LETTER

Transport Engineering

GTAconsultants now Stantec

REF: N171073

DATE: 22 October 2021

Barr Property & Planning
92 Young Street
CARRINGTON NSW 2294

Attention: Mr. Stephen Barr

Dear Stephen,

RE: STAGE 1 AND 2 INDUSTRIAL DEVELOPMENT – JOHN RENSHAW DRIVE, BLACK HILL

The purpose of this traffic review is to detail several modelling scenarios associated with the development of the proposed Broaden Management large lot industrial development on land at DP1057179 on John Renshaw Drive, Black Hill.

As part of this analysis, this review considers:

1. Relocation of the eastern intersection.
2. What aspects of the development can be undertaken without external traffic impacts. This involves analysis of stages 1 and 2 of the development.

This letter sets out a review of the following:

- background and proposal
- modelling parameters
- traffic generation and distribution
- modelling results
- summary.

Background and Proposal

The industrial precinct comprises both the Broaden site (subject site) and the adjacent Coal and Allied Land site (herein referred to as the "BHI site"). The Industrial Precinct is on John Renshaw Drive in Black Hill and close to the northern end of the M1 Motorway. The key road corridors that surround the Industrial Precinct include:

- Pacific Motorway (M1): north-south motorway that runs along the eastern boundary of the Industrial Precinct.
- John Renshaw Drive: east-west road which runs along the northern boundary of the Industrial Precinct which also provides a connection between the Hunter Expressway (M15) and the Pacific Motorway (M1) / New England Highway (A43).
- Weakleys Drive: north-south continuation of the M1 corridor to connect with the New England Highway (A43).

The M1/ John Renshaw Drive/ Weakleys Drive signalised intersection is also centrally located within the study area, immediately north-east of the Industrial Precinct.

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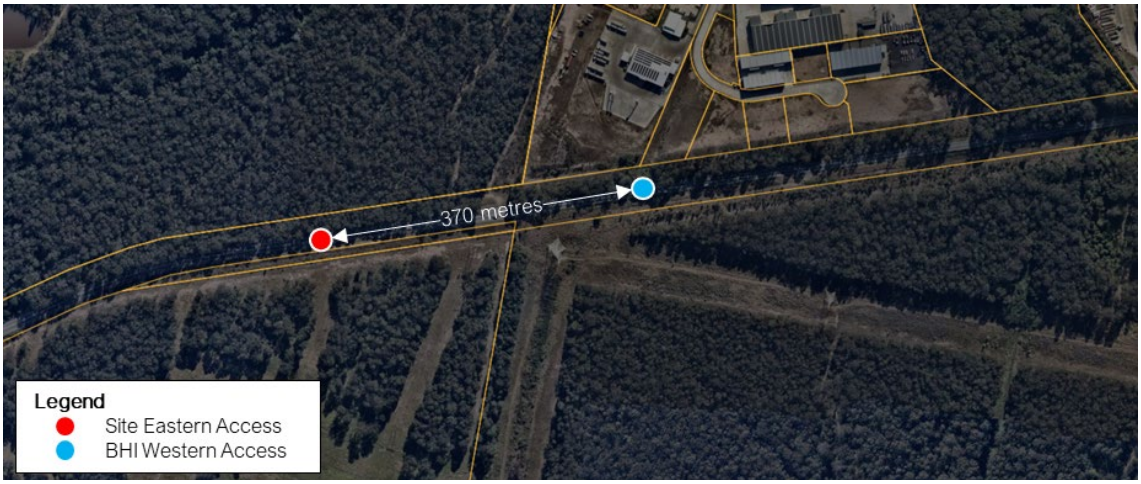
An additional signalised intersection on John Renshaw Drive close to the eastern site boundary is also necessary to ensure appropriate site access to the entire site. The new intersection (herein referred to as the 'eastern access') is proposed about 230 metres west of the BHI site boundary. The proposed subdivision plan and associated intersection interface plans are included in Attachment 7.

It is understood that the BHI site development proposal also includes a new signalised intersection on John Renshaw Drive (herein referred to as the 'BHI western access') located about 140 metres east of the site boundary, and a new left-in intersection (herein referred to as the 'BHI eastern access') located close to the M1/ John Renshaw Drive/ Weakleys Drive intersection. The two proposed signalised intersections would be about 370 metres apart, as shown in Figure 1. The intersection separation exceeds the relevant Austroads requirements having regard to the posted and future design speed along this section of John Renshaw Drive.

Figure 1: Proposed signalised intersection locations



Base image source: Nearmap

The project team has regularly consulted with key stakeholders, namely TfNSW in relation to the traffic related impacts associated with development of the subject site. This resulted completion of VISSIM microsimulation modelling that considered the traffic effects of the entire industrial precinct. TfNSW provided an extract of the expansive SMEC model in which to progress the VISSIM model at the time. The GTA VISSIM model was ultimately completed adopting all TfNSW specified parameters and modelling assumptions.

The Black Hill Traffic Modelling & Traffic Analysis Report prepared by SMEC, dated 9 October 2020 is the TfNSW preferred reference document when considering the traffic effects associated with the Industrial Precinct on the surrounding road network.

The purpose of this assessment is to understand the traffic effects associated with stages 1 and 2 of the development as well as the substation lot. SIDRA INTERSECTION modelling has been completed to demonstrate the outcomes of several future year and development scenarios. The model has also been developed as a network to understand the traffic effects along the John Renshaw Drive corridor.

Modelling Parameters

Modelling Scenarios

Intersection capacity analysis has been conducted at the key existing and future intersections near the site to assess the traffic impacts of the proposal. Select scenarios also consider the cumulative impact of the subject site in combination with the adjacent BHI site. The modelling scenarios are described in Table 1.

Table 1: Scenario analysis for modelling traffic impacts

No.	Scenario	Description
1	2021 Base	2019 base traffic volumes extracted from the VISSIM model with 1.5% pa. background growth
2	2024 Base	2019 base traffic volumes extracted from the VISSIM model with 1.5% pa. background growth
3	2024 with Development	Scenario 2 plus site development traffic
4	2024 with Development and BHI	Scenario 3 plus adjacent BHI site development traffic
5	2024 with Development and BHI, and road network upgrades	Scenario 4 with upgrades to John Renshaw Drive/ Weakleys Drive/ M1 intersection as recommended in the Black Hill Traffic Modelling & Traffic Analysis Report (SMEC, 9 October 2020)
6	2029 with Development and BHI, and road network upgrades	2029 base volumes, incorporating traffic effects associated with M1RT, plus site development traffic and adjacent BHI site with upgrades to John Renshaw Drive/ Weakleys Drive/ M1 intersection

Traffic Volumes

2019 traffic volumes have been determined by adopting the validated and calibrated 2017 TfNSW VISSIM model and applying 1.5 per cent per annum background growth. The weekday AM and PM peak hour traffic volumes are summarised in Figure 2 and Figure 3.

Figure 2: Existing (calibrated 2019 volumes) AM peak hour traffic volumes

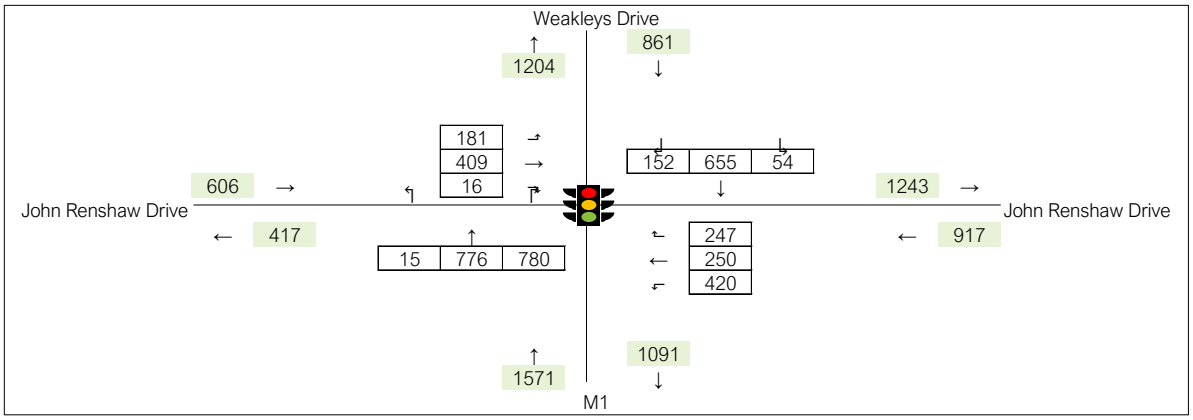
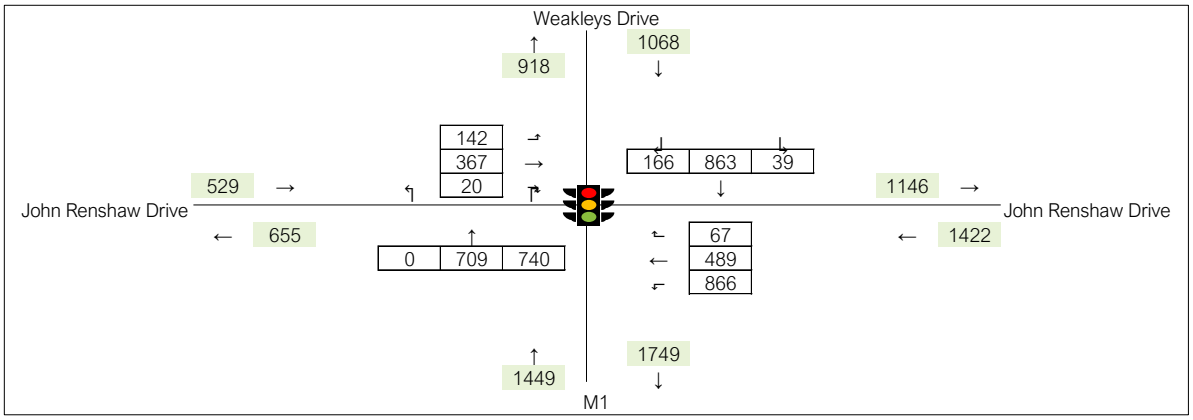


Figure 3: Existing (calibrated 2019 volumes) PM peak hour traffic volumes



As advised by TfNSW, background traffic growth rates of 1.5 per cent per annum have been applied to the base model for each design year.

M12RT Link Impacts

The proposed Pacific Highway M1 Extension to Raymond Terrace, known as the M12RT link is planned to be operating by 2028. The effects associated with this significant National Highway project have been considered in the 2029 SIDRA model. The future year traffic demands have been adjusted to reflect the expected redistribution of traffic and in particular, less traffic using the John Renshaw Drive/ Weakleys Drive/ M1 intersection. Again, these assumptions have been provided by TfNSW and incorporated into the model. They include the following:

- 65 per cent reduction in the AM northbound right turn from M1 to John Renshaw Dr at Weakleys Dr
- 45 per cent reduction AM southbound left turn from John Renshaw Dr to M1 at Weakleys Dr
- 40 per cent reduction PM northbound right turn from M1 to John Renshaw Dr at Weakleys Dr
- 35 per cent reduction PM southbound left turn from John Renshaw Dr to M1 at Weakleys Dr.

These assumptions result in significant traffic redistribution away from the M1/ John Renshaw Drive/ Weakleys Drive intersection with the intersection subsequently showing capacity to accommodate local and regional background traffic growth and future Industrial Precinct development traffic.

Traffic Generation and Distribution

The following traffic generation rates and distribution assumptions have been adopted for the subject site and, to our knowledge, the BHI site. These assumptions reflect those provided by TfNSW.

- Trip generation rate:
  - AM 0.38 vehicles per 100 square metres GFA
  - PM 0.40 vehicles per 100 square metres GFA
- Lot yield of 26 per cent GFA of total Net Developable Area
- Entry/ exit movements from the site:
  - AM 66.3% (entry), 33.7% (exit)
  - PM 36.3% (entry), 63.7% (exit)
- Heavy vehicle percentages:
  - AM 20%
  - PM 15.5%
- AM trip distribution (opposite in the PM):
  - South 35% (entry), 20% (exit)
  - West 20% (entry), 20% (exit)
  - East 25% (entry), 40% (exit)
  - North 20% (entry), 20% (exit).

Based on the above, an estimate of weekday AM and PM peak period traffic demands is set out in Table 2, indicating that the proposed stage 1, stage 2 and substation lot is forecast to generate 459 and 484 vehicle trips during the AM and PM peak periods respectively.

Table 2: Stage 1, Stage 2 and substation lot traffic generation and distribution

Direction	AM				PM			
	Entry		Exit		Entry		Exit	
	Distribution	Generation	Distribution	Generation	Distribution	Generation	Distribution	Generation
South	35%	107	20%	31	20%	35	35%	108
West	20%	61	20%	31	20%	35	20%	62
East	25%	76	40%	62	40%	70	25%	77
North	20%	61	20%	31	20%	35	20%	62
Total	**459**				**484**			

Based on the TfNSW traffic generation, distribution and assignment assumptions, Figure 4 and Figure 5 have been prepared to show the estimated marginal increase in turning movements near the subject site following development in the AM and PM peak hours respectively.

