

50 Tallawong Road, Rouse Hill (NSW)

Traffic & Car Parking Assessment Report

Client: JS Architects Pty Ltd

Prepared by

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1. INTRODUCTION

1.1 Purpose of this report

This report sets out an assessment of the traffic and parking implications of the proposed development, with specific consideration of the following:

- the existing conditions and a description of the proposal;
- an assessment of the development's car parking requirements;
- adequacy of the on-site car parking supply to accommodate the proposal's car and bicycle parking requirements;
- an assessment of the adequacy of the car park layout; and
- the traffic impact of the proposal.

1.2 Referenced documents

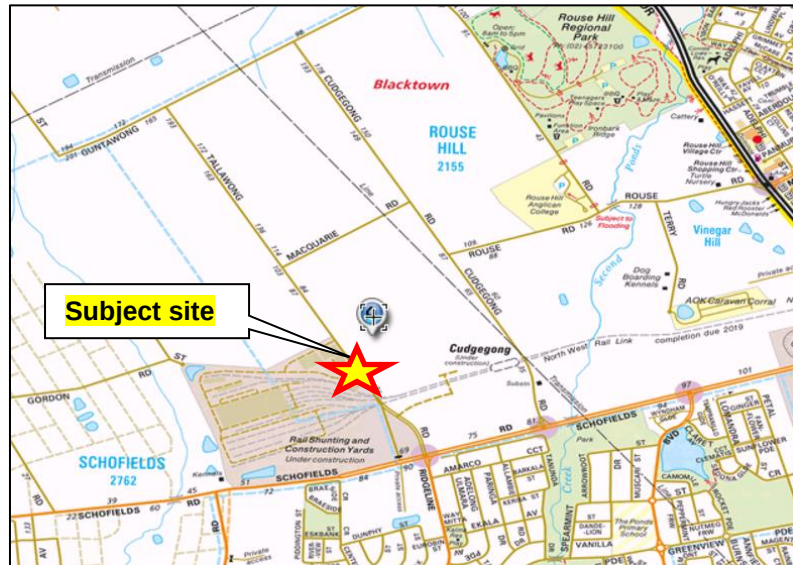
This report has been based upon a number of sources and references. These include:

- Discussions with and information provided by the applicant;
- Discussions with town planning officers at the City of Blacktown;
- Nearmap, Google maps and Melways online;
- Blacktown Council's web site;
- City of Blacktown, Growth Centre Precincts - Development Control Plan (September 2016);
- Blacktown Local Environmental Plan (21015);
- AutoTURN computer software for swept path analysis;
- www.transportnsw.info;
- Australian Standards AS 2890.1 (2004), AS 2890.6 (2009) and AS 2890.2 (2002);
- Traffic Authority of NSW, Guide to Traffic Generating Developments (Oct 2002); and
- Layout plans prepared by JS Architects Pty Ltd, project no. 108/16-17, Sheets 1 - 39, Issue A, dated 8 June 2017.

2. EXISTING CONDITIONS

2.1 Location and Land use

The subject site is located on the east side of Tallawong Road approximately midway between Macquarie Road and Schofields Road. The location of the subject site is shown in **Figure 2.1**.



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Figure 2.1: Location of the subject site

The corner site is currently occupied by a single dwelling with a frontage of 82 m along Tallawong Road and a site area of 15,173 sqm. The subject site is located within a R3 - Medium Density Residential Zone with the surrounding area is comprised of residential dwellings with the Rail Shunting and Construction Yard located on the west side of Tallawong Road opposite the site. The nature of the site and surrounds is shown in **Figure 2.2**.



Source: nearmap (image taken 16 May 2017)

Figure 2.2: Nature of the subject site and surrounds

2.2 Road Network

Tallawong Road serves a local collector road function and has an undivided cross section with a single traffic lane in each direction. Gravel shoulders exist along either side of the roadway.

Tallawong Road has a pavement width of approximately 7.8 m adjacent to the site. The speed limit along Tallawong Road in the vicinity of the site is 60 km/hr.

The cross section of Tallawong Road adjacent to the site looking to the north and south is shown in **Figures 2.3** and **2.4**, respectively.



Source: google maps

Figure 2.3: Tallawong Road looking north



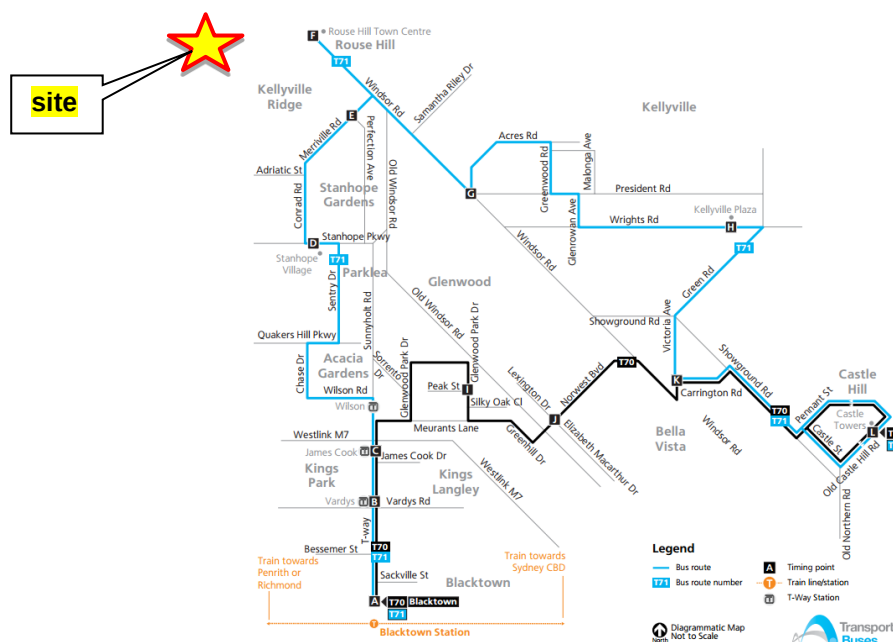
Source: google maps

Figure 2.4: Tallawong Road looking south

2.3 Public Transport

The public transport routes in the area include bus route T71 which operates along Windsor Road and Merriville Road to the south of the site.

The bus route is shown in **Figure 2.5**.



Source: Transport Buses

Figure 2.5: Location of bus routes in the area

3. THE PROPOSAL

It is proposed to construct seven residential flat building towers. The residential towers will each comprise of five levels above ground with three separate two level basement car parks. The following is a summary of the number of dwellings and parking spaces:

Blocks A/B (110 dwellings)

- 35 x one bedroom dwellings;
- 65 x two bedroom dwellings; and
- 10 x three bedroom dwellings.

A total of 152 spaces are provided within a two level basement car park comprising of 122 occupier spaces, 22 visitor spaces, 12 accessible spaces and 2 car wash bays.

Blocks C/D/E (150 dwellings)

- 45 x one bedroom dwellings;
- 75 x two bedroom dwellings; and
- 30 x three bedroom dwellings.

A total of 259 spaces are provided within a two level basement car park comprising of 209 occupier spaces, 30 visitor spaces, 18 accessible spaces and 2 car wash bays.

Blocks F/G (110 dwellings)

- 35 x one bedroom dwellings;
- 55 x two bedroom dwellings; and
- 20 x three bedroom dwellings.

A total of 156 spaces are provided within a two level basement car park comprising of 120 occupier spaces, 22 visitor spaces, 12 accessible spaces and 2 car wash bays.

Access to/from the basement car parks will be provided via a single access along a new east-west road adjacent to the site's northern boundary. In addition, new roads will be created abutting the site's eastern and southern boundaries which extend eastwards from Tallawong Road.

The layout of the proposed development including the basement car parking areas are shown in **Attachment A**.

4. CAR PARKING CONSIDERATIONS

4.1 Car Parking Requirements

The car parking requirements for the proposed development are set out in the Blacktown Growth Centre Precincts - Development Control Plan (September 2016), specifically Section 4.3.5 (residential flat buildings), Table 4-10, which states that, for residential flat buildings in an R3 zone, the car parking requirements are:

- 1 space per (1 or 2 bedroom) dwelling;
- 1.5 spaces/dwellings (3 or more bedrooms); and
- 1 space per 5 dwellings (visitors).

Further, there is a requirement that 10 % of dwellings are required to be designed to be capable of adaptation for access by people with all levels of mobility, and as a result, there is a requirement that 10 % of the parking supply for occupiers be provided as accessible parking bays.

Application of the car parking requirements to the development results in a requirement to provide:

Block	Occupier Bays	Visitor Bays	Accessible bays
A/B	115	22	12
C/D/E	165	30	17
F/G	120	22	12

Reference to the layout plans indicate that the provision of the parking bay types:

Blocks A/B: 122 occupier, 22 visitor spaces, 12 accessible bays and 2 car wash bays

Blocks C/D/E: 209 occupier, 30 visitor spaces, 18 accessible bays and 2 car wash bays

Blocks F/G: 120 occupier, 22 visitor spaces, 12 accessible bays and 2 car wash bays

The proposed car parking provision therefore complies with the car parking requirements stipulated in Table 4-9 of the Blacktown Growth Centre Precincts - Development Control Plan (2016).

