

Mt Pritchard & District Community
Club Ltd

Harbord Diggers Club

Section 96 Traffic Report

Issue | 10 July 2015

This report takes into account the particular
instructions and requirements of our client.

It is not intended for and should not be relied
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is undertaken to any third party.

Job number 240343-00

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Document Verification

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Job title		Harbord Diggers Club		Job number	
				240343-00	
Document title		Section 96 Traffic Report		File reference	
Document ref					
Revision	Date	Filename	Report.docx		
Draft 1	12 Jun 2015	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	James Turner	Andrew Hulse	Andrew Hulse
		Signature			
Issue	10 Jul 2015	Filename	Issue S96 Traffic Report 20150615.docx		
		Description			
			Prepared by	Checked by	Approved by
		Name	James Turner	Andrew Hulse	Andrew Hulse
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue Document Verification with Document <input checked="" type="checkbox"/>					

Contents

	Page
1 Introduction	1
1.1 Background	1
1.2 Scope	1
2 Existing site conditions	2
2.1 Site location	2
2.2 Pedestrians and cycling	2
2.3 Road network and parking	3
2.4 Public transport	4
3 Proposed amended development and impacts	5
3.1 Loading dock swept paths	5
3.2 Sight lines at driveways	5
3.3 Parking provision	5
3.4 Alteration to driveway egress	6
3.5 Egress queuing	7
3.6 Car park wayfinding	8
3.7 Other matters	8
4 Summary and conclusions	10

Appendices

Appendix A

Swept paths

1 Introduction

1.1 Background

Cerno Management appointed Arup on behalf of Mt Pritchard & District Community Club Ltd to prepare a Traffic Report for the modification of the proposed redevelopment of Harbord Diggers Club.

A development proposal was lodged with Warringah Council in 2014 and a development application Traffic and Parking Report was prepared by GTA Consultants and forms part of the conditions of consent for DA2014/0875. This report utilises data from this report and assesses the modifications proposed as part of the Section 96 application.

This Traffic Report has been prepared to address the proposed modifications to DA2014/0875 and matters raised by Council at the pre-lodgement meeting held 27 May 2015.

1.2 Scope

Council requested that a Traffic Report be provided with the Section 96 application and address the following

- Swept paths for loading dock and bus parking position in Porte Cochere
- Sight lines for pedestrians for cars entering loading dock or Porte Cochere entry
- Car parking numbers and justification if parking numbers have reduced
- Justification of Porte Cochere egress with single vehicular egress (approved scheme was a double exit) - Council prefer to see a double egress, or widening at the boundary, to reduce queuing
- Arup to review queueing at Porte Cochere particularly with one egress position, to demonstrate design
- Address carpark way-finding signage within Porte Cochere, to express ramp

2 Existing site conditions

2.1 Site location

Harbord Diggers Club is located at 80 Evans Street, Freshwater, and is on Lot 12 DP 11997725. It has frontages to Evans Street, Lumsdaine Drive and Carrington Parade. A residential property fronting Lumsdaine Drive is also part of the subject site. The site is located adjacent to McKillop Park headlands as shown below.

