Kariong Sand and Soil Supplies

Jackson Planning and Environment

Traffic Impact Assessment

July 2020

SECA solution

Kariong Sand and Soil Supplies, Somersby

Development Application

Traffic Impact Assessment

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Client: Jackson Environment and Planning Pty Ltd

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Quality Review and Document History

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1. Introduction

Background

Seca Solution Pty Ltd has been commissioned by Jackson Environment and Planning Pty Ltd to provide a traffic impact assessment to support the proposal to the Planning Assessment Commission for an integrated development and a state significant development, for the upgrading and increased processing capacity at the existing Kariong Sand and Soil Supplies facility. As heavy vehicle movements to and from the site will impact on the regional and state road network the application will also be reviewed by Roads and Maritime Services (RMS) and their concurrence will be required.

Planning Context

In preparing this document, the following guides and publications are used:

- RMS Guide to Traffic Generating Developments, Version 2.2 Dated October 2002;
- RMS Technical Direction TDT 2013/ 04a Updated traffic surveys:
- Gosford Development Control Plan 2013;
- Australian / New Zealand Standard – Parking Facilities Part 1: Off-street car parking (AS2890.1:2004).

Table of SEARs Requirements

Agency	Requirement / comment	Response / where addressed.
SEARs	Details of all traffic types and volumes likely to be generated during construction and operation, including a description of haul routes	Chapter 2 Sec 4.1
	An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including the consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic models	Chapter 2 Section 4
	Plans of any proposed road upgrades, infrastructure works or new roads required for the development	Chapter 2 Sec 4.62 Appendix B Concept Plan
	Plans demonstrating how all vehicles associated with construction and operation awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network	Chapter 2 Sec 3.3.1 Maximum vehicles movements 23 per hour = 12 vehicles inbound and 12 outbound per hour
	Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site for both heavy and light vehicles.	Appendix A Site Plan including swept paths for internal movements Appendix B Concept Plan for Access
Central Coast Council	Car parking must comply with Chapter 7.1 Carparking of Gosford DCP 2013	Chapter 2 Sec 3.4.2
Roads & Maritime Services	The EIS should refer to the following guidelines with regard to the traffic and transport impacts of the proposed development:	Chapter 2

Agency	Requirement / comment	Response / where addressed.
	- *Road and Related Facilities* within the Department of Planning *EIS Guidelines*, and, - Section 2 *Traffic Impact Studies* of Roads and Maritime's *Guide to Traffic Generating Developments 2002*.	
	A traffic and transport study shall be prepared in accordance with Austroads Guide to Traffic Management Part 12 the Roads and Maritime's *Guide to Traffic Generating Developments 2002* and is to include (but not be limited to) the following: • Assessment of all relevant vehicular traffic routes and intersections for access to / from the subject properties. • Current traffic counts for all relevant traffic routes and intersections. • The anticipated additional vehicular traffic generated from both the construction and operational stages of the project. • The distribution on the road network of the trips generated by the proposed development. It is requested that the predicted traffic flows are shown diagrammatically to a level of detail sufficient for easy interpretation. • Consideration of the traffic impacts on existing and proposed intersections, in particular, the intersection of Central Coast Highway and Kangoo Road, and the capacity of the local and classified road network to safely and efficiently cater for the additional vehicular traffic generated by the proposed development during both the construction and operational stages. The traffic impact shall also include the cumulative traffic impact of other proposed developments in the area. • Identify the necessary road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network for the development. In this regard, preliminary concept drawings should be submitted with the EIS for any identified road infrastructure upgrades. However, it should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of Roads and Maritime and Council. • Traffic analysis of any major / relevant intersections impacted, using SIDRA or similar traffic model. • Any other impacts on the regional and state road network including consideration of pedestrian, cyclist and public transport facilities and provision for service vehicles. • Details of any measures proposed to manage and / or mitigate impacts as a result of the proposal identified in traffic and transport study.	Chapter 2 Section 4 Appendix B
Comments on EIS from Public Exhibition (Feb to Mar 2019)		

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Agency	Requirement / comment	Response / where addressed.
Department of Planning and Environment	The Department concurs with Central Coast Council and the Transport for NSW submissions dated 20 March 2019 and 21 March 2019 respectively that Gindurra Road (between Wisemans Ferry Road and Debenhams Road South) is not identified as a B-Double Vehicle Route. The TIA and EIS must be amended to exclude B-Doubles from the traffic generation. A revised assessment and analysis vehicle types used by the facility and potential impacts is required in the TIA and EIS.	Updated in Rev 05 and 06
Department of Planning and Environment	The Department notes the TIA refers to 40 tonne B-Doubles, the EIS states 25 m B-Doubles and the Civil Plans shows swept paths of 26 m B-Doubles. The Department requests the TIA, EIS and Civil Plans be updated to delete all references to B-Doubles.	Updated in Rev 05 and 06
Department of Planning and Environment	Section 4.1 of the Traffic Impact Assessment (TIA) states averaged over an 8-hour working day the predicted traffic generation equates to 21 trips per hour. However, there will be peak periods/hours for the facility. An updated TIA is required to show the maximum amount of trucks predicted in a peak hour.	Updated in Rev 05 and 06
Department of Planning and Environment	Section 2.3.7 of the EIS states that there is sufficient space for two vehicles to queue behind the entrance boom gate. However, the EIS does not consider the maximum amount of truck predicted in a peak hour and whether a space for two vehicles behind the entrance boom gate is sufficient to avoid queuing on Gindurra Road in a peak hour. The Department requests an updated TIA consider the peak hour traffic generation and the potential queuing impacts on Gindurra Road.	Updated in Rev 05 and 06
Department of Planning and Environment	The TIA and the EIS do not consider the maximum number of trucks can be held on site at any given time and truck parking provisions. The TIA and the EIS must be updated to provide this information.	Updated in Rev 05 and 06
Department of Planning and Environment	The Department notes Figures E2 and 2.14 indicate trucks would weigh onto the 18 m weighbridge. The 18 m weighbridge is inconsistent with Section 2.3.7 of the EIS that states the weighbridge is designed to accommodate extra wide loads (4 m wide x 26 m long). The Applicant is required to update Figures E2 and 2.14 ensure consistency between sections of the EIS.	Updated in Rev 05 and 06
Department of Planning and Environment	The Department notes the swept path diagrams show trucks will use Gindurra Road and Debenham Road South enter and leave the site. However, Section 4.2.1 of the TIA states haul route includes Central Coast Highway, Wisemans Ferry Road and Gindurra Road. Clarification is requested to address the discrepancy.	Updated in Rev 05 and 06
Transport for NSW	B-double access on Gindurra Road Issue:	Updated in Rev 05 and 06

Agency	Requirement / comment	Response / where addressed.
	The proposal states that the proposed heavy vehicles servicing the site will include tippers, truck and dog or semi-trailers and B-doubles. Gindurra Road is not currently identified as a B-double route (neither 19m B-double over 50t, nor 25/26m B-doubles) on the RMS RAV map. Swept path diagrams for a 25m B- double are presented in the traffic report. The use of smaller vehicles with smaller payloads would increase the number of heavy vehicles required for the freight task. Recommendation: Clarification should be provided to address the apparent discrepancy and assess the impact if there would be an increase of heavy vehicle movements. Swept path analysis should also be provided for semi-trailers.	
Transport for NSW	Road Safety Audit Prior to issue of construction certificate, the applicant shall prepare a Stage 3 (Detailed Design) Road Safety Audit in accordance with Austroads Guide to Road Safety Part 6: Road Safety Audit by an independent TfNSW accredited road safety auditor. Based on the results of the road safety audit, the applicant needs to review the design drawings and implement safety measures as required.	To be undertaken as requested
Roads & Maritime Services	Transport for NSW and Roads and Maritime's primary interests are in the road network, traffic and broader transport issues. In particular, the efficiency and safety of the classified road network, the security of property assets and the integration of land use and transport. Roads and Maritime have reviewed the referred information, including the Traffic Impact Statement (TIS) prepared by SECA Solutions and dated December 2018, noting the minor additional trip generation of the proposal, and raise no objection to or requirements for the proposed development.	No response required
Central Coast Council	Road Works With due regard to the existing road infrastructure, road pavement works in Gindurra Road would not be required.	No response required
Central Coast Council	Access It is noted that Stage 1 of this SSD (SSD 8660) is associated with the development application and works previously approved under DA52541/ 2017. Access arrangements associated with that DA require the location of the vehicular access crossing be located approximately 14m west of the existing vehicle crossing to achieve the minimum sight distance of 69m in accordance with Figure 3.3 of AS 2890.22002. Although the Traffic Impact Assessment	Updated in Rev 05 and 06

Agency	Requirement / comment	Response / where addressed.
	prepared by SECA Solution recommends the proposed entrance design in the location of the exiting vehicle crossing to be satisfactory with a reduced sight distance of 55m, Council is of the opinion that the vehicle crossing is to still be located a minimum of 14m west of the existing vehicle crossing, particularly when considering that the level of operation of the development by 2025 is estimated to generate up to 164 vehicle trips per day consisting of staff operational vehicles, 12 tonne tippers, 32 tonne truck and dog or semis and 40 tonne (25m long) B-Doubles. The vehicle access crossing for Stage 2 works would need to be of a heavy duty standard and incorporate appropriate splays to cater for the proposed 25m long B Double vehicles.	
Central Coast Council	For the use of Gindurra Road between the intersection of Wisemans Ferry Road and the proposed access, that would be associated with B-Double Truck movements to and from Wisemans Ferry Road, the applicant/developer must make a formal application with the National Heavy Vehicle Regulator for consideration and approval for Gindurra Road to become a designated B-Double route. This would be the required route for the use of B-Double vehicles associated with this development.	Updated in Rev 05 and 06
Central Coast Council	It is not recommended that B-Double vehicles enter & exit the site associated with movements to & from Debenham Road South (i.e. the eastern side of the site) for the following reasons: • The intersections of Gindurra Road / Debenham Road South, and Debenham Road South / Acacia Road do not safely accommodate the manoeuvres for B-Double Vehicles. • Debenham Road South, Acacia Road, and the section of Kangoo Road from the site frontage to Acacia Road are rural roads and have not been designed to cater for the traffic loadings and vehicle manoeuvrability for B-Double vehicles. As such it is unlikely that Council would support this route for B-Double vehicles between the site and the intersection of Kangoo Road and Wella Way via Debenham Road South and Acacia Road, and the section of Kangoo Road north of Wella Way. To facilitate the east bound right turn movements from Gindurra Road into the development the existing centre line marking in Gindurra Road is proposed to be relocated a minimum of 3 metres south (towards the site) to provide sufficient width for a right turn lane into the site, with this right turn lane being a minimum 60m long to provide sufficient storage for two B-Doubles vehicles. The site access is to be designed to ensure that the largest vehicle entering or exiting the site is able to do so without encroaching on the opposite lane in Gindurra Road. "No Stopping" signs would need to be installed on both sides of Gindurra Road for the full length of	Updated in Rev 05 and 06

Agency	Requirement / comment	Response / where addressed.
	the right turn lane and adjustments to the line marking and painted chevrons. Any alterations to regulatory signage and line marking would require approval by the Council Traffic Committee prior to approval of any plans under Section 138 of the Roads Act, 1993. Council is presently undertaking construction works in Debenham Road South located between the northern side of the Gindurra Road / Debenham Road South intersection towards the M1 Motorway, and which includes works associated with the Gindurra Road/ Debenham Road intersection. As part of these works the priority movements for the intersection are being altered such that traffic in Gindurra Road will in the future need to 'give way' in both directions to traffic movements in Gindurra Road.	
Central Coast Council	The internal accesses, roads and parking aisles will be need to be designed in accordance with AS2890.	Accepted
Public submission during EIS exhibition period		
Public submission - Save Somersby Form Letter	200+ trucks per day travelling through the local roads past local front doors causing increased traffic congestion, also causing noise & vibration to the local residence.	
DPIE Adequacy Review Comments Feb 2020		
DPIE	Appendix G of the TIA includes a B-Double Authorisation Permit. The Department notes the Permit is valid for 3 years (will expire on 5 March 2022). Please clarify after the 3-year period, what actions will be taken to ensure continuity of Gindurra Road as an authorised B-Double road.	Permits are renewed each three years to maintain currency and confirm they are still required.
	Section 2.1.5 Transport and Traffic of the Response to submission (RtS) report states over an average 8-hour working day this equates to 21 trips per hour. This is inconsistent with the TIA report which states an upper limit of 23 vehicles expected to access the site in any 1 hour. Please clarify the discrepancy.	23 vehicle movements per hour (12 inbound/12 outbound) Detailed Chapter 2 Sec 3.2.4
	RtS report notes a second weighbridge will be installed as a dedicated outbound weighbridge when the facility reaches 100,000 tonnes per annum capacity (page 100). The TIA does not clearly state the staged installation of weighbridge is included in the revised development. Should the staged approach be proposed, please clarify how the development would manage the potential queuing, internal manoeuvrability impacts caused by single weighbridge operation prior to 100,000 tonnes per annum capacity is reached.	The assessment allows for the total capacity to be managed with a single weighbridge. The installation of a second outbound unit is to provide for further efficiencies.
	Please clarify the design capacity of the designated truck parking area (i.e. whether it can accommodate up to 19 m semi-trailer or 26 m B-Doubles).	It is understood that this truck parking area is an overnight layover area for the site and not an area for general parking.

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Proposed Development

The subject site is located at 90 Gindurra Road, Somersby as shown to follow in Figure 1. The surrounding land use consists primarily of light industrial and rural residential properties.

The site is used for storing and screening soil and sand, which is sold for landscaping. It was originally approved as a Sand and Metal Recycling Facility on 28/02/1992 (DA 15337). As part of the original approval, only the front section of the site was approved for this use. The site's current development approval and infrastructure limits the amount of material that can be accepted and processed (screened and sorted) at the site.

The project allows for the upgrade of onsite facilities to accommodate an increase in throughput from the current 6,000 tonnes per annum to a proposed 200,000 tonnes per annum and the expansion into a best-practice recycling plant that can process a range of sand, soil and building materials. We have reviewed the SEARs that have been issued and note the requirements of the Roads and Maritime Services (RMS) for the project.

