CLIENTS | PEOPLE | PERFORMANCE

Wagga Wagga City Council

Report for Wagga Wagga Planning Studies

Traffic Management - Estella West

September 2008

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

Contents

Table Index

Figure Index

Appendices

1. Estella West

1.1 Introduction

Estella West is a relatively large area on the northern side of Old Narrandera Road and extends to the existing development at Estella. Its western extent is just east of the Harris Road and Old Narrandera Road intersection and it extends to about 800 metres north of Harris Road.

No traffic reports were available for the Estella West area.

1.2 Existing Conditions

1.2.1 Road and Intersection Layouts

The existing conditions and road hierarchies are shown in Appendix A.

Old Narrandera Road is a two lane sealed road that runs generally along the northern side of the river connecting villages such as Millwood and Euberta to Wagga Wagga via Olympic Way. It has a posted speed limit of 100 km/hr. It intersects Olympic Way as a priority controlled seagull intersection.

Pine Gully Road runs parallel to and west of Boorooma Street and provides access to the western portion of Charles Sturt University. Pine Gully Road and Old Narrandera Road intersect at a T-junction where Pine Gully Road traffic is controlled by a stop sign. It has a posted speed limit of 100 km/hr.

Harris Road is a two-lane sealed road that connects Old Narrandera Road and Pine Gully Road. It has a posted speed limit of 100 km/hr.

1.2.2 Traffic Flow

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

» Old Narrandera Road: 2,500 vpd (near Olympic Highway Intersection).

» Harris Road: 85 vpd.

No traffic flow data was available for the following roads and estimates were made for the purposes of the analysis:

» Pine Gully Road: 2000 vpd but varies with fluctuations in university traffic.

1.2.3 Public Transport

Fearnes Coaches operates an hourly service between the Wagga Wagga CBD and the Boorooma-Estella area. Fearnes Coaches also operate school bus services throughout Wagga Wagga.

1.2.4 Cycling/Footpath Systems

There are some off-road paths along the Cooramin Street reserve between Gunn Drive and Boorooma Street.

1.3 Proposed Development

1.3.1 Road Layout and Hierarchy

The conceptual road layout for Estella West was taken from the Preliminary Structure Plan Concepts Willana 2007) refer Figure 1.

Refer also to Appendix B for post development access arrangements at Estella West site.

Old Narrandera Road and Pine Gully Road are the main roads accessing the site. Harris Road is absorbed in the site and is not maintained in its present form through the site.

There are two access roads onto Old Narrandera Road equally spaced between the existing intersections of Harris Road and Pine Gully Road.

For the portion of Estella West on the western side of Pine Gully Road, there is a central access road proposed onto Pine Gully Road at Harris Road and a second access road north of Estella Road. Both roads are proposed as T-junctions.

1.3.2 Future Traffic Flows

General Traffic Growth

An estimate of traffic volumes on Old Narrandera Road, Pine Gully Road and Harris Road was made by applying a 1.22% compound growth rate to 2006 traffic volumes. The estimated traffic volume on these roads in 2016 are:

- Old Narrandera Road 2810 vpd.
- Pine Gully Road 2250 vpd.
- Harris Road 100 vpd.

Traffic Generation

The numbers of residential lots in Estella West was determined by applying a medium density rate of 10 lots per ha to 200 ha and a low density rate of 4 lots per ha to 6 ha. The resultant lot yield for Estella West is 2000. Based on the rates given in the RTA Guide to Traffic Generating Developments AM peak, there would be about 1350 vehicle trips added to the external road network during the peak period.

Traffic Distribution

During the AM peak, approximately 30% of the vehicles generated by the development will directly exit onto Old Narrandera Road (405 veh/hr) and the balance onto Pine Gully Road (945 veh/hr), approximately 80% of which (740 veh/hr) eventually exit onto Old Narrandera Road.

Projected Flows

Pine Gully Road provides an alternative to Boorooma Street for access to the University, as well as serving the student residences to the northwest. Old Narrandera Road is assumed to carry a small volume of traffic west of the intersection with Pine Gully Road. Apart from Pine Gully Road, two internal north-south roads serve the majority of residences located south of Harris Road. The area west of Pine Gully Road and north of Harris Road sees the majority of traffic travelling south onto Harris and then west onto Pine Gully. The majority of vehicles generated in the eastern portion of Estella West are likely to travel south via Pine Gully Road during the AM peak.