4.2 Bicycle Parking Requirements

Blacktown Growth Centre Precincts - Development Control Plan (September 2016), specifically Section 4.3.4 (multi dwelling housing), Table 4-10, set out the parking requirements for bicycles, which states that for residential flat buildings in an R3 zone, there is a requirement to provide '1 space per 3 dwellings.'

Having regard to the above, there is a requirement to provide the following number of occupier bicycle spaces:

Blocks A/B: 37 spaces

Blocks C/D/E: 50 spaces

Blocks F/G: 37 spaces

Reference to the layout plans indicate that the provision of the following bicycle parking bays:

Blocks A/B: 37 spaces

Blocks C/D/E: 50 spaces

Blocks F/G: 6 spaces

It is therefore recommended that an additional 31 bicycle spaces be provided within the Blocks F/G basement car parking areas, to encourage occupiers and their visitors to travel sustainably.

Further, AS 2890.3:2016 requires 20 % of bicycle parking be provided at ground level (horizontal) bicycle parking devices in any parking facility. Therefore, it is recommended that 20 % of the proposal's bicycle parking requirements be provided at ground level.

4.3 Car Park Layout

4.3.1 Dimensions of car accommodation

Reference to the layout plans show that the parking bays are provided at the dimensions varying between 2.6 m and 2.75 m in width, and a minimum length of 5.4 m and minimum aisle widths of 5.8 m.

Further, a minimum offset clearance of 300 mm is required to be provided to the width of the parking bays located next to end walls, to comply with AS 2890.1:2004.

The disabled bays (and central shared space) are required to be provided at a width of 2.4 m with a length of 5.4 m, with a centrally located column within the shared space positioned at an off-set distance of 800 mm from the accessway, to accord with the Australian Standards, AS 2890.6 (2009).

A blind aisle extension of 1 m has generally been provided at each end of the car park aisle which accords with the requirements of the Australian Standards for Off-street car parking, AS 2890.1:2004.

It is recommended that the correct orientation of the directional arrows be shown within the Block F/G basement levels 1 and 2 accessways.

4.3.2 Access to/from car accommodation spaces

The swept paths of a vehicle entering and exiting the proposed on-site car spaces on the development site have been assessed with the use of the AutoTURN swept path computer software for a B85 motor car.

Reference to the swept path analysis indicates that motorists can safely enter and exit the on-site parking bays and exit from the development site in a forward manner.

A further assessment has been undertaken with the use of the AutoTURN computer software to assess the ability for a B85 and B99 car to pass each other at the base of the ramp. The analysis, which is shown in **Attachment B**, indicates that, a B85 and B99 cars can generally pass each other at the base of the access ramps and around the bends within the basement car park levels.

Reference to the layout plans however indicate that a motorist exiting along the accessway on the west side of the main access ramp to the Blocks C/D/E basement 1 car park, would be required to undertake a three point turn at the base of the ramp.

To minimise the potential for conflict at the base of the Blocks C/D/E basement level 1 access ramp, it is recommended that the accessway to the immediate west of the access ramp be closed, which provides an opportunity to locate additional parking bays in this area.

4.3.3 Width of accessway

Reference to Clause 3.2 of AS 2890.1:2004 indicates that, for a user class 1/1A (residential) with in excess of 100 spaces, the width of the access is required to be a minimum of 6 m.

Further, reference is made to Clause 3.2.2 of AS 2890.1:2004 states that:

“Where the circulation roadway leading from a Category 1 access driveway is 30 m or longer (applies here) or sight distance from one end to the other is restricted (applies here) and the frontage is an arterial or sub-arterial road (not applies here), both the access driveway and the circulation roadway for at least the first 6 m from the property boundary shall be a minimum of 5.5 m wide.”

Reference to the layout plans indicate that the width of the access has been provided at a minimum width of 6.2 m which is in excess of the requirements stipulated in Clause 3.2.2 of AS 2890.1:2004.

In addition, 300 mm kerbs are required to be provided along both sides of the access ramps in accordance with the requirements of the Australian Standard for Off-street car parking, AS 2890.1:2004.

4.3.4 Gradient of access ramp

The following gradients have been provided along the main access ramps from Ground level into basement 1 for the respective car parking areas:

Blocks A/B

- Initial (up) gradient for 6 m at 1:25 (4 %);
- Transition (up) gradient for 6 m at 1:20 (5 %);
- Level for 0.95 m (0 %);
- Transition (dn) gradient for 4 m at 1:8 (12.5 %);
- Intermediate (dn) gradient of 1:6.5 (15.4 %) for 15.6 m; and
- Transition (dn) gradient for 8 m at 1:16 (6.25 %).

Blocks C/D/E

- Initial (up) gradient for 6 m at 1:25 (4 %);
- Transition (dn) gradient for 6 m at 1:20 (5 %);
- Transition (dn) gradient for 4 m at 1:8 (12.5 %);
- Intermediate (dn) gradient of 1:6.5 (15.4 %) for 14.625 m; and
- Transition (dn) gradient for 8 m at 1:16 (6.25 %).

Blocks F/G

- Initial (up) gradient for 6 m at 1:25 (4 %);
- Transition (dn) gradient for 6 m at 1:20 (5 %);
- Transition (dn) gradient for 4 m at 1:8 (12.5 %);
- Intermediate (dn) gradient of 1:6.5 (15.4 %) for 18.85 m; and
- Transition (dn) gradient for 8 m at 1:16 (6.25 %).

The following gradients have been provided along the access ramps between basements 1 and 2 for each of the three car parks:

- Transition gradient for 2 m at 1:8 (12.5 %);
- Intermediate gradient of 1:5 (20 %) for 12.5 m; and
- Transition gradient for 2 m at 1:8 (12.5 %).

These gradients comply with the requirements in the Australian Standards for off-street car parking, AS 2890.1:2004.

4.3.5 Columns

Any columns located within the car park are required to be located between 0.75 m and 1.75 m from the edge of the access aisle, to accord with the requirements of Figure 5.2 of AS/NZS 2890.1:2004.

4.3.6 Headroom clearance

To accord with the Australian Standard, AS 2890.6 (2009), the headroom clearance within the basement car park is required to be a minimum of 2.2 m with a minimum headroom clearance of 2.5 m above the disabled bays.

Reference to the layout plans indicate that a minimum headroom clearance of 4.5 m has been provided along the main access ramps to each of the three car parks and a headroom clearance in excess of 2.5 m has been provided above the accessible bays within the basement car parks and 2.2 m along the interconnecting ramps/accessways which accords with the Australian Standard, AS 2890.6 (2009) and AS 2890.1 (2004).

4.3.7 Sight lines for exiting motorists

Figure 3.3 of the Australian Standard for off-street car parking, AS 2890.1:2004 specifies that the minimum sight lines for pedestrian safety along a circulation driveway or domestic driveway.

The minimum sight lines are specified as clear sight line triangles which extend 2 m along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage. The sight line triangles are required to be clear of visual obstructions to provide the exiting motorist with a clear view of pedestrians on the footpath of the frontage road (and vice versa).

Reference to the layout plans indicate that sight line triangles have been provided on either side of the accessway at the title boundary. It is recommended that any vegetation or obstructions provided within the sight line triangles not exceed a height of 900 mm.

5. COMMERCIAL VEHICLES

5.1 Refuse

The refuse bins are proposed to be stored in the loading dock areas and are proposed to be serviced by Council's refuse vehicles. It is understood from discussions with the applicant, that the maximum sized truck anticipated to access the loading docks are an 8.8 m Medium Rigid Vehicle (MRV).

5.2 Accessibility

Discussions with the applicant indicate that the loading docks will be restricted to a Medium Rigid Vehicle (MRV) which is 8.8 m in length.

Conservatively, the ability for a truck to enter and exit each of the loading dock facilities on Basement level 1 was undertaken with the use of the AutoTURN swept path computer software for an 8.8 m long Medium Rigid Vehicle (MRV), the analysis of which is shown in **Attachment C**.

Reference to the swept path analysis indicates that a refuse vehicle can safely enter and exit each of the on-site loading dock areas and exit from the development site in a forward manner.

The requirements in AS 2890.2 (2002), which stipulate, amongst other things, that the maximum gradient for an MRV is 1:6.5 (15.4 %) with a maximum change of gradient of 1:16 (6.25 %) over a length of 7 m.

Reference to the layout plans indicate that the gradients have been generally provided along the main access ramps in accordance with AS 2890.2 (2002).

A ground clearance assessment has been undertaken with the use of the AutoTURN computer software to examine whether an 8.8 m truck would scrape its underside along the ramp. The analysis, which is shown in **Attachment D**, indicates that there would be minor scraping to the underside of an 8.8 m truck at the lower part of the main ramp, however given that this portion of the ramp fully complies with AS 2890.2 (2002), the proposed gradients are considered acceptable.

5.3 Headroom Clearance

Reference to the Australian Standard AS 2890.2 (2002), indicates that for a Medium Rigid Vehicle (8.8 m in length), the minimum headroom clearance is required to be 4.5 m.

Reference to the layout plans indicate that the headroom clearance along the access ramp, along the accessways on either side of the loading docks and within the two loading dock areas is 4.5 m, which complies with the Australian Standard AS 2890.2 (2002).

