TRAFFIC ASSESSMENT REPORT

FOR

PROPOSED QUARRY WEST ESTATE

SOUTHERN EMPLOYMENT LANDS
GREYSTANES

Ref. 14136r-1

Revision 1
19 March 2015

Prepared By

TRANSPORT & URBAN PLANNING PTY LTD
Traffic Engineering, Transport Planning
Road Safety & Project Management Consultants
5/90 Toronto Parade
P.O. Box 533
SUTHERLAND NSW 2232
Tel: (02) 9545-1411
Fax: (02) 9545-1556
Email: terry@transurbanplan.com.au

CONTENTS

ILLUSTRATIONS

APPENDICES

1.0 INTRODUCTION

1.1 Background

DEXUS Quarry West Subtrust, part of the DEXUS Property Group (DEXUS), is proposing to develop a world class industrial and business park on a 26 hectare portion of the Greystanes Southern Employment Lands (Greystanes SEL) in western Sydney. The Greystanes SEL is a State Significant Site, and is the subject of a concept plan approved by the then Minister for Planning in 2007. **Figure 1** shows the location.

The proposed development is classified as State Significant Development under the Environmental Planning and Assessment Act 1979 (EP&A Act).

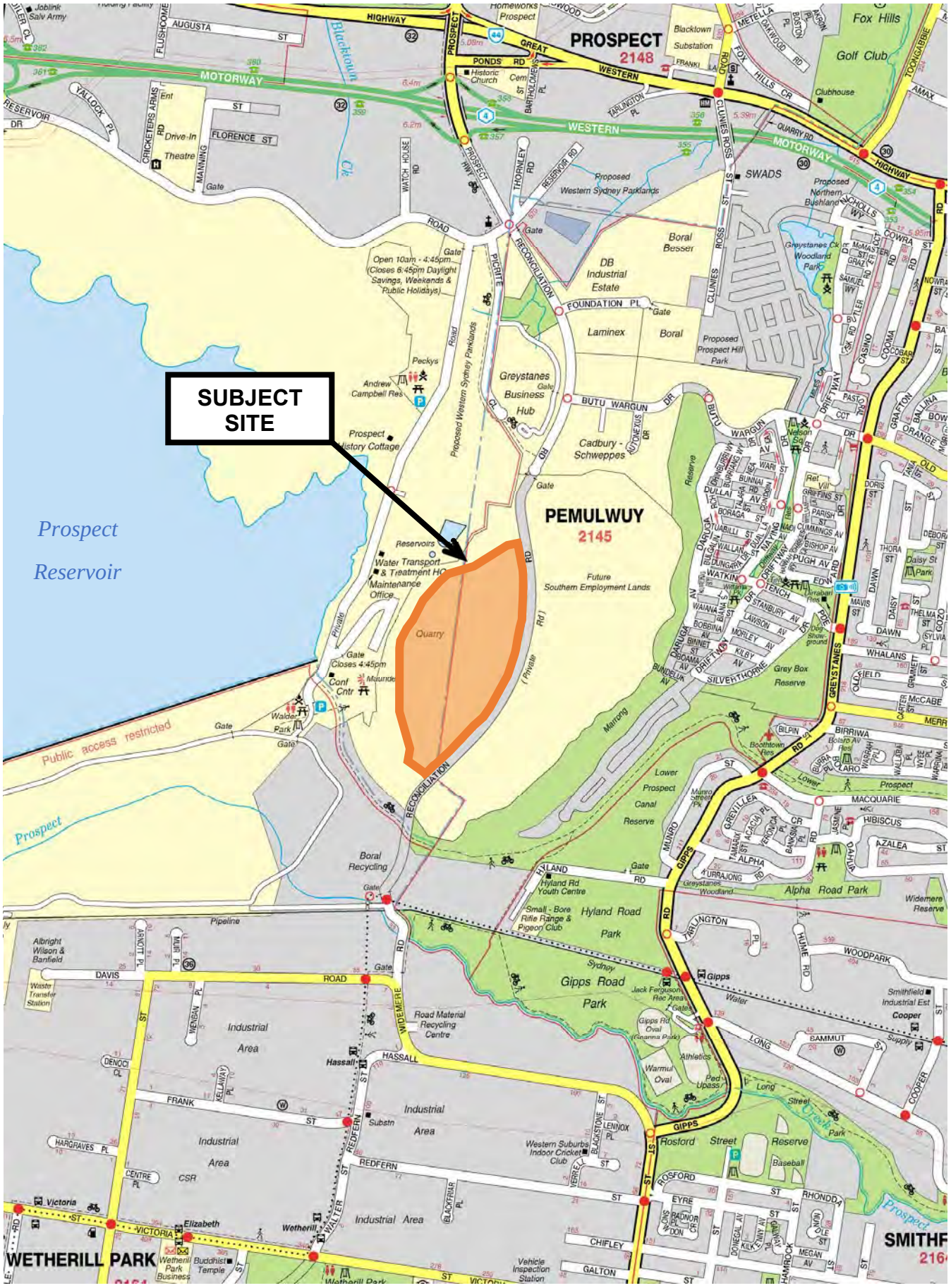
The concept plan approval (as modified) provides for the creation of an industrial and business park on the Greystanes SEL site. The concept plan provides for:

- An industrial precinct comprising 75 industrial lots, one of which may be used for the purpose of hotel accommodation, with a maximum floor space ratio of 0.75:1 across the industrial lots;
- A maximum GFA of 493,215m^2 across the industrial and business park uses;
- A business park precinct comprising a gross floor area of 97,500m^2 for business uses (ie. 100% office) and 6,500m^2 for service retail uses;
- Associated infrastructure and services, including a conceptual road design comprising a central spine road (Reconciliation Road, including provision for a future bus transitway) and local estate roads; and
- Three (3) signalised intersections along the north south spine road (Reconciliation Road) that connects Greystanes SEL to the wider road network. Funding for these three (3) intersections was provided by Boral as part of their contribution towards road upgrades associated with Greystanes SEL.

On 5 December 2008, the Greystanes SEL site was gazetted as a State significant site under *State Environmental Planning Policy (Major Development) 2005* (the Major Development SEPP) establishes zoning provisions and permissible uses for the Greystanes SEL site, and details applicable development standards.

On 8 November 2009, the then Minister for Planning approved a proposal from DEXUS under the former Part 3A of the EP&A Act, for the DEXUS Estate Industrial Park Project (DEXUS Estate Project) – now known as QuarryEAST. The QuarryEAST project essentially involves development of the eastern half of the industrial precinct within the Greystanes SEL, in a manner that is generally consistent with the approved Greystanes SEL concept plan. Specifically, the project involves:

- Subdivision of the 47 hectare site and includes some 226,770m^2 of warehouse and 23,837m^2 of office;
- Construction of internal estate roads and site services;
- Detailed earthworks; and
- Construction and use of industrial facilities (specifically warehousing and distribution centre) across the site.



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

N

NOT TO SCALE

FIGURE 1

QUARRY WEST ESTATE,
RECONCILIATION RD, PEMULWUY

SITE LOCATION

JOB NO. 14136

QuarryEAST is being developed on a staged basis in line with the securing of end-users for the facilities and/or market demand with most of QuarryEAST now developed.

Based on information provided by DEXUS, QuarryEAST has developed 183,000m^2 GFA of warehouse of which approximately 10% is office (ie. provided as part of the warehouse buildings). This represents approximately 83.6% of total development planned for QuarryEAST.

In June 2014, DEXUS purchased the western half of the industrial and business precinct of the Greystanes SEL from Boral. It is now proposing to develop this western half – known as QuarryWEST – in a similar manner as the successful development of QuarryEAST.

The project has a capital investment value of approximately $100 million, and is expected to generate approximately 500 full-time equivalent jobs during construction and 830 jobs during operation.

1.2 This Report

DEXUS has engaged Transport and Urban Planning Pty Ltd to assess the traffic and associated impacts associated with the proposed QuarryWEST Estate.

In this regard the remaining sections of this report address the following matters.

- Section 2 describes the proposed QuarryWEST Estate and proposed development;
- Section 3 reviews the existing and proposed road network;
- Section 4 examines the traffic and transport impacts of the full development of the QuarryWEST and QuarryEAST Estate(s); and
- Section 5 examines parking issues and assesses the proposed estate roads; and
- Section 6 provides conclusions.

2.0 THE SITE AND QUARRYWEST ESTATE

2.1 The Site

The 26 hectare QuarryWEST site (the site) forms part of the 156 hectare Greystanes SEL, which in turn forms part of the approximately 330 hectare Greystanes Estate. The current real property description of the site is Lot 18 in Community Plan DP270644. It is located within both the Holroyd and Blacktown local government areas. The boundary between the two local government areas runs down the middle of the QuarryWEST site, as shown (by the red line) on **Figure 2**.

The site is located within the former Prospect Quarry, which has produced aggregate for use in construction materials for around 100 years. As outlined in Section 1 above, the eastern half of the quarry is currently being developed as a high quality industrial estate by DEXUS. The western half of the quarry is currently undergoing final quarry rehabilitation and decommissioning, in parallel with infrastructure works for the Greystanes SEL.

2.2 Proposed Development

DEXUS is proposing to develop the QuarryWEST site for industrial and business purposes, in a manner that is generally consistent with the Greystanes SEL concept plan, and in a similar conceptual manner as the QuarryEAST project.

In this regard, the project involves:

- Subdivision of the site to create nominally 8 development lots and roads;
- Construction of internal roads and site services;
- Detailed earthworks; and
- Construction and use of industrial (warehousing and distribution centre) and business facilities (retail facilities) across the site.

The project would, essentially, develop the entirety of the QuarryWEST site. The masterplan for the project is shown on **Figure 3** as well as in Appendix 1 and provides for:

- Construction of 11 freestanding and attached warehouse facilities across the site, ranging in size from 1,550m^2 to 52,540m^2 gross floor area (GFA), including ancillary offices;

- Construction of:

  - A supermarket with a GFA of 2,000m^2 ;
  - Speciality retail store with a GFA of 870m^2;
  - A petrol station with a GFA of 100m^2; and
  - Fast food outlet with a GFA 250m^2.

- A total GFA of approximately 131,140m^2 across the site, including 2,870m^2 of retail GFA and 350m^2 of shop (fast food/petrol); and

- Ancillary development including hardstand, carparking and landscaping etc. The nominal car parking provision in the QuarryWEST Estate Masterplan is 927 car spaces.

TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

N

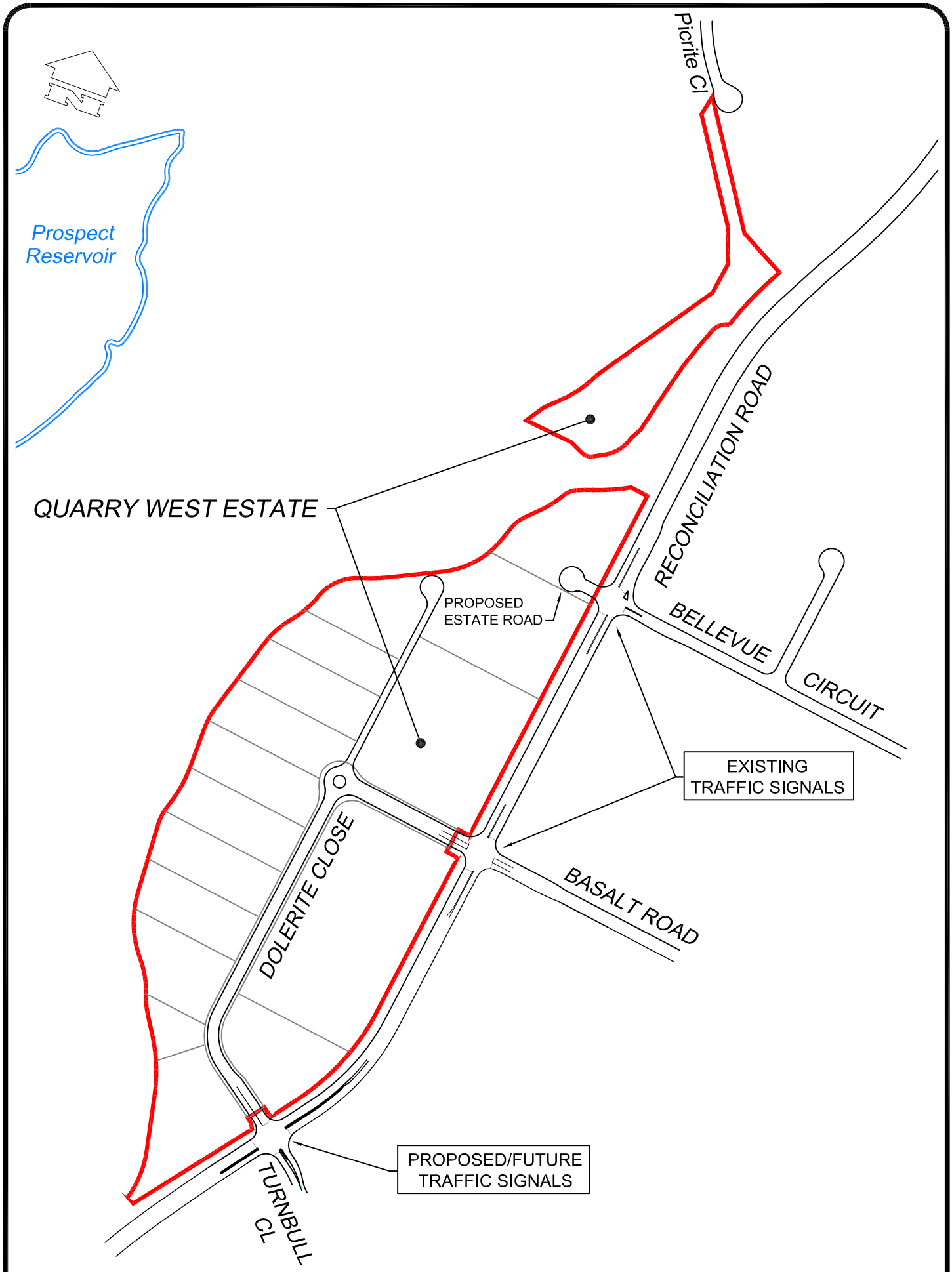
NOT TO SCALE

FIGURE 2

QUARRY WEST ESTATE,
RECONCILIATION RD, PEMULWUY

SITE LOCATION

JOB NO. 14136



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 3

QUARRY WEST ESTATE
RECONCILIATION RD, PEMULWUY

MASTER PLAN

JOB NO.14136

The approval of the Greystanes SEL concept plan included the signalisation of 3 intersections along the spine road (Reconciliation Road) which traverses the Greystanes site.

Reconciliation Road will provide the main access road to QuarryWEST Estate with the intersections of Bellevue Circuit cul de sac, Basalt Road and Dolerite Close providing direct access to the lots and development from Reconciliation Road.

These 3 intersections will provide access to Lots 1 to 7. Lot 8 will be accessed via the existing roads and intersections, Picrite Close and Reservoir Road and adjacent the intersection of Reconciliation Road/Prospect Highway/Reservoir Road. The intersection of Picrite Close and Reservoir Road is located to the north, near Prospect Highway.

3.0 EXISTING AND PROPOSED ROAD NETWORK

3.1 Main Access Roads

Reconciliation Road provides the main vehicle access to the Greystanes Estate. Reconciliation Road links with Prospect Highway to connect to the M4 Western Motorway and the Great Western Highway located to the north and to Widemere Road within the Wetherill Park industrial area to the south. Reconciliation Road adjacent QuarryWEST Estate is constructed as a divided carriageway road with two (2) traffic lanes in each direction and with widening for additional lanes at critical intersections. In the section between Reservoir Road and south of Butu Wargun Drive it provides for one (1) lane carriageway in each direction.

Prospect Highway north of Reservoir Road and the M4 Ramp provides for 2 lanes in each direction.

The intersection of Reconciliation Road with Prospect Highway/Reservoir Road is controlled by a roundabout, with single lane approaches and departures.

The Prospect Highway/M4 Ramp intersections are controlled by traffic signals and a roundabout.

Picrite Close is a local industrial road 12.0 metres wide between kerbs and forms a T-junction intersection with Reservoir Road approximately 70 metres west of Reconciliation Road. Sight distance at the Picrite Close/Reservoir Road intersection is satisfactory for the estimated vehicle speeds in Reservoir Road and the posted speed limit.

Figure 4 shows the main access roads and intersections. The intersections of Reconciliation Road with Bellevue Circuit, Basalt Road and Dolerite Close/Turnbull Close are intersections that currently service the QuarryEAST Estate and will also service the QuarryWEST Estate.

The Bellevue Circuit and Basalt Road intersections were recently signalised to provide safe vehicle access to the QuarryEAST development. The funding of the traffic signals was provided by DEXUS, so that the traffic signals would be installed to coincide with the QuarryEAST development.

The proposed road network for QuarryWEST will be enhanced with the provision of:

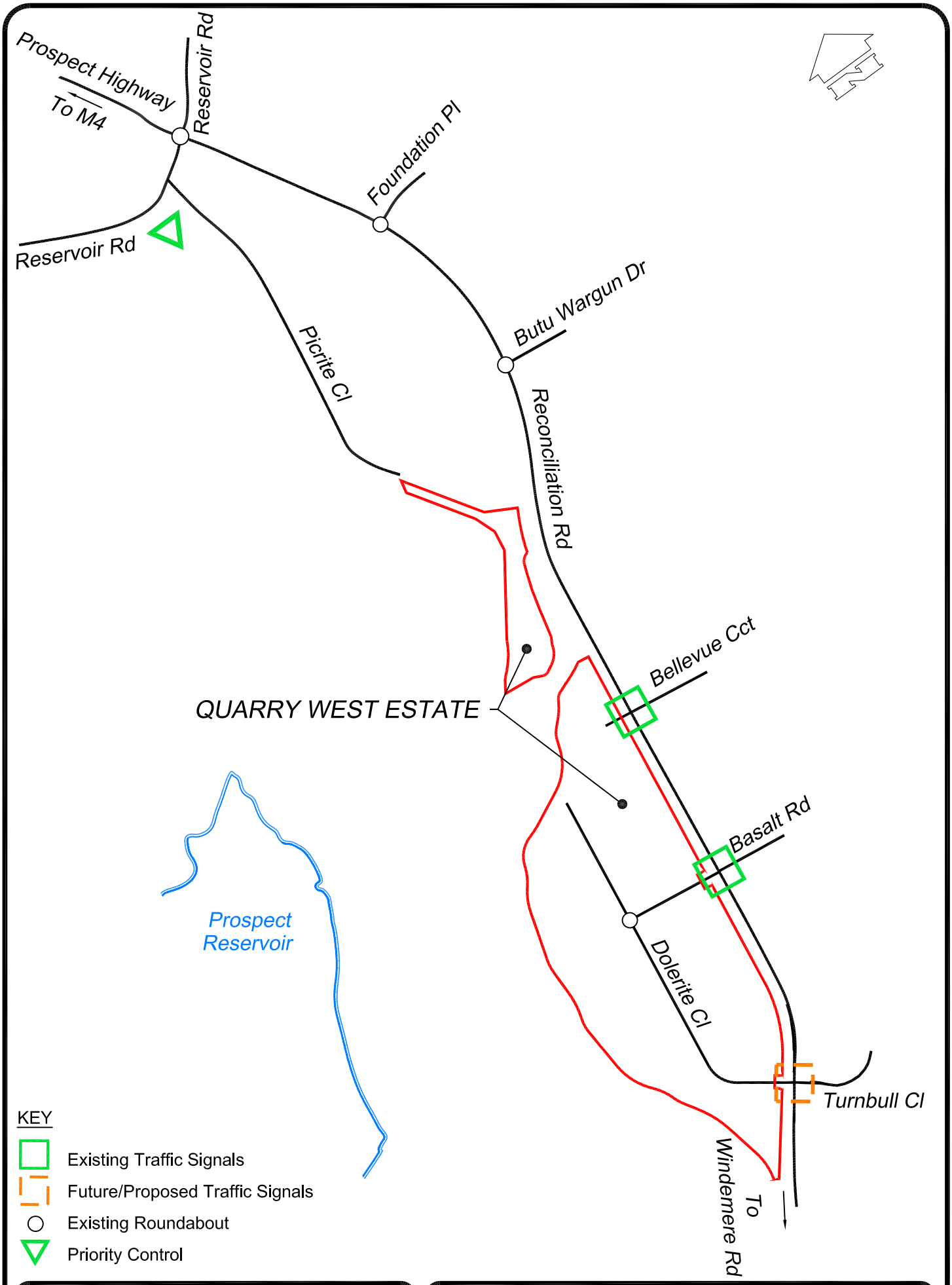
- A proposed new road to the QuarryWEST Estate opposite Bellevue Circuit creating a cross junction intersection with a new right turn bay/lane in the northern approach of Reconciliation Road; and

- A new/proposed right turn bay/lane in the northern approach of Reconciliation Road at Dolerite Close to facilitate the safe right turn into Dolerite Close from Reconciliation Drive.

The above changes and the proposed QuarryWEST estate will require:

- The reconstruction of the traffic signals at the intersection of Reconciliation Road/Bellevue Circuit to provide for the 4th arm (ie. Bellevue Circuit cul de sac); and

- The provision of new traffic signals at the intersection of Reconciliation Drive/Dolerite Close/Turnbull Close, to cater for the future traffic volumes that will use this intersection.



TRANSPORT AND URBAN PLANNING
TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS
5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 4

QUARRY WEST ESTATE
RECONCILIATION RD, PEMULWUY

MAIN ACCESS ROADS & INTERSECTIONS

JOB NO.14136

The conceptual intersection layouts for these intersections are shown on **Figures 5** and **6**.

The proposed enhancements to the above intersections will ensure that traffic generated by QuarryWEST Estate is evenly distributed over the three (3) signalised intersections and will provide for optimised traffic signal operation, with each intersection operating at similar levels of service, with spare intersection capacity. No changes are proposed for the Reconciliation Road/Basalt Road intersection. **Figure 7** shows the existing intersection layout for this intersection.

The proposed changes will provide for 3 signalised cross junction intersections with appropriate right turn bays in Reconciliation Road at all these intersections to cater safely for right turn movements from Reconciliation Road.

All of the above intersections have been designed to accommodate B Double vehicles turning into and out of Reconciliation Drive from and to the QuarryWEST Estate roads.

Existing B Double routes in the area include Reconciliation Road, Reservoir Road, the M4, Great Western Highway and Widemere Road.

3.2 QuarryWEST Estate Roads

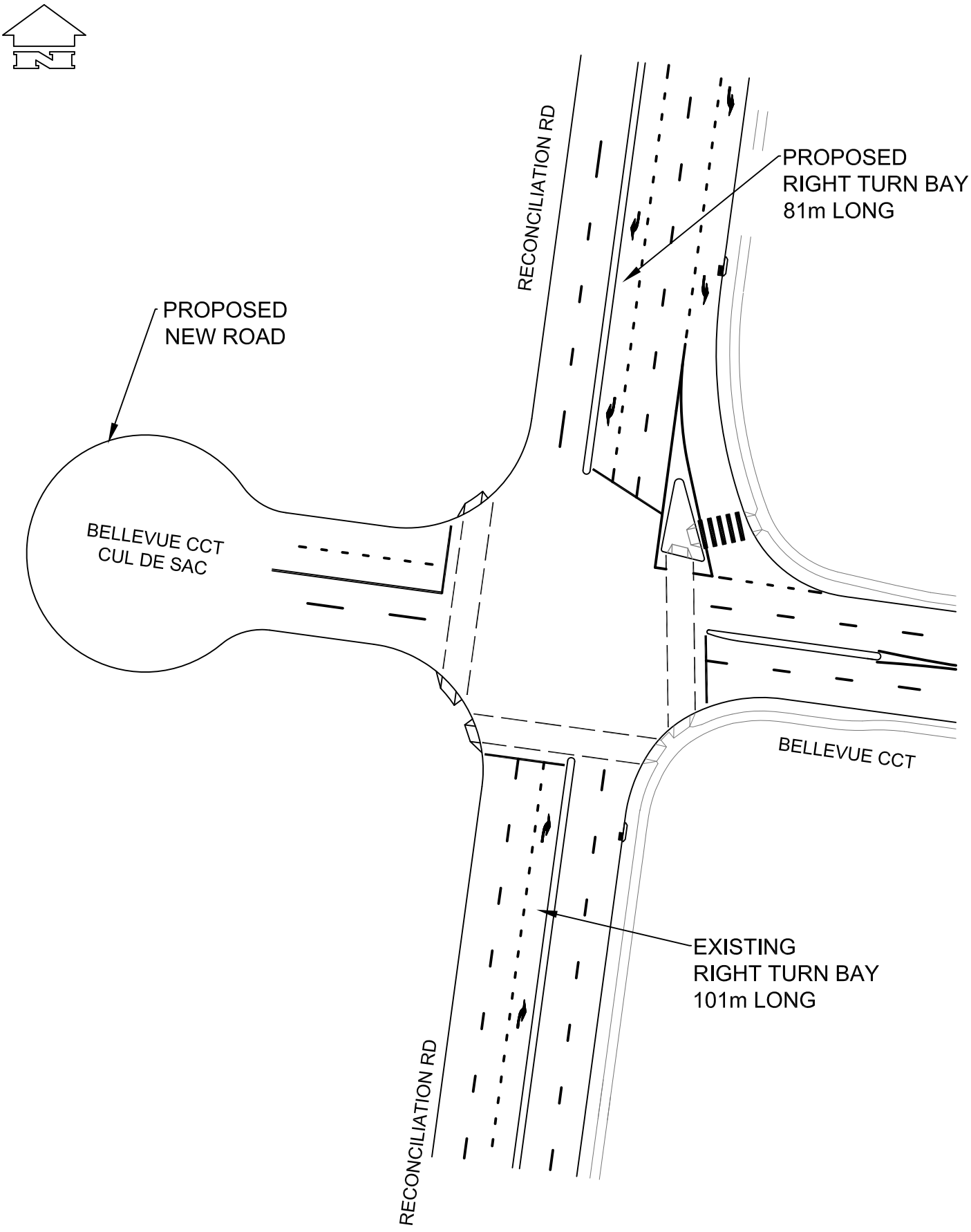
Dolerite Close, Basalt Road and Bellevue Circuit cul de sac have been designed to accommodate B Double trucks accessing the development areas within QuarryWEST.

