DONALD VEAL CONSULTANTS

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Final Issue 2

Lot 78 Punrak Road, Keysbrook
Proposed Motor Racing Circuit

Prepared For: Stati Group

Transport Impact Assessment Report

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Donald Veal Consultants Pty Ltd

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1. INTRODUCTION

1.1 BACKGROUND

Stati Group has commissioned Donald Veal Consultants to prepare this Transport Impact Assessment (TIA) report to support its Development Application to the Shire of Serpentine Jarrahdale regarding the proposed development of a Motorsport facility on Lot 78 Punrak Road, Keysbrook.

A TIA report for this development proposal was prepared in 2017, which concentrated on the first stages of the project with less detail on how longer-term expansion was to be managed.

Our brief has now changed and the full use of the development is to be considered for the opening year.

1.2 SCOPE OF THIS REPORT

The structure and scope of this Transport Impact Assessment is in accordance with the WAPC's Transport Impact Assessment Guidelines (August 2016).

2. EXISTING SITE CONDITIONS

2.1 LOCATION

The development site lies to the east of the Kwinana Freeway and south of Karnup Road in the Hopeland area of the Shire of Serpentine-Jarrahdale. Serpentine Airfield on Yangedi Road is close to the site, which is bounded by Punrak Road, Wigg Road and the unconstructed alignment of Yangedi Road.

The general locality is shown in **Figure 2.1**, with the site location shown in more detail in **Figure 2.2.**

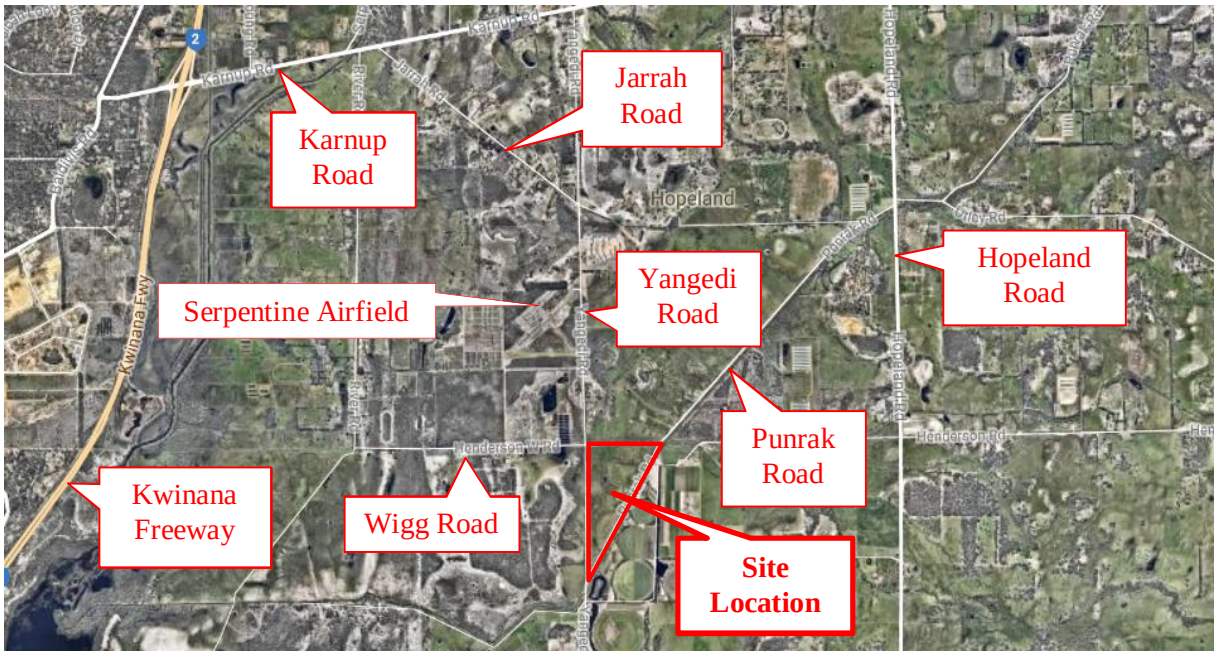


Figure 2.1: General Locality Plan. ***Source: Nearmap***

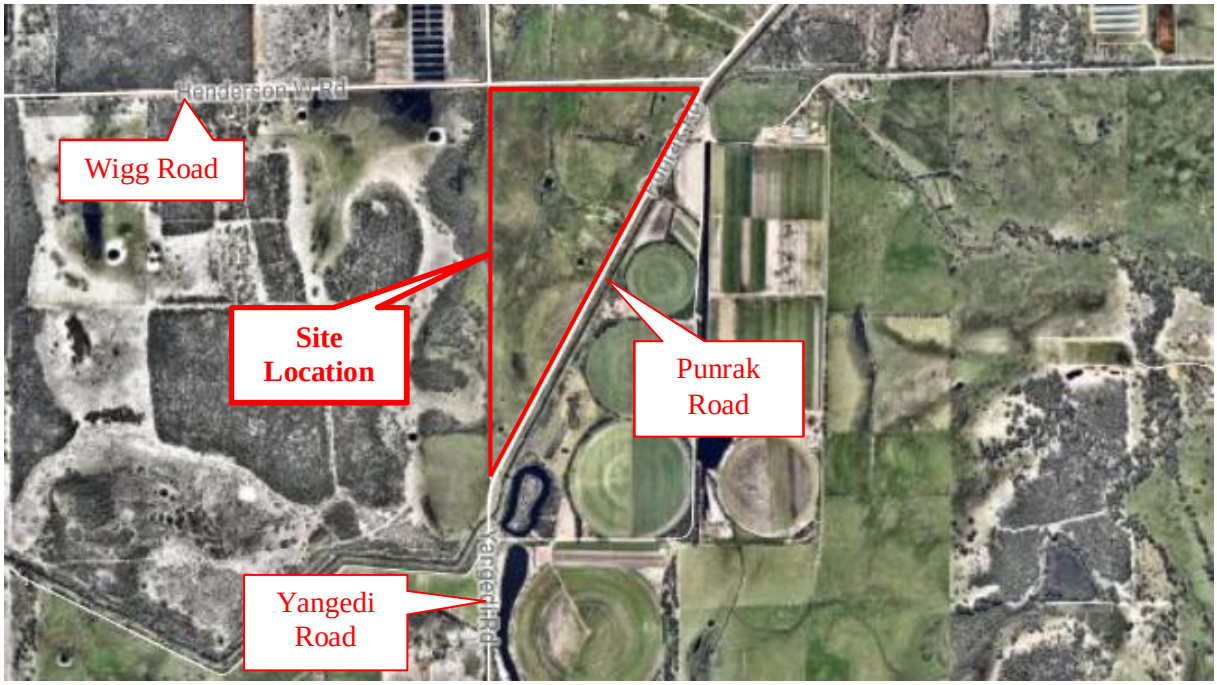


Figure 2.2: Site Location. ***Source: Nearmap***

2.2 CURRENT LAND USES

The site is largely undeveloped at the present time, apart from a single farmhouse (McNeill Farm) halfway along the eastern boundary on Punrak Road. See **Photos 1 & 2**.

Photo 1: The site looking south from the intersection of Punrak Road and Wigg Road (2017)

The adjacent land uses are primarily rural, although Serpentine Airfield lies around 1.5km to the north.

Photo 2: Farmhouse to the east side of the site along Punrak Road (2017)

2.3 EXISTING SITE ACCESSES

Whilst the majority of the site boundary is only loosely fenced, there appears to be only one formal access, being that at McNeill Farm, along the east side, off Punrak Road. See **Photo 3**.

Photo 3: Existing main site access off Punrak Road (2017)

2.4 ADJACENT ROAD NETWORK

The road network immediately adjacent the site includes Punrak Road, Yangedi Road and Wigg Road. All three roads are constructed as undivided single carriageway roads, with one lane in each direction, and are classified as Access Roads in MRWA's road hierarchy. See **Figure 2.3**.

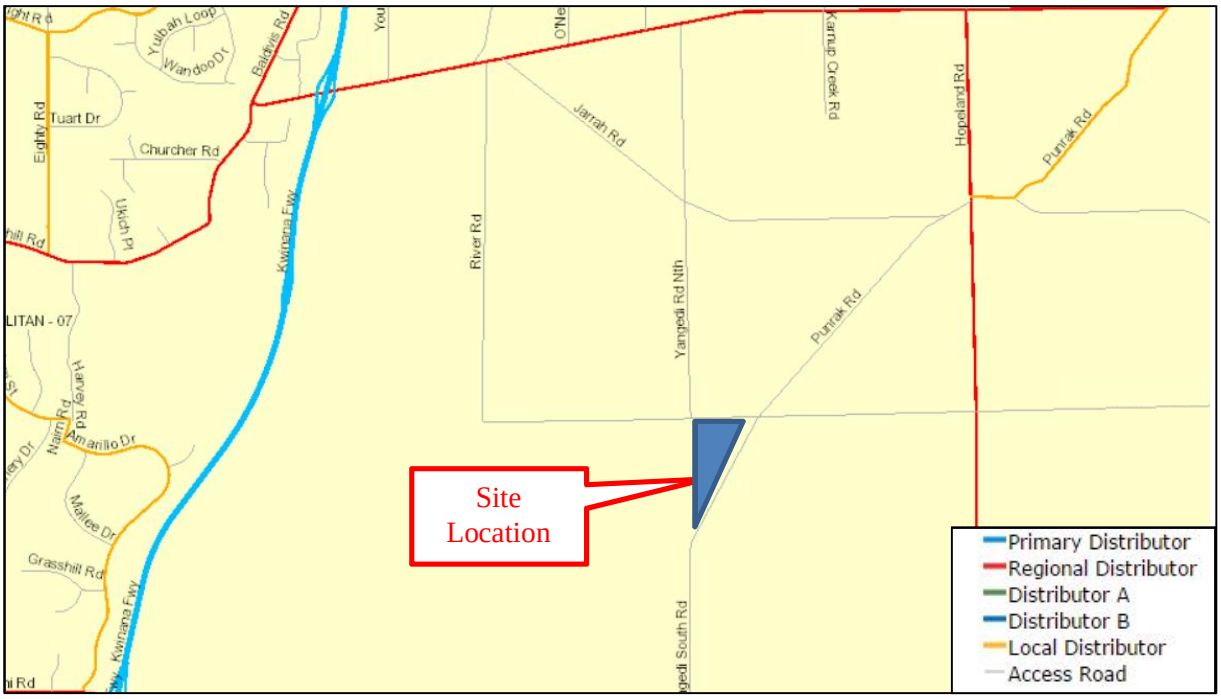


Figure 2.3: MRWA Road Hierarchy

As it is assumed that the above roads do not qualify as being in built up areas, the applicable speed limit as indicated on MRWA's Road Information Mapping System is 110 km/h.

2.5 EXISTING TRAFFIC VOLUMES

Traffic count information for the adjacent road network was supplied by the Shire of Serpentine Jarrahdale, including counts from 2017 and 2021. This is summarised in **Table 2.1**.

