

WOOLWORTH LIMITED

TRAFFIC AND TRANSPORT
IMPACT ASSESSMENT FOR
PROPOSED WOOLWORTHS
WAREHOUSE AND
DISTRIBUTION CENTRE AT 11-13
PERCY STREET, AUBURN

SEPTEMBER 2020

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TABLE OF CONTENTS

1. INTRODUCTION	1
2. EXISTING CONDITIONS.....	4
3. IMPLICATIONS OF PROPOSED DEVELOPMENT	13

Appendix A - Cycle Routes

Appendix B - Vehicle Swept Paths

Appendix C - Draft Construction Traffic Management Plan



1. INTRODUCTION

- 1.1 Colston Budd Rogers and Kafes Pty Ltd has been commissioned by Woolworths Limited to prepare a traffic and transport impact assessment to support the state significant development application (SSDA) for the proposed online distribution facility at 11-13 Percy Street, Auburn. The site is located on the eastern side of Percy Street, between Parramatta Road and Boorea Street, as shown on Figure 1.
- 1.2 The proposed development will include a Woolworths online customer fulfilment centre, comprising a warehouse of some 19,260m², ancillary office of some 1,220m² and customer pick-up facility of some 135m². Online grocery orders would be completed at and distributed from the facility to customers' homes. Car parking is proposed adjacent to Percy Street, and loading and delivery areas will be located on the eastern and western sides of the building.
- 1.3 Vehicular access will be provided from Percy Street, via access driveways adjacent to the northern and southern boundaries of the site. 24 hour, seven day operation of the development is proposed.
- 1.4 The Secretary's Environmental Assessment Requirements for the project, dated 30 June 2020, include a number of traffic and parking matters. Table 1.1 includes the SEARs and the relevant sections of the report in which they are addressed.
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Table I.1: SEARs	
SEARs requirement	Section of report
<p>Traffic and Transport – including:</p> <ul style="list-style-type: none"> - <i>A Traffic Impact Assessment detailing all daily and peak traffic and transport movements likely to be generated (vehicle, public transport, pedestrian and cycle trips) during construction and operation of the development, including a description of vehicle access routes and the impacts on nearby intersections;</i> 	<p>Traffic generation and the impact on nearby intersections are discussed in paragraphs 3.37 to 3.47. Vehicular access routes, public transport and pedestrian aspects are discussed in paragraphs 2.3 to 2.7, 2.14 to 2.16, 2.17 to 2.19, 3.7 to 3.12, 3.13 to 3.15, 3.16 to 3.19 and 3.24 to 3.36.</p> <p>Construction traffic is discussed in the draft construction traffic management plan, provided in Appendix C.</p>
<ul style="list-style-type: none"> - <i>details of access to the site from the road network including intersection location, design and sight distance;</i> 	<p>These matters are discussed in paragraphs 3.37 to 3.47.</p>
<ul style="list-style-type: none"> - <i>an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the development;</i> 	<p>These matters are discussed in paragraphs 3.24 to 3.36 and 3.37 to 3.47.</p>
<ul style="list-style-type: none"> - <i>detailed plans of the proposed site access and parking provision on site in accordance with the relevant Australian Standards;</i> 	<p>These matters are discussed in paragraphs 3.24 to 3.36.</p>
<ul style="list-style-type: none"> - <i>identification of any dangerous goods likely to be transported on arterial and local roads to/from the site and, if necessary, the preparation of an incident management strategy;</i> 	<p>This matter is being addressed by other study team members.</p>

<p>- <i>details of impact mitigation, management and monitoring measures.</i></p>	<p>These matters are discussed in paragraphs 3.24 to 3.36 and 3.37 to 3.47. No impact mitigation measures are required on the surrounding road network to cater for the additional development traffic. With regards to monitoring measures for the proposed facility, non are required.</p>
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1.5 With regards to the proposed development, Cumberland Council raised the following matters:

- car parking to comply with the requirements of the Auburn DCP 2010 (office one space/40m² and warehouse one space/300m²);
- loading and unloading facilities to comply with the Part 7.0 of the parking and loading chapter of the Auburn DCP 2010;
- Traffic Impact Assessment to include modelling of the following intersections:
 - Hall Street/Percy Street;
 - Hall Street/St. Hilliers Road;
 - St. Hilliers Road/Boorea Street/Rawson Street; and
 - Percy Street/Boorea Street.

1.6 These matters have been addressed in paragraphs 3.20 to 3.23, 3.24 to 3.36, 3.37 to 3.47.

- 1.7 The traffic and transport matters set out in the SEARs are based on the matters set out in the TfNSW submission dated 18 June 2020. These matters raised by TfNSW have been addressed in the sections identified in Table I.1.
- 1.8 This report assesses the traffic and transport implications of the proposed development, including addressing the SEARs, through the following chapters:
- Chapter 2 - describing the existing conditions; and
 - Chapter 3 - assessing the traffic and transport implications of the proposed development.

2. EXISTING CONDITIONS

Site Location and Road Network

- 2.1 The site is on the eastern side of Percy Street, between Parramatta Road and Boorea Street, within the Auburn industrial area, as shown on Figure 1. It is occupied by two warehouse/industrial buildings. Vehicular access to the site is provided from Percy Street, with access driveways adjacent to the northern and southern boundaries of the site.
- 2.2 Surrounding development includes industrial and warehouse development, with residential development west of St.Hilliers Road and sports playing fields south of Boorea Street. The Haslams Creek canal extends along the eastern boundary of the site.
- 2.3 Adjacent to the site, Percy Street provides an undivided carriageway with one traffic and one parking lane in each direction, clear of intersections. It provides access to industrial properties. Percy Street intersects with Parramatta Road to the north and Boorea Street to the south. The intersection of Parramatta Road and Percy Street is restricted to left turn only for vehicles turning from Parramatta Road into Percy Street. The intersection of Boorea Street and Percy Street is a priority sign controlled intersection with turning movements restricted to left in and left out.
- 2.4 Parramatta Road is north of the site and provides an east-west arterial road connecting Parramatta and the western suburbs of Sydney to the Sydney CBD. It provides a four to six lane divided carriageway with additional turning lanes at
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signalised intersections. The intersection of Parramatta Road, Silverwater Road and St. Hilliers Road is controlled by traffic signals.

- 2.5 St. Hilliers Road is west of the site and provides a north-south connection between Parramatta Road and Silverwater Road to the north and Rawson Street and Boorea Street to the south. It provides a six lane divided carriageway with three traffic lanes in each direction, and additional turning lanes at major intersections. The intersections of St. Hilliers Road with Rawson Street/Boorea Street and Hall Street are controlled by traffic signals. North of the site, St. Hilliers Road and Silverwater Road provide access to the M4 Motorway with east and westbound on and off-ramps.
- 2.6 Hall Street is west of the site and provides an east-west connection between St. Hilliers Road and Percy Street. East of St. Hilliers Road, it provides access to industrial properties. Hall Street provides an undivided carriageway with one traffic and one parking lane in each direction, clear of intersections. The intersection of Percy Street and Hall Street is a priority sign controlled intersection with all turning movements permitted.
- 2.7 South of the site, Boorea Street and Rawson Street combine to provide an east-west connection between Parramatta Road and Olympic Drive. To the south west, Rawson Street provides a four lane undivided carriageway, clear of intersections. To the south east, Boorea Street, between St. Hilliers Road and Olympic Drive, provides a four to six lane divided carriageway, clear of intersections. To the south, Olympic Drive combines with Joseph Street, Rookwood Road and Stacey Street to provide an arterial traffic route connecting to Bankstown and the southern suburbs of Sydney.
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Traffic Flows

2.8 Traffic generated by the proposed development will have its greatest effects during weekday morning and afternoon peak periods, when it combines with other traffic on the surrounding road network. As required by Council, an assessment of the following intersections has been undertaken:

- St. Hilliers Road/Hall Street;
- Rawson Road/Boorea Street/St. Hilliers Road;
- Boorea Street/Percy Street; and
- Percy Street/Hall Street.

2.9 The existing traffic flows are shown on Figures 2 and 3, and summarised in Table 2.1. This table indicates the following:

- St. Hilliers Road traffic flows are some 2,940 to 3,390 vehicles per hour two-way during the weekday morning and afternoon peak hours;
 - Rawson Road traffic flows are some 1,720 to 1,845 vehicles per hour two-way during the weekday morning and afternoon peak hours;
 - Boorea Street traffic flows are some 3,865 to 4,380 vehicles per hour two-way during the weekday morning and afternoon peak hours;
 - Percy Street traffic flows are some 110 to 385 vehicles per hour two-way during the weekday morning and afternoon peak hours; and
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Road/Location	Weekday Morning	Weekday Afternoon
St Hilliers Road		
- north of Hall Street	2,940	3,265
- south of Hall Street	3,065	3,390
- south of Rawson Road	50	85
Rawson Road		
- west of St Hilliers Road	1,720	1,845
Boorea Road		
- east of St Hilliers Road	3,865	4,260
- east of Percy Street	3,905	4,380
Percy Street		
- north of Hall Street	175	385
- south of Hall Street	180	315
- north of Boorea Street	110	315
Hall Street		
- east of St Hilliers Street	210	370

- Hall Street traffic flows are some 210 to 370 vehicles per hour two-way during the weekday morning and afternoon peak hours.

Intersection Operation

- 2.10 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 have been analysed using the SIDRA program for the traffic flows shown in Figures 2 and 3.

2.11 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 delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is 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"	Satisfactory but 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

2.12 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 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.

2.13 The analysis found that:

- the signalised intersection of Rawson Road/Boorea Street/St. Hilliers Road is currently operating with average delays of less than 40 seconds per vehicle in the morning and less than 50 seconds per vehicle in the afternoon peak periods. This represents level of service C and D respectively for the morning and afternoon peak periods, which are satisfactory levels of service for busy intersections;
- the signalised intersection of St. Hilliers Road and Hall Street is currently operating with average delays of less than 15 seconds per vehicle in the morning and afternoon peak periods. This represents level of service A/B, a good level of intersection operation;
- the priority controlled intersection of Boorea Street and Percy Street is currently operating with average delays, for the movement with the highest

average delay, of less than 15 seconds per vehicle in the morning and afternoon peak periods. This represents level of service A/B, a good level of service; and

- the priority controlled intersection of Percy Street and Hall Street is currently operating with average delays, for the movement with the highest average delay, of less than 15 seconds per vehicle in the morning and afternoon peak periods. This represents level of service A/B, a good level of service.

Public Transport

- 2.14 Sydney Buses operates the Route M92 metro service along Parramatta Road, some 400 metres walking distance from the site. The Route M92 service connects Parramatta to Sutherland. Services operate every 15 minutes during peak hours and 30 minutes during of peak hours minutes in each direction.
- 2.15 The site is also located within a one kilometre walk of Auburn Station which services the T1 North Shore and Western Line and T2 Inner West and Leppington Line. Auburn Station can be accessed via Rawson Road, south west of the site. It provides convenient links with Sydney CBD to the north and Campbelltown to the south west, with services at approximate five minute frequencies during peak periods.
- 2.16 The site therefore has access to regular public transport services.

Pedestrians and Cyclists

- 2.17 Pedestrian facilities in the vicinity of the site are provided by existing footpaths on the surrounding road network and pedestrian crossing facilities at signalised intersections.
- 2.18 There is an existing designated on road cycle path, some 500 metres to the west of the site, along Station Road, Simpson Street and Northumberland Road, linking to Auburn railway station to the south west and to the Adderley Street cycle path to the north. There is a pedestrian link along Hall Street which connects the site to the cycle path. A plan showing cycle routes is provided in Appendix A.
- 2.19 The intersections of Hall Street/St. Hilliers Road, Parramatta Road/St. Hilliers Road/Silverwater Road and Rawson Road/Boorea Street/St. Hilliers Road include signalised pedestrian crossings. These signalised crossings and the existing footpaths on the surrounding road network, provide pedestrian and cycle access to and from the site.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

- 3.1 It is proposed to demolish the two existing warehouse/industrial buildings on the site and construct a new warehouse to be used as a customer fulfilment centre by Woolworths. It will comprise a warehouse of some 19,260m², ancillary office of some 1,220m² and customer pick-up facility of some 135m². Car parking is proposed within a mezzanine car park adjacent to Percy Street. Loading and delivery areas will be located on the eastern and western sides of the building.
- 3.2 Online grocery orders would be completed at and distributed from the facility to customers' homes. Delivery vans (small rigid trucks) will be used to deliver orders to customers' homes. A drive through customer pick-up facility (for online orders) with six pick-up bays will be provided on the southern side of the building.
- 3.3 Deliveries to replenish the online fulfilment centre will be made by semi-trailers. Vehicular access will be provided from Percy Street, adjacent to the northern and southern boundaries of the site.
- 3.4 The facility is proposed to operate 24 hours a day, seven days a week. The warehouse and distribution centre will operate with overlapping shifts and the office will operate during normal business hours, from Monday to Friday. The number of employees per shift (excluding delivery drivers) will vary from some 20 to 60 staff and the office will have some 15 staff. The number of employees present on-site at any given time will be some 130, typically between 9.00am and 12.00pm on weekdays.
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- 3.5 Customer deliveries will typically occur during the morning between 5.00am and 8.00am, with vehicles returning later in the morning, and during the afternoon between 1.00pm to 4.00pm, with vehicles returning later in the evening.
- 3.6 This chapter assesses the implications of the proposed development through the following sections:
- public transport;
 - active transport;
 - travel demand management;
 - parking provision;
 - access, servicing and internal layout;
 - traffic generation and effects; and
 - summary.

Public Transport

- 3.7 As discussed in Chapter 2, the site has access to regular public transport services through the area. These include train and bus services through Auburn and Lidcombe, which provide public transport services to and from the site.
- 3.8 The Central City District Plan identifies Auburn and Lidcombe as local centres serving the surrounding community. They provide public transport connections to the surrounding area and to Sydney metropolitan public transport nodes, including Parramatta and Sydney CBD.
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- 3.9 Journey to work data indicates the following modes of travel to work in this area:
- car driver - 76 per cent;
 - car passenger - 6 per cent;
 - train - 13 per cent;
 - bus - 2 per cent;
 - walk/cycle - 2 per cent; and
 - other - 1 per cent.
- 3.10 The proposed development is expected to result in some 85 staff per hour (35 warehouse staff, 35 drivers and 15 office staff) travelling to and from the site during the morning and afternoon peak periods. Based on the above journey to work data and an improvement in travel by train (to 15%) and bus (to 5%), the proposed development would generate some 13 trips by train and some 5 trips by bus in the morning and afternoon peak hours.
- 3.11 These trips would be spread across the various bus and train services, resulting in some 2 to 3 additional passengers per service. The existing public transport services will readily cater for these trips.
- 3.12 The proposed development is therefore consistent with the Central City District Plan, government objectives and planning principles of:
- (a) improving accessibility to employment and services by public transport;
 - (b) improving the choice of transport and reducing dependence solely on cars for travel purposes;
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- (c) moderating growth in the demand for travel and the distances travelled, especially by car; and
- (d) support the efficient and viable operation of public transport services.

Active Transport

- 3.13 With regards to active transport, that is walking and cycling, the site is adjacent to the Haslams Creek corridor which provides green grid opportunities linking to Sydney Olympic Park and to Parramatta CBD, via the Parramatta Road corridor and the M4 Motorway corridor.
- 3.14 There is an existing designated on road cycle path, some 500 metres to the west of the site, along Station Road, Simpson Street and Northumberland Road, linking to Auburn railway station to the south west and to the Adderley Street cycle path to the north. The existing pedestrian footpaths adjacent to the site and the signalised crossings at nearby signalised intersections provide access to the cycle path.
- 3.15 The proposed development will provide appropriate bicycle parking and end of trip facilities. The proposed development will improve accessibility to employment and encourage the use of active transport by promoting the use of bicycles and providing secure bicycle parking and end of trip facilities. Maps showing walking and cycling routes will be provided to employees.