Dolerite Close and Basalt Road will operate as public roads and away from the Reconciliation Road intersections and will be generally 13.5 metres wide between kerbs, with 3.5 metre wide verges, on both sides of the road.

A roundabout will be provided at the intersection of Dolerite Close and Basalt Road, which will also provide access to a minor estate access road, which runs in a north south direction. These roads will provide vehicle access to Lots 1, 2, 3, 4 and 5 and partial access to Lot 6.

Bellevue Circuit cul de sac will be 13.5 metres wide between kerbs with a turning head. Bellevue Circuit will provide vehicle access to Lot 7 and partial vehicle access to Lot 6.

As previously noted Lot 8 will be accessed via Picrite Close which is an existing industrial road, located to the north of the QuarryWEST Estate.



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232

Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 5

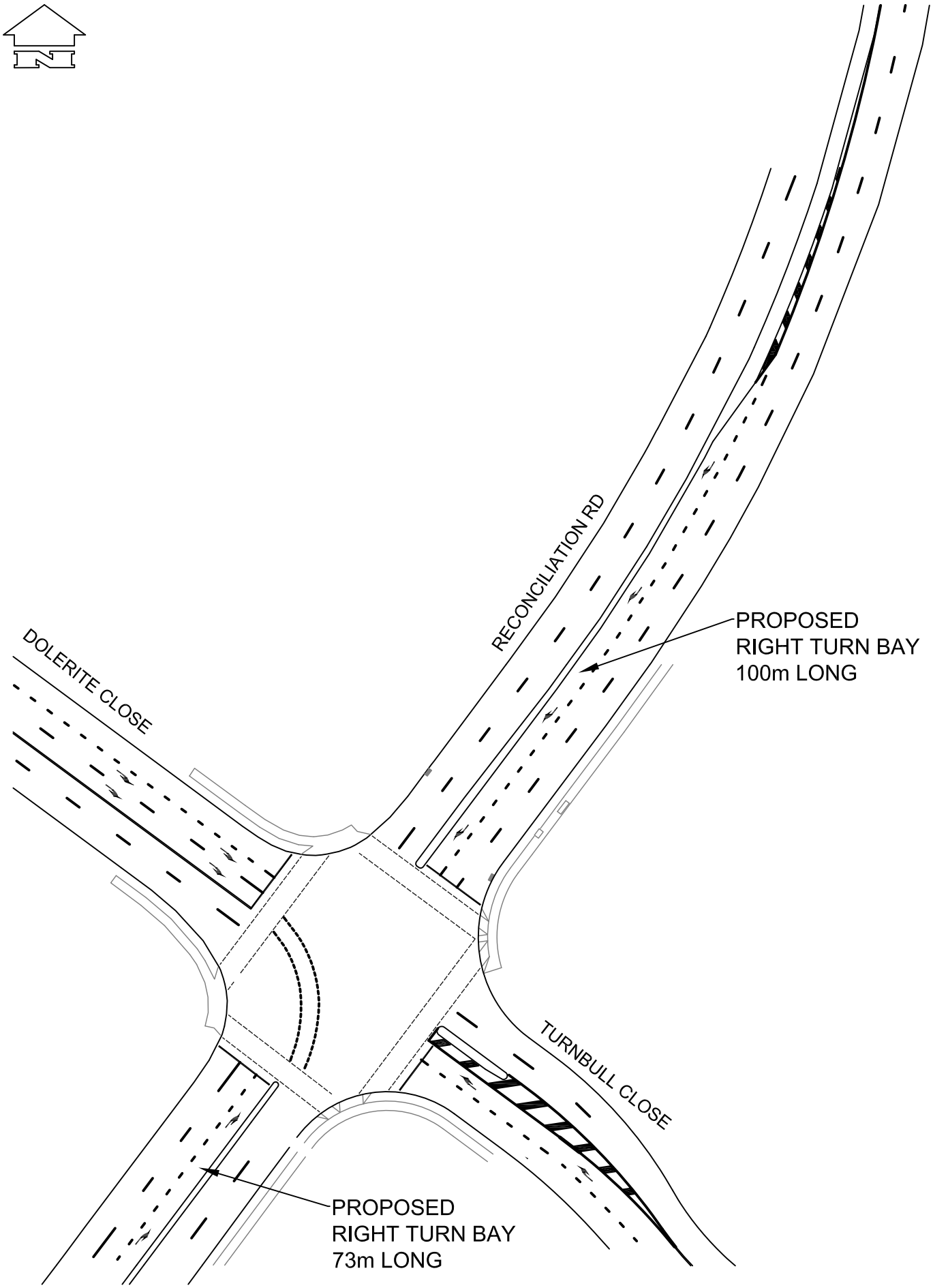
QUARRY WEST ESTATE

RECONCILIATION RD, PEMULWUY

CONCEPT INTERSECTION LAYOUT

RECONCILIATION RD & BELLEVUE CCT

JOB NO.14136



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232

Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgl.com.au www.transurbanplan.com.au

FIGURE 6

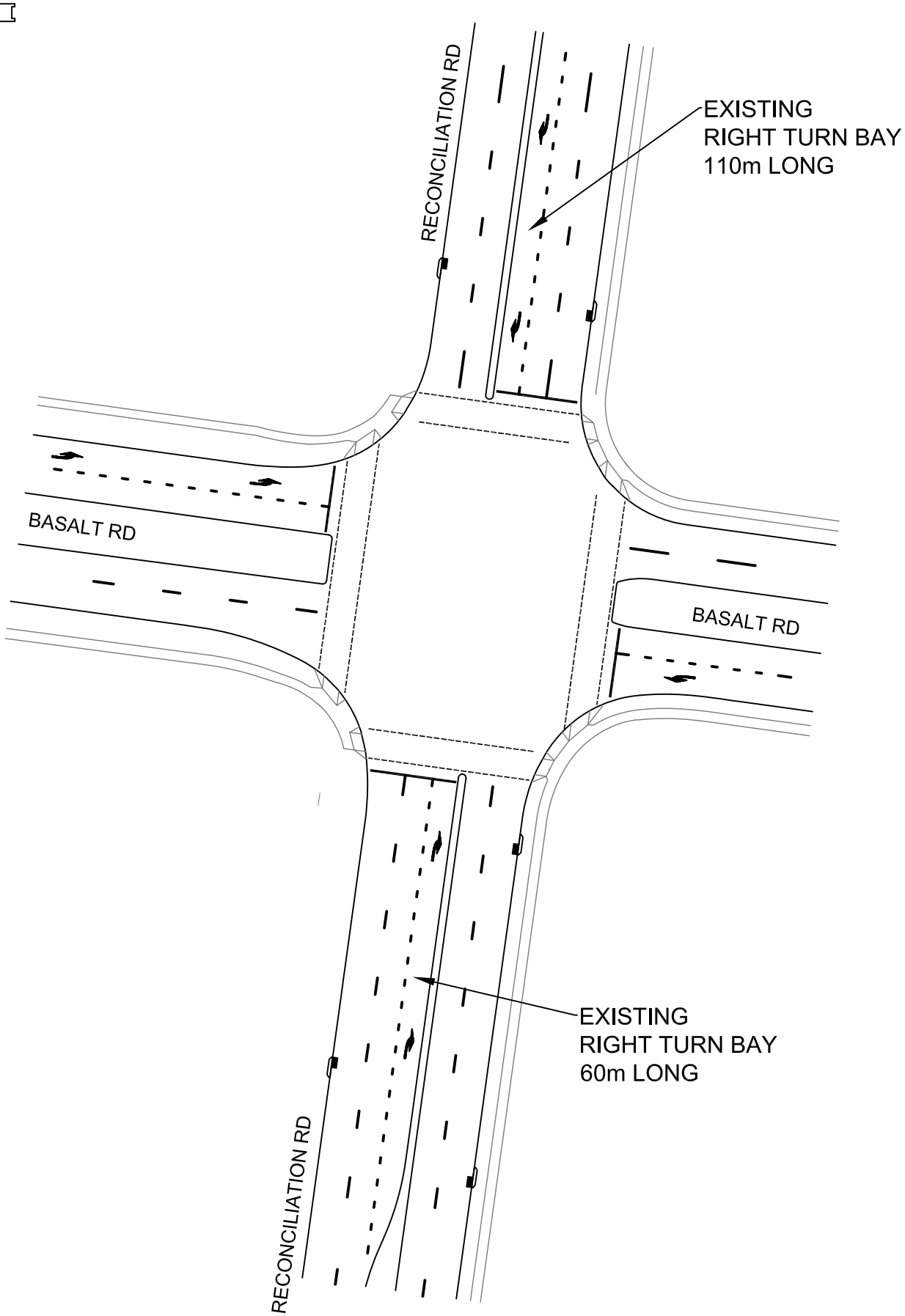
QUARRY WEST ESTATE

RECONCILIATION RD, PEMULWUY

CONCEPT INTERSECTION LAYOUT

RECONCILIATION RD, DOLERITE CL & TURNBULL CL

JOB NO.14136



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgl.com.au www.transurbanplan.com.au

FIGURE 7

QUARRY WEST ESTATE
RECONCILIATION RD, PEMULWUY

EXISTING INTERSECTION LAYOUT

RECONCILIATION RD & BASALT RD

JOB NO.14136

4.0 ASSESSMENT OF TRAFFIC AND TRANSPORT IMPACTS

4.1 Previous Traffic Assessment Studies

There have been a number of traffic and transport studies that have previously assessed the regional and local traffic effect of the Greystanes SEL. These include:

- Regional Transport Requirements for Boral's Greystanes Estate (Sinclair Knight Merz, 1999);
- Greystanes Estate Transport Plan (Environmental Resources Management Australia 2000);
- Boral Greystanes Estate, Local Traffic Study (Sinclair Knight Merz, 2001);
- Greystanes Estate, Southern Employment Land Traffic and Transport Assessment, (Sinclair Knight Merz, 2006);
- Traffic Review of Proposed DEXUS Estate Masterplan, QuarryEAST Southern Employment Lands Greystanes, (Colston Budd Hunt & Kafes Pty Ltd, 2009); and
- Various traffic reviews of individual developments contained in the DEXUS QuarryEAST Estate undertaken by Colston Budd Hunt & Kafes Pty Ltd between 2009 and 2014.

The traffic assessment for the Greystanes SEL (Sinclair Knight Merz, 2006) assessed a traffic generation for the overall Greystanes industrial development of some 4800 vehicles per hour two-way during peak periods, including a traffic generation of some 2700 to 2800 vehicles per hour two-way for the approved DEXUS QuarryEAST Estate masterplan. That report concluded that the surrounding road network incorporating the proposed road improvements and the signalised intersections on Reconciliation Road, would operate at appropriate levels of service.

Colston Budd Hunt & Kafes Pty Ltd in 2009 undertook a detailed traffic review of the DEXUS QuarryEAST Estate masterplan for warehouse/office uses and concluded that the QuarryEAST Estate would generate some 1500 – 1700 vehicles per hour two way during the morning and afternoon peak periods. This traffic generation is less than the 2700 – 2800vph two way assessed by SKM for the same area of land. The assessment also included the forecasted traffic generated by the overall Greystanes Industrial Estate (NEL and all of the SEL including QuarryWEST) for the forecasted weekday morning and afternoon peak periods traffic volumes for 2016.

The assessment concluded that the three Reconciliation Road signalised intersections at Bellevue Circuit, Basalt Road and Dolerite Close/Turnbull Close would all operate at a satisfactory level of service.

4.2 Existing Traffic Generation of QuarryEAST Estate

Traffic counts were undertaken during the weekday AM and PM peak periods in Reconciliation Road at the intersections of Basalt Road, Bellevue Circuit and Turnbull Close in August 2014.

Traffic counts were also undertaken at the intersections of Picrite Close, Reservoir Road and Prospect Highway/Reservoir Road/Reconciliation Road in November 2014.

Figure 8 and **9** show the AM and PM peak hour volumes using the above intersections.

At the time of the traffic counts for the Reconciliation Road intersections DEXUS confirms that 183,000m^2 GFA of warehouse (with approximately 10% of office space) was fully developed and occupied by tenants across 11 buildings in QuarryEAST.

During the AM and PM peak hours, the QuarryEAST development generated some 429 and 419 vehicle trips per hour respectively, which represents a traffic generation of 0.24 vehicle trips/100m^2 GFA per hour, which is significantly lower than the published RMS traffic generation rates for warehouse developments which is 0.5 vehicles trips per hour.

It is not surprising that the traffic generation for the QuarryEAST Estate warehouse development would be lower than RMS published rates, given the changes in the transport and distribution industry (since the RMS undertook the land use surveys), with longer working hours and larger size warehouse space and a smaller workforce, on-site at the same time.

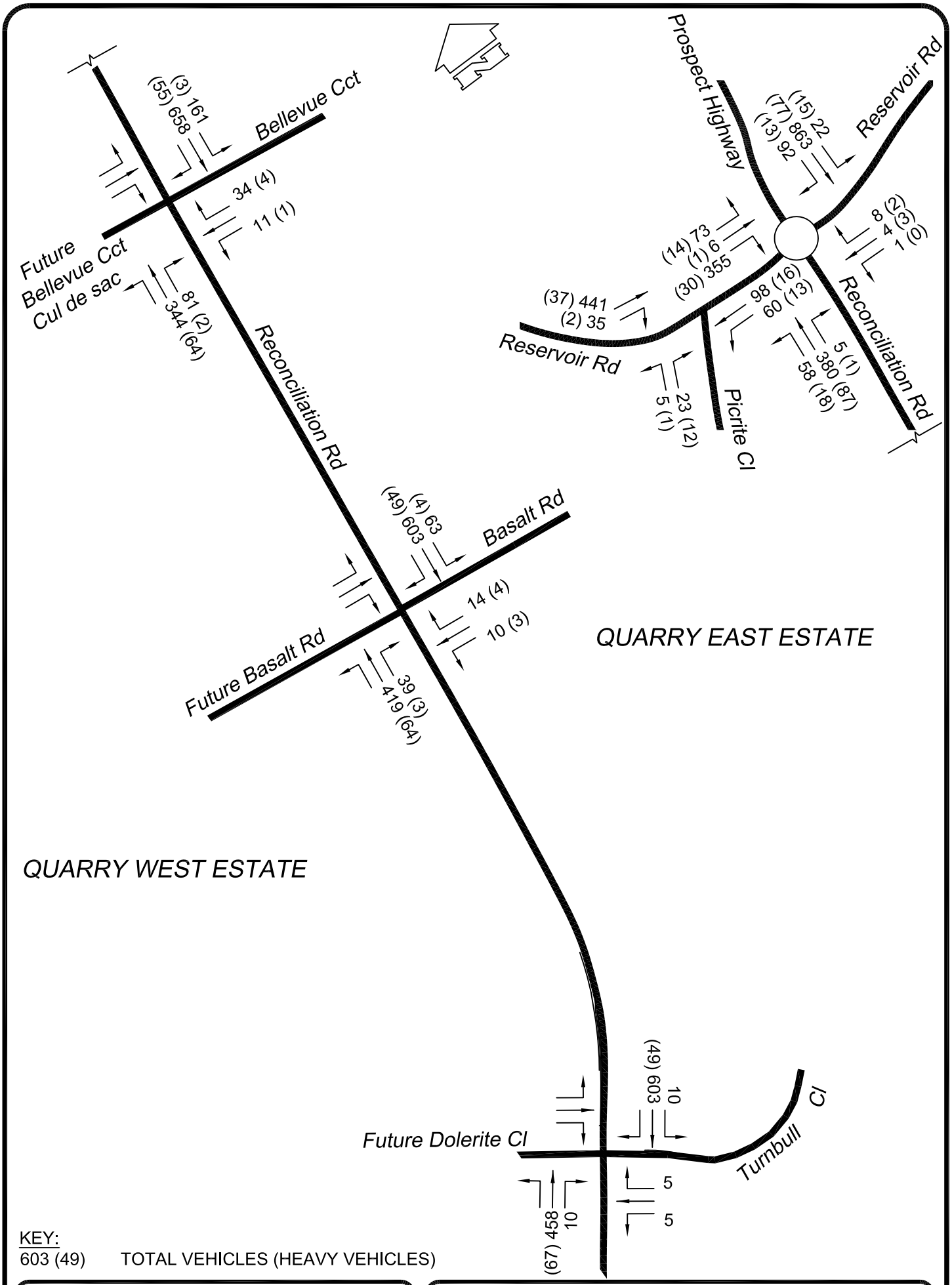
What the traffic generation of QuarryEAST does show is that the vehicle trips associated with the office component, which is typically 10% of the gross floor area, should be included in the generic warehouse rate (0.5 trips/100m^2 GFA) and there is no need to calculate this separately using the commercial rate of 2.0 trip/100m^2 GFA.

Therefore assuming a traffic generation in the peak hours of 0.5 vehicle trips/100m^2 GFA for the total floor area of the building, also incorporates those trips generated by the office component and this traffic generation is likely to be conservatively higher than the actual traffic generation of any future warehouse development at QuarryEAST and QuarryWEST.

4.3 Additional Traffic Generation of QuarryEAST

DEXUS confirms that there are currently 4 warehouse buildings under construction in QuarryEAST (15,500m^2 GFA) and one other site that will accommodate a warehouse building of 21,000m^2 GFA, providing a total of 36,500m^2. Once these buildings are complete, QuarryEAST Estate will be fully developed.

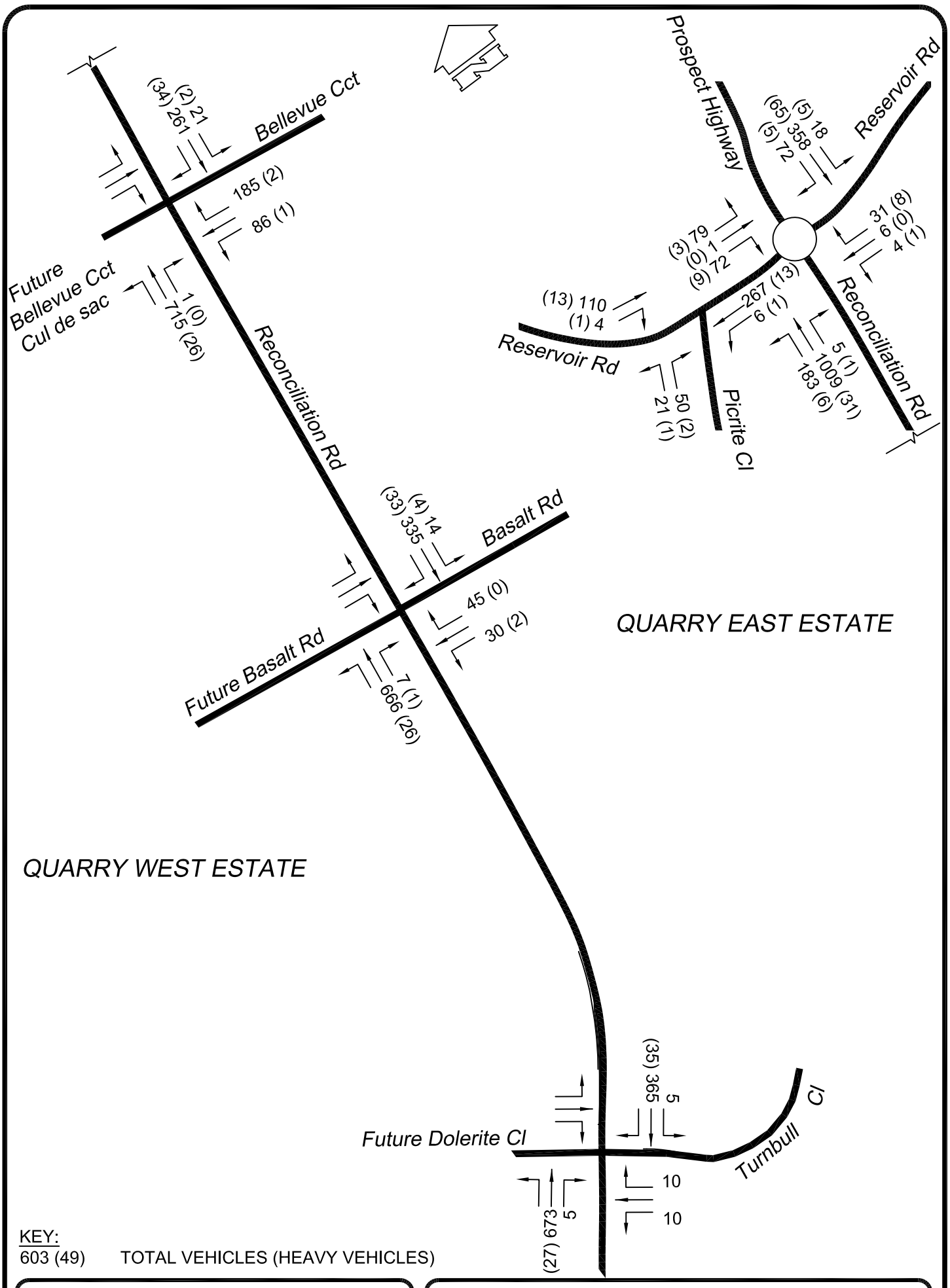
Adopting the RMS weekday peak hour rate of 0.5 trips/100m^2 GFA indicates that this additional floor space would generate some 183 vehicle trips per hour.



KEY:
603 (49) TOTAL VEHICLES (HEAVY VEHICLES)

TRANSPORT AND URBAN PLANNING
TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS
5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 8
QUARRY WEST ESTATE
RECONCILIATION RD, PEMULWUY
EXISTING AM PEAK HOUR TRAFFIC VOLUMES
JOB NO.14136



KEY:
603 (49) TOTAL VEHICLES (HEAVY VEHICLES)

TRANSPORT AND URBAN PLANNING
TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS
5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 9
QUARRY WEST ESTATE
RECONCILIATION RD, PEMULWUY
EXISTING PM PEAK HOUR TRAFFIC VOLUMES
JOB NO.14136

4.4 Traffic Generation of QuarryWEST Estate

Table 4.1 shows a breakdown of the proposed development areas for QuarryWEST. The development areas are grouped into 6 areas A, B, C, D, E and F.

The development areas include a total of:

- 117,710m^2 GFA of warehouse with 10,210m^2 GFA of office providing a total of 127,920m^2 of GFA; and
- 3,220m^2 of retail, which consists of specialty retail, a supermarket, fast food outlet and a petrol station.

