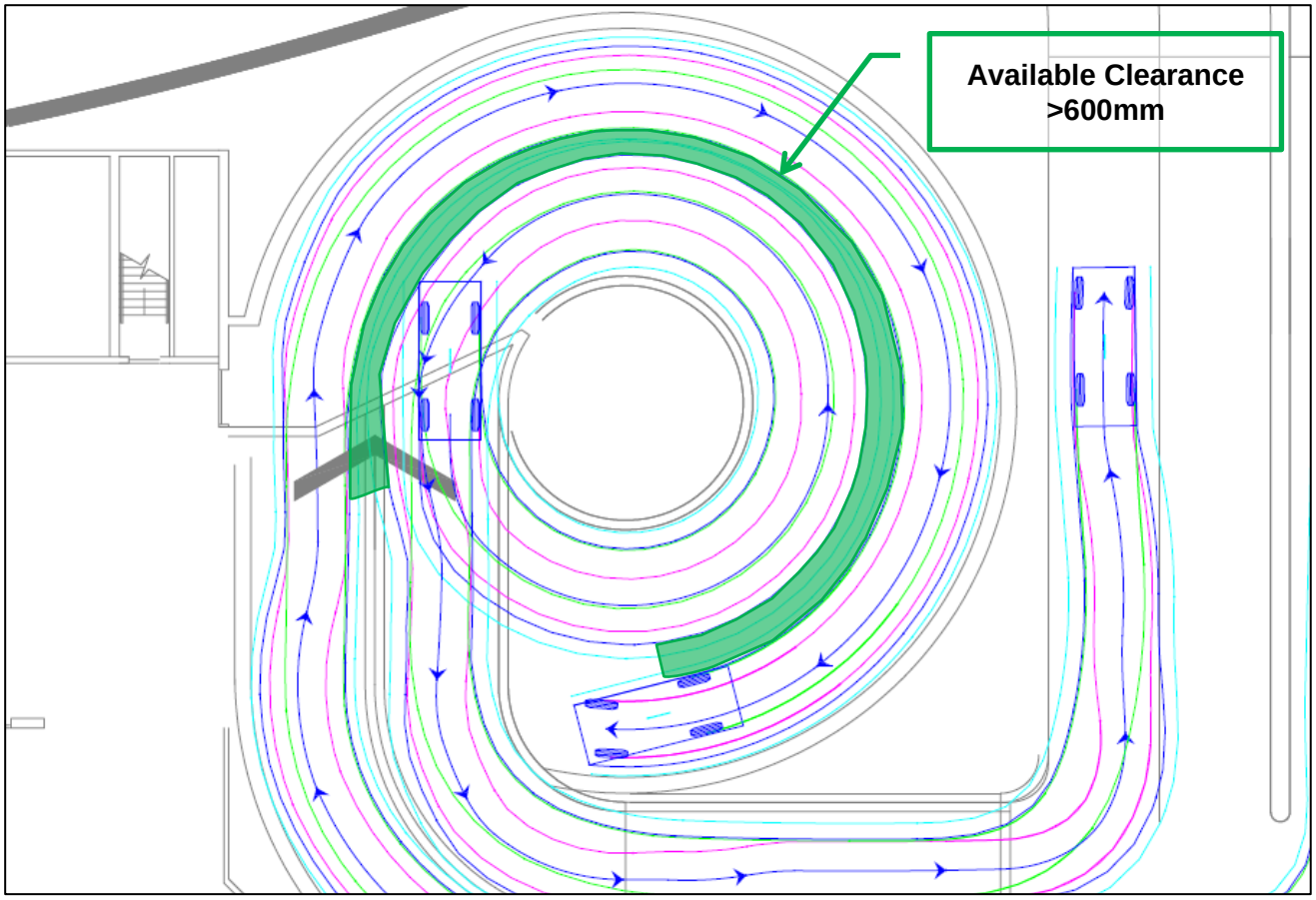


Figure 1: Available Clearance on Circular Ramp

It is noted that a separating kerb is currently shown at the Green Level landing to define inbound and outbound directions, and whilst it is not currently shown for the extent of the circular ramp through the upper levels, the preceding dimensions can incorporate a central separation of 600mm ($C_{C)}$ between travel directions if Council so desires.

