

Appendix G

Traffic Impact Assessment

(RoadNet, 2015)



Traffic Assessment

Impacts of Proposed Poultry Development

At

Sturt Highway, Euroley

for

SLR Consulting

22 April 2015

Document Control Sheet

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1. INTRODUCTION

RoadNet Pty Ltd has been engaged by SLR Consulting to provide a Traffic Impact Assessment (TIA) for a proposed poultry development at Euroley, west of Narrandera, in New South Wales. The site is located on the southern side of the Sturt Highway, approximately 26km west of the Narrandera township and 48km south-east of Griffith.

The Traffic Impact Assessment (TIA) examines the potential impacts of traffic to be generated by the proposed poultry farm on the existing traffic movements on the Sturt Highway.

This assessment is prepared in accordance with relevant Council and Roads and Maritime Services (RMS) standards. The brief also requires that the TIA identify and address:

- the operation of the existing Sturt Highway
- traffic generation to and from the proposed development
- the impacts of the additional traffic on the operation of the Sturt Highway
- access requirements for the proposed development

The key issues in relation to transport and road traffic that were identified in the Secretary's Environmental Assessment Requirements (SEARs) for this project are summarised in Table 1.1 below, which also shows the location where each of the issues is addressed.

Table 1.1 – SEARs relating to Traffic and Transport

Aspect – Transport and Road Traffic	Where addressed in this report
details of all road transport routes;	Sections 1, 2, 3.4, 4.3
access to the site from the road network including intersection location, design and sight distance;	Sections 1, 2.3, 3.5, 4.4
road traffic predictions for the development during construction and operation;	Sections 3.1, 3.3, 4.6
an assessment of predicted impacts on road safety and the capacity of the transport network, including an appraisal of any impact mitigation measures;	Sections 4, 5, 6
a description and plans of any road upgrades required for the development; and	Sections 3.5, 5, 6
plans for the layout of the internal roads and parking.	Sections 3.2, 3.5, 3.6, 4.4, 5, 6

Figure 1.1 shows the location of the site.

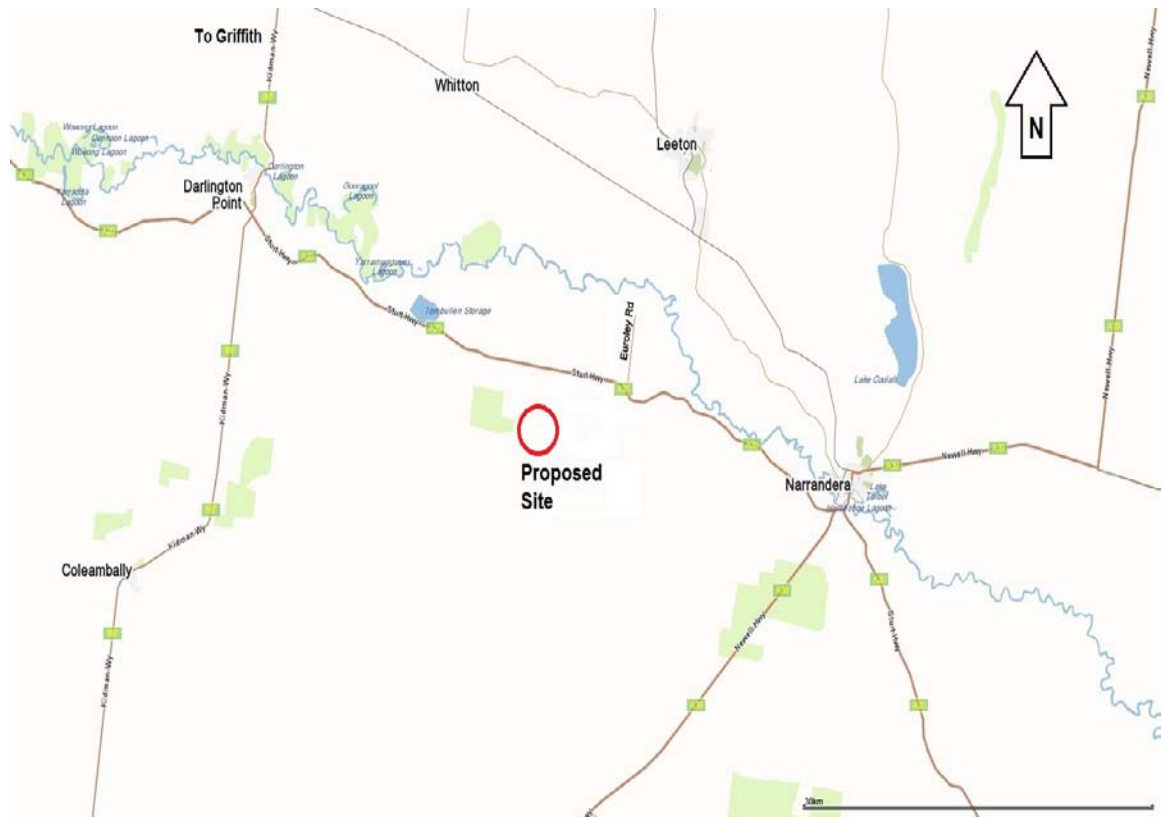


Figure 1.1: Locality Plan

2. EXISTING TRAFFIC CONDITIONS

2.1 The Site

The proposed Euroley poultry development is located approximately 4km to the south of the Sturt Highway.

The proposal includes five poultry production units, each consisting of 16 sheds, to be located on existing rural Lots 1, 41, 42, 44, 45 & 54 of DP 750898 and Lot 1 of DP 1054064. The site is approximately 26km west of the Narrandera CBD.

Access to the existing rural lots is via an unsealed roadway, which intersects with the Sturt Highway. Access to the site would be via this upgraded roadway and construction of a new intersection off the Sturt Highway.

2.2 Existing Road Network

The Sturt Highway is a sealed, 2-lane rural highway linking Narrandera in the east to Darlington Point in the west (approximately 60km). In the vicinity of the proposed development it is approximately 7.0m wide with 1.0m wide sealed shoulders. The speed limit is 100kph.

2.3 Proposed intersection with Sturt Highway

Access to the site is via a number of unsealed rural tracks which connect the site and a number of adjoining lots with the Sturt Highway (see Figure 2.1). A new intersection with the Sturt Highway would be formed to accommodate the additional traffic generated.

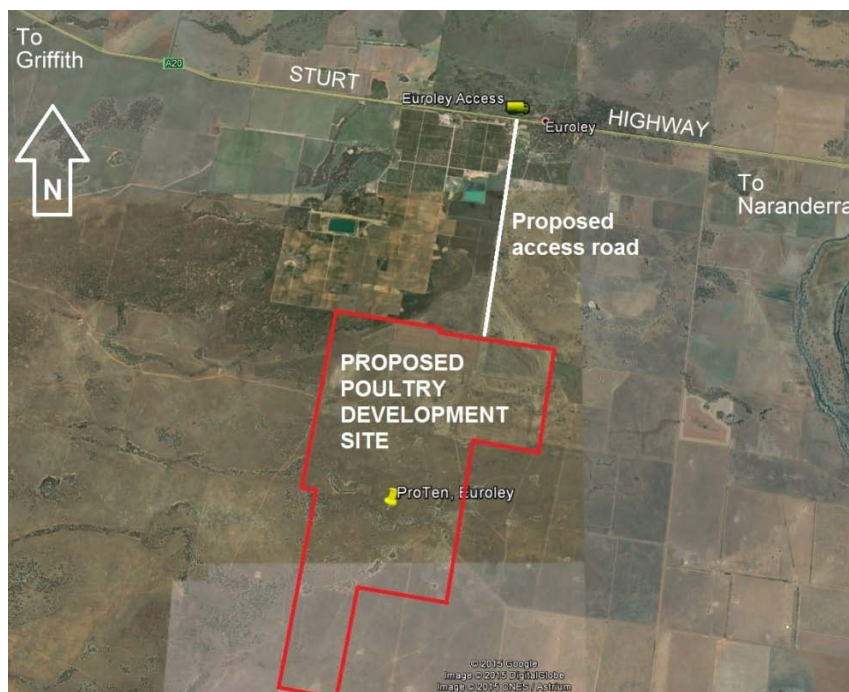


Figure 2.1: Location of Development Site in relation to the Sturt Highway.



