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Our Reference: P2930.005L
Your Reference:

2 November 2017

Hanson Construction Materials
C/- Gilbert and Sutherland Pty Ltd
5/232 Robina Town Centre Drive
ROBINA QLD 4226

Attention: **Glyn Cowie**
Sent via email: cowie.gr@access.gs

Dear Glyn

RE : TWEED SAND QUARRY LOT 22, (DP1082435), LOT 23 (DP1077509) AND LOT 494 (DP720450) CRESCENT STREET CUDGEN RESPONSE TO RMS COMMENTS

1.0 INTRODUCTION

In response to the Road and Maritime Services NSW (referred to herein as RMS) comments regarding the above development dated 24th August 2017, this letter provides further information with regards to the Transport Planning items, specifically this letter responds to Items 1,2 and 3 of RMS comments.

2.0 INFORMATION REQUEST ITEMS

2.1. Item 1

The identified haulage for the subject development is also the approved route for the Cudgen Lakes Sand Quarry under Project Approval MP05_0103. The supporting Traffic Impact Assessment (TIA) should address the cumulative traffic and road safety impacts of existing and proposed development in the subject area.

The following traffic assessment addresses the cumulative impact of the Tweed Sand Quarry's proposed expansion and Cudgen Lakes Sand Quarry on the surrounding road network. The assessment will determine whether new mitigation measures are required in addition to those upgrades proposed for the Cudgen Lakes Sand Quarry project. It should be noted that the Cudgen Lakes Sand Quarry is defined as a major project for the area by RMS.

Cudgen Lakes Sand Quarry Report No.617/04 – Part 7 Traffic and Transport Assessment, prepared by Veitch Lister Consulting Pty Ltd, dated October 2007 presents the following results for the intersections of Tweed Coast Road / Crescent Street and Crescent Street / Altona Road, for a worst-case scenario (i.e. when all trips are to / from north of the site Scenario A).

Table 2.1: Performance of Existing Intersections in the 2011 Operation Scenarios at Cudgen Lakes Sand Quarry Report

Intersection (Scenario A - north)	Type	Degree of Saturation		Level of Service (LoS)	
		AM	PM	AM	PM
Tweed Coast Road / Crescent Street	Priority	0.5	0.4	A / E	A / D
Crescent Street / Altona Drive	Priority	0.04	0.03	A / B	A / B

Veitch Lister's report specifically noted that the intersection of Tweed Coast Road / Crescent Street, particularly the left-turn movement from Crescent Street, had the highest impact on the average delays and level of service.

- AM Peak – 39 seconds (LoS E); and
- PM Peak – 28 seconds (LoS D).

Considering the resulting SIDRA outputs, Cudgen Lakes Sand Quarry Report proposed the following recommendations for the surrounding priority controlled intersections:

"Minor improvements and realignment at various stages at the project to Altona Road / Crescent Street priority controlled intersection and improvements to the priority controlled intersection of Tweed Coast Road and Crescent Street, including:

- *amend the right turn off Tweed Coast Road from a type 'AUR' to a type 'CHR' treatment (Tweed Shire);*
- *ban the right turn from Crescent Street to Tweed Coast Road (Tweed Shire); and*
- *implement a 200m acceleration lane for the left turn from Crescent Street to Tweed Coast Road."*

Bitzios has assessed the upgraded Tweed Coast Road / Crescent Street and Crescent Street / Altona Road priority controlled intersections considering the cumulative traffic generation of the proposed Tweed Sand Quarry development and Cudgen Lakes Sand Quarry.

Based on the proposed development and Cudgen Lakes Sand Quarry traffic generation, Figure 2.1 and Figure 2.2 details the combined traffic volumes assigned to the surrounding road network during the AM and PM peak hours.

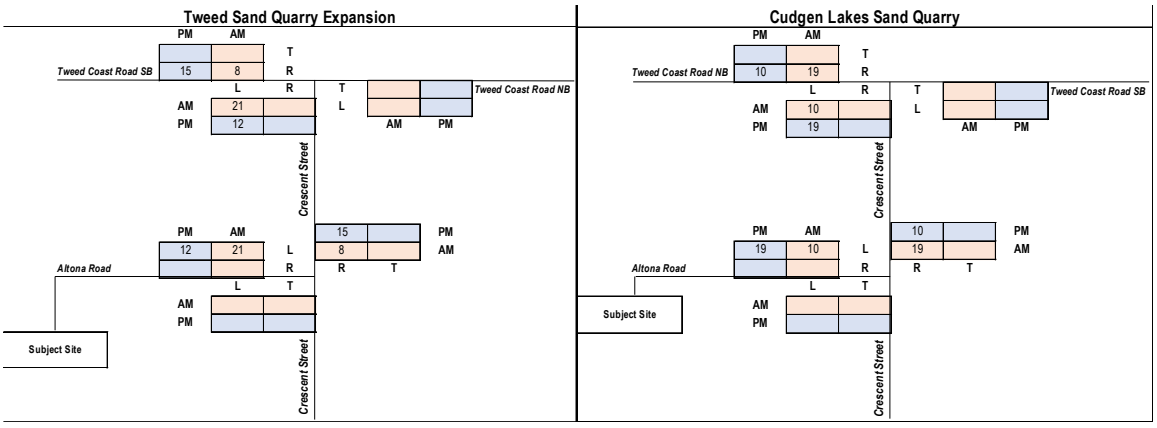


Figure 2.1: Development Traffic Generation

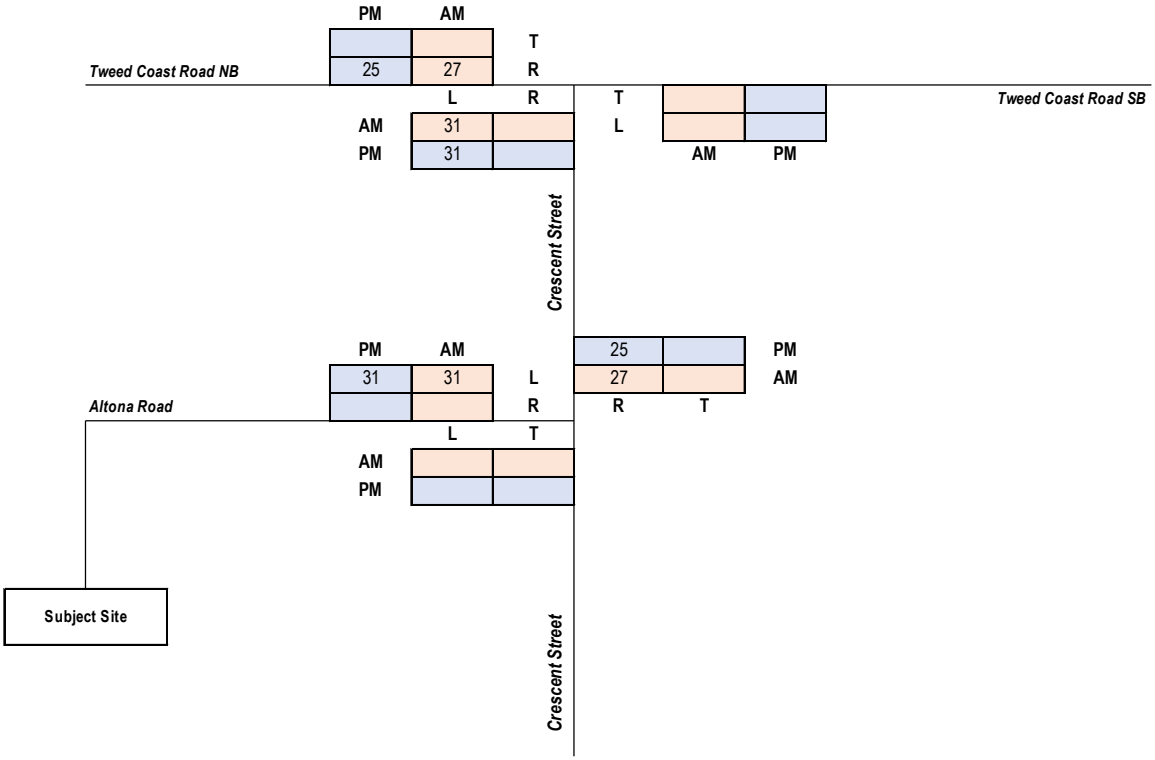


Figure 2.2: Combined Traffic Generation

The resulting 2017 and 2027 (10-year design period) design traffic volumes have been calculated by using background traffic volumes for the subject intersections (as per Bitzios previous report *P2930.008R Tweed Sand Quarry TIA*, dated 2nd November 2017). Background volumes were based on traffic surveys undertaken by Traffic Data Control (TDC) in December 2016, using a traffic growth rate of 3% compounded per annum. Figure 2.3 and Figure 2.4 show the design traffic volumes for the 2017 and 2027 respectively.

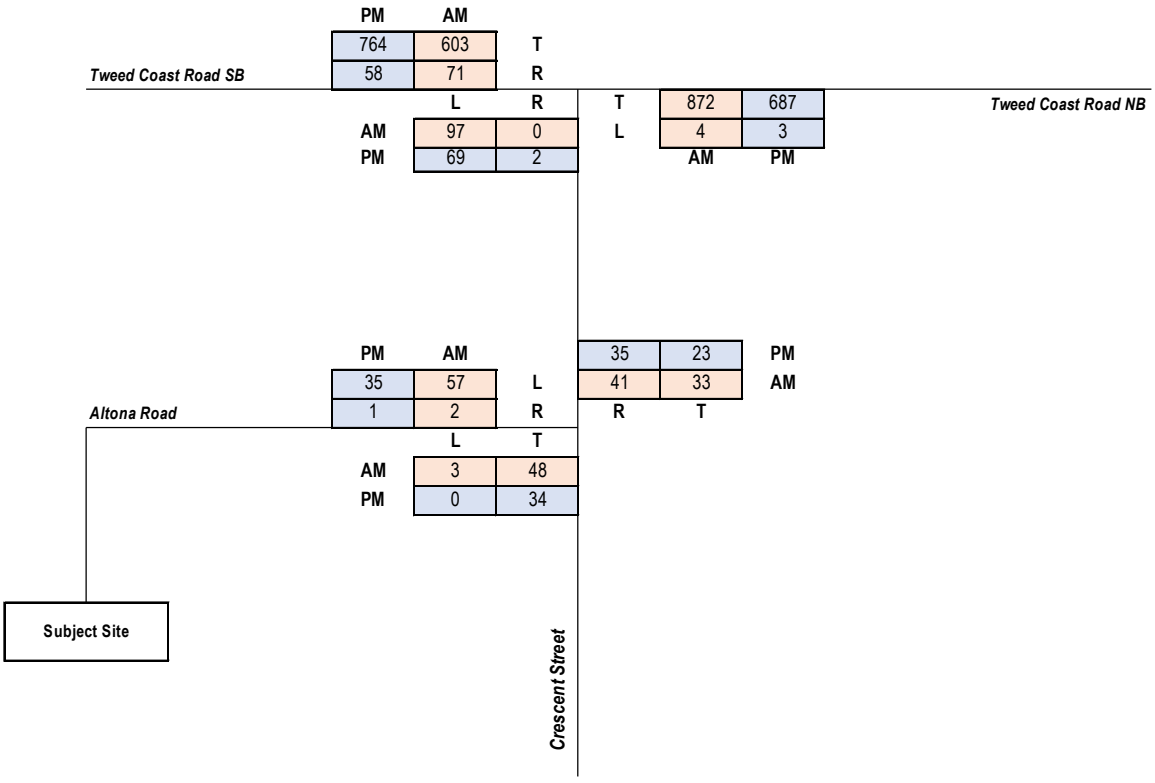


Figure 2.3: 2017 Peak Hour Design Traffic Volumes

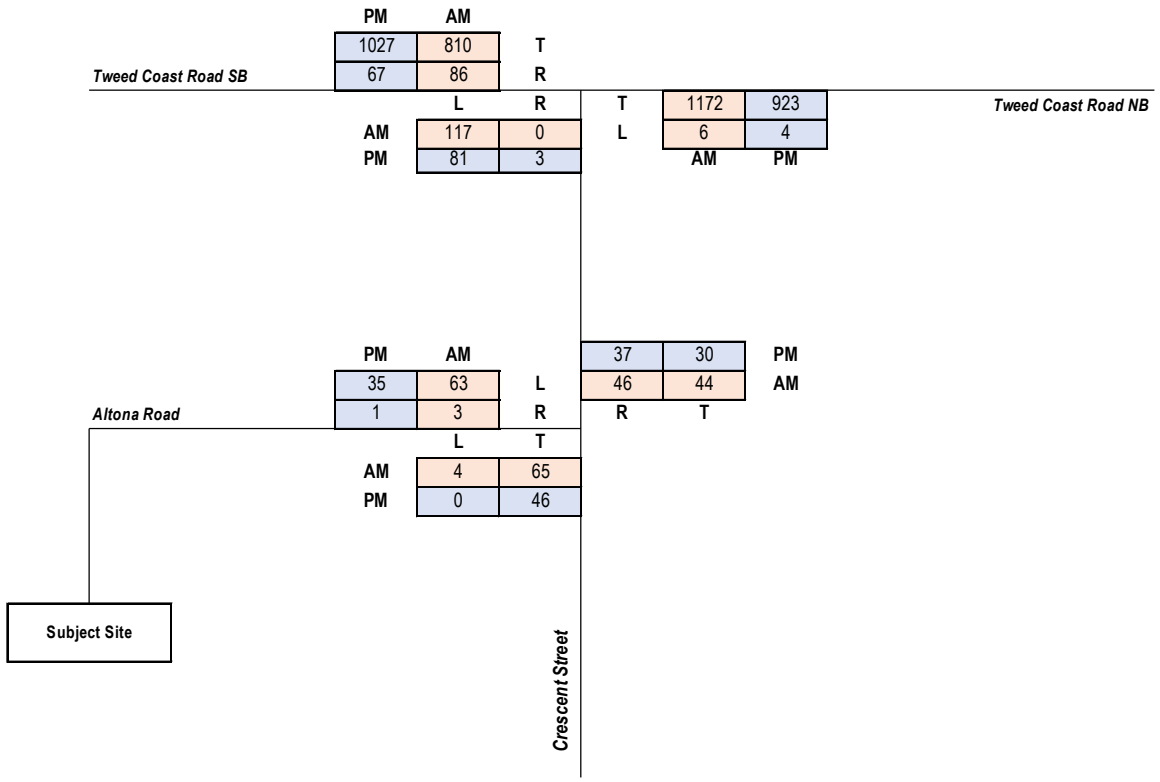


Figure 2.4: 2027 Peak Hour Design Traffic Volumes

In order to determine the impacts of the proposed development on the surrounding road network, SIDRA Intersection 7.0 software was used to quantify the effects of the design traffic. A SIDRA assessment was undertaken on the Tweed Coast Road / Crescent Street and Crescent Street / Altona Road priority controlled intersections.

It should be noted that, based on discussion with RMS, the following analysis has been undertaken to determine if the proposed TSQ development would cause the need for additional upgrades above those required by Cudgen Lakes Sand Quarry Consent Condition. As such, existing intersection layouts have not been modelled as part of this assessment.

Figure 2.5 and Figure 2.6 show the Tweed Coast Road / Crescent Street and Crescent Street / Altona Road priority controlled intersections respectively.

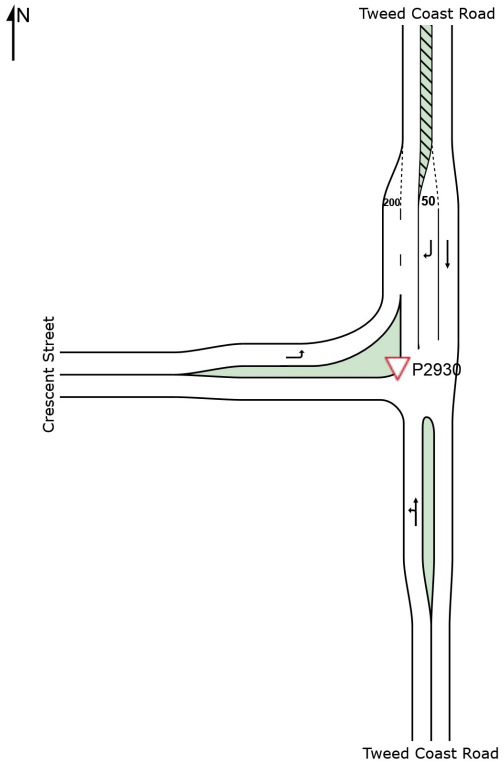


Figure 2.5: Tweed Coast Road / Crescent Street Intersection Layout

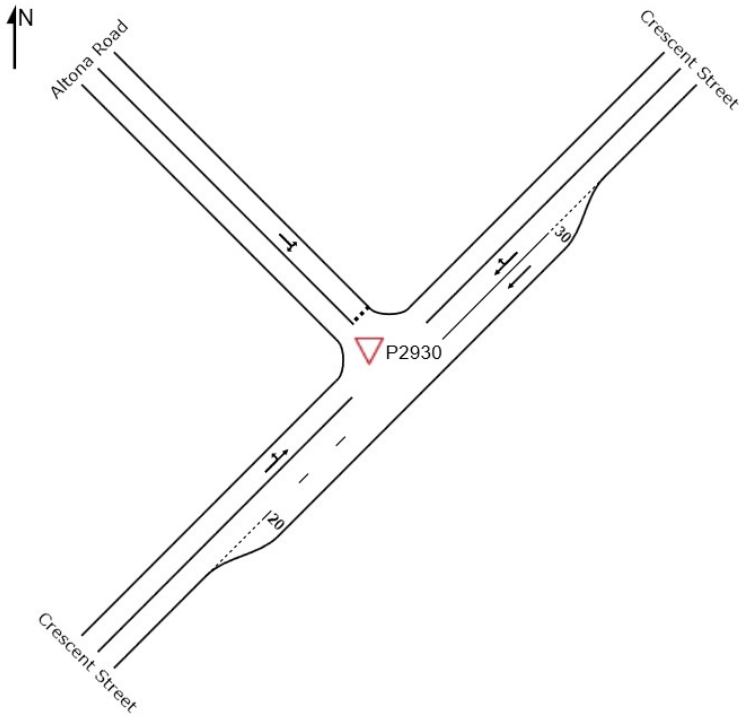


Figure 2.6: Crescent Street / Altona Road Intersection Layout

The AM and PM peak period results for the 2027 design year for the Tweed Coast Road / Crescent Street and Crescent Street / Altona Road intersections are presented in Table 2.2 and Table 2.3 respectively.