The above characteristics will ensure that the ramp is comfortable for shopping centre customers and provides an opportunity for vehicles to access upper parking levels quickly and conveniently.

- *Justification for the residential arrival and departure traffic distribution*

Review of ABS Journey to Work data for 2011 indicates that for the City of Monash, approximately 26% of residents work within the municipality, 21% of this within the Waverley West and South-West SLAs.

Some 34% of City of Monash residents travel to municipalities north-west of Monash (including Melbourne, Port Phillip, Stonnington, Glen Eira and Yarra), all of which would most conveniently be accessed via Monash Freeway, either via the Ferntree Gully Road interchange (to the south) or via the Blackburn Road interchange (to the south-west).

The Kingston and Greater Dandenong municipalities (to the south) represented some 11% of employment trips from City of Monash and the municipalities north and east of Monash (Whitehorse, Knox and Casey) represent some 12.5% of trips.

Based on this information, and the most convenient and available access routes to these areas (including alternative access routes to the city via the north), we are of the opinion that the most

likely trip distribution for residents of the proposal would be as adopted in the Traffix report as follows:

- 67% of arrivals take place from the south and 33% will be from the north;
- A broad distribution of departures was assumed to be split 75% to the west and south and 25% to the north and east.

It is of note that the peak hour traffic generation of the residential component is only some 206 vehicle movements and therefore a change to these distributions would not materially change the outcome of the traffic analysis.

Council requirement – further consideration of:

- *Vehicle access to and from the site – which include operational, congestion and safety issues.*

As noted within the Traffix report, the modest increase to traffic volumes which are projected to be generated by The Glen redevelopment and the SIDRA analysis establishes that the impacts on individual intersections across the network by the proposed development will be manageable.

To supplement the analysis within the traffic report, Traffix has also provided further information to VicRoads (and cc'd Council) in support of the proposed split intersection to Springvale Road and the assumptions contained within our analysis.

- *Traffic conflict between residential, shopping and loading vehicles on Green Level access off Snedden Drive*

Whilst internally the Green access to The Glen provides for two separate eastbound lanes from the property boundary, it will actually only service a single inbound traffic stream from Snedden Drive (as there is only one right turn lane from Snedden Drive). Similarly, in the westbound direction, only a single traffic stream will be fed from the Level 1 car park into the two westbound lanes.

For entering vehicles, the development of two separate lanes allows customer vehicles wishing to use the circular ramp and trucks accessing the loading dock to prop in a separate lane without obstructing through traffic wishing to enter the Level 1 car park.

There is sufficient space for four cars to wait to access the circular ramp and an additional separation to the loading access (able to accommodate a 19.0m semi-trailer) which is expected to be more than sufficient queuing space such that vehicles entering from Snedden Drive and access to Level 1 car parking are not disrupted.

For exit movements, the development of two lanes will allow for increased storage at the Snedden Drive signals and for the separate left turn lane to utilise the bonus left turn arrow which is proposed as part of the signal phasing at this intersection. This will assist in managing the potential for exiting vehicles to be queued such that they do not block the exits from the loading area and circular ramp.

If Council deemed necessary, 'Keep Clear' linemarking could be installed to further manage traffic movements in this area.

- *Traffic conflict at the entrance/exit ramp to shopping centre car park Level 1.5*

The separation of the car park accesses at Level 1.5 allows for opposing entry and exit movements to be a split and reduce conflict around these areas of the car park.

Upon entering the site from Springvale Road, vehicles will either make a left turn to the south and use the existing ramp to access Level 1, or make a right turn and circulate north to either park on this level or use the main circulation ramp to access Level 3 (which is opposite the exit to Springvale Road).

