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CRG Traffic Pty Ltd ACN 151 846 847
In association with CRG Acoustics Pty Ltd

Proposed Multi-Unit Dwelling Development (37 units)
5, 7 & 9 Folkestone Street, Bowen Hills
Lots 6 – 8 on RP10094

TRAFFIC ENGINEERING ASSESSMENT

Prepared For

Melthorn Pty Ltd

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DOCUMENT REGISTER

NUMBER	ISSUE	AUTHOR	PROJECT DIRECTOR
1	17 December 2014	D Janzekovic B Eng (Civil)	 Luke Rytenskild BE (Civil), RPEQ

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1 INTRODUCTION

CRG Traffic Pty Ltd has been engaged by Melthorn Pty Ltd to undertake a Traffic Engineering Assessment of its proposed multi-unit dwelling development at Bowen Hills.

This report is to be submitted with a letter of enquiry to Economic Development Queensland (EDQ).

The following issues have been assessed during the study:

- Impact of the development on the surrounding road network;
- Car parking supply and design;
- Access location and design;
- Servicing.

2 SUBJECT SITE

As shown in Figure 2.1, the subject site is located on the southern side of Folkestone Street at the approximate midpoint between the Folkestone Street / Abbotsford Road and Folkestone Street / Cintra Road intersections. The site is identified at Lots 5 to 9 on RP10094 and is currently occupied by detached dwellings.

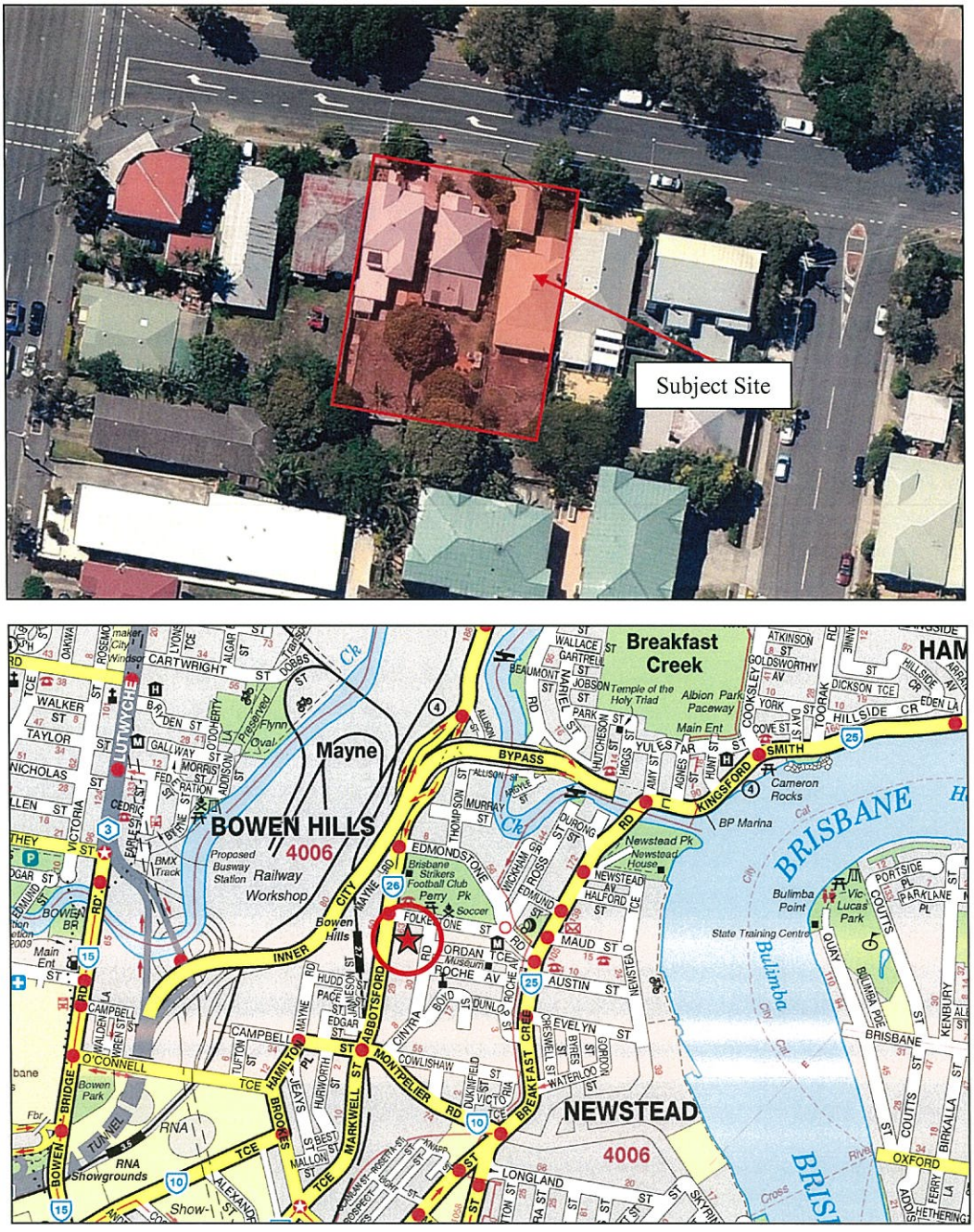


Figure 2.1: Location of the Subject Site
(Image Source: Nearmap and UBD Maps)

3 PROPOSED PLAN OF DEVELOPMENT

The proposed plan of development is for an eight storey multi-unit dwelling development comprising of 37 units as follows:

1 bedroom	2 units
2 bedroom	31 units
3 bedroom	4 units
Total:	**37 units**

Access onto the site is proposed approximately 55 metres east of the Folkestone Street / Abbotsford Road intersection and will be gained via a standard Brisbane City Council crossover. The site comprises of a total of 37 car parking spaces and provides provision for on-site refuse collection.

The proposed car parking plans are shown in Figures 3.1 and 3.2.