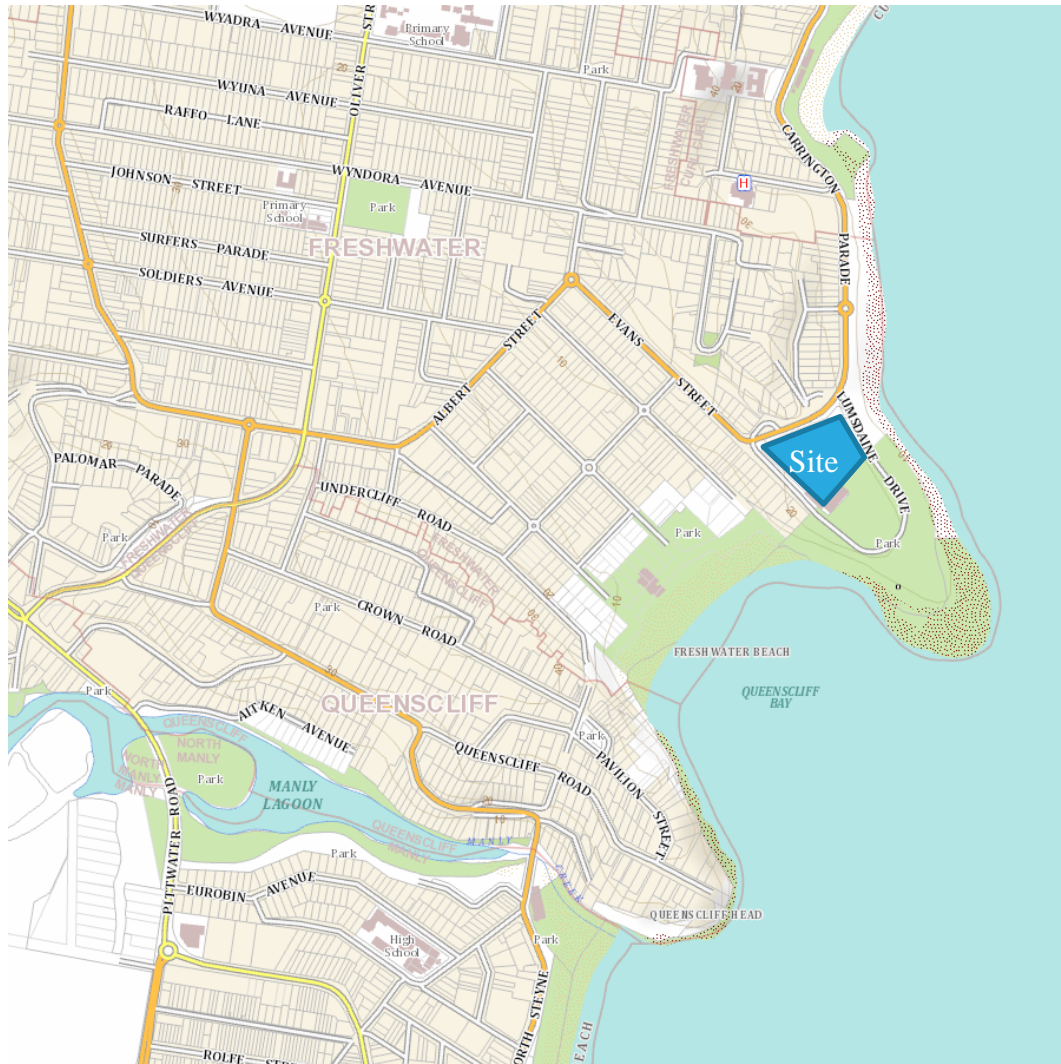


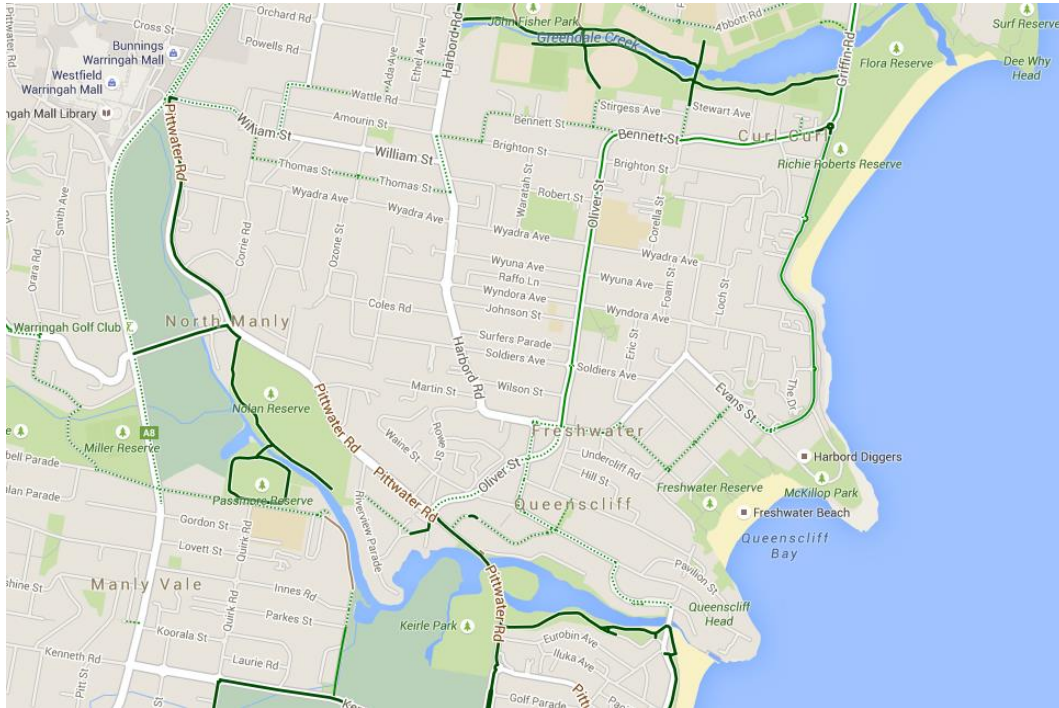
Figure 1: Site location

2.2 Pedestrians and cycling

Footpaths are provided adjacent to most roads in the vicinity although no footway is provided on the southern and eastern sides of the site along Lumsdaine Drive.

There is a pedestrian refuge located on Carrington Parade to the north of the site but there are no other formal pedestrian crossing facilities provided within Evans Street or Lumsdaine Drive.

The Warringah Council's cycling routes in the vicinity of the site are shown below.



2.3 Road network and parking

Evans Street is a two-way local road, which provides access to the Harbord Diggers Club and adjoining residential properties. On street parking is generally not allowed along the frontage of the site.

Evans Street forms a T intersection with Carrington Parade with the traffic on Carrington Parade having priority over Evans Street traffic. Lumsdaine Drive is also a two-way local road, which provides access to the Harbord Diggers Club's at-grade car park, McKillop Park car park and freshwater pool. On street parking is generally allowed.

Lumsdaine Drive forms a T intersection with Carrington Parade with the traffic on Carrington Parade having priority over Lumsdaine Drive traffic.

Carrington Parade is a two-way collector type road, providing a connection between Freshwater and Curl Curl. On street parking is generally not allowed along the frontage of the site.

The site contains a large underground and at-grade car park of total 448 parking spaces.

The McKillop Park car park is a 12P Council parking area with 61 parking spaces.

2.4 Public transport

A bus stop is located on Evans Street, to the east of the site. Sydney Buses operate Route 139 – Freshwater to Manly to these stops. The next nearest route, E65 – Freshwater to Manly & City has stops further up Evans Street and Charles Street located 400m west of the site. These routes are shown below.



The frequencies of these services are also summarised below.