Table 2.1: Traffic counts

Road	Location	Average Daily Traffic Flow	
		2017	2021
Hopeland Road	Between Wigg Road and Karnup Road	1,000	-
Punrak Road	500m south of Karnup Road	100	-
	500m south of Jarrah Road	-	71
	400m south of Henderson W Road	-	55
Wigg Road	1,000m west of Punrak Road	20	-
Yangedi Road	300m south of Karnup Road	170	-
	500m south of Jarrah Road	-	145

2.6 CRASH HISTORY

A search of the MRWA CARS database showed no crashes at any of the roads or intersections immediately adjacent the site in the last 5-year recording period, from 2016 to 2020 inclusive as shown in **Figure 2.2**.

However, there were 39 crashes recorded along Karnup Road between the Kwinana Freeway northbound on-ramp and Punrak Road, in the same period. Of these 39 crashes, six required a hospital visit while seven others resulted in the need for medical attention. The remaining crashes resulted in property damage only (20 major, 6 minor).

Five crashes were recorded along Hopeland Road between Karnup Road and Elliott Road (excluding the intersection with Karnup Road). One of these crashes occurred at the intersection with Punrak Road, and required a hospital visit.

Only two crashes were recorded along Jarrah Road.

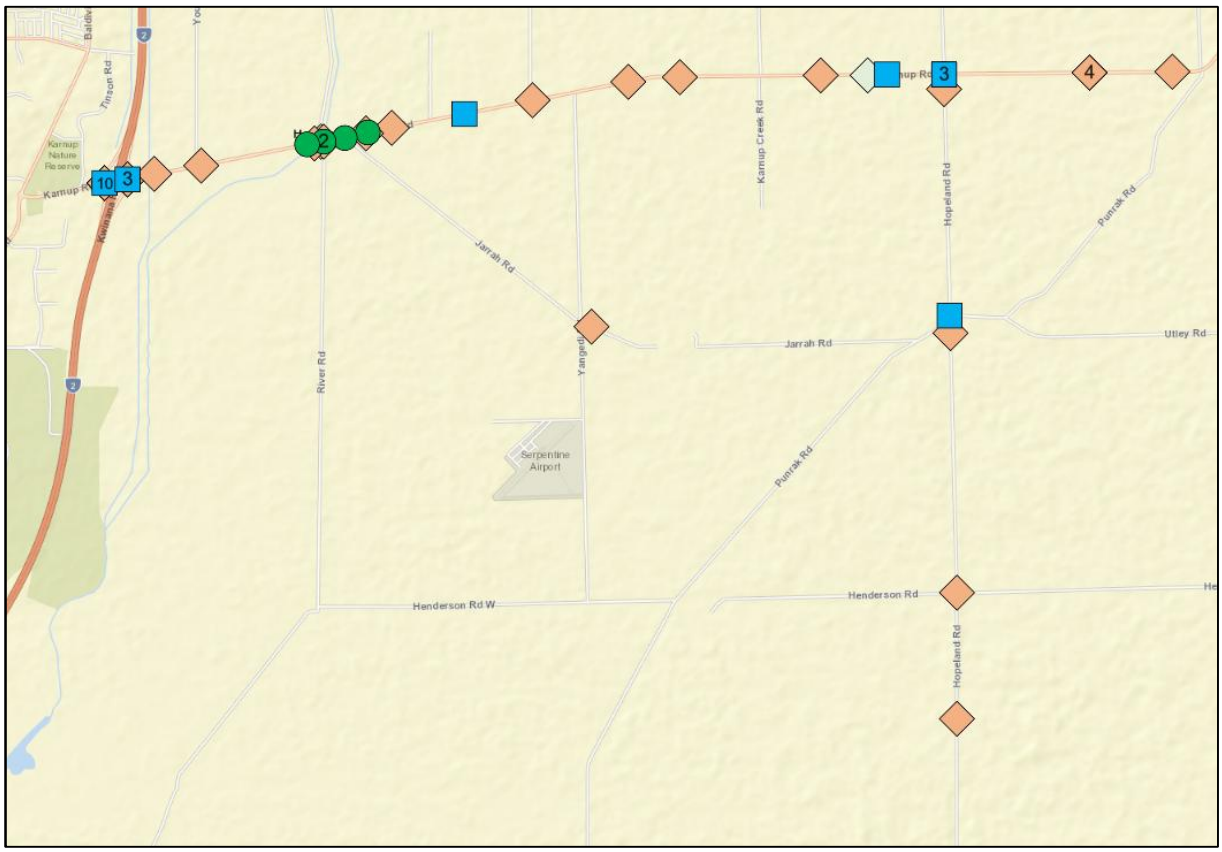


Figure 2.1: Crash History (2016-2020)

2.7 PLANNED CHANGES TO THE ROAD NETWORK

There are no known imminent changes planned for the road network in this vicinity.

3. PROPOSED DEVELOPMENT

3.1 GENERAL

The Motorsport Facility will supply an advanced race circuit designed and constructed to Federation Internationale de l'Automobile (FIA) and Confederation of Australian Motor Sport (CAMS) standards with a Go-Kart Circuit to Commission Internationale de Karting (CIK) level. This will enable the potential for National and International race events to occur on the site. On a day-to-day basis, the facility will offer a wide range of complementary uses which focus on road safety, driver training and recreation.

3.2 SITE ACCESS ARRANGEMENTS

The development, including the site's car parking areas, will be accessible from at least two crossovers, being located on Punrak Road and Wigg Road.

3.3 DEVELOPMENT USES

The client has indicated that the site will be used for a wide range of events from international V8 supercar races to go-kart racing at state and national amateur levels and driver training courses.

The proposed and potential uses for this facility might include:

- Driver Training;
- Manufacturer Events (e.g. National Dealer Meetings);
- Road Safety Driver Training (Individuals, Fleet, Defensive Driving, 4WD);
- Government driver safety and training;
- Track Days Race circuit for road and race cars;
- Corporate Go Kart events;
- International and National Car Race Events;
- International and National Go Kart Events;
- Concert and entertainment events;
- Fitness based events (Tough Mudder, Spartan Race and the like);
- Seminars (Corporate Hire of Meeting Rooms);
- Motoring Events (Top Gear, Live Show etc.);
- Cycling Events; and
- School Hire (e.g. Cross Country events).

Figure 3.1 shows the general layout of the development.

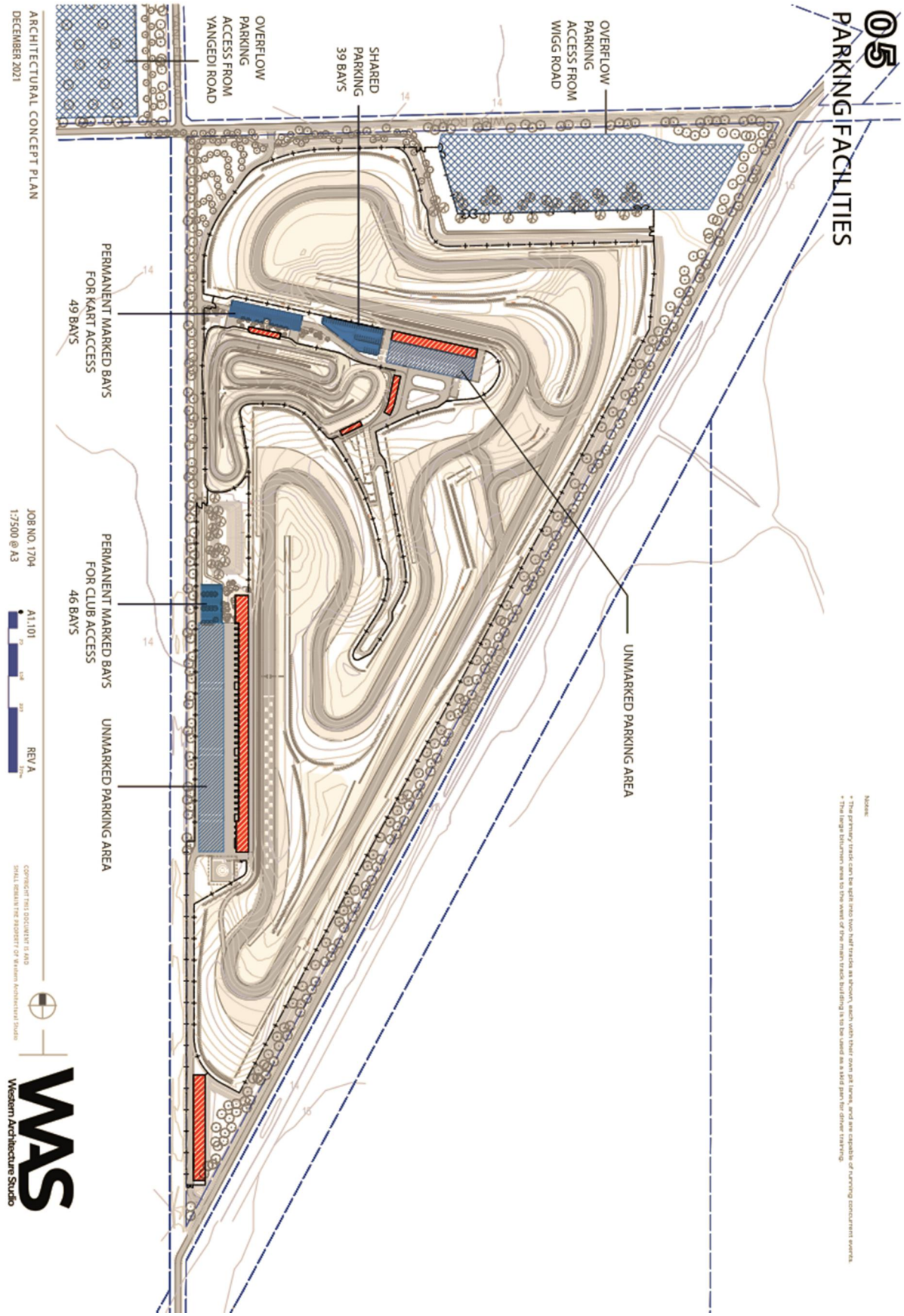


Figure 3.1: Development Layout

The race events likely to occur at the site will comprise the following broad categories:

V8 Supercar events:
V8 Supercar and similar professional national events are likely to attract larger numbers of patrons and such events will rely on a coordinated approach to transport and access (including public transport), as well as the provision of facilities and services to support each event.

Such events can potentially draw between 20,000 and 80,000 spectators (depending on the capacity for the facility to accommodate the event). Other V8 Supercar events elsewhere in Australia such as Clipsal 500 (South Australia) and Phillip Island (Victoria) can draw up to 250,000 spectators over the course of an event; however, the level of patronage at such events is based on a number of factors such as accessibility, track popularity and promotion of the event.

International race events:
The facility has the potential to also host international race events, such as the World Rally Championships or international sports car endurance races (e.g. Bathurst) subject to interest by those events. It is expected that such events would draw patrons of a similar number to V8 Supercar events, however the difference being that international events would likely draw a broader range of patrons depending on the type of event. International events previously held in Perth, such as the Red Bull Air Race and the World Rally Championships, draw large numbers of spectators and promote international travel to the region which in turn promotes positive economic outcomes for the region.

