Condobolin Ethanol Production Facility Traffic Impact Assessment Report

Final Report

for Agri Energy Limited

February 2007

0056132

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Date:	*February 2007*

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FINAL REPORT

Agri Energy Limited

Condobolin Ethanol Production Facility

Traffic Impact Assessment

February 2007

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1 INTRODUCTION

1.1 PURPOSE OF THE REPORT

Agri Energy Limited (AEL) commissioned Environmental Resources Management Australia (ERM) to prepare a Traffic Impact Assessment for the construction and operation of an ethanol production facility at Lot 32 of Deposited Plan (DP) 752093, Micabil Road, Condobolin, New South Wales (NSW).

The proposed ethanol production facility will process a range of cereal grains (such as corn, wheat, barley and sorghum), which are grown in nearby rural areas. Grains and ethanol will be transported by heavy vehicles, with the option available to utilise rail access in later operations.

This report has been prepared in accordance with the NSW Roads and Traffic (RTA) (2002) *Guide to Traffic Generating Developments* to accompany an application under Part 3A of the *Environmental Planning and Assessment Act 1979 (*EP&A Act).

1.2 SITE DESCRIPTION

The site comprises Lot 32 of DP 752093 and is located on Micabil Road MR7521 (otherwise known as the Kiacatoo Road), Condobolin. The Condobolin urban area is located approximately five kilometres (km) east of the site. The external road network is illustrated in *Figure 1.1*. The site is approximately 96 hectares in size.

Micabil Road is adjacent to the southern boundary of the property and the Orange-Broken Hill Railway line. It forms a T-intersection with Melrose Road (MR61) to the east of the site, which links to Condobolin. Melrose Road becomes Melrose Street within the township of Condobolin.

Within a 150km catchment, Condobolin produced an average of 2.5 million tonnes of grain annually between 1998 and 2006 (Neil Clark and Associates, 2006). The estimated feed grain demand from the region between 1998 and 2004 was 379,000 tonnes, leaving an average grain surplus of over two million tonnes. Yearly surpluses would be available for use in the ethanol production process which at full capacity, requires approximately 600,000 tonnes of grain per annum.