Travel Demand Management

- 3.16 A number of measures will be implemented to reduce and manage travel demands to and from the site. These include appropriate provision for non-car based travel, including access to public transport, pedestrians and bicycle facilities.
- 3.17 For employees, to encourage travel modes other than private vehicle, a travel demand management approach will be adopted, through a workplace travel plan to meet the specific needs of the site, future employees and visitors. The specific requirements and needs of the future employees and visitors, including travel from surrounding areas and public transport nodes, would be incorporated in the workplace travel plan to support the objectives of encouraging the use of public transport.
- 3.18 The principles of a workplace travel plan, to be developed for the site in consultation with council, TfNSW, bus operators and other stakeholders, would include the following:
- encourage the use of public transport, including train and bus services in the area;
 - work with public transport providers to improve services;
 - encourage public transport use by employees and visitors through the provision of information, maps and timetables in the workplace travel plan;

- raise awareness of health benefits of walking and cycling (including maps showing walking and cycling routes);
- encourage cycling by providing safe and secure bicycle parking and end of trip facilities.

3.19 The workplace travel plan will assist in delivering sustainable transport objectives by considering the means available for reducing dependence solely on cars for travel purposes, encouraging the use of public transport and supporting the efficient and viable operation of public transport services.

Parking Provision

3.20 The Auburn Development Control Plan 2010 includes the following parking requirements:

- Warehouses
 - one space 300m² GFA; and
- Ancillary office
 - one space per 40m² GFA.

3.21 Application of these parking rates to the proposed 19,260m² warehouse and 1,355m² of office/customer pick-up facility, results in a requirement of some 98 parking spaces. The proposed parking provision is 150 spaces, including two disabled parking spaces. This satisfies Council's requirement and is therefore appropriate.

- 3.22 In addition to car parking spaces, the proposed development will include appropriate bicycle parking. In accordance with the Auburn DCP 2010, bicycle parking facilities should be provided in safe and convenient locations for developments greater than 1,000m² GFA.
- 3.23 The proposed development will provide some 20 secure bicycle parking spaces, equivalent to one space per 1,000m² of development. Five short stay visitor spaces and 15 long stay employee spaces will be provided. Short stay visitor bicycle parking spaces could be provided near the front office, adjacent to Percy Street. Long stay employee bicycle parking could be provided next to the staging area on the ground floor. Bicycle parking will be provided in accordance with the Australian Standard AS2890.3-2015.

Access, Servicing and Internal Layout

- 3.24 Access to the site will be provided from Percy Street. The main access to the site for service vehicles and emergency vehicles will be provided via two access driveways at the northern end of the site (separate driveways for inbound goods and outbound deliveries). The northernmost driveway will provide access to the eastern end of the site, servicing the inbound docks. The second northern driveway will provide access to the western end of the site, servicing the outbound delivery docks.
- 3.25 Two additional driveways will be provided at the southern end of the site, providing access to the mezzanine staff parking area and to the customer pick-up facility located on the southern boundary of the building. The southernmost
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driveway may also provide access to the delivery van parking area located along the southern and western site boundary.

- 3.26 The driveways will provide appropriate sight lines for vehicles entering and exiting the site to observe pedestrians on the adjacent footpath and vehicles in Percy Street. Sight lines for exiting vehicles will be in excess of 70 metres, in accordance with the Australian Standard AS2890.2-2018 for a 50 km/hr road two lane two-way road.
- 3.27 The driveway widths will be provided in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking and Part 2: Off-street commercial vehicle facilities), AS2890.1-2004 and AS2890.2-2018, to cater for the swept paths of cars, service vehicles and emergency vehicles.
- 3.28 Inbound deliveries to the online fulfilment centre will be made by semi-trailers up to 20 metres long. Some 10 to 15 inbound deliveries are expected per day. Outbound deliveries from the online fulfilment facility will be made by small rigid trucks (6.4 metres long), generally outside peak times. These service vehicles will use the two northernmost driveways onto Percy Street. Service vehicles will enter and exit the site in a forward direction. Swept paths are shown in Appendix B.
- 3.29 The Auburn DCP 2010 includes the following loading arrangements for industrial/warehouse developments:
- ❑ one loading bay per 800m² GFA up to 8,000m² GFA; plus
 - ❑ one loading bay per 1,000m² GFA thereafter.

- 3.30 Application of these rates to the proposed 19,260m² of warehouse results in a requirement of 21 loading bays. The proposed warehouse will provide 36 loading bays, including eight inbound loading bays (six suitable for 20 metre articulated vehicles and two suitable for rigid trucks) and 28 small rigid truck loading bays (suitable for delivery vehicles up to 6.4 metres in length), which satisfies Council's requirements.
- 3.31 Loading bays and van delivery parking spaces will be provided adjacent to the eastern and western boundaries of the site. The inbound loading docks will be 3.5 metres wide and will cater for vehicles up to 20 metre articulated vehicles. The outbound loading docks and the delivery van parking bays will be 3.5 metres wide and will cater for vehicles up to 6.4 metre small rigid trucks. The proposed loading dock arrangements will be designed to comply with the requirements of the Australian Standard for Parking Facilities AS2890.2-2018.
- 3.32 Pedestrian access to the site from Percy Street will be provided by a designated footpath, accessing the ground floor office and the adjacent customer pick-up facility. Appropriate sight lines and pedestrian measures will be provided to ensure safe access for staff and visitors.
- 3.33 Within the car parking areas, car parking dimensions, aisle widths, ramp grades and transitions will be in accordance with the Australian Standard AS2890.1-2004. Parking spaces will be provided with minimum dimensions of 2.5 metres wide by 5.4 metres long and aisle widths of 6.2 metres. Spaces located adjacent to obstructions will be 300mm wider to appropriately provide for doors to open. Disabled parking spaces will be 2.4 metres wide, with a 2.4 metre wide adjacent
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shared zone for wheelchair access. These dimensions are appropriate, being in accordance with AS2890.1-2004.

- 3.34 A drive through customer pick-up facility (for online orders) will also be provided on the southern side of the building. It will provide six pick-up bays and a turnaround area. Vehicles will enter and exit the drive through pick-up, to and from Percy Street, in a forward direction. Vehicle swept paths are shown in Appendix B.
- 3.35 The facility provides for customers wishing to collect their online orders, in preference to home delivery. Staff will deliver on-line orders to the waiting customer vehicles. The proposed facility will be provided in accordance with the Australian Standard AS2890.1-2004.
- 3.36 The drive through pick-up will have a service capacity of some 60 vehicles per hour. The peak number of pick ups is anticipated to be some 20 customers per hour. The 95th percentile queue for the pick-up operation would be two vehicles, which will readily be accommodated within the drive through (six pick-up bays).

Traffic Generation and Effects

- 3.37 The development is proposed to operate 24 hours a day, seven days a week. The warehouse and distribution centre will operate with overlapping shifts. The office will operate during normal business hours, from Monday to Friday. The drive through customer pick-up facility will operate Monday to Saturday. Customer home deliveries will typically occur during the morning between 5.00am and
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8.00am, with vehicles returning later in the morning, and during the afternoon between 1.00pm to 4.00pm, with vehicles returning later in the evening.

- 3.38 Daily traffic generation of the customer fulfilment centre would be some 1,100 vehicles per day two-way (including some 600 cars and 500 delivery vans).
- 3.39 Traffic generated by the proposed development will have its greatest effects during the weekday morning and afternoon peak periods when it combines with other traffic on the surrounding road network. During peak periods the proposed development will generate some 160 vehicles per hour two-way (comprising some 120 cars and 40 delivery vans) during the morning and afternoon peak periods.
- 3.40 The additional traffic generated by the proposed development has been assigned to the surrounding road network. Existing peak hour traffic flows plus the additional development traffic are shown in Figures 2 and 3, and summarised on Table 3.1.
- 3.41 Traffic increases on Hall Street, Percy Street and St. Hilliers Road (north of Hall Street) would be some 50 to 105 vehicles per hour two-way at peak times.
- 3.42 Increases on St. Hilliers Road (south of Hall Street), Rawson Street and Boorea Street would be some 30 to 40 vehicles per hour two-way.

Table 3.1: Existing Two-Way (Sum of Both Directions) Peak Hour Traffic Flows Plus Development Traffic				
Road/Location	Weekday Morning		Weekday Afternoon	
	Existing	Plus Development	Existing	Plus Development
St Hilliers Road				
- north of Hall Street	2,940	+75	3,265	+75
- south of Hall Street	3,065	+30	3,390	+30
- south of Rawson Road	50	-	85	-
Rawson Road				
- west of St Hilliers Road	1,720	+35	1,845	+35
Boorea Road				
- east of St Hilliers Road	3,865	+35	4,260	+35
- east of Percy Street	3,905	+30	4,380	+30
Percy Street				
- north of Hall Street	175	+55	385	+55
- south of Hall Street	180	+100	315	+100
- north of Boorea Street	110	+35	315	+35
Hall Street				
- east of St Hilliers Street	210	+105	370	+105

3.43 The intersection previously analysed in Chapter 2 have been reanalysed with SIDRA for the additional development traffic flows shown on Figures 2 and 3. The analysis found that:

- the signalised intersection of Rawson Road/St Hilliers Road/Boorea Street would continue to operate with average delays of less than 40 seconds per vehicle in the morning and less than 50 seconds per vehicle in the afternoon peak periods. This represents level of service C and D respectively for the

morning and afternoon peak periods, which are satisfactory levels of service for busy intersections;

- the signalised intersection of St. Hilliers Road and Hall Street would continue to operate with average delays of less than 15 seconds per vehicle in the morning and afternoon peak periods. This represents level of service A/B, a good level of intersection operation;
- the priority controlled intersections of Boorea Street/Percy Street and Percy Street/Hall Street would continue to operate with average delays, for the movement with the highest average delay, of less than 15 seconds per vehicle in the morning and afternoon peak periods. This represents level of service A/B, a good level of service.

3.44 Therefore, the road network will be able to cater for the proposed development traffic.

3.45 As set out in the draft construction traffic management plan, the number of vehicles generated during construction is likely to be some 40 to 60 construction vehicles per day two-way.

3.46 Construction worker numbers will vary over the construction period but would generally be some 50 to 150 workers at any give time. Based on journey to work data, construction workers would generate some 80 to 230 vehicles per day two-way.

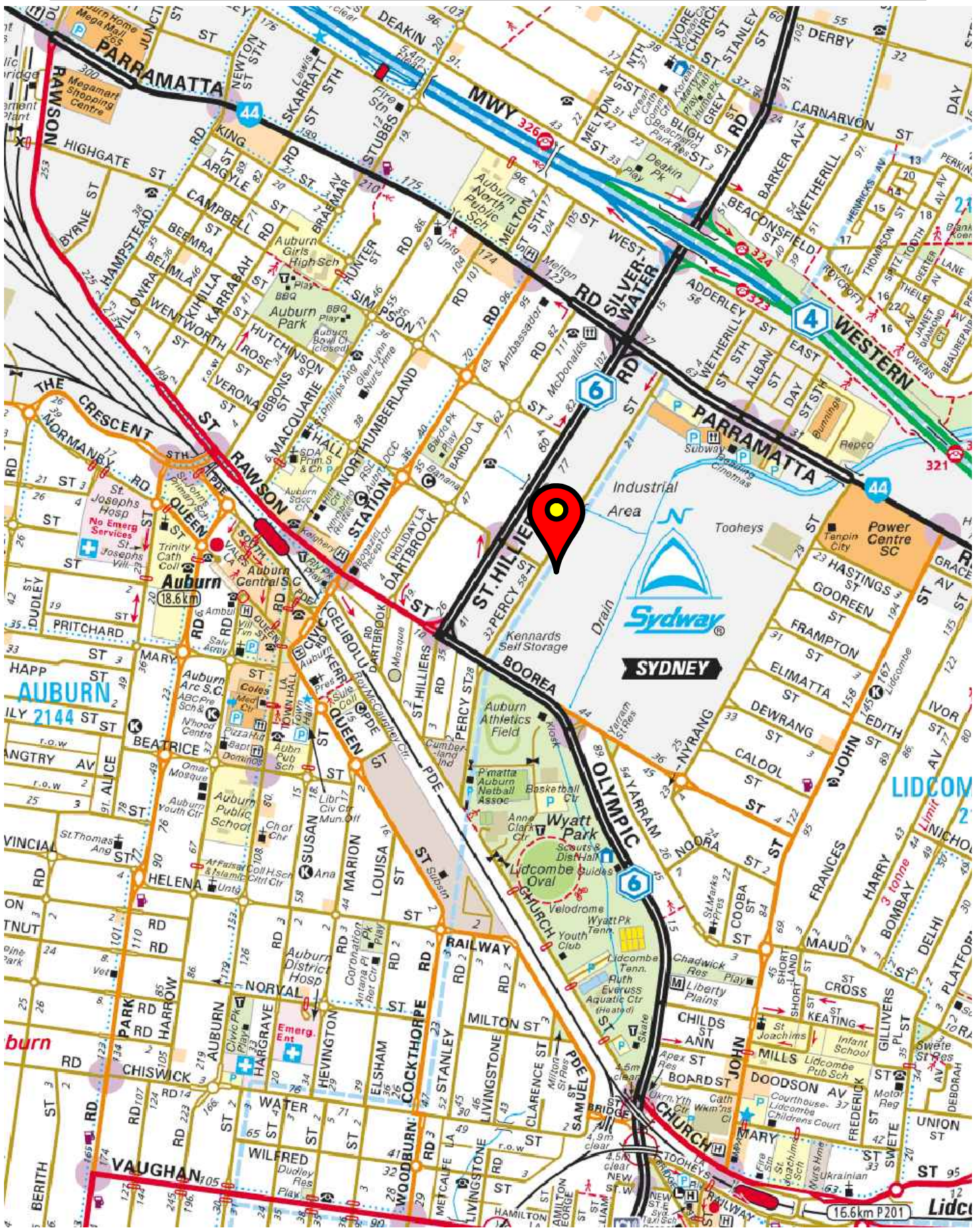
3.47 Construction of the proposed development would therefore have a total daily traffic generation up to some 290 vehicles per day two-way (including some 230 cars and 60 construction vehicles per day). The effects of construction vehicle activity on the surrounding road network will therefore be less than the operational effects of the proposed customer fulfilment centre.

Summary

3.48 In summary, the main points relating to the traffic implications of the proposed development are as follows:

- i) the proposed development will be a Woolworths online customer fulfilment centre;
 - ii) the site has access to regular public transport services;
 - iii) the site is accessible by active transport;
 - iv) a travel demand management approach is proposed through implementation of a work place travel plan;
 - v) parking provision is appropriate;
 - vi) access, servicing and internal layout will be provided in accordance with Australian Standards AS2890.1-2004 and AS2890.2-2018;
 - vii) the surrounding road network and intersections will be able to cater for the proposed development traffic; and
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- viii) Table 1.1 in Chapter 1 sets down the SEARs and identifies the relevant sections of the report where they are addressed.



