

NOTICE OF MEETING



EXTRAORDINARY LOCAL TRAFFIC COMMITTEE MEETING

An Extraordinary Local Traffic Committee Meeting of Byron Shire Council will be held as follows:

Information	This meeting is to be conducted electronically, where advice of members is sought via email, as per point 5.3.1 of the Guide to the Delegation to Councils for the Regulation of Traffic (including the operation of Traffic Committees).
Committee Members	Alan Eichmann – Roads and Maritime Services Snr Constable David Brigg – Police Cr Basil Cameron Tamara Smith MP

A handwritten signature in black ink, appearing to read 'Phil Holloway', is located in the bottom left area of the page.

Phil Holloway
Director Infrastructure Services

BUSINESS OF MEETING

1. APOLOGIES

2. DECLARATIONS OF INTEREST – PECUNIARY AND NON-PECUNIARY

3. ADOPTION OF MINUTES FROM PREVIOUS MEETINGS

3.1 Local Traffic Committee Meeting held on 16 January 2018

4. MATTERS ARISING

5. OUTSTANDING ISSUES/RESOLUTIONS

6. REGULATORY MATTERS

6.1 Traffic - Events - Byron Bay Blues Festival 2018.....3

REGULATORY MATTERS

Report No. 6.1 Traffic - Events - Byron Bay Blues Festival 2018
File No: I2018/96

SUMMARY

Council has received an event Traffic Management Plan (TMP) and Traffic Control Plan (TCP) for Byron Bay Bluesfest 2018 to be held on Thursday 29 March 2018 to Monday 2 April 2018.

OFFICER RECOMMENDATION

That the Local Traffic Committee (LTC) review the event documents and provide comments and the recommendations to the Byron Bay Bluesfest 2018 organisers for the event to be held on Thursday 29 March 2018 to Monday 2 April 2018.

The committee are requested to specifically review the recommendations contained within the 2017 Post Event Traffic Evaluation Report prepared by Greg Alderson and Associates and provide comment in relation to support for the recommendation or otherwise.

To assist the committee members, the recommendations and conclusion contained in the Alderson Report have been reproduced below.

12 Recommendations from this report
Recommendations included in this report are summarised below:

1. *Recommend: that the temporary festival delineation of the southbound off-ramp is reviewed for future events. Issues to consider could include:*
 - *that the delineation starts earlier on the off-ramp;*
 - *install different arrangement of signs and devices;*
 - *roadside and signage maintenance works are undertaken to improve sight distance to the Bluesfest off-ramp;*
 - *A detailed section of the TCP should be included for this small area showing all signs and devices to be installed;*
 - *Reducing the speed of exiting vehicles to 60km/h or less to reduce exit ramp sight distance requirements**

**AUSTROADS Guide to Road Design Part 4C: Interchanges, Section 7.3 specifies sight distance requirements for vehicles using exit ramps. In a 110km/h speed zone, the sight distance required to the exit ramp "nose" from the auxiliary lane is 215m. It is estimated that the drivers sight distance to the exit nose of the Bluesfest Off-Ramp is less than this and may be a contributing factor to this issue. For 60km/h a reduced requirement of 120m is required.*

2. *Recommend: that this driveway access (Access 3) is upgraded in the future to improve efficiency and that the internal driveway from access 3 to Noble Way is sealed.*

3. *Recommend: Future TCP could include a temporary footway along here (Tanner Lane) with pedestrian barrier/s.*

4. *Recommend: Traffic Control Manager must be aware of any future queuing along Yarun Road in real time and implement internal measures to ensure queuing is not caused by back up of internal site traffic.*

5. *Recommend: Retain the new pick-up zone location for future festivals, this was very successful.*

6. *Recommend: Bluesfest investigate feasibility of a Grays Lane exit*

7. *Recommend: That Bluesfest continue to improve and increase shuttle bus services for the festival.*

8. *Recommend: Bluesfest investigate having shuttle buses enter the site at a different location to improve efficiency. Entry from either Grays Lane or the Southbound Exit Ramp should be considered.*

BACKGROUND

Bluesfest has lodged documents for the 29th annual Byron Bay Bluesfest event to be held Thursday 29 March 2018 to Monday 2 April 2018 for consideration by the Local Traffic Committee.

Bluesfest have also provided a copy of the Bluesfest 2017 Post Event Traffic Evaluation Report prepared by Greg Alderson and Associates which amongst other things contains a number of recommendations for changes to be incorporated into future traffic management plans for implementation.

The report concludes “ that the traffic control measures external to the site, were appropriate for the event and were capable of dealing with the patronage and traffic flows.

The main issue observed that must be rectified for the 2018 event is recommendation 1 from Section 12 above.”

The Traffic Management Plan (TMP) and Traffic Control Plans (TCP) are different to those submitted for the 2017 event although it is not possible to assess if all the recommendations contained within the Alderson Report have been incorporated into the plans to be implemented for the 2018 event.

KEY ISSUES

1. Congestion caused by the event will directly affect a RMS controlled asset – Pacific Highway.
2. RMS Traffic Engineering Department requires separate approval of the TMP and TCP.

COUNCIL IMPLICATIONS

▪ Budget/Financial

The event organisers to pay the relevant Approval of Road Events fee pursuant to s144 of the Roads Act as per the Fees & Charges 2017/18.

▪ Asset Management

Not applicable.

COMMITTEE RECOMMENDATION:

1. That Council endorse the recommendations of the Local Traffic Committee for the Byron Bay Bluesfest 2018 to be held on Thursday 29 March 2018 to Monday 2 April 2018.

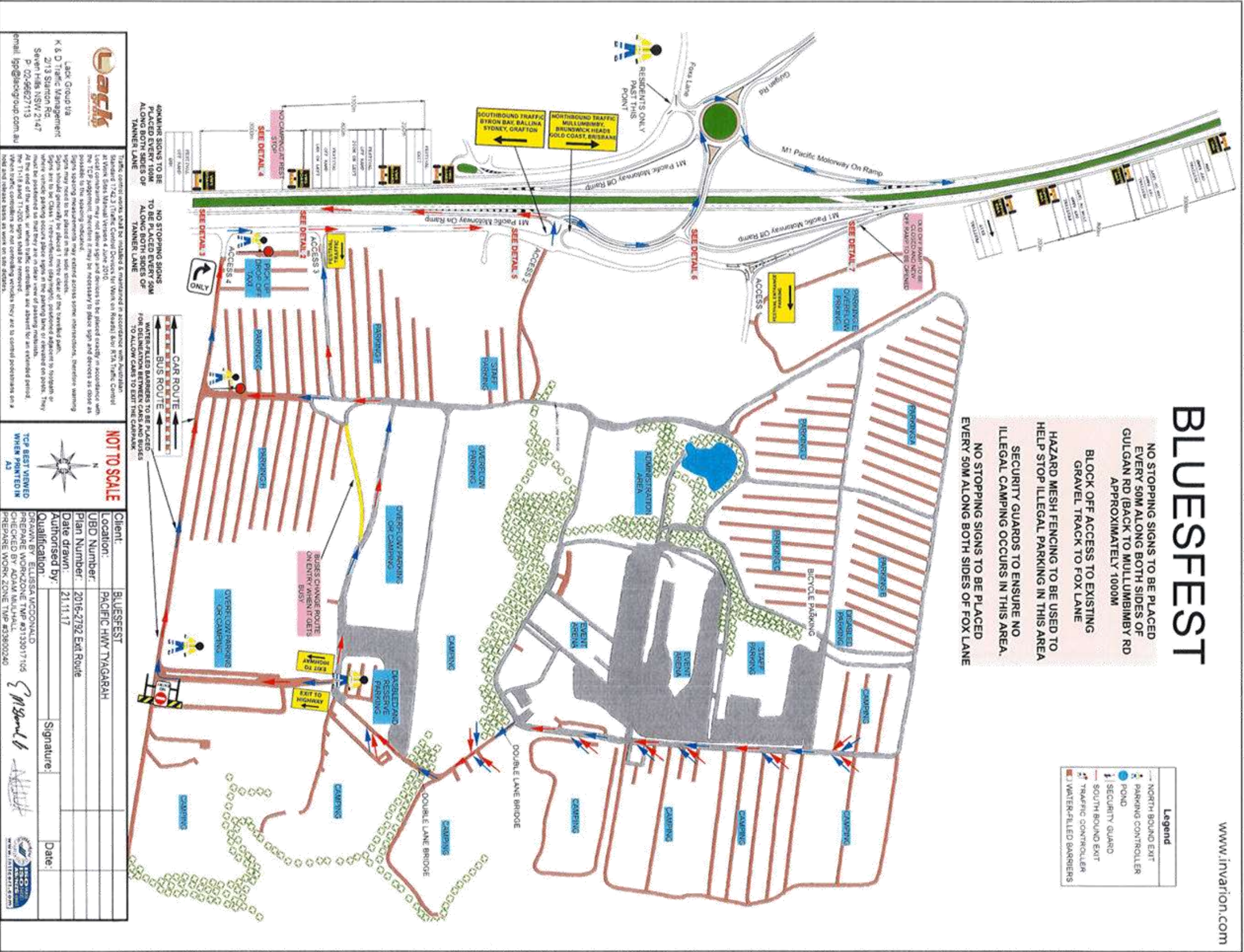
2. That the approval provided in Part 1 is subject to:

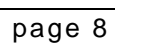
- a. separate approvals by NSW Police and RMS being obtained, noting that the event is on a state road or may impact the state road network**
- b. implementation of the approved Traffic Management Plan and Traffic Control Plan, including the use of signed detours, as designed and implemented by those with appropriate accreditation**
- c. that the impact of the event be advertised via a notice in the local weekly paper a minimum of one week prior to the operational impacts taking effect, noting it must include the event name, specifics of any traffic impacts or road closures and times, alternative route arrangements, event organiser, a personal contact name and a telephone number for all event related enquiries or complaints**
- d. the event be notified on Council's webpage**
- e. the event organiser:**
 - i. Update the Traffic Management and Control Plans to be implemented for the 2018 event to incorporate the recommendations contained within the Greg Alderson & Associates – Bluesfest 2017 Post Event Traffic Evaluation Report in accordance with the committee comments.**
 - ii. undertake consultation with community and affected businesses including adequate response/action to any raised concerns**
 - iii. undertake consultation with emergency services and any identified issues addressed**
 - iv. hold \$20m public liability insurance cover which is valid for the event**
 - v. pay Council's Road Event Application Fee prior to the event**

