Greg Alderson & Associates

Chartered Professional Engineers and Scientists

Traffic Impact Assessment
Traffic Management Plan
"Festival of the Stone"
Stone & Wood Brewery, Centennial Circuit, Byron Bay 2020 - 2022

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Document Information

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1.0 Introduction

Greg Alderson Associates have been engaged by Stone & Wood to undertake a Traffic Impact Assessment (TIA) and associated Traffic Control Plan (TCP) for a proposed annual one-day event - *'Festival of the Stone'*, at the Stone & Wood Brewery, 96-100 Centennial Circuit, Byron Bay.

This traffic impact assessment forms part of an application to Byron Shire Council for the use of the brewery and Cavanbah Centre carpark at 249 Ewingsdale Road, Byron Bay for the event to be held over three consecutive years (2020-2022) on the June long weekend (Queens Birthday long weekend).

In 2018 the event was held on the Saturday of the long weekend at the Stone & Wood brewery at Boronia Place, Byron Bay. GAA provided the TIA and TCP for the event. We did not carry out traffic and parking monitoring during the event.

The scope of this TIA includes the traffic impacts that will be generated during the event day, by event patrons and staff entering and exiting the site. The TIA does not include assessment of the minor traffic impacts associated with setting up/ packing up the event (bump in and bump out) on non-event days and implementing any traffic control measures.

1.1 Relevant standards, specifications and guidelines

This TIA will be prepared generally in accordance with the following standards, specifications and guidelines:

- NSW Government Guide to Traffic and Transport Management for Special Events Version 3.5
- QLD TMR Event Traffic Management Design Guidelines July 2018
- RMS Traffic Control at Worksites manual Version 5.0
- Australian Standards (in particular AS1742.3-2009 Traffic Control for Works on Roads)
- Quality Assurance specifications
- Austroads Guide to Traffic Management

Definitions

AADT	Average Annual Daily Traffic; average traffic volume per day after application of correction factors
ADT	Average Daily Traffic; average traffic volume per day, based on a limited survey period, typically 1 week.
Peak Flow Rate	Hourly volume of vehicles during busiest part of assessment period
Background Traffic	Traffic composition as would typically exist without superposition of event traffic

1.2 Site location

The event site is located in Centennial Circuit, in the Byron Bay Industrial Estate, approximately 3 kilometres west of Byron Bay town centre.

Land use in the immediate vicinity is the Byron Bay Industrial Estate, with Ewingsdale Road immediately south of the property and the Cavanbah Centre carpark 500 metres to the west (600m walk).

The vehicular entrance/s to the event site are via the existing brewery driveways at 96-100 Centennial Circuit. It is proposed that service vehicles, artist and stall holders would use these existing entrances during bump-in and bump out.

During the event, patrons will enter the site on foot via a temporary entry (using the concrete driveway) from Centennial Circuit. Emergency access is proposed to be provided at the same location (Refer site plan Appendix B).

During event times it is proposed to implement a temporary road closure fronting the site to provide full separation of external vehicle traffic from pedestrian traffic at the site frontage.

Error! Reference source not found. below depicts the location of the site with respect to its locality.

Figure 1 - Site locality, *Source of map: Six Maps 2017*

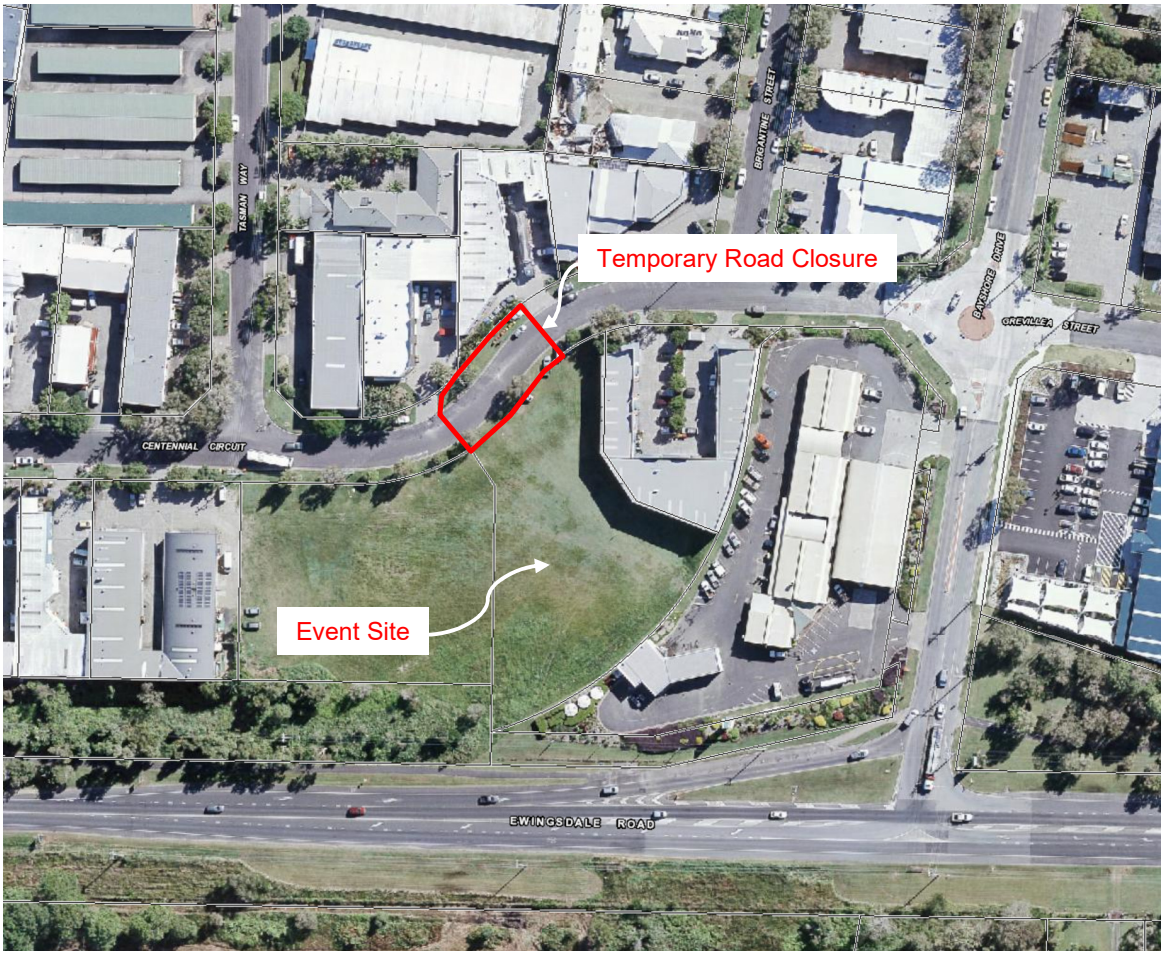


Figure 2 - Site location, *Source of map: SIXMaps 2019*

1.3 Event description

The event is proposed to operate under the following parameters:

Event dates:	Saturday 6th June 2020
	Saturday 12th June 2021
	Saturday 11th June 2022
Operating Times:	3.00pm – 10.00pm
Total attendees:	2,000 patrons and staff
Entertainment:	Family activities (face painting etc)
	D.J.'s / Bands

Set up of the internal event site (bump in) will mostly be carried out during the morning of the event (Saturday) with some low impact activities/ deliveries during the week leading up to the event. Generally entry to and from the site during this time would be by normal turning movements into and out of the existing driveways on Centennial Circuit. **No Vehicle Movement Plan is required for bump-in and bump-out at this low speed location.**

Saturday is not a working/trading day for all businesses in the area, hence the traffic impact of the bump in is considered minor and site movements would be managed by the events staff or contractors as required. Bump out will commence after the event on the night (subject to noise recommendations), and be completed on Sunday. Sunday would not be a normal working/trading day for most businesses in the area.

It is recommended that businesses in the immediate area are notified of the proposed temporary road closure, event bump-in and patron arrival times as there may be an impact on their access, local travel times and on-street parking availability during these hours.

In addition it is recommended that access to off-street parking by event traffic is prevented to business premises that will be operating during these times.

Events staff would manage workplace safety and vehicle movements during bump-in and bump-out to reduce the risk of pedestrian and vehicle conflict. All deliveries and loading/ unloading activities should be undertaken on site where feasible at this location. The bump-in and bump-out vehicle movements are not included in this traffic impact assessment and the traffic management plan. The traffic impact of bump-in and bump-out at this location is expected to be minimal, subject to undertaking notifications as indicated above.

2.1 Existing Traffic Conditions

The event site is accessed from Centennial Circuit which is the main circulation road within the Byron Bay Industrial Estate for the west side of Bayshore Drive. Centennial Circuit is a local road under the control of Byron Shire Council.