6. TRAFFIC IMPACT

The impact of the proposed development can be assessed having regard to the anticipated number of vehicle movements likely to be generated at the development access during the commuter peak periods.

The proposed development is conservatively expected to generate an average of 5 vehicle trips per dwelling per day (and up to 0.5 vehicle trips per dwelling during the weekday peak hours), as set out in the RTA Guide for Traffic Generating Developments (Vers 2.2, 2002).

On this basis, it is anticipated that the residential development will generate the around 58 vehicle movements (Blocks A/B), 75 vehicle movements (Blocks C/D/E) and 55 vehicle movements (Blocks F/G) during the am and pm peak hours.

The directional distribution of these movements is based upon surveys undertaken by consultants which indicate that during the am peak hour, 80 % of traffic will exit the site and 20 % will enter and during the pm peak hour, 30 % of traffic will exit the site and 70 % will enter.

The total vehicle movements anticipated to be generated by each of the proposed development's on-site car parks are summarised as:

Peak Hour	Number of vehicle movements					
	Blocks A/B		Blocks C/D/E		Blocks F/G	
	Entry	Exit	Entry	Exit	Entry	Exit
AM peak	12	46	15	60	11	44
PM peak	41	17	53	22	39	16

The level of traffic anticipated to be generated at the respective car park access points is considered minimal and will not represent any adverse impact upon the safety or operation of the surrounding road network.

7. CONCLUSIONS AND RECOMMENDATIONS

Having regard to the above, it is concluded that the:

- proposed car parking supply generally accords with the requirements stipulated in the Blacktown Growth Centre Precincts - Development Control Plan (September 2016), specifically Section 4.3.5;
- car park layout has been generally designed in accordance with the requirements of the Australian Standards AS 2890.1 (2004), AS 2890.6 (2009) and AS2890.2 (2002); and
- traffic generated by the proposal will be minimal and is not expected to adversely impact upon the safety or operation of the surrounding road network.

Further, it is recommended that:

- the correct orientation of the directional arrows be shown within the Block F/G basement levels 1 and 2 accessways;
- an additional 31 bicycle spaces be provided within the Blocks F/G basement car parking areas;
- 20 % of the bicycle parking requirements be provided at ground level;
- the access way to the immediate west of the Blocks C/D/E basement level 1 access ramp be closed;
- 300 mm kerbs be provided along both sides of the access ramps;
- a minimum offset clearance of 300 mm is required to be provided to the width of the parking bays located next to end walls;
- any columns located within the car park are required to be located between 0.75 m and 1.75 m from the edge of the access aisle; and
- any vegetation or obstructions provided within the sight line triangles not exceed a height of 900 mm.

A handwritten signature in black ink, appearing to read 'Evan Boloutis'.

Evan Boloutis

Director

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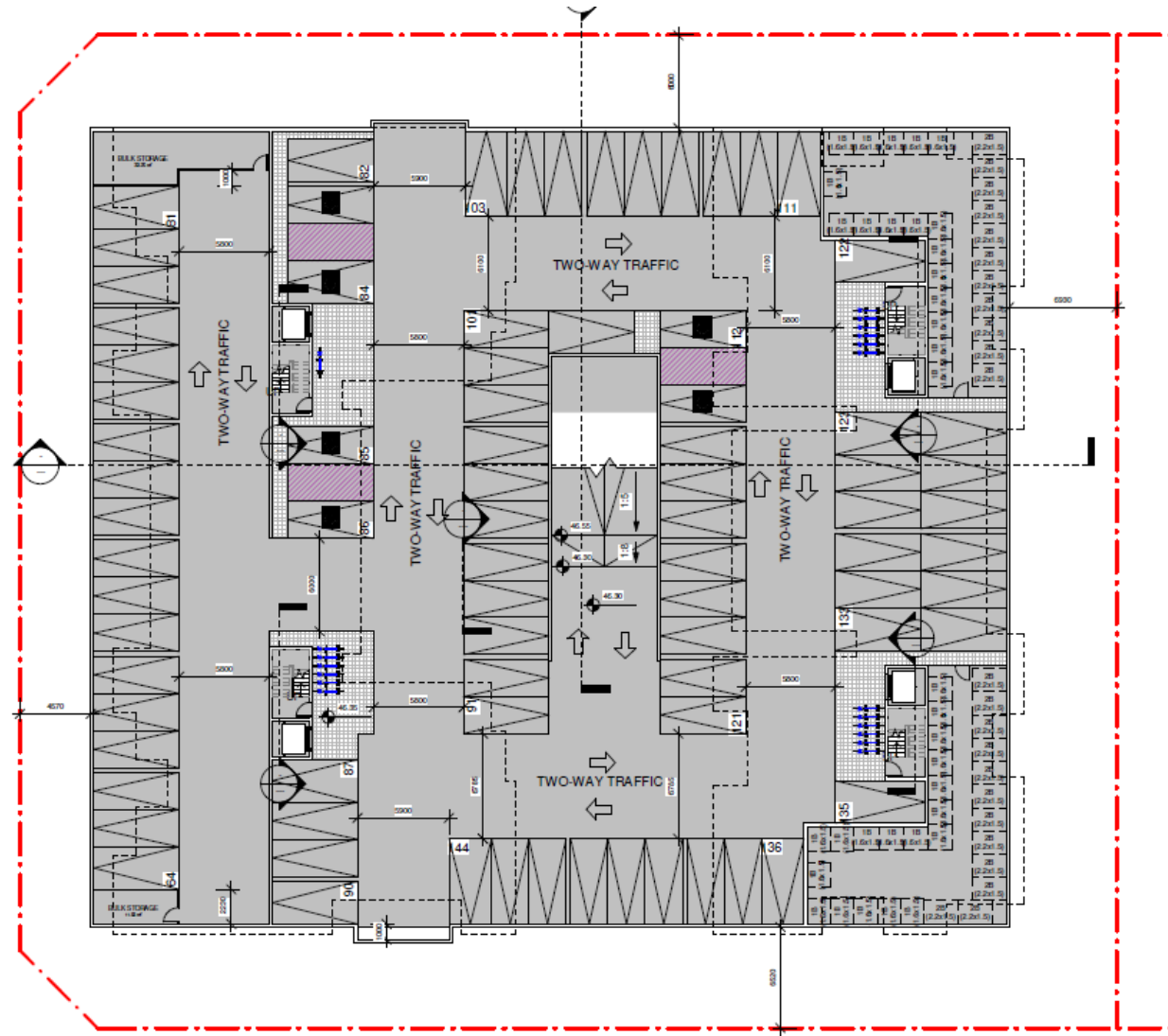
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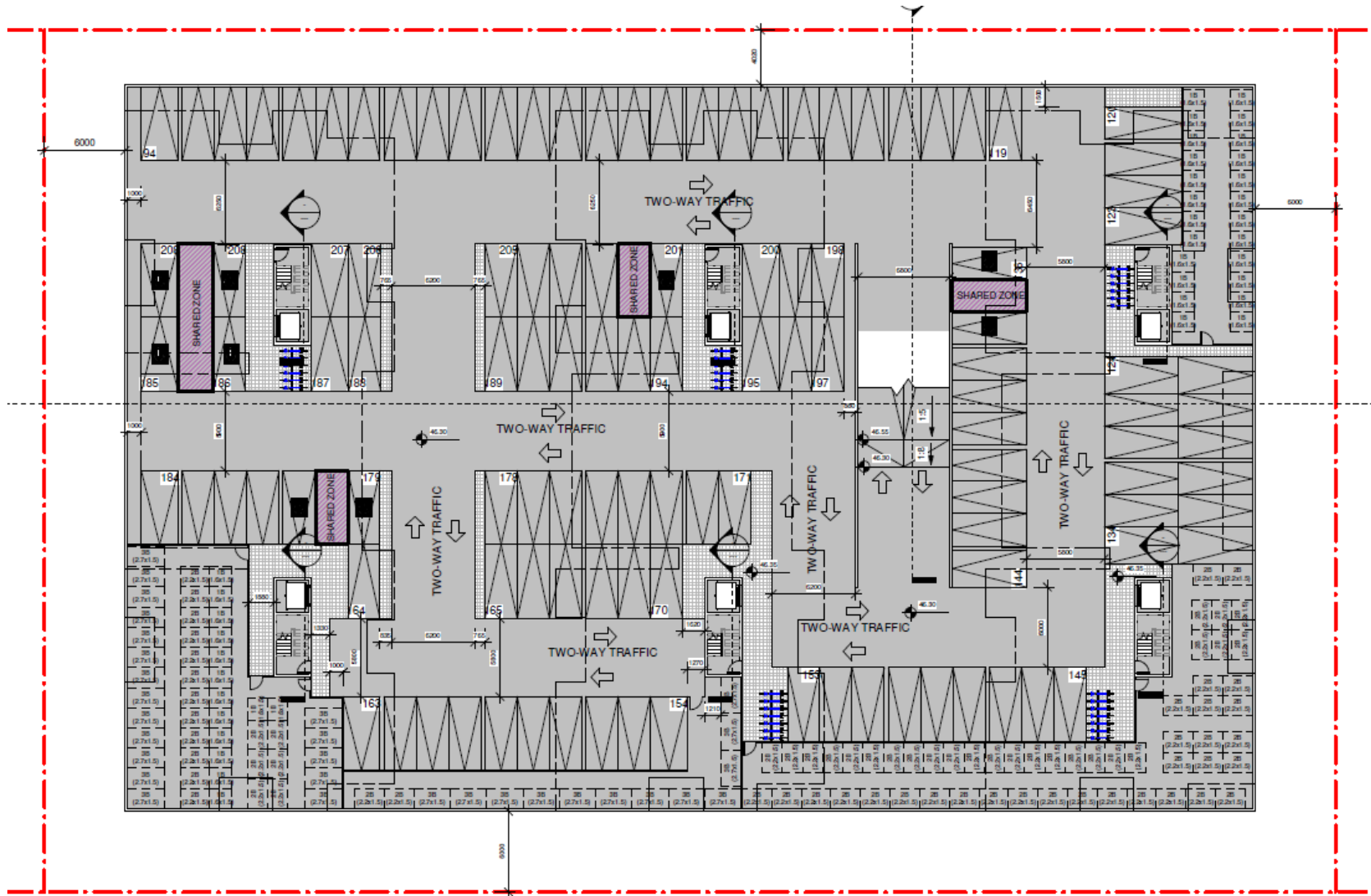
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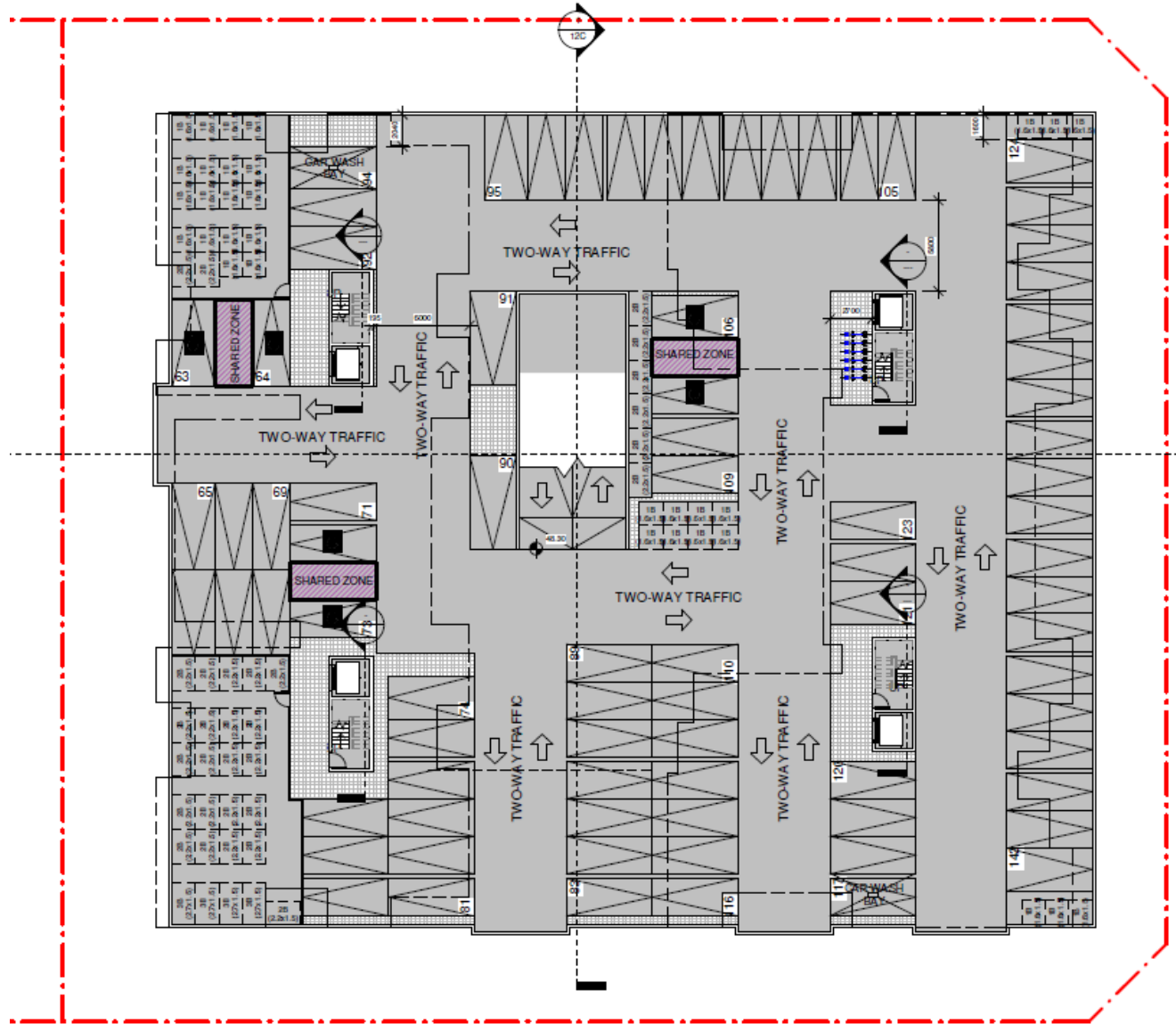
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ATTACHMENT A
LAYOUT OF DEVELOPMENT AND CAR PARK LAYOUT