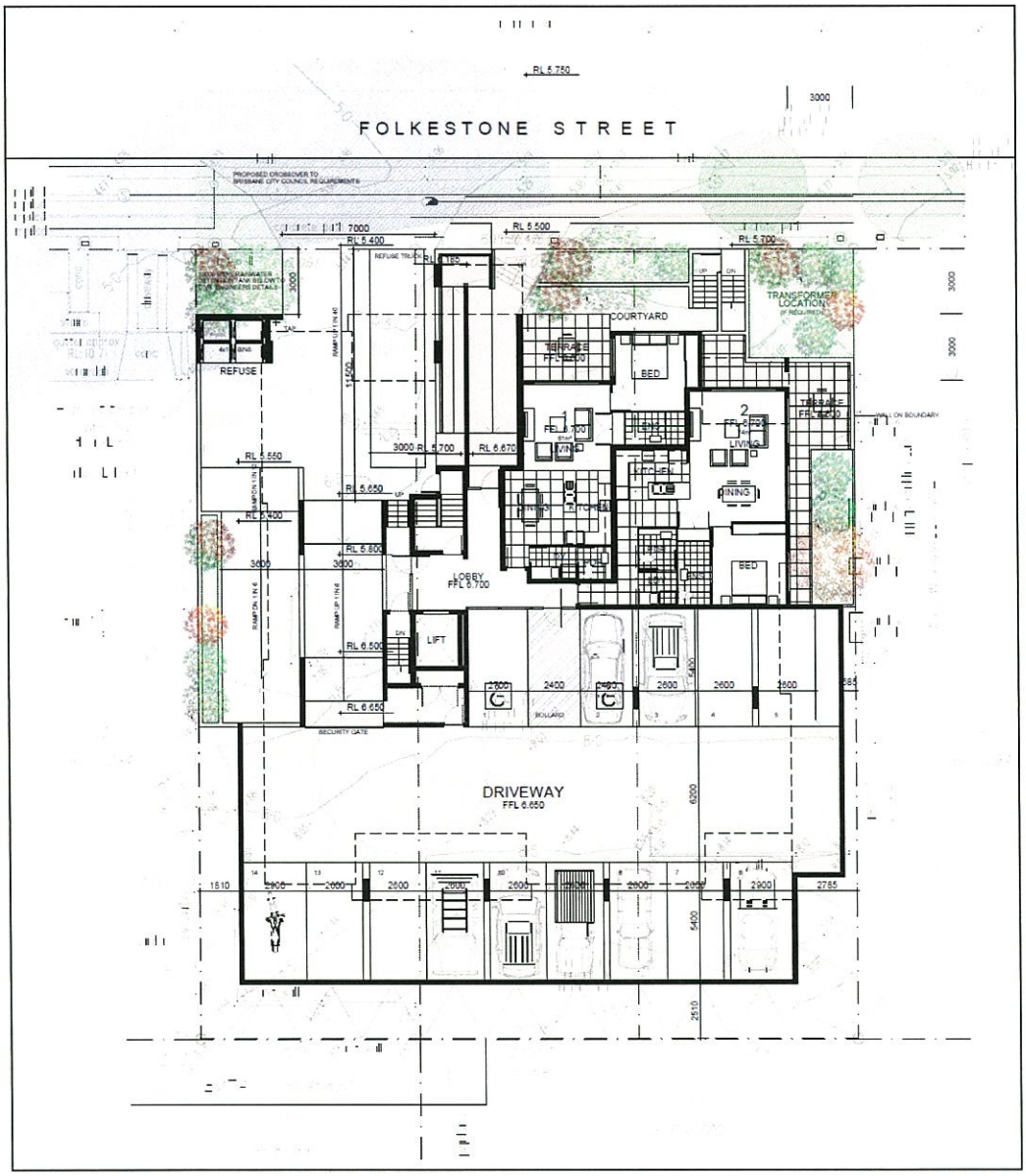


Figure 3.1 – Proposed Plan of Development – Ground / Upper Ground Level

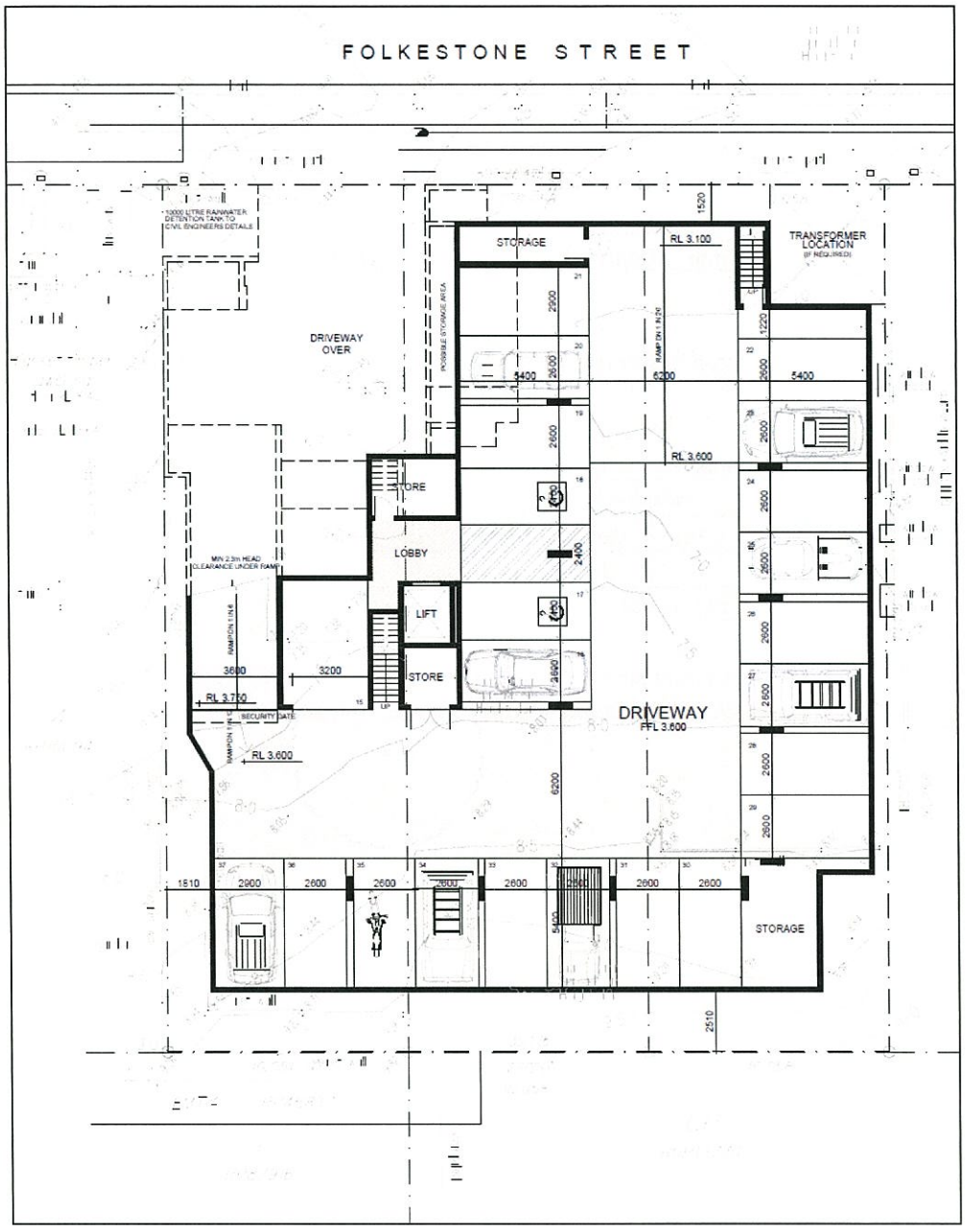


Figure 3.2 – Proposed Plan of Development - Basement Level

4 DEVELOPMENT TRAFFIC

An estimation of the traffic generating potential of the proposed development is determined by applying the trip generation rates prescribed in the Department of Transport and Main Roads '*Road Planning and Design Manual, Appendix 3 – Trip Generation Rates (December 2005)*. The following trip generation rate is applicable to the proposed development:

Residential Development (Medium - High Density)
0.4 trips per dwelling

Application of the above rate to the proposed development yields a traffic generation potential of 15 peak hour trips as follows:

Table 4.1: Development Traffic Generation

Component	Morning Peak Hour			Afternoon Peak Hour		
	In	Out	Total	In	Out	Total
Proposed Development (37 units)	5	10	15	9	6	15

Peak Hour Distribution:- AM, 30 / 70 – PM, 60 / 40

As shown in Table 4.1, the traffic generation potential of the proposed development is relatively low and is therefore considered that a detailed traffic impact assessment is not warranted.

5 CAR PARKING AND ACCESS

5.1 Car Parking Supply

The proposed development is assessed under the Bowen Hills Development Scheme, and therefore requires a minimum of one car parking space per unit. Application of this rate yields a minimum car parking requirement of 37 spaces (including visitors).