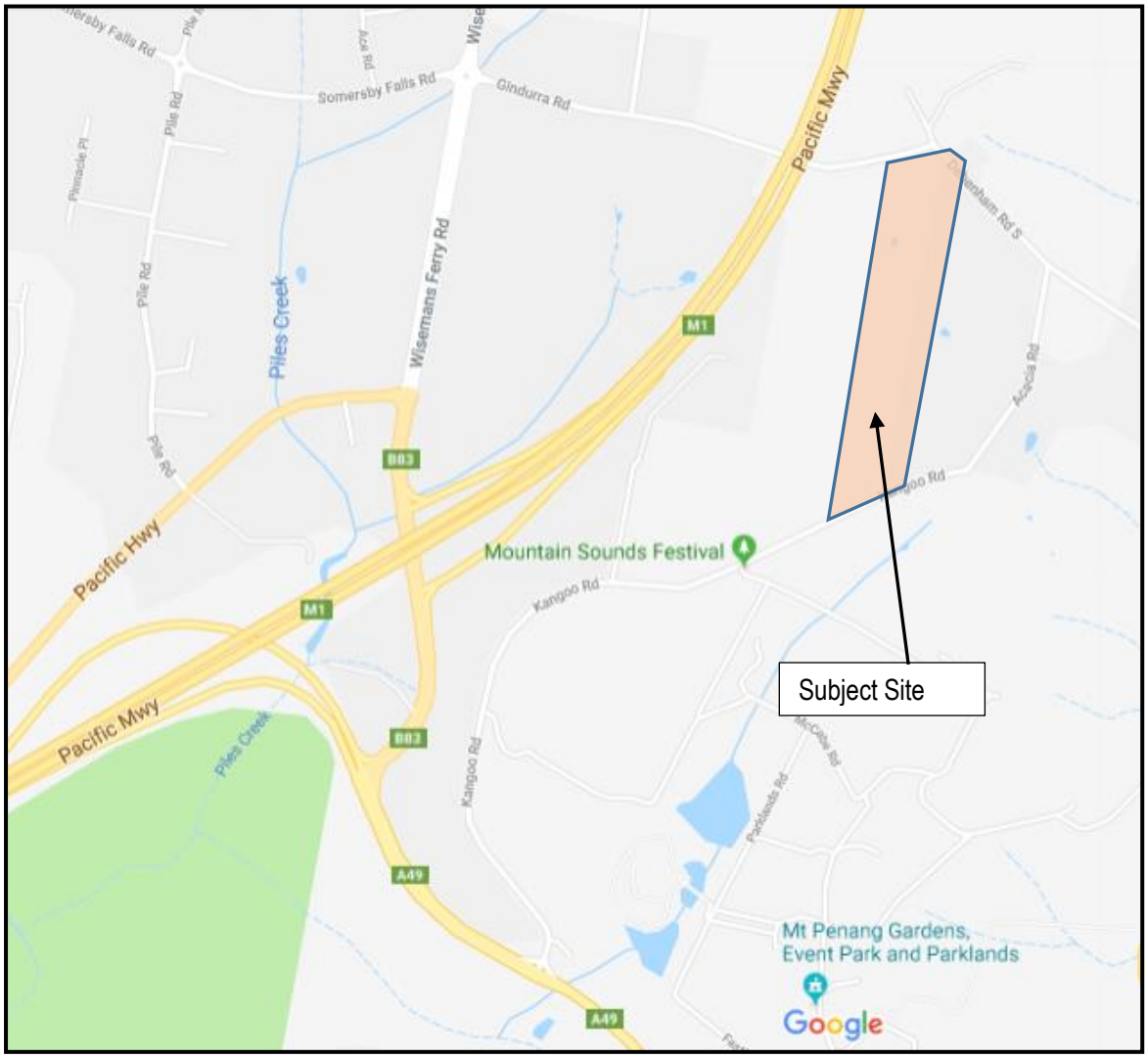

Figure 1 – Site Location

2. Traffic Impact Assessment

The following assessment has been completed following the requirements of the RMS Guide to Traffic Generating Developments and Austroads Guidelines and Road and Related Facilities within the Department of Planning EIS Guidelines

Item	Comment
Existing Situation	
2.1 Site Location and Access	The subject site is located at 90 Gindurra Road Somersby. The surrounding land use consists primarily of light industrial and rural residential properties.
2.2 Existing Road Network	
2.2.1 Road Hierarchy	The main road through the locality is the **Central Coast Highway** (A49) which lies to the south of the subject site. This road provides a major link between the M1 Pacific Motorway to Gosford and through to the Central Coast. In the vicinity of the subject site it provides 2 lanes of travel in each direction with additional lanes provided at intersections to maintain capacity. Being an arterial road, the Central Coast Highway carries over 40,000 vehicles per day. **Wisemans Ferry Road** is a regional road connecting the Central Coast Highway with the Pacific Highway, Somersby Industrial Area and the rural residential and agricultural areas of the Somersby plateau, Mangrove Mountain, Mangrove Creek and through to Wisemans Ferry on the Hawkesbury River. At its southern end Wisemans Ferry Road connects with the Central Coast Highway via a signalised intersection at the start of the southbound on ramp to the M1 Pacific Motorway. Between the Central Coast Highway and the Pacific Highway, it passes under the M1 and connects with the southbound off ramp and the northbound on ramp. This section has a four-lane divided formation and the Pacific Highway intersection is a two-lane roundabout. North of the Pacific Highway the formation becomes two-lane divided standard up to the Gindurra Road / Somersby Falls Road intersection which is also under roundabout control. North of this intersection Wisemans Ferry Road reverts to a two-lane rural road formation. The whole section between the Central Coast Highway and Gindurra Road is designed to cater for heavy vehicles accessing the businesses within the Somersby Industrial Area. The posted speed limit is 70km/h. **Gindurra Road** is a local road providing access to businesses within the eastern section of the Somersby Industrial Area including the subject site. At its eastern end it connects with Debenham Road South which provides access to primarily rural residential properties and a few scattered light industrial developments as well as providing an alternative light traffic connection with Dyer Crescent at West Gosford. Gindurra Road was upgraded in previous years to provide a 10-metre-wide asphalt pavement to cater for heavy vehicle access to the industrial developments in this area. This pavement width provides a single lane of travel in each direction with sufficient space for kerb side parking to both sides, however there is little demand for on-street parking. There are no pedestrian footpaths provided along Gindurra Road, although the grass verges on each side are wide enough to provide for pedestrian access. The posted speed limit is 50 km/hr. 90 Gindurra Road has been approved to use B-Doubles to access the site via the Somersby Industrial area. This approval has been granted by the National Heavy Vehicle Regulator (NHVR), with this included in **Appendix G**. **Kangoo Road** is a local road that provides a connection between the Central Coast Highway and Debenham Road. It lies generally to the south-east of Gindurra Road and connects with Debenham Road about 330 metres south of Gindurra Road. It provides access primarily to light industrial businesses as well as Mount Penang Parklands and several rural residential properties. It also forms the southern boundary of the subject site, however, there is no existing access to the site from Kangoo Road. About 450 metres before it connects with Debenham Road the road name

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Item	Comment
	changes to Acacia Road. For a length of 1km from the Central Coast Highway, Kangoo Road has kerb and gutter along its eastern side and a pavement that varies between 9 to 10 metres wide, which is suitable for heavy vehicles servicing the adjacent industrial developments. Past this point and along the frontage of the subject site to Debenham Road, Kangoo Road narrows to a typical two-lane rural road standard with a pavement width of 6 metres and narrow gravel shoulders. The posted speed limit is 50km/h. The section of **Debenham Road** between Gindurra Road and Acacia Road (Kangoo Road) is a two-lane rural road with a 7-metre-wide sealed pavement and narrow gravel shoulders. The posted speed limit is 50km/h.
2.2.2 Roadworks	There are no significant roadworks occurring or planned in the locality other than general road maintenance and resurfacing undertaken by Council.
2.2.3 Traffic Management Works	No traffic management works noted or planned for this area.
2.2.4 Pedestrian and Cycling Facilities	Pedestrian and cycling facilities are provided along the Central Coast Highway and a short section of Wisemans Ferry Road in the form of shared paths and on-road cycle lanes. There is no direct connection between these facilities and the subject site.
2.2.5 Public Transport	There is a regular bus service between Gosford and Somersby by Busways with the route including Central Coast Highway, Kangoo Road, Debenham Road, Gindurra Road, Somersby Falls Road and Pile Road.
2.3 Existing Traffic Flows	
2.3.1 Daily Traffic Flows	As part of the project work Seca Solution collected traffic data at the intersection of **Central Coast Highway and Kangoo Road** during typical weekday morning and afternoon peak periods. This survey was completed on Thursday 30 November 2017 from 6.00am to 8.00am and from 3.00pm to 6.00pm, with the peak hours determined as 7.00am to 8.00am and 4.45pm to 5.45pm (**Appendix D**). Peak hour volumes typically represent around 10% of the daily traffic volumes. During the morning peak hour, the two-way traffic volumes along Central Coast Highway (west of Kangoo Road) were in the order of 3,900 vehicles per hour whilst in the afternoon peak volumes were 4,300 vehicles per hour. Daily volumes could therefore be in the order of 41,000 vehicles per day, reflecting both local demand as well as through traffic in this location. Peak hour volumes along Kangoo Road were significantly lower with two-way volumes averaging 340 vehicles per hour. This would give daily flows in the order of 3,500 vehicles per day. Traffic surveys were also conducted at the intersection of **Central Coast Highway and Wisemans Ferry Road** on Thursday 7 December 2017 from 6.00am to 8.00am and 4.00pm to 6.00pm, with the peak hours determined as 6.15am to 7.15am and 5.00pm to 6.00pm (**Appendix D**). During the morning peak hour, the two-way traffic volumes along Wisemans Ferry Road were 1,000 vehicles per hour whilst in the afternoon peak volumes were in the order of 1,300 vehicles per hour. Daily volumes could therefore be in the order of 11,500 vehicles per day. Traffic flows along the Central Coast Highway were lower in this location. Traffic surveys were previously conducted at the **Wisemans Ferry Road / Gindurra Road** intersection in December 2015. During the morning peak hour (6.15am to 7.15am) the two-way traffic volumes along Wisemans Ferry Road (south) were 427 vehicles per hour and in the

Item	Comment
	afternoon peak (3.30pm to 4.30pm) volumes were 545 vehicles per hour (average 486). Daily volumes along Wisemans Ferry Road in this location could therefore be in the order of 4,900 vehicles per day. Peak hour volumes along Gindurra Road (east) were slightly lower with two-way volumes of 329 vehicles per hour in the AM and 433 vehicles per hour in the PM (average 381). This would give daily flows in the order of 3,800 vehicles per day. A spot check of current traffic volumes was conducted at the Wisemans Ferry Road / Gindurra Road intersection on Thursday 23 November 2017 from 6.15am to 7.15am. During the morning peak hour, the two-way traffic volumes along Wisemans Ferry Road (south) were 490 vehicles per hour. The 2015 data found afternoon flows were 27.6% higher than morning flows. On this basis, afternoon flows in 2017 would be in the order of 625 vehicles. This would give daily flows in the order of 5,600 vehicles per day. During the morning the two-way peak hour volumes along Gindurra Road (east) were 417 vehicles per hour. The 2015 data found afternoon flows were 31.6% higher than morning flows. On this basis, afternoon flows in 2017 would be in the order of 549 vehicles. This would give daily flows in the order of 4,800 vehicles per day.
2.3.2 Daily Traffic Flow Distribution	The traffic surveys conducted for this assessment indicate that there is a priority movement of 65% total traffic towards the M1 Motorway in the AM Peak and the reverse in the PM Peak.
2.3.3 Vehicle Speeds	No speed surveys were completed as part of the study work. Observations on site indicate that vehicle speeds along Gindurra Road are generally above the 50km/h posted speed limit.
2.3.4 Existing Site Flows	Based on the existing throughput of 6,000 tonnes per annum the existing traffic generated to and from the site would be a maximum of 6 trips per day.
2.3.5 Heavy Vehicle Flows	During the peak hour traffic surveys, heavy vehicle volumes accounted for around 16% of total volumes in Wisemans Ferry Road and 10% in Gindurra Road. This equates to around 800 heavy vehicle movements per day on Wisemans Ferry Road and 400 per day on Gindurra Road.
2.3.6 Current Road Network Operation	Observations on site during the morning and afternoon peak periods show that the road network in the vicinity of the subject site operates well, with low delays and congestion for drivers. The RMS Guide to Traffic Generating Developments, Section 4 (Table 4.4) provides guidance as to the operating level of service for urban roads at various ranges of mid-block traffic volumes. According to Table 4.4, the roads surrounding the subject site are currently operating at the following levels of service during peak periods: • Wisemans Ferry Road (2017 AM-surveyed): 1 lane each direction, 273vph – LoS B. • Wisemans Ferry Road (2017 PM-adjusted): 1 lane each direction, 431vph – LoS C. • Gindurra Road (2017 AM-surveyed): 1 lane each direction, 249vph – LoS B. • Gindurra Road (2017 PM-adjusted): 1 lane each direction, 299vph – LoS B. • Kangoo Road (2017 AM): 1 lane each direction, 228 vehicles per hour – LoS B. • Kangoo Road (2017 PM): 1 lane each direction, 215 vehicles per hour – LoS B.
2.4 Traffic Safety and Crash History	Crash data provided by Roads and Maritime Services show that there have been 38 recorded crashes along the roads within the study area since January 2012. 29 of these crashes occurred along the Central Coast Highway between Kangoo Road and Wisemans Ferry Road, 5 were at the intersections of Wisemans Ferry Road and the M1 Motorway ramps, 2 were on Wisemans Ferry Road between the Pacific Highway and Gindurra Road, one on Kangoo Road 200 metres north of

Item	Comment
	the Central Coast Highway and one was at the Acacia Road / Debenham Road intersection. Almost half of the crashes were rear-end crashes associated with queueing along the Central Coast Highway. None of these crashes resulted in a fatality, however, 21 were injury crashes with the remaining 17 being non-injury crashes. The crash rate along the Central Coast Highway averages at just under 5 per year over the last 6 years of recorded data which indicates a reasonably high level of safety considering the high volume of traffic travelling along this route each day. The other roads in the study area, particularly Wisemans Ferry Road, Gindurra Road and Kangoo Road are operating at a high level of safety and it is important to note that there have been no recorded crashes in the vicinity of the subject site. The available sight distance at the existing access to the site on Gindurra Road exceeds the Austroads requirements of 90 metres in each direction so it is reasonable to assume that, the current level of safety along Gindurra Road will continue following the development of the site.
2.5 Parking Supply and Demand	
2.5.1 On-street Parking Provision	Unrestricted on-street parking is available along both sides of Gindurra Road near the site.
2.5.3 Parking Demand and Utilisation	There is limited parking demand in the general locality of the subject.
2.5.4 Set down or pick up areas	There are no dedicated set down or pick up areas near the site.
2.6 Public Transport	
2.6.1 Rail Station Locations	The closest railway station is located at Gosford some 6kms from the site.
2.6.2 Bus Stops and Associated Facilities	Local bus services are available from a bus stop in Gindurra Road about 500 metres to the south of the site.
2.6.3 Pedestrians	There are no concrete footpaths along Gindurra Road, but pedestrian access is available via a wide grass verge along the southern side of the road.
2.7 Other Proposed Developments	There is limited potential for further developments within the Somersby Industrial area but primarily to the west of Wisemans Ferry Road. Any future developments in this area will contribute traffic to the Wisemans Ferry Road / Somersby Falls Road / Gindurra Road intersection but will have only a minor impact on the operation of the subject site.
The Development	
3.1.1 Nature of Development	The Kariong Sand and Soil Supplies (KSSS) site will be developed to receive, process and store up to 200,000 tonnes per annum of soil, sand and building materials. The upgrade of the site will be conducted in two stages. Stage 1 of the development has been approved and will include; demolition of the existing corrugated iron sheds, construction of a front office and warehouse, construction of parking areas and the new entrance and installation of security fencing. This proposal seeks approval for Stage 2 which entails the works outlined in Table 1 to follow.

<table>
<tr><th>Item</th><th>Comment</th></tr>
<tr><td></td><td>
Table 1 – Proposed development works for Stage 2
<table>
<tr><th>Description of works</th></tr>
<tr><td>Excavation works to level site in preparation for construction</td></tr>
<tr><td>Construct hardstand across operational areas</td></tr>
<tr><td>Construct onsite roads, new entrance and modifications to Gindurra Rd (turning lane)</td></tr>
<tr><td>Construct stormwater drainage system</td></tr>
<tr><td>Install weighbridge</td></tr>
<tr><td>Construct noise barrier</td></tr>
<tr><td>Construct storage bunkers</td></tr>
<tr><td>Install processing equipment in operational area and secondary sorting warehouse</td></tr>
<tr><td>Commissioning – up to 30,000 tpa throughput for 3 months</td></tr>
<tr><td>Fully operational – ramp up to 200,000 tpa throughput</td></tr>
</table>

It is anticipated that a total final area of the developed operational area on the site will be approximately 39,000m^2. The development would need to be consistent with the Gosford Local Environmental Plan 2014 and the Gosford Development Control Plan 2013. As a State Significant Development, the development will also need to be consistent with any conditions attached to the development approval by the State Government.

Processed product shall be exported from site.

Additionally, there is in the order of 10,000 tonnes of landscaping product.
</td></tr>
<tr><td>3.1.2 Access and Circulation Requirements</td><td>All vehicles shall be able to enter and exit in a forward direction. Access and internal circulation are to be designed in accordance with AS2890 and Council's DCP.</td></tr>
<tr><td>3.2 Access</td><td></td></tr>
<tr><td>3.2.1 Driveway Location</td><td>Vehicular access will be provided off Gindurra Road, with a new driveway located 14 metres west of the existing access driveway to ensure safe sight distance in each direction. The upgraded layout for the site access, including a suitable right turn treatment is provided in Appendix B. Access to the site shall be controlled by a secure gate which will be located a sufficient distance within the property so that a single vehicle can store without interrupting traffic flows in Gindurra Road. This gate shall remain open during the day when the site is operational to ensure unrestricted access for heavy vehicles associated with general operations.