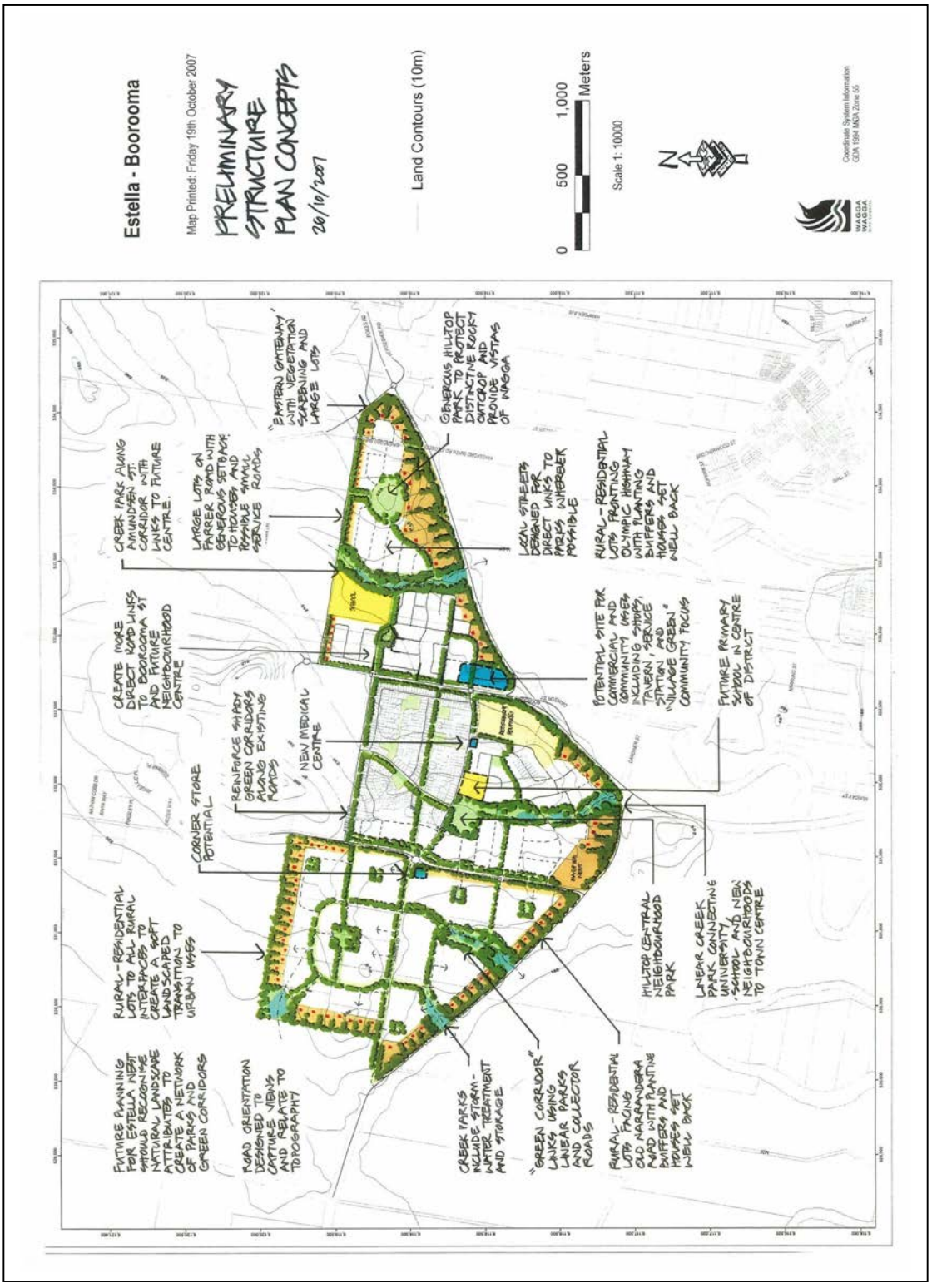


Figure 1: Conceptual Layout for Estella West

1.3.3 Intersection Traffic analysis

The AM peak traffic flows for intersecting roads along Boorooma Street and Farrer Road were analysed using aaSIDRA (Vers 3.1) to determine intersection levels of service for projected traffic flows in 2016. The type of intersection control proposed and the intersection level of service are given in Table 1.

Table 1: Analysis Results

Intersection	Intersection Type	Level of Service
Pine Gully Road / Harris Road	Two lane roundabout	A
Pine Gully Road / Old Narrandera Road	Two lane roundabout	A
Old Narrandera Road / Olympic Way	Seagull roundabout	B

A description of the level of service thresholds for various intersection control measures is provided by in the RTA Guidelines to Traffic Generating Developments and is reproduced in Table 2.