Figure 2.2: *Proposed intersection location, looking east towards Narrandera.*



Figure 2.3: *Proposed intersection location, looking west towards Darlington Point.*

2.4 Existing Traffic Volumes

Roads and Maritime Services (RMS) has provided traffic data for the Sturt Highway. The information includes hourly traffic volumes collected by an Infra-Red Traffic Logger (TIRTL) for the 18 month period between 1 January 2011 and 9 June 2012. The RMS safety camera site is located just east of the proposed development, and the information includes hourly traffic volumes in each direction, and separated into 12 different vehicle classifications.

The data shows relatively low traffic volumes on the Highway over the 18 month count period. Daily volumes were commonly less than 200 vehicles per day. The peak day (18 February 2011) saw 243 vehicles pass across the frontage of the site in a 24 hour period.

Further analysis of the data indicates:

- Traffic volumes generally increase during the morning to a mid-day peak before reducing through the afternoon to an over-night low (4 vph).
- Traffic volumes are generally evenly split between eastbound and westbound directions at most times of the day.
- Heavy vehicle numbers contribute up to 50% of the hourly and daily traffic volumes throughout the whole day.
- There were no noticeable peak days of the week, although volumes appeared generally higher between Friday and Monday than the other week days.

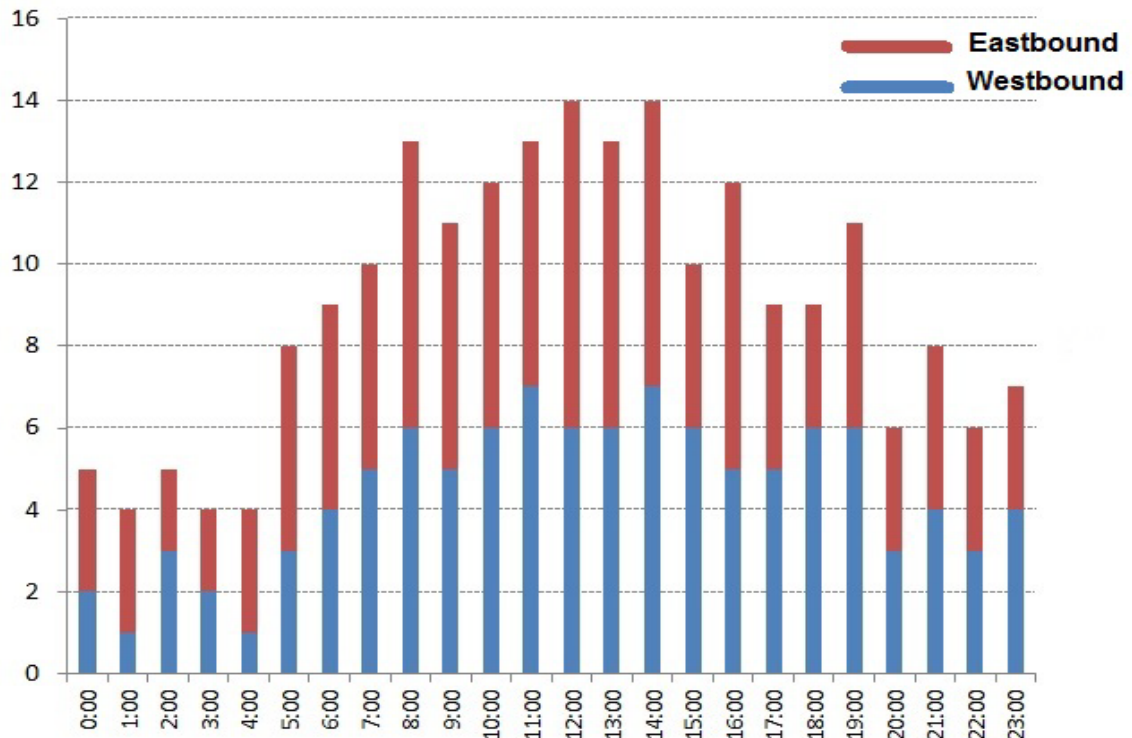


Figure 2.4: Average hourly traffic volumes (from RMS data)

An onsite traffic count was also conducted on Friday 25 July 2014. The count indicated a peak hour volume of 57 vehicles between 12:15 – 1:15pm. The traffic count included:

- 27 eastbound & 30 westbound vehicles
- A total of 17 heavy vehicles (or 29.8%)

This volume is well above those contained in the RMS data set. Accordingly, for the purposes of this assessment, the manual traffic count (midday to 1pm approx. on Friday 25 July 2014) will be used for assessment of the impacts of the proposed development.

3. PROPOSED DEVELOPMENT

3.1 Development Description

ProTen Pty Limited (ProTen) intends to develop a poultry production complex at Euroley (Euroley Poultry Production Complex) comprising of 5 poultry production units (PPUs), where broiler birds will be grown for human consumption. The conceptual layout of the proposed development is shown in Appendix A. The key development elements of the proposed farm include:

Table 3.1 Summary of Proposed Euroley Poultry Production Complex Development

Development Characteristic	Proposed Development
Purpose	Birds grown for human consumption
Number of PPUs	Five, with a total footprint of around 70 hectares
Number of poultry sheds per PPU	16, each measuring 160 metres long by 17 metres wide
Type of poultry sheds	Tunnel-ventilated, fully-enclosed, climate-controlled
Maximum shed population	49,000 birds
Maximum PPU population	784,000 birds
Maximum farm population	3,920,000 birds
Maximum bird density within sheds	40 kg/m ²
Hours of operation	24 hours a day, 7 days a week
Production cycle length	Approximately 9 weeks, comprising a maximum bird occupation of 8 weeks and a cleaning phase of 1 week.
Number of production cycles per year	An average of 5.7

Each of the proposed poultry production units (PPUs) will comprise of 16 fully-enclosed climate-controlled poultry sheds. Each shed will have the capacity to house a maximum of 49,000 broilers at any one time, equating to a maximum PPU population of 784,000 birds and a maximum farm population of 3,920,000 broilers at any one time.

The proposed footprint of the Euroley Poultry Production Complex will be relatively small and the commercial activities associated with the poultry operation will be largely confined to the area around the sheds.

In addition to poultry shedding, the Euroley Poultry Production Complex will also include:

- The construction of ten (10) residential dwellings to accommodate farm managers and assistant farm managers; and
- The construction of ancillary infrastructure and improvements required to support the poultry production operation.

It should be noted that the buildings and other infrastructure proposed as part of the Euroley Poultry Production Complex are similar to ProTen's Jeanella Poultry Production Complex, which is also located in the Griffith region.

It is intended to continue using the land outside of the disturbance footprint for agricultural production purposes under some form of lease or share farming arrangement.

3.2 Internal Road Layout

A conceptual layout of the internal roads servicing the development is provided in Appendix A. The development will have one-way circulation roads (ring roads) around the perimeter of each PPU to enable traffic to enter, exit and manoeuvre around the PPUs for loading-unloading and servicing activities in a forward direction, thereby minimising the potential for traffic conflict and noise.