The proposal provides a total of 37 car parking spaces and therefore exceeds the minimum parking requirement specified by the Bowen Hills Development Scheme. The proposed car parking allocation is as follows:

Upper level parking	
Regular parking -	12 spaces
Disabled parking -	2 spaces
Lower level parking	
Regular parking -	21 spaces
Disabled parking -	2 spaces
TOTAL PARKING -	37 spaces

It is noted that a minimum of four disabled spaces should be provided at the site. The proposal provides two disabled spaces on the upper and lower car parking levels respectively and therefore satisfies the disabled car parking supply requirement.

5.2 Proposed Car Parking Layout

The geometric layout of the proposed parking facilities has been designed to comply with the relevant requirements specified in the Brisbane City Council *Transport, Access, Parking and Servicing* (TAPS) Policy and *AS2890.1-2004*. The proposed car park has been provided with the following dimensions:

Regular parking bays -	2.6 metres × 5.4 metres
Disabled parking bays -	2.4 metres × 5.4 metres
	+ 2.4 metres × 5.4 metres shared zone
Aisle width -	6.2 metres
Terminated aisle extension -	1.7 metres (compliant with AS2890)

CRG has undertaken a swept path analysis of the proposed car park using an 85th percentile (i.e. Ford Falcon) vehicle. It is determined that the proposed car parking arrangement provides satisfactory manoeuvring for such vehicles to negotiate the car park

Vehicle templates for representative car parking bays are shown in Figures 5.1 and 5.2.

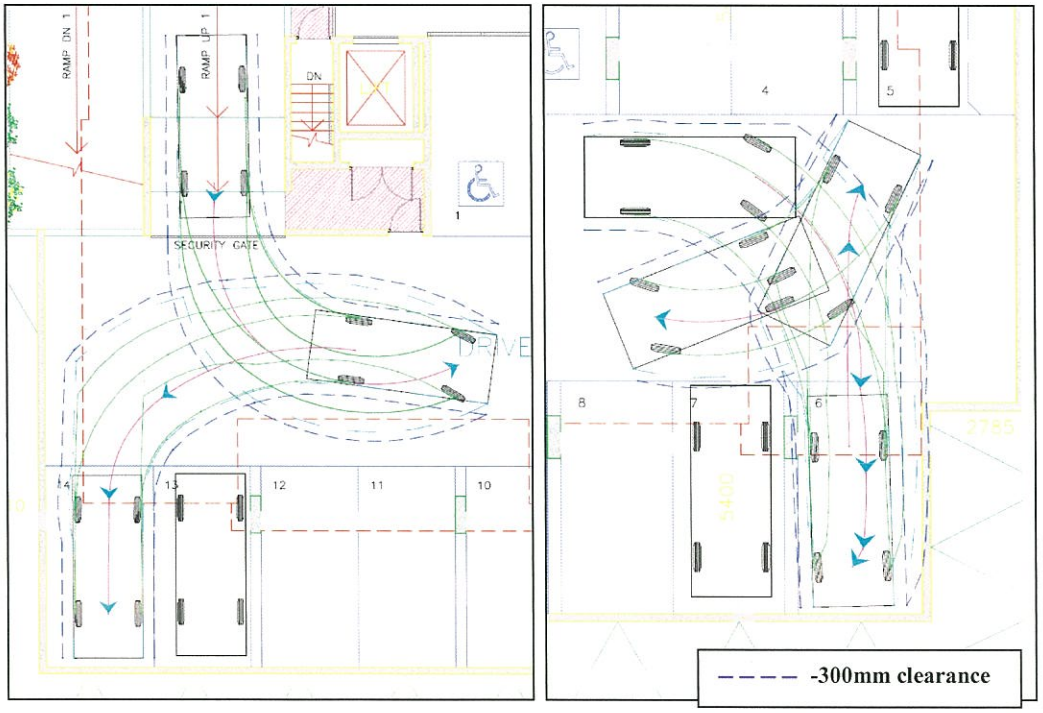


Figure 5.1– Swept Paths of an 85th Percentile Vehicle (Upper Car Parking Level)

