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Wagga Wagga City Council

Report for Wagga Wagga Planning Studies

Traffic Management - Boorooma East

September 2008



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1. Boorooma East

1.1 Introduction

Boorooma East is bounded by Amundsen Street to the west, Olympic Highway and Coolamon Road to the east and Farrer Road to the north.

The following traffic reports were available for the Boorooma area:

- » Boorooma-Estella Structure Plan Review (Graham Moseley Planning and RJ Nairn and partners, 1995). The review was undertaken in the context of the long term growth strategy based on the Revised "Strategy Plan C" (1983).
- » Boorooma Traffic Study (RJ Nairn and Partner, 1998). This study updated the 1995 review in light of changes in land use relating to the Bomen Industrial area and the deferment of Cartwrights Hill neighbourhood.

1.2 Existing Conditions

1.2.1 Road and Intersection Layouts

Boorooma Street is the primary road serving the Boorooma-Estella area. It is the main north-south access road to Charles Sturt University and connects at its southern end to Olympic Highway at a grade-separated junction. It has a posted speed limit of 70 km/hr.

Farrer Road is a two-lane sealed road that provides secondary access to the University, connecting to Olympic Highway via Coolamon Road. It has a posted speed limit of 70 km/hr between the University and the Anglican college, at which point there is a 40km/h zone during school hours. East of the college the speed limit is 80km/h. Boorooma Street intersects Farrer Road near the entrance to the University where Boorooma Street traffic has priority. Kingsford Smith Road is unsealed and runs off Farrer Road, providing property access but does not connect to Olympic Highway.

Cooramin Street is a two-lane sealed road that provides access for several properties. Amundsen Street is an unsealed road that connects Cooramin Street to Farrer Road.

Coolamon Road is a two lane sealed road that connects Wagga Wagga to Coolamon and Ardlethan and is a B-double route. It has a posted speed limit of 100 km/hr.

The existing road conditions and road hierarchy are shown on Appendix A.

1.2.2 Traffic Flow

The following existing two way traffic volumes were provided by WWCC:

- » Boorooma Street (north of Estella Rd): 4,500 vpd.
- » Boorooma Street (south of Avocet Estella Rd): 7,200 vpd.
- » Farrer Road: 500 vpd.
- » Coolamon Road: 2,200 vpd.
- » Estella Road: 650 vpd.



1.2.3 Public Transport

The bus system in Wagga Wagga operates on an hourly basis between the Wagga Wagga CBD and Boorooma. Fearnas Coaches also operate school bus services throughout Wagga Wagga.

1.2.4 Cycling/Footpath Systems

There are no established off-road paths in the Boorooma East area.

1.3 Proposed Development

1.3.1 Previous Traffic Studies

The Boorooma-Estella Structure Plan Review (Graham Moseley Planning and RJ Nairn and partners, 1995) was reviewed and updated by the Boorooma Traffic Study (RJ Nairn and Partner, 1998). Traffic modelling undertaken in the 1998 study indicated that traffic levels on Boorooma Street would increase to about 20,000 vpd in 2014. The modelling results indicated that the university would attract a two-way traffic volume of about 2,400 veh/hr in the morning peak period. At these relatively high traffic levels on Boorooma Street, the modelling indicated that university traffic would also begin to use Pine Gully Road and Farrer Road to avoid congestion on Boorooma Street. The study concluded that by 2014 Boorooma Street would begin to face increasing congestion in peak hours and that additional capacity should be provided.

1.3.2 Road Layout and Hierarchy

The road layout for Boorooma East is based on the Preliminary Structure Plan Concept shown in Figure 1.

The proposed road layout features two primary streets, Boorooma Street and a new east-west street intersecting at the neighbourhood centre. The new east-west and north-south primary streets separate through-traffic and public transport from traffic on local streets.

The extension of Avocet Drive into Boorooma Street provides direct and safe access to the neighbourhood centre for residents in Estella.

1.3.3 Intersections and Access Points

Locations of proposed intersection upgrades are shown at Appendix B.

The most southern street in Boorooma West forms part of the main street network and is planned to intersect Boorooma Street opposite Avocet Street. The proposal to construct a roundabout at this location is supported. This will regulate intersection traffic flows and will serve to slow traffic speeds particularly in the northbound direction. A roundabout would also provide good access to the proposed neighbourhood centre to be located near this intersection.