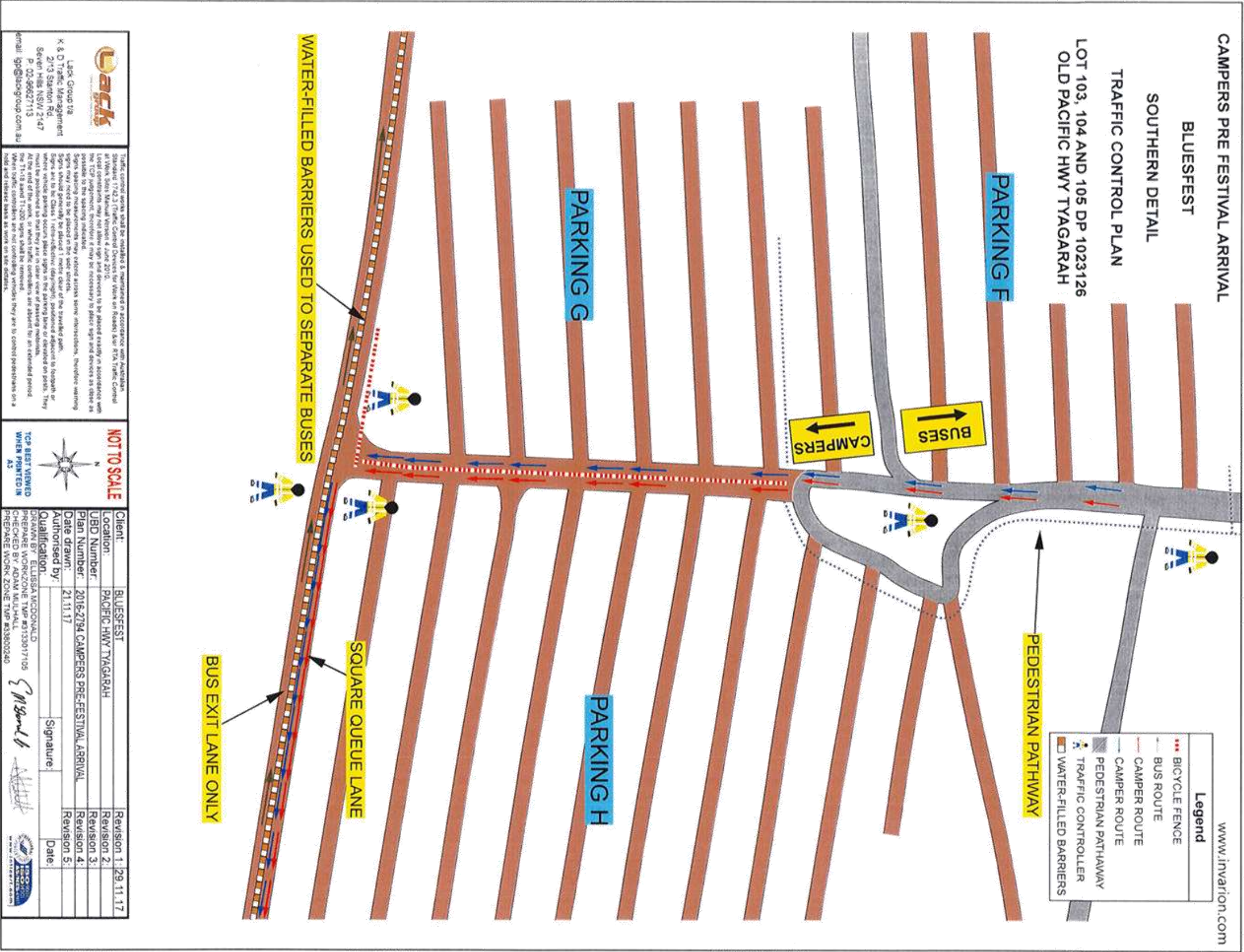
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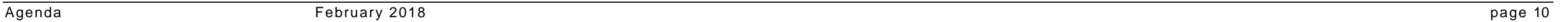
- 1 Traffic - Bluesfest Traffic Management Plan 2018 - from Mark Norris, E2018/7846 , page 6 [↓](#)
- 5 2 Traffic - Bluesfest Traffic Management Plan 2018 - from Mark Norris, E2018/7845 , page 18 [↓](#)
- 3 Traffic - Bluesfest 2017 post event Traffic Evaluation Report 2017 from Mark Norris, E2018/7847 , page 31 [↓](#)