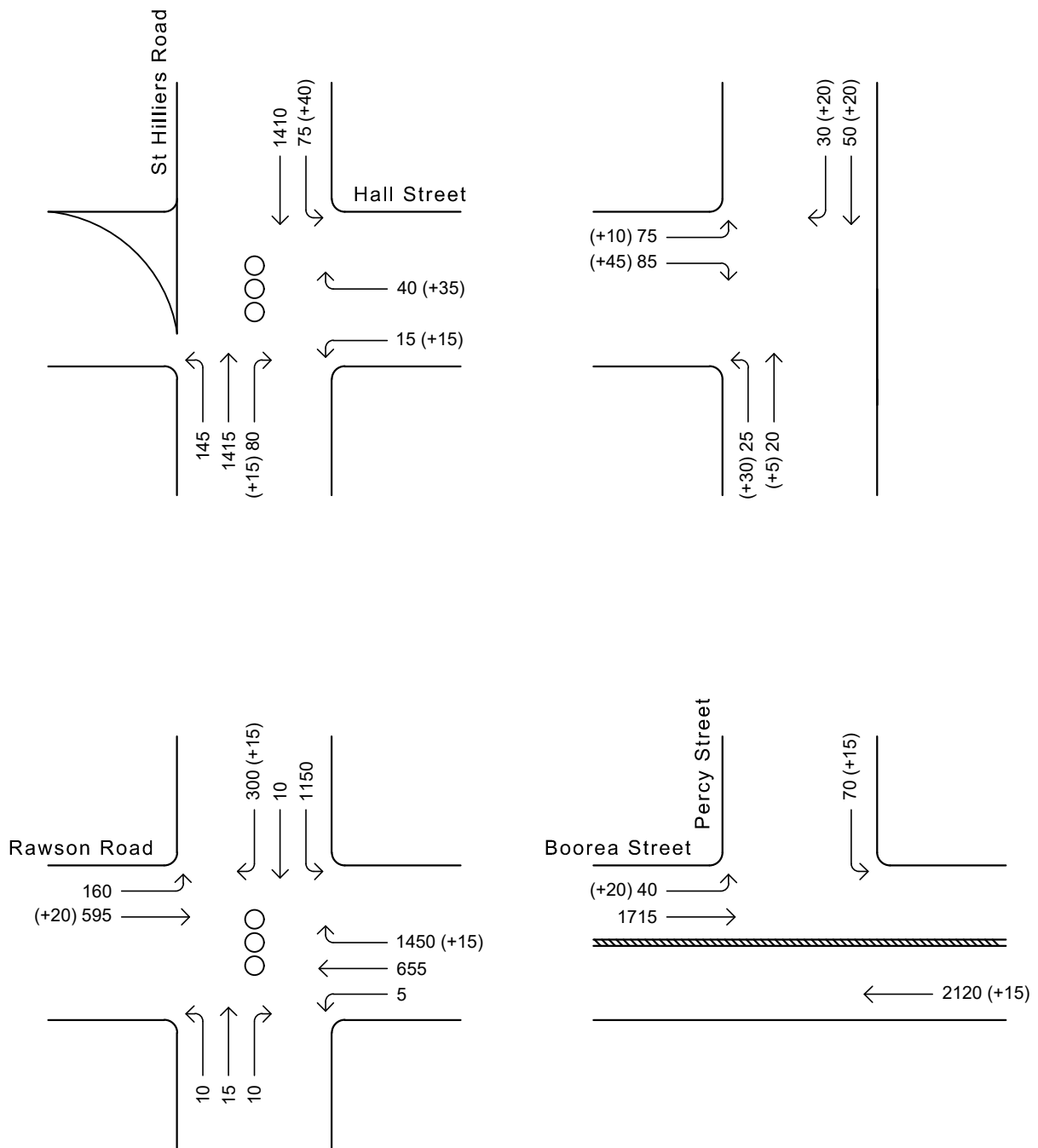
Click: <https://goo.gl/maps/HzbzJAxWWDCHP1fW8>

Location Plan

Colston Budd Rogers & Kafes Pty Ltd

Drawn By: CBRK Pty Ltd_hs/mr Ref: 11555 15 September 2020

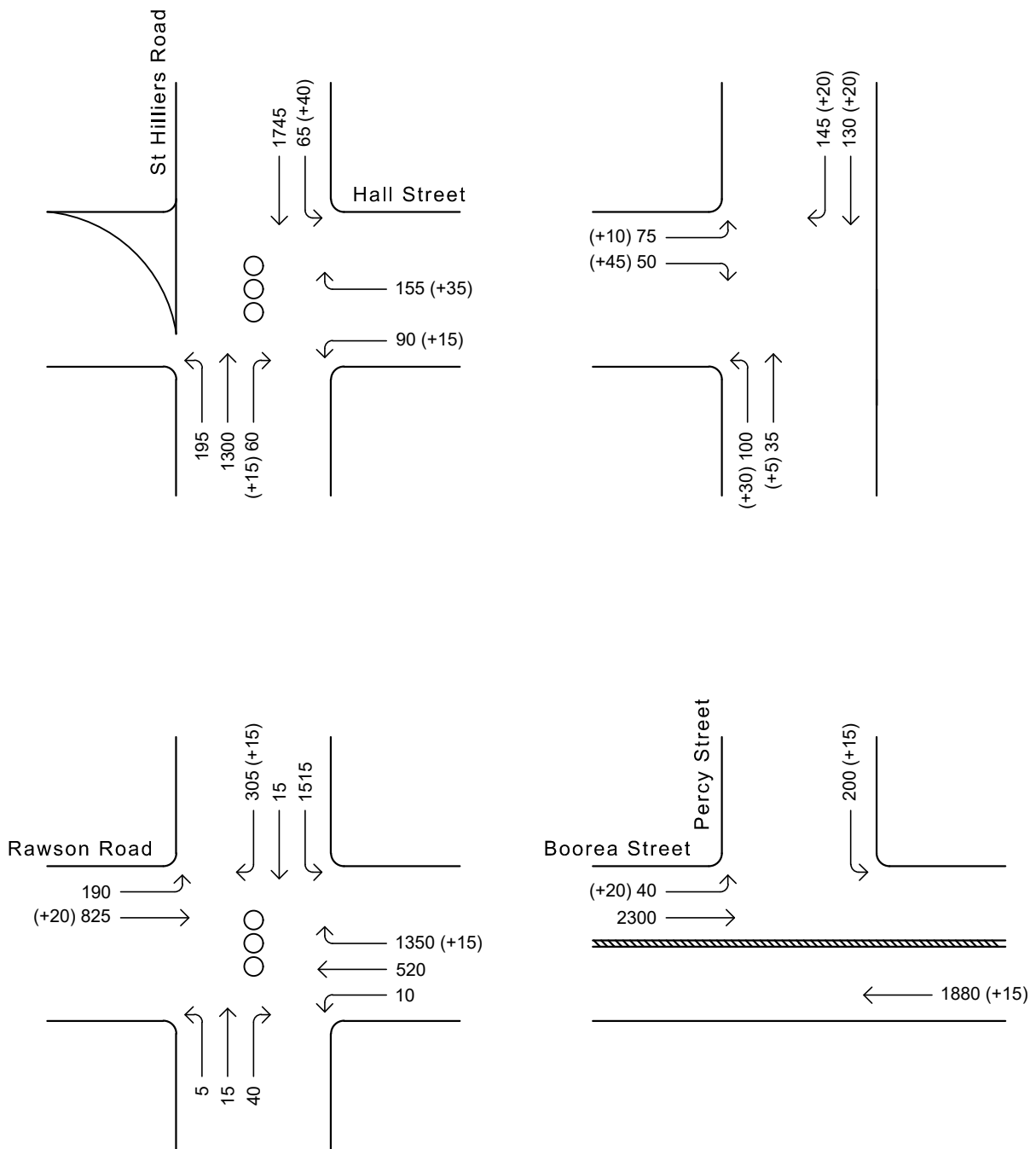
Figure 1



LEGEND

- 100 - Existing Peak Hour Traffic Flows
- (+10) - Additional Development Traffic
- ⊗ - Traffic Signals

Existing weekday morning peak hour traffic flows plus development traffic
Figure 2



LEGEND

- 100 - Existing Peak Hour Traffic Flows
- (+10) - Additional Development Traffic
- - Traffic Signals

Existing weekday afternoon peak hour traffic flows plus development traffic
Figure 3