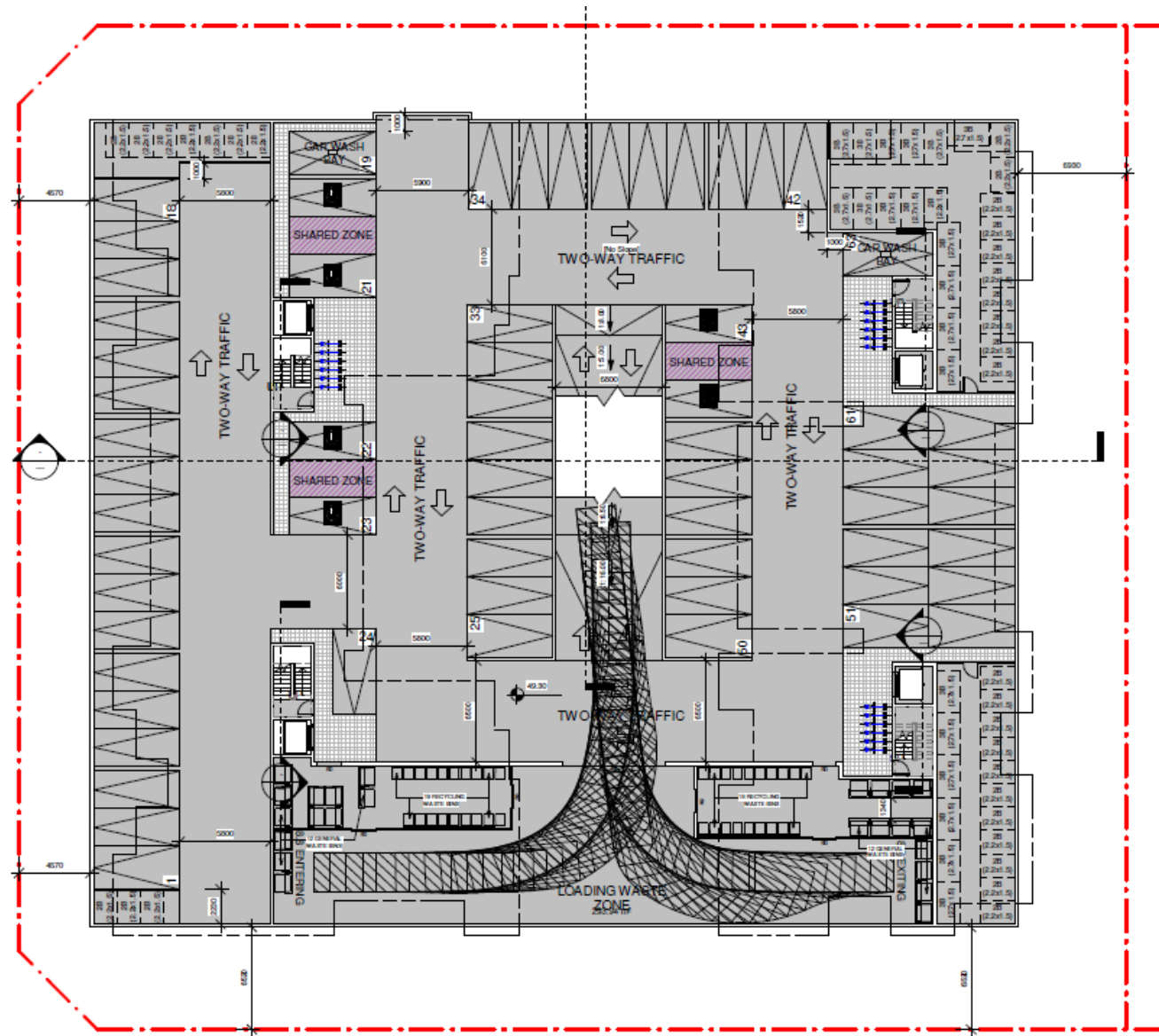




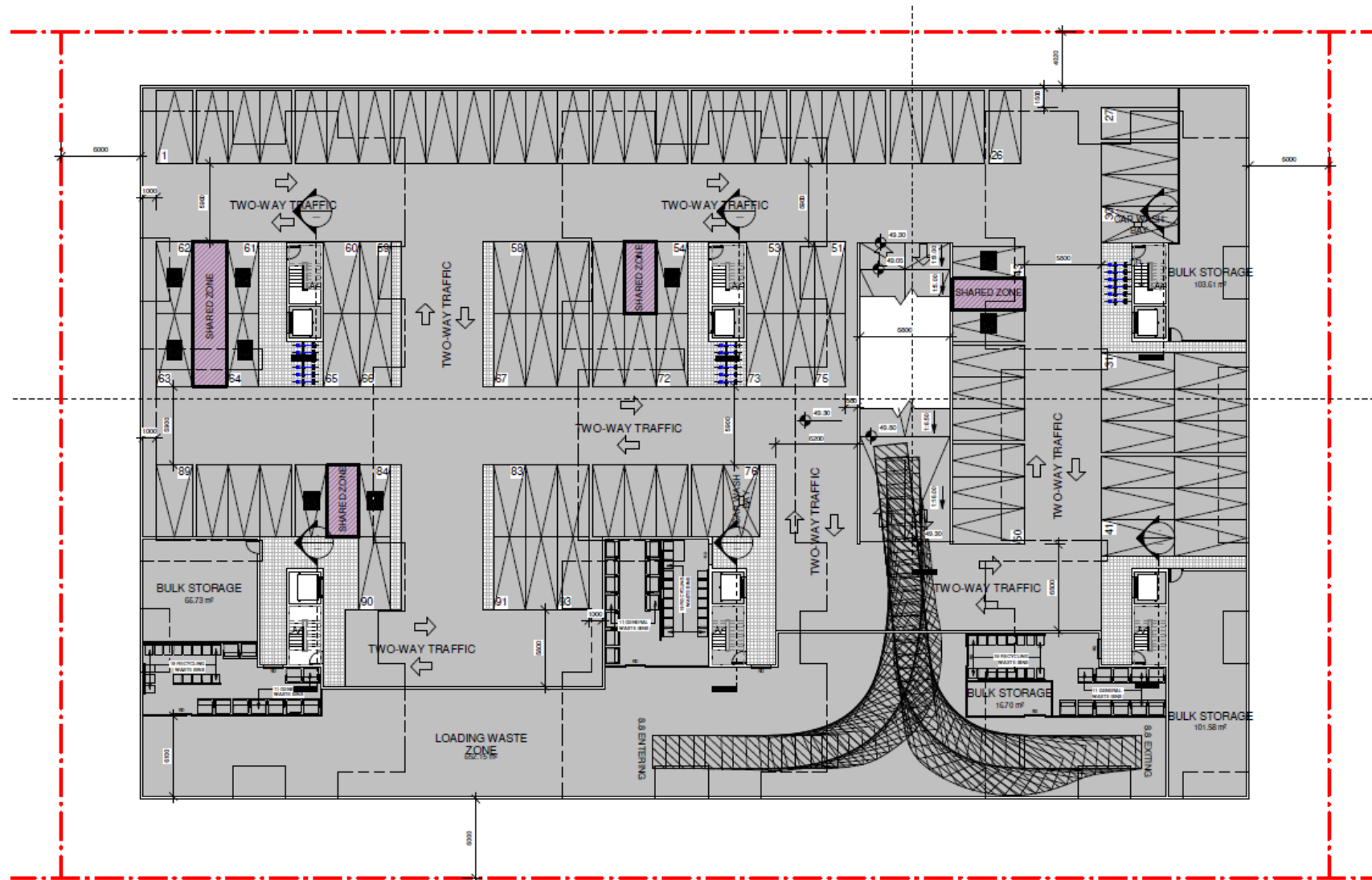


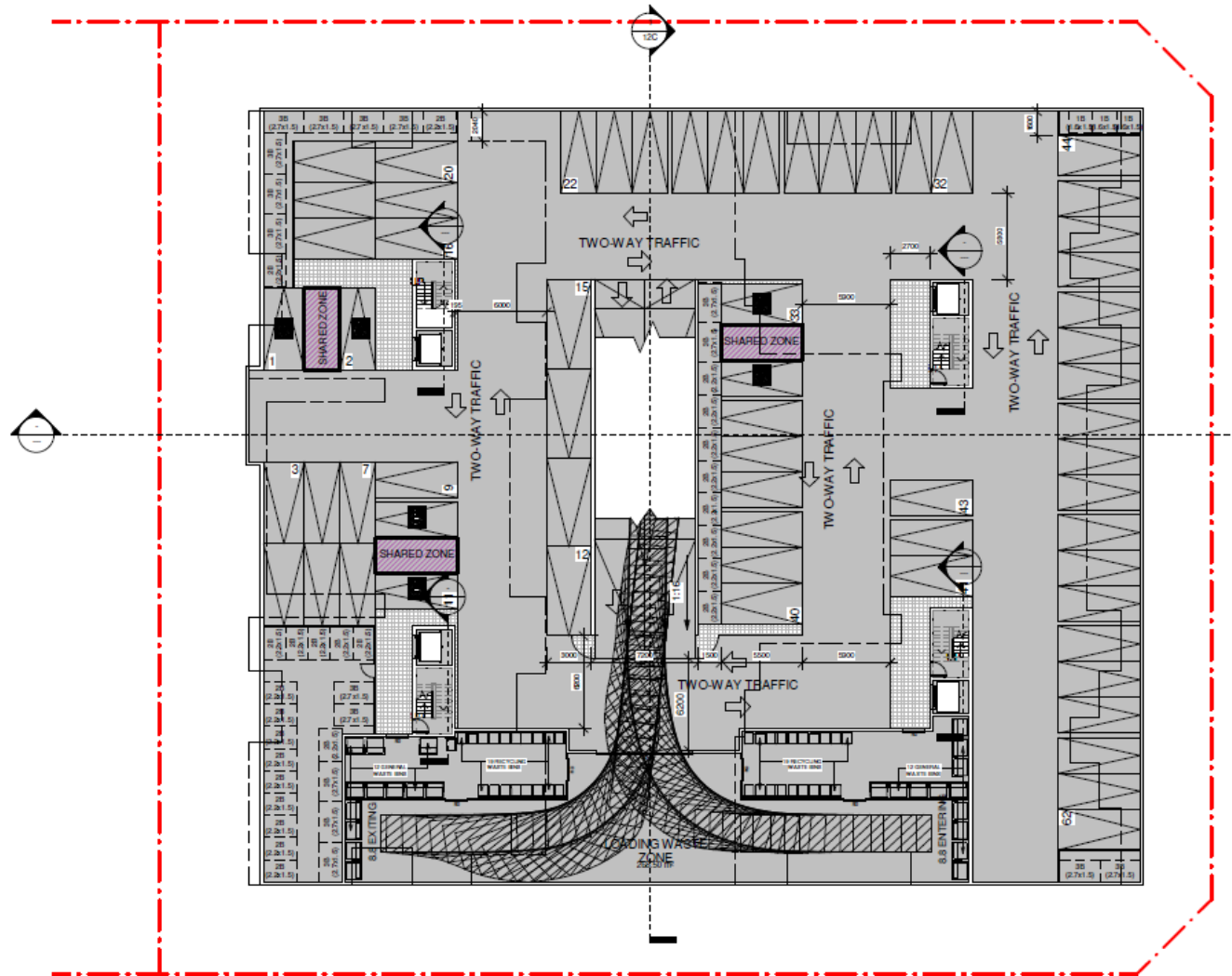


1 BLOCK F/G BFL 2



1 BLOCK A-E BFL I/II (A/B)

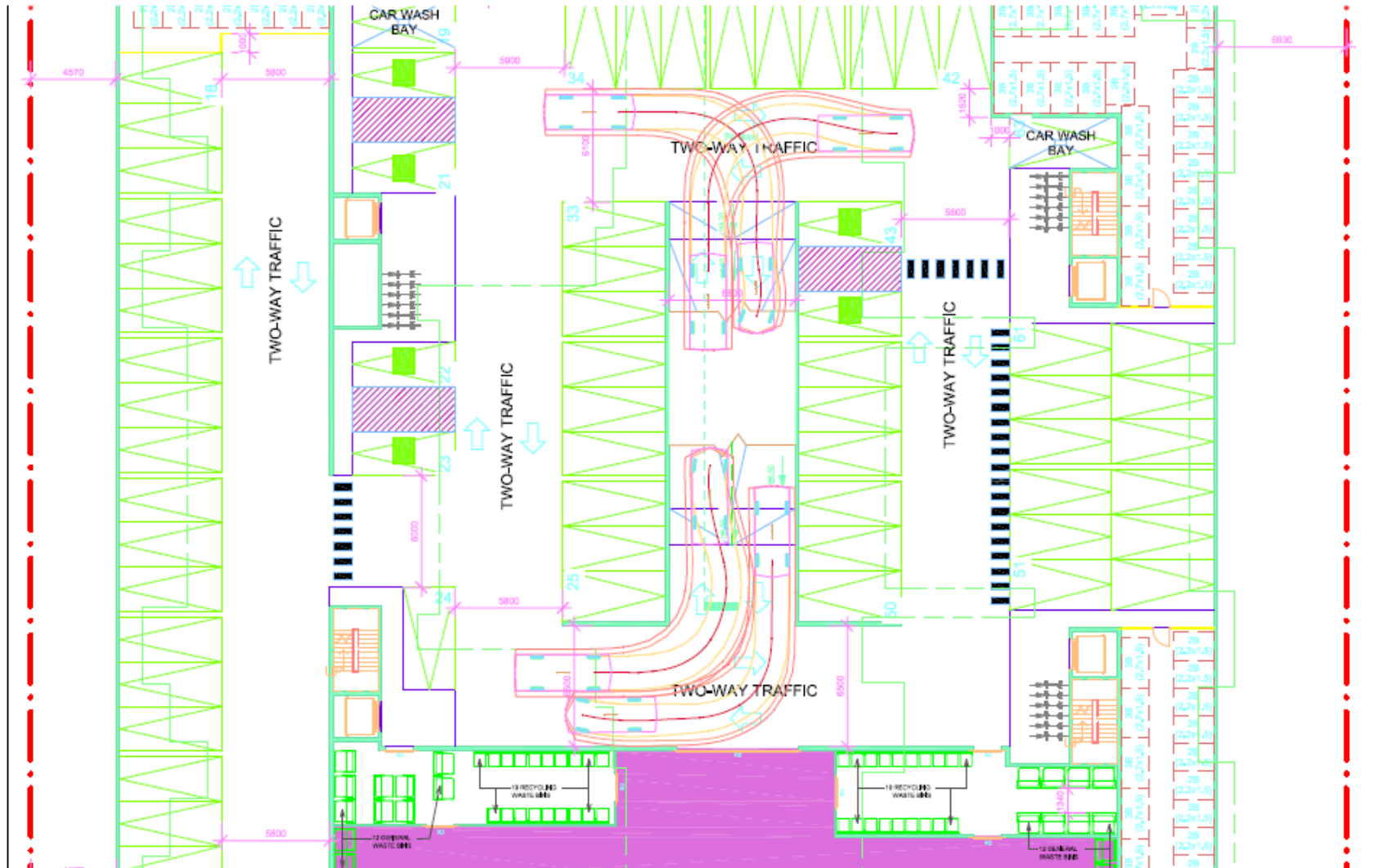




1 BLOCK F/G BFL

ATTACHMENT B

