FABCOT PTY LTD

REPORT ON THE TRAFFIC ASPECTS OF PROPOSED MODIFICATIONS TO THE APPROVED SHOPPING CENTRE, VINCENTIA – STAGE 1

NOVEMBER 2012

COLSTON BUDD HUNT & KAFES PTY LTD
ACN 002 334 296
Level 18 Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067

Telephone: (02) 9411 2411
Facsimile: (02) 9411 2422
Email: cbhk@cbhk.com.au

REF: 8769/1

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1. INTRODUCTION

1.1. Colston Budd Hunt & Kafes Pty Ltd has been retained by Fabcot Pty Ltd to prepare a report on traffic aspects of modifications to the approved shopping centre at Vincentia. The approved shopping centre forms part of the approved Vincentia District Centre.

1.2. The approved district centre comprised some 37,000m^2 GFA of retail development (three supermarkets, DDS, mini majors and specialty shops), commercial space and a library. Some 1,355 parking spaces are approved with access from Moona Creek Road and The Wool Road. As part of the approval a number of improvements to the surrounding road works are required. The road works include:

- construct a new traffic signal controlled access to the site on The Wool Road;
- relocate the leisure centre access on The Wool Road to opposite the school access and provide traffic signals;
- contribute to the upgrade of The Wool Road (west of Naval College Road);
- upgrade The Wool Road from two to four lanes between Naval College Road and the traffic signal controlled access to the leisure centre/school;
- upgrade Naval College Road from two lanes to four lanes between Moona Creek Road and The Wool Road;
- 50% contribution to the construction of pedestrian/cycleway underpass on Naval College Road, between Moona Creek Road and The Wool Road;
- Construct Moona Creek Road with access points to shopping centre and adjacent residential development (to be constructed as part of the approved residential development north of the site); and
- construct a roundabout at the intersection of Naval College Road and Moona Creek Road (to be constructed as part of the approved residential development north of the site).

1.3. It is proposed to construct the first stage of the development. The first stage will include a number of the previously approved parts of the district centre, with amended layout and access arrangements. The proposed first stage includes the following:

- some 9,255m^2 GLA of retail development (two supermarkets, mini major and specialty shops);
- provision for a petrol filling station, located on a pad site in the north western corner of the site;
- provision for a fast food restaurant, on a pad site on the western part of the site (south of the petrol filling station);
- some 550 parking spaces in at-grade parking; and
- access from Moona Creek Road (two locations).

1.4. The petrol filling station and fast food restaurant will be subject to separate development applications. Nonetheless the traffic effects of both developments have been considered in the Stage 1 traffic assessment.

1.5. As noted in paragraph 1.2, the approved shopping centre required extensive improvements to the surrounding road network (for a much larger development). Our assessment of Stage 1 reviews the requirement for these works.

1.6. This report assesses the implications of the proposed development through the following chapters:-

- Chapter 2 - Describing the existing conditions; and
- Chapter 3 - Assessing the implications of the proposed

development.

2. EXISTING CONDITIONS

Site Location

2.1. The site is located in Vincentia, on the eastern side of Naval College Road, between the future Moona Creek Road and The Wool Road as shown in Figure 1. The site is currently vacant. Located north of the site is existing residential development (some 200 dwellings) with access to Naval College Road via Bayswood Avenue. Future residential development (some 250 dwellings) is approved for construction between the subject site and the existing residential development. Vincentia Leisure Centre is located east of the site.

Road Network

2.2. The road network in the vicinity of the site comprises Naval College Road, The Wool Road and the future Moona Creek Road. Naval College Road is located along the western boundary of the site. It provides the main access to Vincentia from the Princes Highway. In the vicinity of the site it provides one traffic lane in each direction. North of the site, a one lane roundabout has been constructed at the intersection with Bayswood Avenue (to provide access to the new residential development). The intersection of Naval College Road and The Wool Road is controlled by a single lane roundabout.

2.3. The Wool Road is located along the southern boundary of the site. It travels in an east west direction connecting Naval College Road with Vincentia. West of Naval College Road, The Wool Road provides an alternative connection to the Princes Highway. In the vicinity of the site The Wool Road provides one traffic lane in each direction.

2.4. Moona Creek Road is a new road that will be constructed along the northern boundary of the site. Once constructed it will provide one traffic lane in each direction with kerb side parking. A roundabout will be constructed at the intersection of Moona Creek Road and Naval College Road. Along Moona Creek Road roundabouts will be constructed at Abour Way (midway along the frontage of the site) and at the eastern end of the site.

Traffic Flows

2.5. In order to establish existing traffic flows in the area, traffic counts were undertaken during the Thursday afternoon and Saturday midday peak periods in early September 2012 at the following intersections:

- Naval College Road/Bayswood Avenue (roundabout);
- Naval College Road/The Wool Road (roundabout); and
- The Wool Road/Leisure Centre Access (unsignalised).

2.6. The results are summarised in Table 2.1 and displayed in Figures 2 and 3.

Table 2.1: Existing Two Way (sum of both directions) Traffic Flows

Location	Thursday Afternoon	Saturday Midday
Naval College Road		
- north of Bayswood Avenue	340	370
- north of The Wool Road	390	390
- south of The Wool Road	340	300
The Wool Road		
- east of Leisure Centre Access	750	925
- east of Naval College Road	770	925
- west Naval College Road	810	815
Bayswood Avenue		
- east of Naval College Road	100	80
Leisure Centre Access		
- north of The Wool Road	80	50

2.7. Examination of Table 2.1 reveals that:

- Naval College Road carried some 300 to 390 vehicles per hour (two way) during the Thursday afternoon and Saturday midday peak periods;

- The Wool Road carried some 810 to 925 vehicles per hour (two way) during the Thursday afternoon and Saturday midday peak periods;

- Bayswood Avenue carried some 80 to 100 vehicles per hour (two way) during the Thursday afternoon and Saturday midday peak periods; and

- The Leisure Centre access carried some 50 to 80 vehicles per hour (two way) during the Thursday afternoon and Saturday midday peak periods.

2.8. Previous studies[1] undertaken as part of the approved district centre estimated a background traffic growth through the intersection of Naval College Road and The Wool Road of some 2% per year. With the area a popular recreational destination on weekends and during holidays, an assessment of traffic conditions in the summer holidays (high season) was also undertaken as part of the approved district centre. The traffic flows in that study were increased by some 20% to represent seasonal traffic flows.

2.9. A comparison between the 2003 and 2012 traffic counts undertaken at the intersection of Naval College Road and The Wool Road (also undertaken in September) found the increase in traffic flows through the intersection was some 5% during the Thursday afternoon peak hour. During the Saturday midday peak hour the increase between 2003 and 2012 was some 20%.