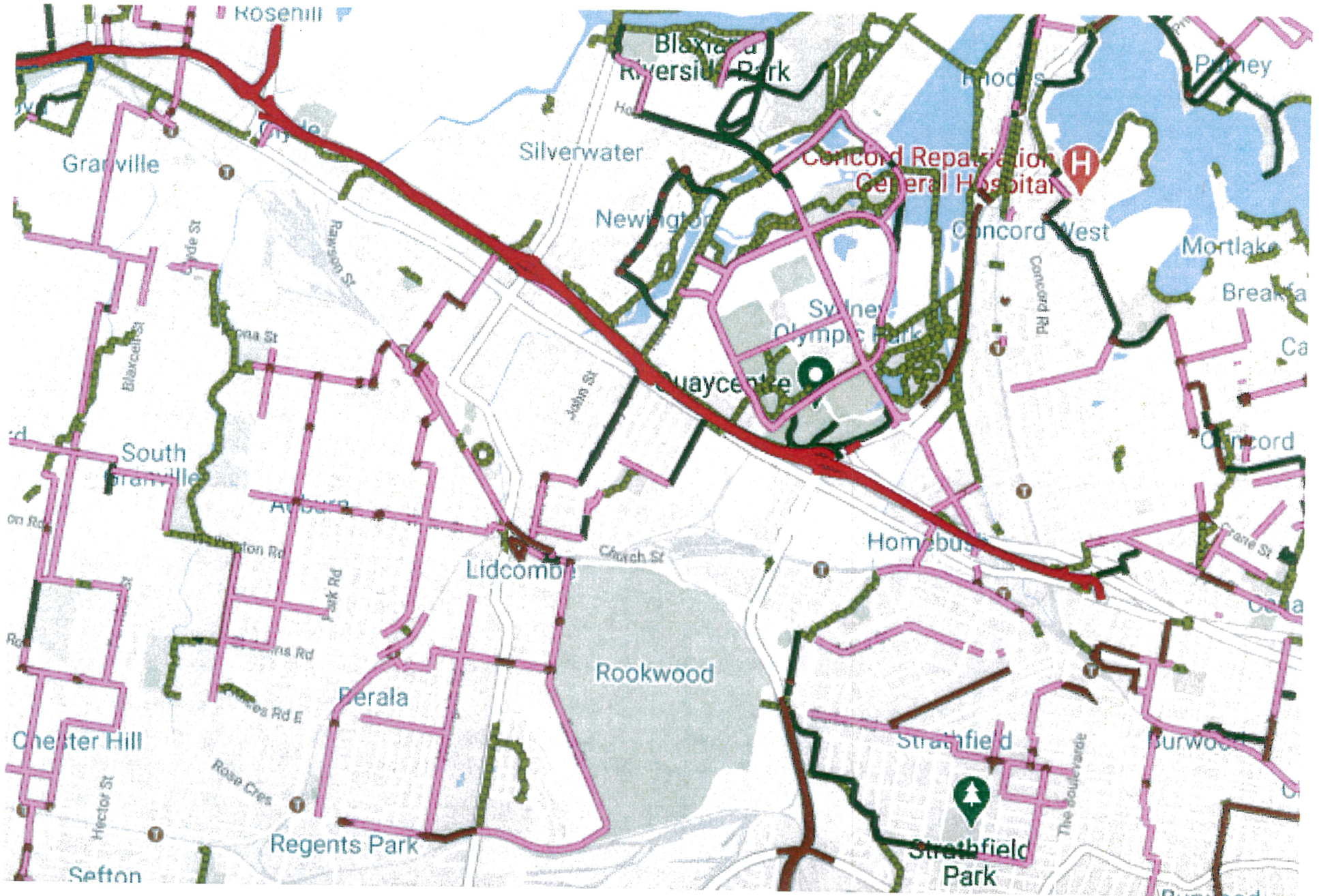
APPENDIX A

Cycle Routes



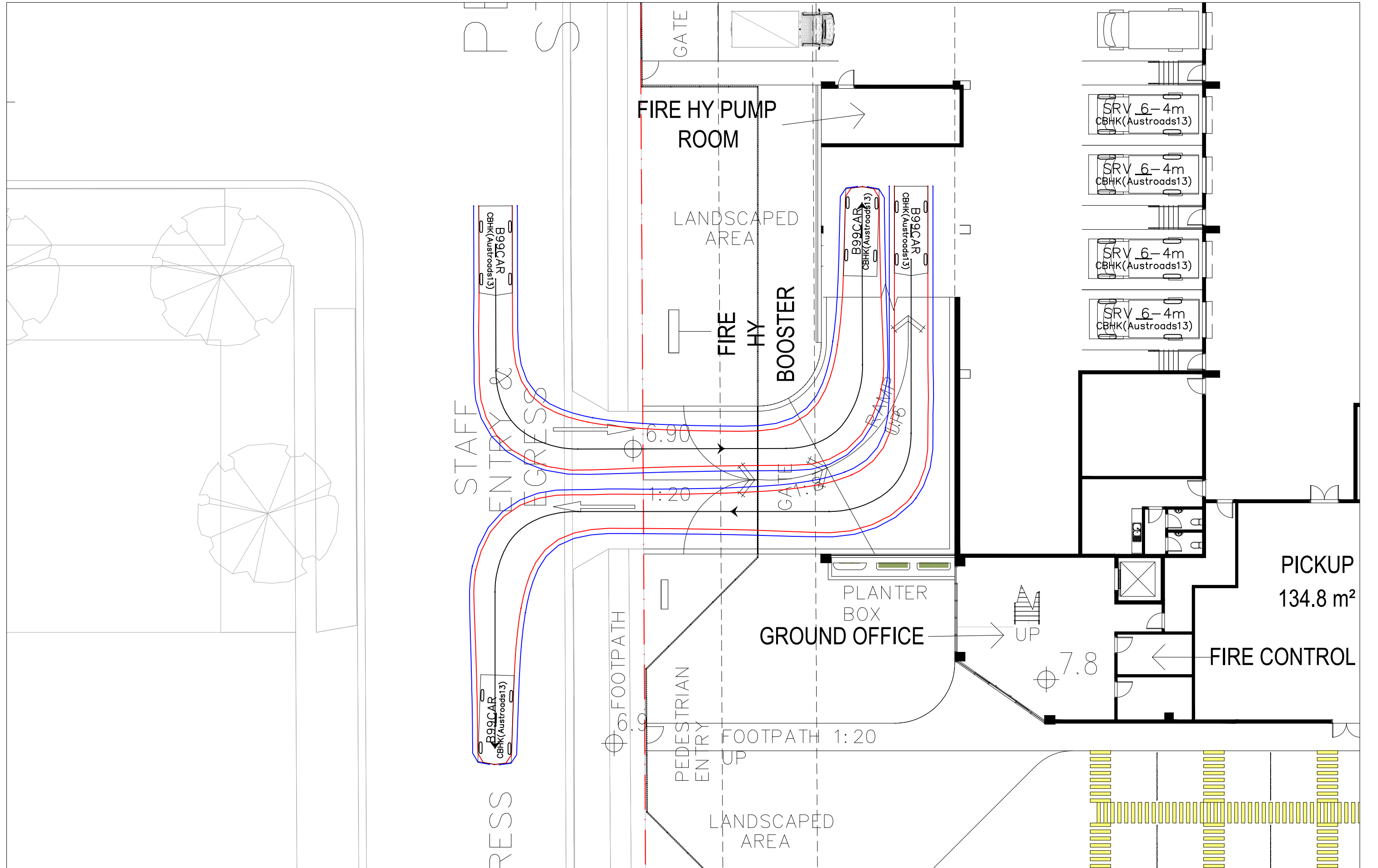
Transport
Roads & Maritime
Services

Cycleway Finder



APPENDIX B

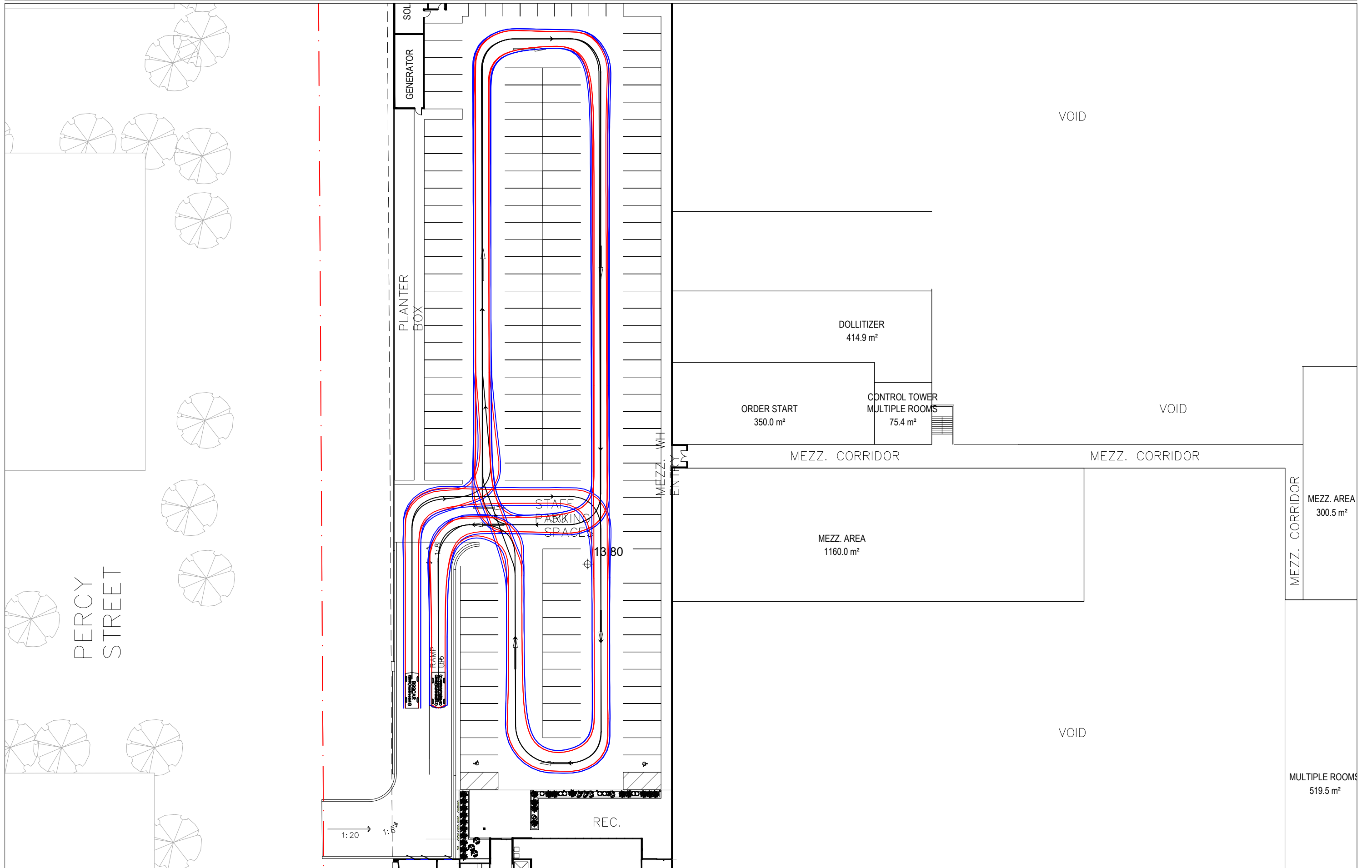
Vehicle Swept Paths



NOTE:
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 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

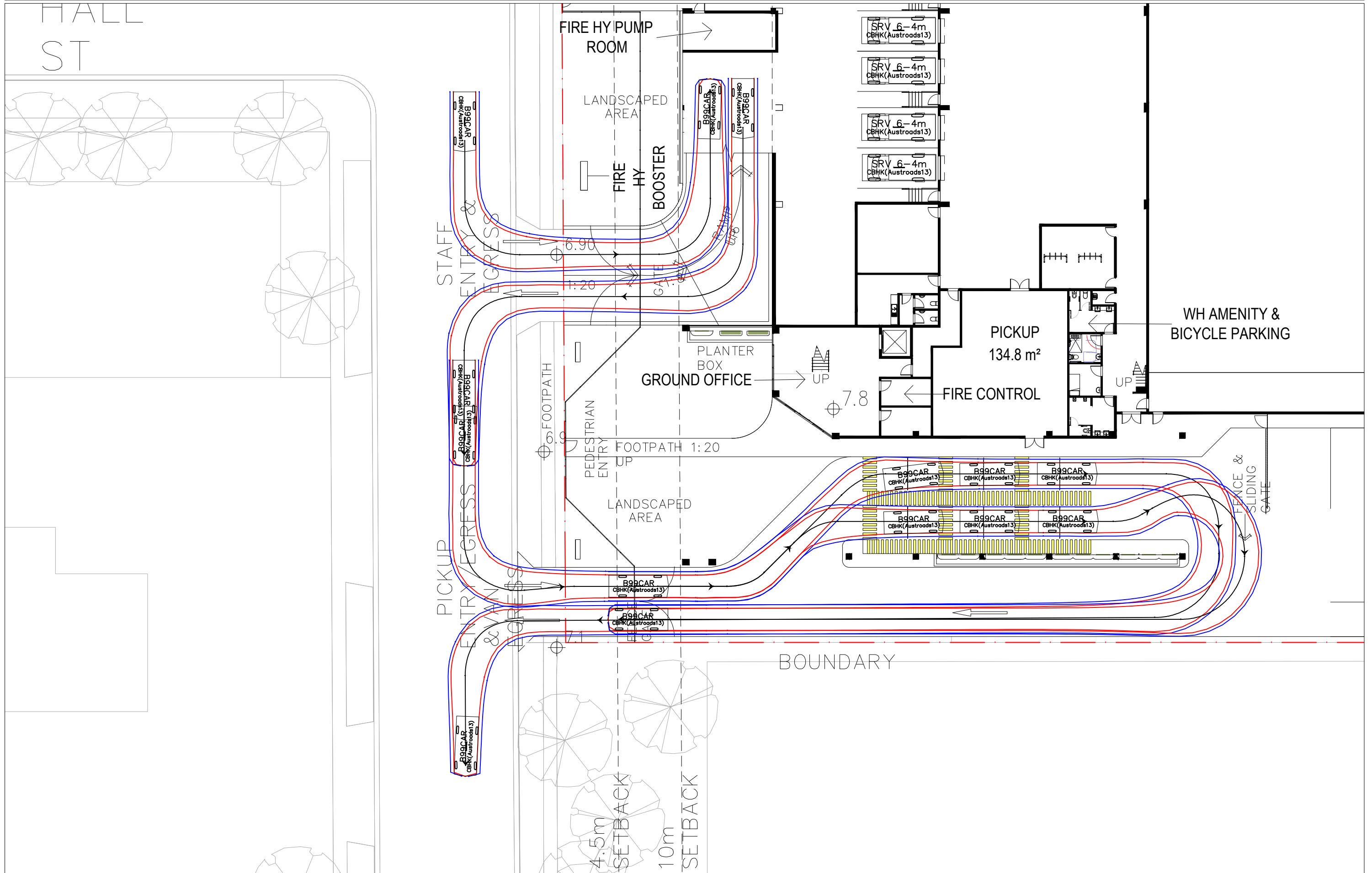
B99 VEHICLE SWEEP PATHS



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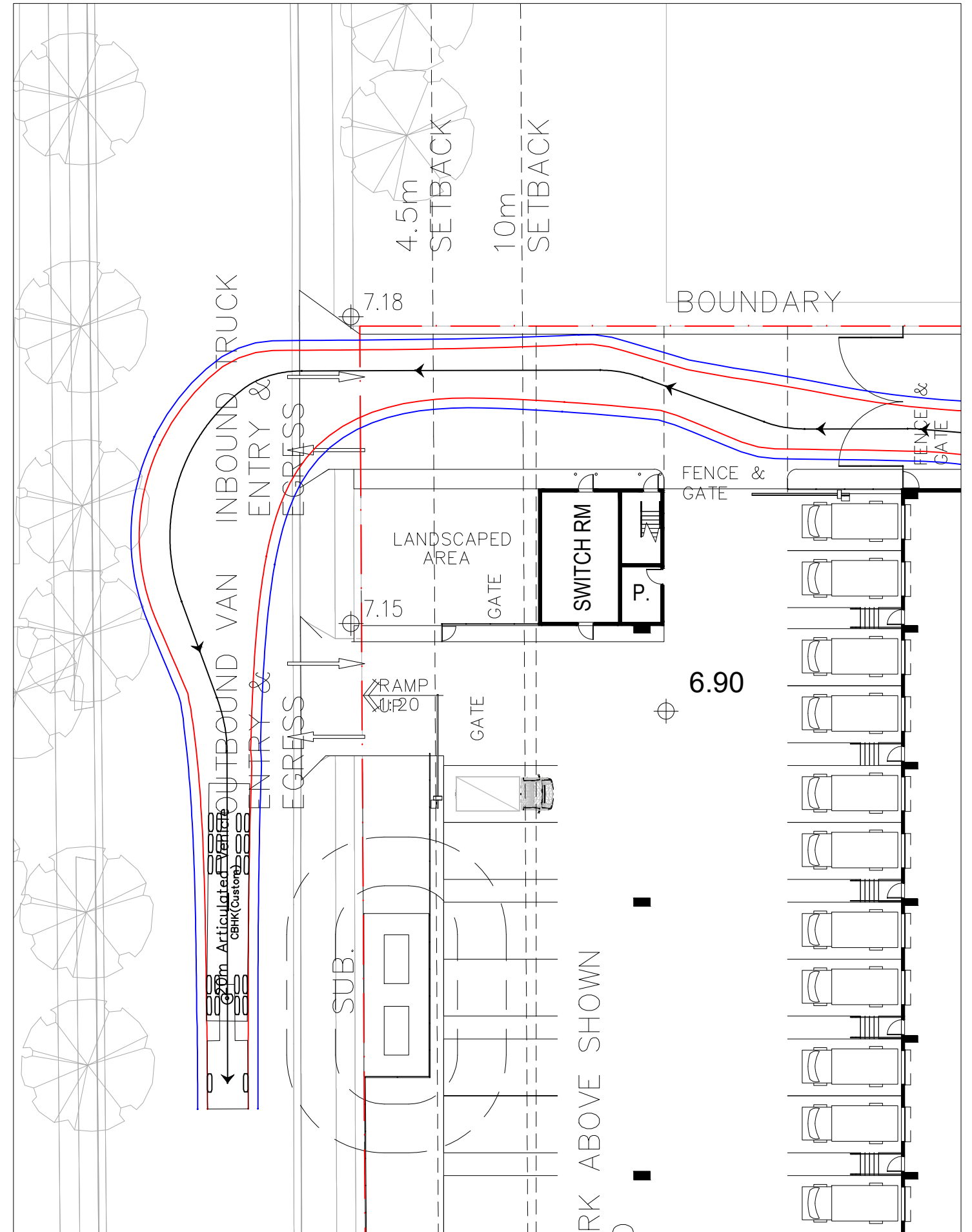
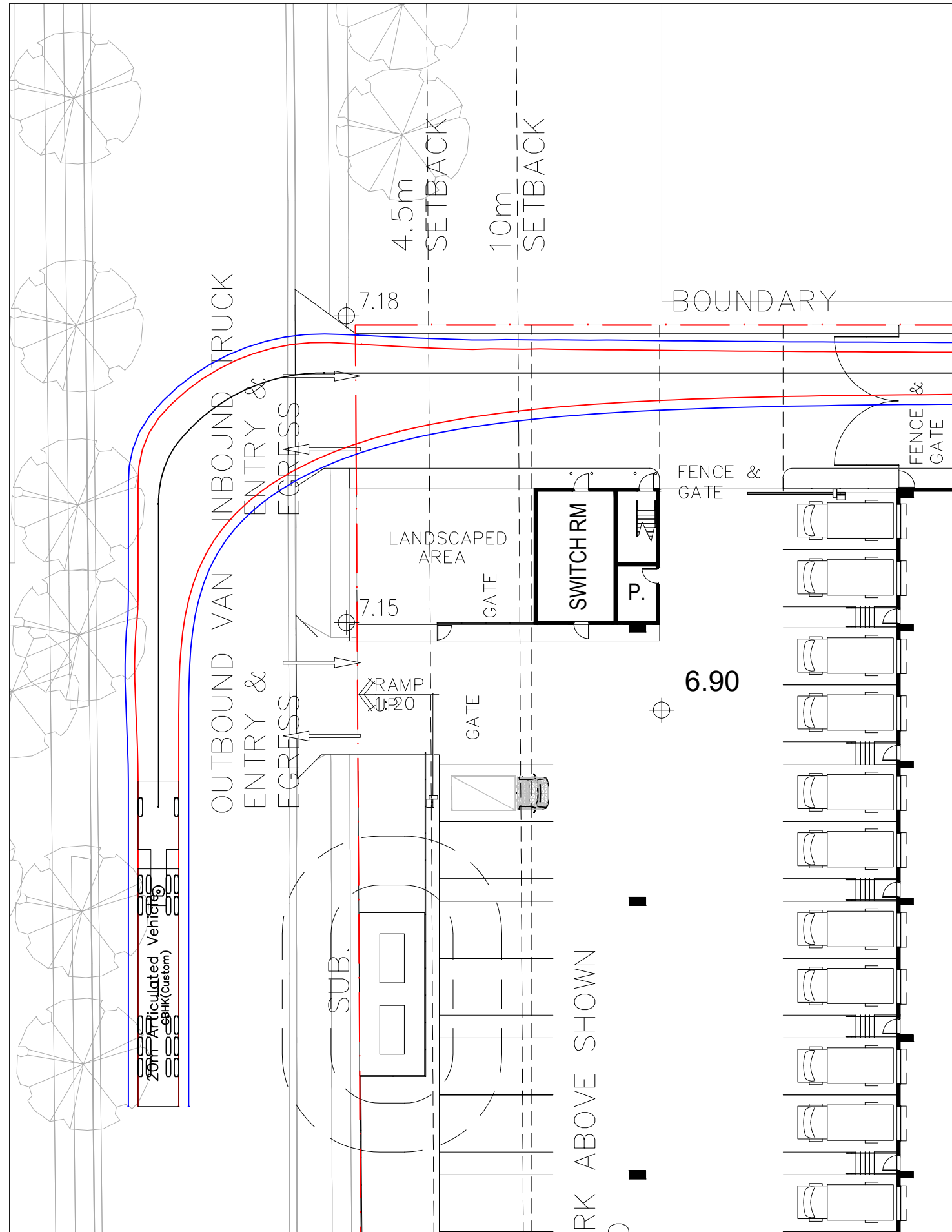
**B99 VEHICLE SWEEP PATHS
 - STAFF CAR PARK**