State (amateur) motorsport events:
Such events would be attended by local drivers and support teams, with spectators typically limited to family, friends and individuals associated with the event. State motorsport events would typically occur over a weekend where there may be between 100 and 150 individual vehicles racing over the course of the two-day period. Such events are unlikely to draw a large spectator following and spectators are likely to be in the range of 100 to 500 people per day, depending on the event. Events are estimated to occur up to 15 times per year.

National (amateur) motorsport events:
Similar to the State motorsport events, the attendees for such events would typically be individuals with an interest in motorsport or with a particular involvement in the event. The attendance numbers for the national events are likely to be in the same range as State events and are estimated to occur up to 4 times per year.

Minor events:
It is noted that in addition to car races, the main track is designed to also host motorcycle events of various categories. Such events are likely to occur throughout the year, mainly on weekends when state and national club meetings typically occur.

Each category of event will require specific site and event management planning which will be subject to separate local (and State) government approvals and consultation on a case-by-case basis.

Table 3.1 provides additional information regarding the current estimates for typical frequency and duration of the various potential track uses.

Table 3.1: Typical day to day track use

Track Use	Vehicle Type	Frequency	Duration
Race Karts	Equivalent to 125cc Rotax Karts	Daily	8am-6pm
Hire Karts	Standard	Daily	8am-6pm
Manufacture Days	Various (non-modified)	Weekly	8am-6pm
Driver Training	Various (non-modified)	Weekly	8am-6pm
Amateur Events (State)	Formula Ford / GT3 Sports Cars	Average 15 times per year	2-3 days (over weekend)
Amateur Events (National)	Formula Ford / GT3 Sports Cars	Average 4 times per year	2-3 days (over weekend)
Amateur Events (track/test days)	Formula Ford / GT3 Sports Cars	Average 4-5 days per month	Weekdays (8am-6pm)
Bikes (racing)	Super bikes / Street bikes	Average 15 times per year	2-3 days (over weekend)
Bikes (track/test days)	Super bikes / Street bikes	Average 4-5 days per month	Weekdays (8am-6pm)
V8 Supercars	V8 Supercars	1 per year	3 days

4. TRAFFIC AND TRANSPORT ANALYSIS

4.1 TRIP GENERATION

Generally, on days when neither major nor minor events are scheduled, the number of trips being generated by the facility would be limited to those by track staff and visitors to the Go Kart track, track days or driver training sessions. It is not expected that the number of peak period vehicle trips generated on such days would exceed 100. This would constitute only a moderate impact, and would not require specific analysis.

4.1.1 'Minor Events' Scenario

Advice provided by the developer is that the maximum daily attendance at the types of minor event to be held is likely to be around 500 spectators. This level of event is expected to occur perhaps four or five times per month. This is considered regular enough to require the local road network and facilities to be able to cater for the traffic movements without the need for a specific event traffic management plan (Event TMP). Nonetheless, some direction signs may be required given the rural nature of the area, especially regarding the appropriate routes and access points for competitors and for visitor parking. Parking marshals may also be required to ensure orderly entry and exit at the crossovers.

It is expected that for these smaller events, the majority of attendees will arrive by private vehicle. The average occupancy level of these private vehicles attending the site is likely to be at least 2 people. This would indicate a total number of 250 vehicles arriving at the venue.

Whilst it is unlikely that attendees will all arrive at the same time, with different people perhaps being interested in different events on the itinerary, in the worst case scenario, we would allow for the arrival of 250 vehicles over a one hour period. Other trips generated by the events, such as those associated with competitors, marshals, other venue staff, refreshment outlet staff and suppliers etc. would all generally be expected to arrive much earlier than the patrons, and leave much later. On such a day, and assuming 100 staff this would equate to 700 vehicles per day (vpd).

Almost all of these events are expected to be held over a weekend, and would not therefore coincide with any commuter peaks in traffic on the local network. Should they occur on holiday weekends, consideration may be required of the cumulative effect of other events, or significant traffic movements to and from the south of the state. If appropriate a specific Event TMP could then be considered.

4.1.2 'Major Events' Scenario

Advice provided by the developer is that the maximum attendance at the types of larger event to be held is likely to be up to 50,000 spectators spread over a three day event. This level of event is expected to occur perhaps once or twice a year.

Although as many attendees as possible would be encouraged to arrive on specially chartered buses and coaches, events of this scale would still be expected to generate a level of traffic that would only be

manageable under a specific Event TMP, refer section 7.4. The Event TMP is required to be undertaken with reference to MRWA's template and subject to MRWA and Shire approval.

Given the location of the venue, it is likely that, even for the larger events, a significant number of attendees will arrive by private vehicle. The average occupancy level of these private vehicles attending the site is however likely to be higher than for the lower key events, and may be as high as 3 or more. Buses and coaches would typically be expected to carry an average of around 45 passengers.

If the maximum forecast attendance of 50,000 is realised, this is likely to be split unevenly over the three days, with more people attending the 'main event', likely to be held on the third day. This may equate to perhaps 50% of the total, or around 25,000 people.

The use of public transport/coaches will be encouraged, with the cost of public transport and chartered coaches being included in the ticket price. However, it is anticipated and accepted that people may still prefer (as mentioned before) to arrive in private vehicles. Thus, if the number arriving by coach is estimated at around 35% or 8,700, this would then require around 193 coach arrivals. If more coaches are required then this may be catered for by some coaches potentially making more than one trip. However, for the purposes of this report it is taken that all coaches will remain on site.

The remaining 16,300 people might be expected to arrive in up to 4,878 private vehicles. The occupancy rate is taken to be between 3 and 3.5 persons per vehicle.

Coach parking will be provided within the Motorsport site. Private vehicle overflow parking will be provided on Lot 400 Wigg Road. Indicative layouts of the overflow parking area and coach parking are shown in **Appendix A,** in **SK4** and **SK5**, respectively.

As with the smaller events, it is unlikely that attendees will all arrive at the same time, with different people perhaps being interested in different events on the itinerary. Generally with larger events such as V8 Supercars, there is a complete support program of other races, with the main event not commencing until later in the day.

Nonetheless, this level of traffic, even if arriving gradually over a number of hours, would only be able to access the site safely with a full Event TMP in place. **Table 4.1** shows estimated volumes generated by attendees.

Table 4.1: Estimated volumes for Major Event

	Persons/vehicle	No. of vehicles	Persons	Arrival over	Vehicles per hour
Public carpark	3.35	4,878	16,341	3hrs	1,626
Coach	45	193	8,685	3hrs	64
Total		5,071	25,026		1,690

The above estimation is considered to be conservative, as motorcycle numbers have not been taken into consideration. However, separate motorcycle parking will be provided.

As a likely worst case scenario, we would allow for the arrival of 5,071 vehicles over a three hour period, comprising 4,878 cars and 193 buses or coaches. Other trips generated by the events, such as those associated with competitors, marshals, other venue staff, refreshment outlet staff and suppliers etc. would all generally be expected to arrive much earlier than the patrons, and leave much later.

Almost all of these events are expected to be held over a weekend, and would not therefore coincide with any commuter peaks in traffic on the local network. Should they occur on holiday weekends, consideration may be required of the cumulative effect of other events, or significant traffic movements to and from the south of the state. If appropriate a specific 'Combined Events' TMP could then be considered.

4.2 TRIP DISTRIBUTION

Given the location of the facility, and the availability of other venues such as the RAC's track at Perth Airport and Barbagallo in the northern suburbs, it is expected that attendance at the typical daily services such as Go karting, driver training and track days, not associated with specific events, will be biased towards residents of the southern suburbs, Rockingham, Mandurah and other towns and cities further south.

In most cases, the large majority of these trips will involve travelling either north or south on Kwinana Freeway to the Karnup Road intersection. An indicative distribution diagram is shown in **Figure 4.1**. Return trips are expected to be a reversal of this diagram.

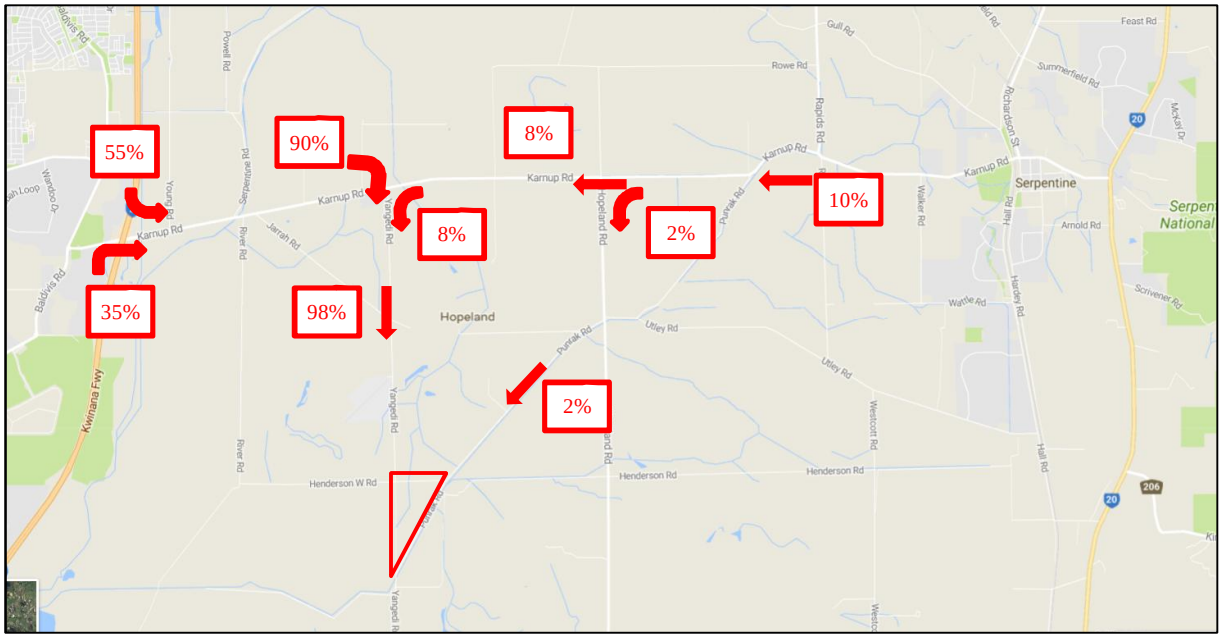


Figure 4.1: Trip distribution – arrivals

This suggests that around 90% of trips will approach the site eastbound along Karnup Road, having emanated from Kwinana Freeway. The remaining 10% of trips are estimated to approach the site from the east along Karnup Road. These will be sign-posted to use Yangedi Road, although some travellers may use Hopeland Road and Punrak Road. Very few trips are anticipated from the south along Yangedi Road.

Photo 4: Yangedi Road is sealed as far as the airfield (2017)

Photo 5: Yangedi Road south of the airfield (unsealed) (2017)

The shortest route to the site from Kwinana Freeway would take drivers down the currently partially-sealed Jarrah Road. Given the nature of this road and the number of residential driveways along it, it would be preferable to discourage drivers from using this route, especially for larger events. Although the route via Yangedi Road is longer, signage and, if necessary, traffic controllers should be reasonably effective in channelling patrons via this route during major events.