2.10. The lower increase in traffic of some 5% during the Thursday afternoon peak hour (over nine years) would suggest that traffic growth on the surrounding road

[1] *"Modified Vincentia District Centre Project Approval Application"*, prepared for Fabcot Pty Ltd by Halcrow, 27 April 2010

network has increased at less than two per cent per year. With the area a popular recreational destination on weekends, the higher 20% increase between 2003 and 2012 Saturday flows could be due to the 2012 Saturday counts being undertaken on a weekend with good weather conditions. Hence the Thursday flows would be expected to give a more accurate representation of the increase in traffic flow between 2003 and 2012 than the Saturday flows.

2.11. As background traffic growth through the intersection of Naval College Road and The Wool Road over the last nine years has been around 0.5% year, it would be inappropriate to continue to use the 2% per year growth rate. In assessing future 2022 traffic conditions a growth rate of 1% per year has been adopted. When shopping centre traffic is combined with background traffic growth of 1% per year, traffic flows through the intersection of Naval College Road and The Wool Road would increase by over 20% by 2022 (representing an increase of over 2% per year between 2012 and 2022).

Intersection Operations

2.12. The capacity of the road network is generally determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections have been analysed using the SIDRA program. SIDRA is designed to analyse traffic signal controlled intersections, roundabouts and priority intersections.

2.13. The program produces a number of measures of intersection operations. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.

2.14. 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

2.15. 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.

2.16. The SIDRA analysis found that:

- the roundabout controlled intersection of Bayswood Avenue and Naval College Road operated with average delays per vehicle of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation;

- the roundabout controlled intersection of The Wool Road and Naval College Road operated with average delays per vehicle of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation; and

- the priority controlled intersection of the leisure centre access with The Wool Road operated with average delays per vehicle of less than 20 seconds (for the movement with the highest delay, right turn out of the leisure centre access) for both peak periods. This represents level of service B, an acceptable level of intersection operation.

2.17. The operation of the intersections was reanalysed using SIDRA for 2022 seasonal traffic conditions (existing traffic flows plus 30%). The analysis found that:

- the roundabout controlled intersection of the Bayswood Avenue and Naval College Road would operate with average delays per vehicle of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation;

- the roundabout controlled intersection of The Wool Road and Naval College Road would operate with average delays per vehicle of less than 20 seconds for both peak periods; This represents level of service B, an acceptable level of intersection operation with spare capacity; and

- the priority controlled intersection of the leisure centre access with The Wool Road would operate with average delays per vehicle of less than 25 seconds (for the movement with the highest delay, right turn out of the leisure centre access) for both peak periods. This represents level of service B, an acceptable level of intersection operation.

Public Transport

2.18. The site currently has limited access to public transport with Nowra Coaches operating a limited service between Bomaderry/Nowra to the Bay & Basin (which includes Vincentia). The service operates along The Wool Road past the site with four to six services on weekdays (between 6.00am and 5.50pm) and one service on Saturday and Sunday.

3. IMPLICATIONS OF PROPOSED STAGE 1 DEVELOPMENT

The Proposed Development

3.1. It is proposed to modify the existing approved shopping centre to provide a new shopping centre in two stages. Stage 1 of the shopping centre will have some 9,255m^2 GLA comprising two supermarkets (some 5,747m^2), mini major (some 1,122m^2) and specialty shops of some 2,386m^2. Parking for some 550 cars will be provided within at-grade car parks. Access is proposed from Moona Creek Road at two locations with the western access providing access to parking and the eastern access providing access to the loading dock. Two pad sites are located on the north-western part of the site. A petrol filling station is proposed on the northern pad site and a fast food restaurant on the southern pad site. While the petrol filling station and fast food restaurant would be subject to separate applications, the traffic generated by these two pad sites has been included in the assessment of the proposed development.

3.2. The future Stage 2 development would increase the size of the shopping centre to some 18,227m^2 GLA, (with the addition of a DDS and specialty shops). In addition Stage 2 would include a third pad site, bulky goods (some 6,900m^2) and a library. Parking provision would increase to some 1,200 spaces with an additional access provided to The Wool Road (left in/left out).

3.3. The traffic and parking effects of the first stage of the shopping centre are set out through the following sections:

- public transport;
- parking provision;
- access;
- internal layout and circulation;

- servicing;
- traffic effects; and
- summary.

Public Transport

3.4. As noted in Chapter 2, the site currently has limited access to public transport. However, as additional development occurs in the area (increased residential densities and the proposed shopping centre), there is the potential for improved bus services (more frequent services) to meet increased demand.

3.5. As part of the construction of Moona Creek Road, bus stops will be provided along the frontage of the site with pedestrian paths connecting the bus stops with the shopping centre.

3.6. The proposed development will also provide pedestrian/cycle connections to the new network of footpaths/cycleways to be provided along Moona Creek Road, The Wool Road and Naval College Road.

3.7. On site bicycle parking will be provided for staff and visitors in accordance with Council requirements. End of trip facilities (shower and change room) will be provided for staff.

Parking Provision

3.8. Shoalhaven City Council DCP 18 suggests the following minimum car parking provision for shopping centres:

- Supermarkets – 1 space per 19m^2 GLA;
- Other retail – 1 space per 24m^2 GLA; and
- Storage areas/back of house - 1 space per 50m^2 GLA.

3.9. Using these rates, Stage 1 of the proposed shopping centre would require some 450 parking spaces. The proposed provision of some 550 spaces satisfies this requirement. A minimum of 1% (or six spaces) will be designated as disabled spaces.

Access

3.10. Access to Stage 1 will be provided from Moona Creek Road at two locations. The western access will provide access to customer parking (provided as at-grade car parking south and west of the shopping centre) via a service road. The connection of the service road to Moona Creek Road is in the same location as the approved shopping centre. As per the approved shopping centre, the intersection of the western access and Moona Creek Road will be a priority controlled T-intersection (with Moona Creek Road the major road) and include the provision of a separate right turn bay on Moona Creek Road and no right turn out of the shopping centre.

3.11. The eastern access for Stage 1 will be located at Arbour Way and provide access to the loading dock. As per the approved shopping centre, the intersection of Arbour Way and Moona Creek Road will be controlled by a single lane roundabout.

3.12. At the eastern end of the site a roundabout will be constructed on Moona Creek Road. This will provide for future access to Stage 2. This eastern roundabout has been designed to allow for 19 metre semi-trailers to undertake a u-turn on Moona Creek Road.

Internal Layout and Circulation

3.13. The parking layout is set out in a simple and clear manner. Parking spaces, aisles, ramps etc. will be designed in accordance with appropriate standards. Customer parking bays will generally be a minimum of 2.6 metres wide by 5.4 metres long with 6.6 metre wide aisles. These dimensions comply with the requirements of AS2890.1-2004. Overall, subject to satisfactory detailed design, it is considered that the layout of parking areas is appropriate.