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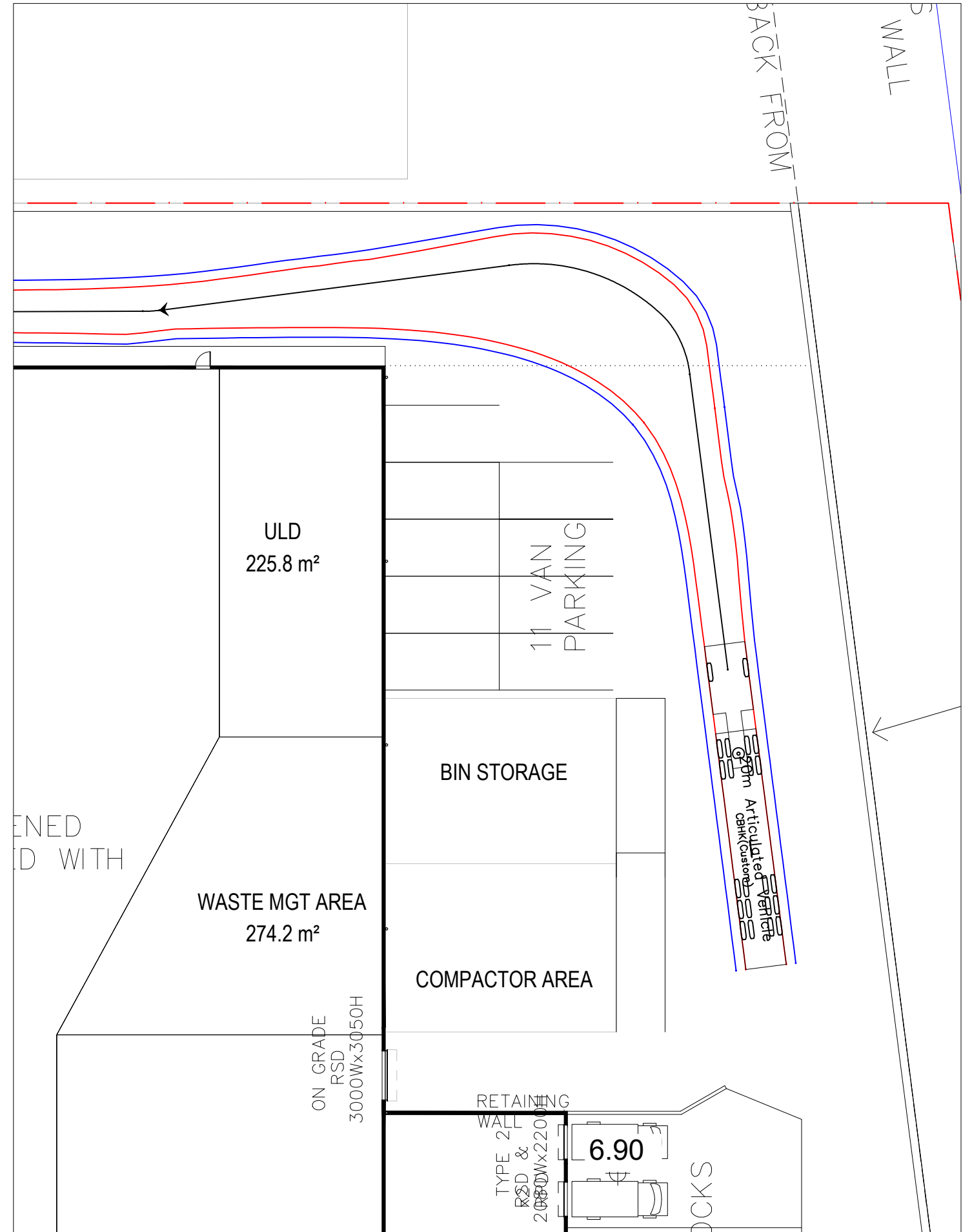
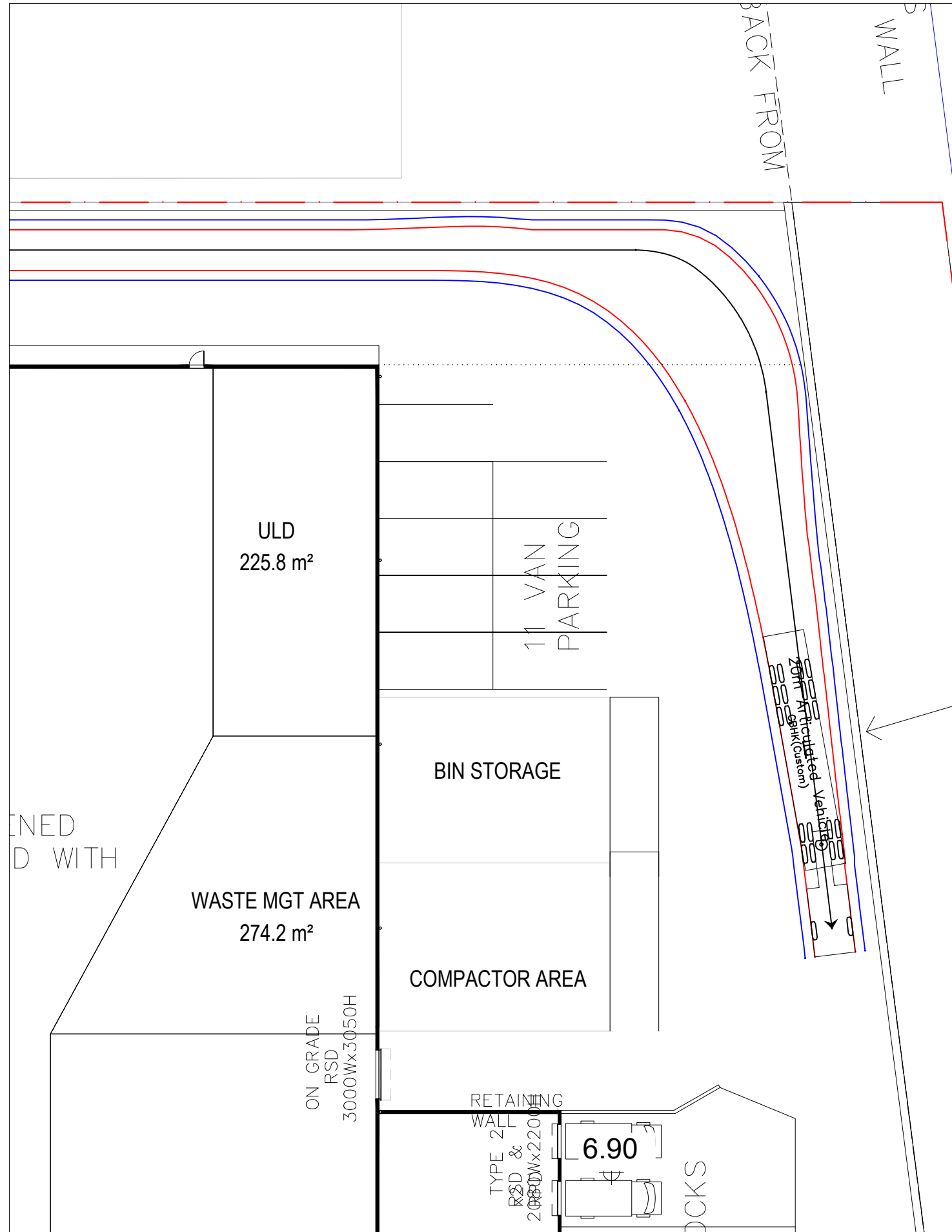
B99 VEHICLE SWEEP PATHS



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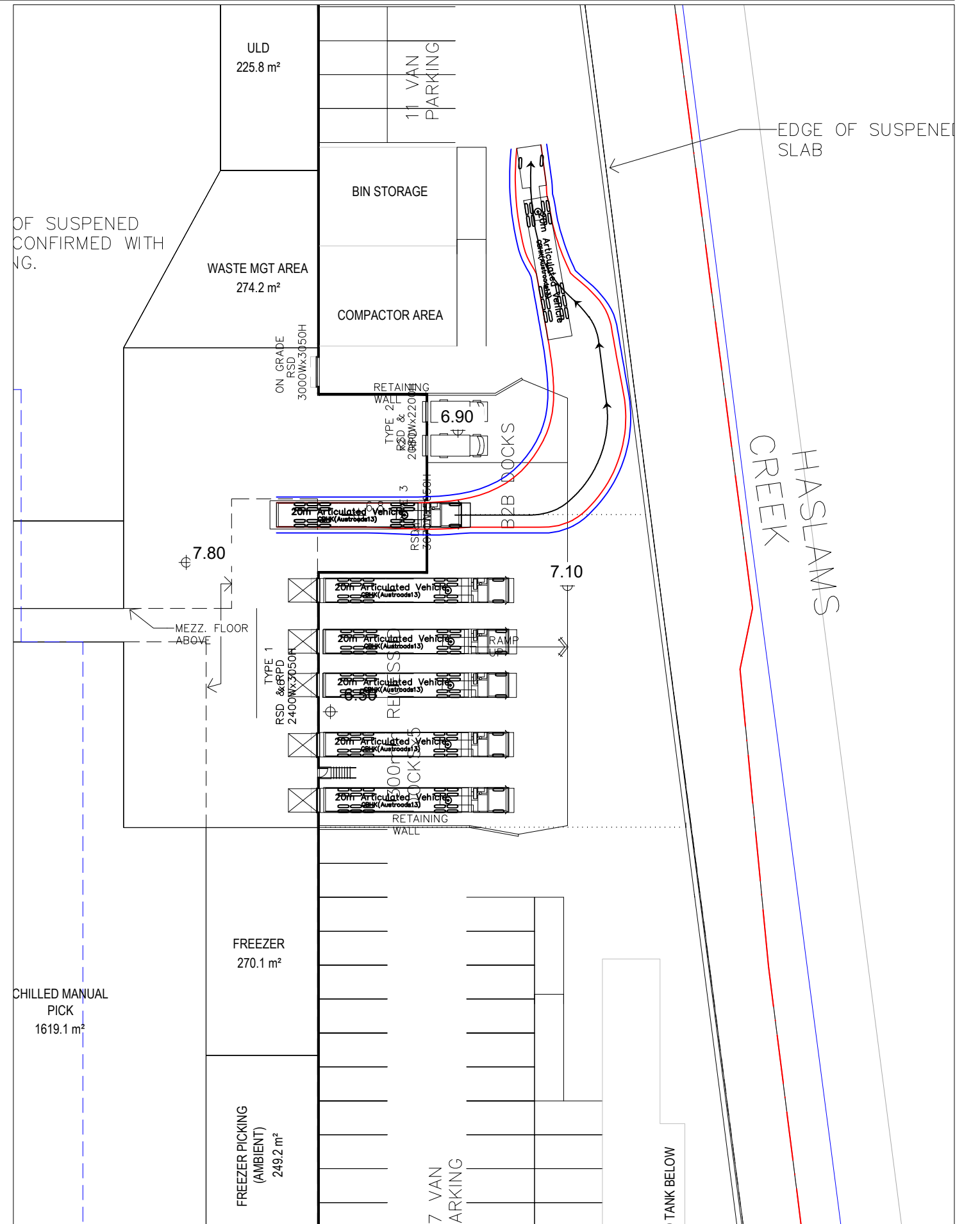
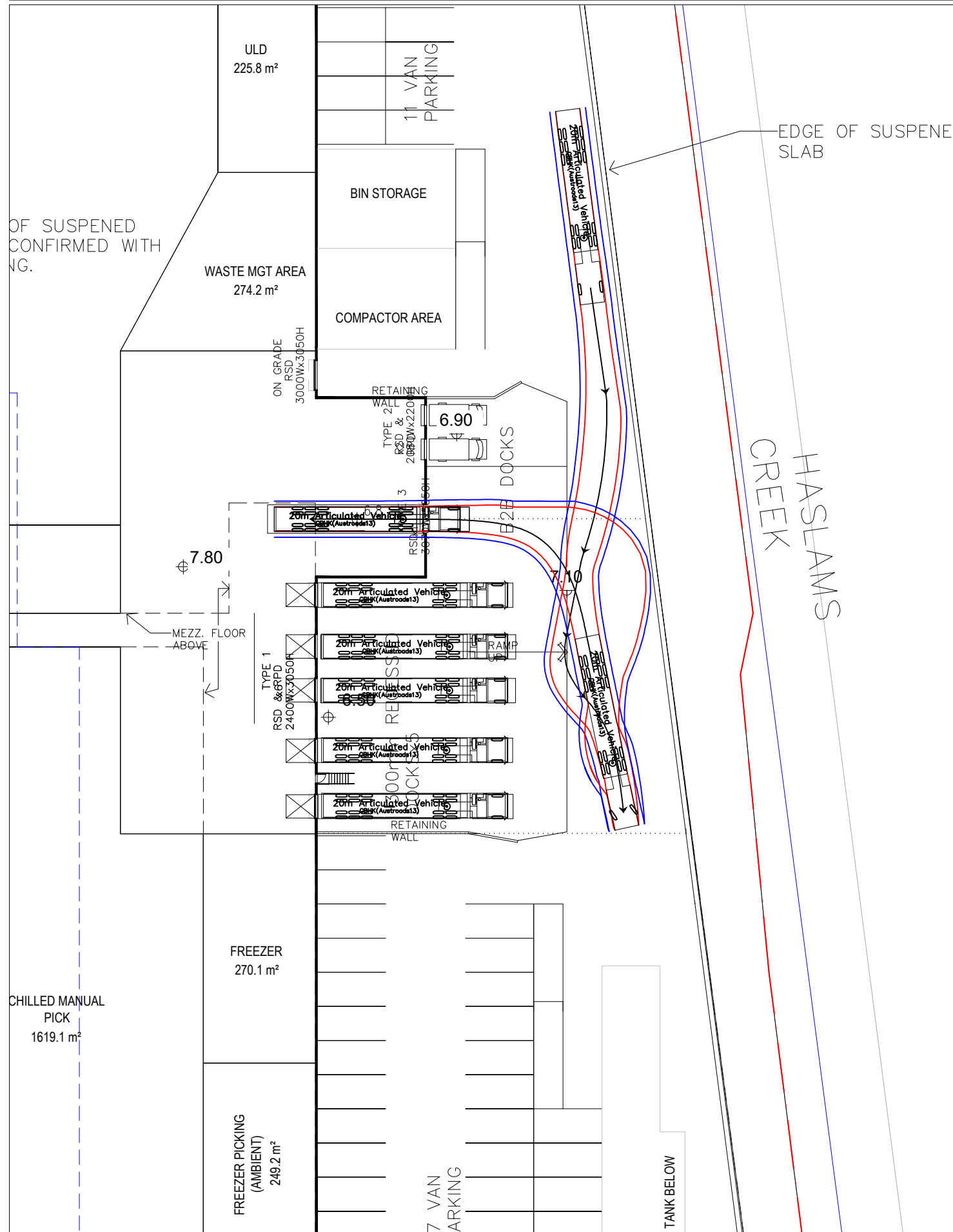
**20.0m ARTICULATED VEHICLE
 SWEEP PATHS**