TABLE 4.1

PROPOSED FLOOR SPACE OF QUARRYWEST

Developable Lot	Proposed Use and Floor Space (GFAm^2)						
	Warehouse	**Office**	**Sub Total Warehouse and Office**	**Retail**	**Super-market**	**Petrol**	**Fast Food**
Developable Lot A Lot 1	7,255	500	7,755				
Developable Lot B Lots 4 & 5	48,740	3,800	52,540				
Developable Lot C Lot 2				870	2000[1]	100[1]	250[1]
Developable Lot D Lot 3	24,155	2,500	26,655				
Developable Lot E Lots 6 & 7	36,360	3,060	39,420				
Developable Lot F Lot 8	1,200	350	1,550				
TOTAL	**117,710**	**10,210**	**127,920**	**3,220[2]**			

1. *Included in total as retail space*
2. *Includes retail, supermarket, fast food and petrol*

The traffic generated by QuarryWEST Estate has been estimated based on the Roads and Maritime Services "Guide to Traffic Generating Developments" which suggest the following two-way peak hour traffic generation rates for the various uses.

- Warehouse
  - 0.5 vehicles per hour per 100m^2 GFA in AM and PM peak hours.

- Retail
  - 12.5 vehicles per hour per 100m^2 GLFA in PM peak hour with 25% of trips drawn from passing traffic as part of a linked trip (NB. GLFA represents 75% of GFA).

- Fast Food
  - Assume 180 vehicles per hour in PM peak hour based on a McDonalds Restaurant, with 35% of trips drawn from passing traffic.

- Petrol (convenience store)
  - 0.66 vehicles per hour GFA in PM peak hour. Most driveway crossing movements for petrol stations are drawn from existing traffic passing the site. However only 25% of trips generated by the service station has been assumed to be drawn from passing traffic.

For the purposes of calculating traffic generation it is assumed that both the fast food and petrol station would generate the same volumes in the AM peak hour as the PM peak hour, but the retail uses (ie. supermarket and specialty shop would not generate any traffic in the AM peak hour).

Based on the above traffic generation rate the QuarryWEST Estate would generate a total of:

- 888 two way vehicle trips in AM peak hour of which 76 vehicle trips will be drawn from passing traffic; and

- 1158 two way vehicle trips in the PM peak hour of which 142 vehicles trips will be drawn from passing traffic.

The QuarryWEST Estate traffic has been assigned to road network in the AM and PM weekday peak hours, respectively based on:

- An 80:20 split in the peak direction for the warehouse and office uses (ie. 80% in/20% out in the AM peak hour and 20% in/80% out) in the PM peak hour; and

- 50:50 split for the retail, petrol and fast food uses.

The traffic has been assigned to road network and intersections based on the proposed development in each lot area and the location of the car park entry/exit driveways for the warehouse buildings and retail uses.

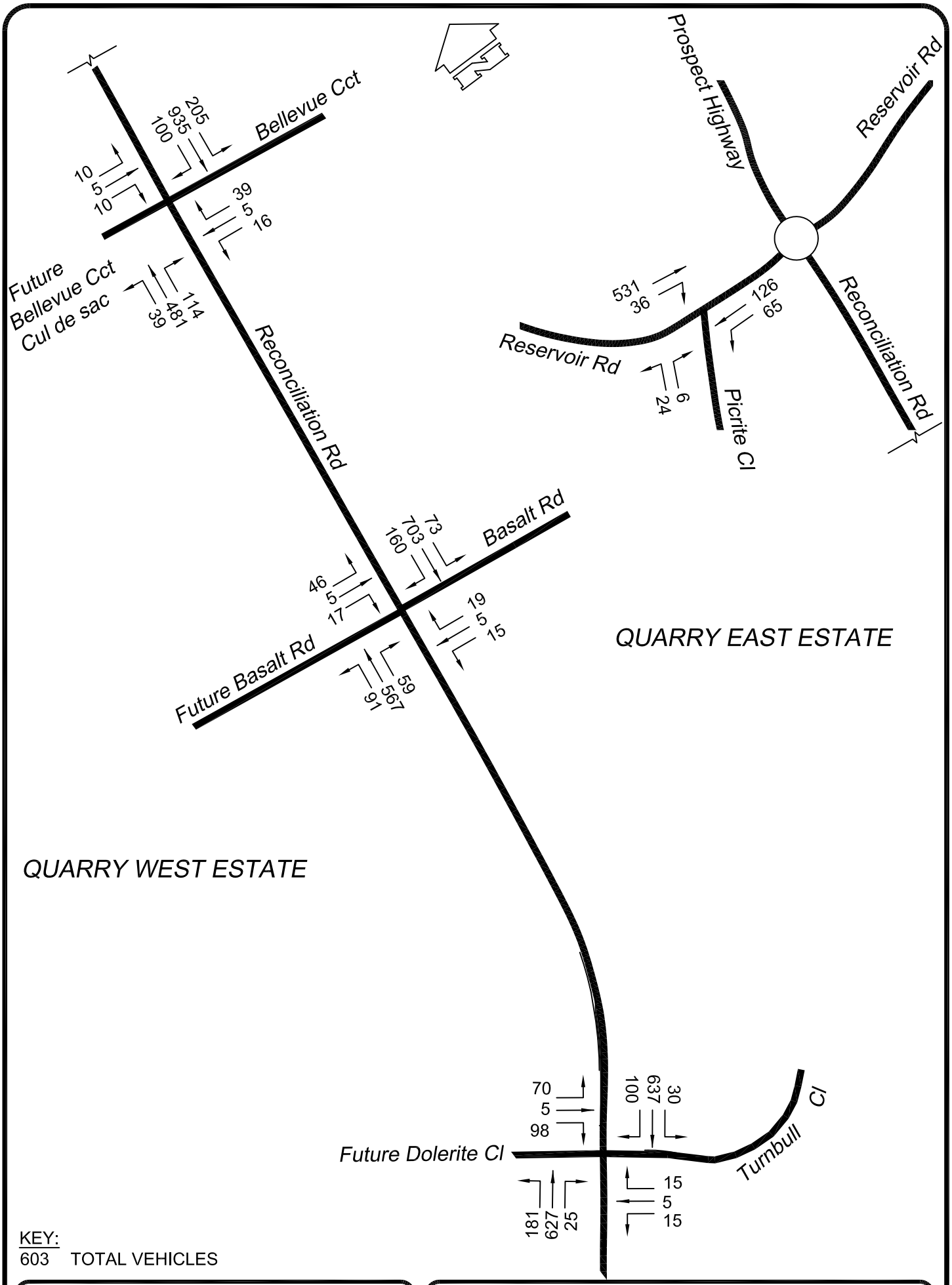
4.5 Assessment of Traffic Impacts

Figures 10 and **11** show the full development traffic for both QuarryEAST and QuarryWEST together with the 2014 traffic volumes using the Reconciliation Road intersections in the weekday AM and PM peak hours respectively.

To examine the impact of the total development traffic on the Reconciliation Road intersections, traffic modelling using the software package SIDRA 6 has been undertaken.

SIDRA assesses the operational performance of intersections under traffic signal, roundabout or sign control. The best criteria for assessing intersections controlled by traffic signals are Level of Service (LS), Degree of Saturation (DS) and Average Vehicle Delay (AVD). Table 4.2 shows the Level of Service Criteria for intersections as reproduced from the RTA's Guide to Traffic Generating Developments. The desirable design criteria for intersections is a Level of Service D or better (ie. A, B, C or D).

Average vehicle delay for intersections controlled by traffic signals is based on the delay for all vehicles using the intersection and not individual traffic movements. Provided that the average vehicle delay for all vehicles at the intersection is equivalent to a Level of Service D or better, then the intersection is considered to have a satisfactory operation.

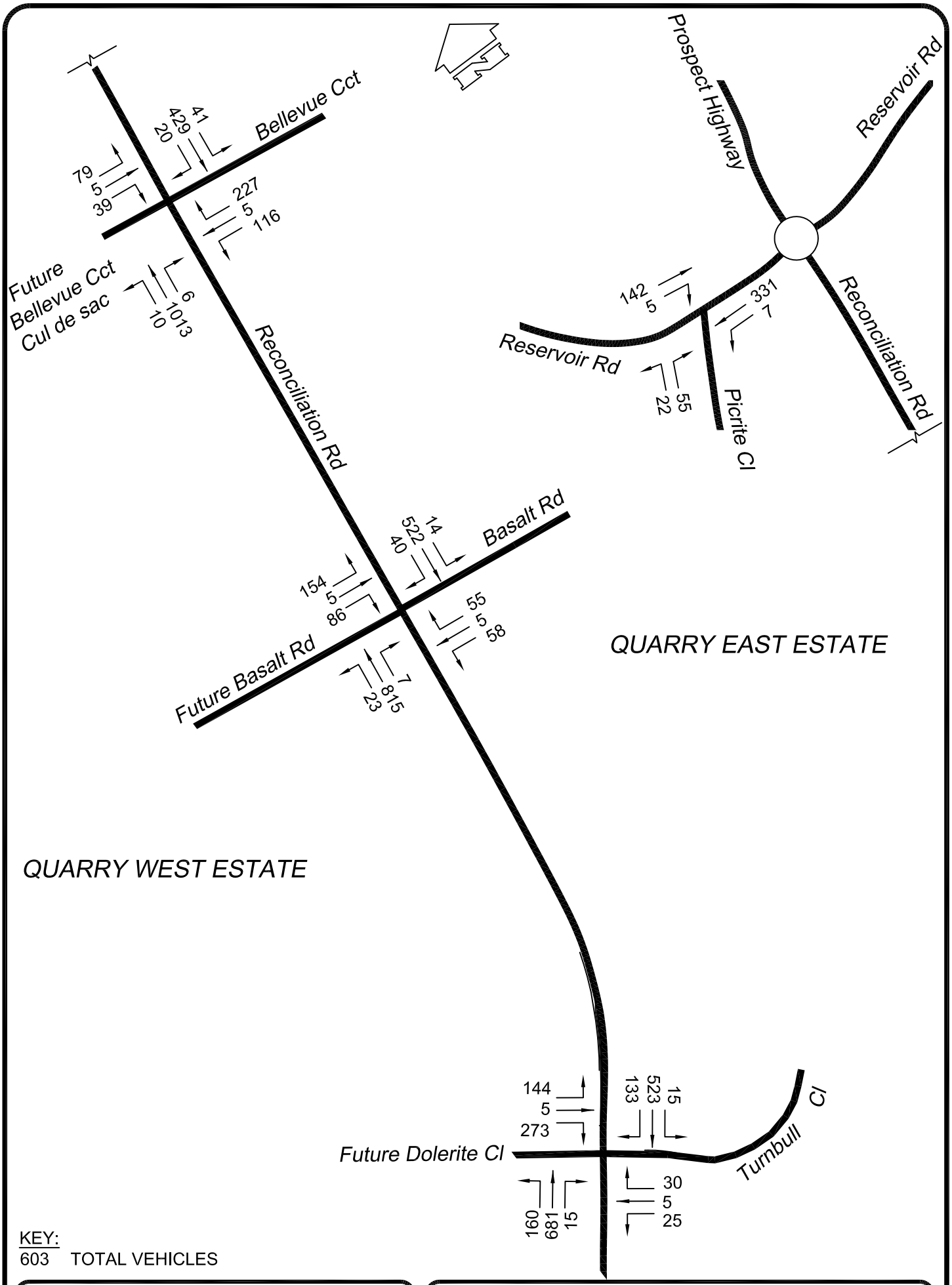


TRANSPORT AND URBAN PLANNING
TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS
5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 10

QUARRY WEST ESTATE
RECONCILIATION RD, PEMULWUY
AM PEAK HOUR TRAFFIC VOLUMES WITH FULL DEVELOPMENT OF QUARRY WEST & QUARRY EAST

JOB NO.14136



KEY:
603 TOTAL VEHICLES

TRANSPORT AND URBAN PLANNING
TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS
5/90 Toronto Parade, Sutherland NSW 2232
Phone 02 9545 1411 Fax 02 9545 1556
tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 11

QUARRY WEST ESTATE
RECONCILIATION RD, PEMULWUY
PM PEAK HOUR TRAFFIC VOLUMES WITH FULL DEVELOPMENT OF QUARRY WEST & QUARRY EAST

JOB NO.14136

TABLE 4.2

LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	> 70	Intersection is oversaturated	Oversaturated, requires other control mode

Source: Table 4.2 Guide to Traffic Generating Developments October 2002. Roads and Traffic Authority

The modelling has been undertaken based on the existing geometry for the Reconciliation Road/Basalt Road intersection (**Figure 7**) and concept geometry of the Reconciliation Road intersections with Bellevue Circuit and with Dolerite Close/Turnbull Close shown on **Figures 5** and **6**.

The traffic signal phasing included:

- Single diamond overlap phasing with standard cross phase for the intersections of Bellevue Circuit and Basalt Road with Reconciliation Road (2 intersections); and

- Double diamond phasing for the intersections of Dolerite Close/Turnbull Close with Reconciliation Road.

A cycle length of 120 seconds was assumed for all the intersections in the AM and PM peak hours, as well as pedestrian crossing movements on all legs, where crossings are provided. The full development traffic volumes also included heavy vehicles in the modelling.

The results of the traffic modelling for these intersections is shown in the following tables.

Reference to Table 4.3 which shows the modelling results for the Reconciliation Road/Bellevue Circuit/Bellevue Circuit cul-de-sac intersection indicates this intersection will have a satisfactory to good operation in both peak hours with the full development traffic of QuarryWEST and QuarryEAST with the proposed cross junction intersection and traffic signal phasing. The intersection will operate at a B level of service with average vehicle delays in the order of 21.6 to 26.4 seconds per vehicle.

Reference to Table 4.4 which shows the modelling results for the Reconciliation Road/Basalt Road intersection indicates this intersection will also have a satisfactory to good operation in both peak hours with the full development traffic of QuarryWEST and QuarryEAST and the existing geometry and traffic signal phasing. The intersection will operate at a B level of service with average vehicle delays in the order of 22.0 to 27.0 seconds per vehicle.

Reference to Table 4.5 which shows the modelling results for the Reconciliation Road/Dolerite Circuit/Turnbull Close intersection indicates this intersection will have a satisfactory operation in both peak hours with the full development traffic of QuarryWEST and QuarryEAST with the proposed geometry of the intersection and traffic signal phasing. The intersection will operate at a C level of service with average vehicle delays in the order of 32.0 to 38.2 seconds per vehicle.

While the modelling has calculated that some individual movements at each intersection have a Level of Service E, this is due to the cycle length which at 120 seconds is longer than required for the traffic demands. The Degree of Saturation (DS) for these movements is quite low indicating satisfactory traffic conditions for these movements. As previously noted the level of service for a traffic signal controlled intersection is based on the Average Vehicle Delay for all vehicles at the intersection.

The full results of the modelling are shown in Appendix 2.

TABLE 4.3

SIDRA RESULTS FOR RECONCILIATION ROAD/BELLEVUE CIRCUIT/BELLEVUE CIRCUIT CUL DE SAC INTERSECTION[1] WITH QUARRYWEST AND QUARRYEAST DEVELOPMENT

Approach	AM Peak				PM Peak			
	DS	AVD	LS	95th% Queue Length	DS	AVD	LS	95th% Queue Length
South Reconciliation Road								
Left	0.264	20.6	B	61.0	0.564	29.7	C	152.4
Through	0.264	15.0	B	61.0	0.564	24.0	B	152.5
Right	0.472	58.8	E	45.8	0.072	67.5	E	2.8
East Bellevue Circuit								
Left	0.064	44.0	D	8.8	0.161	28.8	C	31.2
Through	0.064	38.3	C	8.8	0.161	23.0	B	31.2
Right	0.183	53.0	D	17.1	0.567	45.0	D	81.8
North Reconciliation Road								
Left	0.142	6.7	A	10.9	0.030	7.0	A	2.4
Through	0.454	17.2	B	119.3	0.244	19.8	B	55.1
Right	0.418	58.4	E	40.3	0.233	68.4	E	8.8
West Bellevue Circuit Cul-de-Sac								
Left	0.041	46.2	D	5.1	0.102	26.7	B	19.6
Through	0.041	41.5	C	5.1	0.102	33.0	C	19.6
Right	0.042	51.2	D	3.7	0.102	38.2	C	12.4
TOTAL - All Vehicles	**0.472**	**21.6**	**B**	**119.3**	**0.567**	**26.4**	**B**	**152.5**

1. *Based on geometry shown in Figure 5 and single diamond overlap phasing in Reconciliation Road and cross phase in Bellevue Circuit/Bellevue Circuit cul de sac*

Where: *DS* - *Degree of Saturation*
AVD - *Average Vehicle Delay in Seconds*
LS - *Level of Service*
95th% Queue Length - *95th% Queue Length in Metres*

TABLE 4.4

SIDRA RESULTS FOR RECONCILIATION ROAD/BASALT ROAD INTERSECTION[1] WITH QUARRYWEST AND QUARRYEAST DEVELOPMENT

Approach	AM Peak				PM Peak			
	DS	AVD	LS	95th% Queue Length	DS	AVD	LS	95th% Queue Length
South Reconciliation Road								
Left	0.384	27.1	B	92.8	0.383	20.3	B	94.6
Through	0.384	21.5	B	94.4	0.383	14.7	B	94.8
Right	0.160	47.7	D	21.1	0.117	66.3	E	5.3
East Basalt Road								
Left	0.028	26.8	B	5.3	0.102	35.7	C	17.5
Through	0.130	47.7	D	11.7	0.294	48.6	D	24.7
Right	0.130	53.5	D	11.7	0.294	54.2	D	24.7
North Reconciliation Road								
Left	0.441	27.9	B	110.3	0.254	19.2	B	57.6
Through	0.441	22.2	B	111.5	0.254	13.4	A	57.7
Right	0.427	50.5	D	59.8	0.376	67.8	E	17.1
West Basalt Road								
Left	0.067	27.2	B	12.7	0.260	37.5	C	47.3
Through	0.109	46.4	D	9.9	0.367	48.3	D	34.5
Right	0.109	52.0	D	9.9	0.367	53.9	D	34.5
TOTAL - All Vehicles	**0.441**	**27.0**	**B**	**111.5**	**0.383**	**22.0**	**B**	**94.8**

1. Based on existing geometry and traffic signal phasing

Where: *DS* - *Degree of Saturation*
AVD - *Average Vehicle Delay in Seconds*
LS - *Level of Service*
95th% Queue Length - *95th% Queue Length in Metres*

TABLE 4.5

SIDRA RESULTS FOR RECONCILIATION ROAD/DOLERITE CLOSE INTERSECTION[1] WITH QUARRYWEST AND QUARRYEAST DEVELOPMENT

Approach	AM Peak				PM Peak			
	DS	AVD	LS	95th% Queue Length	DS	AVD	LS	95th% Queue Length
South Reconciliation Road								
Left	0.493	28.6	C	125.4	0.595	36.6	C	142.5
Through	0.493	23.6	B	125.4	0.595	31.6	C	142.5
Right	0.122	57.9	E	10.0	0.068	56.2	D	5.8
East Turnbull Close								
Left	0.052	45.5	D	6.7	0.069	43.1	D	9.7
Through	0.052	39.9	C	6.7	0.069	37.5	C	9.7
Right	0.145	66.5	E	6.5	0.125	55.7	D	11.4
North Reconciliation Road								
Left	0.392	27.8	B	93.9	0.384	34.2	C	83.8
Through	0.392	22.5	B	95.1	0.384	28.9	C	84.7
Right	0.478	60.8	E	41.4	0.583	60.7	E	54.3
West Dolerite Close								
Left	0.147	40.0	C	23.6	0.262	38.3	C	46.3
Through	0.147	34.4	C	23.6	0.262	32.7	C	46.3
Right	0.468	68.5	E	21.7	0.561	59.6	E	55.1
TOTAL - All Vehicles	**0.493**	**30.0**	**C**	**125.4**	**0.595**	**38.2**	**C**	**142.5**

1. Based on Geometry shown in Figure 6 and double diamond overlap phasing at intersection

Where: DS - Degree of Saturation
AVD - Average Vehicle Delay in Seconds
LS - Level of Service
95th% Queue Length - 95th% Queue Length in Metres

The proposed small warehouse development in Lot F will generate additional traffic volumes via Picrite Close and the intersection of Picrite Close/Reservoir Road.

The estimated AM and PM peak hour traffic volumes generated by Lot F will be 8 vehicles per hour, which is a relatively small traffic volume.

While this volume of additional traffic is unlikely to have any significant impact on the intersection of Reservoir Road/Picrite Close, and or other adjacent intersections, traffic modelling has also been undertaken for this intersection using the existing traffic volumes for the AM and PM peak hours as shown on **Figures 8** and **9** and the additional traffic generated by QuarryWEST and QuarryEAST in the AM and PM peak hours as shown in **Figures 10** and **11**.

The results of the traffic modelling are shown in Tables 4.6 and 4.7.

Reference to Table 4.6 and 4.7 shows that the additional traffic from QuarryWEST and QuarryEAST developments will have minimal impact on traffic conditions at the Reservoir Road/Picrite Close intersection. The intersection will continue to operate at a good level of service with a Level of Service A operation in both the AM and PM peak hours with low vehicle delays for all vehicles using the intersection, including vehicles turning left or right out of Picrite Close.

TABLE 4.6

SIDRA RESULTS FOR RESERVOIR ROAD/PICRITE CLOSE INTERSECTIONS FOR EXISTING CONDITIONS

Approach	AM Peak				PM Peak			
	DS	AVD	LS	95th% Queue Length	DS	AVD	LS	95th% Queue Length
South Picrite Close								
Left	0.004	6.1	A	0.1	0.017	6.5	A	0.5
Right	0.051	11.5	A	1.6	0.057	7.2	A	1.3
East Reservoir Road								
Left	0.089	5.8	A	0	0.140	5.7	A	0
Through	0.089	0	A	0	0.140	0	A	0
West Reservoir Road								
Through	0.260	0.8	A	13.2	0.065	1.2	A	3.3
Right	0.260	6.4	A	13.2	0.065	7.1	A	3.3
TOTAL - All Vehicles	**0.260**	**1.8**	**A**	**13.2**	**0.140**	**1.5**	**A**	**3.3**

Where: *DS* - *Degree of Saturation*
AVD - *Average Vehicle Delay in Seconds*
LS - *Level of Service*
95th% Queue Length - *95th% Queue Length in Metres*

TABLE 4.7

SIDRA RESULTS FOR RESERVOIR ROAD/PICRITE CLOSE INTERSECTION WITH QUARRYWEST AND QUARRYEAST DEVELOPMENT

Approach	AM Peak				PM Peak			
	DS	AVD	LS	95th% Queue Length	DS	AVD	LS	95th% Queue Length
South Picrite Close								
Left	0.005	6.2	A	0.1	0.019	6.8	A	0.5
Right	0.069	14.0	A	2.1	0.070	7.8	A	1.6
East Reservoir Road								
Left	0.108	5.8	A	0	0.173	5.7	A	0
Through	0.108	0	A	0	0.173	0	A	0
West Reservoir Road								
Through	0.321	1.0	A	17.9	0.084	1.7	A	4.7
Right	0.321	6.6	A	17.9	0.084	7.5	A	4.7
TOTAL - All Vehicles	**0.321**	**1.9**	**A**	**17.9**	**0.173**	**1.6**	**A**	**4.7**

Where: *DS* - *Degree of Saturation*
AVD - *Average Vehicle Delay in Seconds*
LS - *Level of Service*
95th% Queue Length - *95th% Queue Length in Metres*

4.6 B Double Routes

As previously noted the road network for QuarryEAST and QuarryWEST has been designed to accommodate B Double vehicles including the traffic signal controlled intersections along Reconciliation Road at Bellevue Circuit/Bellevue Circuit cul-de-sac, Basalt Road and Dolerite Close/Turnbull Close.

Reconciliation Road is an approved B Double route and DEXUS have recently applied for this to be gazetted as a permanent B Double route.

Reconciliation Road links to the other approved B Double routes including Prospect Highway, M4, Great Western Highway and Widemere Road.

4.7 Public Transport

A future bus transitway is planned on the western side of Reconciliation Drive, which will connect Blacktown with the Liverpool to Parramatta Bus Transitway. Provision for this is provided within the overall road reserve.

Transit Systems operates the 812 bus service along Reconciliation Road between Fairfield Railway Station and Blacktown Rail Station. This is a peak hour service that operates at 30 minute intervals Monday to Friday.

