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Wagga Wagga City Council

Report for Wagga Wagga Planning Studies

Traffic Management - Lloyd

September 2008

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

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1. Lloyd

1.1 Introduction

The Lloyd area is bounded by the Main Southern Railway Line and the Olympic Highway to the west, the existing urban development areas of Glenfield Park to the north and Bourkelands to the east.

The following traffic reports were available for Lloyd:

» Lloyd LES (June 2002)

» Lloyd Master Plan (June 2005)

1.2 Existing Conditions

1.2.1 Road Hierarchy

Red Hill Road is an east-west arterial road that skirts the southern suburbs of Glenfield Park and Tolland connecting Olympic Highway to Kooringal Road. It has a posted speed limit of 70 km/hr.

The north-south running arterial roads Glenfield Road, Bourke Street and Lake Albert Road intersect Red Hill Road. Glenfield Road and Bourke Street meet Holbrook Road south of Red Hill Road.

Dalman Parkway is a sub-arterial road connecting Red Hill Road to Glenfield Road through Glenfield.

1.2.2 Road and Intersection Layouts

The following roads intersect with Red Hill Road in the vicinity of Lloyd:

» Olympic Highway (give-way T-junction)

» Yentoo Drive (give-way T-junction)

» Dalman Parkway (give-way T-junction)

» Hudson Drive (give-way T-junction)

» Glenfield Road (two-lane roundabout)

Deakin Avenue intersects Glenfield Road as a give-way T-junction and provides an alternative access to Hudson Drive for the residents of the existing development of Lloyd.

1.2.3 Traffic Flows

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

» Red Hill Road, between Dalman Parkway and Glenfield Road: 2,020 vpd

» Red Hill Road, between Glenfield Road and Bourke St: 4,940 vpd

» Holbrook Road: 2,040 vpd

No daily traffic flow data was available for Dalman Parkway and an estimate was made of 7,000 vpd at its northern end based on recent peak period intersection traffic counts. This is expected to be less at the southern end and in the order of 2000 vpd.

1.2.4 Public Transport

The bus system in Wagga Wagga is provided by Fearnes Coaches and operates on an hourly basis between the Wagga Wagga CBD and Glenfield Park. Fearnes Coaches also operate school bus services throughout Wagga Wagga.

1.2.5 Cycling/Footpath Systems

An off-road cycle trail runs along the north side of Red Hill Road between Glenfield Road and the transmission line reserve to the west of Dalman Parkway where it continues along the south side of Red Hill Road. A bicycle path extends along Dalman Parkway through Glenfield Park from Glenfield Road to Red Hill Road.

The Wiradjuri Walking Track runs along the south side of Red Hill Road between Glenfield Road and Hudson Drive. It traverses the Lloyd area and crosses the railway and follows the Silveralite Reserve to the Sturt Highway, passing under Red Hill Road at an underpass between Olympic Highway and the railway.

1.3 Proposed Development

1.3.1 Road Layout and Hierarchy

The Lloyd Neighbourhood Master Plan (Willana Associates, 2005) proposes that the main connection point for the neighbourhood be located opposite Dalman Parkway. This would directly connect the Neighbourhood to the future Glenfield Park retail and community centre.

The road layout for Lloyd and connections to the existing road network is shown on Appendix B and is based on the Draft Structure Plan for Lloyd shown on Figure 1 on the next page. This road layout has a loop Collector Street within the main residential part of the development. Connections to Red Hill Road are located where there is good sight distance. In keeping with the principle of direct connections, and to reduce unnecessary additional intersections on Red Hill Road, an access at the existing Red Hill Road/ Dalman Parkway intersection is supported.

1.3.2 Public Transport

The existing bus service should be extended into Lloyd following collector roads. The bus route / Collector road network in Lloyd should be designed so that all residential houses are within 400m of the bus route and within 500m of a bus stop and to service the proposed neighbourhood centre.

1.3.3 Cycling/Footpath Systems

Pedestrian and bicycle paths form a key component of the proposed master plan for Lloyd. New paths in Lloyd should connect with the existing network in Glenfield Park. A path is suggested along the north side of Red Hill Road with a possible underpass crossing to the west of Hudson Drive intersection.