Figure 4: Stage 1, Stage 2 and substation lot AM peak hour traffic volumes

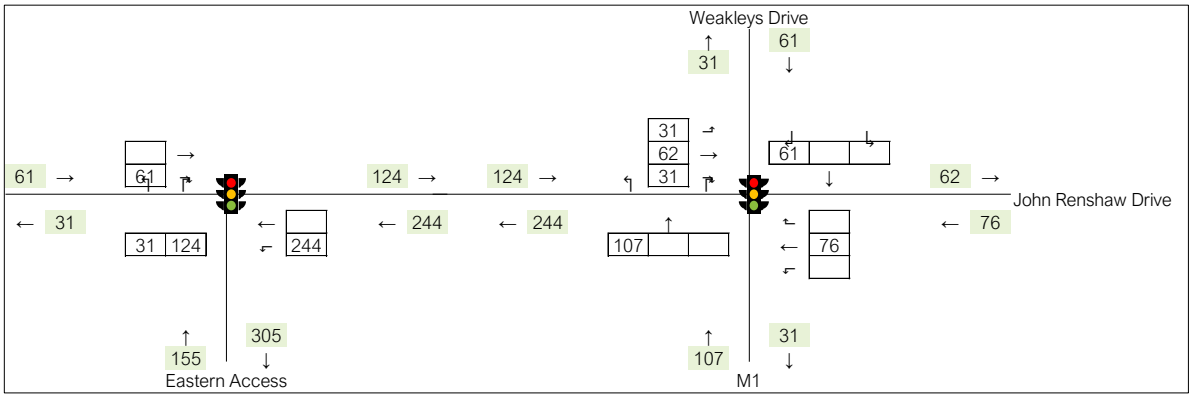
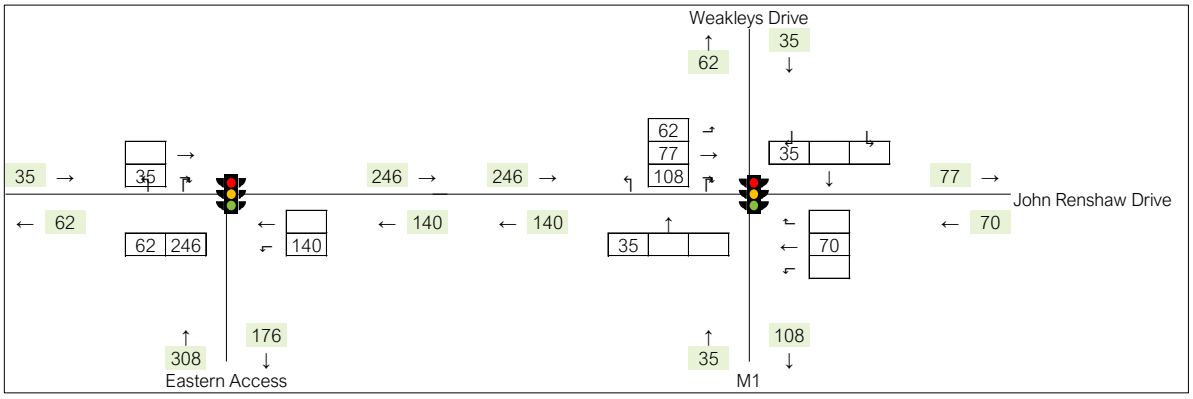


Figure 5 – Stage 1, Stage 2 and substation lot PM peak hour traffic volumes



Modelling Results

The commonly used measure of intersection performance is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service. Table 3 shows the criteria that SIDRA INTERSECTION software adopts in assessing the level of service.

Table 3: SIDRA INTERSECTION Level of Service criteria

Level of service (LOS)	Average delay per vehicle (secs/veh)	Traffic signals, roundabouts & give ways
A	Less than 14	Good operation
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity, at signals incidents will cause excessive delays
F	Greater than 70	Extreme delay, major treatment required

Model Calibration

The proposed signalised intersection to provide access to the development, and the adjacent proposed BHI site signalised intersection are each assumed to have pedestrian crossings on each approach. Full pedestrian protection is assumed for the pedestrian movement on the eastern approach at both intersections, coded in the SIDRA intersection model as 27 seconds based on the indicative intersection geometry (input as opposing peds (signals) in gap acceptance data). A default pedestrian volume of 50 pedestrians per hour has been assumed however given the site location the pedestrian movement is expected to be called every other cycle. As such, assuming a pedestrian movement is called in 25 per cent of cycles, the pedestrian protection has been coded as seven seconds.

Notwithstanding, this is considered conservative as it unlikely that even 25 per cent of traffic signal cycles will result in a pedestrian movement being called given the characteristics of the proposed industrial precinct (now and in the future).

Scenario 1 – 2021 Base

Accordingly, Table 4 presents a summary of the existing operation of the John Renshaw Drive/ M1/ Weakleys Drive intersection, with full results presented in Attachment 1 of this letter.

Table 4: Scenario 1 – 2021 Base

Intersection	Peak Period	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
John Renshaw Drive/ M1/ Weakleys Drive	AM	0.87	56	158	D
	PM	0.85	51	164	D

Table 4 indicates that overall, the John Renshaw Drive/ M1/ Weakleys Drive intersection operates near capacity in 2021 when applying the TfNSW background growth rates. Average delays of up to 56 seconds and average queues of around 160 metres are noted in the respective peak hours.

Scenario 2 – 2024 Base

Table 5 presents a summary of the operation of the key intersections in 2024, with full results presented in Attachment 2 of this letter.

Table 5: 2024 Base intersection operation

Intersection	Peak Period	Approach	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
John Renshaw Drive/ M1/ Weakleys Drive	AM	South	0.91	62	177	E
		East	0.91	39	108	C
		North	0.92	76	152	F
		West	0.90	71	89	F
		Overall	**0.92**	**61**	**177**	**E**
	PM	South	0.91	66	181	E
		East	0.83	29	111	C
		North	0.91	68	172	E
		West	0.85	65	82	E
		Overall	**0.91**	**55**	**181**	**D**

Table 5 indicates that the John Renshaw Drive/ M1/ Weakleys Drive intersection would operate close to capacity in the respective peak hours, with average delays up to 61 seconds and average queues up to 180 metres. While approaching operational capacity, the intersection manages delay and queuing similar to existing conditions.

Scenario 3 – 2024 with Development

Table 6 presents a summary of the operation of the key intersections in the 2024 growth year assuming full development of stage 1 and stage 2 Full results are presented in Attachment 3 of this letter.

Table 6: 2024 Intersection operation with site development traffic

Intersection	Peak Period	Approach	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
John Renshaw Drive/ M1/ Weakleys Drive	AM	South	0.96	70	196	E
		East	0.95	43	115	D
		North	0.93	77	153	E
		West	0.93	73	109	E
		Overall	**0.96**	**66**	**196**	**E**
	PM	South	0.99	79	213	E
		East	0.98	39	162	D
		North	0.98	88	202	F
		West	0.91	69	108	E
		Overall	**0.98**	**67**	**213**	**E**

Intersection	Peak Period	Approach	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
John Renshaw Drive/ Site Eastern Access	AM	South	0.34	30	10	C
		East	0.37	13	26	B
		West	0.39	11	25	B
		Overall	**0.39**	**14**	**26**	**B**
	PM	South	0.57	30	19	C
		East	0.58	17	42	B
		West	0.31	10	23	B
		Overall	**0.58**	**17**	**42**	**B**

Table 4 indicates that again, the John Renshaw Drive/ M1/ Weakleys Drive intersection would operate close to capacity in both peak hours, with overall average delays of around 66 seconds and average queues up to 210 metres in any peak. This remains similar to the 2024 base year intersection operation.

The proposed signalised eastern access on John Renshaw Drive is expected the operate well with spare capacity in both peak periods. Average delays are expected to be around 15 seconds in the AM and PM peak periods. The through traffic movements on John Renshaw Drive in particular are expected to operate with minor delays of up to nine seconds in any peak period. The modelling confirms that the proposed signalised eastern access is expected to have present only a minor impact to mid-block capacities on John Renshaw Drive with travel times largely retained as per existing conditions.

Scenario 4 – 2024 with Development and BHI

Table 7 presents a summary of the operation of the key intersections in the 2024 growth year, assuming full development of stage 1 and stage 2 plus full development of stage 1 of the BHI site. Full results are presented in Attachment 4 of this letter.

Table 7: 2024 Intersection operation with development site traffic and BHI site traffic

Intersection	Peak Period	Approach	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
John Renshaw Drive/ M1/ Weakleys Drive	AM	South	0.98	85	221	F
		East	0.99	49	125	D
		North	0.96	89	163	F
		West	0.96	79	136	E
		Overall	**0.99**	**77**	**221**	**E**
	PM	South	1.01	87	227	F
		East	1.23	86	308	F
		North	1.07	100	261	F
		West	1.25	117	205	F
		Overall	**1.25**	**95**	**308**	**F**

Intersection	Peak Period	Approach	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
John Renshaw Drive/ BHI Western Access	AM	South	0.50	33	11	C
		East	0.52	14	42	B
		West	0.41	9	29	A
		Overall	**0.52**	**14**	**42**	**B**
	PM	South	0.61	31	20	C
		East	0.64	17	49	B
		West	0.44	11	37	B
		Overall	**0.64**	**17**	**49**	**B**
John Renshaw Drive/ Site Eastern Access	AM	South	0.40	31	10	C
		East	0.38	6	11	A
		West	0.39	10	28	A
		Overall	**0.40**	**10**	**28**	**A**
	PM	South	0.57	30	19	C
		East	0.59	6	22	A
		West	0.33	10	25	A
		Overall	**0.59**	**11**	**25**	**B**

Table 7 indicates that overall, the John Renshaw Drive/ M1/ Weakleys Drive intersection operates at capacity in the AM peak period and overcapacity in the PM peak period, with average delays of 77 and 95 seconds respectively in the AM and PM peak periods. Review of the degree of saturation for the west approach in the PM peak indicates practical capacity is exceeded and degree of saturation more than 1.00. Such outcomes are not surprising given existing and future 2024 base year intersection operation. When stage 1 and stage 2 development traffic associated with the subject site, and stage 1 traffic associated with the BHI site is added and no external intersection works or duplication of John Renshaw Drive is included, the intersection and mid-block capacities are exceeded.

Similar to scenario 4, both proposed signalised site accesses on John Renshaw Drive are expected to operate well and with spare capacity in both peak periods, with overall intersection average delays up to 17 seconds. The through movements on John Renshaw Drive are also expected to operate with minimal average delays of up to 10 seconds in any peak period, with the exception of the east approach to the BHI site with moderate average delays up to 18 seconds. This still represents a good level of operation. Overall, the proposed signalised intersections, when modelled as a network with the John Renshaw Drive/ M1/ Weakleys Drive intersection confirm that they would not materially affect through traffic flows on John Renshaw Drive (and travel times). The separation of 370 metres between the proposed signalised intersections also maintains appropriate sightlines with minor queuing not affecting overall operation with signal coordination in place.

Scenario 5 – 2024 with development and BHI, and upgrades to John Renshaw Drive/ M1/ Weakleys Drive

Given that the John Renshaw Drive/ M1/ Weakleys Drive intersection is expected to operate over capacity following stage 1 and stage 2 development of both the subject site and adjacent BHI site, the following road network upgrades are considered necessary. These upgrades are based on the Stage 1 mitigation works as recommended in the Black Hill Traffic Modelling & Traffic Analysis Report (SMEC – 9 October 2020). The works are shown in Figure 4 and defined as follows:

- Introduce an additional through movement lane on the John Renshaw Drive eastbound direction.
- Introduce an additional through movement lane on the Weakleys Drive's southbound direction.
- Introduce an additional right-turn movement lane on the Weakleys Drive's southbound direction.
- Introduce an additional right-turn movement lane on the John Renshaw Drive westbound direction.
- Convert the left-turn movement on the John Renshaw Drive's eastbound to a free-flow slip-lane.

Figure 6: Mitigation works John Renshaw Drive/ M1/ Weakleys Drive intersection

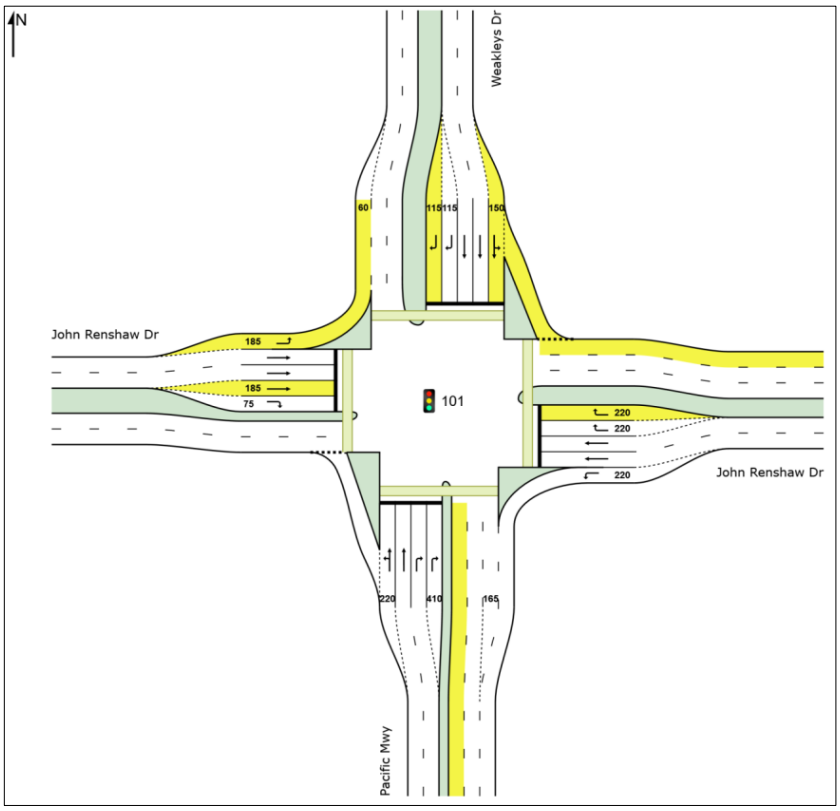


Table 7 presents a summary of the operation of the key intersections in the 2024 growth year, assuming full development of stage 1 and stage 2 of the subject site and adjacent BHI site, and upgrades to the John Renshaw Drive/ M1/ Weakleys Drive intersection. Full results are presented in Attachment 5 of this letter.