Bus stops are located on both sides of Reconciliation Road close to the intersections of Bellevue Circuit, Basalt Road and Dolerite Close/Turnbull Close.

4.8 Bicycles

Cycleway provision has been made in the Transitway Road Reserve on the western side of Reconciliation Road. This cycleway will be constructed by the RMS at a future time in conjunction with the Transitway. This cycleway will link to existing and future cycleways in the Blacktown, Holroyd and Fairfield LGA's. Appendix 2 provides details of the existing and proposed cycleway in these LGA's.

4.9 Pedestrian Network

QuarryWEST Estate will provide pedestrian linkages within the Estate along the footpath/verge areas in the internal roads, as well as along the western side of Reconciliation Road.

Safe pedestrian crossing facilities across Reconciliation Road will be provided at the traffic signal controlled intersection at:

- Bellevue Circuit/Bellevue Circuit cul de sac;
- Basalt Road; and
- Dolerite Close/Turnbull Close.

4.10 Construction Impacts

The construction workforce is expected to be approximately 500 persons, but this number will not be on site at the same time during the full period of construction.
It would be expected that approximately half of this workforce could be on site at the same time which is some 250 personnel. Adopting a driver rate of 85% then arrival and departure trips of the workforce is estimated as 213 vehicle trips each way per day (ie. 213 inbound and 213 outbound trips per day).

Heavy vehicle associated with deliveries of materials would visit the site on a regular basis and on an average day somewhere between 10-20 heavy vehicles could be expected, although this would vary depending on the activities being undertaken.

The total number of vehicle trips during the weekday AM and PM peak hours associated with construction will be significantly less than when QuarryWEST is fully operational and therefore the impacts during construction are expected to be satisfactory.

5.0 PARKING PROVISION AND MANOEUVRING

5.1 Car Parking Provision

The approval for the modified concept plan for Greystanes SEL requires the car parking to be provided in accordance with the following rates:

- Warehouse - one (1) space per 300m^2 GFA
- Commercial - one (1) space per 40m^2 GFA
- Retail - one (1) space per 20m^2 GFA

Holroyd Council's DCP parking rate for Shops of 1 space per 8m^2 GFA has been adopted for the fast food outlet and the service (petrol) station.

Table 5.1 shows the parking calculation for the QuarryWEST Estate broken down for the development lot areas. Reference to Table 5.1 shows that the parking requirement is satisfied for each of the development lot areas and therefore the proposed car parking provision complies with the modified concept plan approval.

In total a nominal 927 car parking spaces are shown on the QuarryWEST Estate masterplan and the total required is 836 car spaces.

The car parking areas have been generally designed to comply with the requirements of AS2890.1

TABLE 5.1

PARKING CALCULATION FOR QUARRYWEST

Developable Lot	Floor Space (GFAm^2)					
	Warehouse	Office	Retail	Shop	Required Parking	Parking Provision
Developable Lot A Lot 1	7,255	500			37	79
Developable Lot B Lots 4 & 5	48,740	3,800			258	258
Developable Lot C Lot 2			2,870	350	187	188
Developable Lot D Lot 3	24,155	2,500			143	143
Developable Lot E Lots 6 & 7	36,360	3,060			198	208
Developable Lot F Lot 8	1,200	350			13	51
TOTAL	**117,710**	**10,210**	**3,220**		**836**	**927**

5.2 Internal Manoeuvring

The concept warehouse layouts and hard stand areas will be designed to accommodate the largest vehicle, which will be typically a B Double. The internal roads, driveways and hardstand areas will be designed to AS2890.2 requirements.

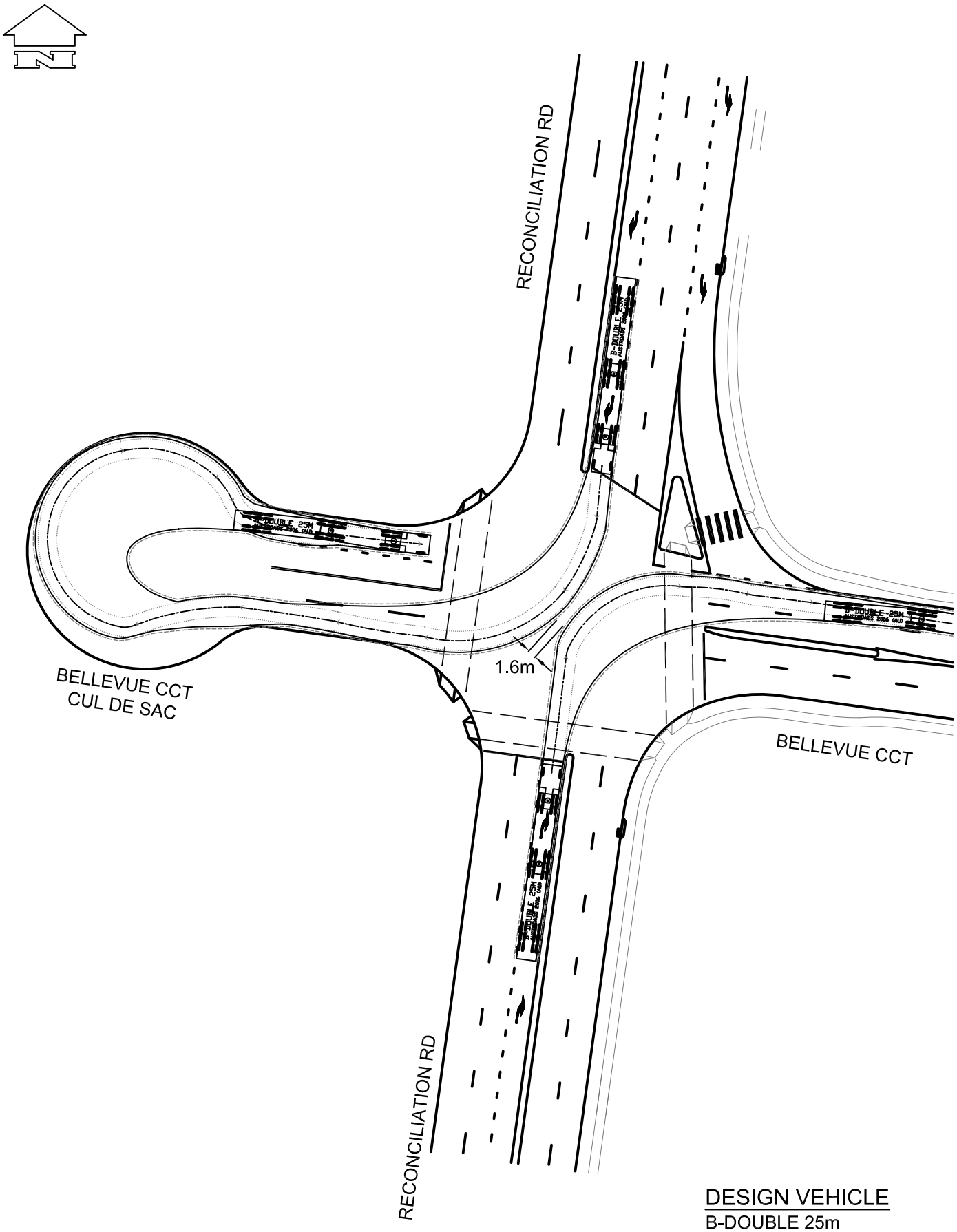
5.3 QuarryWEST Estate Roads

As noted in Section 3.2 the internal QuarryWEST Estate Roads including the intersections in Reconciliation Road are designed to accommodate B Double vehicles.

Figures 12D, **A** to **D** shows the swept path of a B Double vehicle turning right and or left to and from Reconciliation Road at the signalised intersections.

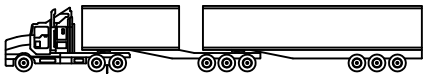
Figure 12E shows the swept path for a B Double vehicle using the roundabout at the intersection of Basalt Road and Dolerite Close.

Reference to these swept path diagrams shows that manoeuvring is satisfactory and fully in accordance with Austroads requirements as appropriate.



DESIGN VEHICLE

B-DOUBLE 25m



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232

Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 12 A

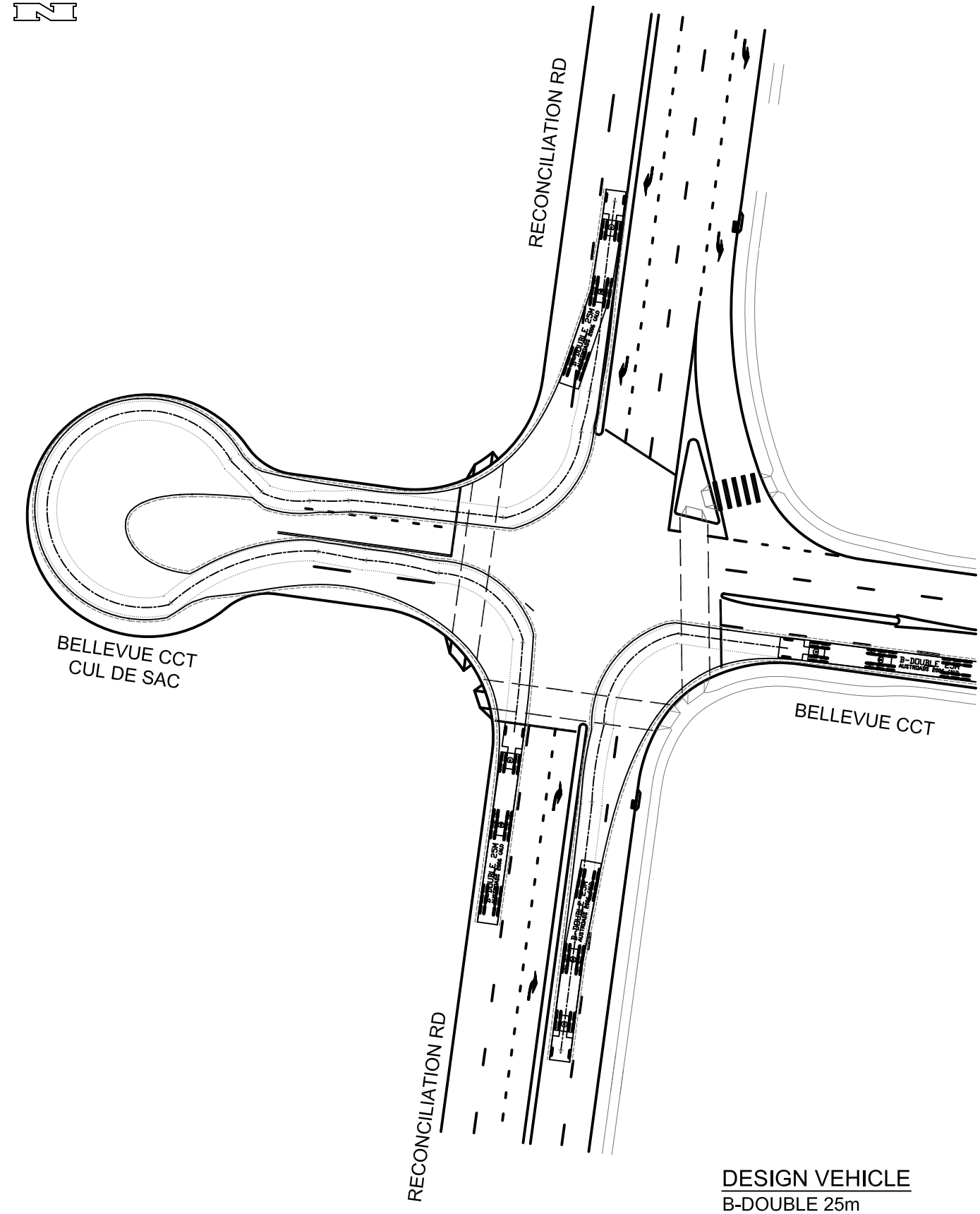
QUARRY WEST ESTATE

RECONCILIATION RD, PEMULWUY

TURNPATH DIAGRAM

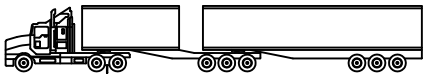
RIGHT TURN - RECONCILIATION RD TO BELLEVUE CCT

JOB NO.14136



DESIGN VEHICLE

B-DOUBLE 25m



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232

Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 12 B

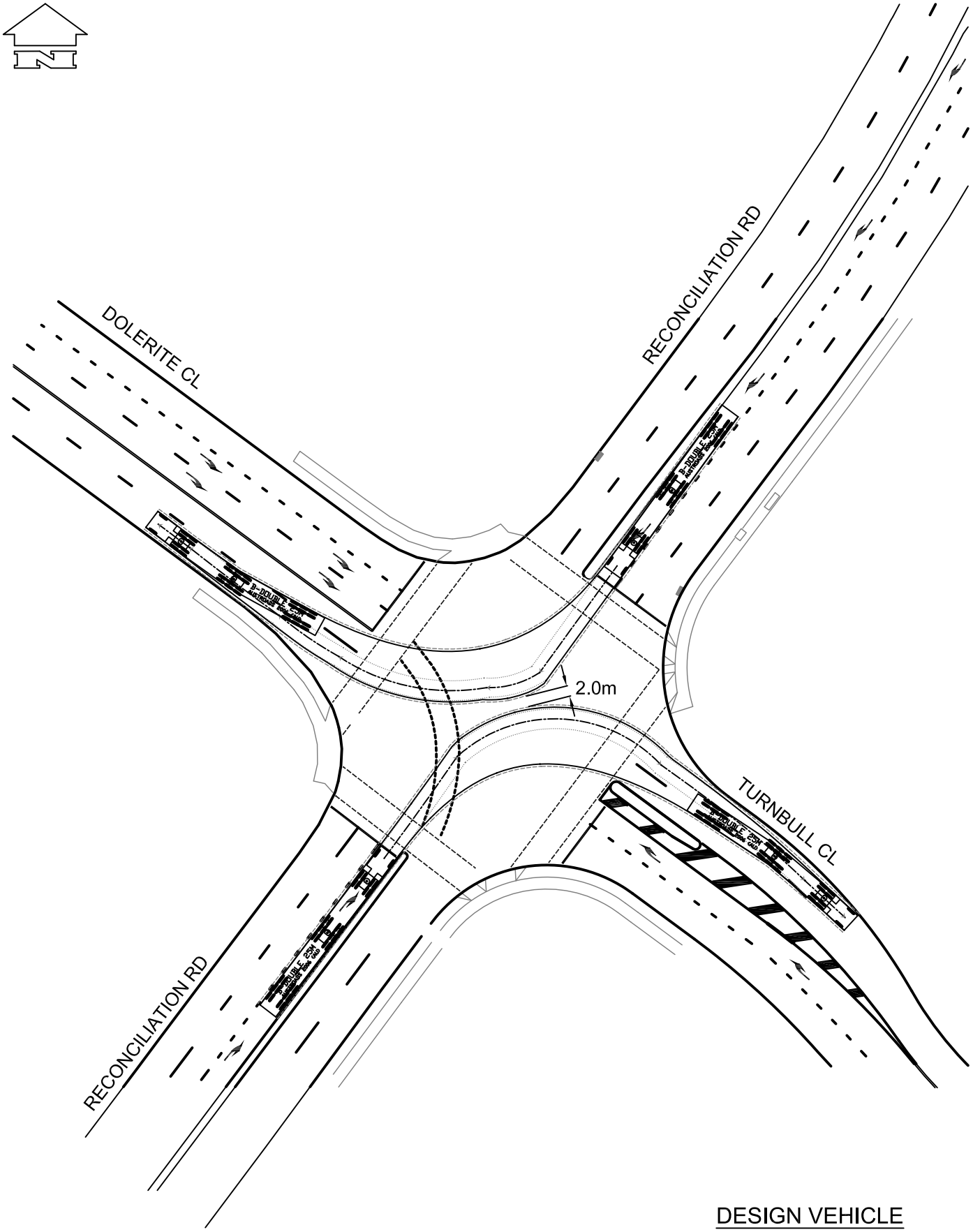
QUARRY WEST ESTATE

RECONCILIATION RD, PEMULWUY

TURNPATH DIAGRAM

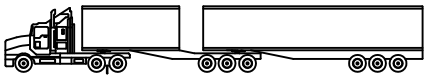
LEFT TURN - BELLEVUE CCT TO RECONCILIATION RD

JOB NO.14136



DESIGN VEHICLE

B-DOUBLE 25m



TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232

Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 12 C

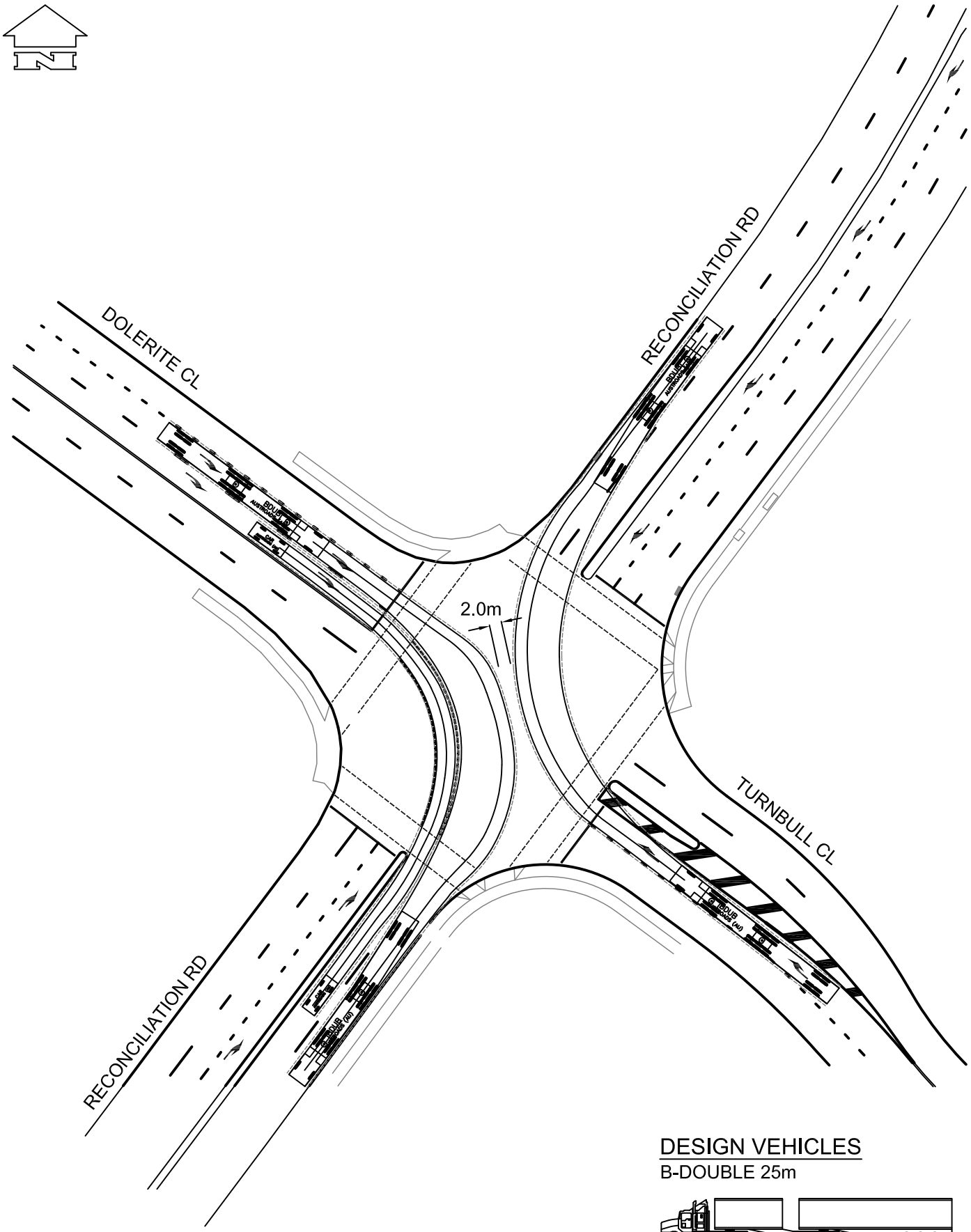
QUARRY WEST ESTATE

RECONCILIATION RD, PEMULWUY

TURNPATH DIAGRAM - RIGHT TURN

RECONCILIATION RD TO TURNBULL CL & DOLERITE CL

JOB NO.14136



DESIGN VEHICLES

B-DOUBLE 25m

B85 CAR

TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232

Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 12 D

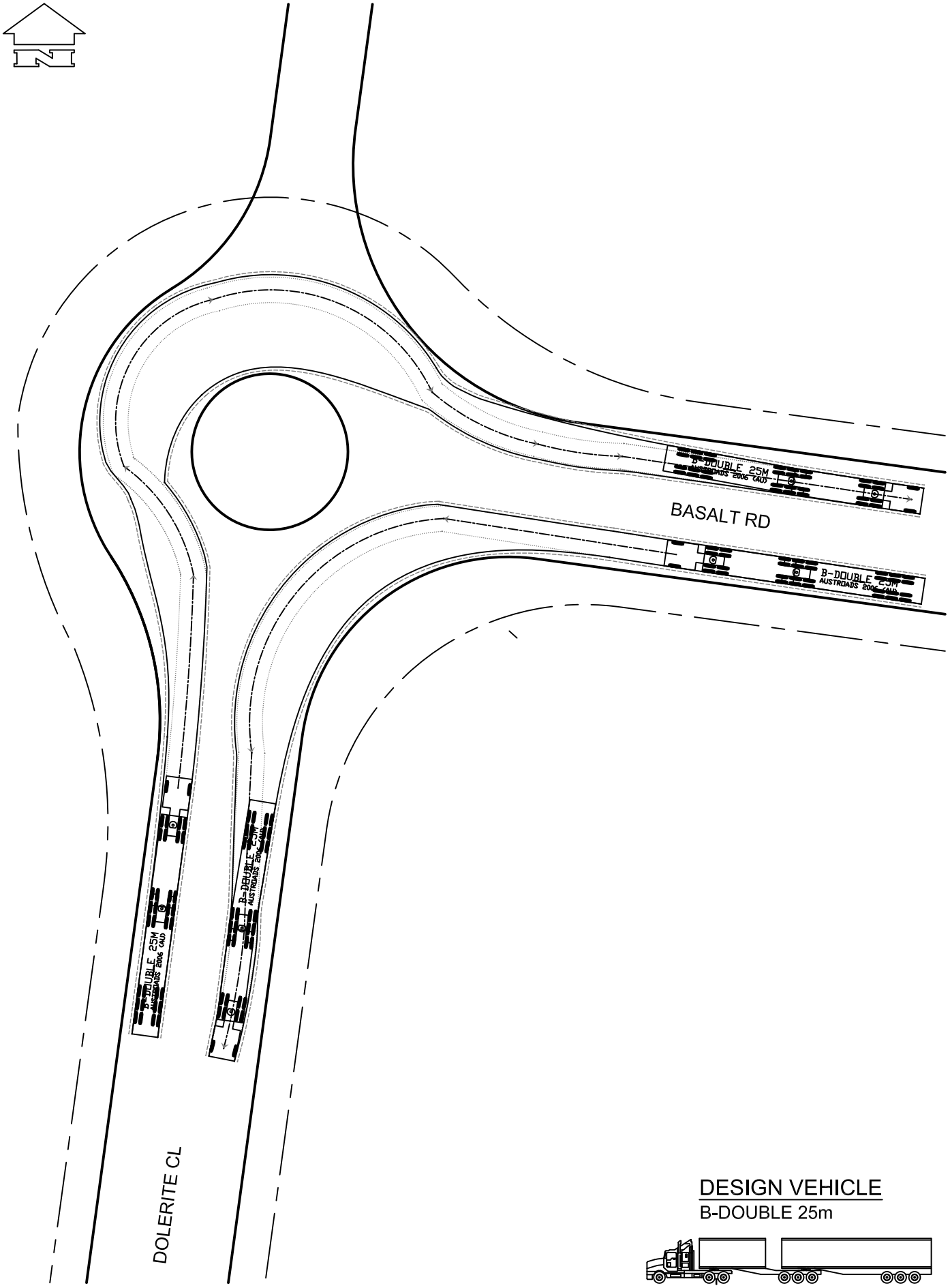
QUARRY WEST ESTATE

RECONCILIATION RD, PEMULWUY

TURNPATH DIAGRAM - RIGHT TURN

TURNBULL CL & DOLERITE CL TO RECONCILIATION RD

JOB NO.14136



DESIGN VEHICLE

B-DOUBLE 25m

TRANSPORT AND URBAN PLANNING

TRAFFIC, TRANSPORT & PROJECT MANAGEMENT CONSULTANTS

5/90 Toronto Parade, Sutherland NSW 2232

Phone 02 9545 1411 Fax 02 9545 1556

tupa@tpgi.com.au www.transurbanplan.com.au

FIGURE 12 E

QUARRY WEST ESTATE

RECONCILIATION RD, PEMULWUY

TURNPATH DIAGRAM

INTERNAL ROUNDABOUT - DOLERITE CL

JOB NO.14136

6.0 CONCLUSIONS

This report has been prepared to assess the traffic, transport and parking impacts of the DEXUS QuarryWEST Estate Masterplan.

