Amber

Traffic & Transportation Direction

Gunnedah Highway Service Centre

127-141 Lochrey Road, Gunnedah

Traffic and Transport Assessment

September 2023

Reference: 193 rep 230920 final

Gunnedah Highway Service Centre

127-141 Lochrey Road, Gunnedah

Traffic and Transport Assessment

Prepared for: Charlie One Pty Ltd

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Table of Contents

1. Introduction

Amber Organisation has been engaged by Charlie One Pty Ltd to provide a Traffic and Transport Assessment associated with a proposal to amend the Gunnedah Local Environmental Plan 2012 (LEP) with respect to land at 127-141 Lochrey Road, Gunnedah.

The site is proposed to be developed with the intention of constructing a highway service centre with fast food outlets. A Feasibility Plan has been developed for the site which provides a draft internal layout with two vehicle accesses to the site proposed from the eastern and western frontages with Oxley Highway. It is understood the Feasibility Plan is a conceptual model for delivery of the overarching development of the land and is not intended to represent the final development arrangement.

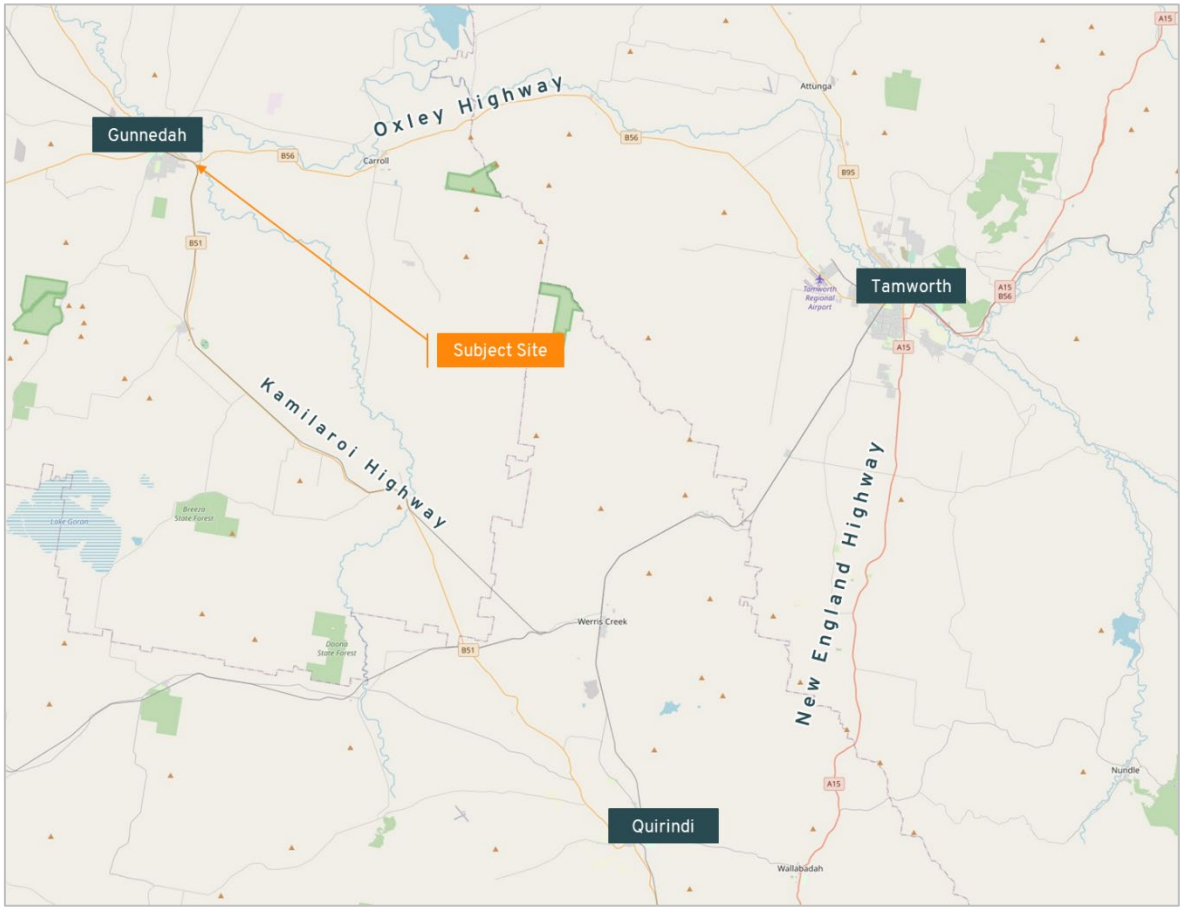
The subject site is currently zoned RU1 – Primary Production which prohibits the use of the land as a highway service centre. The Planning Proposal seeks to amend the LEP by providing an amendment to *Schedule 1 Additional Permitted Uses* to add highway service centre as an additional permitted use with consent for Lot 1 DP841781.

This report has been prepared to provide a preliminary Traffic and Transport Assessment of the proposal sufficient to support the Planning Proposal and provide Council, regulatory agencies and the Department of Planning and Environment the confidence that the proposal can be delivered with acceptable impacts to the local traffic environment.

2. Transport Environment

The site is located at 127-141 Lochrey Road, Gunnedah (Lot 1 DP841781), and is situated on the northern and eastern side of the intersection of Kamilaroi Highway and Oxley Highway. The location of the site in relation to the surrounding road network is shown within Figure 1.

Figure 1: Surrounding Road Network



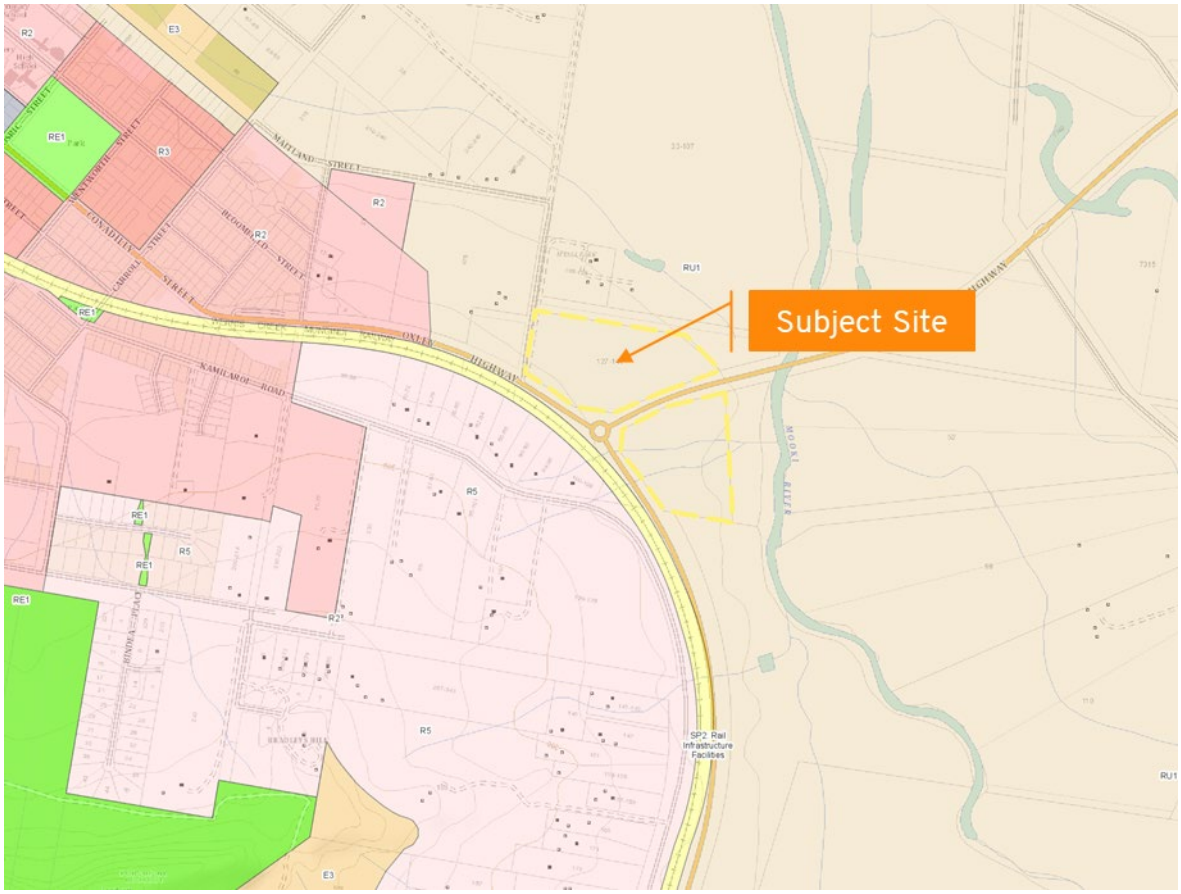
Source: Open Street Map

The site is located on the south-eastern outskirts of Gunnedah and is well placed to attract drivers travelling between Gunnedah and Tamworth to the east via Oxley Highway and vehicles travelling between Gunnedah and New England Highway to the south via Kamilaroi Highway.

The site and the surrounding land to the northeast of Kamilaroi Highway is zoned RU1 – Primary Production and is primarily occupied by agricultural land. Land to the southwest of Kamilaroi Highway is zoned R5 - Large Lot Residential and is occupied by a number of larger residential lots and agricultural land use. West of the site is zoned R2 - Low Density Residential and is occupied by residential dwellings. Further west is the Gunnedah City Centre which provides a range of land uses.