Centennial Circuit is a 2 way street with a sealed width of approximately 9 metres. Other connecting streets within the industrial estate, including Tasman Way, Brigantine Street and Wollongbar Street also have sealed widths of approximately 9 metres. Footpath areas are generally grass surface.

Byron Shire Council have recently considered implementing a one-way trial for Centennial Circuit. This trial may be in place during one or more of the proposed events, so the Traffic Control Plan for each event will depend on whether Centennial Circuit is one-way or two-way at the time. We understand that the likely option is for Centennial Circuit to be one-way from Brigantine Street to Wollongbar Street in a clockwise direction (Figure 3).

Figure 3 – Likely option for one-way trial along Centennial Circuit

Parallel parking is generally permissible in the streets of the industrial estate on both sides. There are some areas however that have No Stopping zones and some time limited parking on Bayshore Drive.

We have previously carried out a site inspection at 8:30am on Thursday April 20th 2017. Along Banksia Drive where vehicles were parked along both sides at the time of inspection, there was between 5m to 6m trafficable width between parked vehicles. This width allows for slow speed passing of vehicles, with some drivers electing to give way to oncoming vehicles over short segments. Figure 4 shows an example of the existing parking conditions during the inspection. Event parking on-street around Centennial Circuit has been observed to be similar.

Figure 4 - Banksia Drive Parallel Parking

The speed limit in the industrial area is 50km/h. When vehicles are parked on both sides of Centennial Circuit vehicle operating speed is estimated at less than 40 km/h.

2.2 Parking Supply

Parking for event patrons and staff will be available in the industrial estate both on-street and (some) off-street, and at the Cavanbah Centre.

We carried out parking observations around Centennial Circuit and its connecting streets (Bayshore Dr, Brigantine St, Wollongbar St and Tasman Way) on Saturday 9th March 2019, from 3:45pm to 4:30pm. The on-street parking demand observed included:

- Bayshore Drive 0 vehicles using on-street parking
- Centennial Circuit 22 cars and 2 heavy vehicles using on-street parking
- Tasman Way 15 cars and 2 heavy vehicles using on-street parking
- Brigantine Street 6 cars using on-street parking
- Wollongbar Street 14 cars using on-street parking
- Total observed 57 cars and 4 heavy vehicles

Based on the above observations there would be sufficient capacity of on-street parking in the industrial area to the west of Bayshore Drive for approximately 200 spaces for event patrons. Any patrons and staff that use available off-street parking would reduce the impact to the on-street parking in the industrial area.

It is proposed to provide off-street parking for the event at the Cavanbah Centre (hire to be secured by the event manager and DA consent). Provision of the overflow parking area and formalised carpark at the Cavanbah would provide:

- Overflow parking area: 150 spaces (will require temporary works to convert bus parking to car parking)
- Carpark Area: 176 spaces (assuming 8 rows secured)

No parking fees should be collected from vehicles at the off-street parking area to minimise risk of queuing onto Ewingsdale Road.

Total available event parking supply would be more than 500 spaces. This event has an estimated (assumed based on experience with similar events) vehicle occupancy of 3 patrons per vehicle, so parking would have capacity for approximately 1500 patrons.

2.3 Public Transport

A shuttle system is being arranged with local bus operators to provide transport for patrons from Byron Bay township to the site and return. Patrons from other areas including Suffolk Park to the south will need to arrange transport by other means either to Byron Bay for shuttle or to the event.

The shuttle buses will set-down and pick-up in a temporary drop-off zone created using the temporary traffic control plan.

2.4 Pedestrian Network

The main pedestrian flow in the vicinity of the subject site will be in Centennial Circuit itself where patrons will congregate at the event entry. It will be critical that the proposed road closure is implemented and event staff process the entry of patrons efficiently in order to manage the external queue length in the closed road area. Event security may be required to control and manage the queueing if necessary.

It was observed in 2019 that the arrival profile of patrons was spread over a number of hours without any external queuing problems. The event catered for families during the afternoon, and to adult entertainment later in the evening. This event schedule was a good way to avoid a significant peak flow occurring during the arrival period.

At closing time, however there was a significant crowd of patrons waiting for transport to leave the event. This issue can be mitigated for future events by:

- Providing additional shuttle services to reduce patron waiting times;
- Implementing the proposed road closure to fully separate pedestrian traffic from vehicle traffic at the site frontage;
- Consider event scheduling options that may spread the departure period over a few hours.

Patrons parking on-street and then arriving by foot would use the existing unsealed footpath areas as do workers and customers during normal work days in the area. Due to the low speed environment of the streets, during the event no formal temporary pedestrian facilities or traffic controllers are proposed specifically for pedestrian management.

Patrons parking at the Cavanbah Centre will walk to the event using the existing off-road pathway along Ewingsdale Road. A temporary path link is proposed for connection to the site from Ewingsdale Road as depicted in Figure 5. The proposed link crosses a lot owned by Byron Shire Council. Owners Consent may be required for this temporary work.

The temporary pathway can be created using suitable rubber matting or similar.

Figure 5 – Temporary footpath link from Ewingsdale Road footway

It was observed in 2019 that the number of cars parked in the Cavanbah Centre and around the industrial area was significantly less than expected and the impact was minor. It was observed that a majority of patrons were arriving by being “dropped off” at the event, and leaving by arranging a “pick-up” or using the shuttle bus service.

3. PROPOSED DEVELOPMENT

3.1 Description

The proposed development, *'Festival of the Stone'* events, will be held on Saturday of the June long weekend from 2020 to 2022. Gates are proposed to open at 3 pm and close at 10 pm.

The total attendees is 2000 patrons and staff. The event staff on site, including performers and security, is estimated for the purpose of the traffic report at 100.

Event patron vehicle access to/ and from the off-street parking site at the Cavanbah Centre, will be under the management of the traffic control plan (event directional signage) and parking marshalls.

A temporary road closure will be implemented under an approved traffic control plan at the site frontage on Centennial Circuit during the event times to separate pedestrians from external vehicle traffic.

3.2 Access

Vehicle access to the event shuttle bus and taxi drop off zone at the site will be within the proposed temporary road closure on Centennial Circuit fronting the site. Event marshalls will be provided to assist with managing pedestrians and vehicle drop-offs at the site frontage.

There is a need for service vehicles, performer's vehicles, food stall operators, and officials to enter and exit the site. These movements are planned to be undertaken before and after gates are open/shut for the event and all patrons have left the site. Emergency vehicles will be able to access the site at the entry location. Opening of these gates would be under the control of event staff.

3.3 External and Internal Circulation at the Site

No vehicles (other than in an emergency) will be permitted to enter the site during the event. Refer to the Emergency Response and Evacuation Procedure for further details.

Unlike other larger events that are generally adjacent to arterial roads, it is not proposed to implement 'no stopping' areas along roadsides to prevent drop-off and pick-up of patrons on roadsides. Due to the smaller scale of the proposed event, its timing and the type of roads surrounding the site, it is considered that patrons can be dropped off safely in the area and make their way by foot to the gate. If this becomes an issue at the first event the TCP would be revised for future events.

The largest vehicles, which will access the site, are small/ medium trucks and towed food vans, which will be used to transport equipment for the bands performing at the Event, deliver site toilets and set up food vendors. Equipment and food vans will be set up prior to the Event and removed after the conclusion of the Event.

3.4 Parking

The event is proposed to include up to 1900 patrons and approximately 100 staff and others. There is sufficient parking for the event with provision of off-street parking at the Cavanbah Centre and on-street parking spaces in the industrial estate west of Bayshore Drive. The arrival of patrons by shuttle bus, taxi and other drop-off will reduce the impact of on-street parking.

In 2019, a total of 1020 tickets were sold/issued for the event for patrons and staff.

We carried out some brief traffic observations after 7pm and found that approximately 20 cars were parked at the Cavanbah Centre and approximately 50 cars were parked in the industrial area near the event.

We were advised by other event staff that most patrons were being dropped off at the site, and that the arrivals were spread over a number of hours throughout the afternoon and evening. There was no obvious peak in the arrivals profile based on these observations.

It is estimated that approximately 20% of ticket holders arrived in vehicles that parked near the event (210 persons in 70 cars based on an assumed 3 persons per vehicle). The remaining ticket holders are expected to arrive by "drop-off", using the shuttle service, by taxi/uber and private vehicles.

Actual attendance at the event based on event-brite check-ins was 853 persons. So it is estimated that approximately 643 patrons arrived by "drop-off".

Using the above observations, an event of 2000 persons would require:
- Up to 150 car spaces;
- "drop-off" of up to 1300 patrons over the afternoon and evening.

