Transport Impact Statement

Project:	Great Southern Landfill Development
	2556 Great Southern Highway, St Ronans
Client:	Alkina Holdings
	c/o Resource Recovery Solutions Pty Ltd
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1. Executive Summary

Shawmac was initially engaged in 2013 by Bowman and Associates on behalf of SITA (now SUEZ) to prepare a Transport Impact Statement (TIS) for the proposed landfill development. Shawmac then prepared a concept design for the proposed access which progressed to the final stages of detailed design before the project was halted in 2016.

GTA consultants was then engaged in 2017 by Resource Recovery Solutions on behalf of Alkina Holdings to prepare an addendum to the original TIS based on up to date information.

Due to the amount of time since the previous TIS, an updated assessment has again been requested as part of the current EPA assessment. The current TIS report consolidates the original assessment with the GTA addendum and takes into account the latest available traffic and crash data as well as the most recent policies and guidelines.

Overall, the results of the assessment have not changed since the previous assessments. Many of the recommendations made in the original assessment have been retained in order to minimise disruption to the approval process. The key recommendations include the provision of an auxiliary right (AUR) turn treatment and a channelised left (CHL) turn treatment with a free-flow acceleration lane instead of the warranted basic right (BAR) and basic left (BAL) turn treatment.

2. Introduction

2.1. Background

Shawmac has been engaged by Resource Recovery Solutions on behalf of Alkina Holdings to prepare a TIS for the proposed landfill development located at 2556 Great Southern Highway (GSH), St Ronans, in the Shire of York. This TIS has been prepared in accordance with the following reference documents:

- Western Australian Planning Commission *Transport Impact Assessment Guidelines* (TIA Guidelines); and
- Main Roads Western Australia Standard Restricted Access Vehicle (RAV) Route Assessment Guidelines (RAV Guidelines).

The general site location is shown in **Figure 1**.

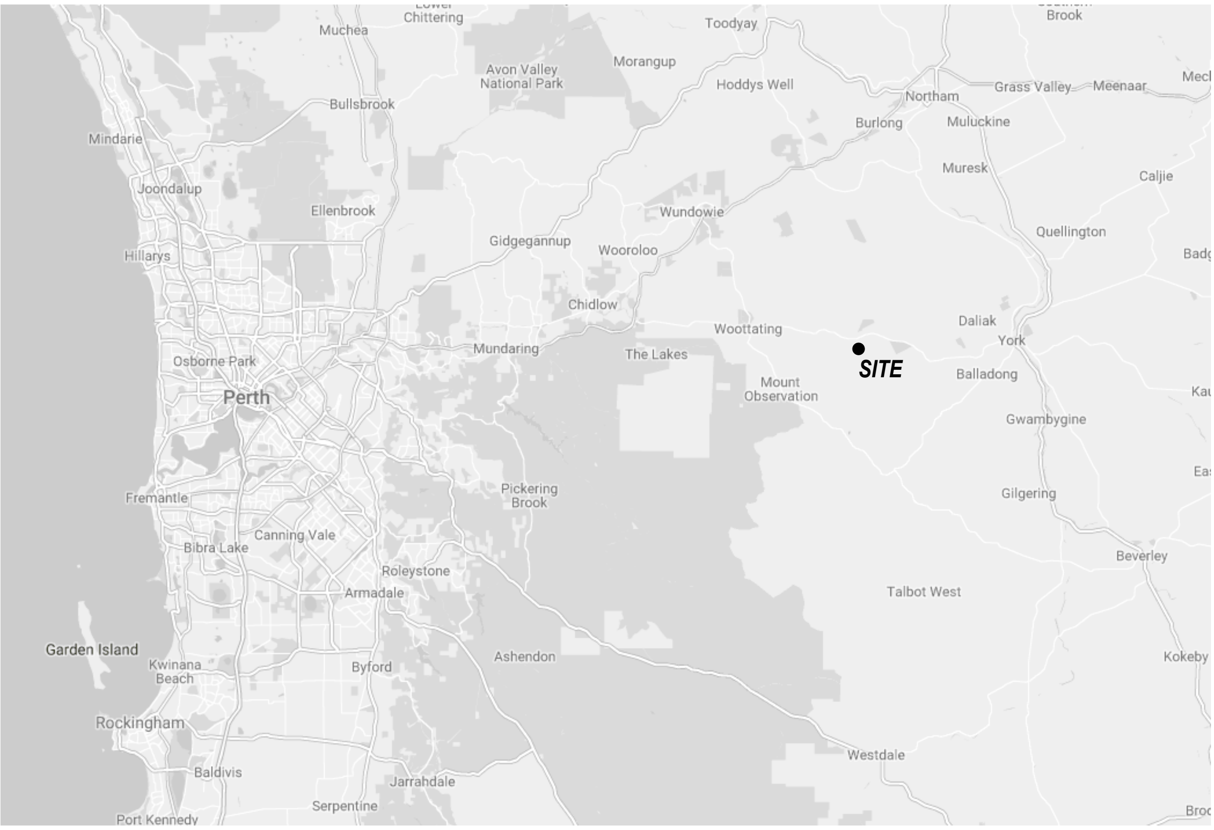


Figure 1: Site Location

2.2. Development Proposal

The proposed development is a landfill site operating from 6am to 6pm, Monday to Saturday. The proposed access will be from Great Southern Highway via an existing driveway at approximately SLK25.82 as shown in **Figure 2**.

Figure 2: Proposed Access Location

3. Existing Situation

3.1. Roads

GSH is a Primary Distributor Road under the jurisdiction of MRWA. In the vicinity of the proposed access, GSH is a two-lane, single carriageway consisting of a 7m wide seal, 0.5m wide sealed shoulders and 1m wide unsealed shoulders.