The masterplan proposes minor changes to two of the intersections in Reconciliation Road at Dolerite Close/Turnbull Close and at Bellevue Circuit/Bellevue Circuit Cul-de-Sac to provide improved vehicle access to the QuarryWEST Estate.

The proposed enhancements to the intersections will ensure that the traffic generated by the QuarryWEST Estate is more evenly distributed over the three signalised intersections and will provide for optimised traffic signal operation.

The provision of additional right turn bays in Reconciliation Road at the above intersections will ensure that right turn movements are safely catered for at these intersections.

The Reconciliation Road intersections and the QuarryWEST Estate Road are designed to cater for B Double vehicles and the design of the Estate Roads and all intersections are considered to be satisfactory and in accordance with the required standards.

QuarryWEST Estate incorporates a total floor area of 131,140m^2 including some 127,920m^2 GFA of warehouse and office and 3,220m^2 GFA of retail/fast food/petrol uses.

The assessment of the traffic impacts of the full development of QuarryWEST and QuarryEAST indicates that the impacts will be satisfactory with all intersections operating at an acceptable level of service.

The proposed car parking provision will be adequate and will meet/exceed the requirements of the approved concept plan for Greystanes SEL.

All car parking areas for the industrial warehouse buildings, as well as the internal roads used by trucks, driveways and hardstand areas can be designed to comply with AS2890.1 and AS2890.2 requirements as appropriate.

APPENDIX 1

Masterplan Plans

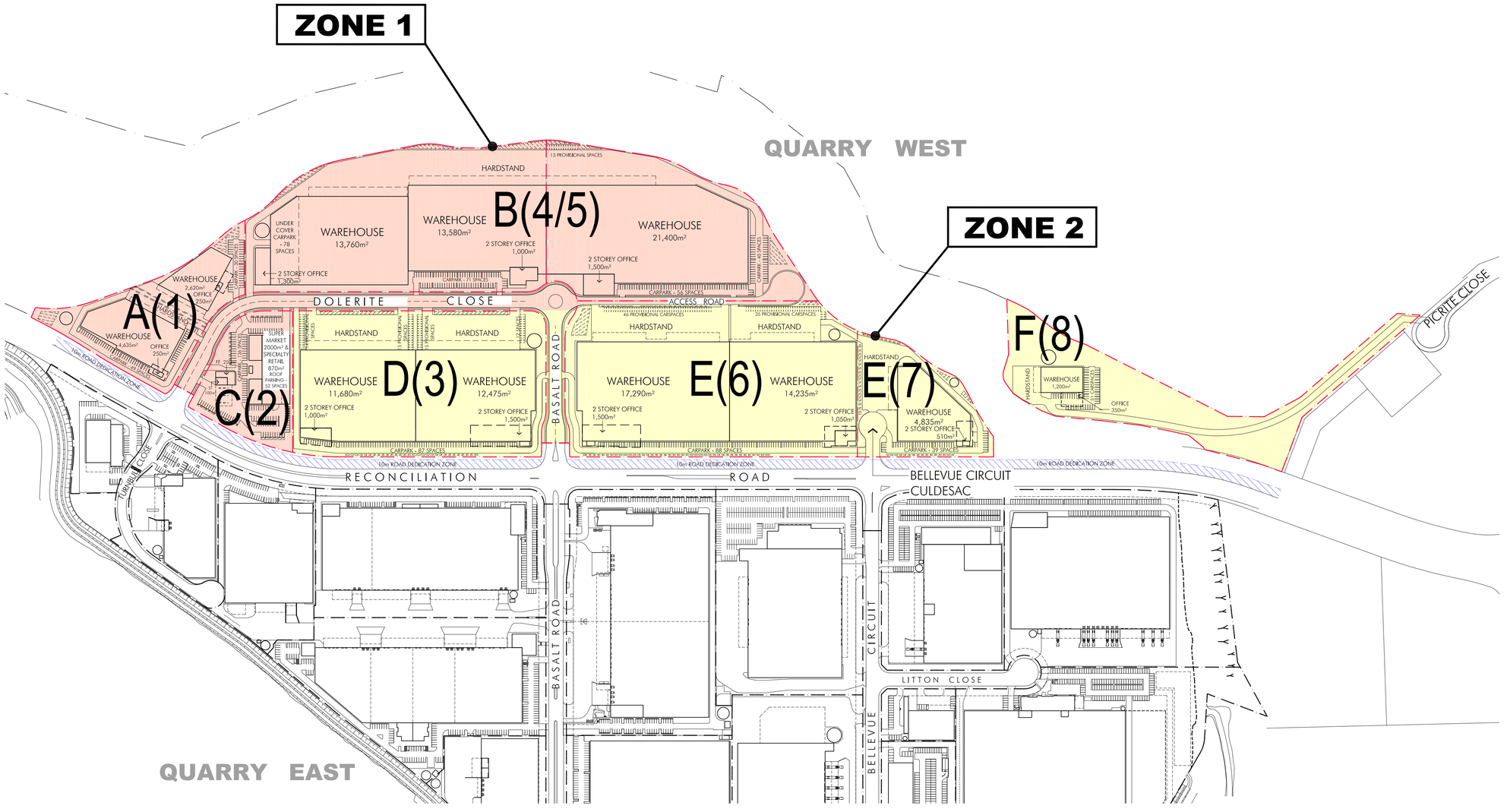
DEVELOPMENT DATA

TOTAL SITE AREA	approx. 728,319m²
QUARRY EAST SITE AREA	approx. 472,429m²
QUARRY WEST SITE AREA	approx. 255,890m²
QUARRY WEST DEVELOPABLE SITE AREA (INCL. LANDSCAPE AREA)	242,397m²
QUARRY WEST NON-DEVELOPABLE SITE AREA (INCL. BASALT ROAD & DOLERITE CLOSE)	13,493m²
TOTAL BUILDING AREA	131,140m²
TOTAL AWNING AREA	9,524m²
TOTAL HEAVY DUTY AREA	44,870m²
TOTAL LIGHT DUTY AREA	24,464m²
TOTAL LANDSCAPE AREA (% CALC. FROM DEVELOPABLE AREA)	39,038m²(16%)
TOTAL SITE COVER (% CALC. FROM DEVELOPABLE AREA)	136,298m² (56%)
FSR	0.5:1
PARKING CONTROLS (WAREHOUSE 1/300m², OFFICE 1/40m², RETAIL 1/20m²,FAST FOOD 1/8m²)	
TOTAL PARKING REQUIRED	836
TOTAL PARKING PROVIDED	927

PROPOSED DEVELOPMENT AREAS

ZONE 1	OFFICE	WAREHOUSE	RETAIL	TOTAL
DEVELOPABLE LOT A(1) - 17,003m² OFFICE WAREHOUSE	500m²	7,255m²		7,755m²
DEVELOPABLE LOT B(4/5) - 82,338m² OFFICE WAREHOUSE	3,800m²	48,740m²		52,540m²
DEVELOPABLE LOT C(2) - 11,966m² RETAIL SUPERMARKET FAST FOOD PETROL STATION			870m² 2,000m² 250m² 100m²	3,220m²
SUBTOTAL	4,300m²	55,995m²	3,220m²	63,515m²
TOTAL BLG AREA (ZONE 1)				63,515m²

ZONE 2	OFFICE	WAREHOUSE	RETAIL	TOTAL
DEVELOPABLE LOT D(3) - 42,365m² OFFICE WAREHOUSE	2,500m²	24,155m²		26,655m²
DEVELOPABLE LOT E(6/7) - 65,799m² OFFICE WAREHOUSE	3,060m²	36,360m²		39,420m²
DEVELOPABLE LOT F(8) - 22,926m² OFFICE WAREHOUSE	350m²	1,200m²		1,550m²
SUBTOTAL	5,910m²	61,715m²		67,625m²
TOTAL BLG AREA (ZONE 2)				67,625m²



ISSUED FOR DEVELOPMENT APPLICATION

quarry at Greystanes

QUARRY WEST MASTERPLAN
GREYSTANES ESTATE

Quarry West - Overall Site Plan

Scale 1:2500@A1 March 2015 3966_MP-002[B]

nettletontribe

DEXUS PROPERTY GROUP

DEVELOPMENT DATA

TOTAL SITE AREA	approx. 728,319m²
QUARRY EAST SITE AREA	approx. 472,429m²
QUARRY WEST SITE AREA	approx. 255,890m²
QUARRY WEST DEVELOPABLE SITE AREA (INCL. LANDSCAPE AREA)	242,397m²
QUARRY WEST NON-DEVELOPABLE SITE AREA (INCL. BASALT ROAD & DOLERITE CLOSE)	13,493m²
TOTAL BUILDING AREA	131,140m²
TOTAL AWNING AREA	9,524m²
TOTAL HEAVY DUTY AREA	44,870m²
TOTAL LIGHT DUTY AREA	24,464m²
TOTAL LANDSCAPE AREA (% CALC. FROM DEVELOPABLE AREA)	39,038m²(16%)
TOTAL SITE COVER (% CALC. FROM DEVELOPABLE AREA)	136,298m² (56%)
FSR	0.5:1

PARKING CONTROLS
(WAREHOUSE 1/300m², OFFICE 1/40m², RETAIL 1/20m²,FAST FOOD 1/8m²)

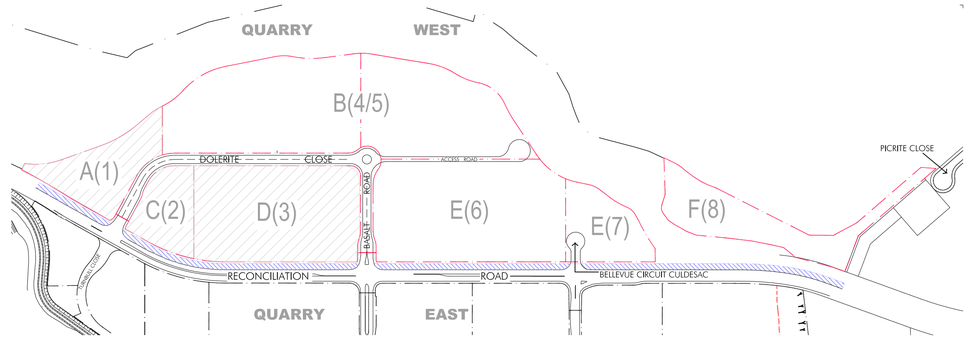
TOTAL PARKING REQUIRED	836
TOTAL PARKING PROVIDED	927

PROPOSED DEVELOPMENT AREAS - LOT A, C & D

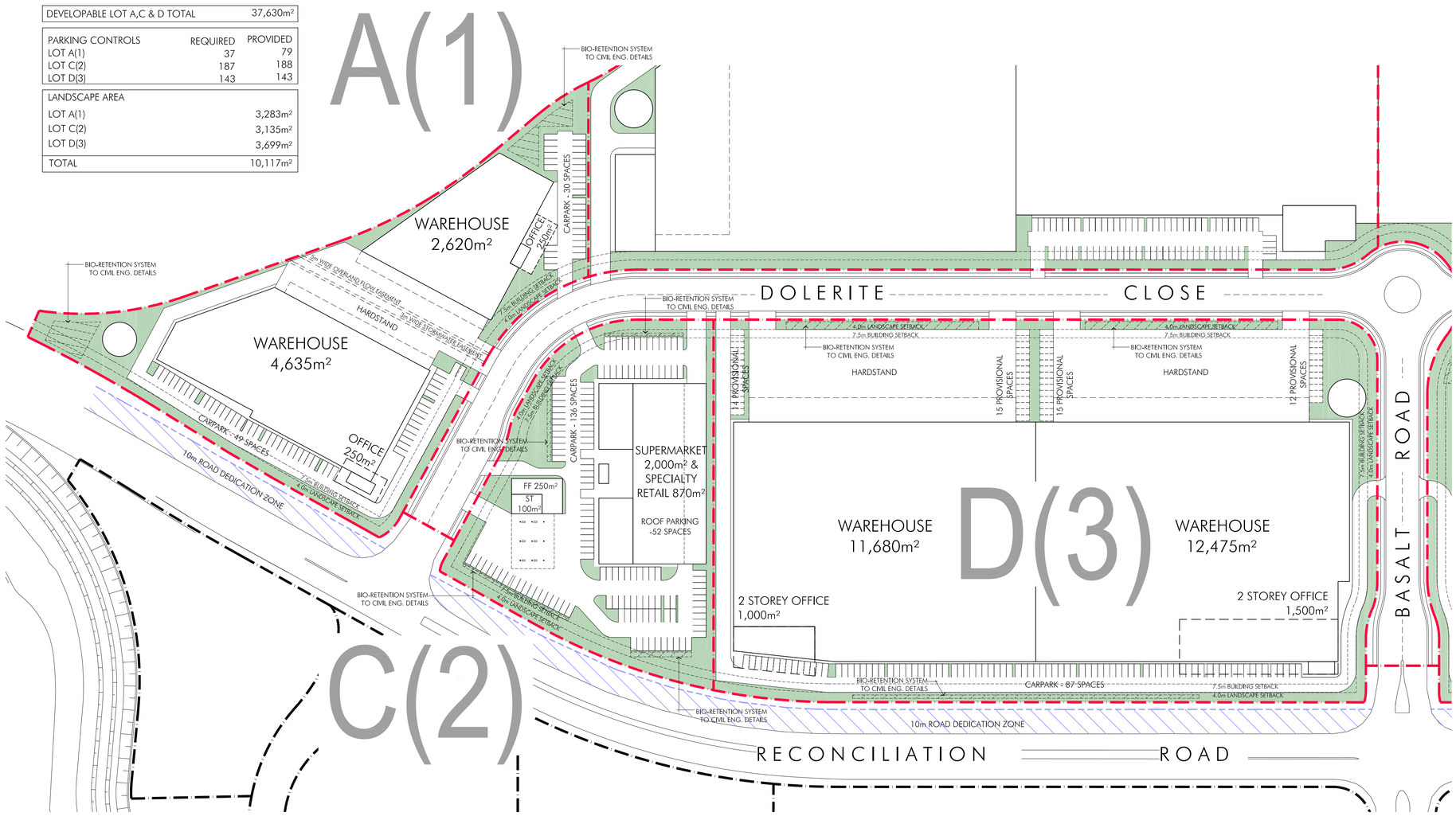
	BLG AREA	BLG AREA	TOTAL
DEVELOPABLE LOT A SITE AREA 17,003m²			
LOT A(1)			
OFFICE	500m²		
WAREHOUSE		7,255m²	
TOTAL	500m²	7,255m²	7,755m²
DEVELOPABLE LOT C SITE AREA 11,966m²			
LOT C(2)			
RETAIL		870m²	
SUPERMARKET		2,000m²	
FAST FOOD		250m²	
PETROL STATION		100m²	
TOTAL		3,220m²	3,220m²
DEVELOPABLE LOT D SITE AREA 42,365m²			
LOT D(3)			
OFFICE	2,500m²		
WAREHOUSE		24,155m²	
TOTAL	2,500m²	24,155m²	26,655m²
DEVELOPABLE LOT A,C & D TOTAL			37,630m²

PARKING CONTROLS	REQUIRED	PROVIDED
LOT A(1)	37	79
LOT C(2)	187	188
LOT D(3)	143	143

LANDSCAPE AREA	
LOT A(1)	3,283m²
LOT C(2)	3,135m²
LOT D(3)	3,699m²
TOTAL	10,117m²



02 - **SUBDIVISION PLAN**
SCALE 1:5000@A1



ISSUED FOR DEVELOPMENT APPLICATION

quarry at Greystanes

QUARRY WEST MASTERPLAN
GREYSTANES ESTATE

Developable Lots A, C & D Plan

Scale 1:1000@A1 March 2015 3966_MP-011[B]

nettletontribe

DEXUS PROPERTY GROUP

DEVELOPMENT DATA

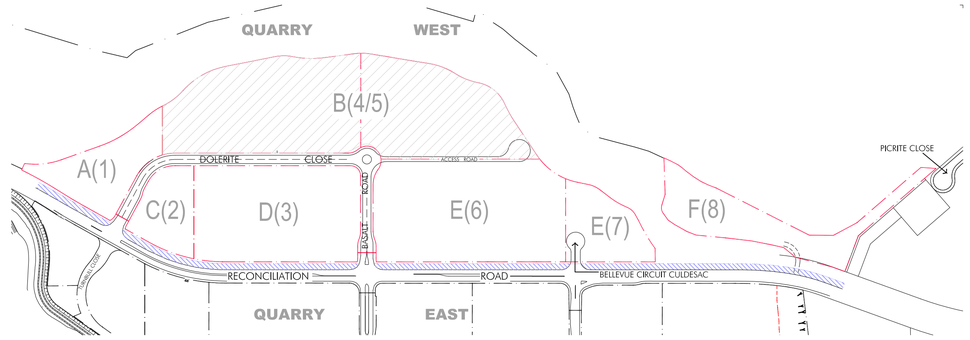
TOTAL SITE AREA	approx. 728,319m²
QUARRY EAST SITE AREA	approx. 472,429m²
QUARRY WEST SITE AREA	approx. 255,890m²
QUARRY WEST DEVELOPABLE SITE AREA (INCL. LANDSCAPE AREA)	242,397m²
QUARRY WEST NON-DEVELOPABLE SITE AREA (INCL. BASALT ROAD & DOLERITE CLOSE)	13,493m²
TOTAL BUILDING AREA	131,140m²
TOTAL AWNING AREA	9,524m²
TOTAL HEAVY DUTY AREA	44,870m²
TOTAL LIGHT DUTY AREA	24,464m²
TOTAL LANDSCAPE AREA (% CALC. FROM DEVELOPABLE AREA)	39,038m²(16%)
TOTAL SITE COVER (% CALC. FROM DEVELOPABLE AREA)	136,298m² (56%)
FSR	0.5:1
PARKING CONTROLS (WAREHOUSE 1/300m², OFFICE 1/40m², RETAIL 1/20m²,FAST FOOD 1/8m²)	
TOTAL PARKING REQUIRED	836
TOTAL PARKING PROVIDED	927

PROPOSED DEVELOPMENT AREAS - LOT B

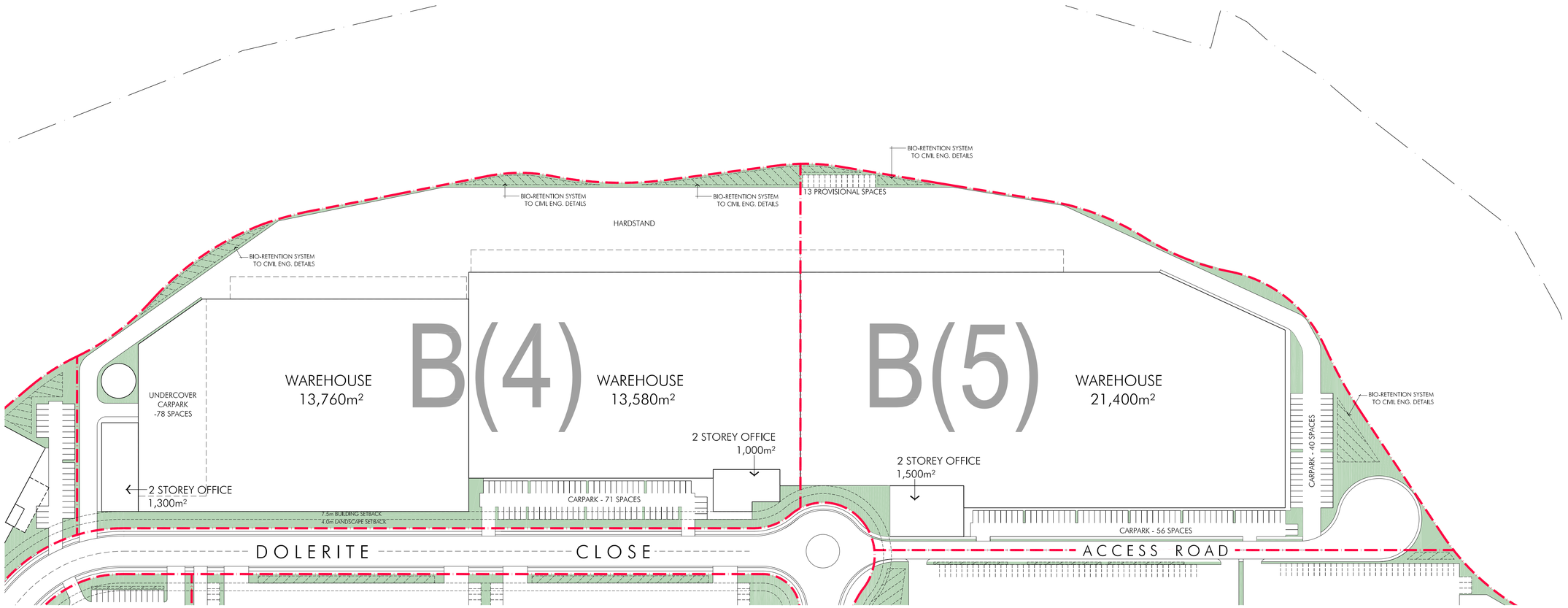
	BLG AREA	BLG AREA	TOTAL
DEVELOPABLE LOT B SITE AREA 82,338m²			
LOT B(4)			
OFFICE	2,300m²		
WAREHOUSE		27,340m²	
LOT B(5)			
OFFICE	1,500m²		
WAREHOUSE		21,400m²	
TOTAL	3,800m²	48,740m²	52,540m²

PARKING CONTROLS	REQUIRED	PROVIDED
LOT B(4)	149	149
LOT B(5)	109	109
TOTAL	258	258

LANDSCAPE AREA	
LOT B(4)	3,738m²
LOT B(5)	2,785m²
TOTAL	6,523m²



02 - **SUBDIVISION PLAN**
SCALE 1:5000@A1



ISSUED FOR DEVELOPMENT APPLICATION

quarry at Greystanes

QUARRY WEST MASTERPLAN
GREYSTANES ESTATE

Developable Lot B Plan

Scale 1:1000@A1 March 2015 3966_MP-012[B]

nettletontribe

DEXUS PROPERTY GROUP

DEVELOPMENT DATA

TOTAL SITE AREA	approx. 728,319m²
QUARRY EAST SITE AREA	approx. 472,429m²
QUARRY WEST SITE AREA	approx. 255,890m²
QUARRY WEST DEVELOPABLE SITE AREA (INCL. LANDSCAPE AREA)	242,397m²
QUARRY WEST NON-DEVELOPABLE SITE AREA (INCL. BASALT ROAD & DOLERITE CLOSE)	13,493m²
TOTAL BUILDING AREA	131,140m²
TOTAL AWNING AREA	9,524m²
TOTAL HEAVY DUTY AREA	44,870m²
TOTAL LIGHT DUTY AREA	24,464m²
TOTAL LANDSCAPE AREA (% CALC. FROM DEVELOPABLE AREA)	39,038m²(16%)
TOTAL SITE COVER (% CALC. FROM DEVELOPABLE AREA)	136,298m² (56%)
FSR	0.5:1

PARKING CONTROLS
(WAREHOUSE 1/300m², OFFICE 1/40m², RETAIL 1/20m²,FAST FOOD 1/8m²)

