

ATTACHMENT 3

TRANSPORT AND TRAFFIC PLANNING ASSOCIATES

**PROPOSED BUNNINGS WAREHOUSE
CNR RICHMOND ROAD AND TOWNSON ROAD,
MARSDEN PARK**

***Assessment of Traffic and
Parking Implications***

March 2011

Reference 10013

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1. INTRODUCTION

This report has been prepared to accompany a Development Application to Blacktown City Council for a proposed Bunnings 'Warehouse' on a site with frontages to Richmond Road and Townson Road, Marsden Park (Figure 1).

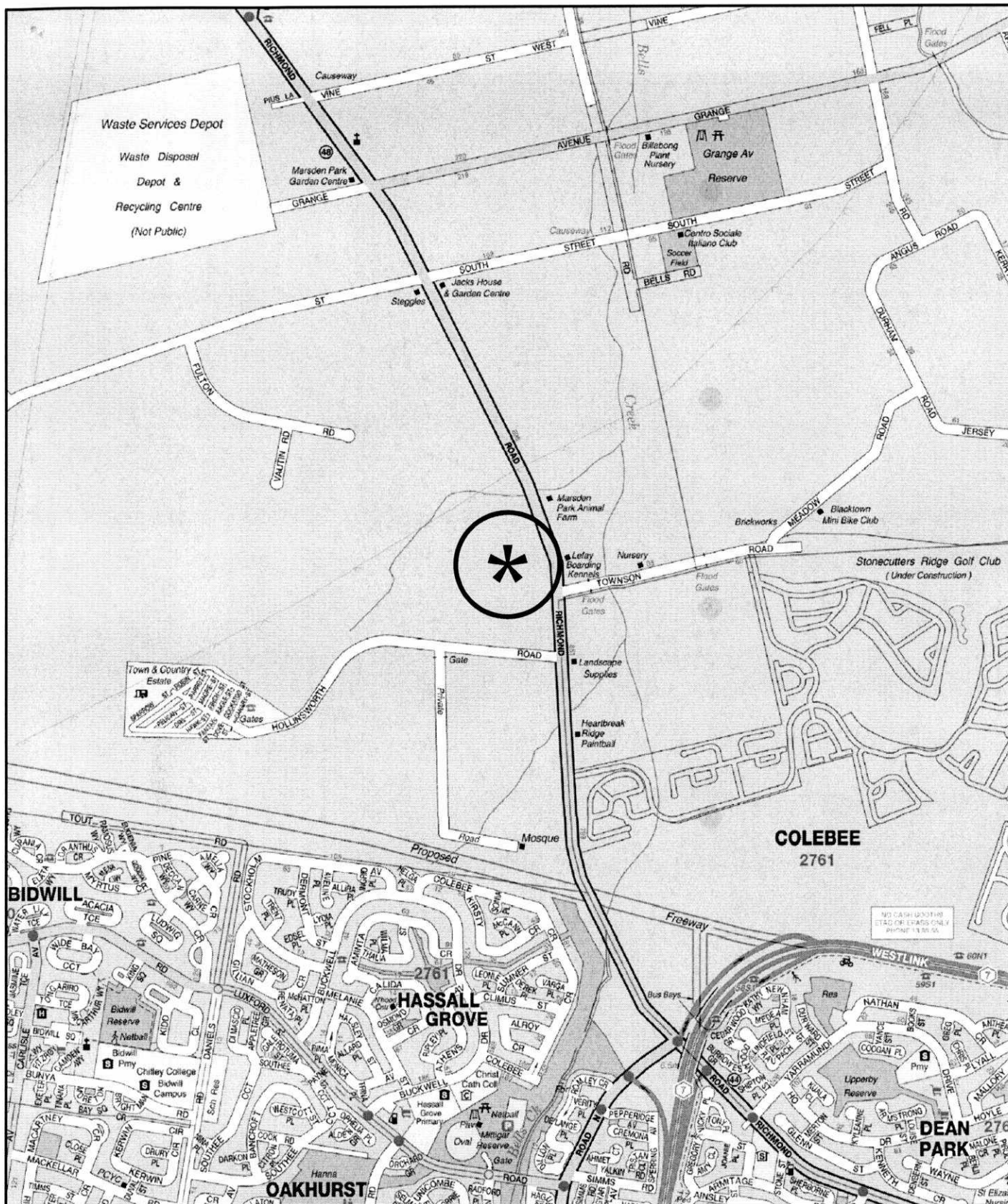
The development site is located within the new Marsden Park Industrial (Employment) Precinct which encompasses a total area of some 550 ha located to the west of Bells Creek and largely extending along the western side of Richmond Road. The Minister for Planning recently approved a Development Masterplan for the precinct comprising Employment/Industrial and Commercial/Business Park uses as well as some smaller area of residential development.

The proposed Bunnings development will be a contemporary warehouse comprising:

Warehouse	9,285m ²
Trade Area	1,888m ²
Nursery	1,351m ²
Bagged Goods Yard	1,512m ²
Carparking	323 spaces

The purpose of this report is to:

- * describe the site, the precinct planning and the development proposal
- * describe the road network and traffic conditions including the future circumstances
- * assess the adequacy of the proposed parking provision for the development
- * assess the potential traffic implications of the development
- * assess the proposed access, internal circulation and servicing arrangements.



LEGEND



LOCATION

FIG 1

2. DEVELOPMENT SCHEME

2.1 SITE, CONTEXT AND EXISTING USE

The site (Figure 2) is the proposed Lot 101 which is indicated on the subdivision plan reproduced overleaf from the Stage 1 Development Application. The lot occupies an area of 3.3 ha with frontages of some 125 metres to Richmond Road and some 180 metres to Townson Road.

The site levels fall away towards Richmond Road where there is a dam and treed area and the existing use is former grazing land.

2.2 PRECINCT PLANNING

Details of the Masterplan for development of the Marsden Park precinct are provided on the plan reproduced from the relevant Transport and Access Study¹. The proposed uses for the precinct development include:

- Business Park
- Business Zone
- Light Industrial
- Low and Medium Density Residential
- Drainage, Conservation and Riparian Areas.

The Precinct is largely bounded by the future Castlereagh Freeway corridor to the south, South Street to the north, West End Road to the west and Richmond Road to the east (with some minor development between Richmond Road and Bells Creek). It is envisaged that there will be a total future workforce in the precinct of some 10,000 persons with some 1,100 additional dwellings.