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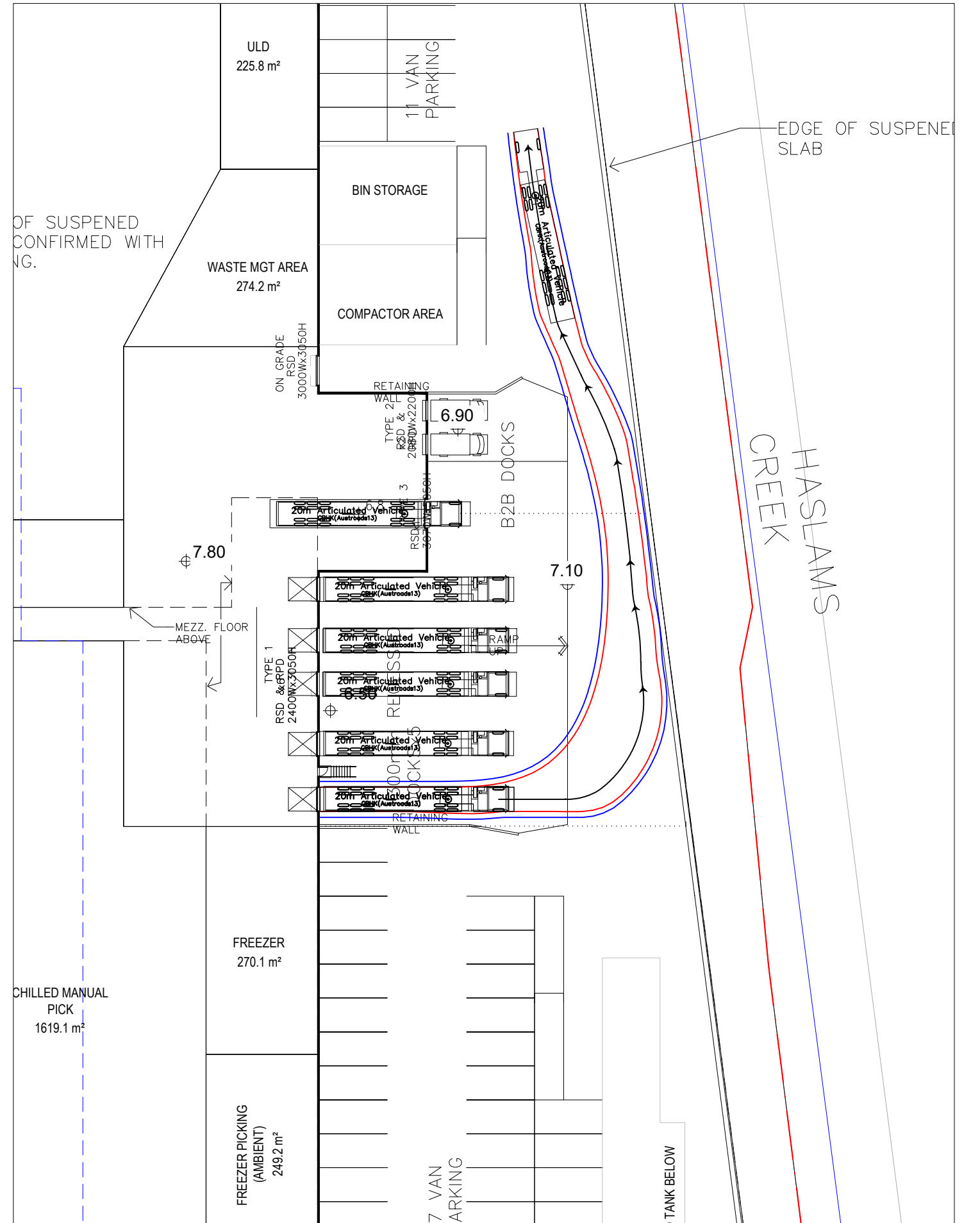
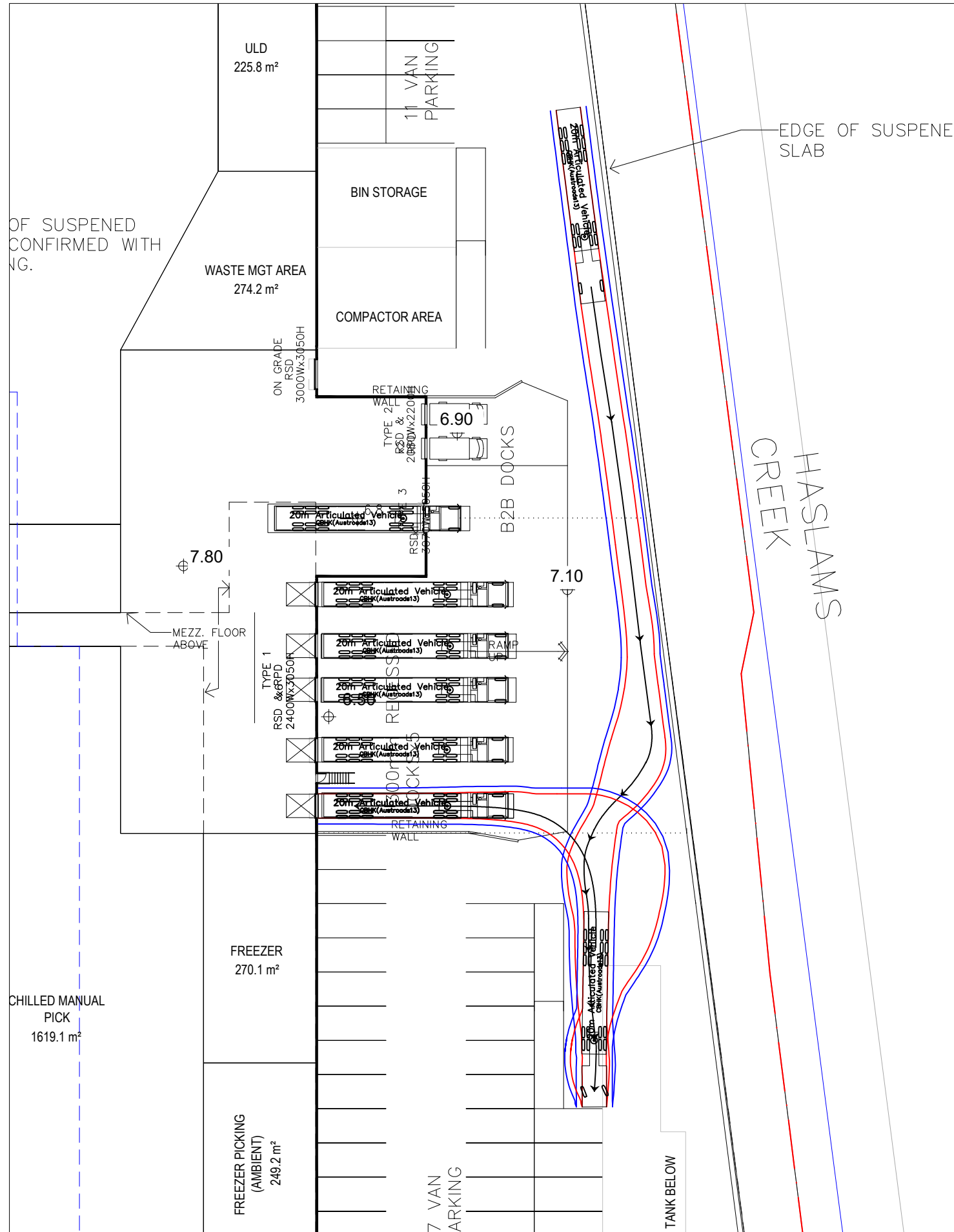
**20.0m ARTICULATED VEHICLE
 SWEEP PATHS**



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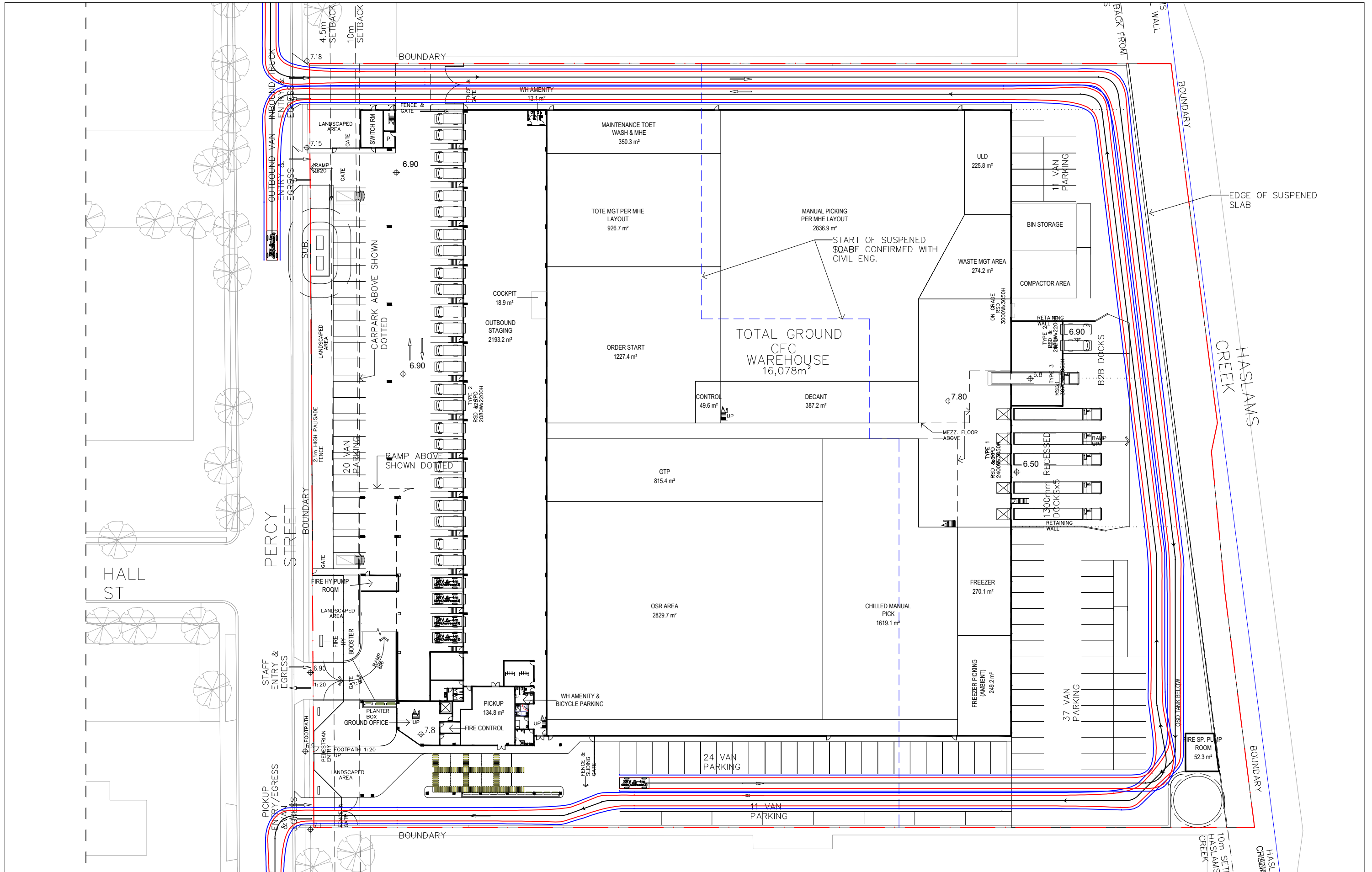
**20.0m ARTICULATED VEHICLE
 SWEEP PATHS**



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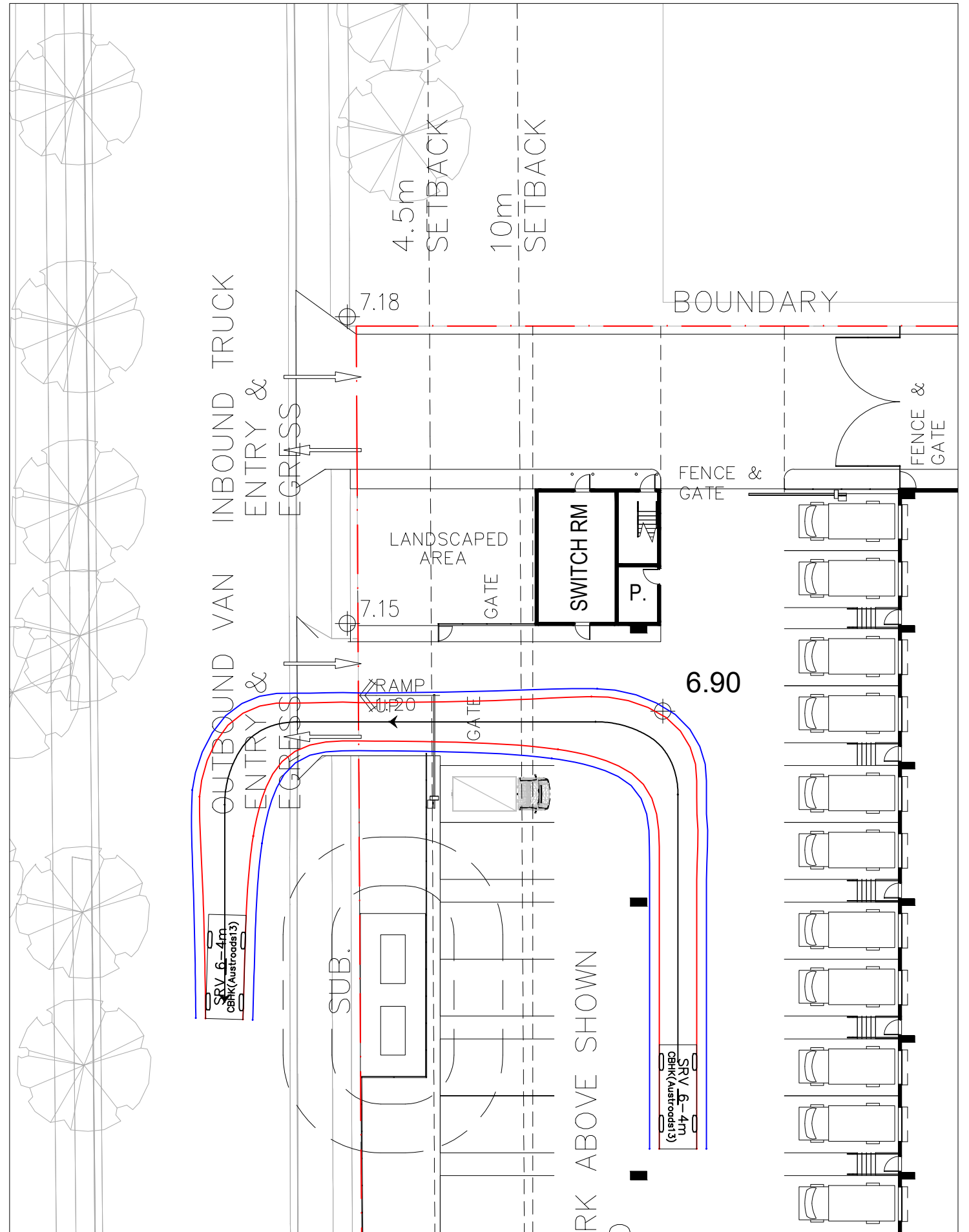
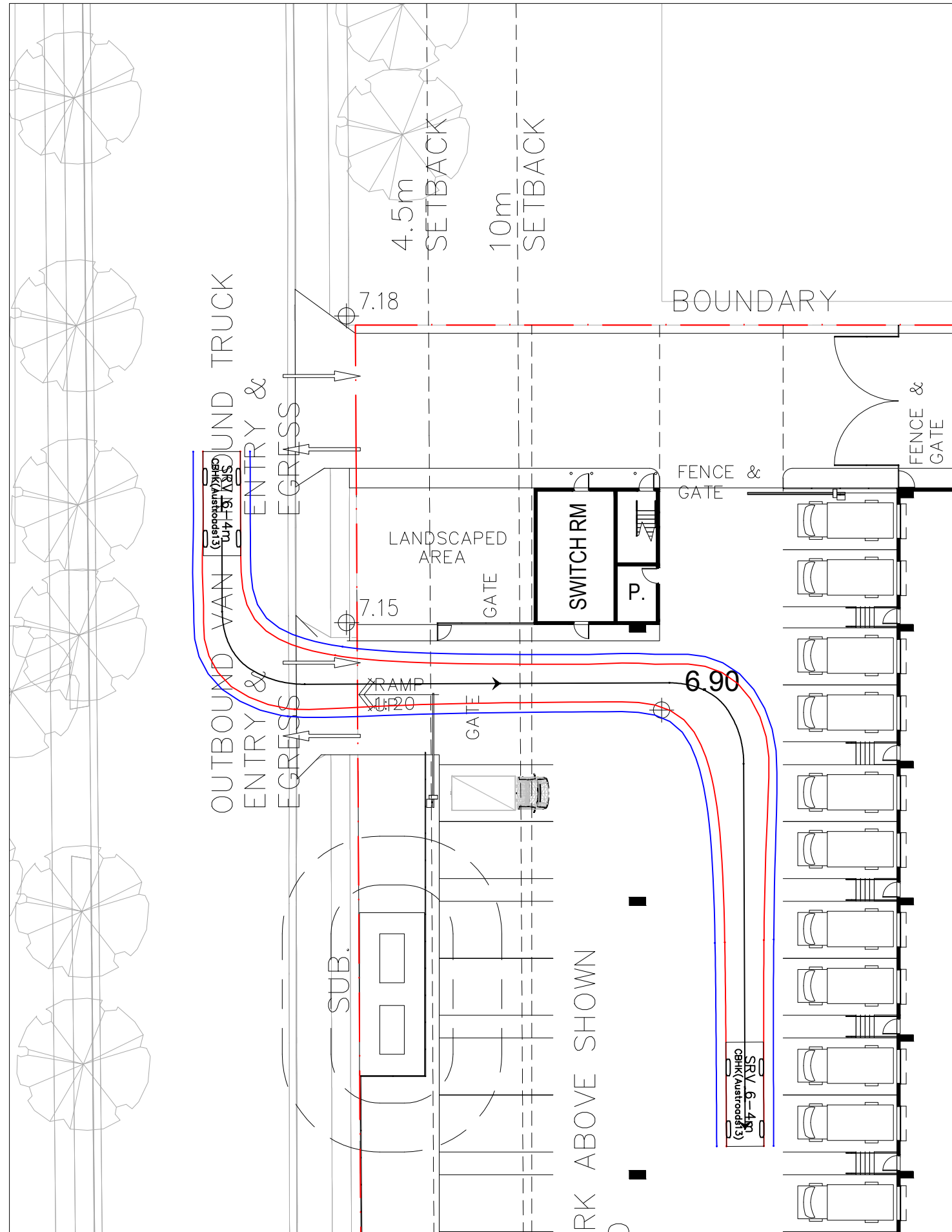
**20.0m ARTICULATED VEHICLE
 SWEEP PATHS**