Whilst access will also be available to Level 1 via the ramp at the north-east of the site, we expect that it is unlikely that this will form a direct desire line for those vehicles entering from Springvale Road via the entry signals. Access to this parking would be more convenient via the proposed left-in/left-out to Springvale Road at Level 1 and use of the eastern ramps which circulate to/from the levels below.

As such, whilst there will be some traffic using the north-south aisle on this level past the main circulation ramp, it is not expected to be of a significant enough level to create issues for vehicles coming down the ramp from Level 3 and wishing to exit to Springvale Road via the exit signals.

For vehicles exiting the site from this level, signage will direct drivers as to which exit lanes to choose in order to travel their desired path to the north or south on Springvale Road. Similarly, signage will direct vehicles arriving from the main circulation ramp from Level 3 to use the correct lanes to exit to Springvale Road.

At the points at which the entry and exit intersect with the car parking aisles at Level 1.5, sight lines are relatively unobstructed, allowing clear views of approaching vehicles and therefore conflict will be able to be effectively managed in these areas.

A representation of the primary ingress and egress circulation routes as described above is shown in Figure 2.

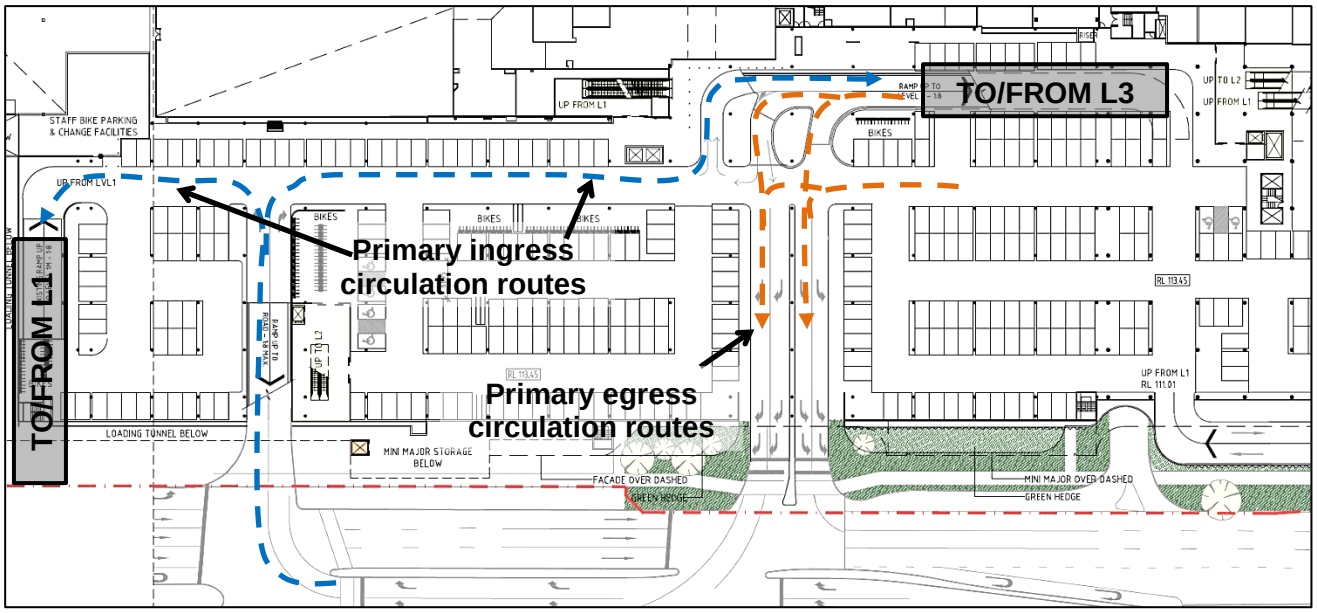


Figure 2: Level 1.5 Primary Ingress and Egress Routes

- *O'Sullivan Road safety and access concerns*

The proposed O'Sullivan Road access will serve resident parking only and a wide pedestrian footpath along the site's southern boundary (northern side of O'Sullivan Road) is proposed.