1 Marsden Park Industrial (Employment) Precinct
Transport and Access Study – Final Report
ARUP – April 2009



LEGEND



SITE

FIG 2

INDICATES PROPOSED LOT 101

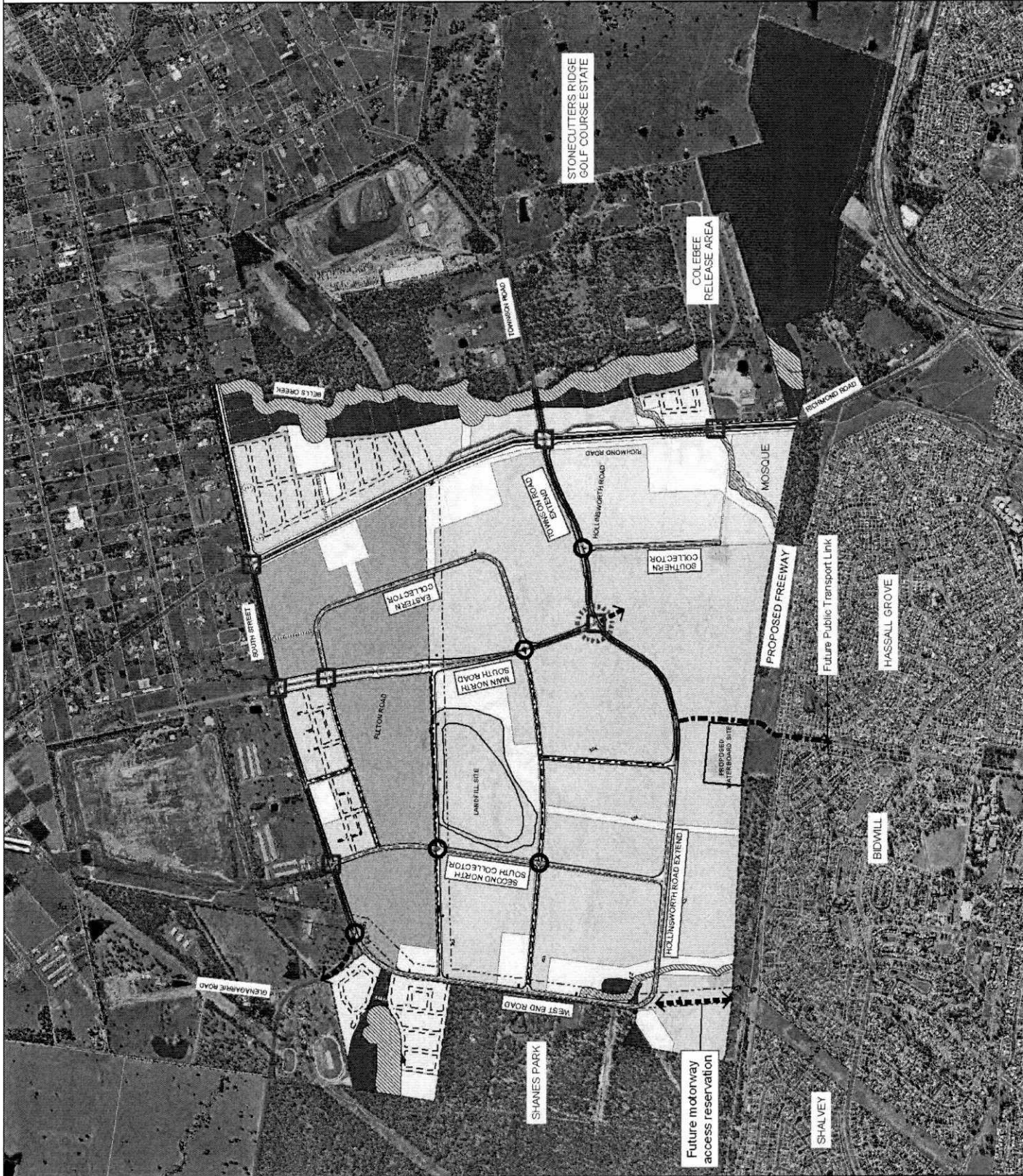
INDICATES PROPOSED RESIDUE LOT

INDICATES PROPOSED DRAINAGE RESERVE

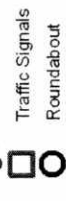
NOTE:
PROPOSED BOUNDARIES
TO BE CHECKED BY SURVEYOR

17

[illegible]



Legend



Traffic Signals
Roundabout
Proposed Transmission Easement
Precinct Boundary
Bells Creek
Preferred Location for
Neighbourhood Services
Road centreline

Road Hierarchy

Arterial
Sub Arterial
Collector

Name

Business Park
Business Zones
Drainage and Infrastructure
Light Industrial
Low Density Residential
Medium Density Residential
Conservation Areas
Riparian Corridor

Issue	Date	By	Chkd	Appd
P1	30-03-2009	DD	TB	TB

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Client

Marsden Park Development

Job Title

**Marsden Park Industrial
(Employment) Precinct Study**

Drawing Title

Future Precinct Road Hierarchy

Scale at A3

1:15,000

Coordinate System

GDA94 MGA Zone 56

Job No

205773-00

Figure No

MAP 003

2.3 PROPOSED DEVELOPMENT

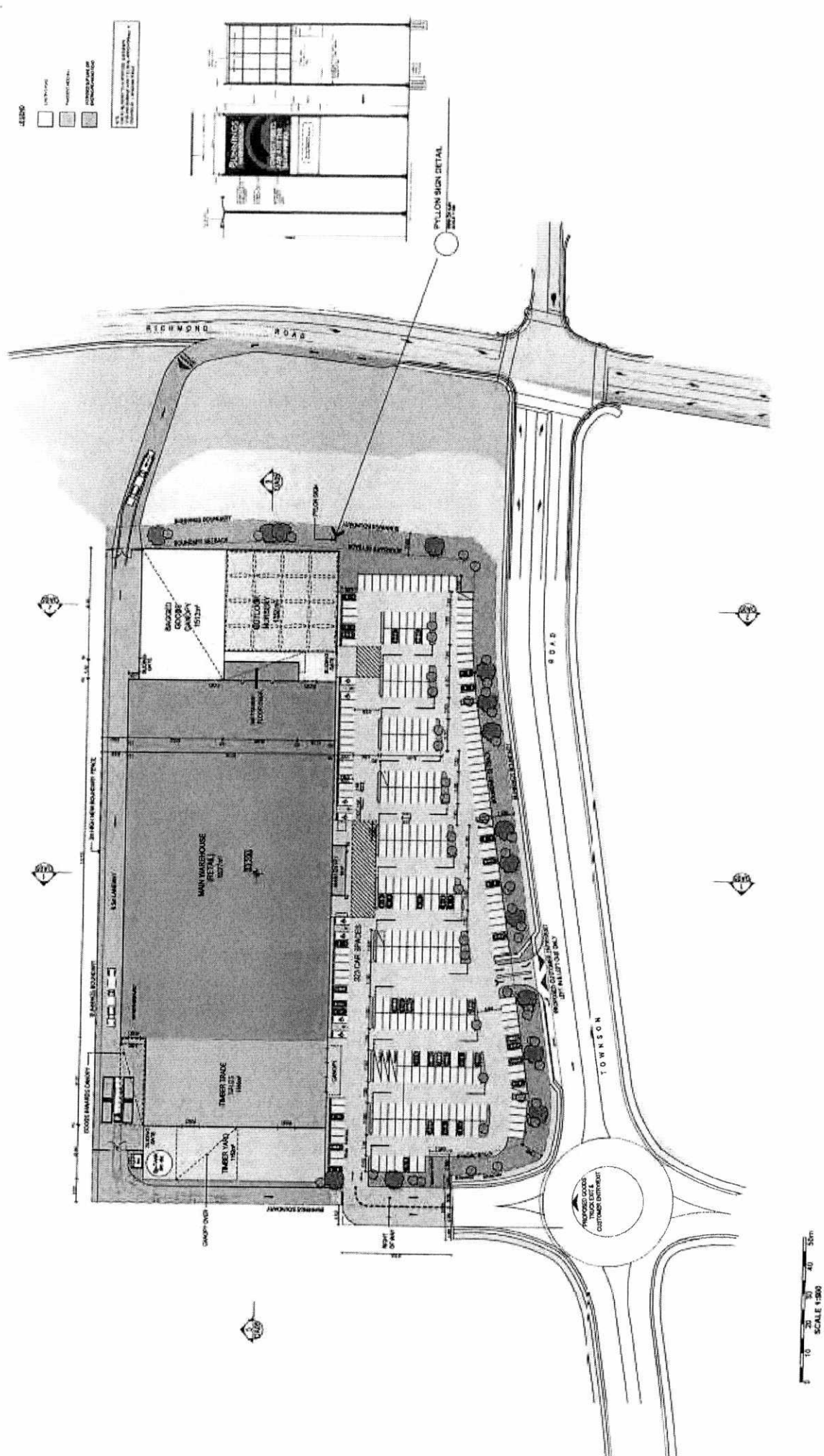
The development scheme involves clearing and some cut and fill of the site to provide level platforms for building and hardstand areas. The new Bunnings warehouse building will occupy the northern part of the site with the nursery located on the eastern (Richmond Road) side.

