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30 August 2021

P1680 Hillsborough Indoor Stadium DA update TIA

Basketball Association of Newcastle Ltd
C/o Catalyst Project Consulting Pty Ltd

Attn: Kris Leck

Dear Kris,

Proposed new indoor stadium, 62&62A Hillsborough Road and 109-117 Waratah Avenue, Hillsborough NSW

Further to your engagement we have now completed our site visit and reviewed the documentation provided for the proposed indoor stadium and reviewed the plans provided. In providing this assessment, we have also liaised with Transport for New South Wales (TfNSW) to discuss the development and confirm any background information and any specific issues with regards to the existing access on the Inner-City Bypass on-ramp from Hillsborough Road. Council have also been involved in prior discussions on the project.

The following traffic impact assessment has been prepared in conjunction with the Austroads Guidelines and Section 2.3 of the RTA Guide to Traffic Generating Developments which provides the structure for the reporting of key issues to be addressed when determining the impacts of traffic associated with a development. The guide indicates that the use of this format and checklist ensures that the most significant matters are considered by the relevant road authority.

State Environmental Planning Policy (Infrastructure) 2007

Given the scale of the development which requires access to or within 90 metres of the Newcastle Inner City Bypass (a classified road), the development will be referred to TfNSW for review as required by Schedule 3 of State Environmental Planning Policy (Infrastructure) 2007.

TfNSW consultation

As part of the project work for the submission, there has been extensive consultation with TfNSW. An initial submission to TfNSW raised a number of concerns with regards to the potential traffic impacts for the project. These included the adopted traffic generation rates for the project, extent of modelling and the impact upon the operation of the intersection of Hillsborough Road and the Newcastle Inner Bypass.

As part of the project submission update, TfNSW have commissioned their traffic consultant to update the network traffic model for this area of the road network to allow for the project site and its associated traffic demands. The following work was completed for the modelling:

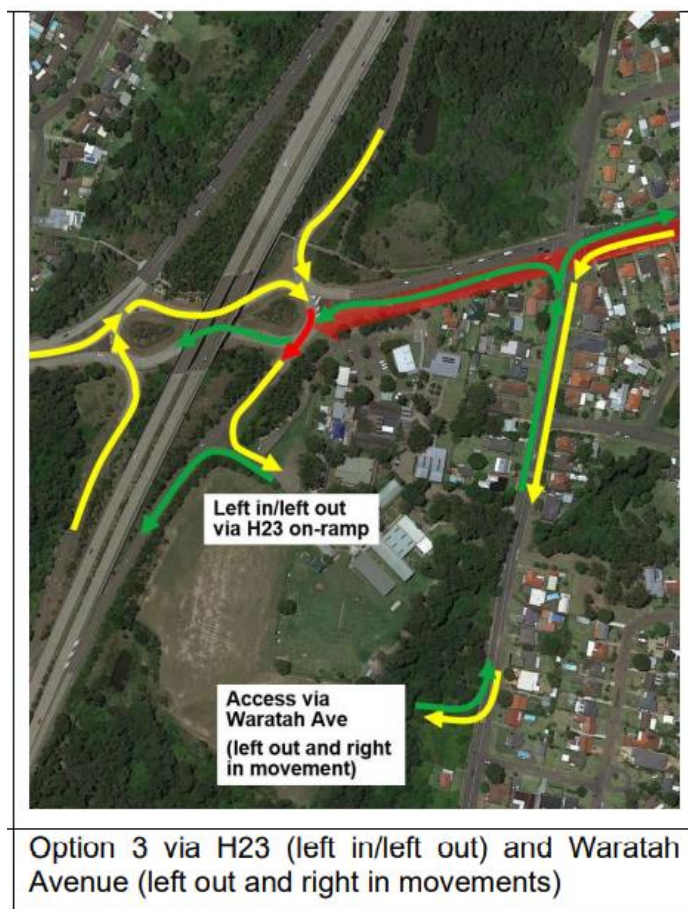
- The base VISSIM traffic model prepared by Arcadis was adopted to obtain current traffic flows and operation at the key intersection of Hillsborough Road and the Newcastle Inner City Bypass as well as the signal-controlled intersection of Hillsborough Road and Waratah Avenue
- Traffic generation rates based on surveys of a similar centre was used for the VISSIM model and are presented below.

Time	Arrival	Departure
4.00-4.15	45	34
4.15-4.30	42	37
4.30-4.45	40	41
4.45-5.00	40	44
5.00-5.15	40	45
5.15-5.30	41	45
5.30-5.45	44	45
5.45-6.00	43	44
Total PM peak two hours (4pm to 6pm)	335	335

Three access options were adopted by TfNSW for the modelling:

- Option 1 proposes one access point via the Waratah Avenue (left in and right out movements permitted) with no access from the H23 on ramp
- Option 2 proposes two access points via left in/left out access intersection on the H23 on ramp and via left out only at the Waratah Avenue
- Option 3 proposes two access points via left in/left out access intersection on the H23 on ramp and via the Waratah Avenue (left out and right in movements permitted)

From the discussions with LMCC the Option 3 has been adopted for this submission.



