



Traffic Engineers and Transport Planners

Amendment C185 to the Ballarat Planning Scheme

Central Victorian Livestock Exchange (CVLX), Sunraysia Highway, Miners Rest

Statement to Planning Panels Victoria by Jason Walsh, Traffic Engineer

**Prepared For
RLX Investment Company Pty Ltd**

**Site Inspections:
Tuesday 14th May 2015**

**Date of Report: 12 June 2015
G15152A1**

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1 Introduction

I have been instructed by Harwood Andrews on behalf of RLX Investment Company Pty Ltd to undertake a traffic engineering assessment of the proposed rezoning of the site on the north-western corner of Sunraysia Highway / Western Freeway, Miners Rest to accommodate the use of the site as a saleyard, in the context of Amendment C185 to the Ballarat Planning Scheme.

The intention is that the existing Central Victorian Livestock Exchange, operating at the Ballarat Saleyards, would be relocated to the site.

My firm prepared a Traffic Engineering Assessment report (ref 15152R9670 dated 28 August 2014) that accompanied the application for a rezoning of the subject land.

In the course of preparing this statement, I have inspected the subject site, reviewed development plans and background material, and assessed the car parking and traffic impacts of the proposed amendment.

My qualifications and experience to undertake the following assessment are set out in Appendix A.

2 Background

Amendment C185, prepared by City of Ballarat at the request of RLX Investment Company Pty Ltd, proposes to rezone *“the land from Farming Zone to Special Use Zone (Schedule 15) to allow the establishment of a regional livestock exchange (saleyard)”*.

The proposed Special Use Zone Schedule 15 requires the completion of a Development Plan before the use can commence.

In relation to car parking and traffic, the Development Plan must contain a Car Parking and Traffic Management Plan that addresses car parking and traffic matters, including traffic generation and distribution; vehicle access; internal road layout; car parking provision; heavy vehicle truck routes; and loading arrangements.

The Amendment was placed on Public Exhibition for five weeks in February and March 2015.

A number of submissions have been received, with some concerned about traffic and in particular truck routes.

In a letter dated 18th March 2015, VicRoads provided comment on the proposed amendment, indicating that:

“Overall, VicRoads is not opposed to the proposed amendment C185 of the Ballarat Planning Scheme, however, changes should be made to Schedule 15 to the Special Use Zone, under Clause 2 to include:

Requirement for Development Plan

- *The Development Plan must be submitted to VicRoads for review and comments.*

Site Layout Plan

- *Access arrangements on Sunraysia Highway.*

Car Parking and Traffic Management Plan

- *One access point on Sunraysia Highway away from the Western Freeway interchange is permitted and access arrangement must be constructed to the satisfaction of VicRoads.*
- *Any other potential desired traffic route needs to be identified for vehicular movements from the region to the north east of the Saleyard (such as to or from Ballarat Maryborough Road to the Saleyard), including likely impact to road and intersections.*
- *A Road Safety Audit report (RSA) needs to be undertaken for the southbound traffic on Sunraysia Highway heading to Western Freeway westbound via the interchange and the findings of the report must be implemented.”*

Following the Directions Hearing, which was held on 18 May 2015, Planning Panels Victoria issued Panel Directions, identifying that information must be supplied to address the following item relating to traffic engineering matters:

“The traffic impacts on the surrounding local road network including roads in Miners Rest, the proposed heavy vehicle management plan and the access/egress design to cater for trucks including B-Doubles”

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My firm prepared correspondence dated 13 May 2015 to address VicRoads matters raised within its submission. This correspondence was forwarded to VicRoads on 18 May 2015 by Harwood Andrews, and is attached as Appendix B.

VicRoads has reviewed the material and is now requiring the installation of a vehicle activated advisory speed sign on the west bound on-ramp of the Western Freeway at Sunraysia Highway. VicRoads has also asked for improvement works at intersections of Sunraysia Highway and Ballarat-Maryborough Road that form part of the proposed diversion route.

An assessment of the proposal against these items is provided within the following report.

3 Subject Site

The subject site is located at the north western corner of the Western Highway and Sunraysia Highway intersection in Miners Rest, as shown in the locality plan in Figure 1.

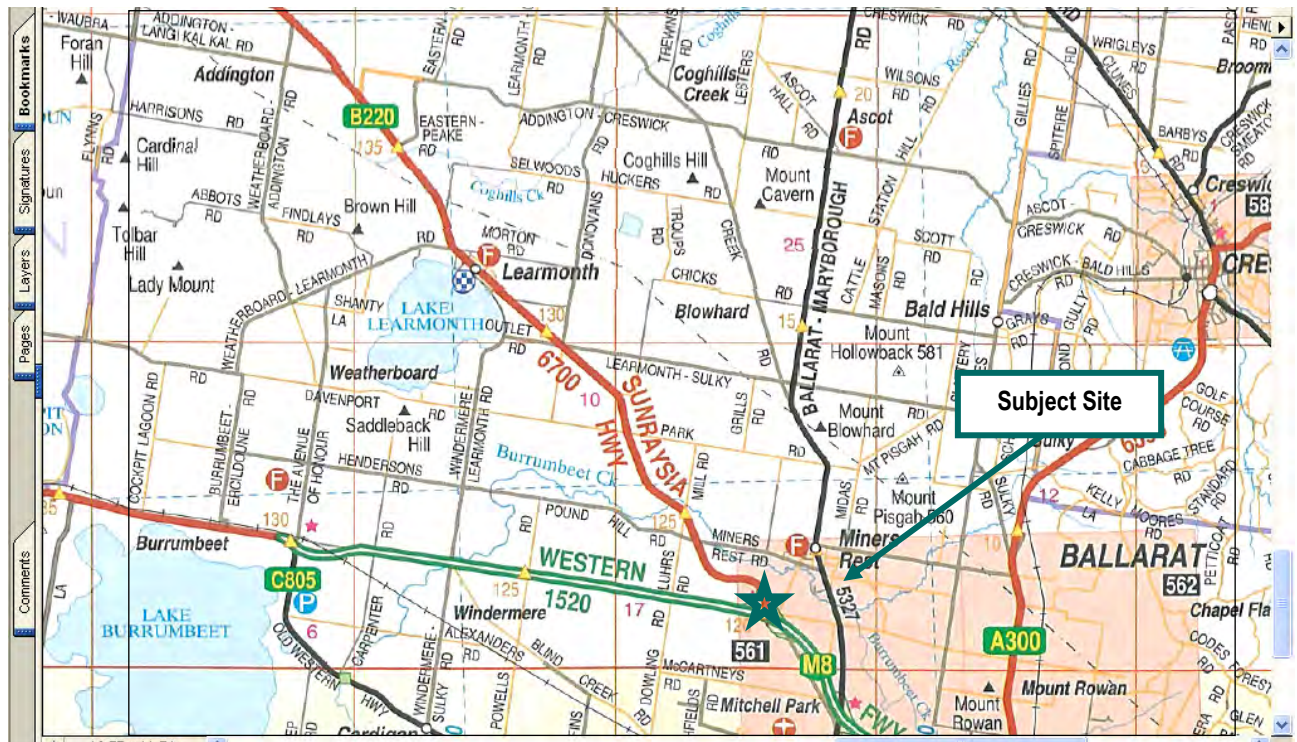


Figure 1: Locality Plan

The subject site is currently used for grazing and has an area of approximately 46 hectares. It is situated within a Farming Zone (FZ) under the Ballarat Planning Scheme, as shown in Figure 2.

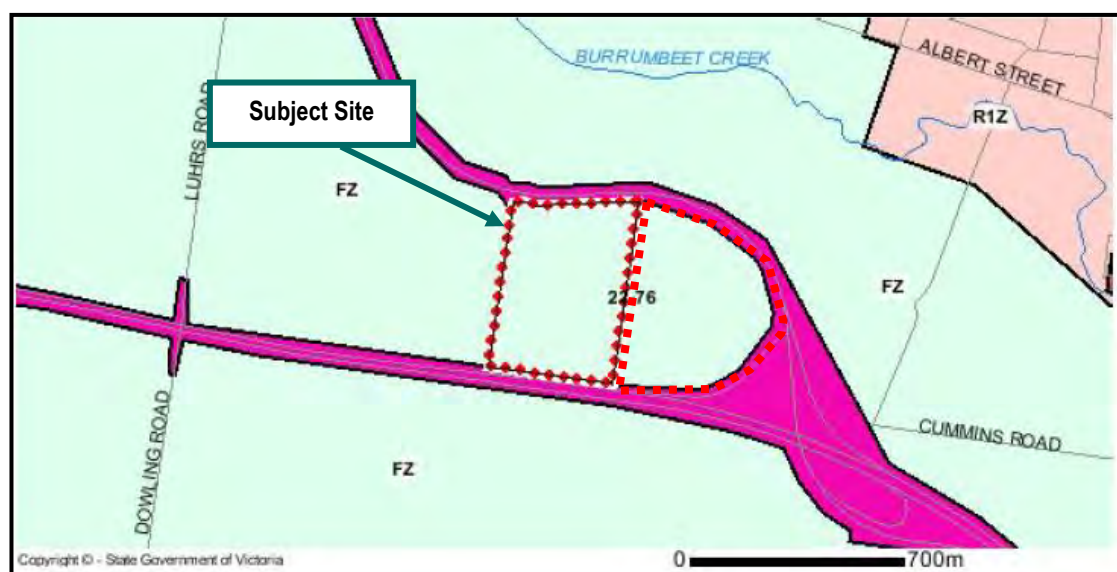


Figure 2: Planning Scheme Zone Map

Existing land use surrounding the subject site is predominantly farming related. The Miners Rest township is approximately one kilometre to the north west.

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An aerial photograph of the site is shown in Figure 3.



Figure 3: Aerial Photograph

4 Amendment C185 Proposal

4.1 Existing Ballarat Livestock Selling Centre

The existing Ballarat Livestock Selling Centre is located in the suburb of Delacombe to the south-west of Ballarat, and is bound by Latrobe Street, Learmonth Street, Winter Street and Brazenor Street, as shown in Figure 4.

Weekly sales are held for sheep/lambs, fat cattle and pigs, whereas store cattle sales are held once a month. Horse sales are less frequent, at around five (5) per year.