The proposed development scheme will comprise a single warehouse level with a total retail area of 15,524m² including:

Warehouse	-	9,285m ²
Trade area	-	1,888m ²
Nursery	-	1,351m ²
Bagged Goods Yard	-	1,512m ²
Timber Storage	-	1,152m ²

A total of 323 parking spaces will be provided in the southern part of the site with vehicle access comprising combined ingress/egress driveways on Townson Road and a new access road while service vehicles will ingress on the future Richmond Road service road and egress the new access road.

Details of the proposed development are provided on the plans prepared by Morris Bray Architects which accompany the Development Application and are reproduced in part overleaf in relation to the Stage 1 and ultimate upgrading of Richmond Road and the Townson Road intersection.



PRELIMINARY

PROPOSED NEW STORE CNR RICHMOND & TOWNSON RD MARDEN PARK NSW 2765	BUNNINGS WAREHOUSE	Project Manager	DATE: 10/10/2011 DRAWN: 10/10/2011 CHECKED: 10/10/2011 APPROVED: 10/10/2011	DATE: 10/10/2011 DRAWN: 10/10/2011 CHECKED: 10/10/2011 APPROVED: 10/10/2011	DATE: 10/10/2011 DRAWN: 10/10/2011 CHECKED: 10/10/2011 APPROVED: 10/10/2011	DATE: 10/10/2011 DRAWN: 10/10/2011 CHECKED: 10/10/2011 APPROVED: 10/10/2011	DATE: 10/10/2011 DRAWN: 10/10/2011 CHECKED: 10/10/2011 APPROVED: 10/10/2011	DATE: 10/10/2011 DRAWN: 10/10/2011 CHECKED: 10/10/2011 APPROVED: 10/10/2011
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3. ROAD NETWORK AND TRAFFIC CONTROLS

3.1 ROAD NETWORK

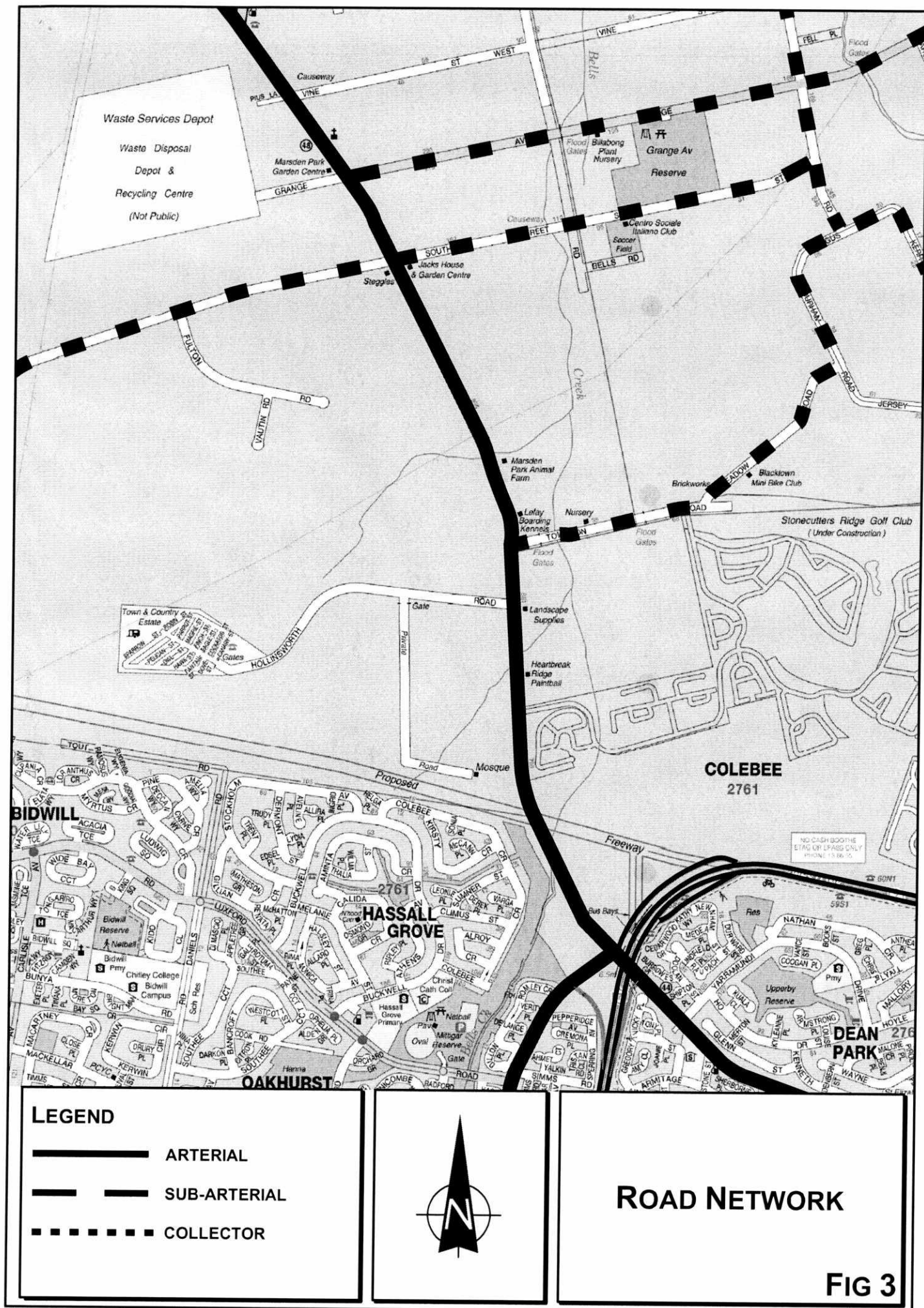
The road network serving the site (Figure 3) comprises:

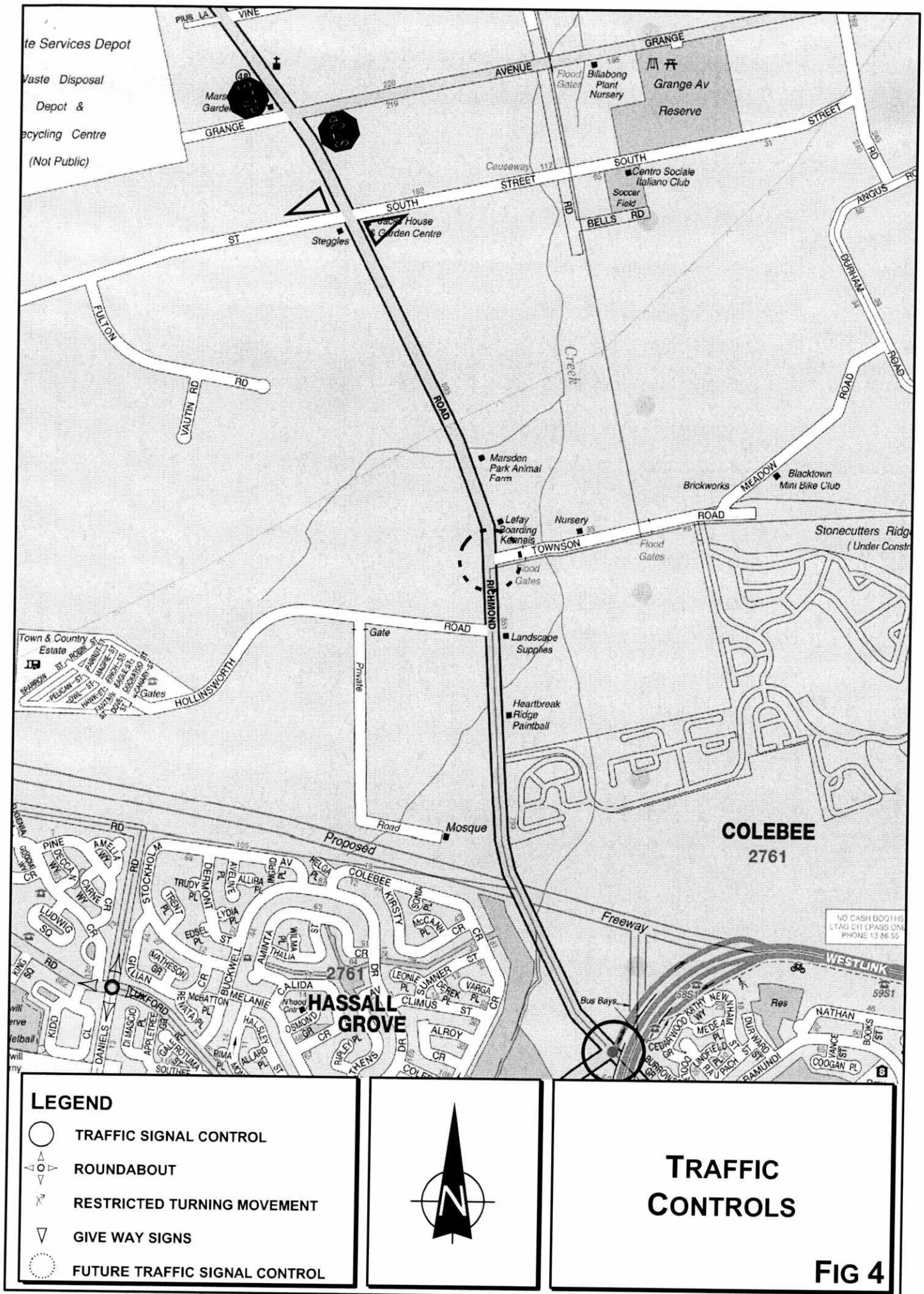
- * *Westlink M7* – a State Road and arterial route which is part of the Sydney Orbital Route
- * *Richmond Road* – a State Road and arterial route linking between Blacktown and Richmond
- * *Garfield Road* – a major collector route linking between Windsor Road and Richmond Road through Riverstone
- * *Grange Avenue* – a collector road route linking between Richmond Road and Schofields
- * *South Street-Townson Road-Carnavon Road etc* – a minor collector system serving the eastern Marsden Park area.

3.2 TRAFFIC CONTROLS

The limited existing traffic controls which have been applied to the road system in the area comprise:

- * the traffic signals at the intersections of Garfield Road with Richmond Road and Windsor Road
- * the traffic signals at the intersection of Richmond Road and Rooty Hill Road





- * the STOP signs at the Richmond Road/Grange Avenue and the GIVE WAY signs at the Richmond Road/South Street intersections
- * the 80 kmph speed limit on Richmond Road
- * the B Double routes along Richmond Road and the section of Townson Road just to the east of Richmond Road.

3.3 TRAFFIC CONDITIONS

Details of the existing recorded AADT volumes on the road system serving the Marsden Park Precinct are shown on the diagram reproduced from the ARUP study in Appendix A. The traffic flow on Richmond Road at the site frontage has fluctuated over recent years as indicated on the AADT data following:

1991	1996	2002	2005
23,060	19,246	23,813	21,983

3.4 FUTURE CIRCUMSTANCES

The Marsden Road Precinct is one of 16 precincts identified in the North-West Growth Centre and one of six precincts which has been the subject of detailed precinct Masterplanning. Details of the planned road network and intersection works for the Marsden Park development are provided on the plans reproduced from the ARUP report in Appendix B. These works include the extension of Townson Road to the west of Richmond Road and the new internal access road system.

The principal element of road network upgrading involves the widening of Richmond Road between the M7 and Grange Avenue. Stage 1 of the RTA scheme for this work at the Townson Road intersection are provided on the plan prepared by J Wyndham Prince reproduced overleaf. (The RTA has reached agreement with the developers for the funding and implementation of these works.) In the future further upgrading works will be undertaken to provide 3 through lanes in each direction along Windsor Road.

Details of the planned road and intersection works relative to the developing Marsden Park Precinct are provided in Appendix A.

Planning for the Marsden Park Industrial Precinct includes the development of public transport services to reduce the reliance on travel by private motor vehicles.

4. TRAFFIC

Planning for development in the Marsden Park Precinct included a comprehensive Traffic Study undertaken by Arup. The proposed development in precinct involves a range of landuses including Business Park, Business Zone and Light Industrial which provide for a multiplicity of potential development outcomes.

The proposed Bunnings development represents a 'counter balance' to the normal development commuter peak traffic circumstances in that:

- * the traffic generation in the weekday morning peak is very minor
- * the peak traffic generation occurs on weekends
- * the weekday afternoon peak is only some 50% of the site peak.

The RTA recently undertook survey study of 'large formal hardware' outlets as part of its process to update the Landuse Development Guidelines. That study established the following traffic generation characteristics:

	vtpm per 100m ² GFA		
	Min	Max	Average
AM Peak	0.60	2.22	1.68
PM Peak	2.05	3.56	2.70
WE Peak	3.15	4.67	4.03

The overall Bunnings experience is very similar to this with generic peak generation rates (per 100m²) of:

AM	0.70 vtpm
PM	2.50 vtpm
WE	5.00 vtpm

The proposed development at Marsden Park will compete with other Bunnings stores at Rouse Hill (approved), Norwest and Seven Hills as well as other existing, proposed and envisaged competitor outlets (ie Mitre 10, Woolworths).

On this basis the projected peak traffic generation for the proposed store will be as follows:

AM	PM	Sat MD
86 vtph	260 vtph	520 vtph

Of the various Bunnings store elements the timber storage and bagged goods yard do not generate customer presence while the trade area is largely only active in the weekday morning.

The other issue which will impact on the 'nett' additional traffic circumstance resultant to the proposed development is the normal 'passing trade' factor including traffic which currently passes the site for visitation to other existing stores.

The traffic generation of the proposed development, as with all retail type uses, will have a significant element of 'passing trade/diverted trips' (ie vehicles which are already on the road system serving the site. Details of research undertaken in relation to 'diverted' trips are provided in Appendix D and the adopted trip factors for the proposed development are as follows (although this will increase over time as a result of urban development with the sub-region):

	PM	Sat
Bunnings	15%	20%

Thus the projected traffic generation outcome for the proposed development will comprise:

PM		Sat MD	
IN	OUT	IN	OUT
130	130	260	260
20	20	50	50
110	110	210	210

The distribution of these volumes onto the road system will also change over time with the urban development in the sub-region. The site is contained within the Marsden Park Precinct which will be subject to wholesale development over a period of time and accordingly it is not possible or realistic to undertake a detailed assessment of the potential nature and quantum of development which will occur in the precinct other than what has been undertaken for the Masterplanning undertaken for the area.

For the first stage of the Marsden Park Precinct a development agreement has been reached with the RTA, Council and Department of Planning in relation to the necessary road infrastructure. That agreement is based on the infrastructure being in place for the first developments and this will ensure a satisfactory traffic outcome.