Table 8: 2024 with development site traffic and BHI site traffic plus intersection upgrades

Intersection	Peak Period	Approach	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
John Renshaw Drive/ M1/ Weakleys Drive	AM	South	0.88	40	129	D
		East	0.87	34	54	C
		North	0.90	56	110	E
		West	0.89	46	87	D
		Overall	**0.90**	**43**	**129**	**D**
	PM	South	0.94	70	190	E
		East	0.92	40	139	D
		North	0.94	73	187	E
		West	0.94	53	94	D

Intersection	Peak Period	Approach	Degree of Saturation (DOS)	Average Delay (sec)	Average Queue (m)	Level of Service (LOS)
		Overall	**0.94**	**58**	**190**	**E**
John Renshaw Drive/ BHI Western Access	AM	South	0.50	32	11	C
		East	0.52	14	42	B
		West	0.41	8	29	A
		Overall	**0.52**	**13**	**42**	**B**
	PM	South	0.70	32	21	C
		East	0.66	17	53	B
		West	0.42	9	34	A
		Overall	**0.70**	**16**	**53**	**B**
John Renshaw Drive/ Site Eastern Access	AM	South	0.40	31	10	C
		East	0.38	6	11	A
		West	0.39	10	28	A
		Overall	**0.40**	**10**	**28**	**A**
	PM	South	0.66	31	20	C
		East	0.60	6	23	A
		West	0.32	9	24	A
		Overall	**0.66**	**11**	**24**	**B**

Table 7 confirms that following the SMEC recommended stage 1 road network upgrades, the John Renshaw Drive/ M1/ Weakleys Drive intersection operation significantly improves when compared to the 2024 base scenario in the AM peak period, with an 18 second reduction in the average intersection delay. The intersection operation in the PM peak period proves to be similar to the 2024 base scenario, with the average delay increasing by three seconds (from 55 seconds to 58 seconds).

Furthermore, the road network upgrades result in a reduction to overall intersection average delay of 34 and 37 seconds respectively in the AM and PM peak periods when compared with scenario 4. No change is expected to the operation of the proposed signalised site accesses when compared with scenario 4.

Scenario 6 – 2029 with development and BHI, and upgrades to John Renshaw Drive/ M1/ Weakleys Drive

As discussed, and as instructed by TfNSW, the M12RT link is expected to be open by 2028. Any post 2028 modelling is to reflect such significant road network modifications. The M12RT link is planned to remove significant traffic from the M1/ John Renshaw Drive/ Weakleys Drive intersection therefore releasing the known intersection constraints while allowing background traffic growth and precinct development traffic to justifiably utilise such spare intersection and mid-block capacity.

Scenario 5 considers the following assumptions:

- M12RT link open in 2028
- future growth year of 2029, with 1.5 per cent annual growth applied to 2028 base year volumes
- stage 1 and stage 2 development of the subject site
- stage 1 development of the adjacent BHI site
- road network upgrades to the John Renshaw Drive/ M1/ Weakleys Drive intersection (consistent with those detailed above).

Based on the above, the full results are presented in Attachment 5 of this letter. The results indicate that the M1/ John Renshaw Drive/ Weakleys Drive intersection operation improves in both peak periods when compared with scenario 5. The average intersection delay reduces by six seconds in the AM peak and 10 seconds in the PM peak. The results confirm that the intersection operation can be expected to improve in both peak periods when compared with the 2024 base scenario.

No change to the operation of the proposed signalised site accesses is expected, with similar results when compared with scenario 4 and scenario 5.

Summary

Based on the modelling scenarios and intersection operation detailed in this assessment, it is evident that development of the subject site involving stage 1and stage 2 can be satisfactorily accommodated by the surrounding road network without the need for external road network improvements.

The John Renshaw Drive/ M1/ Weakleys Drive intersection and mid-block capacities are expected to be maintained at similar or at slightly reduced levels when compared with the 2024 base year. All TfNSW instructed background growth rates, traffic generation rates and distribution assumptions have been applied to all modelling scenarios together with future SMEC recommended road network upgrades to better understand the effects of stage 1and stage 2 traffic associated with not only the subject site but also the adjacent BHI site. The several modelling scenarios communicate the traffic impacts through the specified future years.

The opening of the M12RT link in 2028 is also expected to release the known existing and pre 2029 intersection constraints and significantly improving intersection operation. Such significant road network changes would readily allow for the TfNSW defined background traffic growth while readily facilitating precinct development traffic.

I trust this provides the information you require. Naturally, should you have any questions or require any further information, please do not hesitate to contact me on (02) 8448 1800.

Yours sincerely

GTA, NOW STANTEC

Rhys Hazel
Director

encl.

Attachments 1-6 – Scenarios 1-6 SIDRA Intersection Results
Attachment 7 – Proposed Subdivision Plan 38 Industrial Lots, 1 Environmental Lot & 1 Substation Lot, Revision B, 7 October 2021, adw Johnson.

ATTACHMENT 1

Scenario 1 SIDRA Intersection Results

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 **Template: Layout**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 AM (Site Folder: 2024 w. Dev)]

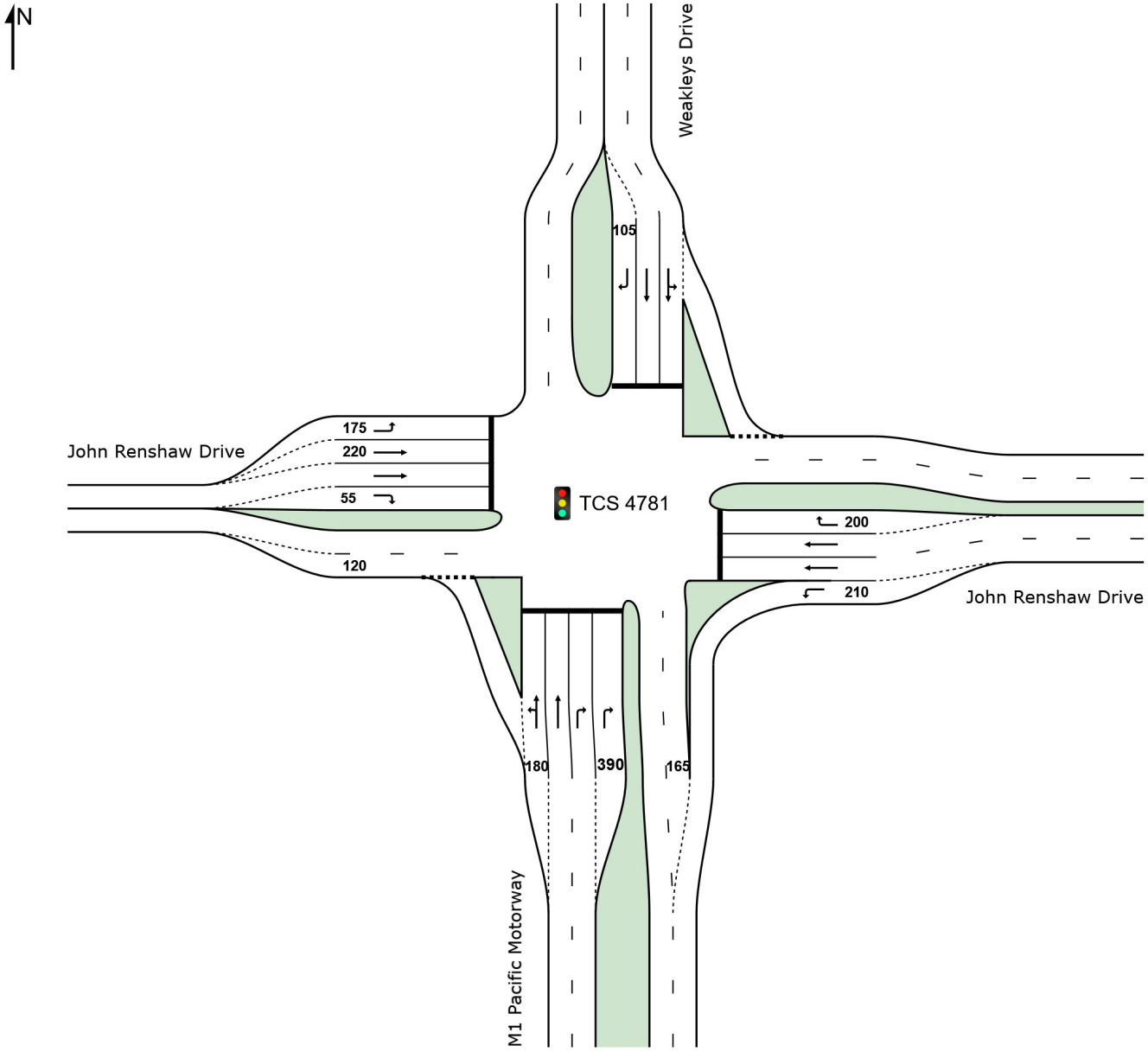
Network: 5 [2024 AM with Dev (Network Folder: 2024 with Dev)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Saturday, July 17, 2021 1:53:34 PM
Project: \\Corp.ads\gtadata\ProjectFilesSyd\N17100-17199\N171073 John Renshaw Drive, Black Hill -\Modelling\SIDRA\210716sid-N171073 Ped Act 2.sip9

USER REPORT FOR SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2021 AM (Site Folder: 2021)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS 4781 - mod
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	15	4	16	26.7	0.637	51.8	LOS D	25.2	195.7	0.88	0.81	0.88	43.0
2	T1	799	96	841	12.0	0.637	43.5	LOS D	25.5	197.2	0.88	0.80	0.88	35.1
3	R2	804	95	846	11.8	* 0.872	71.3	LOS F	33.4	257.9	1.00	0.95	1.15	27.6
Approach		1618	195	1703	12.1	0.872	57.4	LOS E	33.4	257.9	0.94	0.87	1.01	31.0
East: John Renshaw Drive														
4	L2	433	147	456	33.9	0.302	6.0	LOS A	0.0	0.0	0.00	0.51	0.00	53.6
5	T1	258	42	272	16.3	0.324	46.2	LOS D	9.2	73.0	0.83	0.68	0.83	43.4
6	R2	254	21	267	8.3	* 0.870	81.2	LOS F	21.2	159.2	1.00	0.94	1.22	25.5
Approach		945	210	995	22.2	0.870	37.2	LOS C	21.2	159.2	0.50	0.67	0.55	40.2
North: Weakleys Drive														
7	L2	56	30	59	53.6	0.815	72.4	LOS F	26.8	215.7	1.00	1.05	1.07	28.0
8	T1	675	75	711	11.1	* 0.867	66.8	LOS E	28.8	220.7	1.00	1.02	1.12	28.8
9	R2	157	38	165	24.2	0.645	70.7	LOS F	11.6	97.7	0.99	0.82	0.99	37.4
Approach		888	143	935	16.1	0.867	67.9	LOS E	28.8	220.7	1.00	0.99	1.09	30.9
West: John Renshaw Drive														
10	L2	186	37	196	19.9	0.350	45.3	LOS D	10.6	87.2	0.80	0.79	0.80	42.9
11	T1	421	35	443	8.3	* 0.857	76.8	LOS F	17.6	132.1	1.00	0.97	1.22	36.7
12	R2	16	0	17	0.0	0.224	85.2	LOS F	1.3	8.9	1.00	0.69	1.00	35.0
Approach		623	72	656	11.6	0.857	67.6	LOS E	17.6	132.1	0.94	0.91	1.09	38.3
All Vehicles		4074	620	4288	15.2	0.872	56.5	LOS E	33.4	257.9	0.85	0.86	0.94	34.4

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

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2021 PM (Site Folder: 2021)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	1	0	1	0.0	0.529	52.1	LOS D	21.3	158.3	0.82	0.73	0.82	43.3
2	T1	730	54	768	7.4	0.529	41.5	LOS C	21.4	159.4	0.82	0.73	0.82	35.8
3	R2	762	155	802	20.3	* 0.873	72.2	LOS F	32.0	262.8	1.00	0.95	1.16	27.3
Approach		1493	209	1572	14.0	0.873	57.2	LOS E	32.0	262.8	0.91	0.84	0.99	30.9
East: John Renshaw Drive														
4	L2	892	123	939	13.8	0.550	6.0	LOS A	0.0	0.0	0.00	0.52	0.00	54.1
5	T1	504	41	531	8.1	0.797	62.2	LOS E	22.4	168.0	0.98	0.87	1.03	39.7
6	R2	69	19	73	27.5	* 0.434	75.6	LOS F	5.1	44.5	0.98	0.77	0.98	26.4
Approach		1465	183	1542	12.5	0.797	28.6	LOS C	22.4	168.0	0.38	0.65	0.40	44.3
North: Weakleys Drive														
7	L2	40	8	42	20.0	0.817	68.4	LOS E	34.5	253.8	0.98	0.98	1.03	29.2
8	T1	889	41	936	4.6	* 0.870	63.5	LOS E	34.5	253.8	0.98	0.97	1.06	30.2
9	R2	171	28	180	16.4	0.518	63.1	LOS E	11.8	94.1	0.94	0.81	0.94	39.0
Approach		1100	77	1158	7.0	0.870	63.6	LOS E	34.5	253.8	0.97	0.95	1.04	32.1
West: John Renshaw Drive														
10	L2	146	22	154	15.1	0.235	38.6	LOS C	7.5	59.1	0.72	0.76	0.72	44.7
11	T1	378	65	398	17.2	* 0.815	73.7	LOS F	15.5	124.2	1.00	0.93	1.16	37.2
12	R2	21	0	22	0.0	0.295	85.7	LOS F	1.7	11.7	1.00	0.71	1.00	34.9
Approach		545	87	574	16.0	0.815	64.8	LOS E	15.5	124.2	0.92	0.88	1.04	38.9
All Vehicles		4603	556	4845	12.1	0.873	50.5	LOS D	34.5	262.8	0.76	0.81	0.82	36.3