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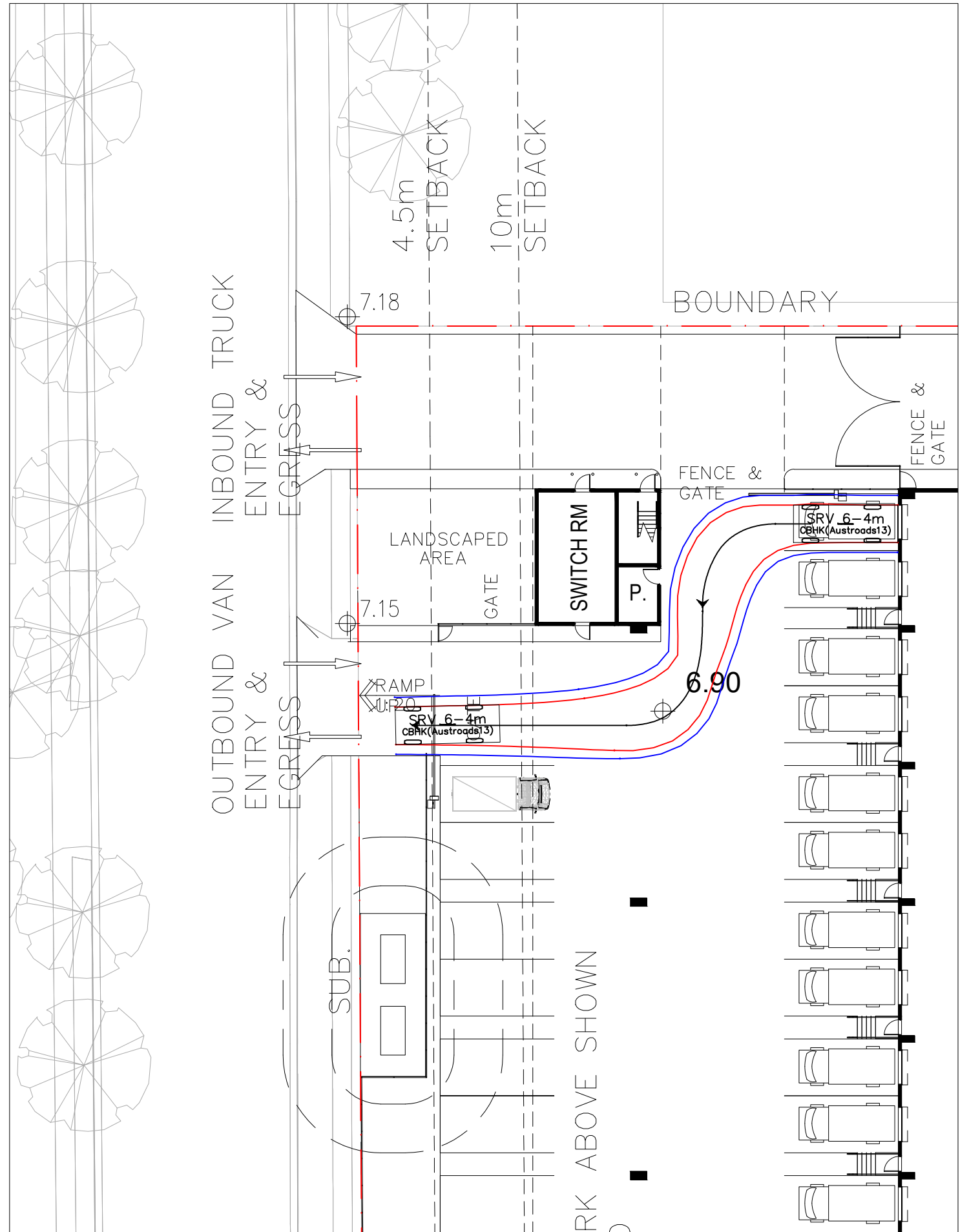
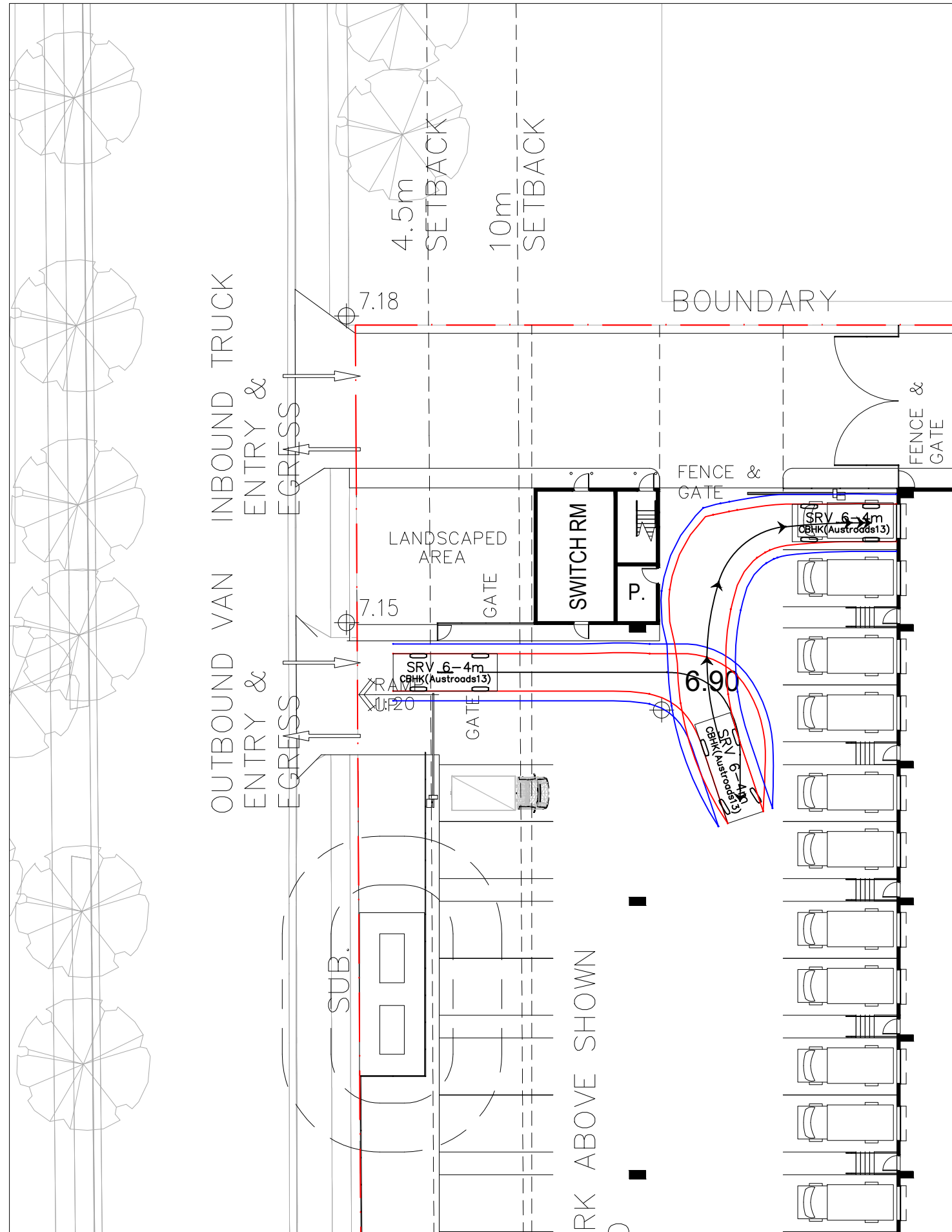
6.4m SMALL RIGID VEHICLE
 SWEEP PATHS



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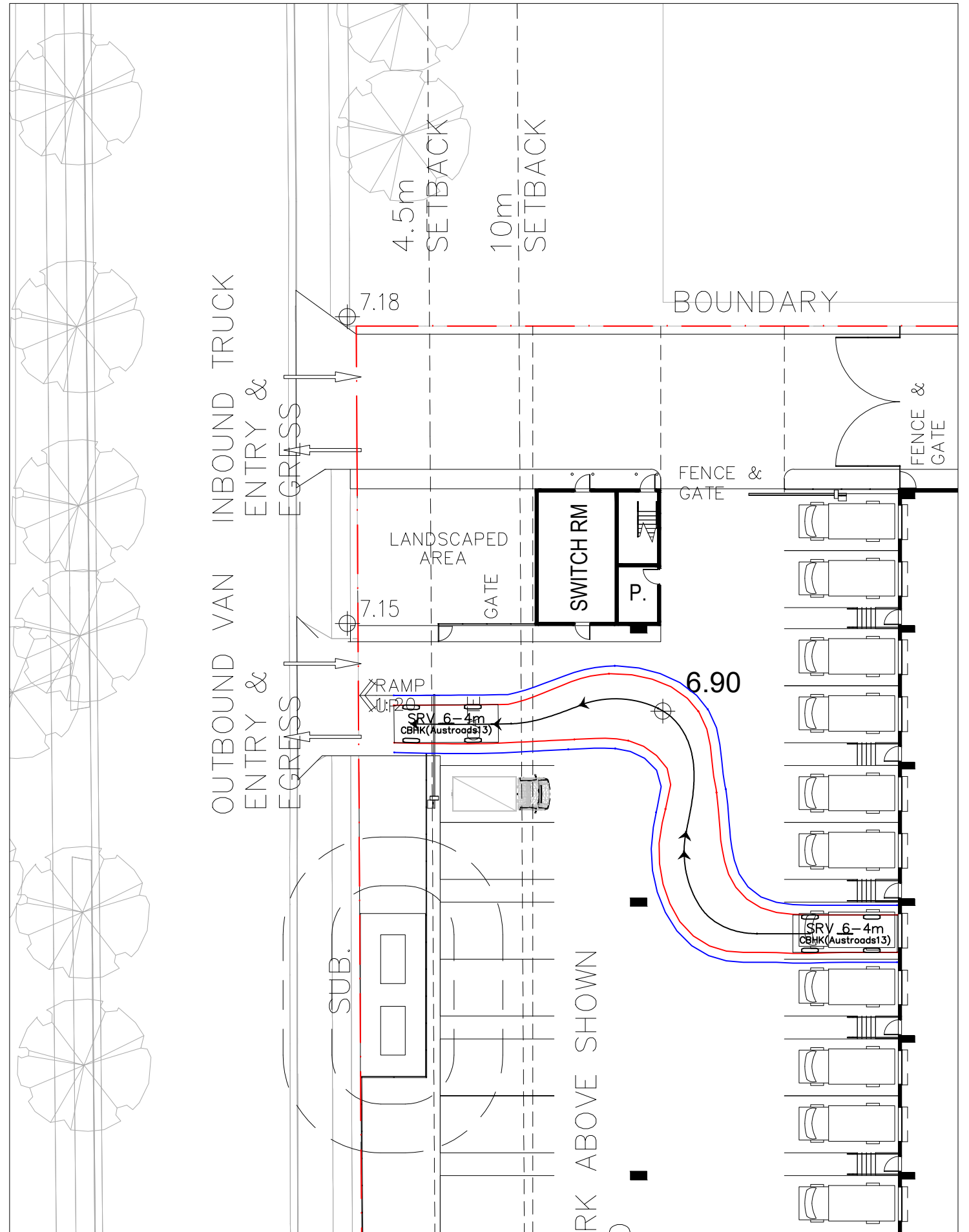
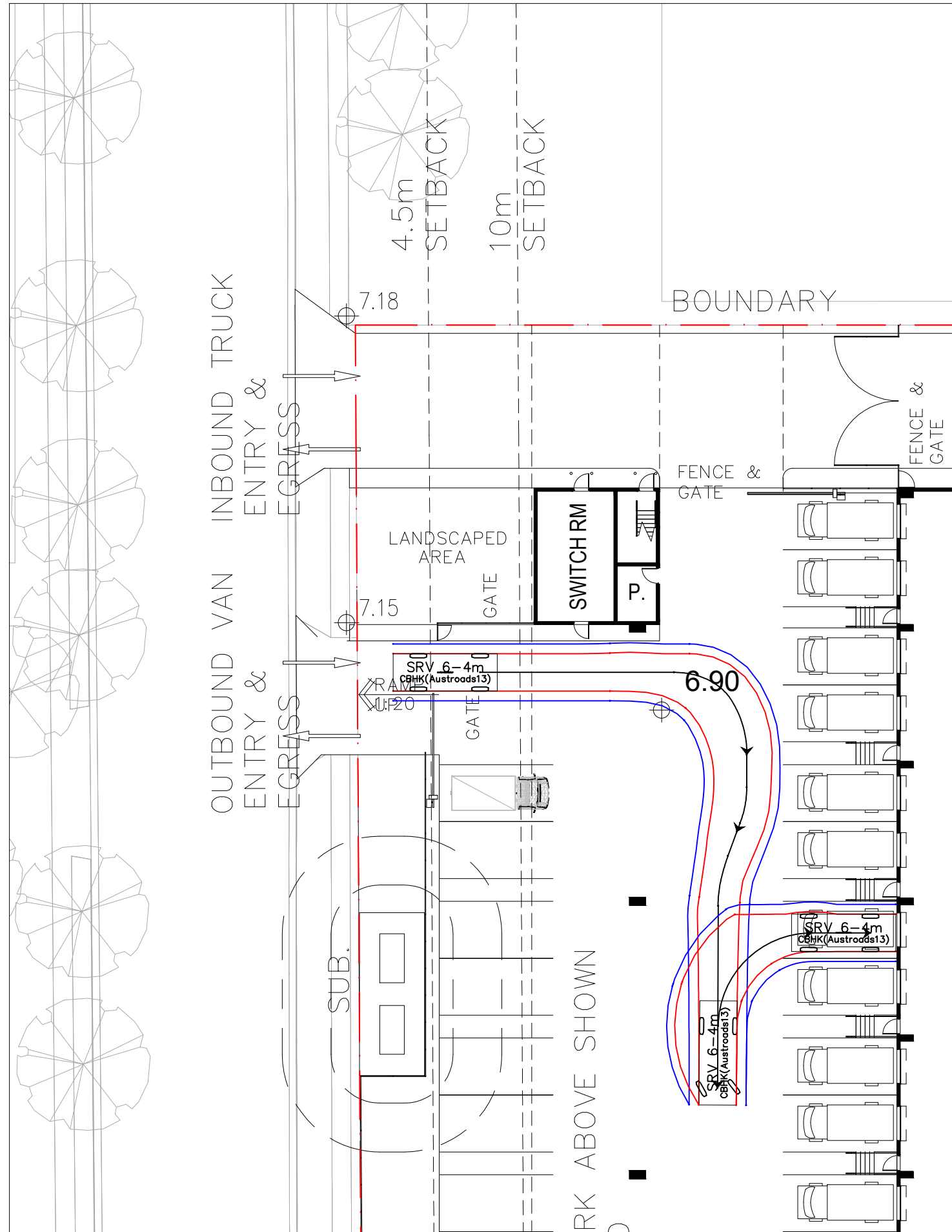
**6.4m SMALL RIGID VEHICLE
 SWEEP PATHS**