Figure 2 shows the surrounding land use zoning within the vicinity of the site.

Figure 2: Land Zoning Map



Source: NSW Government ePlanning Spatial Viewer

Key activities provided within the surrounding area include:

- Kitchener Park Oval located 1.5km west of the site;
- Gunnedah Jockey Club located 3.0km north of the site;
- Gunnedah High School located 2.5km west of the site;
- Porcupine Lookout located 1.8km south of the site; and
- Gunnedah Rural Museum located 4.0km west of the site.

The site is situated on the eastern side of Kamilaroi Highway on both sides of Oxley Highway, with the land to be utilised for the purposes of a service centre only including the land to the northwest of Oxley Highway. The site also has frontage to Lochrey Road at the western boundary and Crown Land is provided along the northern boundary. The site has a total area of approximately 8,6000sqm (part of 127-141 Lochrey Road west of the Oxley Highway) and no dedicated vehicle access is currently provided from the road network.

The site and the surrounding area are illustrated within Figure 3.

Figure 3: Site and Surrounds

Source: SIX Maps

2.1 Road Network

Oxley Highway is a State Road which runs in a general east-west alignment. It links Port Macquarie and Pacific Highway to New England Highway near Bendemeer. Oxley Highway continues west of Tamworth, through Gunnedah and extends to link with Newell Highway near Coonabarabran. It terminates at its connection with Mitchell Highway at Nevertire. Between Tamworth and Gunnedah it has a typical carriageway width of 9.0 metres accommodating one lane of traffic in each direction. It has a speed limit of 100km/hr which is reduced to 60km/hr adjacent to the site.

Kamilaroi Highway is classified as a State Road and is under the care and management of Transport for NSW (TfNSW). It runs in a general northwest-southeast alignment extending between Newell Highway in Narrabi and New England Highway near Willow Tree. It has a typical carriageway width of 9.0 metres accommodating one lane of traffic in each direction. It has a speed limit of 60km/hr within Gunnedah which increases to 100km/hr southeast of Oxley Highway.

Lochrey Road is a municipal local road under the care and management of Council. It is currently an unsealed road in poor condition with a carriageway width of approximately 3.0 metres that extends between Oxley Highway and Old Tamworth Road. It primarily services a single dwelling located on the north-western corner of its intersection with Oxley Highway.

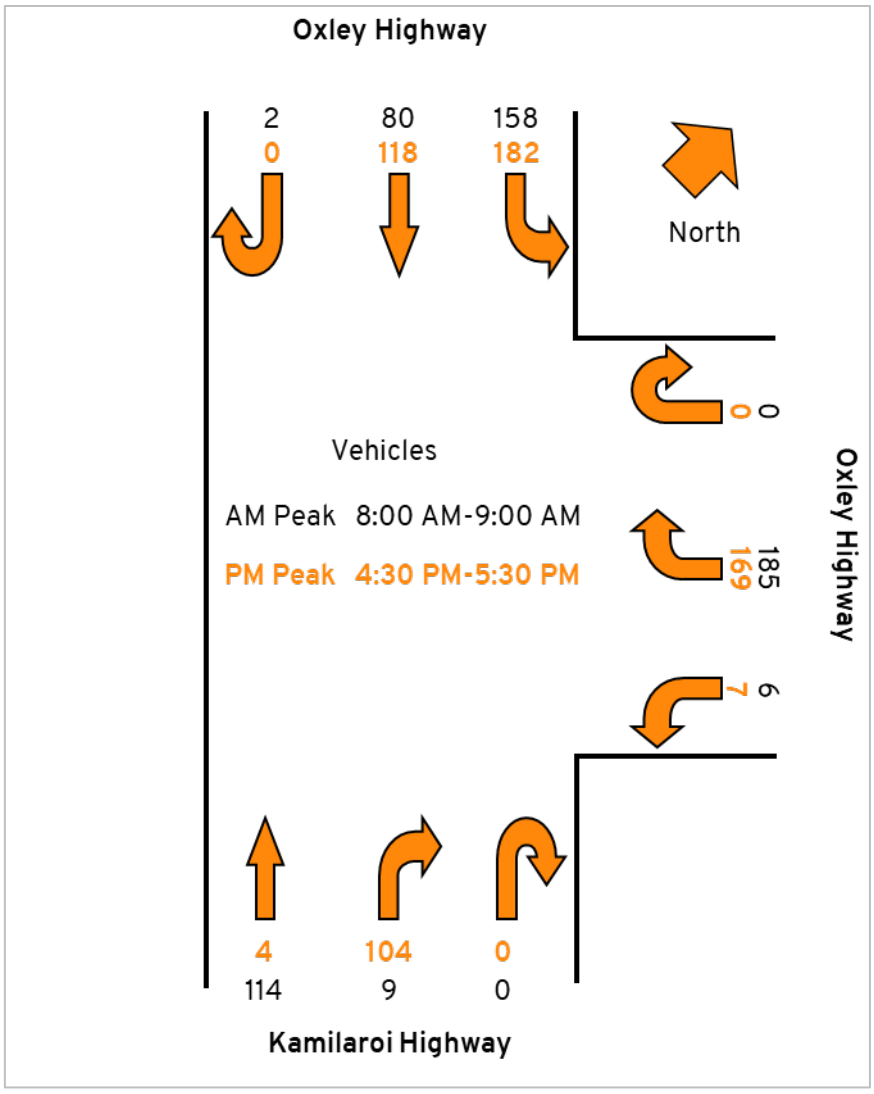
The intersection of Kamilaroi Highway and Oxley Highway is controlled by a single lane roundabout. The intersection of Oxley Highway and Lochrey Road is priority controlled and has been designed with a sealed surface with Lochrey Road being widened to accommodate simultaneous two-way vehicle movement.

2.2 Traffic Environment

2.2.1 Intersection Volumes

Amber Organisation conducted turning movement counts at the roundabout intersection of Oxley Highway and Kamilaroi Highway on Wednesday 10 November 2021. Traffic counts were undertaken from 7:30am to 9:00am and 4:30pm to 6:00pm in order to determine the morning and evening peak hour volumes. The peak hour volumes are presented within Figure 4.

Figure 4: Peak Hour Turning Movements – Kamilaroi Highway / Oxley Highway



The survey results are summarised below:

- The morning peak hour occurs at 8:00am and the evening peak hour occurs at 4:30pm;
- The intersection recorded a total of 554 and 584 vehicle movements during the morning and evening peak hour, respectively;
- The majority of vehicle movements were recorded between the northern and eastern legs of Oxley Highway; and

- During the morning peak the majority of vehicle movements are northbound on Kamilaroi Highway and during the evening peak the majority are southbound.

Overall, the intersection accommodates a low level of traffic and is expected to be able to readily accommodate an increase in traffic movements.

2.2.2 Midblock Volumes

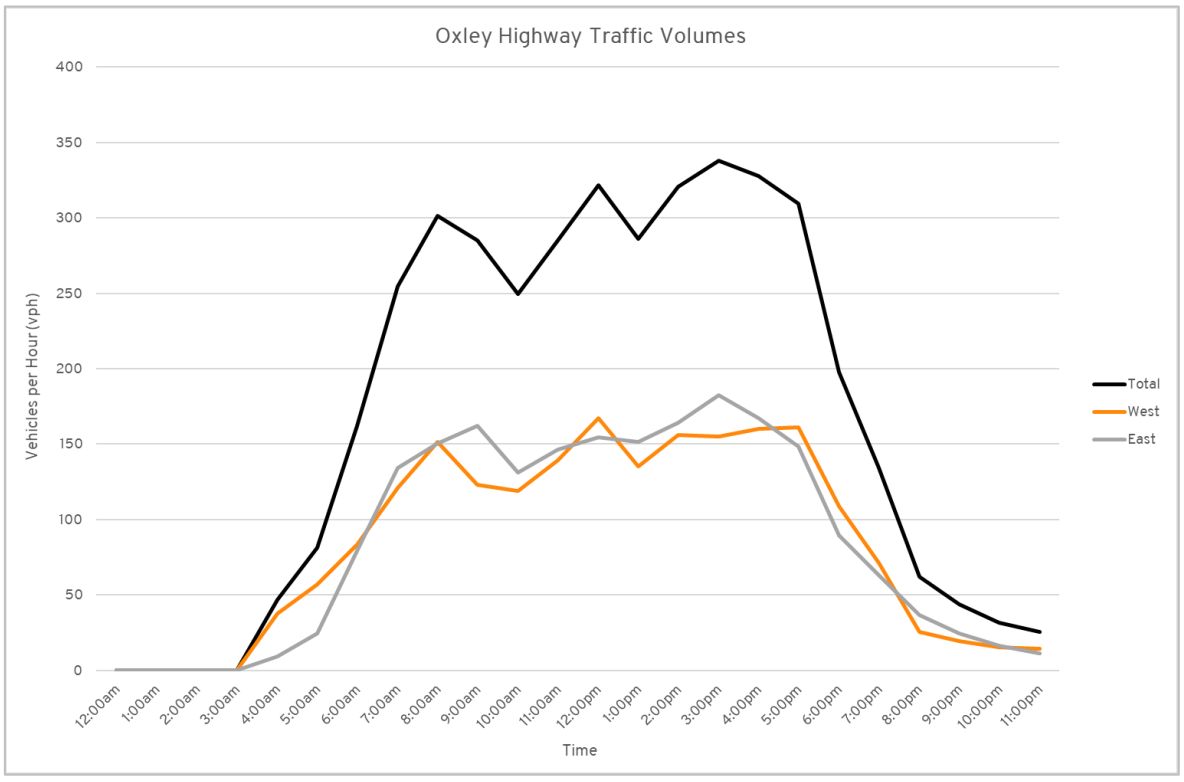
Traffic volume data has been collected from the TfNSW Traffic Volume database for any nearby data stations. The closest available station which provides recent data is located on Oxley Highway to the east of the site. A summary of the traffic volumes is provided within Table 1.