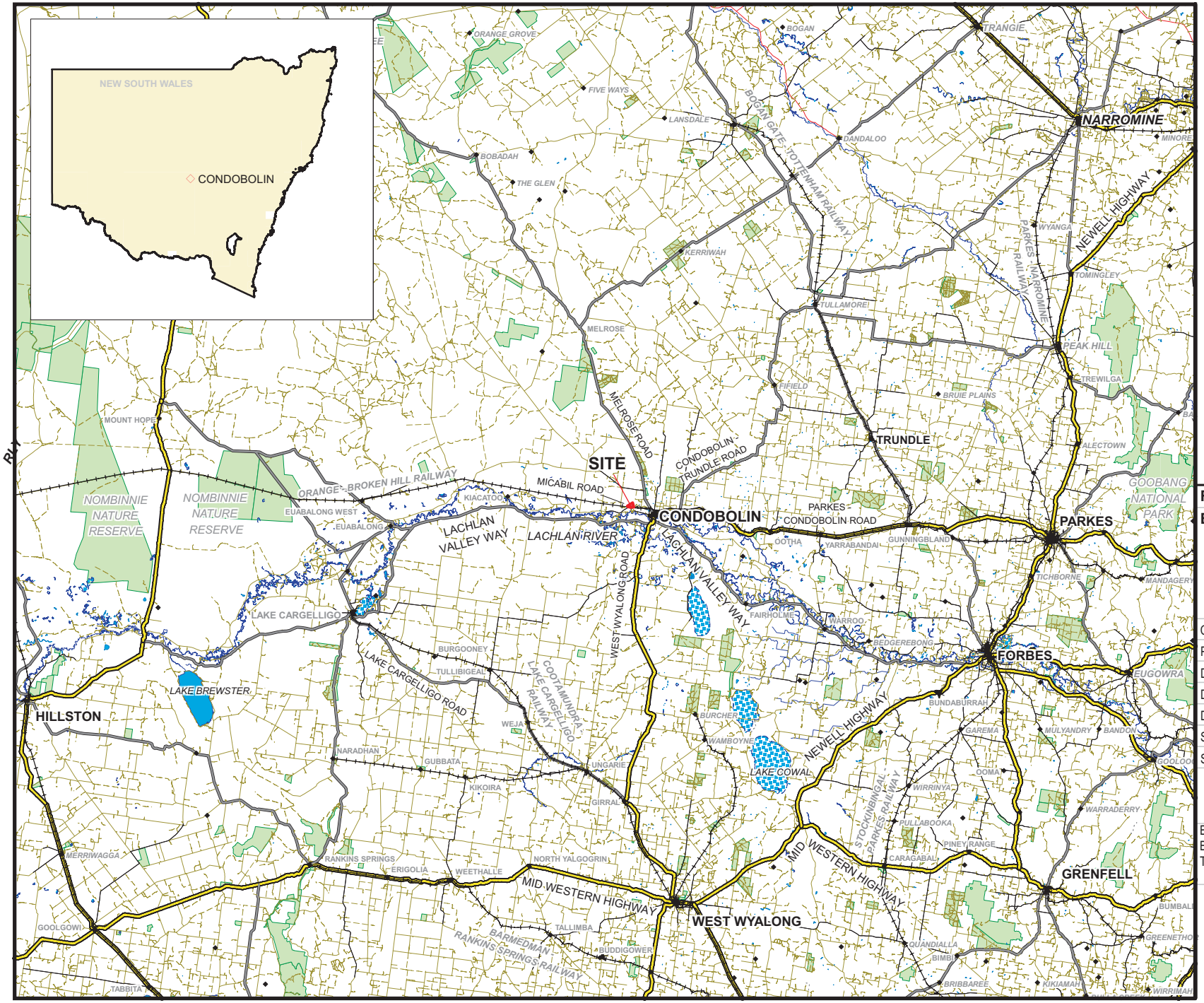

Figure 1.1

External Traffic Network

Client:	Agri Energy Limited	
Project:	Condobolin Ethanol Production Facility	
Drawing No:	0056132_CN_TT_03	
Date:	16.02.2007	Drawing Size: A4
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1.3 CONSULTATION

The following consultation was undertaken to identify potential traffic issues relating to this assessment. Issues identified during this consultation have been incorporated into the scope of this assessment.

Director General's Requirements

These were issued by NSW Department of Planning (DoP) on 5 October 2006. In relation to traffic, they require:

- details of the traffic volumes likely to be generated during construction and operation, and an assessment of the predicted impacts of this traffic on the safety and capacity of the surrounding road network and the nearby railway level crossing;
- details of on site access, internal roadways, infrastructure works and parking; and
- details of any proposed rail siding and associated rail traffic and the predicted impact of this on the rail network.

No rail siding is proposed as part of the current development.

NSW RTA Requirements

In an email dated 27 September 2006 from Mr D. Moore, Assessment Officer, the RTA indicated that the following details should be considered in the traffic assessment for the Condobolin ethanol production plant:

- proposed traffic volumes including peak times, peak days for construction traffic, staff traffic and delivery traffic;
- proposed vehicle types;
- any parking areas and delivery areas;
- existing volume of traffic along Micabil Road as well as MR61 (Melrose Road).
- any proposed works at the Micabil Road/MR61 intersection and the proposed Micabil Road entry point to accommodate the expected increase of traffic as well as the expected heavy vehicle turn paths; and
- available sight distance at the Micabil Road/MR61 intersection and the proposed entry point.

In further discussions, it was considered likely that some upgrading works at the Micabil Road/MR61 intersection would be required to meet current AUSTROADS/RTA standards. It was requested that any roadworks that relocate or replace the existing culverts incorporate the use of sloped culvert headwalls. A Works Authorisation Deed may be required for construction activities on RTA managed-roads.

Lachlan Shire Council

In a letter date 25 September 2006, Lachlan Shire Council indicated:

The assessment should also detail the proposed transport routes as well as provide details of the expected number of vehicle movements including the expected times of vehicle movements. This section should also consider vehicle movements through Condobolin. The assessment should also consider both construction and post construction actives.

There is also a need to consider the issues associated with providing access to the facility from the main access road (MR 7521 Kiacatoo Road). The applicant would need to address all issues as stated in the Lachlan LEP 1991.

In further discussions with Council's Engineering Officer it was indicated that there are several approved B-doubles haulage roads that can be utilised for movements to and from the site, including Micabil and Melrose Roads. Council indicated that the preferred heavy vehicle route through Condobolin from Parkes is via Station St/Denison St/Lachlan St/Busby St/Harding Ave/Melrose St.

Maitland Street could potentially be used as a northern link between the Condobolin-Parkes Road and Melrose Road by heavy vehicles, although use of the road link may potentially be limited due to grade.

2 PROJECT DESCRIPTION

2.1 SITE LAYOUT

The proposal includes locating the main components of the ethanol production facility in the northern portion of the site. The remainder of the site will be used for dams and an irrigation area.

In relation to traffic, the facility will include the following:

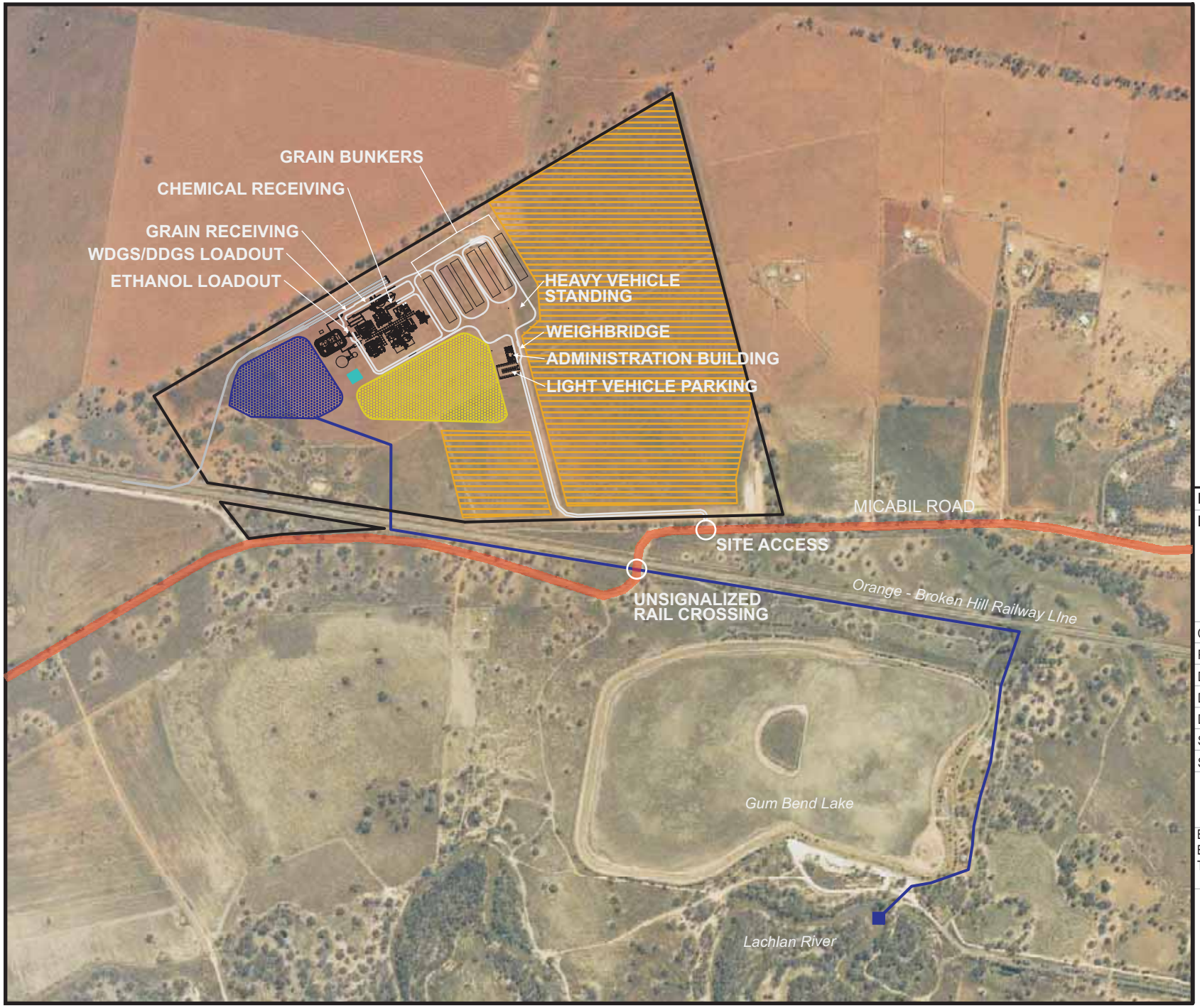
- an office/administration area comprising a reception area, offices, meeting room areas, bathroom facilities and a first aid room;
- grain receipt and storage buildings/ bunkers;
- a maintenance workshop and store which also includes an irrigation area services facility;
- wet and dry materials dispatch;
- car parking for 40 light vehicles on-site;
- sealed circulation roads for key movements of heavy vehicles through the site;
- weigh bridge; and
- a heavy vehicle standing area.

Figure 2.1 provides the proposed layout for the production facility, including identification of loadout/ dispatch points, parking and truck standing areas.

2.2 SITE ACCESS

Access to the site will utilise the existing entry site entry from Micabil Road. The access road into the site will be sealed to minimise dust and will be wide enough to accommodate passing B-Doubles.

A rail siding may be constructed in the future to allow rail transportation of ethanol product. Due to the uncertain timing of this access, this has not been considered in this assessment.



Legend

- 200Ml Raw Water Dam
- 2Ml Stormwater Dam
- 40Ml Effluent Dam
- Irrigation Area
- Water Pump Station (existing) & Pipeline
- Site Boundary
- Internal Access Road
- Future Rail Siding

Figure 2.1

Internal Site Network

Client:	Agri Energy Limited	
Project:	Condobolin Ethanol Production Facility	
Drawing No:	0056132_CN_TT_01	
Date:	05.02.2007	Drawing Size: A4
Drawn By:	ML	Reviewed By: -
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2.3 *CONSTRUCTION TRAFFIC GENERATION*

It is estimated that construction activities would take place over 14 to 16 months, and require light and heavy vehicles associated with importing materials, plant and contractors.

It is anticipated that construction-related traffic would predominantly travel to and from Condobolin, with the importing of some components using the regional traffic network.

Construction-related traffic will generally be restricted to daytime hours (ie 6am-6pm) and volumes will vary depending on site construction activities at the time. It is assumed that the generation at any time over this short period will not exceed operational traffic generation and as such it has not been assessed separately.

2.4 *OPERATIONAL TRAFFIC GENERATION OF THE PROPOSAL*

Ethanol production is planned to occur throughout the year. Traffic generation from the proposal will peak during grain and corn harvesting seasons (November to January, April to June). At these times the raw materials will be imported to the facility.

Peak operational traffic will include the following:

- light vehicles for staff and visitors;
- heavy vehicles for importing products, primarily grain;
- heavy vehicles for exporting products – ethanol, dry and wet distillers grain with solubles; and
- other vehicles for assorted deliveries/dispatch (e.g. ethanol denaturant).

Heavy vehicle traffic will be a mixture of semi-trailers and B-doubles. A summary of the primary traffic–generating components is provided below.

2.4.1 *Grain Receipt And Storage*

The ethanol production process requires a constant supply of grain. For the production of 200 million litres/year of ethanol the peak daily demand for grain during harvest seasons is about 1,600 tonnes, equivalent to approximately 67 tonnes per hour. Grain will be preferentially sourced from the Central West region of NSW.

