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Our Ref: 20204033

Date: 10 March 2021

Chief Executive Officer
Douglas Shire Council
PO Box 723
Mossman QLD 4873

Via Email: enquiries@douglas.qld.gov.au

Dear Sir,

RE: RESPONSE TO INFORMATION REQUEST - APPLICATION FOR MATERIAL CHANGE OF USE, FUNCTION FACILITY, ON LAND LOCATED AT 5146 CAPTAIN COOK HIGHWAY, OAK BEACH (LOT 1 RP742791)

COUNCIL REF: MCUI 2020_3879/1

Reference is made to Councils Information Request pursuant to section 12 of the Development Assessment Rules, dated 16 December 2021, in respect of the abovementioned application.

Specifically, the following information was requested to complete the assessment of the application:

- An acoustic report, prepared by an appropriately qualified acoustic engineer demonstrating compliance with the EPP for Noise Nuisance;
- A typical layout plan for the Function Facility area, for small, medium and large events, that identifies tents, recreational areas, kitchen/cold store vans and equipment, amenity facilities;
- The parking arrangements for the maximum number of attendees including contingency where locals and self-driving guests attend an event. The possible bus parking area and the type of bus used for guest transport.
- Advice regarding all abilities access, for drop-off / collection or self-drive all abilities drivers, between the vehicle parking area and the function facility area.

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- Whether the limited number of functions are to be calculated per financial or calendar year and how the number is to be recorded and the records stored, please advise whether there is an expectancy to have a higher number of functions in a particular range of months or one per month.

In accordance with section 13.2 of the Development Assessment Rules please find attached the following:

- A Traffic Report prepared by ARO industries and which responds to the information requested regarding traffic impacts and vehicle types.

In terms of the other information requested we would offer the following:

Noise Sensitive Uses and Acoustic Report

The areas proposed for the holding of functions are identified on the proposal plans. These areas are approximately 65 metres and 110 metres from the nearest sensitive receptor and are separated by dense and mature vegetation that would not be affected by the proposed development.

The acoustic quality objective set out in the Environmental Protection (Noise) Policy 2019 is to achieve the following:

- Day time and Evening (outdoors) 55-65 dB(A)
- Daytime and evening (indoors) 35-45 dB(A)
- Night time (indoors) 30-40 dB(A)

In respect of Noise from refrigeration equipment, this is managed by the Environmental Protection Act and states at s440V (2)

(2) The person must not use, or permit the use of, the refrigeration equipment on any day—

(a) before 7a.m, if it makes a noise of more than 3dB(A) above the background level; or

(b) from 7a.m. to 10p.m, if it makes a noise of more than 5dB(A) above the background level; or

(c) after 10p.m, if it makes a noise of more than 3dB(A) above the background level.

The proposed use would be required by law to comply with his requirement.

Similarly, s 440X of the *Environmental Protection Act* provides controls for open air events and states:

440X Open-air events

(1) An occupier of premises must not use, or permit the use of, the premises for an open-air event on any day—

(a) before 7a.m, if the use causes audible noise; or

(b) from 7a.m. to 10p.m, if the use causes noise of more than 70dB(A); or

(c) from 10p.m. to midnight, if the use causes noise of more than the lesser of the following—

(i) 50dB(A);

(ii) 10dB(A) above the background level.

The proposed use would also be required by law to comply with his requirement.

Given these requirements, the location of the events and the significant buffer to the nearest sensitive receptor, the quality of the noise environment at the adjacent residence would be maintained. It is submitted that an acoustic report is not necessary in this instance and any approval is able to be conditioned to simply comply with the Environmental Protection (Noise) Policy.

Function Facility Plan

The site plan provided with the application indicates that functions would be held in one of two areas, being the existing tennis courts or the grassed area in the east of the site between the two existing buildings. The intent of the facility is to provide small scale functions in a semi-natural coastal setting where guests are able to establish a layout that best serves their event. There would not be a standard layout that would be applicable any event and it would be dependent on the guests aspirations. On this basis, it is not possible to provide a typical layout plan for any event.

Vehicle Parking Area

Reference is made to section 4.0 Proposal of the Planning Statement submitted with the application. This section outlines that it is proposed that attendees would be required to attend by bus as part of a managed event. The plan attached to the statement provides details of the proposed car parking spaces and the supporting statement identifies that the buses would load and unload in the driveway, which provides a single movement for vehicles to enter and leave the site in a forward gear as is also shown on the proposal plan. As also stated in the report the buses would be limited to a maximum of 25 seats. (for example, a Mitsubishi Fusio). This is further reinforced in the Traffic Report attached.

All Abilities Access

As stated in the report all attendees would be required to attend the event by managed transport through the event manager. Where required the event manager would be responsible for providing appropriate transport for all abilities access.

Functions per annum

As stated in the Planning Statement submitted with the application, the maximum number of functions would be 12 per annum and a maximum of 2 events per month. The highest number of events are likely to occur in the tropical dry season.

In giving this response we also advise that we wish Council to proceed with the assessment of this application under section 13.3 of the Development Assessment Rules, effectively ending the applicant-response period. Should you have any queries regarding this matter please do not hesitate to contact the undersigned on 0438 755 374 or by email Patrick.c@gmacert.com.au

Kind Regards,

Patrick Clifton
PLANNING MANAGER
GMA CERTIFICATION GROUP

ARO INDUSTRIES

'COTTONWOOD' OAK BEACH TRAFFIC REPORT



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1. INTRODUCTION

This engineering report has been prepared by ARO Industries to assess the traffic impacts of a proposed change of use to enable conversion of an existing house 'Cottonwood' to operate as a function centre to cater for 80 persons.

The site is Lot 1, RP742791, 5146 Captain Cook Highway, Oak Beach. It is located approximately 14.5km south of Port Douglas and 29km north of Palm Cove and is shown in figure1. The site is located within the jurisdiction of Douglas Shire Council and is subject to its planning controls.



Figure 1 – Locality Plan (Courtesy of Queensland Globe)

The traffic assessment has been commissioned to investigate vehicular access to the site, car parking requirements and the ability of the surrounding road network to absorb future traffic growth associated with development on the subject site.

2. EXISTING USE OF SITE

The site of the proposed change of use is an existing residential allotment containing a 3-bedroom residential house and a 2-bedroom cottage located on a large block of approximately 1.92ha in size. Cottonwood currently operates as a prestige vacation home rental. The block has direct privileged access onto Oak Beach.

The site is currently accessed from the Captain Cook Highway via an existing driveway. A site plan has been included in Appendix A.

3. ADJACENT DEVELOPMENT

There are numerous small lot residential developments along both sides of the Captain Cook Highway in the Oak Beach Area. To the North there is an eight-lot residential development, with access to the highway via an intersection with Toll Gate Road. Similarly, there subdivisions to the South (59 lots accessing the highway via Reynolds Road and another 32 lots off Oak Beach Road. The sites surrounding Cottonwood are typically large, with various uses.