It is recommended that concrete kerbing be installed at the site access in order to prevent the right-hand turn for vehicles exiting the site onto Gindurra Road. This physical feature will be accompanied by a no right turn sign at the exit of the site to prevent vehicles entering the rural residential area to the east of the site towards Debenham Road. This treatment was recommended during consultation with the DPE to ensure the load limit in this area is adhered to.</td></tr>
<tr><td>3.2.2 Sight Distances</td><td>The posted speed limit along Gindurra Road is 50 km/h. According to Austroads Guide to Road Design the sight distance requirement to approaching vehicles for a left turning driver is 69 metres at an approach speed of 50km/h.

The relocation of the access driveway shall see this distance being available in each direction out of the site, thereby satisfying the requirement set by Austroads.</td></tr>
</table>

Item	Comment
3.2.3 Service Vehicle Access	Service vehicle access will be available via the main entry / exit off Gindurra Road.
3.2.4 Queuing at entrance to site	It is proposed to adjust the existing centreline in Gindurra Road to provide a right turn lane for vehicles entering the site. No Stopping signs will be provided along the length of this turning lane. The design of the access point will ensure vehicles can enter the site with minimal delays to other road users with the access gate open when the site is operational to ensure unrestricted entry for heavy vehicles associated with general operations. The internal layout of the site will allow at least 2 trucks to queue on-site between the access and the entrance boom gate / weigh bridge along with a further designated queueing space (Appendix A). The expected hourly vehicle movements are outlined further in Section 4, with an upper limit of 23 vehicle movements expected to access the site in any 1 hour. This allows for the whole of site capacity and could see up to 12 vehicles inbound, or 1 vehicle every 5 minutes on average. As such, the demand for queuing of heavy vehicles is not expected to exceed 1 vehicle at any time, with the site layout allowing for 3 being sufficient to ensure all queuing can be contained within the site, thereby having no impact upon the external road network once the site is at capacity. In the earlier stages such movements could be less. The provision of an outbound weighbridge once throughput exceeds 100,000 tpa will provide for further efficiencies for vehicle movements.
3.2.5 Comparison with existing site access	The access to the site has been designed to be relocated fourteen metres west of the existing site access to provide appropriate sight lines and to enable the safe entry and exit of heavy vehicles up to a B-Doubles.
3.2.6 Access to Public Transport	Local bus services are available from a bus stop in Gindurra Road about 500 metres to the south of the site. This service connects with Gosford railway station.
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 internal parking layout to be designed at the detailed design stage of the development in accordance with Council requirements and AS/NZS 2890.1:2004 Parking facilities Off-street Parking. The internal roads will allow heavy vehicles to circulate within the site to load or unload and exit onto Gindurra Road in a forward direction. A weighbridge shall be located adjacent to the recycling plant with boom gate controls and traffic signals on each approach to control traffic movements across the weighbridge. Two waiting bays shall be provided within the site for vehicles to queue whilst waiting to use the weighbridge. The predicted site flows of up to 12 inbound trucks in an hour, (Sec 4) equates to an average of one truck every five minutes. Two waiting bays is therefore sufficient to provide for the holding of trucks within the site. Swept paths have been prepared to confirm the ability of large trucks, up to a B-Double combination, to enter and exit onto Gindurra Road in a forward direction (**Appendix B**).
3.3.2 Road width	The accesses, internal roads and parking aisles will be designed in accordance with AS/NZS 2890.1:2004 Parking facilities, Part 1: Off-street car parking and AS 2890.2:2002 Parking facilities, Part 2: Off-street commercial vehicle facilities.
3.3.3 Internal Bus Movements	There will be no internal bus movement associated with this development.
3.3.4 Service Area Layout	Service vehicle access will be available via the main entry / exit off Gindurra Road.
3.4 Parking	

<table>
<tr><th>Item</th><th>Comment</th></tr>
<tr><td>3.4.1 Proposed Supply</td><td>It is proposed to provide 18 parking spaces on site, which will accommodate the parking demands for employees.

A parking area for heavy vehicles will be located within the site near the main entrance off Gindurra Road.</td></tr>
<tr><td>3.4.2 Authority Parking</td><td>Neither the Gosford DCP nor the RMS guidelines provide parking requirements for this type of development. Parking has therefore been determined with regards to the expected parking demands and the various discussions with Council in relation to this development.</td></tr>
<tr><td>3.4.3 Parking Layout</td><td>The parking layout shall be designed in accordance with AS/NZS 2890.1:2004 Parking facilities Off-street car parking.

Parking Class: 1A (residential, staff).

• Bay lengths: 5.4 metres
• Bay widths: 2.4 metres
• Aisle widths: 5.8 metres (note extra clearance may be required where parking is provided on a single side only and the other side is bounded by a wall or other vertical obstruction).</td></tr>
<tr><td>3.4.4 Parking Demand</td><td>The operational analysis indicates that staff will total a maximum of 11, therefore the proposed 18 parking spaces will be sufficient to cater for these demands within the site.</td></tr>
<tr><td>3.4.5 Service Vehicle Parking</td><td>Service vehicle parking will be provided on site within the servicing and loading / unloading area near the main building.</td></tr>
<tr><td>3.4.6 Pedestrian and Bicycle Facilities</td><td>Internal pedestrian access will be provided from the main gate to the main building.</td></tr>
<tr><td colspan="2">Traffic Assessment</td></tr>
<tr><td>4.1 Traffic Generation</td><td>The operational analysis for the proposed development has been provided by Kariong Sand and Soil Supplies which includes traffic volumes that will be generated at various stages of the development. (Appendix C.)

At full development (expected to be in 2025) the site will be capable of receiving, processing and storing up to 200,000 tonnes per annum of soil, sand and building materials. It is also expected to supply and deliver up to 10,000 tonnes per annum of landscape supplies.

This level of operation is estimated to generate up to 164 vehicle trips per day (82 inbound and 82 outbound) consisting of:

• staff operational vehicles x 20
• 12 tonne tippers x 77
• 32 tonne truck and dog or semi trailers x 41
• 40 tonne B-Doubles x 14
• Landscaping x 12

Advice from the study team of a similar development has allowed however for the calculation of the hourly trip distribution as shown in Table 2.

Table 2 – Distribution of development traffic across a typical working day
<table>
<tr><th>Time</th><th>% Daily Traffic</th><th>Hourly Movements</th></tr>
<tr><td>7-8 am</td><td>7%</td><td>12</td></tr>
<tr><td>8-9 am</td><td>9%</td><td>15</td></tr>
</table>
</td></tr>
</table>

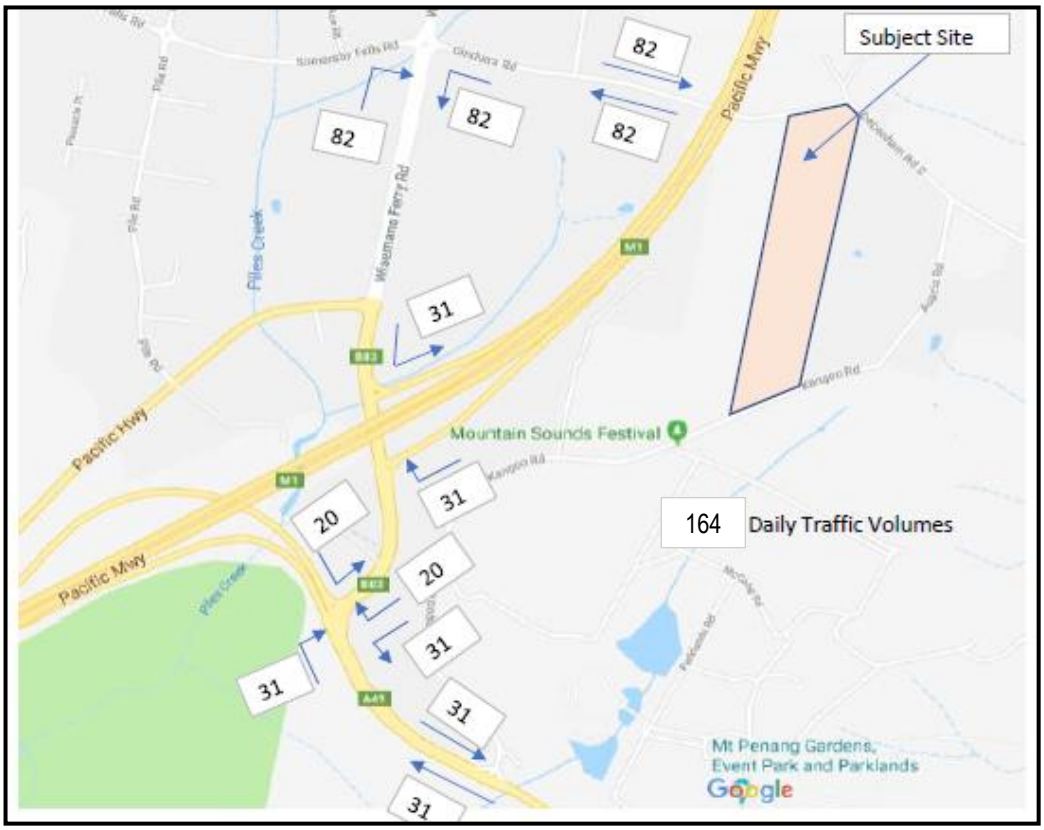
<table>
<tr><th>Item</th><th>Comment</th></tr>
<tr><td></td><td>
<table>
<tr><td>9-10 am</td><td>11%</td><td>18</td></tr>
<tr><td>10-11 am</td><td>14%</td><td>23</td></tr>
<tr><td>11 am-12 pm</td><td>11%</td><td>18</td></tr>
<tr><td>12-1 pm</td><td>14%</td><td>23</td></tr>
<tr><td>1-2 pm</td><td>9%</td><td>15</td></tr>
<tr><td>2-3 pm</td><td>11%</td><td>18</td></tr>
<tr><td>3-4 pm</td><td>8%</td><td>13</td></tr>
<tr><td>4-5 pm</td><td>5%</td><td>9</td></tr>
<tr><td>5-6 pm</td><td>0%</td><td>0</td></tr>
</table>

It can be seen that the majority of vehicle movements for this type of facility occur outside of the local road network peak, with flows being highest through the middle of the working day. The traffic to be generated by the development has been assessed during the AM and PM road peaks, with significantly lower flows on the local road network noted outside of these periods.

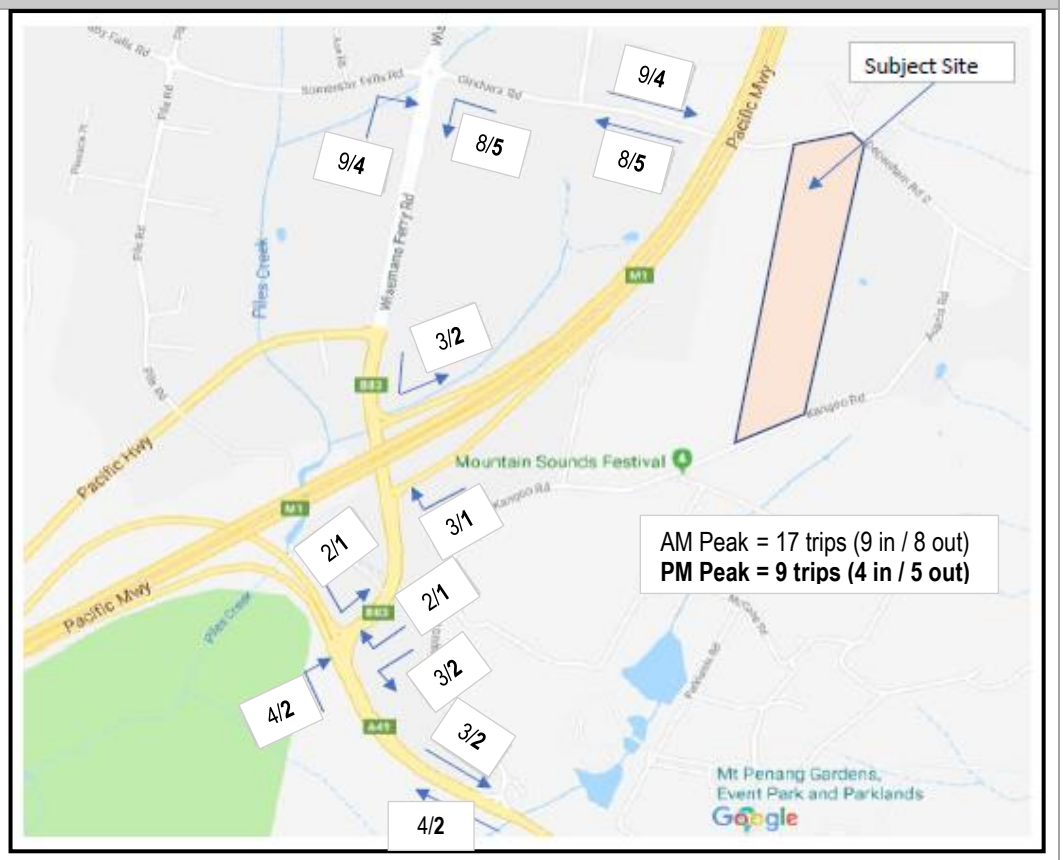
A conservative approach has allowed for 10% of daily flows to occur in the AM peak hour, with 5% in the PM, noting that the road peak for the key intersections was determined to be across the period from 4:45pm – 6pm when it is expected there will be minimal movements associated with the development. This gives peak hour flows of:
• AM Peak = 17 trips per hour (9 in / 8 out)
• PM Peak = 9 trips per hour (4 in / 5 out)
</td></tr>
<tr><td>4.1.1 Daily and Seasonal Factors</td><td>The facility shall operate 6 days per week (Monday – Saturday). Limited annual variation is expected except for holiday periods.</td></tr>
<tr><td>4.1.2 Pedestrian Movements</td><td>The development is not expected to generate a high level of pedestrian activity.</td></tr>
<tr><td>4.2 Traffic Distribution and Assignments</td><td></td></tr>
<tr><td>4.2.1 Origin / destinations assignment</td><td>The site operator is anticipating that 25% of materials entering the site will come from Sydney while the remainder will be sourced locally on the Central Coast. 100% of the products leaving the site are expected to be used in the local area. These will be bulk loads transported in the various heavy vehicle classes listed above. There will be no sales direct to the public.

Vehicles accessing and egressing the site at Gindurra Road will travel to and from the Central Coast Highway and M1 Motorway via Wisemans Ferry Road and Gindurra Road. According to the operational details provided these vehicles will be distributed to the network as follows:

• M1 Motorway south – 40 trips per day (20 inbound, 20 outbound).
➢ Inbound Route: M1 Motorway northbound off-ramp, Central Coast Highway, Wisemans Ferry Road, Gindurra Road.
➢ Outbound Route: Gindurra Road, Wisemans Ferry Road, Central Coast Highway, M1 southbound on-ramp.
• M1 Motorway north – 62 trips per day (31 inbound, 31 outbound).
➢ Inbound Route: M1 Motorway southbound off-ramp, Wisemans Ferry Road, Gindurra Road
➢ Outbound Route: Gindurra Road, Wisemans Ferry Road, M1 Motorway northbound on-ramp.
• Central Coast Highway – 62 trips per day (31 inbound, 31 outbound).
➢ Inbound Route: Central Coast Highway, Wisemans Ferry Road, Gindurra Road.</td></tr>
</table>

Item	Comment
	➢ Outbound Route: Gindurra Road, Wisemans Ferry Road, Central Coast Highway. This distribution of trips is shown diagrammatically in Figure 2, with the distribution of these trips during the peak hours shown in Figure 3.  *Figure 2 – Predicted daily traffic distribution at full development – Gindurra Road Access (Source: Google Maps).*

Quality Traffic Advice

Item	Comment
	 *Figure 3 – Predicted AM/PM traffic distributions at full development – Gindurra Road Access (Source: Google Maps).*
4.3 Impact on Road Safety	The major impact of the development will be increased traffic movements along Gindurra Road and Wisemans Ferry Road. Due to the low volumes of additional traffic that will be generated from this development and the low incidence of crashes it is considered that the additional traffic movements at this intersection will have a minimal impact upon road safety.
4.4 Impact of Generated Traffic	
4.4.1 Impact on the capacity of the existing road network.	Current daily traffic volumes in the other major roads in the network area: • Wisemans Ferry Road (south of Gindurra Road) - 5,600 vehicles per day. • Gindurra Road (east of Wisemans Ferry Road) – 4,800 vehicles per day. • Kangoo Road (north of Central Coast Highway) - 3,500 vehicles per day. The RMS Guide to Traffic Generating Developments, Section 4 (Table 4.4) provides guidance as to the operating level of service for urban roads at various ranges of mid-block traffic volumes. According to Table 4.4. Allowing for the Level of Service detailed above in Sec 2.3.6 the additional 17 trips per hour that will be generated by the full development in the AM peak and 9 in the PM peak will have only a minor impact, with no change to the existing LoS of these roads which can continue to operate within their existing capacity.
4.4.2 Peak Hour Impacts on Intersections	The key intersections have been assessed below in Section 4 using Sidra intersection modelling.

