Traffic Impact Statement

Project:	Jacup Emergency OBH
Client:	CBH
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1. Introduction

1.1. Background

CBH are proposing to construct an emergency open bulkhead (OBH) at their existing Jacup site in preparation for the 2021 harvest. It is proposed to construct a single new emergency OBH with 35,370t capacity which will utilise the existing site access/exit and marshal/sample/weigh facilities.

Shawmac have been commissioned to prepare a Traffic Impact Statement assessing the impacts of the proposed emergency OBH storage on the surrounding road network.

Figure 1 shows the existing site and location of the proposed emergency OBH. Refer to **Appendix A – CBH Concept Plan** for full details of the proposal.

The emergency OBH is anticipated to be in place for one year only.

Figure 1: Site Location

2. Existing Situation

2.1. Road Network

The layout and hierarchy of the existing local road network according to the Main Roads WA Road Information Mapping System is shown in **Figure 2**.

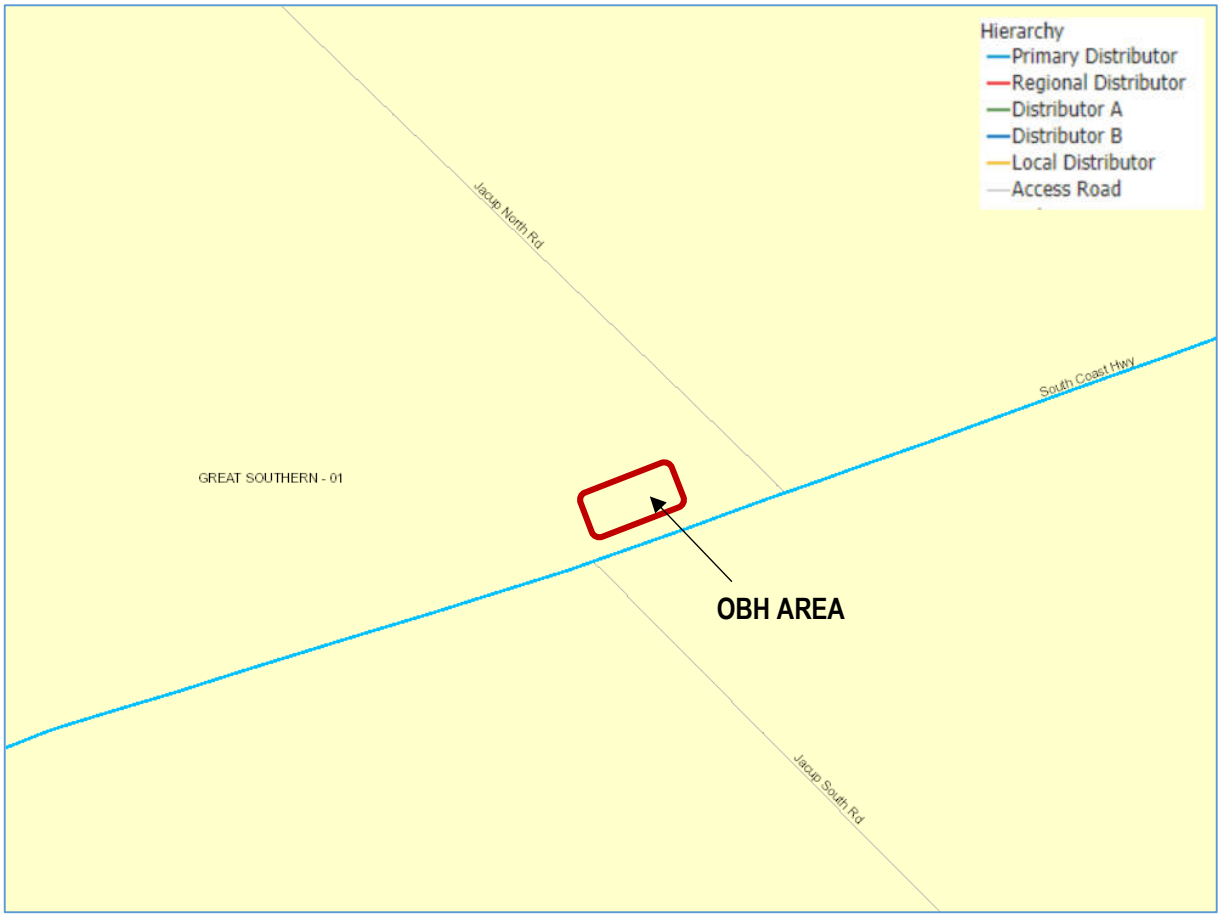


Figure 2: Surrounding Road Hierarchy

2.2. Carriageway Width and Cross Section

The carriageway and configuration of surrounding roads is summarised in **Table 1**.

Table 1: Road Configuration

Road and Location	Road Type	Cross Section	Carriageway Width (Approx.)	Sealed Pavement Width (Approx.)
South Coast Hwy	Primary Distributor	Single carriageway, two lane, two way	9m	6.6m
Jacup Road South	Access Road		8m	N/A (unsealed)
Jacup Road North	Access Road		10m	7m

2.3. Traffic Volumes

Based on MRWA's Traffic Map, the nearest traffic count site for South Coast Hwy is approximately 25km west of the CBH site, just west of the Woolshed Road/Monkey Road intersection. These counts were undertaken in 2019/2020. Refer to **Appendix B – Traffic Data** for detailed information. There are no available traffic counts for Jacup Road South or North.

The traffic count data for South Coast Hwy indicates an average weekday traffic of 483 vehicles (2019/2020). For the purposes of this assessment, it has been assumed that 500 vehicles per day is representative of the daily traffic past the CBH site in 2021/2022, but it should be noted that this assumption is likely conservative as the traffic count site is located close to the Jerramungup town site. Peak hour and Heavy Vehicle volumes have been estimate based on the same proportion as the traffic count data (approx. 11% of daily volumes)

Jacup Road North and South service only the surrounding farms and the traffic volumes are expected to be minimal. Based on the connectivity they provide, it is assumed that 50 vehicles per day utilise Jacup Road South and 100 vehicles per day utilise Jacup Road North. Peak hour volumes have been assumed as 10% of the daily volumes and Heavy Vehicle volumes have been assumed at 40% of total movements.

Table 2 and **Table 3** below provide a summary of the estimated existing daily and peak hour traffic volumes.