A new road will intersect Boorooma Street about 200 metres north of Cooramin Street and also forms part of the main street network though Boorooma. It intersects Farrer Road about 150 metres to the east of the existing Amundsen Street reserve.

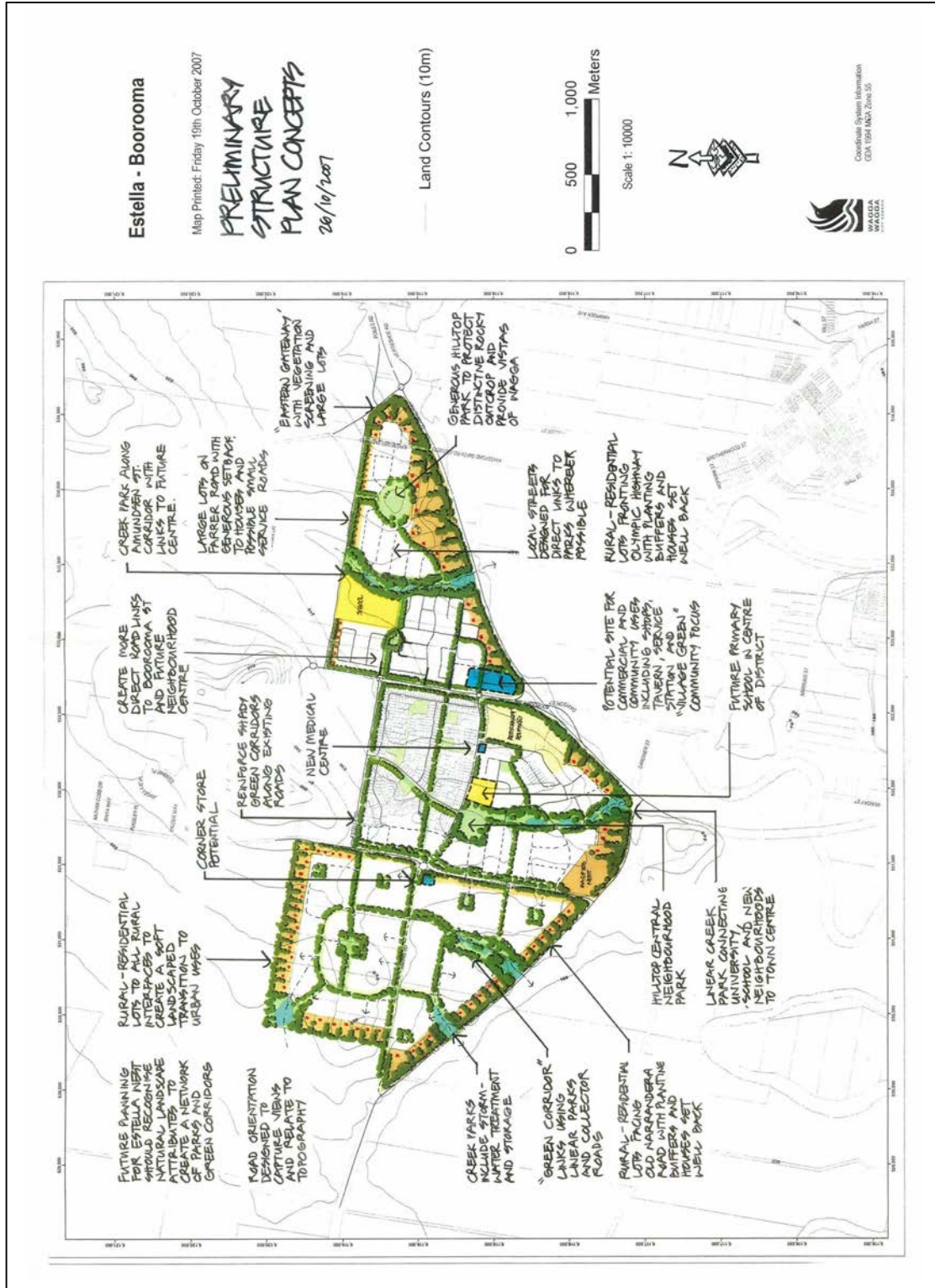


Figure 1: Road Layout for Boorooma East



1.3.4 Future Traffic Flows

General Traffic Growth

An estimate of traffic volumes on Boorooma Street and Farrer Road was made by applying a 1.22% compound growth rate to the 2006 traffic volumes, supplied by WWCC. Based on this assumed growth rate, the estimated traffic volume on these roads in 2016, excluding the traffic generated by Boorooma, are:

- » 8,100 vpd on Boorooma Street.
- » 560 vpd on Farrer Road.