5. PARKING

Council's Parking Code specifies a parking provision in relation to 'Bulky Goods' of 1 space per 45m² GFA which equates to 249 spaces for the total floorspace of 11,173m² (excluding outdoor areas).

It is proposed to provide a total of 323 parking spaces which will be compliant with the code and will be quite adequate even for peak seasonal demands. This provision will include:

- * 8 disabled driver bays
- * 3 trailer bays.

6. ACCESS, INTERNAL CIRCULATION AND SERVICING

Access

The principal vehicle access will be located on the new access road running along the western boundary of the site and this combined ingress/egress driveway will be located well away from the Townson Road intersection. It is desirable to provide a secondary carpark access for Bunnings stores to accommodate seasonal peak activity or for any potential congestion within the site or on the access road system.

While the planning for the Marsden Park Precinct foresaw on 'access denied' status along Townson Road this presents the only potential location for the secondary access. It is proposed to provide a combined ingress/egress driveway for the carpark on the Townson Road frontage however:

- * this access will be limited to left-turn IN/OUT only by the central median island in Townson Road
- * a deceleration lane will be provided for the ingress
- * the driveway will be located on the western part of the site well removed from the Richmond Road intersection.

The access provision for delivery vehicles will be entirely segregated from the carpark and will comprise a left-turn ingress from Richmond Road and an egress to the access road along the western boundary. The ingress will be by way of the future serviced road along Richmond Road to serve properties to the north and this will be preceded by a deceleration lane.

This proposal has been submitted to the RTA and approval in principle granted by the Landuse Assessment Manager (Appendix C).

Internal Circulation

The vehicle access, circulation and carpark areas are designed to accord to the design requirements of AS 2890.1 and AS 2890.2 with generous parking bay and aisle provisions. A flexible two-way circulation arrangement will be available throughout the carpark and the access ramps, grades and transitions will accord with the standards.

Servicing

The Bunnings delivery and service vehicles will ingress and travel along the northern side of the building to unload and then egress. The Bunnings delivery vehicles will involve B Double and semi-trailers (AV) with some vans and MRV's and the very extensive queuing length available will ensure that there is no possibility on waiting trucks affecting the movement of cars to/from the carpark. Details of the turning path implications of the movements of the AV vehicles are provided in Appendix C indicating a satisfactory provision for access and circulation.

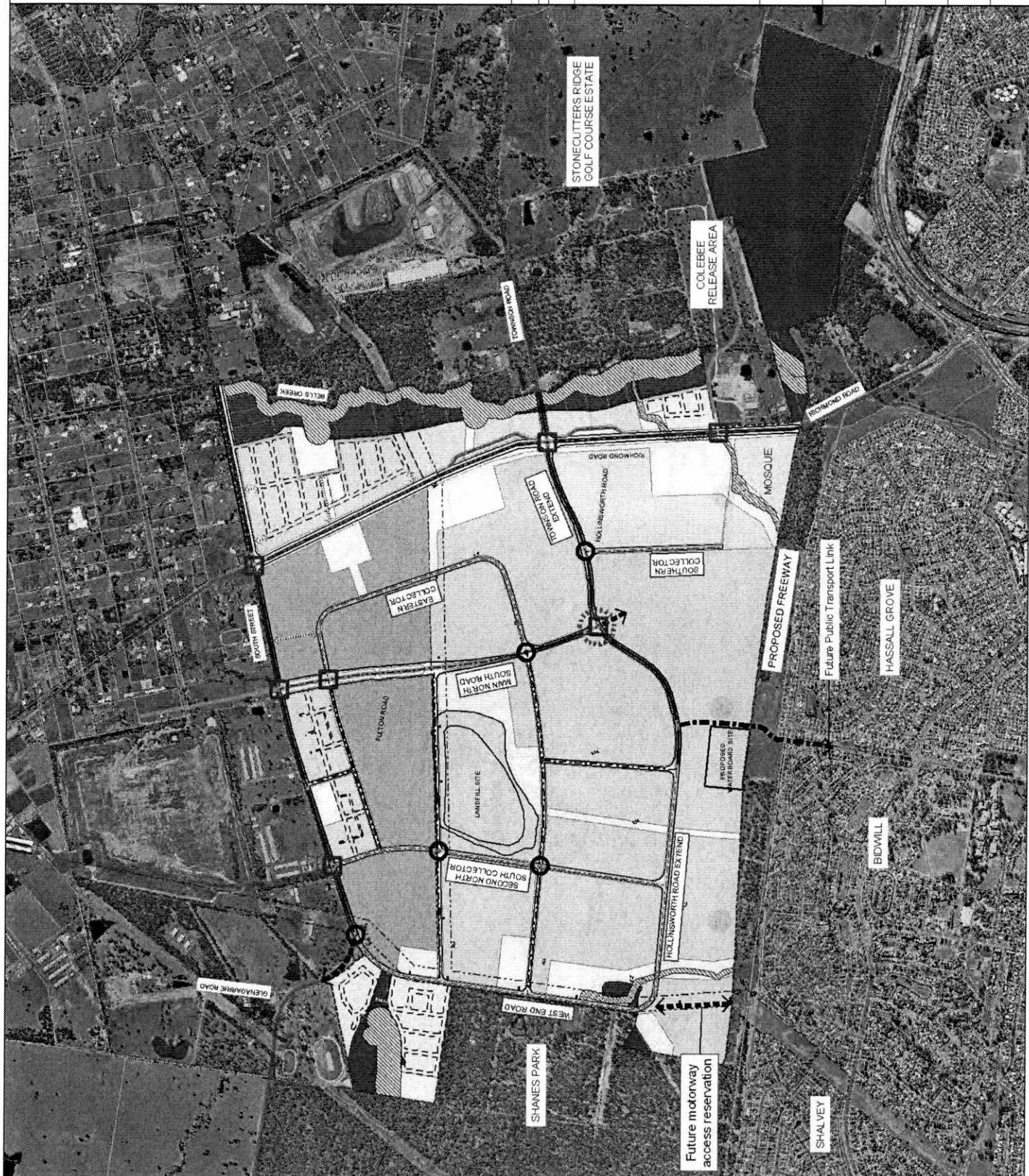
7. CONCLUSION

The proposed Bunnings warehouse development at Marsden Park will utilise the relatively large site which has convenient access to the arterial road system within the new Marsden Park Industrial (Employment) Precinct. This assessment has concluded that:

- * the development will be consistent with the planning undertaken for the precinct including the road network development and traffic outcome
- * there will be no adverse traffic implications
- * the proposed parking provision will be adequate and appropriate
- * the vehicle access and internal circulation arrangements will be suitable.

