

FABCOT PTY LTD

TRAFFIC REPORT FOR
PROPOSED RETAIL
DEVELOPMENT, BRIDGMAN
ROAD & GLASS PARADE,
SINGLETON

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I. INTRODUCTION

- I.1 Colston Budd Hunt and Kafes Pty Ltd has been commissioned by Fabcot Pty Ltd to prepare a report examining the traffic implications of a proposed retail development on the corner of Bridgman Road and Glass Parade at Singleton. The site location is shown in Figure 1.
- I.2 The site is currently undeveloped. The proposed development is for a supermarket and BWS of some 4,030m² and specialty retail of some 470m². Vehicular access is proposed from Bridgman Road and Glass Parade.
- I.3 This report assesses the implications of the proposed development through the following chapters:
- Chapter 2 - describing the existing conditions; and
 - Chapter 3 - assessing the traffic implications of the proposed development.

2. EXISTING CONDITIONS

Site Location and Road Network

- 2.1 The site is on the corner of Bridgman Road and Glass Parade at Singleton, as shown in Figure 1. It is currently undeveloped.
- 2.2 There is open space and rural residential properties opposite the site on Bridgman Road. There are residential properties being constructed east of the site.
- 2.3 Bridgman Road connects north from New England Highway and provides access to rural and residential areas to the north. It provides one traffic lane in each direction in each direction, clear of intersections, with a 60 kilometre per hour speed limit.
- 2.4 Glass Parade connects to Bridgman Road at a roundabout. There are two lanes on the Glass Parade approach to the intersection. Glass Parade provides one traffic lane in each direction, clear of intersections. A right turn bay has been constructed on Glass Parade for access to future development on the site.
- 2.5 East of the site, Glass Parade connects to Wattle Ponds Road at a roundabout. Wattle Ponds Road provides for one traffic lane in each direction and provides access to residential areas.
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Traffic Flows

2.6 Traffic generated by the proposed development will have its greatest effects during weekday afternoon and Saturday peak periods when it combines with other traffic on the surrounding road network. In order to gauge traffic conditions, counts were undertaken during Friday afternoon (28 November 2014) and Saturday midday (29 November 2014) periods at the following intersections:

- Bridgman Road/Glass Parade;
- Bridgman Road/Gardner Circuit (north);
- Bridgman Road/Gardner Circuit (south); and
- Glass Parade/Wattle Ponds Road.

2.7 The results of the surveys are shown in Figures 2 and 3 and summarised in Table 2.1.

Table 2.1: Existing Peak Hour Two-Way (Sum of Both Directions) Traffic Flows		
Road/Location	Friday afternoon	Saturday midday
Bridgman Road		
- north of Gardner Circuit (north)	175	145
- north of Glass Parade	335	260
- north of Gardner Circuit (south)	565	430
- south of Gardner Circuit (south)	720	580
Glass Parade		
- east of Bridgman Road	305	235
- west of Wattle Ponds Road	310	235
- east of Wattle Ponds Road	165	105
Gardner Circuit (north)		
- west of Bridgman Road	190	145
Gardner Circuit (south)		
- west of Bridgman Road	265	210
Wattle Ponds Road		
- north of Glass Parade	170	125
- south of Glass Parade	85	75

2.8 The traffic counts found the following:-

- ❑ Bridgman Road, north of Glass Parade, carried some 150 to 350 vehicles per hour two-way during the Friday afternoon and Saturday midday peak periods;
- ❑ traffic flows on Bridgman Road, south of Glass Parade, were higher at some 400 to 750 vehicles per hour two-way during peak periods;
- ❑ traffic flows on Glass Parade and Gardner Circuit were some 150 to 300 vehicles per hour two-way during peak periods; and
- ❑ traffic flows on Wattle Ponds Road, north of Glass Parade were some 120 to 170 vehicles per hour two-way during peak periods. South of Glass Parade traffic flows were lower at some 70 to 90 vehicles per hour two-way.

Intersection Operations

2.9 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections shown in Figures 2 and 3 have been analysed using the SIDRA program.

2.10 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

- ❑ For traffic signals, the average delay per vehicle in seconds is calculated as $\text{delay}/(\text{all vehicles})$, for roundabouts the average delay per vehicle in seconds is
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selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

- 2.11 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that
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movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

- 2.12 The SIDRA analysis found that the roundabout controlled intersection of Bridgman Road and Glass Parade is operating with average delays, for the movement with the highest average delay, of less than 20 seconds per vehicle during peak periods. This represents level of service B, a good level of intersection operation.
- 2.13 The roundabout controlled intersection of Glass Parade and Wattle Pond Road is operating with average delays, for the movement with the highest average delay, of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of intersection operation.
- 2.14 The unsignalised intersections of Bridgman Road/Gardner Circuit (north) and Bridgman Road/Gardner Circuit (south) are operating with average delays for all movements through the intersection of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of intersection operation.

Public Transport

- 2.15 Local bus services are provided by Hunter Valley Buses. Services operate along Bridgman Road, south of the site. Services include:
- o route 180 – Singleton Heights to Greenhills via Branxton, Greta, Rutherford and Maitland;
 - o route 401 – Singleton town service;
 - o route 402 – Singleton to Darlington and Hunterview;
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o route 403 – Singleton to Singleton Heights.

2.16 Future development in the area, including the proposed development, will provide the opportunity to extend bus services in the area.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 The proposed development is for a supermarket and BWS of some 4,030m² and specialty retail of some 470m². Vehicular access is proposed from Glass Parade and Bridgman Road. This chapter assesses the implications of the proposed development through the following sections:

- ❑ public transport;
- ❑ parking provision;
- ❑ access, servicing and internal layout;
- ❑ traffic generation and effects; and
- ❑ summary.

Public Transport

3.2 As previously discussed, the site is close to existing bus services and the proposed development will provide the opportunity to extend bus services in the area. These would offer alternatives to travel by modes other than car, particularly for employees.

3.3 The proposed development will include appropriate bicycle parking on the site. Footpaths and pedestrian connections will also be provided adjacent to and within the site.

3.4 The proposed development is therefore consistent with government objectives and the planning principles of:

- (a) improving accessibility to employment and services by walking, cycling, and public transport;
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- (b) improving the choice of transport and reducing dependence solely on cars for travel purposes;
- (c) moderating growth in the demand for travel and the distances travelled, especially by car; and
- (d) supporting the efficient and viable operation of public transport services.