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

* Critical Movement (Signal Timing)

ATTACHMENT 2

Scenario 2 SIDRA Intersection Results

USER REPORT FOR SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 AM (Site Folder: 2024)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS 4781 - mod
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	16	4	17	25.0	0.666	52.7	LOS D	26.8	207.9	0.89	0.83	0.89	42.8
2	T1	836	100	880	12.0	0.666	44.2	LOS D	27.1	209.3	0.90	0.81	0.90	34.9
3	R2	840	99	884	11.8	* 0.911	78.9	LOS F	37.4	288.1	1.00	0.98	1.22	26.1
Approach		1692	203	1781	12.0	0.911	61.5	LOS E	37.4	288.1	0.95	0.90	1.06	30.0
East: John Renshaw Drive														
4	L2	452	154	476	34.1	0.315	6.1	LOS A	0.0	0.0	0.00	0.51	0.00	53.6
5	T1	269	44	283	16.4	0.338	46.4	LOS D	9.6	76.5	0.84	0.69	0.84	43.4
6	R2	266	22	280	8.3	* 0.912	88.2	LOS F	23.5	176.1	1.00	0.98	1.30	24.3
Approach		987	220	1039	22.3	0.912	39.2	LOS C	23.5	176.1	0.50	0.68	0.58	39.6
North: Weakleys Drive														
7	L2	58	31	61	53.4	0.866	80.2	LOS F	30.8	247.5	1.00	1.11	1.14	26.5
8	T1	706	79	743	11.2	* 0.922	76.3	LOS F	32.4	248.3	1.00	1.09	1.21	26.9
9	R2	164	40	173	24.4	0.675	71.5	LOS F	12.2	103.4	1.00	0.83	1.02	37.2
Approach		928	150	977	16.2	0.922	75.7	LOS F	32.4	248.3	1.00	1.05	1.17	29.2
West: John Renshaw Drive														
10	L2	195	39	205	20.0	0.368	45.6	LOS D	11.2	92.1	0.80	0.79	0.80	42.8
11	T1	441	37	464	8.4	* 0.898	82.1	LOS F	19.3	144.7	1.00	1.02	1.30	35.7
12	R2	17	0	18	0.0	0.238	85.3	LOS F	1.3	9.4	1.00	0.70	1.00	35.0
Approach		653	76	687	11.6	0.898	71.3	LOS F	19.3	144.7	0.94	0.95	1.14	37.5
All Vehicles		4260	649	4484	15.2	0.922	60.9	LOS E	37.4	288.1	0.85	0.89	0.98	33.3

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

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 PM (Site Folder: 2024)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	1	0	1	0.0	0.669	61.9	LOS E	25.2	187.4	0.92	0.82	0.92	41.0
2	T1	764	56	804	7.3	0.669	51.1	LOS D	25.3	188.2	0.92	0.82	0.92	32.8
3	R2	797	162	839	20.3	* 0.913	80.4	LOS F	35.9	294.8	1.00	0.99	1.24	25.7
Approach		1562	218	1644	14.0	0.913	66.1	LOS E	35.9	294.8	0.96	0.90	1.08	28.8
East: John Renshaw Drive														
4	L2	933	128	982	13.7	0.575	6.0	LOS A	0.0	0.0	0.00	0.52	0.00	54.1
5	T1	527	43	555	8.2	0.834	64.1	LOS E	24.2	181.6	0.98	0.89	1.06	39.3
6	R2	72	19	76	26.4	* 0.450	75.8	LOS F	5.4	46.1	0.98	0.78	0.98	26.3
Approach		1532	190	1613	12.4	0.834	29.3	LOS C	24.2	181.6	0.38	0.66	0.41	44.1
North: Weakleys Drive														
7	L2	42	9	44	21.4	0.853	73.3	LOS F	38.0	279.7	1.00	1.03	1.08	28.1
8	T1	930	43	979	4.6	* 0.908	70.4	LOS E	38.6	280.7	0.99	1.03	1.13	28.7
9	R2	179	29	188	16.2	0.410	53.7	LOS D	11.3	89.7	0.87	0.80	0.87	41.1
Approach		1151	81	1212	7.0	0.908	67.9	LOS E	38.6	280.7	0.97	0.99	1.09	31.2
West: John Renshaw Drive														
10	L2	153	23	161	15.0	0.210	31.9	LOS C	7.0	55.2	0.64	0.74	0.64	46.7
11	T1	395	68	416	17.2	* 0.852	76.8	LOS F	16.6	133.5	1.00	0.97	1.22	36.7
12	R2	22	0	23	0.0	0.309	85.8	LOS F	1.8	12.3	1.00	0.71	1.00	34.9
Approach		570	91	600	16.0	0.852	65.1	LOS E	16.6	133.5	0.90	0.90	1.06	38.8
All Vehicles		4815	580	5068	12.0	0.913	54.7	LOS D	38.6	294.8	0.77	0.85	0.87	35.2

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

* Critical Movement (Signal Timing)

ATTACHMENT 3

Scenario 3 SIDRA Intersection Results

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 | **Template: Layout**

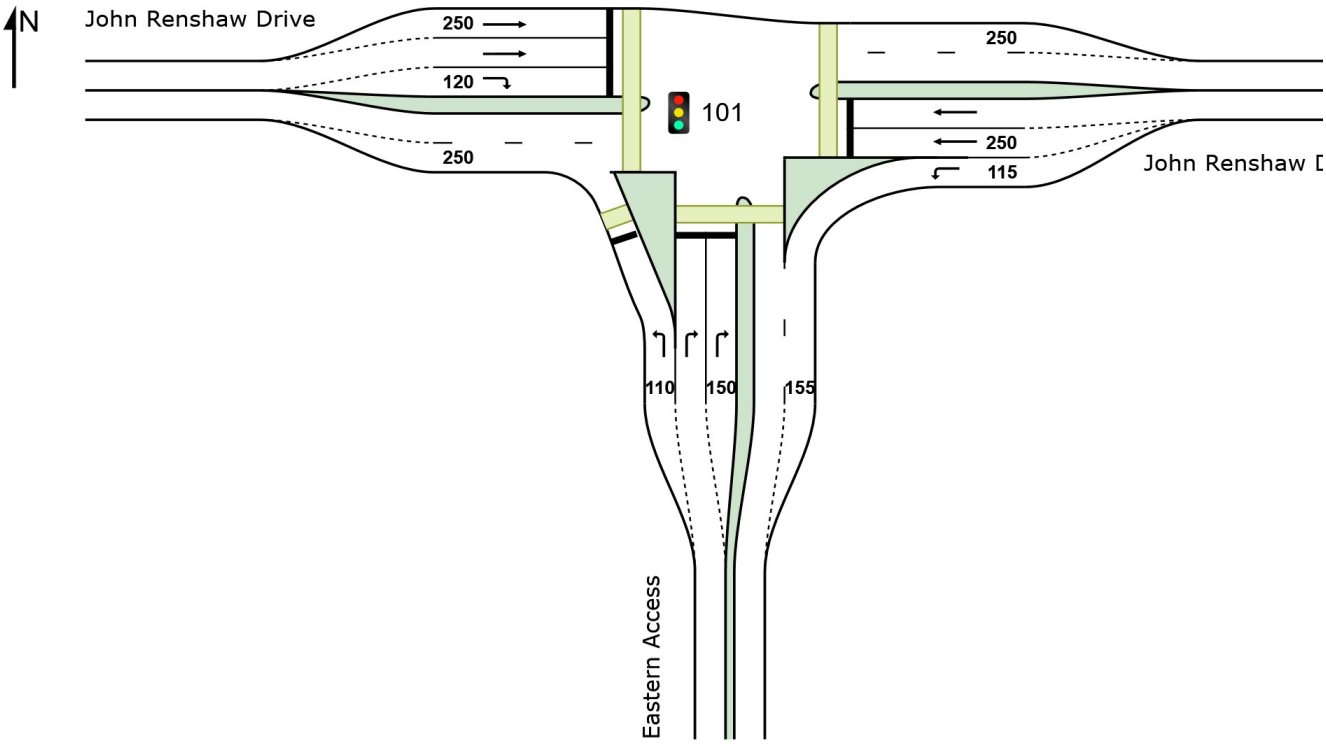
Site: 101 [John Renshaw Drive/ eastern access 2024 AM (Site Folder: 2024 w. Dev)] | **Network: 5 [2024 AM with Dev (Network Folder: 2024 with Dev)]**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Saturday, July 17, 2021 1:54:01 PM
Project: \\Corp.ads\gtadata\ProjectFilesSyd\N17100-17199\N171073 John Renshaw Drive, Black Hill -\Modelling\SIDRA\210716sid-N171073 Ped Act 2.sip9

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 AM (Site Folder: 2024 w. Dev)] — **Network: 5 [2024 AM with Dev (Network Folder: 2024 with Dev)]**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	129	21.1	129	21.1	0.789	50.8	LOS D	19.2	151.1	0.95	0.95	0.96	24.7
2	T1	880	12.0	880	12.0	0.789	46.9	LOS D	19.7	151.8	0.96	0.91	0.98	33.8
3	R2	884	11.8	884	11.8	* 0.958	95.1	LOS F	25.4	195.6	1.00	1.04	1.35	23.4
Approach		1894	12.5	1894	12.5	0.958	69.7	LOS E	25.4	195.6	0.98	0.98	1.15	27.5
East: John Renshaw Drive														
4	L2	476	34.1	476	34.1	0.315	6.1	LOS A	0.0	0.0	0.00	0.51	0.00	53.6
5	T1	363	17.1	363	17.1	0.458	49.7	LOS D	7.9	63.7	0.88	0.73	0.88	23.5
6	R2	280	8.3	280	8.3	* 0.948	98.5	LOS F	15.3	115.0	1.00	1.02	1.40	22.8
Approach		1119	22.1	1119	22.1	0.948	43.4	LOS D	15.3	115.0	0.53	0.71	0.63	32.4
North: Weakleys Drive														
7	L2	61	53.4	61	53.4	0.871	81.1	LOS F	19.0	153.0	1.00	1.11	1.15	26.3
8	T1	743	11.2	743	11.2	* 0.926	77.5	LOS E	19.8	152.3	1.00	1.10	1.22	26.6
9	R2	237	23.1	237	23.1	0.817	76.0	LOS E	11.0	92.4	1.00	0.91	1.14	17.6
Approach		1041	16.4	1041	16.4	0.926	77.3	LOS E	19.8	153.0	1.00	1.06	1.20	24.9
West: John Renshaw Drive														
10	L2	238	19.9	238	19.9	0.381	41.7	LOS D	7.7	62.7	0.77	0.79	0.77	43.8
11	T1	529	9.7	529	9.7	* 0.927	86.4	LOS F	14.4	109.3	1.00	1.08	1.35	34.9
12	R2	51	12.5	51	12.5	0.440	81.7	LOS F	2.3	17.7	1.00	0.75	1.00	35.5
Approach		818	12.9	818	12.9	0.927	73.1	LOS E	14.4	109.3	0.93	0.97	1.16	37.2
All Vehicles		4872	15.6	4872	15.6	0.958	65.8	LOS E	25.4	195.6	0.87	0.93	1.04	30.2

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

Site: 101 [John Renshaw Drive/ eastern access 2024 AM (Site Folder: 2024 w. Dev)]

Network: 5 [2024 AM with Dev (Network Folder: 2024 with Dev)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	33	19.4	33	19.4	0.046	15.3	LOS B	0.3	2.8	0.60	0.64	0.60	56.1
3	R2	131	20.2	131	20.2	* 0.341	33.6	LOS C	1.2	9.5	0.96	0.75	0.96	26.6
Approach		163	20.0	163	20.0	0.341	29.9	LOS C	1.2	9.5	0.89	0.73	0.89	34.9
East: John Renshaw Drive														
4	L2	257	20.1	257	20.1	0.156	9.3	LOS A	0.0	0.0	0.00	0.63	0.00	80.8
5	T1	473	19.6	473	19.6	* 0.369	15.6	LOS B	3.2	25.9	0.78	0.65	0.78	86.4
Approach		729	19.8	729	19.8	0.369	13.4	LOS B	3.2	25.9	0.50	0.64	0.50	84.7
West: John Renshaw Drive														
11	T1	687	11.5	687	11.5	0.331	8.1	LOS A	3.3	25.4	0.57	0.49	0.57	85.4
12	R2	64	19.7	64	19.7	* 0.390	38.3	LOS D	1.2	9.6	0.97	0.75	0.97	52.3
Approach		752	12.2	752	12.2	0.390	10.6	LOS B	3.3	25.4	0.60	0.51	0.60	79.6
All Vehicles		1644	16.3	1644	16.3	0.390	13.8	LOS B	3.3	25.9	0.59	0.59	0.59	78.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14