Table 2.2: 2027 SIDRA Results Summary – Tweed Coast Road / Crescent Street

Approach	Degree of Saturation (v/c)	Average Delay (sec)	95th Percentile Queue (m)
	Combined Intersection Model (2027)		
AM Peak			
Tweed Coast Road (South)	0.636	0.2	0
Tweed Coast Road (North)	0.698	5.9	27.6
Crescent Street (West)	0.081	6	0
Intersection	0.698	2.8	27.6
PM Peak			
Tweed Coast Road (South)	0.501	0.1	0
Tweed Coast Road (North)	0.55	1.3	8.7
Crescent Street (West)	0.06	6	0
Intersection	0.55	1	8.7

Table 2.3: 2027 SIDRA Results Summary – Crescent Street / Altona Road

Approach	Degree of Saturation (v/c)	Average Delay (sec)	95th Percentile Queue (m)
	Combined Intersection Model (2027)		
AM Peak			
Crescent Street (Northeast)	0.058	4.5	2.7
Altona Road (Northwest)	0.062	4.2	2.7
Crescent Street (Southwest)	0.037	0.4	0
Intersection	0.062	3.1	2.7
PM Peak			
Crescent Street (Northeast)	0.043	4.4	2.1
Altona Road (Northwest)	0.037	4	1.9
Crescent Street (Southwest)	0.025	0.1	0
Intersection	0.043	3	2.1

As an intersection approaches Degree of Saturation (DOS) 0.85 or 85% it's capacity begins to have impacts on the surrounding road network. The above SIDRA results demonstrate that both priority controlled intersections perform acceptably (DOS < 0.85) and do not have any significant queuing impacts. Upgraded intersection layouts are therefore considered appropriate to accommodate the proposed development combined with Cudgen Lakes Sand Quarry. Detailed SIDRA Outputs are presented in Attachment 1.

2.2. Item 2

Project Approval MP05_0103 requires an upgrade of the Tweed Coast Road and Crescent Street intersection prior to the transportation of sand by road. Consideration should be given to identifying an equitable arrangement for delivery of any intersection improvements required to address the cumulative road safety and traffic impacts of approved developments in the subject area.

As per the above, the Tweed Coast Road / Crescent Street and Crescent Street / Altona Road priority controlled intersections do not require intersections improvements above those already proposed due to the proposed Cudgen Lakes Sand Quarry development traffic when considering cumulative road and safety impacts with the Cudgen Lakes Sand Quarry development.

2.3. Item 3

The supporting TIA has focused primarily on capacity analyses of affected intersections along the designated haulage route. Further consideration should be given to road safety at the site access, along the designated haulage route and at affected intersections. Any assessment should consider, but not be limited to, the following;

- *Available sight distances for the posted speed limits*
- *Intersection geometry, delineation and regulatory signage.*
- *Width of carriageway and objects or drainage structures within clear zones.*

The following assessment has been undertaken at the site access and along the designated haulage route and at affected intersections.

Sight Distance Assessment

Sight distance for the three affected intersections has been assessed in accordance with Austroads Guide to Road Design Part 4a, considering heavy vehicle use and taking into consideration the design speed. Required sight distance and achievable sight distance are summarised in Table 2.4.

Table 2.4: Safe Intersection Sight Distance Requirements for a Truck

Location	Design Speed**	Austroads: Guide to Road Design Part 4a Requirements	Minimum Achievable Sight Distance
Site Access / Altona Road	Site located at dead end*		
Altona Road / Crescent Street	60 km/h	99 m	220 m
Tweed Coast Road / Crescent Street	90 km/h	185 m	190 m

**stopping bays provided along length of Altona Road to allow inbound vehicles to yield to outbound vehicles and all light vehicles give way to heavy vehicles (see Bitzios traffic report presented in Attachment 2 for more information).*
***Design speed = +10km/h over posted speed as per Austroads Guidelines*

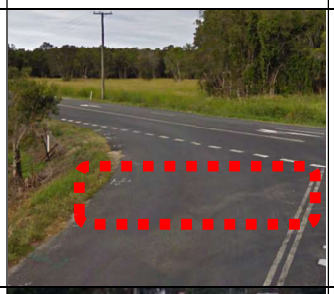
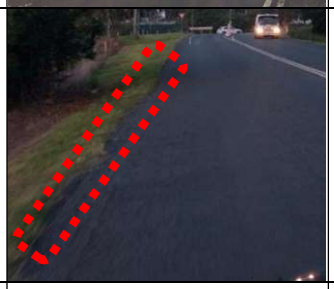
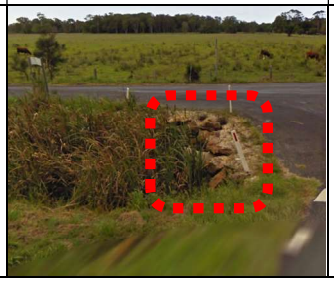
As demonstrated in Table 2.4, the intersections are considered to provide sufficient sight distance to comply with the requirements prescribed by Austroads for heavy vehicles.

Safety Review

The following items, presented in Table 2.5, were noted regarding intersection geometry, road delineation, regulatory signage, width of carriageway and objects or drainage structures within clear zones. It should be noted that no findings are expected to impact the safe operation of the intersections within the inclusion of additional development traffic. Any recommended improvements on Crescent Street or Tweed Coast Road are related to general road maintenance and are the responsibility of the road authority.

Table 2.5: Road Condition Review

Location	Findings	Illustration	Comments
Site Access / Altona Road	Absence of trucks turning signage and recommended speed signage		Investigate installing appropriate speed signage. Consider installing truck turning warning signs on approach to site access to assist in driver awareness
	Culvert/ditch hazard		Install guideposts at hazard.

Location	Findings	Illustration	Comments
	Soft Edges on Altona Road		It is understood that Altona Road is to be monitored and maintained by existing properties with access to the road. Cudgen Lakes Sand Quarry development has proposed significant works and realignment of Altona Road in the long term.
	Three formalised and signalised passing opportunities for trucks		Considered appropriate.
Altona Road / Crescent Street	Absence of give-way line marking for Altona Road approach		Install give-way line marking
	Absence of shoulders on Crescent Street		Investigate formalising shoulders on Crescent Street (Council)
	Absence of intersection signage at Crescent Street Approach		Consider installing intersection warning signs to assist driver awareness
	Culvert/ditch hazard at Crescent Street south approach		Improve the guideposts at hazard

Based on the findings within Table 2.5, an Impact Assessment and Mitigation Matrix was prepared comparing the 'without development' and 'with development' scenarios to determine any significant exacerbation of existing issues as a result of the proposed development traffic impacts. Table 2.6 shows the Impact Assessment associated with the development.

Table 2.6: Impact Assessment

Risk Item	Without the Development			With Development		
	Likelihood	Consequence	Result	Likelihood	Consequence	Result
Frequency of Heavy Vehicles	1	2	L	2	2	L
Crash due to culvert	1	2	L	1	2	L
Off-path crash due to soft road edges	1	3	L	1	3	L
Crash due to narrow shoulders	1	3	M	1	3	M
Crash due to absence of intersection signage	2	2	L	2	2	L

*Likelihood and Consequence ratings utilised in the above table are ranked from one (1) to five (5) and are defined below. It should be noted that the resulting **Low**, **Medium** or **High** risk result is based on a combination of these two elements, site inspections and a professional understanding of the risks involved.*
***Likelihood** - **1** (Rare/Very Unlikely) to **5** (Frequent/Highly Likely)*
***Consequence** - **1** (Low Severity/Minor Incident) to **5** (Very High Severity/Death)*

Table 2.6 demonstrates that the proposed development has a negligible impact and is not considered to exacerbate existing maintenance issues along adjacent roads or at nearby intersections.

As per the above assessment, we conclude that there is no significant traffic or safety impacts associated with the proposed development that would preclude its approval and relevant conditioning by RMS and Council.

Yours faithfully

Andrew Eke
Manager – Gold Coast & Northern NSW
Principal Traffic Engineer / Transport Planner
BITZIOS CONSULTING

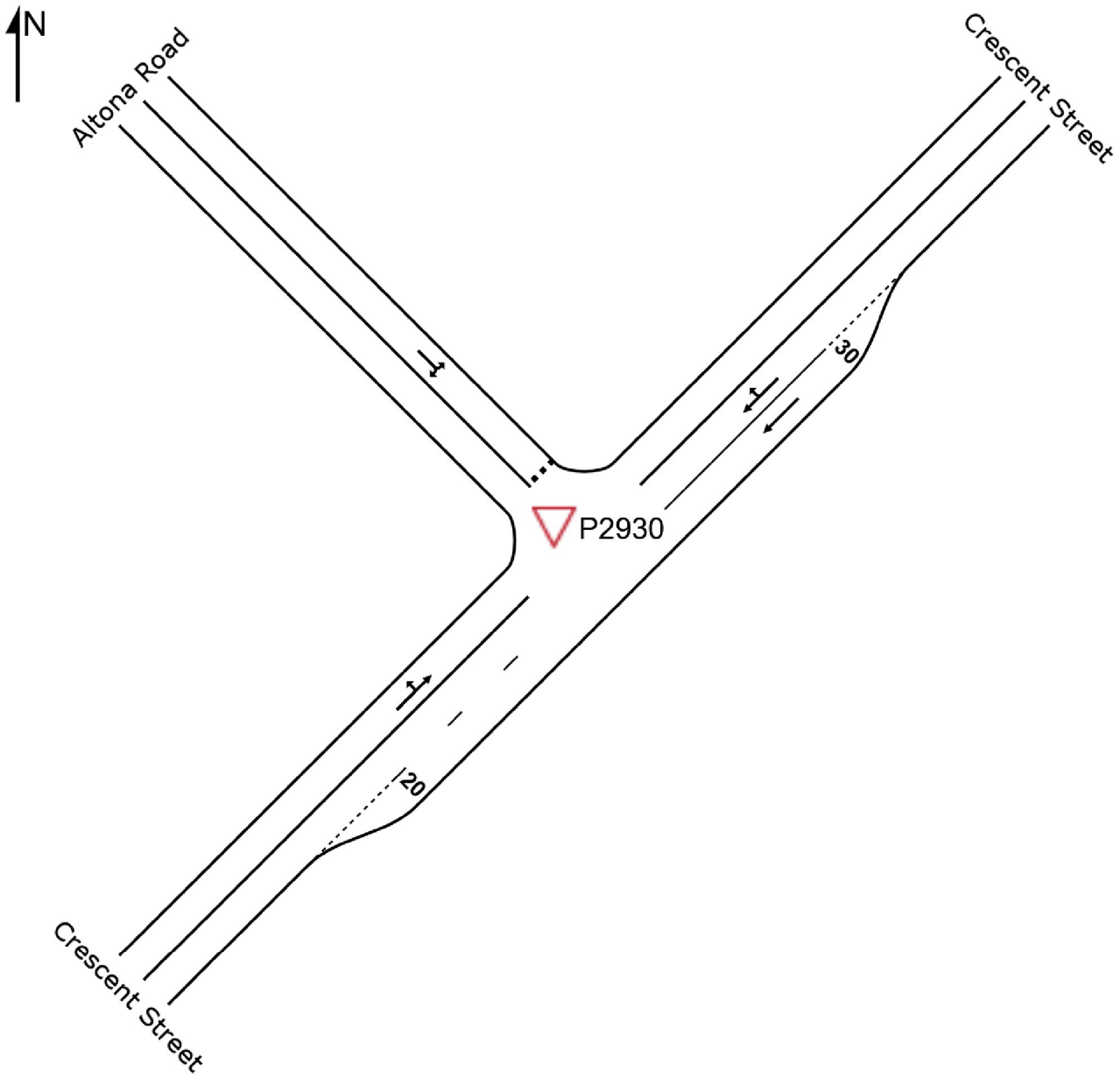
ATTACHMENT 1

SIDRA OUTPUTS

SITE LAYOUT

Site: P2930 [2027 AM Design]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: P2930 [2027 AM Design]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	46	0.0	0.058	2.9	LOS A	0.3	2.8	0.10	0.35	69.0
26	R2	48	78.3	0.058	6.1	LOS A	0.3	2.8	0.20	0.69	39.0
Approach		95	40.0	0.058	4.5	NA	0.3	2.8	0.15	0.53	49.5
NorthWest: Altona Road											
27	L2	66	66.7	0.062	4.1	LOS A	0.3	2.7	0.18	0.44	37.5
29	R2	3	0.0	0.062	4.5	LOS A	0.3	2.7	0.18	0.44	38.1
Approach		69	63.6	0.062	4.2	LOS A	0.3	2.7	0.18	0.44	37.5
SouthWest: Crescent Street											
30	L2	4	0.0	0.037	6.8	LOS A	0.0	0.0	0.00	0.04	72.2
31	T1	68	0.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.04	76.7
Approach		73	0.0	0.037	0.4	NA	0.0	0.0	0.00	0.04	76.4
All Vehicles		237	34.7	0.062	3.2	NA	0.3	2.8	0.12	0.35	50.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 PM Design]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	32	0.0	0.043	2.8	LOS A	0.2	2.1	0.07	0.33	69.3
26	R2	39	81.1	0.043	5.7	LOS A	0.2	2.1	0.16	0.71	38.5
Approach		71	44.8	0.043	4.4	NA	0.2	2.1	0.12	0.54	48.1
NorthWest: Altona Road											
27	L2	37	100.0	0.037	4.0	LOS A	0.1	1.9	0.16	0.43	37.6
29	R2	1	0.0	0.037	4.2	LOS A	0.1	1.9	0.16	0.43	38.2
Approach		38	97.2	0.037	4.0	LOS A	0.1	1.9	0.16	0.43	37.6
SouthWest: Crescent Street											
30	L2	1	0.0	0.025	6.9	LOS A	0.0	0.0	0.00	0.01	73.8
31	T1	48	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.01	78.8
Approach		49	0.0	0.025	0.1	NA	0.0	0.0	0.00	0.01	78.6
All Vehicles		158	43.3	0.043	3.0	NA	0.2	2.1	0.09	0.35	50.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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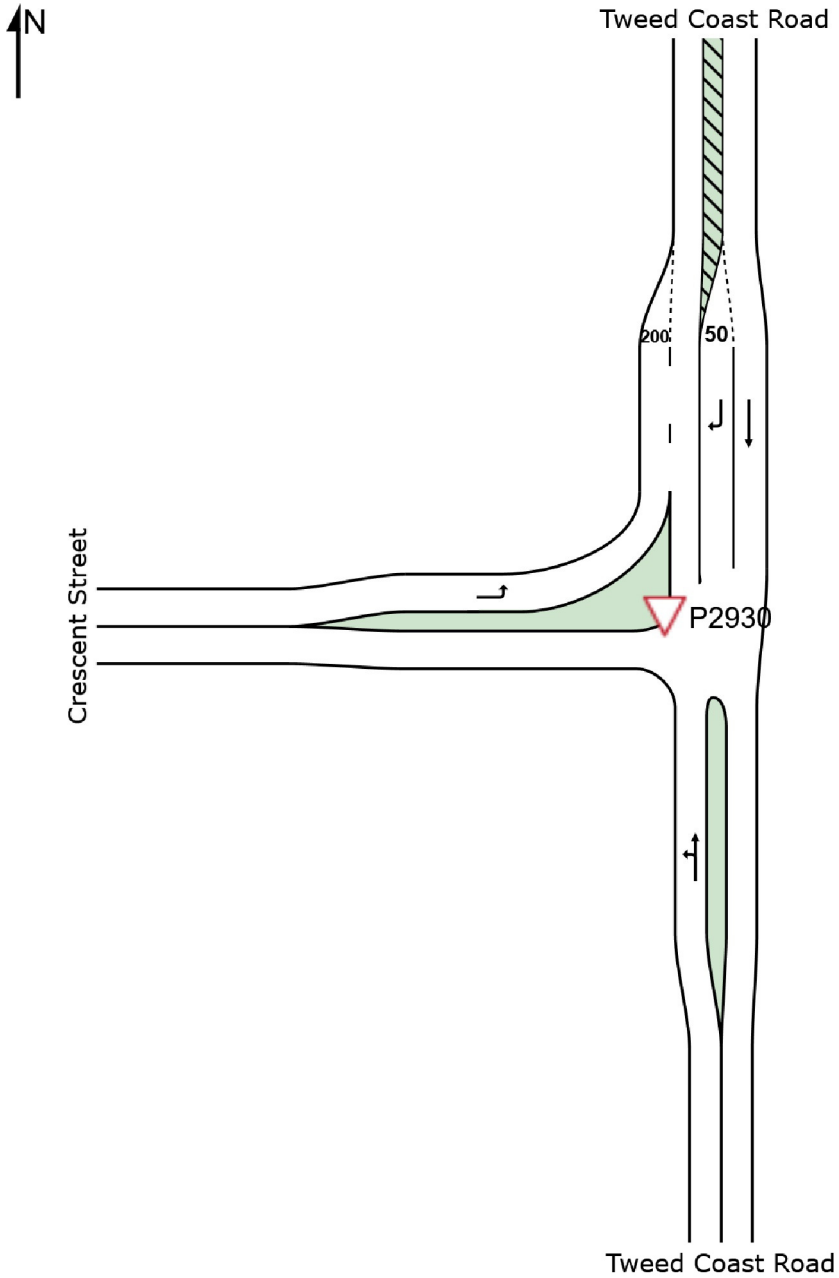
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: P2930 [2027 AM Design]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: P2930 [2027 AM Design]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	6	0.0	0.636	5.7	LOS A	0.0	0.0	0.00	0.00	58.1
2	T1	1234	0.0	0.636	0.1	LOS A	0.0	0.0	0.00	0.00	59.7
Approach		1240	0.0	0.636	0.2	NA	0.0	0.0	0.00	0.00	59.7
North: Tweed Coast Road											
8	T1	853	0.0	0.433	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
9	R2	91	41.9	0.698	61.4	LOS F	2.9	27.6	0.97	1.15	28.9
Approach		943	4.0	0.698	5.9	NA	2.9	27.6	0.09	0.11	54.3
West: Crescent Street											
10	L2	123	35.9	0.081	6.0	LOS A	0.0	0.0	0.00	0.51	53.7
Approach		123	35.9	0.081	6.0	NA	0.0	0.0	0.00	0.51	53.7
All Vehicles		2306	3.6	0.698	2.8	NA	2.9	27.6	0.04	0.07	57.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 PM Design]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	4	0.0	0.501	5.6	LOS A	0.0	0.0	0.00	0.00	58.2
2	T1	972	0.0	0.501	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		976	0.0	0.501	0.1	NA	0.0	0.0	0.00	0.00	59.8
North: Tweed Coast Road											
8	T1	1084	0.0	0.550	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
9	R2	71	44.8	0.240	19.8	LOS C	0.9	8.7	0.84	0.96	43.1
Approach		1155	2.7	0.550	1.3	NA	0.9	8.7	0.05	0.06	58.4
West: Crescent Street											
10	L2	88	41.7	0.060	6.0	LOS A	0.0	0.0	0.00	0.51	53.5
Approach		88	41.7	0.060	6.0	NA	0.0	0.0	0.00	0.51	53.5
All Vehicles		2219	3.1	0.550	1.0	NA	0.9	8.7	0.03	0.05	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