Item	Comment
4.4.3 Impact of Construction Traffic	Most of the construction work will be contained within the site so minimal impact is expected upon the external road network. There will be a requirement for construction machinery and traffic associated with workers to access the site. A Traffic Management Plan will be required for work on site and to provide access controls. This will be completed as part of the design process by the contractor on site. During the construction of the site access there will be a need to manage traffic flows along Gindurra Road. The Traffic Control Plan for this work will be prepared as part of the detailed design/construction certificate stage of the project.
4.4.4 Other Developments	There are no other sites in the area currently being developed that will affect this site.
4.5 Public Transport	
4.5.1 Options for improving services	Current bus services in the area are adequate.
4.5.2 Pedestrian Access to Bus Stops	This proposal will not impact on pedestrian access to bus services.
4.6 Recommended Works	
4.6.1 Improvements to Access and Circulation	The access to the site and internal roads will be designed for the safe and efficient movement of all vehicles entering and exiting the site.
4.6.2 Improvements to External Road Network	The access will be upgraded to allow for a channelised right turn into the site as per the concept design in **Appendix B**. No further upgrades are required as part of this development.
4.6.3 Improvements to Pedestrian and Cyclist Facilities	No improvements required as the existing facilities are adequate.
4.6.4 Effect of Recommended Works on Adjacent Developments	No impact on adjacent development.
4.6.5 Effect of Recommended Works on Public Transport Services	Nil
4.6.6 Provision of LATM Measures	None required
4.6.7 Funding	All recommended works shall be funded by the developer.

3. Site Photos

Photo 1 Existing access off Gindurra Road

Photo 2 View to right for drivers exiting the subject site onto Gindurra Road

Photo 3 – View left for drivers exiting the subject site onto Gindurra Road

4. Sidra Assessment

The intersections at Central Coast Highway / Wisemans Ferry Road and Wisemans Ferry Road / Gindurra Road have been modelled using Sidra Intersection 8 software to assess their existing operational performance during the morning and afternoon peak. The results of the modelling are shown below (AM/PM).

Intersection		Level of Service	Average Delay (s)	95% Queue (m)
Central Coast Hwy / Wisemans Ferry Rd				
Central Coast Hwy (westbound)	Through	B / A	17.7 / 14.2	302.5 / 65.3
	Right Turn	E / E	64.4 / 58.6	97.9 / 152.6
Wisemans Ferry Road	Right Turn	F / E	72.3 / 70.2	48.8 / 20.2
Central Coast Hwy (eastbound)	Through	A / B	10.1 / 23.6	53.8 / 313.0
Overall		B / C	26.4 / 31.6	302.5 / 313.0

Intersection		Level of Service	Average Delay (s)	95% Queue (m)
Wisemans Ferry Rd / Gindurra Rd				
Wisemans Ferry Road (northbound)	Right Turn	A / A	10.0 / 9.8	11.1 / 9.9
Gindurra Road	Right Turn	A / A	9.6 / 10.4	9.6 / 12.5
Wisemans Ferry Road (southbound)	Right Turn	A / A	10.4 / 11.7	4.0 / 7.2
Somersby Falls Road	Right Turn	A / A	11.2 / 10.6	3.1 / 8.2
Overall		A / A	6.3 / 6.7	11.1 / 12.5

Note: PM flows from the 2015 survey data were factored up for each movement consistent with the observed increase in the 2015 – 2017 AM movements, to achieve 2017 PM volumes.

The results indicate that, overall, these intersections are currently operating at a satisfactory level of service, particularly the roundabout at Wisemans Ferry Road / Gindurra Road. Some of the movements at the Central Coast Highway intersection are experiencing low levels of service but these are the minor movements turning right to and from Wisemans Ferry Road. However, the queue lengths are acceptable and do not exceed the available lengths of the right turn lanes.

Furthermore, the major through movements on the Central Coast Highway are operating at LoS A or B and the queue lengths do not block adjacent intersections as there is at least 500 metre separation between Woy Woy Road, Kangoo Road and Wisemans Ferry Road.

Sidra modelling has also been completed for the intersection of the Central Coast Highway and Wisemans Ferry Road allowing for the additional traffic generated by the development. The results of this are provided below.

Intersection		Level of Service	Average Delay (s)	95% Queue (m)
Central Coast Hwy / Wisemans Ferry Rd				
Central Coast Hwy (westbound)	Through	B / A	19.2 / 14.2	314.1 / 65.3
	Right Turn	E / E	61.6 / 59.0	96.7 / 154.2
Wisemans Ferry Road	Right Turn	E / F	73.9 / 70.4	51.3 / 21.1
Central Coast Hwy (eastbound)	Through	A / B	10.6 / 23.7	55.1 / 313.4
Overall		B / C	27.0 / 31.7	314.1 / 313.4

The above results indicate that the additional trips that will be generated by the development will have a negligible impact upon the operation of this intersection during the peak hours with very minimal increase to the average delays or queueing on each approach.

The intersection of Wisemans Ferry Road / Gindurra Road / Somersby Falls Road currently operates well within the acceptable levels of service and has sufficient spare capacity to cater for the additional 17 AM trips and 9 PM trips per hour generated by the development.

5. Conclusion

The Kariong Sand and Soil supplies site is located at 90 Gindurra Road, Somersby (Lot 4 DP 227279) and is currently used for storing and screening soil and sand, which is sold for landscaping. It is proposed to develop the site over the next 6 years to receive, process and store up to 200,000 tonnes per annum of soil, sand and building materials with all materials then being exported from the site.

This level of operation, by 2025, is estimated to generate up to 164 vehicle trips per day consisting of staff operational vehicles, 12 tonne tippers, 32 tonne truck and dog or semi-trailers and 40 tonne B-Doubles. The peak hour movements were calculated based on the operation of a similar development, with a review of the typical movements across a day for this type of facility showing that peak truck movements for the site do not coincide with the road network peak periods. An allowance for 17 vehicles in the AM peak and 9 vehicles in the PM peak has been made based on the data provided. It is noted that the road network between Wisemans Ferry Road and 90 Gindurra Road is an approved B-Double route by the National Heavy Vehicle Regulator.

The site operator is anticipating that 25% of materials entering the site will come from Sydney while the remainder will be sourced locally on the Central Coast. It is expected that 100% of the products leaving the site will be used in the local area. These will be bulk loads transported in the various heavy vehicle classes. There will be no sales direct to the public.

The existing road network and major intersections are currently operating at a good level of service with spare capacity and the traffic generated by the proposed development will be distributed to the road network across the working day. The additional traffic is expected to have only a minor impact on the LoS of each of these roads and they will still be operating within their existing capacity.

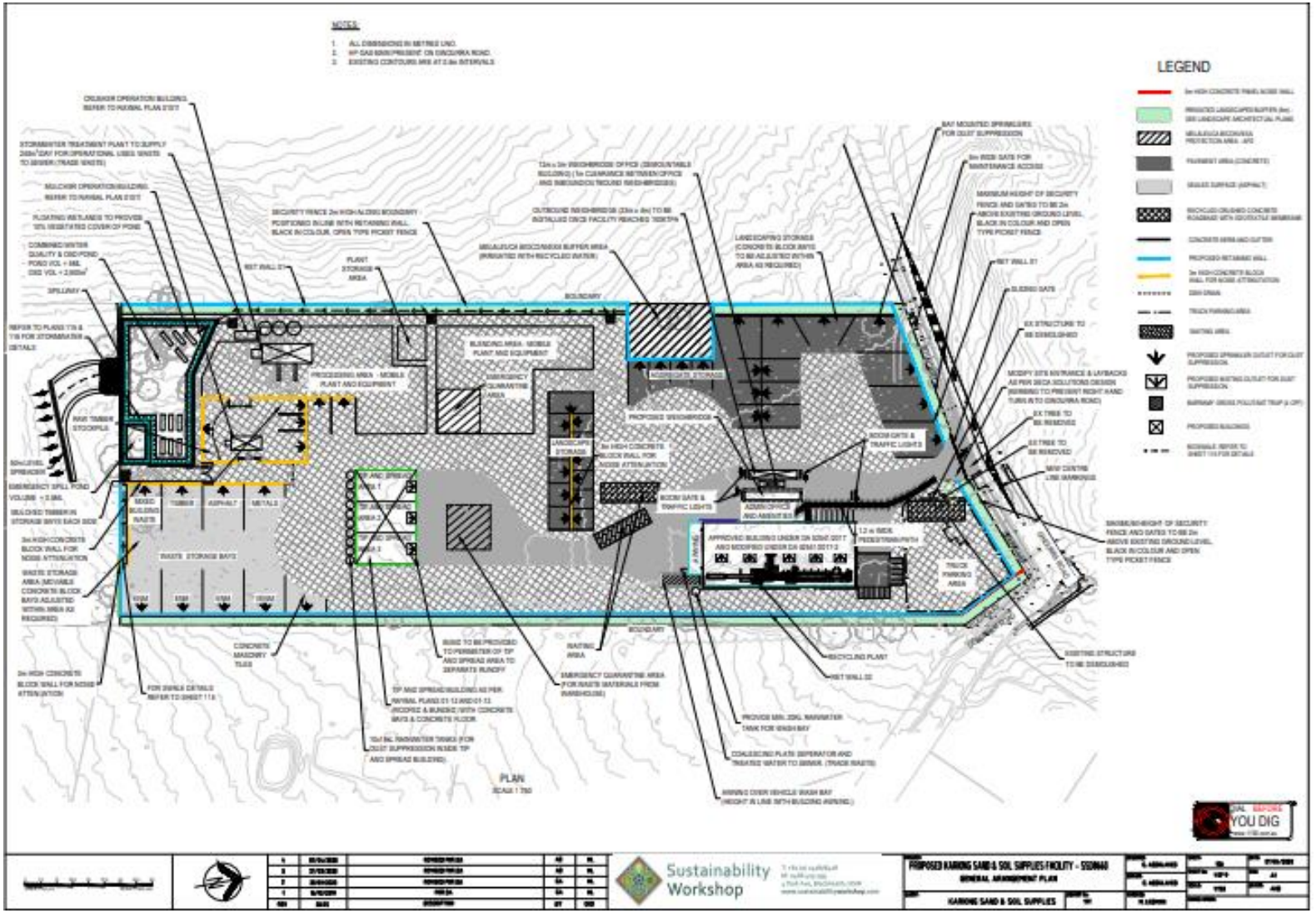
From the route nominated these additional trips will not have any significant impact on the operational performance of the intersections at Central Coast Highway / Kangoo Road. The intersections of the Central Coast Highway / Wisemans Ferry Road and Wisemans Ferry Road / Gindurra Road have been assessed and as each of these intersections is currently operating at acceptable levels of service with sufficient spare capacity to cater for the additional traffic generated by this proposed development, the impact of the future development is acceptable.

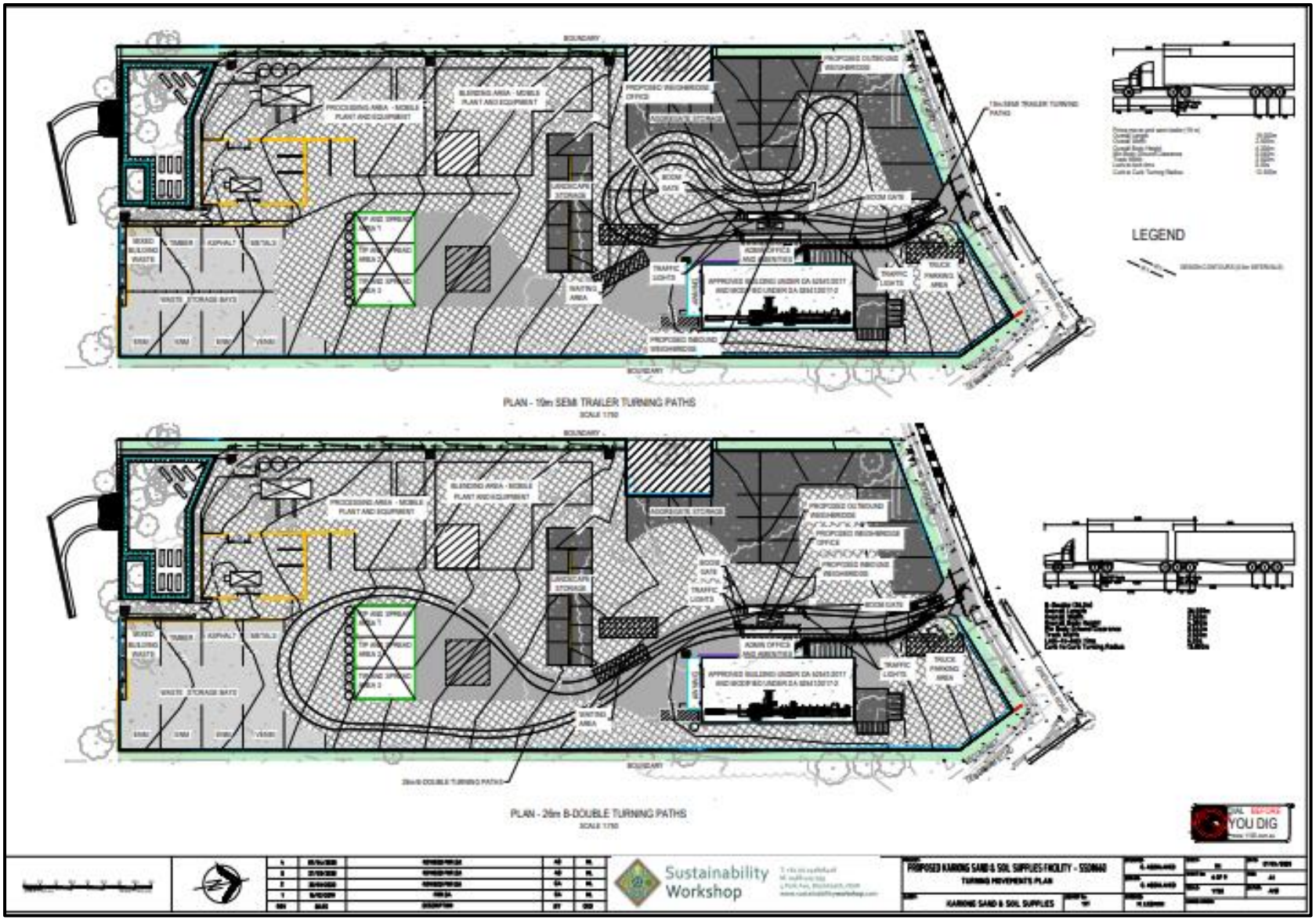
The existing access has been reviewed on site and is to be relocated 14 metres west in accordance with Council's recommendation to satisfy the sight distance. A concrete kerb is recommended on the exit to the site to ensure vehicles only exit to the left on Gindurra Road and do not proceed into rural and residential areas to the east. A no right turn sign will also be installed at the exit to the site.

To facilitate the right turn movement into the site modifications have been designed to provide a right turn treatment as shown in Attachment B. The right turn lane shall provide sufficient storage to allow for two B-Double with No Stopping signs also installed.