The access is set-back approximately 25 metres from the existing edge of the northbound carriageway on Springvale Road. As such, we have no concerns with regard to the operation of the Springvale Road / O'Sullivan Road intersection as a result of the access location.

With regard to the interaction between vehicles and pedestrians, the pedestrian access to Residential Lobby A is set-back from the property boundary and the adjacent building line, and is also located on the entry side of the vehicle ramp. A splay has been provided to the corner of the eastern retail tenancy adjacent the exit side of the vehicle ramp, and the actual ramp has been set-back from the property boundary.

We are satisfied that these provisions will allow for suitable pedestrian and vehicle sight lines to be provided at this access point.

In addition to the above, we understand that Council wishes to provide for improved pedestrian amenity within O'Sullivan Road.

In order to facilitate this, and based on discussions at a meeting with Council and VicRoads, we have investigated the option to convert the section of O'Sullivan Road east of the Right of Way and west of Springvale Road to be two-way. A sketch is provided at Attachment B showing how this may be achieved. This concept includes:

- Retention of the existing parallel parking spaces on O'Sullivan Road;
- Widening of O'Sullivan Road to provide a 6.0m wide two-way section (a 5.0m pedestrian path along the northern side of this section can be maintained);
- Provision of a splitter island on the O'Sullivan Road approach and modifications to the Springvale Road central median to restrict movements to left-out onto Springvale Road only.

We note that this option does not show how vehicle movements to and from the west could be restricted in order to limit conflict through the proposed pedestrian area. We expect that this could be achieved through one of the following options:

- *Restriction of the western portion of O'Sullivan Road to be one-way westbound only*.

  It is considered that if restricted to eastbound movements, it may encourage more diverted trips from Snedden Drive to Springvale Road and hence maintaining the westbound direction is preferential.

  With the new two-way section of O'Sullivan Road (as shown in the attached sketch), vehicles accessing The Glen residential car park, the RoW, the parallel parking and the western laneway will have the opportunity to enter via Springvale Road. The Glen and the RoW will be able to exit to Springvale Road, with an alternative exit path to Snedden Road through the shared area available for all users.

- *A full road closure between the RoW and the western laneway.*

  Vehicles accessing the RoW and The Glen residential car park would all be restricted to and from Springvale Road.

  Vehicles accessing the western laneway would all be restricted to and from Snedden Drive.

- *Level 3.5 shopping centre car park – number of access points.*

Appendix D of AS/NZS2890.1:2004 includes commentary on the capacity of entry and exits to large car parks. It suggests that a single access point is appropriate for up to 500 car parking spaces, however should take into account the traffic generation and peak hour flows through the access.

Parking on Level 3.5 will typically be a lower traffic generator than the lower levels as it will be the 'last' parking level which can be accessed from the other levels. Furthermore, it is our recommendation that this parking level be preferentially utilised by staff of the centre, particularly during busy periods, which will also contribute to a lower turnover of parking and reduced traffic generation.

Accordingly, we are satisfied that due to the lower turnover of parking on Level 3.5, even though the provision of one access point is at the upper limit of this guide it will adequately serve the 487 car spaces on this level.

We trust this information is of assistance. Should you require anything further, please don't hesitate to contact us.