Grain will be received principally via semi-trailers and B-double trucks. Trucks will enter the site and drive onto a weighbridge, where the gross weight will be recorded and grain samples will be taken for quality control purposes. The vehicle will then proceed to one of two unloading areas (a grain receival platform from where the grain is conveyed to one of two storage silos and a grain storage area, which will consist of six separate grain bunkers) where the grain will be stored prior to processing. Grain from these storage areas will be fed to a 'shift silo' which will supply the ethanol plant.

Once the grain truck is unloaded it will return to the weighbridge and then exit the site via Micabil Road.

2.4.2 Products Storage And Dispatch

Ethanol product will be transported to market via B-double trucks. Rail will be potentially utilised later and is not considered in this assessment. The co-products of the ethanol production process, namely wet distillers grain and solubles (WDGS) and dried distillers grain with solubles (DDGS) will also be dispatched by truck (B-doubles).

It is assumed in this assessment that there will be no accumulation of products on-site over extended periods (ie the dispatch volume is equivalent to the volume of products produced).

2.4.3 Receipt And Dispatch Of Other Materials

Other materials used in the processes at the facility will be imported, such as ethanol denaturant. Some traffic generation may occur in the future that is related to harvesting of crops from the irrigation area, although this is considered to be inconsequential to generation operations over time.

2.4.4 Staff Movements

The plant will operate 24 hours per day, seven days a week. It is anticipated that the onsite workforce will comprise 32 people, inclusive of six to eight administration staff who will be present during standard working hours. There will typically be three shifts, each staffed with eight persons. Shifts will nominally be 7am to 3pm, 3pm to 11pm and 11pm to 7am.

2.4.5 Traffic Generation And Timing

Traffic generation from the proposal has been estimated based on a previously approved ethanol production facility currently being constructed by AEL at Swan Hill. The expected traffic generation and timing is summarised in *Table 2.1*. Peak hour traffic generation was assumed to occur during the evening shift changeover period.

Table 2.1 Traffic Generation of the Proposed Facility

Component	Type and Capacity	Peak Period	Peak Traffic Generation (trips)		
			Annual	Daily	Worst Case Peak Hour
Wheat/Barley Deliveries	B-Double (40t) 70% Semi (20t) 30%	Nov-Jan, Mon-Sat	4,735 4,058	114 98	8 7
Corn Deliveries	B-Double (40t) 70% Semi (20t) 30%	Apr-June, Mon-Sat	As for Wheat/Barley above As for Wheat/Barley above		
Denatured Ethanol Dispatch	B-Doubles 50,000L	Mon-Sat	4,200	30	2
WDGS dispatch	B-Double (32t)	Mon-Sat	3,212	22	2
DDGS Dispatch -	B-Double (32t)	Mon-Sat	10,325	72	5
Staff/Visitors/ Contractors	Light Vehicles	Mon-Sat	12,000	80	24
Assorted other vehicles eg Gasoline, Ethanol Denaturant, Other chemical deliveries	B-doubles and Heavy Rigid Vehicles	Mon-Sat	1,529	10	2
		Total	**48,852**	**426**	**50**
	Total Heavy Vehicles		**36,852**	**346**	**26**

Notes:

- One delivery is equivalent to two trips (access and egress from the facility).
- Wheat/Barley and Corn deliveries will not occur concurrently.

Grain deliveries and ethanol dispatch would be staggered over a 16 hour daily period between 6am and 10pm to allow for efficient loading and weighbridge operations. Other deliveries such as ethanol denaturant will generally occur during daytime hours.

2.5 *TRAFFIC DISTRIBUTION: HAULAGE ROUTES*

It is predicted that traffic generation would be distributed in the following fashion (as shown on *Figure 2.2*):