Appendix A

FUTURE ROAD AND INTERSECTION WORKS



Legend

- Traffic Signals
- Roundabout
- Proposed Transmission Easement
- Precinct Boundary
- Bells Creek
- Preferred Location for Neighbourhood Services
- Road centreline

Road Hierarchy

- Arterial
- Sub Arterial
- Collector

Name

- Business Park
- Business Zones
- Drainage and Infrastructure
- Light Industrial
- Low Density Residential
- Medium Density Residential
- Conservation Areas
- Riparian Corridor

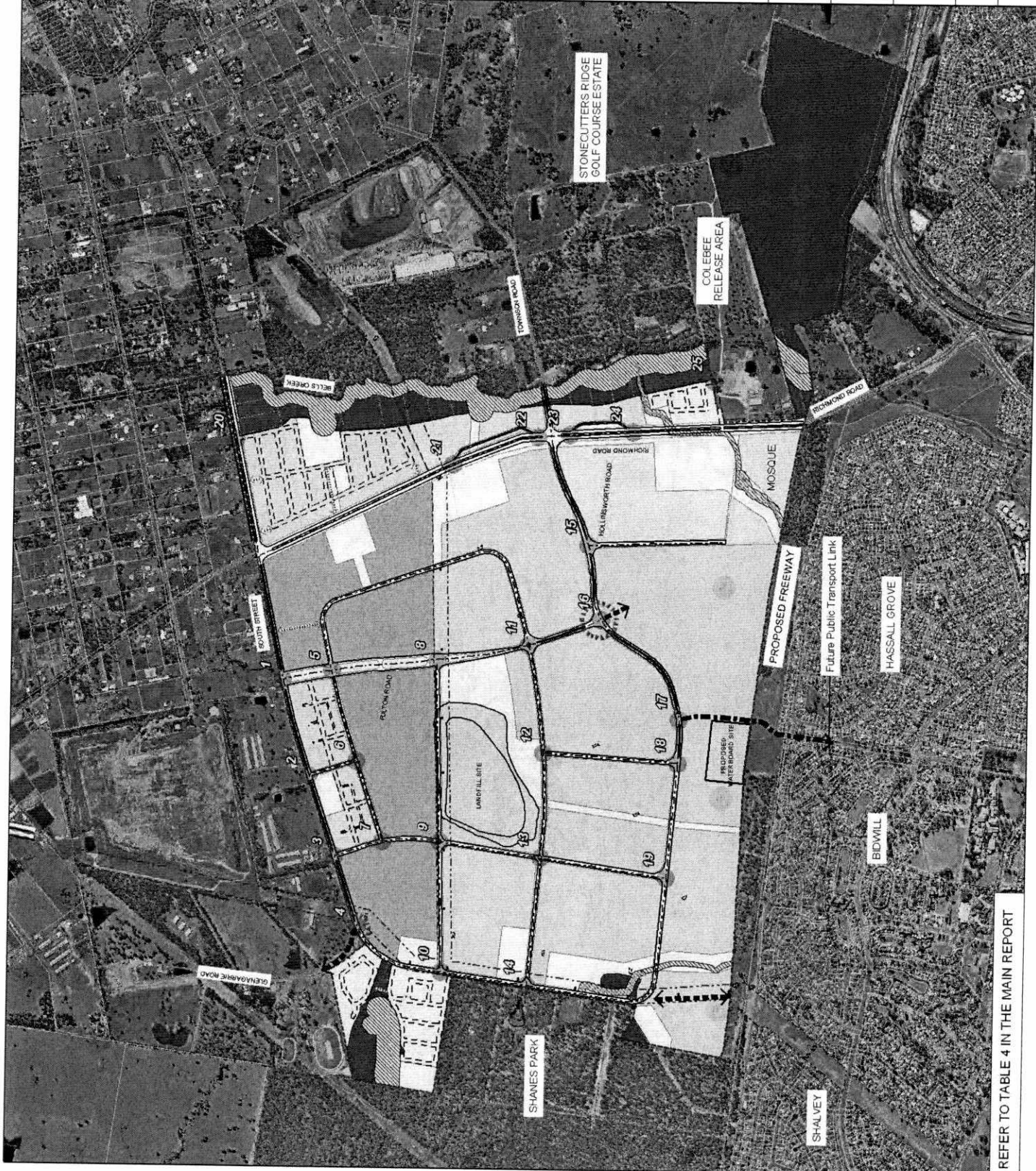
P1	30-03-2009	DD	TB	TB
Issue	Date	By	Chkd	Appd

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Client	Marsden Park Development			
Job Title	Marsden Park Industrial (Employment) Precinct Study			
Drawing Title	Future Precinct Road Hierarchy			
Scale at A3	1:15,000	Job No	205773-00	
Coordinate System	GDA94 MGA Zone 56	Figure No	MAP 003	



Legend

- Reference Numbers
- Future Precinct Intersections
- Precinct Boundary
- Proposed Transmission Easement
- Bells Creek
- Road centreline
- Preferred Location for Neighbourhood Services
- Name
- Business Park
- Business Zones
- Drainage and Infrastructure
- Light Industrial
- Low Density Residential
- Medium Density Residential
- Conservation Areas
- Riparian Corridor

P1	30-03-2009	DO	TB	TB
Issue	Date	By	Chkd	Appd

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Client	Marsden Park Development			
Job Title	Marsden Park Industrial (Employment) Precinct Study			
Drawing Title	Future Precinct Intersections			
Scale at A3	1:15,000	Job No	205773-00	
Coordinate System	GDA94 MGA Zone 56	Figure No	MAP 005	

REFER TO TABLE 4 IN THE MAIN REPORT

Appendix B

DIVERTED TRIP RESEARCH

F LINKED TRIPS

Traffic generation data for movements in and out of certain development types is readily available. However, there is a need to understand how much of the generated traffic is new and how much is already on the road network prior to opening of the development.

Historically, traffic impact assessments conservatively assumed that all generated traffic was new. More recently, 'discounts' have been applied to generated traffic to account for the 'drop in' component, which is not new traffic to the network.

Research undertaken on this subject has concluded that it is appropriate to make adjustments to generated traffic due to linked trips.

Definitions

Trips can be broadly categorised into the following types:

Linked Trip A journey where there is a chain of stops from origin to ultimate destination. A trip from home to work with stops at school and the post office comprises three linked trips:

- home to school;
- school to post office; and
- post office to work.

Unlinked Trip A journey with no intermediate stops.

For the purposes of a RIA, the following three types of trips are commonly used:

New Trip In traffic impact studies, unlinked trips are generally referred to as new trips. These are trips attracted to the development and without the development would not have been made - hence a new trip.

Diverted Drop In Trips A linked trip from an origin to a destination that has made a significant network diversion to use the new development.

Undiverted Drop In Trips A linked trip from an origin to a destination that previously passed the development site. This is also referred to as a 'pass by' trip and the new development is an intermediate stop on a trip that is made from an origin to a destination.

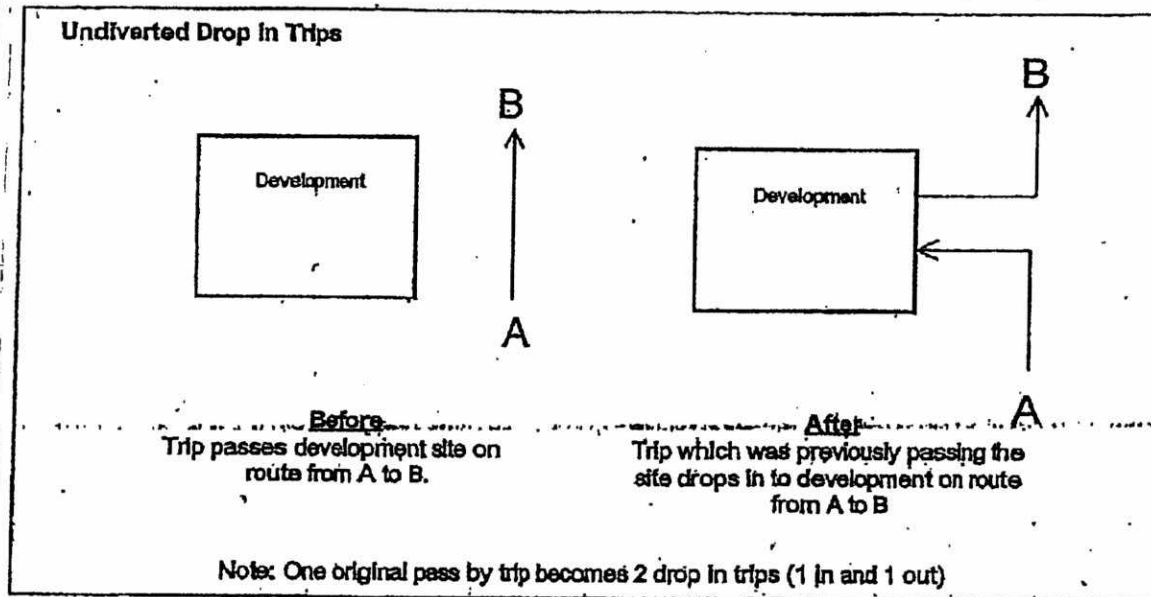
The diverted and undiverted drop in trips are considered to be trips that are already part of the existing flows on the road network.