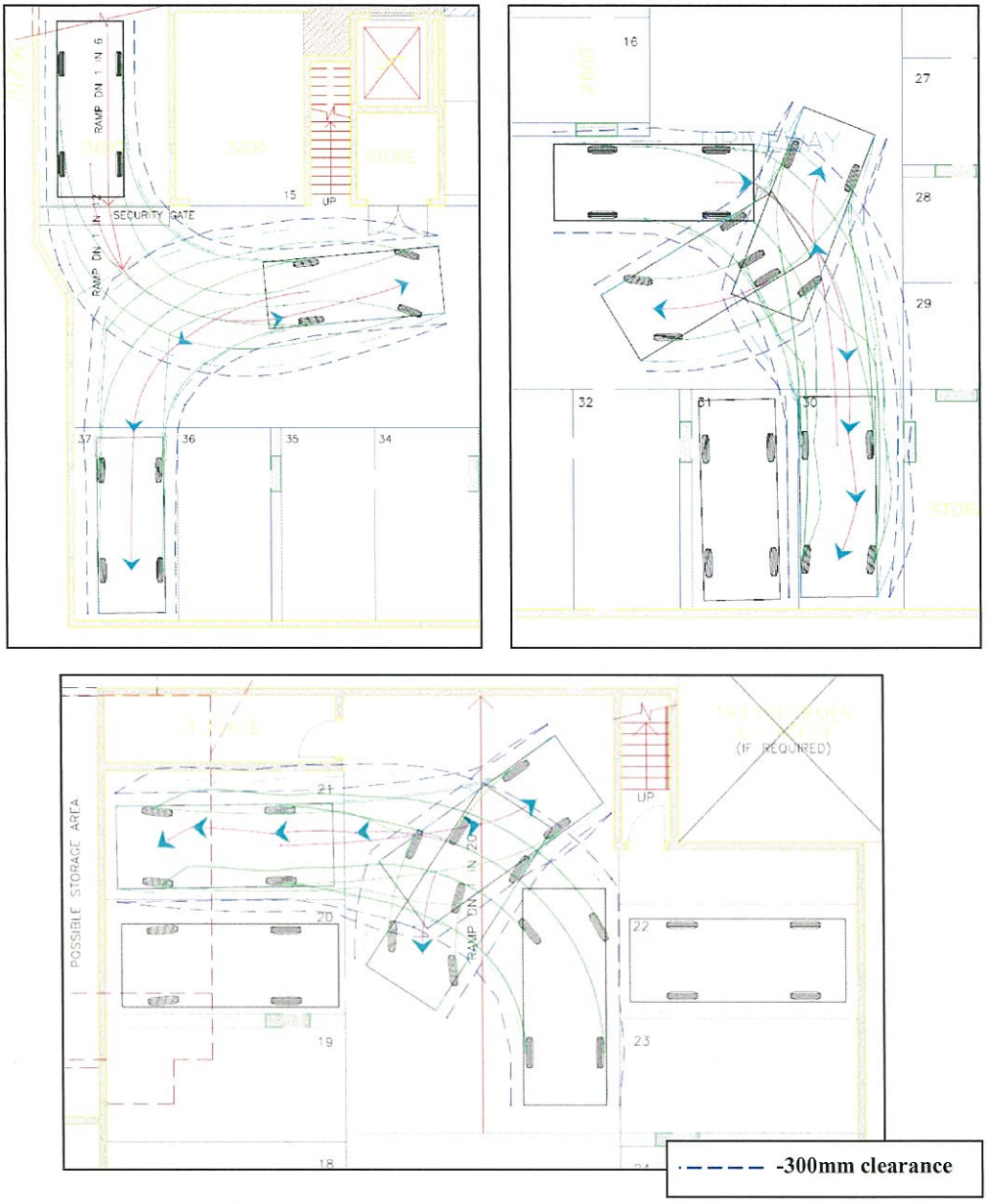


Figure 5.2 – Swept Paths of an 85th Percentile Vehicle (Lower Car Parking Level)

5.3 Ramp Design

As shown in Figure 5.3, the proposed car parking arrangement provides single lane ramps to the lower and upper car parking levels. The proposed ramps have been design in accordance with Section 2.5 of AS2890.1:2004 and provide a maximum grade of 16.7% (1:6) with 8% (1:12) transitions at either side of the maximum grade. The ramps provide a wall to wall width of 3.6 metres.

As shown in Figure 5.4, an advance warning system has been proposed to alert drivers of vehicles arriving from the ramp in addition to strategically placed convex mirrors typical used in car parking arrangements similar to the proposed. The single lane ramp arrangement is therefore considered acceptable given the developments low traffic generation potential.

A swept path analysis showing vehicles manoeuvring at the 'Give Way' locations are shown in Figure 5.5.