Traffic Generation

The numbers of residential lots in Boorooma East was estimated based on a generation rate of 10 lots per ha for 40 ha of medium density housing, and an additional 11 large lots. The resultant lot yield for Boorooma East is 411 lots. Based on the rates given in the RTA Guide to Traffic Generating Developments AM peak, there would be about 277 vehicle trips added to the external road network during the peak period.

Traffic Distribution

Approximately 80% of the vehicles generated by the Boorooma East development are assumed to use Boorooma Street (214 veh/hr) and the balance would use Farrer Road/Coolamon Road(58 veh/hr).

In addition to the traffic generated by Boorooma East, about 20% of traffic from Estella West is estimated to use Boorooma Street.

1.4 Proposed Improvements

1.4.1 Intersection Analysis

The peak period traffic flows estimated for 2016 at the following intersections were analysed and were found to operate at acceptable levels of service under existing traffic control arrangements:

Farrer Road/ Coolamon Road

The additional traffic generated by the development is estimated to be relatively small and the existing intersection arrangement should have sufficient capacity. This should be monitored to assess intersection safety as traffic levels increase.

Farrer Road/ New Access

The intersection of Farrer Road with the new access road for Boorooma East is not projected to attract a significant volume of traffic and would operate satisfactorily as a give-way controlled junction provided safe sight distance is available. Consideration should be give to lowering the speed limit from 80km/hr along Farrer Road.



Coolamon Rd/ Olympic Highway

The existing roundabout has sufficient capacity to accommodate additional traffic from the development.

Boorooma Street/ Farrer Road

As traffic levels increase on both Boorooma Street and Farrer Road, the existing intersection will require upgrading. There are a number of constraints that affect the form and location of the upgrade. These include the entry nature of Boorooma Street approaching the university, the close proximity of the intersection to the large roundabout within the university grounds and the presence of major underground services in the area that affect the cost of construction. Further detailed consideration needs to be given to the development of the roads and intersections associated with this intersection upgrade.

Boorooma Street/ Estella Road

The intersection of Boorooma Street and Estella Road would benefit from the construction of a roundabout to assist in reducing travel speeds on Boorooma Street and to provide improved access for traffic entering from Estella. A single lane roundabout would be appropriate and would accommodate the projected traffic flows at an acceptable level of service.

Boorooma Street/ Avocet Street

The cross junction formed at Boorooma Street/ Avocet Street intersection with the new street accessing the shopping centre in Boorooma West may create a safety problem for traffic crossing Boorooma Street under give-way control conditions. Preliminary analysis of projected traffic flows from Estella and Boorooma East indicate that a single lane roundabout would be suitable at this intersection. It should be noted that the analysis has not taken account of traffic generated by development at Boorooma West and that the adequacy of the roundabout should be reviewed for this additional traffic.

It is noted that the Boorooma Street/ Avocet Street intersection is located a relatively short distance from the intersection with Olympic Highway where travel speeds for northbound traffic leaving the highway are likely to be high. A roundabout would serve to reduce travel speeds and provide improved access for minor road traffic. In order to progressively reduce speeds on the approach to the proposed roundabout, the posted speed limit for traffic leaving the highway should be reviewed.

1.4.2 Midblock Traffic Analysis

The projected peak period two-way traffic flow on Farrer Road in 2016 based on background traffic growth and the estimate of traffic generation for Boorooma East is relatively small and can be accommodated by the existing two lane road.