Parking spaces available for patrons include approximately 200 spaces on-street parking in the industrial area west of Bayshore Drive, and at least 300 spaces at the Cavanbah Centre parking area. Additional on-street overflow parking is available to the east of Bayshore Drive. Supply of parking spaces is not an issue with the proposed event.

Disabled access is proposed to be provided at the shuttle bus/ taxi drop-off area. Disabled patrons would be set-down on Centennial Circuit in front of the event entry.

4. Impact of proposed development

4.1 Traffic Generation of Proposed Development

Arrival Traffic
The estimated number of trips for arrivals to the event includes:
- 150 cars arriving and parking for the duration of the event;
- 433 vehicles performing "drop-off" of 1300 patrons in Centennial Circuit.
- These trip numbers have excluded the number of patrons using the shuttle service, so the trip generation is conservative for the purpose of the analysis.

Based on previous event experience we have estimated that drop-off vehicles have an average occupation of 3 persons per vehicle. Hence there is an estimated 433 arrival trips.

The greatest potential impact on traffic will be if the event arrivals peak flow coincides with the afternoon background peak flow of traffic (peak flow occurring after 3pm).

We have completed a SIDRA Network analysis to estimate the potential traffic impacts from the event. We have assumed that all traffic arrives during 1 hour for the analysis. We know from previous experience that arrivals will occur over an extended period of time of 2-3 hours or more.

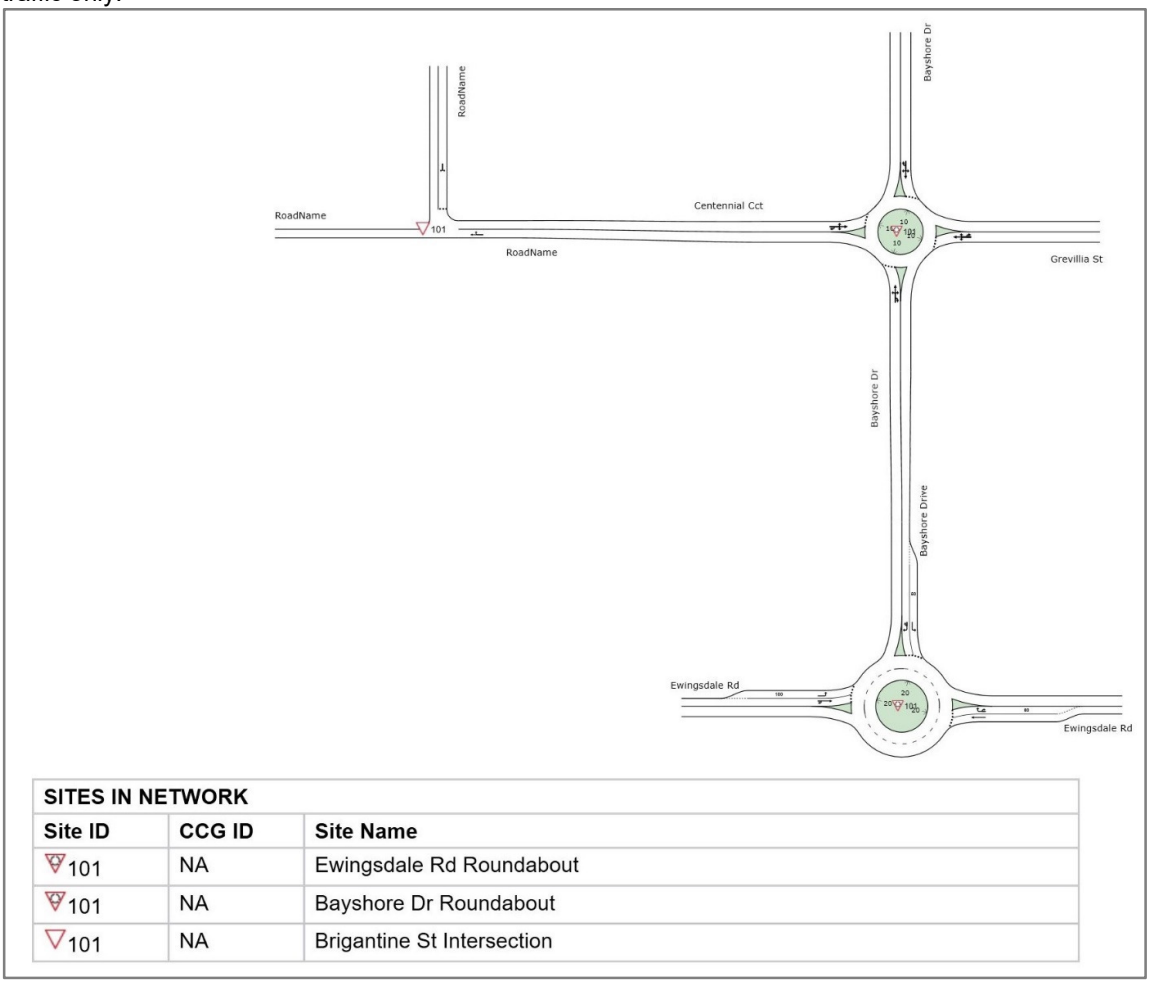
Departure Traffic
Patron peak exit flows after the event would be after 9:30pm on the Saturday Night. The traffic generated by the patrons leaving the event would not coincide with any significant background traffic hence the impact on traffic queuing and Level of Service will be minimal.

The most important issue during departures is to manage patron/ pedestrian safety as they leave the event site. This scenario has not been analysed in SIDRA. Management measures proposed include:

- Implementation of the temporary road closure;
- Provision of shuttle bus services;
- Temporary pedestrian walkway suitable for night-time access to Cavanbah Centre.

SIDRA Network Model

The SIDRA Network Layout created for this analysis is shown in Figure 5. Centennial Circuit is modelled as one-way from Brigantine Street, which both represents the proposed one-way trial and also represents the proposed road closure which would accommodate shuttle bus and taxi/ uber traffic only.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	Ewingsdale Rd Roundabout
101	NA	Bayshore Dr Roundabout
101	NA	Brigantine St Intersection

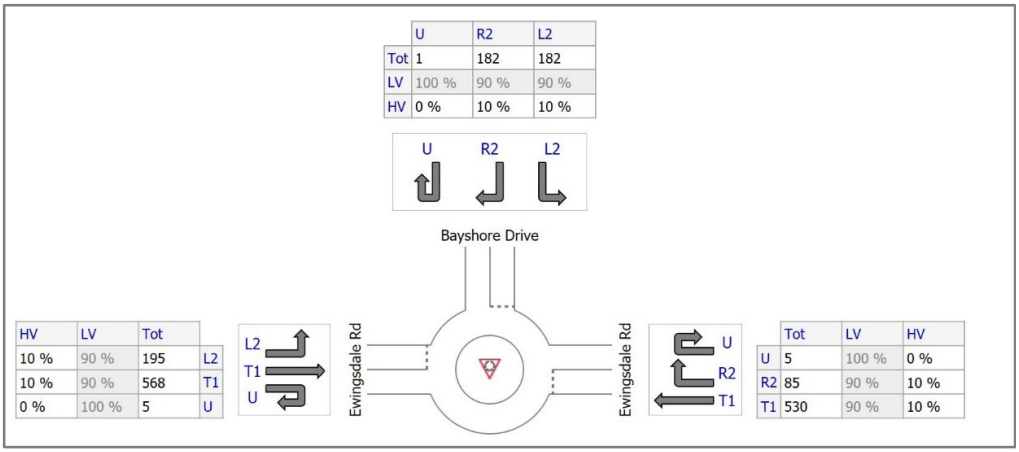
Figure 6 – SIDRA Network Layout - Festival of The Stone

Background Traffic – Pre-Event Afternoon Peak after 3pm

We have utilised traffic count data from Byron Shire Council undertaken on Ewingsdale Road prior to the construction of the Ewingsdale Road/ Bayshore Drive Roundabout, and from a counter installed separately on Bayshore Drive. The reports included:

- SP0591 Bayshore Dr 15m north Roundabout September 2019
- SP0516 Ewingsdale Rd WB only at Bayshore Dr January 2016
- SP0515 Ewingsdale Rd Left Turn Slip Lane January 2016
- SP0514 Ewingsdale Rd EB only at Bayshore Dr January 2016

The input volumes are shown in the following Figures 5-7. Input volumes to minor approaches were assumed.