Figure 4: Existing Livestock Exchange Location

4.2 Proposed Saleyards Site

Amendment C185 is for the site specific rezoning of the subject land for the purposes of a saleyard. In essence, it is intended to relocate the Ballarat Livestock Selling Centre located at Latrobe Street, Delacombe to the subject land to be the new Central Victoria Livestock Exchange.

A concept development plan prepared by Geolyse, dated 3 June 2015, is attached as Appendix C.

The Plan illustrates a single access to Sunraysia Highway towards the western boundary. Once within the site, the internal road circulates around the saleyard providing access to a separate cattle and sheep loading / unloading areas.

There is a main car parking area, a grass overflow parking area and a truck parking area. There is also a truck wash.

4.3 Proposed Operation

I am instructed that unlike at the existing saleyards, there will be no pig or horse sales at the new site.

The relocated saleyards will operate in a similar manner to the existing saleyards in that fat cattle sales will occur weekly on Mondays, sheep sales will occur weekly on Tuesdays and store cattle sales will occur approximately monthly on a Friday.

The majority of sheep and cattle are transported to the site the afternoon prior to the sale, and are transported from the site the afternoon of the sale.

The CVLX is estimated to have an annual throughput in the order of 78,000 cattle and 1.5 million sheep.

I have been provided with existing sales figures for the Ballarat Livestock Sales Centre for the period between May 2010 and May 2015. The median; 85th percentile and maximum sales for each of sheep, prime cattle and store cattle are summarised below.

- Sheep: Median sale of 24,934 sheep; 85th percentile sale of 39,058 sheep, and maximum sale of 58,643 sheep.
- Prime cattle: Median sale of 343 cattle; 85th percentile sale of 555 cattle, and maximum sale of 1,211 cattle.
- Store cattle: Median sale of 3,024 cattle; 85th percentile sale of 3,940 cattle, and maximum sale of 5,019 cattle.

5 Traffic Considerations

5.1 Immediate Road Network

Sunraysia Highway is a Road Zone Category 1 (RDZ1) under the Ballarat Planning Scheme and is under the control of VicRoads. Sunraysia Highway in the vicinity of the site is configured with an undivided carriageway, which generally accommodates a single lane of through traffic and a sealed shoulder in each direction.

Sunraysia Highway is aligned in a north westerly direction from Western Freeway travelling through to Mildura (via the Calder Freeway).

A speed limit of 100 km/h applies to Sunraysia Highway.

Sunraysia Highway is shown in Figure 5, and Figure 6.



Figure 5: Sunraysia Highway - view north-west



Figure 6: Sunraysia Highway - view south-east

Western Highway is a Road Zone Category 1 (RDZ1) under the Ballarat Planning Scheme and is under the control of VicRoads. Western Highway runs along the southern boundary of the site and is configured with a divided carriageway, which accommodates two lanes of through traffic and sealed shoulders in each direction of travel. East of its intersection with Sunraysia Highway, Western Highway continues as the Western Freeway.

Western Highway connects to Sunraysia Highway via two on-ramps. A speed limit of 110 km/h currently applies to Western Highway.

Western Highway is shown in Figure 7 and Figure 8.

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Figure 7: Western Highway - view east



Figure 8: Western Highway - view west

5.2 Regional Road Network

The proposed development will draw traffic from around the broader regional area. The regional road network is shown in Figure 9 which demonstrates the radial nature of the State Highway system, with Western Highway, Western Freeway, Sunraysia Highway, Glenelg Highway and Midland Highway all leading to Ballarat. These roads generally comprise “M”, “A” and “B” class roads, defined as follows:

- “M” roads provide the primary road links that connect Melbourne and the major provincial centres. They are the highest quality divided roads with generally four lanes, good linemarking, delineation and sealed shoulders.
- “A” roads have a similar role to M roads. They are generally two lane undivided roads with good linemarking and delineation, sealed shoulders and reasonable overtaking opportunities.
- “B” roads provide the major link between regions not served by A roads, and are highly significant tourist roads. They are generally two-lane undivided roads with good linemarking and delineation.

These roads have been highlighted in Figure 9 which also shows, amongst others, the Main Road system of this section of regional Victoria. This system provides “cross country” connections between towns and generally comprises “C” class roads, defined as follows:

- “C” roads provide important links between Victoria’s rural towns, and are generally two-lane sealed undivided roads.
- M, A, B, and C roads are under the control of VicRoads.

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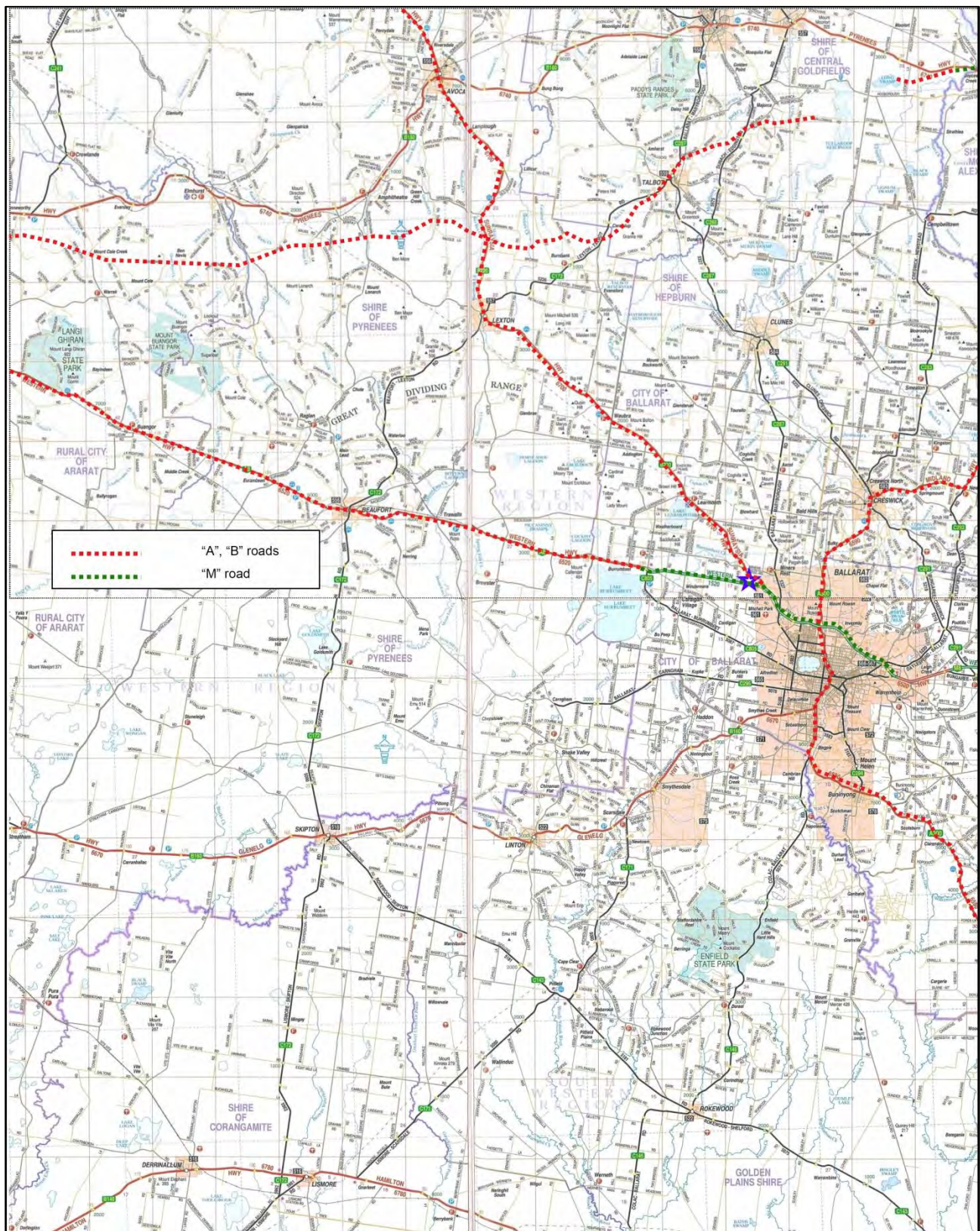


Figure 9: Regional Road Network Classifications

5.3 Existing Traffic Volumes

I have sourced traffic volumes recorded by VicRoads along Sunraysia Highway.

The most recent count was completed to the north of the Western Freeway ramps, in the vicinity of the site. The traffic count was completed over the 7 day period of Wednesday 20th November to Tuesday 26th November, 2013.

A summary of the survey results is presented in Table 1.

Table 1: Sunraysia Highway: Summary of Traffic Characteristics

Traffic Characteristic	Southbound	Northbound	Two-way
Traffic Volumes			
24 Hour Weekday Average (All Vehicles)	738	792	1,530
24 Hour Weekday Average (Trucks)	188 (25.5%)	188 (23.7%)	376 (24.6%)
AM Peak Hour Weekday Volume (All Vehicles): 8-9am	66	46	112
PM Peak Hour Weekday Volume (All Vehicles): 4-5pm	62	76	138
24 Hour Saturday (All Vehicles)	658	642	1,300
24 Hour Saturday (Trucks)	94 (14.3%)	90 (14.0%)	184 (14.2%)
24 Hour Sunday (All Vehicles)	766	619	1,385
24 Hour Sunday (Trucks)	135 (17.6%)	88 (14.2%)	223 (16.1%)

The data indicates that on a typical weekday, Sunraysia Highway has a two-way volume of 1,530 vehicles per day, with 112 vehicles in the AM peak (8-9am) and 138 vehicles in the PM peak hour (4-5pm). Traffic volumes on the weekends are lower, with 1,300 vehicles recorded on the Saturday and 1,385 vehicles per day recorded on the Sunday.

This level of daily traffic is relatively low for a declared state highway and category 1 Road Zone.

Figure 10 demonstrates the pattern of traffic volumes throughout a typical weekday. A discernible AM and PM peak period can be identified within the weekday average volumes at 8am-9am and 4pm-5pm, respectively.

The predominant movement in the AM peak is the southbound direction (towards the Ballarat Town Centre), while in the PM peak it is in the northbound direction (away from the Ballarat Town Centre).