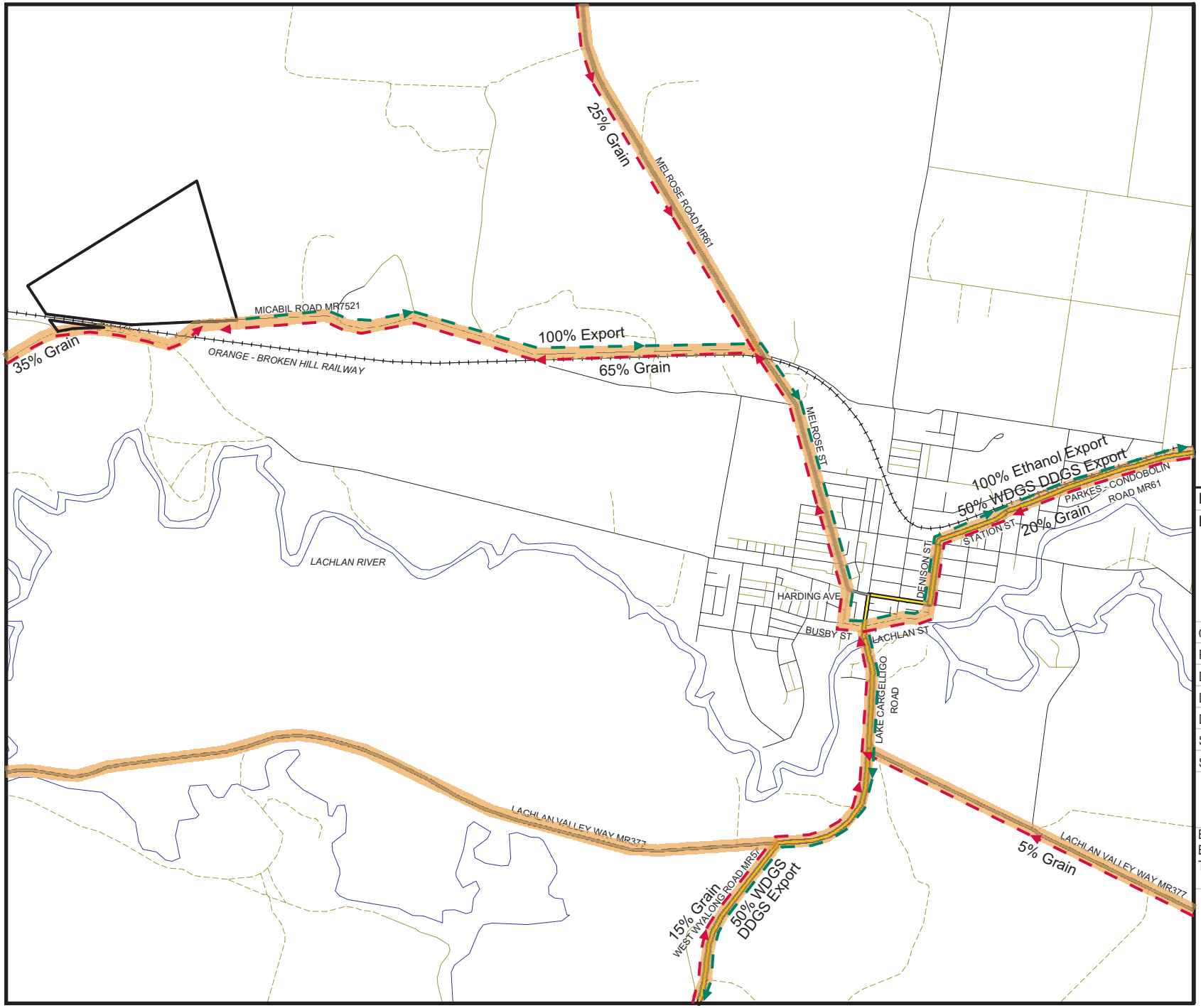
- Raw materials deliveries (B-Doubles, Semis):
  - 35% from the west, via Micabil Road;
  - 25% from the north, via Melrose Road;
  - 40% from the south and east, through Condobolin, comprising:
    - 20% from the Parkes/Condobolin Road;
    - 15% from the West Wyalong Road MR 57;
    - 5% from the south-east via Lachlan Valley Way;

- Dispatch (B-Doubles):
    - Ethanol generation: All traffic would be heading towards Sydney via Parkes/Condobolin Road;
    - WDGS and DDGS: would be distributed 50% towards the south (West Wyalong Road MR 57) and 50% towards Parkes, both through Condobolin.
- Staff/visitors: Primarily to and from Condobolin; and
- Chemical deliveries: Primarily to and from Condobolin from the Parkes/Condobolin Road or Lachlan Valley Way.

B-Doubles are restricted to approved B-double routes, which include the following routes through Condobolin to and from Micabil Road:

- From the Parkes Road via Station St/Denison St/Lachlan St/Busby St/Harding Ave/Melrose St/ Melrose Road; and
- From the West Wyalong Road or Lachlan Valley Way via Busby St/Harding Ave/Melrose St/Melrose Road.

These B-doubles routes are indicated in *Figure 2.2*.



Legend

- Site Boundary
- Heavy Vehicle Haulage Routes to Site
- Heavy Vehicle Haulage Routes from Site

Figure 2.2

Proposed Haulage Routes

Client:	Agri Energy Limited	
Project:	Condobolin Ethanol Production Facility	
Drawing No:	0056132_CN_TT_02	
Date:	07.02.2007	Drawing Size: A4
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3 CURRENT TRAFFIC CONDITIONS

3.1 REGIONAL TRANSPORT NETWORK

Condobolin is serviced by the following regional road network (*Figure 1.1*):

- The Lachlan Valley Way (MR 377) from Forbes to the south-east;
- MR61 The Melrose/Condobolin Road (MR61) to the north;
- Parkes/Condobolin Road to the east; and
- MR 57 to West Wyalong (south) and Tullamore/Nyngan (north-east).

The above roads provide access to the State Highway network, including:

- the Mid-Western Highway to the south;
- Newell Highway to the east and
- Mitchell and Barrier Highways in the north.

A passenger rail service the Outback Xplorer runs along the Orange-Broken Hill Railway line through Condobolin, linking it to Menindee, Parkes, Orange, Bathurst, Lithgow and Katoomba. Freight services also operate along the rail line transporting approximately 500,000 tonnes of freight annually.

3.2 LOCAL ROAD NETWORK

3.2.1 *Micabil Road MR7521 (Kiacatoo Road)*

Micabil Road provides for both regional and local traffic movements between Condobolin and the rural areas of Kiacatoo and Euabalong West. The road crosses the Orange-Broken Hill Railway line south of the site. It is part of the approved B-double network. The site has direct access to this road.