The roads will be constructed as all-weather rural-type roads able to carry the anticipated heavy vehicle movements.

Parking will be available adjacent to each PPU to accommodate staff and visitor movements.

3.3 Development Traffic Generation

3.3.1 Traffic Generating Sources

With the exception of live bird removal, which will generally occur between the hours of 8.00pm and 2.00pm, all transport activities will occur during daylight hours.

It is estimated that close to 35 percent of the total daily traffic will be generated by light vehicles (cars).

Light Vehicles - Cars

The Client advises that most light vehicle traffic will be to and from the direction of Narrandera (30km to the east). This means that most light vehicles will turn left into the site and right out of the site.

Some workers will travel from the west from the small community of Darlington Point (30km) and the large town of Griffith (60km).

The following issues have been considered when estimating traffic generation.

- Most staff will travel to and from the site by car.
- The number of staff is likely to vary seasonally i.e. there will be busy times when additional labour will be called upon.
- Given the distance from towns to the site it is likely that there will be a significant degree of car-pooling.
- Staff numbers are relatively low in relation to the number of birds on the site. It is proposed that there be:
 - 10 employees who will live on-site (farm managers and assistant staff).
 - 20 additional full-time equivalent staff members.

Trucks

Trucks will travel to and from the site on a daily basis. Most truck movements will be to and from the direction of Griffith i.e. west. This means that they will turn right into the site and left out of the site. The operational activities associated with these movements include:

- Delivery of the shed floor bedding material in rigid trucks from a storage facility located near Hanwood, to the west of the site;
- Delivery of day-old chicks from Baiada's hatchery facility located approximately 3 kilometres west of Griffith on Snaldero Road in insulated pantechicon trucks (west);
- Delivery of feed from Baiada's feedmill facility located approximately 1 kilometre south of Hanwood on the corner of Kidman Way and McWilliams Road in semi-trailers (west);
- Delivery of bulk liquid petroleum gas (LPG) from Griffith in rigid trucks (west);
- Removal of birds to Baiada's processing complex located approximately 1 kilometre south of Hanwood on the corner of Kidman Way and Murphy Road in semi-trailers (west);
- Removal of shed floor litter (spent bedding material) in semi-trailers to various locations;
- Removal of dead birds to Baiada's processing complex, which includes a protein recovery/rendering plant, located approximately 1 kilometre south of Hanwood on the corner of Kidman Way and Murphy Road in rigid trucks (west);
- Removal of general garbage in rigid trucks to disposal facilities located within the vicinity of Griffith (west).

The traffic volume calculations used in the traffic assessment are based on the largest truck being a semi-trailer. However, it is possible that future contractors may use B-Doubles to service the site.

Heavy vehicle trips will be mostly spread over the nine week production cycle and will be distributed relatively evenly over the predicted delivery hours.

3.3.2 Traffic Generation volumes

Traffic generation for a typical 9 week production cycle and annually (based on 5.7 production cycles per year) has been based on data provided by SLR Consulting. A summary is provided in Table 3.2.

Activity	Vehicle Type	Vehicles (Two Way Trips)	
		Traffic Per 9 Week Production Cycle (Trips)	Annual Traffic - 5.7 Production Cycles (Trips)
Heavy Vehicles			
Delivery of Bedding Material	Rigid Truck	108 (216)	613 (1226)
Delivery of Chicks	Rigid Truck	45 (90)	256 (513)
Delivery of Feed	Semi-Trailer	722 (1445)	4118 (8236)
Delivery of Fuel	Rigid Tanker	2 (4)	12 (24)
Delivery of Gas	Rigid Tanker	10 (20)	56 (112)
Removal of Birds	Semi-Trailer	745 (1490)	4246 (8493)
Removal of Birds – catching equipment transporter	Semi-Trailer	6 (12)	34 (68)
Removal of Birds - catching staff	Bus	42 (84)	240 (480)
Removal of shed litter material	Semi-Trailer	178 (355)	1012 (2024)
Shed wash down equipment transporter	Semi-Trailer	2 (4)	12 (24)
Removal of Dead Birds	Rigid Truck	64 (128)	364 (728)
Refuse Collection	Rigid Truck	2 (4)	12 (24)
Heavy Vehicle Sub-Total		1926 (3852)	10975 (21950)
Light Vehicles			
Staff Movements	Car	970 (1940)	5529 (11058)
Tradesmen	Ute/Van	10 (20)	58 (116)
Catching equipment maintenance	Van	22 (44)	126 (252)
Shed litter material removal contractors	Car	24 (48)	136 (272)
Shed wash down contractors	Car	36 (72)	206 (412)
Light Vehicle Sub-Total		1062 (2124)	6055 (12110)
TOTAL		2988 (5976)	17030 (34060)

Table 3.2 – Traffic Generation per Production Cycle and Year

While the proposed poultry development will operate 24 hours a day, seven days a week, the majority of activities will occur between 7.00am and 7.00pm, with the exception of the removal of birds which will occur between 8.00pm and 2.00pm.

There will typically be one daily shift for farm workers between 7:00am and 4:00pm each day.

Daily traffic generation and hourly volumes have been calculated on the basis of 20 full-time equivalent staff. It is assumed that about half will car pool. A few trucks will come and go as they are spread evenly throughout daylight hours. There will be some minor movements to and from the residential dwellings, e.g. to school etc. The calculations are imprecise but only small numbers are involved.

On average there will be 96 movements per day (62 of these trucks).

The peak generating hours of the development will occur at the start and finish of the shift.

It is estimated that there would be 20 trips in the AM peak hour and 20 trips in the PM peak hour.

It is also assumed that 70% of vehicle movements will be into the site in the morning, with 30% out, while the situation will be reversed in the afternoon (i.e. 30% in and 70% out).

Vehicle Type	Vehicles Per Day (Vehicle Trips)	AM Peak Hour Movements	PM Peak Hour Movements
Cars (LV)	17 (34)	14 (10 in, 4 out)	14 (4 in, 10 out)
Heavy Vehicles	31 (62)	6 (4 in, 2 out)	6 (2 in, 4 out)
Total	48 (96)	20 (14 in, 6 out)	20 (6 in, 14 out)

Table 3.3 – Traffic Generation per Day and in each Peak Hour

For the purposes of analysis it is assumed heavy vehicle trips will be spread evenly over the 9 week cycle and will be distributed evenly over the predicted delivery hours. As discussed previously, a number of the heavy vehicle movements will be undertaken outside of normal working hours. Transporting live chickens is more efficient when temperatures are cooler and the animals are more settled.

Any upgraded access from the Sturt Highway required as part of the Euroley Poultry Production Complex development is likely to be utilised by adjacent land-owners. However, there are only a few residences located on the adjacent lots, and therefore only a small number of potential additional movements could be expected. For the purposes of this assessment, one additional movement per peak hour has been added to cater for movements not associated with the Euroley poultry development.

The following figures show the estimated daily traffic volumes and volumes at the peak generating times of the development, including the counted volumes on the Sturt Highway.