Mitigation requirements provided by VISSIM model



Site Location and Context

The subject site is located at 62&62A Hillsborough Road and 109-117 Waratah Avenue, Hillsborough, adjacent to the Hillsborough Public School as shown in Figure 1.

The surrounding land use comprises mostly residential to the east, the Hillsborough Public School and Newcastle School to the east and north and the Newcastle Inner City Bypass along the western side of the site.



Figure 1 - Location of the subject site in the context of the location road network.

1. Traffic Impact Assessment:

Item	Comment
Existing Situation	
2.1.1 Site Location and Access	The subject site is located at 62&62A Hillsborough Road and 109-117 Waratah Avenue as shown in Figure 1. Access to the site is currently provided via the driveway connection provided via the on-ramp to the Newcastle Inner City Bypass and driveway connections to Waratah Avenue.
2.2.1 Road Hierarchy	Newcastle Inner City Bypass is the major road through the locality, forming part of the regional road network which provides an inner city bypass in a north-sound alignment, connecting between Bennetts Green to the south and the John Hunter Hospital (Rankin Park) to the north. In the immediate locality of the subject site, it provides two lanes of travel in both directions and a raised central median to separate opposing traffic movements. It operates under the posted speed limit of 90 km/h and the various connections along its length are grade separated to maximise capacity and road safety. It provides for a mixture of local traffic, movements between various suburbs across Newcastle, as well as regional traffic demands. Street lighting is inconsistent along its length, with lighting typically restricted to intersections. On road cycling is catered for within the sealed shoulders / breakdown lanes in both directions. There are no pedestrian facilities provided along its length. The intersection of the Newcastle Inner City Bypass and Hillsborough Road is grade separated and provides for all turning movements with a roundabout type configuration. It is noted that the southbound off ramp from the bypass has been recently signalised to relieve the traffic delays / queues that occur here, due to the high demand for traffic to exit the bypass at this location and turn onto Hillsborough Road, especially westbound towards Warners Bay. Hillsborough Road is a local major collector road to the north of the site that runs in an east-west direction connecting between Charlestown Road to the east and through to Warners Bay and Lake Macquarie to the west. It provides two lanes of travel between the bypass and Charlestown Road and a mixture of 1 and 2 lanes of travel to the west of the bypass towards Warners Bay. To the east of the bypass there is a median to restrict right turns to the 2 key intersections only and footpaths provided along both sides. To the west of the bypass there is a footpath on one side only. Parking is allowed along the majority of its length. The posted speed limit on Hillsborough Road is 60 km/hr. Waratah Avenue is a local road running along the eastern side of the site and connects with Hillsborough Road via a 4-way signal-controlled intersection. It provides a single lane of travel in both directions and operates under the posted speed limit of 50 km/h. It provides a footpath along both sides and provides access to the Hillsborough Public School as well as the wider residential area in this location. The surrounding roads are local roads under the care and control of Lake Macquarie City Council.

Item	Comment
2.2.2 Current and Proposed Roadworks, Traffic Management Works and Bikeways	TfNSW has recently upgraded the intersection of Hillsborough Road and the bypass, with partial signal control for the off-ramp from the bypass southbound onto the roundabout connection with Hillsborough Road. There is a high demand for this traffic movement in the traditional morning and afternoon – this traffic is a mixture of local traffic demands as well as more regional traffic movements. There are no other planned roads works in this location. The intersection of the bypass and Hillsborough Road allows for a full separation of traffic cycling movements from west to east on the northern side of the intersection with ramps and grade separation.
2.3 Traffic Flows	Traffic surveys have been completed to determine the current traffic demands along the on-ramp southbound from Hillsborough Road to the bypass, adjacent to the existing site access. Traffic data has also been collected at the signal-controlled intersection of Hillsborough Road and Waratah Avenue. A summary of the traffic flows is provided below. This data has been sourced from traffic surveys completed by Seca Solution staff and data provided by TfNSW. This data shows that whilst in the traditional morning and afternoon peak hours associated with commuter demands the traffic flows are relatively high, the traffic flows on a weekend are much lower.

Location	Direction	Flow
Hillsborough Road east of bypass – PM peak Wednesday Feb 2015	westbound	1238
	eastbound	896
Hillsborough Road east of bypass – AM peak Wednesday Feb 2015	westbound	750
	eastbound	1129
Hillsborough Road east of bypass – Saturday midday Nov 2017	westbound	990
	eastbound	944
Waratah Avenue – Sat 15 th Feb 2020	northbound	86
	southbound	177
Waratah Avenue – Sat 15 th Feb 2020 (11.30-12.30)	northbound	142
	southbound	159

2.3.1 Daily Traffic Flows	It is typically accepted that peak hour traffic flows represent between 8-12% of the daily traffic flows. Daily traffic flows on Hillsborough Road mid-week could therefore be in the order of 16,500 to 25,000 vehicles per day. Based on observations on site outside of the peaks, it is considered that the daily flows would be towards the lower end of this daily range, as out of the peak periods the traffic flows on Hillsborough Road are relatively light. Daily flows on Waratah Avenue would be somewhat lower, in the order of 3,000 vehicles per day.
2.3.2 AADT	No AADT traffic data is available within the general vicinity of the subject site.