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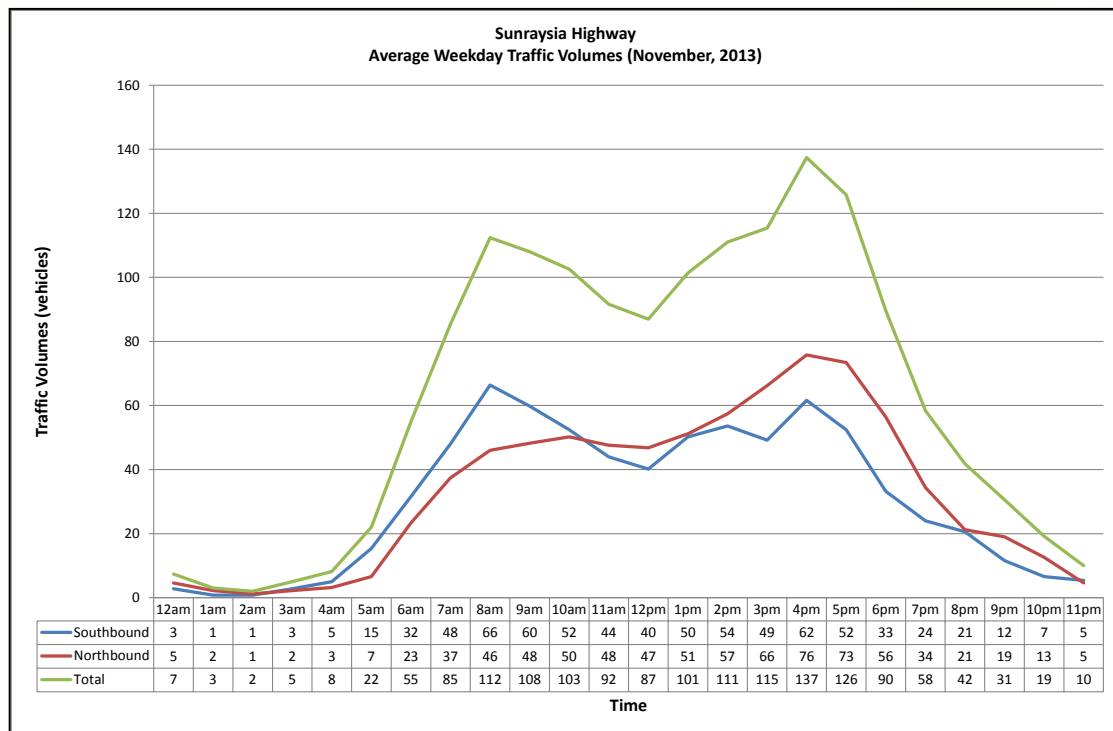


Figure 10: Sunraysia Highway – Weekday Average Traffic Volumes

5.4 Expected Traffic Generation (Peak)

I am instructed that the monthly store cattle sales are typically the most well attended event in relation to buyers and patrons.

To understand traffic associated with a typical sale, I have sourced traffic surveys undertaken at the Northern Victoria Livestock Exchange in March 2010 for a cattle sale. The survey recorded vehicle movements 3:15pm – 10:30pm on the 3rd of March (day before sale) and 6am – 3pm on the 4th of March (day of the sale).

On the day of the sale there were 2,800 cattle yarded, which is relatively close to the median store cattle sale of 3,024 of the existing Ballarat Saleyard.

The survey recorded peak hour traffic volumes in the order of 150 vehicles between 10am and 11am and in the order of 130 vehicles between 1pm and 2pm (of which 10-15% were trucks). These peak hours represent the highest volume of traffic associated with the arrival and departure of agents / patrons etc. attending the sale event.

I note that the recorded peak periods do not correspond with the AM and PM peak periods of Sunraysia Highway.

Whilst the number of patrons / buyers is likely to increase for a larger store cattle event, it is not a direct linear relationship.

In this regard, to provide a conservative assessment, I will adopt a peak hour traffic generation of 200 vehicle movements.

5.5 Traffic Distribution

CVLX has provided detailed data which shows the distribution of existing sheep and cattle vendors and buyers across the state. This has enabled likely routes to and from the site, particularly for heavy vehicles, to be determined.

The predicted traffic distribution and traffic volumes are based on the following assumptions:

- A directional split of 85% to / from the east, and 15% to / from the west along Sunraysia Highway.
- During the 10-11am arrival period, a split comprising 90% arrivals and 10% departures.
- During the 1pm-2pm departure period, a split comprising 10% arrivals and 90% departures.

It is typical for accesses to be designed to operate for a 10 year period. Therefore, a 2% compounded growth rate has been applied to traffic volumes on Sunraysia Highway to establish a 2024 design volume.

The projected post development peak hour volumes are illustrated in Figure 11.

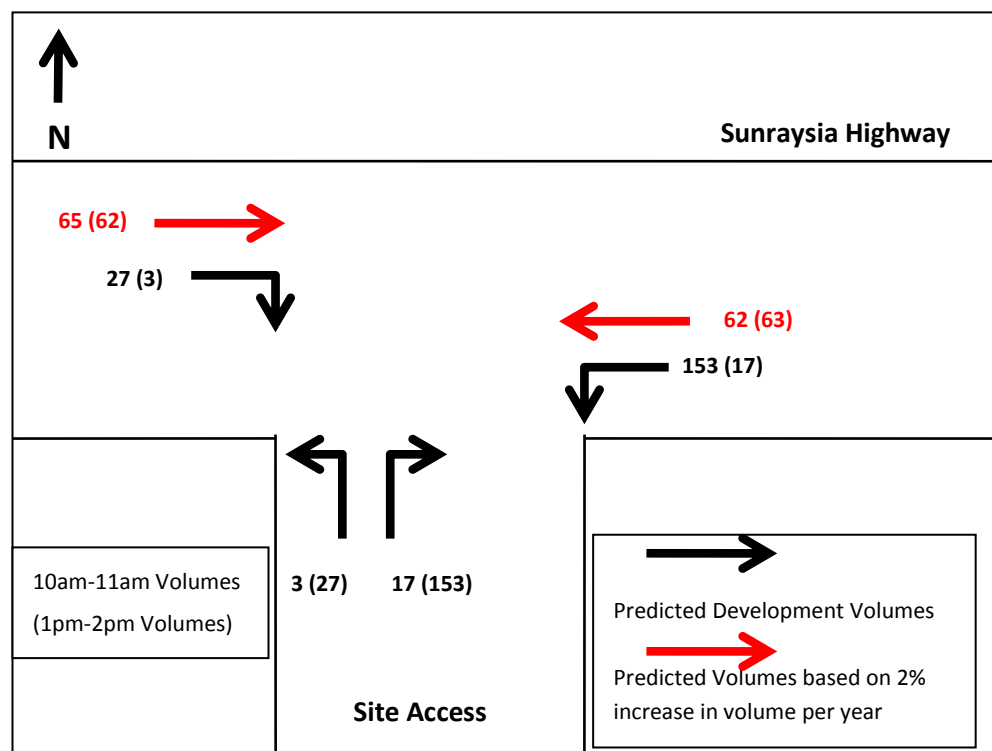


Figure 11: Predicted Tuesday Post-Development Traffic Volumes

5.6 Proposed Site Access Arrangements

The proposed site access location has been selected to maximise the available sight distance.

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VicRoads advises to adopt a design speed of 10km/h over the posted speed limit for high speed rural roads and therefore a design speed of 110km/h is applicable for Sunraysia Highway. AustRoads Guide to Road Design Part 4A specifies a Safe Intersection Sight Distance requirement of 300 metres for cars and 332 metres for trucks (based on a 2.5s reaction time). I am satisfied that this sight distance is available in both directions at the proposed access.

Based on the post development traffic volumes, AustRoads Guide to Road Design Part 4A at Figure 4.9 recommends localised widening of the Sunraysia Highway to accommodate a channelised short right turn lane (CHR(S)), and a basic left turn lane (BAL).

However, given the projected levels of left turning traffic, inclusive of commercial vehicles, it is recommended the requirement for a basic left turn lane is upgraded to a short auxiliary left turn lane (AUL(S)).

My firm has prepared an Access Concept Layout Plan, attached at Appendix D to demonstrate the works required to provide these turn treatments. Also included at Appendix D are swept path diagrams for B-double vehicles at the access.

This plan has been presented to VicRoads.

5.7 Traffic Impact

An assessment of the performance of the proposed site access has been undertaken using SIDRA Intersection. The intersection capacity analysis allows estimation of key operating parameters such as intersection degree of saturation (DoS), 95th percentile queue lengths, and average delay which are described below:

- Degree of Saturation (DoS) – measure of intersection performance expressed as a ratio of demand/capacity. A DOS greater than 0.90 is generally regarded as unsatisfactory for a un-signalised intersection, see below:

Level of Service		Intersection Degree of Saturation	
Level of Service		Unsignalised Intersection	Signalised Intersection
A	Excellent	<= 0.60	<= 0.60
B	Very Good	0.60 – 0.70	0.60 – 0.70
C	Good	0.70 – 0.80	0.70 – 0.90
D	Acceptable	0.80 – 0.90	0.90 – 0.95
E	Poor	0.90 – 1.00	0.95 – 1.00
F	Very Poor	>= 1.0	>= 1.0

- 95th Percentile Queue Length (m) – one car represents a 7m queue.
- Average delay - no. of seconds delayed.

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The critical gaps and follow up gaps for each movement which have been adopted within the Sidra analysis are provided in Table 2. These allow for greater gaps than would be assumed for light vehicle traffic, to minimise the impacts on through traffic along Sunraysia Highway.

Table 2: Critical Gaps and Follow up Gaps Adopted for Sidra Analysis

Movement	Critical Gap	Follow up Gap	Source
Right turn into site access from Sunraysia Hwy	4.5s	2.5s	Sidra Default settings, which are higher than Austroads (AGRD Pt 4A) recommended gaps
Left turn into Sunraysia Hwy from site access	14s	3s	Required by Austroads (AGRD Pt 4A) in order for exiting vehicles to not interfere with vehicles on Sunraysia Highway
Right turn into Sunraysia Hwy from site access	14s	3s	Required by Austroads (AGRD Pt 4A) in order for exiting vehicles to not interfere with vehicles on Sunraysia Highway

The results of the Sidra analysis are summarised in Table 3, and demonstrate that the proposed access will provide for convenient access to / from the site, with no material impact to the operation of the Sunraysia Highway.