Yours faithfully,

TRAFFIX GROUP PTY LTD

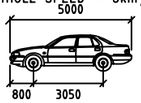
JASON WALSH
Director
www.traffixgroup.com.au

Attachment A

Vehicle Swept Paths

Green Level Circular Ramp – Autoturn IN and OUT

VEHICLE USED IN SIMULATION
(VEHICLE SPEED – 5km/h)



99th-CAR-AS-2890-04

Width	:	1940
Track	:	1840
Lock to Lock Time	:	6.0
Steering Angle	:	37.5

N

MELWAY MAP
REF 71 B2

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

REV.	REVISION NOTES	REVISION DATE

GENERAL NOTES
1. BASE INFORMATION FROM: OA-PLAN-01-Green Level.dwg PREPARED BY NH Architecture – received 31-03-2015

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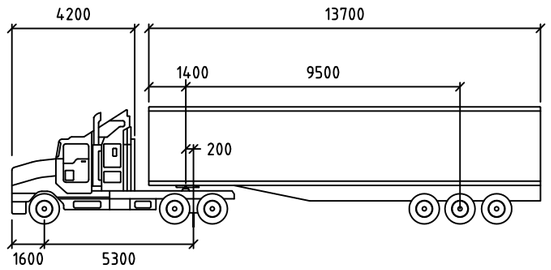
THE GLEN

DESIGN SWEPT PATHS

PROPOSED SHOPPING CENTRE DEVELOPMENT

SCALE 0 4.0 8 | SHEET No. 01/05 | 16211-01

VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5km/h)

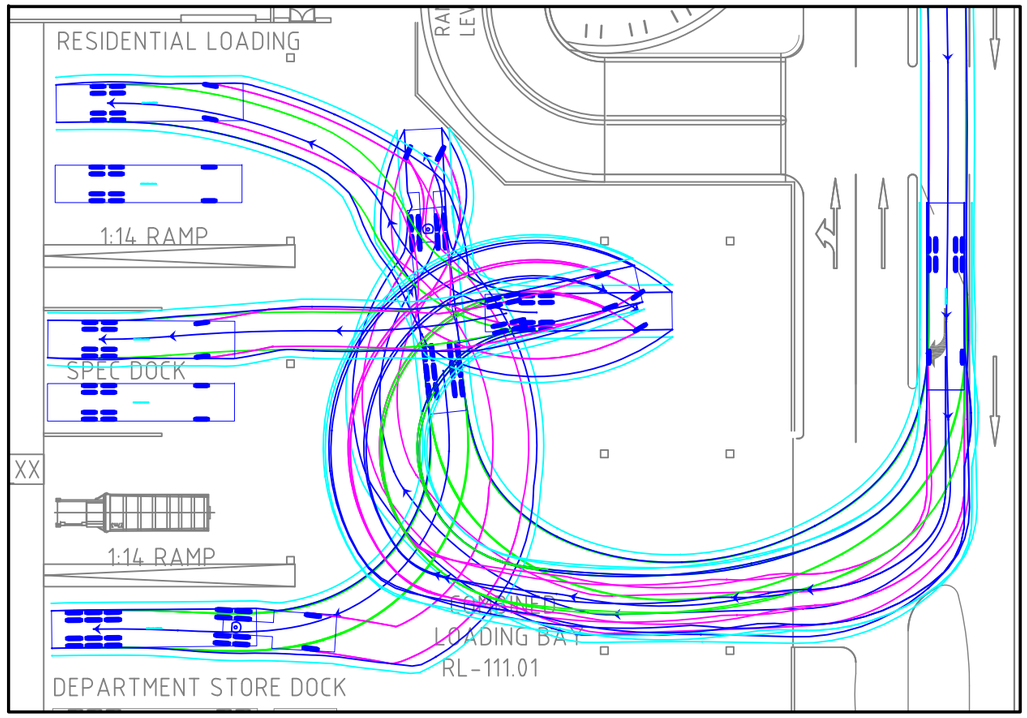


PM S 19M

	mm		
Tractor Width	: 2500	Lock to Lock Time	: 6.0
Trailer Width	: 2500	Steering Angle	: 27.8
Tractor Track	: 2500	Articulating Angle	: 70.0
Trailer Track	: 2500		