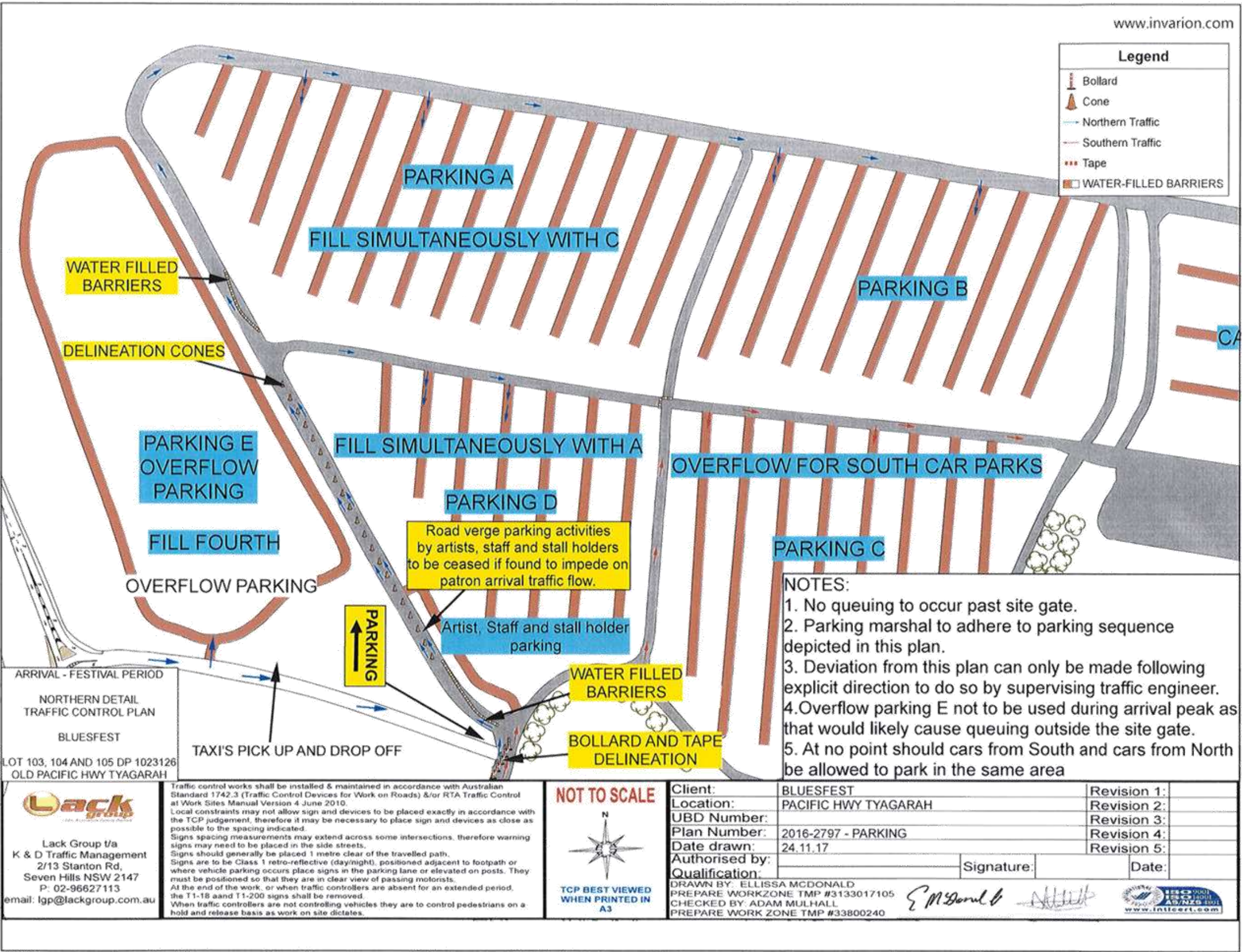


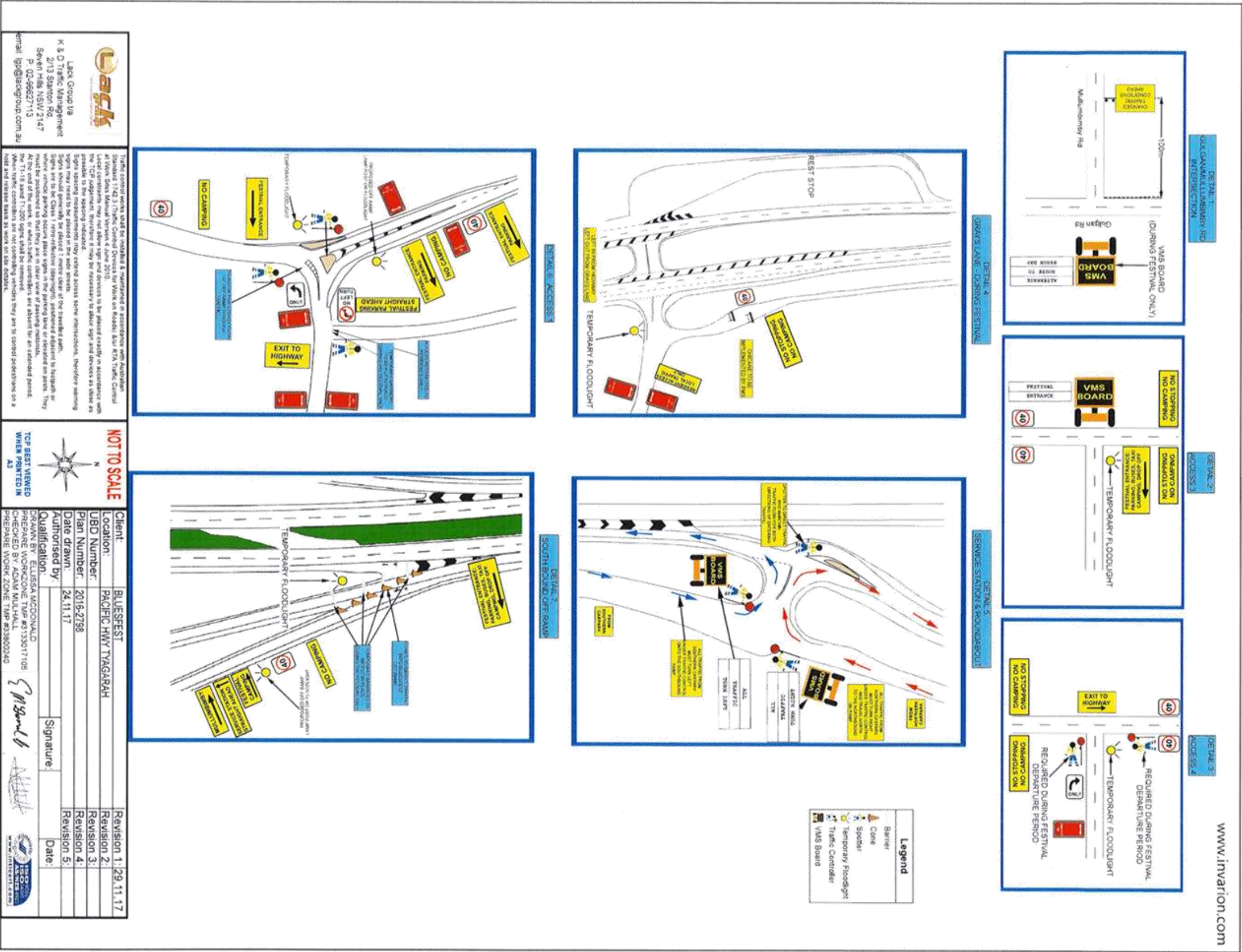


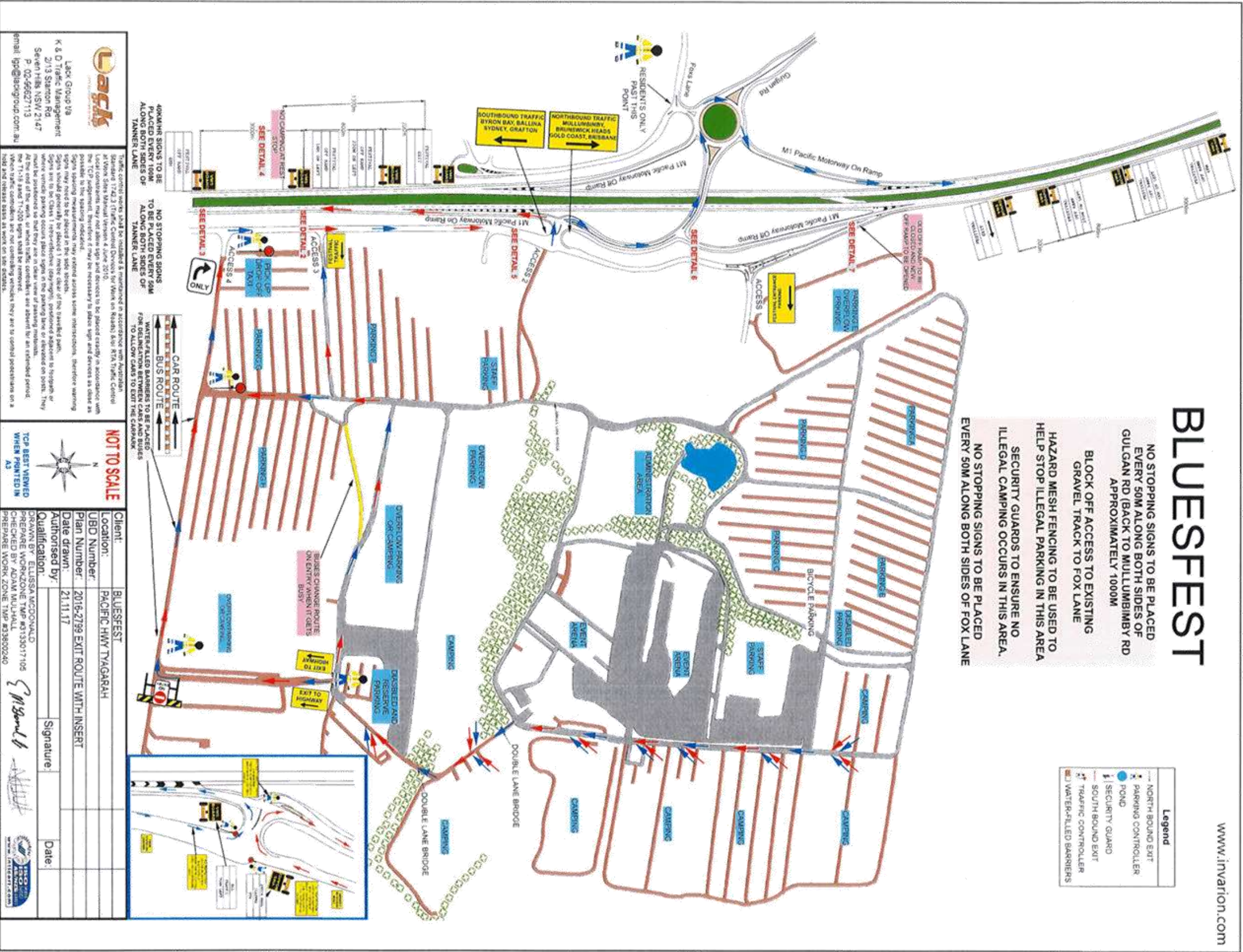


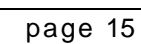


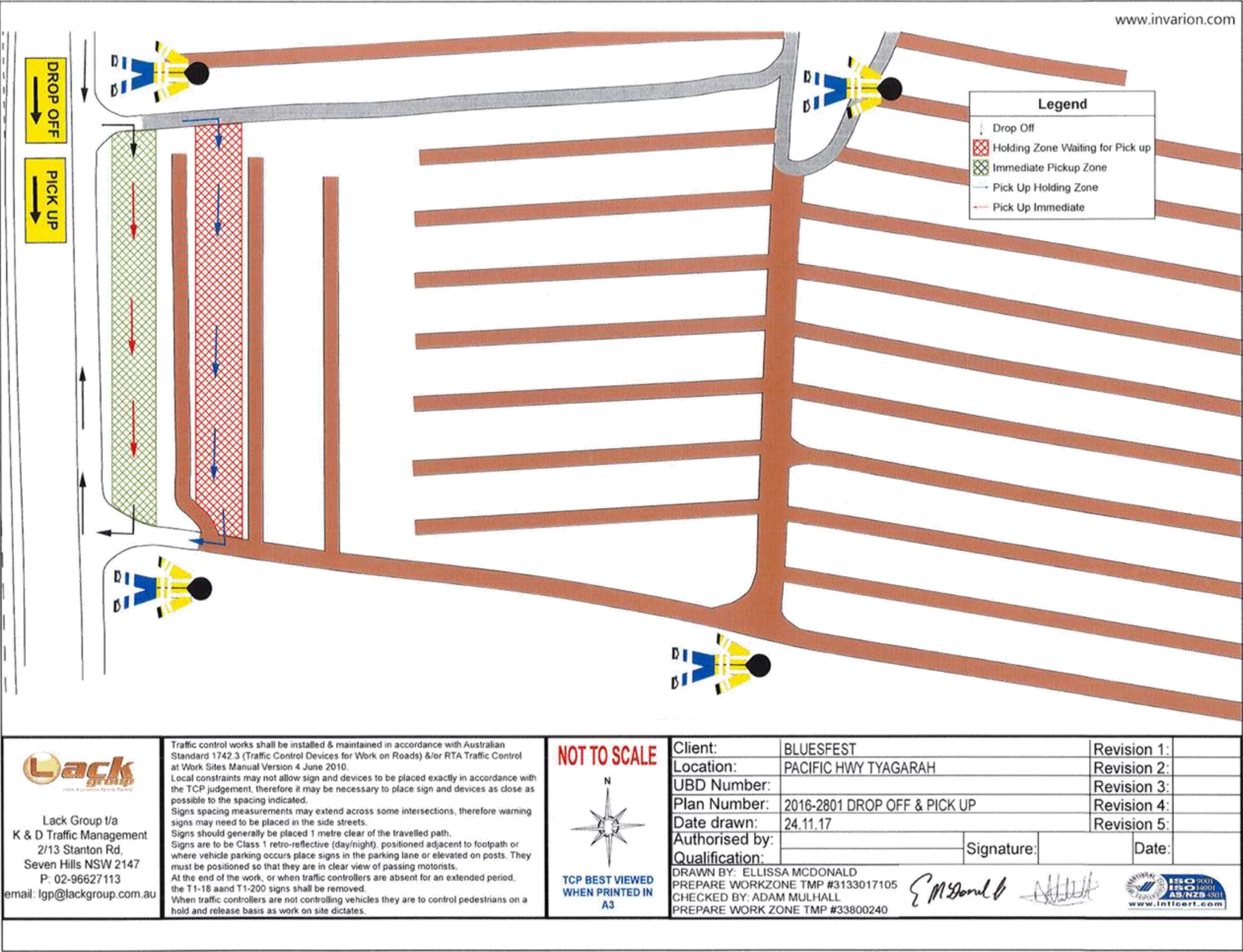


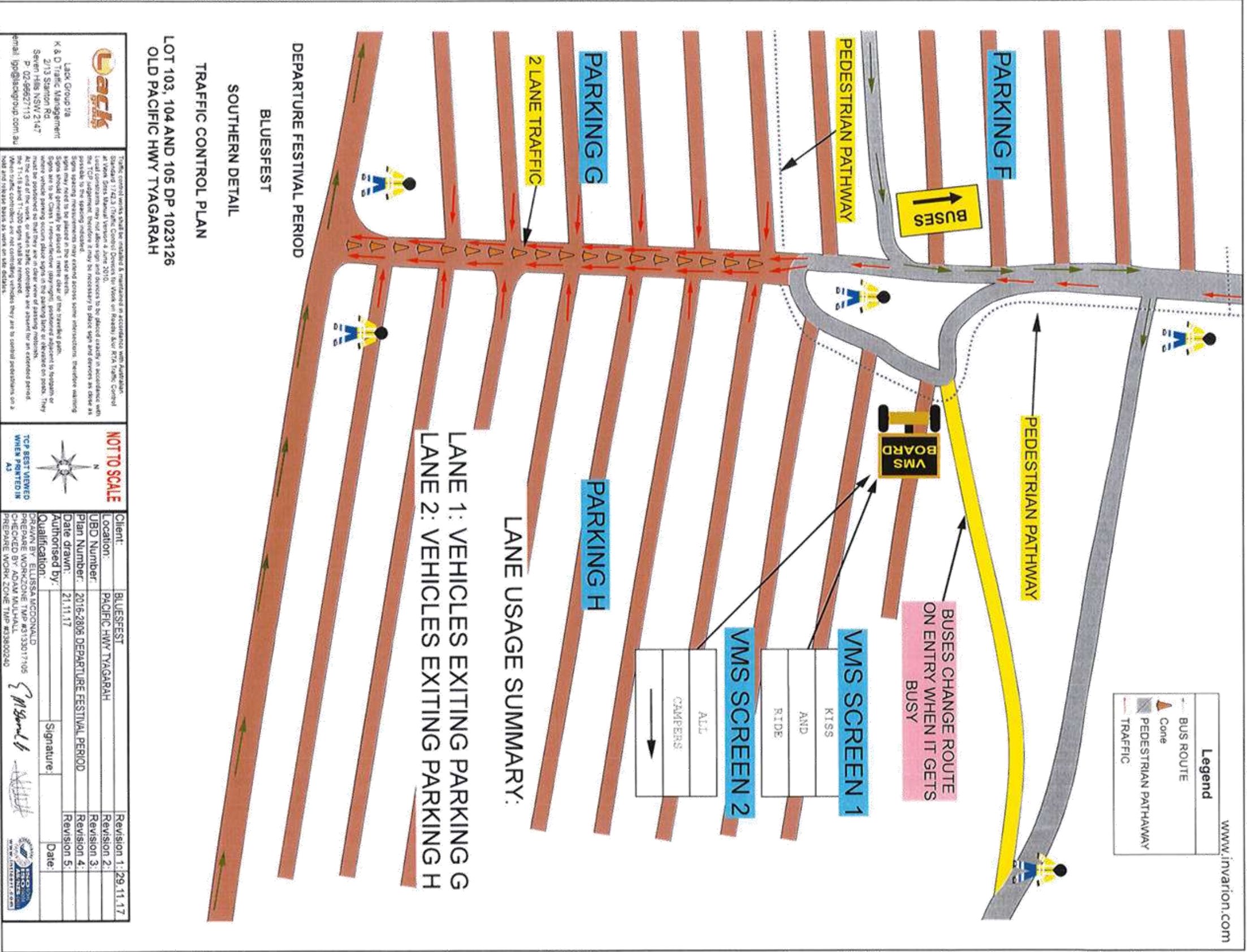














BLUESFEST 2018
TRAFFIC MANAGEMENT PLAN

For
Bluesfest Services Pty Ltd

Bluesfest 2018 Traffic Management Plan

For
Bluesfest Services Pty Ltd

DOCUMENT CONTROL SHEET

Document title: Bluesfest 2018 Traffic Management Plan

Document reference: Traffic Management Plan

Revision: Plan updated for 2018 event

Client: Bluesfest Services

Client contact: Peter Noble

Original Authors: Michiel Kamphorst,
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REVISION NUMBER	DATE OF ISSUE	AUTHOR		REVIEWED BY		APPROVED BY	
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1.0 INTRODUCTION

The purpose of this Traffic Management Plan (TMP) is to summarize the traffic management procedures specified in the Traffic Control Plans and Traffic Monitoring Program for the Bluesfest 2018 event.

All traffic controllers are to be Roads and Maritime Services (RMS) certified controllers with two-way radio. Traffic controllers are not to verbally communicate with drivers of vehicles other than to move them through quickly. Any traffic controllers found causing delays by having conversations with drivers are to be replaced immediately after reasonable warning.

It is important to realise that this 2018 Bluesfest at Tyagarah will need to comply with key performance indicators as defined under the current development approval. These levels must not be breached and the traffic controls and parking marshals are the key components in achieving these performance levels. It is therefore paramount that the traffic is operated smoothly and safely within the constraints set by the State Government and Byron Shire Council. These constraints are called key performance indicators, (KPI) and are summarized as follows:

- Worst case Level of Service(LOS) on adjoining local roads: LOS D between 8am and 8pm event days, measured as follows:
 - Traffic flow on adjoining local roads not to exceed 800 vehicles per hour per lane where 40 km/h special speed limits apply;
 - Traffic flow on adjoining local roads not to exceed 1260 vehicles per hour per lane where 60 km/h special event limits apply;
- Worst case level of service on Gulgah Interchange: LOS C
- Maximum queue length northbound off ramp (measured from give way line): 215m;
- Maximum queue length existing southbound off ramp (measured from stop line): 248m;
- Maximum queue length new southbound off ramp (measured from end of off ramp): 162m;

Any traffic incidents resulting in non-compliance with any of the above conditions will have serious consequences for future events at this site. It is important that at all times, sufficient qualified staff is available to implement the traffic management plan including any contingencies. It is required that all traffic controllers are properly briefed giving them an appreciation of the bigger picture of the traffic management plan and an understanding of the impact that their specific role may have on the overall performance of the festival.

Of equal importance in the compliance with the above specifications is that there are no restrictions within the site which cause a queue of traffic back out the entrance gates onto Tanner Lane or Yarin Lane.

The traffic control supervisor and parking supervisor are to liaise closely with each other before and during the festival. The supervising traffic engineer will also liaise with these two supervisors and other parties, such as RMS, Council, Bluesfest Management, NSW Police Force and the public both within and outside the site to ensure efficient operation overall. The operation of the traffic management is a team effort and regular coordination meetings will be held with all relevant stakeholder personnel.

2.0 TRAFFIC CONTROL AT TYAGARAH INTERCHANGE AND NEW BLUESFEST SOUTH BOUND OFF RAMP

2.1 Main purpose

The main priorities of the traffic control measures at the Tyagarah Interchange are:

- No queuing onto the Pacific Highway Off-ramps;
- No interruption of through traffic on the Pacific Highway;
- Limit delay for local traffic on local roads

The traffic control plans (TCPs) detailing the required traffic control measures are prepared by The Lack Group and adopted by Council. These plans form the statutory controls for traffic management on the public roads adjacent to the event site and along with the Road Occupancy Licence issued by the RMS serve to give the necessary authority to the Traffic Controllers to implement traffic management on and off the site. A set of approved traffic control plans will be issued to all stakeholders.

2.2 General layout

The traffic control plans show signage, barriers and other traffic control measures to offer a managed environment around the Bluesfest site.

Southbound motorway traffic seeking to attend the festival will be directed by signage to take the new off ramp, recently completed by Bluesfest, and proceed directly without interruption to their parking areas, situated in the north of the tea tree Farms site.