Servicing

3.14. A service area is provided on the north eastern corner of Stage 1 with access from Arbour Way. Access to/from the service area by all trucks would be in a forward direction. 19 metre articulated trucks will enter Arbour Way from the east after undertaking a u-turn at the roundabout located on Moona Creek Road at the eastern end of the site. The service area provides loading docks for the two supermarkets (a loading dock and waste compactor each) and the specialty docks (three docks plus a waste compactor). Thus a total of eight loading docks are provided (including waste collection). The two supermarket docks have been designed to accommodate 19 metre semi-trailers, while the specialty docks have been designed to accommodate 12.5 metre rigid trucks. All docks operate independently with a turning area provided. Truck turning paths are attached to this report.

3.15. The service area will be designed to comply with the requirements of AS2890.2-2002. Overall the proposed service arrangements are considered appropriate.

Traffic Effects

3.16. Traffic generated by Stage 1 of the proposed shopping centre will have its greatest effects during the Thursday afternoon and Saturday midday peak periods. Estimates of traffic generation of the proposed retail component of the development have been made using RMS Guidelines. These are set out below:

Thursday Afternoon

- supermarket – 15.5 trips per 100m^2;
- specialty shops – 4.6 trips per 100m^2; and
- DDS/mini major – 5.1 trips per 100m^2.

Saturday Midday

- supermarket – 14.7 trips per 100m^2;
- specialty shops – 10.7 trips per 100m^2; and
- DDS/mini major – 1.3 trips per 100m^2.

3.17. Application of these rates results in a traffic generation of some 1,100 vehicles per hour (two way) in the Thursday afternoon and Saturday midday peak hours.

3.18. The petrol filling station has been assumed to generate some 100 vehicles per hour (two way) at peak times of which 40% would be linked trips with the shopping centre (that is not additional traffic).

3.19. For the purposes of assessing the traffic effects, a McDonald's has been assumed as the fast food outlet on the pad site located south of the petrol filling station, as this is the highest traffic generating fast food use. McDonald's has a peak traffic generation of some 230 vehicles per hour (two way) of which 20% would be linked trips with the shopping centre (that is not additional traffic).

3.20. In addition to linked trips a proportion of traffic generation would be passing trade that is, traffic that would have travelled past the site. RMS Guidelines suggest that this could be between 25% for the shopping centre and 35% for a McDonald's. For petrol stations passing trade is typically 50%. For the purposes of assessing the traffic effects of Stage 1 (including the petrol filling station and the fast food restaurant), passing trade has been assumed to be 20% (as some discount has already been applied for linked trips).

3.21. 20% of the traffic generated by the proposed shopping centre has been assumed to travel between the existing/future residential area to the north and the shopping centre via Moona Creek Road. This includes linked trips/passing trade as people will stop at the shopping centre on their way to/from work or pass the centre at other times.

3.22. The balance of additional traffic has been assigned to the surrounding road network based on the distribution used in previous studies:

- 25% east along The Wool Road;
- 10% south along Naval College Road;
- 50% west along The Wool Road; and
- 15% north along Naval College Road.

3.23. The results are summarised in Table 3.1 and Figures 2 and 3.

3.24. Examination of Table 3.1 shows that:

- traffic flows on Naval College Road would increase by some 70 to 105 vehicles per hour (two way) during the Thursday afternoon and Saturday midday peak periods, north of Moona Creek Road and south of The Wool Road. In the section between Moona Creek Road and The Wool Road the increase would be some 770 vehicles per hour (two way);

- traffic flows on The Wool Road (east of Naval College Road) would increase by some 225 vehicles per hour (two way) during the Thursday afternoon and Saturday midday peak periods. West of Naval College Road, traffic flows would increase by some 440 vehicles per hour (two way); and

- traffic flows on Moona Creek Road would be some 260 vehicles per hour (two way) during the Thursday afternoon and Saturday midday peak periods, east of the car park access. In the short section of Moona Creek Road between the car park access and Naval College Road, the traffic flows would be some 1,040 vehicles per hour (two way).

Table 3.1: Existing + Stage 1 Development Two Way (sum of both directions) Traffic Flows

Location	**Thursday Afternoon**		**Saturday Midday**	
	Existing	+ Stage 1	Existing	+ Stage 1
Naval College Road				
- north of Bayswood Avenue	340	+70	370	+70
- north of Moona Creek Road	340	+70	370	+70
- north of The Wool Road	390	+770	390	+770
- south of The Wool Road	340	+105	300	+105
The Wool Road				
- east of Leisure Centre Access	750	+225	925	+225
- east of Naval College Road	770	+225	925	+225
- west Naval College Road	810	+440	815	+440
Bayswood Avenue				
- east of Naval College Road	100	+0	80	+0
Leisure Centre Access				
- north of The Wool Road	80	+0	50	+0
Moona Creek Road				
- east of car park access	0*	+260*	0	+260*
- east of Naval College Road	0	+1040*	0	+1040*

*Includes traffic from full development of residential development to the north of the site

3.25. An assessment of the operation of the intersections along Naval College Road, The Wool Road and Moona Creek Road has been undertaken using SIDRA with

the Stage 1 traffic and traffic from the future residential added to existing traffic flows. The SIDRA analysis found that:

- the roundabout controlled intersection of the Bayswood Avenue and Naval College Road would continue to operate with average delays per vehicle of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation;

- the roundabout controlled intersection of The Wool Road and Naval College Road would operate with average delays per vehicle of less than 20 seconds for both peak periods. This represents level of service B, an acceptable level of intersection operation with spare capacity;

- the priority controlled intersection of the leisure centre access with The Wool Road would operate with average delays per vehicle of less than 25 seconds (for the movement with the highest delay, right turn out of the leisure centre access) for both peak periods. This represents level of service B, an acceptable level of intersection operation;

- the roundabout controlled intersection of Naval College Road and Moona Creek Road would operate with average delays per vehicle of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation with spare capacity. The analysis is based on a single lane roundabout at this intersection; and

- the priority controlled intersection of Moona Creek Road with the western car park access would operate with average delays per vehicle of less than 15 seconds (for the movement with the highest delay, left turn out of the shopping centre) for both peak periods. This represents level of service A/B, a good level of intersection operation.