Table 3: SIDRA Summary - Proposed Access Arrangements

Peak	Leg	Movement	DoS	Av. Delay	95 th %ile queue
AM Peak	Site Access (S)	L	0.05	22	3
		R	0.05	22	3
	Sunraysia Hwy East	L	0.09	14	0
		T	0.04	0	0
	Sunraysia Hwy West	T	0.04	0	0
		R	0.03	15	1
PM Peak	Site Access (S)	L	0.30	17	27
		R	0.30	17	27
	Sunraysia Hwy East	L	0.01	14	0
		T	0.04	0	0
	Sunraysia Hwy West	T	0.04	0	0
		R	0.03	15	1

5.8 Regional Traffic Impacts

A number of submitters have raised concerns with the volume of truck traffic.

In order to understand truck movements associated with the proposal, my firm reviewed heavy vehicle data collected at the existing BLSC site in July, 2014. The surveys undertaken included:

- Store Cattle Sale: unload between 12-6pm on Thursday, 17th July, 2014 and load between 12-7pm on Friday, 18th July, 2014.
- Prime Cattle Sale: unload between 1pm to 6pm on Sunday 6th July, 2014 and load between 7am-2pm on Monday, 7th July, 2014.
- Sheep Sale: unload between 3pm to 10pm on Monday 14th July, 2014 and load between 9am and 4pm Tuesday, 15th July, 2014.

The survey times recorded the large majority of trucks, however a small amount of trucks would have unloaded or loaded outside of the survey period.

A full breakdown of truck and sales volumes are provided at Appendix E. This includes a breakdown of the heavy vehicle types and also a profile over the time of day.

Given that prime cattle sale occurs on a Monday, and sheep begin arriving for the Tuesday sale on the Monday afternoon, Monday represents the overall peak commercial vehicle activity day.

For the Monday of the survey period, there were 376 prime cattle yarded and 12,629 sheep yarded. The prime cattle sale was above the median cattle sale (343 cattle), however the sheep sale was relatively small (median sheep sale of 24,934).

It is typical to design for the 85th percentile event. To this end, I have factored the recorded truck volumes based on the survey sales data compared to the 85th percentile sales data. However, BLSC advises that during the low season, trucks are generally not loaded to capacity. Therefore, during the busier months and sales the loading of trucks increases, thereby increasing efficiency. As such, the 85th percentile factors have been reduced by 20% to reflect this situation.

Based on the foregoing, I have prepared a Heavy Vehicle profile for the 85th percentile sales event for a Monday (7am – 10pm), illustrated as Figure 12.

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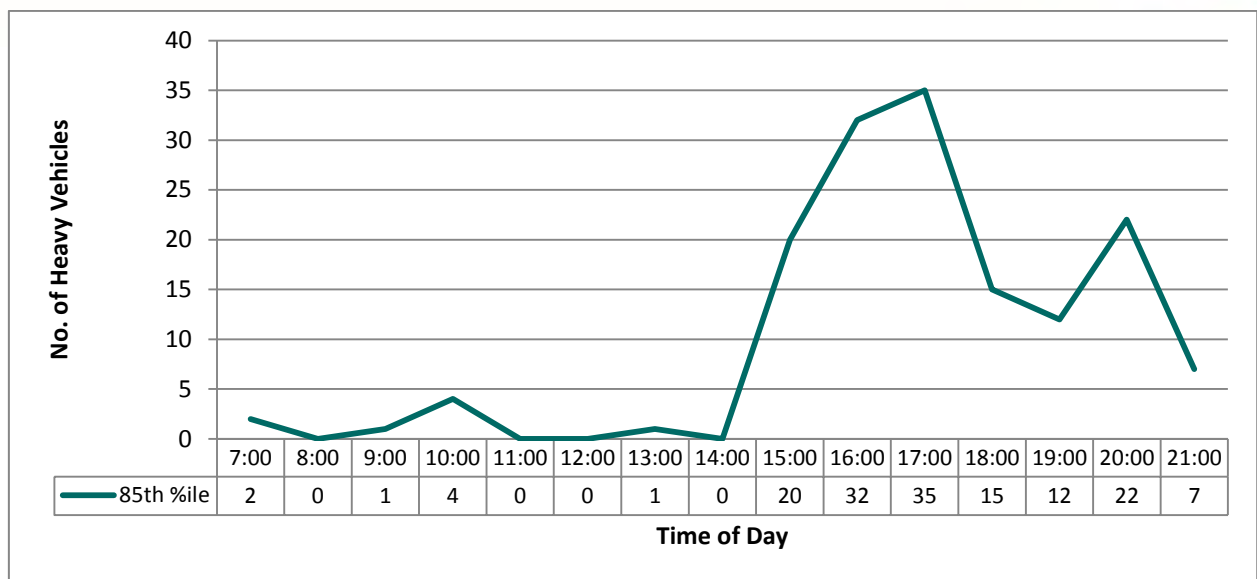


Figure 12: Anticipated Monday Heavy Vehicle Movement Profile – 85th Percentile Sales

The profile predicts a total of 151 heavy vehicles between the hours of 7am and 10pm for a Monday (crossover of prime cattle load and sheep unload) associated with an 85th percentile sales event.

As noted previously, CVLX has provided my firm with detailed data which identifies the location of cattle and sheep vendors and buyers by sale size all over the state allowing the likely routes of stock to and from the site to be established.

The data reveals that both vendors and buyers are located broadly throughout Victoria, and there is a relatively small percentage of locally generated traffic. In this regard, the majority of traffic is likely to be attracted to the primary roads, being the Western Highway to generally head east and west, and the Midland Highway (via the Western Highway) to head north or south.

Similarly, more locally generated traffic to the south, west and east is likely to use the Western Highway or Sunraysia Highway.

To the north-east, to towns such as Creswick, it is my view that commercial traffic is more likely to use the Midland Highway rather than Ballarat-Maryborough Road as there is no convenient arterial east-west route.

To the north, local traffic from towns such as Blowhard, Clunes, Talbot and Maryborough may be attracted to use the Ballarat-Maryborough Road travelling through the town of Miners Rest to access and egress the site.

I understand, despite the designation of the road (being an 'A' road), that the local Miners Rest community is concerned with commercial vehicle traffic travelling through the township.

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To estimate the locally generated traffic to the north, I have used the historical vendor and buyer data provided by CLVX. The data reveals the following percentages immediately to the north:

- Sheep vendors: 3.89%
- Sheep buyers: none
- Cattle vendors: 4.87%
- Cattle buyers: 0.31%

Applying these percentages to the anticipated 85th percentile sale of stock results in the following heavy vehicle numbers (excludes deliveries made by utes and light vehicles with trailers attached):

- Sheep vendors: 3.89% of 144 heavy vehicles over a 3pm-10pm unload period weekly on a Monday equal to six (6) vehicles, or on average one vehicle an hour.
- Prime cattle vendors: 4.87% of 26 vehicles over a 1pm-6pm unload period weekly on a Sunday equal to a single vehicle over this period, and
- Store cattle vendors: 4.87% of 101 heavy vehicles over a 12pm-6pm unload period monthly on a Thursday equal to five (5) vehicles, or on average less than one vehicle an hour.

This level of traffic is relatively small and would make no material difference to the operation of Ballarat-Maryborough Road.

Furthermore, it is likely that the majority of the potential projected commercial vehicle volumes that may want to travel through Miners Rest would already utilise this route in accessing the existing Ballarat Livestock Sales Centre in Delacombe.

Notwithstanding my view, I have explored possible alternative routes to divert heavy vehicle traffic away from the Miners Rest township, and the applicant is willing to prepare a truck management plan (including a heavy vehicle driver induction) that encourages commercial vehicles to utilise an alternative route.

A potential diversion route is Sunraysia Highway to Learmonth-Sulky Road to Ballarat-Maryborough Road. This route is illustrated in Figure 13. It is noted that Walsh Quarry is located on Learmonth-Sulky Road, and to this end this road and its intersections with Sunraysia Highway and Ballarat-Maryborough Road are already accommodating large commercial vehicles.

I have travelled this route and am confident that it is accessible by B-Doubles.

To affirm the accessibility, my firm has prepared and attach B-Double swept paths (Appendix F) for the key intersections. The swept paths demonstrate accessibility, however B-Doubles are likely to traverse part of the splitter island on the west approach of the intersection of Learmonth-Sulky Road and Ballarat-Maryborough Road. To this end, it is recommended that part of the splitter island that is traversed should be reconstructed with mountable kerb to allow a B-Double to track over the splitter island when travelling from north to west.

I am satisfied that the diversion route, including the truck management plan, is an appropriate strategy to minimise heavy vehicle traffic through the Miners Rest township.

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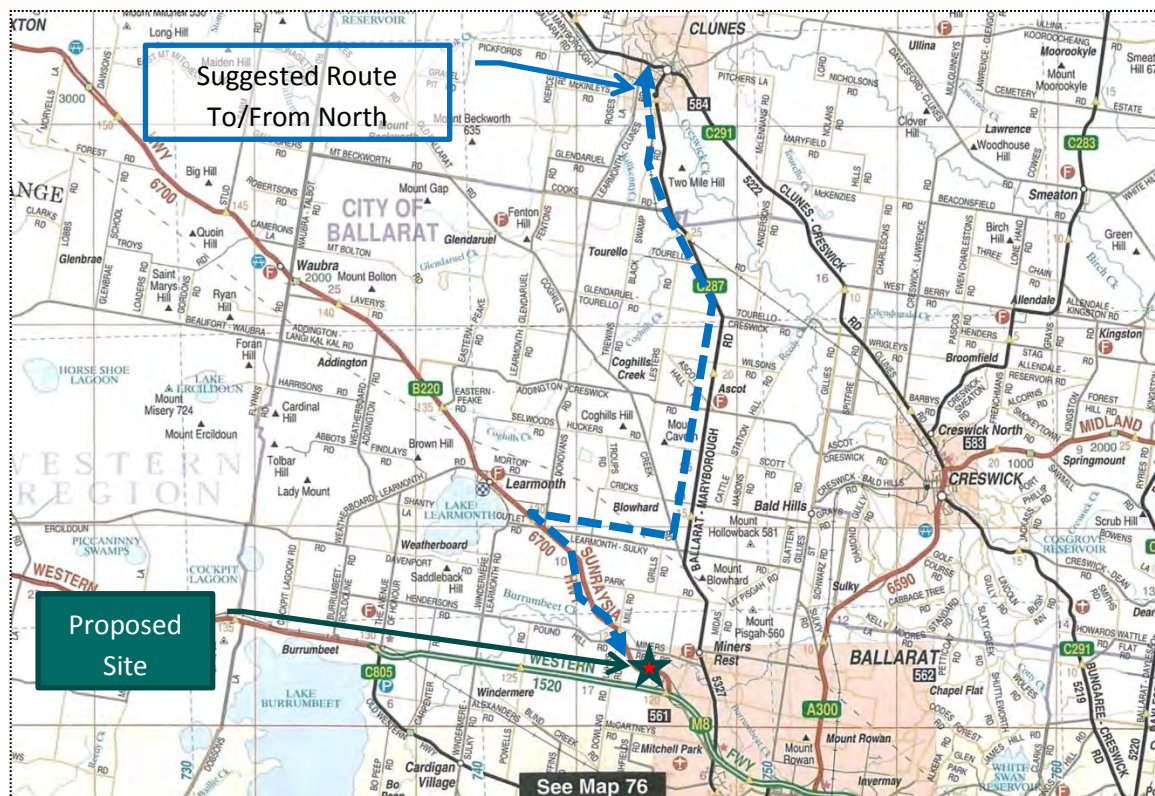


Figure 13: Site Truck Access Routes to/from North/North-East

5.9 Sunraysia Highway to Western Highway B-Double Movement

VicRoads has requested confirmation that the west bound on-ramp from Sunraysia Highway to Western Freeway, is accessible for B-Doubles.