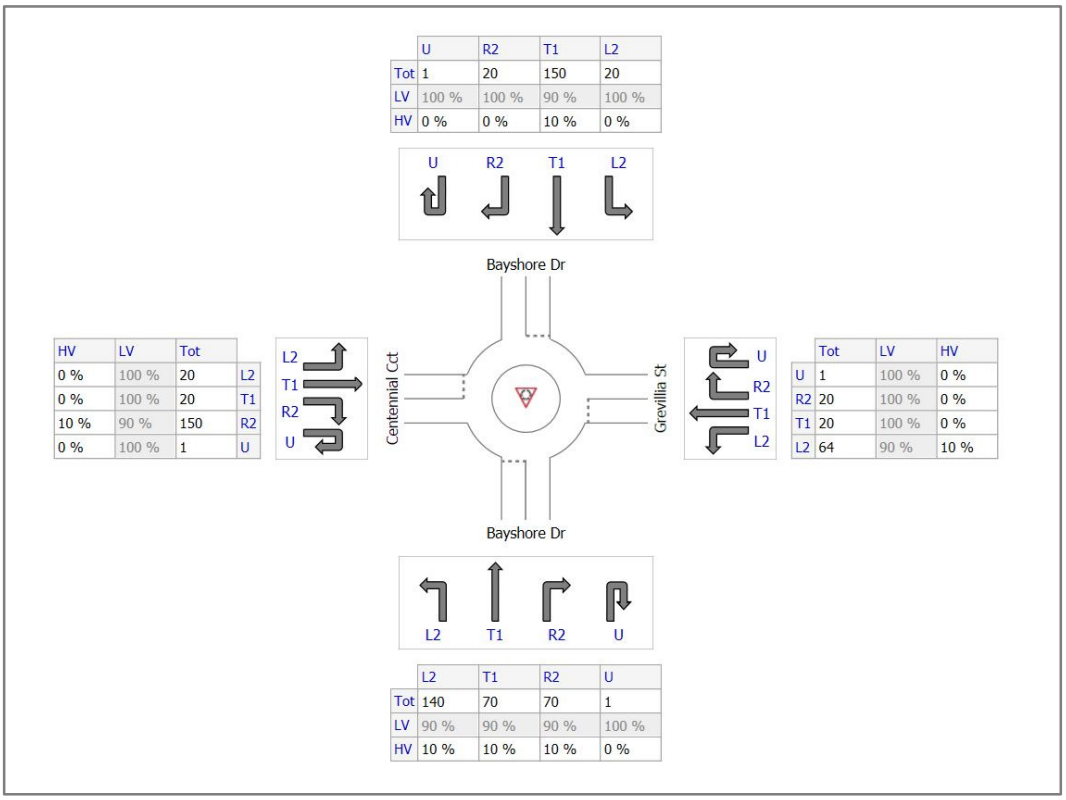


	U	R2	L2
Tot	1	182	182
LV	100 %	90 %	90 %
HV	0 %	10 %	10 %

HV	LV	Tot	
10 %	90 %	195	L2
10 %	90 %	568	T1
0 %	100 %	5	U

	Tot	LV	HV
U	5	100 %	0 %
R2	85	90 %	10 %
T1	530	90 %	10 %

Figure 7– SIDRA Input Volumes – Background Traffic Peak Flow after 3pm



	U	R2	T1	L2
Tot	1	20	150	20
LV	100 %	100 %	90 %	100 %
HV	0 %	0 %	10 %	0 %

HV	LV	Tot	
0 %	100 %	20	L2
0 %	100 %	20	T1
10 %	90 %	150	R2
0 %	100 %	1	U

	Tot	LV	HV
U	1	100 %	0 %
R2	20	100 %	0 %
T1	20	100 %	0 %
L2	64	90 %	10 %

	L2	T1	R2	U
Tot	140	70	70	1
LV	90 %	90 %	90 %	100 %
HV	10 %	10 %	10 %	0 %

Figure 8 – SIDRA Input Volumes – Background Traffic Peak Flow after 3pm

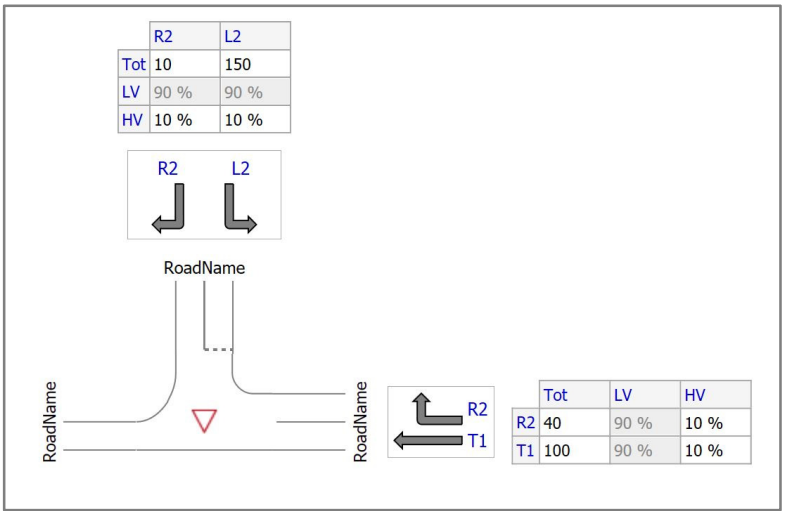


Figure 9- SIDRA Input Volumes – Background Traffic Peak Flow after 3pm

Event Traffic – Afternoon Arrivals Scenario

As discussed above, the greatest potential impact on traffic will be if the event arrivals peak flow coincides with the afternoon peak flow of traffic (peak flow occurring after 3pm).

We have assumed conservatively that all arrivals traffic occurs in a 1 hour period of time. The input volumes are shown in the following Figures 8-10, and the volumes are based on:

- 430 vehicles performing “drop-off” near the event site;
- 100 vehicles parking in the streets of the Industrial Estate near the event site;
- All vehicles arriving via Ewingsdale Road and Centennial Circuit.