West: John Renshaw Drive										
P4 Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians	211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 PM (Site Folder: 2024 w. Dev)] — **Network: 6 [2024 PM with Dev (Network Folder: 2024 with Dev)]**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	37	14.3	37	14.3	0.649	57.6	LOS E	15.3	114.4	0.90	0.87	0.90	23.0
2	T1	804	7.3	804	7.3	0.649	47.3	LOS D	15.6	116.1	0.90	0.83	0.90	33.8
3	R2	839	20.3	839	20.3	*0.985	109.5	LOS F	25.9	213.1	1.00	1.09	1.45	21.4
Approach		1680	14.0	1680	14.0	0.985	78.6	LOS E	25.9	213.1	0.95	0.96	1.18	26.0
East: John Renshaw Drive														
4	L2	982	13.7	982	13.7	0.575	6.0	LOS A	0.0	0.0	0.00	0.52	0.00	54.1
5	T1	628	9.0	628	9.0	*0.981	86.3	LOS F	21.5	162.3	1.00	1.05	1.27	16.2
6	R2	76	26.4	76	26.4	0.423	74.5	LOS E	3.3	28.0	0.97	0.78	0.97	26.6
Approach		1686	12.5	1686	12.5	0.981	39.0	LOS D	21.5	162.3	0.41	0.73	0.52	33.8
North: Weakleys Drive														
7	L2	44	21.4	44	21.4	0.920	90.9	LOS F	27.1	199.1	1.00	1.14	1.21	24.8
8	T1	979	4.6	979	4.6	*0.979	93.4	LOS F	27.7	201.9	1.00	1.17	1.30	24.4
9	R2	225	16.4	225	16.4	0.628	63.9	LOS E	9.2	73.8	0.96	0.83	0.96	19.8
Approach		1248	7.3	1248	7.3	0.979	88.0	LOS F	27.7	201.9	0.99	1.11	1.24	23.8
West: John Renshaw Drive														
10	L2	226	14.9	226	14.9	0.313	35.9	LOS D	6.6	52.2	0.71	0.77	0.71	45.5
11	T1	497	16.9	497	16.9	0.883	77.1	LOS E	13.4	107.6	1.00	1.02	1.26	36.6
12	R2	136	13.2	136	13.2	*0.913	95.9	LOS F	7.0	54.8	1.00	1.00	1.43	33.2
Approach		859	15.8	859	15.8	0.913	69.2	LOS E	13.4	107.6	0.92	0.95	1.14	37.9
All Vehicles		5474	12.3	5474	12.3	0.985	67.1	LOS E	27.7	213.1	0.79	0.92	0.98	29.8

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

Site: 101 [John Renshaw Drive/ eastern access 2024 PM (Site Folder: 2024 w. Dev)]

Network: 6 [2024 PM with Dev (Network Folder: 2024 with Dev)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	65	16.1	65	16.1	0.086	14.8	LOS B	0.7	5.4	0.60	0.66	0.60	57.2
3	R2	259	15.4	259	15.4	* 0.574	33.8	LOS C	2.4	18.8	0.98	0.81	1.03	26.5
Approach		324	15.6	324	15.6	0.574	30.0	LOS C	2.4	18.8	0.91	0.78	0.94	35.1
East: John Renshaw Drive														
4	L2	147	15.7	147	15.7	0.087	9.2	LOS A	0.0	0.0	0.00	0.63	0.00	81.7
5	T1	743	10.2	743	10.2	* 0.575	18.1	LOS B	5.6	42.3	0.87	0.74	0.87	84.7
Approach		891	11.1	891	11.1	0.575	16.6	LOS B	5.6	42.3	0.72	0.72	0.72	84.3
West: John Renshaw Drive														
11	T1	600	15.8	600	15.8	0.305	8.5	LOS A	2.9	23.3	0.58	0.49	0.58	84.8
12	R2	37	14.3	37	14.3	* 0.216	37.3	LOS D	0.7	5.2	0.95	0.73	0.95	52.7
Approach		637	15.7	637	15.7	0.305	10.2	LOS B	2.9	23.3	0.60	0.51	0.60	80.8
All Vehicles		1852	13.5	1852	13.5	0.575	16.8	LOS B	5.6	42.3	0.71	0.66	0.72	75.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14

West: John Renshaw Drive										
P4 Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians	211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

ATTACHMENT 4

Scenario 4 SIDRA Intersection Results

USER REPORT FOR NETWORK SITE

All Movement Classes

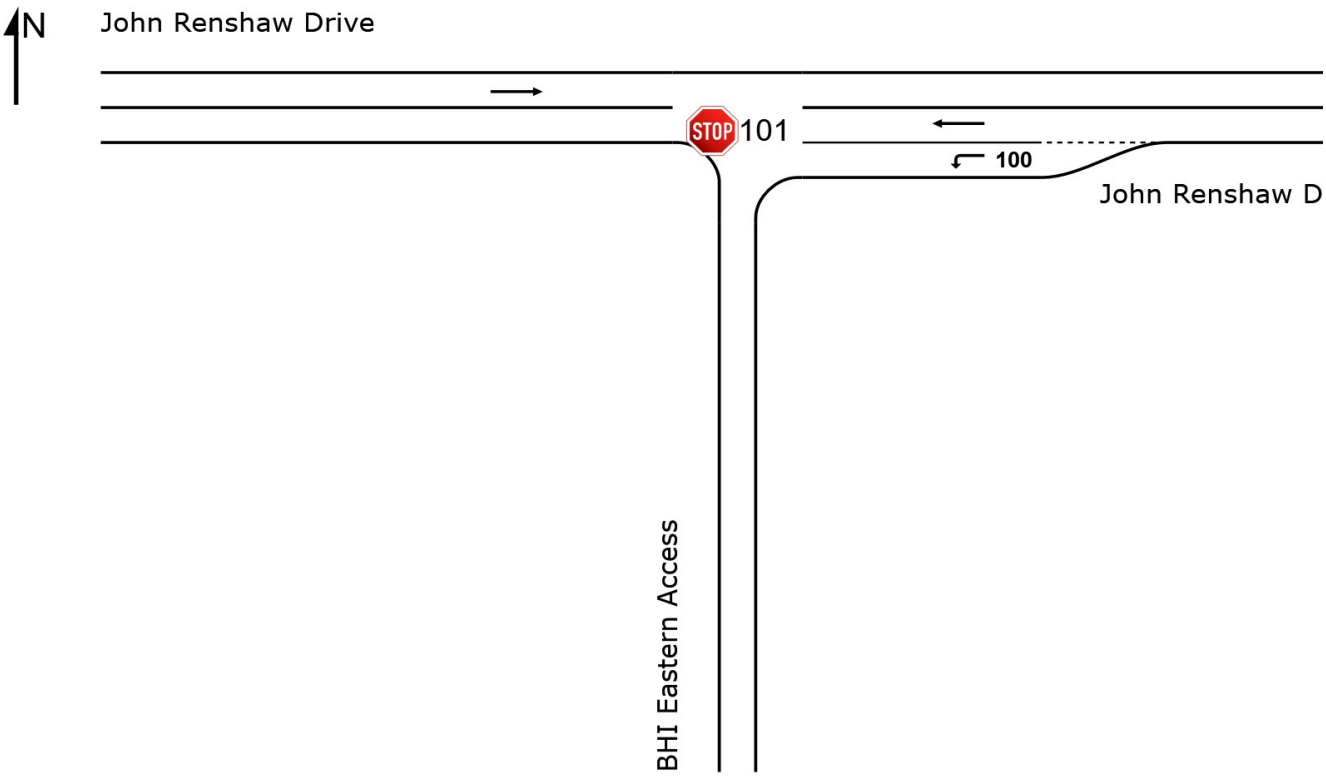
Project: 210716sid-N171073 Ped Act 2 | **Template: Layout**

Site: 101 [John Renshaw Drive/ BHI eastern access 2024 AM (Site Folder: 2024 w. Dev & BHI)] | **Network: 7 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]**

New Site
Site Category: (None)
Stop (Two-Way)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Site: 101 [John Renshaw Drive/ BHI western access 2024 AM (Site Folder: 2024 w. Dev & BHI)]

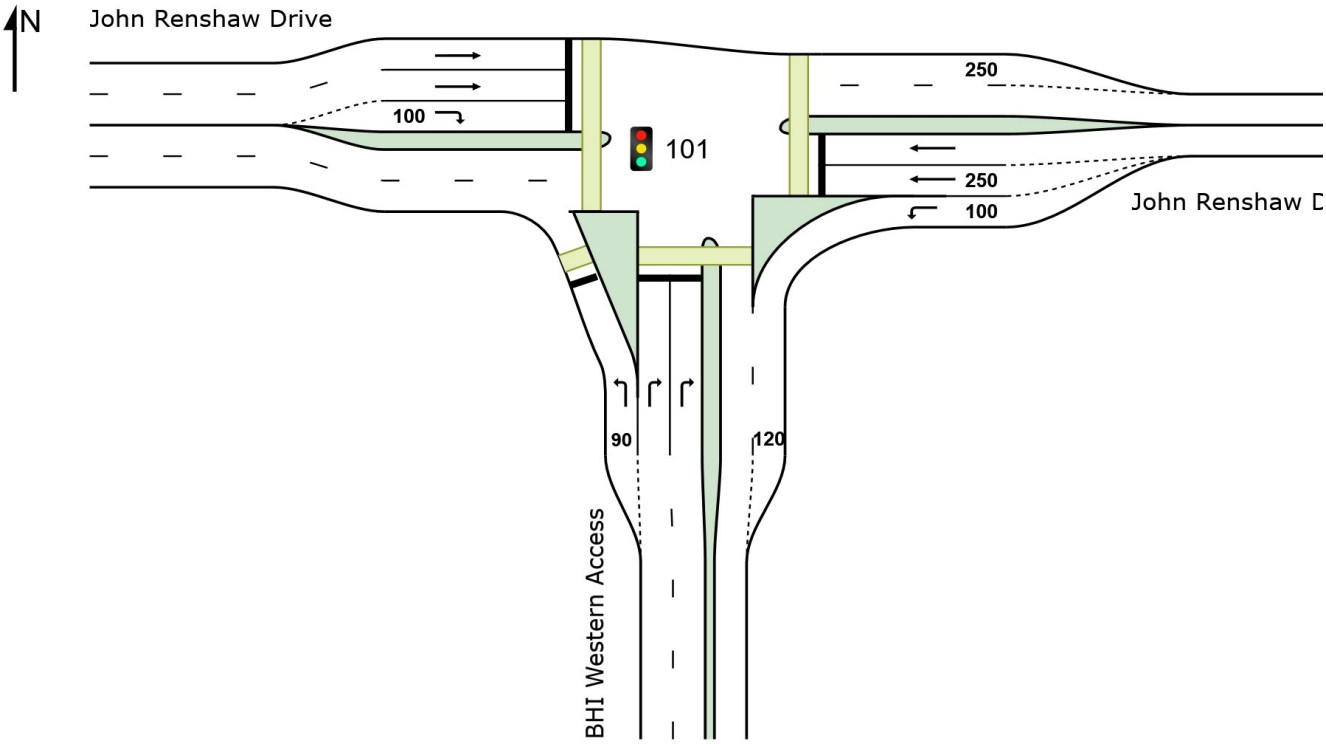
Network: 7 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Saturday, July 17, 2021 1:54:39 PM
Project: \\Corp.ads\gtadata\ProjectFilesSyd\N17100-17199\N171073 John Renshaw Drive, Black Hill -\Modelling\SIDRA\210716sid-N171073 Ped Act 2.sip9

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 AM (Site Folder: 2024 w. Dev & BHI)] — **Network: 7 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	248	20.3	248	20.3	0.915	69.9	LOS E	27.9	220.7	1.00	1.16	1.17	19.8
2	T1	880	12.0	880	12.0	0.915	67.1	LOS E	27.9	220.7	1.00	1.10	1.19	28.5
3	R2	884	11.8	884	11.8	* 0.983	107.2	LOS F	27.0	208.2	1.00	1.08	1.43	21.7
Approach		2013	12.9	2013	12.9	0.983	85.1	LOS F	27.9	220.7	1.00	1.10	1.29	24.2
East: John Renshaw Drive														
4	L2	476	34.1	476	34.1	0.315	6.1	LOS A	0.0	0.0	0.00	0.51	0.00	53.6
5	T1	448	17.8	448	17.8	0.583	52.6	LOS D	10.2	82.7	0.91	0.77	0.91	22.8
6	R2	280	8.3	280	8.3	* 0.988	115.2	LOS F	16.7	125.1	1.00	1.08	1.53	20.6
Approach		1204	22.0	1204	22.0	0.988	48.8	LOS D	16.7	125.1	0.57	0.74	0.69	30.3
North: Weakleys Drive														
7	L2	61	53.4	61	53.4	0.900	87.6	LOS F	20.2	162.6	1.00	1.16	1.21	25.1
8	T1	743	11.2	743	11.2	* 0.957	86.3	LOS F	21.0	161.1	1.00	1.16	1.29	25.0
9	R2	304	22.5	304	22.5	0.941	95.3	LOS F	16.6	138.8	1.00	1.03	1.37	14.9
Approach		1108	16.6	1108	16.6	0.957	88.9	LOS F	21.0	162.6	1.00	1.12	1.31	22.6
West: John Renshaw Drive														
10	L2	273	20.1	273	20.1	0.395	37.9	LOS D	8.4	68.9	0.74	0.79	0.74	33.5
11	T1	598	10.9	598	10.9	* 0.960	95.7	LOS F	17.8	136.4	1.00	1.15	1.43	21.1
12	R2	85	16.0	85	16.0	0.584	79.7	LOS E	3.8	30.5	1.00	0.78	1.01	23.3
Approach		956	14.0	956	14.0	0.960	77.8	LOS E	17.8	136.4	0.93	1.01	1.19	23.8
All Vehicles		5281	16.0	5281	16.0	0.988	76.3	LOS E	27.9	220.7	0.89	1.01	1.14	24.8