3.26. The operation of the intersections was reanalysed using SIDRA for 2022 seasonal traffic conditions (existing traffic flows plus 30%) with Stage 1 traffic in place. The analysis found that:

- the roundabout controlled intersection of the Bayswood Avenue and Naval College Road would operate with average delays per vehicle of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation;

- the roundabout controlled intersection of The Wool Road and Naval College Road would operate with average delays per vehicle of less than 30 seconds for both peak periods. This represents level of service B/C, a satisfactory level of intersection operation;

- the priority controlled intersection of the leisure centre access with The Wool Road would operate with average delays per vehicle of less than 30 seconds (for the movement with the highest delay, right turn out of the leisure centre access) for both peak periods. This represents level of service B/C, a satisfactory level of intersection operation;

- the roundabout controlled intersection of Naval College Road and Moona Creek Road would operate with average delays per vehicle of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation with spare capacity. The analysis is based on a single lane roundabout at this intersection; and

- the priority controlled intersection of the Moona Creek Road with the western car park access would operate with average delays per vehicle of less than 15 seconds (for the movement with the highest delay, left turn out of the shopping centre) for both peak periods. This represents level of service A/B, a good level of intersection operation.

3.27. In summary, with Stage 1 traffic in place and Moona Creek Road constructed, the adjoining road network and the site accesses would operate satisfactorily or better in the Thursday afternoon and Saturday midday peak periods. The upgrades (apart from the construction of Moona Creek Road) to the surrounding road network identified in previous studies are not required to accommodate traffic from Stage 1 of the proposed first stage of the modified shopping centre.

Summary

3.28. In summary, the main points relating to the proposed first stage of the modified shopping centre are:

(i) the proposed development is for Stage 1 of the approved shopping centre as part of the Vincentia district centre;

(ii) as additional development occurs in the area there is the potential for improved bus services (more frequent services) to meet increased demand;

(iii) bus stops will be provided along the Moona Creek Road frontage of the site with pedestrian paths connecting the bus stops with the shopping centre;

(iv) the parking provision for the Stage 1 of the shopping centre is considered appropriate and complies with the requirements of DCP 18;

(v) access arrangements and parking layout, subject to detailed design, are considered satisfactory;

(vi) servicing arrangements, subject to detailed design, are considered satisfactory;

(vii) with Stage 1 traffic in place the adjoining road network and the site accesses would operate satisfactorily or better in the Thursday afternoon and Saturday midday peak period; and

(viii) the upgrades (apart from the construction of Moona Creek Road) to surrounding road network identified in previous studies are not required to accommodate traffic from Stage 1 of the shopping centre.

Location Plan

Colston Budd Hunt & Kafes Pty Ltd

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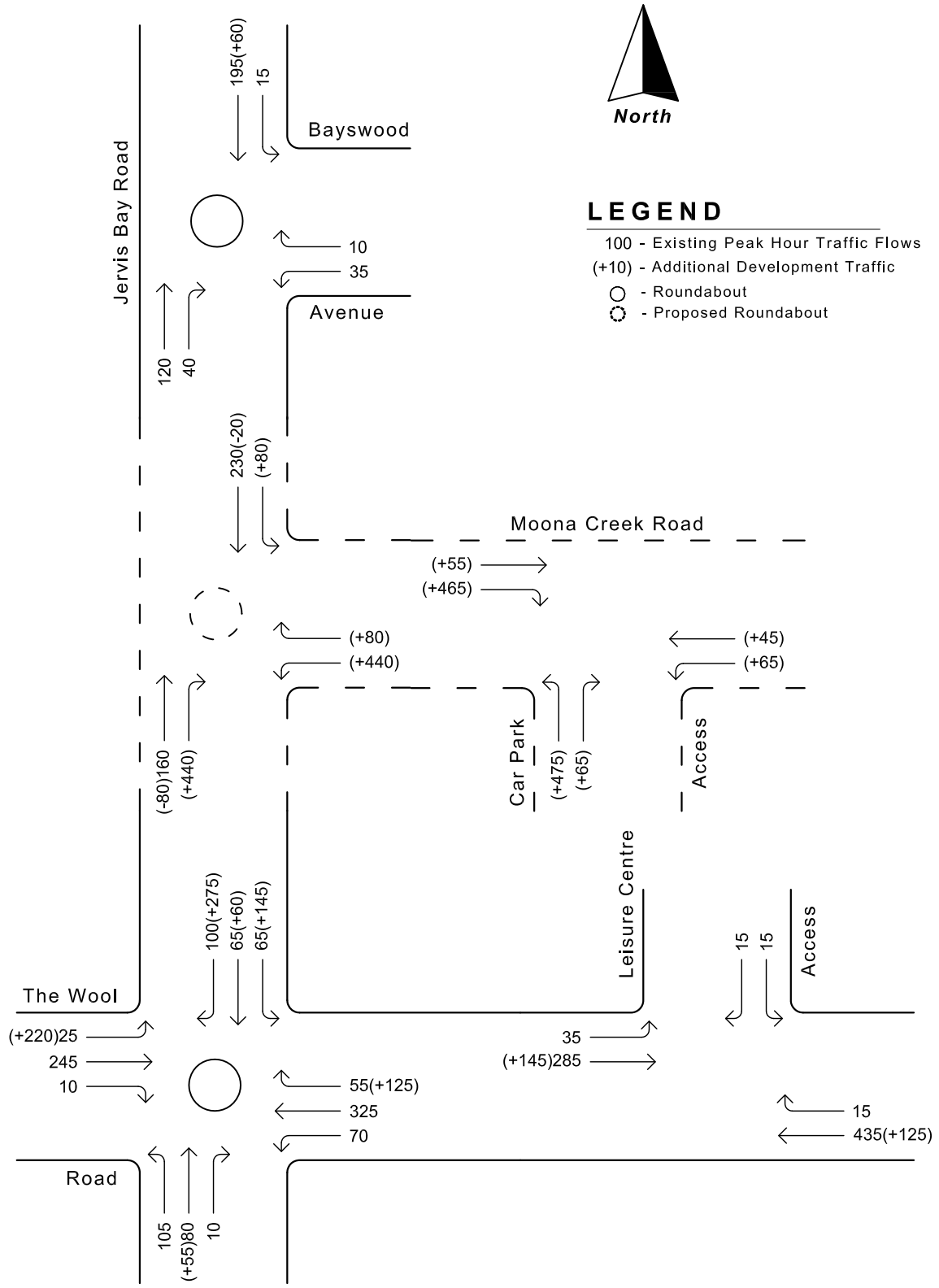
Figure 1



Existing Thursday afternoon peak hour traffic flows plus Stage 1 development traffic