Figure 2 – Site Location (Courtesy of Queensland Globe)

4. TRAFFIC ENVIRONMENT ON CAPTAIN COOK HIGHWAY

The Captain Cook Highway is a State Controlled Road aligned North-South between Cairns and Port Douglas. The highway links Cairns' northern beaches suburbs, Wangetti and Oak beach communities. The highway consists of a two-lane, undivided road, 7.0m wide with line marking and sealed shoulders. Some overtaking lanes and widening at intersections have been provided where warranted.

The existing speed zone on the Captain Cook Highway past the Oak Beach community is 80km/h and has flat gradients approaching the access to the development from both the north and the south. The site access is via a restricted access driveway. Whilst there is no intention of changing the access to the site, throughout the analysis it has priority-controlled t-intersection.

5. TRAFFIC VOLUMES ON CAPTAIN COOK HIGHWAY

Traffic data has been obtained from TMR counter ID No. 110022 located in Craiglie for the year 2019 and has been extrapolated for the year 2021. Due to Port Douglas being a popular local destination on the weekends both weekday and weekend traffic has been considered. The critical AM peak identified in the traffic data is 10am on both weekdays and weekends. The afternoon peak for weekdays occurs at 4pm and at 2pm on weekends. To predict the future volume of traffic on the Captain Cook Highway a linear growth rate of 2% has been applied to the existing traffic volumes. Based on the above growth rate and the AM and PM Peak background traffic volumes for 2021 and the design horizon of 10 years the traffic volumes were calculated. The backgrounds traffic volume on the Captain Cook Highway have been summarised in table 1, and the raw traffic data included in Appendix B.

Table 1: Traffic Volumes for the Captain Cook Highway

	2021		2031		Comments
	Weekday	Weekend	Weekday	Weekend	
AM Peak (two-way traffic)	539	652	642	777	Peak time = 10am (weekdays and weekends)
PM Peak (two-way traffic)	582	583	694	696	Peak time = 4pm weekdays Peak time = 2pm weekends
Daily (two-way traffic)	6870	6448	8191	7688	

6. TRAFFIC GENERATION FOR FUNCTION CENTRES

To analyse the impact of the development on the highway, it is necessary to assess the number of trips generated to and from the site and where they are likely to travel. Austroads Guides and RTA Guidelines have no specific traffic generation rates for function centres.

The potential development traffic generation from the site has been reviewed based on information provided by the applicant. This can be summarised as:

- The facility will provide space to accommodate a wedding function for 80 persons.
- On the day prior to the event, it is proposed a medium rigid (MR) truck will arrive to setup the equipment for the event and then leave.
- On the day of the event but prior to it is anticipated that vehicles will drop catering supplies and toilets to site and leave.
- Kitchen and food and beverage staff will arrive on the day of the event.
- Three Buses will be used to transport guests to the site.
 - One bus will carry a maximum capacity of 34 guests and two 28 persons per bus, Buses will arrive to site and drop off guests then depart, similarly, they will arrive to collect guests and return to either Port Douglas or Cairns.
- There would be three (3) additional staff required on the day including Celebrant, Entertainment and photographer is proposed onsite, arriving by private vehicle.
- The day after the event the MR truck and utes will return to collect the equipment and the toilets.

Therefore, the total trips generated for any one event will be 36 vehicles per event over a three-day period. The busiest day will be that of the event which will have 18 trips throughout the day. During this the peak will consist of seven (7) private vehicles and three (3) buses.

As part of the assessment, we have made a number of assumptions, which we believe are conservative, but provide confidence that the intersection is able to operate in the worst-case scenario without additional control(s). The assumptions include:

- The peak traffic volumes on the highway coincide with the peak traffic volumes with the event.
- That the traffic entering the site does so entirely from the South.
 - The right-hand turn treatment into the proposed development, when approaching from the South, is the critical and most adverse movement. Consequently, the assessment of the access driveway using the *most adverse movement*, has been undertaken. The findings of the investigation were that the access driveway operates safely and efficiently without any additional measures required to monitor or control the access, when assessed against the *most adverse movement*.
 - When considering the operation of the access against other, less adverse, movements the access performs equally well, if not better.
 - It should be explicitly noted, that the access to the property has been assessed as both an access driveway, and as a formal intersection. Assessing as an intersection is a more conservative approach but gives a higher degree of confidence as to the operation of the access.

7. ASSESSMENT CRITERIA

The performance of each leg of the priority-controlled intersection was analysed using SIDRA Intersection 9. SIDRA is an industry recognised analysis tool that estimates the capacity and performance of intersections based on input parameters, including geometry and traffic volumes, and provides estimates of an intersection's Degree of Saturation (DOS), queues and delays. Importantly it is noted that DOS is not the only performance indicator and that other measures such as critical delay and level of service (LOS) should also be considered when assessing the performance of an intersection.

8. ASSESSMENT RESULTS

The performance of the access was analysed using SIDRA Intersection 9 (SIDRA) which is an industry recognised analysis tool that estimates the capacity and performance of intersections based on input parameters, including geometry and traffic volumes, and provides estimates of an intersection's Degree of Saturation (DOS), queues and delays.

The analysis has been carried out with the projected traffic on the Captain Cook Highway in 2031 with the analysis results summarised in the table below.

Table 2: Assessment Results

	AM Peak			PM Peak		
	DOS	Delay (Sec)	95% Queue (m)	DOS	Delay (Sec)	95% Queue (m)
Captain Cook Highway (North)	0.207	0.7		0.246	0.8	
Captain Cook Highway (South)	0.247	0.5	1	0.163	0.8	1
Access	0.006	7.4	0	0.003	2.7	0

Table 8.1 – SIDRA Results Summary

The results indicate the current form of the intersection / access operates within the typical performance thresholds for both peak periods, therefore, no mitigation measures are required.

9. ROAD SECTION ANALYSIS

The traffic generation and distribution from the site has been assessed and the impacts of the proposed development on the state-controlled road namely the Captain Cook Highway have been reviewed.

TMR's Guide to Traffic Impact Assessment (2018) states, in Section 6.4, that it is considered unreasonable to require quantification of the impacts on intersections and road links, unless the development creates an increase in traffic exceeding 5% of base traffic for any movement.

The annual average daily traffic volume (AADT) for 2031 for the Captain Cook Highway has been obtained from TMR and indicates traffic flows of 8,191 vehicles per weekday and 7688 vehicles on the weekend in the vicinity of the subject site.

The proposed development only generates an additional 18 trips per day maximum to the road network. This traffic impact is well below 5% of existing levels, therefore the impact on the state-controlled road network is considered insignificant, and detailed analysis is considered unnecessary.

10. SIGHT DISTANCE

Sight distance along Captain Cook Highway at the existing access to Cottonwood House are:

- Looking Left (south) ≈ 195 metres
- Looking Right (north) ≈ 205 metres

AS/NZS 2890.1 – 2004 dictates the following sight distance requirements for access driveways at the development.

Frontage Road Speed	Minimum Sight Distance	Desirable Sight Distance
80 km/hr	105m	111m

Table 5.5 of the Austroads publication “Guide to Road Design Part 3: Geometric Design” indicates that the desirable minimum safe intersection sight distance for cars on sealed roads, with a driver reaction time of 2.0 seconds and level gradients is 181 metres.