Event traffic from the south will be directed by signage to exit the Pacific Highway at the existing Mullumbimby off-ramp. This traffic will cross the motorway using the existing Tyagarah interchange overpass. Then they travel south to the site entrance gate and park in the southern car parking areas. Event traffic from the north will use the newly constructed off ramp which will lead them straight into the site to park in the northern car parks.

Thus vehicles from either direction will be kept separate to reduce on-site congestion during both arrival and departure times.

The Grays Lane intersection with the Pacific Highway can continue to operate for left in and out, if not closed by RMS. This intersection could operate by itself without traffic control. However, in order to introduce a clearer direction to patrons a Traffic Controller will be stationed at this intersection to act as an advanced warning controller, for traffic into and out of the festival. This controller will also discourage festival traffic, where possible, from travelling east down Grays Lane. It should be noted that the event traffic management will not promote the use of this intersection for access to and from the event site if the intersection has not been closed by RMS prior to the event.

Observers will be necessary on the Tyagarah over bridge and on the southbound off-ramp. These observers will be required to give advice to the traffic controllers as to the length of the queue. Adjustments may then be necessary on the site to give increased priority and avoid queues back to the highway.

2.3 Traffic controllers on the off-ramps

Traffic controllers will not be placed on the off-ramps. These ramps are intended to operate without the need for traffic controllers.

2.4 Traffic Controllers

The first Traffic controllers would be at the Tyagarah Interchange intersection with Tanner Lane and

within the site at the northern car park.

2.5 Traffic Control Plans

The Traffic Control Plan designs aim to minimise the impact of traffic control on all road users and that patrons are encouraged to enter and exit the site in a safe and efficient manner.

The implementation of traffic management arrangements shall be done in accordance with the RMS TCAWS Manual, AS1742.3 and traffic control sub-contractor safe work procedures. Only those personnel who are competent for the task shall be engaged in the implementation of traffic management arrangements.

The approved traffic control plans to be implemented in support of this event are included in the Event Management Plan.

2.6 Traffic Control Implementation

The duration of the Festival is from Thursday 29 March 2018 to Monday 2 April 2018 The traffic management for the event including pre-event site establishment and site close down will be as follows:

- **WEDNESDAY 21ST MARCH**
 - Installation of no stopping signs every 50m along Gulgan Rd to Mullumbimby Rd. Erected under a standard RMS TCP 83/57 with a shoulder closure used under a standard RMS TCP 42/57 at locations where feasible.
 - Installation of static signage on Gulgan rd roundabout directing people to Festival entrance. Sign install to be implemented under a standard RMS TCP 42/57 shoulder closure.
- **THURSDAY 22ND to FRIDAY 23RD MARCH**
 - Two VMS boards to be installed on the Pacific Highway for northbound and southbound approaches stating "Bluesfest Exit 4kms on left" This is to give advance notification to the public. These VMS will be deployed using a VMS truck as a shadow vehicle displaying "Road Plant Ahead", "Reduce Speed" and a tow vehicle with the VMS boards. The tow vehicle is to display flashing amber lights.
 - Installation of static signage on Gulgan Rd roundabout directing people to Festival entrance. Under a shoulder closure.
 - Commence internal signage erection
 - Hazard Mesh Fencing to be installed in Fox Lane area to prevent illegal parking and camping. No stopping signs and no camping signs also to be erected in this area at approx 50m segments. Closure of gravel access track in Fox Lane to help prevent illegal camping. Implemented under shoulder closure RMS TCP 42/57.
 - The erection of "NO STOPPING" to be placed every 50m along both sides of Tanner Lane and Yarun Road and the erection of "40km/h" speed signs every 100m on both sides of Tanner lane and Yarun Road. This sign installation is undertaken pre-festival as Tanner Lane and Yarun Road experiences a higher volume of traffic during this time due to the arrival of equipment that is needed for the event and which can be managed. Implemented under a RMS TCP42/57 shoulder closure.

- **MONDAY 26TH MARCH to TUESDAY 27TH MARCH**
 - Installation of no stopping signs every 50m along Grays Lane to the intersection of Grays lane and Prestons lane. Erected under a speed reduction with a shoulder closure.
 - Detail 1,2,3,6 signage as per approved TCP are to be erected under shoulder closures.
 - Remaining VMS boards for the highway to be installed.
 - Light towers deployed ready for light check on Wednesday night.
 - Water-filled barriers to be put in place at service station intersection but still allowing normal traffic flow.
- **WEDNESDAY 28TH MARCH**
 - TC on site for the commencement of the campers arrivals at approximately 8am.
- **THURSDAY 29TH MARCH 0600**
 - Opening of the Bluesfest Off Ramp and closure of the current Mullumbimby exit. This is performed under a rolling blockade mobile traffic control arrangement to minimize impact on the Pacific Highway and to avoid having traffic control on foot exposed to live traffic.
 - Traffic control on site from 8am for the first day of Festival.
- **HOURS OF WORK FOR ACTUAL EVENT – THURSDAY to MONDAY**
 - Traffic Control Day Shift Hours 0800 – 1700
 - Day Shift Supervisor – TBC
 - Traffic Control Night Shift Hours 1700 – 0130 or till last car has left the site.
 - Night Shift Supervisor – TBC
 - Traffic Control Supervisor (whole event) – William Davis, The Lack Group
- **TUESDAY 3RD APRIL**
 - Traffic control crews begin pack-up of Event using the same methodology as the implementation of set-up. The Mullumbimby off-ramp is to be re-opened and the Bluesfest off-ramp is to be closed by 6am Tuesday morning.

3.0 TRAFFIC CONTROL AT SITE GATES

3.1 Main purpose

The main priorities of traffic control at the entries to the site are:

- Quick entry to the site for event traffic,
- Safe and efficient site entry and egress.

3.2 Campers arrival

Most campers are expected to arrive at the site on Wednesday, Thursday and Friday morning. Campers that arrive on Wednesday, either from the north or south, will be entering through the main southern gate. The new off-ramp access from the north does not open until Thursday morning at 6am.

From Thursday morning, campers approaching from the north will arrive at the site via the new off-ramp, and will be directed by signage, to the camping accreditation area. These campers will be directed by signage to continue along to enter via the southern main gate. If campers ignore the signage, an enter via the north gate an internal VMS board will direct them over the one lane bridge and to the campers check

in station. This internal direction will be supported by traffic control located at key positions within the event site.

Campers from the south will access the site during the festival via the southern main gate similar to general patrons and will be directed by traffic control and VMS boards on how to proceed to the campers check in area.

3.3 Day patrons arrival

Day patrons will enter the site either from the north gate or the southern gate depending on their point of origin. Normally the majority of day patrons for the Bluesfest begin arriving about 1 hour before the Festival gates open.

Traffic controllers and the whole traffic control plan will be set up and in operation from the Wednesday before the first Festival gates opening. The traffic plan would remain operative until Wednesday morning, after the festival has finished.

3.4 Buses

All buses and Taxis are to use the southern main entry and exit. There will be no Kiss & Ride facility in the northern area of the event site.

3.5 Departure

The departure of vehicles is to be divided as per the parking area. Those in the north parking areas will leave the site and join the highway via the service station intersection and the Tyagarah interchange bridge and travel north on the Pacific Highway. The departure for the northern car park patrons to exit to the north will be supported by variable message signs, static signage and traffic control. Any motorists that need to travel south from this point will be directed to turn around at the Gulgan Road north interchange.

Vehicles parking in the southern parking area will leave the site and turn left and travel south on the Pacific Highway. The departure for the southern car park patrons to exit to the north will be supported by variable message signs, static signage and traffic control. Any motorists that need to travel north from this point will be directed to turn around at the Ewingsdale Road interchange.

Exiting buses are to exit using the southern gate and then proceed to the service station, prior to entering the Pacific Highway.

Traffic control will be required to manage the exit from the site and the service station intersection to ensure no significant obstruction of northbound or southbound traffic. The peak bump-out period will be managed by physically separating the traffic from the south and north carparks at the service station intersection with water-filled barriers located in the middle of the road. This will allow traffic exiting the site to the north and south without any conflict. Traffic control will manage the conflict with traffic coming from the Tyagarah overbridge to enter the site precinct and traffic exiting the north carpark.

4.0 ON SITE TRAFFIC CONTROL

4.1 Main purpose

Traffic control outside the event site can only operate effectively for incoming traffic, if the internal traffic and parking is managed properly. Any congestion on-site in the parking area or internal road network may result in queuing on Tanner Lane and Yarun Road and then onto the Pacific Highway.

The traffic control plans therefore require RMS certified traffic controllers at various key locations on site.

4.2 Car parks

The traffic controllers depicted on the TCPs at the entries and internal roads are there to assist festival guests.

It is essential that the traffic controller does not engage in a discussion with the driver of the vehicle but gets the driver off the road, after which the driver is dealt with by festival parking staff. Any congestion at this point would quickly result in queuing onto the public road system, which is not acceptable.

4.3 North-South Internal Road

There are traffic controllers on this road, to provide the opportunity for a relief route, if issues arise at other locations.

Potentially, and based on previous festivals at this site, this road service to relieve the overflow of traffic, if one car park becomes full.

It is likely that south bound campers will be required to use this road along with bus and taxi, to get to the existing bus and taxi bays. Also for campers to get to the camp check out area. This will be required if no northern facilities for campers check in or bus and taxi set down and pick up are provided.

This traffic control of the north-south road does also affect the back-of-house operation and has to be managed well to keep the function of the festival and ensure that these traffic conflicts are managed such that no queuing appears onto the public road network.

4.4 Bus and taxi ranks

Traffic controllers at the bus and taxi ranks are not required other than to get buses and taxi in and out of the traffic line to ensure that these ranks are operated safely and congestion is prevented both in the ranks as well as on the internal road system.

4.5 Role of On-site Supervising Traffic Engineer

The Supervising Traffic Engineer shall direct the traffic, parking and camping controllers, as required, to ensure an efficient entry and exit from the site. This role will also incorporate decisions with respect to the use of overflow parking areas.

5.0 MONITORING

The Supervising Traffic Engineer will undertake site monitoring in consultation and co-ordination with traffic control resources during the event to:

- ensure traffic management arrangements are installed in accordance with the approved TCPs;
- ensure traffic control implementation and operation is in compliance with RMS TCAWS manual and AS1742.3;
- observe driver behavior on the external road network and internal car park access to assess the suitability of the traffic management arrangements associated with the event and implement

changes as necessary; and

- ensure compliance with DA conditions including end of queue management and traffic flow rates on local roads .

Traffic control observers will be utilized at key locations to monitor queue lengths against known markers and undertake spot traffic counts to measure traffic flows during peak traffic flow periods.

An evaluation report will be prepared following the event to assess the traffic management performance against the relevant standards and guidelines and key performance indicators.

6.0 PAID PARKING

Bluesfest is introducing paid parking for the 2018 Event to offset the significant annual investment into parking infrastructure capital & recurrent, mounting costs of Traffic Management, increased User Pays Police contingent for Counter Terrorism including Hostile Vehicle Mitigation Measures.

The Paid Parking will not affect the previous points 1.0 through 5.0 of this Traffic Management Plan. The paid parking will be carried out by a separate extra team of staff that will only approach cars for payment once they have been directed to a parking bay and parked their vehicle to a full stop. This also gives our staff a chance to engage vehicle occupants before they enter the Festival area to assess any suspicious behavior and alert Security & Police.

The Payment collection team will be under the direction of our experienced North and South Car Park Supervisors who will be monitoring queue lines and flow rates of traffic within the car parks. Through our website and social media platforms we will be engaging our patrons to notify them of the payment structure and to be ready with payment on arrival.

The method of collection will be a combination of a Credit Card Tap Device or a cash payment and that will be indicated to our Patrons before they arrive. Extra signage at entrance points to the Festival Site will also reinforce what to expect on parking their vehicles.