Parking Provision

- 3.5 The Singleton Development Control Plan 2014 indicates that shops should provide a minimum of one space per 25m² GFA.
- 3.6 With 4,500m² GFA proposed, the development would require 180 spaces. The proposed provision of 214 on-site spaces, including six disabled spaces, therefore satisfies this requirement, and is considered appropriate.
- 3.7 The DCP indicates that parking for bicycles should be provided at two spaces for the first 100m² plus 0.5 spaces per 100m² thereafter. On this basis, 24 bicycle spaces would be required. The proposed development will include parking for 24 bicycles in accordance with the DCP.

Access, Servicing and Internal Layout

- 3.8 Primary access to the development is proposed to be provided from Glass Parade. Separate driveways from Glass Parade are proposed for customers and service vehicles.
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- 3.9 An exit driveway is proposed from the site onto Bridgman Road, near the southern end of the site. This driveway will provide for customer traffic and a median across the driveway will restrict egress from the site to left turning vehicles only.
- 3.10 The driveways will provide widths, grades and transitions in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1-2004, to cater for parking areas of the size and type proposed and accommodate vehicle swept paths. Entry and exit lanes from the main driveway to the customer car park will be separated by a median. As previously noted, there is a right turn bay in Glass Parade for access to the site.
- 3.11 The main area of parking will be provided on the south western side of the retail building. Some parking will be provided adjacent to the main loading dock for staff and employees.
- 3.12 The loading dock driveway and service vehicle area will provide for 19 metre semi-trailers and 12.5 metre large rigid trucks to enter the site, manoeuvre and exit in a forward direction. Service vehicles will enter and exit via the western driveway onto Glass Parade.
- 3.13 Two loading bays plus a loading zone will be provided within the main loading dock. The loading bays will provide for 19 metre semi-trailers and for 12.5 metre long rigid trucks.
- 3.14 The loading zone will cater for the specialty retail shops. This loading zone will provide service vehicles ranging from van to small rigid trucks.
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- 3.15 The service vehicle manoeuvring areas for the main supermarket loading dock and the specialty retail loading zone will be provided in accordance with the Australian Standard for Parking Facilities (Part 2: Off-street commercial vehicle facilities), AS 2890.2-2002. Service vehicle swept paths are shown in Appendix A.
- 3.16 Within the customer parking areas, spaces will be a minimum of 5.4 metres long by 2.6 metres wide with 6.6 metre wide circulation aisles. Spaces with adjacent obstructions will be 0.3 metres wider. Disabled spaces will be 2.4 metres wide, with a 2.4 metre wide adjacent area for wheelchairs. These dimensions are considered appropriate, being in accordance with AS 2890.1-2004 and AS 2890.6-2009.

Traffic Generation and Effects

- 3.17 Traffic generated by the proposed development will have its greatest effects during weekday afternoon and Saturday peak periods when it combines with other traffic on the surrounding road network.
- 3.18 The RMS “Guide to Traffic Generating Developments” includes the following two-way peak hour traffic generation rates:
- o supermarkets: 15.5 and 14.7 vehicles per hour per 100m² on Thursday afternoon and Saturday respectively;
 - o specialty retail: 4.7 and 10.7 vehicles per hour per 100m² on Thursday afternoon and Saturday respectively.
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- 3.19 On this basis, the proposed development would generate some 650 to 640 vehicles per hour two-way during weekday afternoon and Saturday peak hours respectively.
- 3.20 The RMS guidelines suggest that some 25 per cent of visits are likely to be passing trade, i.e. customers who would have driven past the development regardless of their visit to the development. Our assessment is based on 25 per cent passing trade.
- 3.21 The additional traffic has been assigned to the road network. Existing traffic flows plus the additional traffic from the proposed development are shown in Figures 2 and 3, and summarised in Table 3.1.

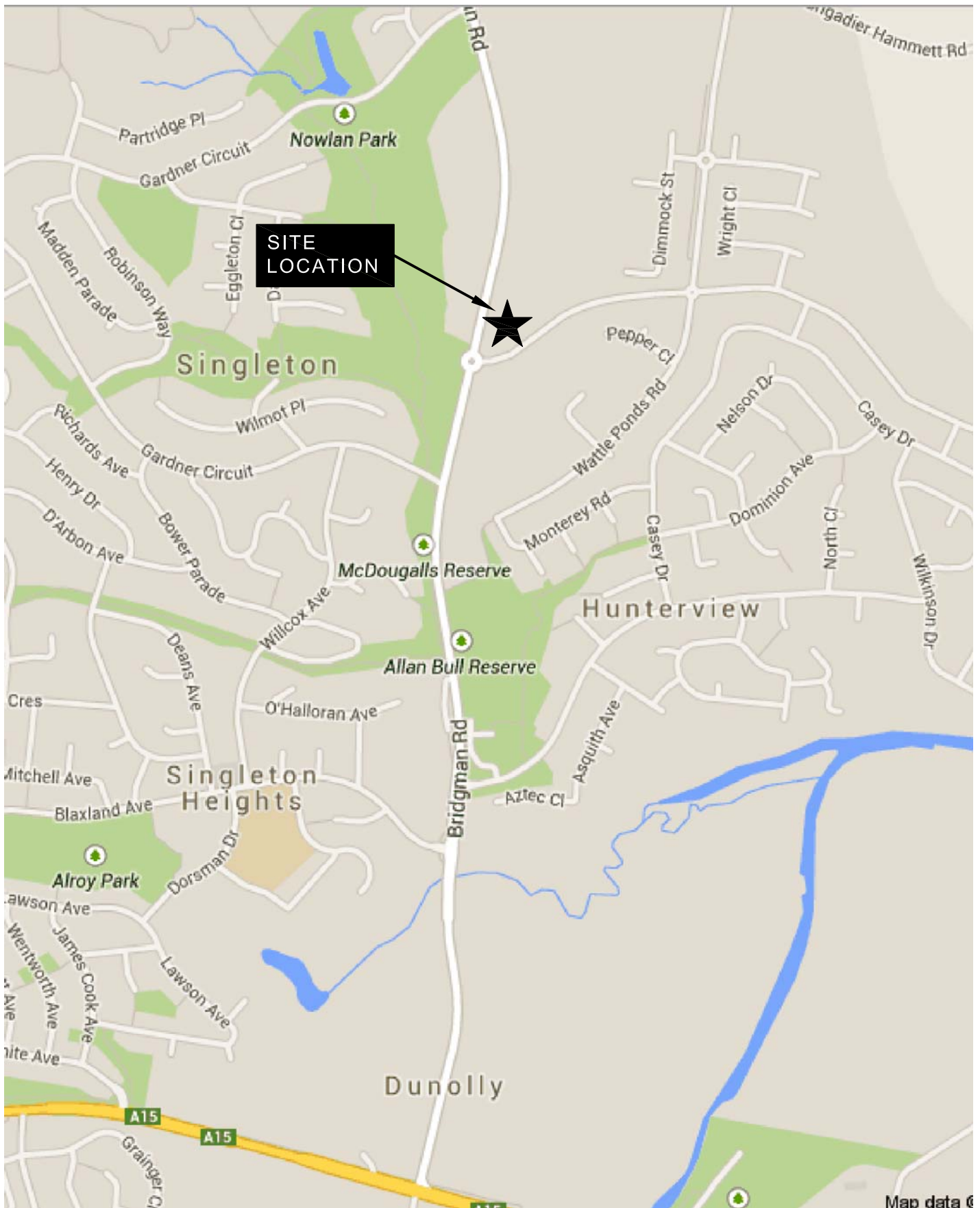
Table 2.1: Existing Peak Hour Two-Way (Sum of Both Directions) Traffic Flows				
Road/Location	Friday afternoon		Saturday midday	
	Existing	Plus Development	Existing	Plus Development
Bridgman Road				
- north of Gardner Circuit (north)	175	+60	145	+60
- north of Glass Parade	335	+170	260	+170
- north of Gardner Circuit (south)	565	+260	430	+260
- south of Gardner Circuit (south)	720	+200	580	+200
Glass Parade				
- east of Bridgman Road	305	+410	235	+410
- west of Wattle Ponds Road	310	+200	235	+200
- east of Wattle Ponds Road	165	+70	105	+70
Gardner Circuit (north)				
- west of Bridgman Road	190	+60	145	+60
Gardner Circuit (south)				
- west of Bridgman Road	265	+60	210	+60
Wattle Ponds Road				
- north of Glass Parade	170	+70	125	+70
- south of Glass Parade	85	+60	75	+60