Table 1: State Road Traffic Volumes

Road	Survey Location	Station ID	Survey Year	Recorded Volume	Heavy Vehicles
Oxley Highway	1.45km East of Wilkinson Road, Gunnedah 2380	6167	2021	3,506 vpd 297 vph AM 333 vph PM	19% heavy

The traffic volumes have been calculated for each hour and separated in to east and westbound movements and are shown below in Figure 5.

Figure 5: Oxley Highway Traffic Volume Data 2021



The data indicates that Oxley Highway has a relatively constant level of traffic between 7:00am and 5:00pm and lower traffic volumes outside of these times. The traffic volume data also indicates that Oxley Highway currently carries a high level of heavy vehicle movements.

The traffic volumes were recorded during the COVID-19 pandemic which may impact travel behaviour and subsequently the traffic volumes on the road network. The data station also

provides traffic counts each year between 2015 and 2019 before the pandemic. The average daily traffic count for these years was 3,532 vehicle movements per day which is similar to the traffic volumes presented within Table 1. As such the traffic volumes for Oxley Highway in 2021 are considered to be similar to pre-pandemic volumes.

The TfNSW traffic volume data reflects the traffic volumes recorded on Oxley Highway as part of the turning movement count survey. Therefore, the traffic volumes recorded at the intersection are considered to be suitable for use within this assessment.

2.2.3 Road Network Operation

In order to determine the existing operating conditions at the intersection of Kamilaroi Highway and Oxley Highway an analysis was undertaken using the SIDRA computer modelling program. The traffic volumes have been based on the traffic volumes presented within Figure 4. The results of the analysis are provided within Appendix A and are summarised below.

Table 2: SIDRA Analysis Results Summary – Kamilaroi Highway and Oxley Highway

Movement		AM Peak			PM Peak		
		Average Delay (sec)	95% Queue (m)	Level of Service	Average Delay (sec)	95% Queue (m)	Level of Service
Kamilaroi Highway South	Through	5.5	5.2	A	5.3	4.5	A
	Right Turn	10.1		B	10.0		B
Oxley Highway East	Left Turn	4.6	7.0	A	4.8	7.3	A
	Right Turn	9.4		A	9.7		A
Oxley Highway North	Left Turn	4.1	8.0	A	4.8	13.2	A
	Through	4.3		A	5.0		A

Based on the above assessment the following conclusions are provided:

- The intersection is expected to operate with a good level of service, acceptable delays and queue lengths, during both the morning and evening peak hour; and
- The intersection recorded a degree of saturation of 0.169 and 0.264 during the morning and evening peak hour, respectively.

Overall, the results of the analysis indicate that the intersection has ample spare capacity to accommodate an increase in traffic.

2.3 Sustainable Transport

No public transport or walking and cycling facilities are currently provided within the vicinity of the site.

2.4 Road Safety

Amber has conducted a review of the TfNSW Centre for Road Safety Crash and Casualty Statistics database for all injury crashes within 500 metres of the subject site. The crash database provides

the location and severity of all injury and fatal crashes for the five-year period from 2017 to 2021. The crash search revealed the following crashes:

- One moderate injury right-near crash located on the roundabout intersection of Oxley Highway and Kamilaroi Highway, south of the site; and
- One serious injury run off road crash located on the roundabout intersection of Oxley Highway and Kamilaroi Highway, south of the site.

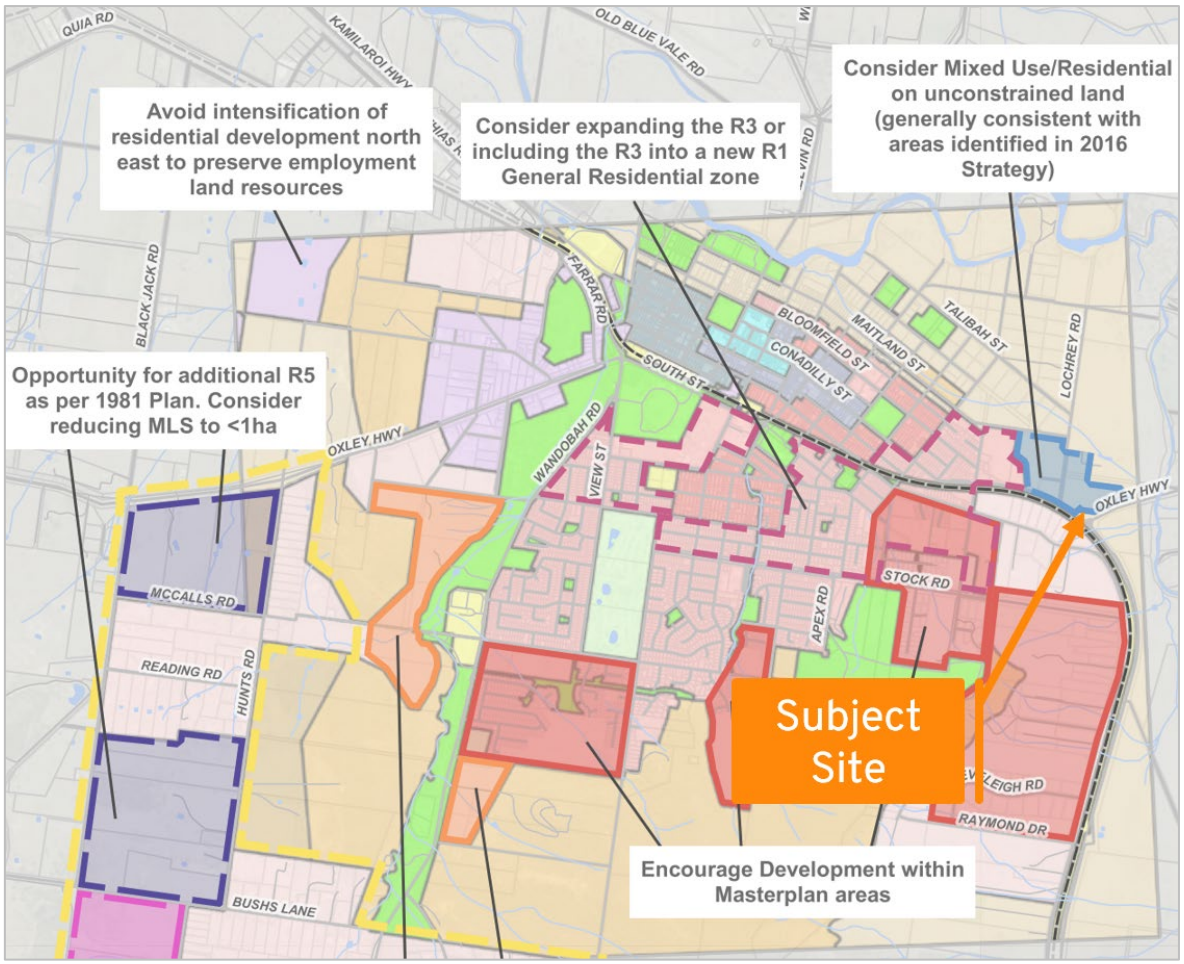
The crash search indicates that there are no discernible crash trends within the vicinity of the subject site. Given the low number of crashes and associated traffic volumes on the surrounding roads, it is concluded that the road network is currently operating in a relatively safe manner.

3. Future Road Environment

The Gunnedah Shire Local Housing Strategy has recently been adopted which identifies areas suitable for the provision of additional housing to assist Gunnedah Shire Council to meet the demands generated by expected population growth and demographic change. The Strategy has been prepared in response to the limited supply of serviced residential land and housing choice to meet the short and medium term needs of the community. It aligns with NSW Government and Council policy and the Directions of the New England North West Regional Plan 2036.

The Strategy recommends investigating land extending between Maitland Street and Kamilaroi Highway which includes the subject site. The proposed land is recommended as mixed use/residential land and is illustrated within Figure 12 of the document which is provided below.

Figure 6: Gunnedah Shire Local Housing Strategy – Figure 12



Source: Gunnedah Shire Local Housing Strategy

Council has advised that has part of the development of the Maitland Street land Lochrey Road would be upgraded in order to provide suitable vehicle access between Oxley Highway and Maitland Street. However, no design has been prepared for Lochrey Road at this stage.

4. Development Proposal

4.1 LEP Amendment

It is proposed to amend the Gunnedah Local Environmental Plan 2012 (LEP) with respect to land at 127-141 Lochrey Road, Gunnedah. The subject site is currently zoned RU1 – Primary Production which prohibits the use of the land as a highway service centre. The Planning Proposal seeks to amend the LEP by providing an amendment to *Schedule 1 Additional Permitted Uses* to add highway service centre as an additional permitted use with consent for Lot 1 DP841781.