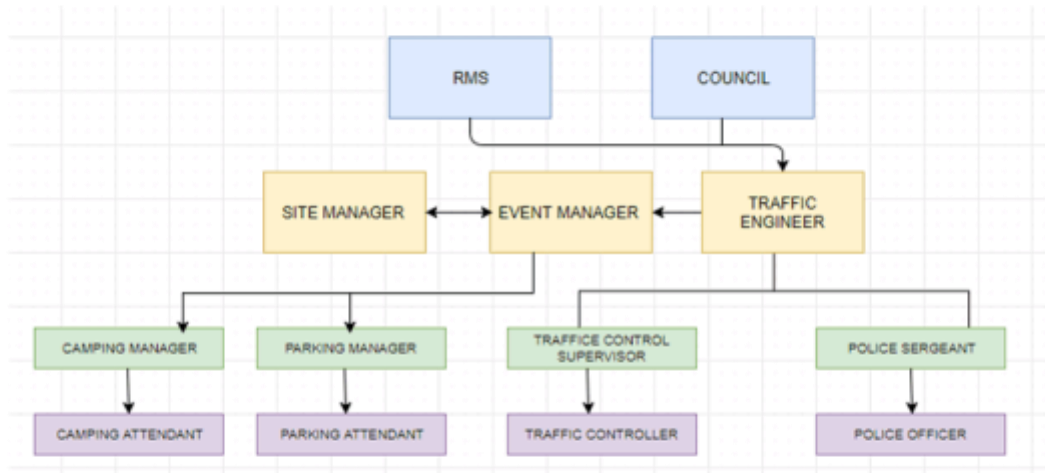
At any point during a peak flow period if the Paid Parking initiative impacts on the traffic flow it will be suspended until it is deemed practical to continue.

The safety of our Staff, Patrons and Traffic Flow on the Pacific Hwy is of the highest importance and will be considered first at all times.

7.0 CONTACT DETAILS

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South Parking Control Supervisor:	Clint Lazarus
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Camping Control Supervisor:	Tony Reynolds
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8.0 COMMAND STRUCTURE





Greg Alderson & Associates

Chartered Professional Engineers and Scientists

Traffic Evaluation Report Bluesfest 2017 at Tyagarah, NSW

Author: Hayden Kress
Date: May 2017

civil | structural | environmental | traffic | acoustics

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summary

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Greg Alderson & Associates
Chartered Professional Engineers and Scientists

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1 Introduction and initial comments

Greg Alderson and Associates have been engaged by Bluesfest to prepare a Traffic Evaluation Report (TER) for the Bluesfest 2017 event at The Bluesfest Farm Tyagarah. This report is prepared in response to DA 10.2014.753.1 Consent Conditions, which requires performance reports on the traffic and submission of traffic data collected.

In preparation for this festival, a Traffic Management Protocol, incorporating Traffic Control Plans for the local road network, was prepared by Bluesfest and Workforce Road Services. The TER is to be read in conjunction with the TMP report and associated Traffic Control Plans.

Our staff attended the site and drove the neighbouring road network during most days of the Festival.

The campers parking and processing, which had been a problem in previous festivals, with significant queues back in the site was not observed to be a problem this year.

Previous TER Reports included traffic counter data collected during the festival. No traffic counters were installed this year, however manual observation counts were undertaken around peak times to estimate vehicle flow rates, and to observe various traffic behaviour.

In summary, overall the traffic worked well and without incident and is a credit to the traffic and parking teams as well as the Bluesfest teams.

1.1 Project brief

The aim of the Traffic Evaluation Report is to describe the 2017 Bluesfest event from a traffic management point of view, as observed by our staff during the event, and as commented upon by others.

The assessment report will also provide indicative figures to allow assessment of the success of this event and in the planning for future events at the site.

1.2 Relevant standards, specifications and guidelines

This TER has been prepared in general accordance with the following standards, specifications and guidelines:

- Guide to Traffic and Transport Management for Special Events Version 3.4
- RMS Traffic Control at Worksites manual v4
- Australian Standards (in particular AS1742)
- Quality Assurance specifications
- Austroads Guide to Traffic Management.

1.3 Event description

Bluesfest is a music festival that was held at The Farm Tyagarah from Thursday 13 April 2017 to Monday 17 April 2017. Although the actual festival with live bands was held from Thursday to Monday, campers were allowed to arrive on Wednesday and Thursday. Campers are also allowed to leave the site on Tuesday.

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1.4 Site location

The subject site is formally known as Lots 103, 104, 105 DP 1023126, Tanner Lane Tyagarah. The southernmost entry to the site is located at approximately 300 m south of the Tyagarah Service Station, and the North entrance from an off ramp on Tanner Lane constructed by Bluesfest to facilitate access to the north of the Festival site.

Figure 1 below depicts the location of the site with respect to its locality.

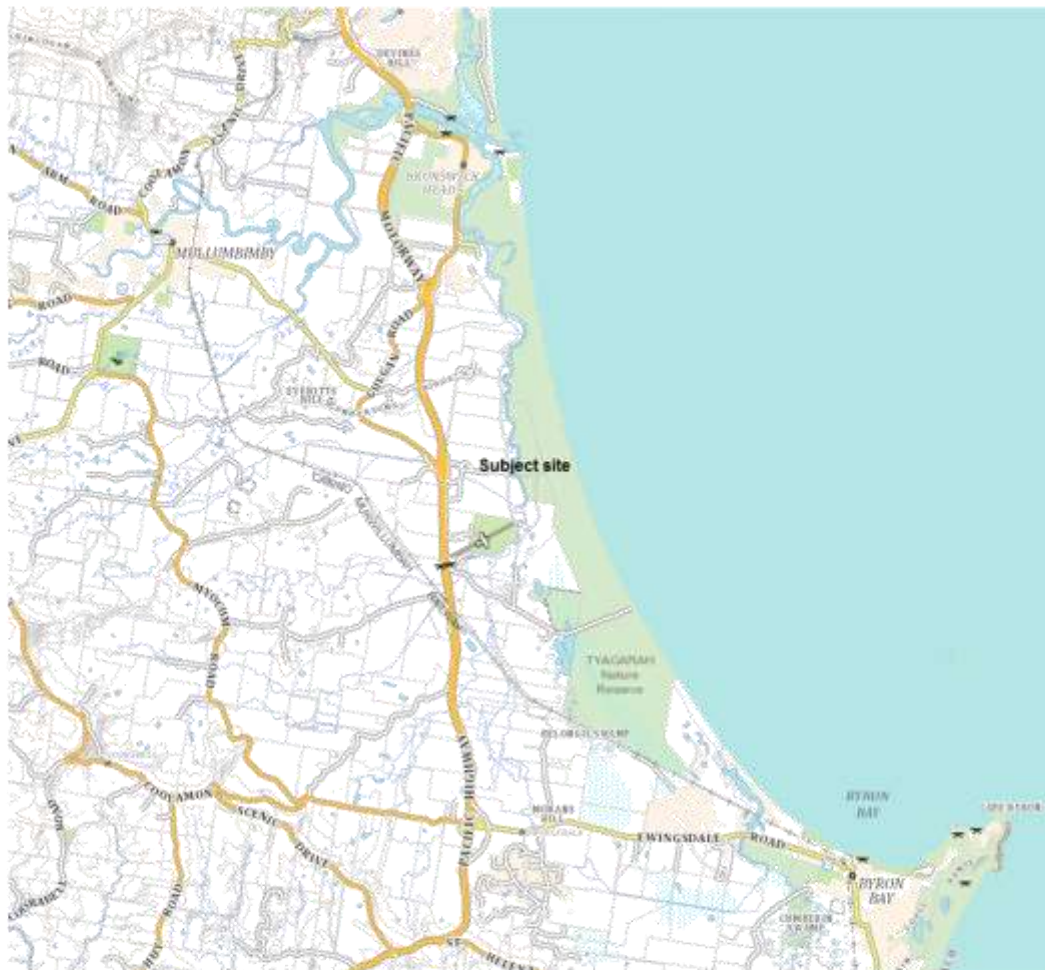


Figure 1 - Site locality, Source of map: NSW LPI SIX Maps

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Figure 2 - Site Plan, Source of map: NSW LPI SIX Maps

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1.5 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
Heavy Vehicle	For the purposes of this report: anything other than a pedestrian, cyclist, motorbike or car

1.6 Summary of Key Performance Indicators

The Development Consent for previous events (DA10.2013.128.1) provided a set of Key Performance Indicators (KPI's) that were created to ensure acceptable traffic conditions on the public road during the event. These KPI's were as follows:

1. The local roads adjoining the Bluesfest site must have a Level of Service (LoS) of D or better between 8am and 8pm event days. This can be measured by ensuring flow rates do not exceed 800 vehicles per hour per lane when 40 km/h special event speed limits apply, and not exceed 1260 vehicles per hour per lane when 60 km/h special event speed limits apply. Reference is made to Figure 3.1, Levels of Service and Flow Rates, Austroads Guide to Traffic Management Part 3.
2. The on-ramps of the Gulgan interchange with the Pacific Highway operate at LoS C or better at event times. This would be assessed by calculating average delay on the on ramps. LoS C would be exceeded when average ramp delay exceeds 42 seconds, with ramp traffic gap acceptance of 2.5 seconds and a follow up headway of 2 seconds. Micro simulation packages such as SIDRA can be used to determine LoS at maximum traffic flow rates during the event.
3. Traffic queuing on the Gulgan Road interchange off ramps must not exceed stopping sight distance fore 110 km/h speeds. Stopping sight distance is to be measured from the highway at the start of the diverge taper for the off-ramp. Reference is made to RTA supplement to the Austroads guide to Road Design Part 3 Section 4.3.1 for stopping sight distances.

The Development Consent for the current events (10.2014.753.1) includes similar requirements in the following conditions:

Condition 61

v. *There is to be no impact on through travel times on the Pacific Highway*

vi. *The TCP must incorporate a monitoring program to assess the traffic volumes and peak parking numbers associated with each event. Twenty four hour traffic counts are to be undertaken before, during and after the first two medium and large events (and as further required by Council or the Roads and Maritime Service) for the traffic on the frontage and surrounding roadways. Such report must include details demonstrating compliance with the conditions of consent relating to traffic management including the requirements of the RMS provided below. From time to time aerial photography of the site and surrounds at regular intervals before during and after the event, including peak traffic and parking periods should be undertaken to support the traffic monitoring report.*

xiii *The TCP to factor in that local roads operate a Level of Service D or better between the hours of 8am and 8pm on event days. The ramps of the Gulgan Road Interchange with the Pacific Highway to operate at Level*

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of Service C or better at event times (See Figure 3.1 Levels of Service Flow rates Austroads Guide to Traffic Management Part 3 and Highway Capacity Manual)

xiv The TCP to include provision so that Traffic queuing on the Gulgan road off ramps does not exceed stopping sight distances for 110 km/h speeds. (See RMS supplements and Austroads Guide to road Design Part 3 Section 5.3.1 for stopping sight distances)

Based on the above KPI's defined by Council, the following site specific KPI's can be defined:

1. Maximum back of queue location on northbound off ramp: 200 metres from start of diverge taper,
2. Maximum queue length on new southbound off ramp: 210 metres from start of diverge taper,
3. Maximum flow rate 1260 vehicles per hour per lane on overpass, between 8am and 8pm
4. Maximum flow rate 800 vehicles per hour per lane on Tanner Lane and Yarun Road, between 8am and 8pm.
5. No queuing on the Pacific Motorway,
6. No queuing, other than in the turning bays on Tanner Lane into the site, for through traffic,
7. No back up queue from the site onto Tanner Lane or Yarun Road,
8. Maximum on-ramp delay 42 seconds.
9. no impact on through travel times on the pacific Highway.

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2 Presence at event

GAA were engaged by Bluesfest at this event to undertake passive traffic engineering observations and monitoring, generally during predicted peak traffic periods. GAA staff were not present at all times during the event.

No traffic counters were installed during the 2017 event, however manual traffic counts were undertaken to assist with KPI monitoring.

2.1 Classified counters

Classified counters were placed on the following roads at previous Bluesfest events:

- North bound off ramp, Pacific Motorway.
- Tyagarah interchange, on overpass road,
- North bound on ramp.
- South bound off ramp from Pacific Motorway,
- South bound on ramp.

Counter data from previous events was used to predict/ or estimate peak traffic flow times, and then undertake manual traffic counts at similar times at this years event. It is noted that peak traffic flows are also impacted by times that popular/or headline acts are performing at the festival.

3 Implementation of traffic control plans

The approved traffic control plan was installed by Workforce Road Services staff prior to commencement of the festival camping entry. An inspection was undertaken by GAA staff to check the general compliance with the approved TCP.

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4 Wednesday: 12 April 2017

Wednesday is the first day that camper vehicles arrive.

General drive-by from south and north to Gulgan Road Interchange.

Followed some vehicles towing caravans along Pacific Highway to the Bluesfest site.

1:23pm – drive-by VMS boards from the north (1KM, 600m, 200m). Took southbound off-ramp (normal off-ramp) noted that bluesfest off-ramp still closed at this time.