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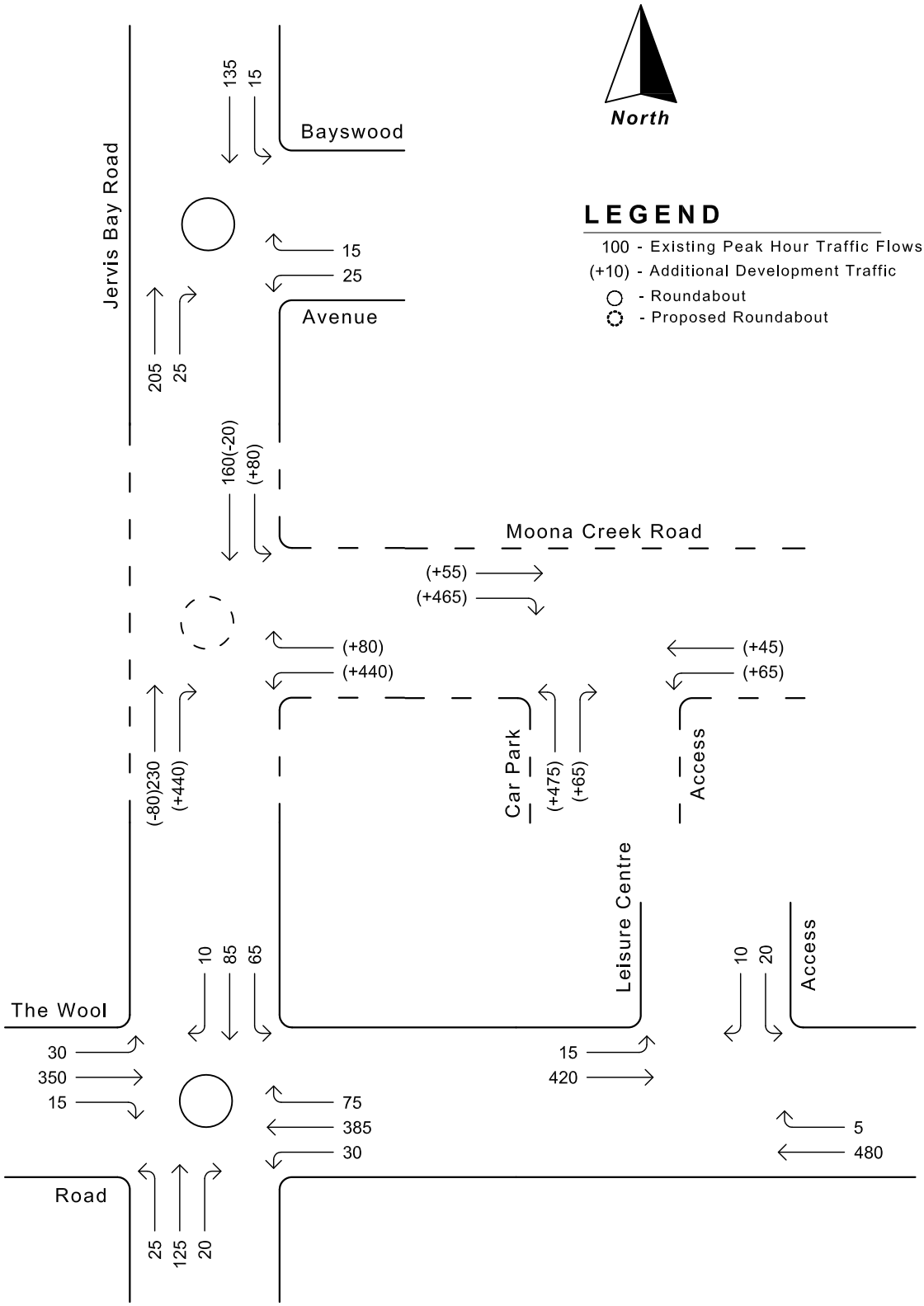
Figure 2



Existing Saturday midday peak hour traffic flows plus Stage 1 development traffic