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

Site: 101 [John Renshaw Drive/ BHI eastern access 2024 AM (Site Folder: 2024 w. Dev & BHI)]

Network: 7 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: John Renshaw Drive														
4	L2	136	20.2	136	20.2	0.083	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	51.5
5	T1	865	19.8	865	19.8	0.496	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach		1001	19.9	1001	19.9	0.496	0.9	NA	0.0	0.0	0.00	0.08	0.00	57.1
West: John Renshaw Drive														
11	T1	956	13.9	956	13.9	0.529	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		956	13.9	956	13.9	0.529	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		1957	16.9	1957	16.9	0.529	0.6	NA	0.0	0.0	0.00	0.04	0.00	58.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [John Renshaw Drive/ BHI western access 2024 AM (Site Folder: 2024 w. Dev & BHI)]

Network: 7 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: BHI Western Access														
1	L2	35	21.2	35	21.2	0.053	16.6	LOS B	0.4	3.2	0.64	0.65	0.64	34.8
3	R2	138	19.8	138	19.8	* 0.503	37.0	LOS D	1.3	10.8	1.00	0.77	1.02	25.5
Approach		173	20.1	173	20.1	0.503	32.9	LOS C	1.3	10.8	0.92	0.74	0.95	26.9
East: John Renshaw Drive														
4	L2	136	20.2	136	20.2	0.083	9.3	LOS A	0.0	0.0	0.00	0.63	0.00	72.1
5	T1	729	19.8	729	19.8	* 0.522	15.0	LOS B	5.1	41.5	0.81	0.70	0.81	63.5
Approach		865	19.8	865	19.8	0.522	14.1	LOS B	5.1	41.5	0.68	0.68	0.68	65.4
West: John Renshaw Drive														
11	T1	818	12.9	818	12.9	0.375	7.2	LOS A	3.7	28.5	0.53	0.46	0.53	68.8
12	R2	67	20.3	67	20.3	* 0.411	31.7	LOS C	1.1	8.7	0.83	0.74	0.83	39.1
Approach		885	13.4	885	13.4	0.411	9.1	LOS A	3.7	28.5	0.55	0.48	0.55	61.4
All Vehicles		1923	16.9	1923	16.9	0.522	13.5	LOS B	5.1	41.5	0.64	0.60	0.65	57.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: BHI Western Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14

West: John Renshaw Drive										
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

Site: 101 [John Renshaw Drive/ eastern access 2024 AM (Site Folder: 2024 w. Dev & BHI)]

Network: 7 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	33	19.4	33	19.4	0.047	15.9	LOS B	0.3	2.9	0.62	0.65	0.62	55.8
3	R2	131	20.2	131	20.2	* 0.398	34.5	LOS C	1.2	9.8	0.98	0.75	0.98	26.1
Approach		163	20.0	163	20.0	0.398	30.7	LOS C	1.2	9.8	0.90	0.73	0.90	34.4
East: John Renshaw Drive														
4	L2	257	20.1	257	20.1	0.156	9.3	LOS A	0.0	0.0	0.00	0.63	0.00	65.3
5	T1	507	19.7	507	19.7	* 0.379	4.3	LOS A	1.3	10.7	0.26	0.22	0.26	93.5
Approach		764	19.8	764	19.8	0.379	6.0	LOS A	1.3	10.7	0.17	0.35	0.17	85.3
West: John Renshaw Drive														
11	T1	755	12.3	755	12.3	0.355	7.1	LOS A	3.6	27.6	0.56	0.49	0.56	86.1
12	R2	64	19.7	64	19.7	* 0.390	38.3	LOS D	1.2	9.6	0.97	0.75	0.97	52.3
Approach		819	12.9	819	12.9	0.390	9.5	LOS A	3.6	27.6	0.59	0.51	0.59	80.5
All Vehicles		1746	16.6	1746	16.6	0.398	10.0	LOS A	3.6	27.6	0.44	0.46	0.44	76.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											
P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14

West: John Renshaw Drive										
P4 Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians	211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 PM (Site Folder: 2024 w. Dev & BHI)] — **Network: 8 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]**

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D2*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	76	15.3	76	15.3	0.738	59.7	LOS E	16.7	125.8	0.94	0.96	0.94	22.4
2	T1	804	7.3	804	7.3	0.738	50.9	LOS D	17.0	126.5	0.95	0.90	0.95	32.7
3	R2	839	20.3	839	20.3	* 1.012	124.4	LOS F	27.7	227.4	1.00	1.13	1.54	19.6
Approach		1719	14.0	1719	14.0	1.012	87.1	LOS F	27.7	227.4	0.98	1.01	1.24	24.3
East: John Renshaw Drive														
4	L2	982	13.7	982	13.7	0.575	6.0	LOS A	0.0	0.0	0.00	0.52	0.00	54.1
5	T1	706	9.7	706	9.7	* 1.231	197.2	LOS F	40.6	307.9	1.00	1.50	1.89	8.1
6	R2	76	26.4	76	26.4	0.450	75.8	LOS E	3.3	28.3	0.98	0.78	0.98	26.3
Approach		1764	12.6	1764	12.6	1.231	85.6	LOS F	40.6	307.9	0.44	0.92	0.80	21.6
North: Weakleys Drive														
7	L2	44	21.4	44	21.4	1.004	67.6	LOS E	29.3	215.7	1.00	1.06	1.47	19.6
8	T1	979	4.6	979	4.6	* 1.068	110.6	LOS F	35.8	260.8	1.00	1.26	1.60	18.3
9	R2	264	15.9	264	15.9	0.735	66.7	LOS E	11.3	90.1	0.99	0.86	1.03	19.2
Approach		1287	7.5	1287	7.5	1.068	100.1	LOS F	35.8	260.8	1.00	1.17	1.48	18.4
West: John Renshaw Drive														
10	L2	295	15.0	295	15.0	0.373	33.0	LOS C	8.4	66.3	0.69	0.78	0.69	35.4
11	T1	583	16.6	583	16.6	0.890	74.4	LOS E	16.7	133.7	0.99	1.02	1.23	24.6
12	R2	257	13.9	257	13.9	* 1.251	308.5	LOS F	26.2	205.4	1.00	1.53	2.50	8.2
Approach		1135	15.6	1135	15.6	1.251	116.7	LOS F	26.2	205.4	0.91	1.07	1.38	17.9
All Vehicles		5905	12.5	5905	12.5	1.251	95.2	LOS F	40.6	307.9	0.81	1.03	1.19	20.8

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

Site: 101 [John Renshaw Drive/ BHI eastern access 2024 PM (Site Folder: 2024 w. Dev & BHI)]

Network: 8 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: John Renshaw Drive														
4	L2	78	16.2	72	16.4	0.043	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	51.7
5	T1	968	11.4	897	11.6	0.490	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach		1046	11.8	969 N1	11.9	0.490	0.6	NA	0.0	0.0	0.00	0.04	0.00	58.1
West: John Renshaw Drive														
11	T1	1134	15.7	1134	15.7	0.668	0.7	LOS A	0.0	0.0	0.00	0.00	0.00	59.1
Approach		1134	15.7	1134	15.7	0.668	0.7	NA	0.0	0.0	0.00	0.00	0.00	59.1
All Vehicles		2180	13.8	2103 N1	14.3	0.668	0.6	NA	0.0	0.0	0.00	0.02	0.00	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 101 [John Renshaw Drive/ BHI western access 2024 PM (Site Folder: 2024 w. Dev & BHI)]

Network: 8 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: BHI Western Access														
1	L2	68	15.4	68	15.4	0.090	14.9	LOS B	0.7	5.6	0.60	0.66	0.60	36.0
3	R2	275	15.3	275	15.3	* 0.609	34.8	LOS C	2.5	20.1	0.99	0.83	1.07	26.4
Approach		343	15.3	343	15.3	0.609	30.8	LOS C	2.5	20.1	0.91	0.80	0.97	27.9
East: John Renshaw Drive														
4	L2	78	16.2	72	16.4	0.043	9.2	LOS A	0.0	0.0	0.00	0.63	0.00	73.1
5	T1	891	11.1	825	11.3	* 0.642	18.1	LOS B	6.4	48.9	0.89	0.77	0.89	59.1
Approach		968	11.5	897 N1	11.7	0.642	17.4	LOS B	6.4	48.9	0.82	0.76	0.82	60.6
West: John Renshaw Drive														
11	T1	859	15.8	859	15.8	0.437	9.9	LOS A	4.6	36.6	0.63	0.55	0.63	61.8
12	R2	39	16.2	39	16.2	* 0.232	34.4	LOS C	0.6	5.1	0.87	0.72	0.87	37.8
Approach		898	15.8	898	15.8	0.437	11.0	LOS B	4.6	36.6	0.64	0.56	0.64	58.4
All Vehicles		2209	13.9	2138 N1	14.3	0.642	16.9	LOS B	6.4	48.9	0.76	0.68	0.77	51.3

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: BHI Western Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

Site: 101 [John Renshaw Drive/ eastern access 2024 PM (Site Folder: 2024 w. Dev & BHI)]

Network: 8 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	65	16.1	65	16.1	0.086	14.8	LOS B	0.7	5.4	0.60	0.66	0.60	57.2
3	R2	259	15.4	259	15.4	* 0.574	33.2	LOS C	2.4	18.8	0.98	0.81	1.03	26.5
Approach		324	15.6	324	15.6	0.574	29.5	LOS C	2.4	18.8	0.91	0.78	0.94	35.1
East: John Renshaw Drive														
4	L2	147	15.7	137	15.9	0.082	9.1	LOS A	0.0	0.0	0.00	0.63	0.00	66.6
5	T1	812	10.6	756	10.8	* 0.587	5.3	LOS A	2.9	22.3	0.35	0.30	0.35	92.5
Approach		959	11.4	894 N1	11.6	0.587	5.9	LOS A	2.9	22.3	0.30	0.35	0.30	89.2
West: John Renshaw Drive														
11	T1	639	15.8	639	15.8	0.325	8.0	LOS A	3.2	25.1	0.58	0.50	0.58	84.6
12	R2	37	14.3	37	14.3	* 0.216	37.3	LOS D	0.7	5.2	0.95	0.73	0.95	52.7
Approach		676	15.7	676	15.7	0.325	9.6	LOS A	3.2	25.1	0.60	0.51	0.60	80.9
All Vehicles		1959	13.6	1894 N1	14.1	0.587	11.2	LOS B	3.2	25.1	0.51	0.48	0.52	74.8

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

ATTACHMENT 5

Scenario 5 SIDRA Intersection Results

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 | **Template: Layout**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 AM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

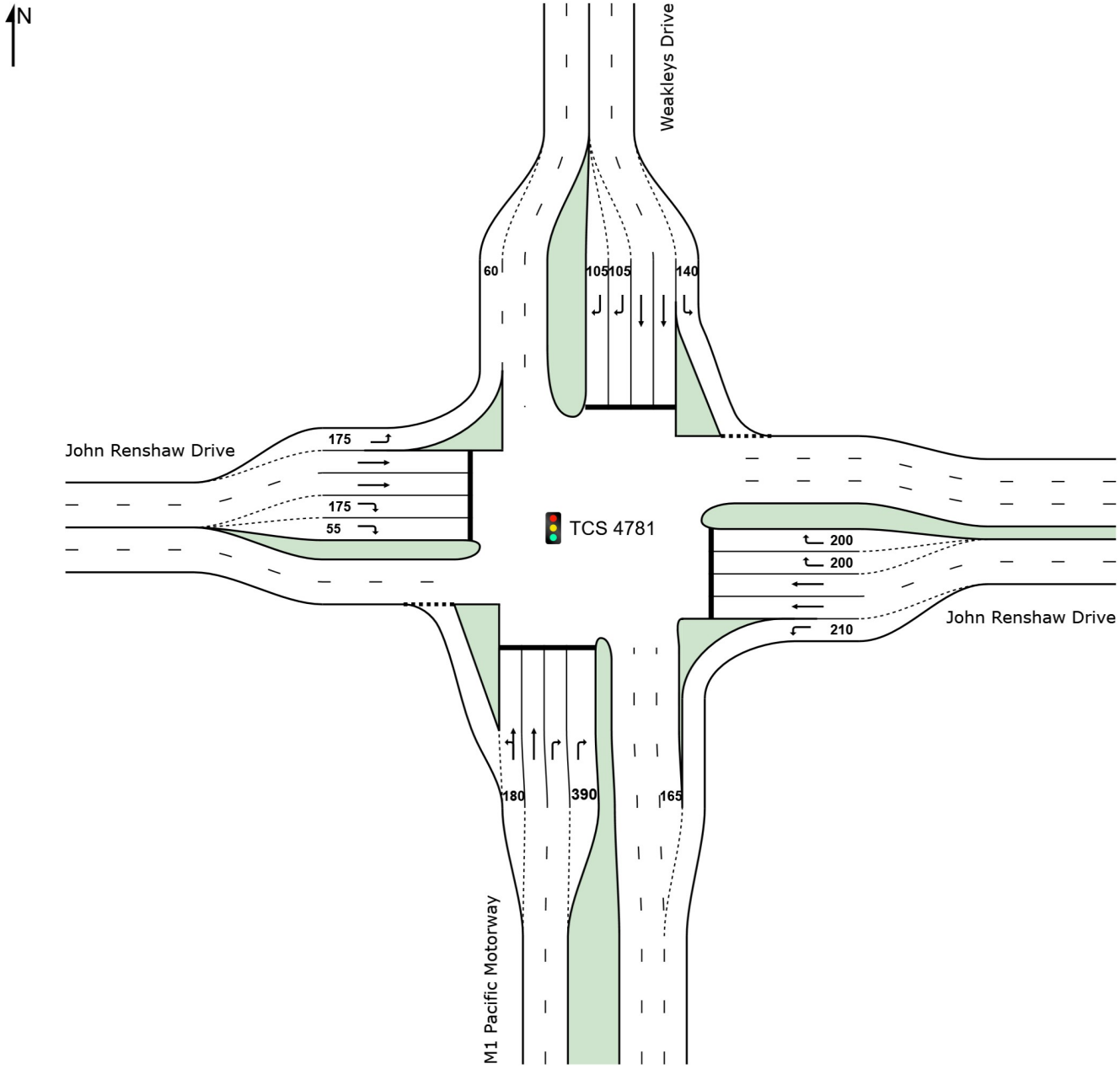
Network: 11 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Saturday, July 17, 2021 1:52:57 PM
Project: \\Corp.ads\gtadata\ProjectFilesSyd\N17100-17199\N171073 John Renshaw Drive, Black Hill -\Modelling\SIDRA\210716sid-N171073 Ped Act 2.sip9