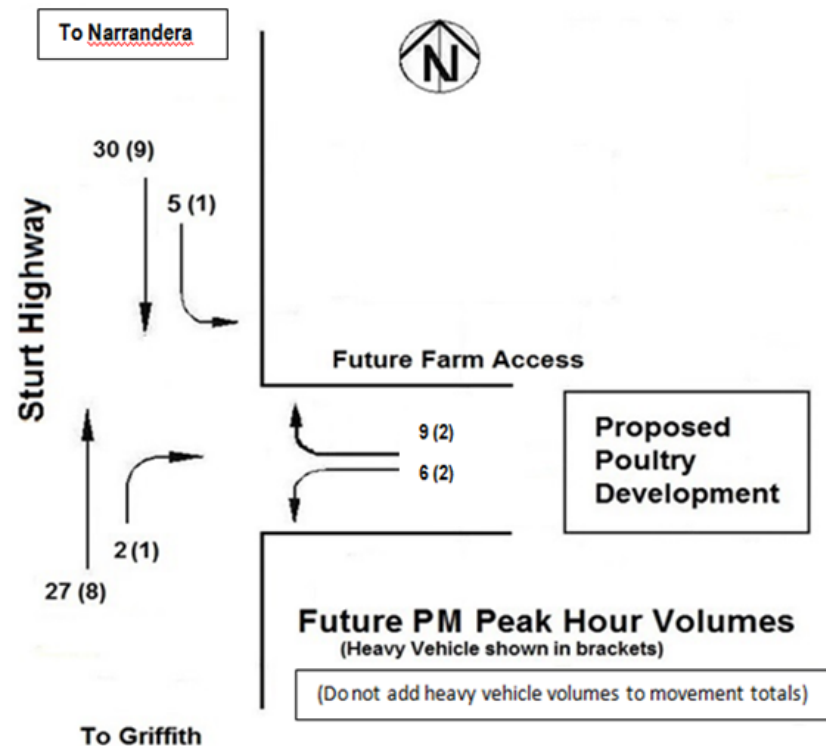


Figure 3.1: Future peak hour traffic volumes at proposed access road, including estimated traffic generated by the proposed Euroley Poultry Production Complex development.

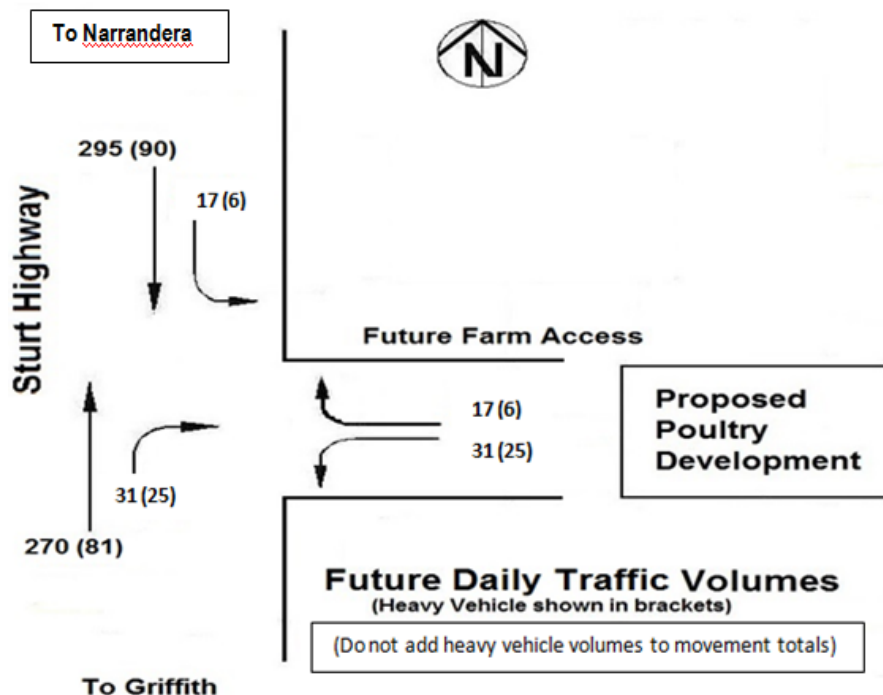


Figure 3.2: Future daily traffic volumes at proposed access road, including estimated traffic generated by the proposed Euroley Poultry Production Complex development.

As previously noted in Section 2.4, the current traffic volumes on the Sturt Highway generally peak around the middle of the day (see Figure 2.4), while the peak volumes generated by the proposed development are estimated to coincide with the beginning and end of daytime staff shifts i.e. 7:00am and 4:00pm. The counted traffic volumes along the Sturt Highway adopted for the analysis are also substantially higher than (approximately twice) those recorded by the RMS Infra-Red Traffic Logger.

Allowing for these two factors, an adjustment to the peak hour traffic volumes on the Sturt Highway used in the analysis to accommodate 10 yrs of background traffic growth (as per normal RMS requirements for examining future intersection requirements) has not been explicitly undertaken, since the volumes adopted in Figures 3.1 and 3.2 above already more than compensate for this adjustment and are therefore conservative for the purposes of considering the future intersection requirements at the site access.

3.4 Heavy Vehicle Route

Heavy vehicles will generally travel to and from the site from facilities located in Hanwood 6km south of Griffith on a daily basis via the Sturt Highway. Deliveries of day old chicks, feed etc. will be delivered from sources generally based around Griffith, which will be delivered in articulated or rigid trucks, and are already accommodated on the road network in the region.

A designated B-double route currently exists along the Sturt Highway through to Narrandera. The Sturt Highway is also an approved Road Train Route. The daily volumes along this route are low. The additional 62 heavy vehicle trips per day (6 in each of the peak hours for the development) along the Sturt Highway are not expected to have any significant traffic impacts.

It is possible that future contractors may use B-Doubles to service the site.

3.5 Access to Proposed Development Site

3.5.1 Sturt Highway Intersection

A single access to serve the future Euroley poultry development is proposed from the Sturt Highway. The proposed development site will be approximately 4km south of the existing Sturt Highway carriageway, which allows adequate room for development-generated vehicles to manoeuvre or queue without impacting on highway traffic.

The access point is assessed using intersection warrants prescribed in Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections. This warrant is shown in the following diagram and represents the requirements for the layout of the proposed intersection of the Site Access Road with the Sturt Highway.

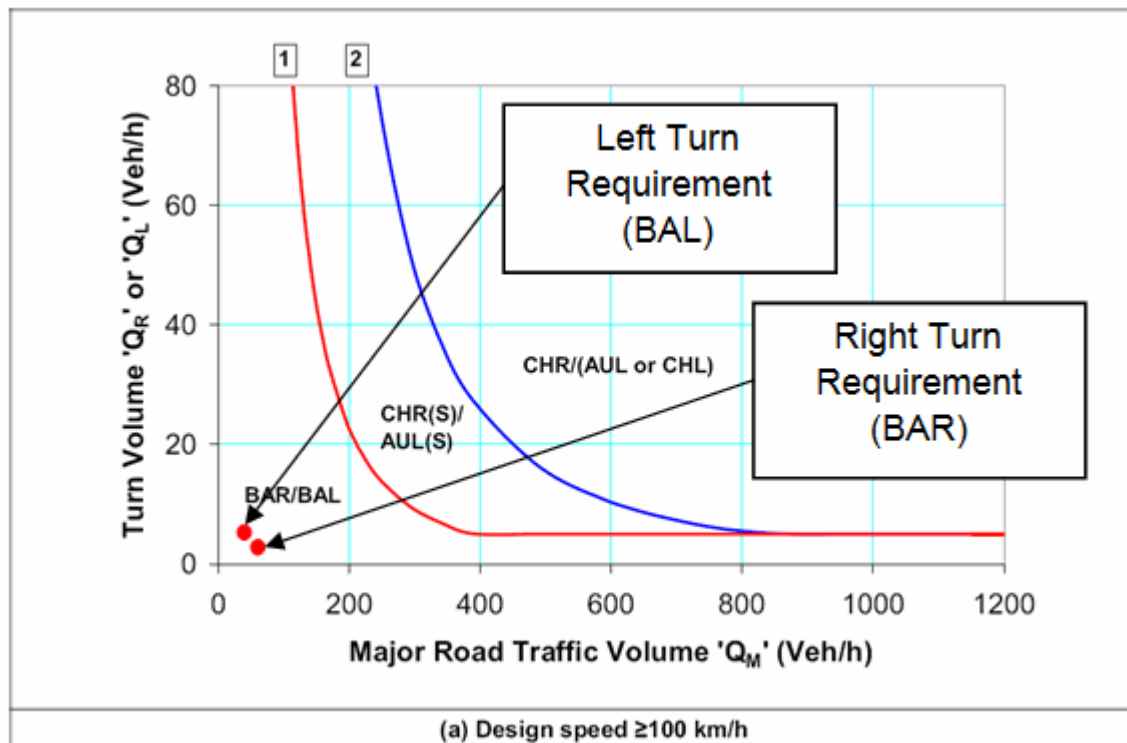


Figure 3.3: Access Turn Warrants (Extracted from Figure 4.9 from Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections)