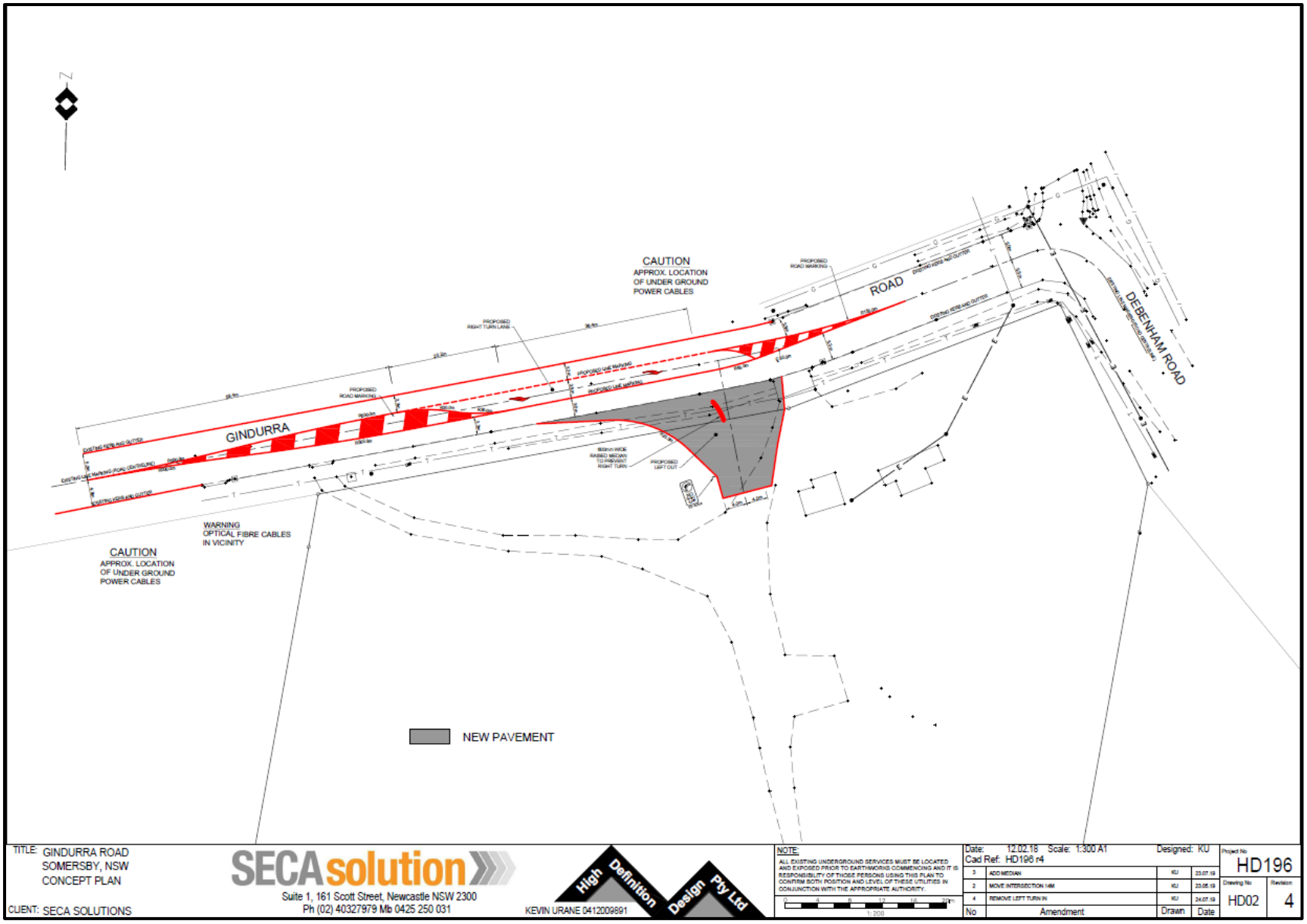
It is therefore recommended that allowing for the minor works at the access, the proposed development be approved given the acceptable impact on traffic, access and safety.

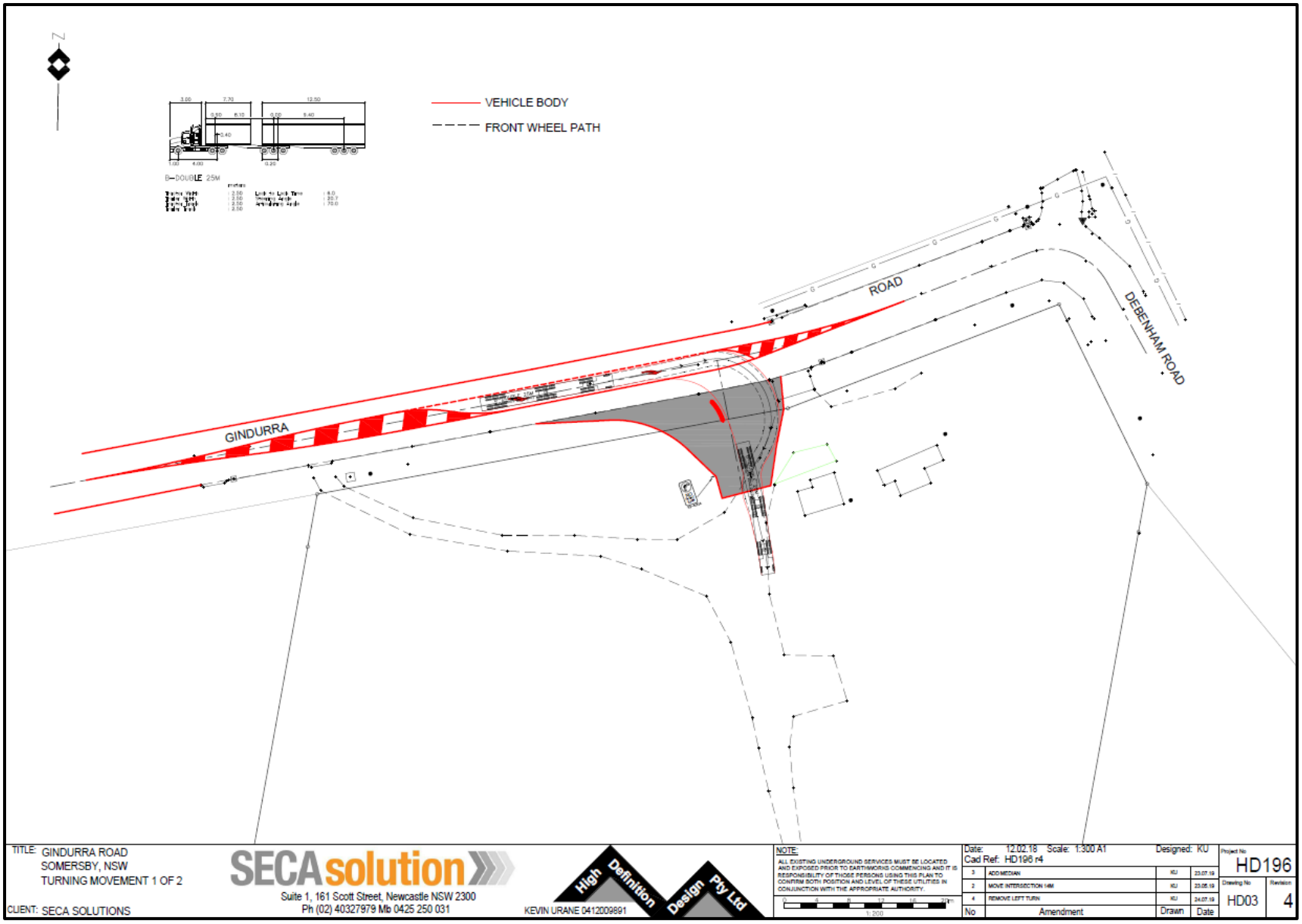
Appendix A Site Plan




LEGEND
PLAN - 19m SEMI TRAILER TURNING PATHS
PLAN - 26m B-DOUBLE TURNING PATHS
Sustainability Workshop
PROPOSED KARING SAND & SOIL SUPPLIES FACILITY - SSD9640
TURNING MOVEMENTS PLAN
KARING SAND & SOIL SUPPLIES

Appendix B Concept Access Design and Swept Paths


N
CAUTION
APPROX. LOCATION
OF UNDER GROUND
POWER CABLES
GINDURRA ROAD
DEBENHAM ROAD
PROPOSED RIGHT TURN LANE
PROPOSED ROAD MARKING
PROPOSED LINE MARKING
EXISTING KERB AND GUTTER
800mm WIDE RAISED MEDIAN TO PREVENT RIGHT TURN
PROPOSED LEFT OUT
WARNING
OPTICAL FIBRE CABLES
IN VICINITY
CAUTION
APPROX. LOCATION
OF UNDER GROUND
POWER CABLES
NEW PAVEMENT
TITLE: GINDURRA ROAD
SOMERSBY, NSW
CONCEPT PLAN
CLIENT: SECA SOLUTIONS
SECAsolution
Suite 1, 161 Scott Street, Newcastle NSW 2300
Ph (02) 40327979 Mb 0425 250 031
High Definition Design Pty Ltd
KEVIN URANE 0412009891
NOTE:
ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.
Date: 12.02.18 Scale: 1:300 A1
Cad Ref: HD196 r4
Designed: KU
3 ADD MEDIAN KU 23.07.19
2 MOVE INTERSECTION 14M KU 23.05.19
4 REMOVE LEFT TURN IN KU 24.07.19
No Amendment Drawn Date
Project No HD196
Drawing No HD02
Revision 4


VEHICLE BODY
FRONT WHEEL PATH
B-DOUBLE 25M
GINDURRA ROAD
DEBENHAM ROAD
TITLE: GINDURRA ROAD
SOMERSBY, NSW
TURNING MOVEMENT 1 OF 2
CLIENT: SECA SOLUTIONS
SECAsolution
Suite 1, 161 Scott Street, Newcastle NSW 2300
Ph (02) 40327979 Mb 0425 250 031
High Definition Design Pty Ltd
KEVIN URANE 0412009891
NOTE:
ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.
Date: 12.02.18 Scale: 1:300 A1
Cad Ref: HD196 r4
Designed: KU
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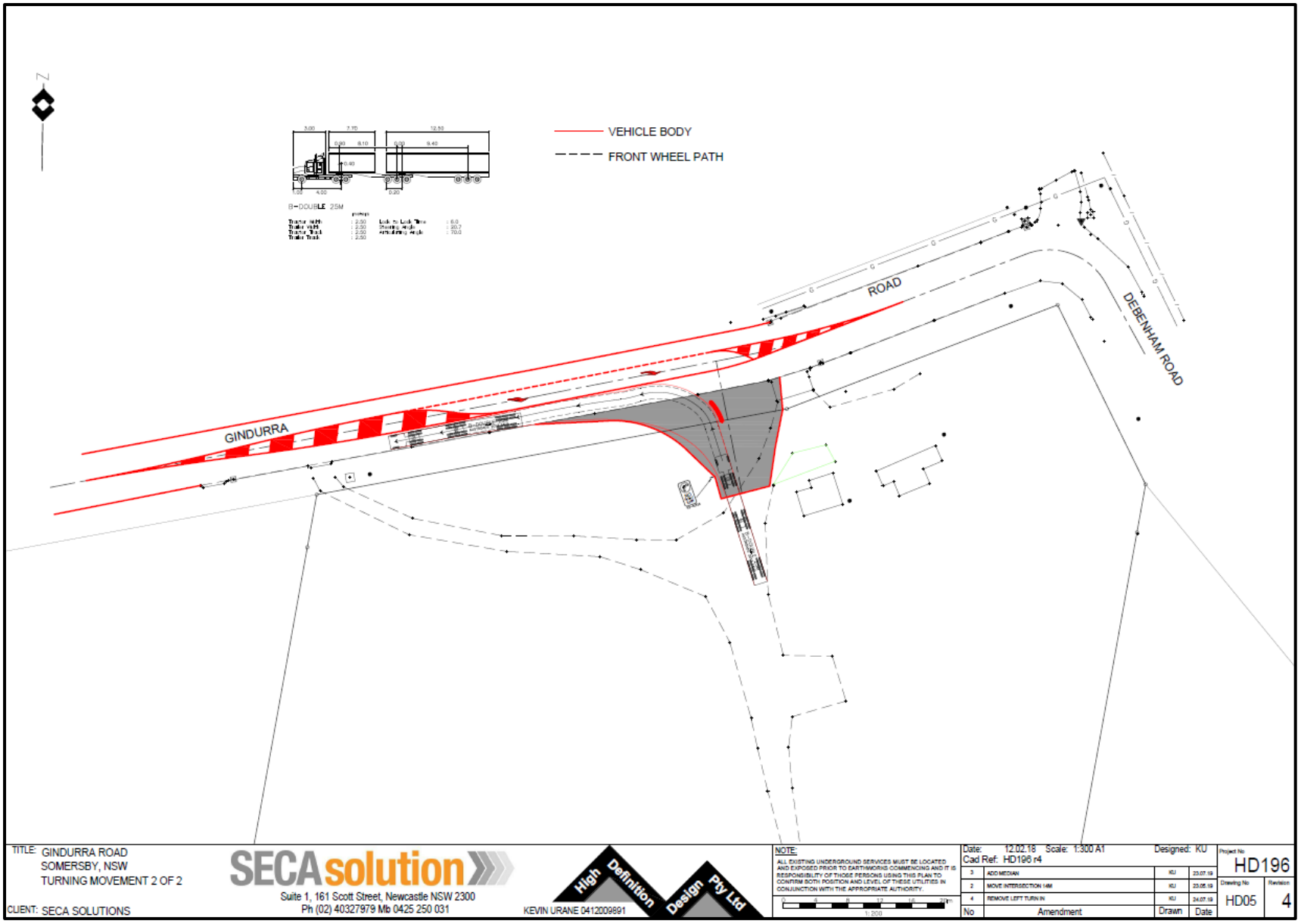
Drawing No HD03
Revision 4


N
VEHICLE BODY
FRONT WHEEL PATH
B-DOUBLE 25M
GINDURRA ROAD
DEBENHAM ROAD
TITLE: GINDURRA ROAD
SOMERSBY, NSW
TURNING MOVEMENT 2 OF 2
CLIENT: SECA SOLUTIONS
SECAsolution
Suite 1, 161 Scott Street, Newcastle NSW 2300
Ph (02) 40327979 Mb 0425 250 031
High Definition Design Pty Ltd
KEVIN URANE 0412009891
NOTE:
ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.
Date: 12.02.18 Scale: 1:300 A1
Cad Ref: HD196 r4
Designed: KU
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2 MOVE INTERSECTION 14M KU 23.05.19
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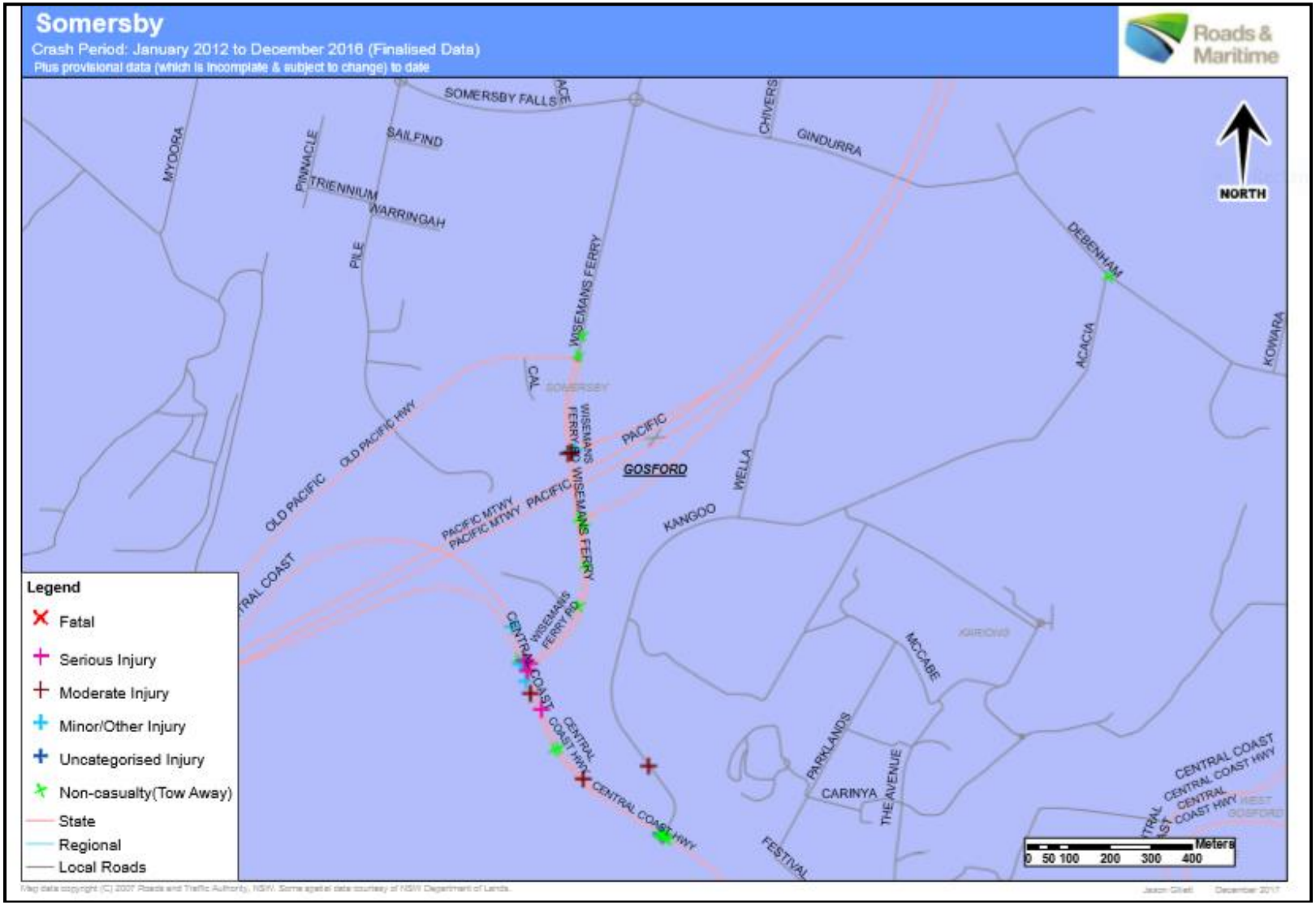
No Amendment Drawn Date
Project No HD196
Drawing No HD05
Revision 4