Even with the envisaged major events, this general distribution of arrivals is not expected to vary very much, although the north/south split on Kwinana Freeway may change to reflect a larger proportion of people heading south from Perth for such events. In addition, there may be a significant number of buses and coaches ferrying passengers between the venue and Warnbro railway station.

4.3 DRIVEWAY ACCESSES

For general everyday access, and entrance to minor events, there are intended to be just two driveway accesses to the internal roads and car parking areas within the site. The main access will be from Wigg Road, with a secondary one from the southern end of Punrak Road.

For the major events, a few access points are proposed to ensure access and egress from the various parking locations can be undertaken safely and efficiently (refer section 7.4). These accesses will need to be manned by Traffic Controllers or parking marshals for the larger events, so that delays in entry and exit are kept to a minimum.

4.4 SERVICE VEHICLES

In most case, it is not expected that any vehicles larger than a 19m semi-trailer would be required to deliver competitors vehicles, ancillary equipment or general supplies to the circuit. The accesses, internal road network and loading docks should therefore be designed to suit these vehicles.

Should larger vehicles be required, as may be possible for the bigger events, then the design will need to take this into account. In addition, if larger vehicles are to be accommodated on the local road network, some of the adjacent roads and intersections may need to be significantly improved to meet MRWA's RAV network requirements, and an application to add these roads to that network would need to be prepared and submitted to Heavy Vehicle Services.

Potentially, if such vehicles are only expected to attend the site once or twice a year, it may be possible to obtain some form of special permit, in order to facilitate their movements, potential under escort, but this would need to be investigated further with the relevant authorities.

With larger events, and perhaps any CAMS event, there may be a requirement to have a medical unit on site and a suitable paramedic equipped helicopter available to take emergency cases directly to the nearest hospital.

The proximity of the venue to the Serpentine Airfield may satisfy any such requirement, but access may be difficult at certain times due to congestion around the circuit. A serviceable helipad will probably be required within or immediately adjacent the site.

Photo 6: Serpentine Airfield (2017)

5. TRAFFIC IMPACT

5.1 GENERAL

Generally, there is very little traffic on the road network immediately surrounding the site, and the impact on other road users is expected to be very low for the most part. However, during major events, it is probable that background traffic will be affected, with a certain amount of congestion on the local roads being unavoidable.

It is also expected that the arrival of attendees at specific events will be spread over a reasonably long period, with some arriving early to avoid queues and enjoy the whole day's program of events. Others, only interested in seeing the main race, may arrive later.

However, the most critical period in terms of traffic movements will be at the end of the day, when the majority of attendees may be expected to leave the venue within a quite condensed period of time.

It should be noted that the majority of larger events will be held over weekends, and no significant impact would be expected on existing peak hour commuter movements during the week.

5.2 NON-EVENT AND MINOR EVENT DAY SCENARIOS

Outside of the occasional major national and international events, traffic impacts will normally be split between attendance at daily offerings such as corporate go-karting, road safety courses, advanced driver training, track days etc. and small scale, minor motor racing events.

The former activities may be held during the week, and attendees may arrive and depart during the peak hours of the local road network, but the likely trip generation will be significantly less than 100 trips in the peak hour, and the overall impact will be almost negligible in terms of road capacity.

Whilst the latter events may attract slightly higher attendances, they will mainly occur at weekends, and will have little impact on the low levels of traffic on the road network during those periods.

5.3 MAJOR EVENT SCENARIOS

The larger, higher profile events will occur less often, but will attract far greater crowds and result in significantly larger traffic impacts.

Such impacts will vary between events, and an overall Event TMP for the site will need to be developed and tailored to fit the particular type and level of traffic and the specific issues expected for each individual event.

6. INFRASTRUCTURE UPGRADES

Even under the lower trip generation levels forecast for the minor events, some upgrades would be required to the road network in the vicinity of the venue. Specifically, sections of Yangedi Road, Punrak Road, and Wigg (Henderson) Road will need to be upgraded, as they will be the main access routes, and are currently only partially sealed at best. Upgrades to Hopeland Road would be required to cater for the Major Events.

The following recommended upgrades are from a desktop analysis and are subject to further details on the existing road widths and the Shire's requirements. Reference should be made to **Appendix A SK1, SK2 and SK3** for routes of relevant modes of transport for the Moderate, Large and Major Events, respectively.

6.1 YANGEDI ROAD

As noted in Section 4.1.1 minor events that occur on a weekly basis will produce in the order 700 vpd. Presently, Yangedi Road carries 145vpd. The use of Jarrah Road to access to the Motorsport facility is to be discouraged (refer Section 4.2) with Yangedi Road being the preferred option.

Yangedi Road, north of the Serpentine Airfield access, is predominantly constructed as a 6m sealed pavement with 1m unsealed shoulders. South of the Airfield, through to Wigg Road, Yangedi Road is 6m wide, but unsealed. This length of Yangedi Road (approximately 1.6km) will be required to be upgraded to match the cross section to the north, i.e. 6m sealed asphalt road pavement with 1m unsealed shoulders.

6.2 KARNUP ROAD/YANGEDI ROAD

Some localised widening will also be required along Karnup Road, at its intersection with Yangedi Road, in order to allow eastbound through traffic to safely pass to the left of vehicles waiting to turn right into the side road. Discussions with the Shire in 2017 indicated that a full right turn lane is not envisaged and the localised widening will be adequate.

6.3 WIGG (HENDERSON) ROAD

One of the main accesses to the site is on Wigg Road, just east of Yangedi Road. For Major Events, Wigg Road will be utilised to access the on-site coach/bus parking, with the proposed access some 450m west of Punrak Road.

For the first 450m to the west of Punrak Road, Wigg Road is currently a 4m sealed road with 1.5m unsealed shoulders. From here to Yangedi Road it has a 7m unsealed formation, refer **Photo 7**.

For the first 300m east of Yangedi Road, Wigg Road will need to be upgraded to a 6m sealed asphalt pavement with 0.5m unsealed shoulders. From here to Punrak Road, the sealed width should be increased to 7m with 0.5m unsealed shoulders as buses will be traversing this length for Major Events.

Photo 7: Intersection of Yangedi Road with Wigg Road (signed as Henderson Road) (2017)

6.4 HOPELAND ROAD

For Major Events Hopeland Road is to be utilised by coaches/buses. Typically, a 7m width is required for buses. The route has sufficient width for the northern section, however for a length of 1.3km north of Punrak Road the sealed width varies between 6m and 7m. Widening of this 1.3km section by 0.5m on either side is therefore recommended, pending more detailed analysis of the existing road widths along Hopeland Road.

6.5 PUNRAK ROAD

The other access to the Motorsport Facility is on Punrak Road located on the southern end of the site. For minor events, Punrak Road is not anticipated to carry much traffic to the Motorsport Facility. However for Moderate to Major Events, it will be utilised by more traffic and by coaches/buses during Major Events. Typically, a 7m width is required for buses. Presently, Punrak Road has a 3.5m sealed pavement with 1.5m sealed shoulders (see **Photos 8 & 9**).

The road is therefore required to be upgraded to 7m sealed width with 0.5m unsealed shoulders, between Wigg Road and Hopeland Road, a section of approximately 3.5km in the length. From Wigg Road to the proposed site access way, the road should be widened to 6m with 0.5m unsealed shoulder, a section of approximately 1.6km in length.

See **Photos 8 & 9**.

Photo 8: Punrak Road south of Wigg Road (2017)

Photo 9: Punrak Road north of Wigg Road (2017)

6.6 LIGHTING

Although it is not envisaged that many additional trips would be generated in the hours after dark, the need for and/or extent of any street lighting to be installed should be determined in consultation with the Shire, the facility owners and management, event organisers and other key stakeholders.

6.7 RESTRICTED ACCESS VEHICLES (RAV)

As previously identified, if it is necessary for trucks larger than 19m to gain access to the site, perhaps most likely for major events such as V8 Supercars, then a RAV approved access route may be required. This would need to be identified and a separate study undertaken, to identify what upgrades would be required in order for the chosen route to be accepted by MRWA.

As the asset owner, the Shire would also need to approve the addition of such vehicles to the necessary road sections.

7. EVENT TRAFFIC MANAGEMENT PLANS

The main issue with the amount of traffic generated by major events is not so much the need for additional infrastructure upgrades over and above those needed for minor events, but more a case of simply managing the traffic to ensure that the levels of safety and congestion are kept within acceptable limits.

Traffic management for significant events will be included in the Event TMP. For the purposes of this report, we have identified different levels of event traffic management likely to be required, dependent upon the event size, as shown in **Table 7.1**.

Table 7.1: Event Traffic Management Trigger Points

Scenario	Description	Max. No. of Attendees per day	Event Management Plan Required?	Nature of Event Management Plan
1	Non-Event Day	500	No	N/A
2	Minor Event	1,500	No	N/A
3	Moderate Event	3,000	Yes	Minor traffic management at key locations
4	Large Event	5,000	Yes	Multi agency involvement, comprehensive coverage
5	Major Event	25,000	Yes	Multi agency involvement, comprehensive coverage

For minor events with up to 1,500 attendees, we would not anticipate the need for any event traffic management. Events attracting up to 3,000 attendees are likely to warrant traffic management at key locations to manage traffic at specific intersections and at entry to the site.

For large events up to 5,000 attendees, off-site parking is likely to be required and the level of traffic management will be greater and for major events up to 25,000 attendees on any one day, a comprehensive traffic management plan will be required.

It will also be important to ensure that no ad-hoc parking is allowed along the verges of any roads in the vicinity of the Motorsport Facility during event days. The provision of adequate parking and ‘policing’ by traffic controllers will ensure this does not occur.

7.1 MINOR EVENT SCENARIO

The minor events attracting up to 1,500 attendees, all parking would be accommodated within the site. With an average vehicle occupancy rate of 3 persons per vehicle, the 500 bays within the Keysbrook Motorsport Facility would cater for the demand without the need for specific event traffic management.

7.2 MODERATE EVENT SCENARIO

For moderate events attracting up to 3,000 attendees, with parking requirements for approximately 1,000 vehicles, it is envisaged that all parking will be accommodated within the site. Overflow parking would be provided to the northeast of the track as shown in **Figure 7.1**. Such events would require:

- traffic management at critical points such as the right turn from Karnup Road into Yangedi Road and entries into the site; and
- Marshalls deployed within the overflow parking area as parking is not formalised.

This is likely the 'cap' on the number of attendees before overflow parking arrangements external to the Keysbrook Motorsport Facility site are required. **Appendix A SK1** shows the event traffic management strategy for the Moderate Event Scenario.