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- 3.22 Table 3.1 shows that traffic increases on Glass Parade, between Bridgman Road and Wattle Pond Road, would be some 200 to 410 vehicles per hour two-way during peak periods. Increases on Bridgman Road would be some 60 to 260 vehicles per hour two-way.
- 3.23 Traffic increases on Gardner Circuit and Wattle Pond Road would be lower at some 60 to 70 vehicles per hour two-way during peak periods.
- 3.24 The intersections previously analysed in Chapter 2 have been reanalysed with SIDRA for the additional development traffic flows shown in Figures 2 and 3.
- 3.25 The analysis found that the roundabout controlled intersection of Bridgman Road and Glass Parade would continue to operate with average delays, for the movement with the highest average delay, of less than 20 seconds per vehicle during peak periods. This represents level of service B, a good level of intersection operation.
- 3.26 The roundabout controlled intersection of Glass Parade and Wattle Pond Road would continue to operate with average delays, for the movement with the highest average delay, of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of intersection operation.
- 3.27 The unsignalised intersections of Bridgman Road/Gardner Circuit (north) and Bridgman Road/Gardner Circuit (south) would continue to operate with average delays for all movements through the intersection of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of intersection operation.
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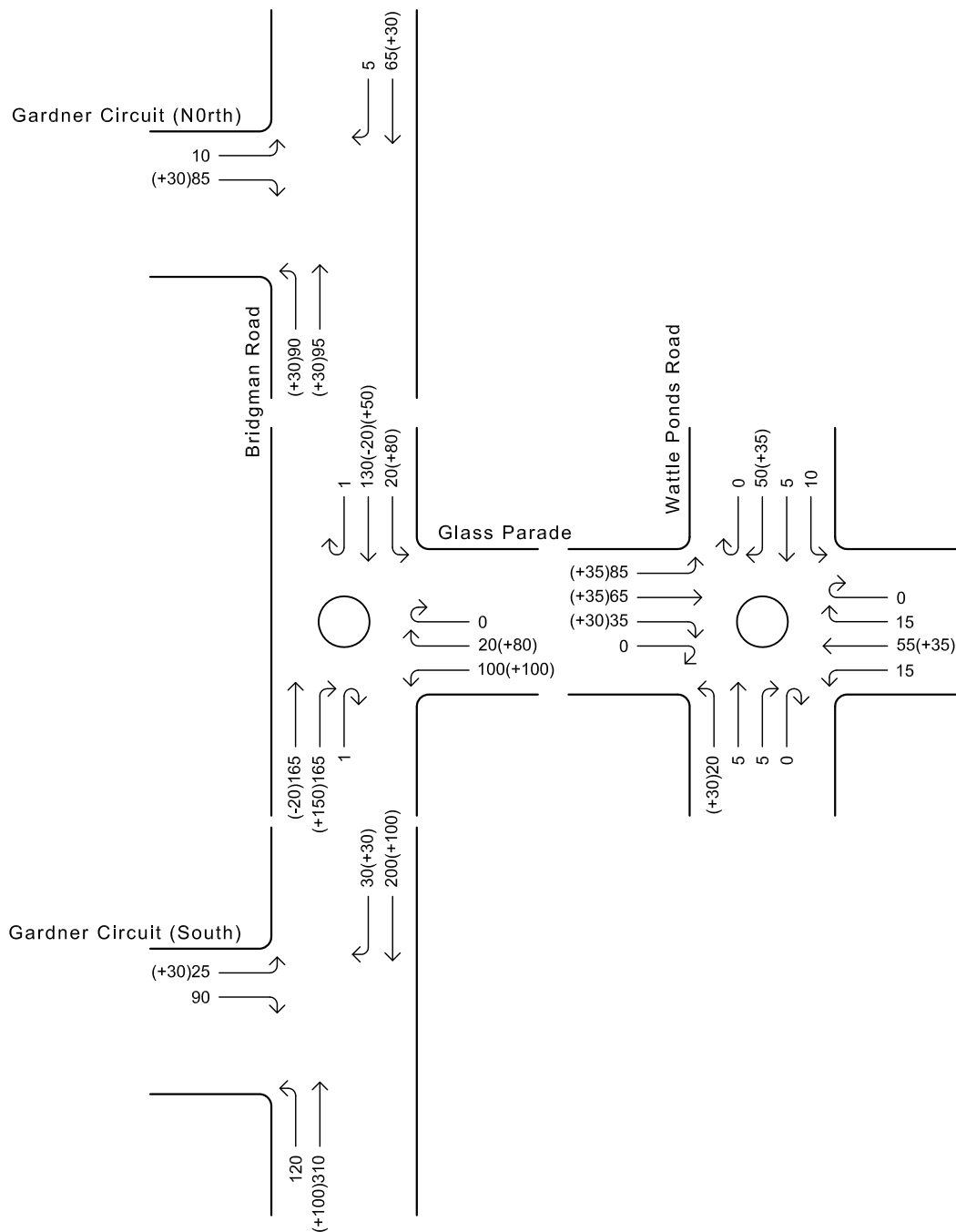
- 3.28 The customer access driveways on Glass Parade and Bridgman Road (exit only) would operate with average delays for the highest delayed movement of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of service.
- 3.29 Therefore, the road network will be able to cater for the additional traffic from the proposed development.