Item	Comment
2.3.3 <i>Traffic Flow Distribution</i>	Hillsborough Road shows a strong bias eastbound in the AM peak associated with the commuter demands and the reverse trend in the PM peak. The Inner City Bypass shows a high demand northbound in the AM peak and the reverse in the PM peak. During the weekend periods from the surveys there was minor bias in traffic movements.
2.3.4 <i>Vehicle Speeds</i>	No speed surveys were completed as part of the site work. Whilst traffic can speed on Hillsborough Road, especially westbound due to the down grade, the traffic signals at Waratah Avenue and the roundabout at the bypass both help contain vehicle speeds. There is also a school zone on Hillsborough Road which reduces vehicles speeds during the school zone times.
2.3.5 <i>Existing Site Flows</i>	The site is currently vacant. The access on to the bypass is shared with the school and OOSH. During the afternoon period (3.00 to 4.00 PM) the traffic flows using this access were 24 vehicles 2-way.
2.3.6 <i>Heavy Vehicle Flows</i>	The traffic surveys showed low numbers of heavy vehicles on Hillsborough Road and Waratah Avenue. Neither of these roads provide an attractive through route for heavy vehicles with Waratah Avenue having a 5t local limit. The majority of through traffic demands in this location are carried by the Newcastle Inner City Bypass.
2.3.7 <i>Current Road Network Operation</i>	Observations on site indicate that the local road network in this location operates to a satisfactory standard with minor delays and congestion observed in the morning and afternoon peak periods. Queues and delays are noted in the PM peak for the southbound traffic exiting the bypass onto Hillsborough Road, but the installation of the partial traffic signal-control at this location has reduced these delays and queues. During the weekend observations this approach operates well and the overall intersection of Hillsborough Road and the bypass operates well with minimal delays. The major traffic movement is north-south on the bypass and this is accommodated over the top of this intersection. The signal-controlled intersection of Waratah Avenue and Hillsborough Road operates well during the mid-week peaks and very well over the weekend with lower traffic demands. The Guide to Traffic Generating Developments provides a framework for assessing the mid-block capacity of an urban road applying a Level of Service criteria. For a two-lane, two-way urban road, the mid-block capacity is 900-1,000 vph per direction, which includes the effects of intersections within urban environments. Under ideal conditions with minimal impacts from intersections etc mid-block capacities can increase to 1,400 vph, which corresponds with the upper limit for LoS E (which indicates the road being close to capacity with drivers having almost no freedom to select their desired speed or manoeuvre within the traffic lane). This increased capacity is likely to be reflective of Hillsborough Road in this location, which is influenced only by the intersection of the bypass and the traffic signals at Waratah Avenue.

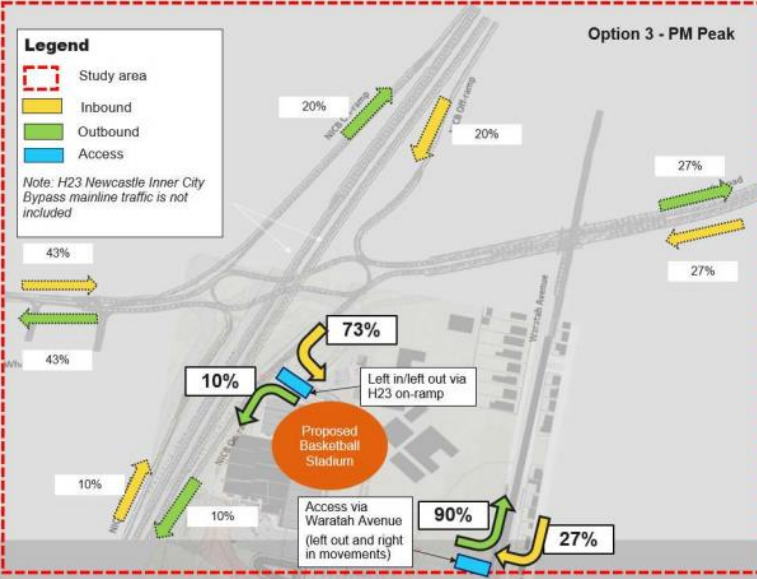
Item	Comment
	The traffic flows on Waratah Avenue are very low and well within the acceptable urban limit of 900 vehicles per direction.
2.4 Traffic Safety and Accident History	Crash data provided by TfNSW indicates that there have been no recorded accidents at the signal-controlled intersection of Waratah Avenue with Hillsborough Road and at the existing access to the site off the on-ramp to the Newcastle Inner City Bypass (from July 2014 to June 2019). The local road network in this location provides a safe road environment, with no notable safety concerns. The roads and intersections surrounding the site are typically well laid out, with suitable line marking provided to guide drivers through the intersection of the bypass and Hillsborough Road and adequate sight lines available approaching intersections.
2.5 Parking Supply and Demand	
2.5.1 On-street Parking Provision	Parking is permitted along the length of Waratah Avenue adjacent to the subject site. No parking is permitted along the on-ramp to the bypass.
2.5.2 Off-street Parking Provision	No public off-street parking provided in the locality of the site.
2.5.3 Current Parking Demand and Utilisation	Currently there is minimal demand for parking along Waratah Avenue, except during the school drop off and pick up periods.
2.5.4 Short term set down or pick up areas	None. A school drop off zone is promoted in the No Parking area adjacent to the school on Waratah Avenue.
2.6 Public Transport	
2.6.1 Rail Station Locations	The site is not serviced by trains.
2.6.2 Bus Stops and Associated Facilities	Bus services operate along Waratah Avenue, with route number 25 providing a route between Broadmeadow train station, via Kotara and Waratah Avenue to Charlestown Square. This is provided on a 30 minute frequency during the week. The bus stops on Waratah Avenue provide a sign only with no shelter nor seats.
2.7 Pedestrians Network	Footpaths are provided along both sides of Waratah Avenue and pedestrian crossings are provided on each approach to the signal-controlled intersection of Hillsborough Road and Waratah Avenue. There is also a pedestrian crossing on Waratah Avenue adjacent to the school.
2.8 Other Proposed Developments	No other major projects noted within the general locality of the subject site.
The Development	
3.1.1 Nature of Development	The proposed stadium facility will include provision for 10 indoor basketball courts including a 2,200 seat show court, offices, car parking and café spaces. Access will be provided via a new access connection to Waratah Avenue allowing for all turning movements in and left out only. The existing access to the Newcastle Inner City Bypass will also be used for the facility but will be restricted during the afternoon mid-week period so that no traffic can enter the site via this access. Traffic will still be able to exit this access at this time. A permanent sealed car park with 258 formal spaces, which includes 17 disabled parking spaces, will be provided on site for car parking, with additional space for bus drop off. There is a level grass area adjacent to the car park area that shall be available for overflow parking and can accommodate 97 vehicles.