This section of Sunraysia Highway provides a single linemarked traffic lane of approximately 4.0 metres width, set within a pavement of approximately 6.5 metres width. Advisory signage is present on approach to the turn advising vehicles to reduce speeds to 50 km/h as shown in Figure 14.



Image courtesy of Google Street View

Figure 14: Advisory Signage on approach to Turn (Sunraysia Highway)

Central Victorian Livestock Exchange (CVLX), Sunraysia Highway, Miners Rest
Amendment C185 to the Ballarat Planning Scheme : Statement to Planning Panels Victoria

Of particular note, this road has been gazetted for B-Doubles and is an approved access route under VicRoads' B-Double Network. Notwithstanding, my firm has prepared a swept path for a B-Double undertaking the movement on an aerial image in order to demonstrate the suitability of this route for B-Double access. The swept path is attached at Appendix G.

To further confirm B-Double accessibility, I observed a B-Double, organised by Central Victorian Livestock Exchange (the proponent) undertaking this movement on Tuesday 12th May 2015. I followed the B-Double in my vehicle and observed that the B-Double comfortably negotiated the access ramp in wet conditions and there were no concerns with the existing width, radii or superelevation of the road.

I do not believe any works, including the VicRoads requested vehicle activated advisory speed sign, are necessary for this route arising from the application.

6 Car Parking Considerations

6.1 Statutory Parking Requirements

The proposed use of the site falls within the land-use category of 'saleyard' under Clause 74 of the Planning Scheme. Table 1 at Clause 52.06-05 of the Planning Scheme specifies the applicable rate for this use, requiring 10% of the site area to be set aside for parking.

I have assumed that this requirement relates to the area of the site designated for saleyards. The area of the site allocated for saleyards is in the order of 20 hectares, and would therefore indicate a requirement for an area of 20,000 square metres to be available for parking.

The proposal sets aside approximately 13,000 square metres for car parking and truck parking (not including the circulatory road), and accordingly a partial waiver of the statutory car parking requirements is required.

Clause 52.06-3 of the Planning Scheme allows for the statutory car parking requirement to be reduced (including to zero).

Practice Note 22 (April 2013) specifies that the provisions draw a distinction between the assessment of likely demand for parking spaces, and whether it is appropriate to allow the supply of fewer car spaces. These are two (2) separate considerations, one technical while the other is more strategic. Different factors are taken into account in each consideration.

Accordingly, the Responsible Authority must be satisfied that the provision of car parking is appropriate on the basis of a two-step process which has regard to:

- The car parking demand (Car Parking Demand Assessment) likely to be generated by development.
- Whether it is appropriate to allow fewer spaces to be provided than the number likely to be generated by the use.

A discussion of these considerations is as follows.

6.2 Car Parking Demand Assessment

A previous application for the relocation of the BLSC to Learmonth recommended the provision of 240 car parking spaces and parking for approximately 30 trucks. This figure was derived from a review of parking survey data collected for various sale events at BLSC in August, 2005, as well as a review of the provision of parking at a number of saleyards across Victoria.

In addition to this, we have reviewed parking survey data collected to support the application for the relocation of the Northern Victoria Livestock Exchange in 2010.

6.2.1 Existing Ballarat Livestock Sales Centre

A series of parking occupancy surveys were completed of the existing Ballarat Livestock Selling Centre in Delacombe by Cardno (Grogan Richards).

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Surveys were completed for a single sheep sale, prime cattle sale and store cattle sale in August, 2005. Details of the sale date, number of head sold and peak parking demands are summarised as follows:

- Friday, 12th August, 2005: Peak parking demand of 234 vehicles for a monthly store cattle sale size of 3,092 cattle.
- Monday 15th August, 2005: Peak parking demand of 122 vehicles for a weekly prime cattle sale size of 122 cattle.
- Tuesday, 16th August, 2005: Peak parking demand of 140 vehicles for a weekly sheep sale size of 13,192 sheep.

It is noted that the above parked vehicle numbers include trucks. The Cardno (Grogan Richards) report states that in the order of 35-40 trucks were parked on site during the monthly store cattle sale i.e. around 200 cars and 35 trucks for a monthly store cattle sale size of 3,092 cattle.

6.2.2 Northern Livestock Exchange

Reference is made to a series of parking occupancy surveys which were completed of the existing Northern Victoria Livestock Exchange in its previous location in Whytes Road, Bandiana as part of a CPG (now SPIIRE) traffic assessment.

These surveys were completed at the following times:

- Wednesday 3rd March, 2010 between 3pm-10:30pm at 15 minute intervals, and
- Thursday 4th March, 2010 between 6am-3pm at 15 minute intervals.

The above times were chosen to cover the entire sale period for the 4th March, 2010 store cattle sale.

The Wednesday survey times correspond with times when cattle are delivered (receivables) to the livestock exchange. The Thursday survey times correspond with the remaining receivables, the sales times and the period over which the majority of buyers load vehicles for external deliveries.

The peak time for the surveys was recorded at 11am Thursday 4th March, 2010, where a total of 227 parked cars were observed on the site, which relates to a sale size of 2,800 store cattle. A maximum of 41 trucks was observed on the site at 12:30pm.

6.3 Appropriateness of Parking Provisions

From the parking survey results at the BLSC, it appears that the highest parking demands occurred during the monthly store cattle sale, when around 200 cars and 35 trucks were parked for a sale size of approximately 3,100 store cattle (median sale of 3,024 cattle).

The surveys undertaken at the former Bandiana exchange had parking demands during the monthly store cattle sale of 227 cars and 41 trucks for a sale size of 2,800 approx.

I do not expect that parking demands will have a direct linear relationship to the size of the sale, albeit I accept that larger sales would typically attract more parking. Nonetheless to provide a robust assessment, I have factored the recorded Ballarat parking demand for the monthly cattle sale to the 85th percentile sale (3,940 cattle), realising a projected car parking demand for 255 car spaces and 45 trucks.

Central Victorian Livestock Exchange (CVLX), Sunraysia Highway, Miners Rest

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The Concept Plan for the site identifies a Main Car Park area with an area of approximately 6,220 square metres with an additional grassed overflow car park area of some 2,500 square metres. At an average of 25 square metres per parking space (including aisle) I estimate these two areas could accommodate around 249 spaces within the Main Car Park and 100 spaces within the overflow area.

Therefore, I expect that car parking demands associated with an 85th percentile sales event will be largely accommodated in the main car park, and the grass overflow area would only be used for events larger than the 85th percentile sales event.

In relation to truck parking, the Concept Plan identifies an area of approximately 4,400 square metres, being an angled parking area of approximately 165 metres wide and a depth of approximately 38 metres.

Allowing for a width of 4.0 metres for each truck, I estimate this area could accommodate in the order of 40 trucks. The depth of the parking area will accommodate a B-double vehicle (at a length of 25 metres) and manoeuvring area in addition to the circulation roadway.

In addition to this, there is space for trucks to load and un-load at the cattle and sheep stores.

Consequently, I am comfortable that there is suitable provision for truck parking.

Based on the above assessment, I am of the view that a partial waiver of the statutory car parking requirements is justified.

7 Design Considerations

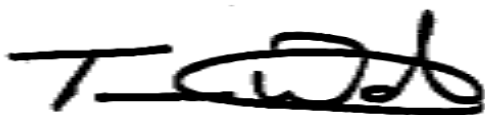
I have reviewed the Concept Layout Plan and have undertaken a review for B-double vehicle access and of the car parking areas and am satisfied that the proposed layout can appropriately accommodate the desired internal traffic movements.

8 Conclusions

Having undertaken a detailed traffic engineering assessment of proposed Amendment C185 and the relocation of the Ballarat Livestock Sales Centre to the Central Livestock Exchange site in Miners Rest, I am of the opinion that:

- a) The Concept Layout Plan prepared by my firm for the proposed site access works is appropriate and suitable to cater for B-double and other vehicle access to the site and should be constructed prior to the use of the site. The proposed access intersection is expected to operate under satisfactory conditions given the level of traffic expected to be generated to and from the site during the peak period.
- b) In consideration of the available regional network routes to / from the site, the level of heavy vehicle traffic generated through Miners Rest is expected to be very low in realistic terms, and is not expected to be materially different than the current use of this route resulting from the existing Ballarat Saleyard.
- c) Nonetheless, the proponent is willing to prepare a Traffic Management Plan that encourages heavy vehicles to use a diversion route via Sunraysia Highway to Learmonth-Sulky Road to Ballarat-Maryborough Road.
- d) To accommodate B-double vehicles along this route it is recommended improvements works are constructed at the intersection of Learmonth-Sulky Road and Ballarat-Maryborough Road to accommodate the B-double movement from north to west.
- e) I have reviewed the access route for a B-double travelling south-eastbound to westbound from Sunraysia Highway to Western Highway and note that the road has been gazetted for B-doubles and is an approved access route under VicRoads' B-Double Network. From my observations, a B-double can comfortably negotiate the access ramp in wet conditions and there are no concerns with the existing width, radii or superelevation of the road.
- f) A waiver of the car parking requirements under Clause 52.06 is justified.