Table 2: Weekday Traffic Volumes

Road	Location	Daily	% HV	Data Source
South Coast Hwy	CBH Site Frontage	500	27	Assumed
Jacup Road South	South of South Coast Hwy	50	40	Assumed
Jacup Road North	North of South Coast Hwy	100	40	Assumed

Table 3: Weekday Peak Hour Traffic Volumes

Road / Direction	Location	Overall Peak Hour	Data Source
South Coast Hwy	CBH Site Frontage	54	Assumed
Jacup Road South	South of South Coast Hwy	5	Assumed
Jacup Road North	North of South Coast Hwy	10	Assumed

It is further assumed that the above volumes do not include any existing CBH traffic.

2.4. RAV Status

As per MRWA's HVS Network Mapping Tool:

- South Coast Hwy is categorised under the Tandem Drive 7.3 network and Tri Drive 4.3 network without conditions.
- Jacup Road South and North are both categorised under the Tandem Drive 7.1 network and Tri Drive

4.1 network without conditions.

Figure 3 shows the Tandem Drive 7.1 network in the vicinity of the site.

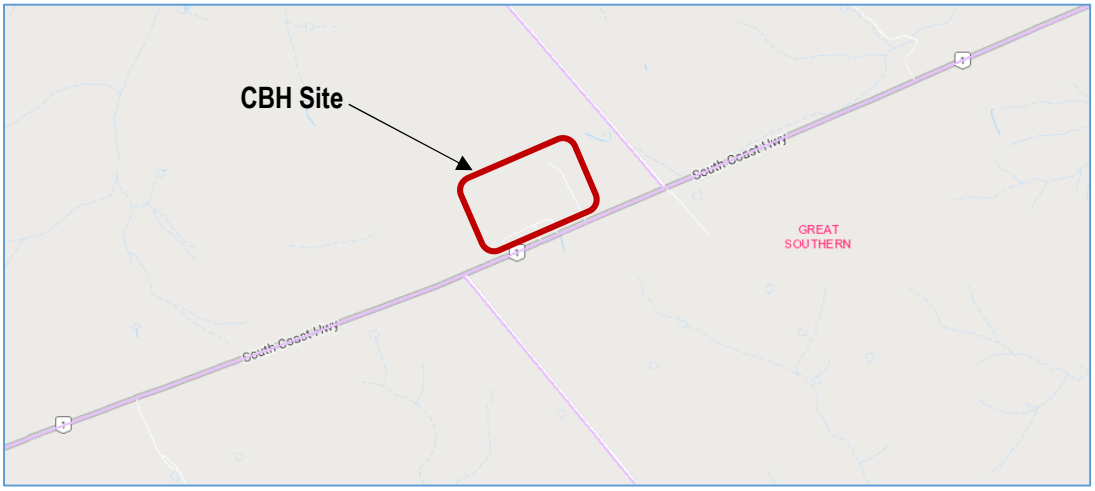


Figure 3: RAV Network

2.5. Speed Limit

As per MRWA's Road Information Mapping System, South Coast Hwy is subject to a 110km/h speed limit. Jacup Road North and South are subject to a 110km/h limit as they are outside built-up areas. **Figure 4** shows the speed zoning of the surrounding road network.

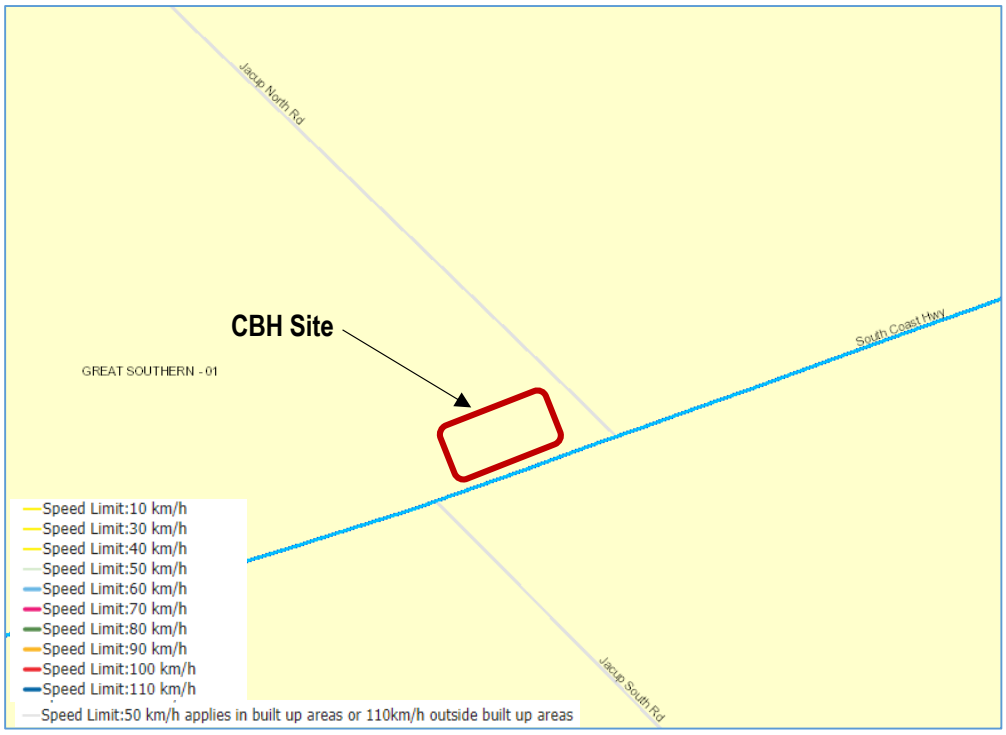


Figure 4: Speed Zoning

2.6. Crash History

Crash data for the surrounding roads was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 31/12/2020.

The crash history for the surrounding roads are summarised in **Table 4** and shown in **Figure 5**.

No crashes were reported nearby on Jacup Road South or North.

Table 4: Crash History

Location	MR Nature and Location	Severity
South Coast Hwy SLK 201.86	Midblock, Hit Object	Fatality