Table 2: Performance Criteria for Intersections

Level of Service	Average Delay Per Vehicle (secs/vehicle)	Traffic Signals, Roundabout	Give-Way and Stop Signs
A	Less than 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 other accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays	At capacity and requires other control mode
F	Greater than 70	Roundabouts require other control mode	

The analysis results indicate that the projected traffic volumes at intersections along Old Narrandera Road require improved capacity at Pine Gully Road and Olympic Way.

» At Pine Gully Road a two-lane roundabout is recommended. The left turn from Pine Gully Road will require a slip lane with traffic moving into its own lane on Old Narrandera Road.

» At Harris Road a dual circulating lane roundabout is required.

» At Olympic Way, the capacity of the existing channelised intersection would be exceeded with the projected flows for 2016 and cause safety problems for traffic seeking gaps in the highway traffic. A seagull roundabout was investigated and found to accommodate the projected flows at an acceptable level of service and address the safety issues. The southbound traffic on Olympic way would bypass the roundabout.

1.3.4 Midblock Traffic Analysis

The projected peak period two-way traffic flow on Old Narrandera Road in 2016 west of Pine Gully road is estimated to be 4,000 vpd. This can be accommodated by the existing two lane road. East of Pine Gully Road the traffic volumes are estimated to be 16,000 vpd. This level of traffic would require a four lane road to operate at an acceptable level of service.

The projected flows on Pine Gully Road south of Harris Road in 2016 are about 13,000 vpd. This is approaching the level of traffic where congestion would occur on a two-lane road and provision should be made to provide a second carriageway. The existing two-way road north of Harris Road is adequate for the projected traffic.

1.3.5 Public Transport

The existing bus service in Estella could be extended into Estella West along Dunns Road, Pine Gully Road and via the collector road system in Estella West then Old Narrandera Road to the city.

1.3.6 Cycling/Footpath Systems

The Cooramin Street reserve provides an opportunity to extend pedestrian links to Estella West along the Harris Road corridor.

1.4 Construction Cost Estimate

The proposed improvement works and associated indicative cost estimates are summarised in Table 3.