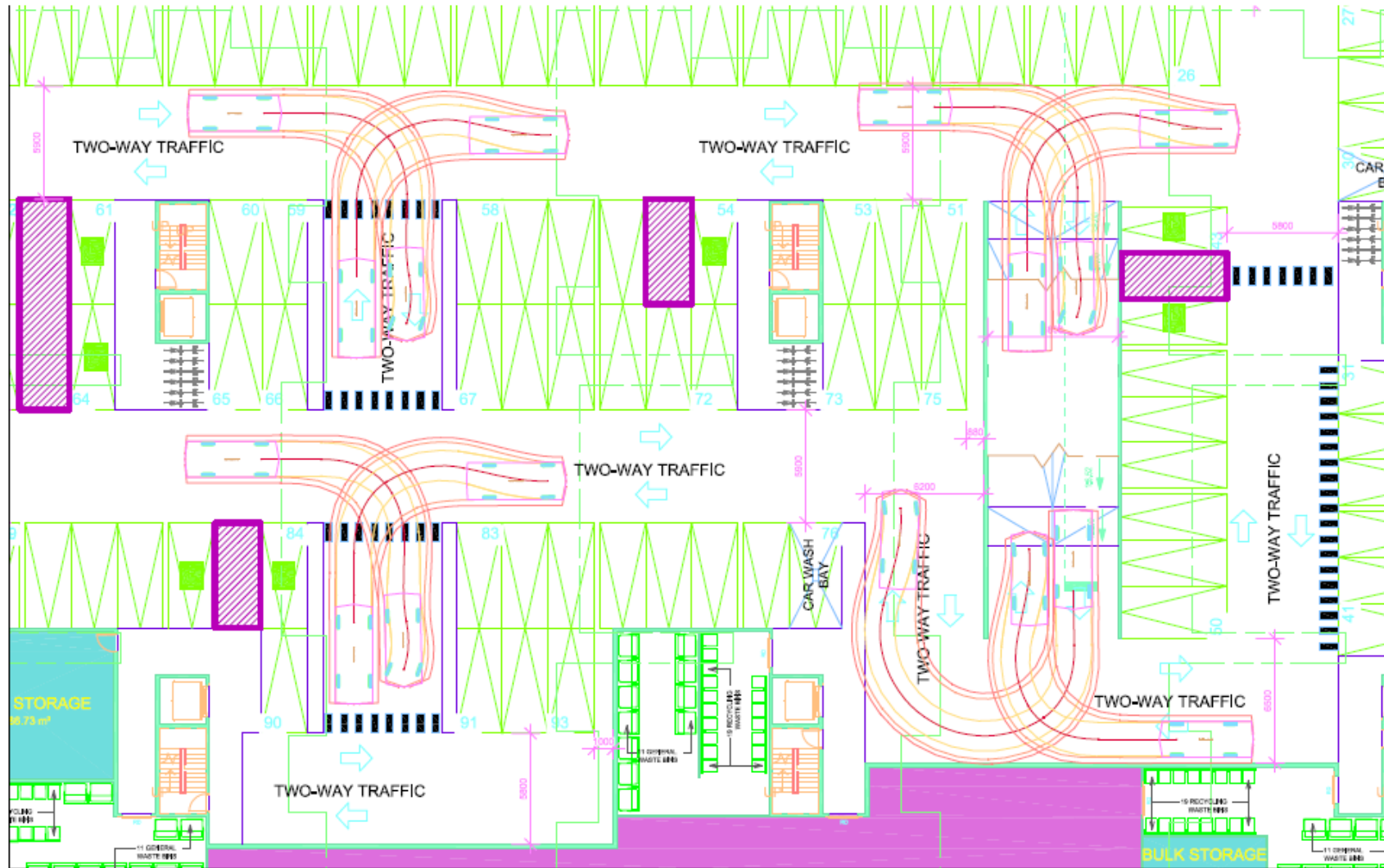
SWEPT PATH ANALYSIS AROUND BEND (B85/B99 CARS)



50 Tallawong Road, Rouse Hill (Block A-B)
Swept Path Diagram
B85 & B99 Car

Scale 1:100 @ A4
Plan prepared by EB Traffic Solutions Pty Ltd
Date: 23/06/2017