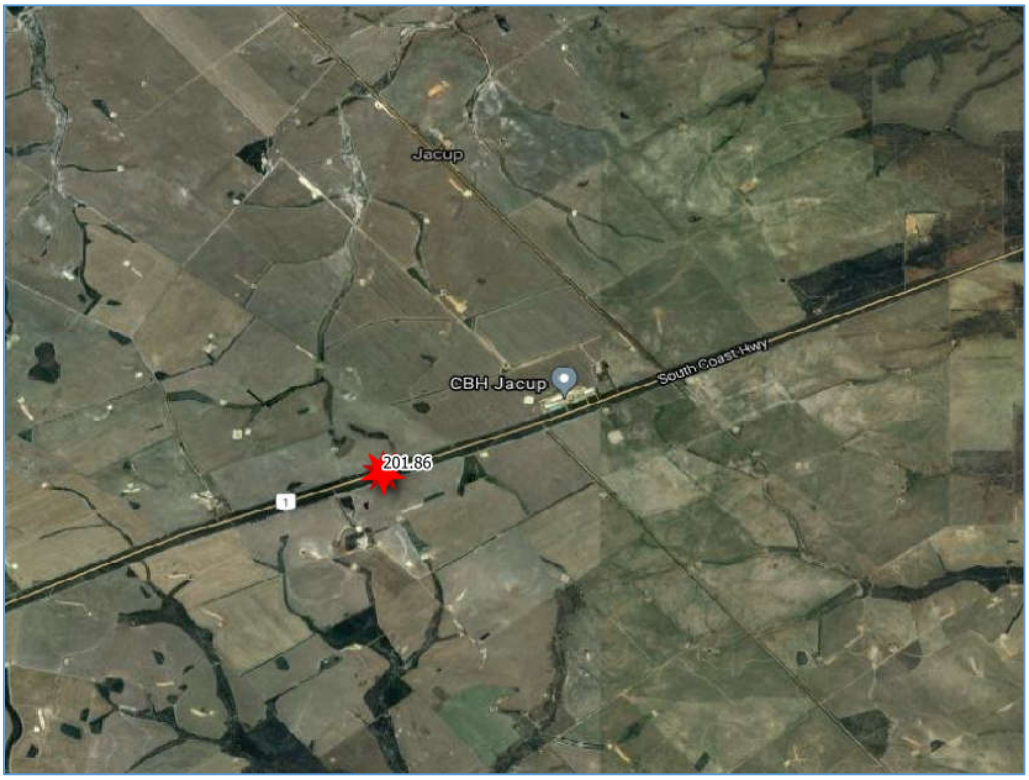


Figure 5: Crash Locations (SLK 201.86)

The crash history is considered typically of a rural arterial highway and does not appear to be associated with the CBH site.

2.7. Changes to Surrounding Transport Networks

There are no known changes to the adjacent network that have the potential to affect the assessment.

3. Traffic Generation

3.1. Development Details

CBH propose to construct a single new temporary OBH with a nameplate storage capacity of 35,370t. This will increase the total site storage capacity from 110,450t to 145,820t.

CBH have advised that the nameplate capacity is seldom able to be achieved. This is because of "loss by division/loss by commodity" where multiple grain types are required to be stored/tarped within the same OBH, resulting in less efficient storage. CBH have advised that maximum effective storage capacity is generally around 85% of nameplate i.e., there is 15% lost due to loss by division/loss by commodity inefficiency. The effective existing storage capacity would therefore be 93,883t, increasing to 123,947t after construction of the emergency OBH.

3.2. Haulage Vehicle

It is proposed to use RAV7 trucks up to 36.5m long for the transport of grain. **Figure 6** shows a typical RAV7 vehicle. In addition, CBH also noted that while this site is rated for RAV7, deliveries would include haulage using RAV4 or even as low as RAV1 vehicles.

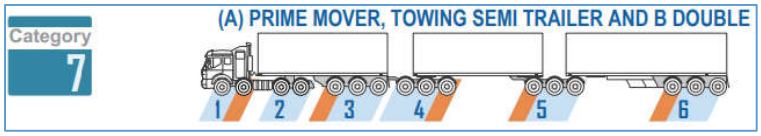


Figure 6: Typical Tandem Drive RAV7

3.3. Operating Hours and Receival Period

The campaign period for receival of grains will start mid-October and last 2-3 months. Based on 5-year average data, the total number of days for grain receival is 65 days. It is noted that the amount of daily receival varies depending on the supply.

CBH propose to operate the site 12 hours a day (6 AM to 6 PM) and Monday to Sunday with minor variations of start and finish times.

3.4. 5-year Average Traffic Data

CBH have provided the past 5-year average traffic data associated with the Jacup Site as follows:

- Average receivals per year – 62,503t
- Maximum receivals – 80,875t (2020/2021)
- Average truck payload:

- 47.9t (2016/2017)
- 54t (2017 to 2021)

- Origin direction split – 28% north, 1% south, 48% east, 23% west.

Between 2016/2017 and 2017/2018 there was a significant increase in average truck payloads. This is likely a result of larger trucks (RAV7) being more predominately utilised. This trend is expected to continue and probably increase as it is more efficient to utilise larger trucks.

3.5. Predicted Traffic without Emergency OBH

CBH are proposing to construct the emergency OBH to increase site capacity so that more grain can be stored through the harvest and inefficient out loading movements within the harvest period are avoided. During the harvest, once site capacity is reached, out loading movements may be required to restore capacity and allow grain to continue to be received from the nearby farms. This will involve shifting the grain from Jacup to the next available site with storage capacity, with movement occurring towards the export port. In this case, movements would be south (in the direction of Albany Port), likely to CBH's Gairdner site. This double-handling of grain is inefficient in terms of cost and adds additional traffic to the surrounding road network.

For comparative purposes it is useful to assess what would occur if the proposed emergency bulkheads are not constructed.

CBH expect that the 2021/2022 harvest will exceed the existing effective site capacity by approximately the planned volume of the effective emergency storage. This would result in receivals of approximately 123,947t (145,820t x 85% efficiency) which is greater than any of the previous 5-years and 30,065t greater than the existing effective site capacity. Based on the average truck payload of 54t, this would result in an additional 557 truck movements within the harvest period for out loading.

Note that for the purposes of this assessment a single 'movement' has two components; a site entry/delivery and a site exit.

If the emergency OBH is constructed, then the 557 truck movements still need to occur to move the grain for export, but this would occur outside the harvest period, when there are less trucks on the road network.

3.6. Predicted Traffic with Emergency OBH

As discussed previously, CBH expect that the 2021/2022 harvest will result in approximately 123,947t of grain being transported to the Jacup Site. Based on the average payload of 54t, **Table 5** provides an estimate of the 21/22 harvest period truck movements, with and without the proposed emergency OBH and with comparison to the previous 5-year average and maximum volumes and movements.

Table 5: Harvest Truck Movement Comparison

	5-year Average	5-year Maximum	21/22 Without Emergency OBH	21/22 With Emergency OBH
Tonnes Received	62,503t	80,875t	123,947t	123,947t
Effective Site Capacity	93,883t	93,883t	93,883t	123,947t
Truck Payload	54t	54t	54t	54t
Total Harvest Receival Movements	1,157	1,498	2,295	2,295
Total Harvest Out loading Movements	-	-	557	-
Total Harvest Movements	1,157	1,498	2,851	2,295

As shown, the movements for 2021/2022 are expected to exceed the 5-year average and maximum, but the construction of the emergency OBH allows movements to be reduced in comparison to the scenario where the emergency OBH is not installed for the 2021/2022 harvest.