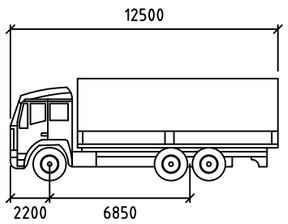
MELWAY MAP
REF 71 B2

Green Level Loading Zone - Autoturn IN



Green Level Loading Zone - Autoturn OUT

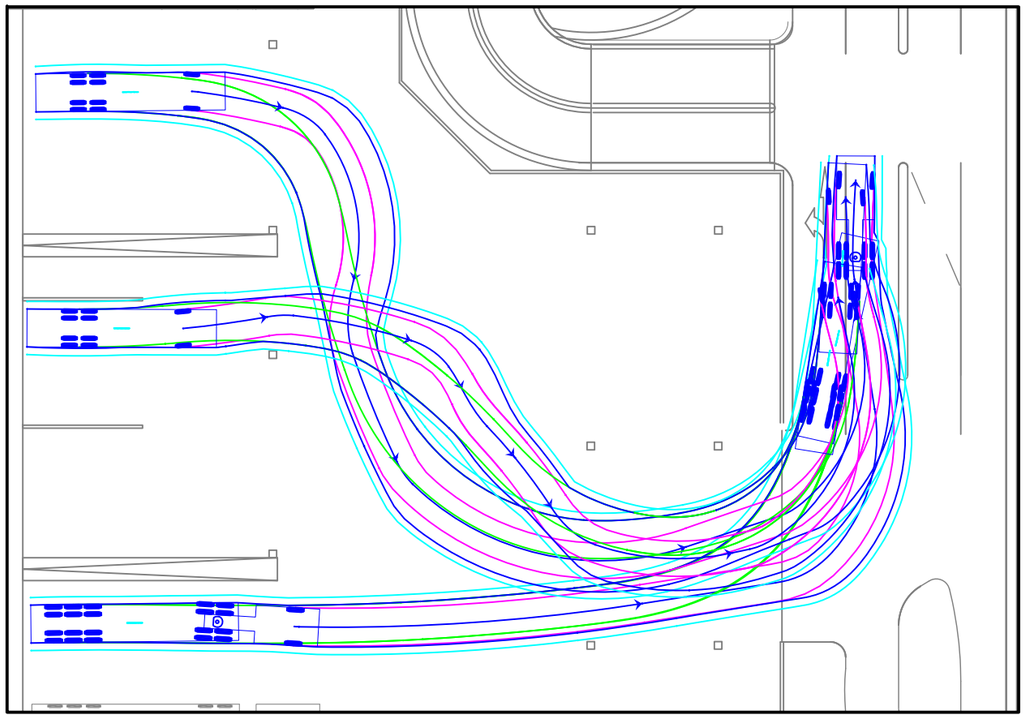
VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5km/h)



SU TRUCK

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

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



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GENERAL NOTES
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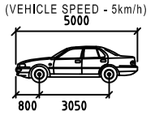
THE GLEN