Sheet 01



50 Tallawong Road, Rouse Hill (Block C-D)
Swept Path Diagram
B85 & B99 Car

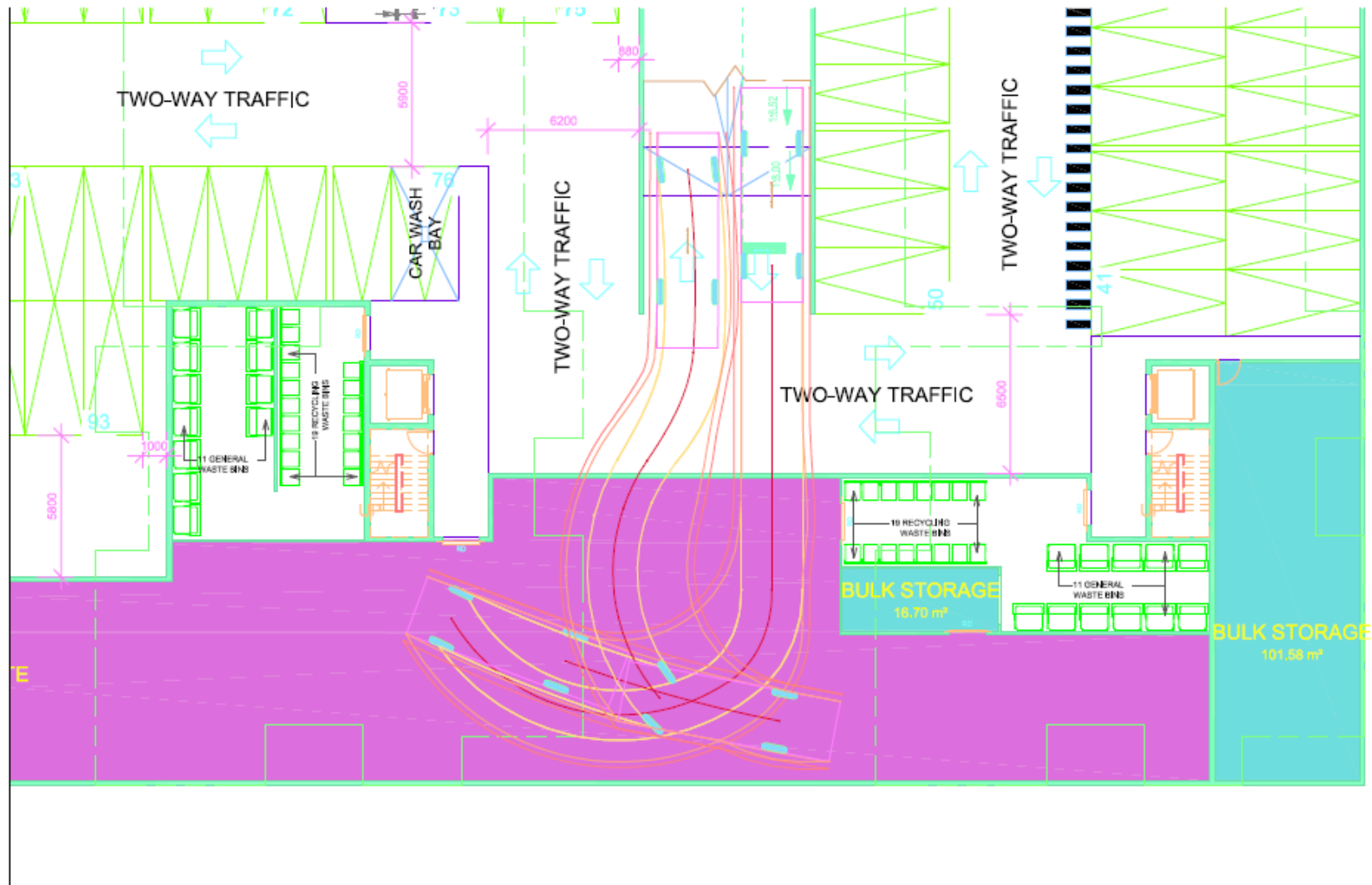
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Plan prepared by EB Traffic Solutions Pty Ltd
Date: 23/06/2017