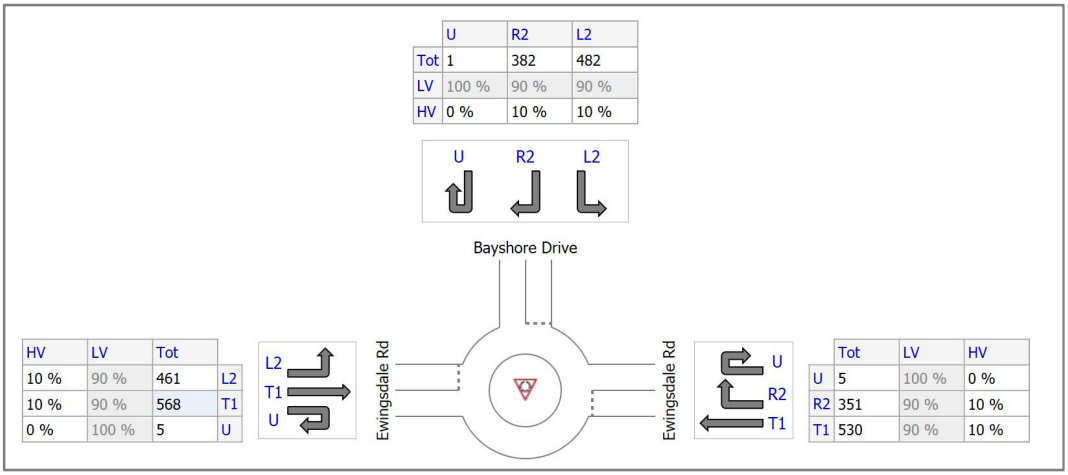


Figure 10 - SIDRA Input Volumes – Event Arrivals Traffic Peak Flow after 3pm

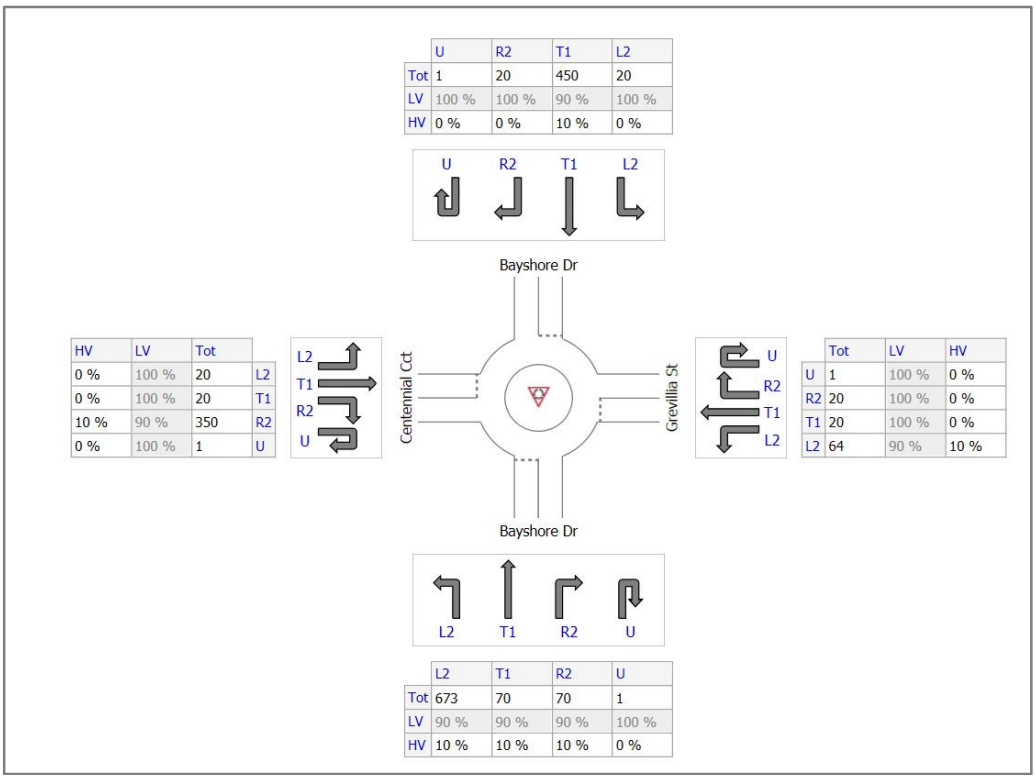


Figure 11 - SIDRA Input Volumes – Event Arrivals Traffic Peak Flow after 3pm

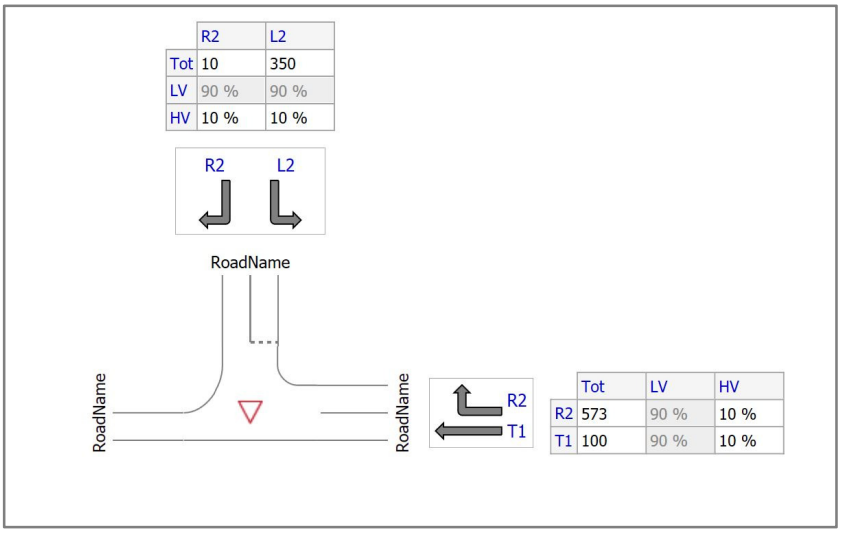


Figure 12- SIDRA Input Volumes – Event Arrivals Traffic Peak Flow after 3pm

SIDRA Outputs – Queuing Distance

The estimated queue distance (95 %ile) is shown for pre-event and during event in Figures 12-14. Level of Service, LOS A is predicted for both scenarios at all intersections in the network.

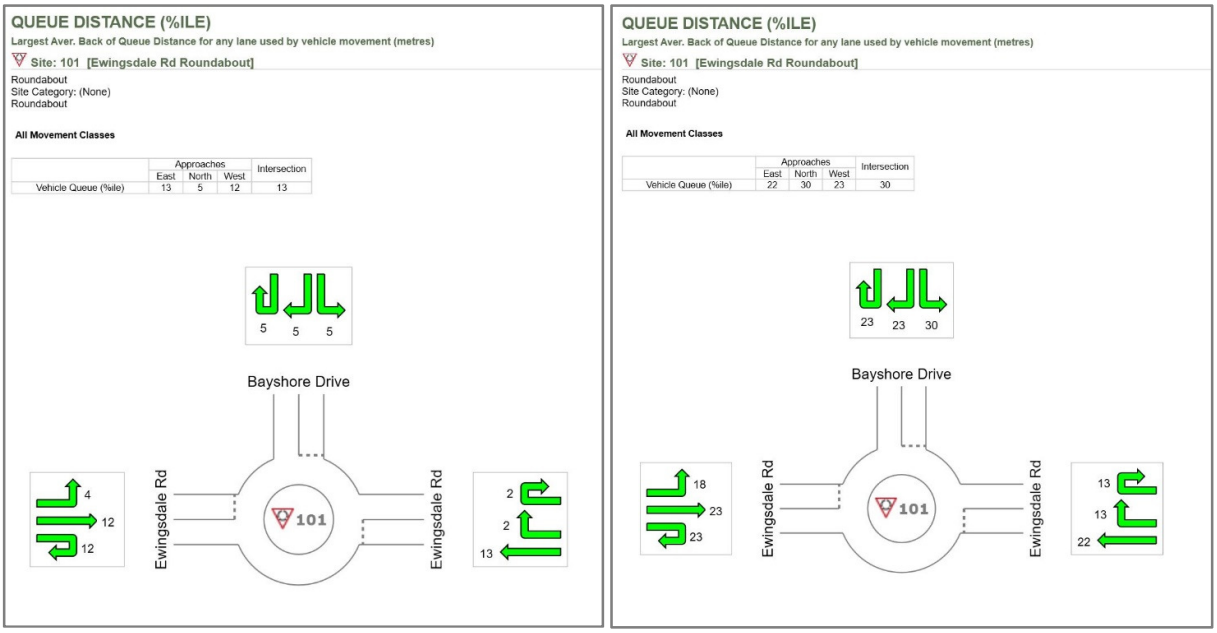


Figure 13 – Queue Distance – Background Traffic (Left) and Event Arrivals (Right)

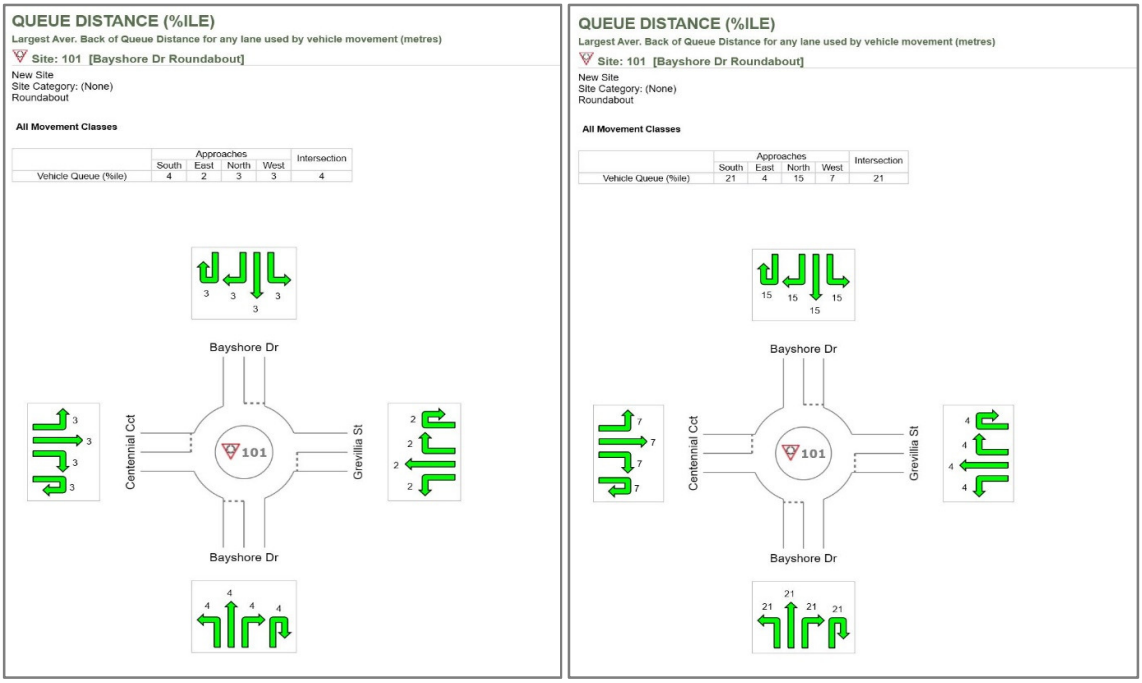


Figure 14 - Queue Distance – Background Traffic (Left) and Event Arrivals (Right)