Summary

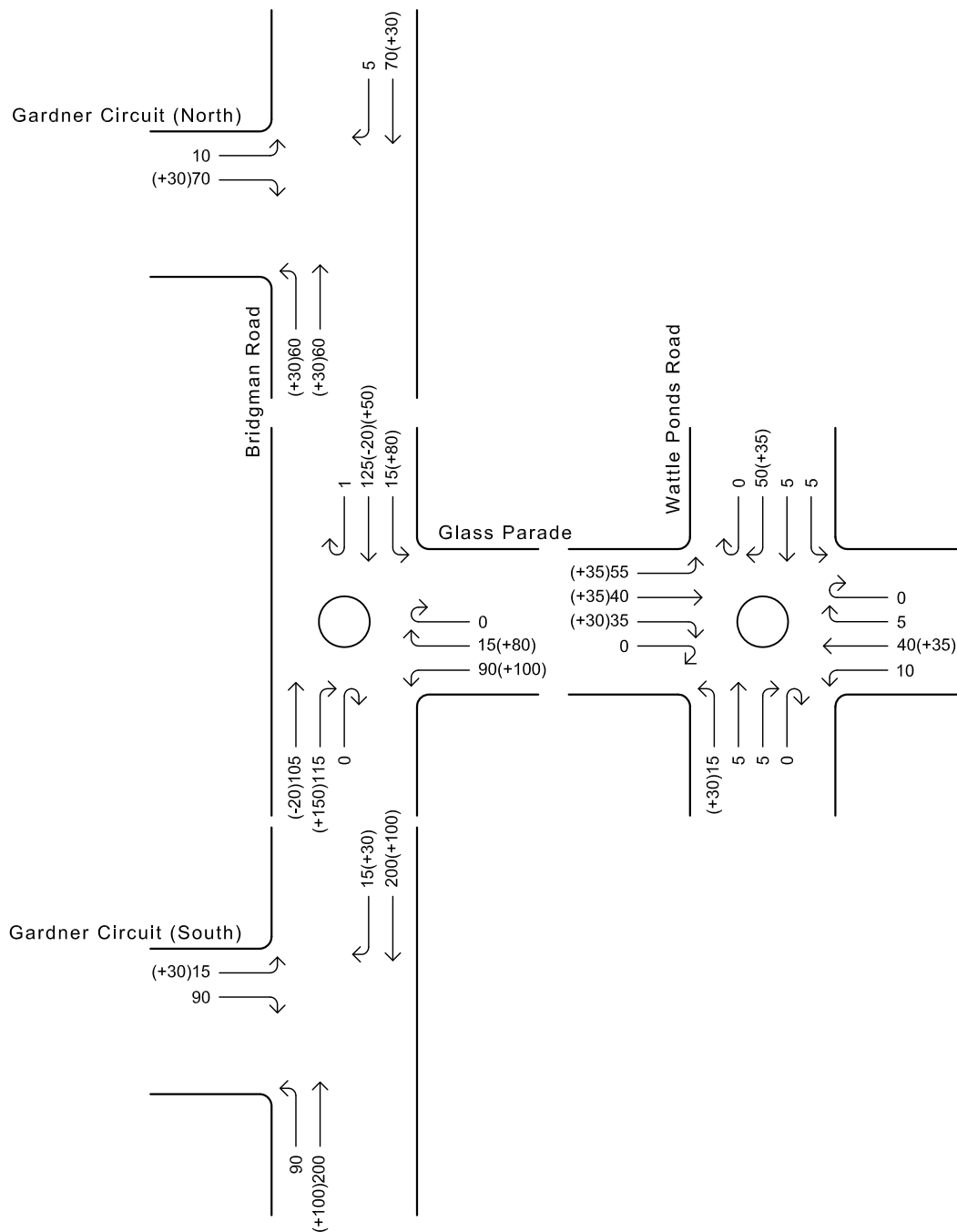
- 3.30 In summary, the main points relating to the traffic implications of the proposed development are as follows:
- i) the proposed development provides the opportunity to improve public transport accessibility the area;
 - ii) the proposed parking provision is considered appropriate;
 - iii) access, servicing and internal layout are considered appropriate; and
 - iv) the road network will be able to cater for the additional traffic from the proposed development.