Appendix C Crash Data



Summary Crash Report

Transport for NSW

# Crash Type		
Car Crash	31	81.6%
Light Truck Crash	6	15.8%
Rigid Truck Crash	2	5.3%
Articulated Truck Crash	1	2.6%
'Heavy Truck Crash	(3)	(7.9%)
Bus Crash	0	0.0%
"Heavy Vehicle Crash	(3)	(7.9%)
Emergency Vehicle Crash	0	0.0%
Motorcycle Crash	4	10.5%
Pedal Cycle Crash	0	0.0%
Pedestrian Crash	1	2.6%

' Rigid or Artic. Truck " Heavy Truck or Heavy Bus
These categories are NOT mutually exclusive

Location Type		
*Intersection	23	60.5%
Non Intersection	15	39.5%

* Up to 10 metres from an intersection

Collision Type		
Single Vehicle	10	26.3%
Multi Vehicle	28	73.7%

Road Classification		
Freeway/Motorway	3	7.9%
State Highway	32	84.2%
Other Classified Road	0	0.0%
Unclassified Road	3	7.9%

Contributing Factors		
Speeding	5	13.2%
Fatigue	3	7.9%

Weather		
Fine	27	71.1%
Rain	4	10.5%
Overcast	6	15.8%
Fog or mist	0	0.0%
Other	0	0.0%

Road Surface Condition		
Wet	9	24.3%
Dry	28	75.7%
Snow or Ice	0	0.0%

Natural Lighting		
Dawn	3	7.9%
Daylight	28	73.7%
Dusk	3	7.9%
Darkness	4	10.5%

Crash Movement		
Intersection, adjacent approaches	3	7.9%
Head-on (not overtaking)	0	0.0%
Opposing vehicles; turning	5	13.2%
U-turn	0	0.0%
Rear-end	15	39.5%
Lane change	2	5.3%
Parallel lanes; turning	0	0.0%
Vehicle leaving driveway	0	0.0%
Overtaking; same direction	0	0.0%
Hit parked vehicle	0	0.0%
Hit railway train	0	0.0%
Hit pedestrian	1	2.6%
Permanent obstruction on road	0	0.0%
Hit animal	0	0.0%
Off road, on straight	0	0.0%
Off road on straight, hit object	2	5.3%
Out of control on straight	0	0.0%
Off road, on curve	0	0.0%
Off road on curve, hit object	5	13.2%
Out of control on curve	0	0.0%
Other crash type	5	13.2%

Speed Limit				
40 km/h or less	1	2.6%	80 km/h zone	1	2.6%
50 km/h zone	2	5.3%	90 km/h zone	0	0.0%
60 km/h zone	9	23.7%	100 km/h zone	0	0.0%
70 km/h zone	25	65.8%	110 km/h zone	0	0.0%

~ 07:30-09:30 or 14:30-17:00 on school days	~ 40km/h or less	0	0.0%	~ School Travel Time Involvement	13	34.2%

Day of the Week												
Monday	7	18.4%	Wednesday	7	18.4%	Friday	3	7.9%	Sunday	0	0.0%	WEEKEND	5	13.2%
Tuesday	6	15.8%	Thursday	10	26.3%	Saturday	5	13.2%	WEEKDAY	33	86.8%			

#Holiday Periods												
New Year	0	0.0%	Easter	1	2.6%	Queen's BD	0	0.0%	Christmas	1	2.6%	Easter SH	1	2.6%
Aust. Day	0	0.0%	Anzac Day	1	2.6%	Labour Day	1	2.6%	January SH	6	15.8%	June/July SH	0	0.0%
Sept./Oct. SH	1	2.6%	December SH	1	2.6%							

CRASHES	38	
Fatal	0	0.0%
Serious Inj.	4	10.5%
Moderate Inj.	8	21.1%
Minor/Other Inj.	8	21.1%
Uncategorised Inj.	1	2.6%
Non-casualty	17	44.7%

Self Reported Crash	14	36.84%

Time Group		% of Day	
00:01 - 02:59	0	0.0%	12.5%
03:00 - 04:59	0	0.0%	8.3%
05:00 - 05:59	4	10.5%	4.2%
06:00 - 06:59	2	5.3%	4.2%
07:00 - 07:59	3	7.9%	4.2%
08:00 - 08:59	2	5.3%	4.2%
09:00 - 09:59	1	2.6%	4.2%
10:00 - 10:59	4	10.5%	4.2%
11:00 - 11:59	0	0.0%	4.2%
12:00 - 12:59	0	0.0%	4.2%
13:00 - 13:59	2	5.3%	4.2%
14:00 - 14:59	2	5.3%	4.2%
15:00 - 15:59	7	18.4%	4.2%
16:00 - 16:59	3	7.9%	4.2%
17:00 - 17:59	2	5.3%	4.2%
18:00 - 18:59	1	2.6%	4.2%
19:00 - 19:59	2	5.3%	4.2%
20:00 - 21:59	2	5.3%	8.3%
22:00 - 24:00	1	2.6%	8.3%

Street Lighting Off/Nil		% of Dark
0	of 4	In Dark 0.0%

CASUALTIES	27	
Killed	0	0.0%
Seriously Inj.	4	14.8%
Moderately Inj.	10	37.0%
Minor/Other Inj.	12	44.4%
Uncategorised Inj.	1	3.7%
^ Unrestrained	0	0.0%

^ Belt fitted but not worn, No restraint fitted to position OR No helmet worn

Crashes		Casualties
4	2017	1
4	2016	3
9	2015	6
6	2014	7
4	2013	3
11	2012	7

McLean Periods		% Week	
A	11	28.9%	17.9%
B	0	0.0%	7.1%
C	5	13.2%	17.9%
D	4	10.5%	3.5%
E	0	0.0%	3.6%
F	9	23.7%	10.7%
G	7	18.4%	7.1%
H	0	0.0%	7.1%
I	0	0.0%	12.5%
J	2	5.3%	10.7%

Crashid dataset Somersby - 2012 to 2017"

Note: Data for the 9 month period prior to the generated date of this report are incomplete and are subject to change.
Crash self reporting, including self reported injuries began Oct 2014. Trends from 2014 are expected to vary from previous yrs. More unknowns are expected in self reported data.
Reporting yrs 1996-2004 and 2017 onwards contain uncategorised inj crashes.
Percentages are percentages of all crashes. Unknown values for each category are not shown on this report.

Appendix D Operational Analysis

Kariong Sand and Soil Supplies - Preliminary Traffic Generation Assessment

Phase of development	2018				2021				2025			
	1				4				8			
Annual waste received (tpa)	20000				80000				200000			
Operation	*Vehicles (staff)*	*12 t tipper*	*32 t T&D or semi*	*40 t B-double*	*Vehicles (staff)*	*12 t tipper*	*32 t T&D or semi*	*40 t B-double*	*Vehicles (staff)*	*12 t tipper*	*32 t T&D or semi*	*40 t B-double*
Staff operational vehicles	1,152				2,304				2,880			
WASTE RECEIVAL												
Excavated Natural Material (soil)		222	83	67		889	333	667		2,222	833	667
Virgin Excavated Natural Material (VENM) (soil)		56	21	17		222	83	167		556	208	167
Asphalt		56	21	17		222	83	167		556	208	167
Metal		33	-	-		133	-	-		333	-	-
Timber, stumps and rootballs (clean, non-treated and non-painted separated timber and woody tree material)		167	-	-		667	-	-		1,667	-	-
Concrete / tiles / masonry		128	48	38		511	192	383		1,278	479	383
Mixed building waste		28	10	8		111	42	83		278	104	83
PRODUCT SALES												
Virgin Excavated Natural Material (VENM) (soil)		33	49	-		131	196	-		327	490	-
Asphalt		33	49	-		131	196	-		327	490	-
Metal		-	-	10		-	-	40		-	-	100
Timber mulch		150	-	-		600	-	-		1,500	-	-
Excavated Natural Material (ENM)		131	196	-		523	784	-		1,307	1,960	-
Crushed concrete		74	111	-		296	444	-		740	1,110	-
DISPOSAL OF RESIDUAL WASTE TO LANDFILL												
Landfill				40				160				400
Total vehicles per day												
Staff operational vehicles				3.69				7.38				10.00
12 t tipper				3.55				14.22				38.50
32 t T&D or semi				1.89				7.54				20.43
40 t B-double				0.63				5.34				6.83
				9.76				34.49				75.76

Assumptions

1. Data is for trucks accessing the facility on a yearly basis
2. Assume ENM, VENM, asphalt, deliveries, equally split between tippers, semis and b-doubles
3. Metals and timber delivered in rigid trucks only
4. Staffing - Truck drivers full time (4); plus operation staff of 7 staff total - increasing from 4 by 1 employee every 2 years; assume 48 week per year working duration, 6 days per week)
5. 80% of VENM, ENM, asphalt and crushed concrete transported out of the site in Truck & Dog loads directly from 'Processing Area'; 20% is transported out of the site from the 'Landscaping Supplies Area' in tipper trucks.

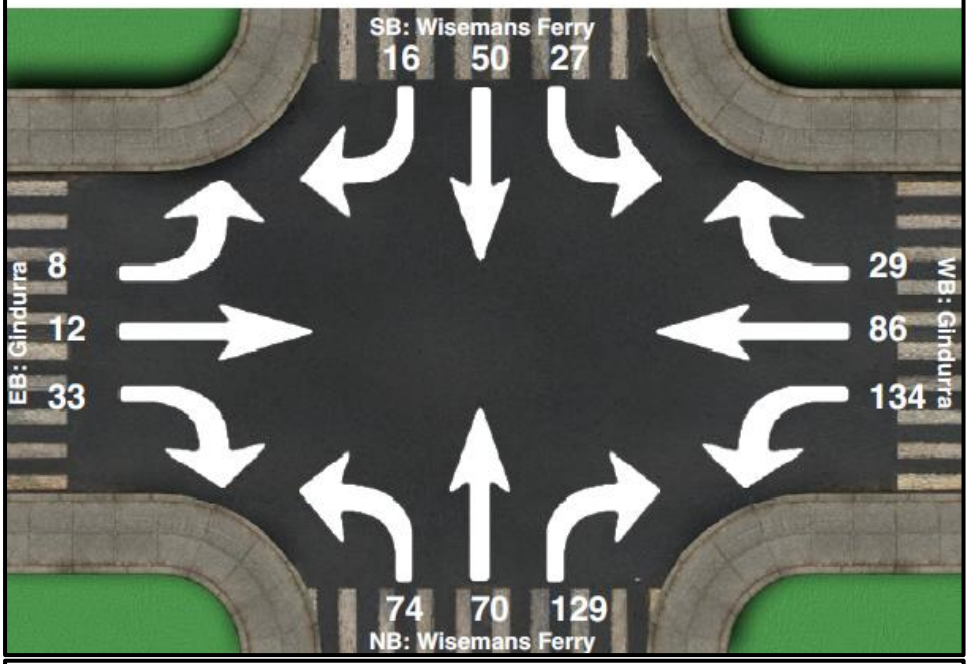
Landscape supplies	6
	81.76 trucks

Truck type	Load (tonnes)
Tipper	12
Truck & dog or semi	32
B-double	40

Appendix E Traffic Survey Results

Intersection Peak Hour

Location: Wisemans Ferry at Gindurra, Somersby
GPS Coordinates: Lat=-33.413178, Lon=151.290261
Date: 2017-11-23
Day of week: Thursday
Weather:
Analyst: Rob



Intersection Peak Hour

06:15 - 07:15

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	27	50	16	134	86	29	74	70	129	8	12	33	668
Factor	0.84	0.74	0.67	0.74	0.60	0.66	0.84	0.92	0.85	0.33	0.75	0.82	0.92
Approach Factor	0.80			0.86			0.89			0.66			

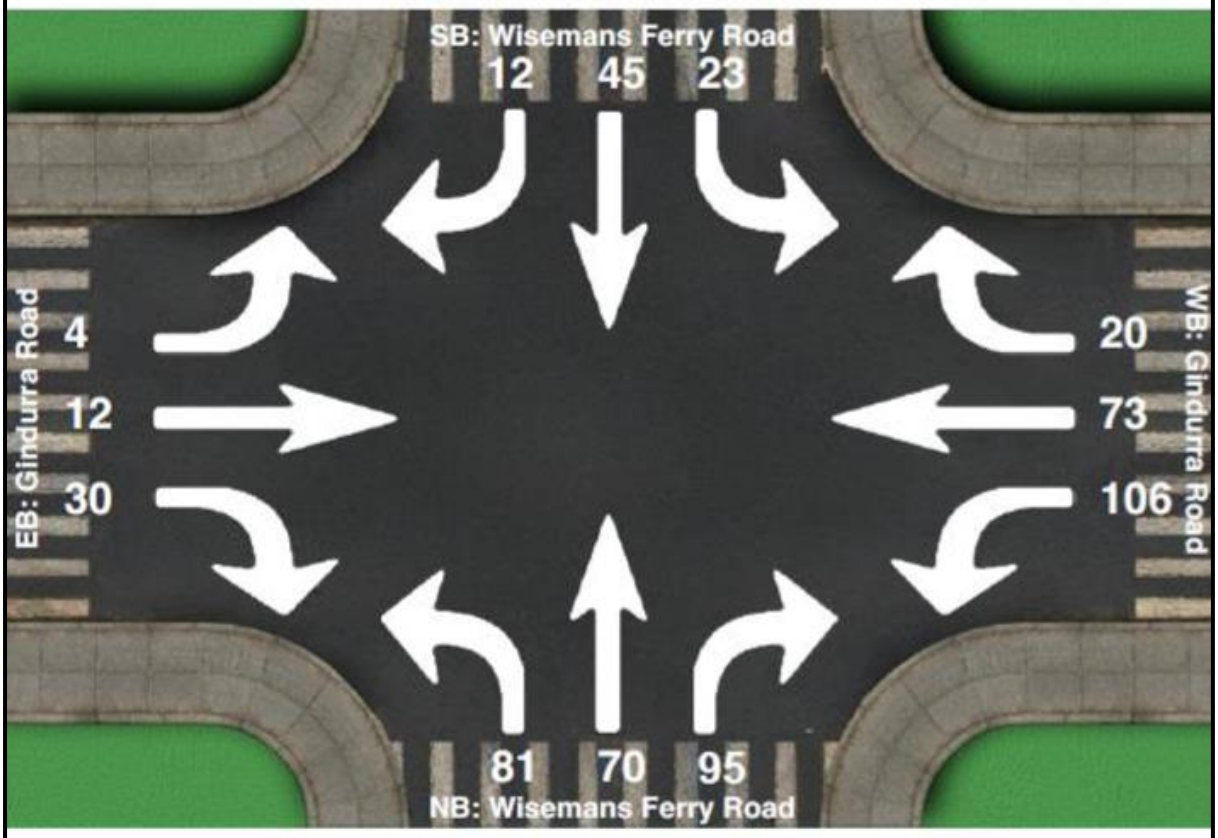
Peak Hour Vehicle Summary

Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	24	32	12	101	81	28	64	56	107	3	8	16	532
Truck	3	18	4	33	5	1	10	14	22	5	4	17	136