DESIGN SWEPT PATHS

PROPOSED SHOPPING CENTRE DEVELOPMENT

SCALE 0 4.0 8 | SHEET No. 01/04 | 16211-01

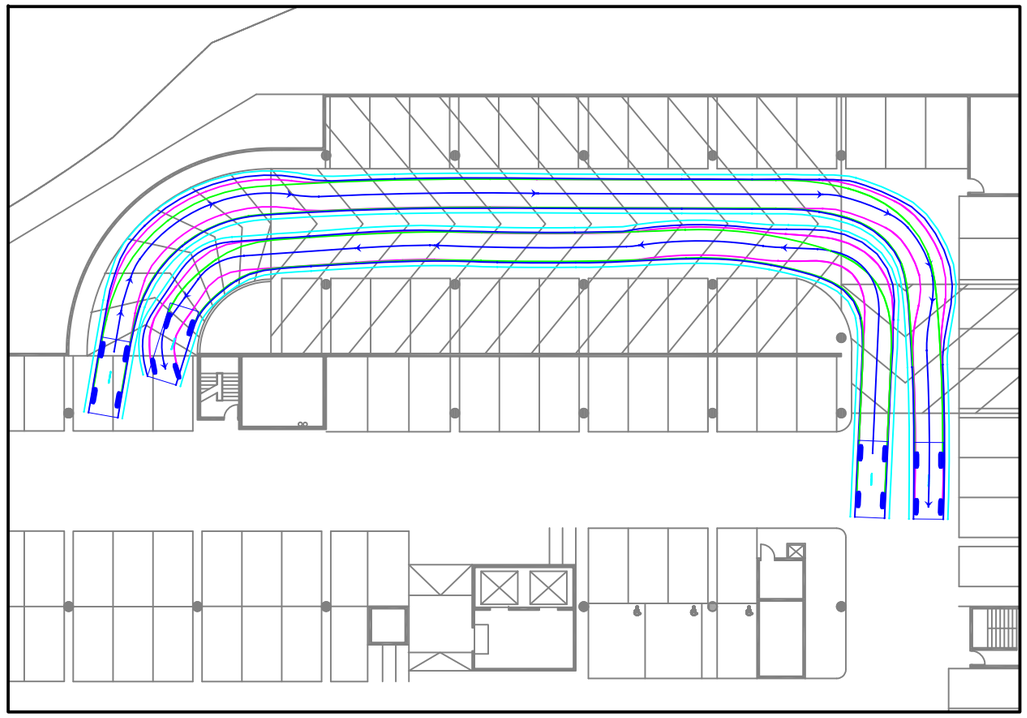
VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5km/h)