Figure 3.3 shows that any future intersection with the Sturt Highway should include a basic right turn treatment (BAR) and a basic left turn treatment (BAL). Figure 3.3 also shows that, as a result of the low turning volumes predicted to be generated by the proposed development in conjunction with the low through volumes along the Sturt Highway, there is significant room for the major road traffic volume to increase before a higher level of intersection treatment would be required. As discussed in section 3.3.2, the traffic volumes along the Sturt Highway that have been used in the assessment are already conservative, hence the requirement to only provide BAR and BAL type treatments is considered to be robust.

The BAR and BAL treatments require sufficient widening for through vehicles to pass turning vehicles. Indicative diagrams for the treatments are shown in the following diagrams extracted from Figure 7.5 and 8.2 from Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections.

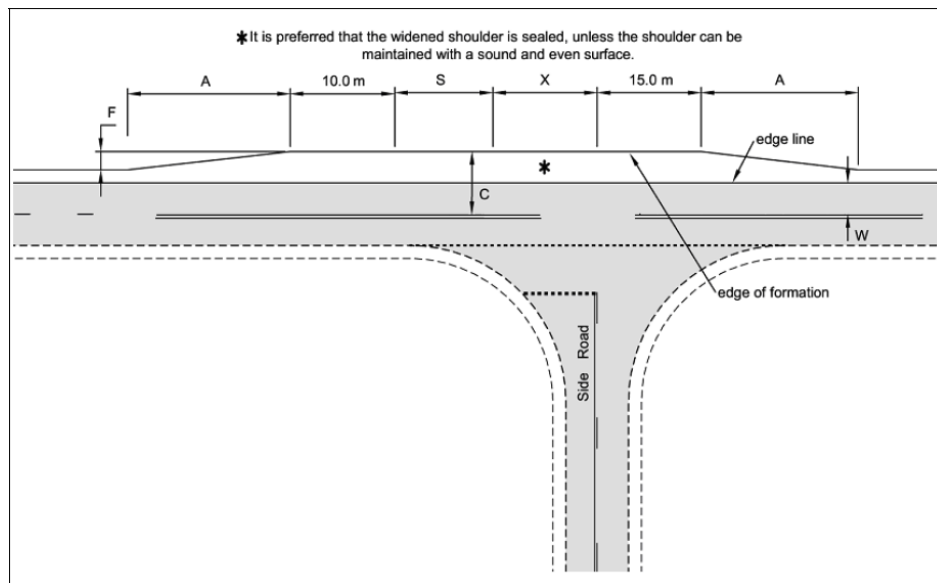


Figure 3.4: *BAR Treatment (Extracted from Figure 7.5 from Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections)*

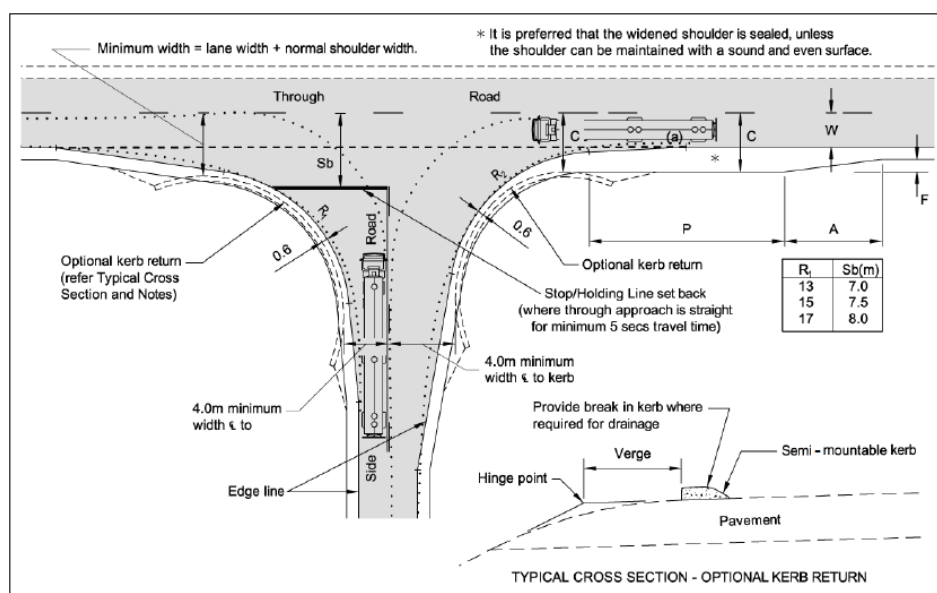


Figure 3.5: *BAL Treatment (Extracted from Figure 8.2 from Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections)*

The road reserve at the access point is sufficiently wide for these requirements to be constructed with minimal road works. The through lanes along the Sturt Highway will continue to be of a width suitable to accommodate vehicles up to the size of Road Trains consistent with its designation as a Road Train Route. The radii of the left turn road edge should be constructed to accommodate the turn path of the largest vehicles likely to enter the site. In this case the largest vehicles anticipated are B-double trucks.

RMS has requested that a CHR (short) type intersection be considered (a painted right turn lane). Based on the traffic volumes to be generated by the development the warrants do not require this level of intersection

upgrade. However, the BAL and BAR treatment warranted could be supplemented with advance signposting in both directions warning of trucks turning. In addition, an intersection direction sign opposite the access would further help identify the access point.

3.5.2 Sight Distance

The Sturt Highway has a straight and undulating road alignment. The proposed access is optimally located between two crests to maximize sight distance.

Safe Intersection Sight Distance (SISD) has been assessed using the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, Tables 3.2 and 3.3. The maximum reaction time of 2.5s has been used. The required SISD for a design speed of 110km/h (10 above posted speed of 100km/h on the Sturt Highway to allow a factor of safety) is calculated as 311m to the west and 305m to the east for cars, allowing for grade corrections on each of the approaches to the proposed development access.

Both approaches to the site i.e. from the west (from Griffith) and from the east (Narrandera) exceed this requirement.

Stopping Sight Distance (SSD) along the Sturt Highway in the vicinity of the proposed access has also been checked in accordance with Austroads Guide to Road Design Part 3: Geometric Design, Table 5.4 based on the same design speed, reaction time and grade corrections. The required SSD values of 219m to the west and 213m to the east are exceeded along the subject section.

Sight line diagrams overlayed on long section drawings for the subject section of the Sturt Highway have been prepared which are included in Appendix B.

It should be noted that driver's reaction time can be further improved by the erection of warning signage at each approach to the proposed access.

3.5.3 Access Road and Driveway to Development

It is proposed that vehicles will enter and exit the Sturt Highway via a new intersection. Access to the poultry development is then proposed via an all-weather rural roadway approximately 4km in length.

The intersection with the Sturt Highway should be constructed to the standard of a public road and bitumen sealed for a minimum length of 50m to ensure orderly driver behaviour at the intersection and to avoid gravel spreading onto the Sturt Highway. It should be designed to accommodate the turn paths of B-Doubles.