Since the original assessment, the speed limit along GSH was reduced from 110km/h to 100km/h.

GSH is currently approved on the following Restricted Access Vehicle (RAV) networks:

- Tandem Drive 4.3; and
- Tri-Drive 3.1.

The existing access to the site is an unsealed driveway approximately 5m wide as shown in **Figure 3**.

Figure 3: Existing Driveway Looking South

3.2. Traffic Volumes

The latest traffic count data for GSH sourced from MRWA *Traffic Map* is attached as **Appendix A** and summarised in **Table 1** below:

Table 1: GSH Average Weekday Traffic Count Data

Site No.	Road	Location	Time Period	Traffic Volume	%HV	Data Date
16720	GSH	West of Morris Edwards Dr	Daily	1,659 826 EB / 833 WB	21.8	2018
			AM Peak (8 to 9am)	129 59 EB / 70 WB	25.6	
			PM Peak (3 to 4pm)	134 64 EB / 70 WB	18.7	

3.3. Crash History

The crash history of the section of GSH from Berry Brow Road to 1km east of Wambyn Road for the five year period ending December 2018 was sourced from MRWA as summarised in **Figure 4**.

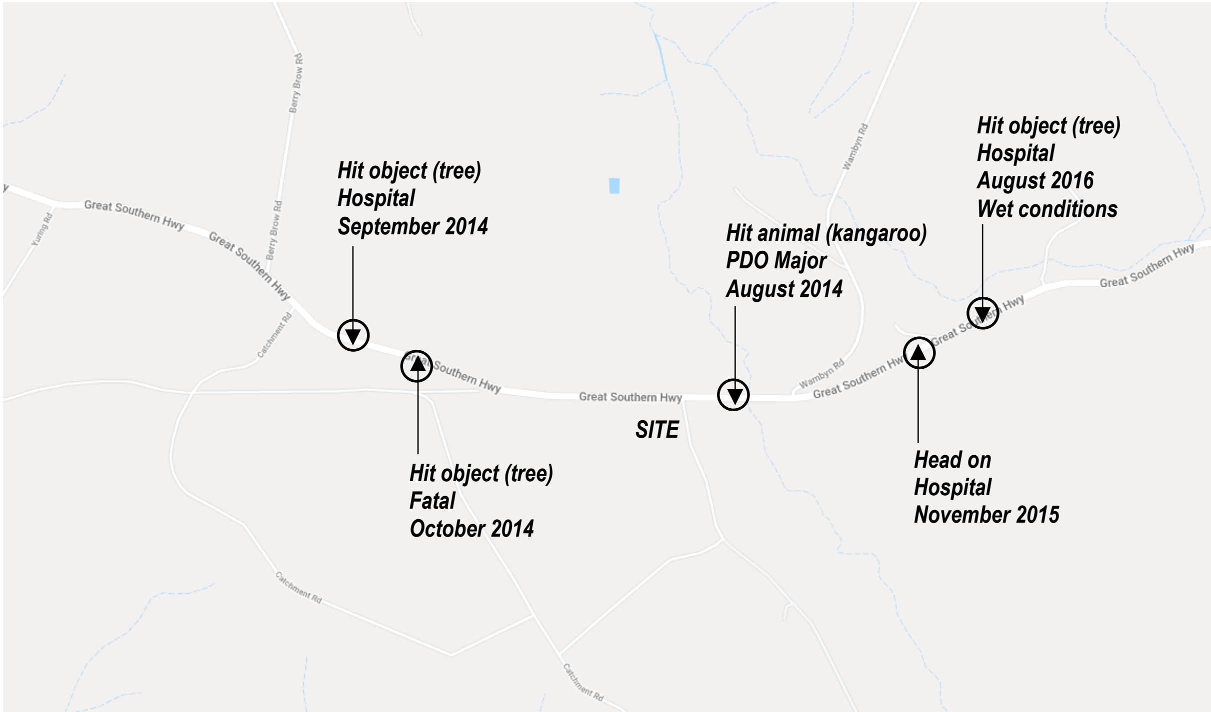


Figure 4: Crash History – January 2014 to December 2018

The majority of crashes in the vicinity of the site involve vehicles hitting trees or animals. It is noted that no crashes have occurred in the last 2 to 3 years and that the speed limit has been reduced to 100km/h. As such, there are no major safety concerns with the existing road network and the traffic generated by the proposed development is not expected to increase the risk of crashes unacceptably.

4. Transport Metrics and Proposed Routes

4.1. Operating Hours

The proposed facility will operate from 6am to 6pm on Mondays to Saturdays.

4.2. Vehicle Types and Movements

Deliveries to the site will be made using RAV Category 3 prime mover and trailer combination vehicles up to 27.5m in length with a maximum load of 84 tonnes. An example vehicle as extracted from MRWA is shown in **Figure 5**.

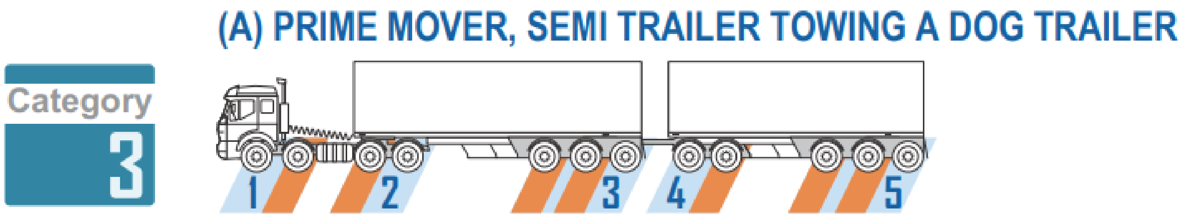


Figure 5: Example RAV 3 Vehicle Combination

It is proposed that up to 20 RAV 3 vehicles will arrive at the site with a full load, unload on site for approximately 10 to 20 minutes and then leave the site empty.