The proposed development would be a highway service centre as defined:

> ***highway service centre*** *means a building or place used to provide refreshments and vehicle services to highway users. It may include any one or more of the following—*
>
> *(a) a restaurant or cafe,*
>
> *(b) take away food and drink premises,*
>
> *(c) service stations and facilities for emergency vehicle towing and repairs,*
>
> *(d) parking for vehicles,*
>
> *(e) rest areas and public amenities.*

4.2 Site Layout

The site is proposed to be developed with the intention of constructing a highway service centre with fast food outlets. A Feasibility Plan was developed for the site which provides a draft internal layout with two vehicle accesses to the site proposed from the two frontages with Oxley Highway. It is understood the Feasibility Plan is a conceptual model for delivery of the overarching development of the land and is not intended to represent the final development arrangement.

For the purposes of this assessment, the site has been assessed as having the following key features:

- A total of 12 bowsers including 8 for light vehicle sand 4 four heavy vehicles, which are provided in separate areas;
- A convenience store with a floor area of approximately 550sqm associated with the service station that would also sell food, drinks, and general goods;
- Two fast food outlets with a total floor area of approximately 840sqm, that would provide drive through facilities along the northern side of the building and approximately 120 internal seats;
- Parking areas for trucks, RVs, light vehicles and hydrogen/electric vehicles; and
- A BBQ facility for use by service centre patrons;

The Feasibility Plan is provided within Figure 7 which shows the proposed site layout and associated facilities.

Figure 7: Site Feasibility Plan

Source: Hill Lockart Architects

The plan also shows the proposed site access locations to/from Oxley Highway. The accesses are proposed to accommodate all vehicle movements with turn facilities proposed within the road carriageway to allow vehicles to turn safely from the road network. The turn facilities are proposed to be designed in accordance with the Austroads Guidelines.

5. Traffic Assessment

5.1 Traffic Generation

Based on our experience with similar service station developments, the traffic volumes generated by the proposed use depends on the following:

- Traffic generation heavily depends on the traffic volumes of the adjacent roads rather than the size of the site or the number of bowsers as the majority of visitors to the site are already on the road network and choose to purchase fuel based on convenience;
- Service stations typically generate higher traffic generation rates during the evening peak period when compared to the morning peak period. This is primarily due to drivers choosing to purchase fuel on their homeward journey as opposed to their journey to a destination when they have a target arrival time; and
- The provision of other uses on-site, which may include a convenience store or fast food outlet, can generate additional vehicle movements.

The following assessment has focused on the evening peak period with lower traffic rates anticipated during the morning peak period.

5.1.1 Service Station and Convenience Store

The NSW RTA Guide to Traffic Engineering Developments (RTA Guide), October 2002, specifies the expected evening peak hour trip generation rates for service stations and convenience stores. The trip generation rate is calculated using the following formula:

Evening peak hour vehicle trips = 0.04 A(S) + 0.3 A(F)

Where: A(S) = Area of the site (sqm)

A(F) = Gross floor area of convenience store (sqm)

The service station component of the site has a total area of 72,330sqm which does not provide a realistic calculation for the purposes of estimating the traffic generation for the service station component. Accordingly, the area has been limited to the canopy and parking area adjacent to the convenience store and the truck canopy area which provides a site area of 230sqm. The convenience store has a gross floor area of 550sqm. Using the formula above, the service station and convenience store are expected to generate approximately 174 vehicle movements during the evening peak hour.

Survey data collected by Amber and others for a range of service station developments, including sites on major urban arterial roads, indicates that service stations typically generate between 100 and 180 movements during the weekday commuter peak hours. As such, the above calculation is considered to provide a conservative estimate of the potential traffic generation of the service station component of the development given the low level of traffic on the road network.

5.1.2 Fast Food Outlet

The RTA Guide suggests that McDonald's Restaurants are the highest traffic generating facilities when compared to similar convenience restaurants and are expected to generate in the order of

180 vehicle movements per hour. The second highest traffic generator is a Kentucky Fried Chicken Restaurant which generate an average of 100 vehicle movements per hour.

If the fast food outlets were a McDonalds and KFC the associated traffic generation based on the RTA Guide would be 280 vehicle movements during the peak hour.

5.1.3 Summary

For the purposes of this assessment the following assumptions have been made when determine the potential traffic generation for the service station and associated convenience store and fast food outlets:

- The morning peak hour has conservatively been assessed as having the same traffic generation as the evening peak hour;
- Given the limited residential land use in the surrounding area it has been assumed that 80% of the vehicle movements for the fast food outlets are associated with vehicles using the service station and are not expected to generate an additional vehicle movement on the road network or at the site access. As such, the fast food outlets are expected to generate 54 vehicle movements in each of the peak hours; and
- The vehicle movements are evenly split between inbound and outbound vehicle movements.

Based on the above assumptions the service station and associated convenience store and fast food outlets are expected to generate the following traffic volumes in the morning and evening peak hour.

Table 3: Service Station Peak Hour Traffic Generation

	AM Peak (vph)	PM Peak (vph)
Arriving Trips	114	114
Departing Trips	114	114
Total	**228**	**228**

Any traffic volumes generated by the truck parking area are expected to be minimal and have not been included within the above traffic numbers.

5.2 Traffic Distribution

The distribution of service station traffic at the accesses and on the surrounding road network has been based on the following assumptions:

- The distribution of the service station traffic at each of the accesses is based on the existing traffic volumes on the road network;
- A large proportion of trips associated with the service station and associated uses will be pass-by trips that are already distributed on the surrounding road network. These vehicles are already accommodated on the road network and do not represent an increase in traffic volumes associated with the proposal. For the purposes of this assessment and in line with generally accepted rates, it is assumed that 80% of the service station traffic movements travelling from Gunnedah are already on the road

network. A rate of 90% has been adopted for all other movements given the limited residential use to the east and south of the site;

- All vehicle movements that are single purpose trips to the service centre are assumed to exit the site and travel back in the direction they accessed the site;
- All vehicle movements have been assumed to enter and exit the site via the same access. Whilst it is acknowledged that some vehicles will enter via one access and exit via the other access, it is considered that this would occur in a relatively even distribution resulting in similar traffic movements at the accesses; and
- All vehicles have been assumed to enter via the first site access they pass if accessing the site.

Based on this distribution and the assumptions above, the site is expected to generate the following traffic volumes on the road network.

Figure 8: Peak Hour Turning Movements – Site Traffic

The figure shows that the site traffic is relatively evenly spread between the site accesses with the western Oxley Highway access experiencing the highest level of traffic. The left turn into the eastern Oxley Highway access experiences the lowest level of traffic as few vehicles turn right from Kamilaroi Highway onto the eastern leg of Oxley Highway and travel past the site.

The traffic volumes indicate that the intersection of Kamilaroi Highway and Oxley Highway only accommodates an increase of 5 and 9 vehicle movements in the morning and evening peak hours, respectively. The small net increase reflects the fact that most of the traffic to the service centre is a pass-by trip and is already on the road network.

The negative traffic volumes represent a removal of through movements at the access as these vehicles will subsequently turn into the site.

5.3 Traffic Assessment

The future traffic volumes on the road network have been calculated with the inclusion of the development traffic. The traffic volumes are presented within Figure 9

Figure 9: Peak Hour Turning Movements – Future Traffic Volumes with Site Traffic

The SIDRA analysis presented within Section 2.2.3 of this report indicate that the intersection of Kamilaroi Highway and Oxley Highway is currently operating with a good level of service and has ample spare capacity to accommodate an increase in traffic movements. Therefore, the increase of 5 and 9 vehicle movements in the morning and evening peak hours is expected to be able to be readily accommodated at the intersection.

The accesses accommodate a lower level of traffic than the intersection of Kamilaroi Highway and Oxley Highway and as such, are also expected to be able to readily accommodate the traffic volumes generated by the service centre.

Accordingly, the development of the site as a service centre is expected to be able to be established with a minimal impact to the operation of the surrounding road network which is expected to be able to continue to operate with a good level of service.

6. Access Arrangements

6.1 Access Locations

The Feasibility Plan shows the proposed site access locations to/from Oxley Highway. The accesses are proposed to accommodate all vehicle movements with turn facilities proposed within the road carriageway to allow vehicles to turn safely from the road network.

An initial option was assessed that utilised Lochrey Road to gain access to the site via the western boundary following discussions with Gunnedah Shire Council. It was understood that the road would be upgraded as part of the future residential land to the north and would provide a suitable vehicle access location that minimised connections to the State Road network. However, Gunnedah Shire Council have subsequently advised that the level of noise generated by heavy vehicles would detrimentally impact nearby residents and subsequently Lochrey Road is not considered acceptable for vehicle access.

Consultation was undertaken with TfNSW in order to confirm the preferred access arrangements for the site. A range of design options were provided which included the following:

- Option 1: Access via both accesses with right turn movements prohibited at the western access.
- Option 2: Access via both accesses with all turn movements permitted.
- Option 3: Access provided via new leg to the intersection of Kamilaroi Highway and Oxley Highway.

The proposed design options are presented within Appendix B and the subsequent response from TfNSW is provided within Appendix C. Based on the discussions and response from TfNSW, it is concluded that the best access option is to provide both accesses with all turn movements permitted. The roundabout access option is likely to provide significant construction costs that make the access impractical.