Boorooma Street is estimated to carry about 8,000 vpd in 2016 north of Avocet Street and about 9,000 vpd south of Avocet Street. The existing two lane road is sufficient for this volume. However there will be a significant amount of intersection turning movements on Boorooma Street and it is recommended that for safety reasons, driveway access is not permitted.

The western half of Farrer Road appears to have formed and graded shoulders but the section east of about Amundsen Street may require upgrading to strengthen the pavement and to provide wider shoulders and to accommodate the higher levels of traffic expected by 2016.

Proposed road upgrades are shown on Appendix B.



1.4.3 Comment on Boorooma Traffic Study Impact

The Nairn report (1998) forecast 21,000 vpd on Boorooma Street and 5,000 vpd on Farrer Road by 2014. These forecasts were based on a peak hour flow of about 1700 veh/hr in 1996 equivalent to about 17,000 vpd. This is significantly higher than the current traffic count of 4,500 vpd provided by WWCC. The conclusion in the Nairn report to provide additional capacity on Boorooma Street therefore appears to be highly conservative and is based on a projected daily traffic volume on Boorooma Street in 2014 of over 20,00 vpd.

1.4.4 Public Transport

The existing bus service should be extended into Boorooma along the new east-west street connecting Boorooma Street and Farrer Road.

1.4.5 Cycling/Footpath Systems

New pedestrian links across and along the Amundsen Street open space corridor will connect residential areas to the neighbourhood centre.

1.5 Construction Cost Estimate

The proposed improvement works and associated indicative cost estimates are summarised in Table 1.

Table 1 Proposed Improvement Works

Location	Proposed Upgrade Works	Estimated Cost
Boorooma Street/ Estella Road	Single lane roundabout	\$300,000
Boorooma Street/ Avocet Drive	Single lane roundabout	\$300,000
Farrer Road (Amundsen St to Coolamon Rd)	Road and shoulder upgrade	\$200,000

The indicative cost estimates are based on typical rates for projects undertaken by WWCC in 2005 and are accurate to +/- 50%. As the estimates are based on indicative information only, they may change when preliminary and detailed design investigations are undertaken. The estimates exclude the costs of escalation to time of construction, design and construction contingency allowances, the costs of detailed investigations, survey, authority approvals, design, documentation, procurement, and project management of the works.



Appendix A
Existing Conditions - Boorooma East

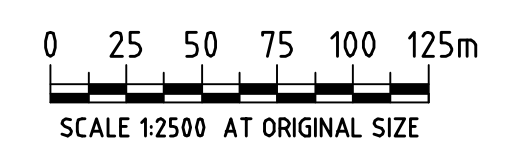


LEGEND

- EXISTING PRIORITY CONTROLLED INTERSECTION
- EXISTING ROUNDABOUT
- HIGHWAY
- ARTERIAL
- SUB-ARTERIAL
- COLLECTOR
- LOCAL
- RAILWAY LINE
- WALKING TRACK
- STUDY AREA