Generally, heavy vehicle movements will be distributed evenly throughout the day (1.7 heavy vehicles per hour, rounded up to 2). There may be instances where a slight peak may occur due to vehicles being delayed at their original loading point and it is therefore conservatively estimated that a maximum of 4 heavy vehicle trips (4 arrivals and departures) could occur between the peak hours of the road network. When this peak occurs, other hourly periods throughout the day would experience less than the typical 2 heavy vehicle trips.

A total of 10 staff are expected to be employed at the site with a maximum of 5 working on any given day. Staff will work 12 hour shifts arriving by car in the morning and leaving at night. Based on this, up to 5 light vehicles will arrive before 6am and 5 light vehicles will depart after 6pm. To be conservative, it has been assumed that the staff movements coincide with the peak hours on the road network from 8 to 9am and 3 to 4pm.

A summary of the expected vehicle movements generated by the site is shown in **Table 2**.

Table 2: Proposed Vehicle Generation

Vehicle Types	Daily Traffic	Peak Trips (8 to 9am)	Peak Trips (3 to 4pm)
Light Vehicles	5 trips	5 arrivals	5 departures
Heavy Vehicles	20 trips	4 trips (4 arrivals + 4 departures)	4 trips (4 arrivals + 4 departures)
Total	25 trips	9 arrivals + 4 departures	4 arrivals + 9 departures

4.3. Vehicle Routes

Heavy vehicles will follow a specific route from the Waste Transfer Station on Clune Street in Bayswater and will travel to and from the site via Tonkin Highway, Great Eastern Highway and then Great Southern Highway. All heavy vehicles will therefore travel to and from the east, turning right into the site from GSH and left out of the site to GSH. The proposed route is shown in **Figure 6**.

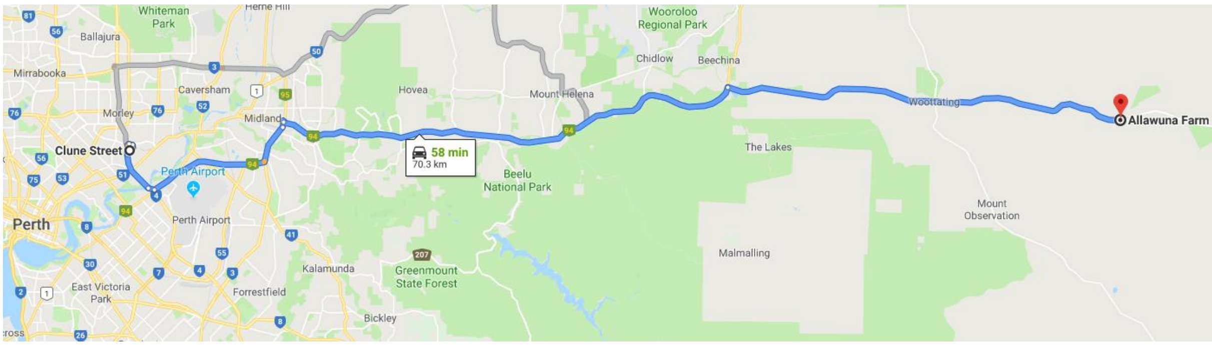


Figure 6: Proposed Heavy Vehicle Route

Light vehicles are assumed to travel to and from the site in both directions along GSH.

5. Transport Impact Assessment

As detailed in the previous section of this assessment, the site is expected to generate 25 vehicle trips (20 heavy vehicle trips and 5 light vehicle trips) per operating day with approximately 13 vehicle movements during each of the road network peak hours.

5.1. Mid-block Capacity

Based on the current daily traffic volume of 1,659 vehicles on GSH, the site generated traffic represents about a 1.5% increase in traffic. This increase is considered to be negligible and there is adequate mid-block capacity in the road network to accommodate this increase.

The WAPC TIA Guidelines refers to Austroads Guide to Traffic Management for assessment of the impact of changes in traffic flows on the surrounding road network. Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* (AGTM03) notes that the typical midblock capacity of a single traffic lane on a two-lane rural road or highway is 1,700 passenger cars per hour (pc/h). Allowing for the passenger car equivalent (PCE) conversion to account for heavy vehicles, the post-development peak hour volumes will remain well below this threshold.

5.2. Access Capacity

SIDRA Intersection 8 has been used to assess the peak hour capacity and performance of the proposed access.

SIDRA is a commonly used intersection modelling tool used by traffic engineers for all types of intersections. Outputs for four standard measures of operational performance can be obtained, being Degree of Saturation (DoS), Average Delay, Queue Length, and Level of Service (LoS).

- Degree of Saturation is a measure of how much physical capacity is being used with reference to the full capability of the particular movement, approach, or overall intersection. A DoS of 1.0 equates to full theoretical capacity although in some instances this level is exceeded in practice. Design engineers typically set a maximum DoS threshold of 0.95 for new intersection layouts or modifications.

- Average Delay reports the average delay per vehicle in seconds experienced by all vehicles in a particular lane, approach, or for the intersection as a whole. For severely congested intersections the average delay begins to climb exponentially.

- Queue Length measures the length of approach queues. In this document we have reported queue length in terms of the length of queue at the 95th percentile (the maximum queue length that will not be exceeded for 95 percent of the time). Queue lengths provide a useful indication of the impact of signals on network performance. It also enables the traffic engineer to consider the likely impact of queues blocking back and impacting on upstream intersections and accesses.