Time period	Weekday		Saturday	
	Route 139	Route E65	Route 139	Route E65
To Manly/City				
AM Frequency	Every 30 minutes	Every 10 minutes	Every 30 minutes	N/A
Midday Frequency	Every 30 minutes	N/A	Every 30 minutes	N/A
PM Frequency	Every 30 minutes	N/A	Every 30 minutes	N/A
From Manly/City				
AM Frequency	Every 30 minutes	N/A	Every 30 minutes	N/A
Midday Frequency	Every 30 minutes	N/A	Every 30 minutes	N/A
PM Frequency	Every 30 minutes	Every 15 minutes	Every 30 minutes	N/A

Harbord Diggers Club also operates courtesy bus services within 5km radius to and from the club to the following suburbs:

Allambie, Allambie Heights, Balgowlah, Beacon Hill, Brookvale, Clontarf, Collaroy, Cromer, Curl Curl, Dee Why, Fairlight, Freshwater, Manly, Manly Vale, Narrabeena, North Balgowlah, North Curl Curl, North Manly, Queenscliff and Seaforth.

The door-to-door service is available on Sunday to Thursday between 5pm and 11pm and Friday and Saturday between 5pm and midnight.

3 Proposed amended development and impacts

3.1 Loading dock swept paths

Swept paths of the loading dock are provided in the appendix. The swept paths indicate that the loading is compliant with AS2890.2-2002 for the Heavy Rigid Vehicle, Medium Rigid Vehicle and suitably sized garbage vehicle.

3.2 Sight lines at driveways

Sight lines at the driveways were assessed in the GTA report. Noting Council's concerns, the egress driveway from the Porte Cochere was located further east.

In addition, a central turning lane has been provided along Evans Street, which is consistent with the plans previously submitted to Council by Arup. This allows vehicles to wait safely in this bay to turn right into the site and residences, and allows vehicles to accelerate into the travel lanes from the various accesses if necessary.

Plans are consistent with approved DA 2014/0875 diagrams for Evans Street.

3.3 Parking provision

Parking provision for the previously approved DA was 705 parking spaces allocated as per condition 73 of the DA allocation (this is an increase of 257 from the existing 448 parking spaces):

- 135 spaces – Senior Housing
- 20 spaces – Senior Housing visitors
- 527 spaces – Registered Club including the associated facilities
- 23 spaces – Child Care Centre

Peak parking occupancy was calculated as 696 in the previously approved DA (when including the allocation for Seniors Living). This meant that the general club parking will reach 90% occupancy based on the GTA parking surveys of the existing site. This parking provision was lower than the combined parking requirement of 755 from the DCP.

It is proposed to provide a total parking provision of 703 spaces, a reduction of 2 spaces compared to the previously approved DA. This is supported by the peak parking occupancy figure noted above by GTA. The general club parking is proposed to be reduced by 6% with the following proposed parking allocations:

- 182 spaces – Senior Housing
- 495 spaces – Club Parking
- 26 spaces – Child Care Centre

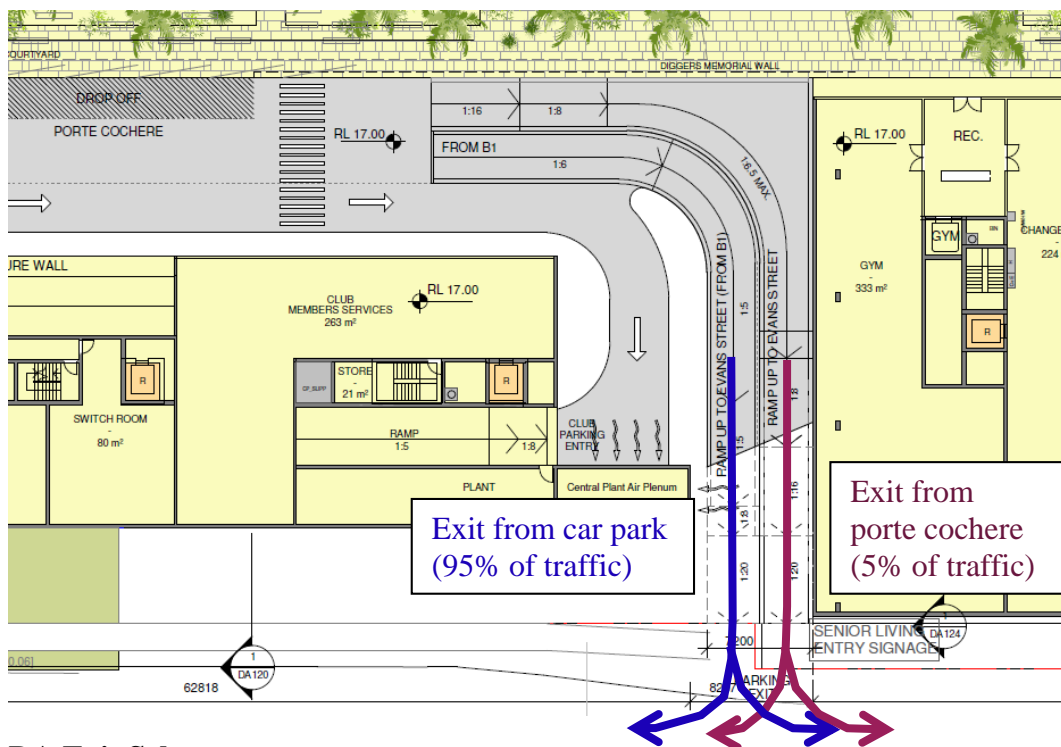
Additionally, the club floor area has been reduced by approximately 16% to substantiate reduction of parking numbers. A total GFA of 22,636m² is proposed for the club compared to the previous 27,033m² in the approved DA (or a total NLA of 49,552m² compared to 62,139m² respectively)

The number of Seniors Living apartments is 96 in the proposed scheme (a reduction of 1 apartment from the approved DA).