Item	Comment
3.1.2 Access and Circulation Requirements	All vehicles shall be able to enter and exit the site in a forward direction. Adequate provision shall be made for the manoeuvring, loading and unloading of vehicles associated with the servicing of the site. All vehicular crossings are to be designed and located in accordance with the relevant Australian Standards (AS/NZS 2890 - Parking Facilities). Vehicle entry and exit movements shall be via a new driveway connection to Waratah Avenue which shall cater for all large vehicles including bus and delivery vehicles in and out of the site. Secondary access will be provided via the existing access on the H23 on-ramp.
3.2 Access	
3.2.1 Driveway Location	The new access point on Waratah Avenue is located in the vicinity of Brett Street (Attachment C). The project seeks to retain the existing access on the H23 on-ramp.
3.2.2 Sight Distances	For the access on Waratah Avenue, the access is located on a straight section of road offering good visibility. The speed limit in this location is 50 km/h. The sight distance available in this location exceeds 100 metres in both directions. For the posted speed limit of 50 km/h, Austroads Guidelines requires minimum sight distance of 90 metres and desirable distance of 97 metres. It can be seen that the visibility splays for exiting drivers meets this requirement. The existing access on the H23 on-ramp is located within the existing 60 km/h speed zone. The visibility requirement is 114 minimum and 123 metres desirable. This visibility is available with drivers able to see to the roundabout which is 110 metres from the site exit point. Vehicles at this point on the roundabout are travelling below 60 km/h and the sight distance available is considered appropriate. This access will only be used by light vehicles.
3.2.3 Service Vehicle Access	Service vehicles shall use the new access point on Waratah Avenue. It is considered that the vast majority of these vehicles will approach / depart to Hillsborough Road and require a right turn in to the site and a left turn out.
3.2.4 Queuing at entrance to site	Minimal queuing is expected at the entry points as there is no conflict within the site so that traffic entering can move easily within the site and away from this entry point. The car park is located over 80 metres from the entry point on Waratah Avenue and hence no queue will block back to the entry point. There are no vehicle restrictions inside the site for the entry point on the H23 on-ramp to create delays for entering traffic.
3.2.5 Comparison with existing site access	The existing site access on the Newcastle Inner City Bypass will remain as per the existing situation and use. A new access is proposed on Waratah Avenue separate to the existing school access point, which is located to the north of the access to the subject site.
3.2.6 Access to Public Transport	The nearest bus stops are located on Waratah Avenue within a 500 metre walk from the main entry point to the facility. Pedestrians can walk along the existing footpath on Waratah Avenue and the footpath located adjacent to the exit driveway.