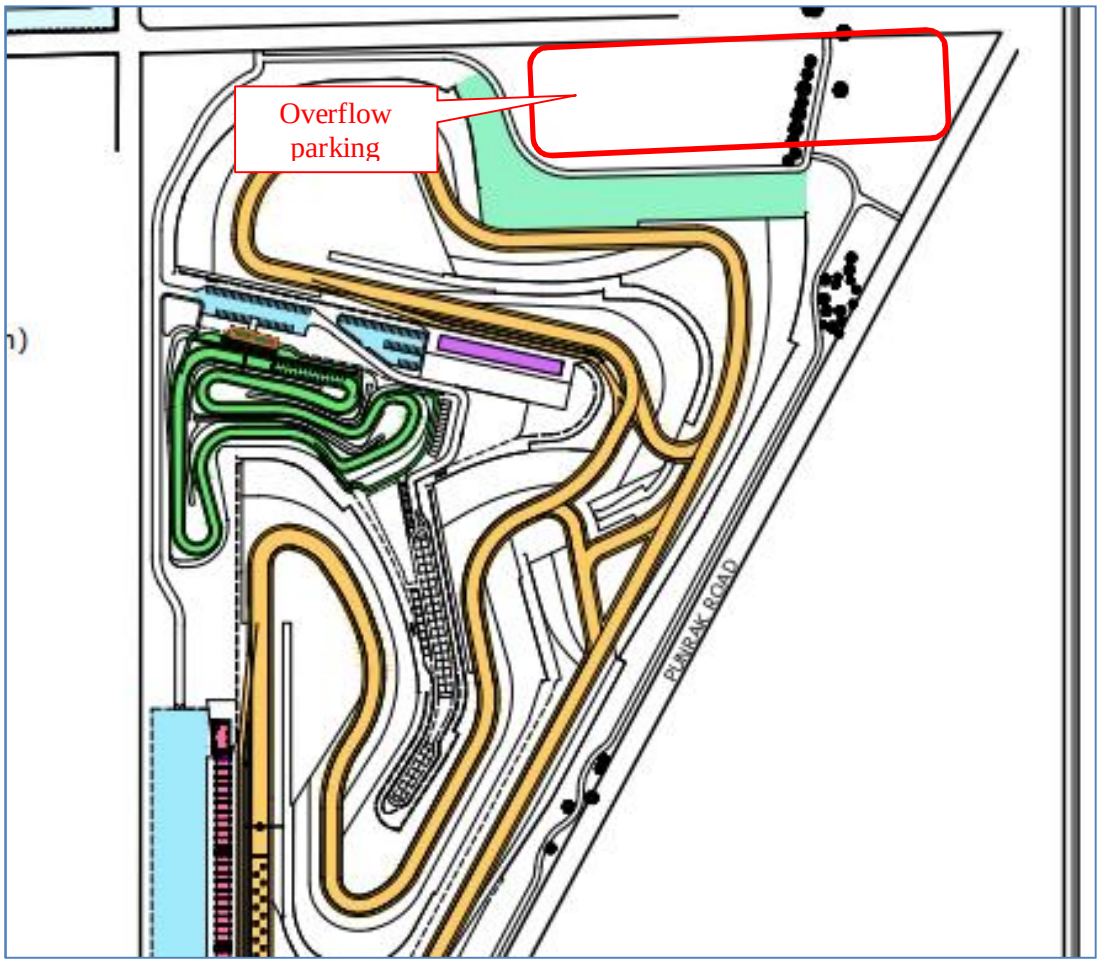


Figure 7.1: Overflow parking for Moderate Event Scenarios

7.3 LARGE EVENT SCENARIO

For large events possibly over a number of days with a peak day attendance of say 5,000 people or 1,500 vehicles, overflow parking arrangement external to the Motorsport Facility site would be required.

Lot 400, located northwest of the Motorsport Facility development site, is proposed to be used for overflow parking. Additional event traffic management to that for moderate event scenarios would be required, with traffic management likely to include:

- Attendees guided to internal parking at the outset, with parking within the site pre-allocated and all other motorists guided to the overflow parking at Lot 400;
- Widespread signage to guide drivers to and from the event site;
- traffic management at critical points such as the right turn from Karnup Road into Yangedi Road and entries into the site; and
- Marshalls deployed within the parking areas to ensure orderly parking.

No road closures are envisaged as some use of Jarrah Road could be tolerated and traffic controllers are likely to be sufficient to guide spectators across Wigg Road. **Appendix A SK2** shows the event traffic management strategy for the Large Event Scenario.

7.4 MAJOR EVENT

For major events, nearing capacity, such as a V8 Supercar round with 50,000 attendees over a three day event, something in the order of 25,000 people may visit on the peak day. This may attract up to 4,900 cars, some 200 coaches, and possibly 500 or more motorcycles arriving over a 3 hour period. The level of management is expected to include:

- Wayfinding signage to ensure attendees are directed to Yangedi Road to access parking on Lot 400 Wigg Road;
- Wayfinding signage to direct coaches and motorcyclists to access the site itself via Punrak Road. Coaches would benefit from avoiding the light vehicle queueing on Yangedi Road and would park within the site, accessing the parking areas abutting Wigg Road. Motorcyclists will be directed to park in the hardstand area to the west of the Main Pit Building. Access to this area will be as such that vehicles are segregated from pedestrians;
- Road closures to Jarrah Road (local access only) to deter rat running;
- Road closure to Wigg Road for safe mass pedestrian access between Lot 400 and the Motorsport Facility;
- Traffic management at critical points, such as the right turn from Karnup Road into Yangedi Road and Punrak Road, and entries into the site.
- Traffic controllers on the Karnup/Yangedi Road intersection to ensure queues do not extend to the Kwinana Freeway;
- Marshalls within Lot 400 to facilitate orderly and safe parking for up to 4,900 cars;

- Marshalls within the Motorsport Facility's internal overflow parking area northeast of the site to manage 200 coaches;
- Free shuttle bus arrangements to promote bus use over private vehicles. Free bus tickets could be provided as part of the event ticket as often offered for major events;
- For those who arrive by private vehicle, the parking charge should be paid upfront and recorded on the ticket to expedite entry into the parking area. This will speed up the entry process and reduce delays and queues on the approach roads;
- Notification to locals of the event; and
- Suitable entertainment prior to and after the main event to help stagger arrival/exit volumes.

Sketches in **Appendix A** provide an overview of how the vehicular and pedestrian traffic will be managed for a major event scenario for an estimated 25,000 attendees with modal split favouring private vehicles (as outlined in section 4.1.2).

SK3 shows the traffic management strategy to be put in place to manage and segregate differing modes of transport to the Motorsport Facility. For Major events, a specific area has been designated within the site for coach parking and for motorcycle parking. Coach parking would be located in the northern portion of the site. Motorcycle parking requires a hard stand rather than a grassed area, which are unsuitable for supporting motorcycle stands.

Within the Lot 400 overflow parking **SK4** shows a parking arrangement for the peak day of a major event which would cater for some 16,300 attendees in private vehicles (assuming occupancy rate of 3.35). A suitable pedestrian path would need to be provided between the event site and Lot 400.

SK5 shows the indicative layout for coach parking within the site, which would cater for 8,700 attendees. The layout shown in **SK5** has assumed that all coaches will stay on site.

Further detail of the event traffic management plans will follow approval of the development proposal and confirmation of the road upgrades proposed. Event Traffic Management plans would then be prepared in detail and refined through consultation with the approving authorities. At this stage, the work presented identifies the magnitude of the planning that will be required.

8. PARKING

8.1 PARKING REQUIREMENT

The parking provision rates shown in Table 5 of the Shire of Serpentine Jarrahdale's Town Planning Scheme No. 2 do not specify a rate that might clearly be appropriate to the development of a motorsports facility.

An acceptable level of formal parking bay provision to cater for daily requirements and possibly the smaller events should be determined through discussions with the Shire at an early stage. Additional parking will also be required for the plethora of support personnel and equipment at major events.

8.2 PARKING PROVISION

The current development layout plans show that approximately 500 bays will be provided within the on-site parking areas. These are split between the parking area near the main pits, which holds approximately 375 bays, and about 125 bays to the south of the secondary pits area. The appropriate number of ACROD bays will need to be determined and suitably located within these areas.

Motorcyclists require a hard surface on which to park and for major events are expected to be accommodated within the site on the area identified behind the main stand, which will comfortably provide for over 1,000 motorcycles.

8.3 OVERFLOW PARKING

The current development plan shows an area for overflow parking internal to the site, northeast of the track capable of accommodating some 900 cars or, for major events, some 190 coaches.

Lot 400 Wigg Road is also proposed for overflow parking arrangements external to the development site for Large and Major event scenarios with capacity for approximately 4,900 cars.

8.4 COACH DROP OFF, PICK UP AND PARKING

Ideally, coaches will be the chosen mode of transport for a substantial proportion of attendees, resulting in a significant number of bus and coach movements at Large and Major events. The inclusion of the coach ride within the ticket price for the event is likely to encourage this mode of transport as will having to pay a premium for private vehicle parking. In this instance, some buses will simply arrive, drop off their passengers and then remain parked on site until required for the return journey. Other buses and coaches may arrive, drop off their passengers and then depart the area, returning only to pick up the passengers at the conclusion of the event. The higher the modal split towards buses/coaches, the lower the demand on the road network and parking requirements.

Section 4.1.2 and 7.4 have assumed a conservative (worse-case) modal split towards to the use of private vehicles.

Regardless of the subsequent movements of these buses and coaches, it will be vital that their passengers can be dropped off safely, and reach the venue via a suitable safe pedestrian route. An indicative layout has been shown at section 7.4. Note that the layout has assumed that the coaches will not perform the 'ferry role' but remain on site.

9. SUSTAINABLE TRANSPORT

9.1 PEDESTRIANS AND CYCLISTS

Given the remoteness of the facility, the number of patrons expected to attend on foot or by bicycle is extremely low.

9.2 PUBLIC TRANSPORT

Whilst Public Transport options may feature as the initial modes on some patrons' journeys to the site, neither TransPerth buses nor trains will be able to directly access the facility.

However, charter buses and coaches may well use the nearest railway station (i.e. Warnbro) as one of the pick-up points for passengers.

The impact on the various public transport services is not expected to be of any significance for the smaller events, whereas, it will be of major significance for the larger events such as V8 Supercars, when additional rail carriages or services may be required.

10. WAYFINDING SIGNAGE STRATEGY

10.1 GENERAL

In order to ensure that visitors and competitors use the most appropriate roads, wayfinding signage will need to be installed at various points along the approach and departure routes. Primarily, this will be to ensure that the vast majority of traffic arriving at the facility does so via Yangedi Road rather than using potentially unsuitable alternatives such as Punrak Road or Jarrah Road, especially for everyday proceedings and minor events. A wayfinding signage plan is shown in **Figures 10.1, 10.2** and **10.3**. Details of the sign content are listed in **Table 10.1** and cross-references with the figures. Some of these signs would be permanent, whilst others would form part of the event traffic management.

10.2 KWINANA FREEWAY

Signs will need to be located along Kwinana Freeway, indicating that visitors to the motorsport facility should exit at the Karnup Road intersection. An application to MRWA to install such signs or modify existing wayfinding signs will need to be made in time for their approval, manufacture and installation prior to the opening of the facility.

10.3 KARNUP ROAD

As the majority of visitors from the north, south and west are expected to arrive at events via Kwinana Freeway and Karnup Road, the main directional signage will be located along Karnup Road, and aimed at directing traffic to travel south to the facility via the Yangedi Road intersection. Additional signs would be required to ensure that visitors approaching from the east along Karnup Road would use this same intersection.

Wayfinding signs would therefore be suitably located at strategic points east of Punrak Road and West of Jarrah Road, as well as adjacent the Yangedi Road intersection itself, indicating this as the preferred route for both spectators and competitors. Jarrah Road in particular may also be provided with ‘Unsealed Road, Local Traffic Only’ signs at either end, to further discourage through traffic use of this road.