Location Plan



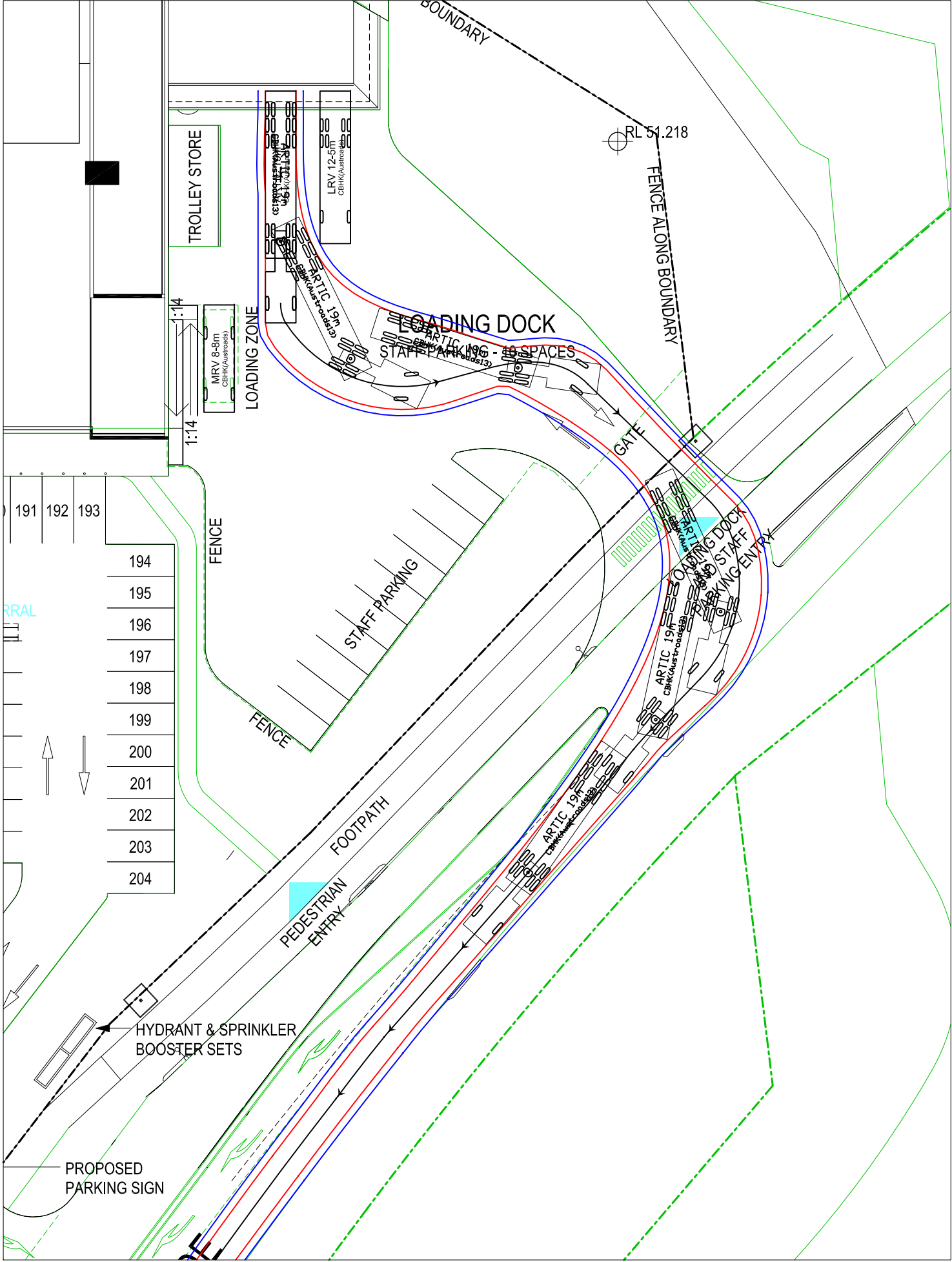
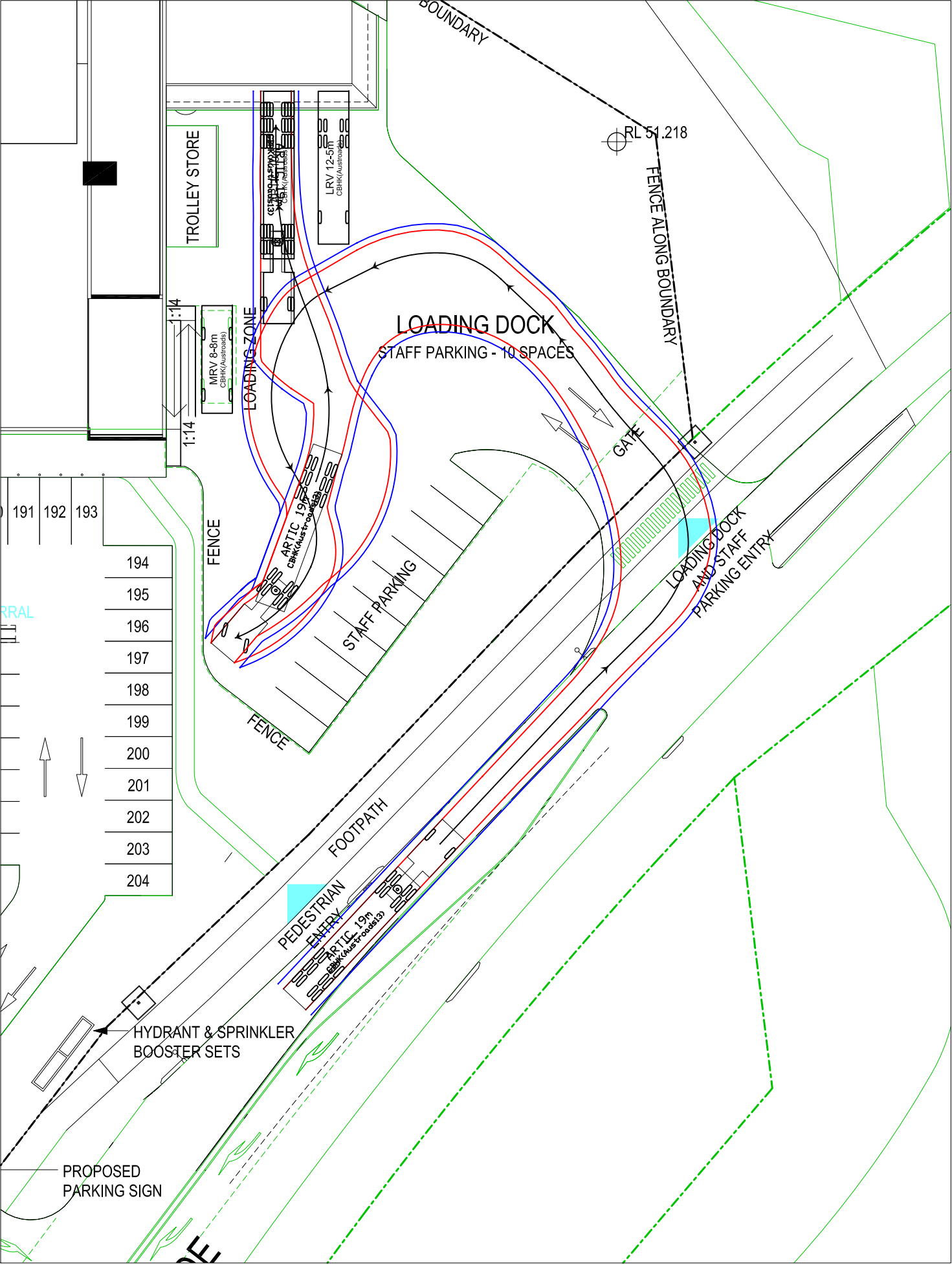
Existing Friday afternoon peak hour traffic flows plus development traffic