3.4 Alteration to driveway egress

The previously approved design considered a separate ramp from B1 and the Porte Cochere. The proposal seeks to alter the driveway egress of the Porte Cochere from two separate lanes to one.

The previous design has been reviewed and is considered unsafe. This arrangement would not have allowed right turning movements onto Evans Street from the Porte Cochere, which would be the predominant desire for vehicles exiting the site, due to the clash with traffic exiting the car park ramp as shown below. It is likely this would have caused conflicts at the interface to Evans Street as a number of vehicles would turn right illegally. In addition, pedestrian safety is further compromised in this arrangement, having to cross two closely spaced intersections with no refuges.



DA Exit Scheme

The proposed consolidation of the egress into one ramp simplifies the exit from the site so that all vehicles may turn right or left from the exit safely. The majority of traffic exits the basement ramp and hence combining the exits has limited impact on the capacity. In addition, pedestrians now only have to cross one lane of traffic at this driveway.

3.5 Egress queuing

3.5.1 Queuing at the Evans Street exit driveway

Traffic generation of the previously approved DA was assumed to be 179 vehicles out of the egress as a worst case during the PM peak hour, when there are currently some 50 vehicles travelling on Evans Street. Given the reduction in club size and parking provision, this figure is likely to reduce, but for this assessment 179 vehicles has been used.

Given that the egress has been reduced to one lane, vehicles will wait in a single queue to exit the site onto Evans Street. The critical movement to assess is the right turn, which is assumed for all egressing vehicles. The egress has also been assessed against the worst case gap acceptance criteria and peak traffic flows along Evans Street to determine the potential internal queuing. It should be noted that no queuing would be likely to occur along Evans Street as a result of the site access driveway.

The queues are summarised for various percentiles below:

50th percentile: 0 vehicles

95th percentile: 1 vehicle

As a worse case assessment for car park exit at the end of a busy attendance period, an analysis of 50% of the car park capacity, 350 emptying out in one hour has been considered. This results in the following queues:

50th percentile: 0 vehicles

95th percentile: 3 vehicles

Both scenarios indicate acceptable queuing outcomes for patrons and residents.

3.5.2 Queuing at the exit boom gates

There are two exit boom gates proposed which provide a total vehicle throughput of 700 vehicles per hour.

For the PM peak exit flow of 179 vehicles, the queues are summarised for various percentiles below:

50th percentile: 0 vehicles

95th percentile: 2 vehicles

As a worse case assessment for car park exit at the end of a busy attendance period, an analysis of 50% of the car park capacity, 350 emptying out in one hour has been considered. This results in the following queues:

50th percentile: 1 vehicle

95th percentile: 4 vehicles

Both scenarios indicate acceptable queuing outcomes for patrons and residents.

3.6 Car park wayfinding

Car parking signage will be determined later in detailed design. Clear signage will be provided as per the AS2890.1-2004 requirements and clearly guide drivers within the Porte Cochere and B1 to the relevant car parking levels within the site.

The detailed signage scope will be captured in a signage package at a later stage and capture the conditions of consent. The conditions of consent state that visitor parking signage is clearly visible from the street (Clause 74) and unit numbering wayfinding for Seniors is provided at the entry (Clause 62).

3.7 Other matters

3.7.1 Pedestrian refuge and drop-off zone – Evans Street

A pedestrian refuge was shown on Evans Street on the approved Site Plan DA002 (Figure 2) between the accesses for the at-grade car park east of the site. It was discussed with Council to relocate this refuge further west to the narrower section of road in accordance with conditions of consent listed in DA 2015/078. However, given that there are private driveways on the south side of Evans Street and inadequate road widths available for the eastbound bus stop to be retained, it is proposed to retain the refuge in the approved DA location.

An indented drop-off zone was also shown on Evans Street on the approved Site Plan DA002 (Figure 2) between the proposed site exit driveway and the eastbound bus stop. It is proposed to retain this drop-off zone on Evans Street west of the current bus stop location for approximately two cars. The design of this drop-off zone will ensure that it is clear of bus movements using the existing stop and any exit movements from the site driveway.