Micabil Road provides access to adjacent rural properties and through traffic from the west. At the site access, the road has a flat grade, with a single line marked carriageway and one lane in each direction. The sealed carriageway width is six to seven metres (m) with gravel shoulders of one to two metres. It is signposted at 100km/hr.

A 90 degree bend in Micabil Road is located approximately 200m west of the proposed site access point to allow for a level crossing of the Orange-Broken Hill rail line. A 'Stop' sign is posted at the crossing. This nearby bend and stop sign results in a reduced average vehicle speed at the proposed site access point. This is demonstrated through traffic speed data collected by Lachlan Shire Council at a survey location immediately east of the crossing. The data indicated that vehicle speeds in both directions were typically between 10 and 60km/hr, with only six percent of traffic travelling at over 60km/hr near the crossing.

Sight distance from the proposed site access point is over 500m along the straight, flat alignment to the east, and approximately 200m to the level crossing to the west. The sight distance to the west is considered to be adequate given that vehicles approach from west at a reduced speed due to the road alignment.

3.2.2 Melrose Road (MR61)

Melrose Road links Condobolin to rural areas to the north, including Melrose and Cobar. Near Micabil Road it comprises a two-lane road with a sealed carriageway width of seven metres. The speed limit is signposted as 80km/hr at the intersection, changing to 100km/hr to the north.

Melrose Road becomes Melrose Street within the township of Condobolin. Within Condobolin, Melrose Street ends at Bathurst Street, where a heavy vehicle bypass extends along Harding Avenue and Busby Street to access William Street. Vehicles travelling to the Parkes/Condobolin Road (Station Street) would also utilise Lachlan Street and Denison St.

A signalised rail crossing is present approximately 100m south of the Melrose Road/Micabil Road intersection.

3.3 SITE ROAD NETWORK

Currently the site comprises agricultural cropping land. Unsealed roads provide access for machinery and storage areas around the cropping areas.

A single access point to Micabil Road is currently provided on the southern boundary.

3.4 *RAIL NETWORK*

The Orange - Broken Hill Railway line is adjacent to the southern boundary of the site, extending in an east-west direction. This may allow rail access in the future, though no access has been proposed at this stage.

Services run along this line at the following frequencies:

- Indian Express: twice per week;
- Broken Hill Outback Explorer: once per week;
- Freight trains, with train frequency varying with seasonal fluctuations.

The following level crossings would be utilised by traffic generation from the facility:

- Micabil Road crossing, 200m west of the proposed site access: this unsignalised crossing would be utilised by grain haulage trucks (approximately 35% of total inputs). A stop sign is provided; and
- Melrose Road crossing, 100m south of the Micabil Road/Melrose Road intersection: this signalised crossing would be utilised by much of the site traffic, including 40% of the grain haulage and all outputs.

3.5 *INTERSECTIONS*

The key intersection to be potentially affected by the development is the Micabil Road MR7521/ Melrose Road (MR61) T-Intersection.

All approaches to this intersection are sealed. Excellent sight distance is provided (greater than 500m) to the north and south, along the straight and level road alignment. Due to a bend in Micabil Road, approaching sight distance from the west is limited to less than 200m, although this approach is well signposted.

This intersection is currently arranged as a simple (BAR/BAL-type AUSTROADS 2005) T-intersection. Limited left-turn aprons are currently provided.

3.6 *BASELINE TRAFFIC VOLUMES*

Traffic volume data collected by Lachlan Shire Council and the NSW RTA are provided in *Table 3.1*.

Table 3.1 ***Traffic Volumes (Vehicles/day, AADT) on the External Road Network, 1999 to 2006***

Road	Location	1999	2001	2002	2003	2004	2005	2006
Micabil/ Kiacatoo Road MR7521	LGA Boundary (west) (2)				69 (20%) Autumn			80 (40%) winter
	At proposed development site (2)							26 (20%) autumn
	RTA Station 93.914, 15km west of Condobolin	227		231				
Condobolin Town Bridge (MR 57)	RTA Station 93.873	1,613		1,484				
Melrose Road MR61	North of Goodwill St (2)		1,092 (11%) Spring			880 (15%) Winter	966 (50%) Summer	
	RTA Station 93.260, at level crossing	962		855				
Parkes-Condobolin Road MR 61	RTA Station 93.902, East of Condobolin	853		840				

1. figures in brackets indicate heavy vehicle composition, where recorded.
2. Survey undertaken by Lachlan Shire Council.
3. AADT - Annual Average Daily Traffic.

The data presented in *Table 3.1* indicates that:

- there are no clear trends of increasing traffic over time;
- measured traffic flows on Micabil Road vary significantly between Council counts (26 to 80 Annual Average Daily Traffic (AADT)) and RTA counts (227 to 231 AADT). The upper range of Council data was adopted for use in this assessment as it is more recent and represents classified counts; and
- measured traffic volumes on Melrose Road near the Micabil Road intersection vary between 855 and 1,092 vehicles per day. A base case AADT of 1,092, with 50% heavy vehicles, was adopted for use in this assessment as it provides for a conservative assessment.

3.7 ADJACENT DEVELOPMENTS

There are no known significant development proposals which would result in changes to flows on MR 7521 in the vicinity of the site.