- Level of Service is a combined appreciation of queuing incidence and delay time incurred, producing an alphanumeric ranking of A through F. A LoS of A indicates an excellent level of service whereby drivers delay is at a minimum and they clear the intersection at each change of signals or soon after arrival with little if any queuing. Values of B through D are acceptable in normal traffic conditions. Whilst values of E and F are typically considered undesirable, within central business district areas with significant vehicular and pedestrian numbers, delays/queues are unavoidable and hence, are generally accepted by road users.

The modelled layout and input traffic volumes are shown in **Figure 7**. The results are included as Appendix B and summarised in **Table 3**.

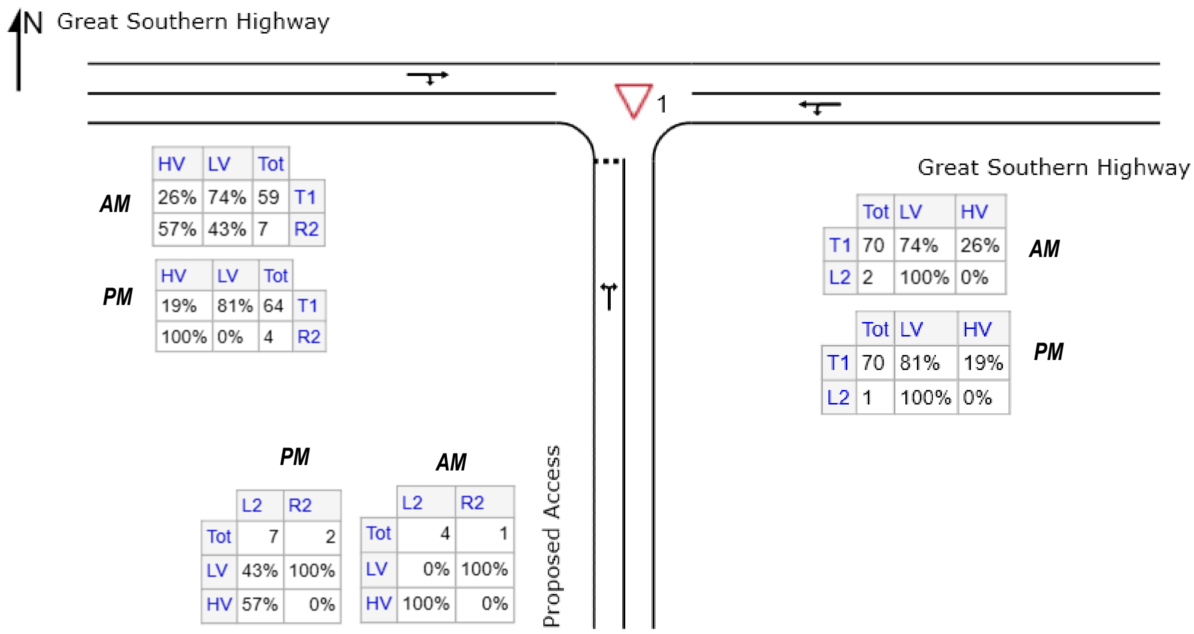


Figure 7: SIDRA Modelled Access Layout and Input Volumes

Table 3: SIDRA Assessment Results – Proposed Access

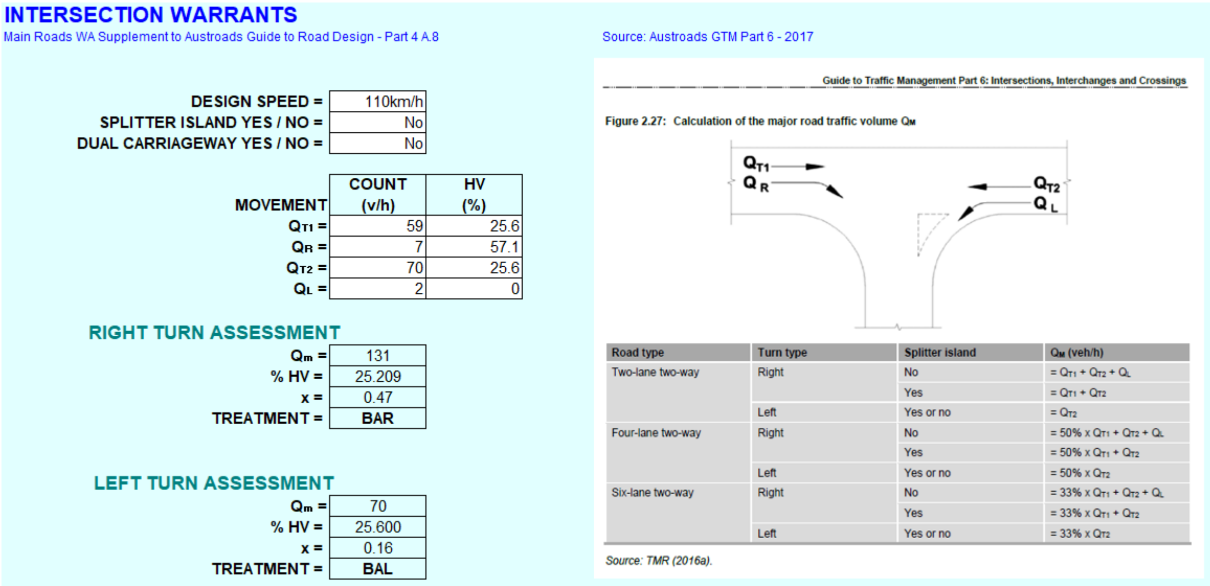
Peak Period	Average LOS	Worst LOS	DOS	Average Delay	Worst Delay	Maximum Queue
AM Peak (8 to 9am)	A	B	0.064	0.8s	10.2s	0.7m
PM Peak (3 to 4pm)	A	B	0.060	0.7s	10.0s	0.5m

As shown above, the access location is predicted as operating well within capacity with minimal delay and virtually no queueing.