10.4 PUNRAK ROAD

Punrak Road will form an essential connection to the site during Major events, providing a designated route for coaches and motorcyclists. Appropriate wayfinding signage will need to be installed to ensure the message is clearly displayed and understood.

10.5 OTHER SIGNAGE

Some additional signage may be required nearer the venue, perhaps along Wigg Road or Punrak Road, to ensure that spectators and competitors are directed to the correct accesses, and that any segregated parking areas are clearly identified. Depending upon the scale of the events, and the likely modal splits envisage, the wayfinding signs may need to be varied or enhanced, and this will be achieved through the implementation of the specific Event TMP.

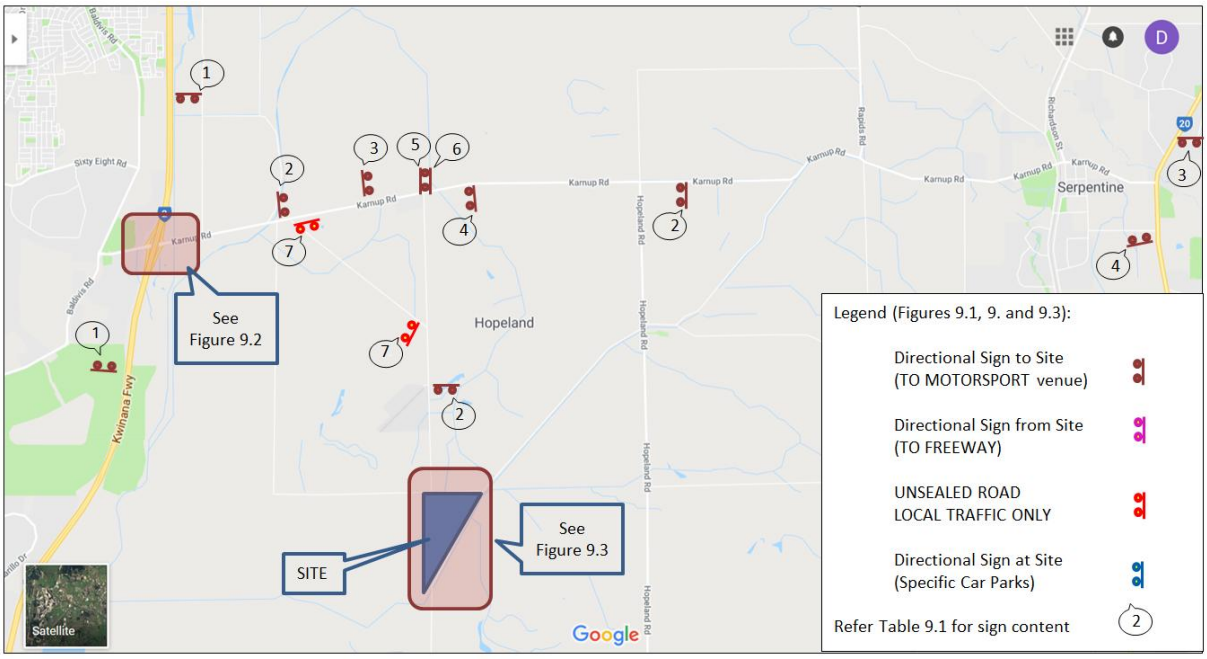


Figure 10.1: Proposed Wayfinding Signage Strategy - General

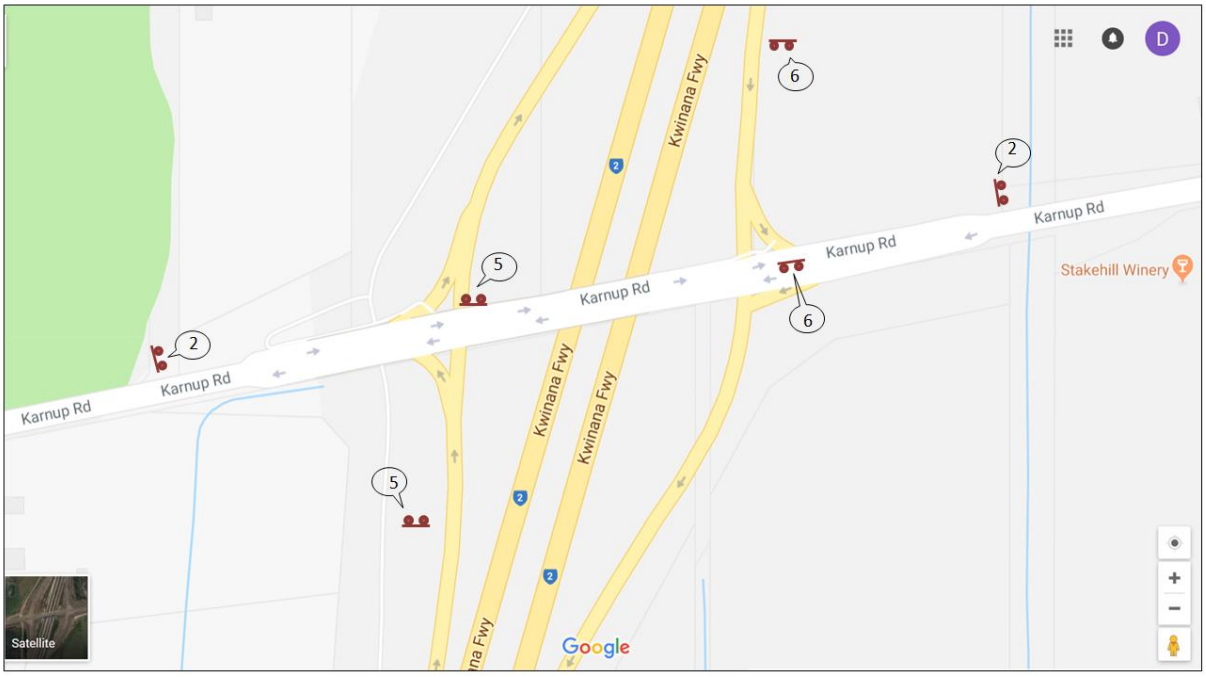


Figure 10.2: Proposed Wayfinding Signage Strategy – Kwinana Freeway Interchange at Karnup Road

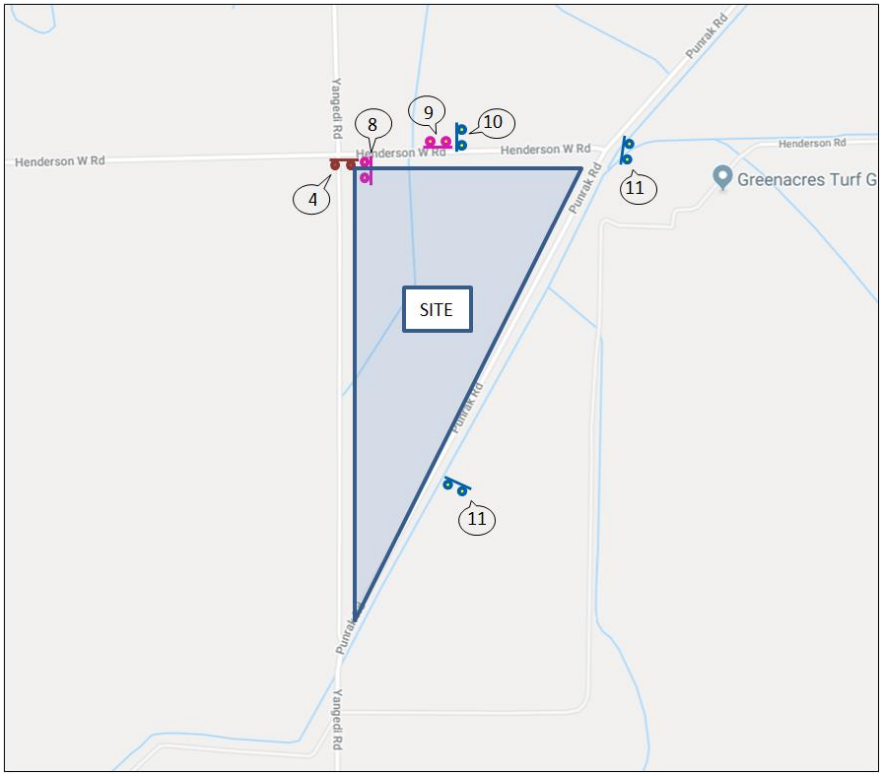


Figure 10.3: Proposed Wayfinding Signage Strategy – Near to the Site

Table 10.1: Proposed Wayfinding Signage Content

No.	Sign Content	No.	Sign Content
1	↖ MOTORSPORT	7	UNSEALED ROAD LOCAL TRAFFIC ONLY
2	MOTORSPORT ↑	8	TO FREEWAY →
3	MOTORSPORT → 300m	9	← TO FREEWAY
4	← MOTORSPORT 300m	10	MAIN ENTRANCE → PUNRAK ENTRANCE ↑
5	MOTORSPORT →		
6	← MOTORSPORT	11	PUNRAK ENTRANCE →

11. SUMMARY AND CONCLUSION

11.1 SUMMARY

Donald Veal Consultants has prepared this Transport Impact Assessment report to support the Development Application to the Shire of Serpentine-Jarrahdale regarding the development of a Motorsport complex in Keysbrook at Lot 78 Punrak Road.

The Motorsport Facility will supply an advanced race circuit designed and constructed to Federation Internationale de l'Automobile (FIA) and Confederation of Australian Motor Sport (CAMS) standards with a Go-Kart Circuit to Commission Internationale de Karting (CIK) level. This will enable the potential for National and International race events to occur on the site. On a day to day basis, the Motorsport facility will offer a wide range of complementary uses which focus on road safety, driver training and recreation.

The client has indicated that the development will be constructed in a single stage, and will consist of a go-kart track and main race track with facilities to a standard to hold state and national amateur events, as well as larger national or international events, including V8 supercars.

For the most part, traffic impacts will be split between attendance at daily offerings such as corporate go-karting, road safety courses, advanced driver training, track days etc. and minor motor racing events. It is expected that for such everyday activity and minor events, the majority of attendees will arrive by private vehicle. The average occupancy level of these private vehicles attending the site is likely to be at least 2 to 3 people. This would indicate in the region of 500 vehicles arriving at the venue on such days, which would not require any event traffic management.

For moderate event scenarios, higher crowd sizes up to 3,000 will result in significantly larger traffic impacts whilst parking would still be accommodated fully on site by utilising the overflow parking area. Such impacts will vary between events, and an overall Event TMP for the site will need to be developed and tailored to fit this level of traffic. Traffic management would be required at critical points along the road network and entries into the site.

Large and major events catering for up to 25,000 attendees on a single day would require additional off-site parking for an additional 4,900 cars on Lot 400. These events will require accredited traffic control services to manage key intersections, implemented road closures to deter rat running and additional temporary wayfinding signage to ensure attendees are directed to appropriate routes and parking areas. The event management plans would need to promote the use of coaches to the event to reduce congestion. We would anticipate two levels of event management plans, one for large event scenarios with attendee numbers up to 5,000 per day and another to cover major events catering for crowds of up to 25,000 attendees per day.