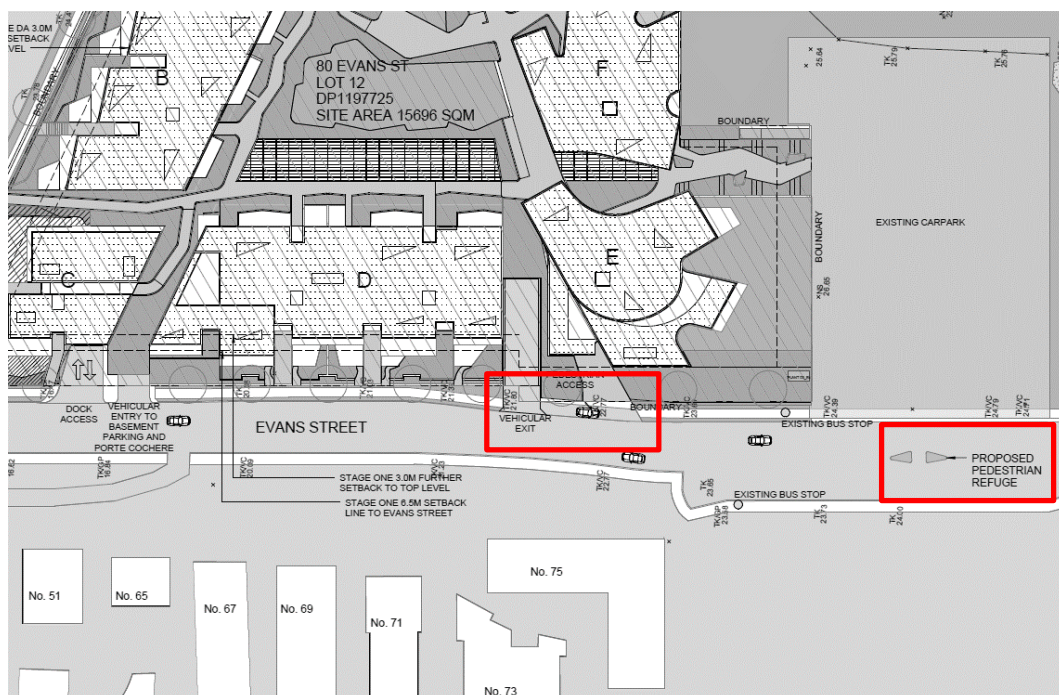


Figure 2: Stamped approved DA plans

3.7.2 Porte Cochere entry

Council had discussed potential issues with the right turn from Evans Street into the Porte Cochere. Swept paths of the largest expected vehicles (the minibus and Armaguard vehicle) assessed this movement and determine that the layout is adequate for this manoeuvre. Swept path diagrams are provided in the appendix.

Additionally, Council advised concerns that the angle of the access into the Porte Cochere has altered from the original DA submission. Our assumption during the S96 meeting was that when the scheme was updated to reflect the road widening this has then changed the appearance of the Porte Cochere entrance.

Swept paths for largest vehicle indicate that the angle is suitable for both left and right turns from Evans Street.

4 Summary and conclusions

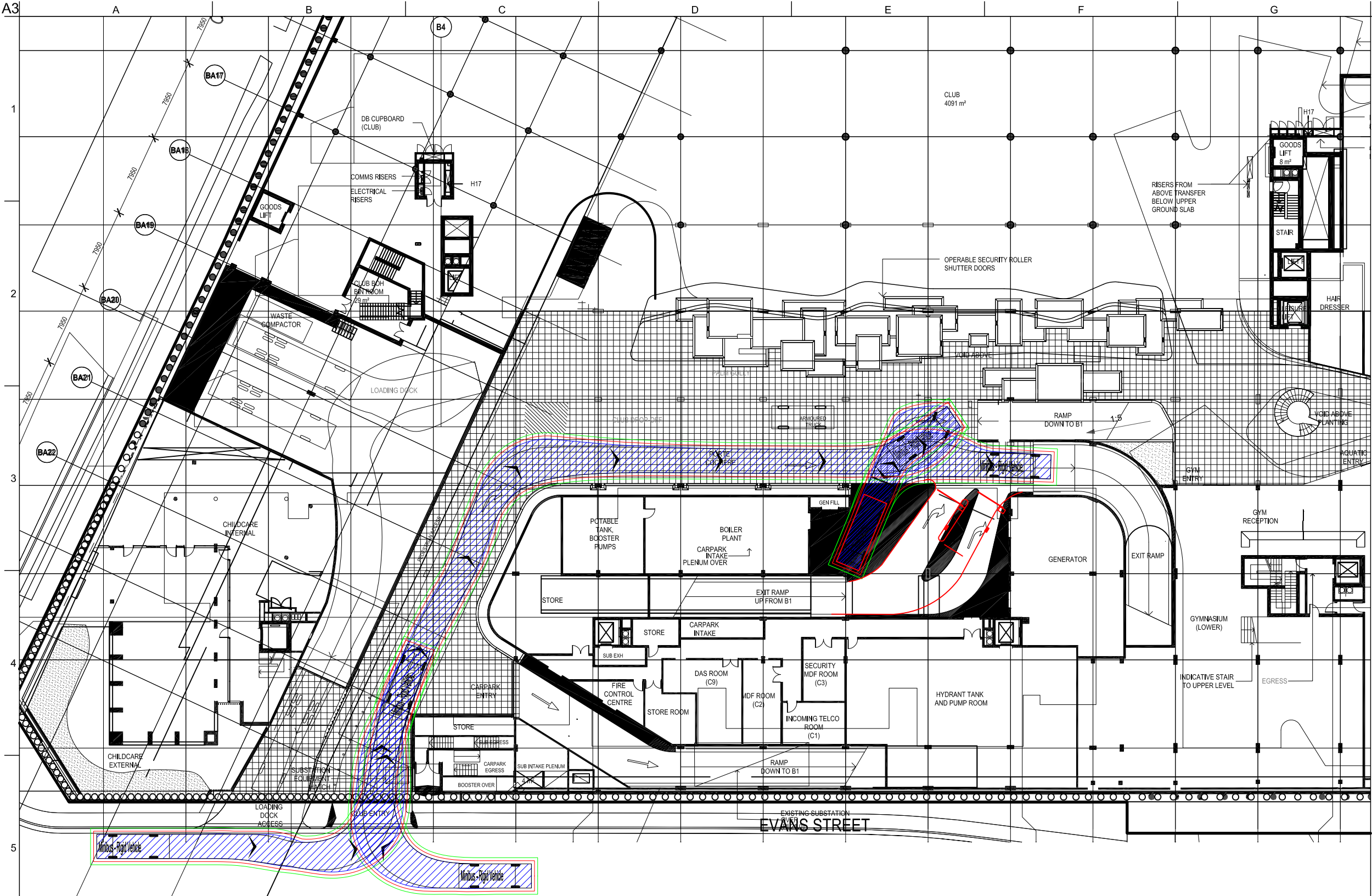
Arup has prepared a Traffic Report for the modification of the proposed redevelopment of Harbord Diggers Club. Council requested that a Traffic Report be provided with the Section 96 application.