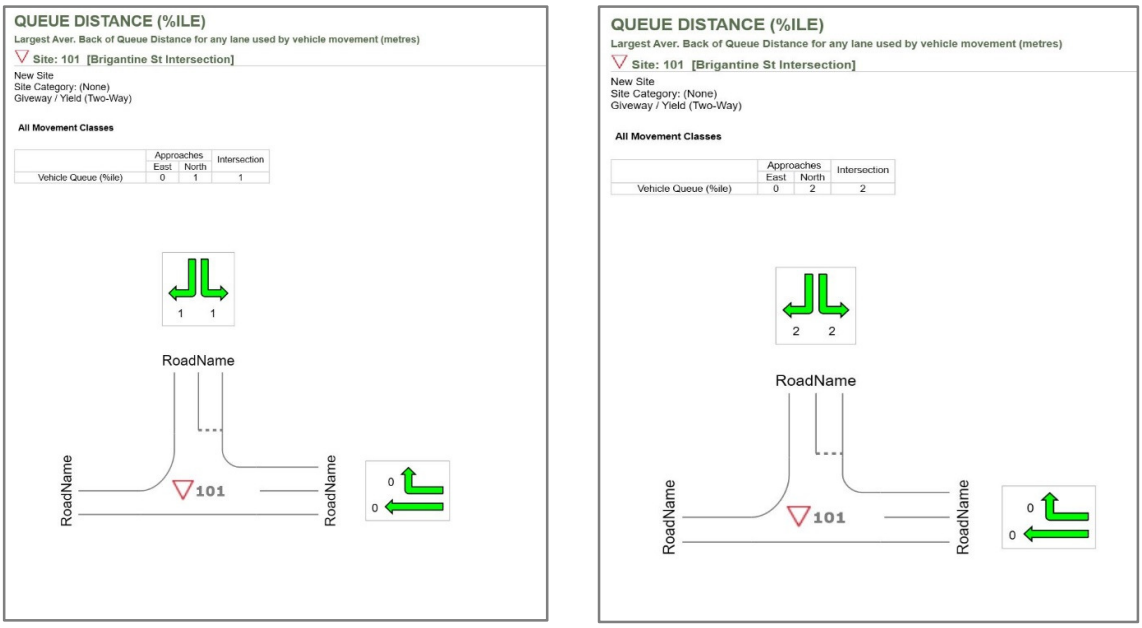


Figure 15 - Queue Distance – Background Traffic (Left) and Event Arrivals (Right)

SIDRA Outputs – Level of Service

The estimated delay level of service is shown for pre-event and during event in Figures 16-18. Level of Service varies for turn movements from A to C. The LOS criteria are shown in Figure 15.

LOS C is shown for right turn from Brigantine Street. This turn movement will be managed or prohibited with implementation of the proposed Traffic Control Plan.

Level of Service (LOS B) is acceptable during the peak flow period. Normal weekday traffic exhibits similar queuing and delay at these intersections as predicted during the event.

Table 6.3: LOS criteria for roundabouts

LOS	Average control delay d (s/veh)
A	$d \leq 10$
B	$10 < d \leq 20$
C	$20 < d \leq 35$
D	$35 < d \leq 50$
E	$50 < d \leq 70$
F	$70 < d$

Source: SIDRA Intersection User Guide (Akçelik & Associates 2011).

Figure 16 - LOS Criteria for roundabouts, *Source: Austroads Guide to Traffic management Part 3, Table 3.1*

Note: Control delay includes delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed.

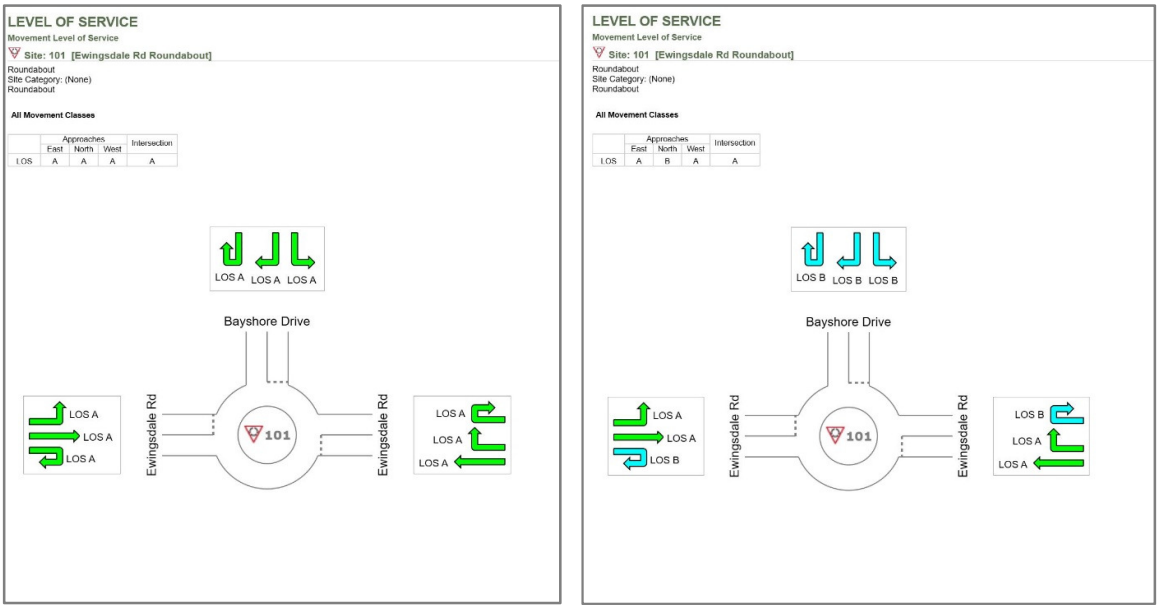


Figure 17- LOS – Background Traffic (Left) and Event Arrivals (Right)

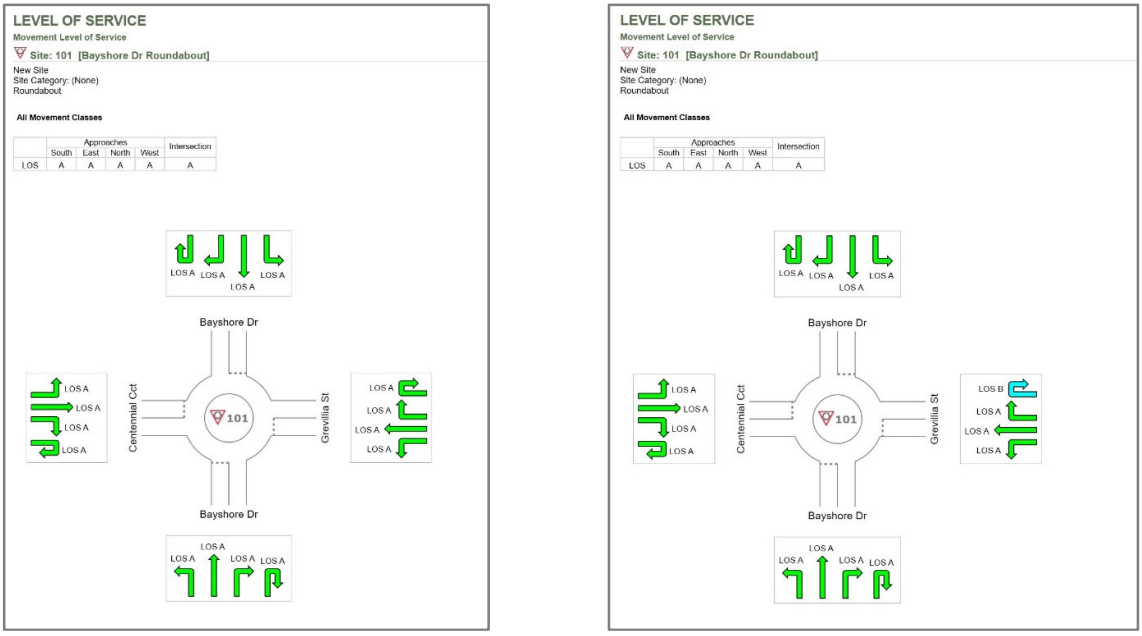


Figure 18 - LOS – Background Traffic (Left) and Event Arrivals (Right)