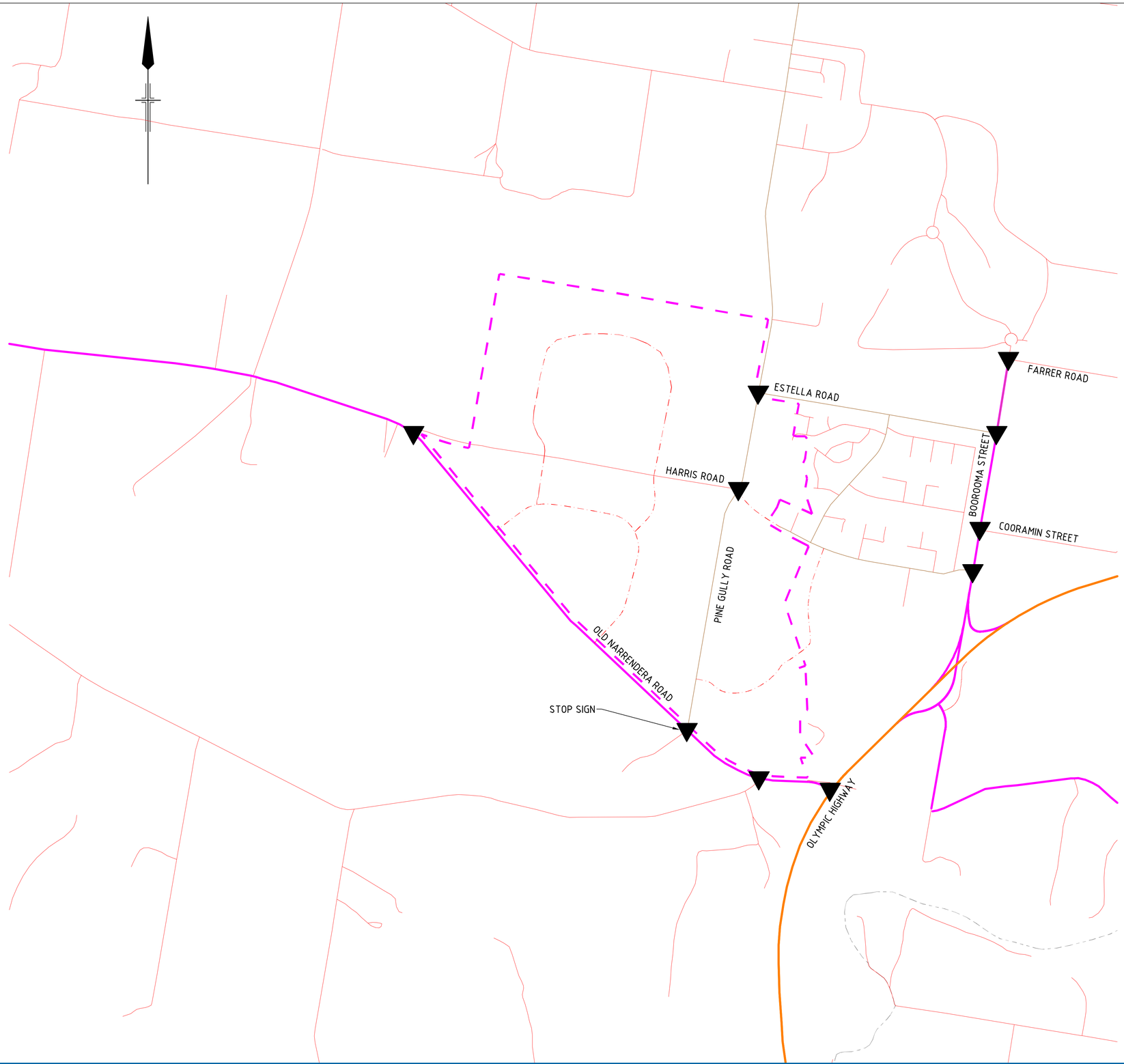
Table 3: Proposed Improvement Works

Location	Proposed Upgrade Works	Estimated Cost
At Old Narrandera Road/ Olympic Way	Seagull roundabout	$1,000,000
At Pine Gully Road/ Old Narrandera Road	Dual lane roundabout with slip lane	$500,000
At Harris Road/ Pine Gully Road	Dual lane roundabout	$500,000
Old Narrandera Road	Construct second carriageway for a distance of about 600 metres	$500,000 (excl property acquisition)
Pine Gully Road	Construct second carriageway for a distance of about 1.2 km	$1,000,000 (excl property acquisition)

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 and Road Hierarchies



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	SOK			

0 100 200 300 400 500m
SCALE 1:10000 AT ORIGINAL SIZE

GHD CLIENTS | PEOPLE | PERFORMANCE
2nd Floor, Belconnen Chambers
59 Cameron Ave Belconnen ACT 2617 Australia
PO Box 36 Belconnen ACT 2617
T 61 2 6253 1999 **F** 61 2 6253 1911
E cbrmail@ghd.com.au **W** www.ghd.com.au