This Traffic Report has been prepared to address the proposed modifications to DA2014/0875 and matters raised by Council at the pre-lodgement meeting held 27 May 2015. In summary:

- The amended loading dock is compliant with the requirements in AS2890.2-2002 as demonstrated by swept paths;
- The sight lines for vehicles accessing the site are satisfactory and have not been reduced since the approved DA stage;
- The proposed modification to parking numbers are acceptable and will not have any unreasonable impacts on the surrounding area given there is a decrease of floor area and peak parking occupancy is less than the capacity;
- The proposed consolidation of the exit driveway to a single lane will improve vehicular and pedestrian safety without resulting in any unreasonable queuing impacts on the internal operation of the car park and Porte Cochere;
- Car park signage will be provided in accordance with the conditions of consent at a later stage of design;
- The pedestrian refuge and indented drop-off on Evans Street is proposed in the original location of the approved DA locations due to private laybacks and road width constraints; and
- The Porte Cochere angled entry has been demonstrated by swept paths as suitable for both left and right turns from Evans Street for largest vehicle.

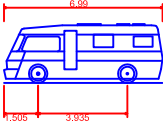
Appendix A

Swept paths



- Legend
- Body Envelope
 - 300mm Envelope
 - 600mm Envelope
 - Wheel Envelope

Design Vehicle(s)



Minibus - Rigid Vehicle
Overall Length 6.990m
Overall Width 2.330m
Overall Body Height 2.600m
Min Body Ground Clearance 0.185m
Track Width 2.330m
Lock to Lock Time 4.00 sec
Curb to Curb Turning Radius 7.500m

F	12/06/15	JRT	AMH	AMH
Updated drawing				
E	07/05/15	JRT	AMH	AMH
Updated drawing				
D	22/04/15	JRT	AMH	AMH
Updated drawing				
C	07/04/15	JRT	AMH	AMH
Updated drawing				
B	27/02/15	JRT	AMH	AMH
Updated drawing				
A	06/11/14	JRT	AMH	AMH
For Information				
Issue	Date	By	Chkd	Appd

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Client

Harbord Diggers

Job Title

80 Evans St Freshwater

Drawing Title

Assumed Minibus Vehicle
Parking option

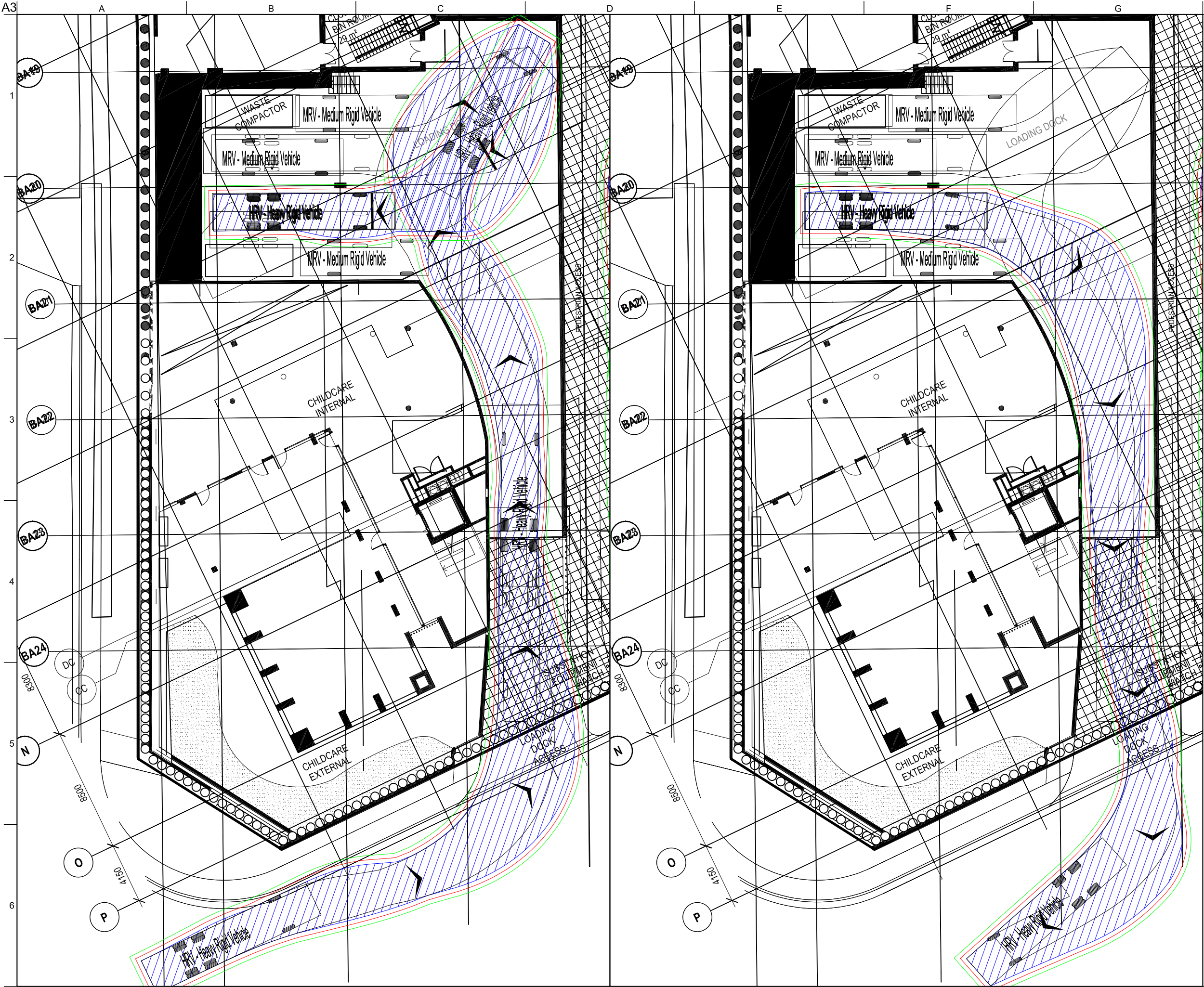
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Discipline Transport