The access road would generally follow the path of existing unsealed rural roads which currently provide access to a number of rural properties.

The future access driveway connecting the site to the access road should comply with the minimum requirements of Figure 3.1 of AS 2890.2, which details the dimensions of a driveway on a minor road catering for heavy vehicles and articulated vehicles (see Appendix C). Preferably, the intersection should be constructed as a BAL treatment as per the diagram in Figure 3.5 of this report.

Trucks will need to pass cars, other trucks and potentially other farm vehicles on the access road. Accordingly, it would be appropriate to construct the future access road (between the proposed poultry development and the Sturt Highway) to a minimum width of 6.5 metres, with a pavement and road surface suitable for B-doubles.

3.6 Internal Access Requirements

The anticipated internal access arrangement, as shown on the layout plans in Appendix A, will provide adequate and suitable vehicular access to each of the proposed PPUs via the construction of new all-weather crossovers and rural-type roads able to carry the anticipated heavy vehicle traffic.

Each PPU will have a separate one-way circulation road around its perimeter to enable traffic to enter, exit and manoeuvre around the PPU sites in a forward direction, minimising the potential for traffic conflict.

It is anticipated the access road will carry approximately 96 trips per day (62 heavy vehicle trips and 34 car trips).

The internal roads would be constructed to suitable strength and width to accommodate the expected heavy vehicles.

Parking will be available adjacent to each PPU to accommodate staff and visitor movements.

4. IMPACT ON ADJOINING ROAD NETWORK

4.1 The Sturt Highway

The additional traffic generated by the Proposal is minimal and will not have any significant impact on the safety or operation of the external road network. The Proposal is expected to generate up to 96 vehicle trips per day, including 62 heavy vehicle trips per day (3 per hour, approx 6 per peak hour) and 34 car trips per day (approx 14 per peak hour). The background traffic volumes on the Sturt Highway are also low and the additional traffic generated by the development can be easily accommodated.

The following table shows the daily background traffic volumes along the subject section of the Sturt Highway and the additional traffic generated by the Proposal.

Sturt Highway	Background Traffic Vehicle Trips Per Day			Additional Generated Traffic Vehicle Trips Per Day			Percentage Increase		
	Cars	HVs	Total	Cars	HVs	Total	Cars	HVs	Total
West of Narrandera	394	171	565	34	62	96	8.6%	36%	17%

Table 4.1 – Percentage Increase of Additional Vehicle Trips on the External Road Network

As previously discussed in sections 3.3.2 and 3.5.1, the background traffic volumes travelling along the Sturt Highway that have been used in the traffic impact analysis equate to a design horizon of 10 years from opening of the development. These background traffic volumes, while low, are considered to be conservative for the following reasons:

- they have been based on a one-off traffic count conducted by RoadNet which resulted in peak hour traffic volumes approximately twice as high as those recorded in data collected by the RMS over an 18 month period using an Infra-Red Traffic Logger.
- the peak hour traffic volumes used in the analysis (from which the daily background traffic volumes shown in Table 4.1 were derived) correspond to a peak occurring around the middle of the day, while the peak volumes generated by the proposed development are estimated to coincide with the beginning and end of daytime staff shifts i.e. 7:00am and 4:00pm.

The expected increase due to staff vehicle trips is approximately 34 trips per day with 14 of these movements expected during each of the morning and afternoon peak hours i.e. at the start and end of the 7am to 4pm shift. As discussed previously, this additional traffic is minor, and will have minimal impact on the Sturt Highway and the external road network.

Heavy vehicles on the Sturt Highway are expected to increase by approximately 36% when the proposed Euroley poultry development (i.e. 5 x PPUs) is completed and fully operational. However, the seemingly large increase is due to the relatively low background traffic volumes utilising the Sturt Highway. The additional 62 heavy vehicle trips per day (average of 3 per hour) are minimal and not expected to have any operational impacts on the external road network.

4.2 Access Track Located Opposite Proposed Access

An unformed access track is located opposite the proposed access on the Highway, as shown in the photo at Figure 4.1.



Figure 4.1: Existing Access Track opposite Proposed Access

This track (one of many in the locality) appears to be little used and should not pose any safety issues to the new intersection.

4.3 Heavy Vehicle Route

4.3.1 Griffith

The existing approved heavy vehicle route through Griffith has been detailed in previous traffic reports for poultry developments in the Griffith area. Heavy vehicles will travel to and from Hanwood utilising Kidman Way and the Sturt Highway. This is a current designated B-double route which has sufficient facilities to accommodate the additional heavy vehicles generated by the Proposal.

4.3.2 Narrandera

Goods delivered to and from Narrandera, or locations further east, can utilize the Sturt Highway and Newell Highway. Both of these highways are suitable for B-doubles.

All routes are considered adequate for the traffic generated by the Proposal, with no upgrades to roadways or intersections anticipated to be required.

4.4 Intersections

4.4.1 Highway Intersection

The proposed access point to the development site is not expected to impact on the traffic flow or safety of the Sturt Highway, due to the low volume of traffic generated by the proposed development and low existing volumes fronting the site. A formal intersection capacity analysis is considered unnecessary, due to the low traffic volumes. It is estimated that ALL through and turn movements through the intersection would have a Level of Service of 'A', and result in minimal delays and queuing.

On this basis it is considered the proposed access point will operate adequately without undue adverse impacts on Highway traffic.

4.4.2 Proposed Site Access Driveway

The future access driveway connecting the site to the access road should meet the minimum requirements of AS 2890.2, to accommodate the turning movements of the largest vehicles generated by the poultry development (B-doubles).

4.5 Pedestrians and Cyclists

The site is located in a low populated rural area, removed from urban residential areas. It is unlikely staff would travel to the site via bicycle or walking. Therefore the provision of cycle and pedestrian facilities to and from the site are not considered necessary.

Within the site adequate provision should be made for pedestrians to move safely around the site.

4.6 Impacts during Construction

There is not expected to be a significant impact to the external road network during construction of the Proposal.

Construction of the PPU's, internal roads and other infrastructure will generate some heavy vehicle movements associated with deliveries of materials, equipment etc. This will also attract construction employee trips to the site. However, this volume is expected to be low and is not expected to impact on the operation or safety of the external road network.

These trips will likely originate from both Griffith in the west and Narrandera in the east, and will generally follow the Sturt Highway to the site. Volumes along this route are low, as shown in Section 2.4, and the highway alignment has the capacity to accommodate the anticipated construction traffic.

Construction of the required intersection with the Sturt Highway may require short term shoulder and lane closures at times. This will be undertaken in accordance with the appropriate traffic control guidelines and by approved traffic control contractors. The impact of this traffic control, in terms of delays and queuing, is expected to be minimal due to the relatively low traffic volumes on this section of the Sturt Highway as described in Section 2.4.

5. CONCLUSIONS

The Proposal involves the construction of a poultry broiler production complex comprising of 5 poultry production units (PPUs) which will be able to accommodate 3.9 million broiler birds at any one time. Operations will occur 24 hours a day, 7 days a week.

The completed poultry development will generate an average of 96 vehicle trips per day (62 heavy vehicle trips and 34 car trips) and 20 trips during the peak generating times of the Proposal (6 heavy vehicle trips and 14 car trips). It is anticipated that the direction of travel for heavy vehicles will predominantly be to and from Hanwood in the west, while the majority of staff vehicles will originate from Narrandera in the east.

A new intersection with the Sturt Highway should include BAL and BAR- type turn treatments to cater for the vehicle movements generated by the 5 poultry production units proposed in the development. This access type is adequate for the low volume of traffic generated by the Proposal and the existing and future low background traffic volumes on the Sturt Highway. The proposed intersection location meets sight distance requirements.