3.7. Haulage Route

As per the site plan provided in **Appendix A – CBH Concept Plan**, all trucks enter the site via the entrance off South Coast Hwy towards the eastern boundary of the site. All trucks exit the site via the exit onto South Coast Hwy which is located centrally to the site.

Based on the road network, and the origin direction split provided by CBH, the following is assumed for movements to the CBH site:

- 40% of movements with northern origins (11.2% overall) will travel south along Jacup Road North, then west along South Coast Hwy.
- 30% of movements with northern origins (8.4% overall) will travel east and 30% (8.4% overall) of movements with northern origins will travel west along South Coast Hwy.
- 100% of movements with southern origins will travel north along Jacup Road South, then east along South Coast Hwy.
- 100% of movements with western origins will travel east along South Coast Hwy.
- 100% of movements with eastern origins will travel west along South Coast Hwy.

Given the road network layout and connectivity, exit movements from the site are assumed to be the opposite of the above.

These movements are shown in **Figure 7**.

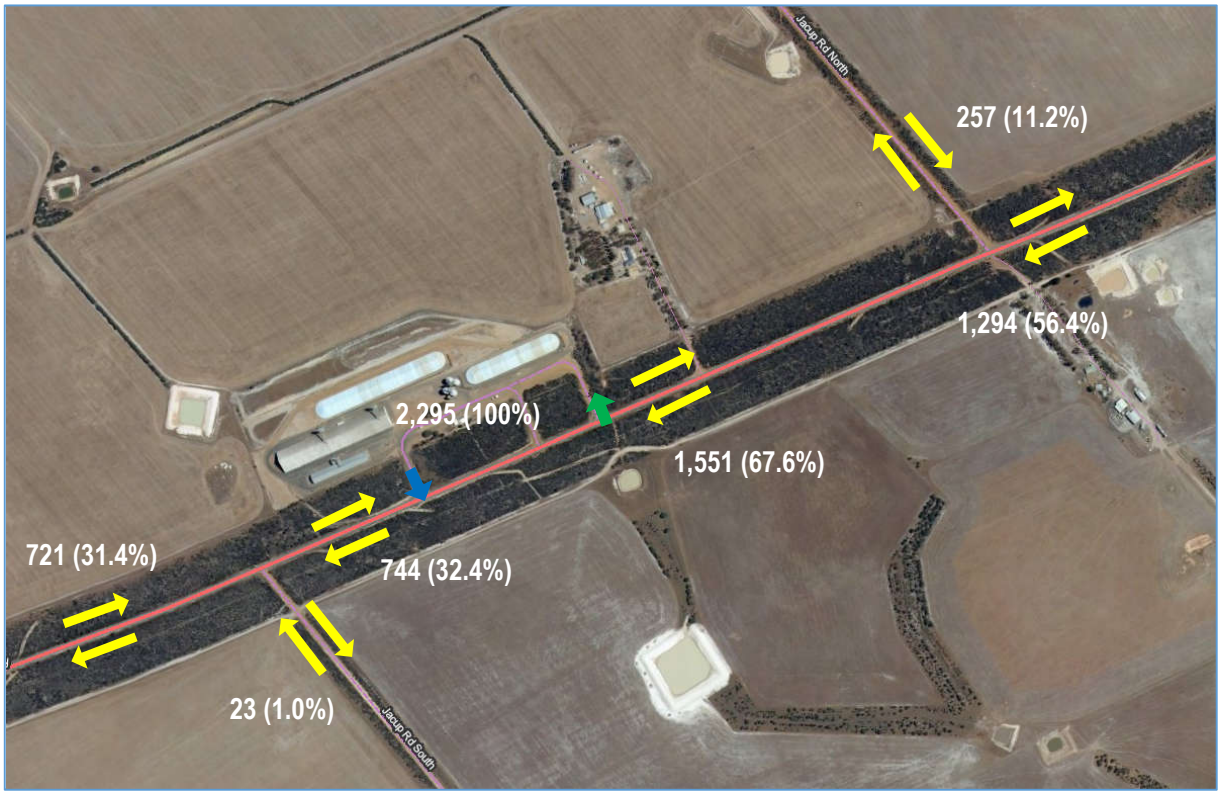


Figure 7: CBH Traffic Distribution

3.8. Peak Period Assessment

Although the harvest period is expected to occur over a period of approximately 65 days, it is known that there is a peak within this period. Specific data for Jacup was not available to define this peak period, but data from other CBH sites indicate that generally 80-85% of grain is received within 28 days.

For the purposes of assessing the peak period impacts, the following assumptions have been made:

- 85% of total grain tonnes are received within, and evenly distributed over 28 days.
- Truck deliveries occur over a 12-hour period, and 10% of all daily volumes are received within a peak hour.

Based on these assumptions:

- 1,951 truck movements will occur during the 28-day peak.
- 70 movements will occur each day of the 28-day peak.
- 7 movements will occur during a peak hour.

Figure 8 shows the peak daily / hourly movement volumes based on the previously discussed traffic distribution. Note that figures have been rounded up to the nearest whole number.