Drawing Status

Draft

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240343-00	SKT102	F

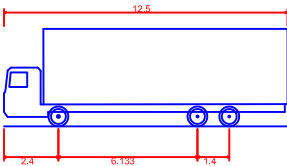


Do not scale

Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



HRV - Heavy Rigid Vehicle
Overall Length 12.500m
Overall Width 2.500m
Overall Body Height 4.300m
Min Body Ground Clearance 0.417m
Track Width 2.500m
Lock to Lock Time 6.00 sec
Curb to Curb Turning Radius 12.500m

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Updated drawing				
D	07/05/15	JRT	AMH	AMH
Updated drawing				
C	13/04/15	JRT	AMH	AMH
Updated swept path				
B	02/03/15	JRT	AMH	AMH
Updated swept path				
A	27/02/15	JRT	AMH	AMH
For Information				
Issue	Date	By	Chkd	Appd

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Client

Harbord Diggers

Job Title

80 Evans St Freshwater

Drawing Title

Heavy rigid vehicle
Entry and Exit

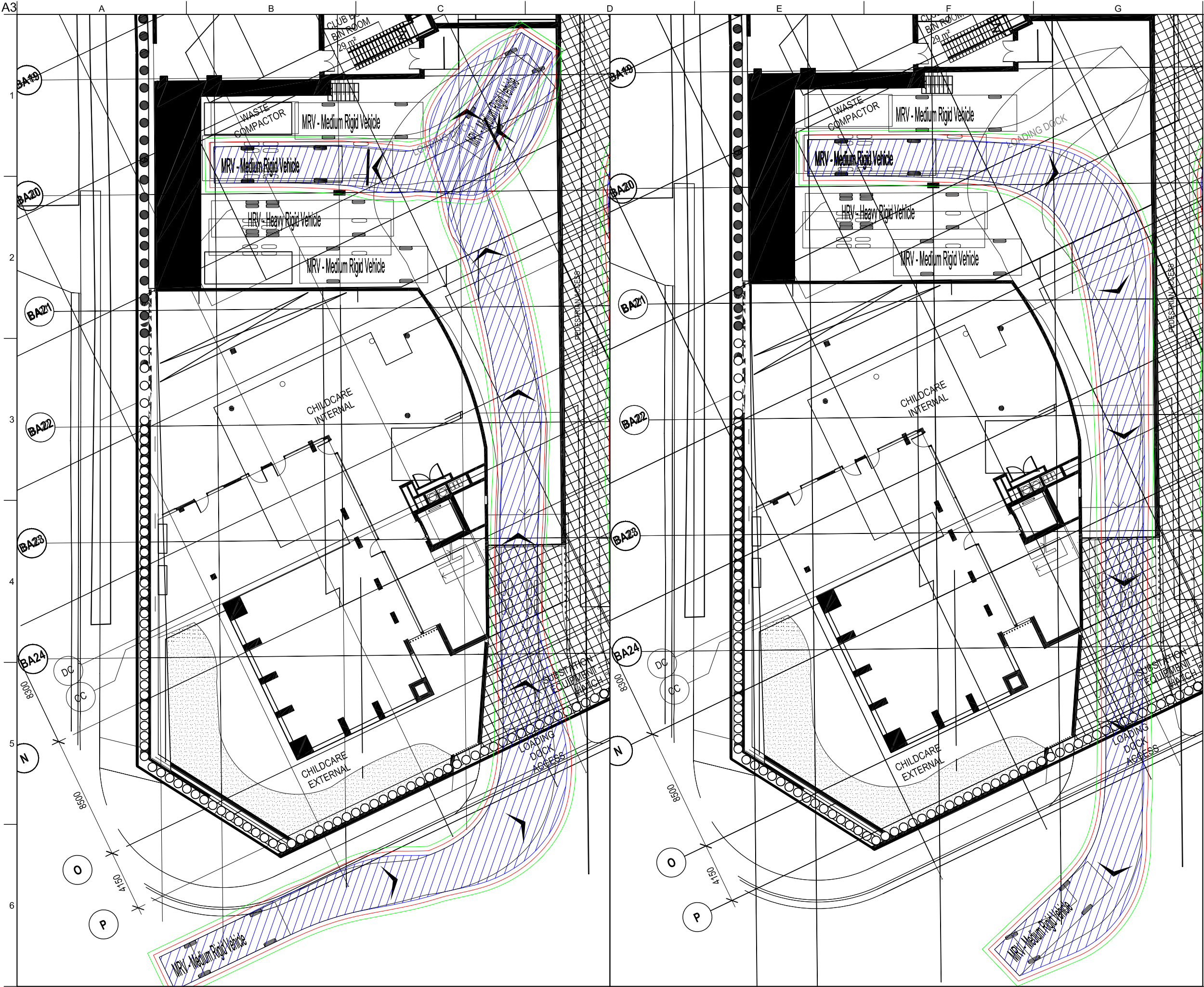
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Discipline
Transport

Drawing Status

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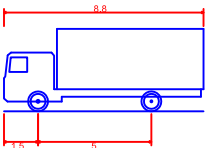
Job No 240343-00	Drawing No SKT107	Issue F
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Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle
Overall Length 8.800m
Overall Width 2.500m
Overall Body Height 3.633m
Min Body Ground Clearance 0.428m
Track Width 2.500m
Lock to Lock Time 4.00 sec
Curb to Curb Turning Radius 10.000m