Sight distance in both directions exceeds the desirable minimum value along the Captain Cook Highway at the existing access to Cottonwood.

There are frequent driveways along the Captain Cook Highway at individual properties and drivers should have an expectation that vehicles could be turning in or out of such properties.

11. PROPOSED ACCESS

The proposed change of use to provide a function centre at Cottonwood house will utilise the existing access driveway on the eastern side of the Captain Cook Highway. The existing access consists of a gravel access road approximately 4.0 metres wide with a gate located on the boundary with the Captain Cook Highway.

12. PARKING

Douglas Shire Council’s Planning Scheme 2018 does not provide any specific guidelines for vehicle access and parking requirements for function centres. The RTA Guide to Traffic Generating Developments also does not provide any specific parking guidelines for function centres, therefore parking will be as required by negotiations with Douglas Shire Council Officers.

13. CONCLUSION

This report has assessed the impact of traffic generated by the proposed function centre on the external transport network. Consideration has been given to operational performance, road safety and access arrangements.

The proposed change of use will permit the use of existing houses at Cottonwood to operate as a Function Centre that will generate minimal traffic volumes, being outside weekday and weekend peak traffic volumes.

Results of the analysis indicate that the road network continues to operate with capacity and the impact of development traffic on the operational performance of the external road network is insignificant.

Therefore, the subject proposal is supported based on the following features;

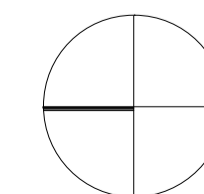
- The site will generate an estimated 36 trips per event with a minimum number occurring within the weekday or Weekend AM and PM peak hours. This level of traffic has a negligible impact on the surrounding road network in terms of traffic flow efficiency.
- The proposed bus service to events will reduce the dependency on private vehicle trips.
- The traffic generation from the proposed Function Centre will be outside weekday peak traffic periods and will be right inwards prior to the commencement of a function and left outwards towards the end of a function.
- Traffic volumes turning right into Cottonwood’s access are outside weekday or weekend peak periods and are unlikely to experience significant opposing southbound traffic on the Captain Cook Highway, therefore widening of the road is considered unnecessary.
- At the completion of the event the left turning traffic leaving Cottonwood and returning to Cairns will experience minimal delays from through traffic.
- The available sight distance enables drivers travelling along the Captain Cook Highway to adequately observe vehicles turning into Cottonwood’s access.

In conclusion, the proposed function facility will not adversely impact on the operational performance of the surrounding road network and the proposed access arrangements are considered adequate and suitable for the proposed use.

APPENDIX A
Site Plan



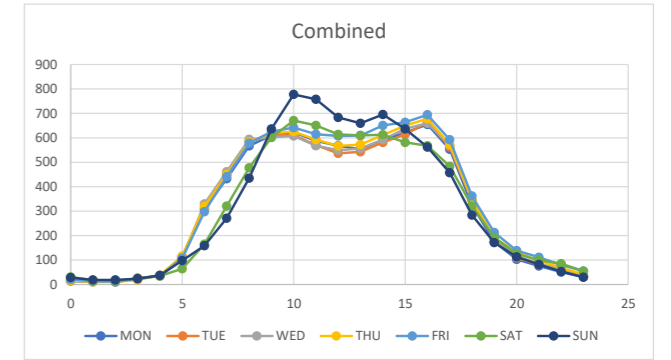
Rev	Description	Date
A	Preliminary	26.11.20



APPENDIX B
TMR Traffic Data

Oak Beach Intersection Traffic Data

COMBINED	0	16	15	14	17	21	31	29
COMBINED	1	12	12	10	11	14	17	19
COMBINED	2	11	11	11	11	11	16	19
COMBINED	3	22	27	22	19	25	25	24
COMBINED	4	37	35	35	38	36	35	37
COMBINED	5	108	114	109	117	108	64	98
COMBINED	6	308	314	330	320	298	165	159
COMBINED	7	433	451	461	451	441	321	272
COMBINED	8	567	585	594	584	578	477	435
COMBINED	9	610	610	603	619	625	601	636
COMBINED	10	622	611	608	625	642	671	777
COMBINED	11	588	570	568	593	615	651	758
COMBINED	12	568	537	549	567	608	614	683
COMBINED	13	553	543	557	573	609	610	660
COMBINED	14	591	582	593	611	651	613	696
COMBINED	15	621	614	637	650	663	582	636
COMBINED	16	655	663	660	678	694	568	562
COMBINED	17	553	563	569	573	593	484	458
COMBINED	18	325	345	347	346	362	321	284
COMBINED	19	175	187	187	192	213	192	171
COMBINED	20	103	109	114	131	139	125	113
COMBINED	21	76	82	87	98	112	99	82
COMBINED	22	51	64	57	68	79	86	53
COMBINED	23	30	37	32	41	55	55	30
		7634.68	7683.04	7753.72	7933.52	8191.44	7422.64	7688



APPENDIX C
SIDRA Results

DETAILED OUTPUT

▼ Site: 101 [Captain Cook Highway 2031 10AM + Arrive South]

New Site

Site Category: (None)

Giveway / Yield (Two-Way)

OUTPUT TABLE LINKS



Sign Control

Sign Control Basic Parameters

Gap Acceptance Parameters



Movements

Intersection Negotiation and Travel Data

Movement Capacity and Performance Parameters

Fuel Consumption, Emissions and Cost



Lanes

Lane Performance and Capacity Information

Lane, Approach and Intersection Performance

Driver Characteristics

Lane Delays

Lane Queues

Lane Queue Percentiles

Lane Stops



Flow Rates

Origin-Destination Flow Rates (Total)

Origin-Destination Flow Rates by Movement Class

Lane Flow Rates



Other

Parameter Settings Summary

Diagnostics

Sign Control

Sign Control Basic Parameters

Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101

Give-Way Sign Controlled Intersection

Approach Control	Leg Geometry	App Dist m	Prop Queued Upstr Signal	Extra Bunching %

South: CC South				
Major Road	Two Way	30000	NA	0.0N

NorthEast: Access				
Giveway	Two Way	20	NA	0.0N

North: CC North				
Major Road	Two Way	14000	NA	0.0N

NA Not Applicable (single Site analysis or unconnected Site in Network analysis).

N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).

[Go to Table Links \(Top\)](#)

Gap Acceptance Parameters
Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

Opd Lane	Dest	Opng Flow pcu/h	Intra Bunch Hdwy sec	Propn Bnchd	Entry HV Equiv	Critical Gap		Foll-up Headway sec
						Hdwy sec	Dist m	

South: CC South								
1	NE	397	1.80	0.047	1.15	4.60	102.0	2.30

NorthEast: Access								
1	S	396+	1.80	0.047	1.00	4.00	88.9	2.20
1	N	863+	0.96	0.056	1.50	6.45	141.6	4.20

North: CC North

No opposed movements on this approach.