The treatment of the different trip types varies with the level of assessment. Hallam (1988) provides a reasoned basis for separating assessment into three levels:

- Regional Assessment - consideration of the impact of a development in the context of the total urban area;

- Local Assessment – consideration of the effect of a development over a substantial area focussed on the development; and
- Access Level – micro level assessment.

At the regional level, insertion of a new development could be considered to only increase travel by the new trips proportion of generation. Diverted and undiverted drop in trips would already be on the network.



A RIA is usually conducted over a limited part of the network. At a local level, both the new trips and diverted drop in trips are introduced into the area and represent additional trips on the local network. This local network may contain roads of regional significance. The undiverted drop in trips to developments on roads of regional significance can be regarded as already on the local network. It is important that these trips are considered. They must be rerouted from movements past the development to movements into and out of the development. For every two development trips assigned as undiverted drop in trips (1 in/1 out), one through trip should be removed from passing traffic.

In 1995, Eppell Olsen & Partners carried out surveys for Main Roads to segment traffic generation for specific developments. The results of these surveys are documented in the report, *Development Traffic Surveys: Linked/Unlinked Trips*.

The segmentation of traffic generation for shopping centres and fast food outlets is shown below:

Development	Trip Segmentation		
	New (%)	Diverted Drop In (%)	Undiverted Drop In (%)
Shopping Centres >20 000 m ²	63	18	19
Shopping Centre 3 000 m ² – 20 000 m ²	50	22	28
Shopping Centres <3 000 m ²	50	32	18
Fast Food Outlets	40	25	35

Shopping Centres

The traffic generated by shopping centres is most influenced by the proximity of other centres. On site facilities such as cinemas, restaurants etc. can also have a significant impact on generation rates.

Thursday design generation rates are shown on Figure 2A.4 while Saturday rates are included as Figure 2A.5. Survey results indicate that during these peak hour periods the in/out proportion is approximately 50/50.

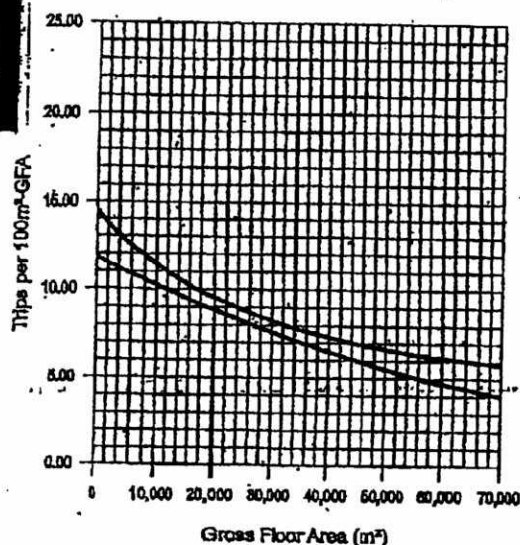


Figure 2A.1 SEQ Shopping Centre Generation (Thursday Afternoon peak)

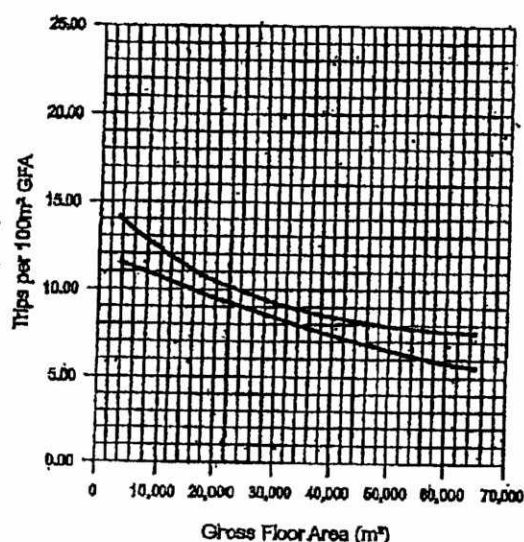


Figure 2A.2 SEQ Shopping Centre Generation (Saturday peak)

Considering the adjacent road network, three shopping centre trip types have been defined as follows:

- New Trips

Trips that would not have appeared on the immediate approaches, local street network or regional road network prior to the opening of the

shopping centre. These trips only appear as a consequence of the opening of the centre.

- Diverted Trips

Linked trips (i.e. in conjunction with another trip purpose) which are diverted off the regional road network to access the shopping centre.

- Drop-In Trips

Linked trips that would have appeared in the local road network irrespective of the presence of the shopping centre.

Research undertaken by Hallam that developed the rates shown in Table 2A.7 for estimating the proportion of drop-in and diverted trips.

Table 2A.7 Proportion of Drop-In and Diverted Trips

Trip Type	Proportion of Trips	
	Thursday	Saturday
New Trip	50%	68%
Diverted Trip	30%	20%
Drop-In Trip	20%	12%

Studies undertaken in the USA suggest the factors in Table 2A.8 are applicable to the above percentages to accommodate different diverted pattern trips for different sized centres.

Table 2A.8 Factors in Drop-In and Diverted Trips

Shopping Centre Size	Factors to be Applied to Proportion of Drop-In and Diverted Trips
0 - 10,000 m ²	1.2
10,000 - 35,000 m ²	1.0
> 35,000 m ²	0.8

Upon determining the proportion of drop-in and diverted trips the traffic discounts in Table 2A.9 would be applicable.

Table 2A.9 Trip Discounts

Road Network Element	Trip Discounts Applicable
Immediate approach and site access	None
Local Road Network	Drop-In Trips
Regional Road Network	Drop-In + Diverted Trips

Appendix C

CORRESPONDENCE WITH RTA

TRANSPORT AND TRAFFIC PLANNING ASSOCIATES



A division of Monvale Pty Ltd ACN 060 653 125
ABN 44 060 653 125

21 February 2011
Ref 10013

Mr Chris Goudanas
Council Liaison and Regional Projects Manager
Roads and Traffic Authority
PO Box 973
PARRAMATTA 2124

(Email: chris_goudanas@rta.nsw.gov.au)

Dear Chris

Proposed Bunnings Development Cnr Richmond Road and Townson Road, Marsden Park

Bunnings have purchased a site on the north-western corner of the subject intersection for a new warehouse store. Details of the proposed development are shown on the attached plan including the access arrangements for cars and trucks.

It would be appreciated if you can make arrangements for this proposal to be considered as a pre-DA by the SRDAC.

Your advice regarding attendance for presentation at this meeting would be appreciated.