1:24pm – left interchange at service station intersection onto Yarun Road. VMS board in place indicating that all campers turn right (towards southern gate entry 'Access 3'). Noted some camping vehicles parked in vicinity of service station (likely getting supplies or waiting for friends to enter at same time (possibly to get neighbouring camp sites)

Parked at new *drop-off/ pick up area* – at front of site next to Access 3.

3pm – finished external manual traffic counts.

Internal site drive-thru – till 3:30 – followed camping vehicles along entry route (southern perimeter road), past camping areas 10-12 (Campers Road), through bush to camping "border control" on Narracott Way.

Internal queue was from southern festival pedestrian entry 'South Entry' along Blues Boulevard to camping areas 1-3 (included caravans). This had no impact on external traffic.

Exited site through Soul Street, past admin building and back to the southern site exit at Access 4.



12 April - Access 3 and drop-off/pick-up area

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12 April - Minor internal queuing – camping arrivals

4.1 External traffic

External traffic flowed well during our times of observation.

It was found that on the Wednesday, there were no observed traffic problems and KPI's were not exceeded.

We observed the following external traffic rates:

1. Gulgan Rd Interchange northbound off-ramp at 2:10pm – 312vph;
2. Pacific Motorway northbound traffic – 1470vph;
3. Gulgan Rd Interchange southbound off-ramp at 1:50pm – 150vph;
4. Pacific Motorway southbound traffic – 1002vph;
5. Gulgan Rd Interchange overpass eastbound at 2:00pm – 300vph; (KPI is 1260vph/lane 8am-8pm)
6. Gulgan Rd Interchange overpass westbound at 2:00pm – 126vph; (KPI is 1260vph/lane 8am-8pm)
7. Yarun Rd (in the area of access 3) at 2:45pm – 324vph. (KPI is 800vph/lane 8am-8pm)

4.2 Internal traffic

Internal traffic operated well during our times of observation as indicated above.

4.3 KPI and Data summary

A summary of KPI compliance for our observations this day is provided in Table 1

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KPI	Data / observation	Complied (Y/N)
Maximum back of queue location on northbound off ramp: 200 metres from start of diverge taper,	No queue observed	Y
Maximum queue length on new southbound off ramp: 210 metres from start of diverge taper,	No queue observed	Y
Maximum flow rate 1260 vehicles per hour per lane on overpass, between 8am and 8pm	Highest flow rate measured: 300 vph (eastbound)	Y
Maximum flow rate 800 vehicles per hour per lane on Tanner Lane, between 8am and 8pm.	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Yarun Road, between 8am and 8pm.	Highest flow rate measured: 324 vph (both directions)	Y
No queuing on the Pacific Motorway,	No queue observed	Y
No queuing, other than in the turning bays on Tanner Lane into the site, for through traffic,	No queue observed	Y
No back up queue from the site onto Tanner Lane or Yarun Road,	No queue observed	Y
Maximum on-ramp delay 42 seconds.	Not likely exceeded	Y

Table 1 - Wednesday KPI summary**5 Thursday: 13 April 2017**

4:18pm – completed manual traffic counts.

It was observed during the traffic counts at the interchange that some vehicles were 'hesitating' when exiting the highway onto the southbound off-ramp. One particular vehicle hesitated, drove past the off-ramp, then stopped in the road shoulder on the highway, reversed back to the off ramp & then exited the highway.

GAA staff discussed what had been observed immediately with a site traffic controller. Workforce staff then did a drive through of the TCP from the Brunswick Interchange to the off ramp and indicated that all signage appeared to be in place & VMS signs were operating. (GAA did a drive through later which is discussed below).

Grays Lane intersection observed 4:19pm – still open to the highway. It was not observed at all during this festival that the Grays Lane/ Highway intersection was closed.

4:26pm – TCP inspection from Brunswick Interchange (and check southbound off-ramp). It was observed on this first drive-through that the delineation that closes the normal southbound off-ramp made it appear that there was a full road closure in place with no detour. As a driver, it felt like I would have to stop the car. Only until drivers see the 'bluesfest' off-ramp do they see that there is a driveable exit route. This observation made it clear why some drivers were hesitating. It was found that during drive-throughs after this – there was reduced hesitation due to the knowledge of the temporary detour.

Recommend: that the temporary festival delineation of the southbound off-ramp is reviewed for future events. Issues to consider could include:

- that the delineation starts earlier on the off-ramp;
- install different arrangement of signs and devices;

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- roadside and signage maintenance works are undertaken to improve sight distance to the bluesfest off-ramp;
- A detailed section of the TCP should be included for this small area showing all signs and devices to be installed;
- Reducing the speed of exiting vehicles to 60km/h or less to reduce exit ramp sight distance requirements*

*AUSTROADS Guide to Road Design Part 4C: Interchanges, Section 7.3 specifies sight distance requirements for vehicles using exit ramps. In a 110km/h speed zone, the sight distance required to the exit ramp "nose" from the auxiliary lane is 215m. It is estimated that the drivers sight distance to the exit nose of the Bluesfest Off-Ramp is less than this and may be a contributing factor to this issue. For 60km/h a reduced requirement of 120m is required.

Thursday Night 9:24pm

Carpark H – full

Carpark G – lots of capacity remaining.

Watched new drop-off zone.

Undertook survey from 9:30pm - 10:00pm at drop-off area near Access 3– no problems with traffic flow were observed.

It was observed that buses/coaches entering at access 3 were manoeuvring slowly into the site.

Recommend: that this driveway access is upgraded in the future to improve efficiency and that the internal driveway from access 3 to Noble Way is sealed.

Left site via Access 4 after 10:15pm – stopped in queue approx. 100m south of the Service Station. Stopped for approx. 30 seconds before moving (This queuing each night is not a KPI issue). Service Station intersection was under traffic control only – so was able to turn right and head towards Gulgan Road interchange. TCP for lane channelization is implemented as peak flow of exiting vehicles commences.

Observed only a few pedestrians around service station intersection at this time.

10:20pm – observed a number of large buses heading along Gulgan Road towards the festival. This is the bus route as they must enter the site via the southern entrance. Observed bus from Brunswick Heads turning across interchange towards Gulgan Road. This is a good bus route for the festival as it reduces local bus traffic using the highway at night.

10:32 – driving highway observed VMS signs & TCP signs. It was observed that the off-ramp delineation seemed to work better at night and not be so overwhelming. Maybe less signs etc were reflecting at night reducing the visual impact of the lane closure.

Drove past Bluesfest northern entry (Access 1) and towards service station along Tanner Lane. Observed a small number of young persons trying to hitch a ride along Tanner Lane which is narrow & dark and has no footpath (had to slow down & avoid young girl). ***Recommend: Future TCP could include a temporary footway along here with pedestrian barrier/s.***

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13 April – Looking east across overpass



13 April – day patrons entering at Access 3

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5.1 External traffic

External traffic flowed well during our times of observation.

It was found that on the Thursday, there were no observed traffic volume or queueing problems and KPI's were not exceeded.

We observed the following external traffic rates:

1. Gulgan Rd Interchange northbound off-ramp at 2:35pm – 660vph;
2. Pacific Motorway northbound traffic – 2004vph;
3. Gulgan Rd Interchange southbound off-ramp at 2:50pm – 258vph;
4. Pacific Motorway southbound traffic – 1602vph;
5. Gulgan Rd Interchange overpass eastbound at 3:00pm – 624vph; (KPI is 1260vph/lane 8am-8pm)
6. Gulgan Rd Interchange overpass westbound at 3:00pm – 96vph; (KPI is 1260vph/lane 8am-8pm)
7. Yarun Rd (in the area of access 3) at 2:45pm – 678vph. (KPI is 800vph/lane 8am-8pm)

5.2 Internal Traffic

At a previous festival (2015) it was observed that camping vehicles were being processed at a rate of 144 vehicles/hour which caused queueing into southern carparking areas. We did not observe this happening this year, so the processing rate has probably been improved compared to previous festivals.

From 9:30pm to 10:00pm we surveyed vehicles exiting the site from access 4. The results were as follows:

- Cars (including vans and small buses) – 124vph;
- Vehicles from drop-off/ pick-up – 30vph;
- Buses/Coaches – 14vph.

Observations during this survey included:

- The new drop-off/pick-up area was operating well;
- Buses were starting to be full towards the end of the survey time (near 10:00pm);

5.3 KPI and Data summary

A summary of KPI compliance for this day is provided in Table 2.

KPI	Data / observation	Complied (Y/N)
Maximum back of queue location on northbound off ramp: 200 metres from start of diverge taper,	No queue observed	Y
Maximum queue length on new southbound off ramp: 210 metres from start of diverge taper,	No queue observed	Y
Maximum flow rate 1260 vehicles per hour per lane on overpass, between 8am and 8pm	Highest flow rate measured: 624 vph (eastbound)	Y
Maximum flow rate 800 vehicles per hour per lane on Tanner Lane, between 8am and 8pm.	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Yarun Road, between 8am and 8pm.	Highest flow rate measured: 678 vph (both directions)	Y
No queueing on the Pacific Motorway,	No queue observed	Y

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No queuing, other than in the turning bays on Tanner Lane into the site, for through traffic,	No queue observed	Y
No back up queue from the site onto Tanner Lane or Yarun Road	No queue observed	Y
Maximum on-ramp delay 42 seconds.	Not likely exceeded	Y

Table 2 - Thursday KPI summary

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6 Friday: 14 April 2017

2:55pm – Completed manual traffic counts.

Southbound off-ramp drive-through. Observed again that the delineation and closure of southbound off-ramp is not ideal. As indicated in the observations from Thursday it is recommended that this issue is investigated further.

Internal Observations

3pm – Internal Inspection northern area. Carpark E vacant. Carpark D Full, vehicles being sent to areas A & B. Note that Area D is nominated as overflow parking for south carparking.

3:08pm – observing parking marshal at northern parking area. Constant stream of day patron vehicles entering. Marshal stopping the vehicles occasionally. 2 minute vehicle count indicated 20 vehicles in 2 minutes or a parking rate of approximately 600vph.

Parallel parking along road adjacent to Parking Area E was full.

Some spaces being filled in area A, however it was nearly at capacity.

3:15pm – observed filling Carpark Area B & C. Area E not being used at that time.

3:20 – Was in a queue of traffic on Yarun Road from South boundary of Service Station – moving slowly towards south entry at Access 4. It appeared that significantly more vehicles were entering to south of site than north. To reduce the impact of the queuing on the external road network, access 4 was implemented rather than access 3. This queuing is not a breach of the KPI's within the consent. It is however a site specific KPI adopted by the Traffic Management Plan.

3:50pm – finished observations for Friday afternoon.

Night-time observations

8:55pm – commenced parking observations.

Area G – 70-80% Full estimated at 9pm;

Area H – 80% Full estimated;

Area F – approximately 50%.

Campground 10 appeared to be used as day parking – 70%-80% full.

Northern parking area.

It was noted that Area E – overflow parking was starting to be utilised. Estimated at 10% capacity.

9:40pm – Grays Lane intersection still open to Highway. This was not observed to be causing any issues as festival traffic appeared to be accessing the motorway from the interchange.

Parked at Service Station to undertake manual traffic count of vehicles exiting site.

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14 April – Pipeline Avenue looking north. Parking D on right and Parking E on left

6.1 External traffic

External traffic flowed well during our times of observation.

It was found that on the Friday, there were no observed traffic volume or queueing problems and KPI's were not exceeded.

We observed the following external traffic rates:

1. Gulgan Rd Interchange northbound off-ramp at 2:35pm – 858vph; (Observed up to 10 second delay maximum for off-ramp traffic to enter the interchange roundabout, with minor queueing significantly below KPI)
2. Pacific Motorway northbound traffic – not counted;
3. Gulgan Rd Interchange southbound off-ramp – not counted; (Observed no issues)
4. Pacific Motorway southbound traffic – not counted;
5. Gulgan Rd Interchange overpass eastbound at 2:25pm – 810vph; (KPI is 1260vph/lane 8am-8pm)
6. Gulgan Rd Interchange overpass westbound at 2:25pm – 174vph; (KPI is 1260vph/lane 8am-8pm)
7. Yarun Rd (in the area of access 3) at 3:30pm – 690vph. (KPI is 800vph/lane 8am-8pm)

In the evening, a 10 minute count was undertaken at the Service Station Intersection, while the intersection was under traffic control. The traffic count indicated the following:

- Vehicles exiting to the south (south-bound on-ramp) – 540vph (56%);
- Vehicles exiting to the north (overpass) – 432vph (44%).