Values in this table are adjusted for movement classes in the entry stream.
 Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
 + Percentage of exiting flow included in opposing vehicle flow

[Go to Table Links \(Top\)](#)

Movements

Intersection Negotiation and Travel Data
Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Dem Flows veh-km/h	Travel Arv Flows veh-km/h	Tot.Trav. Time veh-h/h

South: CC South									
	North	T1	80.0	80.0	44010.0#	1980.9#	19225.4	19225.4	240.4
	NorthEast	R1	79.2	79.2	30030.0#	1365.3#	316.1	316.1	4.0

NorthEast: Access									
	South	L1	78.5	78.1	30030.9#	1384.1#	31.6	31.6	0.4
	North	R3	76.6	75.8	14030.9#	666.5#	14.8	14.8	0.2

North: CC North									
	NorthEast	L3	25.4	25.4	14030.0#	1986.7#	14.8	14.8	0.6
	South	T1	79.9	79.9	44010.0#	1982.5#	16770.1	16770.1	209.8

ALL VEHICLES:			79.9	79.9	43739.5#	1971.4#	36372.8	36372.8	455.4

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable.

INTERSECTION NEGOTIATION DATA

From Approach	To Exit	Turn	Negn Radius m	Negn Speed km/h	Negn Dist m	App Dist m	Exit Dist m	Downstr Dist m
South: CC South								
	North	T1	S	80.0	10.0	30000	14000	NA
	NorthEast	R1	13.4	5.0	10.5	30000	20	NA
NorthEast: Access								
	South	L1	7.0	5.0	10.0	20	30000	NA
	North	R3	5.0	5.0	11.8	20	14000	NA
North: CC North								
	NorthEast	L3	10.0	5.0	23.6	14000	20	NA
	South	T1	S	80.0	10.0	14000	30000	NA

NA Downstream Distance does not apply if:

- Exit is an internal leg of a network
- "Program" option was specified
- Distance specified was less than the Exit Negotiation Distance
- Distance specified was greater than the exit leg length

Some Negotiation Radius, Speed or Distance values are user specified.

MOVEMENT SPEEDS AND GEOMETRIC DELAY

Mov ID	Turn	App. Speeds		Exit Speeds		Queue Move-up Speed km/h	Geom Delay sec
		Cruise km/h	Negn km/h	Negn km/h	Cruise km/h		
South: CC South							
2	T1	80.0	80.0	80.0	80.0	0.4	0.0
3a	R1	80.0	5.0	5.0	5.0	0.4	12.8
NorthEast: Access							
24a	L1	5.0	5.0	5.0	80.0	5.0	0.0
26b	R3	5.0	5.0	5.0	80.0	5.0	0.0
North: CC North							
7b	L3	80.0	5.0	5.0	5.0		20.8
8	T1	80.0	80.0	80.0	80.0		0.0

[Go to Table Links \(Top\)](#)

Movement Capacity and Performance Parameters Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng Flow veh/h	Movement Adjust. Flow pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x
South: CC South									
2	T1	#	437	0	0	1767	0.98	297	0.247*
3a	R1	#	11	382	397	43	0.98	297	0.247*
NorthEast: Access									
24a	L1	#	1	381	396	179	0.80	****	0.006
26b	R3	U3	1	829	863	179	0.80	****	0.006

North: CC North
 7b L3 # 1 0 0 5 0.98 375 0.206
 8 T1 # 381 0 0 1848 0.98 375 0.206

* Maximum degree of saturation
 # Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-km/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: CC South										
2	T1	0.01	0.02	0.1	0.04	16.52	40.54	19225.4	240.4	80.0
3a	R1	0.05	0.44	15.4	0.04	0.4	4.12	316.1	4.0	79.2
NorthEast: Access										
24a	L1	0.00	0.00	1.3	0.43	0.5	6.33	31.6	0.4	78.1
26b	R3	0.00	0.12	13.5	0.43	0.5	2.97	14.8	0.2	75.8
North: CC North										
7b	L3	0.01	0.01	21.5	0.01	0.0	0.19	14.8	0.6	25.4
8	T1	0.07	0.08	0.6	0.01	3.12	09.71	16770.1	209.8	79.9

[Go to Table Links \(Top\)](#)

Fuel Consumption, Emissions and Cost
 Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Mov ID	Turn	Cost Total \$/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: CC South							
2	T1	8490.38	1524.9	3647.4	7.01	0.355	8.008
3a	R1	195.68	25.3	60.0	0.12	0.006	0.135
		8686.06	1550.2	3707.4	7.13	0.361	8.143
NorthEast: Access							
24a	L1	23.59	2.1	4.9	0.01	0.001	0.003
26b	R3	15.15	3.2	8.5	0.01	0.001	0.039
		38.73	5.3	13.4	0.02	0.002	0.042
North: CC North							
7b	L3	8.12	1.2	2.8	0.01	0.000	0.006
8	T1	3567.06	1324.0	3194.9	6.12	0.302	6.940
		3575.17	1325.1	3197.7	6.13	0.302	6.946
INTERSECTION:		12299.97	2880.6	6918.5	13.28	0.665	15.132

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

Mov ID	Turn	Cost Rate \$/km	Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
South: CC South							

2	T1	0.44	7.9	189.7	0.36	0.018	0.417
3a	R1	0.62	8.0	189.8	0.37	0.019	0.427
		0.44	7.9	189.7	0.36	0.018	0.417

NorthEast: Access							
24a	L1	0.75	6.6	154.6	0.39	0.018	0.088
26b	R3	1.03	21.9	574.8	0.50	0.090	2.659
		0.84	11.4	288.4	0.42	0.041	0.907

North: CC North							
7b	L3	0.55	7.9	187.2	0.37	0.018	0.413
8	T1	0.21	7.9	190.5	0.37	0.018	0.414
		0.21	7.9	190.5	0.37	0.018	0.414

INTERSECTION:		0.34	7.9	190.2	0.37	0.018	0.416

[Go to Table Links \(Top\)](#)

Lanes

Lane Performance and Capacity Information Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

LANE PERFORMANCE

Lane No.	Flow veh/h	Cap veh/h	Deg. Satn x	Aver. Delay sec	Eff. Stop Rate	Q u e u e		Lane Length m
						95% Back veh	m	

South: CC South								
1	447	1810	0.247	0.5	0.04	0.2	1.1	30000.0

NorthEast: Access								
1	2	358	0.006	7.4	0.43	0.0	0.2	20.0

North: CC North								
1	382	1853	0.206	0.7	0.01			14000.0

LANE FLOW AND CAPACITY INFORMATION

Lane No.	Total Arv Flow veh/h	Min Cap veh/h	Tot Cap veh/h	Deg. Satn x	Lane Util %

South: CC South					
1	447	225	1810	0.247	100

NorthEast: Access					
1	2	2	358	0.006	100

North: CC North					
1	382	382	1853	0.206	100

The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

[Go to Table Links \(Top\)](#)

Lane, Approach and Intersection Performance
Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

Lane No.	Arrival Flow (veh/h)	%HV	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue m	Lane Length m

South: CC South							
1	447	9		0.247	0.5	1	****
	447	9		0.247	0.5	1	

NorthEast: Access							
1	2	50		0.006	7.4	0	20
	2	50		0.006	7.4	0	

North: CC North							
1	382	8	1950	0.206	0.7		****
	382	8		0.206	0.7		
=====							
ALL VEHICLES							
	Total Flow	% HV		Max X	Aver. Delay	Max Queue	
	832	8		0.247	0.6	1	
=====							

Peak flow period = 15 minutes.