Upgrades will be required to the road network in the vicinity of the venue. These have been identified as providing a continuously sealed road surface between the Serpentine Airfield and the main entrance to the Motorsport facility along Yangedi Road and Wigg Road. Localised widening of the intersection

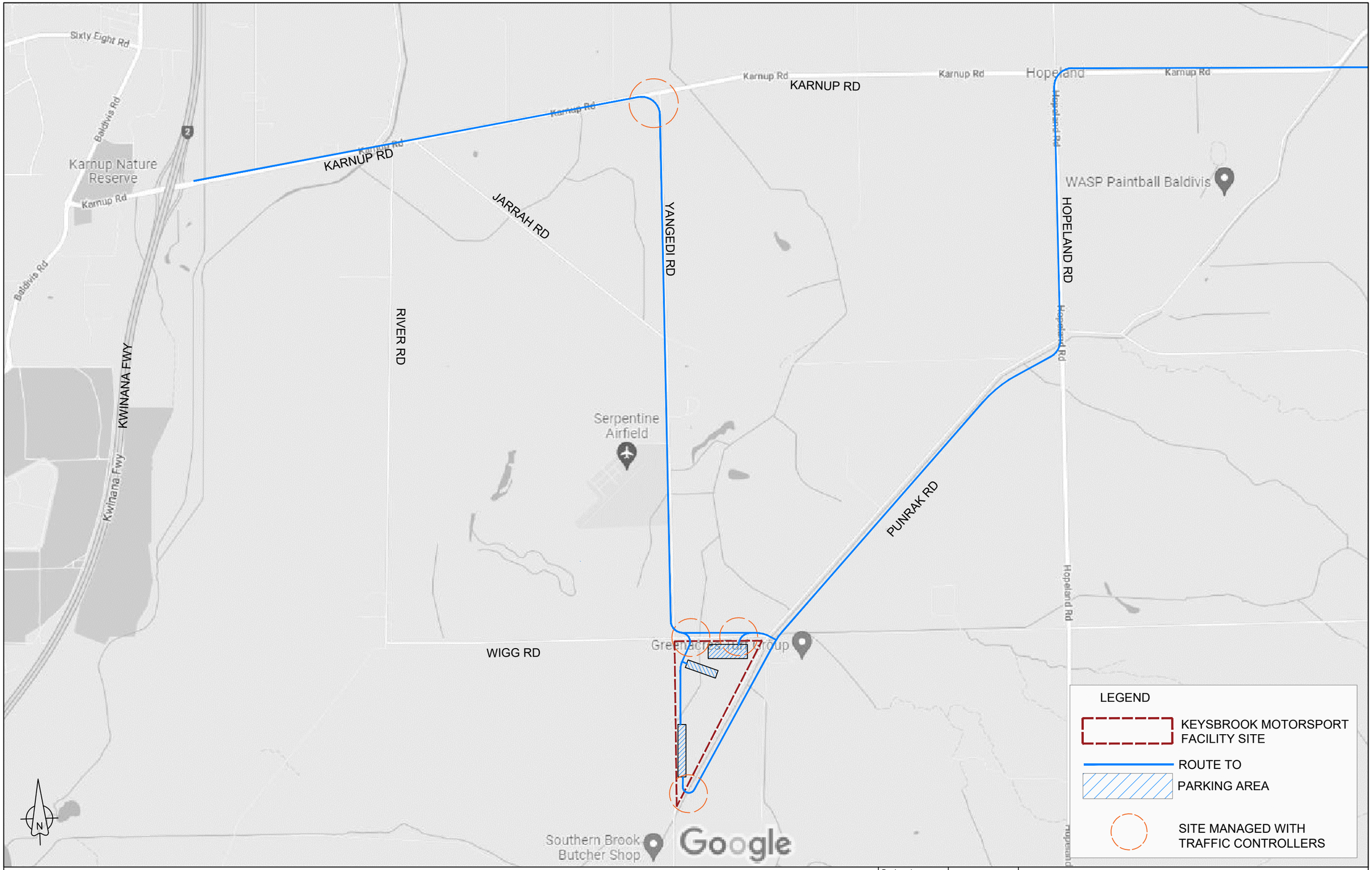
of Karnup Road with Yangedi Road is required to assist right turn traffic from the west. The sealed road width on Punrak Road is also required to be widened and upgrades required to Hopeland Road.

11.2 CONCLUSION

This assessment of the transport impacts on the road network and surrounding land uses of the development of a motorsport facility in Keysbrook shows that with appropriate road upgrades the daily uses and minor events can be safely accommodated with no major impact on road capacity. For moderate, large and major events attracting up to 25,000 people, detailed Event Traffic Management Plans along the lines of those described in this report will need to be prepared and approved beforehand by the road authorities.

DVC supports the development application in terms of the forecast transport impact of the proposal subject to the road improvements identified and the need for detailed Event Traffic Management Plans for events attracting more than 1,500 people on any day.

APPENDIX A: INDICATIVE EVENT TRAFFIC MANAGEMENT STRATEGIES



Project	KEYSBROOK MOTORSPORT FACILITY	Designed DNV	27.10.2021
Title	MODERATE EVENT TRAFFIC MANAGEMENT STRATEGY	Drawn GTT	20.12.2021
Client	STATI GROUP	Checked DNV	20.12.2021
		Approved	
		Scale NTS	

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Project Number	Drawing File Name	Drawing Number	Revision
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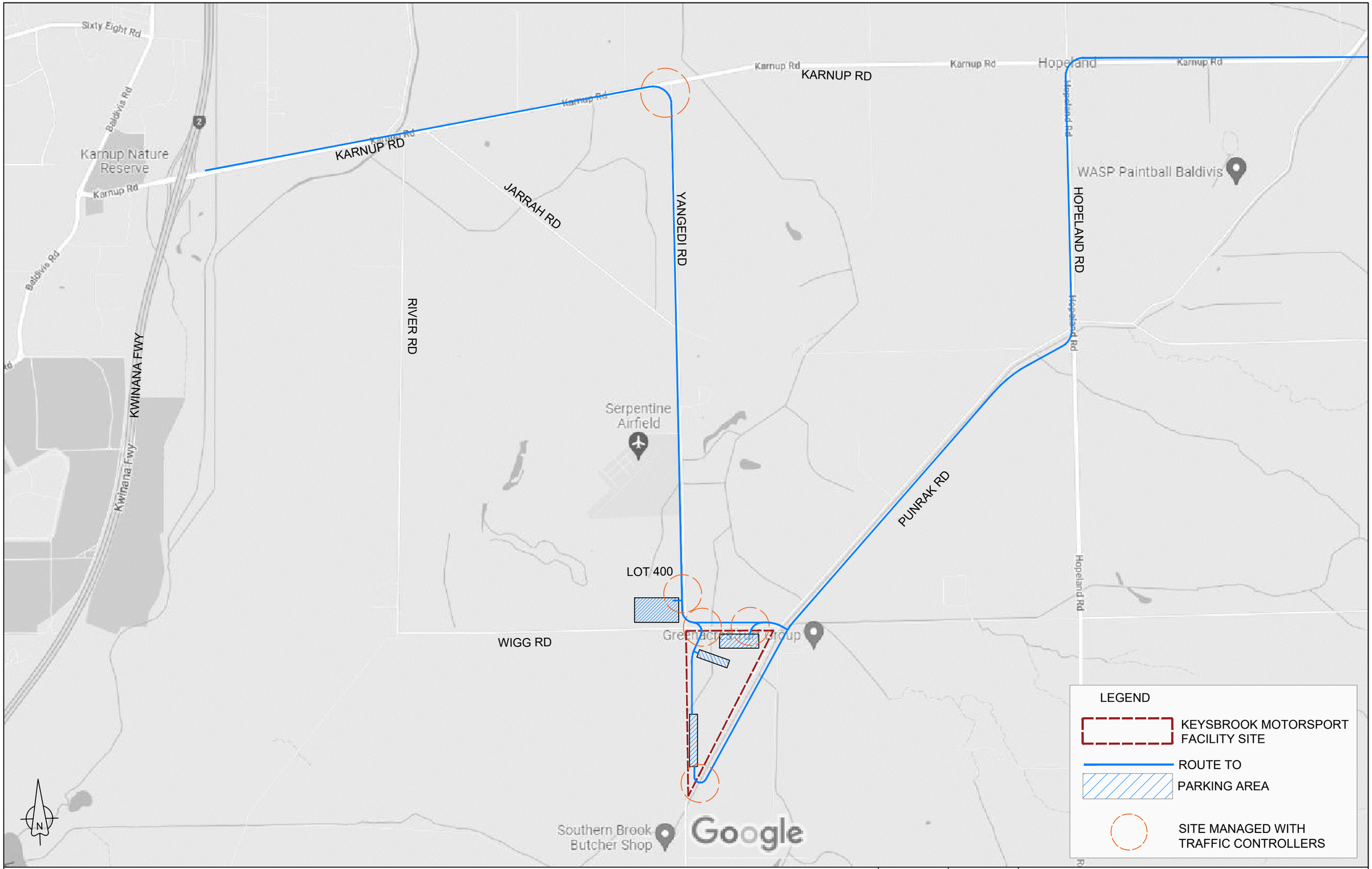

Project	KEYSBROOK MOTORSPORT FACILITY		
Title	LARGE EVENT TRAFFIC MANAGEMENT STRATEGY		
Client	STATI GROUP		
Designed	DNV	20.12.2021	
Drawn	GTT	20.12.2021	
Checked	DNV	20.12.2021	
Approved			
Scale	NTS		