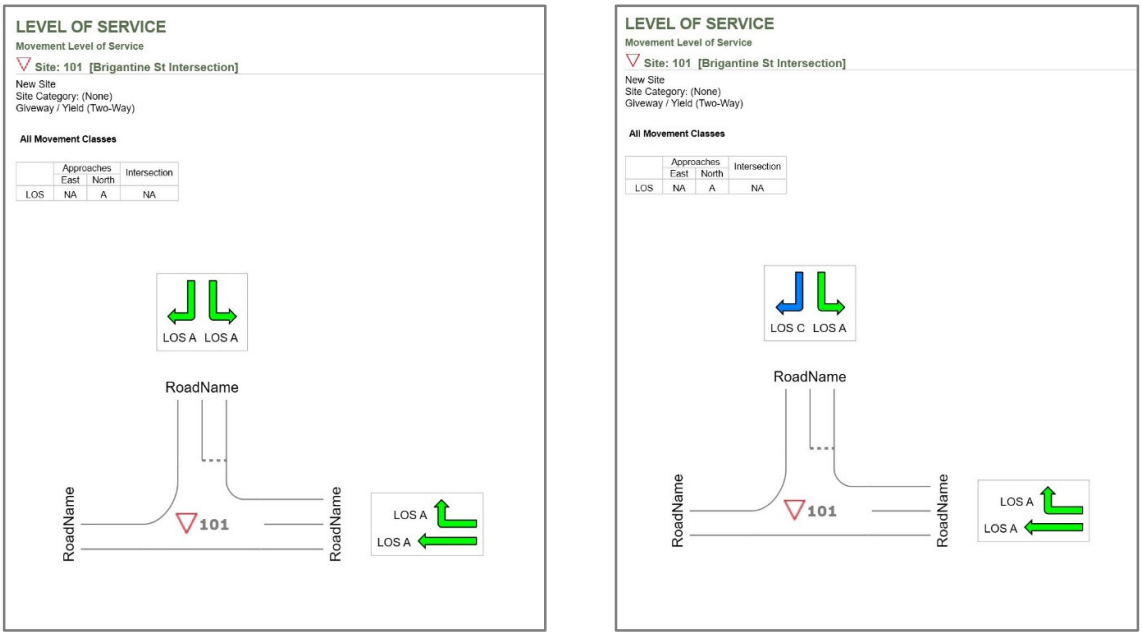


Figure 19- LOS – Background Traffic (Left) and Event Arrivals (Right)

4.2 Impact on Traffic and Pedestrian Safety

The main potential safety issues (and movement conflicts) are:

- Queueing of drop-off vehicles in Centennial Circuit and Brigantine Street;
- Vehicles turning into the Industrial area from Ewingsdale Road;
- Vehicles from the event car parking areas, set-down and pick-up areas leaving the event;
- Pedestrians crossing roads in the industrial area and queuing at the entry on arrival;
- Patrons leaving the event site and seeking transport;
- Service and emergency vehicles entering and leaving the event site;
- Hostile Vehicle Mitigation.

These are proposed to be addressed with the following mitigation measures:

- **Event traffic marshalls and traffic controllers** controlling entry to the site drop-off zone and pedestrian queueing in Centennial Circuit for the duration of the event;
- **Traffic controllers** managing road closures for the duration of the event;
- **Directional signage** be provided on Ewingsdale Road to assist vehicles finding the event parking area at the Cavanbah Centre;
- Minor queuing and delays can be expected for non-event traffic;
- **Event parking marshalls** managing the parking of vehicles at the off-street parking site;
- **Contingency TCP including traffic controllers** be available to be implemented as required.
- **Implement temporary road closure on Centennial Circuit between Brigantine Street to Tasman Way** to provide safe pedestrian access and queueing areas at the event entry
- It is anticipated that the speed environment of the streets in the industrial area during the event would reduce the general speed of vehicles allowing pedestrians to manage crossing of roads and footpaths safely without provision of formal temporary crossing facilities;
- **Traffic Barriers** for temporary hostile vehicle mitigation to provide physical barrier to areas where patrons will gather;
- **Shuttle Bus Service** to and from the event. Shuttle service efficiency will be increased at departure times to reduce the risk of patrons leaving the event site on foot and reduce crowding at the end of the night.

4.3 Impact of Generated Traffic

This proposed *'Festival of the Stone'* event is of a relatively small scale, and is unlikely to cause any significant traffic delays.

Implementation of safety mitigation measures indicated in Section 4.2 would also assist in minimising traffic delays.

SIDRA analysis of event arrivals shows no prediction of significant queueing or delays.

While departures from the event will not have a significant impact on background traffic, managing patron/ pedestrian safety will be a priority.

4.4 Recommended Works

It is recommended that the Event, while having a small impact on the traffic in the local road network surrounding the site, can proceed with the following mitigation works:

- A formal Traffic Control Plan (TCP) be prepared for the temporary traffic works in accordance with the works described in this report. The Traffic Control Plan is to be complied with at all times as nominated in the plan.

- That businesses in the immediate area are notified of the proposed temporary road closure, event bump-in and patron arrival times as there may be an impact on their property access, local travel times and on-street parking availability during these hours.

- That access to off-street parking is prevented at businesses that will be operating during bump-in and patron arrival times to prevent nuisance event parking.

Recommended works include:

- Temporary road closure at drop-off zone/ site frontage;
- Event car parking to be permissible on-street in the industrial area, and off-street parking be provided at the Cavanbah Centre;
- Disabled access be provided by vehicle drop-off at the designated drop-off zone;
- Parking at the Cavanbah Centre to be controlled by event parking marshalls;
- Shuttle Bus and taxi set down and pick up of patrons is to occur in Centennial Circuit;
- Temporary signage to be erected as shown in the Traffic Control Plan to assist traffic flows.
- Event traffic marshalls and traffic controllers to be provided to assist in controlling the site drop-off point and queueing of pedestrians;
- A contingency Traffic Control Plan is to be developed with traffic controllers (and implemented if required) for managing excessive queueing and/or poor traffic flow at Centennial Circuit if the situation arises;
- Provision of temporary traffic barriers in accordance with hostile vehicle mitigation guidelines;
- Traffic and parking monitoring be undertaken during the event by a suitably qualified civil engineer to evaluate the traffic performance of the event.

5.0 Risk assessment

An example risk assessment for the traffic operation of this event is described in this chapter. The risk assessment is set up such to identify potential risks to public health as a result of the event traffic operations.

It is noted that it is the combined responsibility of event management and government authorities to ensure that there is sufficient funding available and personnel in place for adequate implementation of the traffic control plans, infrastructure and risk mitigation measures.

The example risk assessment proposed in this report is provided as a guide.

We recommend that after all relevant staff, consultants and contractors have been engaged by the Event Manager, that a risk management meeting is held prior to the event. During this risk management meeting a final risk assessment shall be established which would be included in the event management manual.

The classification of risks for the purpose of this risk assessment is depicted in Figure 9 and associated definitions are provided in
Table 1.

Figure 9 - Risk classification matrix

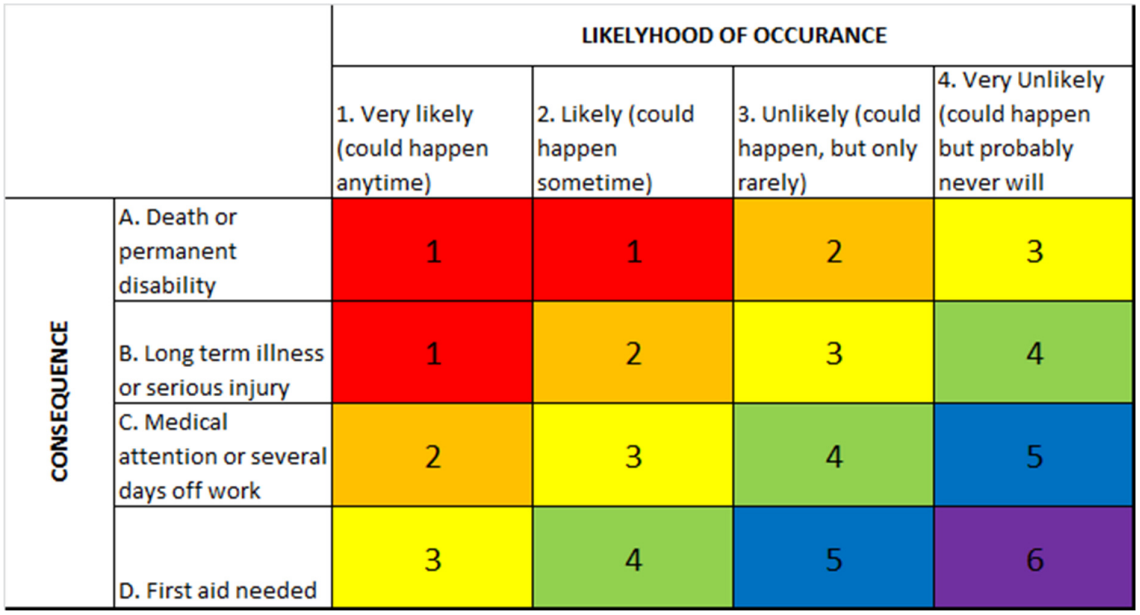


Table 1 - Risk definitions

Risk Class	Time Frame for Corrective Action	Role/Responsibility
Class 1 – Extreme risk	Immediate action required	Senior management – Executive
Class 2 – Very high risk	Immediate action required	Senior management
Class 3 – High risk	Immediate action required	Senior management
Class 4 – Medium risk	Close-of-business of current day	Management responsibility must be specified
Class 5 – Low risk	Within 24 hours	Manage by routine procedures
Class 6 – Very low risk	Within 48 hours	Manage by routine procedures

The risk assessment is provided below.