Quality Traffic Advice

Intersection Peak Hour

Location: Wisemans Ferry Road at Gindurra Road,
GPS Coordinates:
Date: 2015-12-03
Day of week: Thursday
Weather:
Analyst: SL

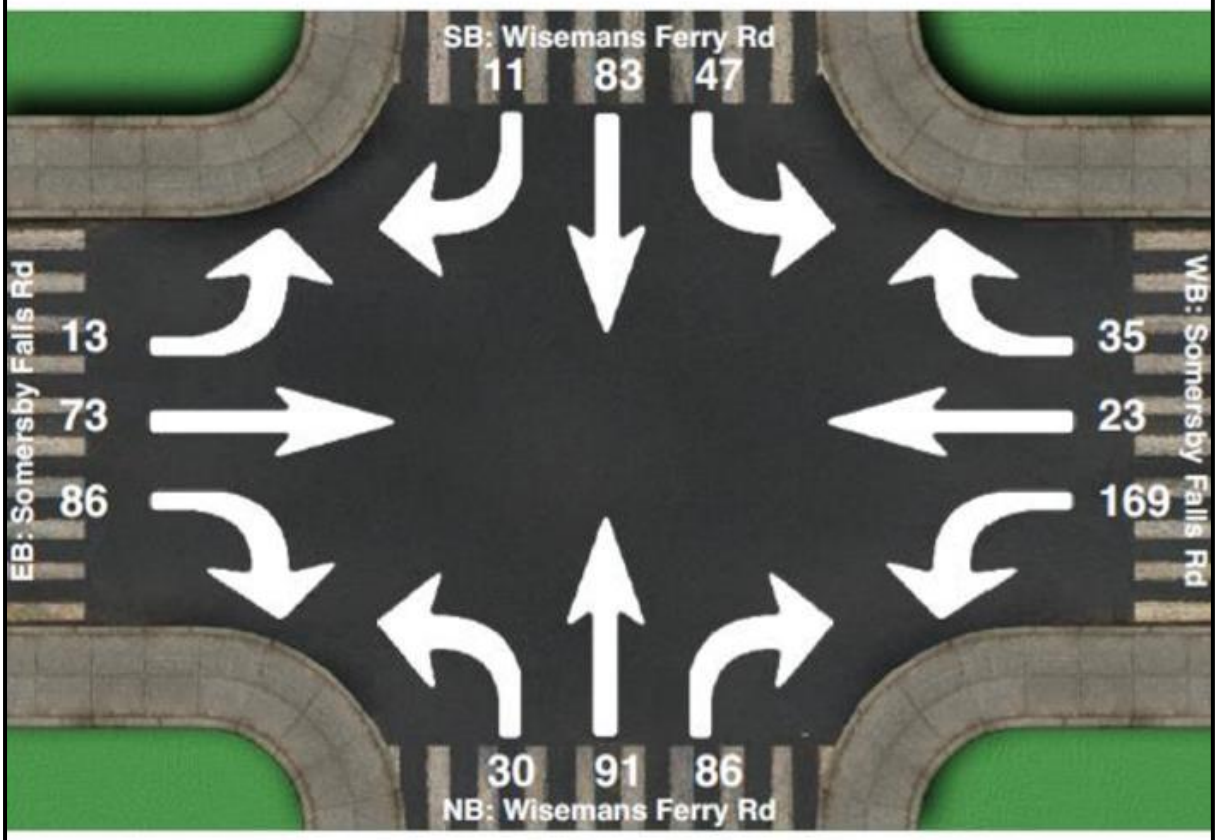


Intersection Peak Hour

06:15 - 07:15

Intersection Peak Hour

Location: Wisemans Ferry Rd at Somersby Falls Rd, Somersby
GPS Coordinates:
Date: 2015-12-03
Day of week: Thursday
Weather:
Analyst: BM



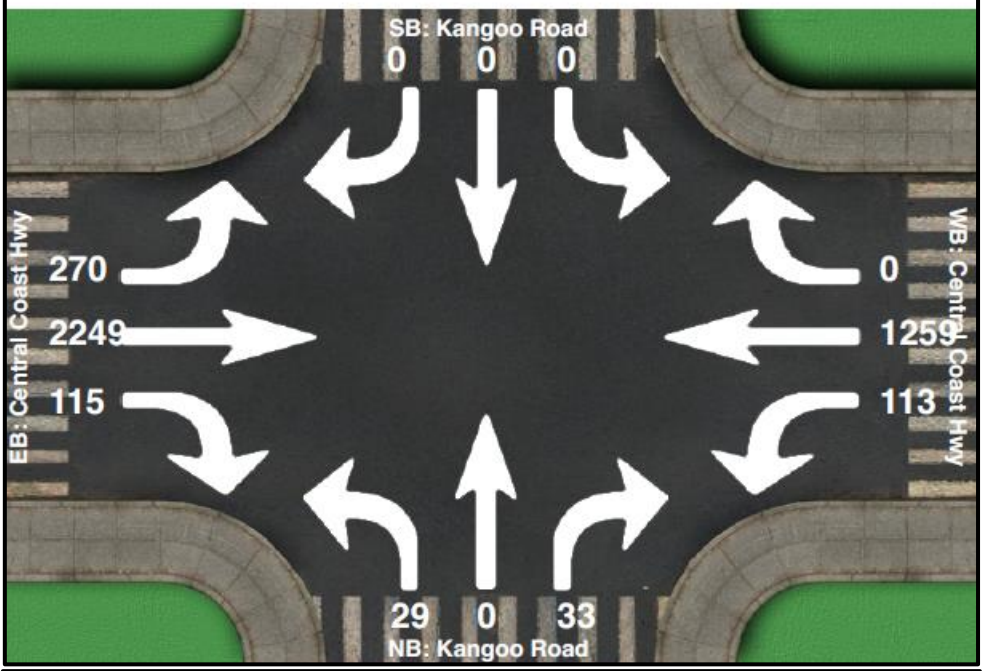
Intersection Peak Hour

15:30 - 16:30

Quality Traffic Advice

Intersection Peak Hour

Location: Kangoo Road at Central Coast Hwy, Kariong
GPS Coordinates:
Date: 2017-11-30
Day of week: Thursday
Weather:
Analyst: Rob



Intersection Peak Hour

07:00 - 08:00

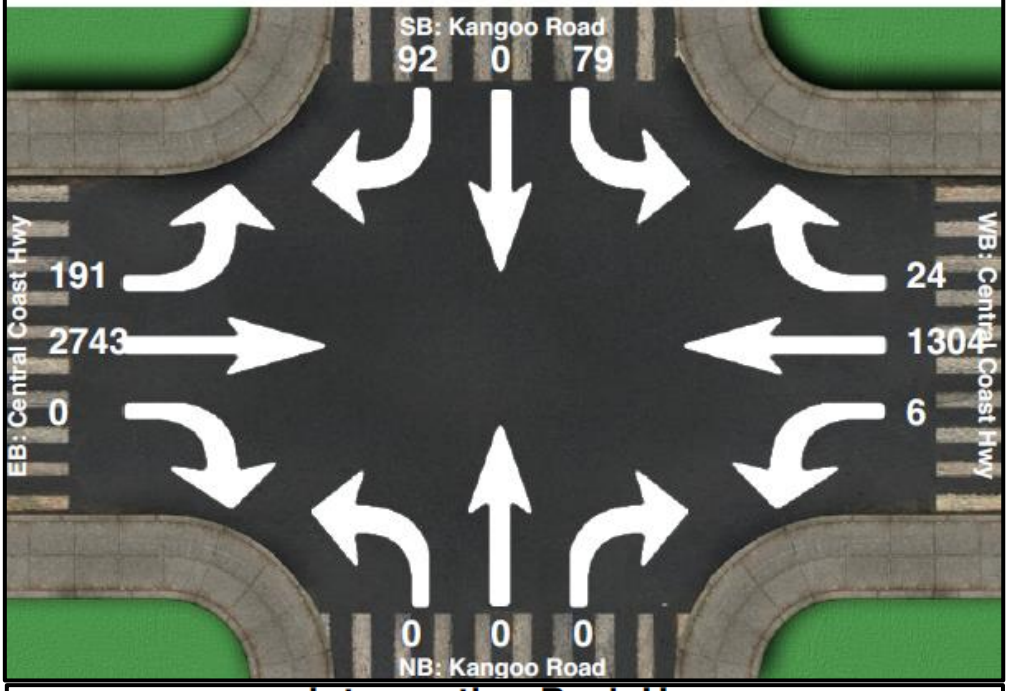
	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	0	0	113	1259	0	29	0	33	270	2249	115	4068
Factor	0.00	0.00	0.00	0.72	0.83	0.00	0.66	0.00	0.82	0.87	0.87	0.85	0.95
Approach Factor	0.00			0.82			0.82			0.87			

Peak Hour Vehicle Summary

Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	0	0	0	109	1192	0	25	0	29	268	2193	108	3924
Truck	0	0	0	4	67	0	4	0	4	2	56	7	144

Intersection Peak Hour

Location: Kangoo Road at Central Coast Hwy, Kariong
GPS Coordinates: Lat=-33.429411, Lon=151.291675
Date: 2017-11-30
Day of week: Thursday
Weather:
Analyst: Rob



Intersection Peak Hour

16:45 - 17:45

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	79	0	92	6	1304	24	0	0	0	191	2743	0	4439
Factor	0.62	0.00	0.68	0.30	0.93	0.67	0.00	0.00	0.00	0.61	0.97	0.00	0.96
Approach Factor	0.65			0.93			0.00			0.97			

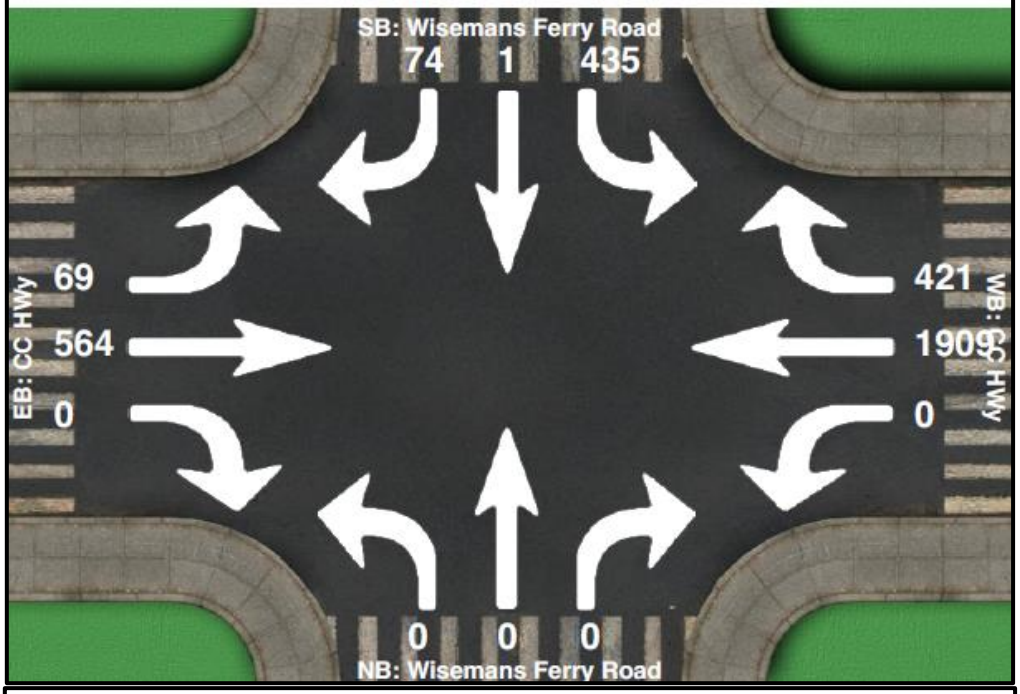
Peak Hour Vehicle Summary

Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	75	0	91	6	1242	23	0	0	0	186	2674	0	4297
Truck	4	0	1	0	62	1	0	0	0	5	69	0	142

Quality Traffic Advice

Intersection Peak Hour

Location: Wisemans Ferry Road at CC HWy, Kariong
GPS Coordinates: Lat=-33.404450, Lon=151.343105
Date: 2017-12-07
Day of week: Thursday
Weather: Fine
Analyst: Rob



Intersection Peak Hour

06:15 - 07:15

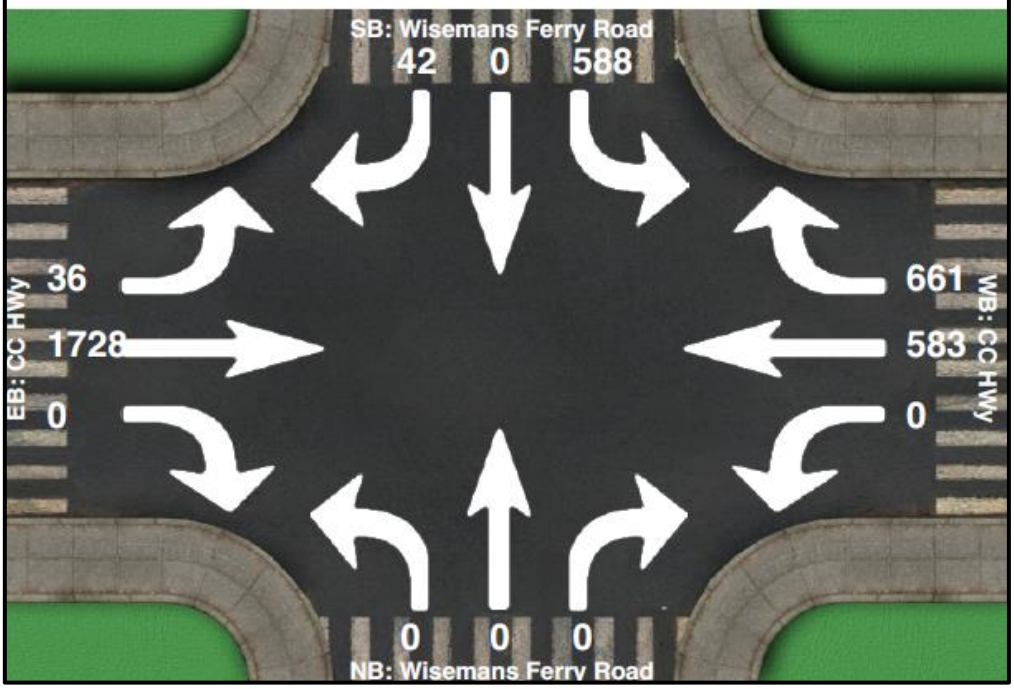
	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	435	1	74	0	1909	421	0	0	0	69	564	0	3473
Factor	0.81	0.25	0.71	0.00	0.78	0.76	0.00	0.00	0.00	0.66	0.81	0.00	0.89
Approach Factor	0.79			0.86			0.00			0.85			

Peak Hour Vehicle Summary

Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	397	1	39	0	1898	401	0	0	0	46	525	0	3307
Truck	38	0	35	0	11	20	0	0	0	23	39	0	166

Intersection Peak Hour

Location: Wisemans Ferry Road at CC HWy, Kariong
GPS Coordinates: Lat=-33.404450, Lon=151.343105
Date: 2017-12-07
Day of week: Thursday
Weather: Fine
Analyst: Rob



Intersection Peak Hour

17:00 - 18:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	588	0	42	0	583	661	0	0	0	36	1728	0	3638
Factor	0.93	0.00	0.55	0.00	0.88	0.87	0.00	0.00	0.00	0.75	0.83	0.00	0.91
Approach Factor	0.95			0.89			0.00			0.84			

Peak Hour Vehicle Summary

Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	548	0	39	0	565	635	0	0	0	29	1708	0	3524
Truck	40	0	3	0	18	26	0	0	0	7	20	0	114

Quality Traffic Advice

Appendix F Sidra Results

Criteria for interpreting results of SIDRA

1-Level of Service (LoS)

LoS	Traffic Signals and Roundabouts	Give Way and Stop Signs
A	Good	Good
B	Good, with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but requires accident study
D	Operating near capacity	Near capacity and requires accident study
E	At capacity, excessive delay: roundabout requires other control method	At capacity, requires other control mode
F	Unsatisfactory, requires other control mode or additional capacity	Unsatisfactory, requires other control mode

2-Average Vehicle Delay (AVD)

The AVD is a measure of operational performance of an intersection relating to its LoS. The average delay should be taken as a guide only for an average intersection. Longer delays may be tolerated at some intersections where delays are expected by motorists (e.g. those in inner city areas or major arterial roads).