Queue values in this table are 95% queue (metres)
 Note: Basic Saturation Flows at roundabouts or sign-controlled intersections apply only to continuous lanes.

[Go to Table Links \(Top\)](#)

Driver Characteristics
Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

Lane No.	Satn Speed km/h	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing m	Average Queue Space m	Driver Response Time sec

South: CC South						
1	NA - Major Road Movement					

NorthEast: Access						
1	5.0	1125	3.20	4.44	10.00	-4.00

North: CC North						
1	NA - Continuous Movement					

Saturation Flow and Saturation Headway are derived from follow-up headway.

[Go to Table Links \(Top\)](#)

Lane Delays
Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Delay (seconds/veh)										
				Min Del dm	Stop-line 1st d1	2nd d2	Delay Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic	

South: CC South														
1	0.247	NA	NA	0.1	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.3	0.5	

NorthEast: Access														
1	0.006	NA	NA	6.8	7.4	0.0	7.4	0.7	6.7	0.0	6.7	0.0	7.4	

North: CC North														
1	0.206					0.6					0.1	0.7		

SIDRA Standard Delay Model is used. Control Delay is the sum of Stop-line Delay and Geometric Delay.
 dm: Minimum delay for gap acceptance cases
 dSL: Stop-line delay (=d1+d2)
 dn: Average stop-start delay for all vehicles queued and unqueued
 dq: Queuing delay (the part of the stop-line delay that includes stopped delay and queue move-up delay)
 dqm: Queue move-up delay
 di: Stopped delay (stopped (idling) time at near-zero speed)
 dig: Geometric delay
 dic: Control delay

[Go to Table Links \(Top\)](#)

Lane Queues
 Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

BACK OF QUEUE (VEHICLES)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (veh)				Queue Stor. Ratio		Prob. Block %	Prob. SL Ov. %
					Nb1	Nb2	Nb	95%	Av.	95%		

South: CC South												
1	0.247	NA	NA	0.0	0.1	0.0	0.1	0.2	0.00	0.00	0.0	NA

NorthEast: Access												
1	0.006	NA	NA	0.0	0.0	0.0	0.0	0.0	0.00	0.01	0.0	NA

North: CC North												

BACK OF QUEUE (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (m)				Queue Stor. Ratio		Prob. Block %	Prob. SL Ov. %
					Nb1	Nb2	Nb	95%	Av.	95%		

South: CC South												
1	0.247	NA	NA	0.0	0.5	0.0	0.5	1.1	0.00	0.00	0.0	NA

NorthEast: Access												
1	0.006	NA	NA	0.0	0.1	0.0	0.1	0.2	0.00	0.01	0.0	NA

North: CC North												

OTHER QUEUE RESULTS (VEHICLES)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Cyc-Av. Nc	Queue 95%

South: CC South						
1	0.247	NA	NA	0.0	0.0	0.0

NorthEast: Access						
1	0.006	NA	NA	0.0	0.0	0.0

North: CC North						

OTHER QUEUE RESULTS (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Cyc-Av. Nc	Queue 95%

South: CC South						
1	0.247	NA	NA	0.0	0.2	0.3

NorthEast: Access						
1	0.006	NA	NA	0.0	0.0	0.1

North: CC North						

[Go to Table Links \(Top\)](#)

Lane Queue Percentiles
Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

LANE QUEUE PERCENTILES (VEHICLES)

Lane No.	Deg. Satn x	Percentile Back of Queue (veh)						
		50%	70%	85%	90%	95%	98%	100%

South: CC South								
1	0.247	0.1	0.1	0.1	0.1	0.2	0.2	0.2

NorthEast: Access								
1	0.006	0.0	0.0	0.0	0.0	0.0	0.0	0.0

North: CC North								

LANE QUEUE PERCENTILES (DISTANCE)

Lane No.	Deg. Satn x	Percentile Back of Queue (metres)						
		50%	70%	85%	90%	95%	98%	100%

South: CC South								
1	0.247	0.5	0.6	0.8	1.0	1.1	1.3	1.3

```

-----
NorthEast: Access
1      0.006  0.1   0.1   0.1   0.2   0.2   0.2   0.2
-----
North: CC North
-----

```

[Go to Table Links \(Top\)](#)

Lane Stops
 Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

```

-----
Lane No.      Deg. Satn  % Arv During  Prog.  -- Effective Stop Rate --  Total  Queue  Total  Prop.  Aver.
              x      Green  Factor  he1    he2    geom. Overall  Stops  Move-up  Queue  Queued  Num. of
              x              h         h         h         h         H      Rate   Move-ups  pq      Cycles to
              x              h         h         h         h         H      hqm    Hqm      Hqm      Depart
-----
South: CC South
1      0.247  NA     NA     0.00  0.00  0.04  0.04  16.9  0.00  0.0  0.04  0.04
-----
NorthEast: Access
1      0.006  NA     NA     0.43  0.00  0.00  0.43  0.9  0.00  0.0  0.59  0.59
-----
North: CC North
1      0.206  NA     NA           0.01  0.01  3.1
-----

```

hig is the average value for all movements in a shared lane
 hqm is average queue move-up rate for all vehicles queued and unqueued

[Go to Table Links \(Top\)](#)

Flow Rates

Origin-Destination Flow Rates (Total)
 Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

TOTAL FLOW RATES for All Movement Classes (veh/h)

```

-----
From SOUTH To:          N      NE
Turn:                   T1     R1     TOT
Flow Rate                436.8  10.5  447.4
%HV (all designations)  8.0    30.0  8.5
-----
From NORTHEAST To:     S      N
Turn:                   L1     R3     TOT
Flow Rate                1.1    1.1    2.1
%HV (all designations)  0.0   100.0  50.0
-----
From NORTH To:         NE     S
Turn:                   L3     T1     TOT
Flow Rate                1.1   381.1  382.1
%HV (all designations)  0.0    8.0    8.0
-----

```

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
 Unit Time for Volumes = 60 minutes
 Peak Flow Period = 15 minutes
 Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
 Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

[Go to Table Links \(Top\)](#)

Origin-Destination Flow Rates by Movement Class
Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Flow Rate	401.9	7.4	409.3
Mov Class %	92.0	70.0	91.5
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Flow Rate	1.1	0.0	1.1
Mov Class %	100.0	0.0	50.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Flow Rate	1.1	350.6	351.6
Mov Class %	100.0	92.0	92.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

FLOW RATES for Heavy Vehicles (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Flow Rate	34.9	0.0	34.9
Mov Class %	8.0	0.0	7.8
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Flow Rate	0.0	0.0	0.0
Mov Class %	0.0	0.0	0.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Flow Rate	0.0	30.5	30.5
Mov Class %	0.0	8.0	8.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