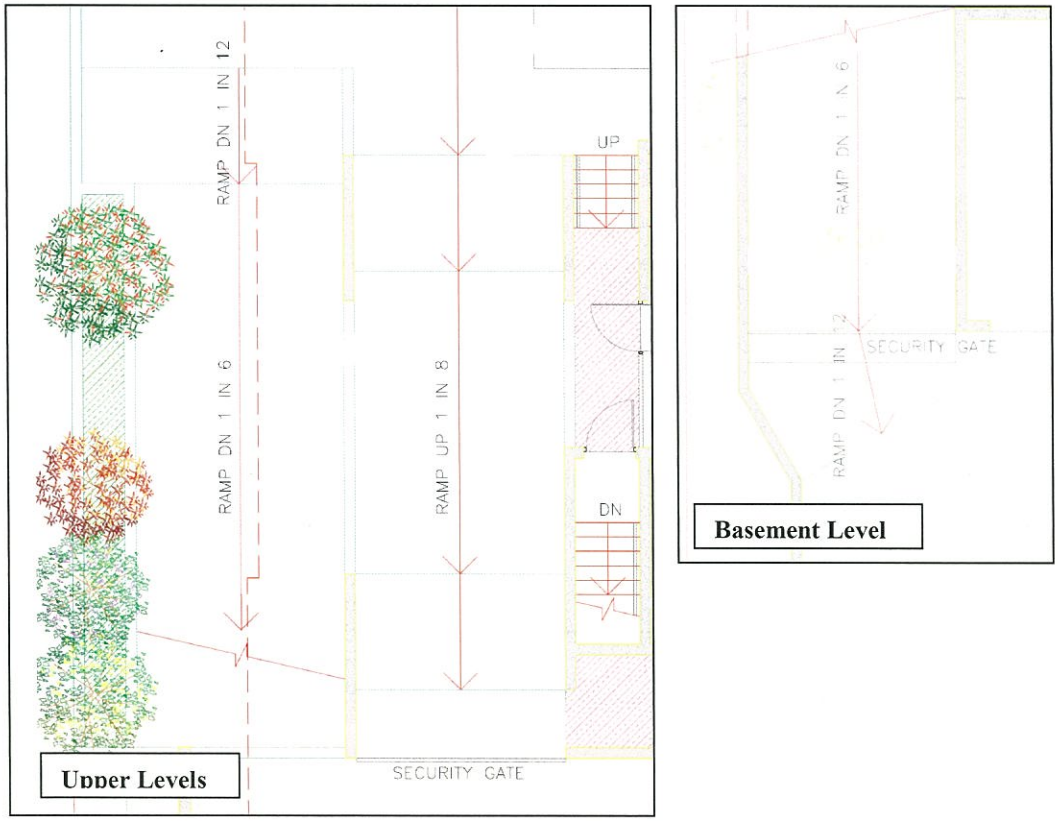
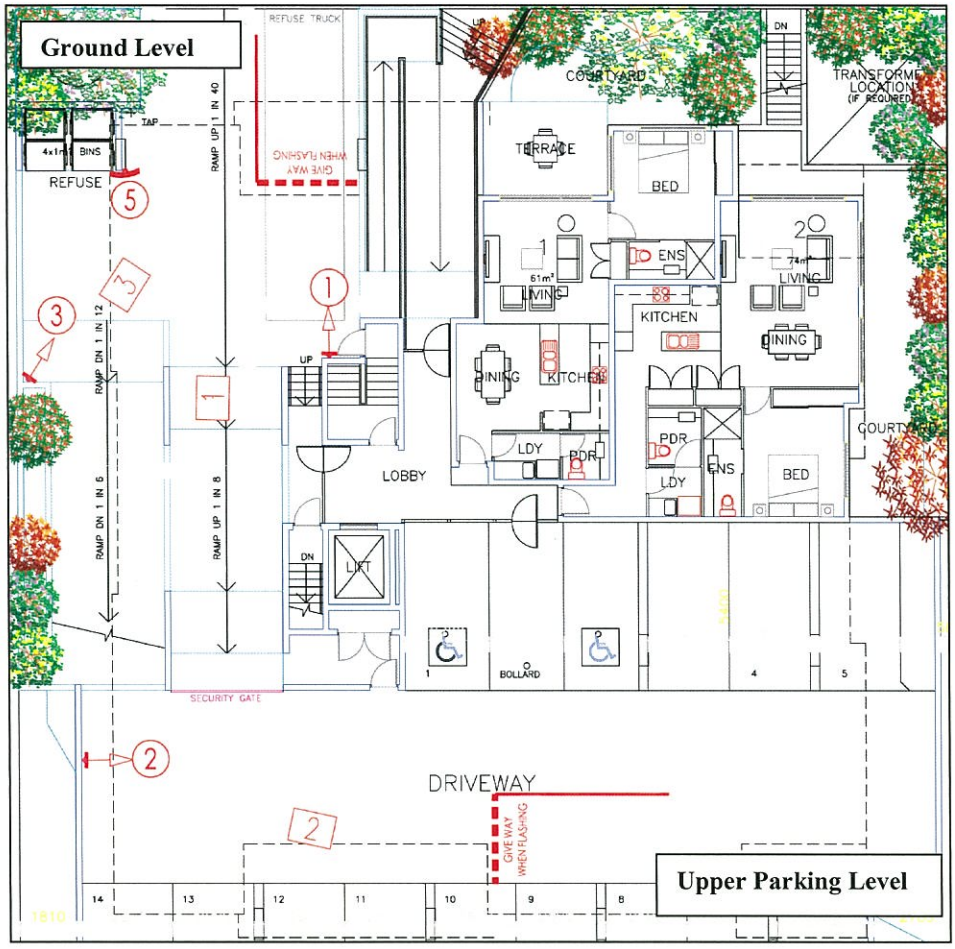
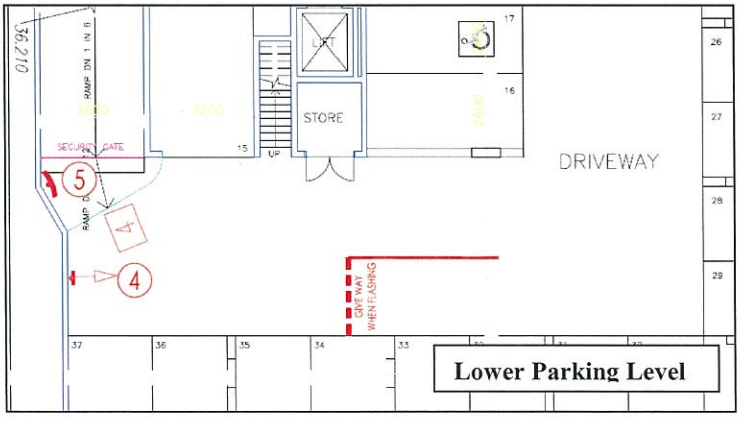
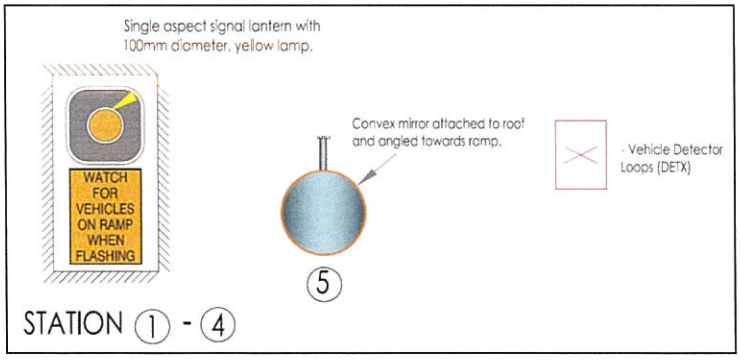