At this time the TCP had not been implemented which forces vehicles to depart in either north or south direction based on which carpark they have come from, rather drivers can choose departure direction as they get to the highway ramp. Some more detailed intersection counts were carried out on Sunday night.

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6.2 Internal traffic

No additional data was collected to discussion above in general daily observations.

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6.3 KPI and Data summary

A summary of KPI compliance for this day is provided in Table 3.

KPI	Data / observation	Complied (Y/N)
Maximum back of queue location on northbound off ramp: 200 metres from start of diverge taper,	Minor queue observed significantly below KPI	Y
Maximum queue length on new southbound off ramp: 210 metres from start of diverge taper,	No queue observed	Y
Maximum flow rate 1260 vehicles per hour per lane on overpass, between 8am and 8pm	Highest flow rate measured: 810 vph (eastbound)	Y
Maximum flow rate 800 vehicles per hour per lane on Tanner Lane, between 8am and 8pm.	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Yarun Road, between 8am and 8pm.	Highest flow rate measured: 690 vph (both directions)	Y
No queuing on the Pacific Motorway,	No queue observed	Y
No queuing, other than in the turning bays on Tanner Lane into the site, for through traffic,	No queue observed	Y
No back up queue from the site onto Tanner Lane or Yarun Road	Queue observed on Yarun Road from Service Station to Access 4 not due to internal back-up	Y
Maximum on-ramp delay 42 seconds.	Not likely exceeded	Y

Table 3 - Friday KPI summary

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7 Saturday: 4th April 2015

On Saturday the vast majority of campers are on site and only day patrons arrive during the day and early evening and depart later at night.

3:24pm – Drove from Brunswick Heads towards festival site.

3:31pm – Minor queuing (less than Friday) along Yarun Road between the Service Station and Access 4 (site entry point at the time). **Recommend: Traffic Control Manager must be aware of any future queuing along Yarun Road in real time and implement internal measures to ensure queuing is not caused by back up of internal site traffic.**

Observed during drive-by of Access 1 & Access 3 that carparking appears to be filling up quickly.

No queue has been observed on southbound off-ramp. General observation that off-ramps have not had queuing issues (or broken KPI's).

Did not do internal drive-through on Saturday. We did not observe traffic on Saturday night.

I was advised on Sunday by the Traffic Control Manager that the south carpark areas were empty by 1am and the north carpark areas by 1:15am. We were advised Saturday night was a busy night with full day parking areas. So getting all traffic out by 1:15am was considered a good result.



15 April – Aerial photo supplied by Bluesfest. Carparking areas labelled.

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7.1 External traffic

No traffic counts were undertaken on Saturday.

7.2 Internal traffic

No Internal observations or data was collected.

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7.3 KPI and Data summary

A summary of KPI compliance for this day is provided in Table 4.

KPI	Data/Observation	Complied (Y/N)
Maximum back of queue location on northbound off ramp: 200 metres from start of diverge taper,	No queue observed	Y
Maximum queue length on new southbound off ramp: 210 metres from start of diverge taper,	No queue observed	Y
Maximum flow rate 1260 vehicles per hour per lane on overpass, between 8am and 8pm	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Tanner Lane, between 8am and 8pm.	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Yarun Road, between 8am and 8pm.	Not likely exceeded	Y
No queuing on the Pacific Motorway,	No queue observed	Y
No queuing, other than in the turning bays on Tanner Lane into the site, for through traffic,	No queue observed	Y
No back up queue from the site onto Tanner Lane or Yarun Road,	Minor queue observed on Yarun Road from Access 3 to Access 4 not due to internal back-up	Y
Maximum on-ramp delay 42 seconds.	Not likely exceeded	Y

Table 4 - Saturday KPI summary

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8 Sunday: 16th April 2017

Again as similar to Saturday the vast majority of campers are on site and there are some change overs which occur on Sunday but the main traffic would be day patrons arriving during the day and departing at night.

We observed the festival at night-time only on Sunday.

8:20pm – Observed north bound off-ramp – all good.

Observed that there would be approximately 30 vehicles parked at the Gulgan Road South public carpark. These persons contribute to pedestrian movements across the highway overpass. The pedestrian facilities (footpaths and lighting) on the interchange and overpass make it relatively safe for pedestrian movements, so no pedestrian management would be recommended in the TCP at this location.

Observed first internal gate from Access 1 into Parking Area E was open to vehicles to enter and park. It was noted that "Santana" was currently performing/ finishing and was a headline act for the festival. Perhaps there would be an early exit peak flow due to his relatively early performance.

Observed Carpark E 90% capacity.

All other parking areas appear at capacity.

Vehicles parallel parked along nearly full length of the internal roads (Pipeline Avenue and North Boundary Road).

Based on observations it was estimated that there might be a peak exit at around 10pm.

Carpark B full. A few aisles roped off – maybe wet ground.

Carpark C & D at capacity.

Southern Gate – Area G appeared nearly full.

Drove southern perimeter and all parking areas along south are at capacity.

Camping areas including the area adjacent to the south emergency evacuation area (campground 11) appear virtually full also.

Drop-off area operating well at this time. As observed later – during the peak exit period only a limited number of vehicles can enter the service station intersection to then go to the pick up area – so it is unlikely that any queueing would extend onto Yarun Road from the relocated pick-up zone. Also the new pick up area was much more efficient for the pick up drivers and taxis as they exit the site in less time without getting caught in the internal day parking traffic. **Recommend: Retain the new pick-up zone location for future festivals, this was very successful.**

Parked at Service Station intersection and undertook spot count at 8:45pm to 9:00pm while intersection under traffic control (no forced directional departure). Data indicates 54% from south carpark & 46% from north carpark. Interesting observation that 25% of south carpark chose to exit north and 28% of north carpark chose to exit south onto southbound on-ramp. *It is not surprising then that many drivers are resistant to the forced directional departure as we observed.*

If a proposed Grays Lane exit strategy is implemented in the future, then patrons may be given the choice of departure direction. **Recommend: Bluesfest investigate feasibility of a Grays Lane exit**

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9:07pm – comment that talking to the Traffic Control Manager, when the peak departure TCP is in place, a number of vehicles that desire heading south will do a u-turn around the Gulgan Rd interchange roundabout and then end up in the queue back at the controlled intersection. The queueing of vehicles back across the overpass is given priority which then disrupts the flow of vehicles exiting Bluesfest. Electronic signage (no u-turn) and police presence has been implemented to try and prevent this movement (and an active police presence appears to work) however it is difficult to manage. Another reason to consider Grays Lane exit strategy.

9:14pm – observed drop-off area. Taxi vans, taxis, cars, approx. 15 people, mini buses.

Noted that I talked to patrons (couples in their 60's), who have been using the Bluesfest bus service and advised me that the bus arrivals and departures have been very efficient including catching late buses leaving the site. Their experience is that they would always catch the buses on this basis and not drive and park as a day patron. **Recommend: That Bluesfest continue to improve and increase shuttle bus services for the festival.**

10:42PM – Appeared that after 10:30pm the peak traffic flow exiting the site has passed. (Seems that this coincides with Santana finishing). The Traffic Control Manager was hoping to empty all parking by 1am, which should be achievable considering the early peak flow and the fact that last night all cars were gone by 1:15pm.

In previous Bluesfest events, there have been significant numbers of patrons arranging to be picked up at the service station. Observing the service station intersection during this festival, it was noted that minimal patrons have been attempting to get picked up at this location (particularly after the first event night). **It is concluded that the following measures have most likely contributed to this positive result:**

- Relocation of pick-up area;
- Active police presence at service station during peak departure periods;
- More efficient bus service.

8.1 External traffic

External traffic flowed well during our times of observation.

It was found that on the Thursday, there were no observed traffic volume or queueing problems and KPI's were not exceeded.

We carried out a number of manual traffic counts at the Service Station intersection on Sunday night during the peak departure period.

Some of the data we collected includes:

1. 8:45pm to 9:00pm

Service Station Intersection under traffic control (drivers can choose direction of departure):

South Carpark Exit		North Carpark Exit		
Exit South	Exit North	Exit South	Exit North	Total vph
268vph	92vph	88vph	220vph	668vph
74%	26%	29%	71%	

This count confirms that a significant number of patrons (26-29%) desire a departure direction which is different to the parking area used.

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2. 9:25pm to 9:35pm

Service Station Intersection under traffic control (drivers can choose direction of departure):

Exiting Site

Cars/ Taxis/ Vans	822vph
Buses/Coaches	6vph

Entering Site

Cars	48vph
Taxis	30vph
Buses/Coaches	30vph

3. 9:45pm to 9:55pm

Service Station Intersection with TCP implemented at 9:45pm (forced directional departure)

Exiting vehicles 1620vph (appeared to be approx. 50/50 north/south carpark split)

During this time there did not appear to be any noticeable delays on the southbound on-ramp.

Entering vehicles (pick-up) 48vph

Overpass vehicles to on-ramp* 66vph

*These vehicles are likely northbound exit vehicles doing a u-turn at the roundabout and returning to head south (approximately 8% of the exit stream)

4. 10:15pm to 10:25pm

Service Station Intersection with TCP implemented (forced directional departure)

Exiting Site

Cars/ Taxis/ Vans	1050vph
Buses/Coaches	30vph

Entering Site

Cars/ Taxis/ Vans	66vph
Buses/Coaches	48vph

Exiting vehicles were stopped 4 times in 10 minutes during this count to let the entering traffic stream in.

General Observations

- Due to the entry of vehicles being controlled by the intersection traffic controllers, the drop-off/ pick-up area flow is being regulated/ limited;
- The entering vehicles are given priority when there is queuing of traffic on the overpass towards the Gulgan Road roundabout;
- The entering vehicles are also given priority as shuttle buses arrive in the queue to do pick-ups.
- There appeared to be a significant reduction in exit flow when there was an increase in arrival of buses to do pick-ups (1620vph down to 1080vph);

Recommend: Bluesfest investigate having shuttle buses enter the site at a different location to improve efficiency. Entry from either Grays Lane or the Southbound Exit Ramp should be considered.

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8.2 Internal traffic

Observations of internal carparks were undertaken as discussed above, however no data was collected.

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8.3 Data summary

A summary of KPI compliance for this day is provided in Table 4.

KPI	Data / observation	Complied (Y/N)
Maximum back of queue location on northbound off ramp: 200 metres from start of diverge taper,	No queue observed	Y
Maximum queue length on new southbound off ramp: 210 metres from start of diverge taper,	No queue observed	Y
Maximum flow rate 1260 vehicles per hour per lane on overpass, between 8am and 8pm	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Tanner Lane, between 8am and 8pm.	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Yarun Road, between 8am and 8pm.	Not likely exceeded	Y
No queuing on the Pacific Motorway,	No queue observed	Y
No queuing, other than in the turning bays on Tanner Lane into the site, for through traffic,	No queue observed	Y
No back up queue from the site onto Tanner Lane or Yarun Road,	Minor queueing was likely on Yarun Road not due to internal backup	Y
Maximum on-ramp delay 42 seconds.	Not likely exceeded	

Table 5 - Sunday KPI summary

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9 Monday: 17th April 2017

The expected guest numbers is lower on Monday, and traffic and parking was expected to be more relaxed.
No traffic observations were undertaken on Monday

9.1 External Traffic

No traffic observations were undertaken on Monday

9.2 KPI and Data summary

A summary of KPI compliance for this day is provided in Table 4.