A cattle feedlot and quarry at Kiacatoo was approved by the NSW Government on 8 April 2005. However this development by Rockdale Beef would not place more traffic upon Micabil Road, instead utilizing Lachlan Valley Way and Tullibigeal Road.

3.8 PUBLIC TRANSPORT, PEDESTRIANS, CYCLISTS AND EMERGENCY ACCESS

There are currently no facilities for public transport, pedestrians or cyclists at the site. Emergency access is provided via the existing road network.

4 TRAFFIC IMPACT ASSESSMENT

4.1 CONSTRUCTION IMPACTS

The construction-related traffic would pose a short-term impact to the road network. Volume and nature of this traffic are unknown at this stage, however would not exceed peak operational conditions.

To minimise impacts of construction traffic on the local road network, it is recommended that a *Traffic Management Plan*, potentially as part of a *Construction Management Plan,* be prepared prior to commencement of works. This should include:

- identification of routes and times of travel for heavy vehicles;
- specification of additional signage at the Micabil/Melrose Road intersection and site access point warning of additional heavy vehicles;
- any special considerations required for oversized vehicles; and
- consideration of resurfacing of the access and on-site circulation roads to minimise dust generation.

4.2 OPERATIONAL IMPACTS TO THE EXTERNAL ROAD NETWORK

4.2.1 Access To Micabil Road

The location of the existing access point provides adequate sight distance along Micabil Road to the east. The sight distance to the west is constrained by the level crossing and is sufficient when the current speed environment is taken into account (94% of traffic travelling under 60 km/hr).

Table 4.1 Sight Distance, Micabil Road Access

Direction of Sight	Currently provided	AUSTROADS (2005) requirement(1)	compliance
East	>300m	100Km/hr: 253m	Yes
West	Approx 200m	100Km/hr: 253m 60 km/hr: 121m	Yes, given the reduced speed environment present

1. 'desirable' Safe Intersection Sight Distance (Table 6.3 Austroads 2005)

It is considered that this location represents a suitable location for the site access.

The access is currently unsealed. It will need to be upgraded to cater for the heavy vehicle traffic flows proposed. It is recommended that the access be sealed and constructed to dimensions that ensure the swept path of a B-Double entering or exiting the site does not cross the centre line of Micabil Road.

4.2.2 Roadway Capacity

Roads in the external network to be utilised by haulage and dispatch trucks are generally classified roads and have excess capacity. Potential daily traffic capacity of between 3,000 and 5,000 vehicles per day (Level of Service C, Austroads 1988) would be common in the locality.

Of the total peak traffic generation (426 trips/day) of the proposal, the following daily traffic volumes would be distributed on the nearby road network:

- Micabil Road: +277 vehicles/day east of the site, +149 veh/day to the west;
- Melrose Road: +107 veh/day to the north, +170 veh/day to the south; and
- Parkes/Condobolin Road: +86 veh/day.

Of the 426 trips per day, 346 trips are heavy vehicle movements and 80 trips are light vehicle movements.

Based on the existing traffic volumes estimated in *Section 3.1* of this report and the above volumes along Micabil Road, the proposal would significantly increase the existing vehicle movements along that road. The combined traffic movements however, would be in the order of 357 movements per day to the east of the site, which is significantly less than the potential daily traffic capacity of 3,000 to 5,000 vehicles per day.

The proposal would add 170 vehicle movements along Melrose Road to the south of Micabil Road. The combined traffic movements along this section of road would be in the order of 1,262 vehicle movements, which is still significantly less than the potential daily traffic capacity of 3,000 to 5,000 vehicles per day.

The proposal would only add 86 vehicle movements along the Parkes / Condobolin Road. The combined traffic movement along this road would be in the order of 939 vehicle movements.

In light of the above the estimated volumes, the proposed development will not cause any affected road to exceed its potential roadway capacity as defined by Austroads (1988).

4.2.3 Intersections

The key intersection affected by the proposal is the Micabil Road MR7521/ Melrose Road (MR61) T-Intersection. The current arrangement of the intersection is consistent with type 'BA' (basic) (Austroads 2005).

To assess the potential need for upgrading, an assessment using Figure 6.41 of Austroads 2005 (from RTA 1999) for 'rural turning lane warrants' was undertaken. For the assessment, it was assumed that:

- **Base case flows and distribution:** peak hour flows were approximated at 15% (RTA, 2002) of daily traffic, which were estimated in *Section 3.6* of this report to be 80 vehicle movements along Micabil Road and 1,092 vehicle movements along Melrose Road. Approximated peak hour flows were calculated to be, at worst, 12 vehicles on Micabil Road, including five heavy vehicle movements and 164 vehicles on Melrose Road, including 82 heavy vehicle movements. It is recognised that a greater proportion of traffic would travel to and from Condobolin in peak hours. A standard base case peak hour traffic directional split of 60%/40% along Micabil and Melrose Roads was used. Of the traffic turning from Micabil Road into Melrose Road, an 80%/20% distribution towards Condobolin was used. This split was based on an assessment of population and land uses in the area.

- **Peak hour generation from the proposal**: as indicated in *Section 2.4*, the worst case peak hour traffic was estimated at the daily shift changeover time, with up to 50 vehicle trips occurring. This includes 26 heavy vehicles and 24 light vehicles.

The assessment is summarised below in *Table 4.2*. Scenarios for the existing case and with the proposed development were considered.