FLOW RATES for User Class 3 (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Flow Rate	0.0	3.2	3.2
Mov Class %	0.0	30.0	0.7
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Flow Rate	0.0	1.1	1.1
Mov Class %	0.0	100.0	50.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Flow Rate	0.0	0.0	0.0
Mov Class %	0.0	0.0	0.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

[Go to Table Links \(Top\)](#)

Lane Flow Rates

Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Lane 1			
LV	401.9	7.4	409.3
HV	34.9	*	34.9
U3	*	3.2	3.2
Total	436.8	10.5	447.4
Approach	436.8	10.5	447.4

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Lane 1			
LV	1.1	*	1.1
U3	*	1.1	1.1
Total	1.1	1.1	2.1
Approach	1.1	1.1	2.1

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Lane 1			
LV	1.1	350.6	351.6

HV	*	30.5	30.5
Total	1.1	381.1	382.1

Approach	1.1	381.1	382.1

* Movement not allocated to the lane

EXIT LANE FLOW RATES

Movement Class:	LV	HV	U3	TOT

Exit: SOUTH				
Lane: 1	351.6	30.5	*	382.1
Total	351.6	30.5	*	382.1

Exit: NORTHEAST				
Lane: 1	8.4	*	3.2	11.6
Total	8.4	*	3.2	11.6

Exit: NORTH				
Lane: 1	401.9	34.9	1.1	437.9
Total	401.9	34.9	1.1	437.9

* Movement not allocated to the lane

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

Movement Class:	LV	HV	U3	TOT

Exit: SOUTH				
Lane: 1	351.6	30.5	*	382.1
Total	351.6	30.5	*	382.1

Exit: NORTHEAST				
Lane: 1	8.4	*	3.2	11.6
Total	8.4	*	3.2	11.6

Exit: NORTH				
Lane: 1	401.9	34.9	1.1	437.9
Total	401.9	34.9	1.1	437.9

* Movement not allocated to the lane

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

[Go to Table Links \(Top\)](#)

Other

Parameter Settings Summary Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

* Basic Parameters:
Intersection Type: Unsignalised - Give Way
Driving on the left-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Left
Peak Flow Period (for performance): 15 minutes
Unit time (for volumes): 60 minutes.

SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (SIDRA)
Queue percentile: 95%

[Go to Table Links \(Top\)](#)

Diagnostics

Site: Captain Cook Highway 2031 10AM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

Lane Flow-Capacity Iterations:

Site Model Variability Index (Iterations 3 to N): 0.0%
Number of Iterations: 3 (Maximum: 10)

Other Diagnostic Messages (if any):

[Go to Table Links \(Top\)](#)

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Processed: Thursday, 25 February 2021 9:59:49 AM

Project: Not Saved

DETAILED OUTPUT

Site: 101 [Captain Cook Highway 2031 2PM + Arrive South]

New Site

Site Category: (None)

Giveway / Yield (Two-Way)

OUTPUT TABLE LINKS



Sign Control

Sign Control Basic Parameters

Gap Acceptance Parameters



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Intersection Negotiation and Travel Data

Movement Capacity and Performance Parameters

Fuel Consumption, Emissions and Cost



Lanes

Lane Performance and Capacity Information

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Origin-Destination Flow Rates (Total)

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Lane Flow Rates



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Parameter Settings Summary

Diagnostics

Sign Control

Sign Control Basic Parameters

Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101

Give-Way Sign Controlled Intersection

Approach Control	Leg Geometry	App Dist m	Prop Queued Upstr Signal	Extra Bunching %

South: CC South				
Major Road	Two Way	30000	NA	0.0N

NorthEast: Access				
Giveway	Two Way	20	NA	0.0N

North: CC North				
Major Road	Two Way	14000	NA	0.0N

NA Not Applicable (single Site analysis or unconnected Site in Network analysis).

N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).

[Go to Table Links \(Top\)](#)

Gap Acceptance Parameters
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

Opd Lane	Dest	Opng Flow pcu/h	Intra Bunch Hdwy sec	Propn Bnchd	Entry HV Equiv	Critical Gap		Foll-up Headway sec
						Hdwy sec	Dist m	

South: CC South								
1	NE	474	1.80	0.058	1.15	4.60	102.0	2.30

NorthEast: Access								
1	S	473+	1.80	0.058	1.00	4.00	88.9	2.20
1	N	775+	1.05	0.055	1.00	4.30	94.3	2.80

North: CC North

No opposed movements on this approach.

Values in this table are adjusted for movement classes in the entry stream.
 Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
 + Percentage of exiting flow included in opposing vehicle flow

[Go to Table Links \(Top\)](#)

Movements

Intersection Negotiation and Travel Data
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Dem Flows veh-km/h	Travel Distance Arv Flows veh-km/h	Tot.Trav. Time veh-h/h

South: CC South									
	North	T1	80.0	80.0	44010.0#	1981.1#	12230.2	12230.2	152.9
	NorthEast	R1	79.2	79.2	30030.0#	1365.5#	316.1	316.1	4.0

NorthEast: Access									
	South	L1	78.5	78.4	30030.9#	1379.4#	31.6	31.6	0.4
	North	R3	76.9	76.6	14030.9#	659.3#	14.8	14.8	0.2

North: CC North									
	NorthEast	L3	25.4	25.4	14030.0#	1987.2#	14.8	14.8	0.6
	South	T1	79.9	79.9	44010.0#	1982.9#	20013.0	20013.0	250.5

ALL VEHICLES:			79.8	79.8	43708.6#	1970.8#	32620.4	32620.4	408.6

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable.

INTERSECTION NEGOTIATION DATA

From Approach	To Exit	Turn	Negn Radius m	Negn Speed km/h	Negn Dist m	App Dist m	Exit Dist m	Downstr Dist m
South: CC South								
	North	T1	S	80.0	10.0	30000	14000	NA
	NorthEast	R1	13.4	5.0	10.5	30000	20	NA
NorthEast: Access								
	South	L1	7.0	5.0	10.0	20	30000	NA
	North	R3	5.0	5.0	11.8	20	14000	NA
North: CC North								
	NorthEast	L3	10.0	5.0	23.6	14000	20	NA
	South	T1	S	80.0	10.0	14000	30000	NA

NA Downstream Distance does not apply if:

- Exit is an internal leg of a network
- "Program" option was specified
- Distance specified was less than the Exit Negotiation Distance
- Distance specified was greater than the exit leg length

Some Negotiation Radius, Speed or Distance values are user specified.