ATTACHMENT 2

P2930.008R TWEED SAND QUARRY TIA

TWEED SAND QUARRY
LOT 22 (DP1082435), LOT 23 (DP1077509) AND LOT 494 (DP720450)
CRESCENT STREET CUDGEN
TRAFFIC IMPACT ASSESSMENT

FOR

HANSON CONSTRUCTION MATERIALS

BITZIOS consulting

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1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting has been engaged by Hanson Construction Materials to prepare a traffic impact assessment for the existing Tweed Sand Quarry (TSQ) located at Altona Road, Chinderah. The site for the existing development is located on Lot 22 (DP1082435), Lot 23 (DP1077509) and Lot 494 (DP720450), adjacent to the Kingscliff Wastewater Treatment Plant.

Source: Google Maps

Figure 1.1: Site Location

1.2 SCOPE

The purpose of this report is to undertake an assessment of the potential traffic and transport impacts associated with the proposed increase in extraction limit for the existing sand quarry on the external road network. This includes the impact of increased vehicle trips along Altona Road, as well as the Crescent Street / Altona Road and Tweed Coast Road / Crescent Street intersections. Specifically, this report includes:

- an estimation of development's increase in traffic generation and the distribution onto the external road network;
- assessment of the development's traffic impacts on the surrounding road network (including the Tweed Coast Road / Crescent Street and the Crescent Street / Altona Road intersections for the year 2017 and 10-year design horizon);
- the observation and calculation of the proportion of equivalent standard axles (heavy vehicles) attributed to the Tweed Sand Quarry and Council's Wastewater Treatment Plant and Sustainable Living Centre along Altona Road, both before and after the proposed development expansion;
- the increase in average annual daily traffic (AADT) traffic generation to assist in calculating Council's Section 94, Plan No. 4 Road Infrastructure Contributions;
- assessment of site access location and form;
- assessing the on-site parking layout for general traffic and service vehicle manoeuvring; and
- assessing any impacts to public transport, pedestrian and cycling networks and connectivity within vicinity of the site (as required by RMS).

2. EXISTING CONDITIONS

2.1 ROAD NETWORK

The site for the existing development is located on the southern side of Altona Road, Chinderah, with designated access from Tweed Coast Road via Crescent Street. The site is located approximately 2.75km to the south of the Pacific Highway. Table 2.1 provides details for the existing key roads and intersection configurations within close proximity to the subject site.

Table 2.1: Surrounding Road Network

Road Name	No. of Lanes	Median Divided?	Jurisdiction	Hierarchy	Comments
Altona Road	1*	No Lines	TSC	Access	Local access road connecting to development site and other large scale land uses (i.e. agricultural land, waste treatment facility). Provides stopping bays to inbound vehicles
Crescent Street	2	No	TSC	Local Collector	Connects to Cudgen residential area and provides access to Tweed Coast Road.
Tweed Coast Road	2	No	TSC	Sub-Arterial	Regional arterial road connecting to the highway in the north and running along the coast to the south via a number of local townships.

**stopping bays provided along length of road to allow inbound vehicles to yield to outbound vehicles. All light vehicles give way to heavy vehicles.*

The following nearby intersections are to be assessed as part of the proposed development's traffic impacts:

- Tweed Coast Road / Crescent Street priority-controlled intersection; and
- Crescent Street / Altona Road priority-controlled intersection.

Crescent Street south of the Altona Road intersection is subject to load limit restrictions. Signage located to the immediate south of the intersection states that the road has a gross load limit of 14.5 tonnes. It should be noted that Schedule 3, Condition 31 of the site development consent states that "*No heavy vehicles shall travel via Crescent Street through Cudgen Village, except for local deliveries to Cudgen Village*".

2.2 BACKGROUND TRAFFIC VOLUMES

Background traffic volumes were obtained from traffic surveys undertaken by Traffic Data and Control (TDC) for:

- Tweed Coast Road / Crescent Street Intersection – AM (7:00AM to 9:00AM) and PM (3:00PM to 6:00PM) Intersection Counts – Thursday 15th December 2016; and
- Crescent Street / Altona Road Intersection – AM (7:00AM to 9:00AM) and PM (3:00PM to 6:00PM) Intersection Counts – Thursday 15th December 2016.

The traffic volumes for the surveyed three (3) hour periods by vehicle type is summarised in Table 2.2.

Table 2.2: Surveyed Total Traffic Volumes by Vehicle Type on Local Roads

Location		Two-Way Traffic Volumes	
		AM (3-hr period)	PM (3-hr period)
Crescent Street	- Trucks	51	21
	- Light Vehicles	145	172
Altona Road	- Trucks	43	11
	- Light Vehicles	40	11

Survey video data was reviewed to determine all the truck traffic by vehicles types utilising Altona Road in the AM (8:00AM to 9:00AM) and PM (3:00PM to 4:00PM) peaks. Tweed Sand Quarry (TSQ) trucks were observed as Tuck and Dog (TD) and Articulating Vehicles (AV), all Medium Rigid Vehicles (MRV) were observed as related to Council's Wastewater Treatment Plant. The surveyed heavy vehicle volumes by truck type is summarised in Table 2.3.

Table 2.3 Surveyed Existing Truck Volumes by Type Using Altona Road

Vehicle Type AM	Tweed Sand Quarry (TD)		Tweed Sand Quarry (AV)		Council (MRV)	
Direction	Axles	Count*	Axles	Count	Axles	Count
In	7	1	-	-	4	1
	6	1			2	2
Out	6	5	6	2	2	3
					4	2
Vehicle Type PM	**Tweed Sand Quarry (TD)**		**Tweed Sand Quarry (AV)**		**Council (MRV)**	
Direction	Axles	Count	Axles	Count	Axles	Count
In	7	1	6	4	-	-
Out	7	1	6	3	-	-

**Each counted vehicle has its number of corresponding axles in the Axles column (i.e. there are five (5) TD's with six (6) axles each).*

Using the above survey, the proportion of trucks by total ESA's for the peak periods was calculated, as summarised in Table 2.4.

Table 2.4: ESA's by Truck Type on Altona Road Per Peak Hour

Vehicle Type (AM Peak)	Tweed Sand Quarry (TD) 6 Axles	Tweed Sand Quarry (TD) 7 Axles	Tweed Sand Quarry (AV) 6 Axles	Council (MRV) 2 Axles	Council (MRV) 4 Axles
Number of Vehicles	6	1	2	5	3
ESA's Per Commercial Vehicle When Fully Loaded *	7.3	8	5.1	3	4.4
ESA Total	43.8	8	10.2	15	13.2
Vehicle Type (PM Peak)	**Tweed Sand Quarry (TD) 6 Axles**	**Tweed Sand Quarry (TD) 7 Axles**	**Tweed Sand Quarry (AV) 6 Axles**	**Council (MRV) 2 Axles**	**Council (MRV) 4 Axles**
Number of Vehicles	-	2	7	-	-
ESA's Per Commercial Vehicle When Fully Loaded *	7.3	8	5.1	3	4.4
ESA Total	0	16	35.7	0	0

**ESA values are as per AustRoads Vehicle Classification and are for a typical fully loaded vehicle of each type.*

The percentage split of truck volumes for the peak periods is summarised in Table 2.5

Table 2.5: Surveyed Percentage Traffic Volumes by Truck Types on Altona Road*

Vehicle Type AM	Total Number of Trucks	Trucks over total vehicles%	Tweed Sand Quarry (TD) %	Tweed Sand Quarry (AV) %	Council (MRV) %
In	5	29%	40%	0%	60%
Out	12	44%	42%	17%	41%
Vehicle Type PM	**Total Number of Trucks**	**Trucks over total vehicles %**	**Tweed Sand Quarry (TD) %**	**Tweed Sand Quarry (AV) %**	**Council (MRV) %**
In	5	83%	20%	80%	0%
Out	4	50%	25%	75%	0%

**percentages by Tweed Sand Quarry plus Council's trucks equals 100%.*

The background traffic volumes for the AM (8:00AM to 9:00AM) and PM (3:00PM to 4:00PM) peaks, including TSQ haulage truck volumes, is provided in Figure 2.1. The traffic survey data is provided in Appendix A.

It should be noted that for all network figures in this assessment, traffic movements are shown as 'T' (Through traffic), 'L' (Left turning traffic) and 'R' (Right turning traffic).

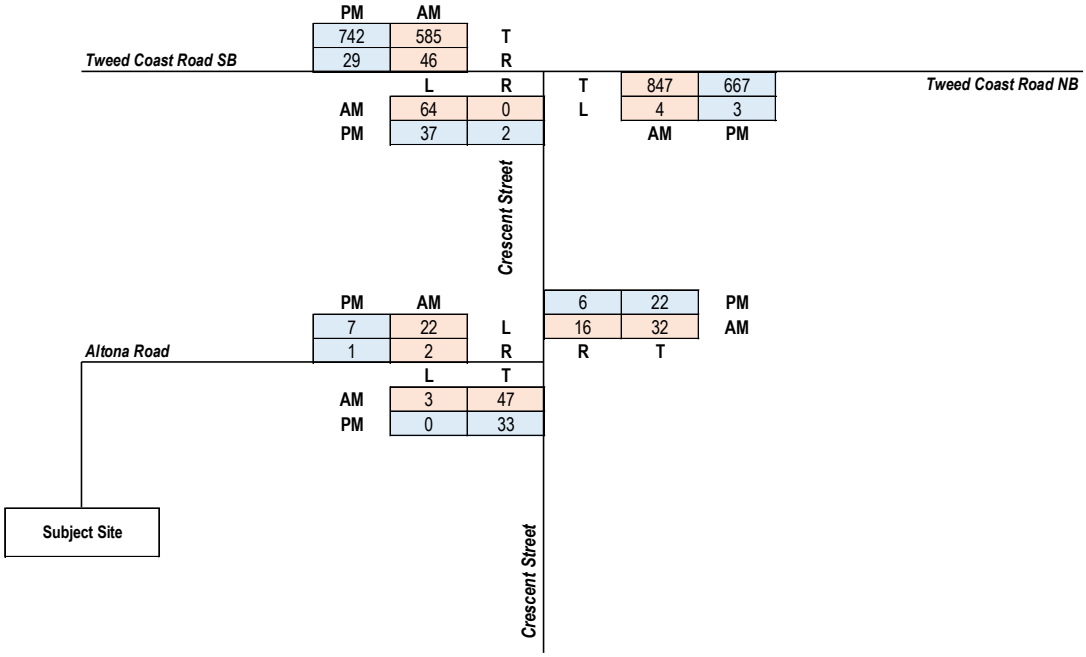


Figure 2.1: 2016 Peak Hour Background Traffic Volumes

Further to the above peak hour background traffic volumes, the existing haulage truck volumes generated by the development were recorded for the purposes of estimating the additional haulage truck movements associated with the extraction limit increase. The existing peak hour haulage truck volumes are provided in Figure 2.2.

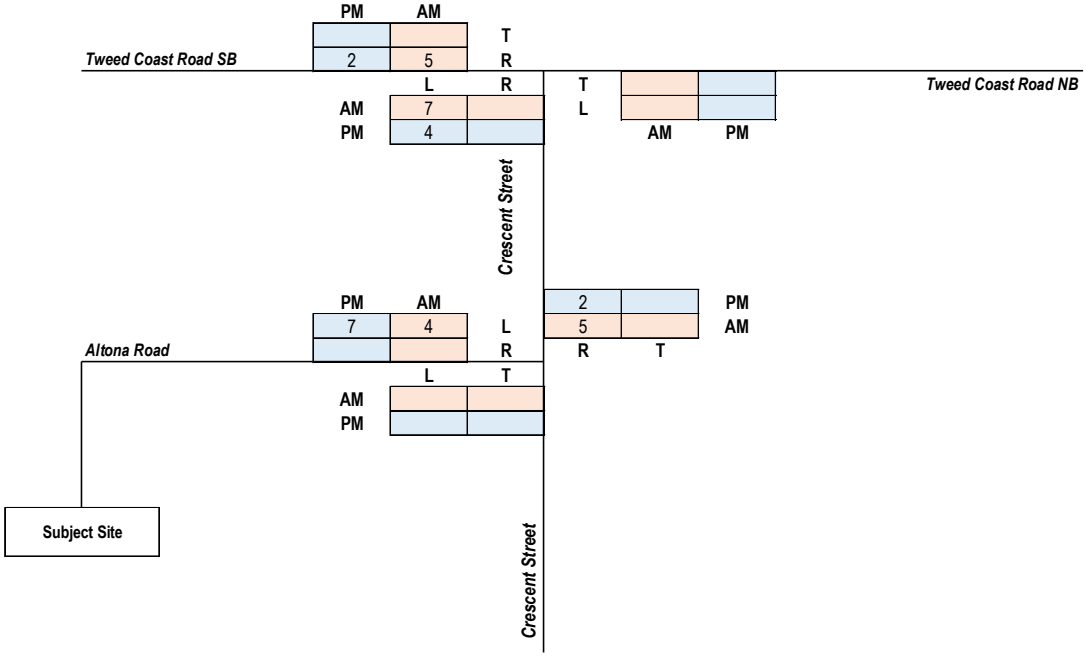


Figure 2.2: 2016 Peak Hour Tweed Sand Quarry Haulage Truck Movements

It is understood that the above peak hour haulage movements do not occur hourly throughout a typical day, site operations and truck movements are monitored (e.g. weigh station) to ensure conditioned daily truck

movement limits are not exceeded. Resulting in a typically lower number of movements throughout the middle of the day.

2.3 TRAFFIC GROWTH

Population data (*sourced from Profile ID online)* has been analysed alongside an understanding of the planned future growth in the area to provide an indication of expected background traffic growth. A linearly growth rate of 1.5% p.a. was extrapolated from the available data. In addition to this, the rate of future growth is expected to increase as a result of surrounding development, namely in the nearby Kings Forest area.