Figure 5.3 – Proposed Ramp Arrangement







Operation:
- Default: All signal station OFF unless triggered by DET1, DET2, DET3 and DET4.
- When DET1 activate, trigger Signal Station 2 on upper level car park to FLASH. Signal Station 2 switch to default phase after 't' seconds allowing vehicle on ramp to pass before signal change.
- When DET2 activate, trigger Signal Station 1 on ground level to FLASH. Signal Station 1 switch to default phase after 't' seconds allowing vehicle on ramp to pass before signal change
- When DET3 activate, trigger Signal Station 4 on lower leve car park to FLASH. Signal Station 4 switch to default phase after 't' second allowing vehicle on ramp to pass before signal change.
- When DET4 activate, trigger Signal Station 3 on ground level to FLASH. Signal Station 3 switch to default phase after 't' seconds allowing vehicle on ramp to pass before signal change.

Figure 5.4 – Proposed Warning System

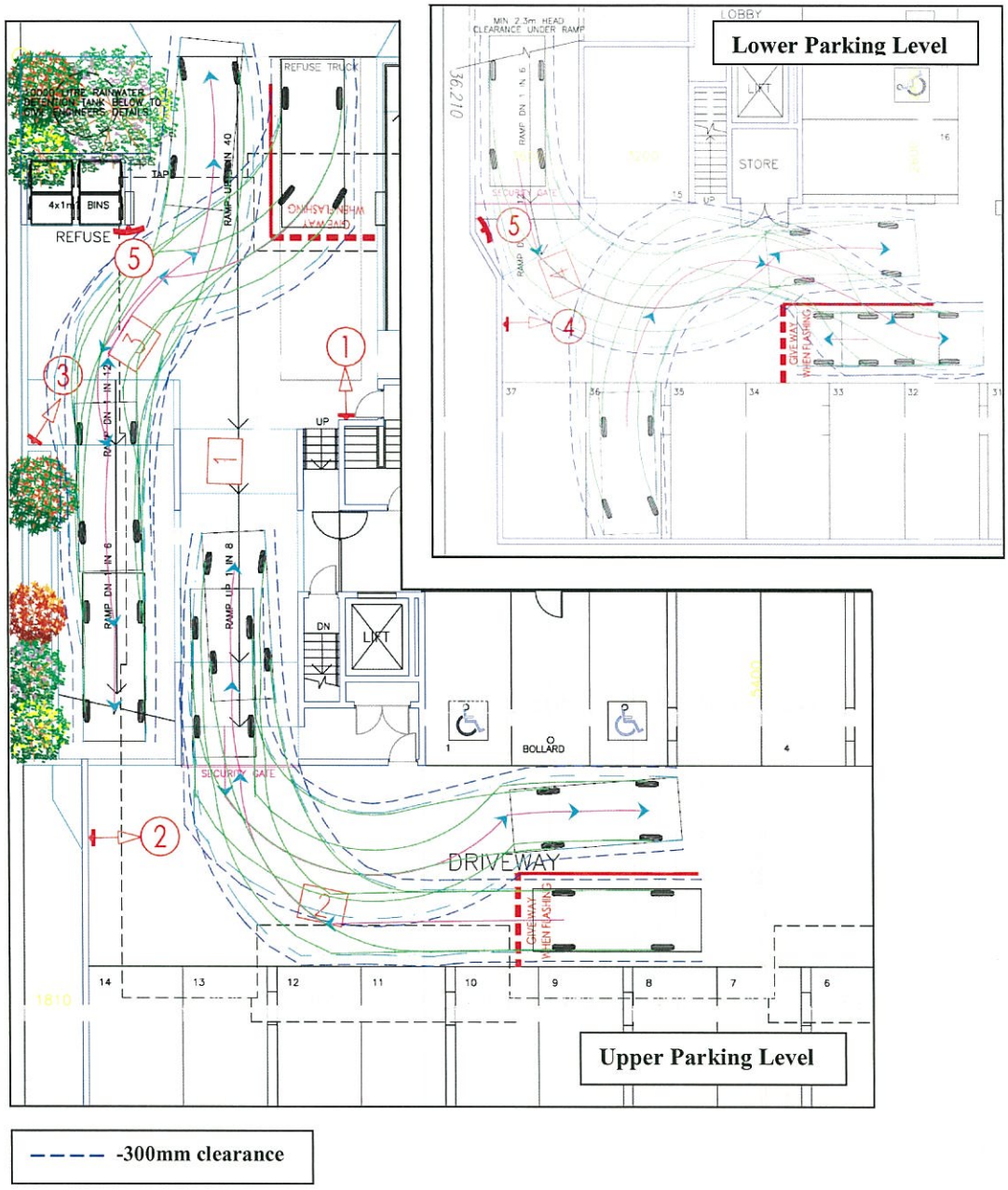


Figure 5.5 – Proposed Warning System Swept Paths

5.3 Proposed Access Arrangements

Access to the proposed development is gained from Folkestone Street approximately 55 metres east of the Folkestone Street / Abbotsford Street intersection. The proposed crossover has been designed to a B2 (7 metre) standard in accordance with Brisbane Standard Drawing BSD-2021.