MOVEMENT SPEEDS AND GEOMETRIC DELAY

Mov ID	Turn	App. Speeds		Exit Speeds		Queue Move-up Speed km/h	Geom Delay sec
		Cruise km/h	Negn km/h	Negn km/h	Cruise km/h		
South: CC South							
2	T1	80.0	80.0	80.0	80.0	0.5	0.0
3a	R1	80.0	5.0	5.0	5.0	0.5	12.8
NorthEast: Access							
24a	L1	5.0	5.0	5.0	80.0	5.0	0.0
26b	R3	5.0	5.0	5.0	80.0	5.0	0.0
North: CC North							
7b	L3	80.0	5.0	5.0	5.0		20.8
8	T1	80.0	80.0	80.0	80.0		0.0

[Go to Table Links \(Top\)](#)

Movement Capacity and Performance Parameters Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng Flow veh/h	Movement Adjust. Flow pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x
South: CC South									
2	T1	#	278	0	0	1709	0.98	503	0.163
3a	R1	#	11	456	474	65	0.98	503	0.163
NorthEast: Access									
24a	L1	#	1	455	473	371	0.80	****	0.003
26b	R3	#	1	744	775	371	0.80	****	0.003

North: CC North
 7b L3 # 1 0 0 4 0.98 298 0.246*
 8 T1 # 455 0 0 1849 0.98 298 0.246*

* Maximum degree of saturation
 # Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-km/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: CC South										
2	T1	0.02	0.02	0.2	0.06	16.11	53.11	12230.2	152.9	80.0
3a	R1	0.05	0.45	15.8	0.06	0.6	4.13	316.1	4.0	79.2
NorthEast: Access										
24a	L1	0.00	0.00	1.6	0.31	0.3	6.33	31.6	0.4	78.4
26b	R3	0.00	0.00	3.8	0.31	0.3	2.96	14.8	0.2	76.6
North: CC North										
7b	L3	0.01	0.01	21.6	0.01	0.0	0.19	14.8	0.6	25.4
8	T1	0.10	0.12	0.8	0.01	3.12	50.28	20013.0	250.5	79.9

[Go to Table Links \(Top\)](#)

Fuel Consumption, Emissions and Cost
 Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Mov ID	Turn	Cost Total \$/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: CC South							
2	T1	5732.40	972.3	2326.0	4.45	0.229	5.112
3a	R1	207.70	25.4	60.3	0.12	0.006	0.137
		5940.10	997.7	2386.3	4.57	0.235	5.249
NorthEast: Access							
24a	L1	2.17	2.0	4.7	0.01	0.001	0.001
26b	R3	1.31	1.0	2.3	0.01	0.000	0.001
		3.48	3.0	6.9	0.02	0.001	0.002
North: CC North							
7b	L3	8.12	1.2	2.8	0.01	0.000	0.006
8	T1	4257.50	1579.9	3812.4	7.30	0.360	8.282
		4265.62	1581.0	3815.2	7.31	0.361	8.288
INTERSECTION:		10209.21	2581.7	6208.5	11.90	0.596	13.539

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

Mov ID	Turn	Cost Rate \$/km	Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
South: CC South							

2	T1	0.47	8.0	190.2	0.36	0.019	0.418
3a	R1	0.66	8.0	190.8	0.36	0.019	0.432
		0.47	8.0	190.2	0.36	0.019	0.418

NorthEast: Access							
24a	L1	0.07	6.3	148.1	0.38	0.017	0.043
26b	R3	0.09	6.5	153.5	0.38	0.018	0.046
		0.08	6.4	149.8	0.38	0.017	0.044

North: CC North							
7b	L3	0.55	7.9	187.2	0.36	0.018	0.413
8	T1	0.21	7.9	190.5	0.36	0.018	0.414
		0.21	7.9	190.5	0.36	0.018	0.414

INTERSECTION:		0.31	7.9	190.3	0.36	0.018	0.415

[Go to Table Links \(Top\)](#)

Lanes

Lane Performance and Capacity Information Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

LANE PERFORMANCE

Lane No.	Flow veh/h	Cap veh/h	Deg. Satn x	Aver. Delay sec	Eff. Stop Rate	Q u e u e		Lane Length m
						95% Back veh	m	

South: CC South								
1	288	1774	0.163	0.8	0.06	0.2	1.2	30000.0

NorthEast: Access								
1	2	742	0.003	2.7	0.31	0.0	0.1	20.0

North: CC North								
1	456	1853	0.246	0.8	0.01			14000.0

LANE FLOW AND CAPACITY INFORMATION

Lane No.	Total Arv Flow veh/h	Min Cap veh/h	Tot Cap veh/h	Deg. Satn x	Lane Util %

South: CC South					
1	288	151	1774	0.163	100

NorthEast: Access					
1	2	2	742	0.003	100

North: CC North					
1	456	456	1853	0.246	100

The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

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Lane, Approach and Intersection Performance
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

Lane No.	Arrival Flow (veh/h)	%HV	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue m	Lane Length m

South: CC South							
1	288	9		0.163	0.8	1	****
	288	9		0.163	0.8	1	

NorthEast: Access							
1	2	0		0.003	2.7	0	20
	2	0		0.003	2.7	0	

North: CC North							
1	456	8	1950	0.246	0.8		****
	456	8		0.246	0.8		
=====							
ALL VEHICLES							
	Total Flow	% HV		Max X	Aver. Delay	Max Queue	
	746	8		0.246	0.8	1	
=====							

Peak flow period = 15 minutes.

Queue values in this table are 95% queue (metres)
 Note: Basic Saturation Flows at roundabouts or sign-controlled intersections apply only to continuous lanes.

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Driver Characteristics
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

Lane No.	Satn Speed km/h	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing m	Average Queue Space m	Driver Response Time sec

South: CC South						
1	NA - Major Road Movement					

NorthEast: Access						
1	5.0	1440	2.50	3.47	7.00	-2.54

North: CC North						
1	NA - Continuous Movement					

Saturation Flow and Saturation Headway are derived from follow-up headway.

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Lane Delays
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Delay (seconds/veh)										
				Min Del dm	Stop-line 1st d1	2nd d2	Delay Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic	

South: CC South														
1	0.163	NA	NA	0.2	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.5	0.8

NorthEast: Access														
1	0.003	NA	NA	2.5	2.7	0.0	2.7	0.6	2.1	0.0	2.1	0.0	2.7	

North: CC North														
1	0.246					0.8					0.0	0.8		

SIDRA Standard Delay Model is used. Control Delay is the sum of Stop-line Delay and Geometric Delay.
 dm: Minimum delay for gap acceptance cases
 dSL: Stop-line delay (=d1+d2)
 dn: Average stop-start delay for all vehicles queued and unqueued
 dq: Queuing delay (the part of the stop-line delay that includes stopped delay and queue move-up delay)
 dqm: Queue move-up delay
 di: Stopped delay (stopped (idling) time at near-zero speed)
 dig: Geometric delay
 dic: Control delay

[Go to Table Links \(Top\)](#)

Lane Queues
 Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

BACK OF QUEUE (VEHICLES)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (veh)				Queue Stor. Ratio		Prob. Block %	Prob. SL Ov. %
					Nb1	Nb2	Nb	95%	Av.	95%		

South: CC South												
1	0.163	NA	NA	0.0	0.1	0.0	0.1	0.2	0.00	0.00	0.0	NA

NorthEast: Access												
1	0.003	NA	NA	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.0	NA

North: CC North												

BACK OF QUEUE (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (m)				Queue Stor. Ratio		Prob. Block %	Prob. SL Ov. %
					Nb1	Nb2	Nb	95%	Av.	95%		