Given the above, a compounding growth rate of 3.0% p.a. has been applied to background traffic volumes (excluding TSQ haulage trucks) in order to forecast background traffic volumes in year 2017 (anticipated "year of opening") and year 2027 (10-year design horizon).

With the assumption that the extraction limit increase at the site is approved, the site's approved resources will be exhausted by year 2024 (approx. 7 years). Noting this, the assessment of the surrounding road network for a 10-year design horizon scenario is considered conservative.

3. DEVELOPMENT DETAILS

3.1 DEVELOPMENT OPERATIONS

The existing development is a sand extraction and processing facility which operates a single dredge to mine high-quality sand from an on-site lake. The dredge material is transferred to shore via a pipe where it is processed through a wash plant and stock-piled. A front-end loader transfers the material to road haulage trucks for delivery as required. The facility is currently limited to an annual extraction of 150,000m^3 of processed material.

While the development operates for extended hours, truck movements to and from the development are restricted to the following periods:

- 7:00am to 5:00pm – Monday to Friday; and
- 7:00am to 12:00pm – Saturday.

Further to the above, Schedule 2, Condition 9 of the current TSQ Development Consent restricts development truck movements to the following:

- 200 per day (max);
- 80 per day (rolling quarterly average); and
- 20 per hour (max peak).

3.2 PROPOSED EXTRACTION LIMITS

It is understood that the development proposes to expand its annual extraction output to approximately 265,000m^3, or approximately 503,500 tonnes.

Further to the above, a modification to Schedule 2, Condition 9 proposed an equivalent increase in development truck movements to the following:

- 354 per day (max);
- 142 per day (rolling quarterly average); and
- 36 per hour (peak).

4. TRAFFIC ASSESSMENT

4.1 DEVELOPMENT GENERATED TRAFFIC

Development generated traffic considers the truck movement limitations and existing haulage truck volumes provided in Figure 2.2 where a total of nine (9) truck trips were observed during both the AM and PM peaks. The site's proposed conditions are to allow for up to 36 truck trips during the peak period, as such the proposed development is restricted to generating a maximum of 27 additional haulage truck trips in the AM peak hour and a maximum of 27 additional haulage truck trips in the PM peak hour.

As the increase in extraction does not propose additional staff or servicing, only additional haulage truck trips have been considered in the development generated traffic for the purposes of this assessment.

It should be noted that the development is not expected to approach the maximum number of peak hour trips allowed within approval conditions across its lifespan. The proposed additional extraction of 115,000m^3 applied as a ratio (150,000current: 265,000future) to the surveyed peak hour truck trips can be used to estimate the number of additional trips that may occur during the peak hour.

(9 / (150,000/265,000)) – 9

= 6.9 additional trips during the peak hour

Considering the above it is expected an additional 6.9 trips would occur during the both the AM and PM peak periods (assuming trucks arrive at equal intervals throughout a regular working day). However, the number of additional trips applied for this assessment (27 trips in each peak hour) takes the most conservative approach to determining traffic impacts on the road network.

The traffic generation for the proposed development scenarios is summarised as follows:

- expected trip generation = 16 truck trips (9 additional); and
- maximum trip generation = 36 truck trips (27 additional).

4.1.1 Future Truck Volumes on Altona Road

The future truck volumes on Altona Road have been provided in Table 4.1 for both the expected and maximum trip generation scenarios. It is understood that the development uses Truck and Dog vehicles and as such it was assumed the additional truck volumes would be designated as 6-axle Truck and Dog vehicles.

Table 4.1 also considers the future (2017) Council truck volumes on Altona Road as follows:

- AM Peak – 5 trips in and 3 trips out; and
- PM Peak – 0 trips in and 0 trips out.

Table 4.1: Percentage Traffic by Trucks Types on Altona Road Post-Development (2017)

Vehicle Type AM	Total Number of Trucks	Trucks %	Tweed Sand Quarry (TD) %	Tweed Sand Quarry (AV) %	Council (MRV) %
In (expected)	7	37%	57%	0%	43%
In (maximum)	11	48%	73%	0%	27%
Out (expected)	17	52%	59%	12%	29%
Out (maximum)	33	67%	79%	6%	15%
Total (expected)	24	46%	58%	9%	33%
Total (maximum)	44	61%	77%	5%	18%
Vehicle Type PM	**Total Number of Trucks**	**Trucks %**	**Tweed Sand Quarry (TD) %**	**Tweed Sand Quarry (AV) %**	**Council (MRV) %**
In (expected)	9	64%	56%	44%	0%
In (maximum)	20	80%	80%	20%	0%
Out (expected)	7	88%	57%	43%	0%
Out (maximum)	16	94%	94%	6%	0%
Total (expected)	16	31%	56%	44%	0%
Total (maximum)	36	86%	81%	19%	0%

The traffic generation is not expected to increase from the year of opening (2017) to the 10-year design horizon (2027).

It should be noted that the expected 6.9 additional trips were rounded to seven (7) trips for both the AM and PM peak periods. This would result in an additional two (2) trucks in and five (5) trucks out during the AM peak; and four (4) trucks in and three (3) trucks out during the PM peak on Altona Road.

For the maximum trip generation scenario, an additional 27 trips is anticipated for both the AM and PM peak periods. This would result in an additional six (6) trucks in and 21 trucks out during the AM peak; and 15 trucks in and four 12 trucks out during the PM peak on Altona Road.

The future truck volume proportions on Altona Road by ESA's for each the peak periods (maximum development scenario) were calculated as shown in Table 4.2

Table 4.2: ESA by Truck Type on Altona Road Post-Development Per Peak Hour (2017)

Vehicle Type (AM Peak)	Tweed Sand Quarry (TD) 6 Axles	Tweed Sand Quarry (TD) 7 Axles	Tweed Sand Quarry (AV) 6 Axles	Council (MRV) 2 Axles	Council (MRV) 4 Axles
Number of Vehicles	33	1	2	5	3
ESA's Per Commercial Vehicle When Fully Loaded *	7.3	8	5.1	3	4.4
ESA Total	240.9	8	10.2	15	13.2
Vehicle Type (PM Peak)	**Tweed Sand Quarry (TD) 6 Axles**	**Tweed Sand Quarry (TD) 7 Axles**	**Tweed Sand Quarry (AV) 6 Axles**	**Council (MRV) 2 Axles**	**Council (MRV) 4 Axles**
Number of Vehicles	27	2	7	-	-
ESA's Per Commercial Vehicle When Fully Loaded *	7.3	8	5.1	3	4.4
ESA Total	197.1	16	35.7	0	0

**ESA values as found within AustRoads Vehicle Classification and are for an average fully loaded typical vehicle.*

As shown in the table above, it is expected an additional ESA of 197.1 will occur due to the proposed development for both the AM and PM peak periods.

4.2 TRIP DISTRIBUTION

The distribution of haulage truck trips has been assigned on the basis of background traffic volumes, as well as the designated haulage route along Tweed Coast Road to the north.

Based on the development traffic generation, and the associated trip distributions, Figure 4.1 illustrates the additional haulage truck trip assignment for the surrounding road network during the AM and PM peak hours for the 'expected' scenario.

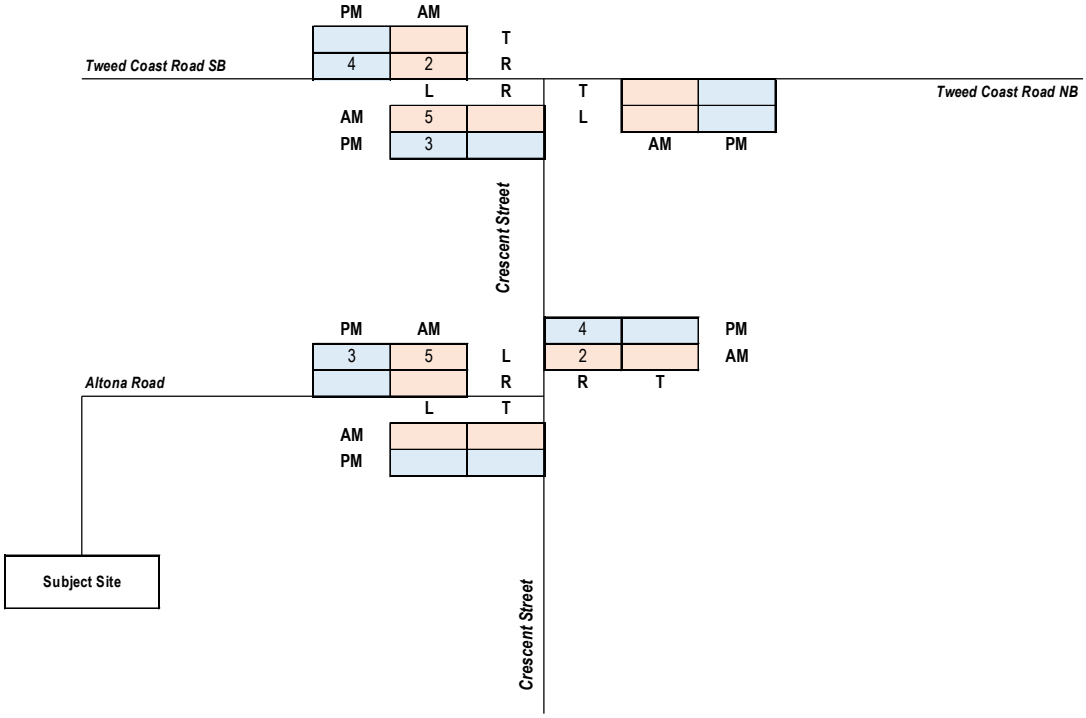


Figure 4.1: Expected Additional Peak Hour Development Traffic Assignment

Figure 4.2 demonstrates the anticipated 'maximum' additional truck movements based on the proposed extraction limits.

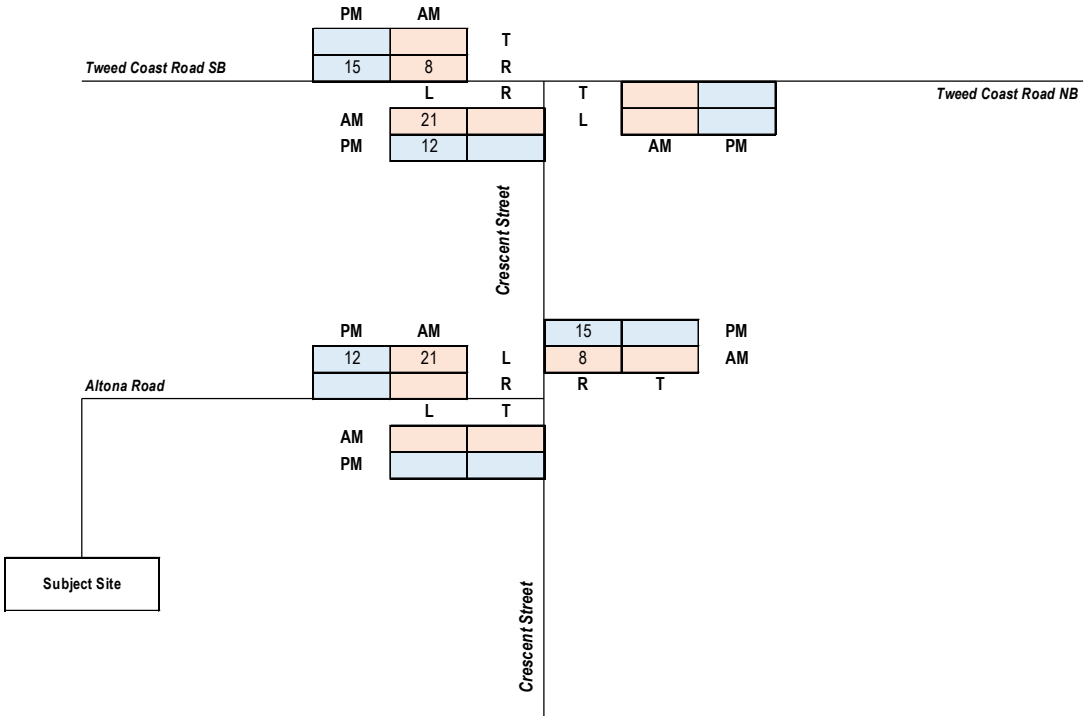


Figure 4.2: Maximum Additional Peak Hour Development Traffic Assignment

4.2.1 Design Traffic Volumes

The 2017 design traffic volumes (i.e. background + development) for the proposed development operations for the expected and maximum scenarios are shown below in Figure 4.3 and Figure 4.4 respectively.

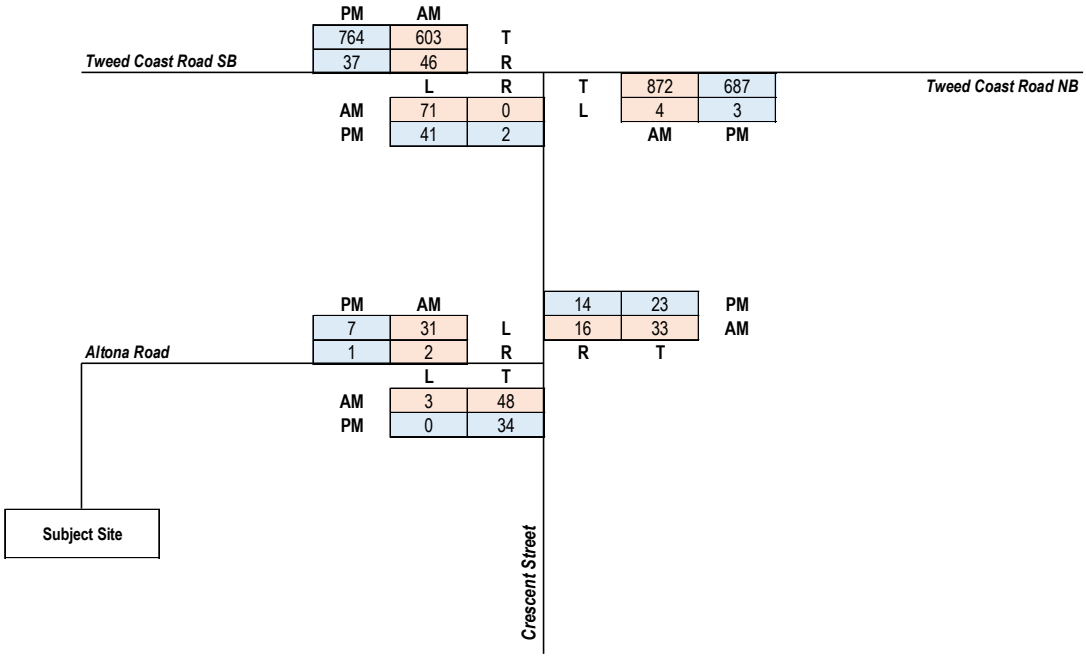


Figure 4.3: 2017 Design Peak Hour Traffic Volumes (Expected Scenario)

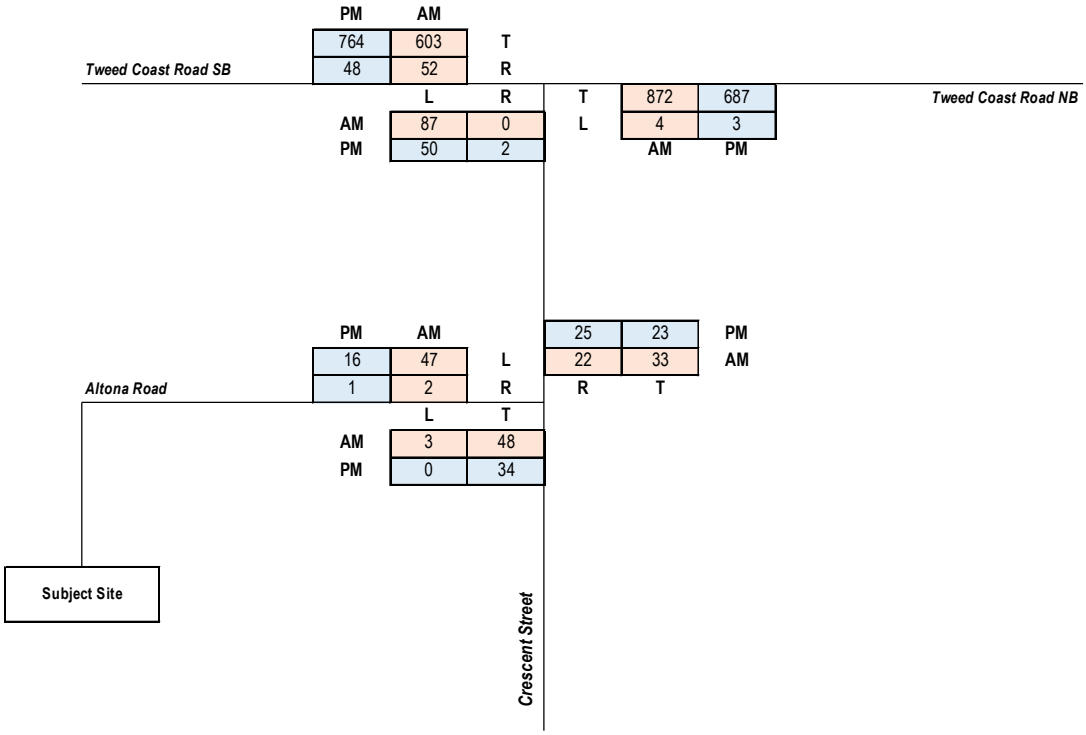


Figure 4.4: 2017 Design Peak Hour Traffic Volumes (Maximum Scenario)

The 2027 design traffic volumes (i.e. background + development) for the proposed development operations for the expected and maximum scenarios are shown below in Figure 4.5 and Figure 4.6 respectively.