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 AM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 11 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	248	20.3	248	20.3	0.713	24.6	LOS C	12.2	96.5	0.82	0.86	0.82	36.2
2	T1	880	12.0	880	12.0	0.713	25.8	LOS C	13.9	107.3	0.87	0.83	0.87	41.9
3	R2	884	11.8	884	11.8	* 0.884	58.3	LOS E	16.7	128.8	1.00	0.99	1.24	30.7
Approach		2013	12.9	2013	12.9	0.884	39.9	LOS D	16.7	128.8	0.92	0.90	1.03	35.5
East: John Renshaw Drive														
4	L2	476	34.1	476	34.1	0.315	6.1	LOS A	0.0	0.0	0.00	0.51	0.00	53.6
5	T1	448	17.8	448	17.8	0.582	42.2	LOS D	6.7	54.2	0.95	0.79	0.95	25.9
6	R2	280	8.3	280	8.3	* 0.869	69.3	LOS E	5.2	39.2	1.00	0.99	1.40	28.1
Approach		1204	22.0	1204	22.0	0.869	34.2	LOS C	6.7	54.2	0.59	0.72	0.68	35.5
North: Weakleys Drive														
7	L2	61	53.4	61	53.4	0.094	19.5	LOS B	1.0	10.2	0.55	0.67	0.55	43.9
8	T1	743	11.2	743	11.2	* 0.900	57.8	LOS E	14.4	110.1	1.00	1.06	1.28	31.2
9	R2	304	22.5	304	22.5	0.739	60.1	LOS E	5.2	43.5	1.00	0.88	1.14	20.8
Approach		1108	16.6	1108	16.6	0.900	56.3	LOS E	14.4	110.1	0.98	0.99	1.20	29.4
West: John Renshaw Drive														
10	L2	273	20.1	273	20.1	0.166	7.2	LOS A	0.0	0.0	0.00	0.52	0.00	53.2
11	T1	598	10.9	598	10.9	* 0.894	60.4	LOS E	11.4	86.9	1.00	1.06	1.33	27.8
12	R2	85	16.0	85	16.0	0.464	64.6	LOS E	1.5	11.7	1.00	0.74	1.00	26.3
Approach		956	14.0	956	14.0	0.894	45.6	LOS D	11.4	86.9	0.71	0.87	0.92	32.0
All Vehicles		5281	16.0	5281	16.0	0.900	43.1	LOS D	16.7	128.8	0.82	0.88	0.97	33.4

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

Site: 101 [John Renshaw Drive/ BHI eastern access 2024 AM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 11 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: John Renshaw Drive														
4	L2	136	20.2	136	20.2	0.083	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	51.5
5	T1	865	19.8	865	19.8	0.248	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1001	19.9	1001	19.9	0.248	0.8	NA	0.0	0.0	0.00	0.08	0.00	57.3
West: John Renshaw Drive														
11	T1	956	13.9	956	13.9	0.264	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		956	13.9	956	13.9	0.264	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		1957	16.9	1957	16.9	0.264	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [John Renshaw Drive/ BHI western access 2024 AM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 11 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: BHI Western Access														
1	L2	35	21.2	35	21.2	0.053	16.6	LOS B	0.4	3.2	0.64	0.65	0.64	34.8
3	R2	138	19.8	138	19.8	* 0.503	36.2	LOS D	1.3	10.8	1.00	0.77	1.02	25.5
Approach		173	20.1	173	20.1	0.503	32.2	LOS C	1.3	10.8	0.92	0.74	0.95	26.9
East: John Renshaw Drive														
4	L2	136	20.2	136	20.2	0.083	9.3	LOS A	0.0	0.0	0.00	0.63	0.00	72.1
5	T1	729	19.8	729	19.8	* 0.522	15.0	LOS B	5.1	41.5	0.81	0.70	0.81	63.5
Approach		865	19.8	865	19.8	0.522	14.1	LOS B	5.1	41.5	0.68	0.68	0.68	65.4
West: John Renshaw Drive														
11	T1	818	12.9	818	12.9	0.375	6.4	LOS A	3.7	28.5	0.53	0.46	0.53	68.8
12	R2	67	20.3	67	20.3	* 0.411	31.7	LOS C	1.1	8.7	0.83	0.74	0.83	39.1
Approach		885	13.4	885	13.4	0.411	8.3	LOS A	3.7	28.5	0.55	0.48	0.55	61.4
All Vehicles		1923	16.9	1923	16.9	0.522	13.1	LOS B	5.1	41.5	0.64	0.60	0.65	57.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: BHI Western Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

Site: 101 [John Renshaw Drive/ eastern access 2024 AM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 11 [2024 AM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	33	19.4	33	19.4	0.047	15.9	LOS B	0.3	2.9	0.62	0.65	0.62	55.8
3	R2	131	20.2	131	20.2	* 0.398	34.5	LOS C	1.2	9.8	0.98	0.75	0.98	26.1
Approach		163	20.0	163	20.0	0.398	30.7	LOS C	1.2	9.8	0.90	0.73	0.90	34.4
East: John Renshaw Drive														
4	L2	257	20.1	257	20.1	0.156	9.3	LOS A	0.0	0.0	0.00	0.63	0.00	65.3
5	T1	507	19.7	507	19.7	* 0.379	4.3	LOS A	1.3	10.7	0.26	0.22	0.26	93.5
Approach		764	19.8	764	19.8	0.379	6.0	LOS A	1.3	10.7	0.17	0.35	0.17	85.3
West: John Renshaw Drive														
11	T1	755	12.3	755	12.3	0.355	7.1	LOS A	3.6	27.6	0.56	0.49	0.56	86.1
12	R2	64	19.7	64	19.7	* 0.390	38.3	LOS D	1.2	9.6	0.97	0.75	0.97	52.3
Approach		819	12.9	819	12.9	0.390	9.5	LOS A	3.6	27.6	0.59	0.51	0.59	80.5
All Vehicles		1746	16.6	1746	16.6	0.398	10.0	LOS A	3.6	27.6	0.44	0.46	0.44	76.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2024 PM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 12 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D2*, E, G
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	76	15.3	76	15.3	0.787	58.2	LOS E	17.8	133.6	0.97	0.96	1.00	22.4
2	T1	804	7.3	804	7.3	0.787	53.5	LOS D	17.9	133.0	0.98	0.92	1.01	32.0
3	R2	839	20.3	839	20.3	*0.936	87.6	LOS F	23.1	189.5	1.00	1.03	1.30	24.7
Approach		1719	14.0	1719	14.0	0.936	70.4	LOS E	23.1	189.5	0.99	0.98	1.15	27.7
East: John Renshaw Drive														
4	L2	982	13.7	982	13.7	0.575	6.0	LOS A	0.0	0.0	0.00	0.52	0.00	54.1
5	T1	706	9.7	706	9.7	*0.922	81.3	LOS F	18.3	139.0	1.00	1.08	1.29	16.9
6	R2	76	26.4	76	26.4	0.600	89.2	LOS F	1.8	15.7	1.00	0.77	1.09	24.3
Approach		1764	12.6	1764	12.6	0.922	39.7	LOS D	18.3	139.0	0.44	0.75	0.56	33.2
North: Weakleys Drive														
7	L2	44	21.4	44	21.4	0.059	22.0	LOS C	0.9	7.6	0.51	0.66	0.51	43.3
8	T1	979	4.6	979	4.6	*0.942	80.4	LOS F	25.7	187.3	1.00	1.09	1.26	26.8
9	R2	264	15.9	264	15.9	0.294	52.7	LOS D	4.7	37.3	0.84	0.77	0.84	22.6
Approach		1287	7.5	1287	7.5	0.942	72.7	LOS E	25.7	187.3	0.95	1.01	1.15	26.6
West: John Renshaw Drive														
10	L2	295	15.0	295	15.0	0.174	6.8	LOS A	0.0	0.0	0.00	0.52	0.00	53.4
11	T1	583	16.6	583	16.6	0.665	54.9	LOS D	11.8	94.4	0.96	0.82	0.96	29.2
12	R2	257	13.9	257	13.9	*0.940	102.0	LOS F	6.9	53.9	1.00	1.03	1.51	20.0
Approach		1135	15.6	1135	15.6	0.940	53.1	LOS D	11.8	94.4	0.72	0.79	0.83	29.6
All Vehicles		5905	12.5	5905	12.5	0.942	58.4	LOS E	25.7	189.5	0.77	0.88	0.91	29.1

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

Site: 101 [John Renshaw Drive/ BHI eastern access 2024 PM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 12 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: John Renshaw Drive														
4	L2	78	16.2	78	16.2	0.046	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	51.7
5	T1	968	11.4	968	11.4	0.264	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1046	11.8	1046	11.8	0.264	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.3
West: John Renshaw Drive														
11	T1	1134	15.7	1134	15.7	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1134	15.7	1134	15.7	0.317	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		2180	13.8	2180	13.8	0.317	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [John Renshaw Drive/ BHI western access 2024 PM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 12 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: BHI Western Access														
1	L2	68	15.4	68	15.4	0.093	15.5	LOS B	0.7	5.8	0.62	0.67	0.62	35.5
3	R2	275	15.3	275	15.3	* 0.696	35.7	LOS D	2.7	21.1	1.00	0.88	1.20	25.6
Approach		343	15.3	343	15.3	0.696	31.7	LOS C	2.7	21.1	0.92	0.84	1.08	27.1
East: John Renshaw Drive														
4	L2	78	16.2	78	16.2	0.046	9.2	LOS A	0.0	0.0	0.00	0.63	0.00	73.1
5	T1	891	11.1	891	11.1	* 0.661	17.7	LOS B	6.9	52.8	0.89	0.78	0.90	59.6
Approach		968	11.5	968	11.5	0.661	17.0	LOS B	6.9	52.8	0.82	0.77	0.83	61.1
West: John Renshaw Drive														
11	T1	859	15.8	859	15.8	0.424	7.7	LOS A	4.3	34.1	0.59	0.52	0.59	64.6
12	R2	39	16.2	39	16.2	* 0.232	33.0	LOS C	0.6	4.9	0.84	0.72	0.84	38.4
Approach		898	15.8	898	15.8	0.424	8.8	LOS A	4.3	34.1	0.60	0.53	0.60	60.7
All Vehicles		2209	13.9	2209	13.9	0.696	16.0	LOS B	6.9	52.8	0.75	0.68	0.78	52.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: BHI Western Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

Site: 101 [John Renshaw Drive/ eastern access 2024 PM (Site Folder: 2024 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 12 [2024 PM with Dev & BHI (Network Folder: 2024 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	65	16.1	65	16.1	0.089	15.5	LOS B	0.7	5.5	0.62	0.67	0.62	56.9
3	R2	259	15.4	259	15.4	* 0.657	35.2	LOS D	2.5	19.6	1.00	0.86	1.14	25.8
Approach		324	15.6	324	15.6	0.657	31.2	LOS C	2.5	19.6	0.92	0.82	1.04	34.4
East: John Renshaw Drive														
4	L2	147	15.7	147	15.7	0.087	9.1	LOS A	0.0	0.0	0.00	0.63	0.00	66.6
5	T1	812	10.6	812	10.6	* 0.601	4.9	LOS A	3.0	22.9	0.33	0.29	0.33	93.1
Approach		959	11.4	959	11.4	0.601	5.6	LOS A	3.0	22.9	0.28	0.34	0.28	89.8
West: John Renshaw Drive														
11	T1	639	15.8	639	15.8	0.316	7.4	LOS A	3.0	24.2	0.56	0.48	0.56	85.6
12	R2	37	14.3	37	14.3	* 0.216	37.3	LOS D	0.7	5.2	0.95	0.73	0.95	52.7
Approach		676	15.7	676	15.7	0.316	9.1	LOS A	3.0	24.2	0.58	0.50	0.58	81.7
All Vehicles		1959	13.6	1959	13.6	0.657	11.0	LOS B	3.0	24.2	0.49	0.47	0.51	75.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