Table 4.2 Turning Warrant Assessment, Micabil Road MR7521/ Melrose Road (MR61) T-Intersection

Turn	Turning volume (veh/hr)	Total approaching volume (veh/hr)	Total opposing volume (veh/hr)	Intersection Requirement (AUSTROADS)
Base case				
Left into Micabil Road	6	99	-	Basic
Right into Micabil Road	2	66	99	Basic
With Development				
Left into Micabil Road	30	123	-	Basic
Right into Micabil Road	7	71	123	Basic

The results in *Table 4.2* indicate that there is no requirement for auxiliary turning lane treatments at the intersection. There is excess capacity due to current relatively low peak hour approaching volumes. This intersection can therefore be maintained as a BAR/BAL intersection.

To cater for the increased heavy vehicle volumes, the Micabil Road MR7521/ Melrose Road (MR61) T-Intersection should be upgraded to comply with Figure 6.24 of Austroads (2005). This primarily involves the widening of sealed tapers to cater for the swept path of turning B-doubles without the need to cross the Melrose Road centreline.

Should work be required to the existing culverts in place on Micabil Road, the RTA has advised that sloped culvert head walls should be utilised for traffic safety purposes.

In summary, the relatively low levels of traffic on the existing road network means the proposal will not pose an impact to the intersection such and as such it does not warrant auxiliary or channelised treatments. The intersection will need to be upgraded to Austroads standards to better cater for turning heavy vehicles.

4.3 IMPACTS TO CONDOBOLIN TOWN RESIDENTIAL AREAS

The distribution of heavy vehicles through Condobolin has the potential to impact on the amenity of residents along haulage routes. However these routes are designated haulage routes and are currently utilised during harvesting season for the movement of grain and other produce.

The incremental increase in traffic generated by the proposal would occur along roads currently subject to relatively high seasonal heavy vehicle traffic.

To ensure any effects of heavy vehicles are minimised, the designated heavy vehicle bypass routes through Condobolin (Station St/Denison St /Lachlan St/Busby St/Harding Ave/Melrose St) should be utilised by all heavy vehicles associated with the facility.

4.4 *IMPACTS TO OVERALL ROAD SAFETY*

It is considered that the development does not pose a road safety issue to the external network as:

- there is sufficient sight distance at the site access point on Micabil Road;
- the two rail line level crossings subject to increases in traffic volumes both have excellent sight distance and would be negotiated at relatively slow speeds by traffic generated by the proposal, with the primary crossing (Melrose Road) being signalised;
- the traffic generated by the proposed facility does not pose unacceptable reductions in Level of Service along nearby roads or at key intersections, given the current excess capacity in the road network;
- heavy vehicles will utilise the designated heavy vehicle bypass route through Condobolin; and
- the site access intersection and Micabil Road/Melrose Road intersections will be upgraded to cater for turning heavy vehicles in accordance with Austroads standards.

4.5 *INTERNAL ROAD NETWORK AND PARKING*

The internal road network caters for the proposed traffic generation, including wide heavy vehicle circulation roads and a large heavy vehicle standing area. The internal circulation roads do not cross the rail line.

The 40-space light vehicle carpark is located near the administration building and with the exception of sharing the main accessway, light vehicle traffic is separated from heavy vehicle circulation around the site.

It is anticipated that the proposed layout will not result in internal traffic safety issues.

4.6 *PUBLIC TRANSPORT, PEDESTRIANS AND CYCLISTS*

There are currently no plans to provide facilities for public transport, pedestrians or cyclists. Demand for pedestrian and cyclist movements would be very limited due to the distance from Condobolin.

5 CONCLUSION AND RECOMMENDATIONS

The assessment indicates that the proposed ethanol facility will not pose unacceptable impacts on the external road network. The proposed site circulation and parking network allows for the efficient and safe movement of operational traffic around the facility.

The following recommendations are made for inclusion in the Statement of Commitments:

- all internal access roads subject to heavy vehicle usage must be sealed;
- the proposed site access intersection should be upgraded to cater for turning B-Doubles entering or exiting the site so as not to cross the centre line of Micabil Road;
- all heavy vehicles associated with the transport of grain and dispatch of materials to and from the site via Condobolin shall use approved B-Double routes (marked 'heavy vehicle bypass' only);
- prior to construction works, a *Traffic Management Plan*, or a component of the *Construction Management Plan* which considers traffic, shall be prepared. This should be approved by Lachlan Shire Council prior to commencement of works and include:
  - details of traffic routes to be used by heavy vehicles associated with the construction;
  - work hours to be adhered to;
  - minimum requirements for vehicle maintenance to address noise and exhaust emissions, and mitigation measures to ensure the relevant criteria are met;
  - speed limits to be observed along routes to and from the site and within the site.
- the Micabil Road MR7521/ Melrose Road (MR61) T-intersection should be upgraded to comply with Figure 6.24 of Austroads (2005), including widening of the departure taper on Micabil Road and expanding the sealed taper to a minimum 15m radius to cater for turning B-doubles without the need to cross the Melrose Road centreline; and
- if works are required to the culvert at the Micabil Road MR7521/ Melrose Road (MR61) T-intersection, the existing culvert head walls should be replaced with sloping head walls for traffic safety purposes.

REFERENCES

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