5.3. Access Turn Treatment Warrants

The warrants for turn treatments at the proposed access have been assessed in accordance with Austroads *Guide to Road Design Part 4: Intersections and Crossings – General* (AGRD04) and the MRWA Supplement to AGRD04. The peak hour volumes on GSH and the expected turning volumes at access were input into the MRWA Supplement spreadsheet as shown in **Figure 8** and **Figure 9**.

As shown, the warranted turn treatments are a rural basic left (BAL) turn treatment and a rural basic right (BAR) turn treatment. These treatments are illustrated in **Figure 10**.



INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	110km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	59	25.6
Q_R =	7	57.1
Q_{T2} =	70	25.6
Q_L =	2	0

RIGHT TURN ASSESSMENT

Q_m =	131
% HV =	25.209
x =	0.47
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	70
% HV =	25.600
x =	0.16
TREATMENT =	BAL

Source: Austroads GTM Part 6 - 2017

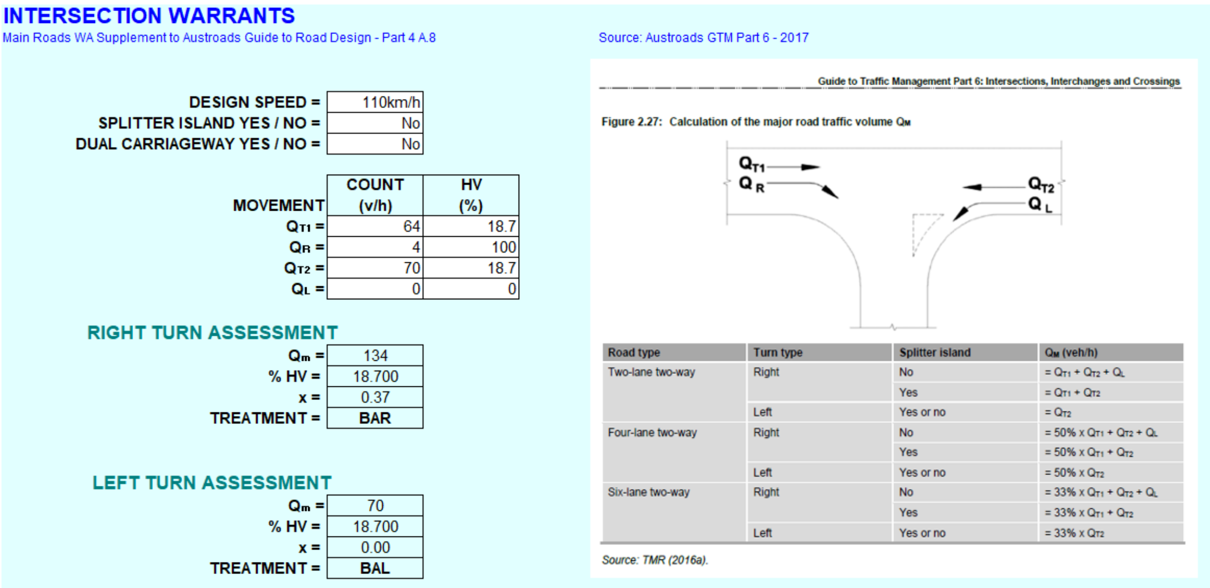
Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M

Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 8: AM Peak Intersection Warrants Calculation



INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	110km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	64	18.7
Q_R =	4	100
Q_{T2} =	70	18.7
Q_L =	0	0

RIGHT TURN ASSESSMENT

Q_m =	134
% HV =	18.700
x =	0.37
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	70
% HV =	18.700
x =	0.00
TREATMENT =	BAL

Source: Austroads GTM Part 6 - 2017

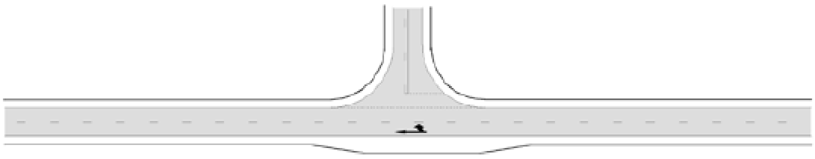
Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M

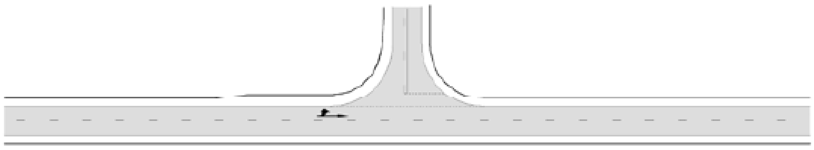
Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 9: PM Peak Intersection Warrants Calculation



Basic right turn (BAR)
on the major road (two-lane, two-way road)



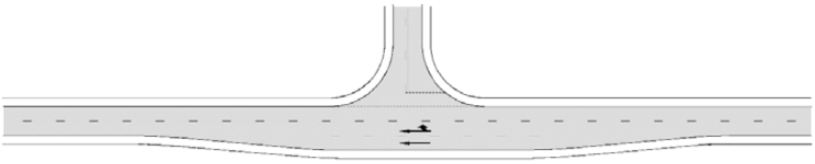
Basic left turn (BAL)
on the major road

Figure 10: Example BAR and BAL Turn Treatments

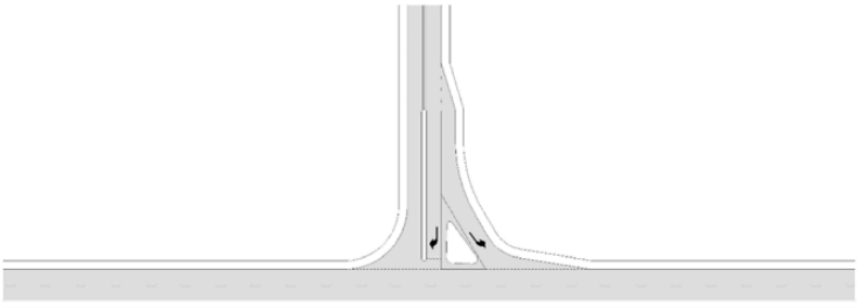
The results of the warrants assessment are consistent with the previous assessments. It is noted however, that the original assessment recommended that the following turn treatments were applied instead of the BAR and BAL due to the high percentage of heavy vehicles on GSH:

- An auxiliary right (AUR) turn treatment on GSH for vehicles turning into the site; and
- A channelised left (CHL) turn treatment for vehicles turning left from the site onto GSH.