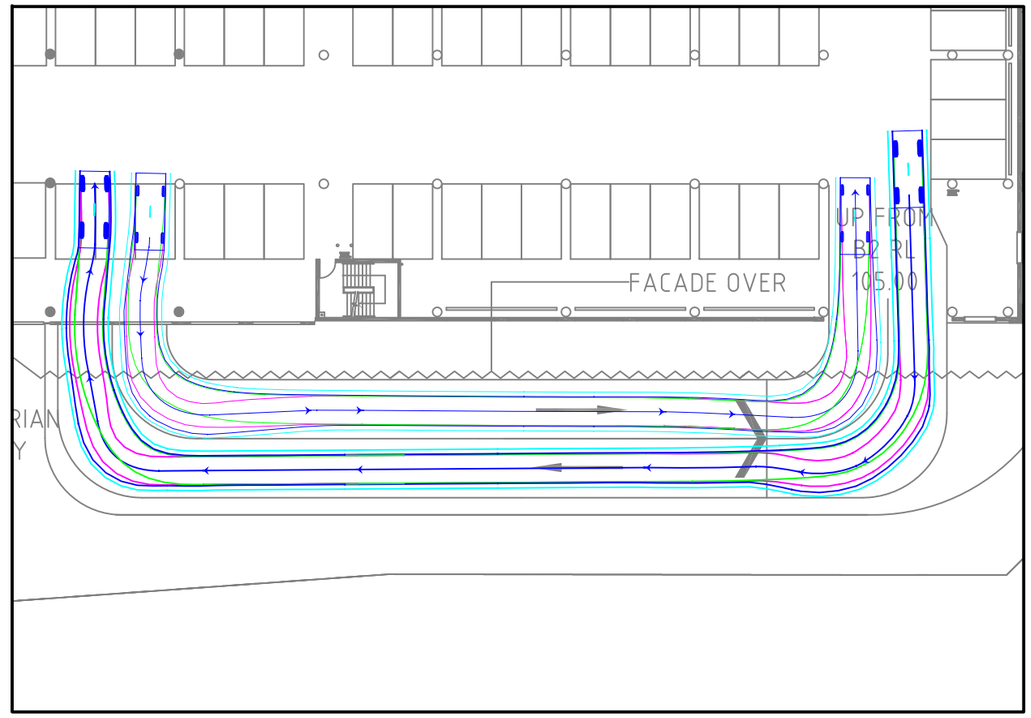
99th-CAR-AS-2890-04

Width	:	1940
Track	:	1840
Lock to Lock Time	:	6.0
Steering Angle	:	37.5

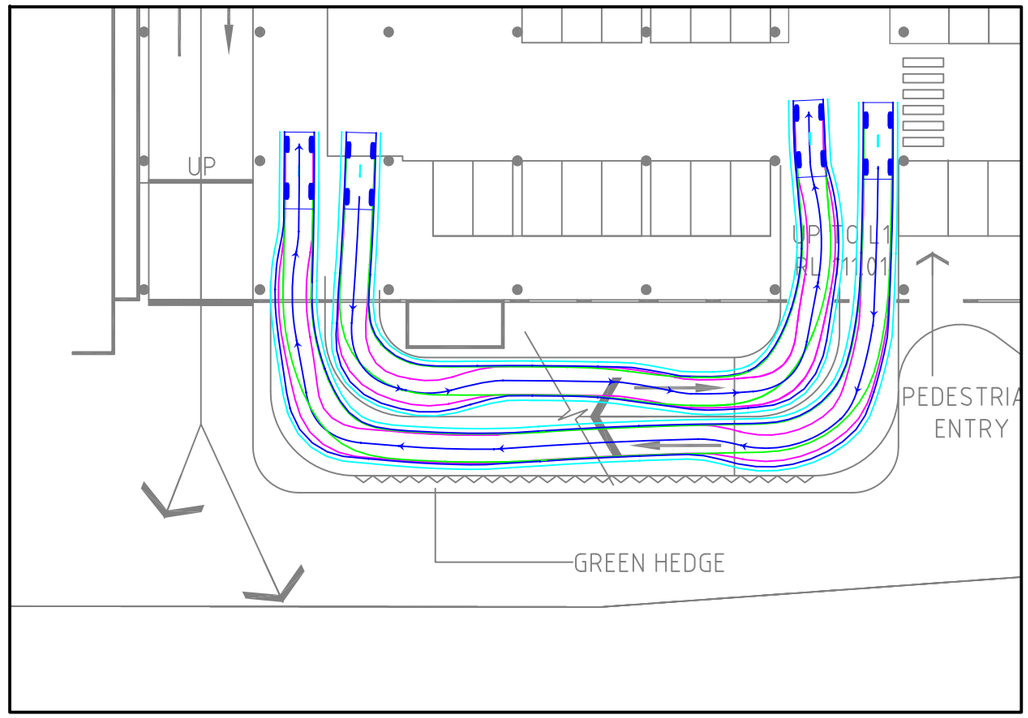
North Western Ramp (Typical)- Autoturn IN and OUT



North Eastern Ramp (Typical)- Autoturn IN and OUT



Eastern Ramp (Typical) - Autoturn IN and OUT



N

MELWAY MAP
REF 71 B2

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

REV.	REVISION NOTES	REVISION DATE

GENERAL NOTES
1. BASE INFORMATION FROM: OA-PLAN-B1-Yellow Level.dwg
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THE GLEN

B99 DESIGN CAR SWEPT PATHS

PROPOSED SHOPPING CENTRE DEVELOPMENT

SCALE 0 4.0 8 | SHEET No. 02/05 | 16211-02

Attachment B

O’Sullivan Road Sketch Concept Plan

SPRINGVALE ROAD

BUILD OUT MEDIAN TO RESTRICT NO RIGHT OUT

WIDEN ROAD ON NORTHERN SIDE TO 6.0M (NOMINAL)

RESIDENTIAL CAR PARK ACCESS

O'SULLIVAN ROAD

RETAIN 4NO. CAR SPACES ON-STREET

EXISTING BUILDING

REMOVE 1NO. CAR SPACES ON-STREET

CUT-BACK EXISTING KERB OUTSTAND

MATCH TO EXISTING

ROW

280m²

1189m²

BIKES

16/3/16
CRM

GRP16211 - THE GLEN
O'SULLIVAN ROAD TWO-WAY OPTION

1:250@A3
CONCEPT ONLY