**Existing Saturday midday peak hour
traffic flows plus development traffic**

APPENDIX A

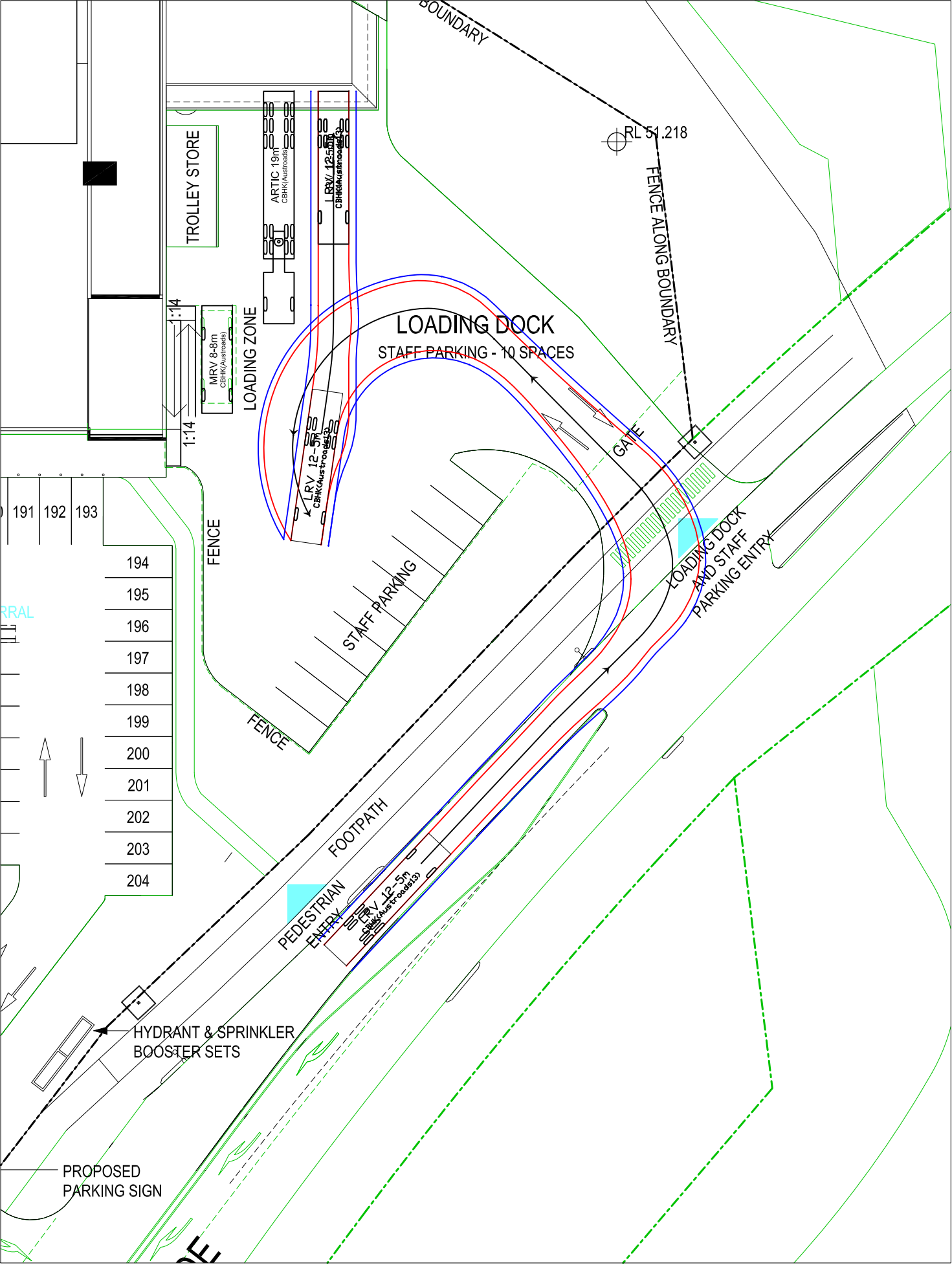
SERVICE VEHICLE SWEPT PATHS



NOTE:
SKETCH PLAN ONLY. PROPERTY BOUNDARIES,
UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO
SURVEY AND FINAL DESIGN. TRAFFIC MEASURES
PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND
ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

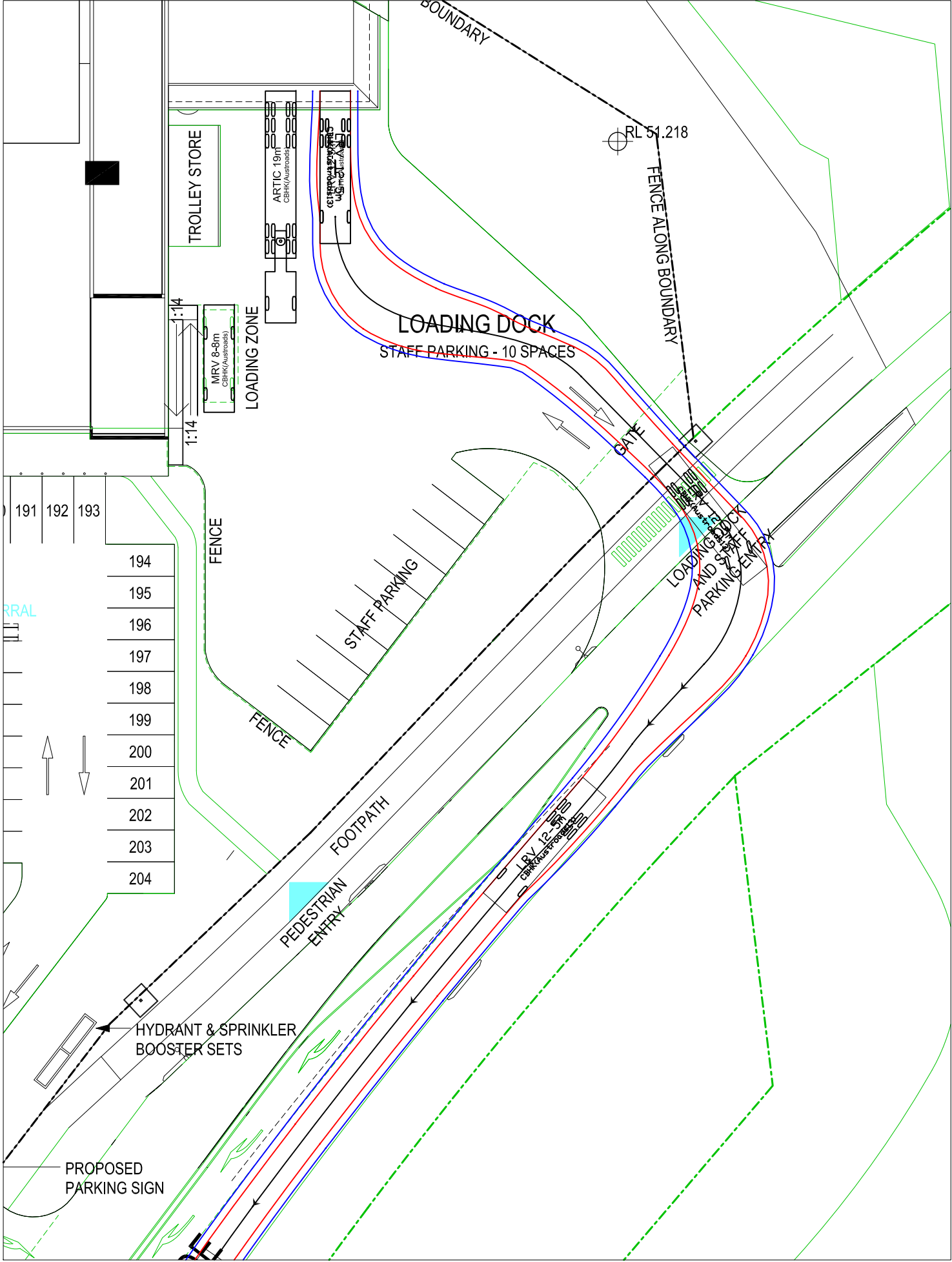
— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