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Project Number	Drawing File Name	Drawing Number	Revision
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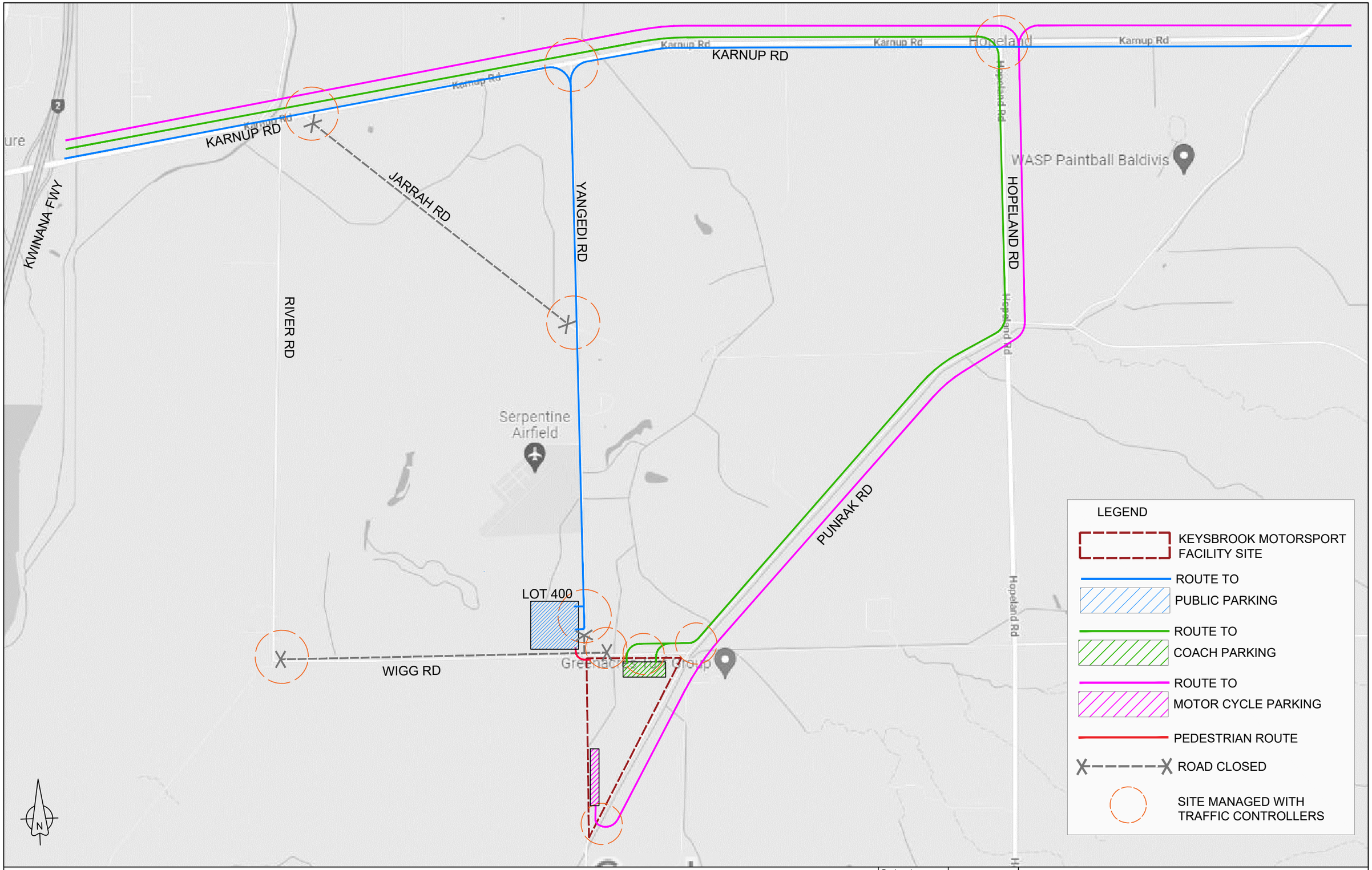

Project	KEYSBROOK MOTORSPORT FACILITY		
Title	MAJOR EVENT TRAFFIC MANAGEMENT STRATEGY		
Client	STATI GROUP		
Designed	DNV	27.10.2021	
Drawn	GTT	20.12.2021	
Checked	DNV	20.12.2021	
Approved			
Scale	NTS		

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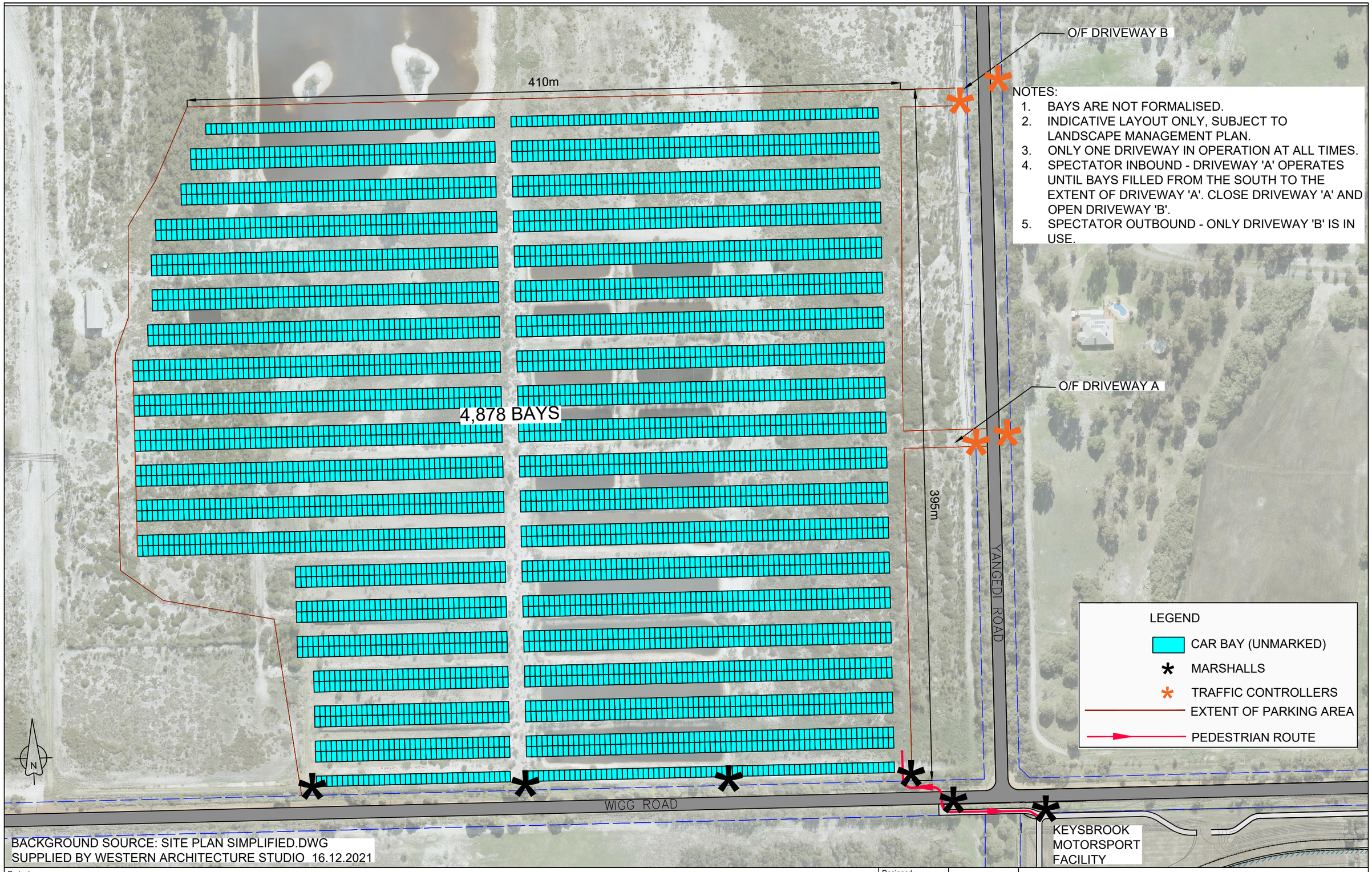

Project	KEYSBROOK MOTORSPORT FACILITY		
Title	MAJOR EVENT OVERFLOW PARKING AT LOT 400 - INDICATIVE LAYOUT		
Client	STATI GROUP		
Designed	DNV	20.12.2021	
Drawn	GTT	20.12.2021	
Checked	DNV	20.12.2021	
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Scale	1:2000 AT A3		

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Project Number	Drawing File Name	Drawing Number	Revision
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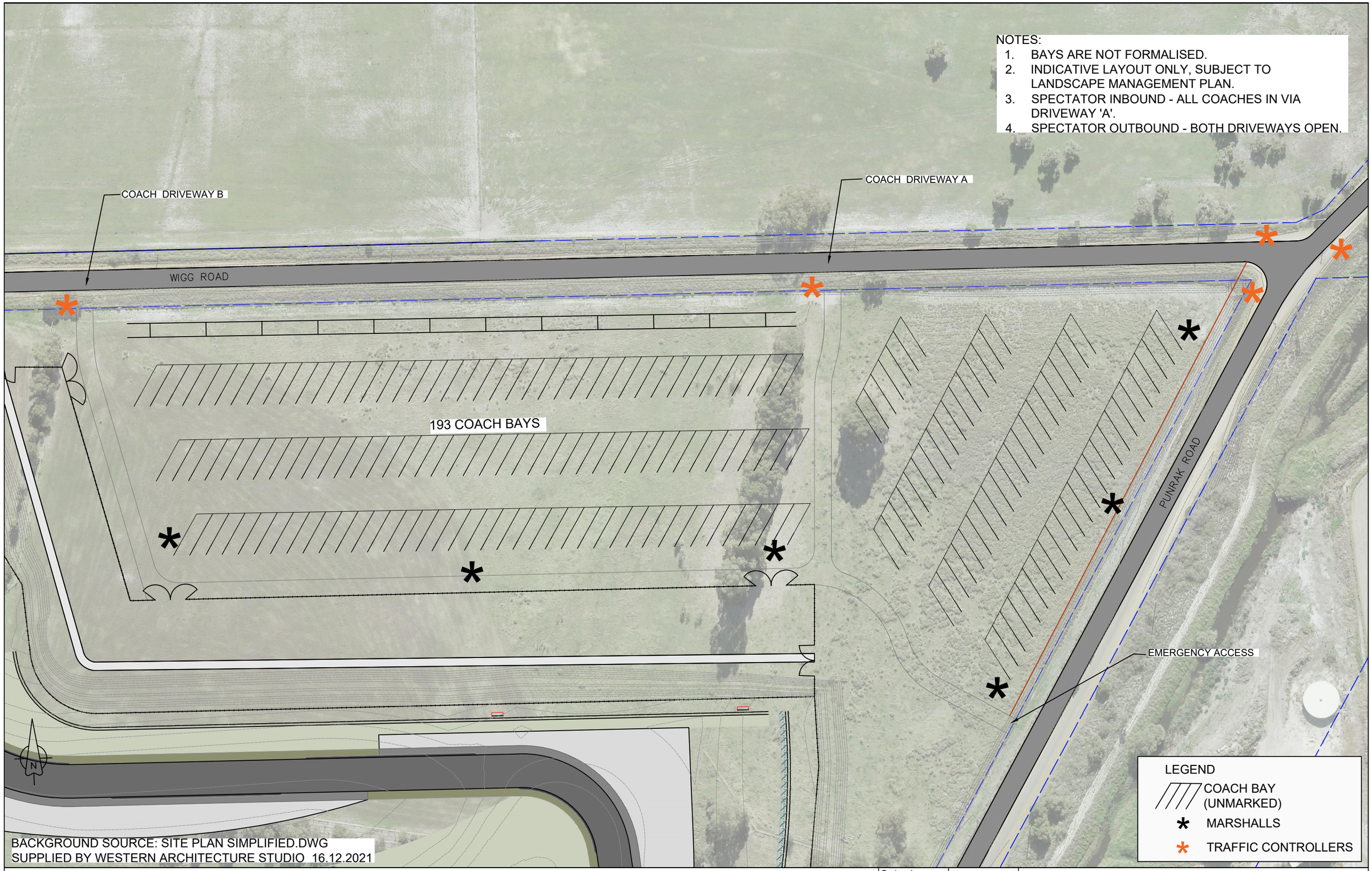

Project	KEYSBROOK MOTORSPORT FACILITY		
Title	MAJOR EVENT COACH PARKING - INDICATIVE LAYOUT		
Client	STATI GROUP		
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Drawn	GTT	20.12.2021	
Checked	DNV	20.12.2021	
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Scale	1:800 AT A3		

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Project Number	Drawing File Name	Drawing Number	Revision
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