I have made all the inquiries that I believe are desirable and appropriate and there are no matters of significance which I regard as relevant which, to the best of my knowledge, have been withheld from the Panel.



JASON WALSH
DIRECTOR
TRAFFIX GROUP
12 June 2015

Appendix A: Qualifications

Central Victorian Livestock Exchange (CVLX), Sunraysia Highway, Miners Rest
Amendment C185 to the Ballarat Planning Scheme : Statement to Planning Panels Victoria

Name

Jason Walsh - Director, Traffix Group Pty Ltd

Address

Suite 8, 431 Burke Road
GLEN IRIS
VICTORIA 3146

Qualifications

My educational qualifications and membership of professional associations are as follows:-

- Bachelor of Civil Engineering, Monash University
- Bachelor of Science, Monash University
- Member, Victorian Planning & Environmental Law Association

Experience

- I have approximately 20 years' experience in Traffic Engineering including,
- 1995-2000 at Turnbull Fenner (now Traffix Group), including short term placements at the cities of Bayside and Whittlesea,
- 2000-2011 at Grogan Richards Pty Ltd (now Cardno),
- 2011-present at Traffix Group.

Areas of Expertise

- Car parking and Traffic.
- Traffic advice and assessment of land uses and development proposals to planning authorities, government agencies, corporations and developers (including major residential, retail, food and drink, commercial, industrial, institutional and mixed use projects.
- Preparation and presentation of evidence before VCAT and Panels.

Expertise to Prepare this Assessment

My experience and expertise over the past 20 years, including involvement with varied forms of developments, qualifies me to comment on the traffic implications of the proposed development.

Instructions

I was retained by RLX Investment Company Pty Ltd to undertake a traffic engineering assessment and prepare an evidence statement for proposed Amendment C185 to the Ballarat Planning Scheme.

Central Victorian Livestock Exchange (CVLX), Sunraysia Highway, Miners Rest
Amendment C185 to the Ballarat Planning Scheme : Statement to Planning Panels Victoria

Facts, Matters and Assumptions Relied Upon

- Amendment C185 Documentation
- Council report of 10 December 2014.
- Spiire Planning Assessment of August 2014.
- Traffix Group Traffic Engineering assessment of 28 August 2014.
- VicRoads submission, dated 18th of March 2015.
- Traffix Group correspondence to VicRoads (Ref 15152L1), dated 13th of May 2015.
- Concept Plan 208120 prepared by Geolyse, Revision M dated 3 June 2015.
- Submissions.
- Council Report of 22 April 2015.
- Ballarat Planning Scheme.
- Site inspection, and
- Relevant experience.

Documents Taken into Account

See above.

Identity of Persons Undertaking Work

Jason Walsh as per the evidence statement.

Carlo Morello (Senior Traffic Engineer, Traffix Group) assisted with preparation of the evidence report

Summary of Opinions

See Conclusions section of the evidence statement.

Appendix B: Traffix Group Correspondence to VicRoads dated 13 May 2015

Our Reference: 15152L1

13 May 2015

Harwood Andrews
PO Box 633 Collins Street West
MELBOURNE VIC 8007

Attention: Mr Greg Tobin

Traffix Group Pty Ltd
ABN 32 100 481 570

Address
Suite 8, 431 Burke Road
Glen Iris Victoria 3146

Contact
Telephone 03 9822 2888
Facsimile 03 9822 7444
admin@traffixgroup.com.au
www.traffixgroup.com.au

Dear Greg,

BALLARAT PLANNING SCHEME AMENDMENT C185 CENTRAL LIVESTOCK EXCHANGE PROPOSED SALEYARDS – MINERS REST

Further to our discussions regarding the proposed Central Livestock exchange, I have now had an opportunity to review VicRoads correspondence of 18 March 2015 and understand that Harwood Andrews has had further discussions with VicRoads.

I understand from these discussions that VicRoads is seeking:

- A Concept plan of the proposed access to Sunraysia Highway.
- A traffic engineering review of B-Double accessibility of the Sunraysia Highway west bound interchange with the Western Highway.
- Assessment of an alternative route for north east bound traffic to bypass Miners Rest.

I am pleased to provide the following correspondence relating to VicRoads' requests. This correspondence should be read in conjunction with the Traffic Engineering Assessment prepared by Traffix Group (Ref 15152R9670 dated 28 August 2014) supporting the above application.

Concept Access Plan

The development proposes to take access to Sunraysia Highway towards the western site boundary.

Sunraysia Highway, in the vicinity of the site, has a posted speed limit of 100 km/h and is configured with an undivided carriageway, which generally accommodates a single lane of through traffic and a sealed shoulder in each direction.

Traffic volume data collected by Traffix Group (provided within the Traffix report) indicates that on a typical weekday, Sunraysia Highway carries in the order of 1,530 vehicles per day, with 112 vehicles in the AM peak (8-9am) and 138 vehicles in the PM peak hour (4-5pm).

It has conservatively been assumed that the weekly sheep sale will generate a peak hour volume of 200 vehicles in each of the entry and exit peak periods, inclusive of 10% commercial vehicles.

To allow for 10 year operation of the access, a 2% compounded growth rate has been applied to existing traffic volumes on Sunraysia Highway to provide design for volumes for 2024. The projected post development peak hour volumes illustrated in Figure 1 have been adopted in determining appropriate access arrangements.

Based on the post development traffic volumes, AustRoads Guide to Road Design Part 4A at Figure 4.9 recommends localised widening of the Sunraysia Highway to accommodate a channelised short right turn lane (CHR(S)), and a basic left turn lane (BAL).

However, given the projected levels of left turning traffic, inclusive of commercial vehicles, it is recommended the requirement for a basic left turn lane is upgraded to a short auxiliary left turn lane (AUL(S)).

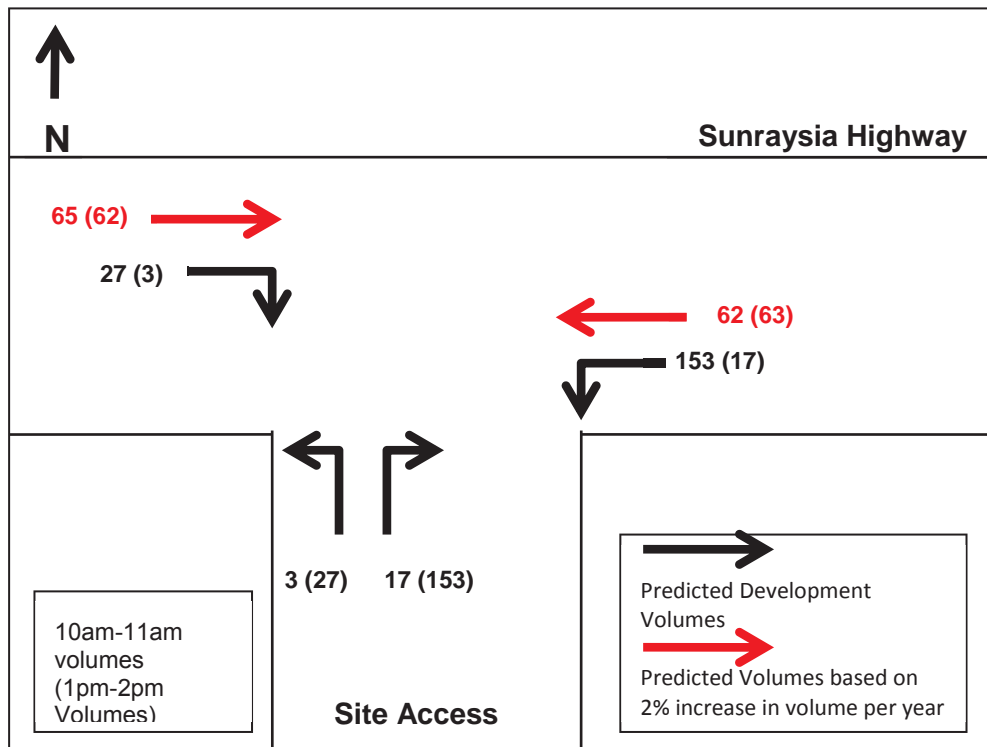


Figure 1: Predicted Tuesday Post-Development Traffic Volumes

Based on these requirements, a design speed of 110km/h and a B-double design vehicle, Traffix Group has prepared the attached Concept Plan (provided at Appendix A) detailing the proposed access arrangements for the site for VicRoads' review and approval.

Swept path diagrams showing access for B-Doubles is also provided at Appendix A.

Sunraysia Highway to Western Freeway (west) On Ramp

This section of Sunraysia Highway provides a single linemarked traffic lane of approximately 4.0 metres width, set within a pavement of approximately 6.5 metres width. Advisory signage is present on approach to the turn advising vehicles to reduce speeds to 50 km/h as shown in **Figure 2**.



Figure 2: Advisory Signage on approach to Turn (Sunraysia Highway)

Of particular note, this road has been gazetted for B-Doubles and is an approved access route under VicRoads' B-Double Network. Notwithstanding, my firm has prepared a swept path for a B-Double undertaking the movement on an aerial image in order to demonstrate the suitability of this route for B-Double access.

The swept path is attached at Appendix B.

To further confirm B-Double accessibility, I observed a B-Double, organised by Central Livestock Exchange (the applicant) undertaking this movement on Tuesday 12th May 2015. I followed the B-Double in my vehicle and observed that the B-Double comfortably negotiated the access ramp in wet conditions and there were no concerns with the existing width, radii or superelevation of the road.

Alternative Access Route

Detailed data was sourced as part of the application and provided within the Traffix report to identify likely routes of stock to and from the site. The data reveals that the majority of traffic is likely to be attracted to the primary roads, being the Western Highway to generally head east and west, and the Midland Highway (via the Western Highway) to head north or south.

More locally generated traffic to the south, west and east is likely to use the Western Highway or Sunraysia Highway.

To the north east to towns such as Creswick, it is my view that commercial traffic is more likely to use the Midland Highway rather than Ballarat-Maryborough Road as there is no convenient arterial east-west route.

To the north, local traffic from towns such as Blowhard, Clunes, Talbot and Maryborough may be attracted to use the Ballarat-Maryborough Road travelling through the town of Miners Rest to access and egress the site. It was projected in the report that there would be no more than seven (7) vehicles within a seven (7) hour period for the 85th percentile sheep sale wishing to use Ballarat-Maryborough Road through Miners Rest.