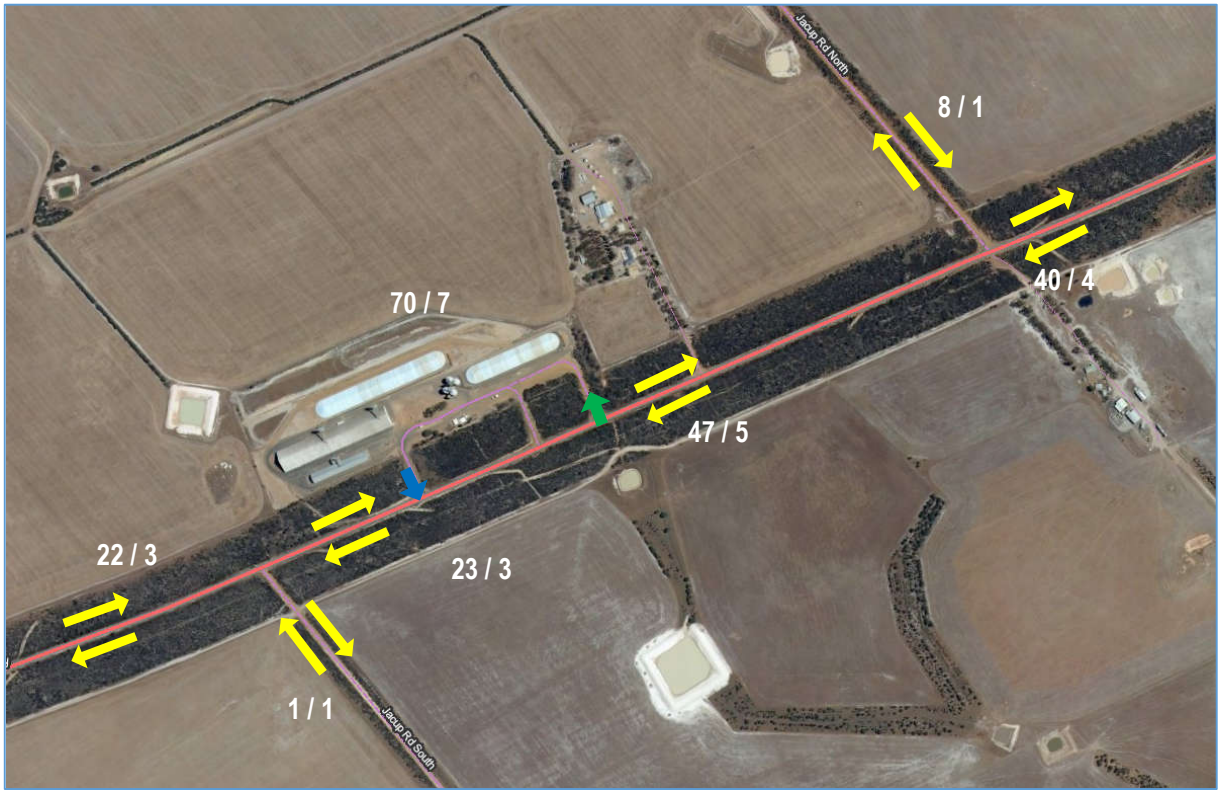


Figure 8: Peak Daily / Hour Volumes (CBH Only)

4. Traffic Impact Assessment

4.1. Assessment Years

The development is assessed based on current network condition (2021).

4.2. Impact on Roads

4.2.1. Road Minimum Widths

The sealed widths of the surrounding roads were checked against the Rural Road Minimum Width in accordance with Appendix A of the MRWA RAV assessment guideline. The comparison is shown below in **Table 6**.

Table 6: Rural Road Minimum Width

Road	Location	Existing AADT	Proposed AADT (Peak)	Speed (RAV)	RAV Status	Required Minimum Seal / Carriageway	Existing Sealed / Carriageway Width
South Coast Hwy	CBH Site Frontage	500	640	100km/h	7.3	3.5m / 8.0m	6.6m / 9m
Jacup Road South	South of South Coast Hwy	50	52	100km/h	7.1	8.0m*	8.0m*
Jacup Road North	North of South Coast hwy	100	116	100km/h	7.1	3.5m / 8.0m	7.0m / 10m

* Unsealed

4.3. Road Safety

The crash history of the adjacent road network (as previously outlined in **Section 2.6**) does not suggest any atypical safety issues in the existing road network. The additional traffic movements generated by the emergency bulkhead is not considered to increase the likelihood of crashes to unacceptable levels.

4.4. Safe Intersection Sight Distance – Site Exit

The Safe Intersection Sight Distance (SISD) is the minimum distance which should be provided on the major road at any intersection. SISD provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point.

The SISD for the site exit along South Coast Hwy is assessed based on the following parameters:

- An observation time of 3 seconds as per Austroads Part 3;
- A reaction time of 2.5 seconds;
- Deceleration coefficients for the purpose of SISD calculations are 0.362 for light vehicles and 0.28 for heavy vehicles; and

- Driver eye height is 2.4m for trucks and 1.1m for cars.
- Design speed for cars at 110km/h and trucks at 100km/h

Figure 9 and **Figure 10** show the sight distance available from the site exit looking west and east, respectively. The available sight distance has been measured at 575m to the west and more than 1km to the east, as shown in **Figure 11.**

Figure 9: Site Exit Looking West

Figure 10: Site Exit Looking East

Figure 11: Site Exit Sight Distance

Based on the sight distance parameters, **Table 7** shows the comparison between the required and available sight distances. As shown, the available sight distance is significantly greater than the minimum requirements.

Table 7: SISD at Site Exit

Location	Vehicle Type	Design Speed (km/h) (EB / WB)	Coefficient of Deceleration	Decision Time (s)	Longitudinal Grade (EB / WB)*	Required SISD for EB / WB Traffic (m)	Available SISD (m)	
							EB	WB
Site Exit	Trucks	100 / 100	0.28	3+2.5	-1.5% / +1.5%	301 / 286	575	1,000+
	Cars	110 / 110	0.362	3+2.5	-1.5% / +1.5%	305 / 294	575	1,000+

*Positive for through traffic travelling uphill and negative for through traffic travelling downhill. Grades are estimated only.

4.5. Entering Sight Distance – Site Exit

The Entering Sight Distance (ESD) is the minimum distance for driver of a RAV, entering a through road, having appropriate sight distance to see a sufficient gap in oncoming traffic that will allow a RAV, with greater length and lower acceleration capacity, to clear the intersection safely.

The ESD is assessed based on the following parameters:

- A reaction time of 4 seconds, and
- Deceleration coefficients of 0.28 (at 100km/hr).

The Entering Sight Distance (ESD) for existing and proposed access locations has been assessed in accordance with RAV Route Assessment Guideline (updated November 2019). A comparison of available and required ESD for RAV vehicles are summarised in **Table 8**.

Table 8: RAV Vehicle Entering Sight Distance

Location	Design Speed (km/h) (EB / WB)	Coefficient of Deceleration	Reaction Time (s)	Longitudinal Grade (EB / WB) *	Required ESD for EB / South WB (m)	Available ESD (m)	
						EB	WB
Site Exit	100 / 100	0.28	4	-1.5% / +1.5%	254 / 240	575	1,000+

*Positive for through traffic travelling uphill and negative for through traffic travelling downhill. Grades are estimated only.

As shown, the ESD are sufficient to achieve minimum requirements in accordance with the MRWA RAV Assessment Guideline.

4.6. Auxiliary Lanes

4.6.1. Intersection Volumes

For the purposes of assessing auxiliary lane requirements at the site access, the peak hour traffic distribution is shown in **Figure 12**.

Note that for existing traffic along South Coast Highway, the directional split has been adopted to be consisted with the recorded traffic volumes (51% eastbound, 49% westbound).