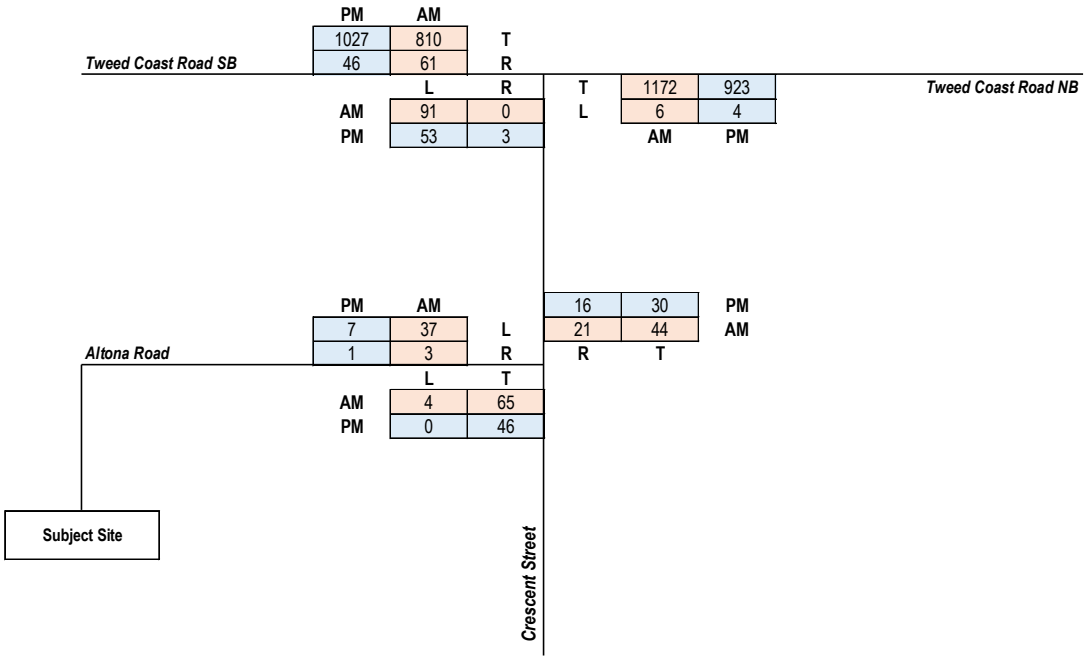


Figure 4.5: 2027 Design Peak Hour Traffic Volumes (Expected Scenario)

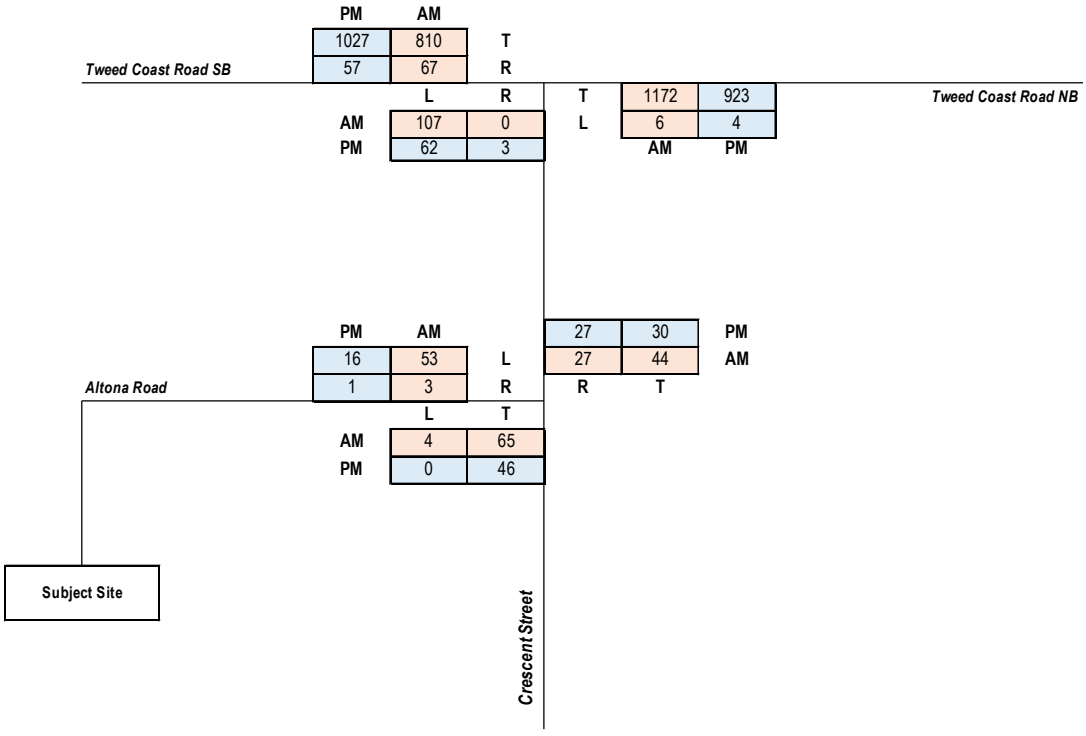


Figure 4.6: 2027 Design Peak Hour Traffic Volumes (Maximum Scenario)

4.3 SIDRA ANALYSIS

The operational performance of each intersection was analysed using SIDRA Intersection v7.0 software to assess the "without development" and "with development" scenarios for 2017 and 2027 design years, this includes 'expected' and 'maximum' proposed scenarios. The assessment and findings are presented herein.

4.3.1 Tweed Coast Road / Crescent Street Intersection

The SIDRA output results for the Tweed Coast Road / Crescent Street Intersection in 2017 and 2027 weekday AM and PM peak periods for "base" and "design" scenarios are provided in Table 4.3.

Table 4.3: Tweed Coast Road / Crescent Street Intersection SIDRA Results Summary

Peak Period	Design Year	Base			Design (background + development)		
		DOS	Average Delay (s)	95% Back of Queue (m)	DOS	Average Delay (s)	95% Back of Queue (m)
AM	2017 (expected)	0.473	1.9	13.4	0.473	2.1	14.9
	2017 (maximum)	0.473	1.9	13.4	0.473	2.8	19.6
	2027 (expected)	0.636	6.3	85.3	0.636	7.0	89.5
	2027 (maximum)	0.636	6.3	85.3	0.797	10.0	102.6
PM	2017 (expected)	0.373	1.0	7.2	0.380	1.2	9.3
	2017 (maximum)	0.373	1.0	7.2	0.408	1.7	15.4
	2027 (expected)	0.523	2.0	20.1	0.540	2.5	25.4
	2027 (maximum)	0.523	2.0	20.1	0.591	3.8	81.3

The SIDRA results summarised in Table 4.3 indicate that the subject intersection operates below the acceptable performance limits for a priority-controlled intersection (i.e. DOS<0.8) both with and without additional development traffic out to a design year of 2027. Detailed SIDRA outputs are included in Appendix B.

4.3.2 Crescent Street / Altona Road Intersection

The SIDRA output results for the Crescent Street / Altona Road Intersection in 2017 and 2027 weekday AM and PM peak periods for "without development" and "with development" scenarios are provided in Table 4.4.

Table 4.4: Crescent Street / Altona Road Intersection SIDRA Results Summary

Peak Period	Design Year	Base			Design (background + development)		
		DOS	Average Delay (s)	95% Back of Queue (m)	DOS	Average Delay (s)	95% Back of Queue (m)
AM	2017 (expected)	0.028	2.4	0.9	0.040	2.6	1.1
	2017 (maximum)	0.028	2.4	0.9	0.046	3.0	2.0
	2027 (expected)	0.038	2.4	1.1	0.038	2.5	1.3
	2027 (maximum)	0.038	2.4	1.1	0.051	2.8	2.2
PM	2017 (expected)	0.019	2.0	0.6	0.022	2.4	0.8
	2017 (maximum)	0.019	2.0	0.6	0.031	2.9	1.4
	2027 (expected)	0.026	1.9	0.6	0.027	2.2	1.0
	2027 (maximum)	0.026	1.9	0.6	0.036	2.7	1.7

The SIDRA results summarised in Table 4.4 indicate that the subject intersection operates below the acceptable performance limits for a priority-controlled intersection (i.e. DOS<0.8) both with and without additional development traffic out to a design year of 2027. Detailed SIDRA outputs are included in Appendix B.

4.4 Altona Road Cross-Section

The first 650m of Altona Road west of Crescent Street presently exists as a single lane two-way roadway with supplementary stopping bays. The stopping bays have been provided to allow traffic to pass along the one-way section of Altona Road. Signage observed on-site outlines that vehicles must "give way to trucks" while it is understood that typically westbound (inbound) trucks will yield to eastbound (outbound) trucks. Appropriate signage is provided along Altona Road indicating the operation of the stopping bays. The location of the stopping bays is illustrated in Figure 4.7.

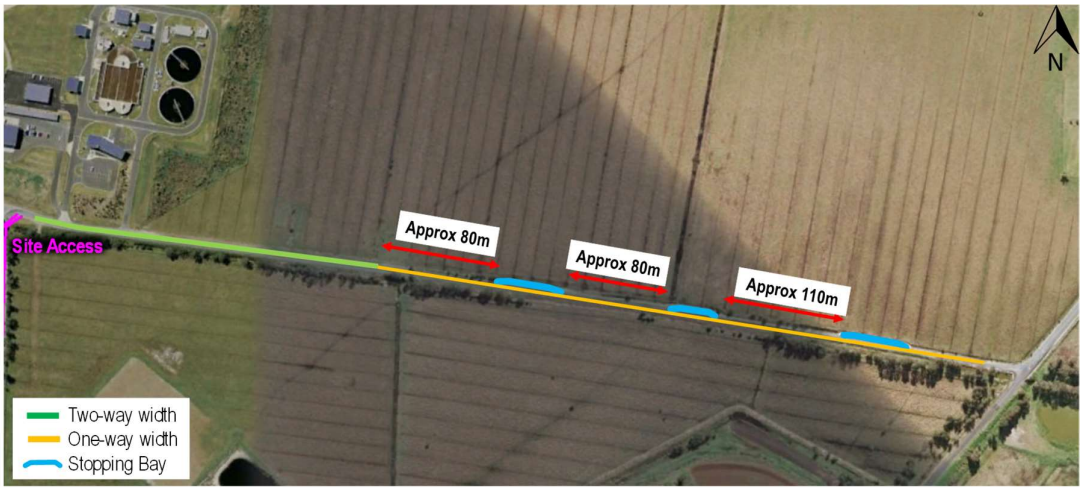


Figure 4.7: Altona Road Layout

4.5 SECTION 94 ROAD CONTRIBUTIONS

The Tweed Shire Council (TSC) Section 94 Plan No. 4 – Tweed Road Contribution Plan (TRCP) does not include a specific trip rate for 'Material Extraction Facility'. Furthermore, the Council's TRCP indicates that *"Where a proposed traffic generation rate departs from the prescriptive rates in this table (excluding the dwelling house and multi house component) or is not stated, a detailed Traffic Study is required substantiating that the proposal conforms with the principles and objectives of this plan."*. Given this, the total daily trip ends have been calculated based on the material extraction limits, as well as the developments existing and future operations. The development is located within Sector 6 – Kingscliff as specified in Schedule 3 – Boundary Definitions in the TRCP.

Section 94 contributions are applied based on a development's number of "daily trips" using rates found within the latest version of the TRCP. As the TRCP does not include a specific trip rate for this development the number of average daily trips has been calculated using a "first principles" approach. The annual extraction limit and average truck capacity were used to determine the number of trucks per year. It was distributed across a typical year (365 days) to determine the daily average rate of truck movements.

The existing development site, with an extraction limit of 150,000m³, currently generates:

- Annual Extraction 150,000m³
- Average Haulage Truck Capacity 16.5m³
- Haulage Trucks per Year 9,091
- Haulage Trucks per Day 25
- Haulage Truck Trip Ends per Day 50
- Employee Trip Ends per Day 4
- Visitor Trip Ends per Week 6
- Visitor Trip Ends per Day 0.86
- **Total Development Trip Ends 54.86**

Based on the above, with an increase in extraction to 265,000m³, the proposed development operations are expected to generate:

- Increase in Annual Extraction 115,000m³
- Average Haulage Truck Capacity 16.5m³
- Haulage Trucks per Year 6,969.7
- Additional Haulage Trucks per Day 19.095
- Additional Haulage Truck Trip Ends per Day 38.19
- **Additional Daily Development Trip Ends 38.19**

The total additional daily trip ends calculated above reflects the proposed developments total impact on the road network.

Based on the current Tweed Road Contribution Plan, Section 94 (2016), a monetary rate of $1,207 per trip is applied to new development generated trips, resulting in a total additional contribution of $46,952.30. It should be noted that this applied rate is indexed by Council and would be expected to change for future years.

5. PARKING ASSESSMENT

5.1 INTERNAL LAYOUT

It is understood that the development site will retain its parking and queuing operations on the existing site layout, as shown in Figure 5.1. Visitors and employees to the site will park adjacent to the site office while trucks are provided sufficient queuing and temporary parking capacity within the allocated circulation area.

Figure 5.1: Internal Site Layout

The queuing and parking of trucks within the circulation area is considered acceptable given the type of development and the short-stay nature of trucks on-site. Further to this, the internal layout and roadway width provides sufficient width for heavy vehicles to pass and does not restrict access by other vehicles accessing the development.

5.2 SITE ACCESS

The existing site access to the development will be retained as part of the proposed extraction increase. The existing access off Altona Road is shown below in Figure 5.2 and is approximately 4.5 metres in width.

Figure 5.2: Site Access

6. ALTERNATE TRANSPORT

6.1 PUBLIC TRANSPORT

While the site is not located within proximity to bus stops, bus route 603 (Tweed Heads to Pottsville) runs along Crescent Street and onto Tweed Coast Road. However, the increased haulage truck movements generated by the development are not expected to impact on public transport services. It is understood that services along this route operation at hourly intervals. Figure 6.1 highlights public transport accessibility around the site.

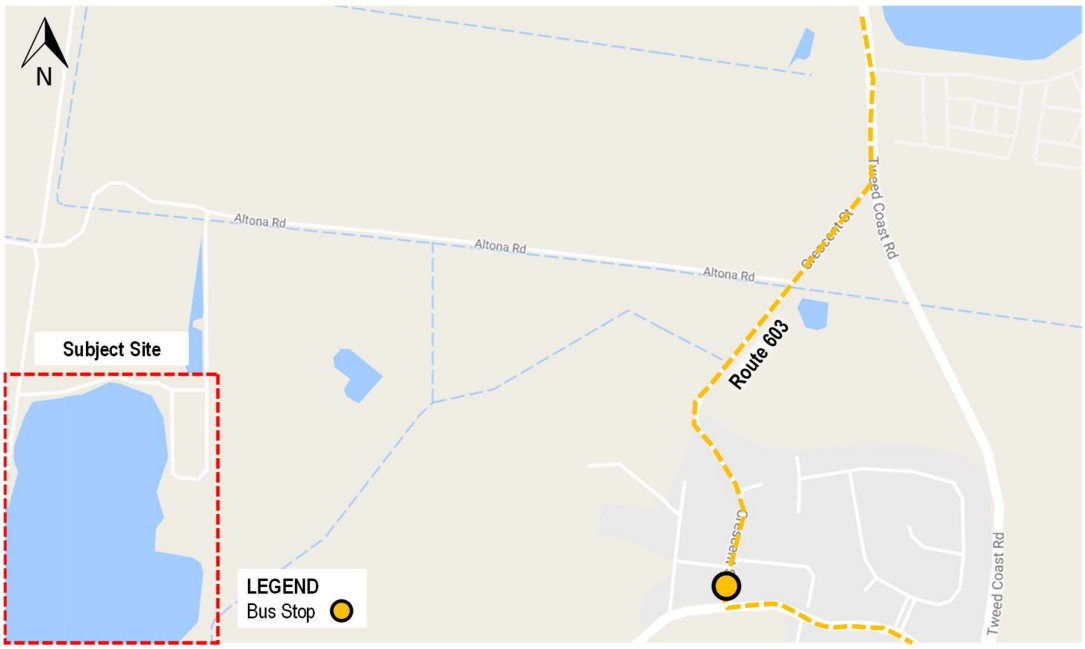
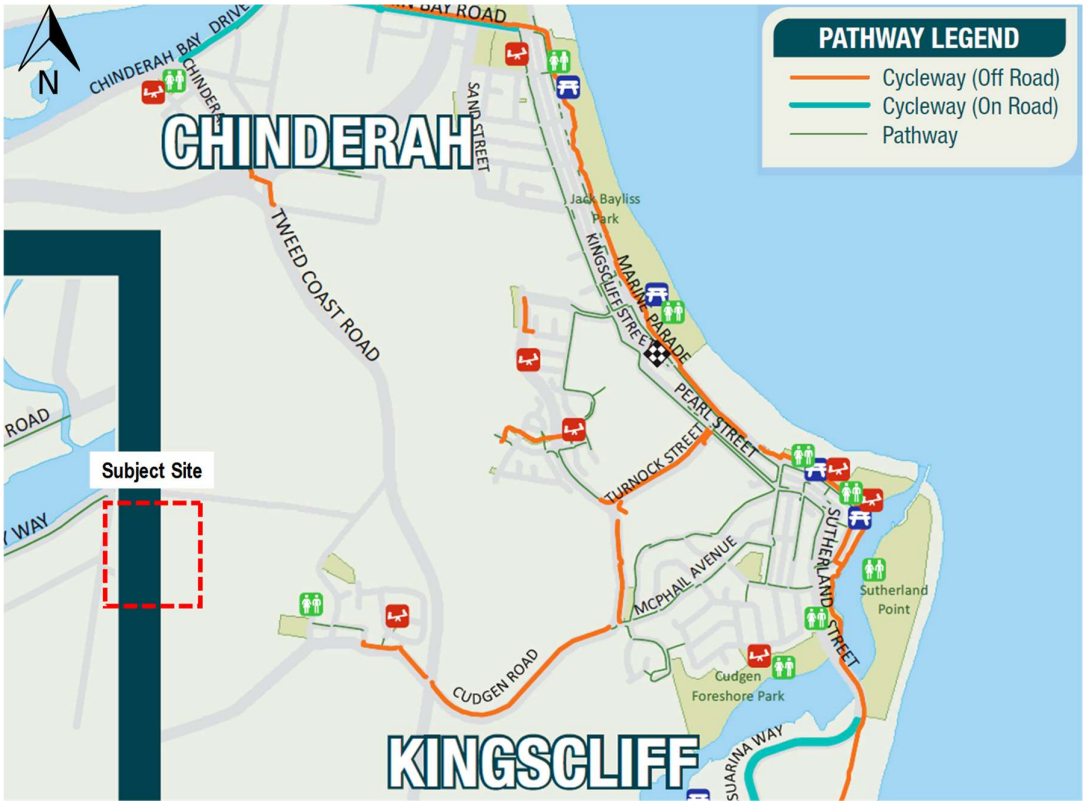


Figure 6.1: Public Transport Accessibility

6.2 ACTIVE TRANSPORT

The areas surrounding the development are not conducive for pedestrian or cyclist use. Active transport facilities are located east of the site, as depicted by Figure 6.2.