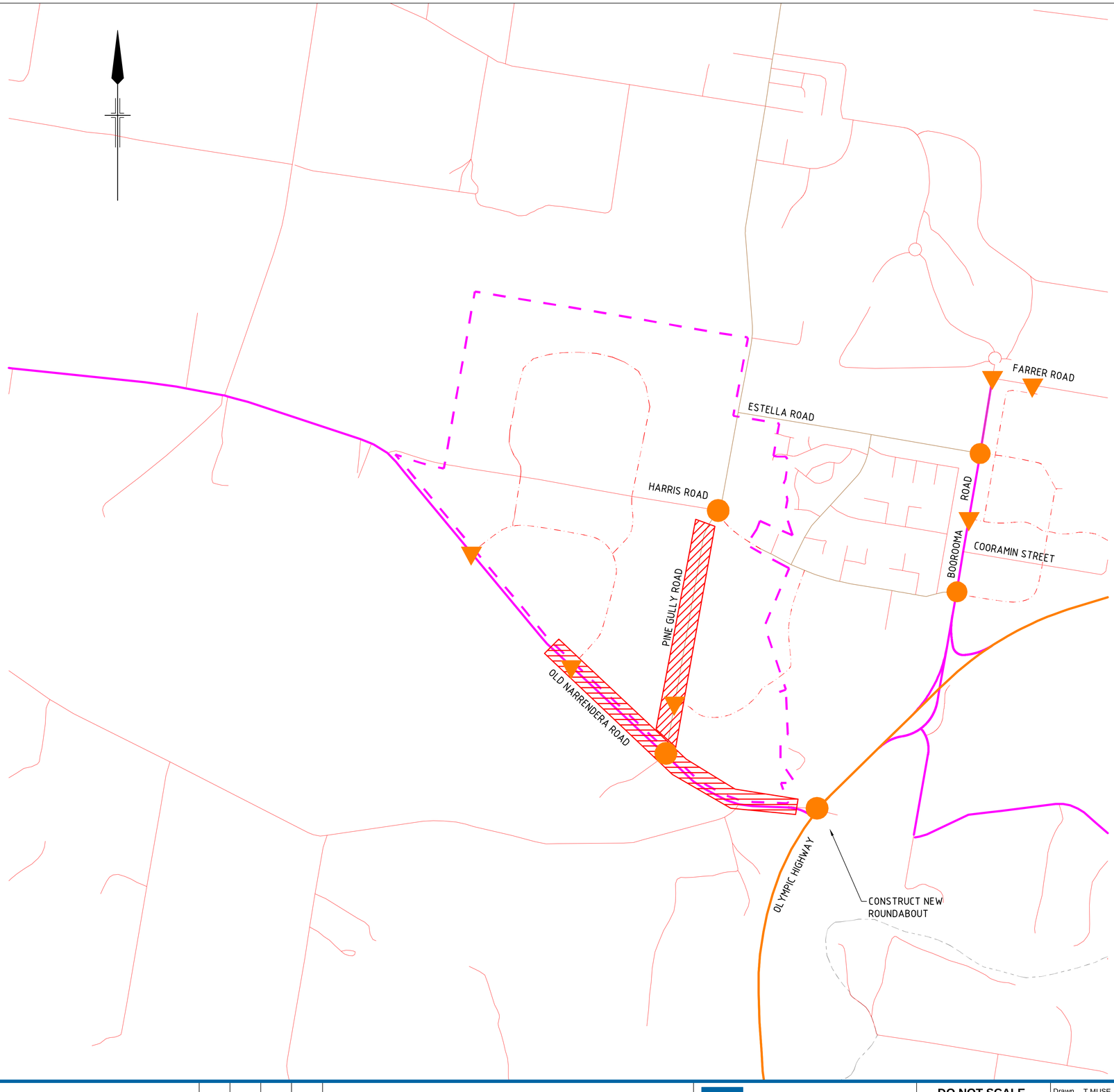
DO NOT SCALE

Drawn T.MUSE	Designed H.VANDERHOEK	Client	WAGGA CITY COUNCIL
Drafting Check	Design Check	Project	WAGGA WAGGA DRAFT LEP STUDY 2007
Approved		Title	ESTELLA WEST EXISTING CONDITIONS
Date			
Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	Original Size A1	Drawing No: 23-12229-SK105 Rev: B

Plot Date: 19 March 2008 - 8:57 AM Cad File No: G:\23\12229\CADD\Drawings\23-12229-SK100-107-EX.dwg

Appendix B

Post Development Access Arrangements



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

No	Revision	Drawn	Checked	Approved	Date
B	REVISED ROAD LAYOUT FOR ESTELLA WEST	TM	GG*	TC*	19.3.08
A	PRELIMINARY	SOK			

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 100 200 300 400 500m
SCALE 1:10000 AT ORIGINAL SIZE

GHD CLIENTS | PEOPLE | PERFORMANCE
2nd Floor, Belconnen Chambers
59 Cameron Ave Belconnen ACT 2617 Australia
PO Box 36 Belconnen ACT 2617
T 61 2 6253 1999 **F** 61 2 6253 1911
E cbrmail@ghd.com.au **W** www.ghd.com.au

DO NOT SCALE

Drawn	T.MUSE	Designed	H.VANDERHOEK
Drafting Check		Design Check	
Approved			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client **WAGGA CITY COUNCIL**
Project **WAGGA WAGGA DRAFT LEP STUDY 2007**
Title **ESTELLA WEST POST DEVELOPMENT**

Original Size **A1**
Drawing No: 23-12229-SK113
Rev: B

Plot Date: 19 March 2008 - 9:03 AM
Cad File No: G:\23\12229\CADD\Drawings\23-12229-SK108-115-PRO.dwg

GHD Pty Ltd ABN 39 008 488 373

59 Cameron Avenue Belconnen ACT 2617
PO Box 36 Belconnen ACT 2616 Australia
T: 61 2 6253 1999 F: 61 2 6253 1911 E: cbrmail@ghd.com.au

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	M Lyons	G Gardner	GG	T Chapman	TC	27/9/07
1	M Lyons	T Yeats	TY	T Chapman	TC	18/3/08
2	M Lyons	T Yeats		T Chapman		08/09/08