Greg Alderson & Associates

Chartered Professional Engineers and Scientists

RISK ASSESSMENT												
				Initial Risk Rating					Residual Risk Rating		
Activity	Hazard description	Direct consequence	Potential indirect consequence	L	C	Risk Class	Method for risk mitigation	Responsible person formitigation implementation	Person responsible for ensuring sufficient funding to enact mitigation	L	C	Risk Class
Traffic control on public road	Traffic controller hit by car	Injury or death	Traffic congestion and queue growth	3	A	2	Ensure proper implementation of traffic control plan	Traffic control manager	Festival General Manager	4	A	3
							Ensure TC staff compliance with WHS regulations and other relevant legislation	Supervisors and overseers	Festival General Manager			
On-site vehicle processing	Insufficient rate at which vehicles are processed	Traffic congestion and queue growth	Collision on public road	2	A	1	Ensure sufficient staff for vehicle processing	Parking manager	Festival General Manager	4	A	3
							Ensure adequate equipment to enable staff to process vehicles safely and efficiently	Parking manager	Festival General Manager			
							Enactment of snake in southern car park to create additional vehicle storage	Event traffic manager	Festival General Manager			
							Traffic controllers on public road to control back of queue	Traffic control manager	Festival General Manager			
Patron arrival, departure and additional festival traffic generation throughout event	Higher patron arrival flow than anticipated	Traffic congestion	Collision on public road	2	A	1	Traffic management plan to allow for sufficient contingency	Traffic Engineer	Festival General Manager	4	A	3
							Contingency plans available for enactment if needed	Traffic Engineer and traffic control manager	Festival General Manager			
							Queue warning vehicle implementation	Traffic control manager	Festival General Manager			
	More concentrated arrival peak than anticipated	Traffic congestion	Collision on public road	2	A	1	Traffic management plan to allow for sufficient contingency	Traffic Engineer	Festival General Manager	4	A	3
							Contingency plans available for enactment if needed	Traffic Engineer and traffic control manager	Festival General Manager			
							Queue warning vehicle implementation	Traffic control manager	Festival General Manager			
	Crash on critical intersection or traffic lane	Injury or death	Traffic congestion and queue growth	3	A	2	Secure crash site	Police	NSW Police Force	4	A	3
							Provide required aid to persons involved	Emergency services	NSW Ambulance Service			
							Manage traffic at crash site	Police	NSW Police Force			
							Manage back of queue	Traffic control manager	Festival General Manager			
	On-site crash	Injury or death	Traffic congestion and queue growth	2	A	1	Ensure adequate on-site road network	NBP General Manager	NBP shareholders	3	C	4
							Ensure sufficient visibility through corners	NBP General Manager and Event Traffic Manager	NBP shareholders and Festival General Manager			
							Ensure low speed environment	Event traffic manager	Festival General Manager			
							Prevent occurrence of sudden stopping	Event traffic manager	Festival General Manager			
							Secure crash site	Police	NSW Police Force			
							Provide required aid to persons involved	Emergency services	NSW Ambulance Service			
							Manage traffic at crash site	Police	NSW Police Force			
							Manage back of queue	Traffic control manager	Festival General Manager			
	On-site vehicle break down	Traffic congestion and queue growth	Collision on public road	2	A	1	Remove vehicle from traffic lane	Event traffic manager	Festival General Manager	4	B	4
							Enactment of snake in southern car park to create additional vehicle storage	Event traffic manager	Festival General Manager			
							Traffic Management Plan to include low speed zones in high risk areas	Traffic Engineer	Festival General Manager			
							Traffic controllers on public road to control back of queue	Traffic control manager	Festival General Manager			
	Queue on motorway, motorway off ramp or arterial road	Traffic congestion and queue growth	Potential back of queue crash	3	A	2	Contingency plans available for enactment if needed	Traffic Engineer and traffic control manager	Festival General Manager	4	A	3
							Queue warning vehicle implementation	Traffic control manager	Festival General Manager			
	On-site fire or bush fire	Panic by drivers	Potential collisions on site and public road	2	A	1	Fire prevention by site planning, vegetation maintenance and crowd control	NBP General Manager and Event Manager	NBP shareholders and Festival General Manager	2	D	4
							Fire identification and fighting	RFS and Event manager	RFS and Festival General Manager			
	Severe wind, rain and/or hail	Sudden stop of traffic flow and uncontrolled placing of vehicles on traffic lane and road shoulder	Collision	2	A	1	Monitor weather and issue sever weather warnings to staff, contractors and patrons	Event manager	Festival General Manager	3	B	3
							Queue warning vehicle implementation	Traffic control manager	Festival General Manager			
							VMS text to be changed to warn drivers of severe weather and traffic congestion	Traffic control manager	Festival General Manager			

6.0 Copies of the traffic management plan

Copies of the Traffic Management Plan, after signature by the relevant persons nominated in the plan, shall be forwarded to the following authorities as a reference should there be any need for contact, such as in the case of an emergency.

- Byron Bay Police Force,
- The Byron Bay Ambulance Service,
- The Rural Fire Service & Fire and Rescue NSW, and
- Byron Shire Council.

7.0 Audit checklist

Any Traffic Controllers shall complete the TCP Audit Check list as included in this report, before the start of the Event and immediately prior to the closure of the Event. The aim of this audit is to ensure that all the requirements of the TCP have been in place for the full duration of the event.

AUDIT CHECKLIST					
Date:		**Time:**	**Auditor:**		
Office/Company:			**Site Supervisor:**		
Location:					
Nature of Activity:					
Duration of Activity:					
Road Configuration:					
1	**Provision for Activity**		**YES**	**NO**	**N/A**
1.1	Has an approved TCP been provided				
2	**Implementation**				
2.1	Are all signs & devices installed in accordance with TCP?				
2.2	Are there any contradictory, distracting or superfluous signs or markings?				
2.3	Are signs suitably placed with regard to:				
2.3.1		Sight distance			
2.3.2		Motorists approaching at high speed			
2.3.3		Queue lengths			
2.3.4		Visibility, shade, light glare?			
2.4	Are all signs displayed appropriate for the current conditions?				
2.5	Are there any damaged or defective signs?				
2.6	Have the needs of pedestrians been considered?				
2.7	Have the needs of cyclists been considered?				
2.8	Are safety barriers required?				
2.9	Are safety barriers installed correctly?				
2.10	Has access to the site been provided?				
3	**Documentation Sighted**				
3.1	TCP, including details & modifications				
3.2	Direction to Restrict (DTR)				
3.3	Traffic controllers certification				
4	Has the Signage been covered for non RTA Controllers operation as specified on the TC Plan				
Comments/Findings					
Recommendations/Corrective Action					
Auditor (signed)			Site Supervisor:		

8.0 Responsible organisations contact persons and signatures

The following persons have read and understand this Traffic Management Plan prepared for '*Festival of the Stone*' event, to be conducted at Stone and Wood Brewery, Centennial Circuit, Byron Bay, and will implement this plan.

Traffic Control Supervisor:
Name of responsible person who can be contacted on the following phone numbers:

Name: ……. Signature: ……

Phone: …….. Mobile Phone: …….

Event Site Manager:
Name of responsible person who can be contacted on the following phone numbers:

Name: ……. Signature: ……

Phone: …….. Mobile Phone: …….

Event Promoter:
Name of responsible person who can be contacted on the following phone numbers:

Name: ……. Signature: ……

Phone: …….. Mobile Phone: …….

REFERENCES

Traffic Control at Worksites, Roads and Traffic Authority NSW, version 5.0, 27 July 2018

Guide to Traffic and Transport Management for Special Events, NSW Government, version 3.5 July 2018

Event Traffic Management Design Guidelines, QLD Department of Transport and Main Roads, July 2018

AS1742.3-2009 Manual of Uniform Traffic Control Devices Part 3: Traffic Control for Works on Roads, Standards Australia, January 2009

APPENDIX A – Traffic Control Plans

APPENDIX B – Event Site Plan