19.0m ARTICULATED
VEHICLE SWEEP PATHS

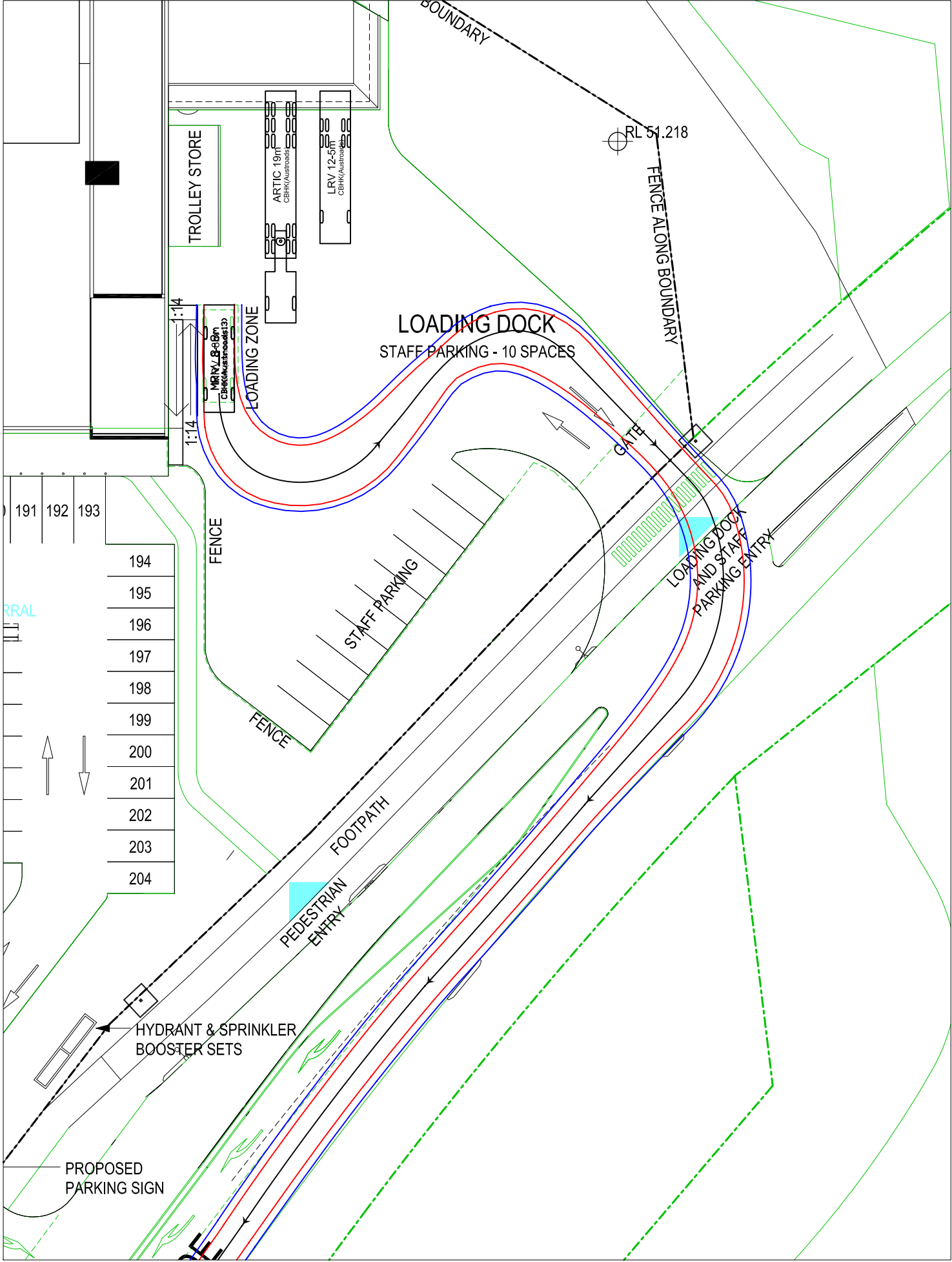
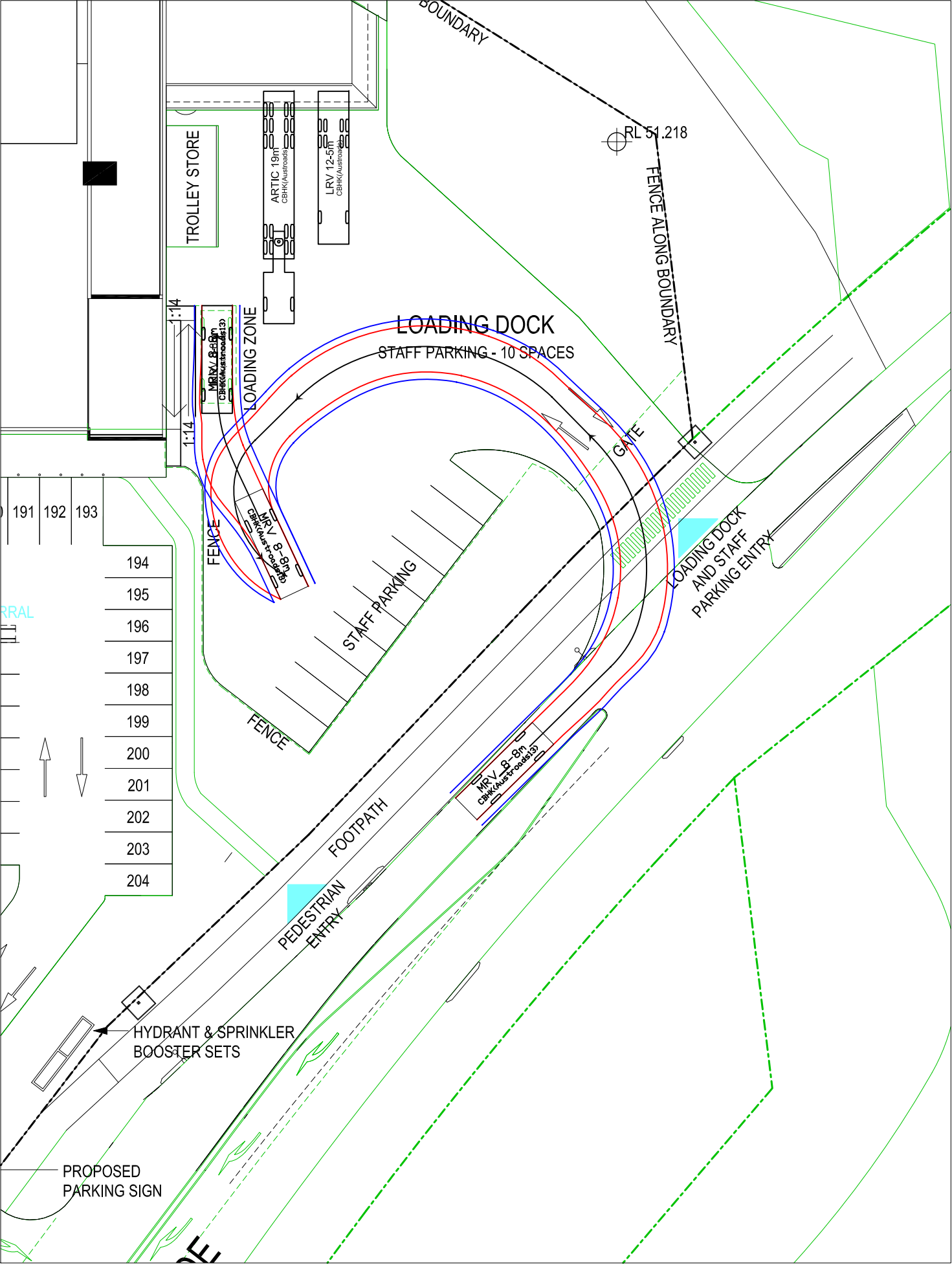