F	23/06/15	JRT	AMH	AMH
Updated drawing				
E	12/06/15	JRT	AMH	AMH
Updated drawing				
D	07/05/15	JRT	AMH	AMH
Updated drawing				
C	13/04/15	JRT	AMH	AMH
Updated swept paths				
B	02/03/15	JRT	AMH	AMH
Updated swept paths				
A	27/02/15	JRT	AMH	AMH
For Information				
Issue	Date	By	Chkd	Appd

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Client

Harbord Diggers

Job Title

80 Evans St Freshwater

Drawing Title

Medium rigid vehicle
Entry and Exit

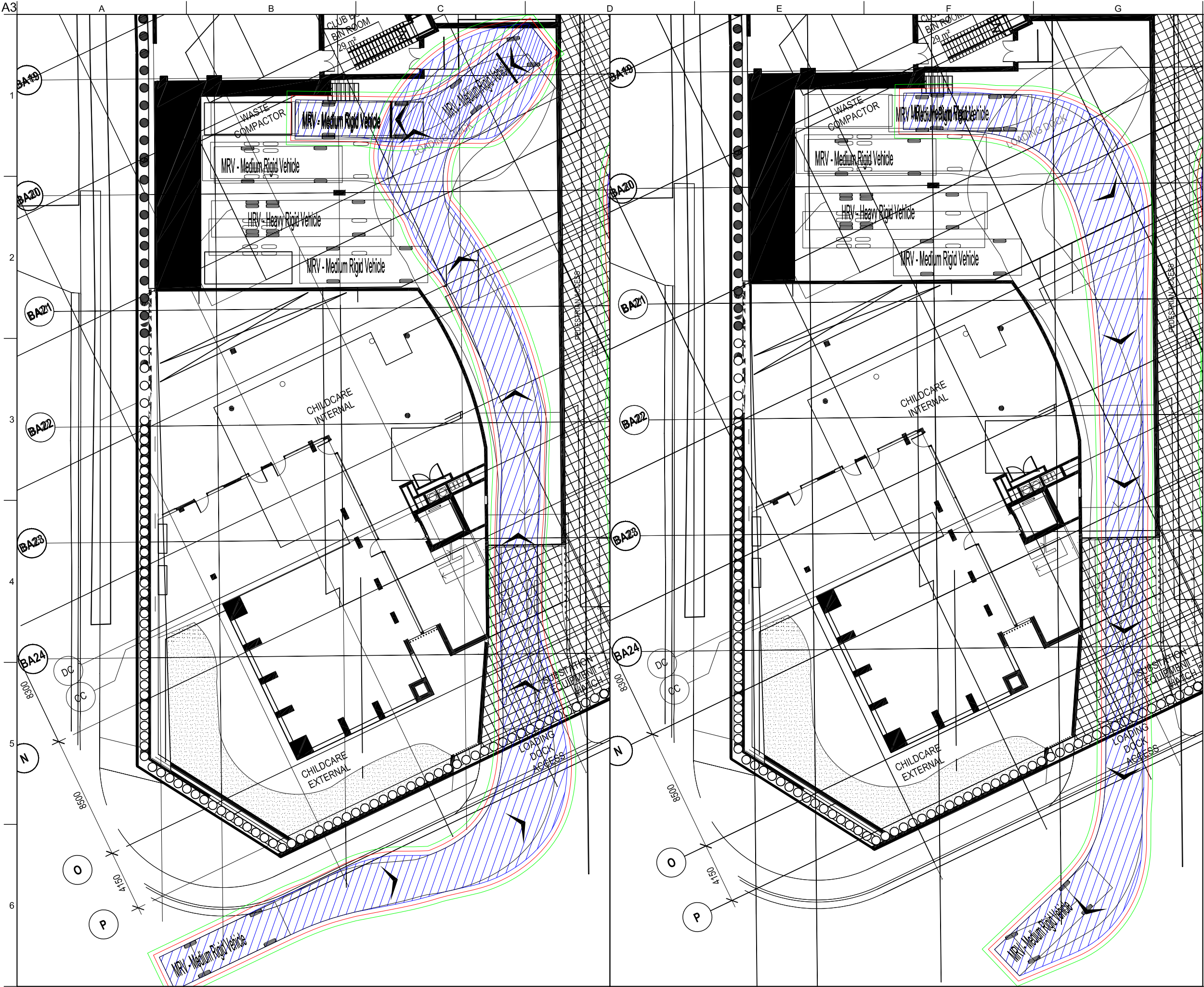
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Discipline
Transport

Drawing Status

Draft

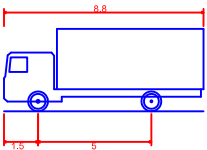
Job No 240343-00	Drawing No SKT108	Issue F
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Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle
Overall Length 8.800m
Overall Width 2.500m
Overall Body Height 3.633m
Min Body Ground Clearance 0.428m
Track Width 2.500m
Lock to Lock Time 4.00 sec
Curb to Curb Turning Radius 10.000m

A	23/06/15	JRT	AMH	AMH
For Information				
Issue	Date	By	Chkd	Appd

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Client

Harbord Diggers

Job Title

80 Evans St Freshwater

Drawing Title

Medium rigid vehicle
Entry and Exit
Option 1 Compactor

Scale at A3 1:500

Discipline Transport

Drawing Status

Draft

Job No	Drawing No	Issue
240343-00	SKT113	A