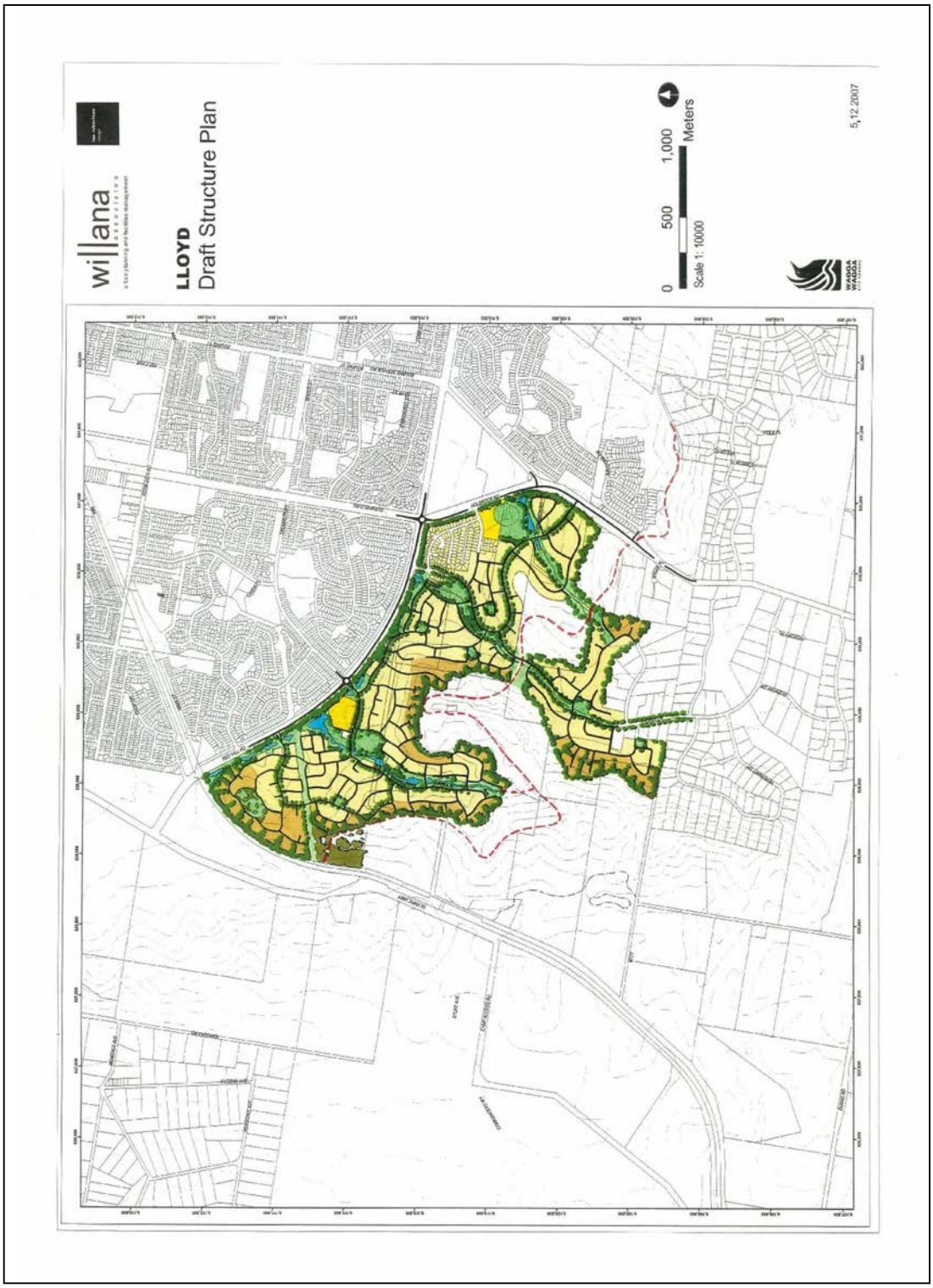


Figure 1: Proposed Road Layout for Lloyd

Provision for off-road cycling should be made along the main distributor road in Lloyd to provide an off-road alternative for cyclists travelling on the relatively steep grades where the speed differential between

bicycles and other vehicles is likely to be high. The existing transmission easement is utilized as a corridor to promote continuity for pedestrians and cyclists along the corridor to the Glenfield Park Neighbourhood Centre.

1.3.4 Intersections and Access Points

Traffic signals are recommended for the four-way junction at the intersection of Dalman Parkway and Red Hill Road. It would have the following advantages over a roundabout:

» Positive management of pedestrians crossing Red Hill Road; and

» Greater control of traffic using Dalman Parkway through signal phases.

A second intersection off Red Hill Road is located between Dalman Parkway and Yentoo Drive at the collector road for development in the northwestern portion of Lloyd. A third access to the site utilises the existing access for the existing development at Hudson Drive. This intersection is suitably distanced from the Dalman Parkway intersection.

Another access point is along Wagga Wagga Mangoplah Road to serve the southeastern area of the development.

The intersection of Olympic Highway and Red Hill Road has good sight distance in both directions along Olympic Highway. The estimated future peak period traffic flow turning right onto the highway is about 200 veh/hr. This entering traffic has to find suitable gaps in highway traffic which carries about 5,000vpd or about 250 veh/hr in each direction. Based on Austroads Roadway Capacity guidelines, the volume of traffic on the highway can adequately absorb the traffic entering from Red Hill Road.