Furthermore, it is expected that the majority of the potential projected commercial vehicle volumes that may want to travel through Miners Rest would already utilise this route in accessing the existing Livestock Exchange in Ballarat.

Whilst I expect that the number of vehicles going to / from the north through Miners Rest will be low, the applicant is willing to prepare a management plan that encourages commercial vehicles to utilise an alternative route, including the provision of signage, to the satisfaction of VicRoads.

A potential diversion route is Sunraysia Highway to Learmonth-Sulky Road to Ballarat-Maryborough Road. This route is illustrated in Figure 3. It is noted that Walsh Quarry is located on Learmonth-Sulky Road, and to this end this road and its intersections with Sunraysia Highway and Ballarat-Maryborough Road are already accommodating large commercial vehicles.

I have travelled this route and am confident that it is accessible by B-Doubles. To affirm the accessibility, my firm has prepared and attach B-Double swept paths (Appendix C) for the key intersections. The swept paths demonstrate accessibility, however it is recommended that part of the splitter island on the west approach of the intersection of Learmonth-Sulky Road and Ballarat-Maryborough Road is converted to mountable kerb to allow a B-Double to track over the splitter island when travelling from north to west.



Figure 3: Site Truck Access Routes to/from North/North-East

I trust this information is of assistance and satisfies VicRoads' requirements. Should you require anything further, please don't hesitate to contact the undersigned.

Yours faithfully,

TRAFFIX GROUP PTY LTD

JASON WALSH

Director

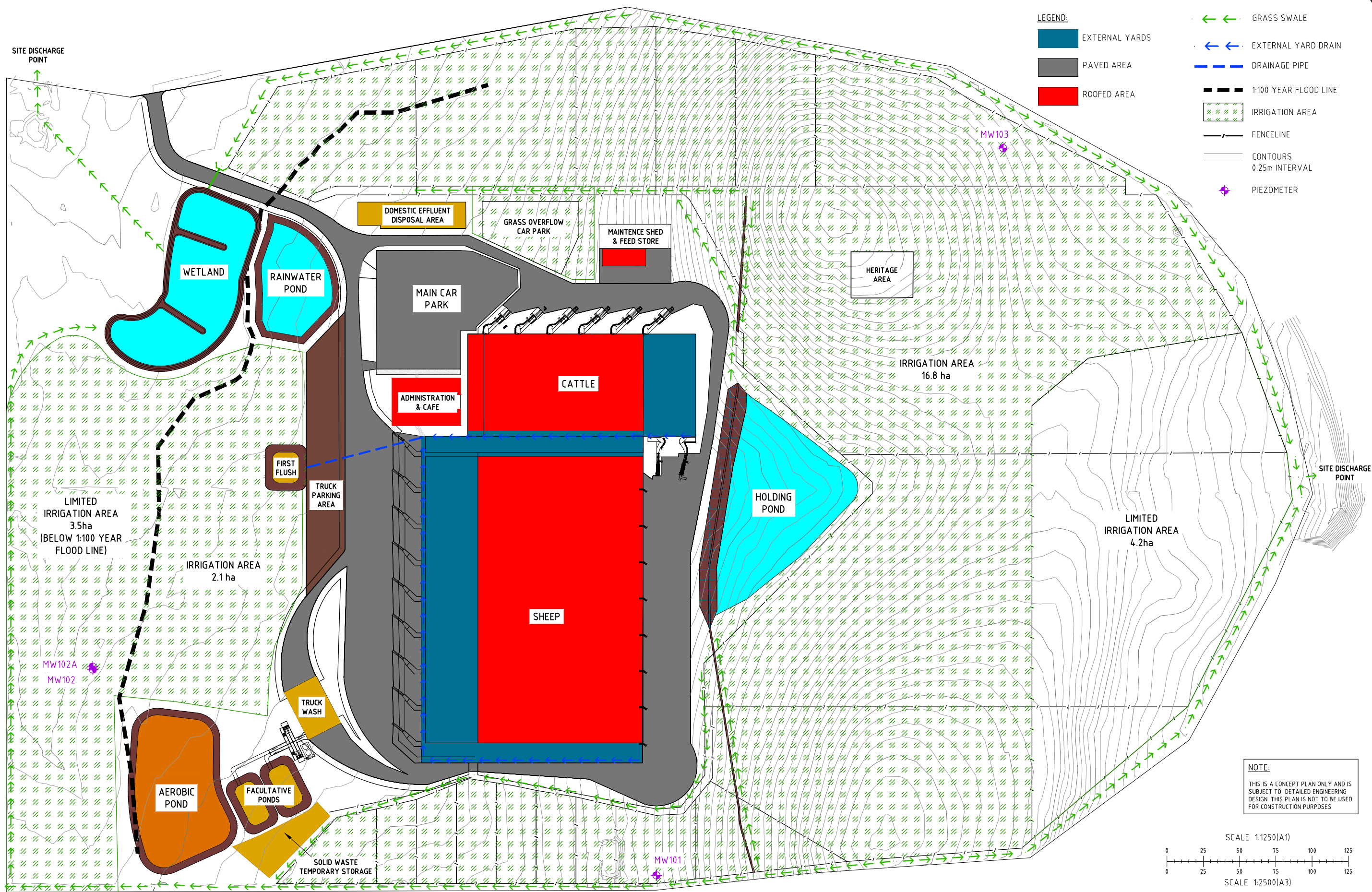
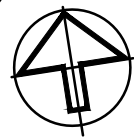
www.traffixgroup.com.au

Enc: Appendix A: Concept Access Plan

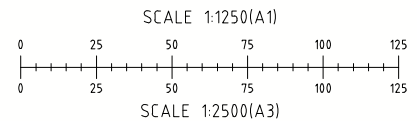
Appendix B: Sunraysia Highway West Bound On-Ramp - B-Double Swept Path

Appendix C: Alternative Access Route Swept Paths

Appendix C: Geolyse Proposal Concept Plan



NOTE:
THIS IS A CONCEPT PLAN ONLY AND IS
SUBJECT TO DETAILED ENGINEERING
DESIGN. THIS PLAN IS NOT TO BE USED
FOR CONSTRUCTION PURPOSES



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154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
Ph. (02) 6393 5000
Fx. (02) 6393 5050

No	DATE	DRAFTING CHECK	APPROVED BY	DETAILS
H	13/01/15	MDH	MDH	REVISED LAYOUT
I	11/05/15	MDH	MDH	REVISED 1% AEP FLOOD LINE
J	12/05/15	MDH	MDH	ADJUSTED RAINWATER POND
K	24/05/15	BH	MDH	ADJUSTED SITE LAYOUT
L	28/05/15	MDH	MDH	ADJUSTED IRRIGATION AREA
M	03/06/15	BH	MDH	ADJUSTED AREAS