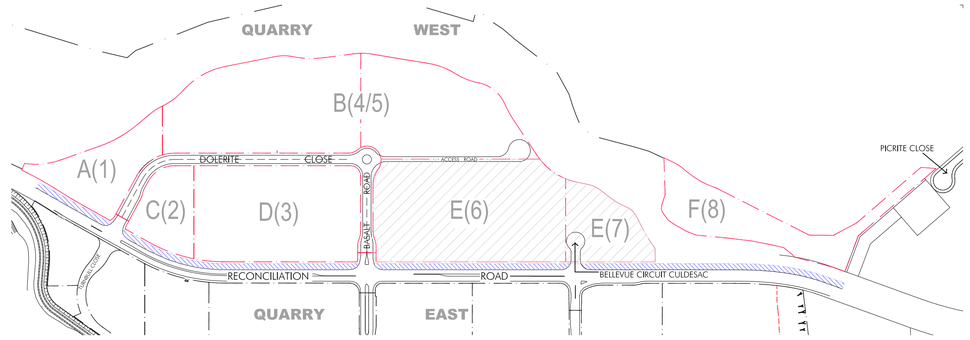
TOTAL PARKING REQUIRED	836
TOTAL PARKING PROVIDED	927

PROPOSED DEVELOPMENT AREAS

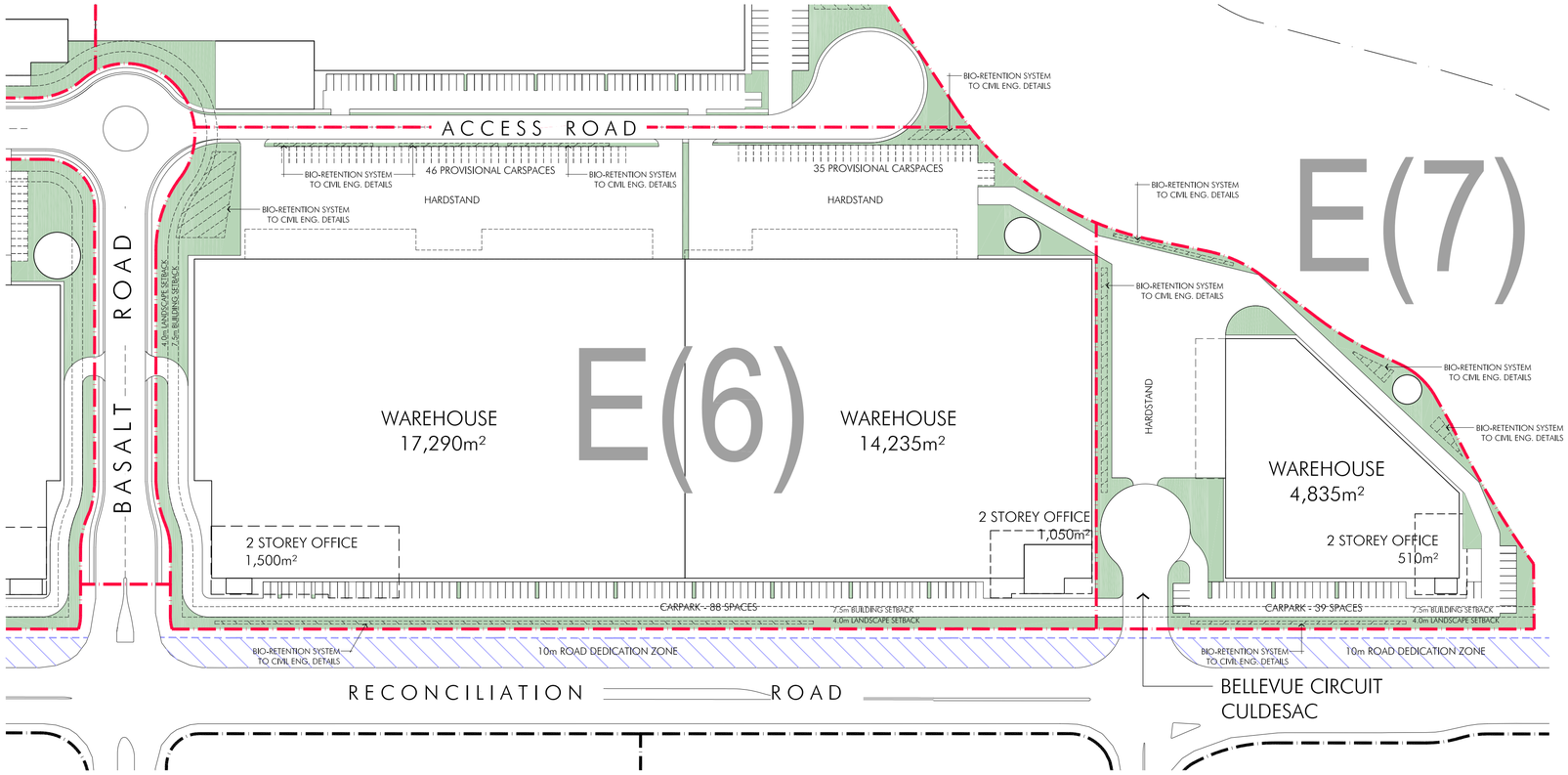
	BLG AREA	BLG AREA	TOTAL
DEVELOPABLE LOT E SITE AREA - 65,799m²			
LOT E(6)			
OFFICE	2,550m²		34,075m²
WAREHOUSE		31,525m²	
LOT E(7)			
OFFICE	510m²		
WAREHOUSE		4,835m²	5,345m²
TOTAL	3,060m²	36,360m²	39,420m²

PARKING CONTROLS	REQUIRED	PROVIDED
LOT E(6)	169	169
LOT E(7)	29	39
TOTAL	198	208

LANDSCAPE AREA	
LOT E(6)	3,844m²
LOT E(7)	2,764m²
TOTAL	6,608m²



02 - **SUBDIVISION PLAN**
SCALE 1:5000@A1



ISSUED FOR DEVELOPMENT APPLICATION

quarry at Greystanes

QUARRY WEST MASTERPLAN
GREYSTANES ESTATE

Developable Lot E Plan

Scale 1:1000@A1 March 2015 3966_MP-013[B]

nettletontribe

DEXUS PROPERTY GROUP

DEVELOPMENT DATA

TOTAL SITE AREA	approx. 728,319m²
QUARRY EAST SITE AREA	approx. 472,429m²
QUARRY WEST SITE AREA	approx. 255,890m²
QUARRY WEST DEVELOPABLE SITE AREA (INCL. LANDSCAPE AREA)	242,397m²
QUARRY WEST NON-DEVELOPABLE SITE AREA (INCL. BASALT ROAD & DOLERITE CLOSE)	13,493m²
TOTAL BUILDING AREA	131,140m²
TOTAL AWNING AREA	9,524m²
TOTAL HEAVY DUTY AREA	44,870m²
TOTAL LIGHT DUTY AREA	24,464m²
TOTAL LANDSCAPE AREA (% CALC. FROM DEVELOPABLE AREA)	39,038m²(16%)
TOTAL SITE COVER (% CALC. FROM DEVELOPABLE AREA)	136,298m² (56%)
FSR	0.5:1

PARKING CONTROLS
(WAREHOUSE 1/300m², OFFICE 1/40m², RETAIL 1/20m²,FAST FOOD 1/8m²)

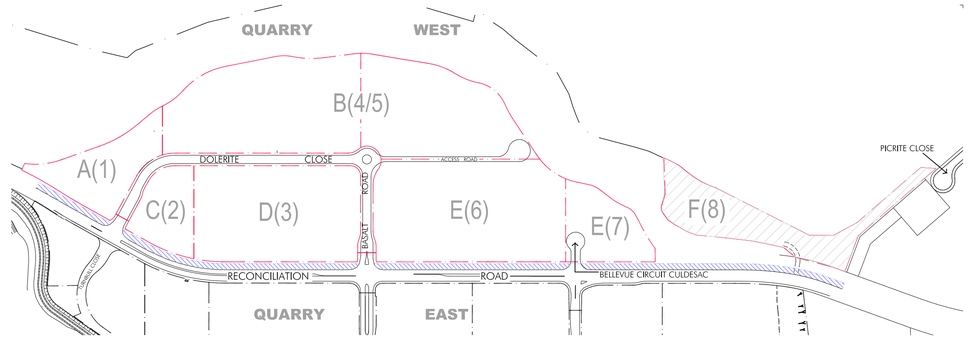
TOTAL PARKING REQUIRED	836
TOTAL PARKING PROVIDED	927

PROPOSED DEVELOPMENT AREAS - LOT F

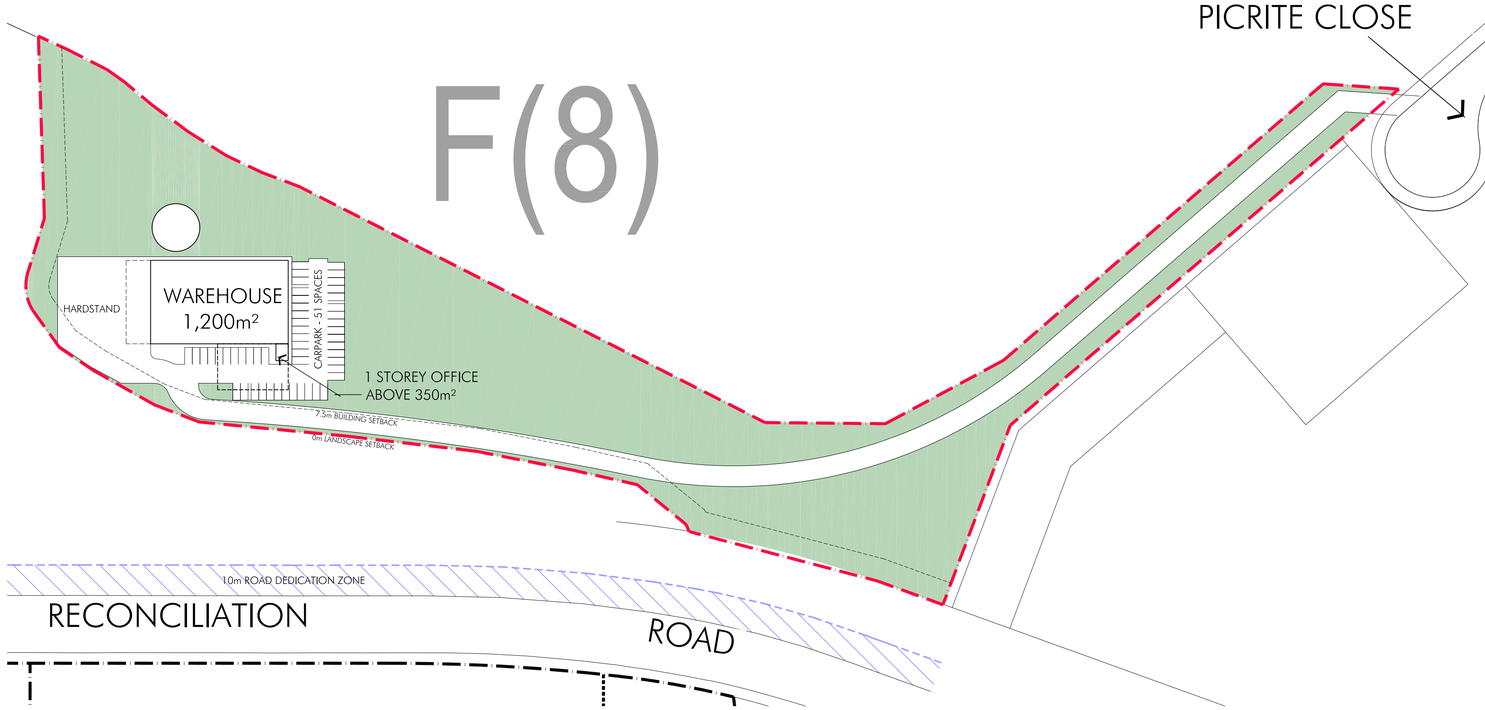
	BLG AREA	BLG AREA	TOTAL
DEVELOPABLE LOT F SITE AREA 22,926m²			
LOT F(8)			
OFFICE	350m²		
WAREHOUSE		1,200m²	
TOTAL	350m²	1,200m²	1,550m²

PARKING CONTROLS	REQUIRED	PROVIDED
LOT F(8)	13	51
TOTAL	13	51

LANDSCAPE AREA	
LOT F(8)	15,789m²



02 - **SUBDIVISION PLAN**
SCALE 1:5000@A1



ISSUED FOR DEVELOPMENT APPLICATION

quarry at Greystanes

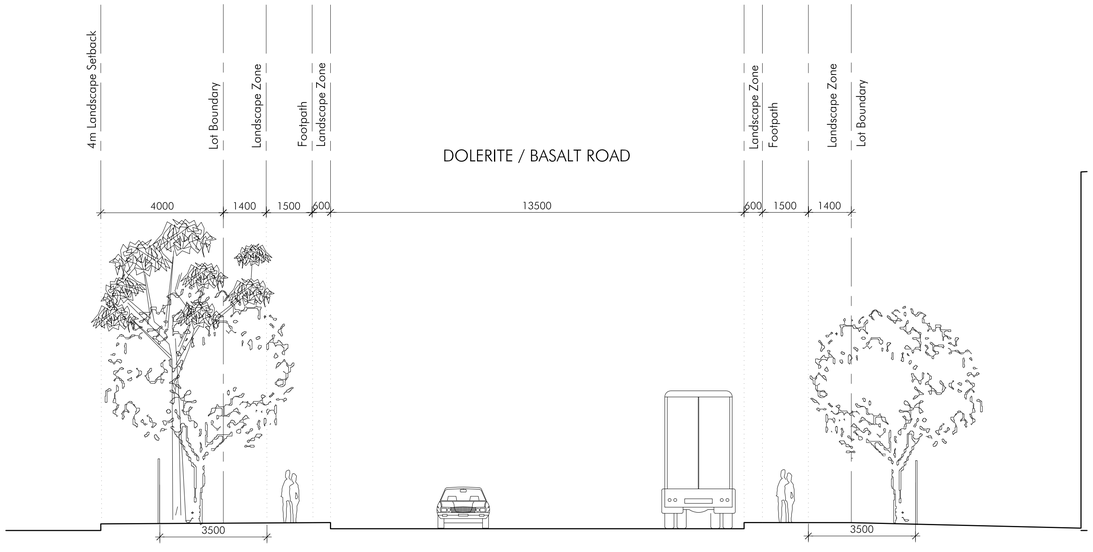
QUARRY WEST MASTERPLAN
GREYSTANES ESTATE

Developable Lot F Plan

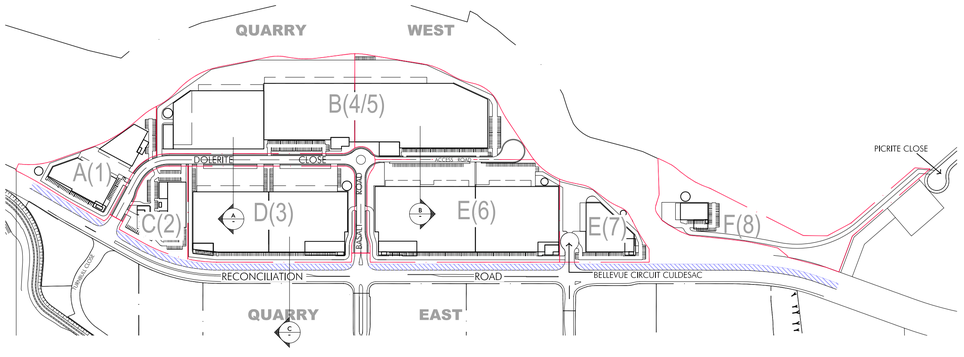
Scale 1:1000@A1 March 2015 3966_MP-014[B]

nettletontribe

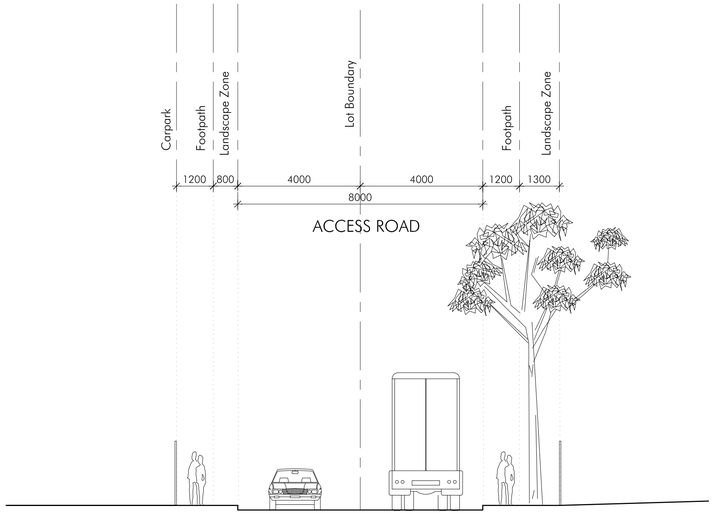
DEXUS PROPERTY GROUP



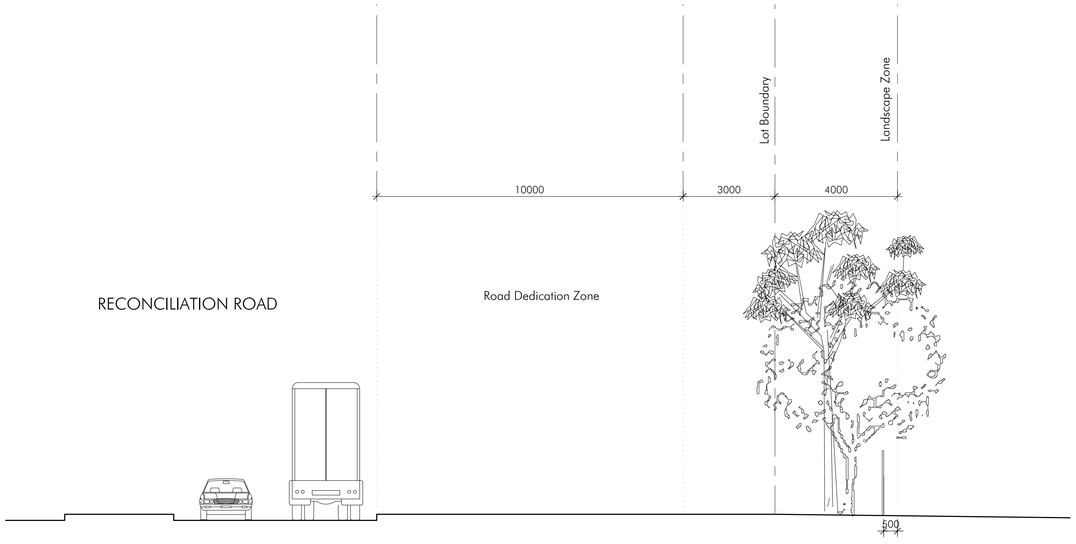
01 - **ROAD SECTION A - DOLERITE / BASALT ROAD**
1:100 @ A1



02 - **KEY PLAN**
SCALE 1:5000@A1



02 - **ROAD SECTION B - ACCESS ROAD**
1:100 @ A1



03 - **ROAD SECTION C - RECONCILIATION ROAD**
1:100 @ A1

ISSUED FOR DEVELOPMENT APPLICATION

quarry at Greystanes

QUARRY WEST MASTERPLAN
GREYSTANES ESTATE

Road Sections

Scale 1:100@A1 March 2015 3966_MP-032[B]

nettletontribe

DEXUS PROPERTY GROUP

APPENDIX 2

SIDRA Modelling Extracts

MOVEMENT SUMMARY

Site: Reconcilliation Rd & Bellevue Cct- AM Traffic Signals Full Masterpan

AM - SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

South: Reconciliation Rd											
1	L2	39	5.1	0.264	20.6	LOS B	7.9	61.0	0.56	0.52	25.2
2	T1	481	13.7	0.264	15.0	LOS B	7.9	61.0	0.56	0.50	47.9
3	R2	114	3.5	0.472	58.8	LOS E	6.3	45.8	0.97	0.79	30.1
Approach		634	11.3	0.472	23.2	LOS B	7.9	61.6	0.64	0.55	41.9
East: Bellevue Cct											
4	L2	21	10.0	0.064	44.0	LOS D	1.2	8.8	0.81	0.69	34.5
5	T1	5	0.0	0.064	38.3	LOS C	1.2	8.8	0.81	0.69	27.1
6	R2	44	9.1	0.183	53.0	LOS D	2.3	17.1	0.90	0.74	31.8
Approach		70	8.7	0.183	49.2	LOS D	2.3	17.1	0.86	0.72	32.3
North: Reconcilliation Rd											
7	L2	205	2.5	0.142	6.7	LOS A	1.5	10.9	0.19	0.61	53.3
8	T1	935	6.4	0.454	17.2	LOS B	16.2	119.3	0.65	0.57	46.8
9	R2	100	5.0	0.418	58.4	LOS E	5.5	40.3	0.96	0.78	16.7
Approach		1240	5.6	0.454	18.8	LOS B	16.2	119.3	0.60	0.60	43.9
West: Bellevue Circuit Cul de sac											
10	L2	10	5.0	0.041	46.2	LOS D	0.7	5.1	0.83	0.66	25.9
11	T1	5	0.0	0.041	41.5	LOS C	0.7	5.1	0.83	0.66	26.5
12	R2	10	5.0	0.042	51.2	LOS D	0.5	3.7	0.87	0.68	24.0
Approach		25	4.0	0.042	47.3	LOS D	0.7	5.1	0.85	0.66	25.2
All Vehicles		1969	7.6	0.472	21.6	LOS B	16.2	119.3	0.62	0.59	42.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

P1	South Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	50	17.6	LOS B	0.1	0.1	0.54	0.54
P4	West Full Crossing	50	17.1	LOS B	0.1	0.1	0.53	0.53
All Pedestrians		150	29.7	LOS C			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

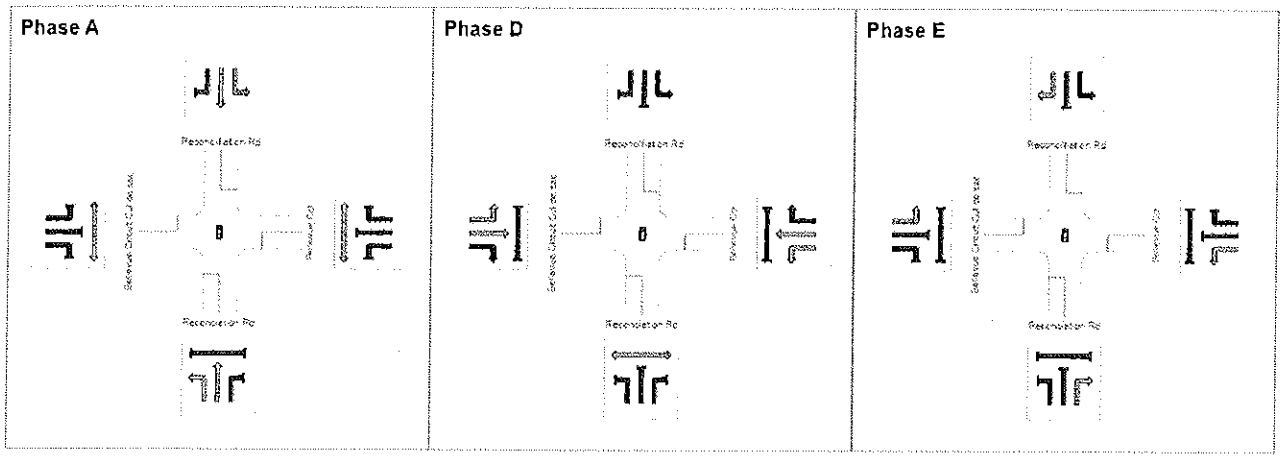
Site: Reconcilliation Rd & Bellevue Cct- AM Traffic Signals Full Masterpan

AM - SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: SDO with Cross Phase
Movement Class: All Movement Classes
Input Sequence: A, D, E
Output Sequence: A, D, E

Phase Timing Results

Phase	A	D	E
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	72	98
Green Time (sec)	66	20	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	26	22
Phase Split	60 %	22 %	18 %



Normal Movement
Slip/Bypass-Lane Movement
Stopped Movement
Other Movement Class Running
Mixed Running & Stopped Movement Classes
Undetected Movement
Permitted/Opposed
Opposed Slip/Bypass-Lane
Turn On Red
Other Movement Class Stopped
Phase Transition Applied