PRELIMINARY

No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
B	MINOR LINEWORK CHANGES		TM	GG*	TC*	19.3.08
A	PRELIMINARY		TM			



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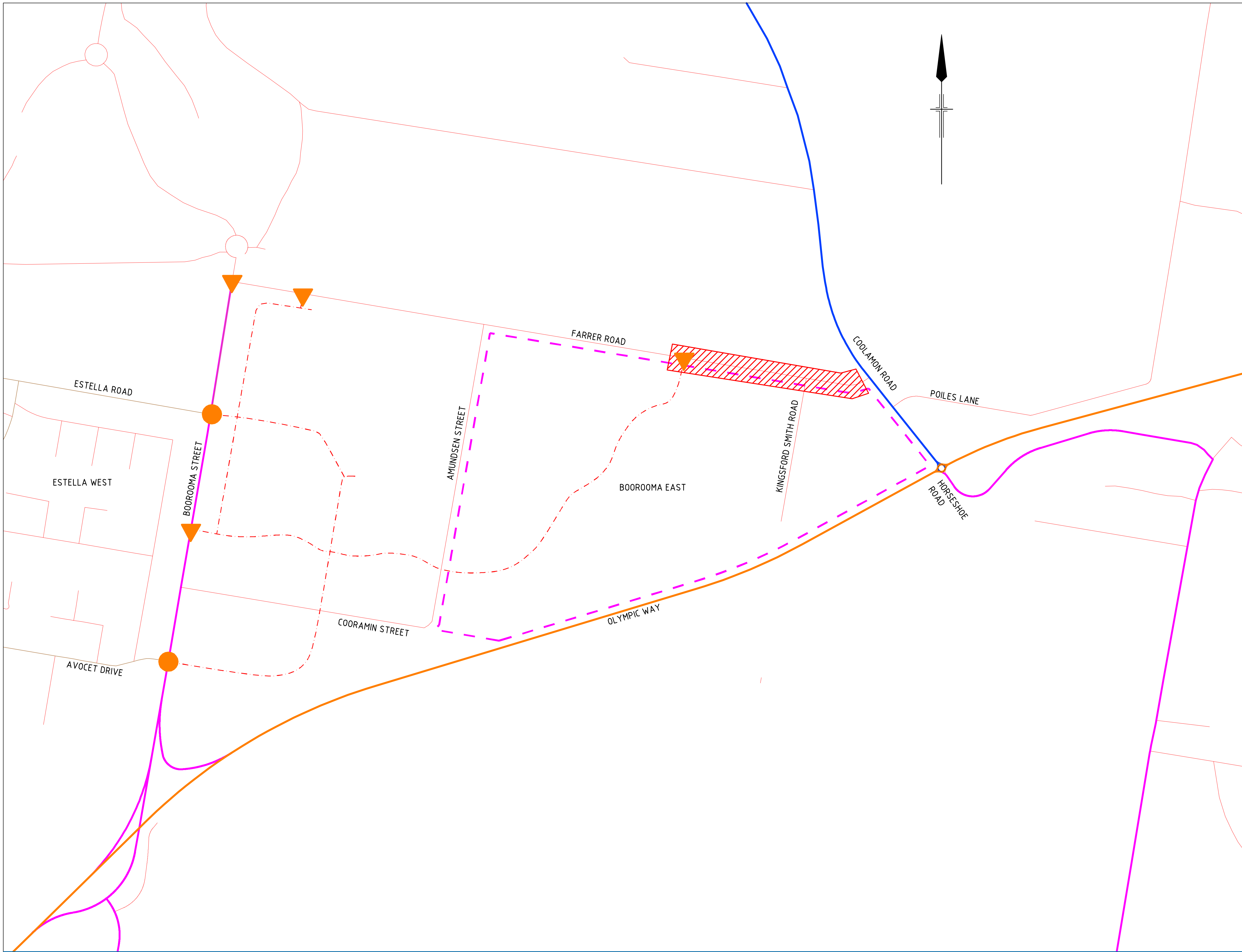
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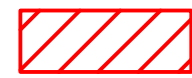












Client	WAGGA CITY COUNCIL
Project	WAGGA WAGGA DRAFT LEP STUDY 2007
Title	BOOROOMA EAST EXISTING CONDITIONS
Original Size	A1
Drawing No:	23-12229-SK106
Rev:	B



Appendix B
Post Development Arrangement -
Boorooma East

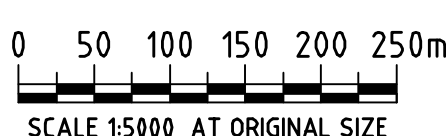


LEGEND

-  NEW/UPGRADED ROADS
-  NEW/UPGRADED INTERSECTION
-  NEW/UPGRADED ROUNDABOUT
-  NEW TRAFFIC SIGNALS
-  HIGHWAY
-  ARTERIAL
-  SUB-ARTERIAL
-  COLLECTOR
-  LOCAL
-  RAILWAY LINE
-  NEW ROAD
-  WALKING TRACK
-  STUDY AREA

PRELIMINARY

B		REVISED ROAD LAYOUT FOR BOOROOMA EAST	TM	GG*	TC*	19.3.08
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Project	WAGGA WAGGA DRAFT LEP STUDY 2007		
Title	BOOROOMA EAST POST DEVELOPMENT		
Original Size	A1	Drawing No: 23-12229-SK114	Rev: B



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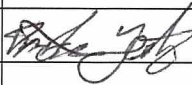
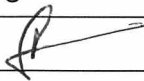
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