A CHR (short) type intersection was considered following discussions with RMS. However, based on the traffic volumes to be generated by the development, BAL/BAR type turn treatments will be sufficient. In order to address any potential safety issues associated with a new intersection, advance warning signposting and intersection direction signage should be installed to alert drivers of the presence of the intersection and the possibility of turning traffic / trucks.

An unformed access track is located opposite the proposed access on the Highway. This track (one of many in the locality) appears to be little used and should pose no safety issues to the new intersection. RMS has advised the client on-site that it does not have an issue with the track or intersection location.

It is proposed to upgrade approximately 4km of existing unsealed tracks to provide access between the development and the Sturt Highway. The future rural road should be upgraded to a minimum 6.5 metres in width, and provide a surface suitable for use by the heavy vehicles generated by the proposed poultry development. The future access driveway connecting the site to the access road should meet the minimum requirements of AS 2890.2, to accommodate the turning movements of the largest vehicles generated by the poultry development (B-doubles).

The largest heavy vehicles servicing the site are anticipated to be B-double trucks. These will generally travel to and from facilities in Hanwood in the west (predominantly) and Narrandera in the east, following the Sturt Highway which is a designated B-double and Road Train route. This route is considered adequate for heavy vehicles generated by the Proposal without the need for further road or intersection improvements.

Existing and future background traffic volumes on the Sturt Highway are relatively low and additional traffic from the Proposal can be easily accommodated. It is not expected to cause any significant impacts in terms of road safety or operation.

Internal roads will be constructed to accommodate heavy vehicles and the operation will allow one way traffic flow around each poultry production unit avoiding conflicts in servicing.

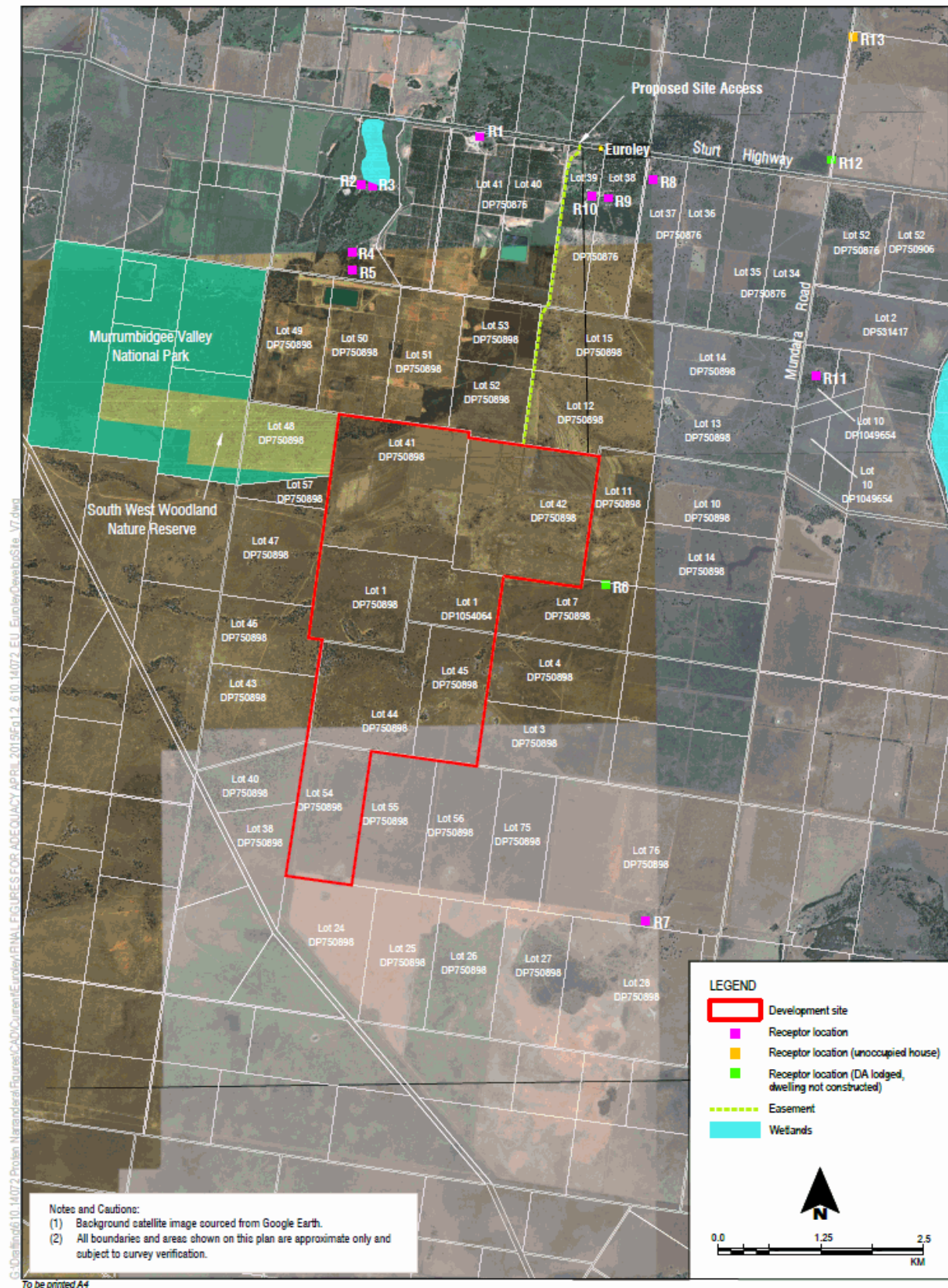
Provided the recommendations in this report are met, the Proposal is not expected to cause any significant impacts in terms of road safety or operation, and there no issues associated with traffic to reject the Proposal.

6. RECOMMENDATIONS

1. Provide a BAL and BAR treatment at the new intersection with the Sturt Highway.
2. Ensure the intersection is designed to accommodate the turn paths of B-Doubles whilst maintaining a suitable geometry for Road Trains travelling along the Sturt Highway (which is a designated Road Train Route).
3. Ensure the access road is bitumen sealed for a minimum length of 50m from the intersection.
4. Provide advance signposting in both directions warning of trucks turning.
5. Provide an intersection direction sign opposite the access to help identify the access point.
6. Design and construct the future access road (between the proposed poultry development and the Sturt Highway) to a minimum width of 6.5 metres, with an all weather pavement and road surface suitable for B-doubles.
7. Construct the internal roads to a suitable strength and width to accommodate the expected heavy vehicle movements and their turn path requirements.
8. The future access driveway connecting the site to the access road should meet the minimum requirements of AS 2890.2, to accommodate the turning movements of the largest vehicles generated by the poultry development (B-doubles).