The intersection of Yentoo Drive and Red Hill Road has been constructed and line-marked to allow through traffic to pass turning traffic and sight distance is unobstructed. The projected relatively low levels of traffic on Red Hill Road (about 7,000 vpd) will absorb about 600 veh/hr on the minor road at an average delay of about 10 seconds. As Yentoo Road is unlikely to carry this level of traffic, the existing intersection control is considered to be adequate.

1.3.5 Future Traffic Flows

General Traffic Growth

An estimate of traffic volumes on Red Hill Road was made by applying a 1.22% compound growth rate to 2006 traffic volumes. Based on this assumed growth rate, the estimated traffic volume on Red Hill Road in 2016 is 2280 vpd, excluding the traffic generated by Lloyd.

Traffic Generation

The number of residential lots was estimated by referring to the Road Structure Plan (Wagga DCP 2005). An estimate of the number of lots in the additional area to the south of Deakin Avenue was based on a medium density rate of 10 lots per hectare. The resultant lot yield for Lloyd is 1,490. Based on the rates given in the RTA Guide to Traffic Generating Developments, there would be about 1,000 vehicle trips added to the external road network during the peak period.

Traffic Distribution

During the AM peak, its is estimated that approximately 40% of the vehicles generated by the development will exit at the Dalman Parkway intersection (438 veh/hr). The remainder of the traffic

generated by Lloyd would be distributed between the north western exit (190 veh/hr), Hudson Drive (282 veh/hr) and the new access onto Wagga Wagga Mangoplah Road (95 veh/hr).

Midblock Capacity

Red Hill Road currently carries a relatively low volume of traffic estimated to have increased from 2,000 to 2,500 vpd following the recent connection to Olympic Way. The additional traffic due to Lloyd is estimated to increase the traffic flow to 6,500 vpd and 4,500 vpd east and west of Dalman Parkway, respectively. Dalman Parkway may carry up to 2,500 vpd depending on the phasing of the traffic signals and the capacity of the Dalman Parkway/Glenfield Road intersection. The projected flows for Red Hill Road can be accommodated by a single two-lane two-way carriageway within the appropriate environmental limits. No capacity constraints are anticipated as a result of this development.

1.3.6 Intersection Traffic Analysis

The AM peak traffic flows for access roads intersecting Red Hill 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 2.

Table 1 Intersection Analysis Results

Intersection	Intersection Type	Level of Service
Red Hill Road/ Dalman Parkway/South Collector Road	Traffic signals	C
Hudson Drive/ Red Hill Road	Single Lane Roundabout	A
New access/Wagga Wagga Mangoplah Road	Give-way	A

A description of the level of service thresholds for various intersection control measures is provided 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

Level of Service	Average Delay Per Vehicle (secs/vehicle)	Traffic Signals, Roundabout	Give-Way and Stop Signs
F	Greater than 70	Roundabouts require other control mode	

The analysis results indicate that the projected traffic volumes at access road intersections along Red Hill Road can be satisfactorily accommodated by the proposed upgrade measures.

At Red Hill Road/North Collector Road intersection, a give-way junction is sufficient to accommodate the projected flows.

At Red Hill Road/ Dalman Parkway/South Collector Road intersection, a roundabout was considered and would be preferable to a simple priority controlled cross-junction for safety reasons. However, traffic signals would provide an effective form of traffic control, would provide an additional level of safety for pedestrians crossing Red Hill Road and could be phased to discourage use of Dalman Parkway. Traffic signals typically cause delays during off-peak periods and incur ongoing additional maintenance costs but in this case is the recommended form of control.

At Hudson Drive/ Red Hill Road, the projected flows were analysed for the existing give-way arrangement. The results showed that there would be unacceptably high delays for Hudson Drive traffic with an associated high risk of crashes. Therefore a single lane roundabout is recommended.

Holbrook Road/ Deakin Avenue performs satisfactorily as a T-junction.