KPI	Data / observation	Complied (Y/N)
Maximum back of queue location on northbound off ramp: 200 metres from start of diverge taper,	Not likely exceeded	Y
Maximum queue length on new southbound off ramp: 210 metres from start of diverge taper,	Not likely exceeded	Y
Maximum flow rate 1260 vehicles per hour per lane on overpass, between 8am and 8pm	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Tanner Lane, between 8am and 8pm.	Not likely exceeded	Y
Maximum flow rate 800 vehicles per hour per lane on Yarun Road, between 8am and 8pm.	Not likely exceeded	Y
No queuing on the Pacific Motorway,	Not likely exceeded	Y
No queuing, other than in the turning bays on Tanner Lane into the site, for through traffic,	Not likely exceeded	Y
No back up queue from the site onto Tanner Lane or Yarun Road	Not likely exceeded	Y
Maximum on-ramp delay 42 seconds.	Not likely exceeded	

Table 6 - Monday KPI summary

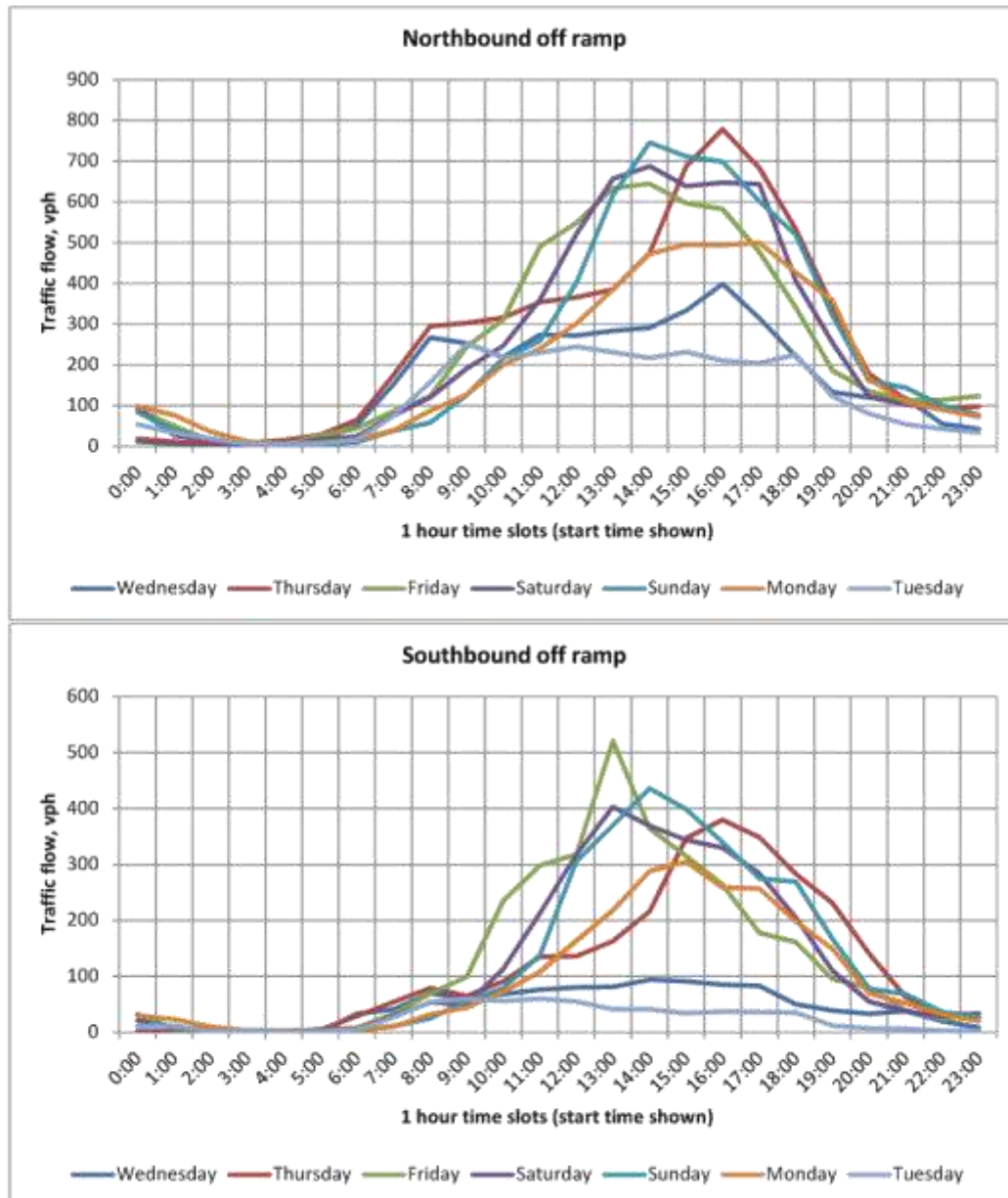
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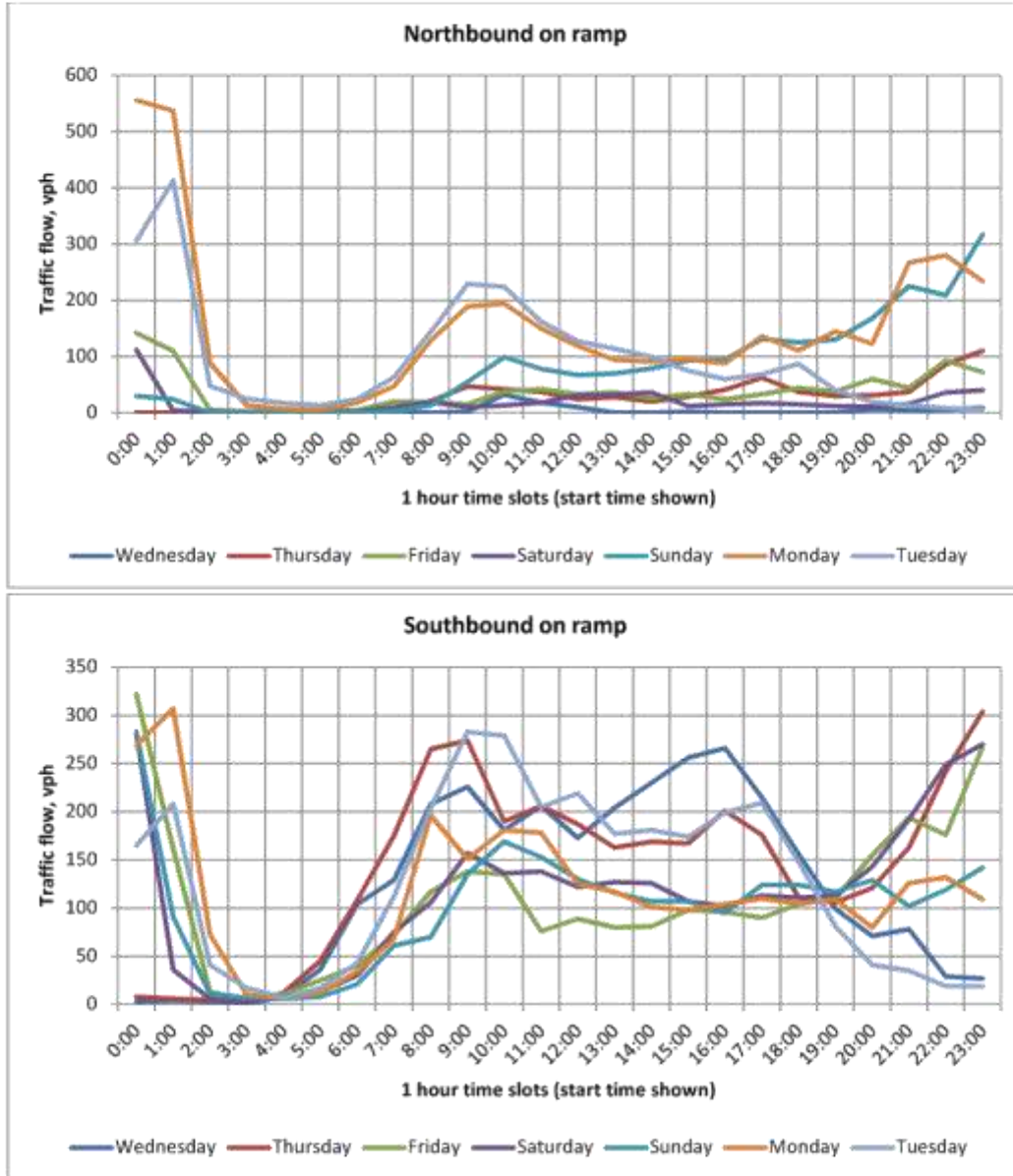
10 Traffic counter data overview – 2015 data

This chapter provides an overview of the data obtained during the 2015 festival for each of the classified counters. The data is presented for each day, with traffic flow in vehicles per hour.

Our times of observation and manual counting was planned around similar peak times to this previous festival.

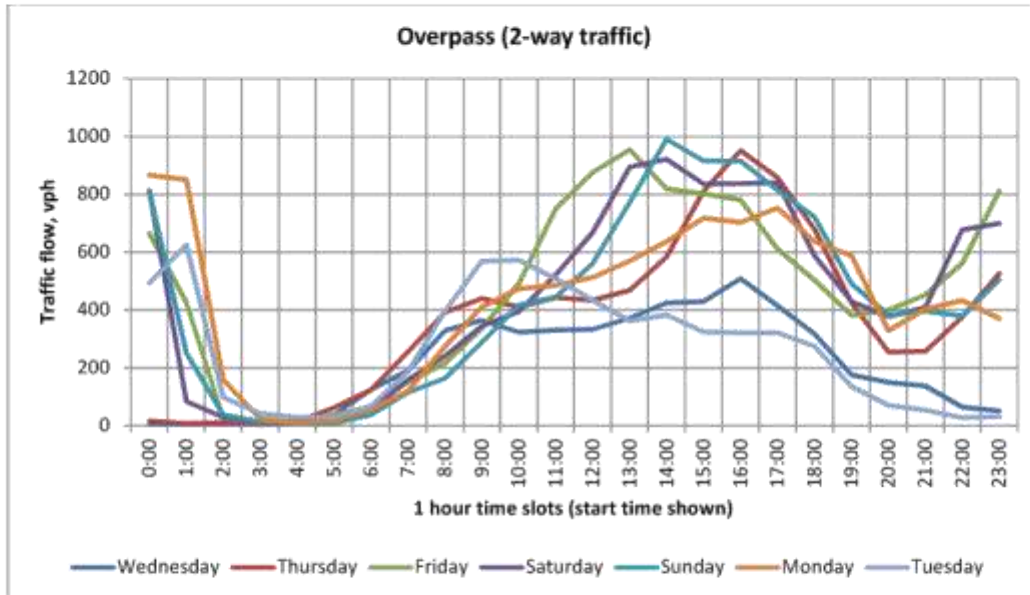


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**11 Effectiveness of site traffic control measures**

The implementation of an on ramp from Tanner Lane to the Motorway near the Airport Road and the Grey Lane deceleration lane should be pursued with the RMS, as this would solve the exiting time issue, and keep it at a manageable value.

The second and only a minor issue, because it was effectively dealt with by the combined team of traffic and parking, was Sunday afternoon at around 4:00 pm, when a small queue of moving traffic began to form in Tanner lane from Gate C back to the service station intersection. This demonstrated the sensitivity of the site to casual traffic and parking management.

The other measures were wet ground in parking areas and the reduced parking spaces because of campers returning, staff, stall holders etc using the north parking areas.

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12 Recommendations from this report

Recommendations included in this report are summarised below:

1. **Recommend: that the temporary festival delineation of the southbound off-ramp is reviewed for future events.** Issues to consider could include:
 - that the delineation starts earlier on the off-ramp;
 - install different arrangement of signs and devices;
 - roadside and signage maintenance works are undertaken to improve sight distance to the bluesfest off-ramp;
 - A detailed section of the TCP should be included for this small area showing all signs and devices to be installed;
 - Reducing the speed of exiting vehicles to 60km/h or less to reduce exit ramp sight distance requirements*

*AUSTROADS Guide to Road Design Part 4C: Interchanges, Section 7.3 specifies sight distance requirements for vehicles using exit ramps. In a 110km/h speed zone, the sight distance required to the exit ramp "nose" from the auxiliary lane is 215m. It is estimated that the drivers sight distance to the exit nose of the Bluesfest Off-Ramp is less than this and may be a contributing factor to this issue. For 60km/h a reduced requirement of 120m is required.
2. **Recommend: that this driveway access (Access 3) is upgraded in the future to improve efficiency and that the internal driveway from access 3 to Noble Way is sealed.**
3. **Recommend: Future TCP could include a temporary footway along here (Tanner Lane) with pedestrian barrier/s.**
4. **Recommend: Traffic Control Manager must be aware of any future queuing along Yarun Road in real time and implement internal measures to ensure queuing is not caused by back up of internal site traffic.**
5. **Recommend: Retain the new pick-up zone location for future festivals, this was very successful.**
6. **Recommend: Bluesfest investigate feasibility of a Grays Lane exit**
7. **Recommend: That Bluesfest continue to improve and increase shuttle bus services for the festival.**
8. **Recommend: Bluesfest investigate having shuttle buses enter the site at a different location to improve efficiency. Entry from either Grays Lane or the Southbound Exit Ramp should be considered.**

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13 Conclusions

We conclude that the traffic control measures external to the site, were appropriate for the event and were capable of dealing with the patronage and traffic flows.

The main issue observed that must be rectified for the 2018 event is recommendation 1 from Section 12 above.

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14 REFERENCES

Traffic Control at Work Sites, RTA, 4th ed, June 2010

Guide to Traffic and Transport Management for Special Events, RTA Transport Management Centre, August 2006

Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis, Austroads Inc., Sydney, August 2009