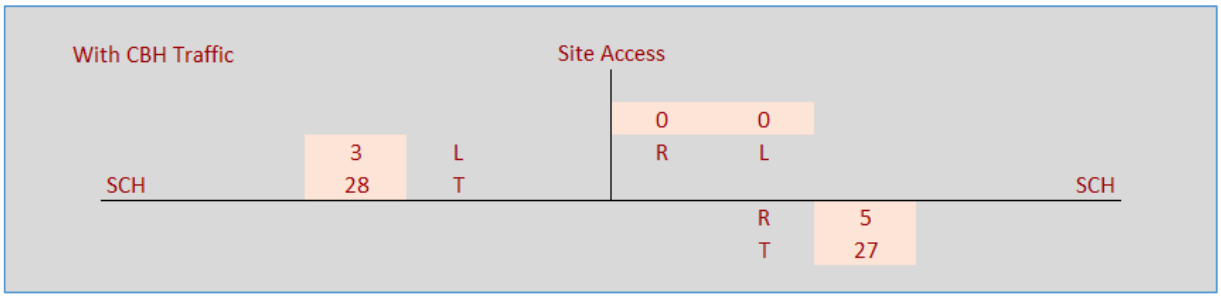
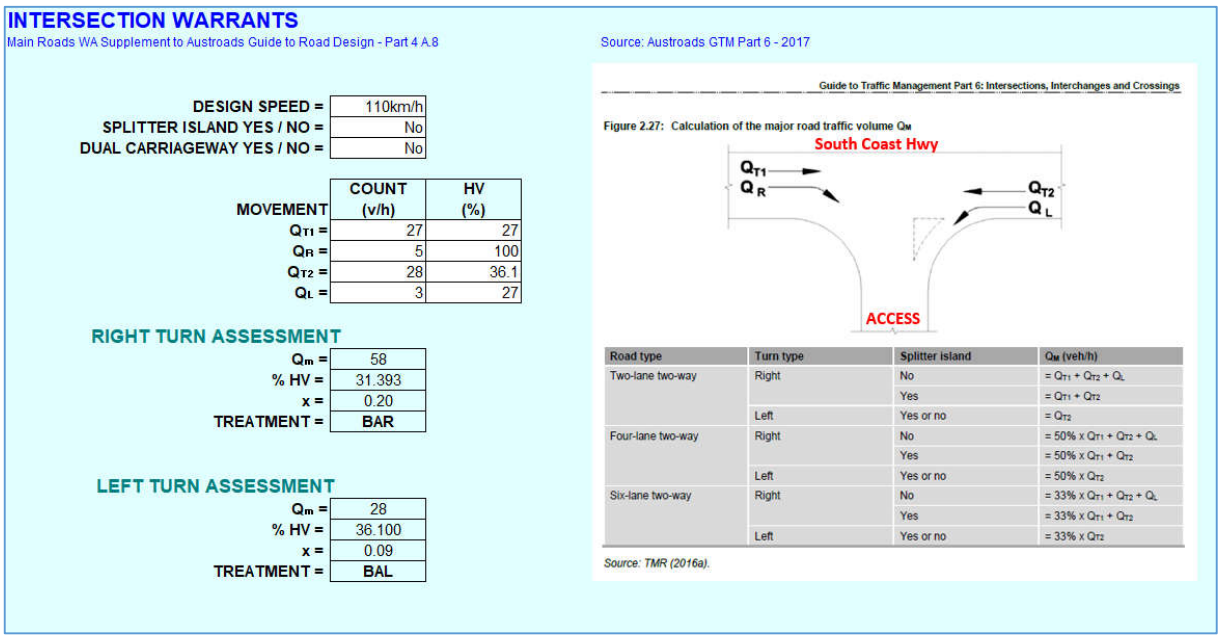


Figure 12: Site Access Peak Hour Traffic Distribution

4.6.2. Intersection Configuration Warrants

The requirement for turning treatments was calculated using the Intersection Warrants calculator provided in Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8. The results of the assessment are shown **Figure 13**.



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} =	27	27
Q_R =	5	100
Q_{T2} =	28	36.1
Q_L =	3	27

RIGHT TURN ASSESSMENT

Q_m =	58
% HV =	31.393
x =	0.20
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	28
% HV =	36.100
x =	0.09
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% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 50% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 50% x Q_{T2}
Six-lane two-way	Right	No	= 33% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 33% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 33% x Q_{T2}

Source: TMR (2016a).

Figure 13: Intersection Configuration Warrants

The warrants show that Basic Right (BAR) and Basic Left (BAL) turning treatments would be required. These treatments are already installed and accordingly no further improvements are suggested.

4.7. Acceleration Lanes

Austroads Guide to Road Design Part 4 (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 vehicles per hour).*
> - *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."*

In this situation, acceleration lanes on Great Eastern Highway are not considered warranted because:

- The site is only proposed to be in operation for one year.
- The volume of loaded RAV vehicles turning onto South Coast Hwy is relatively low.

- There is excellent sight distance available at the Site Exit.
- The observation angle is acceptable at the Site Exit.
- During the peak harvest period, the trucks will be entering South Coast Hwy while empty and will have the capability to accelerate more rapidly than when loaded. It is noted that outside of the harvest, trucks will be entering Great Eastern Highway while loaded, however these movements have much lower intensity (the CBH Design Specification TS10A assumes 10 vehicle trips per day for general CBH site outside of Harvest period).

4.8. Swept Path Assessment

Swept Path analyses have been undertaken for the proposed site access and exit from/onto South Coast Hwy as shown in **Figure 14** and **Figure 15**. Note that the swept paths have been prepared using MRWA standard turning templates which are likely to be conservative in comparison to the movements being undertaken on site.

As shown, the entry movements can be made without encroaching on the existing edge of seal. However, the exit movements require the vehicle to travel over the shoulder and cross the South Coast Hwy centreline. Crossing the centreline is considered acceptable in accordance with MRWA RAV guidelines, given that there is more than adequate sight distance available in all directions at this intersection. However, consideration should be given to widening the seal as the encroachment over the shoulders appear significant any will likely lead to pavement damage. Notwithstanding that, this is an existing issue not likely to be made significantly worse by operating the emergency OBH for one-year.

Figure 14: Entry Movement Swept Paths

Figure 15: Exit Movement Swept Paths

5. Conclusions

This Traffic Impact Statement has been prepared for the proposed Emergency OBH to be installed at CBH's existing Jacup site. The TIS concluded:

- The estimated traffic generation can be accommodated within the capacity of the adjacent road network.
- The additional traffic generated by the site is not considered to increase the likelihood of crashes to unacceptable levels.
- The seal and carriageway widths of the surrounding road network meeting the relevant RAV network requirements.
- There is sufficient sight distance at the site exit onto South Coast Hwy.
- The swept path assessments for the entry movements show that the designated movements can be completed satisfactorily.
- The swept path assessments for the exit movements show encroachment over the shoulders and centreline and consideration should be given to widening the seal accordingly.
- For the designated RAV vehicle movements indicate that the designated movements can be completed satisfactorily.
- The existing BAR/BAL configuration of the site access off South Coast Hwy is appropriate to cater for the proposed additional traffic.
- Acceleration lanes on South Coast Hwy are not considered warranted.