Sheet 02

ATTACHMENT C

SWEPT PATH ANALYSIS: 8.8 M TRUCK

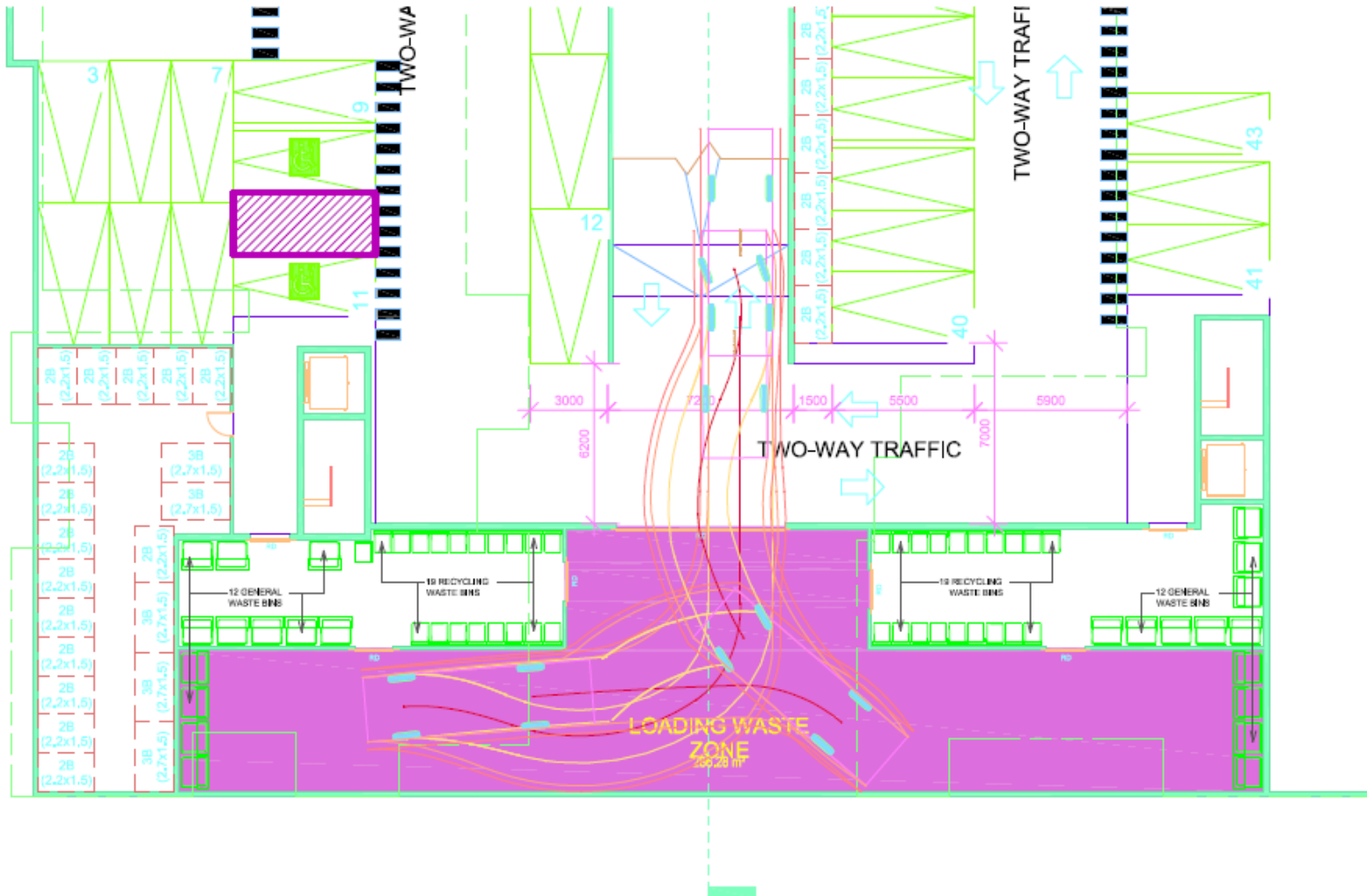
Sheet 04



50 Tallawong Road, Rouse Hill (Block C-D)
Swept Path Diagram
8.8m Rigid Truck

Scale 1:200 @ A4
Plan prepared by EB Traffic Solutions Pty Ltd
Date: 23/06/2017

Sheet 05



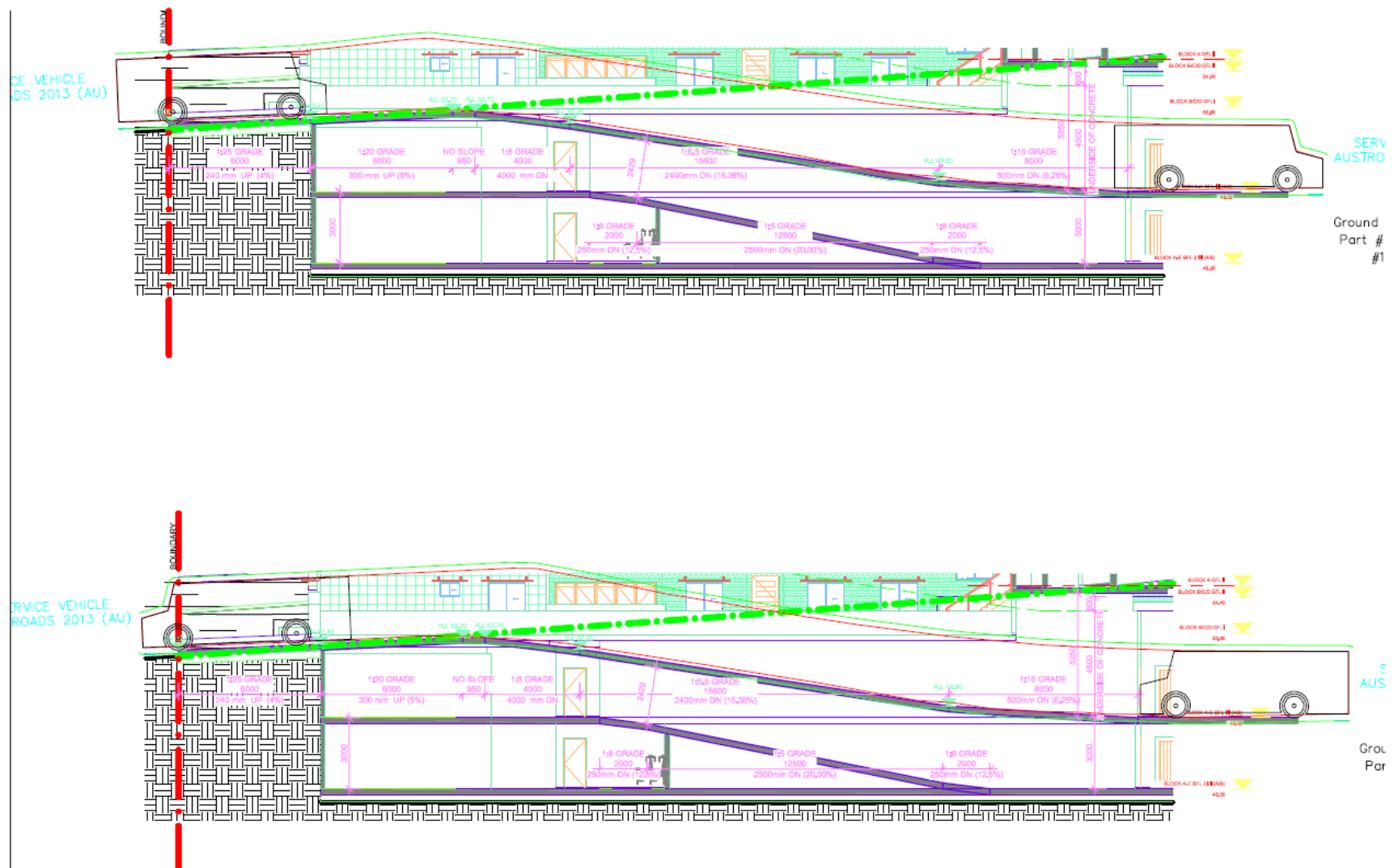
50 Tallawong Road, Rouse Hill (Block F-G)
Swept Path Diagram
8.8m Rlgld Truck