These treatments are illustrated in **Figure 11**.



Auxiliary right turn (AUR)
on the major road (two-lane, two-way)



Channelised left turn (CHL)
on the minor road

Figure 11: Example AUR and CHL Turn Treatments

5.4. Acceleration Lane Warrants

The RAV guidelines provides the following advice with regards to acceleration lanes:

> *To assist in ensuring network performance levels are maintained, the assessor needs to identify if the acceleration lanes and turn pockets are present at intersections and the length of these treatments. Capturing this information in the assessment will assist in determining if network improvements are necessary, in consultation with the road manager.*

AGRD04 notes that:

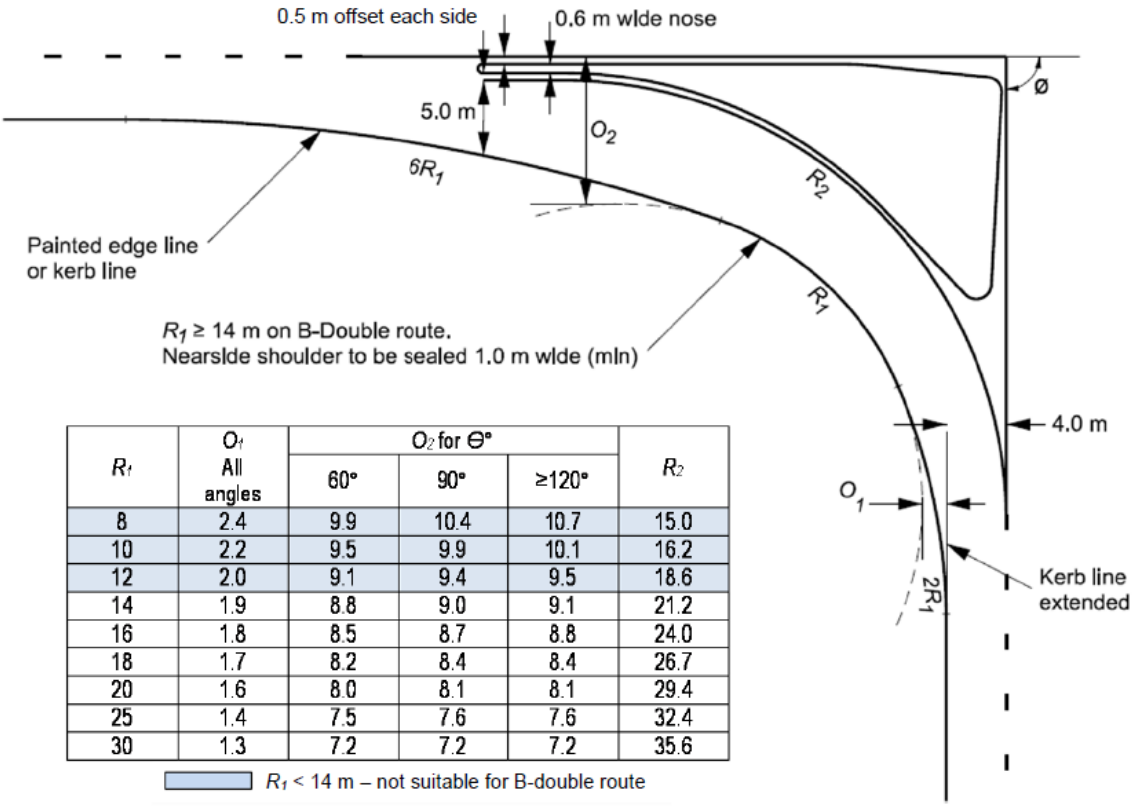
> *There are no simple numerical warrants for the provision of acceleration lanes. However, an auxiliary lane may be added on the departure side of a left turn or right turn if traffic is unable to join safely and/or efficiently with the adjacent through traffic flow by selecting a gap in the traffic stream.*
>
> *Acceleration lanes may be provided at major intersections depending on traffic analysis. However, they are usually provided only where:*
>
> - *insufficient gaps exist for vehicles to enter a traffic stream.*
> - *turning volumes are high (e.g. > 300 vph).*
> - *the observation angle falls below the requirements of the minimum gap sight distance model (for example, inside of horizontal curves).*
> - *heavy vehicles pulling into the traffic stream would cause excessive slowing of major road vehicles.*

Based on the results of the SIDRA assessment and the above advice, an acceleration lane for vehicles turning left out of the site is not considered necessary in this location. It is further noted that:

- There is an overtaking lane approximately 3.1km west of the proposed access location including an "OVERTAKING LANE 3km AHEAD" sign approximately 150m west of the proposed access;
- The speed limit along GSH has reduced from 110km/h to 100km/h since the original assessment was completed;
- Heavy vehicles leaving the site will be unloaded and therefore will be able to reach the speed limit within a shorter amount of time.

Notwithstanding the above, the original assessment concluded that an acceleration lane was warranted when calculated in accordance with the previous RAV guidelines. Considering that the proposed development has gone through a lengthy approvals process already, it is recommended that the acceleration lane is retained.