Item	Comment
	The site on Waratah Avenue will accommodate bus entry and exit movements which will allow for dedicated bus access for major sporting events when held at the facility.
3.3 Circulation	
3.3.1 Pattern of circulation	All vehicles will be able to enter and exit the site in a forward direction, with the proposed entry and internal site layout providing for two-way movements throughout.
3.3.2 Internal Road Widths	The main internal roads will provide sufficient width to support two-way movements, including light and heavy vehicles as described above with these two-way roads providing a minimum width of 6.5 metres.
3.3.3 Internal Bus Movements	Private buses will be used during peak events to transport teams and spectators to the site with all entry and exit movements via the new access on Waratah Avenue. The design of the site allows for these vehicles to travel around the site as appropriate.
3.3.4 Service Area Layout	A dedicated service bay is provided adjacent to the garbage room and the storage / services area. This is located to the side of the building with direct access from the internal site road. The garbage collection will be managed to avoid the busy periods associated with the use on the site.
3.4 Parking	
3.4.1 Proposed Supply	Formal and informal parking is provided throughout the site with 355 spaces, together with spaces for buses to lay over. During peak events the informal spill over parking can provide for 97 vehicles whilst 258 formal spaces (including 17 accessible parking spaces) are allowed for in the at grade asphalt areas. There are also 10 motorbike parking spaces as well as parking for bicycles.
3.4.2 Authority Parking	Under the Council DCP the parking requirement is for 20 spaces per court, giving a parking requirement of 200 parking spaces. It can be seen that the project will cater for the typical everyday parking demands on site. Peak parking demands created by major events will be managed with a site-specific Event Management Plan, to be developed and agreed with Council as discussed at the pre-DA meeting. Further discussion is provided below with regard to parking demands and potential management options for peak events.
3.4.3 Parking Layout	Car parking will be provided in accordance with AS/NZS 2890.1:2004 and AS/NZS 2890.6:2009. For a Class 3 Parking Facility (which is the recommended classification for short term, high turnover parking and therefore appropriate for the proposed uses on site), the minimum dimensions for a car parking space are 2.6 metres wide by 5.4 metres long. Car parking aisles shall be at least 5.8 metres wide.
3.4.4 Parking Demand	When assessing the parking demands, it is noted that the facility will allow for normal daily demands associated with local use of the courts for training mid-week and for competitions at the weekend. Peak events created by major tournaments at the site will be infrequent and will be controlled under a site-specific Event Management Plan.

Item	Comment
	For typical weekday and weekend competition use, the Council DCP requires parking to be provided at a rate of 20 spaces per court, giving 200 parking spaces. The plans prepared for the project allows for 258 formal parking spaces on site. It is considered that this parking provision is adequate and can accommodate the typical parking needs on site for the mid-week and typical weekend demands. The site layout also provides a level grass spill over parking area that can be used by patrons of the site for additional parking demands to ensure that there are no impacts on the local streets during typical weekly activities. For the major events at the site, the travel and hence parking demands will be different to normal activities. During these peak events, there is a higher demand for teams and clubs from outside Newcastle and these groups typically travel to the site by charter bus. During such major events, the attendance is expected to be in the order of 1000-1200 patrons based on attendance numbers for the Sydney Flame and Canberra Capitals. "Full house" events are less likely, where the main stadium with its capacity of 2,200 people could see in the order of 2000-2200 in attendance. Events with over 1100 patrons are covered by an Event Management Plan which has been separately prepared and submitted to the road authority. The event management plan will be continually reviewed and updated to ensure the smooth running of the traffic and parking associated with the major events at the centre.
3.4.5 Service Vehicle Parking	A dedicated service bay is provided adjacent to the garbage collection area and the serving dock area.
3.4.6 Pedestrian and Bicycle Facilities	Suitable bicycle parking is to be provided within the site to accommodate the potential demands associated with staff and patrons. High quality secure bike parking will be provided to support and encourage cycling to the site and reduce the dependency on private motor vehicle access to the site. The majority of the pedestrian demands will be contained movements within the site. Pedestrians will also be able to connect to Waratah Avenue to connect with the bus stops located on this road that can service this site.
Traffic Assessment	
4.1 Traffic Generation	The Guide to Traffic Generating Developments does not provide any specific advice for this type of development. As part of the discussion between the applicant, TfNSW and Council the projected traffic movements for the project have been based on surveys of a similar facility and adjusted to suit the number of courts on site. The projected peak hour traffic flows associated with the project are shown below and have been adopted in the network traffic modelling for the project.