PROJECT
CENTRAL VICTORIA LIVESTOCK EXCHANGE
FILE REFERENCE: 208120_01M_EV01-EV03.dwg



APPROVAL AUTHORITY
EPA VICTORIA
CITY OF BALLARAT

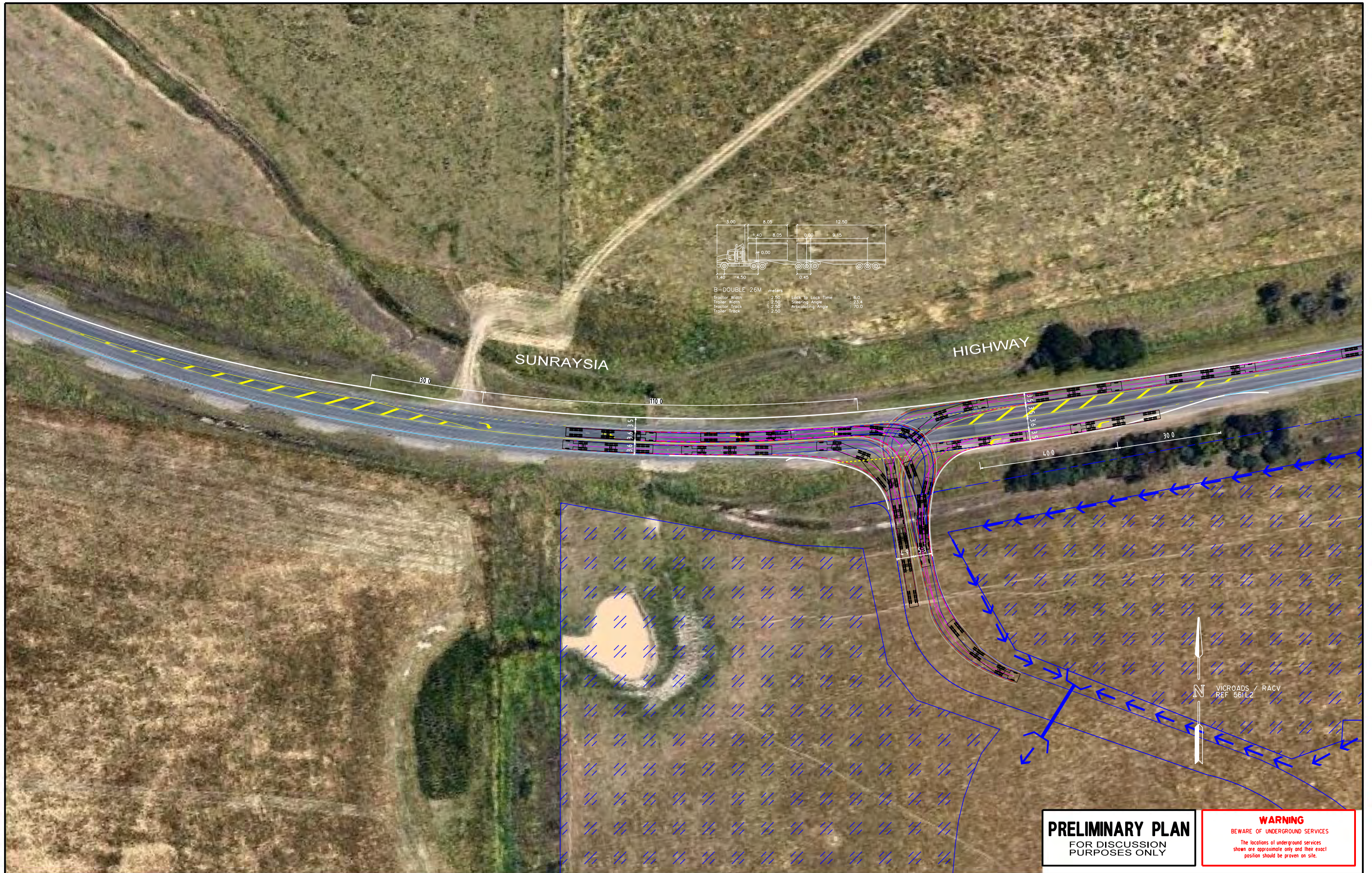
CLIENT
RLX INVESTMENT COMPANY ATF THE RLX INVESTMENT TRUST


DRAWING					
REVISED CONCEPTUAL SITE LAYOUT					
PROJECT NUMBER:	208120	DRAWING NUMBER:	01M_EV02	REV:	M
SOURCE: INTERNAL					

Appendix D: Traffix Group Access Layout Plan & Swept Paths



ISSUE	ISSUE DESCRIPTION	ISSUE DATE	GENERAL NOTES	DESIGNED	<div> Traffic Engineers and Transport Planners <small>Suite 8/431 Burke Road TEL: (03) 9822-2888 GLEN IRIS VICTORIA 3146 FAX: (03) 9822-7444 www.trafficgroup.com.au</small></div>	<div>SUNRAYSIA HIGHWAY - MINERS REST PROPOSED ACCESS ROAD BALLARAT CITY FUNCTIONAL LAYOUT PLAN</div> <div>SCALE  SHEET No. DWG No. G15152-01</div>	
			1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE: NEARMAP APR 2015) 2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL 3 DECLARED ROAD - SUNRAYSIA HIGHWAY (SPEED ZONE 100km/h)	R, CARBARNIS 07 MAY 2015			
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				FILE NAME G15152A-00.dgn			
A	INITIAL ISSUE	07 MAY 2015					



ISSUE		ISSUE DESCRIPTION	ISSUE DATE	GENERAL NOTES 1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE: NEARMAP APR 2015) 2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL 3 DECLARED ROAD - SUNRAYSIA HIGHWAY (SPEED ZONE 100km/h)	DESIGNED R, CARBARNIS 07 MAY 2015	<div> <i>Traffic Engineers and Transport Planners</i> Suite 8/431 Burke Road TEL : (03) 9822-2888 GLEN IRIS VICTORIA 3146 FAX: (03) 9822-7444 www.traffixgroup.com.au</div>	SUNRAYSIA HIGHWAY - MINERS REST PROPOSED ACCESS ROAD BALLARAT CITY FUNCTIONAL LAYOUT PLAN		
					CHECKED/APPROVED C MORELLO 07 MAY 2015		SCALE 0 5 10 15 20	SHEET No.	DWG No. G15152-01
					FILE NAME				
A	INITIAL ISSUE		07 MAY 2015		G15152A-00.dgn				

Appendix E: Truck & Sales Data

Existing BLSC Sales & Truck Breakdown Data by Day:

From 'BLSC Traffic Reference Data': Reduction Factor to Account for Truck Capacity	Prime Cattle Yarded Sunday/Monday			Sheep Yarded Monday/Tuesday			Store Cattle Yarded Thursday/Friday		
	Jul-14	85th %ile	Max	Jul-14	85th %ile	Max	Jul-14	85th %ile	Max
	376	555	1211	12629	39058	58643	1317	3940	5019
	-	0.8	0.8	-	0.8	0.8	-	0.8	0.8

Vehicle	Prime Cattle Sale Unload 6/7/14 - Sunday		Prime Cattle Sale Load 7/7/14 - Monday		Sheep Sale Unload 14/7/14 - Monday		July 2014 - Monday Volumes		Sheep Sale Load 15/7/14 - Tuesday		Store Cattle Unload 17/7/14 - Thursday		Store Cattle Load 18/7/14 - Friday	
	1pm-6pm		7am-2pm		3pm-10pm		Daily		8am-4pm		12-6pm		12-7pm	
	Unload		Loadout		Unload				Load		Unload		Unload/Load	
Utility / 4x4 + trailer	22	50%	2	22%	37	39%	39	38%	2	7%	4	9%	5	15%
Rigid Trucks	22	50%	3	33%	35	37%	38	37%	5	19%	32	70%	12	36%
Semi Trailers	0	0%	2	22%	20	21%	22	21%	10	37%	8	17%	8	24%
B- Double Trucks	0	0%	2	22%	3	3%	5	5%	10	37%	2	4%	8	24%
TOTAL	44	100%	9	100%	95	100%	104	100%	27	100%	46	100%	33	100%

85th Percentiles:

Vehicle	85th Percentile Sunday Volumes		Prime Cattle Sale Load 85th Percentile		Sheep Sale Unload 85th Percentile		85th Percentile Monday Volumes		Sheep Sale Load 85th Percentile		Thursday 85th Percentile		Friday 85th Percentile	
	Daily		7am-2pm		3pm-10pm		Daily		8am-4pm		12-6pm		12-7pm	
			Loadout		Unload				Load		Unload		Unload/Load	
Utility / 4x4 + trailer	26	50%	2	22%	92	39%	94	38%	5	7%	10	9%	12	15%
Rigid Trucks	26	50%	4	33%	87	37%	91	37%	12	19%	77	70%	29	36%
Semi Trailers	0	0%	2	22%	49	21%	51	21%	25	37%	19	17%	19	24%
B- Double Trucks	0	0%	2	22%	7	3%	9	4%	25	37%	5	4%	19	24%
TOTAL	52	100%	10	100%	235	100%	245	100%	67	100%	110	100%	79	100%

Max Truck Volumes:

Vehicle	Max Sunday Volumes		Prime Cattle Sale Load		Sheep Sale Unload Max		Max Monday Volumes		Sheep Sale Load Max		Thursday Max Volumes		Friday Max Volumes	
	Daily		7am-2pm		3pm-10pm		Daily		8am-4pm		12-6pm		12-7pm	
			Loadout		Unload				Load		Unload		Unload/Load	
Utility / 4x4 + trailer	57	50%	5	22%	137	39%	143	38%	7	7%	12	9%	15	15%
Rigid Trucks	57	50%	8	33%	130	37%	138	37%	19	19%	98	70%	37	36%
Semi Trailers	0	0%	5	22%	74	21%	79	21%	37	37%	24	17%	24	24%
B- Double Trucks	0	0%	5	22%	11	3%	16	4%	37	37%	6	4%	24	24%
TOTAL	113	100%	23	100%	353	100%	376	100%	100	100%	140	100%	101	100%

Existing BLSC Sales & Truck Breakdown Data by Hour:

BLSC - Surveyed July 2014, 85th Percentile & Maximum Sales Data	Prime Cattle Yarded			Sheep Yarded			Store Cattle Yarded		
	Jul-14	85th %ile	Max	Jul-14	85th %ile	Max	Jul-14	85th %ile	Max
	376	555	1211	12629	39058	58643	1317	3940	5019
Reduction Factor to Account for Truck Capacity	-	0.8	0.8	-	0.8	0.8	-	0.8	0.8

Time	Survey Truck Data - July 2014					Factored to 85th Percentile Anticipated Trucks					Factored to Maximum Anticipated Trucks				
	Sunday	Monday	Tuesday	Thursday	Friday	Sunday	Monday	Tuesday	Thursday	Friday	Sunday	Monday	Tuesday	Thursday	Friday
0:00						0	0	0	0	0	0	0	0	0	0
1:00						0	0	0	0	0	0	0	0	0	0
2:00						0	0	0	0	0	0	0	0	0	0
3:00						0	0	0	0	0	0	0	0	0	0
4:00						0	0	0	0	0	0	0	0	0	0
5:00						0	0	0	0	0	0	0	0	0	0
6:00						0	0	0	0	0	0	0	0	0	0
7:00		2				0	2	0	0	0	0	5	0	0	0
8:00			5			0	0	12	0	0	0	0	19	0	0
9:00		1	2			0	1	5	0	0	0	3	7	0	0
10:00		3	8			0	4	20	0	0	0	8	30	0	0
11:00			5			0	0	12	0	0	0	0	19	0	0
12:00			0	3	12	0	0	0	7	29	0	0	0	9	37
13:00	2	1	1	4	4	2	1	2	10	10	5	3	4	12	12
14:00	2		3	9	6	2	0	7	22	14	5	0	11	27	18
15:00	9	8	1	11	3	11	20	2	26	7	23	30	4	34	9
16:00	6	13		9	0	7	32	0	22	0	15	48	0	27	0
17:00	3	14		6	1	4	35	0	14	2	8	52	0	18	3
18:00		6			2	0	15	0	0	5	0	22	0	0	6
19:00		5				0	12	0	0	0	0	19	0	0	0
20:00		9				0	22	0	0	0	0	33	0	0	0
21:00		3				0	7	0	0	0	0	11	0	0	0
22:00						0	0	0	0	0	0	0	0	0	0
23:00						0	0	0	0	0	0	0	0	0	0
	22	65	25	42	28	26	151	60	101	67	56	234	94	127	85

Appendix F: B-Double Swept Paths for Key Intersections

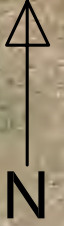






SUNRAYSIA HIGHWAY

LEARMONTH-SULKY ROAD






Appendix G: B-Double Swept Path for Sunraysia Highway Off-Ramp



PRELIMINARY PLAN
FOR DISCUSSION
PURPOSES ONLY

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services
shown are approximate only and their exact
position should be proven on site.

ISSUE		ISSUE DESCRIPTION	ISSUE DATE	GENERAL NOTES 1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP APR 2015) 2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL 3 DECLARED ROAD - WESTERN FREEWAY (SPEED ZONE 110km/h) - SUNRAYSIA HIGHWAY (SPEED ZONE 100km/h)	DESIGNED R CARBARNs 13 MAY 2015	<div> Traffic Engineers and Transport Planners Suite 8/431 Burke Road TEL: (03) 9822-2888 GLEN IRIS VICTORIA 3146 FAX: (03) 9822-7444 www.traffixgroup.com.au</div>	SUNRAYSIA HIGHWAY - MINERS REST WESTERN FREEWAY BALLARAT CITY B-DOUBLE SWEEP PATH		
					CHECKED/APPROVED C MORELLO 13 MAY 2015		SCALE 0 7.5 15 22.5 30	SHEET No.	DWG No. G15152-02
					FILE NAME G15152A-00 dgn				
A	INITIAL ISSUE		13 MAY 2015						