Scale 1:200 @ A4
Plan prepared by EB Traffic Solutions Pty Ltd
Date: 23/06/2017

Sheet 06

ATTACHMENT D

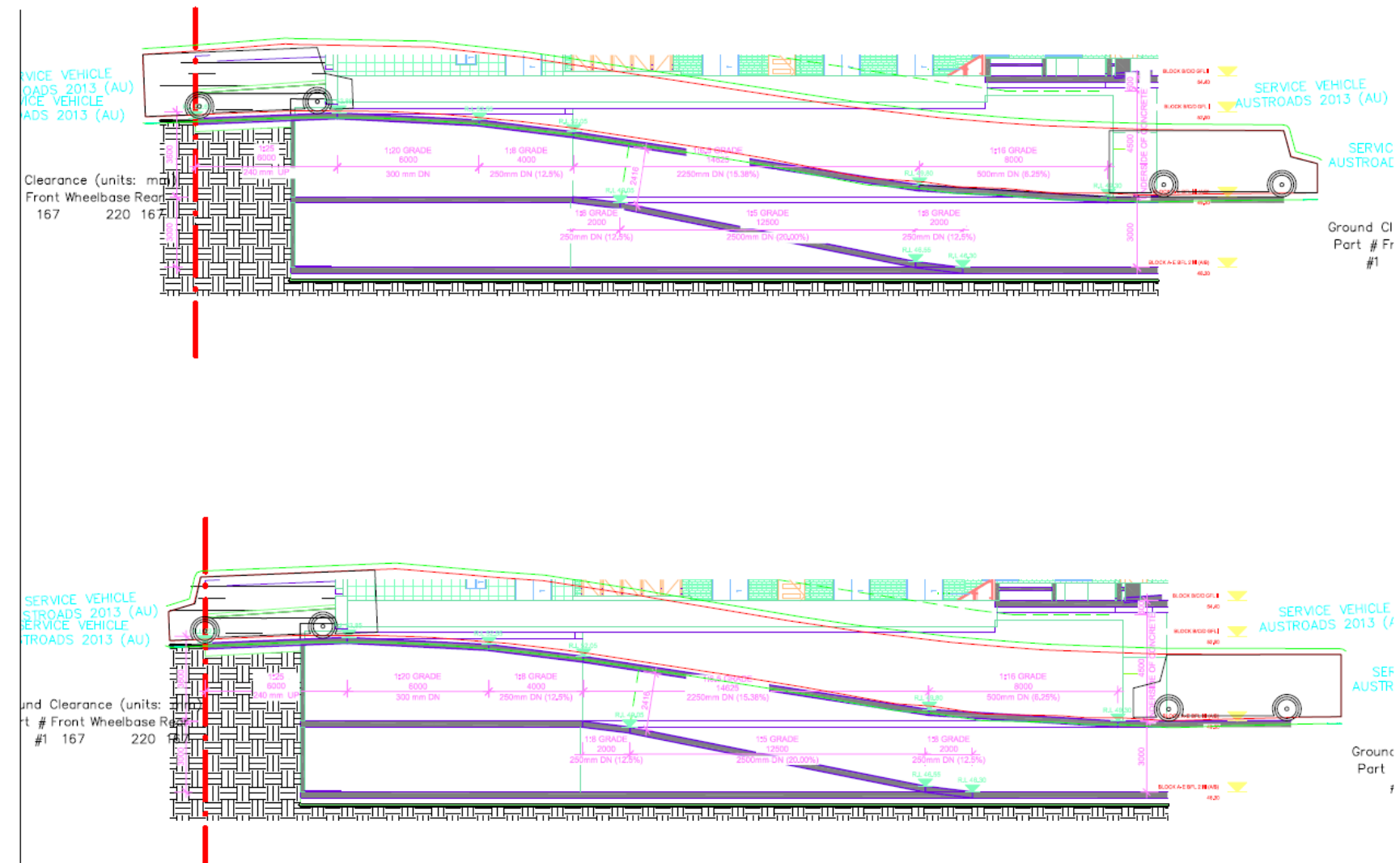
GROUND CLEARANCE ANALYSIS: 8.8 M TRUCK

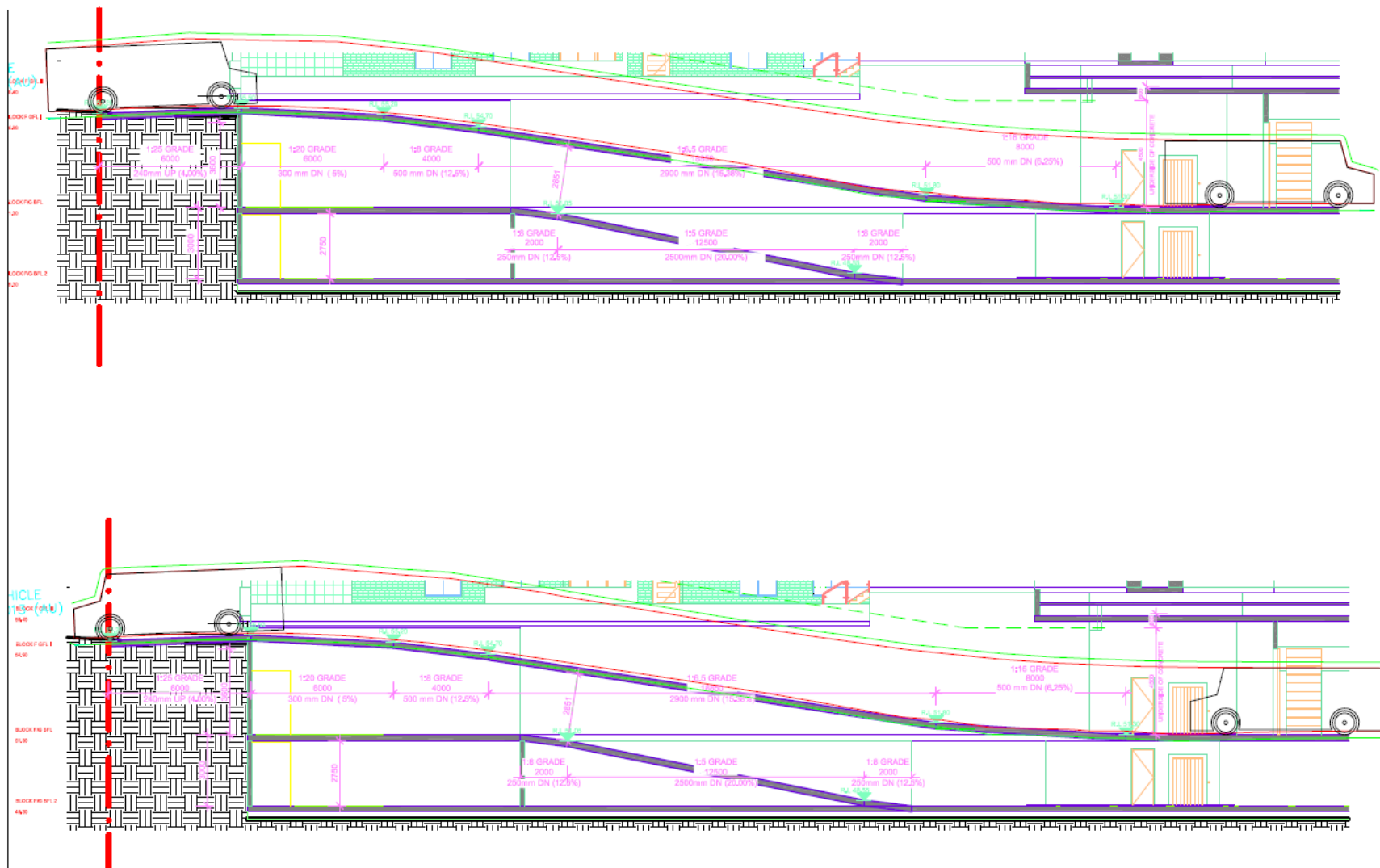


50 Tallawong Road, Rouse Hill (Block A)
Ground Clearance Assessment
8.8m Rigid Truck

Scale 1:200 @ A4
Plan prepared by EB Traffic Solutions Pty Ltd
Date: 26/06/2017

Sheet 03





50 Tallawong Road, Rouse Hill (Block F)
Ground Clearance Assessment
8.8m Rigid Truck

Scale 1:200 @ A4
Plan prepared by EB Traffic Solutions Pty Ltd
Date: 26/06/2017

Sheet 01