1.4 Construction Cost Estimate

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

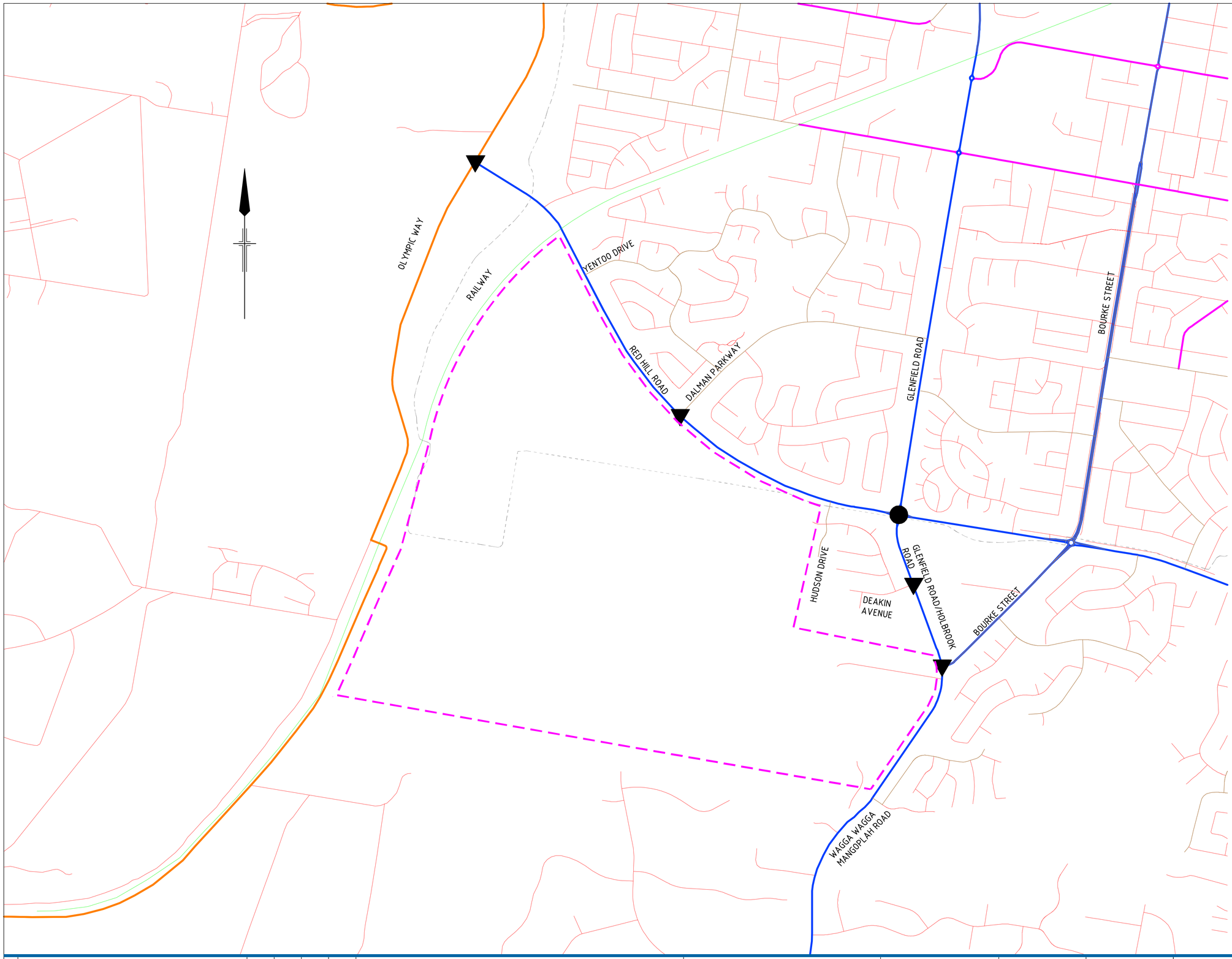
Table 3 Proposed Improvement Works

Location	Proposed Upgrade Works	Estimated Cost
Red Hill Road/ Dalman Parkway/South Collector Road	Traffic signals	$350,000
Hudson Drive/ Red Hill Road	Single lane roundabout	$300,000

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 - Lloyd



LEGEND

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

PRELIMINARY

No	Revision	Drawn	Checked	Approved	Date
B	MINOR LINEWORK CHANGES	TM	GG*	TC*	19.3.08
A	PRELIMINARY	TM			

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

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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 **LLOYD EXISTING DEVELOPMENT**

Original Size **A1**
Drawing No: 23-12229-SK100
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 Arrangement - Lloyd

OLYMPIC WAY
RAILWAY
YENTOO DRIVE
RED HILL ROAD
DALMAN PARKWAY
GLENFIELD ROAD
BOURKE STREET
HUDSON DRIVE
DEAKIN AVENUE
GLENFIELD RD/HOLBROOK ROAD
BOURKE STREET
WAGGA WAGGA MANGOPLAH ROAD

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 LLOYD	TM	GG*	TC*	19.3.08
A	PRELIMINARY	TM			

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

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Approved			
Date			
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Client **WAGGA CITY COUNCIL**
Project **WAGGA WAGGA DRAFT LEP STUDY 2007**
Title **LLOYD POST DEVELOPMENT**

Original Size **A1**
Drawing No: 23-12229-SK108
Rev: B

Plot Date: 19 March 2008 - 9:03 AM
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2	M Lyons	T Yeats		T Chapman		08/09/08