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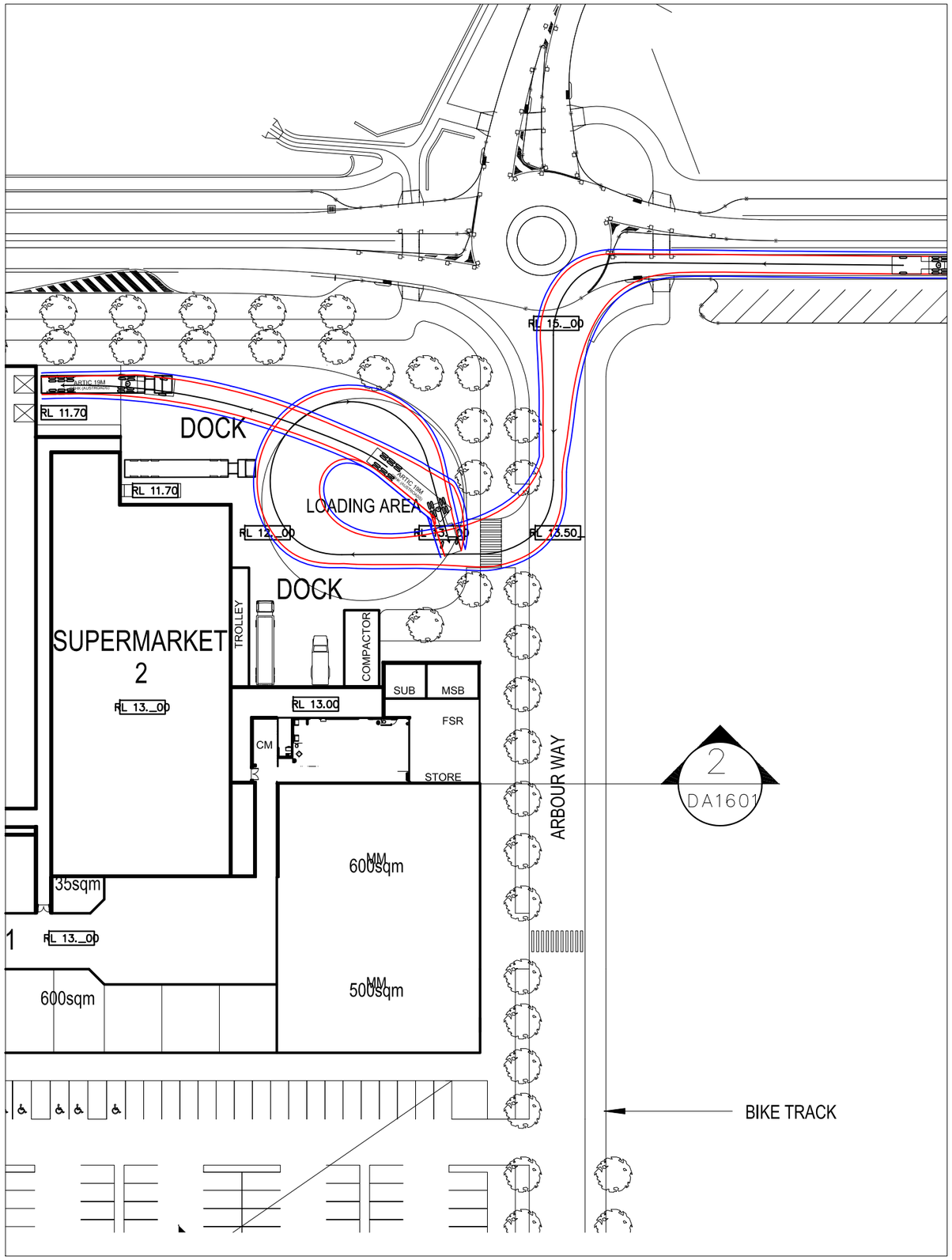
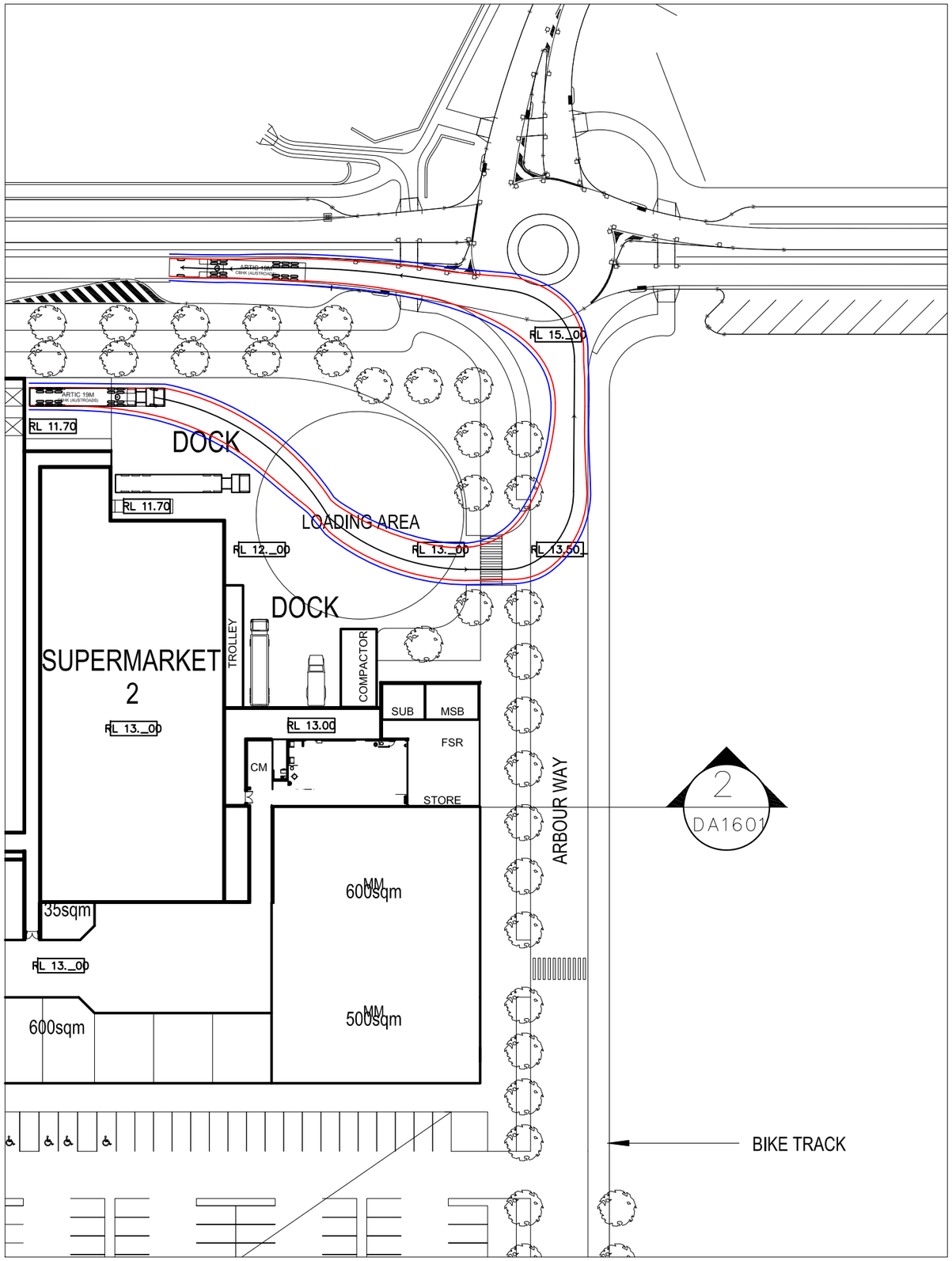
Figure 3