Yours faithfully

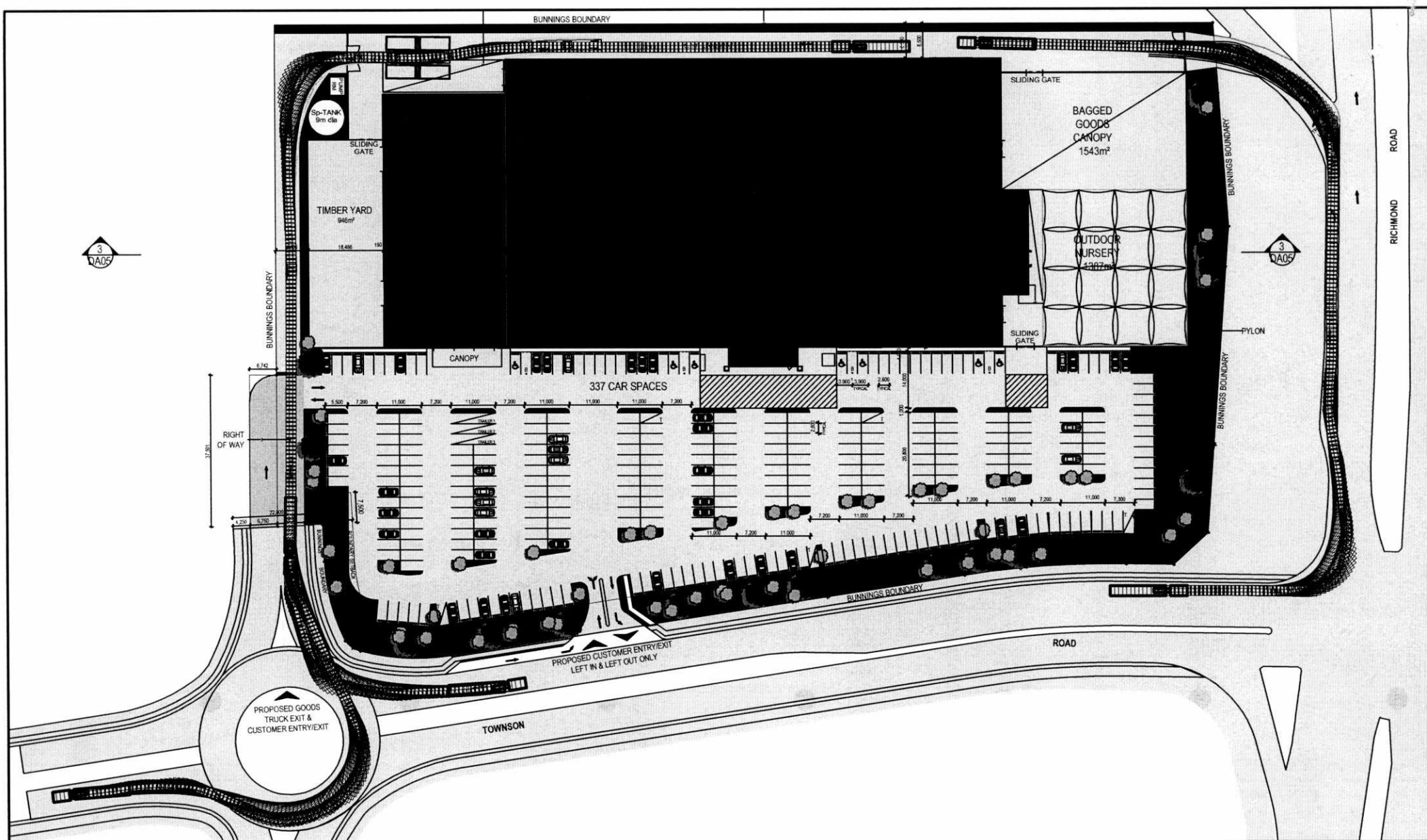
Ross Nettle
Director
Transport and Traffic Planning Associates

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Transportation, Traffic and Design Consultants

Appendix D

TRUCK TURNING PATHS

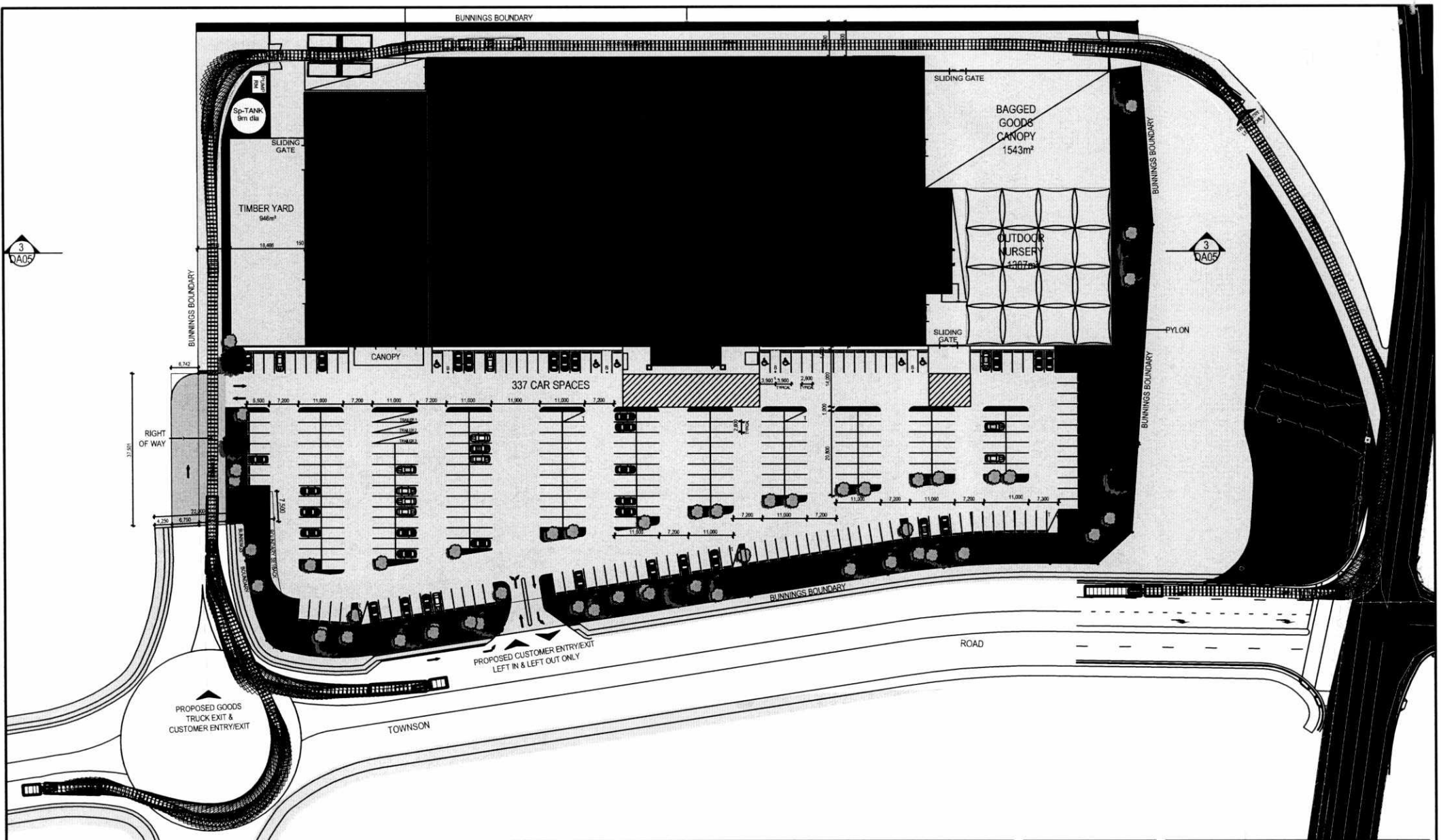


LEGEND



SWEPT PATH ANALYSIS
OF A 19m ARTICULATED
VEHICLE ENTERING AND
EXITING THE SITE
(PROPOSED ROADS)

SP 2



LEGEND



SWEPT PATH ANALYSIS
OF A 19m ARTICULATED
VEHICLE ENTERING AND
EXITING THE SITE
(EXISTING ROADS)

SP 1