Source: Tweed Shire Council Cycleway Map

Figure 6.2: Local Cycle Network

7. CONCLUSION

The key findings from the Tweed Sand Quarry (TSQ) proposed expansion traffic impact assessment are as follows:

- the development proposes to increase the extraction of material from 150,000m³ p.a. to 265,000m³ per p.a. (an increase of 115,000m³) and retains the existing access and site layout. Access to the site is provided from Altona Road via Crescent Street and Tweed Coast Road;
- the development proposes no increase in employees nor is an increase in visitors expected as a result of the extraction increase;
- the existing development provides a large internal circulation road which also acts as queuing space and temporary parking for trucks. Due to the short-stay nature of truck visits to the site the allocated queuing and parking space is suitable;
- approval conditions allow the development site to generate a maximum of an additional 27 haulage truck movements during the AM and PM peak periods (8am - 9am and 3pm - 4pm). However, it should be noted that the development's proposed additional resource extraction of 115,000m^3 equates to an approximate increase of 6.9 truck trips in peak periods based on observed TSQ truck movements;
- based on the increase in truck trips from the proposed development, it is expected that the percentage split of truck types utilising Altona Road in AM peak will be approximately 67% for Tweed Sand Quarry and 33% for Council; and in the PM peak will be solely (100%) Tweed Sand Quarry trucks;
- a detailed intersection analysis using SIDRA Intersection software was undertaken for the Tweed Coast Road / Crescent Street and Crescent Street / Altona Road priority-controlled intersections. It was found that both intersections operate well within acceptable performance criteria under a priority-controlled configuration in the 10-year design horizon based on the maximum allowable number of additional trips (27) under the existing approval conditions;
- based on the increase in extraction and associated haulage limits the development is expected to generate an additional 38.19 daily trips for the purposes of calculating Council's Section 94 Road Contribution requirements; and
- the development is not expected to introduce any impacts on the surrounding public transport (bus) network.

Based on the above assessment we conclude that there are no significant traffic or transport impacts associated with the development's proposed increase in extraction to preclude its approval and relevant conditioning on transport planning grounds.

APPENDIX A

TRAFFIC COUNT DATA

TDC
Traffic Data & Control

SURVEY INFORMATION

Site ID:	2		
Location:	Altona Rd & Crescent St, Chinderah		
Date:	15 / Dec / 2016		
Time Period 1:	07:00	to	09:00
Time Period 2:	15:00	to	18:00

	Primary Classes:	Secondary Classes:
1	Light Vehicles	Pedestrians
2	Trucks	None
3	Bicycles on Road	
4	None	
5	None	

Weather Conditions 1: Fine **Weather Conditions 2:** Fine

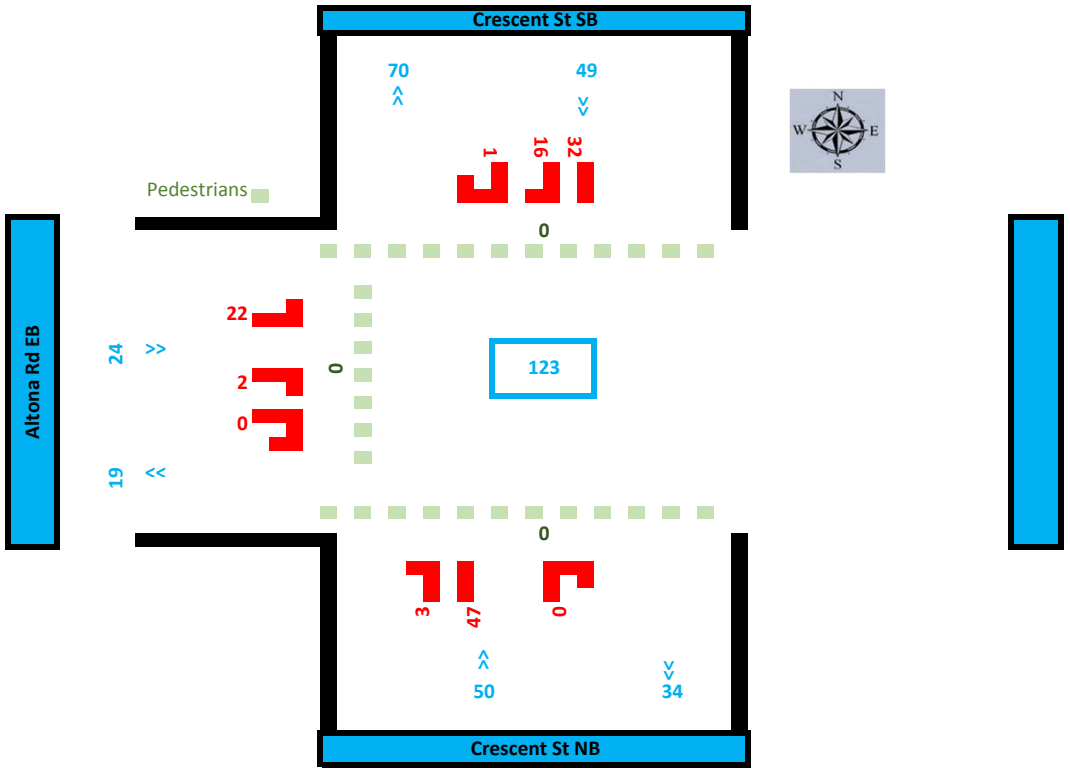
Intersection Legs:		Ch	
	North	☑	Crescent St SB
	East	☐	
	South	☑	Crescent St NB
	West	☑	Altona Rd EB

Output time interval: 15 mins

MAP

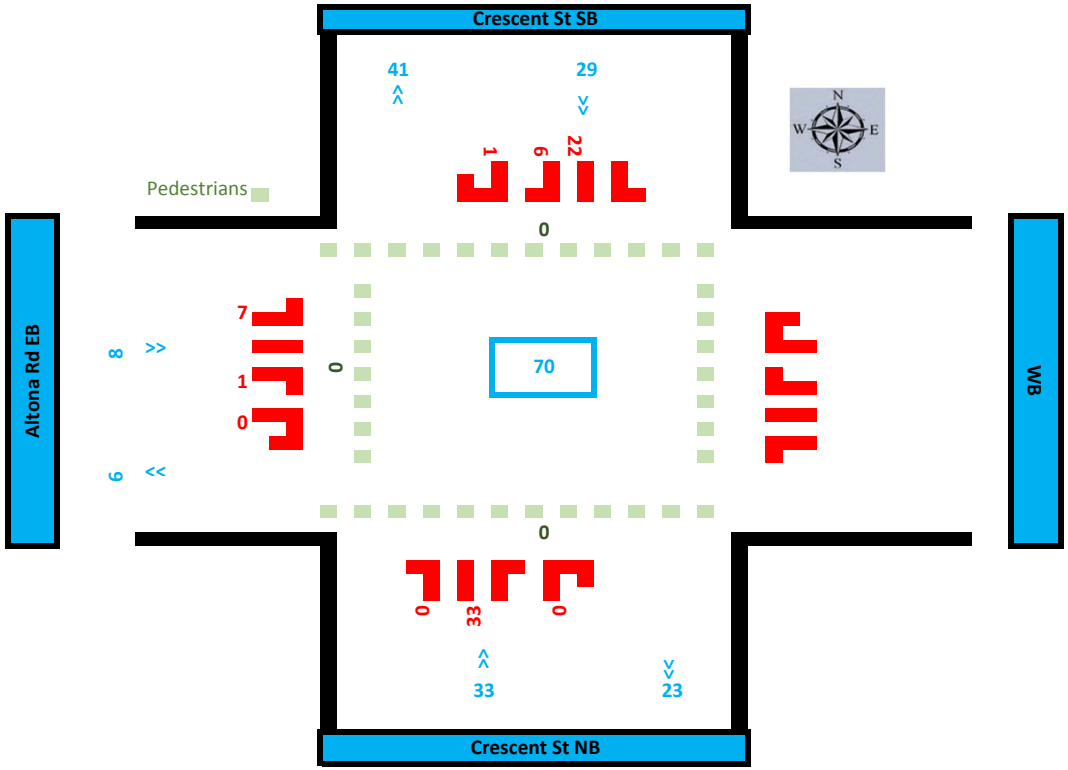
Turning Movement Count Summary

Site ID:	2
Location:	Altona Rd & Crescent St, Chinderah
Date:	15-Dec-2016
Surveyed Time:	7:00 AM to 9:00 AM
Weather:	Fine
Data for hour starting:	8:00 AM to 9:00 AM
Vehicle Class:	ALL VEHICLES



Turning Movement Count Summary

Site ID:	2
Location:	Altona Rd & Crescent St, Chinderah
Date:	15-Dec-2016
Surveyed Time:	3:00 PM to 6:00 PM
Weather:	Fine
Data for hour starting:	3:00 PM to 4:00 PM
Vehicle Class:	ALL VEHICLES



TDC
Traffic Data & Control

SURVEY INFORMATION

Site ID:	1			
Location:	Tweed Coast Rd & Crescent St, Chinderah			
Date:	15	/ Dec /	2016	
Time Period 1:	07:00	to	09:00	
Time Period 2:	15:00	to	18:00	

	Primary Classes:	Secondary Classes:
1	Light Vehicles	Pedestrians
2	Trucks	None
3	Bicycles on Road	
4	None	
5	None	

Weather Conditions 1: Fine **Weather Conditions 2:** Fine

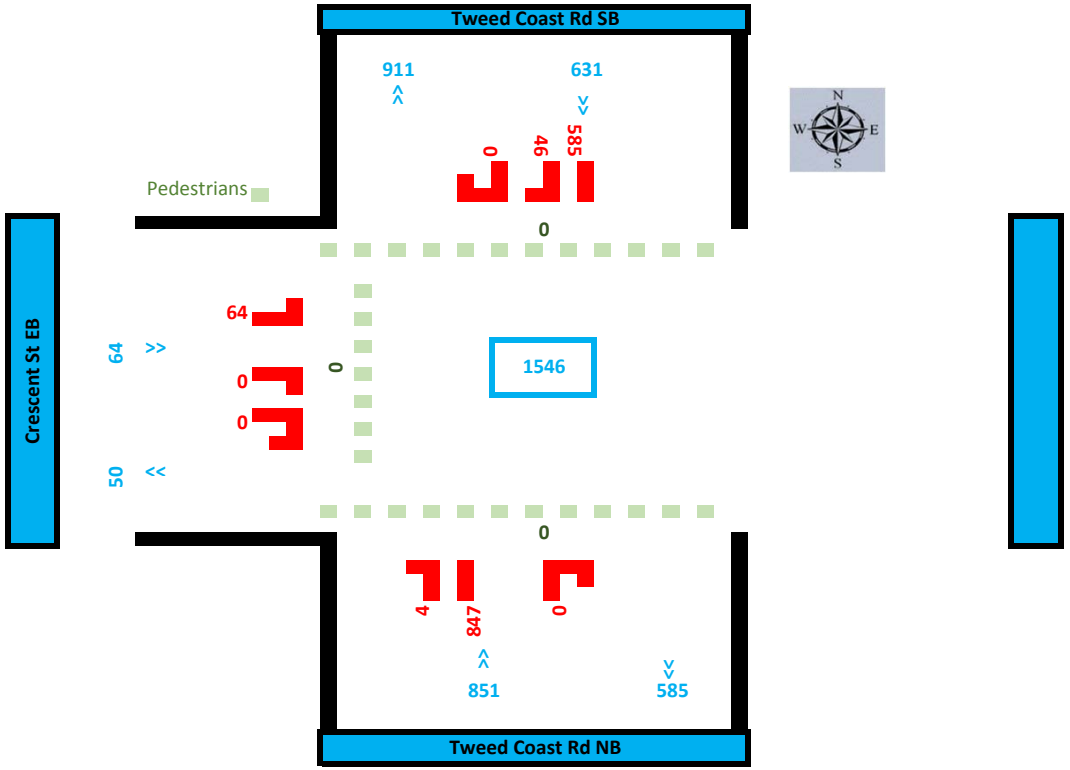
Intersection Legs:			
North	Ch	Tweed Coast Rd SB	
East	Ch		
South	Ch	Tweed Coast Rd NB	
West	Ch	Crescent St EB	

Output time interval: 15 mins

MAP

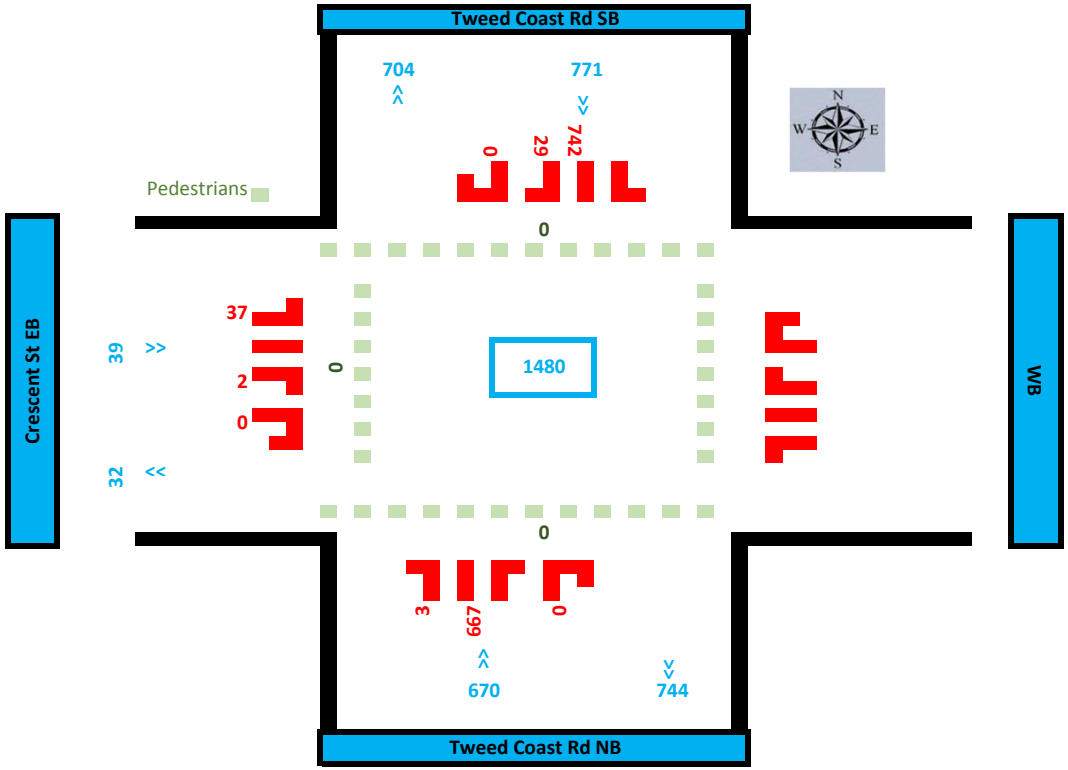
Turning Movement Count Summary

Site ID:	1
Location:	Tweed Coast Rd & Crescent St, Chinderah
Date:	15-Dec-2016
Surveyed Time:	7:00 AM to 9:00 AM
Weather:	Fine
Data for hour starting:	8:00 AM to 9:00 AM
Vehicle Class:	ALL VEHICLES