6.2 Turn Treatments

Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings specifies the turning treatments required at intersections. Figure 3.25 of the guide specifies the required turn treatments on the major road at unsignalised intersections.

For the purposes of this assessment, it has been assumed that a short Auxiliary Left Turn and Channelised Right Turn facility are provided at both accesses. The designs presented within Appendix B show that the accesses can be designed in accordance with the Austroads Guide. Suitable separation has been provided between Lochrey Road, the Oxley Highway / Kamilaroi Highway intersection, and the western access to allow the turn facilities to be provided.

Accordingly, it is concluded that suitable turn facilities are able to be provided at both accesses to allow vehicles to safely turn from the road network.

6.3 Sight Distance

Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided

along the major road at any intersection. Table 3.1 of the guide specifies the SISD required for various design speeds, with the following sight distances required at the accesses:

- A design speed of 70km/hr has been adopted at the western access given the posted speed limit of 60km/hr, which requires a sight distance of 141 metres based on a 1.5 second reaction time;
- A design speed of 110km/hr has been adopted at the eastern access which is considered a conservative approach given Oxley Highway reduces from 100km/hr to 60km/hr near the site access. The required sight distance for a design speed of 110km/hr is 285 metres based on a reaction time of 2.0 metres.

The available sight distance at the site accesses is summarised in Table 4.

Table 4: Turning Volumes for Turn Treatment Calculations

Access	Sight Distance	
	Nort/West	South/East
West	350m+	220m to intersection with Kamilaroi Highway
East	194m to intersection with Kamilaroi Highway	350m+

Accordingly, the available sight distance at the accesses exceeds the requirements of the Austroads Guide and the accesses are considered to be able to provide safe vehicle movement between the site and the road network.

7. Parking Requirement

The number of car parking spaces required for various land uses is listed under Appendix 1 of the Gunnedah Development Control Plan 2012 (DCP). Application of the relevant parking rates based on the Feasibility Plan is provided below in Table 1.

Table 5: Development Control Plan Car Parking Requirement

Use	Number / Floor Area	Parking Rate	Parking Requirement
Service Station	0 work bays	6 spaces per work bay	0 spaces
	100sqm convenience store	1 space per 20sqm GFA of convenience store	5 spaces
	450sqm GFA	1 space per 6.5sqm GFA	69 spaces
Drive In Take Away Food Shop	840sqm GFA	1 space per 10sqm GFA	84 spaces
	120 seats	1 space per 5 seats	24 spaces
Total			**182 spaces**

Accordingly, the development based on the Feasibility Plan would have a statutory parking requirement of 182 spaces.

The DCP also provides the following commentary in relation to service stations:

> *'The additional requirements should be cumulative but may be reduced where it can be demonstrated that the times of peak demand for the various facilities do not coincide. All parking should be clearly designated and located so as not to obstruct the normal sale of petrol and should minimise the potential for vehicular/pedestrian conflict. Consideration should be given to providing adequate manoeuvring space for caravans and B-Doubles.'*

It is considered that the service station is the primary activity on-site and will be the major driving factor behind visitors to the site, with the convenience store and fast food outlets acting as ancillary uses. Accordingly, the proposed operation of the site as a service station with ancillary uses will result in a lower parking demand compared to the combined DCP parking rates for the convenience store and fast food outlets.

Generally, when using a service station drivers will choose to leave their vehicles at the pump while paying for petrol and utilising the services provided by the associated convenience store. As such, it is considered that the DCP parking requirement for the service station of 74 car parking spaces is an over-estimate of the parking demand in this case and that the actual parking demand will be lower.

For the purpose of this assessment, the DCP parking rates for the fast food outlets and general floor area for the service station have been provided with a reduction factor of 50%. The subsequent parking demand for the site is 99 spaces.

A total of 105 parking spaces are shown on-site to accommodate the parking demand generated by the service station, convenience store and fast food outlets. In addition, an area has been provided to allow for truck parking and vans/RVs. Accordingly, it is concluded that the site is able to provide a suitable level of car parking to accommodate the parking demand generated by the proposed uses.

8. Site Layout

The Feasibility Plan demonstrates that the proposed uses can be comfortably provided on the large site which allows suitable internal vehicle circulation and minimises conflict. A summary of an assessment of the Feasibility Plan layout is provided below:

- The bowsers have been located away from the access locations to prevent vehicles queueing for fuel extending onto the road network;
- Drive through facilities are able to be provided for the fast food outlets to allow sufficient queuing to prevent drive through vehicles impacting other uses;
- Truck bowsers are able to be separated from personal vehicles which is appropriate given the high percentage of heavy vehicles;
- Parking for the various uses is able to be accommodated within the site; and
- Suitable areas are provided for service vehicles at the rear of the buildings.

Overall, the Feasibility Plan demonstrates that the site has sufficient area to accommodate the proposed uses in a suitable manner.

9. Conclusion

Amber Organisation has reviewed a proposal to amend the Gunnedah Local Environmental Plan 2012 (LEP) with respect to land at 127-141 Lochrey Road, Gunnedah.

The site is proposed to be developed with the intention of constructing a service centre with fast food outlets. The subject site is currently zoned RU1 – Primary Production which prohibits the use of the land as a highway service centre. The Planning Proposal seeks to amend the LEP by providing an amendment to *Schedule 1 Additional Permitted Uses* to add highway service centre as an additional permitted use with consent for Lot 1 DP841781.

A Feasibility Plan has been developed for the site which provides a draft internal layout with two vehicle accesses to the site proposed from Oxley Highway. It is understood the Feasibility Plan is a conceptual model for delivery of the overarching development of the land and is not intended to represent the final development arrangement.

Based on the above assessment, the following conclusions are provided:

- Based on the Feasibility Plan the site is expected to generate a minimal number of additional traffic movements on the road network with the majority of vehicles accessing the site already being accommodated on the road network. The intersection of Kamilaroi Highway and Oxley Highway is expected to be able to readily accommodate the minor increase in traffic generated and continue to operate with a good level of service.
- The site accesses are expected to accommodate a modest level of traffic and are able to accommodate the expected traffic volumes.
- Potential designs for the accesses have been established through consultation with TfNSW and Council. The preferred option is to provide access via both the eastern and western frontages to Oxley Highway with the accesses accommodating all vehicle movements. Turn facilities are able to be provided at the accesses in accordance with Austroads Guide and the sight distance at the accesses complies with the Austroads Guide. As such, vehicles are expected to be able to safely enter and exit the site via new accesses to Oxley Highway.
- The site has sufficient space to accommodate the parking demand generated by a service centre. The parking rate is expected to be lower than the DCP parking requirement given the primary generator of the site will be associated with the service station and the convenience store and food outlets are ancillary uses.
- The site is able to provide a layout that would allow suitable vehicle circulation with the Feasibility Plan also showing areas for truck parking and electric vehicle parking.

Accordingly, the Planning Proposal to allow the use of the site as a service centre is concluded to be acceptable in relation to traffic and parking impacts, with the future development of the site expected to have a minimal impact on traffic operations on the surrounding road network.