ATTACHMENTS

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

19m ARTICULATED VEHICLE SWEPT PATHS

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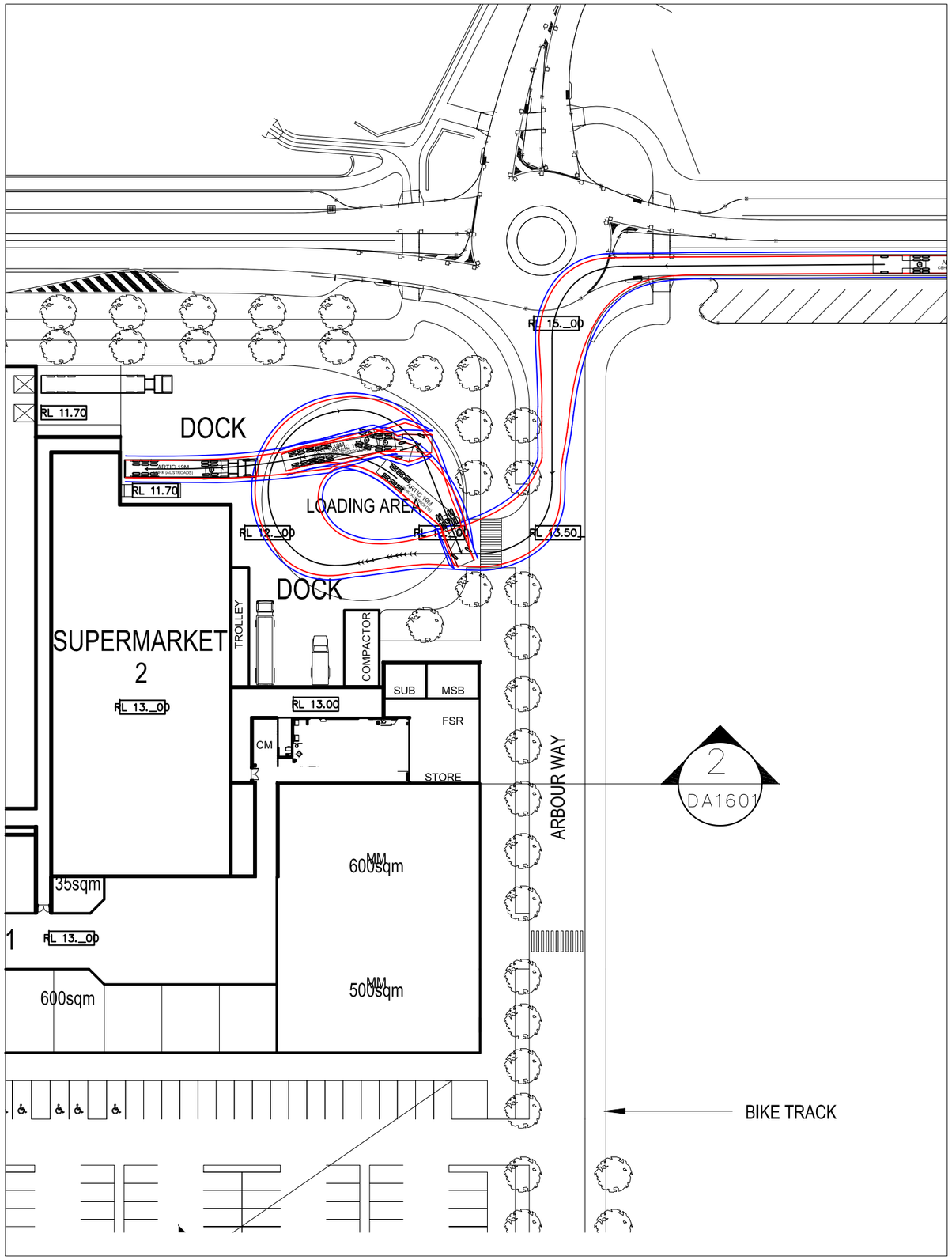
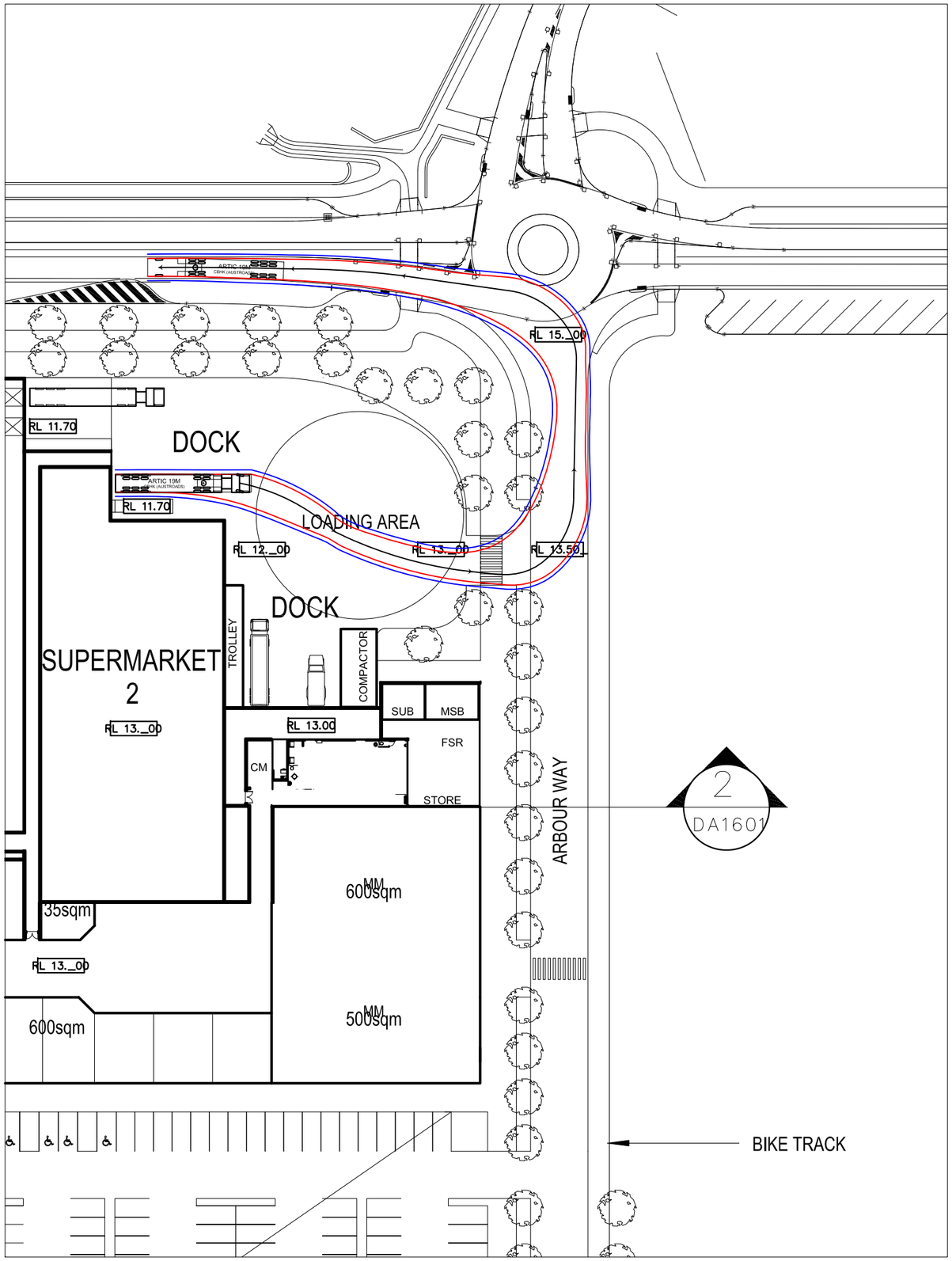
1