Item	Comment																														
	<table><tr><th>Time</th><th>Arrival</th><th>Departure</th></tr><tr><td>4.00-4.15</td><td>45</td><td>34</td></tr><tr><td>4.15-4.30</td><td>42</td><td>37</td></tr><tr><td>4.30-4.45</td><td>40</td><td>41</td></tr><tr><td>4.45-5.00</td><td>40</td><td>44</td></tr><tr><td>5.00-5.15</td><td>40</td><td>45</td></tr><tr><td>5.15-5.30</td><td>41</td><td>45</td></tr><tr><td>5.30-5.45</td><td>44</td><td>45</td></tr><tr><td>5.45-6.00</td><td>43</td><td>44</td></tr><tr><td>Total PM peak two hours (4pm to 6pm)</td><td>335</td><td>335</td></tr></table> <i>Major events</i> Based on current operation there would only be 3 major events per annum where attendance on site is in the order of 800+ people. Such events typically occur of a weekend along with the potential for school gala type events which would occur mid-week but during school hours. For these events, there will be buses to carry people to and from the site which will help to reduce the overall traffic demands for the site. There will also be the event management plan to manage the allocation of parking and hence access to the site which will control the number of vehicles entering and exiting the site. Allowing for expansion of basketball in the region and the strategy to include a team in the Women's League such events could eventually occur 16 times per annum. For school gala events, the vast majority of players shall arrive by bus and be located on site for the duration of the event.	Time	Arrival	Departure	4.00-4.15	45	34	4.15-4.30	42	37	4.30-4.45	40	41	4.45-5.00	40	44	5.00-5.15	40	45	5.15-5.30	41	45	5.30-5.45	44	45	5.45-6.00	43	44	Total PM peak two hours (4pm to 6pm)	335	335
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Total PM peak two hours (4pm to 6pm)	335	335																													
4.1.1 Daily and Seasonal Factors	The traffic flows associated with the site will vary between weekday use, weekend use and occasional major events as described above.																														
4.1.2 Pedestrian Movements	The site will generate some pedestrian movements towards Waratah Avenue to connect to the public buses in this location. A path will be provided adjacent to the driveway to cater for this demand and connect with the existing pedestrian footpaths on Waratah Avenue. There is also potential for local players to walk to the site via this route to access the residential area to the east of the site via this route.																														
4.2 Hourly distribution of trips	Traffic movements will be as assumed above. The facility will generate minor traffic demands during the morning peak period, potentially associated with staff and servicing requirements. On a weekend, the site could generate in the order of 200 vehicle movements per hour.																														
4.2.1 Origin / destinations assignment	The site will have a wide catchment across the greater Newcastle area and the origin / destination has been sourced from the traffic model prepared by Arcadis and shown below.																														

Item	Comment
	
4.3 Impact on Road Safety	The entry point on Waratah Avenue is located on a straight section of road providing good visibility for drivers entering and exiting the site. The sight lines available meet with the requirements and the vast majority of these will be turning left out of the site to use the traffic signals at Waratah Avenue and Hillsborough Road. These traffic signals will control traffic movements in a safe and appropriate manner with no impact upon the road safety for all road users. The layout of this access has been discussed with Council and will allow for a simple driveway type entry. To maintain acceptable traffic operations, a No Stopping zone will be installed on Waratah Avenue at this site access location to allow for through traffic movements and assist road safety. The access point on the H23 on-ramp is an existing access and allows for left in and left out movements only for light vehicles. There is a left turn deceleration lane provided to maximise the safety for traffic turning left into the site at this location. It is considered that this access can continue to provide a safe and appropriate entry / exit movements for the project. As agreed with Council, no vehicle entry will be permitted via this access of an afternoon during the week, with exit traffic movements only allowed. During this time all vehicles will enter the site off Waratah Avenue only. The road network in the vicinity of the site operates well and there are no significant road safety issues noted on the road network in the vicinity of the subject site. Overall, it is considered that the traffic movements associated with the project shall have an acceptable impact upon road safety in the vicinity of the subject site.
4.4 Impact of Generated Traffic	
4.4.1 Impact on Daily Traffic Flows	It can be seen that the project will have a minor impact upon the overall daily traffic flows in the locality of the site, with the key impacts being in the afternoon after school and into the evening, as well as weekend demands associated with regular competitions and major events.

Item	Comment
<i>4.4.2 Peak Hour Impacts on Intersections</i>	This facility will be replacing the existing facility at Broadmeadow and effectively creates a diversion of existing traffic demands and movements. The project will potentially impact upon the signal-controlled intersection of Waratah Avenue and Hillsborough Road as well as the intersection of the Newcastle Inner City Bypass and Hillsborough Road. For the intersection of Hillsborough Road and Waratah Avenue, the traffic surveys and observations at this intersection on a Saturday show that the traffic flows are much lower than the mid-week peak, at around 85% of the mid-week peak demands. The observations show that the traffic delays are very low, with minor traffic queues that clear on each cycle. With the traffic associated with the project site being spread out over the day, the peak impact will be reduced and shall have a minimal impact upon the overall operation of this intersection. During peak events, it can be seen that the traffic demands will be higher and will impact upon the overall operation of this intersection. However, the signals are activated by vehicle demands and as such will allow for the timings to adjust to suit the demands associated with the outbound traffic movements. Whilst the delays and queues will increase, it is considered that these will be over a short time frame and will be an infrequent occurrence. During special events, the impacts could be greater, however these events are typically run over a full day and the traffic could be spread out over a longer timeframe, giving a lower peak demand for any one hour. It can also be seen that these peak events are not a weekly occurrence and with the Event Management Plan and marshals on site these impacts can be mitigated. The impact of the project during the typical weekday events, with training and local competition, the traffic modelling completed by Arcadis for TfNSW has identified a number of issues and determined a number of mitigation options to allow for traffic to continue to operate to a satisfactory level of service. The road works put forward as part of this application are: 1. Provide an access to the site on Waratah Avenue for entry and exit movements to the subject site. This will allow for a simple driveway type layout, with a No Stopping zone installed to assist through traffic movements when traffic is turning right not the site. 2. Move the centreline in Waratah Avenue at the intersection to allow for two lanes onto Hillsborough Road (a left turn and a straight/right turn). 3. Restrict the access on the Newcastle Inner City bypass to exit movements only of an afternoon during the week. At the weekend, this existing access will allow for entry and exit movements as per the current controls at this location. 4. The right turn for eastbound traffic turning right into Waratah Avenue will be extended to provide a length of 100 metres.
<i>4.4.3 Impact of Construction Traffic</i>	During construction there will be a demand for heavy lifting machinery as well as some earthwork equipment. The construction work will all be