LoS	Average Delay / Vehicle (secs)	Traffic Signals and Roundabouts	Give Way and Stop Signs
A	Less than 15	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	28 to 42	Satisfactory	Satisfactory but accident study required
D	42 to 56	Operating near capacity	Near capacity, accident study required
E	56 to 70	At capacity, excessive delays: roundabout requires other control mode	At capacity; requires other control mode
F	Exceeding 70	Unsatisfactory, requires additional capacity	Unsatisfactory, requires other control mode

3-Degree of Saturation (D/S)

The D/S of an intersection is usually taken as the highest ratio of traffic volumes on an approach to an intersection compared with the theoretical capacity, and is a measure of the utilisation of available green time. For intersections controlled by traffic signals, both queues and delays increase rapidly as DS approaches 1.0. An intersection operates satisfactorily when its D/S is kept below 0.75. When D/S exceeds 0.9, queues are expected.

Wisemans Ferry Road / Gindurra Road

MOVEMENT SUMMARY

Site: 101 [Wisemans Ferry / Gindurra 2017 AM]

Wisemans Ferry / Gindurra 2017 AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wisemans Ferry Road												
1	L2	78	13.5	0.238	4.5	LOS A	1.4	11.1	0.35	0.55	0.35	52.7
2	T1	74	20.0	0.238	4.7	LOS A	1.4	11.1	0.35	0.55	0.35	54.1
3	R2	136	17.1	0.238	10.0	LOS A	1.4	11.1	0.35	0.55	0.35	54.0
Approach		287	16.8	0.238	7.1	LOS A	1.4	11.1	0.35	0.55	0.35	53.7
East: Gindurra Road												
4	L2	141	24.6	0.212	4.5	LOS A	1.2	9.6	0.32	0.48	0.32	53.7
5	T1	91	5.8	0.212	4.4	LOS A	1.2	9.6	0.32	0.48	0.32	55.8
6	R2	31	3.4	0.212	9.6	LOS A	1.2	9.6	0.32	0.48	0.32	56.0
Approach		262	15.7	0.212	5.1	LOS A	1.2	9.6	0.32	0.48	0.32	54.7
North: Wisemans Ferry Road												
7	L2	28	11.1	0.093	4.7	LOS A	0.5	4.0	0.38	0.51	0.38	53.6
8	T1	53	36.0	0.093	5.2	LOS A	0.5	4.0	0.38	0.51	0.38	54.7
9	R2	17	25.0	0.093	10.4	LOS A	0.5	4.0	0.38	0.51	0.38	54.6
Approach		98	26.9	0.093	5.9	LOS A	0.5	4.0	0.38	0.51	0.38	54.4
West: Somersby Falls Road												
10	L2	8	62.5	0.062	5.9	LOS A	0.3	3.1	0.44	0.59	0.44	50.8
11	T1	13	33.3	0.062	5.4	LOS A	0.3	3.1	0.44	0.59	0.44	53.1
12	R2	35	51.5	0.062	11.2	LOS A	0.3	3.1	0.44	0.59	0.44	52.0
Approach		56	49.1	0.062	9.1	LOS A	0.3	3.1	0.44	0.59	0.44	52.1
All Vehicles		703	20.4	0.238	6.3	LOS A	1.4	11.1	0.35	0.52	0.35	54.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Wisemans Ferry / Gindurra 2017 PM]

Wisemans Ferry / Gindurra 2017 PM Peak
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wisemans Ferry Road												
1	L2	32	26.7	0.204	4.4	LOS A	1.2	9.9	0.31	0.53	0.31	52.4
2	T1	96	24.2	0.204	4.5	LOS A	1.2	9.9	0.31	0.53	0.31	54.0
3	R2	123	17.4	0.204	9.8	LOS A	1.2	9.9	0.31	0.53	0.31	54.0
Approach		251	21.2	0.204	7.1	LOS A	1.2	9.9	0.31	0.53	0.31	53.8
East: Gindurra Road												
4	L2	224	12.4	0.271	5.0	LOS A	1.6	12.5	0.45	0.57	0.45	53.6
5	T1	28	12.4	0.271	5.1	LOS A	1.6	12.5	0.45	0.57	0.45	55.2
6	R2	54	12.4	0.271	10.4	LOS A	1.6	12.5	0.45	0.57	0.45	55.1
Approach		306	12.4	0.271	6.0	LOS A	1.6	12.5	0.45	0.57	0.45	54.0
North: Wisemans Ferry Road												
7	L2	58	12.4	0.166	5.4	LOS A	0.9	7.2	0.49	0.56	0.49	53.5
8	T1	97	12.0	0.166	5.5	LOS A	0.9	7.2	0.49	0.56	0.49	55.1
9	R2	16	45.5	0.166	11.7	LOS A	0.9	7.2	0.49	0.56	0.49	53.7
Approach		171	15.3	0.166	6.0	LOS A	0.9	7.2	0.49	0.56	0.49	54.4
West: Somersby Falls Road												
10	L2	27	30.8	0.192	5.7	LOS A	1.1	8.2	0.48	0.62	0.48	51.7
11	T1	77	13.7	0.192	5.4	LOS A	1.1	8.2	0.48	0.62	0.48	53.5
12	R2	100	4.7	0.192	10.6	LOS A	1.1	8.2	0.48	0.62	0.48	53.8
Approach		204	11.6	0.192	8.0	LOS A	1.1	8.2	0.48	0.62	0.48	53.4
All Vehicles		932	15.1	0.271	6.7	LOS A	1.6	12.5	0.43	0.57	0.43	53.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Wisemans Ferry Road / Central Coast Highway

MOVEMENT SUMMARY

Site: 101 [CC Hwy / Wisemans Ferry 2017 AM]

CC Hwy / Wisemans Ferry Road 2017 AM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 115 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Central Coast Hwy												
5	T1	2009	0.6	0.826	17.7	LOS B	43.0	302.5	0.84	0.78	0.84	46.6
6	R2	443	4.8	0.834	64.4	LOS E	13.4	97.9	1.00	0.93	1.23	28.8
Approach		2453	1.3	0.834	26.1	LOS B	43.0	302.5	0.87	0.81	0.91	41.9
North: Wisemans Ferry Road												
7	L2	458	8.7	0.486	44.0	LOS D	10.9	81.8	0.89	0.81	0.89	34.6
9	R2	79	46.7	0.814	72.3	LOS F	5.0	48.8	1.00	0.93	1.37	26.8
Approach		537	14.3	0.814	48.1	LOS D	10.9	81.8	0.91	0.83	0.96	33.2
West: Central Coast Hwy												
10	L2	73	33.3	0.065	10.0	LOS A	1.1	9.5	0.28	0.61	0.28	50.1
11	T1	594	6.9	0.254	10.1	LOS A	7.3	53.8	0.48	0.41	0.48	51.5
Approach		666	9.8	0.254	10.1	LOS A	7.3	53.8	0.45	0.43	0.45	51.4
All Vehicles		3656	4.8	0.834	26.4	LOS B	43.0	302.5	0.80	0.74	0.84	41.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	North Full Crossing	5	11.8	LOS B	0.0	0.0	0.45	0.45
P3S	North Slip/Bypass Lane Crossing	5	9.6	LOS A	0.0	0.0	0.41	0.41
P4S	West Slip/Bypass Lane Crossing	5	43.5	LOS E	0.0	0.0	0.87	0.87
All Pedestrians		16	21.6	LOS C			0.58	0.58

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 101 [CC Hwy / Wisemans Ferry 2017 PM]

CC Hwy / Wisemans Ferry Road 2017 PM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Central Coast Hwy												
5	T1	614	3.1	0.283	14.2	LOS A	9.1	65.3	0.55	0.48	0.55	48.7
6	R2	696	3.9	0.825	58.6	LOS E	21.1	152.6	1.00	0.92	1.14	30.2
Approach		1309	3.5	0.825	37.8	LOS C	21.1	152.6	0.79	0.71	0.86	36.8
North: Wisemans Ferry Road												
7	L2	619	6.8	0.524	40.4	LOS C	14.6	108.4	0.86	0.82	0.86	35.8
9	R2	44	7.1	0.500	70.2	LOS E	2.7	20.2	1.00	0.74	1.00	27.6
Approach		663	6.8	0.524	42.4	LOS C	14.6	108.4	0.87	0.81	0.87	35.1
West: Central Coast Hwy												
10	L2	38	19.4	0.035	13.0	LOS A	0.7	6.0	0.36	0.62	0.36	48.5
11	T1	1819	1.2	0.835	23.6	LOS B	44.3	313.1	0.89	0.83	0.90	43.3
Approach		1857	1.5	0.835	23.4	LOS B	44.3	313.1	0.88	0.83	0.89	43.4
All Vehicles		3829	3.1	0.835	31.6	LOS C	44.3	313.1	0.85	0.78	0.88	39.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	North Full Crossing	5	15.5	LOS B	0.0	0.0	0.51	0.51
P3S	North Slip/Bypass Lane Crossing	5	13.1	LOS B	0.0	0.0	0.47	0.47
P4S	West Slip/Bypass Lane Crossing	5	36.8	LOS D	0.0	0.0	0.78	0.78
All Pedestrians		16	21.8	LOS C			0.59	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 101 [CC Hwy / Wisemans Ferry 2017 AM - Development]

CC Hwy / Wisemans Ferry Road 2017 AM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 115 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Central Coast Hwy												
5	T1	2009	0.6	0.838	19.2	LOS B	44.6	314.1	0.86	0.81	0.87	45.7
6	R2	447	5.6	0.800	61.6	LOS E	13.2	96.7	1.00	0.90	1.17	29.5
Approach		2457	1.5	0.838	26.9	LOS B	44.6	314.1	0.89	0.83	0.92	41.5
North: Wisemans Ferry Road												
7	L2	461	9.4	0.476	43.1	LOS D	10.8	81.9	0.88	0.81	0.88	34.9
9	R2	81	48.1	0.842	73.9	LOS F	5.2	51.3	1.00	0.96	1.43	26.5
Approach		542	15.1	0.842	47.7	LOS D	10.8	81.9	0.90	0.83	0.96	33.3
West: Central Coast Hwy												
10	L2	75	35.2	0.068	10.3	LOS A	1.1	10.2	0.29	0.61	0.29	49.8
11	T1	594	6.9	0.258	10.6	LOS A	7.4	55.1	0.49	0.42	0.49	51.2
Approach		668	10.1	0.258	10.5	LOS A	7.4	55.1	0.46	0.44	0.46	51.0
All Vehicles		3667	5.1	0.842	27.0	LOS B	44.6	314.1	0.81	0.76	0.85	41.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	North Full Crossing	5	12.2	LOS B	0.0	0.0	0.46	0.46
P3S	North Slip/Bypass Lane Crossing	5	10.0	LOS B	0.0	0.0	0.42	0.42
P4S	West Slip/Bypass Lane Crossing	5	42.6	LOS E	0.0	0.0	0.86	0.86
All Pedestrians		16	21.6	LOS C			0.58	0.58

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 101 [CC Hwy / Wisemans Ferry 2017 PM - Development]

CC Hwy / Wisemans Ferry Road 2017 PM Peak
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Central Coast Hwy												
5	T1	614	3.1	0.283	14.2	LOS A	9.1	65.3	0.55	0.48	0.55	48.7
6	R2	698	4.2	0.830	59.0	LOS E	21.3	154.2	1.00	0.92	1.15	30.1
Approach		1312	3.7	0.830	38.0	LOS C	21.3	154.2	0.79	0.71	0.87	36.7
North: Wisemans Ferry Road												
7	L2	621	7.1	0.527	40.5	LOS C	14.7	109.2	0.86	0.82	0.86	35.8
9	R2	45	9.3	0.520	70.4	LOS E	2.8	21.1	1.00	0.75	1.02	27.5
Approach		666	7.3	0.527	42.5	LOS D	14.7	109.2	0.87	0.81	0.87	35.1
West: Central Coast Hwy												
10	L2	39	21.6	0.036	13.0	LOS A	0.8	6.3	0.36	0.62	0.36	48.4
11	T1	1819	1.2	0.835	23.7	LOS B	44.3	313.4	0.89	0.83	0.90	43.3
Approach		1858	1.6	0.835	23.4	LOS B	44.3	313.4	0.88	0.83	0.89	43.4
All Vehicles		3836	3.3	0.835	31.7	LOS C	44.3	313.4	0.85	0.79	0.88	39.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	North Full Crossing	5	15.5	LOS B	0.0	0.0	0.51	0.51
P3S	North Slip/Bypass Lane Crossing	5	13.1	LOS B	0.0	0.0	0.47	0.47
P4S	West Slip/Bypass Lane Crossing	5	36.8	LOS D	0.0	0.0	0.78	0.78
All Pedestrians		16	21.8	LOS C			0.59	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Appendix G Gindurra Road B-Double Approval

NHVR
National Heavy Vehicle Regulator

Permit number
236516V1

B-Double Authorisation Permit

Heavy Vehicle National Law
This Permit is issued under the provisions of *Section 143 of the Heavy Vehicle National Law* for the operation of a Class 2 vehicle *(as defined in this Permit)* subject to the conditions set out in this Permit and any attachments.

Permit details

This Permit is issued to

Davis Earthmoving & Quarrying Pty Ltd

Address

1 WIRREANDA ROAD NORTH
INGLESIDE, NSW 2101

Type

B-Double

Vehicle configuration and description

B-Double
9 axles

Permit period

Start date	End date
06-May-2019	05-Mar-2022

continued on next page...

NHVR
National Heavy Vehicle Regulator

Permit number
236516V1

Vehicle details

Vehicle dimensions

Length	Height
Up to 25m/26m	Up to 4.3m

Freight type
Commodity

Description of load
Waste Products

continued on next page...

NHVR
National Heavy Vehicle Regulator

Permit number
236516V1

Authorised Routes

Turn by turn description

236516r1v1 - Area

Start: Approved B-Double Network, Wisemans Ferry Rd, Somersby NSW 2250
Gindurra Rd, Somersby
End: 90 Gindurra Rd, Somersby NSW 2250 (access to the waste facility site)

Road conditions

N/A

Travel conditions

N/A

Vehicle conditions

Regulator
LE07 - The driver and operator of the B-double must comply with all conditions, except conditions relating to stated routes or networks, set out in the National Class 2 Heavy Vehicle B-double Authorisation (Notice) including the Schedule for a participating jurisdiction when the vehicle is being used in the jurisdiction to which that Schedule applies.

LE12 - A B-double may be up to 26.0m long provided the vehicle meets Schedule 6 Section 3 (3) of the Heavy Vehicle (Mass, Dimension and Loading) National Regulation.

continued on next page...

NHVR
National Heavy Vehicle Regulator

Permit number
236516V1

The driver of the heavy vehicle who is driving a vehicle that is subject to a permit issued under the HVNL must keep a copy of the permit for the exemption in the driver's possession.

The driver or operator of a heavy vehicle being used on a road that is subject to a permit issued under the HVNL must not contravene a condition of the permit.

The driver or operator must comply with the provisions of the Heavy Vehicle (Mass, Dimension and Loading) National Regulation unless anything contrary is applied within this permit.

It is an offence to operate a vehicle at a mass limit greater than indicated by an official traffic sign.

Declaration

Signed:

NHVR Delegate

Dated: 06-May-2019

Associated documents

N/A

Disclaimer:
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