Turning Movement Count Summary

Site ID:	1
Location:	Tweed Coast Rd & Crescent St, Chinderah
Date:	15-Dec-2016
Surveyed Time:	3:00 PM to 6:00 PM
Weather:	Fine
Data for hour starting:	3:00 PM to 4:00 PM
Vehicle Class:	ALL VEHICLES



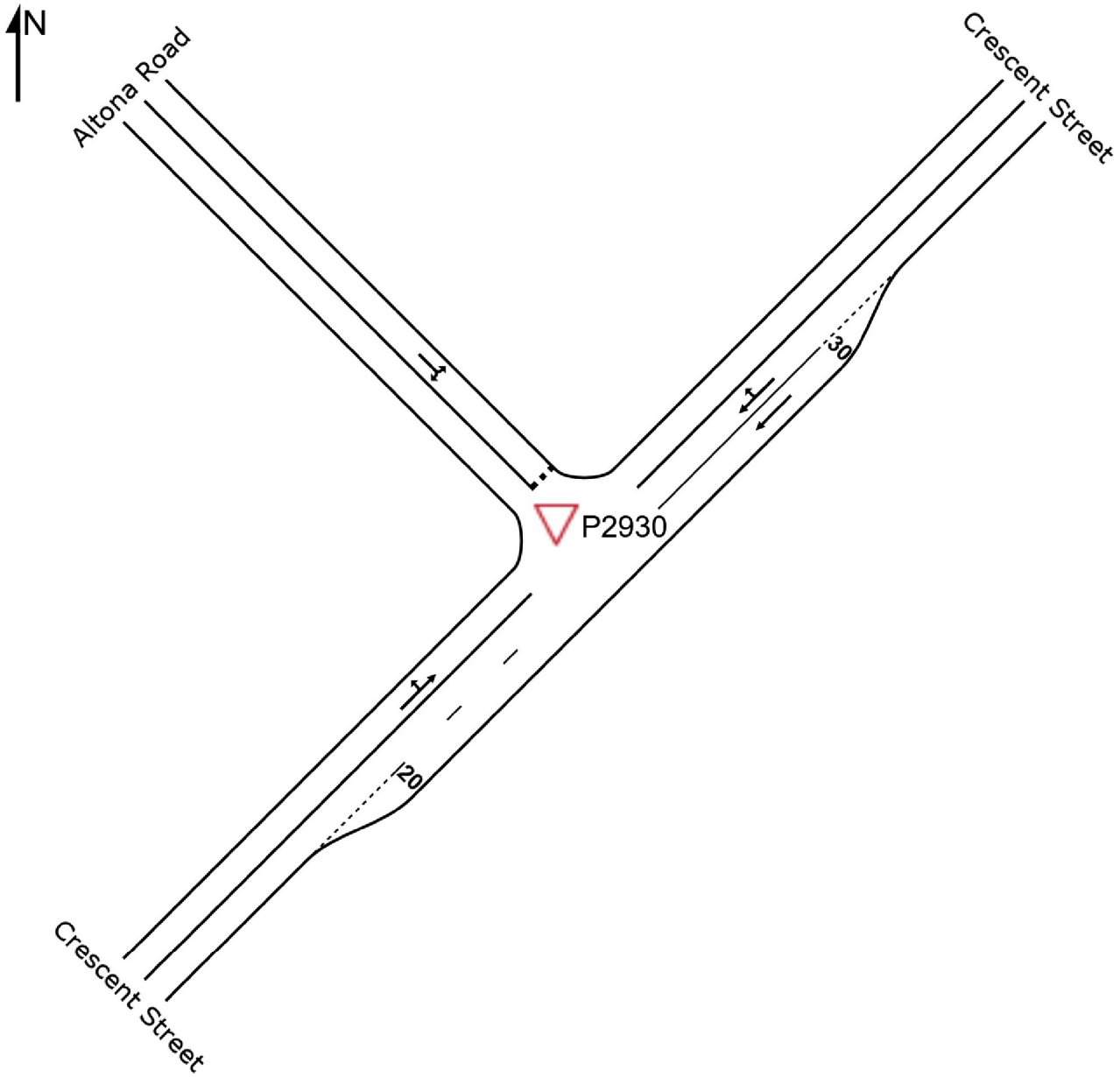
APPENDIX B

SIDRA ANALYSIS OUTPUTS

SITE LAYOUT

Site: P2930 [2017 AM Base]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: P2930 [2017 AM Base]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	35	0.0	0.026	2.3	LOS A	0.1	0.8	0.08	0.44	70.4
26	R2	15	50.0	0.026	6.8	LOS A	0.1	0.8	0.12	0.61	41.4
Approach		49	14.9	0.026	3.7	NA	0.1	0.8	0.10	0.49	58.3
NorthWest: Altona Road											
27	L2	27	42.3	0.023	3.9	LOS A	0.1	0.9	0.14	0.43	37.7
29	R2	2	0.0	0.023	4.1	LOS A	0.1	0.9	0.14	0.43	38.1
Approach		29	39.3	0.023	3.9	LOS A	0.1	0.9	0.14	0.43	37.7
SouthWest: Crescent Street											
30	L2	3	0.0	0.028	6.8	LOS A	0.0	0.0	0.00	0.04	72.2
31	T1	51	0.0	0.028	0.0	LOS A	0.0	0.0	0.00	0.04	76.7
Approach		54	0.0	0.028	0.4	NA	0.0	0.0	0.00	0.04	76.3
All Vehicles		133	14.3	0.028	2.4	NA	0.1	0.9	0.07	0.29	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2017 PM Base]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	24	0.0	0.018	2.3	LOS A	0.1	0.6	0.07	0.45	70.3
26	R2	11	50.0	0.018	6.7	LOS A	0.1	0.6	0.10	0.63	41.4
Approach		35	15.2	0.018	3.7	NA	0.1	0.6	0.08	0.50	58.0
NorthWest: Altona Road											
27	L2	4	75.0	0.005	4.0	LOS A	0.0	0.2	0.12	0.43	37.5
29	R2	1	0.0	0.005	4.0	LOS A	0.0	0.2	0.12	0.43	38.1
Approach		5	60.0	0.005	4.0	LOS A	0.0	0.2	0.12	0.43	37.7
SouthWest: Crescent Street											
30	L2	1	0.0	0.019	6.9	LOS A	0.0	0.0	0.00	0.02	73.4
31	T1	36	0.0	0.019	0.0	LOS A	0.0	0.0	0.00	0.02	78.4
Approach		37	0.0	0.019	0.2	NA	0.0	0.0	0.00	0.02	78.2
All Vehicles		77	11.0	0.019	2.0	NA	0.1	0.6	0.04	0.27	63.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 AM Base]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	46	0.0	0.035	2.4	LOS A	0.1	1.1	0.10	0.43	70.2
26	R2	20	47.4	0.035	6.8	LOS A	0.1	1.1	0.14	0.60	41.4
Approach		66	14.3	0.035	3.7	NA	0.1	1.1	0.11	0.48	58.0
NorthWest: Altona Road											
27	L2	34	34.4	0.029	3.9	LOS A	0.1	1.0	0.17	0.44	37.6
29	R2	3	0.0	0.029	4.3	LOS A	0.1	1.0	0.17	0.44	38.1
Approach		37	31.4	0.029	3.9	LOS A	0.1	1.0	0.17	0.44	37.7
SouthWest: Crescent Street											
30	L2	4	0.0	0.038	6.8	LOS A	0.0	0.0	0.00	0.04	72.2
31	T1	68	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.04	76.7
Approach		73	0.0	0.038	0.4	NA	0.0	0.0	0.00	0.04	76.4
All Vehicles		176	12.0	0.038	2.4	NA	0.1	1.1	0.08	0.29	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 PM Base]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	32	0.0	0.022	2.3	LOS A	0.1	0.6	0.08	0.44	70.5
26	R2	13	41.7	0.022	6.7	LOS A	0.1	0.6	0.11	0.60	41.6
Approach		44	11.9	0.022	3.5	NA	0.1	0.6	0.09	0.48	58.8
NorthWest: Altona Road											
27	L2	4	100.0	0.005	4.0	LOS A	0.0	0.2	0.16	0.43	37.6
29	R2	1	0.0	0.005	4.1	LOS A	0.0	0.2	0.16	0.43	38.1
Approach		5	80.0	0.005	4.0	LOS A	0.0	0.2	0.16	0.43	37.7
SouthWest: Crescent Street											
30	L2	1	0.0	0.026	6.9	LOS A	0.0	0.0	0.00	0.01	73.7
31	T1	48	0.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.01	78.8
Approach		49	0.0	0.026	0.1	NA	0.0	0.0	0.00	0.01	78.6
All Vehicles		99	9.6	0.026	1.9	NA	0.1	0.6	0.05	0.24	64.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2017 AM Design]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	35	0.0	0.028	2.5	LOS A	0.1	1.0	0.11	0.43	69.9
26	R2	17	56.2	0.028	6.8	LOS A	0.1	1.0	0.15	0.63	41.0
Approach		52	18.4	0.028	3.9	NA	0.1	1.0	0.12	0.50	56.8
NorthWest: Altona Road											
27	L2	33	51.6	0.029	4.0	LOS A	0.1	1.1	0.17	0.43	37.6
29	R2	2	0.0	0.029	4.3	LOS A	0.1	1.1	0.17	0.43	38.1
Approach		35	48.5	0.029	4.0	LOS A	0.1	1.1	0.17	0.43	37.6
SouthWest: Crescent Street											
30	L2	3	33.3	0.040	7.4	LOS A	0.0	0.0	0.00	0.04	59.9
31	T1	51	68.8	0.040	0.0	LOS A	0.0	0.0	0.00	0.04	75.8
Approach		54	66.7	0.040	0.4	NA	0.0	0.0	0.00	0.04	74.2
All Vehicles		140	44.4	0.040	2.6	NA	0.1	1.1	0.09	0.31	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2017 PM Design]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	24	0.0	0.022	2.7	LOS A	0.1	0.8	0.08	0.46	69.3
26	R2	15	64.3	0.022	6.5	LOS A	0.1	0.8	0.11	0.71	40.4
Approach		39	24.3	0.022	4.2	NA	0.1	0.8	0.09	0.56	54.6
NorthWest: Altona Road											
27	L2	7	85.7	0.008	4.1	LOS A	0.0	0.3	0.13	0.43	37.5
29	R2	1	0.0	0.008	4.0	LOS A	0.0	0.3	0.13	0.43	38.1
Approach		8	75.0	0.008	4.1	LOS A	0.0	0.3	0.13	0.43	37.6
SouthWest: Crescent Street											
30	L2	1	0.0	0.019	6.9	LOS A	0.0	0.0	0.00	0.02	73.4
31	T1	36	0.0	0.019	0.0	LOS A	0.0	0.0	0.00	0.02	78.4
Approach		37	0.0	0.019	0.2	NA	0.0	0.0	0.00	0.02	78.2
All Vehicles		84	18.8	0.022	2.4	NA	0.1	0.8	0.05	0.31	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 AM Design]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	46	0.0	0.037	2.5	LOS A	0.1	1.2	0.11	0.44	69.9
26	R2	22	52.4	0.037	6.8	LOS A	0.1	1.2	0.15	0.62	41.1
Approach		68	16.9	0.037	3.9	NA	0.1	1.2	0.12	0.50	57.0
NorthWest: Altona Road											
27	L2	39	43.2	0.034	3.9	LOS A	0.1	1.3	0.17	0.44	37.6
29	R2	3	0.0	0.034	4.4	LOS A	0.1	1.3	0.17	0.44	38.1
Approach		42	40.0	0.034	4.0	LOS A	0.1	1.3	0.17	0.44	37.6
SouthWest: Crescent Street											
30	L2	4	0.0	0.038	6.8	LOS A	0.0	0.0	0.00	0.04	72.2
31	T1	68	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.04	76.7
Approach		73	0.0	0.038	0.4	NA	0.0	0.0	0.00	0.04	76.4
All Vehicles		183	15.5	0.038	2.5	NA	0.1	1.3	0.08	0.30	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 PM Design]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	32	0.0	0.027	2.6	LOS A	0.1	1.0	0.09	0.45	69.8
26	R2	17	68.7	0.027	6.8	LOS A	0.1	1.0	0.13	0.66	40.8
Approach		48	23.9	0.027	4.1	NA	0.1	1.0	0.10	0.52	56.0
NorthWest: Altona Road											
27	L2	7	100.0	0.008	4.0	LOS A	0.0	0.4	0.15	0.43	37.6
29	R2	1	0.0	0.008	4.1	LOS A	0.0	0.4	0.15	0.43	38.1
Approach		8	87.5	0.008	4.0	LOS A	0.0	0.4	0.15	0.43	37.7
SouthWest: Crescent Street											
30	L2	1	0.0	0.026	6.9	LOS A	0.0	0.0	0.00	0.01	73.7
31	T1	48	0.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.01	78.8
Approach		49	0.0	0.026	0.1	NA	0.0	0.0	0.00	0.01	78.6
All Vehicles		106	17.8	0.027	2.2	NA	0.1	1.0	0.06	0.28	61.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2017 AM Design - MAX]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	35	0.0	0.032	2.8	LOS A	0.1	1.2	0.11	0.44	69.3
26	R2	21	65.0	0.032	6.7	LOS A	0.1	1.2	0.17	0.67	40.4
Approach		56	24.5	0.032	4.3	NA	0.1	1.2	0.13	0.52	54.6
NorthWest: Altona Road											
27	L2	49	68.1	0.046	4.1	LOS A	0.2	2.0	0.18	0.43	37.5
29	R2	2	0.0	0.046	4.3	LOS A	0.2	2.0	0.18	0.43	38.0
Approach		52	65.3	0.046	4.2	LOS A	0.2	2.0	0.18	0.43	37.5
SouthWest: Crescent Street											
30	L2	3	33.3	0.040	7.4	LOS A	0.0	0.0	0.00	0.04	59.9
31	T1	51	68.8	0.040	0.0	LOS A	0.0	0.0	0.00	0.04	75.8
Approach		54	66.7	0.040	0.4	NA	0.0	0.0	0.00	0.04	74.2
All Vehicles		161	51.6	0.046	3.0	NA	0.2	2.0	0.10	0.33	51.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2017 PM Design - MAX]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	24	0.0	0.031	2.9	LOS A	0.1	1.4	0.07	0.38	68.8
26	R2	26	80.0	0.031	5.9	LOS A	0.1	1.4	0.13	0.75	38.7
Approach		51	41.7	0.031	4.5	NA	0.1	1.4	0.10	0.57	49.0
NorthWest: Altona Road											
27	L2	17	93.8	0.017	4.2	LOS A	0.1	0.8	0.13	0.43	37.4
29	R2	1	0.0	0.017	4.1	LOS A	0.1	0.8	0.13	0.43	38.1
Approach		18	88.2	0.017	4.2	LOS A	0.1	0.8	0.13	0.43	37.5
SouthWest: Crescent Street											
30	L2	1	0.0	0.019	6.9	LOS A	0.0	0.0	0.00	0.02	73.4
31	T1	36	0.0	0.019	0.0	LOS A	0.0	0.0	0.00	0.02	78.4
Approach		37	0.0	0.019	0.2	NA	0.0	0.0	0.00	0.02	78.2
All Vehicles		105	35.0	0.031	2.9	NA	0.1	1.4	0.07	0.35	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 AM Design - MAX]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	46	0.0	0.040	2.7	LOS A	0.2	1.5	0.11	0.44	69.4
26	R2	26	60.0	0.040	6.7	LOS A	0.2	1.5	0.17	0.66	40.6
Approach		73	21.7	0.040	4.2	NA	0.2	1.5	0.13	0.52	55.2
NorthWest: Altona Road											
27	L2	56	60.4	0.051	4.1	LOS A	0.2	2.2	0.18	0.44	37.5
29	R2	3	0.0	0.051	4.4	LOS A	0.2	2.2	0.18	0.44	38.0
Approach		59	57.1	0.051	4.1	LOS A	0.2	2.2	0.18	0.44	37.5
SouthWest: Crescent Street											
30	L2	4	0.0	0.038	6.8	LOS A	0.0	0.0	0.00	0.04	72.2
31	T1	68	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.04	76.7
Approach		73	0.0	0.038	0.4	NA	0.0	0.0	0.00	0.04	76.4
All Vehicles		204	24.2	0.051	2.8	NA	0.2	2.2	0.10	0.32	53.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: P2930 [2027 PM Design - MAX]