The recommended CHL should therefore be combined with the acceleration lane as a free-flow slip lane as illustrated in **Figure 12**.



R_1	O_1 All angles	O_2 for $\Theta°$			R_2
		60°	90°	≥120°	
8	2.4	9.9	10.4	10.7	15.0
10	2.2	9.5	9.9	10.1	16.2
12	2.0	9.1	9.4	9.5	18.6
14	1.9	8.8	9.0	9.1	21.2
16	1.8	8.5	8.7	8.8	24.0
18	1.7	8.2	8.4	8.4	26.7
20	1.6	8.0	8.1	8.1	29.4
25	1.4	7.5	7.6	7.6	32.4
30	1.3	7.2	7.2	7.2	35.6

Figure 12: Example CHL with Free-Flow Slip Lane

Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD04A) advises that for the design of new acceleration lanes for trucks, it is preferable that the design vehicle has sufficient length to accelerate to a speed no less than 20km/h below the mean free speed of the through road, particularly if the acceleration lane is on a dedicated heavy vehicle route. Based on the 100km/h speed limit on GSH, the acceleration lane should have sufficient length to enable trucks to reach 80km/h at the merge. Table 5.8 of AGRD04A, shown as **Figure 13**, provides the acceleration lane lengths required for semi-trailers accelerating from rest to a certain speed on an upgrade. It is assumed that the values are for a loaded semi-trailer.

Table 5.8: Acceleration lane lengths (m) for semi-trailers to accelerate from rest to a speed on an upgrade

Upgrade (%)	Truck speed (km/h)						
	100	90	80	70	60	50	40
1	–	–	2000	890	480	230	100
2	–	–	–	–	890	320	130

Note: Dashes indicate that it is not practical to provide sufficient acceleration lane length for semi-trailers to reach the speeds indicated.

Figure 13: Austroads Acceleration Lane Lengths for Semi-Trailers on an Upgrade

Based on the approximately 1% upgrade from the access location towards the west, a 2000m acceleration lane would be required for a loaded semi-trailer starting from rest to reach 80km/h. Considering that the design vehicle is an unloaded RAV 3 vehicle starting from 20 to 30km/h (according to RAV guidelines), the acceleration lane could justifiably be reduced to about 480m which allows trucks to merge prior to the curve along GSH This is consistent with the intersection design that has been adopted up to this stage of the project.

5.5. Access Sight Distance

The proposed access has been checked for adequate Approach Sight Distance (ASD) and Entering Sight Distance (ESD) in accordance with the RAV Guidelines.

5.5.1. Approach Sight Distance

The ASD is required for vehicles approaching the intersection on the minor approach. The existing site grades at approximately 2% down towards GSH. Assuming a 50km/h speed limit along the access road, the required sight distance according to Appendix D of the RAV Guidelines is 92m. The ASD will need to be confirmed as part of the access road design. A review of the proposed access location suggests that the ASD should be achievable.

5.5.2. Entering Sight Distance

ESD is required for vehicles entering GSH to see a sufficient gap in oncoming traffic and to clear the intersection safely. Based on the 100km/h speed limit and the approximately 1% downgrade along GSH towards the access location from both directions, the required ESD according to Appendix D of the RAV Guidelines is 258m.

The available sight distances at the proposed access location was measured during the initial assessment to be 450m towards the east and 580m towards the west as shown in **Figure 14** and **Figure 15**. The measured sight distances exceed the ESD requirements.

Figure 14: Avaialable Sight Distance Looking West

Figure 15: Avaialable Sight Distance Looking East

6. Conclusions

A Revised Transport Impact Statement for the proposed landfill development to be located at 2556 Great Southern Highway, St Ronan's in the Shire of York has concluded the following:

- The volume of traffic generated by the proposed development can be accommodated within the capacity of the existing road network.
- The volume of through and turning vehicles at the proposed access location warrants the provision of a basic right (BAR) and basic left (BAL) turn treatments. Based on the high percentage of heavy vehicles along GSH, it is recommended to implement the following turn treatments instead:
    - An auxiliary right (AUR) turn treatment; and
    - A channelised left (CHL) turn treatment with a free-flow acceleration lane.
- The minimum required Approach Sight Distance (ASD) for the access road is 92m. A review of the topography of the site indicates that the minimum ASD is achievable.
- The minimum required Entering Sight Distance (ESD) in both directions was calculated to be 258m. The available sight distance as measured onsite is 450m towards the east and 580m towards the west which exceeds the minimum requirement.
- A review of the crash history of GSH in the vicinity of the site identified a number of crashes involving vehicles colliding with trees including one fatality. It is noted however, that no crashes have occurred since 2016 and that the speed limit along GSH has since been reduced from 110km/h to 100km/h.