Appendix A – CBH Concept Plan

STORAGE CAPACITIES

EXISTING STORAGE		
'B' TYPE STORAGE	HOR 01	5,450 t
'Q' TYPE STORAGE	HRC 01	60,000 t
LOW STEEL FRAME OPEN BULKHEAD	(01)	20,000 t
LOW CONCRETE FRAME OPEN BULKHEAD	(TBH 02)	25,000 t
TOTAL EXISTING STORAGE		110,450 t
PROPOSED STORAGE		
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 03)	35,370 t
TOTAL PROPOSED STORAGE		35,370 t
TOTAL SITE STORAGE		**145,820 t**

HATCHING LEGEND

AREA OF NEW WORKS 12,200 m^2

DRAWING LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- CADASTRAL BOUNDARY
- EPA INDUSTRIAL/SENSITIVE LAND USE SEPARATION DISTANCE - 500mm RADIUS
- CBH SITE BOUNDARY
- CBH RAIL LEASE BOUNDARY
- O/H P — OVERHEAD POWER LINES
- U/G P — UNDERGROUND POWER CABLES
- C — UNDERGROUND COMMS CABLES
- U/G W — UNDERGROUND WATER PIPES
- RAIL LINE
- PROPOSED OPEN DRAINS

EXISTING DRAINAGE BASIN
(NOT WITHIN CBH BOUNDARY)

500tph D.O.G. STACKER

EXISTING EDGE OF UNSEALED ROAD
TO FORM NEW PAVEMENT DRAINAGE

(TBH 03) 1.8m INT STEEL FRAMED OPEN BULKHEAD
270m x 35m (35,370 t CAPACITY)

EXISTING OPEN BULKHEAD - TBH 02

'Q' TYPE - HRC 01

'B' TYPE - HOR 01

EXISTING OPEN BULKHEAD - OBH 01

EXISTING WEIGHBRIDGE

EXISTING STAFF ACCOMMODATION

EXISTING SAMPLE PLATFORM

SOUTH COAST HIGHWAY

SITE EXIT

SITE ENTRY

PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 18.06.21

1:1250 @ A1
1:2500 @ A3
0 20 40 60 80 100 120 m

CBH GROUP
ABN 29 256 604 947

CBH GROUP
LEVEL 6
240 ST GEORGE'S TERRACE
PERTH W.A. 6000
PH (08) 9237 9600
FAX (08) 9322 3942

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DESIGNED		
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PROJECT APPR		

TITLE
JACUP
PRE FEASIBILITY STUDY
2021 EMERGENCY STORAGE
CONCEPTUAL LAYOUT No. 1

DRG No 594-ENG-CI-DCO-0001
SHEET 1 OF 1
REV. B

Appendix B – Traffic Data

mainroads WESTERN AUSTRALIA

SITE 51699

Hourly Volume

South Coast Hwy (H008)

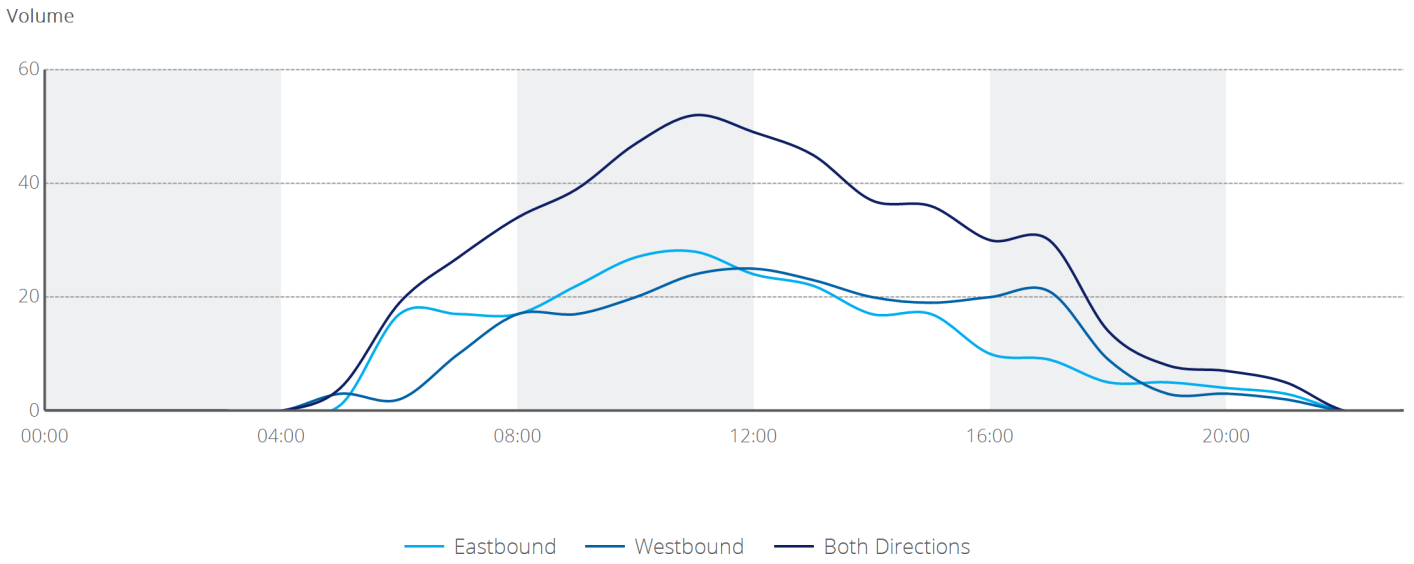
West of Cameron Rd (SLK 181.00)

2019/20
Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	0	0	0	0	0	0	0.0
01:00	0	0	0	0	0	0	0.0
02:00	0	0	0	0	0	0	0.0
03:00	0	0	0	0	0	0	0.0
04:00	0	0	0	0	0	0	0.0
05:00	1	3	4	0	1	1	25.0
06:00	17	2	19	7	0	7	36.8
07:00	17	10	27	11	1	12	44.4
08:00	17	17	34	10	5	15	44.1
09:00	22	17	39	10	3	13	33.3
10:00	27	20	47	10	4	14	29.8
11:00	28	24	52	10	5	15	28.8
12:00	24	25	49	7	4	11	22.4
13:00	22	23	45	8	3	11	24.4
14:00	17	20	37	6	3	9	24.3
15:00	17	19	36	6	5	11	30.6
16:00	10	20	30	3	5	8	26.7
17:00	9	21	30	3	5	8	26.7
18:00	5	9	14	1	2	3	21.4
19:00	5	3	8	1	0	1	12.5
20:00	4	3	7	1	1	2	28.6
21:00	3	2	5	1	0	1	20.0
22:00	0	0	0	0	0	0	0.0
23:00	0	0	0	0	0	0	0.0
TOTAL	245	238	483	95	47	142	29.4