Appendix A

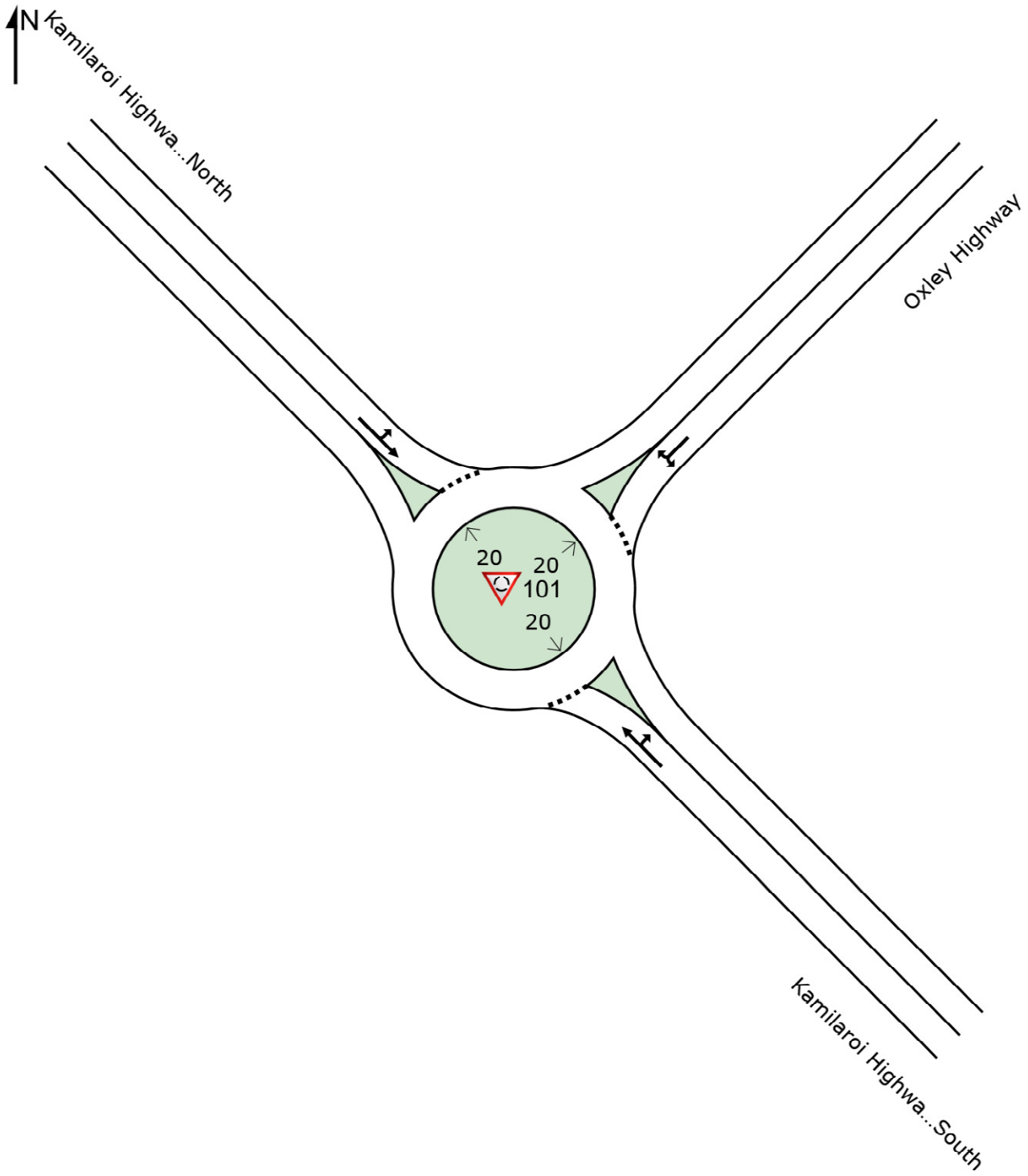
SIDRA Results

SITE LAYOUT

Site: 101 [Kamilaroi Highway / Oxley Highway (Site Folder: General)]

Existing - AM Peak
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Kamilaroi Highway / Oxley Highway (Site Folder: General)]

Existing - AM Peak
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Kamilaroi Highway South														
5	T1	114	19.0	120	19.0	0.123	5.5	LOS A	0.6	5.2	0.40	0.51	0.40	54.3
6	R2	9	19.0	9	19.0	0.123	10.1	LOS B	0.6	5.2	0.40	0.51	0.40	53.9
Approach		123	19.0	129	19.0	0.123	5.8	LOS A	0.6	5.2	0.40	0.51	0.40	54.3
NorthEast: Oxley Highway														
7	L2	6	19.0	6	19.0	0.165	4.6	LOS A	0.9	7.0	0.26	0.60	0.26	50.9
9	R2	185	19.0	195	19.0	0.165	9.4	LOS A	0.9	7.0	0.26	0.60	0.26	51.8
Approach		191	19.0	201	19.0	0.165	9.3	LOS A	0.9	7.0	0.26	0.60	0.26	51.8
NorthWest: Kamilaroi Highway North														
10	L2	158	19.0	166	19.0	0.169	4.1	LOS A	1.0	8.0	0.08	0.44	0.08	54.7
11	T1	80	19.0	84	19.0	0.169	4.3	LOS A	1.0	8.0	0.08	0.44	0.08	56.2
Approach		238	19.0	251	19.0	0.169	4.2	LOS A	1.0	8.0	0.08	0.44	0.08	55.2
All Vehicles		552	19.0	581	19.0	0.169	6.3	LOS A	1.0	8.0	0.21	0.51	0.21	53.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: AMBER ORGANISATION | Licence: PLUS / 1PC | Processed: Wednesday, 23 March 2022 8:15:02 AM
Project: D:\OneDrive - Amber Organisation Pty Ltd\Amber\Jobs\193 - 127-141 Lochrey Road, Gunnedah - Service Centre\SIDRA\193 - KH OH 220323.sip9

MOVEMENT SUMMARY

Site: 101 [Kamilaroi Highway / Oxley Highway (Site Folder: General)]

Existing - PM Peak
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Kamilaroi Highway South														
5	T1	4	19.0	4	19.0	0.107	5.3	LOS A	0.6	4.5	0.38	0.63	0.38	51.8
6	R2	104	19.0	109	19.0	0.107	10.0	LOS B	0.6	4.5	0.38	0.63	0.38	51.4
Approach		108	19.0	114	19.0	0.107	9.8	LOS A	0.6	4.5	0.38	0.63	0.38	51.5
NorthEast: Oxley Highway														
7	L2	7	19.0	7	19.0	0.163	4.8	LOS A	0.9	7.3	0.34	0.61	0.34	50.7
9	R2	169	19.0	178	19.0	0.163	9.7	LOS A	0.9	7.3	0.34	0.61	0.34	51.6
Approach		176	19.0	185	19.0	0.163	9.5	LOS A	0.9	7.3	0.34	0.61	0.34	51.6
NorthWest: Kamilaroi Highway North														
10	L2	182	19.0	192	19.0	0.264	4.8	LOS A	1.6	13.2	0.34	0.48	0.34	53.7
11	T1	118	19.0	124	19.0	0.264	5.0	LOS A	1.6	13.2	0.34	0.48	0.34	55.1
Approach		300	19.0	316	19.0	0.264	4.9	LOS A	1.6	13.2	0.34	0.48	0.34	54.2
All Vehicles		584	19.0	615	19.0	0.264	7.2	LOS A	1.6	13.2	0.35	0.55	0.35	52.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: AMBER ORGANISATION | Licence: PLUS / 1PC | Processed: Wednesday, 23 March 2022 8:15:03 AM
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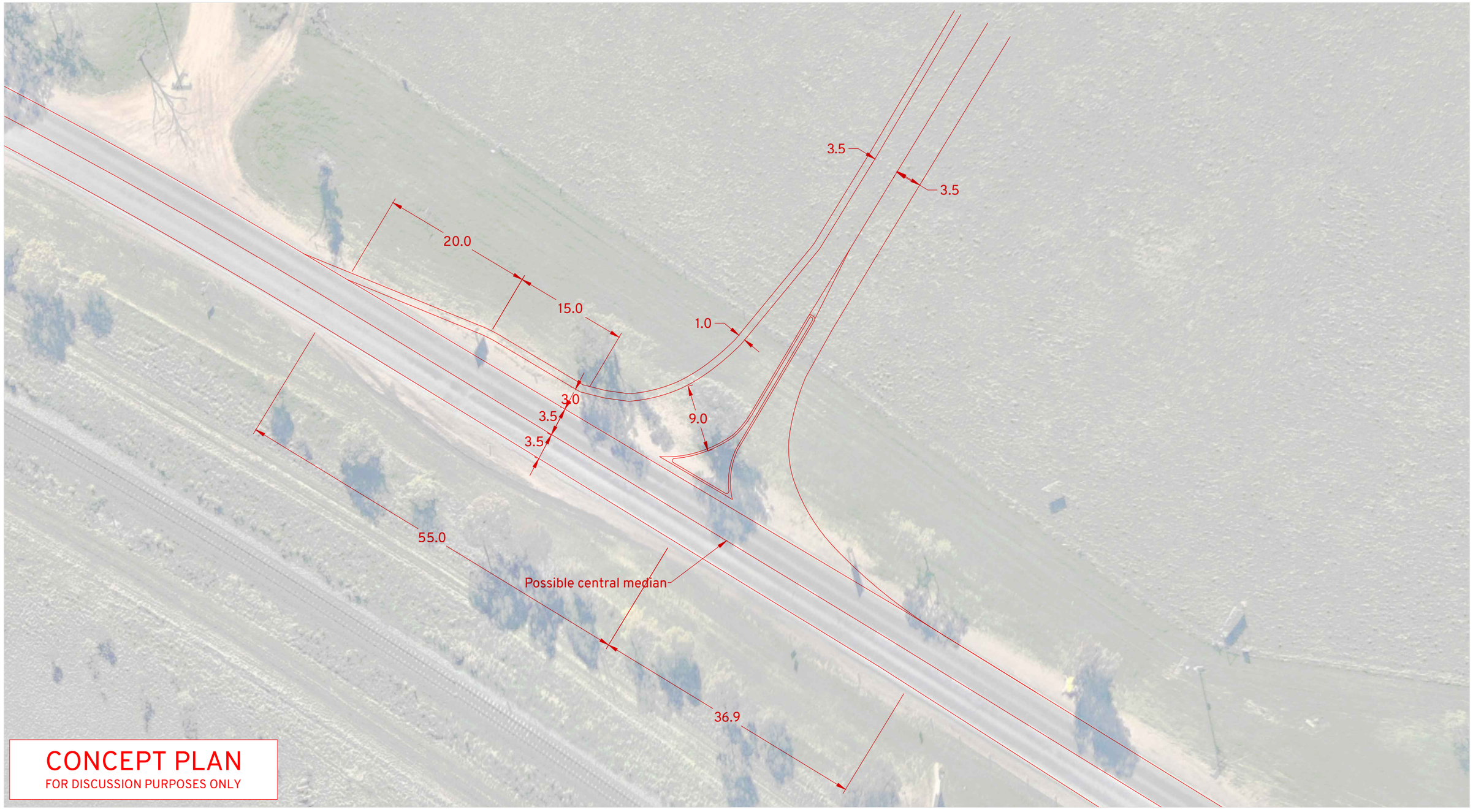
Appendix B

Access Design Options



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

The following design details have been taken from Austroads Guide to Road Design Part 4A:

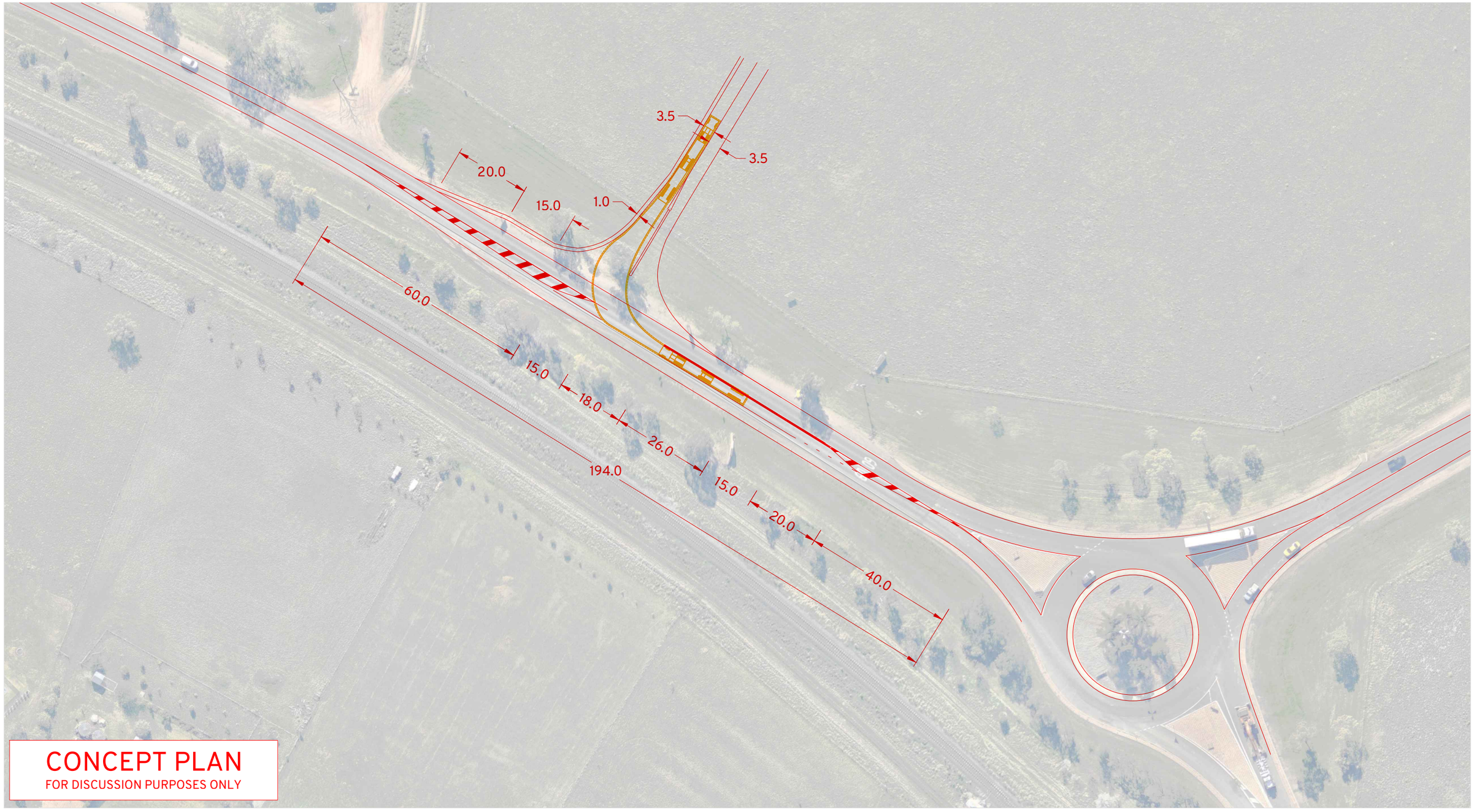
Basic Left Turn Treatment (BAL) Section 8.2.1.
1: Design speed of 70km/h.
2: Lane widths of 3.5m have been used.
3: Formation/carriageway widening is 3.0m.

Rural Left-turn Treatment with short left turn lane (AUL(s)) Section 8.2.2.
1: Design speed of 70km/h.
2: Lane widths of 3.5m have been used.
3: Formation/carriageway widening is 2.5m.
4: Taper length calculates to 20m.
5: Minimum length of parallel widened shoulder used from Table 8.2 is 35m.

Service Centre Development
127-141 Lochrey Road, Gunnedah
Option 1: Oxley Highway West Left-in/Left-Out Feasibility Design

DRAWN: CT
DATE: 24/11/2021
SCALE: 1:500m@ A3
DWG NO: 193 S01A

Amber 01



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

The following design details have been taken from Austroads Guide to Road Design Part 4A:

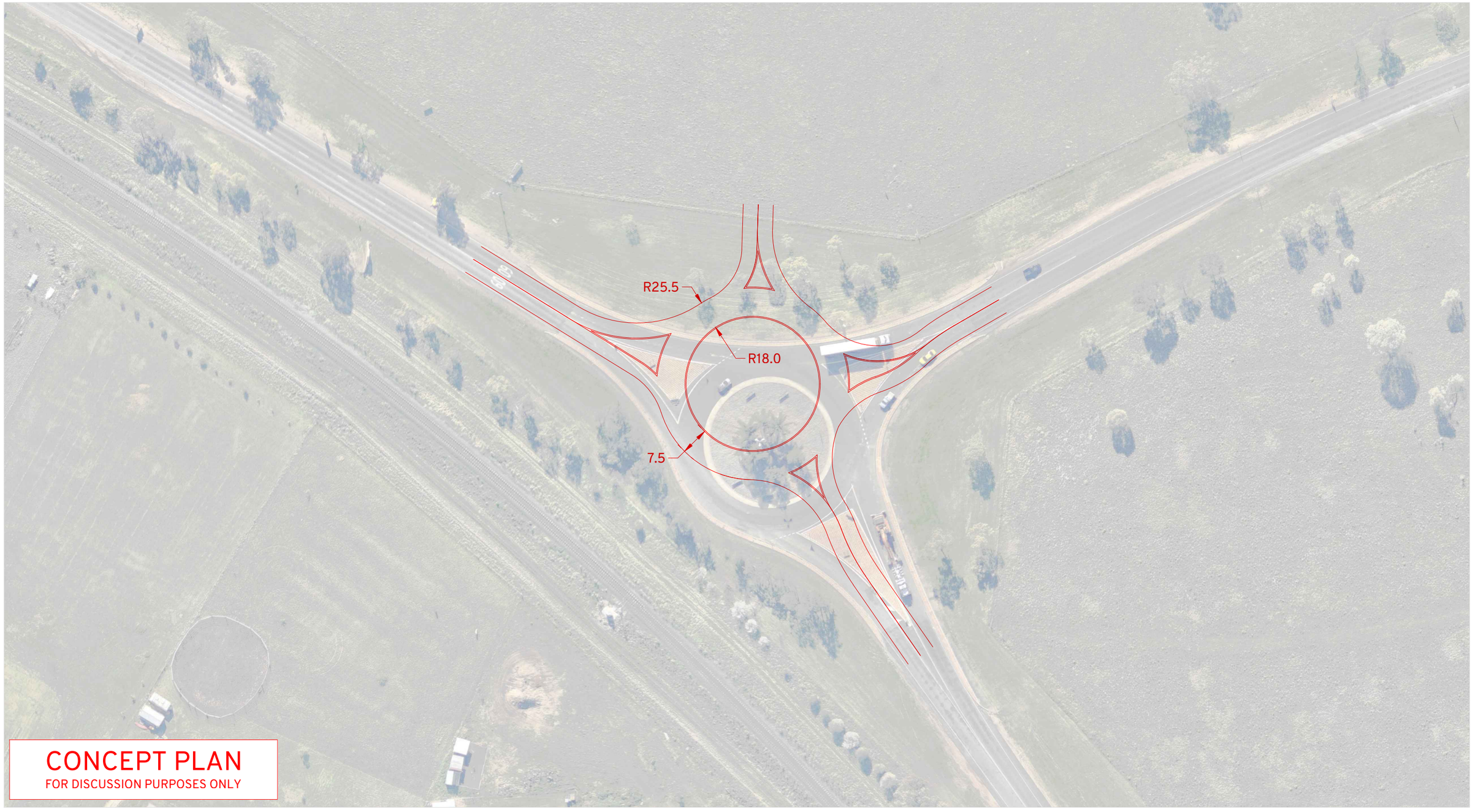
Channelised Right-turn Treatment (CHR(s)) Section 7.5.2.
1: Design speed of 70km/h.
2: Lane widths of 3.5m have been used.
3: Formation/carriageway widening is 3.0m.
4: Lateral movement length *(A)* is 60m.
5: Storage length is 26m for one B-double design vehicle.

Rural Left-turn Treatment with short left turn lane (AUL(s)) Section 8.2.2.
1: Design speed of 70km/h.
2: Lane widths of 3.5m have been used.
3: Formation/carriageway widening is 2.5m.
4: Taper length calculates to 20m.
5: Minimum length of parallel widened shoulder used from Table 8.2 is 35m.