Appendix A – Traffic Count Data

SITE 16720

Hourly Volume

2018/19
Monday to Friday

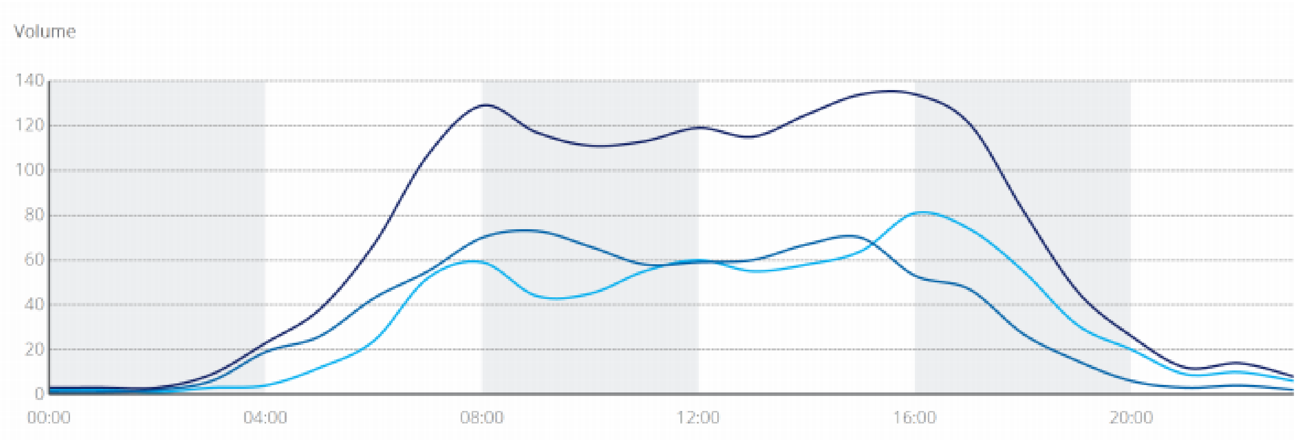
Great Southern Hwy (M010)

West of Morris Edwards Dr (SLK 42.35)

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	2	1	**3**	0	0	**0**	**0.0**
01:00	2	1	**3**	0	0	**0**	**0.0**
02:00	1	2	**3**	0	1	**1**	**33.3**
03:00	3	6	**9**	2	1	**3**	**33.3**
04:00	4	19	**23**	3	6	**9**	**39.1**
05:00	12	26	**38**	5	9	**14**	**36.8**
06:00	24	43	**67**	7	15	**22**	**32.8**
07:00	52	55	**107**	13	13	**26**	**24.3**
08:00	59	70	**129**	14	19	**33**	**25.6**
09:00	44	73	**117**	9	21	**30**	**25.6**
10:00	45	66	**111**	5	21	**26**	**23.4**
11:00	55	58	**113**	11	15	**26**	**23.0**
12:00	60	59	**119**	10	19	**29**	**24.4**
13:00	55	60	**115**	6	20	**26**	**22.6**
14:00	58	67	**125**	8	22	**30**	**24.0**
15:00	64	70	**134**	5	20	**25**	**18.7**
16:00	81	53	**134**	7	15	**22**	**16.4**
17:00	74	47	**121**	2	15	**17**	**14.0**
18:00	55	27	**82**	2	7	**9**	**11.0**
19:00	31	15	**46**	2	4	**6**	**13.0**
20:00	20	6	**26**	2	1	**3**	**11.5**
21:00	9	3	**12**	0	1	**1**	**8.3**
22:00	10	4	**14**	1	1	**2**	**14.3**
23:00	6	2	**8**	1	0	**1**	**12.5**
TOTAL	**826**	**833**	**1659**	**115**	**246**	**361**	**21.8**

Peak Statistics

		All EB	All WB	All Both	Heavy EB	Heavy WB	Heavy Both
AM	TIME	07:45	08:30	**08:30**	07:45	09:45	**07:45**
	VOL	62	81	**133**	16	25	**33**
PM	TIME	16:15	14:30	**16:30**	12:15	14:30	**12:30**
	VOL	83	72	**141**	12	22	**31**



Appendix B – SIDRA Assessment Results

MOVEMENT SUMMARY

Site: 1 [Proposed Access - AM Peak]

Site Category: -
Give way / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Proposed Access												
1	L2	4	100.0	0.005	5.8	LOS A	0.0	0.5	0.20	0.49	0.20	44.1
3	R2	1	0.0	0.005	5.0	LOS A	0.0	0.5	0.20	0.49	0.20	56.0
Approach		5	80.0	0.005	5.8	LOS A	0.0	0.5	0.20	0.49	0.20	46.0
East: Great Southern Highway												
4	L2	2	0.0	0.064	7.8	LOS A	0.0	0.0	0.00	0.02	0.00	88.0
5	T1	70	25.6	0.064	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	99.2
Approach		72	24.9	0.064	0.2	NA	0.0	0.0	0.00	0.02	0.00	98.8
West: Great Southern Highway												
11	T1	59	25.6	0.062	0.1	LOS A	0.1	0.7	0.05	0.07	0.05	98.0
12	R2	7	57.1	0.062	10.2	LOS B	0.1	0.7	0.05	0.07	0.05	60.3
Approach		66	28.9	0.062	1.1	NA	0.1	0.7	0.05	0.07	0.05	91.9
All Vehicles		143	28.7	0.064	0.8	NA	0.1	0.7	0.03	0.06	0.03	91.9

MOVEMENT SUMMARY

Site: 1 [Proposed Access - PM Peak]

Site Category: -
Give way / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Proposed Access												
1	L2	7	57.1	0.008	5.8	LOS A	0.0	0.5	0.18	0.50	0.18	42.8
3	R2	2	0.0	0.008	5.0	LOS A	0.0	0.5	0.18	0.50	0.18	56.0
Approach		9	44.4	0.008	5.7	LOS A	0.0	0.5	0.18	0.50	0.18	45.2
East: Great Southern Highway												
4	L2	1	0.0	0.056	7.8	LOS A	0.0	0.0	0.00	0.01	0.00	88.3
5	T1	70	18.7	0.056	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	99.6
Approach		71	18.4	0.056	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.4
West: Great Southern Highway												
11	T1	64	18.7	0.060	0.0	LOS A	0.0	0.5	0.03	0.08	0.03	98.1
12	R2	4	100.0	0.060	10.0	LOS B	0.0	0.5	0.03	0.08	0.03	60.8
Approach		68	23.5	0.060	1.1	NA	0.0	0.5	0.03	0.08	0.03	94.7
All Vehicles		148	22.3	0.060	0.7	NA	0.0	0.5	0.03	0.07	0.03	90.7