MOVEMENT SUMMARY

Site: Reconcilliation Rd & Bellevue Cct- PM Traffic Signals Full Masterplan

PM - SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

South: Reconciliation Rd											
1	L2	10	10.0	0.564	29.7	LOS C	21.2	152.4	0.77	0.69	22.9
2	T1	1013	3.0	0.564	24.0	LOS B	21.2	152.5	0.77	0.69	43.0
3	R2	6	16.7	0.072	67.5	LOS E	0.4	2.8	0.98	0.65	27.9
Approach		1029	3.1	0.564	24.3	LOS B	21.2	152.5	0.77	0.69	42.7
East: Bellevue Cct											
4	L2	116	2.5	0.161	28.8	LOS C	4.4	31.2	0.66	0.73	40.1
5	T1	5	0.0	0.161	23.2	LOS B	4.4	31.2	0.66	0.73	33.1
6	R2	227	2.5	0.567	45.0	LOS D	11.4	81.8	0.90	0.82	34.2
Approach		348	2.5	0.567	39.3	LOS C	11.4	81.8	0.82	0.79	36.0
North: Reconcilliation Rd											
7	L2	41	7.3	0.030	7.0	LOS A	0.3	2.4	0.20	0.59	52.9
8	T1	429	8.4	0.244	19.8	LOS B	7.3	55.1	0.63	0.53	45.3
9	R2	20	5.0	0.223	68.4	LOS E	1.2	8.8	0.99	0.70	15.5
Approach		490	8.2	0.244	20.7	LOS B	7.3	55.1	0.61	0.55	43.8
West: Bellevue Circuit Cul de sac											
10	L2	79	2.5	0.102	26.7	LOS B	2.7	19.6	0.63	0.71	33.1
11	T1	5	0.0	0.102	33.0	LOS C	2.7	19.6	0.76	0.70	29.2
12	R2	35	5.7	0.102	38.2	LOS C	1.7	12.4	0.76	0.70	28.4
Approach		119	3.3	0.102	30.3	LOS C	2.7	19.6	0.68	0.71	31.4
All Vehicles		1986	4.3	0.567	26.4	LOS B	21.2	152.5	0.73	0.67	41.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

P1	South Full Crossing	50	37.7	LOS D	0.1	0.1	0.79	0.79
P2	East Full Crossing	50	22.9	LOS C	0.1	0.1	0.62	0.62
P4	West Full Crossing	50	22.3	LOS C	0.1	0.1	0.61	0.61
All Pedestrians		150	27.6	LOS C			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

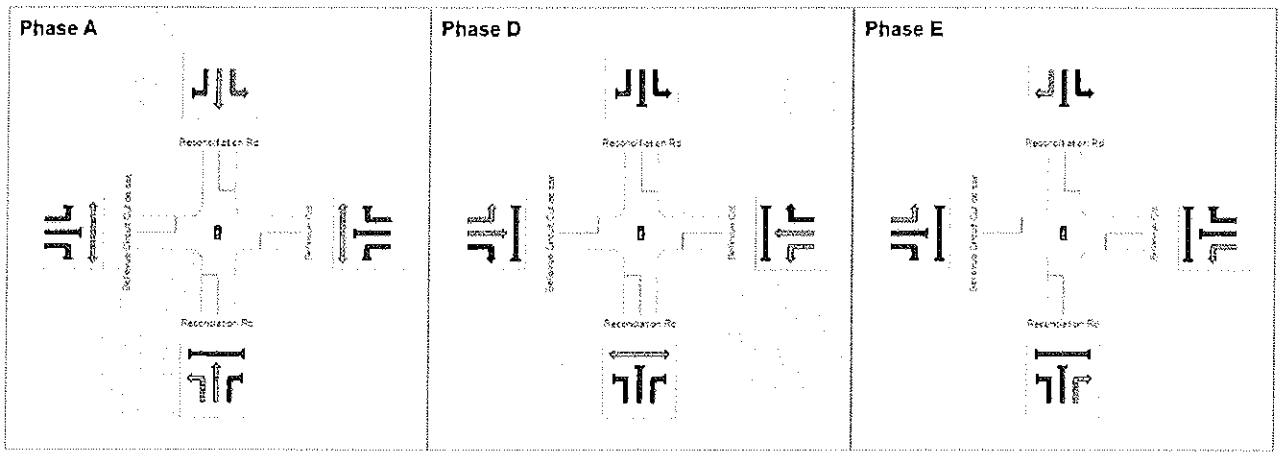
Site: Reconcilliation Rd & Bellevue Cct- PM Traffic Signals Full Masterplan

PM - SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: SDO with Cross Phase
Movement Class: All Movement Classes
Input Sequence: A, D, E
Output Sequence: A, D, E

Phase Timing Results

Phase	A	D	E
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	108
Green Time (sec)	57	39	6
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	45	12
Phase Split	53 %	38 %	10 %



Normal Movement
Slip/Bypass-Lane Movement
Stopped Movement
Other Movement Class Running
Mixed Running & Stopped Movement Classes
Undetected Movement
Permitted/Opposed
Opposed Slip/Bypass-Lane
Turn On Red
Other Movement Class Stopped
Phase Transition Applied

MOVEMENT SUMMARY

Site: Reconcilliation Rd & Basalt St- AM Signals Full Masterplan

AM SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

South: Reconcilliation Rd											
1	L2	91	5.5	0.384	27.1	LOS B	12.2	92.8	0.69	0.65	42.5
2	T1	567	12.0	0.384	21.5	LOS B	12.2	94.4	0.69	0.62	44.0
3	R2	59	6.8	0.160	47.7	LOS D	2.8	21.1	0.86	0.74	33.0
Approach		717	10.7	0.384	24.4	LOS B	12.2	94.4	0.70	0.63	42.6
East: Basalt St											
4	L2	20	15.0	0.028	26.8	LOS B	0.7	5.3	0.60	0.67	40.6
5	T1	5	0.0	0.130	47.7	LOS D	1.5	11.7	0.89	0.71	32.4
6	R2	24	16.7	0.130	53.5	LOS D	1.5	11.7	0.89	0.71	31.7
Approach		49	14.3	0.130	42.0	LOS C	1.5	11.7	0.78	0.70	34.9
North: Reconcilliation Rd											
7	L2	73	6.9	0.441	27.9	LOS B	14.8	110.3	0.71	0.66	42.4
8	T1	703	7.4	0.441	22.2	LOS B	15.0	111.5	0.71	0.64	43.7
9	R2	160	4.4	0.427	50.5	LOS D	8.2	59.8	0.92	0.80	32.2
Approach		936	6.8	0.441	27.5	LOS B	15.0	111.5	0.75	0.67	41.1
West: Basalt St											
10	L2	51	5.0	0.067	27.2	LOS B	1.7	12.7	0.62	0.70	40.6
11	T1	5	0.0	0.109	46.4	LOS D	1.4	9.9	0.88	0.71	32.7
12	R2	22	5.0	0.109	52.0	LOS D	1.4	9.9	0.88	0.71	32.3
Approach		78	4.7	0.109	35.4	LOS C	1.7	12.7	0.71	0.70	37.3
All Vehicles		1780	8.5	0.441	27.0	LOS B	15.0	111.5	0.73	0.66	41.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

P1	South Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	50	25.4	LOS C	0.1	0.1	0.65	0.65
P3	North Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	50	25.4	LOS C	0.1	0.1	0.65	0.65
All Pedestrians		200	39.8	LOS D			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

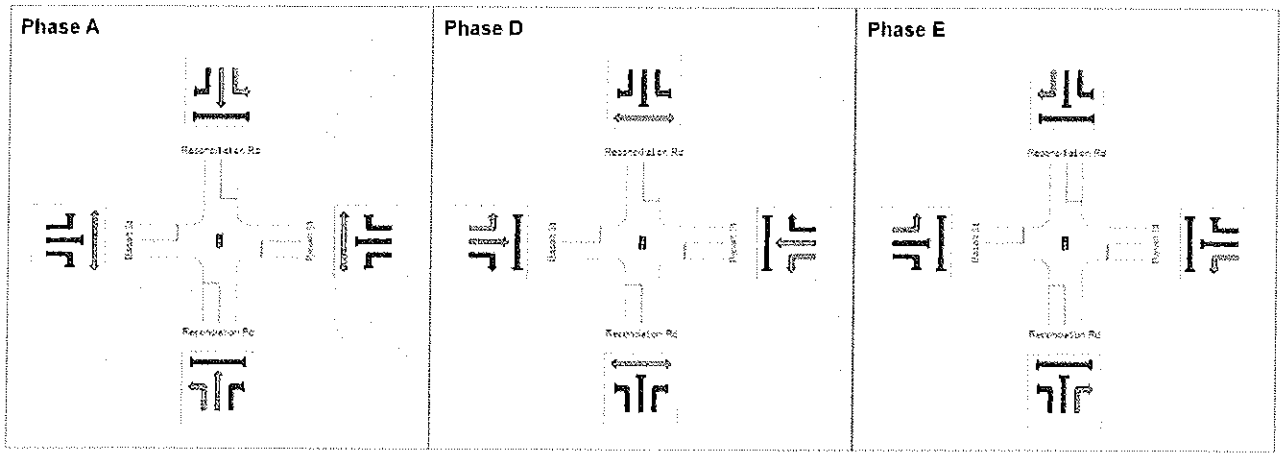
Site: Reconcilliation Rd & Basalt St- AM Signals Full Masterplan

AM SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: SDO with Cross Phase
Movement Class: All Movement Classes
Input Sequence: A, D, E
Output Sequence: A, D, E

Phase Timing Results

Phase	A	D	E
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	63	89
Green Time (sec)	57	20	25
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	63	26	31
Phase Split	53 %	22 %	26 %



Normal Movement
Slip/Bypass-Lane Movement
Stopped Movement
Other Movement Class Running
Mixed Running & Stopped Movement Classes
Undetected Movement
Permitted/Opposed
Opposed Slip/Bypass-Lane
Turn On Red
Other Movement Class Stopped
Phase Transition Applied

MOVEMENT SUMMARY

Site: Reconcilliation Rd & Basalt St- PM Signals Full Masterplan

PM SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

South: Reconcilliation Rd											
1	L2	23	5.0	0.383	20.3	LOS B	13.1	94.6	0.59	0.53	46.9
2	T1	815	3.5	0.383	14.7	LOS B	13.2	94.8	0.59	0.52	48.3
3	R2	12	8.3	0.117	66.3	LOS E	0.7	5.3	0.98	0.68	28.3
Approach		850	3.6	0.383	15.6	LOS B	13.2	94.8	0.59	0.53	47.7
East: Basalt St											
4	L2	60	3.3	0.102	35.7	LOS C	2.4	17.5	0.73	0.72	37.1
5	T1	5	0.0	0.294	48.6	LOS D	3.4	24.7	0.92	0.76	31.9
6	R2	60	3.3	0.294	54.2	LOS D	3.4	24.7	0.92	0.76	31.5
Approach		125	3.2	0.294	45.1	LOS D	3.4	24.7	0.83	0.74	34.0
North: Reconcilliation Rd											
7	L2	20	25.0	0.254	19.2	LOS B	7.7	57.6	0.53	0.48	47.0
8	T1	522	6.7	0.254	13.4	LOS A	7.8	57.7	0.53	0.47	49.1
9	R2	40	2.5	0.376	67.8	LOS E	2.4	17.1	1.00	0.73	28.0
Approach		582	7.0	0.376	17.3	LOS B	7.8	57.7	0.56	0.49	46.6
West: Basalt St											
10	L2	154	2.5	0.260	37.5	LOS C	6.6	47.3	0.78	0.77	36.5
11	T1	5	0.0	0.367	48.3	LOS D	4.8	34.5	0.93	0.78	32.0
12	R2	86	2.5	0.367	53.9	LOS D	4.8	34.5	0.93	0.78	31.6
Approach		245	2.4	0.367	43.5	LOS D	6.6	47.3	0.83	0.77	34.5
All Vehicles		1802	4.5	0.383	22.0	LOS B	13.2	94.8	0.63	0.56	43.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

P1	South Full Crossing	50	48.7	LOS E	0.2	0.2	0.90	0.90
P2	East Full Crossing	50	18.2	LOS B	0.1	0.1	0.55	0.55
P3	North Full Crossing	50	48.7	LOS E	0.2	0.2	0.90	0.90
P4	West Full Crossing	50	18.2	LOS B	0.1	0.1	0.55	0.55
All Pedestrians		200	33.4	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

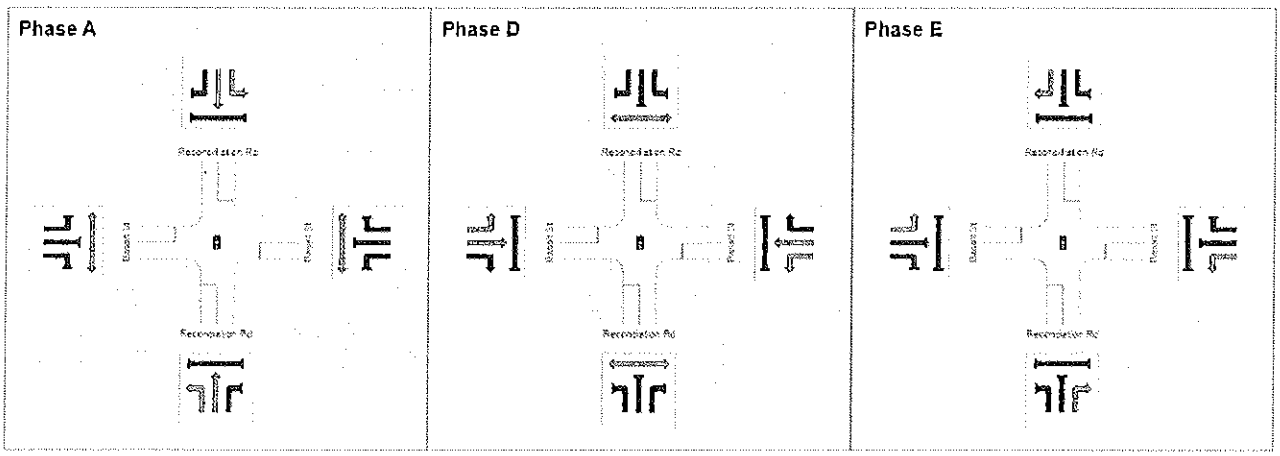
Site: Reconcilliation Rd & Basalt St- PM Signals Full Masterplan

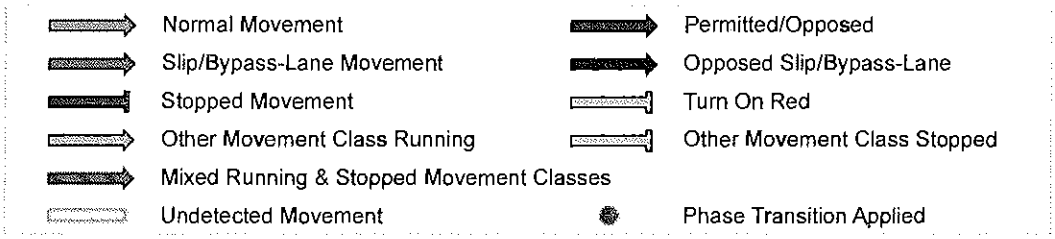
PM SDO with Cross Phase
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: SDO with Cross Phase
Movement Class: All Movement Classes
Input Sequence: A, D, E
Output Sequence: A, D, E

Phase Timing Results

Phase	A	D	E
Reference Phase	Yes	No	No
Phase Change Time (sec)	0	75	107
Green Time (sec)	69	26	7
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	75	32	13
Phase Split	63 %	27 %	11 %





MOVEMENT SUMMARY

Site: Reconcilliation Rd & Dolerite / Turnbull Cl - AM Signals Full Masterplan

AM DDO
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles											
South: Reconciliation Rd											
1	L2	181	5.0	0.493	28.6	LOS C	16.6	125.4	0.74	0.72	41.4
2	T1	627	12.1	0.493	23.6	LOS B	16.6	125.4	0.74	0.67	42.8
3	R2	25	8.0	0.122	57.9	LOS E	1.3	10.0	0.93	0.71	30.2
Approach		833	10.4	0.493	25.7	LOS B	16.6	125.4	0.74	0.68	42.0
East: Turnbull Cl											
4	L2	15	6.7	0.052	45.5	LOS D	0.9	6.7	0.82	0.67	34.2
5	T1	5	0.0	0.052	39.9	LOS C	0.9	6.7	0.82	0.67	34.9
6	R2	15	6.7	0.145	66.5	LOS E	0.9	6.5	0.98	0.69	28.4
Approach		35	5.7	0.145	53.7	LOS D	0.9	6.7	0.89	0.68	31.5
North: Reconcilliation Rd											
7	L2	30	3.5	0.392	27.8	LOS B	12.6	93.9	0.70	0.62	42.8
8	T1	637	7.9	0.392	22.5	LOS B	12.7	95.1	0.70	0.62	43.7
9	R2	100	5.0	0.478	60.8	LOS E	5.7	41.4	0.98	0.78	29.7
Approach		767	7.3	0.478	27.7	LOS B	12.7	95.1	0.74	0.64	41.1
West: Dolerite Cl											
10	L2	70	4.3	0.147	40.0	LOS C	3.3	23.6	0.78	0.73	35.7
11	T1	5	0.0	0.147	34.4	LOS C	3.3	23.6	0.78	0.73	36.4
12	R2	98	5.0	0.468	68.5	LOS E	3.0	21.7	1.00	0.74	27.9
Approach		173	4.6	0.468	56.0	LOS D	3.3	23.6	0.91	0.74	30.9
All Vehicles		1808	8.5	0.493	30.0	LOS C	16.6	125.4	0.76	0.67	40.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
P1	South Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	50	25.4	LOS C	0.1	0.1	0.65	0.65
P3	North Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	50	25.4	LOS C	0.1	0.1	0.65	0.65
All Pedestrians		200	39.8	LOS D			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: Reconcilliation Rd & Dolerite / Turnbull Cl - AM Signals Full Masterplan

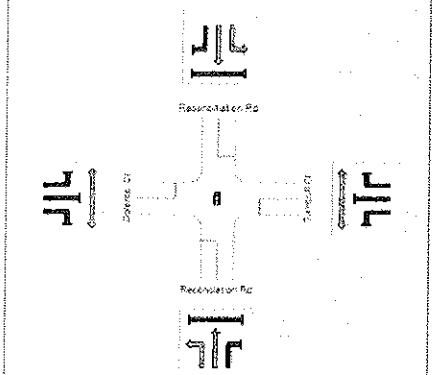
AM DDO
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: DDO
Movement Class: All Movement Classes
Input Sequence: A, D, E, G
Output Sequence: A, D, E, G

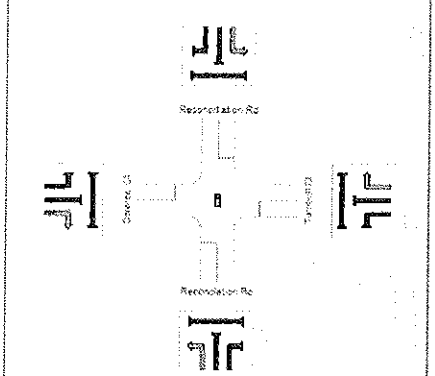
Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	61	74	100
Green Time (sec)	55	7	20	14
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	61	13	26	20
Phase Split	51 %	11 %	22 %	17 %

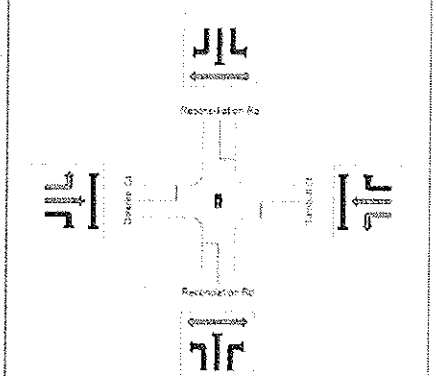
Phase A



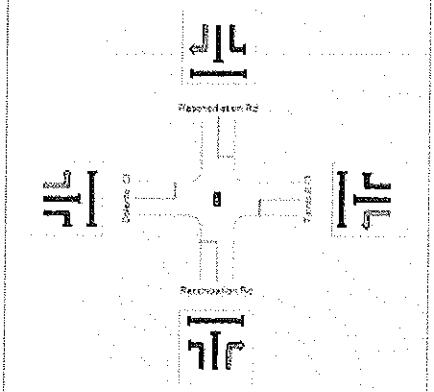
Phase D



Phase E



Phase G



Normal Movement
Slip/Bypass-Lane Movement
Stopped Movement
Other Movement Class Running
Mixed Running & Stopped Movement Classes
Undetected Movement
Permitted/Opposed
Opposed Slip/Bypass-Lane
Turn On Red
Other Movement Class Stopped
Phase Transition Applied

MOVEMENT SUMMARY

Site: Reconcilliation Rd & Dolerite / Turnbull Cl - PM Signals Full Masterplan

PM DDO
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

South: Reconcilliation Rd											
1	L2	160	2.5	0.595	36.6	LOS C	19.8	142.5	0.85	0.78	38.2
2	T1	681	4.0	0.595	31.6	LOS C	19.8	142.5	0.85	0.76	39.2
3	R2	15	6.7	0.068	56.2	LOS D	0.8	5.8	0.91	0.69	30.7
Approach		856	3.8	0.595	33.0	LOS C	19.8	142.5	0.85	0.76	38.8
East: Turnbull Cl											
4	L2	25	4.0	0.069	43.1	LOS D	1.3	9.7	0.80	0.69	34.8
5	T1	5	0.0	0.069	37.5	LOS C	1.3	9.7	0.80	0.69	35.5
6	R2	30	4.0	0.125	55.7	LOS D	1.6	11.4	0.91	0.72	31.0
Approach		60	3.7	0.125	49.0	LOS D	1.6	11.4	0.86	0.71	32.8
North: Reconcilliation Rd											
7	L2	15	6.7	0.384	34.2	LOS C	11.3	83.8	0.77	0.67	39.8
8	T1	523	6.9	0.384	28.9	LOS C	11.4	84.7	0.77	0.66	40.7
9	R2	133	2.5	0.583	60.7	LOS E	7.6	54.3	0.99	0.80	29.7
Approach		671	6.0	0.583	35.3	LOS C	11.4	84.7	0.82	0.69	37.9
West: Dolerite Cl											
10	L2	144	2.5	0.262	38.3	LOS C	6.5	46.3	0.79	0.77	36.2
11	T1	5	0.0	0.262	32.7	LOS C	6.5	46.3	0.79	0.77	36.9
12	R2	273	2.5	0.561	59.6	LOS E	7.7	55.1	0.98	0.80	30.0
Approach		422	2.5	0.561	52.0	LOS D	7.7	55.1	0.92	0.79	31.9
All Vehicles		2009	4.2	0.595	38.2	LOS C	19.8	142.5	0.85	0.74	36.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

P1	South Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	50	32.3	LOS D	0.1	0.1	0.73	0.73
P3	North Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	50	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		200	43.3	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: Reconcilliation Rd & Dolerite / Turnbull Cl - PM Signals Full Masterplan

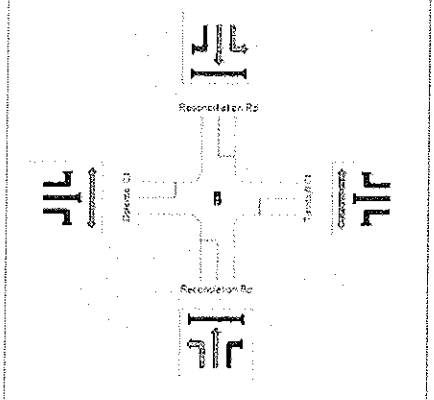
PM DDO
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: DDO
Movement Class: All Movement Classes
Input Sequence: A, D, E, G
Output Sequence: A, D, E, G

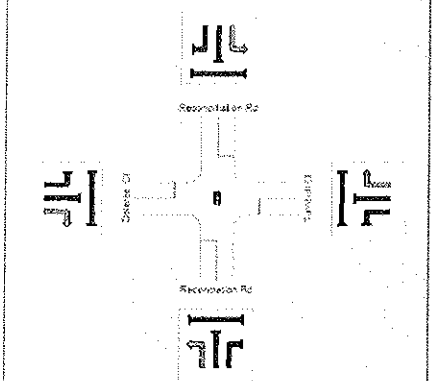
Phase Timing Results

Phase	A	D	E	G
Reference Phase	Yes	No	No	No
Phase Change Time (sec)	0	51	73	99
Green Time (sec)	45	16	20	15
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	51	22	26	21
Phase Split	43 %	18 %	22 %	18 %