South: CC South												
1	0.163	NA	NA	0.0	0.5	0.0	0.5	1.2	0.00	0.00	0.0	NA

NorthEast: Access												
1	0.003	NA	NA	0.0	0.0	0.0	0.0	0.1	0.00	0.00	0.0	NA

North: CC North												

OTHER QUEUE RESULTS (VEHICLES)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Cyc-Av. Nc	Queue 95%

South: CC South						
1	0.163	NA	NA	0.0	0.0	0.0

NorthEast: Access						
1	0.003	NA	NA	0.0	0.0	0.0

North: CC North						

OTHER QUEUE RESULTS (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Cyc-Av. Nc	Queue 95%

South: CC South						
1	0.163	NA	NA	0.0	0.2	0.3

NorthEast: Access						
1	0.003	NA	NA	0.0	0.0	0.0

North: CC North						

[Go to Table Links \(Top\)](#)

Lane Queue Percentiles
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

LANE QUEUE PERCENTILES (VEHICLES)

Lane No.	Deg. Satn x	Percentile Back of Queue (veh)						
		50%	70%	85%	90%	95%	98%	100%

South: CC South								
1	0.163	0.1	0.1	0.1	0.1	0.2	0.2	0.2

NorthEast: Access								
1	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.0

North: CC North								

LANE QUEUE PERCENTILES (DISTANCE)

Lane No.	Deg. Satn x	Percentile Back of Queue (metres)						
		50%	70%	85%	90%	95%	98%	100%

South: CC South								
1	0.163	0.5	0.6	0.9	1.0	1.2	1.3	1.4

```

-----
NorthEast: Access
1      0.003  0.0   0.0   0.0   0.1   0.1   0.1   0.1
-----
North: CC North
-----

```

[Go to Table Links \(Top\)](#)

Lane Stops

Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

```

-----
Lane No.      Deg. Satn  % Arv During  Prog.  -- Effective Stop Rate --  Total  Queue  Total  Prop.  Aver.
              x      Green  Factor  he1    he2    geom. Overall  Stops  Move-up  Queue  Queued  Num. of
              x              h         h         h         h         H      Rate   Move-ups  pq      Cycles to
              x              h         h         h         h         H      hqm    Hqm      Hqm      Depart
-----
South: CC South
1      0.163  NA     NA     0.00  0.00  0.06  0.06  16.7  0.00  0.0   0.06  0.06
-----
NorthEast: Access
1      0.003  NA     NA     0.31  0.00  0.00  0.31  0.7  0.00  0.0   0.49  0.49
-----
North: CC North
1      0.246  NA     NA           0.01  0.01  3.1
-----

```

hig is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

[Go to Table Links \(Top\)](#)

Flow Rates

Origin-Destination Flow Rates (Total)

Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

TOTAL FLOW RATES for All Movement Classes (veh/h)

```

-----
From SOUTH To:          N      NE
Turn:                   T1     R1     TOT
Flow Rate                277.9  10.5  288.4
%HV (all designations)  8.0    30.0  8.8
-----
From NORTHEAST To:     S      N
Turn:                   L1     R3     TOT
Flow Rate                 1.1    1.1    2.1
%HV (all designations)  0.0    0.0    0.0
-----
From NORTH To:         NE     S
Turn:                   L3     T1     TOT
Flow Rate                 1.1  454.7  455.8
%HV (all designations)  0.0    8.0    8.0
-----

```

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

[Go to Table Links \(Top\)](#)

Origin-Destination Flow Rates by Movement Class
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Flow Rate	255.7	7.4	263.0
Mov Class %	92.0	70.0	91.2
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Flow Rate	1.1	1.1	2.1
Mov Class %	100.0	100.0	100.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Flow Rate	1.1	418.4	419.4
Mov Class %	100.0	92.0	92.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

FLOW RATES for Heavy Vehicles (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Flow Rate	22.2	0.0	22.2
Mov Class %	8.0	0.0	7.7
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Flow Rate	0.0	0.0	0.0
Mov Class %	0.0	0.0	0.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Flow Rate	0.0	36.4	36.4
Mov Class %	0.0	8.0	8.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

FLOW RATES for User Class 3 (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Flow Rate	0.0	3.2	3.2
Mov Class %	0.0	30.0	1.1
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Flow Rate	0.0	0.0	0.0
Mov Class %	0.0	0.0	0.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Flow Rate	0.0	0.0	0.0
Mov Class %	0.0	0.0	0.0
Flow Scale	1.00	1.00	-
Peak Flow Factor	0.95	0.95	-
Residual Demand	0.0	0.0	0.0

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

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Lane Flow Rates

Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE (veh/h)

From SOUTH To:	N	NE	
Turn:	T1	R1	TOT
Lane 1			
LV	255.7	7.4	263.0
HV	22.2	*	22.2
U3	*	3.2	3.2
Total	277.9	10.5	288.4
Approach	277.9	10.5	288.4

From NORTHEAST To:	S	N	
Turn:	L1	R3	TOT
Lane 1			
LV	1.1	1.1	2.1
Total	1.1	1.1	2.1
Approach	1.1	1.1	2.1

From NORTH To:	NE	S	
Turn:	L3	T1	TOT
Lane 1			
LV	1.1	418.4	419.4
HV	*	36.4	36.4

Total	1.1	454.7	455.8
Approach	1.1	454.7	455.8

* Movement not allocated to the lane

EXIT LANE FLOW RATES

Movement Class:	LV	HV	U3	TOT
Exit: SOUTH				
Lane: 1	419.4	36.4	*	455.8
Total	419.4	36.4	*	455.8
Exit: NORTHEAST				
Lane: 1	8.4	*	3.2	11.6
Total	8.4	*	3.2	11.6
Exit: NORTH				
Lane: 1	256.7	22.2	*	278.9
Total	256.7	22.2	*	278.9

* Movement not allocated to the lane

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

Movement Class:	LV	HV	U3	TOT
Exit: SOUTH				
Lane: 1	419.4	36.4	*	455.8
Total	419.4	36.4	*	455.8
Exit: NORTHEAST				
Lane: 1	8.4	*	3.2	11.6
Total	8.4	*	3.2	11.6
Exit: NORTH				
Lane: 1	256.7	22.2	*	278.9
Total	256.7	22.2	*	278.9

* Movement not allocated to the lane

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

[Go to Table Links \(Top\)](#)

Other

Parameter Settings Summary
Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

- * Basic Parameters:
 - Intersection Type: Unsignalised - Give Way
 - Driving on the left-hand side of the road
 - Input data specified in Metric units
 - Model Defaults: Standard Left
 - Peak Flow Period (for performance): 15 minutes
 - Unit time (for volumes): 60 minutes.
 - SIDRA Standard Delay model used

SIDRA Standard Queue model used
Level of Service based on: Delay (SIDRA)
Queue percentile: 95%

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Diagnostics

Site: Captain Cook Highway 2031 2PM + Arrive South

Site ID: 101
Give-Way Sign Controlled Intersection

Lane Flow-Capacity Iterations:

Site Model Variability Index (Iterations 3 to N): 0.0%
Number of Iterations: 3 (Maximum: 10)

Other Diagnostic Messages (if any):

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