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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

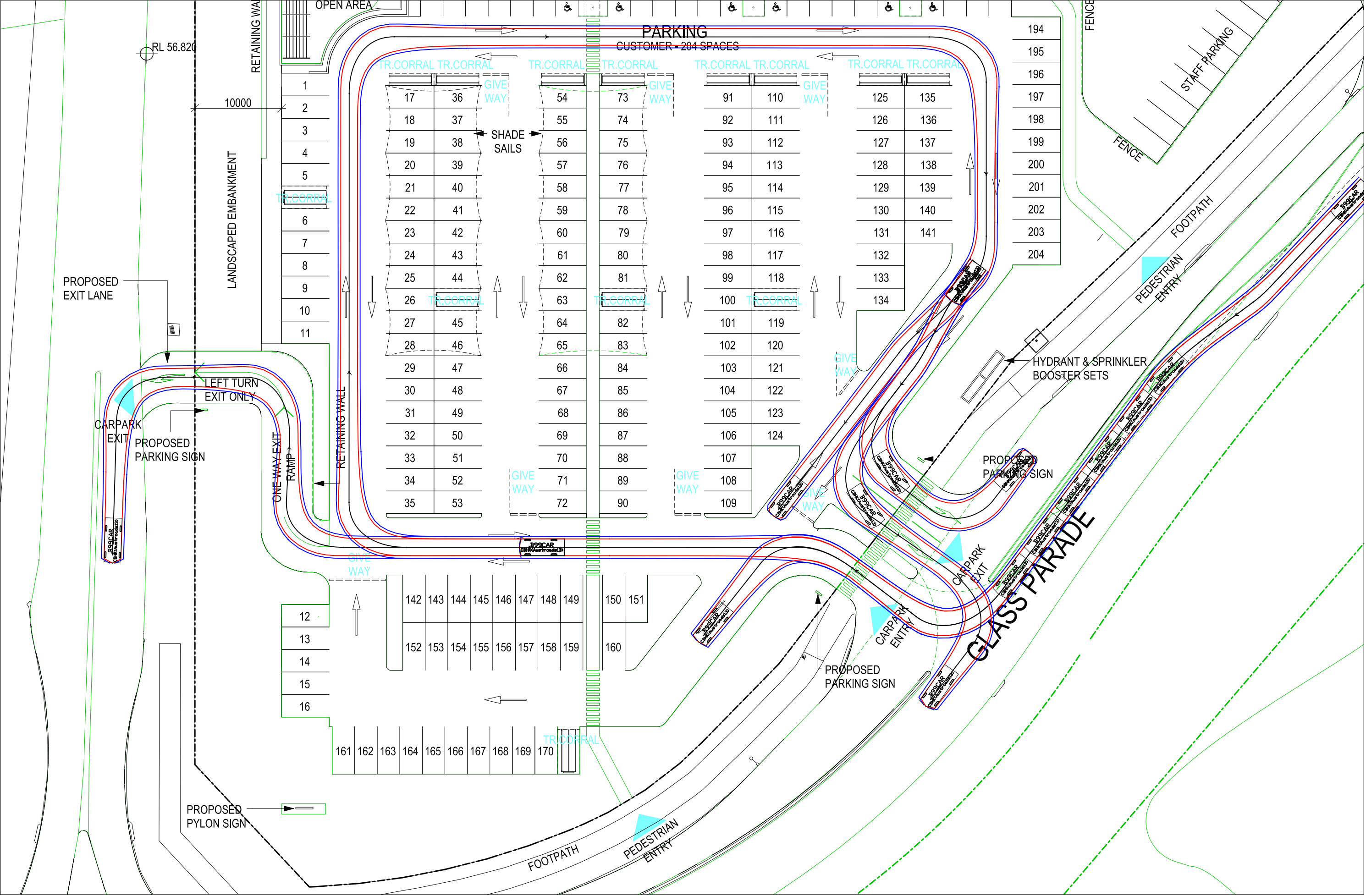


12.5m LARGE RIGID VEHICLE
SWEPT PATHS



— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

12.5m LARGE RIGID VEHICLE
SWEPT PATHS



NOTE:
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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

B99 PERCENTILE CAR
VEHICLE SWEEP PATHS