Service Centre Development
127-141 Lochrey Road, Gunnedah
Option 2: Oxley Highway West CHR(s)/AUL(s) Feasibility Design

DRAWN: CT
DATE: 24/11/2021
SCALE: 1:1 @ A3
DWG NO: 193 S01A

Amber 02

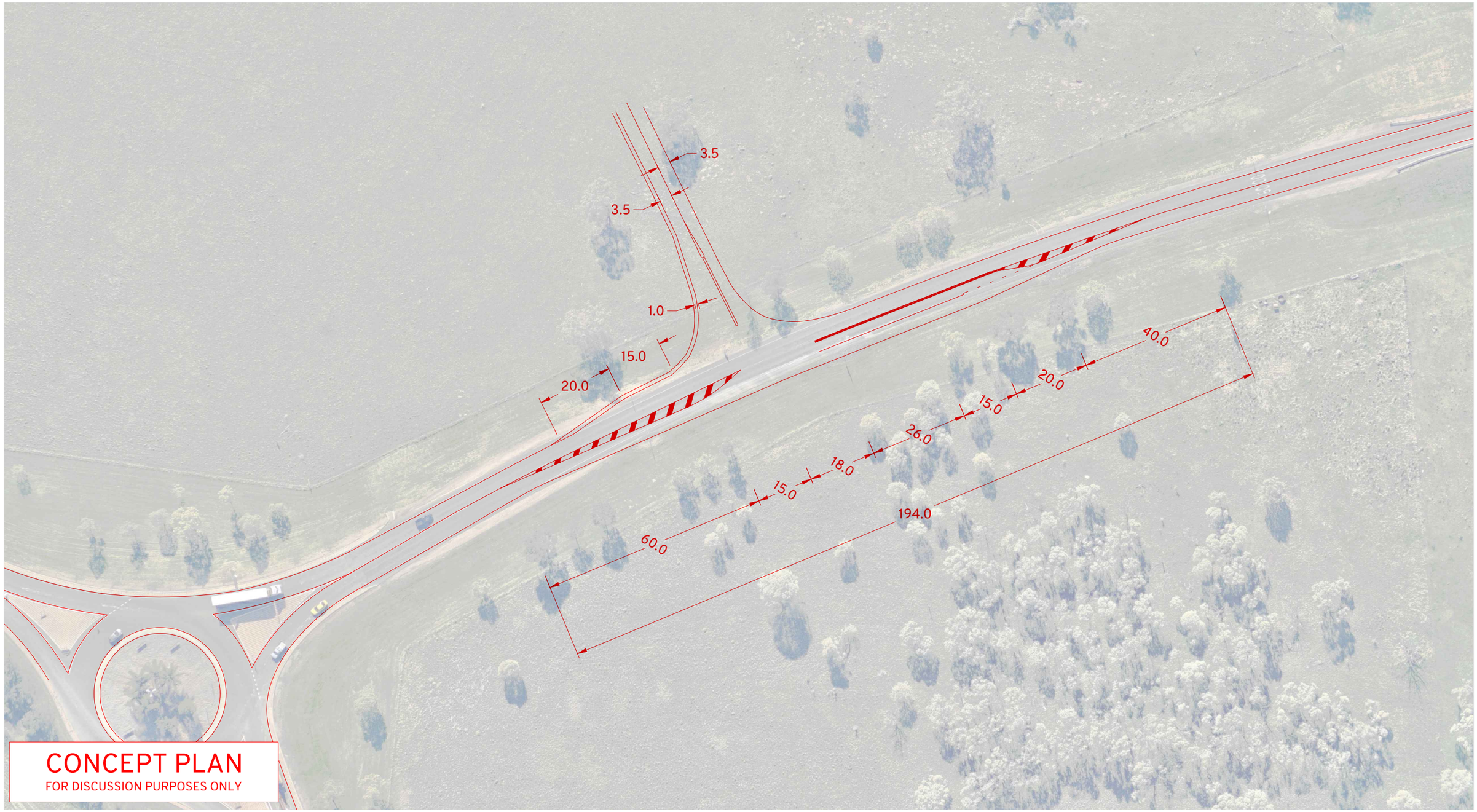


CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

Service Centre Development
127-141 Lochrey Road, Gunnedah
Option 3: Roundabout Access Feasibility Design

DRAWN: CT
DATE: 24/11/2021
SCALE: 1:1 @ A3
DWG NO: 193 S01A

Amber 03



The following design details have been taken from Austroads Guide to Road Design Part 4A:

Channelised Right-turn Treatment (CHR(s)) Section 7.5.2.
1: Design speed of 70km/h.
2: Lane widths of 3.5m have been used.
3: Formation/carriageway widening is 3.0m.
4: Lateral movement length *(A)* is 60m.
5: Storage length is 26m for one B-double design vehicle.

Rural Left-turn Treatment with short left turn lane (AUL(s)) Section 8.2.2.
1: Design speed of 70km/h.
2: Lane widths of 3.5m have been used.
3: Formation/carriageway widening is 2.5m.
4: Taper length calculates to 20m.
5: Minimum length of parallel widened shoulder used from Table 8.2 is 35m.

Service Centre Development
127-141 Lochrey Road, Gunnedah
Option 4: Oxley Highway East CHR(s)/AUL(s) Feasibility Design

DRAWN: CT
DATE: 24/11/2021
SCALE: 1:1 @ A3
DWG NO: 193 S01A

Amber

Appendix C

TfNSW Access Design Response

13 January 2022

File No: NTH15/00090/02

The Director
Amber Organisation
Email: mike@amberorg.com.au

Attention: Mike Willson - Director

Dear Sir,

RE: Preliminary Advice – Proposed Highway Service Centre and Caravan Park
Part Lot 1 DP 841781; 127-141 Lochrey Road, Gunnedah.

I refer to your email of 24 November 2021 requesting comment from Transport for NSW (TfNSW) in relation to the abovementioned pre planning proposal.

Roles and Responsibilities

Our key interests are the safety and efficiency of the transport network, the needs of our customers and the integration of land use and transport in accordance with Future Transport Strategy 2056.

Lochrey Road is a public local road. The Oxley Highway (HW11) & Kamilaroi Highway (HW29) are classified (State) roads. Gunnedah Shire Council is the Roads Authority for all public roads in the local government area pursuant to Section 7 of the *Roads Act 1993*. TfNSW can exercise roads authority functions for classified roads in accordance with Sections 61 & 64 of the Roads Act. Any road works on a classified (State) road will require the consent of TfNSW and are subject to the terms of a Works Authorisation Deed (WAD) or other suitable agreement with TfNSW.

In accordance with Clause 101 of the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) the Consent Authority is to have consideration for the safety, efficiency and ongoing operation of the classified road, as the development has frontage to a classified road. TfNSW is given the opportunity to comment on traffic generating development of a size or capacity listed under Schedule 3.

It is emphasised that the following comments are based on the information provided to TfNSW at this time, they are not final and further comment will be provided following a review of any planning proposal and/or development application referred by the relevant planning authority.

Transport for NSW Response

TfNSW understands that the Proponent is undertaking due diligence to inform a Planning Proposal that would amend the *Gunnedah Local Environmental Plan 2021* to permit a Highway Service Centre and Caravan Park as additional permitted uses on the subject site.

TfNSW has reviewed the access options submitted and provides the following comments to assist development and consultation of further options;

1. The observed traffic volumes may reflect short-term changes in travel patterns arising from Covid-19, and pre-pandemic traffic volumes should be identified to ensure analysis is reflective of longer-term trends.

2. Consideration must be given to relevant design vehicles when considering intersection and access treatments. Whilst the Austroads warrants may suggest that shortened turn treatments (CHR-S / AUL-S) may be suitable for observed volumes, further consideration will need to be given to deceleration and storage lengths for relevant design vehicles.

3. The following comments are provided in response to the access options included in Drawing no. 193 S01A attached to your enquiry;

    - Option 1 appears to only provide access for eastbound traffic leaving Gunnedah. It is considered likely this arrangement would encourage westbound traffic to attempt U-turns at the Lochrey Road intersection. Further consideration should be given to Options or combinations of options that enable access for all directions of travel.

    - Option 2 may present limitations to the design of the CHR and AUL treatments given proximity to the nearby roundabout and the Lochrey Road intersection respectively. This option would appear to be more appropriate as an upgrade of the Oxley Highway and Lochrey Road intersection, providing clear separation to the roundabout and enabling site access from Lochrey Road.

    - Option 3 would not be acceptable as demonstrated in the submitted sketch. Any further option proposing a fourth leg on the roundabout will need to further adjust all approaches to achieve evenly separated approaches. Note that any reconstruction of the roundabout will need to be designed to accommodate the turn paths of relevant design vehicles and a suitable pavement specification.

    - Option 4 may be acceptable subject to further analysis and could be an effective compliment to a modified option 2 subject to further analysis and detail of the development internal design.

Any roadwork on classified (State) road/s is to be designed and constructed in accordance with the current Austroads Guidelines, Australian Standards and TfNSW Supplements.

The Developer will be required to enter into a Works Authorisation Deed (WAD) or other suitable agreement as required by TfNSW for any road works on the classified (State) road. The developer will be responsible for all costs associated with the roadwork and administration for the WAD. It is recommended that developers familiarise themselves with the requirements of the WAD process. Further information can be obtained from the TfNSW website.

If you have any further enquiries regarding the above comments please do not hesitate to contact Leisa Sedger, Development Services Case Officer or the undersigned on (02) 6640 1362 or via email at: development.north@transport.nsw.gov.au

Yours faithfully,

Matt Adams
A/Manager Development Services
Community and Place | Region North
Regional & Outer Metropolitan

Copy for: Gunnedah Shire Council - council@infogunnedah.com.au