Item	Comment
	located on site and as such will have a minimal impact upon the local road network. The size of the site will allow for construction traffic to be parked on site. As part of the detailed design process for the project, a Construction Traffic Management Plan will be prepared to the satisfaction of the road authority to document the traffic routes in and out of the site and controls for heavy vehicles etc.
<i>4.4.4 Other Developments</i>	No other significant developments are noted in the general locality of the subject site.
<i>4.5 Public Transport</i>	
<i>4.5.1 Options for improving services</i>	Options could be considered for additional bus routes to access the subject site. However, it is considered that due to the wide area that the site will service that the use of regular public buses will not be a major travel option for the project. Shuttle buses will form part of the event management plan however.
<i>4.5.2 Pedestrian Access to Bus Stops</i>	The internal driveway that connects with Waratah Avenue will include a pedestrian path for a connection to the Waratah Avenue bus stops located on this road near the site.
<i>4.6 Recommended Works</i>	
<i>4.6.1 Improvements to Access and Circulation</i>	The proposed site layout allows for ease of circulation in and around the site and no alterations are required to improve the proposed access arrangements.
<i>4.6.2 Improvements to External Road Network</i>	The following road upgrades are put forward as part of the project: 1. Move the centreline in Waratah Avenue at the intersection to allow for two lanes onto Hillsborough Road (a left turn and a straight/right turn). 2. Provide an access to the site on Waratah Avenue for entry and exit movements to the subject site. This will allow for a simple driveway type layout, with a No Stopping zone installed to assist through traffic movements when traffic is turning right into the site 3. The right turn for eastbound traffic turning right into Waratah Avenue will be extended to provide a length of 100 metres.
<i>4.6.3 Improvements to Pedestrian Facilities</i>	None required. Pedestrians can use existing footpaths along both sides of Waratah Avenue.
<i>4.6.4 Effect of Recommended Works on Adjacent Developments</i>	No works proposed that will impact on adjacent developments.
<i>4.6.5 Effect of Recommended Works on Public Transport Services</i>	None
<i>4.6.6 Provision of LATM Measures</i>	None Required
<i>4.6.7 Funding</i>	All works on site will be funded by the developer.

Site Photos



Photo 1 –Sight line to right for driver exiting the site onto Waratah Avenue.



Photo 2 –View to left for driver exiting the site onto Waratah Avenue.



Photo 3 – view north along Waratah Avenue showing typical cross section

2. Conclusion

From the site work undertaken and the review of the development proposal and associated plans against the requirements of the Guide to Traffic Generating Developments and Austroads Guide to Traffic Management, it is concluded that the proposed development should be approved on traffic, access and car parking grounds.

Access to the site is proposed via a new driveway on Waratah Avenue that will allow for all turning movements in and left out only and will allow for trips to disperse across the road network. This access will allow for all heavy vehicle movements in and out of the site and access the main road network via the traffic signals at Waratah Avenue and Hillsborough Road. Traffic modelling completed by TfNSW has highlighted some increased delays and queues and as part of this application the following road mitigation options are put forward:

1. The right turn for eastbound traffic turning right into Waratah Avenue will be extended to provide a length of 100 metres
2. Move the centreline in Waratah Avenue at the intersection to allow for two lanes onto Hillsborough Road (a left turn and a straight/right turn).

Secondary access will be provided via the existing access on the H23 on-ramp. This access will not permit vehicles to enter the site of an afternoon Monday to Friday but will permit vehicle exit movements here. Of a weekend, this access will allow for both entry and exit movements.

With these upgrades it is considered the impact of the traffic associated with the project shall have an acceptable impact upon the local road network during the critical afternoon peak period. On a weekend, when the traffic flows are lower, the impact shall be lower again.

Parking for the typical peak use Monday to Friday and of a weekend is provided on site in a permanent car park providing 258 parking spaces, together with a level grass area that can cater for spill over parking for 97 vehicles as required. During major events, the parking shall be managed through the ticketing with parking permits offered. The Event Management Plan shall also provide for shuttle services and Park and Ride which shall control the volume of traffic entering the site and during these peak events, there will be use of private coaches for access which will further reduce the overall parking demand for private vehicles.

This separate Event Management Plan has been prepared for the project and will be developed further in consultation with the road authorities.

The on-site parking for the normal use through the week and the weekend is provided in accordance with the Council DCP and will ensure that there are no external parking demands for parking.

The site layout provides for the efficient movement of vehicles throughout the site with parking provided within a dedicated sealed parking area to the front of the main entry to the buildings. This will also provide a space for a service vehicle accessing the site.

Please feel free to contact me on 4032 7979, should you have any queries.