To ensure adequate sight lines are provided between vehicles leaving the site and pedestrian on the frontage road a pedestrian sight splay has been provided in accordance with Figure 3.3 of AS2890.1:2004. An indicative layout of the proposed access crossover is shown in Figure 5.6.

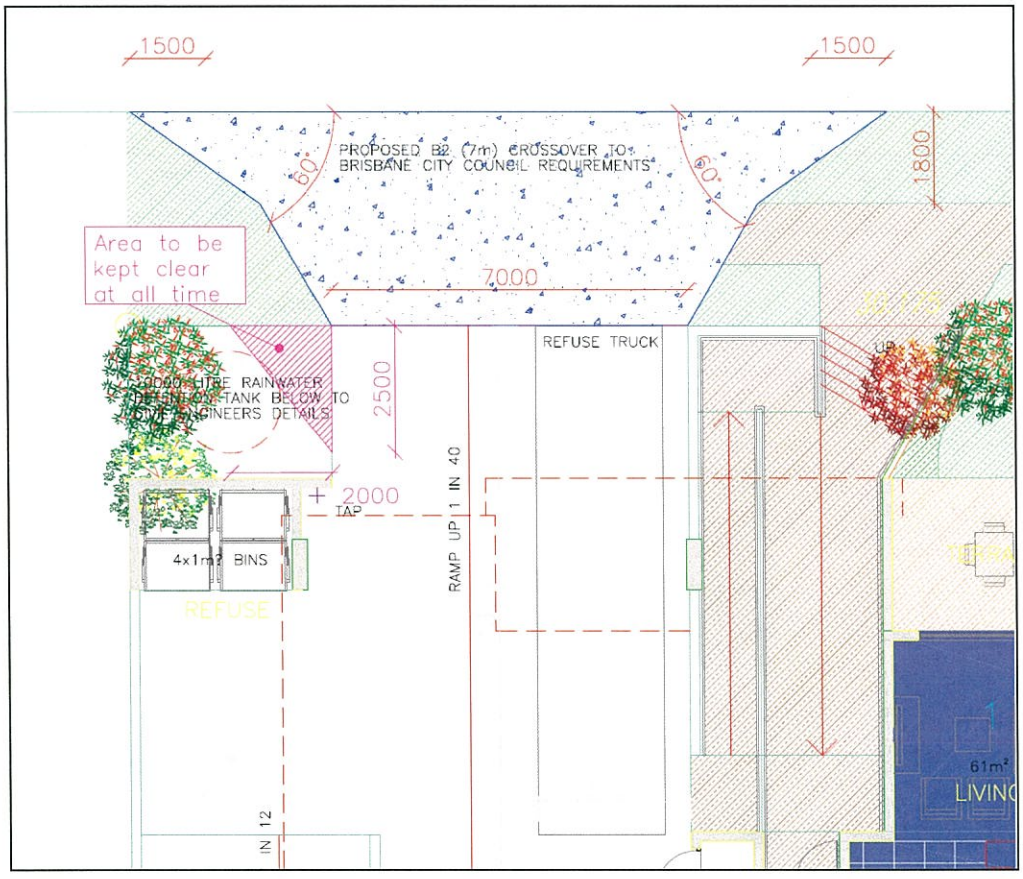


Figure 5.6 – Proposed Access Arrangement

6 SERVICING PROVISION

In accordance with Table 1 of the TAPS Policy, the proposal should provide allow regular access for a 10.24 metre rear loading Refuse Collection Vehicles (RCV). Service vehicle access onto the site is proposed from Folkestone Street, where the truck will reverse onto the loading area and exit the site in a forward gear.

As shown in Figures 6.1, adequate provision is provided for the RCV to enter and exit the site whilst maintaining adequate clearance at all times. It is has been ensured that the service vehicle is fully contained on site whilst servicing the development and allows for circulating vehicles to gain access to the site at all times. A minimum height clearance of 3.6 metres has been provided at all service vehicle manoeuvring areas.

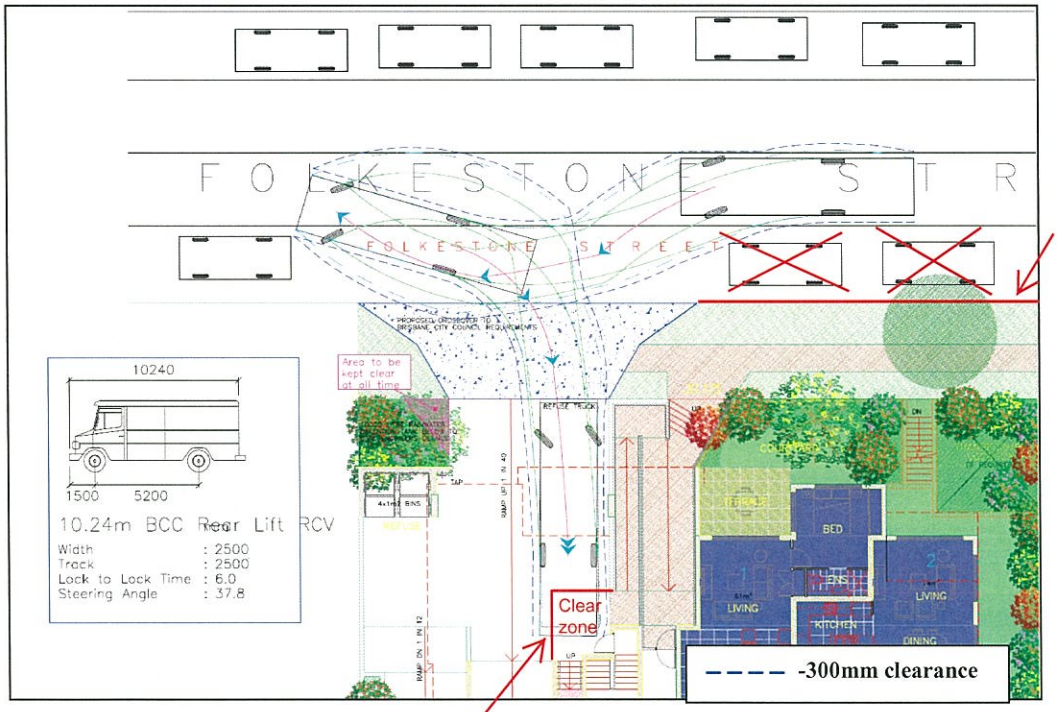


Figure 6.1 – Swept Path of a 10.24 metre Refuse Collection Vehicle (RCV)

Clear zone to be implemented as per Ground Level Floor Plan prepared by Wiltshire Stevens Architecture, drawing number SK-03 Rev F, dated 17.04.15.