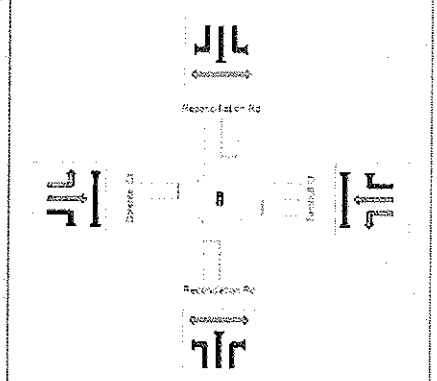
Phase A



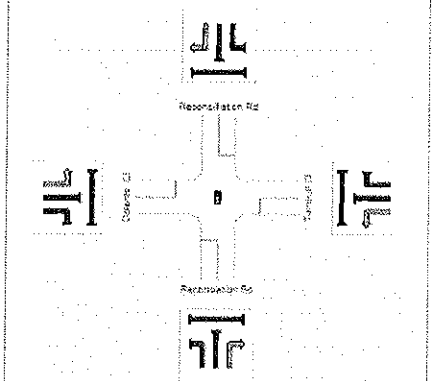
Phase D



Phase E



Phase G



Normal Movement		Permitted/Opposed	
Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane	
Stopped Movement		Turn On Red	
Other Movement Class Running		Other Movement Class Stopped	
Mixed Running & Stopped Movement Classes			
Undetected Movement		Phase Transition Applied	

MOVEMENT SUMMARY

▽ Site: Reservoir Rd Picrite CI - Ex AM

Ex AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
South: Picrite CI											
1	L2	5	20.0	0.004	6.1	LOS A	0.0	0.1	0.20	0.52	52.2
3	R2	23	52.0	0.051	11.5	LOS A	0.2	1.6	0.57	0.79	47.9
Approach		28	46.3	0.051	10.5	LOS A	0.2	1.6	0.50	0.74	48.6
East: Reservoir Rd											
4	L2	60	20.0	0.089	5.8	LOS A	0.0	0.0	0.00	0.22	55.6
5	T1	98	16.3	0.089	0.0	LOS A	0.0	0.0	0.00	0.22	58.0
Approach		158	17.7	0.089	2.2	NA	0.0	0.0	0.00	0.22	57.1
West: Reservoir Rd											
11	T1	441	6.8	0.260	0.8	LOS A	1.8	13.2	0.35	0.04	58.1
12	R2	35	5.7	0.260	6.4	LOS A	1.8	13.2	0.35	0.04	56.2
Approach		476	6.7	0.260	1.2	NA	1.8	13.2	0.35	0.04	57.9
All Vehicles		662	11.0	0.260	1.8	NA	1.8	13.2	0.27	0.12	57.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Reservoir Rd Picrite Cl - Ex PM

Ex PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
South: Picrite Cl											
1	L2	21	5.0	0.017	6.5	LOS A	0.1	0.5	0.34	0.57	52.4
3	R2	50	2.5	0.057	7.2	LOS A	0.2	1.3	0.39	0.65	52.2
Approach		71	3.2	0.057	7.0	LOS A	0.2	1.3	0.37	0.62	52.3
East: Reservoir Rd											
4	L2	6	16.7	0.140	5.7	LOS A	0.0	0.0	0.00	0.01	57.4
5	T1	267	5.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		273	5.3	0.140	0.1	NA	0.0	0.0	0.00	0.01	59.8
West: Reservoir Rd											
11	T1	110	12.5	0.065	1.2	LOS A	0.4	3.3	0.40	0.02	58.1
12	R2	4	25.0	0.065	7.1	LOS A	0.4	3.3	0.40	0.02	55.3
Approach		114	12.9	0.065	1.4	NA	0.4	3.3	0.40	0.02	57.9
All Vehicles		458	6.9	0.140	1.5	NA	0.4	3.3	0.16	0.11	58.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Reservoir Rd Picrite Cl - AM Full Masterplan

AM Full Masterplan
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
South: Picrite Cl											
1	L2	6	20.0	0.005	6.2	LOS A	0.0	0.1	0.23	0.53	52.1
3	R2	24	52.0	0.069	14.0	LOS A	0.2	2.1	0.67	0.86	46.3
Approach		30	45.6	0.069	12.5	LOS A	0.2	2.1	0.59	0.79	47.4
East: Reservoir Rd											
4	L2	65	20.0	0.108	5.8	LOS A	0.0	0.0	0.00	0.20	55.8
5	T1	126	16.3	0.108	0.0	LOS A	0.0	0.0	0.00	0.20	58.2
Approach		191	17.6	0.108	2.0	NA	0.0	0.0	0.00	0.20	57.4
West: Reservoir Rd											
11	T1	551	6.8	0.321	1.0	LOS A	2.4	17.9	0.42	0.04	57.8
12	R2	36	5.7	0.321	6.6	LOS A	2.4	17.9	0.42	0.04	56.0
Approach		587	6.7	0.321	1.4	NA	2.4	17.9	0.42	0.04	57.7
All Vehicles		808	10.7	0.321	1.9	NA	2.4	17.9	0.32	0.10	57.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Reservoir Rd Picrite Cl - PM Full Masterplan

PM Full Masterplan
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

South: Picrite Cl											
1	L2	22	5.0	0.019	6.8	LOS A	0.1	0.5	0.38	0.59	52.2
3	R2	55	2.5	0.070	7.8	LOS A	0.2	1.6	0.44	0.70	51.8
Approach		77	3.2	0.070	7.5	LOS A	0.2	1.6	0.43	0.66	51.9
East: Reservoir Rd											
4	L2	7	16.7	0.173	5.7	LOS A	0.0	0.0	0.00	0.01	57.4
5	T1	331	5.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		338	5.2	0.173	0.1	NA	0.0	0.0	0.00	0.01	59.8
West: Reservoir Rd											
11	T1	142	12.5	0.084	1.7	LOS A	0.6	4.7	0.46	0.02	57.8
12	R2	5	25.0	0.084	7.5	LOS A	0.6	4.7	0.46	0.02	55.1
Approach		147	12.9	0.084	1.9	NA	0.6	4.7	0.46	0.02	57.7
All Vehicles		562	7.0	0.173	1.6	NA	0.6	4.7	0.18	0.10	58.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX 3

Bus Routes

Cycleway Maps

BLACKTOWN BIKE PLAN 2013
EXISTING & FUTURE PROPOSED ROUTES

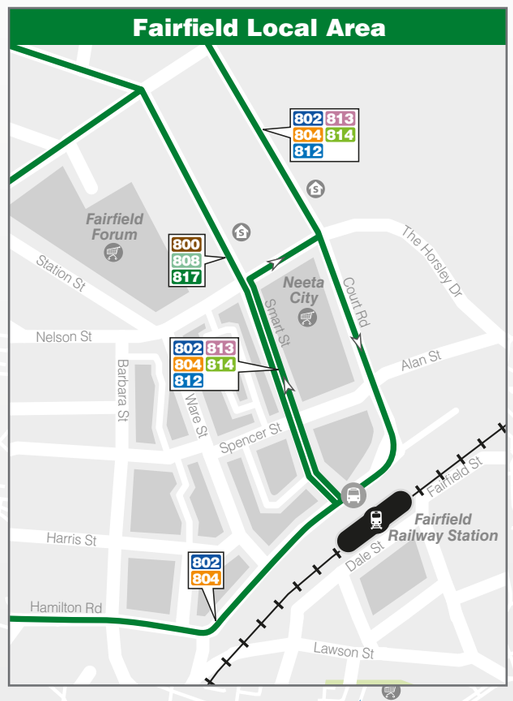
Transit Systems
Western Sydney Bus Network

Effective from:
22 September 2014

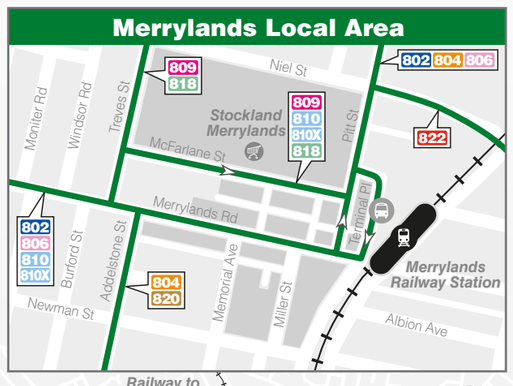
TRANSIT SYSTEMS

Blacktown Local Area

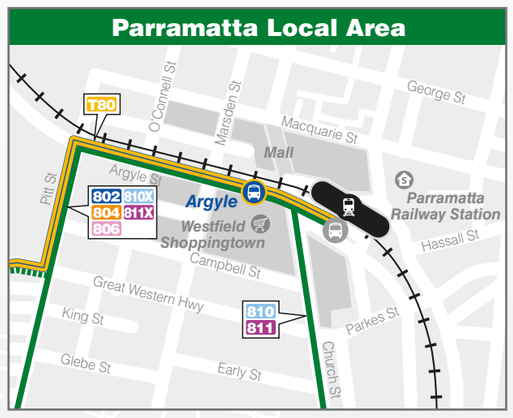
Fairfield Local Area



Merrylands Local Area

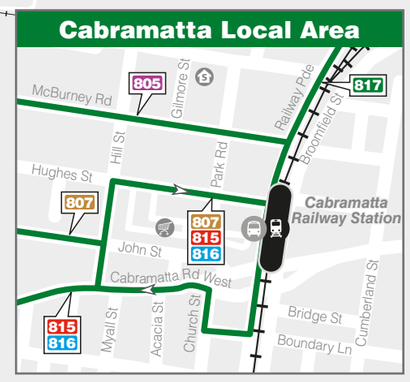


Parramatta Local Area



Transport
Visit transportnsw.info
Call 131 500 TTY 1800 637 500

Cabramatta Local Area



Liverpool Local Area

Map Legend

Train station · Train line · Liverpool-Parramatta T-way stop · Bus terminus · School
Shopping centre · Hospital · Occasional journey · 801 Bus route number · University/TAFE
0m 500m 1km N

FAIRFIELD CITY CYCLEWAYS

1D

Carwarra Place Park Playground. Artist: Joe Hurst.

CYCLE NETWORK

- PROPOSED REGIONAL CYCLEWAY ROUTE
- EXISTING REGIONAL CYCLEWAY ROUTE
- PROPOSED LOCAL CYCLEWAY ROUTE
- EXISTING LOCAL CYCLEWAY ROUTE
- M7 ROUTE CYCLEWAY ROUTE
- RAIL TRAIL/TRANSITWAY ROUTES
- TRANSITWAY
- TRANSITWAY STATIONS
- RAILWAY LINE
- OPEN SPACE
- SCHOOLS
- RETAIL OUTLETS
- EMPLOYMENT PRECINCTS
- TAFE
- POLICE
- HOSPITAL
- CYCLE SHOP
- LEISURE CENTRE
- SKATE PARKS
- WESTERN SYDNEY CYCLING NETWORK
- LIBRARIES
- MUSEUMS
- COUNCIL
- EXERCISE EQUIPMENT

PUBLIC ARTWORKS

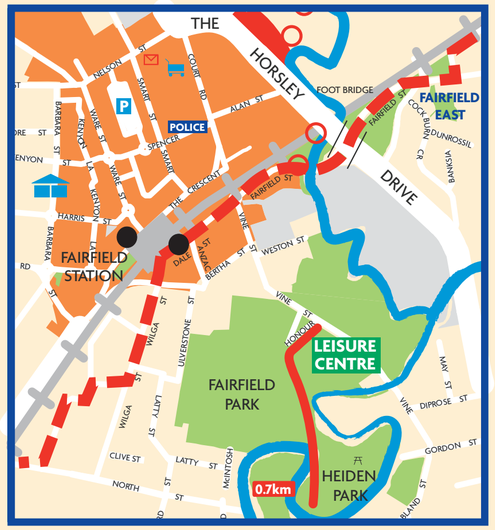
- 1A - 1B WARALI WALI (HOLROYD)
- 1C - 1D WARALI WALI (FAIRFIELD)
- 2A - 2D CYCLEWAY MARKERS
- 3A SEATING WALL
- 3B FISH HABITAT PROJECT
- 3C FISH AND DRAGONS PROJECT

Fairfield City
Celebrating diversity

FAIRFIELD CITY CYCLEWAYS

Carwarra Place Park Playground. Artist: Joe Hurst.

● PROPOSED LOCATIONS FOR BICYCLE STORAGE FACILITIES



CYCLE NETWORK

- PROPOSED REGIONAL CYCLEWAY ROUTE
- EXISTING REGIONAL CYCLEWAY ROUTE
- PROPOSED LOCAL CYCLEWAY ROUTE
- EXISTING LOCAL CYCLEWAY ROUTE
- M7 ROUTE CYCLEWAY ROUTE
- RAIL TRAIL/TRANSITWAY ROUTES
- TRANSITWAY
- TRANSITWAY STATIONS
- RAILWAY LINE
- OPEN SPACE
- SCHOOLS
- RETAIL OUTLETS
- EMPLOYMENT PRECINCTS
- TAFE
- POLICE — POLICE
- HOSPITAL
- CYCLE SHOP — CYCLE SHOP
- LEISURE CENTRE — LEISURE CENTRE
- SKATE — SKATE PARKS
- CLUB HOUSE — WESTERN SYDNEY CYCLING NETWORK
- LIBRARIES
- MUSEUMS
- COUNCIL

PUBLIC ARTWORKS

- 1A - 1B WARALI WALI (HOLROYD)
- 1C - 1D WARALI WALI (FAIRFIELD)
- 2A - 2D CYCLEWAY MARKERS
- 3A SEATING WALL
- 3B FISH HABITAT PROJECT
- 3C FISH AND DRAGONS PROJECT

N

1km (approx.) 0 1 (approx.) 2km (approx.)

Fairfield City
Celebrating diversity

FAIRFIELD CITY CYCLEWAYS

Carwarra Place Park Playground. Artist: Joe Hurst.

PROPOSED SECTION OF CYCLEWAY FOR CONSTRUCTION

PROSPECT RESERVOIR

HORSLEY PARK

EASTERN CREEK

BAY TO MOUNTAINS

TO BLACKTOWN

T' WAY TO PARRAMATTA

WETHERILL PARK

FERRERS ROAD

THE HORSLEY DRIVE

VICTORIA STREET

PROSPECT CREEK

ROSFORD STREET RESERVE

SMITHFIELD

TO HOLROYD

WETHERILL PARK RESERVE

WETHERILL PARK INSTITUTE OF TAFE

SKATE

EMERSON ST RESERVE

LILY STREET

BRENAN STREET

BOURKE STREET

CUMBERLAND HIGHWAY

BRENAN PARK

1.6km

2.5km

CITY OF HOLROYD

YENNORA DISTRIBUTION PARK

RAIL TRAIL TO PARRAMATTA

WESTERN SYDNEY REGIONAL PARK

2.4km

WALLGROVE ROAD

COWPASTURE ROAD

WETHERILL PARK STOCKLAND CENTRE

POLICE

POLDING STREET

THE HORSLEY DRIVE

SPRINGFIELD PARK

0.6km

BOSSLEY PARK

RESTWELL ROAD

MIMOSA ROAD

LEISURE CENTRE

PRAIRIEWOOD

SMITHFIELD ROAD

FAIRFIELD GOLF COURSE

CYCLE SHOP

1.3km

YENNORA STATION

OLD GUILDFORD

0.4km

KNIGHT PARK

PRAIRIE VALE ROAD

ORPHAN SCHOOL CREEK

FAIRFIELD SHOWGROUND

CLUB HOUSE

WAKELEY

KING ROAD

FAIRFIELD HEIGHTS

THE BOULEVARDE

SACKVILLE STREET

FAIRFIELD CITY CENTRE

FAIRFIELD EAST

BURNS CREEK

WOODVILLE ROAD

CITY FARM

STOCKDALE CRESENT RESERVE

KING PARK

FAIRFIELD WEST

14.2km

ENDEAVOUR RESERVE

FAIRFIELD

FAIRFIELD STATION

FAIRFIELD PARK

0.7km

VILLAWOOD

ABBOTSBURY

EDENSOR ROAD

1.8km

1.7km

GREENFIELD PARK

SMITHFIELD ROAD

ST JOHNS PARK

CANLEY VALE ROAD

AVOCA ROAD

GREEN VALLEY CREEK

CANLEY HEIGHTS

RAILWAY PARADE

CARRAMAR

FISH AND DRAGONS PROJECT

CARRAMAR STATION

VILLAWOOD STATION

CLEAR PADDOCK CREEK

ST JOHNS PARK RESERVE

EDENSOR PARK

BONNYRIGG TOWN CENTRE

HUMPHRIES ROAD

SEATING WALL

FISH HABITAT PROJECT

CANLEY VALE STATION

LONG CREEK

CARRAWOOD PARK

ELIZABETH DRIVE

TO M5 & M7

CITY OF LIVERPOOL

CABRAMATTA WEST

CABRAMATTA

CABRAMATTA TOWN CENTRE

CABRAMATTA STATION

CANLEY VALE

LEISURE CENTRE

1.1km

TO MIRAMBEENA REGIONAL PARK BANKSTOWN

HUME HIGHWAY

LANSVALE

BONNYRIGG HEIGHTS

BONNYRIGG

CABRAMATTA ROAD WEST

CABRAMATTA ROAD EAST

HOLLYWOOD DRIVE

MT PRITCHARD

PROUT PARK

1.2km

CABRAMATTA SPORTS GROUND

1.9km

1.6km

CHIPPING NORTON LAKE

FLOYD BAY

CITY OF BANKSTOWN

PROSPECT CREEK

GEORGES RIVER

T' WAY TO LIVERPOOL

NORTH LIVERPOOL ROAD

JOE BROAD MEMORIAL PARK

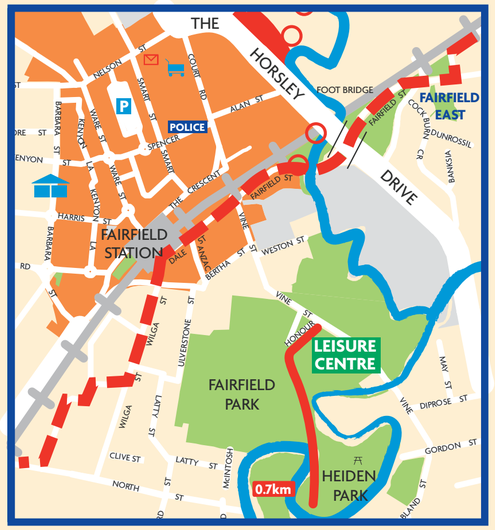
RESERVOIR ROAD

CABRAMATTA CREEK

RAIL TRAIL LIVERPOOL - CITY

N

1km (approx.) 0 1 (approx.) 2km (approx.)



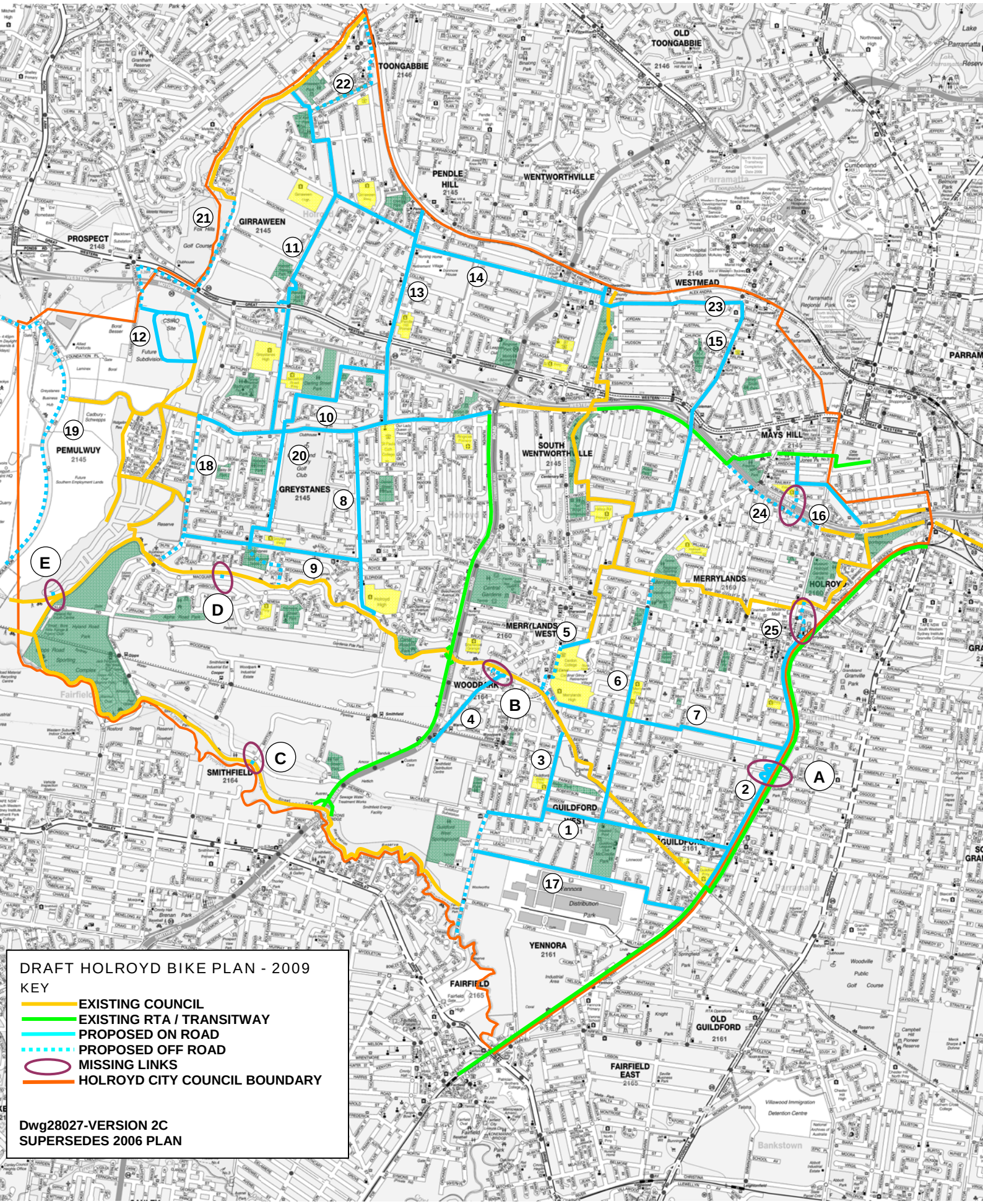
CYCLE NETWORK

- PROPOSED REGIONAL CYCLEWAY ROUTE
- EXISTING REGIONAL CYCLEWAY ROUTE
- PROPOSED LOCAL CYCLEWAY ROUTE
- EXISTING LOCAL CYCLEWAY ROUTE
- M7 ROUTE CYCLEWAY ROUTE
- RAIL TRAIL/TRANSITWAY ROUTES
- TRANSITWAY
- TRANSITWAY STATIONS
- RAILWAY LINE
- OPEN SPACE
- SCHOOLS
- RETAIL OUTLETS
- EMPLOYMENT PRECINCTS
- TAFE
- POLICE — POLICE
- HOSPITAL
- CYCLE SHOP — CYCLE SHOP
- LEISURE CENTRE — LEISURE CENTRE
- SKATE — SKATE PARKS
- CLUB HOUSE — WESTERN SYDNEY CYCLING NETWORK
- LIBRARIES
- MUSEUMS
- COUNCIL

PUBLIC ARTWORKS

- 1A - 1B WARALI WALI (HOLROYD)
- 1C - 1D WARALI WALI (FAIRFIELD)
- 2A - 2D CYCLEWAY MARKERS
- 3A SEATING WALL
- 3B FISH HABITAT PROJECT
- 3C FISH AND DRAGONS PROJECT

FairfieldCity
Celebrating diversity


DRAFT HOLROYD BIKE PLAN - 2009
KEY
EXISTING COUNCIL
EXISTING RTA / TRANSITWAY
PROPOSED ON ROAD
PROPOSED OFF ROAD
MISSING LINKS
HOLROYD CITY COUNCIL BOUNDARY
Dwg28027-VERSION 2C
SUPERSEDES 2006 PLAN
TOONGABBIE
OLD TOONGABBIE
PENDLE HILL
WENTWORTHVILLE
GIRRAWEEN
PROSPECT
WESTMEAD
PEMULWUY
GREYSTANES
SOUTH WENTWORTHVILLE
MAYS HILL
MERRYLANDS
MERRYLANDS WEST
WOODPARK
SMITHFIELD
GUILDFORD
GUILDFORD WEST
YENNORA
FAIRFIELD
OLD GUILDFORD
FAIRFIELD EAST
HOLROYD
A
B
C
D
E