Peak Statistics

AM	TIME	10:30	11:30	10:45	06:45	11:30	09:30
	VOL	29	26	52	12	6	16
PM	TIME	12:00	13:15	12:00	13:15	14:45	13:15
	VOL	24	25	49	9	6	14



SITE 51699

Hourly Volume

South Coast Hwy (H008)

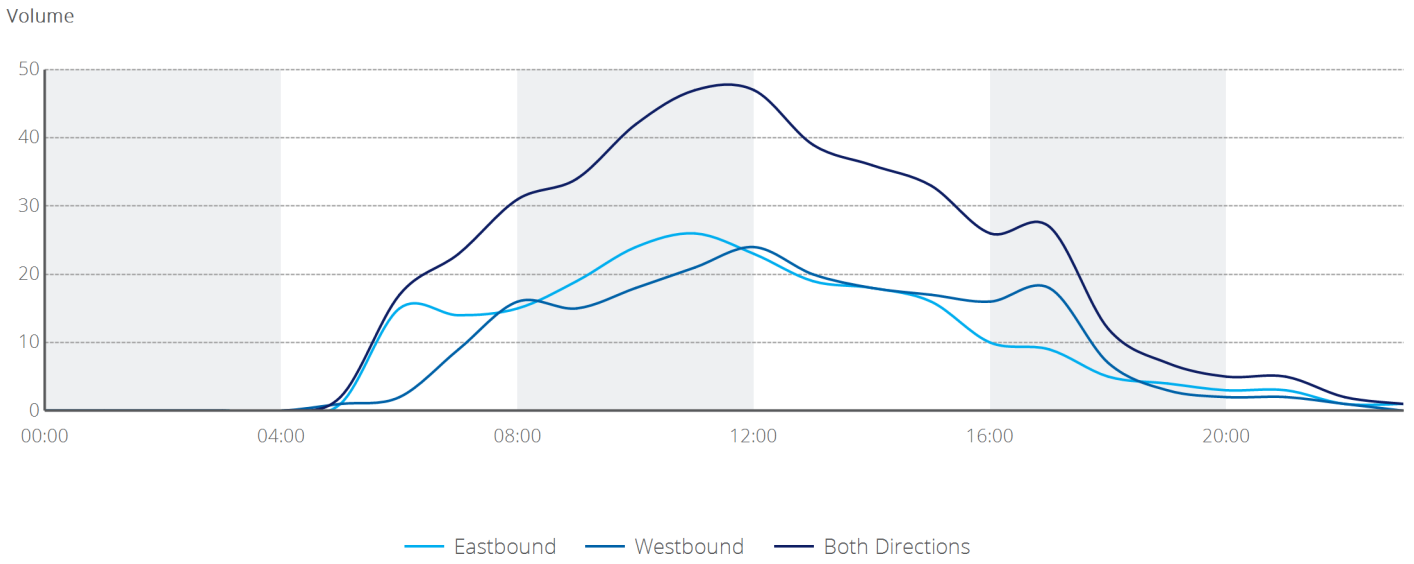
West of Cameron Rd (SLK 181.00)

2019/20
Monday to Sunday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	0	0	0	0	0	0	0.0
01:00	0	0	0	0	0	0	0.0
02:00	0	0	0	0	0	0	0.0
03:00	0	0	0	0	0	0	0.0
04:00	0	0	0	0	0	0	0.0
05:00	1	1	2	0	0	0	0.0
06:00	15	2	17	7	0	7	41.2
07:00	14	9	23	8	1	9	39.1
08:00	15	16	31	8	4	12	38.7
09:00	19	15	34	9	2	11	32.4
10:00	24	18	42	7	3	10	23.8
11:00	26	21	47	8	3	11	23.4
12:00	23	24	47	6	5	11	23.4
13:00	19	20	39	6	3	9	23.1
14:00	18	18	36	7	2	9	25.0
15:00	16	17	33	5	5	10	30.3
16:00	10	16	26	2	3	5	19.2
17:00	9	18	27	3	4	7	25.9
18:00	5	7	12	1	1	2	16.7
19:00	4	3	7	1	0	1	14.3
20:00	3	2	5	1	0	1	20.0
21:00	3	2	5	1	0	1	20.0
22:00	1	1	2	0	0	0	0.0
23:00	1	0	1	0	0	0	0.0
TOTAL	226	210	436	80	36	116	26.6

Peak Statistics

AM	TIME	11:15	11:30	11:15	08:15	07:45	07:45
	VOL	28	23	49	9	5	12
PM	TIME	12:00	12:00	12:00	13:15	14:45	14:45
	VOL	23	24	47	8	6	12



SITE 51699

Hourly Volume

2019/20
Weekend

South Coast Hwy (H008)

West of Cameron Rd (SLK 181.00)

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	0	0	0	0	0	0	0.0
01:00	0	0	0	0	0	0	0.0
02:00	0	1	1	0	0	0	0.0
03:00	0	1	1	0	1	1	100.0
04:00	0	1	1	0	0	0	0.0
05:00	2	1	3	2	0	2	66.7
06:00	5	1	6	3	0	3	50.0
07:00	6	5	11	1	0	1	9.1
08:00	6	10	16	1	0	1	6.3
09:00	14	12	26	6	0	6	23.1
10:00	17	13	30	3	1	4	13.3
11:00	19	15	34	5	0	5	14.7
12:00	17	19	36	3	5	8	22.2
13:00	12	10	22	2	1	3	13.6
14:00	15	11	26	6	0	6	23.1
15:00	13	11	24	1	3	4	16.7
16:00	12	9	21	3	1	4	19.0
17:00	10	12	22	3	2	5	22.7
18:00	6	4	10	3	2	5	50.0
19:00	5	3	8	2	0	2	25.0
20:00	2	0	2	1	0	1	50.0
21:00	3	0	3	1	0	1	33.3
22:00	1	1	2	0	0	0	0.0
23:00	1	0	1	0	0	0	0.0
TOTAL	166	140	306	46	16	62	20.3

Peak Statistics

AM	TIME	10:30	11:45	11:15	09:00	11:45	11:45
	VOL	20	20	38	6	4	9
PM	TIME	12:00	12:00	12:00	14:00	12:15	12:00
	VOL	17	19	36	6	5	8