AMENDED IN RED

24 APR 2015

By: EAMON MCDERMOT (name)
MEDQ

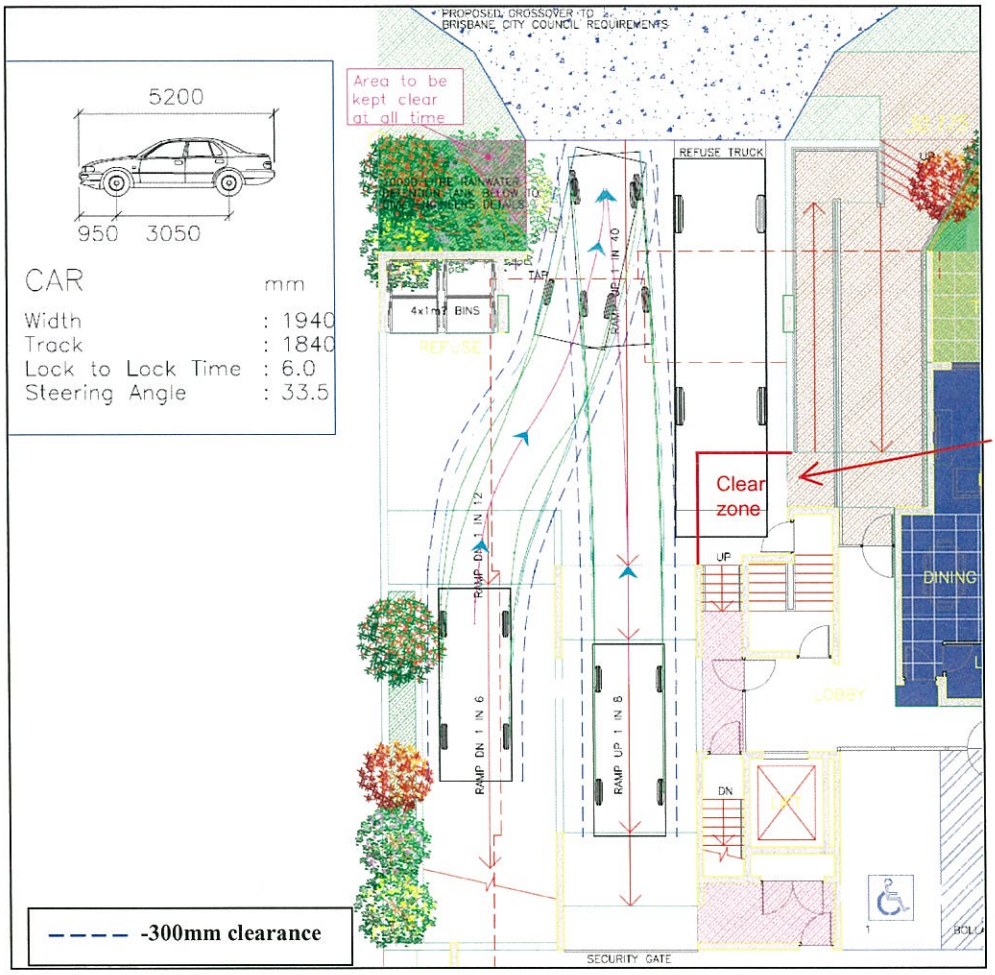


Figure 6.2 – 99th Percentile Vehicle Manoeuvring

AMENDED IN RED

24 APR 2015

By: EAMON MCDERMOT (name)

MEDQ

7 SUMMARY OF CONCLUSIONS & RECOMMENDATIONS

- The subject site is located on the southern side of Folkestone Street at the approximate midpoint between Folkestone Street / Abbotsford Road and Folkestone Street / Cintra Road intersections. The site is formally identified as Lots 5 to 9 on RP10094 and is currently occupied by three detached dwellings.

- The proposed plan of development is for an eight storey multi-unit dwelling development comprising of 37 units. Access to the site is proposed from Folkestone Street via a standard Brisbane City Council crossover. A total of 37 car parking spaces are proposed to be provided on the ground and basement levels.

- As discussed in Section 5, the proposed development is estimated to generate 15 peak hour vehicle trips, which will have a negligible impact upon the local road network.

- As discussed in Section 6, the proposed development is assessed under the Bowen Hills Development Scheme and yields a minimum car parking requirement of 37 spaces. The proposal includes a total of 38 spaces and therefore exceeds the minimum parking requirement.

- The geometric layout of the proposed car parking has been designed to comply with the *AS2890.1:2004* in respect of parking bay dimensions and aisle widths.

- The proposed car parking arrangement provides single lane ramps to the upper and lower car parking levels. The proposed ramps have been designed in accordance with AS2890.1:2004 and therefore provide satisfactory width and maximum grade.

- To ensure safe vehicle egress and ingress an advance warning system has been proposed in addition to convex mirrors. As discussed in Section 6, the proposed single lane ramp arrangement is considered satisfactory based on the low traffic generation potential of the development.

- Access on to the site will be gained from Folkestone Street approximately 55 metres east from the Folkestone Street / Abbotsford Street intersection. The proposed crossover has been designed to a B2 (7 metre) standard in accordance with Brisbane Standard Drawing BSD-2021.

- As discussed in Section 7, the proposed site plan provides sufficient manoeuvring area for a rear lift Refuse Collection Vehicle (RCV) to reverse into the development from Folkestone Street and exit in a forward gear. A minimum height clearance of 3.6 metre has been provided at all service vehicle manoeuvring areas.