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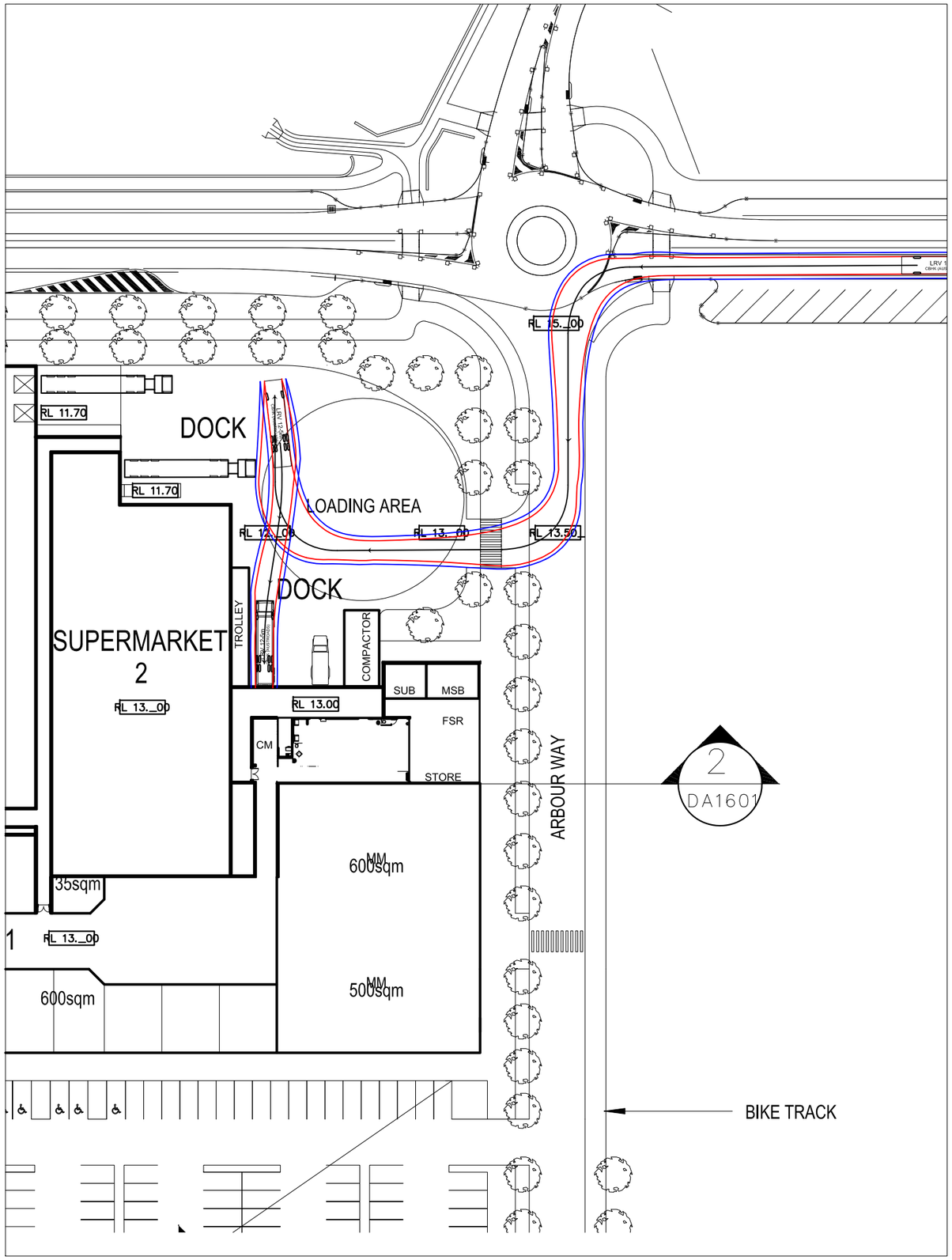
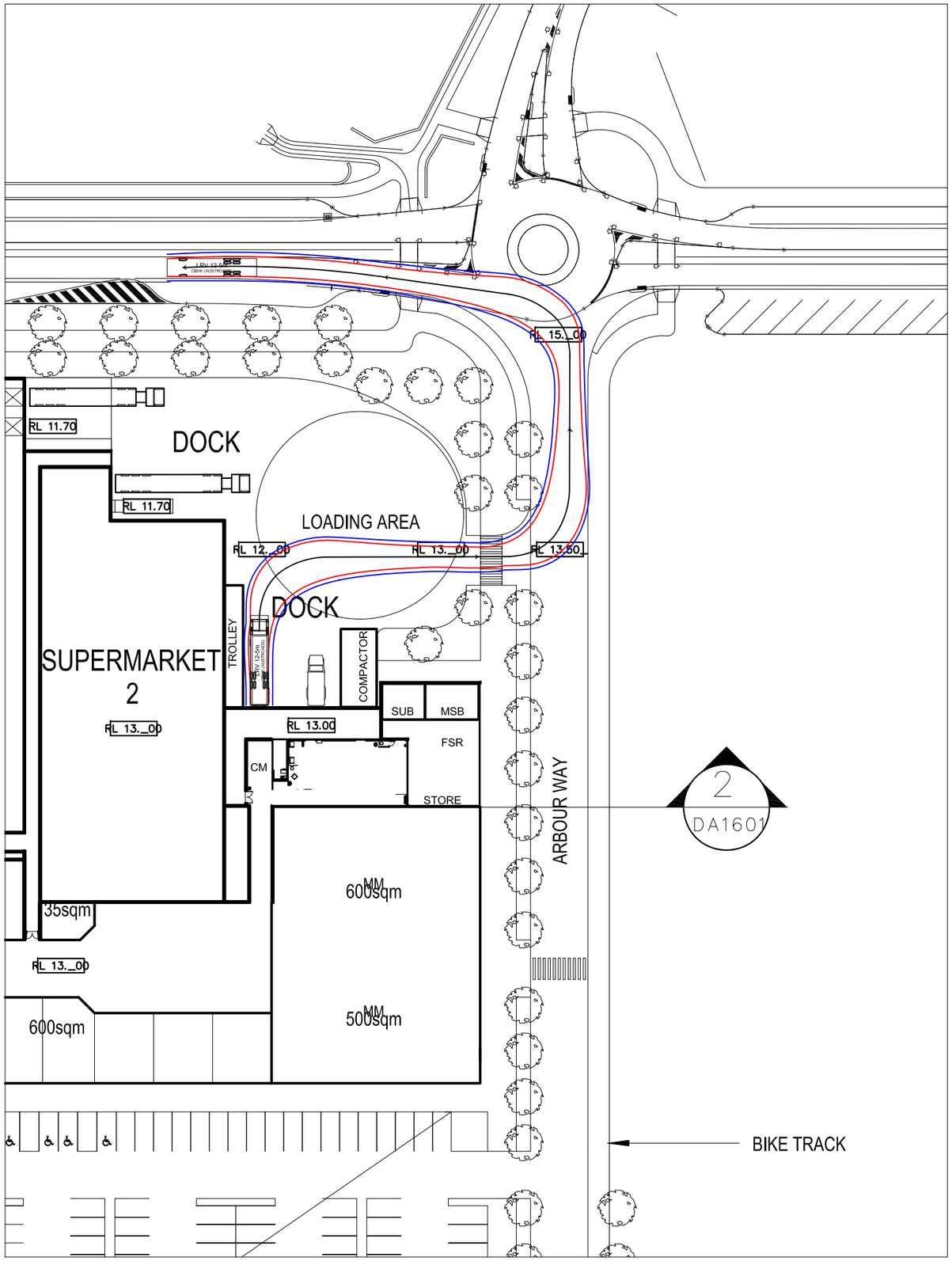
2





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

12.5m LARGE RIGID VEHICLE SWEPT PATHS

DRAWN BY CBHK Pty Ltd_nk Ref: 8769_3 19 November 2012

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