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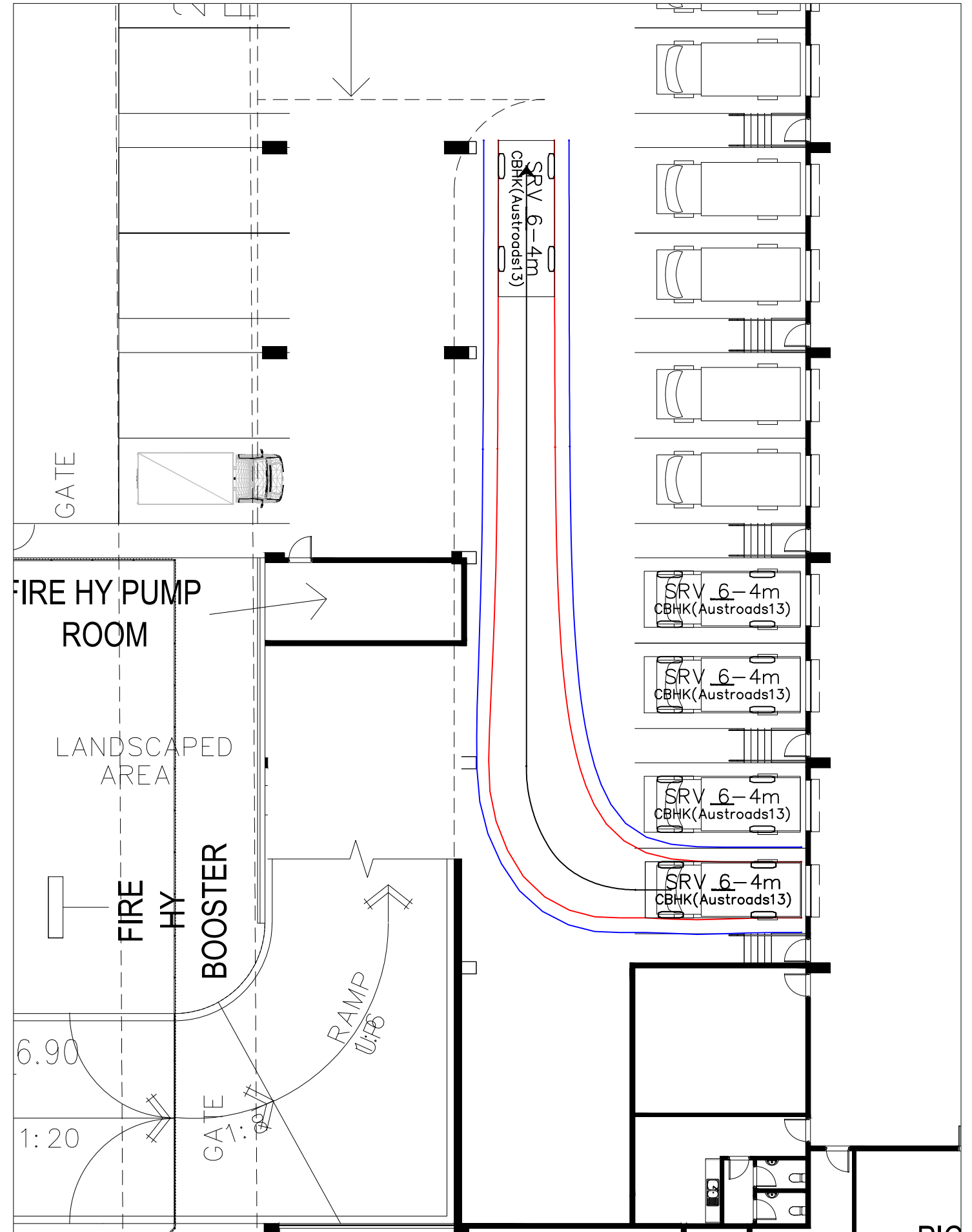
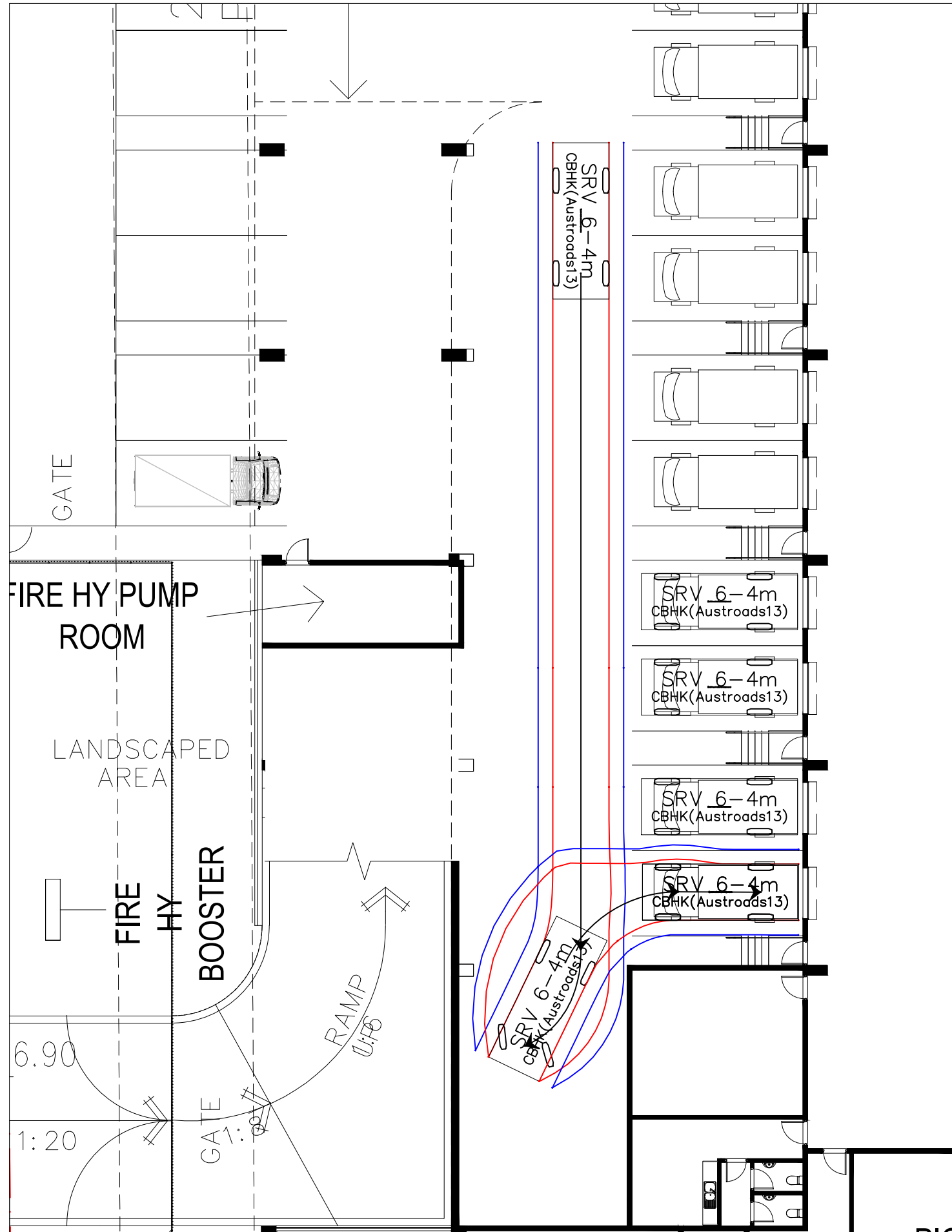
**6.4m SMALL RIGID VEHICLE
 SWEEP PATHS**



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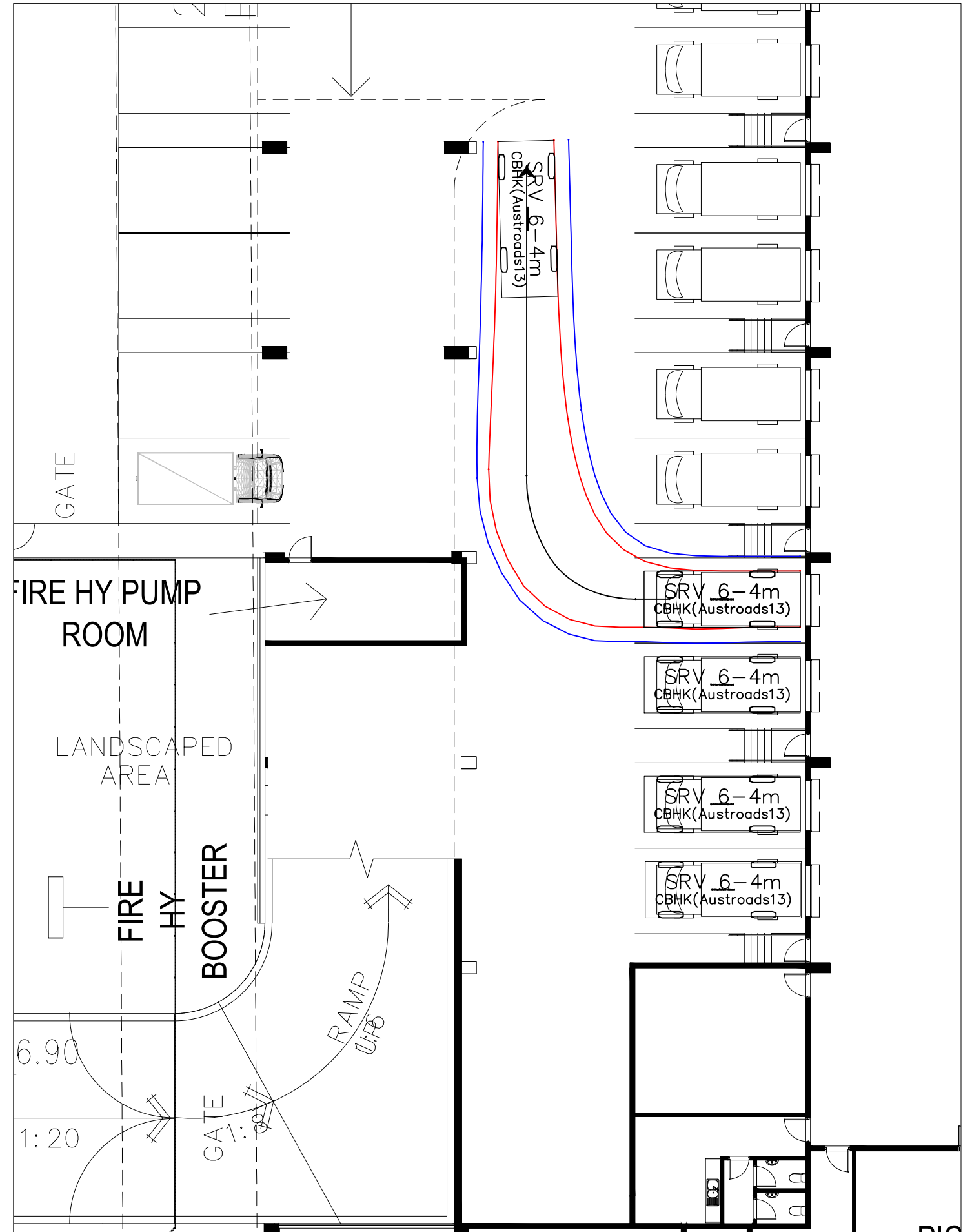
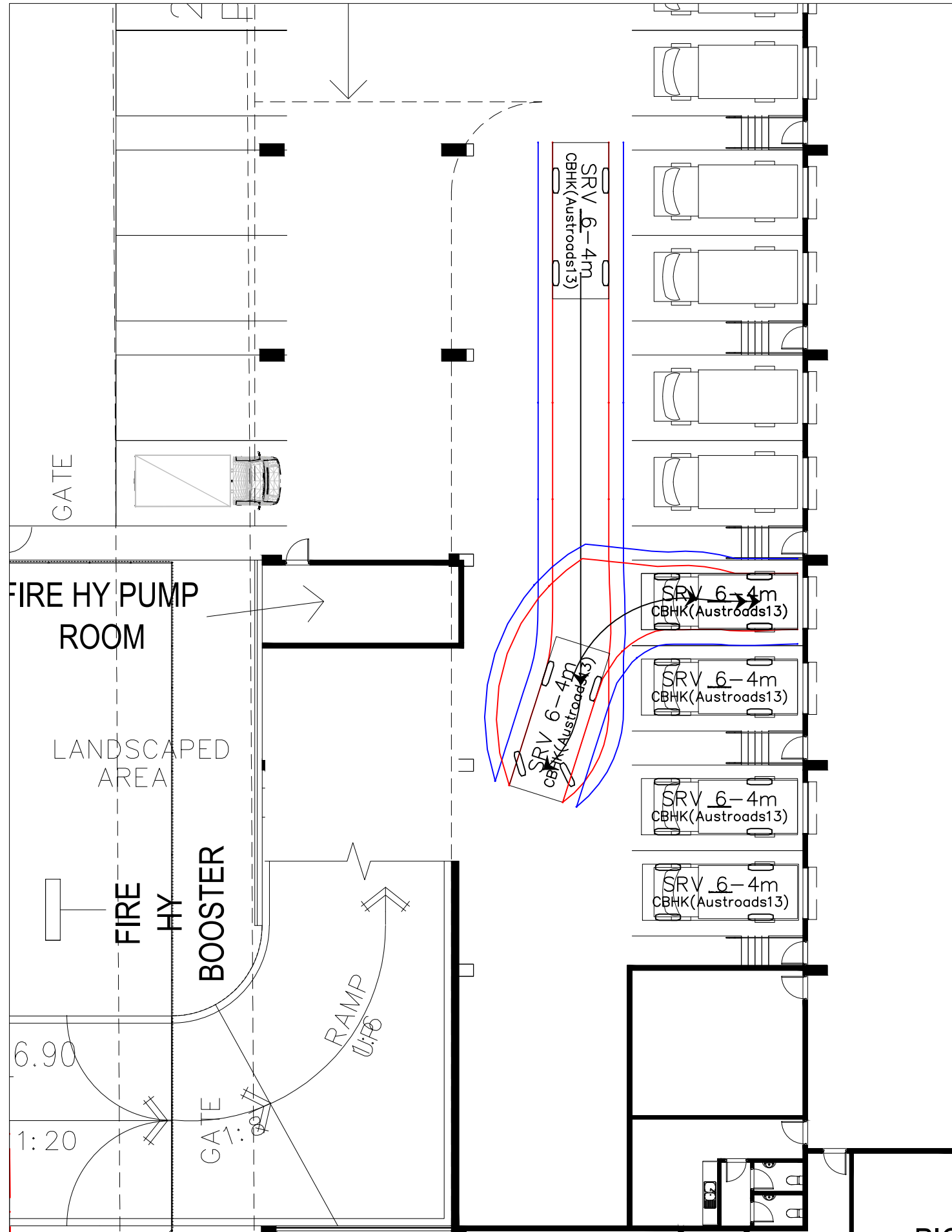
**6.4m SMALL RIGID VEHICLE
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6.4m SMALL RIGID VEHICLE
 SWEEP PATHS

APPENDIX C

Draft Construction Traffic Management Plan