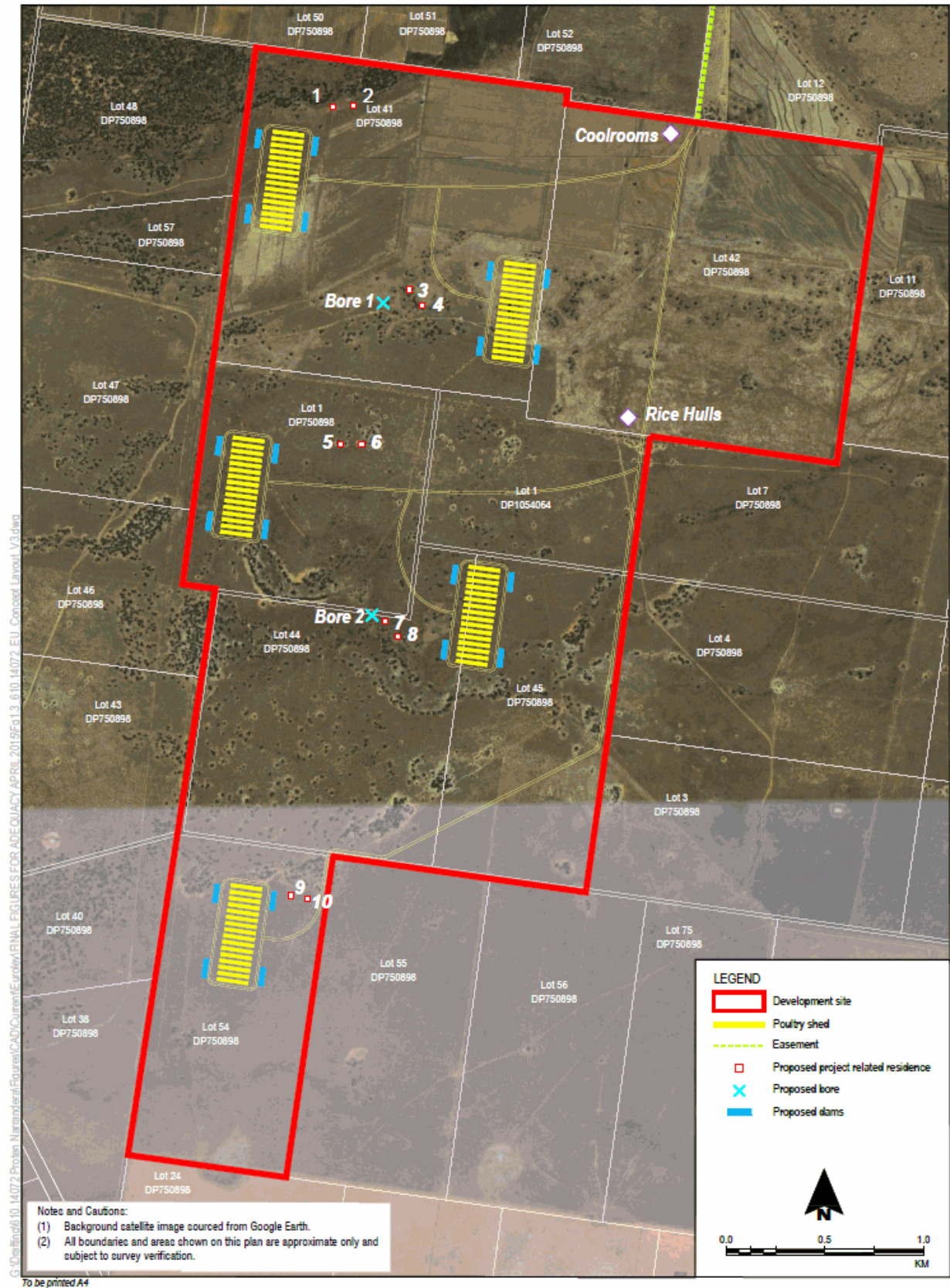
APPENDIX A

PROPOSED DEVELOPMENT LAYOUT



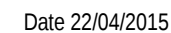
Development Site and Nearest Receptors

FIGURE 1.2



APPENDIX B

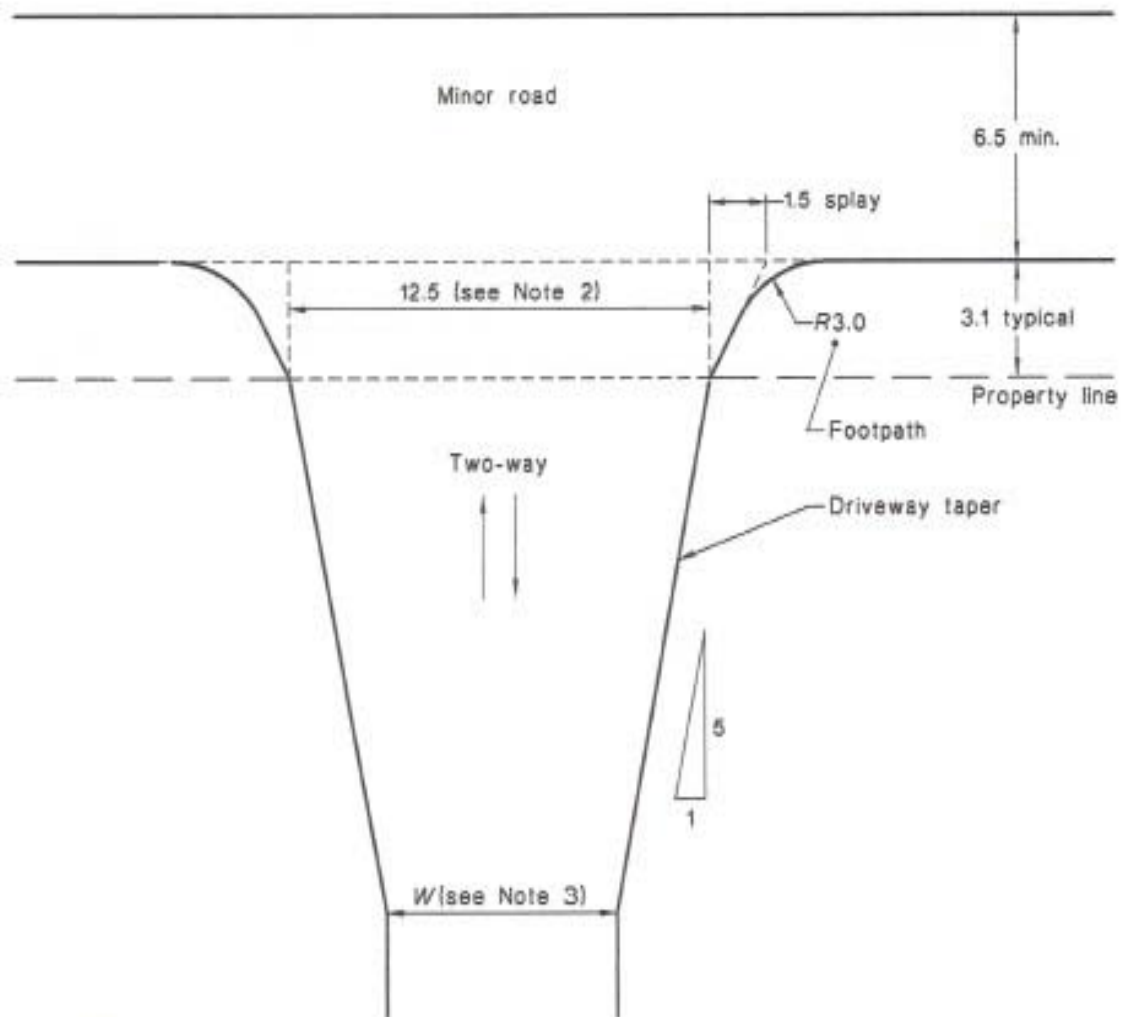
SIGHT LINE DIAGRAMS



APPENDIX C

HEAVY VEHICLE ACCESS

(Fig 3.1 - AS2890.2)



NOTES:

- 1 In the case illustrated the HRV can turn left into the driveway from the left hand side of the public road. The design (19.0 m long) AV will take up most of the public road width when turning left into or out of the driveway, as will the HRV when turning out.
- 2 Corresponding dimensions for the MRV and SRV are 9 m and 6 m respectively. Larger vehicles may be able to use these narrower driveways depending on the width of public road available for manoeuvring in or out.
- 3 W = width of circulation roadway (see Table 3.1).

DIMENSIONS IN METRES

FIGURE 3.1 MINIMUM DESIGN FOR AN ACCESS DRIVEWAY ON A MINOR ROAD CATERING FOR HRVs AND AVs