Crescent Street / Altona Road Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
NorthEast: Crescent Street											
25	T1	32	0.0	0.036	2.9	LOS A	0.2	1.7	0.09	0.41	68.9
26	R2	28	81.5	0.036	6.3	LOS A	0.2	1.7	0.16	0.73	39.2
Approach		60	38.6	0.036	4.5	NA	0.2	1.7	0.12	0.56	50.7
NorthWest: Altona Road											
27	L2	17	100.0	0.017	4.0	LOS A	0.1	0.9	0.15	0.43	37.6
29	R2	1	0.0	0.017	4.2	LOS A	0.1	0.9	0.15	0.43	38.1
Approach		18	94.1	0.017	4.0	LOS A	0.1	0.9	0.15	0.43	37.6
SouthWest: Crescent Street											
30	L2	1	0.0	0.026	6.9	LOS A	0.0	0.0	0.00	0.01	73.7
31	T1	48	0.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.01	78.8
Approach		49	0.0	0.026	0.1	NA	0.0	0.0	0.00	0.01	78.6
All Vehicles		127	31.4	0.036	2.7	NA	0.2	1.7	0.08	0.33	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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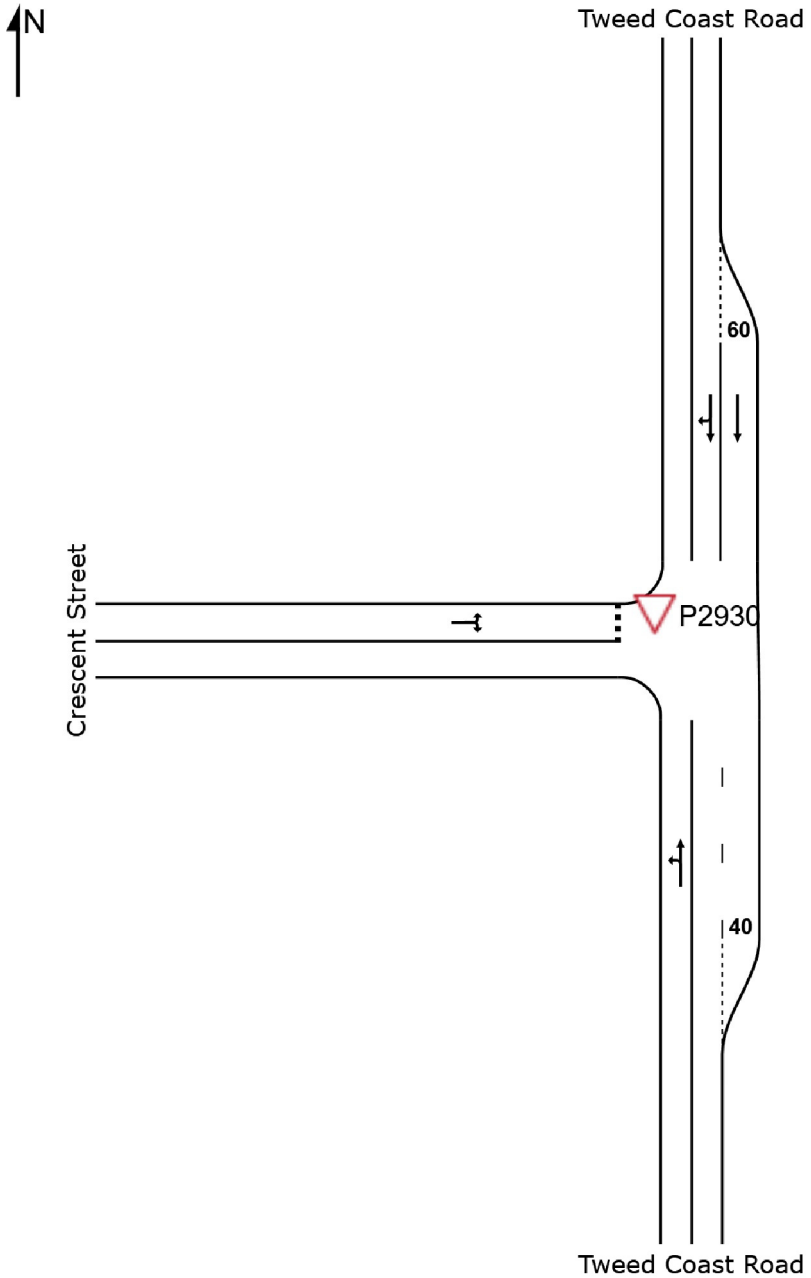
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: P2930 [2017 AM Base]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: P2930 [2017 AM Base]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	4	0.0	0.473	5.6	LOS A	0.0	0.0	0.00	0.00	58.2
2	T1	918	0.0	0.473	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		922	0.0	0.473	0.1	NA	0.0	0.0	0.00	0.00	59.8
North: Tweed Coast Road											
8	T1	635	0.0	0.340	2.1	LOS A	1.9	13.4	0.23	0.05	57.2
9	R2	46	15.9	0.340	16.3	LOS C	1.9	13.4	0.32	0.07	53.5
Approach		681	1.1	0.340	3.1	NA	1.9	13.4	0.24	0.05	57.0
West: Crescent Street											
10	L2	69	15.2	0.169	13.1	LOS B	0.6	4.5	0.75	0.90	47.5
12	R2	1	0.0	0.169	49.0	LOS E	0.6	4.5	0.75	0.90	47.7
Approach		71	14.9	0.169	13.6	LOS B	0.6	4.5	0.75	0.90	47.5
All Vehicles		1674	1.1	0.473	1.9	NA	1.9	13.4	0.13	0.06	58.0

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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: P2930 [2017 PM Base]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	3	0.0	0.373	5.6	LOS A	0.0	0.0	0.00	0.00	58.3
2	T1	723	0.0	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		726	0.0	0.373	0.1	NA	0.0	0.0	0.00	0.00	59.9
North: Tweed Coast Road											
8	T1	804	0.0	0.370	0.7	LOS A	1.0	7.2	0.11	0.03	58.9
9	R2	35	15.2	0.370	12.6	LOS B	1.0	7.2	0.15	0.04	55.7
Approach		839	0.6	0.370	1.2	NA	1.0	7.2	0.12	0.03	58.7
West: Crescent Street											
10	L2	40	10.5	0.079	9.7	LOS A	0.3	2.1	0.64	0.83	49.2
12	R2	2	0.0	0.079	39.2	LOS E	0.3	2.1	0.64	0.83	49.3
Approach		42	10.0	0.079	11.1	LOS B	0.3	2.1	0.64	0.83	49.2
All Vehicles		1607	0.6	0.373	1.0	NA	1.0	7.2	0.08	0.04	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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MOVEMENT SUMMARY

Site: P2930 [2027 AM Base]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	6	0.0	0.636	5.7	LOS A	0.0	0.0	0.00	0.00	58.1
2	T1	1234	0.0	0.636	0.1	LOS A	0.0	0.0	0.00	0.00	59.7
Approach		1240	0.0	0.636	0.2	NA	0.0	0.0	0.00	0.00	59.7
North: Tweed Coast Road											
8	T1	853	0.0	0.595	10.0	LOS B	12.0	85.3	0.63	0.06	50.5
9	R2	62	15.3	0.595	37.4	LOS E	12.0	85.3	1.00	0.10	44.4
Approach		915	1.0	0.595	11.9	NA	12.0	85.3	0.65	0.07	50.1
West: Crescent Street											
10	L2	91	12.8	0.509	31.6	LOS D	1.8	14.1	0.94	1.05	37.8
12	R2	1	0.0	0.509	210.1	LOS F	1.8	14.1	0.94	1.05	37.8
Approach		92	12.6	0.509	33.6	LOS D	1.8	14.1	0.94	1.05	37.8
All Vehicles		2246	0.9	0.636	6.3	NA	12.0	85.3	0.30	0.07	54.2

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MOVEMENT SUMMARY

Site: P2930 [2027 PM Base]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	4	0.0	0.501	5.6	LOS A	0.0	0.0	0.00	0.00	58.2
2	T1	972	0.0	0.501	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		976	0.0	0.501	0.1	NA	0.0	0.0	0.00	0.00	59.8
North: Tweed Coast Road											
8	T1	1081	0.0	0.523	2.1	LOS A	2.9	20.1	0.20	0.03	57.4
9	R2	44	11.9	0.523	21.3	LOS C	2.9	20.1	0.27	0.04	54.0
Approach		1125	0.5	0.523	2.8	NA	2.9	20.1	0.20	0.03	57.3
West: Crescent Street											
10	L2	53	8.0	0.230	14.2	LOS B	0.7	5.4	0.84	0.95	43.7
12	R2	3	0.0	0.230	127.9	LOS F	0.7	5.4	0.84	0.95	43.7
Approach		56	7.5	0.230	20.6	LOS C	0.7	5.4	0.84	0.95	43.7
All Vehicles		2157	0.4	0.523	2.0	NA	2.9	20.1	0.13	0.04	57.9

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MOVEMENT SUMMARY

Site: P2930 [2017 AM Design]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	4	0.0	0.473	5.6	LOS A	0.0	0.0	0.00	0.00	58.2
2	T1	918	0.0	0.473	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		922	0.0	0.473	0.1	NA	0.0	0.0	0.00	0.00	59.8
North: Tweed Coast Road											
8	T1	635	0.0	0.347	2.4	LOS A	2.1	14.9	0.25	0.05	57.0
9	R2	48	19.6	0.347	16.9	LOS C	2.1	14.9	0.35	0.07	53.0
Approach		683	1.4	0.347	3.4	NA	2.1	14.9	0.25	0.05	56.7
West: Crescent Street											
10	L2	75	21.1	0.192	14.0	LOS B	0.7	5.5	0.77	0.91	46.9
12	R2	1	0.0	0.192	49.7	LOS E	0.7	5.5	0.77	0.91	47.3
Approach		76	20.8	0.192	14.5	LOS B	0.7	5.5	0.77	0.91	46.9
All Vehicles		1681	1.5	0.473	2.1	NA	2.1	14.9	0.14	0.06	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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MOVEMENT SUMMARY

Site: P2930 [2017 PM Design]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	3	0.0	0.373	5.6	LOS A	0.0	0.0	0.00	0.00	58.3
2	T1	723	0.0	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		726	0.0	0.373	0.1	NA	0.0	0.0	0.00	0.00	59.9
North: Tweed Coast Road											
8	T1	804	0.0	0.380	0.9	LOS A	1.3	9.3	0.14	0.03	58.6
9	R2	39	24.3	0.380	13.5	LOS B	1.3	9.3	0.18	0.04	54.9
Approach		843	1.1	0.380	1.5	NA	1.3	9.3	0.14	0.03	58.4
West: Crescent Street											
10	L2	43	17.1	0.088	10.1	LOS B	0.3	2.4	0.65	0.84	48.8
12	R2	2	0.0	0.088	39.8	LOS E	0.3	2.4	0.65	0.84	49.1
Approach		45	16.3	0.088	11.5	LOS B	0.3	2.4	0.65	0.84	48.8
All Vehicles		1615	1.0	0.380	1.2	NA	1.3	9.3	0.09	0.04	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 AM Design]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	6	0.0	0.636	5.7	LOS A	0.0	0.0	0.00	0.00	58.1
2	T1	1234	0.0	0.636	0.1	LOS A	0.0	0.0	0.00	0.00	59.7
Approach		1240	0.0	0.636	0.2	NA	0.0	0.0	0.00	0.00	59.7
North: Tweed Coast Road											
8	T1	853	0.0	0.615	11.0	LOS B	12.6	89.5	0.62	0.06	49.8
9	R2	64	18.0	0.615	39.3	LOS E	12.6	89.5	1.00	0.10	43.3
Approach		917	1.3	0.615	13.0	NA	12.6	89.5	0.64	0.07	49.3
West: Crescent Street											
10	L2	96	17.6	0.574	36.1	LOS E	2.1	17.0	0.95	1.08	36.0
12	R2	1	0.0	0.574	214.8	LOS F	2.1	17.0	0.95	1.08	36.2
Approach		97	17.4	0.574	38.1	LOS E	2.1	17.0	0.95	1.08	36.0
All Vehicles		2254	1.3	0.636	7.0	NA	12.6	89.5	0.30	0.07	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 PM Design]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	4	0.0	0.501	5.6	LOS A	0.0	0.0	0.00	0.00	58.2
2	T1	972	0.0	0.501	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		976	0.0	0.501	0.1	NA	0.0	0.0	0.00	0.00	59.8
North: Tweed Coast Road											
8	T1	1081	0.0	0.540	2.7	LOS A	3.6	25.4	0.23	0.03	56.8
9	R2	48	19.6	0.540	23.3	LOS C	3.6	25.4	0.32	0.04	52.9
Approach		1129	0.8	0.540	3.5	NA	3.6	25.4	0.23	0.03	56.6
West: Crescent Street											
10	L2	55	11.5	0.241	14.8	LOS B	0.8	5.9	0.85	0.96	43.4
12	R2	3	0.0	0.241	129.9	LOS F	0.8	5.9	0.85	0.96	43.5
Approach		58	10.9	0.241	21.1	LOS C	0.8	5.9	0.85	0.96	43.4
All Vehicles		2163	0.7	0.540	2.5	NA	3.6	25.4	0.15	0.04	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2017 AM Design - MAX]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	4	0.0	0.473	5.6	LOS A	0.0	0.0	0.00	0.00	58.2
2	T1	918	0.0	0.473	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		922	0.0	0.473	0.1	NA	0.0	0.0	0.00	0.00	59.8
North: Tweed Coast Road											
8	T1	635	0.0	0.371	3.2	LOS A	2.7	19.6	0.29	0.05	56.2
9	R2	55	28.8	0.371	18.6	LOS C	2.7	19.6	0.42	0.08	51.6
Approach		689	2.3	0.371	4.4	NA	2.7	19.6	0.30	0.06	55.8
West: Crescent Street											
10	L2	92	35.6	0.271	16.8	LOS C	1.0	9.2	0.81	0.95	44.9
12	R2	1	0.0	0.271	52.3	LOS F	1.0	9.2	0.81	0.95	45.7
Approach		93	35.2	0.271	17.2	LOS C	1.0	9.2	0.81	0.95	44.9
All Vehicles		1704	2.8	0.473	2.8	NA	2.7	19.6	0.16	0.08	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2017 PM Design - MAX]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	3	0.0	0.373	5.6	LOS A	0.0	0.0	0.00	0.00	58.3
2	T1	723	0.0	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		726	0.0	0.373	0.1	NA	0.0	0.0	0.00	0.00	59.9
North: Tweed Coast Road											
8	T1	804	0.0	0.408	1.6	LOS A	2.1	15.4	0.19	0.04	57.8
9	R2	51	41.7	0.408	15.6	LOS C	2.1	15.4	0.27	0.05	53.1
Approach		855	2.5	0.408	2.5	NA	2.1	15.4	0.20	0.04	57.5
West: Crescent Street											
10	L2	53	32.0	0.116	11.2	LOS B	0.4	3.6	0.67	0.86	47.9
12	R2	2	0.0	0.116	41.4	LOS E	0.4	3.6	0.67	0.86	48.7
Approach		55	30.8	0.116	12.3	LOS B	0.4	3.6	0.67	0.86	47.9
All Vehicles		1636	2.3	0.408	1.7	NA	2.1	15.4	0.13	0.05	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: P2930 [2027 AM Design - MAX]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	6	0.0	0.636	5.7	LOS A	0.0	0.0	0.00	0.00	58.1
2	T1	1234	0.0	0.636	0.1	LOS A	0.0	0.0	0.00	0.00	59.7
Approach		1240	0.0	0.636	0.2	NA	0.0	0.0	0.00	0.00	59.7
North: Tweed Coast Road											
8	T1	853	0.0	0.680	14.3	LOS B	14.3	102.6	0.57	0.07	47.7
9	R2	71	25.4	0.680	45.3	LOS E	14.3	102.6	1.00	0.11	39.7
Approach		923	1.9	0.680	16.7	NA	14.3	102.6	0.61	0.07	47.0
West: Crescent Street											
10	L2	113	29.9	0.797	61.4	LOS F	3.6	31.7	0.98	1.24	28.8
12	R2	1	0.0	0.797	240.7	LOS F	3.6	31.7	0.98	1.24	29.1
Approach		114	29.6	0.797	63.0	LOS F	3.6	31.7	0.98	1.24	28.8
All Vehicles		2277	2.3	0.797	10.0	NA	14.3	102.6	0.30	0.09	51.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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MOVEMENT SUMMARY

Site: P2930 [2027 PM Design - MAX]

Tweed Coast Road / Crescent Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Tweed Coast Road											
1	L2	4	0.0	0.501	5.6	LOS A	0.0	0.0	0.00	0.00	58.2
2	T1	972	0.0	0.501	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		976	0.0	0.501	0.1	NA	0.0	0.0	0.00	0.00	59.8
North: Tweed Coast Road											
8	T1	1081	0.0	0.591	4.6	LOS A	11.4	81.3	0.71	0.04	55.0
9	R2	60	35.1	0.591	28.0	LOS D	11.4	81.3	1.00	0.05	50.0
Approach		1141	1.8	0.591	5.8	NA	11.4	81.3	0.72	0.04	54.7
West: Crescent Street											
10	L2	65	25.8	0.299	17.8	LOS C	1.0	8.6	0.86	0.98	42.0
12	R2	3	0.0	0.299	136.6	LOS F	1.0	8.6	0.86	0.98	42.4
Approach		68	24.6	0.299	23.3	LOS C	1.0	8.6	0.86	0.98	42.0
All Vehicles		2185	1.7	0.591	3.8	NA	11.4	81.3	0.40	0.05	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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