Yours sincerely,

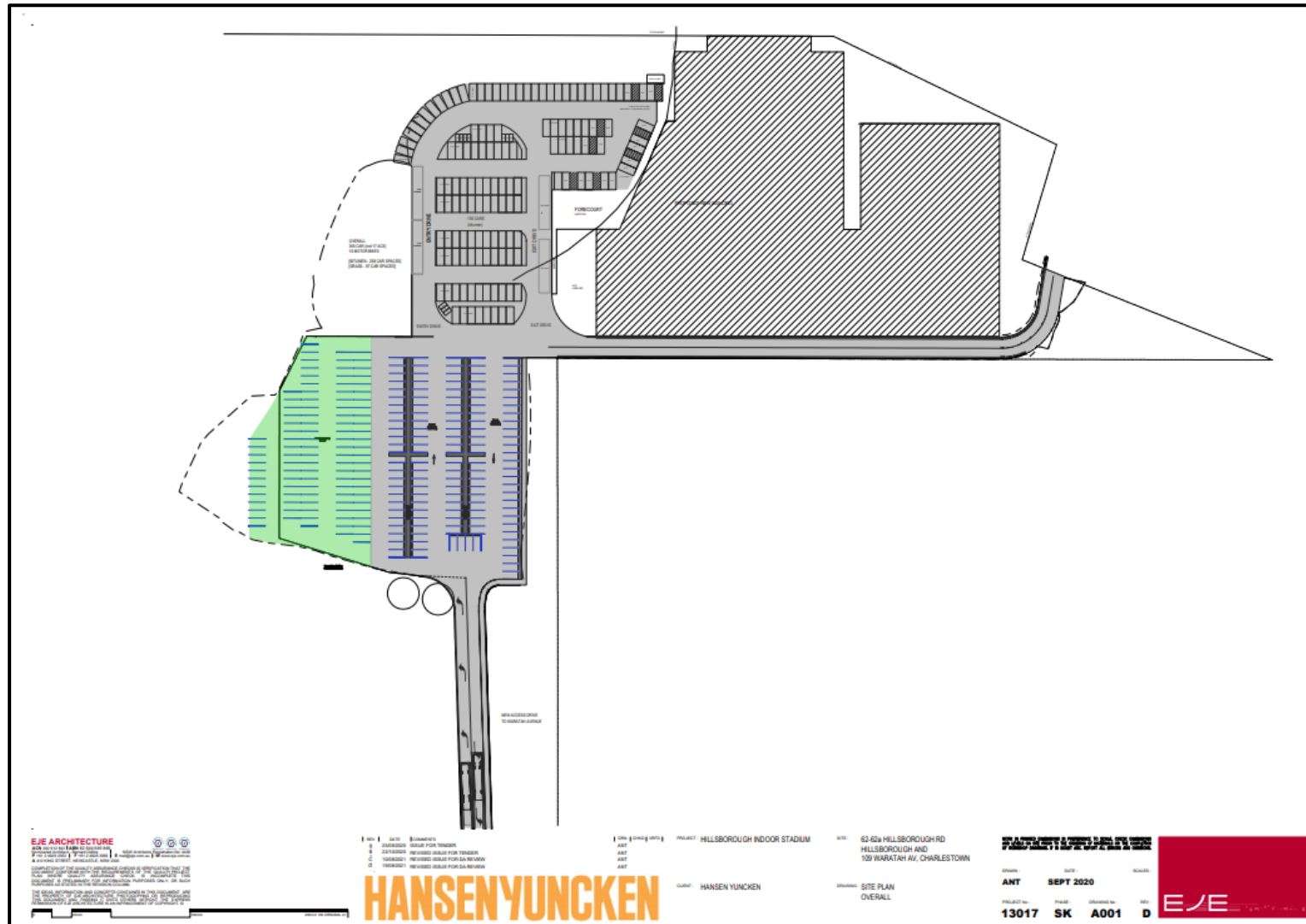


Sean Morgan,
Director

List of Attachments:

- Attachment A: Site Plan
- Attachment B: Accident Data
- Attachment C: Proposed Waratah Avenue Access

Attachment A: Site Plan





Attachment B: Accident Data

RE: Request for accident data, Hillsborough NSW



Jason Gillett <Jason.GILLET@transport.nsw.gov.au> on behalf of Hunter Crash Data <Hunter
To: Tyler Neve

Reply Reply All Forward ...

Mon 2/03/2020 10:41 AM

Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Hi Tyler,

There are no crashes at these locations within a 50m radius from July 2014 to June 2019.

Regards,

Jason Gillett

Jason Gillett
Regional Planning Officer
Regional & Freight
Regional and Outer Metropolitan
Transport for NSW

T 02 4908 7567 | E jason.gillett@transport.nsw.gov.au
Level 8, 266 King Street, Newcastle NSW 2300



Transport
for NSW

From: Tyler Neve [<mailto:tneve@secasolution.com.au>]

Sent: Friday, 28 February 2020 4:45 PM

To: Hunter Crash Data

Subject: Request for accident data, Hillsborough NSW

Attachment C: Proposed Waratah Avenue Access