ATTACHMENT 6

Scenario 6 SIDRA Intersection Results

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2029 AM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 13 [2029 AM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D1*, E, G
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	249	20.7	249	20.7	0.839	32.2	LOS C	15.2	120.3	0.94	1.02	1.05	31.7
2	T1	948	12.0	948	12.0	*0.839	31.8	LOS C	15.2	120.3	0.97	1.01	1.10	39.3
3	R2	334	11.7	334	11.7	0.845	56.2	LOS E	5.2	39.9	1.00	0.98	1.37	31.3
Approach		1532	13.3	1532	13.3	0.845	37.2	LOS D	15.2	120.3	0.97	1.00	1.15	36.3
East: John Renshaw Drive														
4	L2	282	34.0	282	34.0	0.187	6.0	LOS A	0.0	0.0	0.00	0.51	0.00	53.7
5	T1	471	17.7	471	17.7	0.599	34.7	LOS C	5.8	47.0	0.95	0.79	0.95	28.8
6	R2	302	8.0	302	8.0	*0.851	57.3	LOS E	4.6	34.6	1.00	0.98	1.40	30.9
Approach		1055	19.3	1055	19.3	0.851	33.5	LOS C	5.8	47.0	0.71	0.77	0.83	35.3
North: Weakleys Drive														
7	L2	66	54.0	66	54.0	0.079	12.0	LOS B	0.6	6.6	0.43	0.63	0.43	48.2
8	T1	800	11.2	800	11.2	0.660	28.2	LOS C	9.4	72.1	0.91	0.79	0.91	41.4
9	R2	318	22.5	318	22.5	*0.885	60.4	LOS E	5.1	42.3	1.00	1.04	1.50	20.7
Approach		1184	16.6	1184	16.6	0.885	35.9	LOS D	9.4	72.1	0.91	0.85	1.04	36.0
West: John Renshaw Drive														
10	L2	288	20.1	288	20.1	0.176	7.5	LOS A	0.0	0.0	0.00	0.52	0.00	53.2
11	T1	634	10.8	634	10.8	*0.911	53.8	LOS D	10.4	79.8	1.00	1.11	1.44	29.5
12	R2	86	15.9	86	15.9	0.384	52.7	LOS D	1.2	9.6	0.99	0.74	0.99	29.3
Approach		1008	13.9	1008	13.9	0.911	40.5	LOS D	10.4	79.8	0.71	0.91	0.99	33.8
All Vehicles		4779	15.6	4779	15.6	0.911	36.7	LOS D	15.2	120.3	0.84	0.89	1.02	35.5

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

Site: 101 [John Renshaw Drive/ BHI eastern access 2029 AM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 13 [2029 AM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: John Renshaw Drive														
4	L2	136	20.2	136	20.2	0.083	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	51.5
5	T1	902	19.8	902	19.8	0.258	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1038	19.9	1038	19.9	0.258	0.8	NA	0.0	0.0	0.00	0.07	0.00	57.3
West: John Renshaw Drive														
11	T1	1008	13.8	1008	13.8	0.279	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1008	13.8	1008	13.8	0.279	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		2046	16.9	2046	16.9	0.279	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [John Renshaw Drive/ BHI western access 2029 AM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 13 [2029 AM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: BHI Western Access														
1	L2	35	21.2	35	21.2	0.053	16.6	LOS B	0.4	3.2	0.64	0.65	0.64	34.8
3	R2	138	19.8	138	19.8	* 0.503	36.2	LOS D	1.3	10.8	1.00	0.77	1.02	25.5
Approach		173	20.1	173	20.1	0.503	32.2	LOS C	1.3	10.8	0.92	0.74	0.95	26.9
East: John Renshaw Drive														
4	L2	136	20.2	136	20.2	0.083	9.3	LOS A	0.0	0.0	0.00	0.63	0.00	72.1
5	T1	766	19.8	766	19.8	* 0.549	15.2	LOS B	5.4	44.2	0.82	0.71	0.82	63.2
Approach		902	19.8	902	19.8	0.549	14.3	LOS B	5.4	44.2	0.70	0.70	0.70	65.0
West: John Renshaw Drive														
11	T1	871	12.8	871	12.8	0.399	6.8	LOS A	4.1	32.0	0.56	0.49	0.56	67.3
12	R2	67	20.3	67	20.3	* 0.411	32.4	LOS C	1.1	8.8	0.85	0.74	0.85	38.8
Approach		938	13.4	938	13.4	0.411	8.7	LOS A	4.1	32.0	0.58	0.51	0.58	60.6
All Vehicles		2013	16.8	2013	16.8	0.549	13.2	LOS B	5.4	44.2	0.66	0.61	0.66	57.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: BHI Western Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

Site: 101 [John Renshaw Drive/ eastern access 2029 AM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 13 [2029 AM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	33	19.4	33	19.4	0.047	15.9	LOS B	0.3	2.9	0.62	0.65	0.62	55.8
3	R2	131	20.2	131	20.2	* 0.398	34.5	LOS C	1.2	9.8	0.98	0.75	0.98	26.1
Approach		163	20.0	163	20.0	0.398	30.7	LOS C	1.2	9.8	0.90	0.73	0.90	34.4
East: John Renshaw Drive														
4	L2	257	20.1	257	20.1	0.156	9.3	LOS A	0.0	0.0	0.00	0.63	0.00	65.3
5	T1	544	19.7	544	19.7	* 0.406	4.2	LOS A	1.4	11.5	0.26	0.22	0.26	93.7
Approach		801	19.8	801	19.8	0.406	5.8	LOS A	1.4	11.5	0.17	0.35	0.17	85.8
West: John Renshaw Drive														
11	T1	808	12.2	808	12.2	0.380	7.2	LOS A	3.9	30.2	0.57	0.50	0.57	85.9
12	R2	64	19.7	64	19.7	* 0.390	38.3	LOS D	1.2	9.6	0.97	0.75	0.97	52.3
Approach		873	12.8	873	12.8	0.390	9.5	LOS A	3.9	30.2	0.60	0.52	0.60	80.7
All Vehicles		1837	16.5	1837	16.5	0.406	9.8	LOS A	3.9	30.2	0.44	0.46	0.44	77.3

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 210716sid-N171073 Ped Act 2 — **Template: Movement Summaries**

Site: TCS 4781 [John Renshaw Dr/ M1/ Weakleys Dr 2029 PM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 14 [2029 PM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS 4781 - mod - Import
Reference Phase: Phase E
Input Phase Sequence: A, D, D1*, D2*, E, G, G1*, G2*
Output Phase Sequence: A, D, D2*, E, G, G2*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: M1 Pacific Motorway														
1	L2	76	15.3	76	15.3	0.646	41.0	LOS D	13.9	104.5	0.86	0.86	0.86	28.1
2	T1	866	7.3	866	7.3	0.646	35.5	LOS D	14.6	108.2	0.87	0.82	0.87	38.0
3	R2	542	20.2	542	20.2	*0.873	72.6	LOS E	11.9	98.1	1.00	0.97	1.25	27.4
Approach		1484	12.4	1484	12.4	0.873	49.3	LOS D	14.6	108.2	0.92	0.88	1.01	32.9
East: John Renshaw Drive														
4	L2	687	13.8	687	13.8	0.402	5.9	LOS A	0.0	0.0	0.00	0.52	0.00	54.3
5	T1	749	9.7	749	9.7	*0.906	68.2	LOS E	16.7	126.8	1.00	1.07	1.28	19.1
6	R2	82	26.9	82	26.9	0.565	77.3	LOS E	1.7	14.7	1.00	0.76	1.06	26.4
Approach		1519	12.5	1519	12.5	0.906	40.5	LOS D	16.7	126.8	0.55	0.80	0.69	32.1
North: Weakleys Drive														
7	L2	47	20.0	47	20.0	0.054	15.4	LOS B	0.7	5.8	0.44	0.64	0.44	46.9
8	T1	1055	4.6	1055	4.6	*0.900	58.0	LOS E	22.6	164.5	1.00	1.02	1.17	31.4
9	R2	279	16.2	279	16.2	0.634	65.5	LOS E	5.3	42.5	1.00	0.82	1.02	19.6
Approach		1381	7.5	1381	7.5	0.900	58.0	LOS E	22.6	164.5	0.98	0.97	1.12	29.7
West: John Renshaw Drive														
10	L2	307	15.1	307	15.1	0.181	6.9	LOS A	0.0	0.0	0.00	0.52	0.00	53.4
11	T1	615	16.8	615	16.8	0.662	46.4	LOS D	10.7	85.9	0.95	0.82	0.95	31.7
12	R2	258	13.9	258	13.9	*0.892	82.7	LOS F	5.7	45.0	1.00	1.00	1.43	22.8
Approach		1180	15.7	1180	15.7	0.892	44.0	LOS D	10.7	85.9	0.71	0.78	0.81	32.4
All Vehicles		5564	11.9	5564	11.9	0.906	48.0	LOS D	22.6	164.5	0.79	0.86	0.91	31.8

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

Site: 101 [John Renshaw Drive/ BHI eastern access 2029 PM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 14 [2029 PM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: John Renshaw Drive														
4	L2	78	16.2	78	16.2	0.046	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	51.7
5	T1	1026	11.4	1026	11.4	0.280	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1104	11.7	1104	11.7	0.280	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.4
West: John Renshaw Drive														
11	T1	1180	15.7	1180	15.7	0.330	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1180	15.7	1180	15.7	0.330	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		2284	13.8	2284	13.8	0.330	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [John Renshaw Drive/ BHI western access 2029 PM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 14 [2029 PM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: BHI Western Access														
1	L2	68	15.4	68	15.4	0.093	15.5	LOS B	0.7	5.8	0.62	0.67	0.62	35.5
3	R2	275	15.3	275	15.3	* 0.696	35.7	LOS D	2.7	21.1	1.00	0.88	1.20	25.6
Approach		343	15.3	343	15.3	0.696	31.7	LOS C	2.7	21.1	0.92	0.84	1.08	27.1
East: John Renshaw Drive														
4	L2	78	16.2	78	16.2	0.046	9.2	LOS A	0.0	0.0	0.00	0.63	0.00	73.1
5	T1	948	11.1	948	11.1	* 0.704	18.8	LOS B	7.7	58.9	0.91	0.81	0.96	58.2
Approach		1026	11.5	1026	11.5	0.704	18.0	LOS B	7.7	58.9	0.84	0.80	0.88	59.7
West: John Renshaw Drive														
11	T1	905	15.8	905	15.8	0.447	8.2	LOS A	4.7	37.8	0.62	0.54	0.62	63.2
12	R2	39	16.2	39	16.2	* 0.232	33.5	LOS C	0.6	4.9	0.85	0.72	0.85	38.2
Approach		944	15.8	944	15.8	0.447	9.2	LOS A	4.7	37.8	0.63	0.55	0.63	59.7
All Vehicles		2314	13.8	2314	13.8	0.704	16.5	LOS B	7.7	58.9	0.77	0.70	0.81	51.5

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: BHI Western Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
P4	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.7	221.5	1.14
All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

Site: 101 [John Renshaw Drive/ eastern access 2029 PM (Site Folder: 2029 w. Dev & BHI - Stage 1 SMEC Upgrades)]

Network: 14 [2029 PM with Dev & BHI (Network Folder: 2029 with Dev & BHI - Stage 1 SMEC Upgrade)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 60 seconds (Network Practical Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Eastern Access														
1	L2	65	16.1	65	16.1	0.089	15.5	LOS B	0.7	5.5	0.62	0.67	0.62	56.9
3	R2	259	15.4	259	15.4	* 0.657	35.2	LOS D	2.5	19.6	1.00	0.86	1.14	25.8
Approach		324	15.6	324	15.6	0.657	31.2	LOS C	2.5	19.6	0.92	0.82	1.04	34.4
East: John Renshaw Drive														
4	L2	147	15.7	147	15.7	0.087	9.1	LOS A	0.0	0.0	0.00	0.63	0.00	66.6
5	T1	868	10.7	868	10.7	* 0.643	5.0	LOS A	3.3	25.4	0.35	0.30	0.35	93.2
Approach		1016	11.4	1016	11.4	0.643	5.6	LOS A	3.3	25.4	0.30	0.35	0.30	90.1
West: John Renshaw Drive														
11	T1	685	15.8	685	15.8	0.338	7.5	LOS A	3.3	26.3	0.57	0.49	0.57	85.3
12	R2	37	14.3	37	14.3	* 0.216	37.3	LOS D	0.7	5.2	0.95	0.73	0.95	52.7
Approach		722	15.7	722	15.7	0.338	9.1	LOS A	3.3	26.3	0.59	0.51	0.59	81.8
All Vehicles		2062	13.6	2062	13.6	0.657	10.8	LOS B	3.3	26.3	0.50	0.48	0.52	76.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Eastern Access											
P1	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
P1B	Slip/ Bypass	53	24.4	LOS C	0.1	0.1	0.90	0.90	181.7	204.5	1.13
East: John Renshaw Drive											

P2	Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	192.0	218.0	1.14
West: John Renshaw Drive											
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All Pedestrians		211	24.4	LOS C	0.1	0.1	0.90	0.90	190.1	215.5	1.13

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

ATTACHMENT 7

Proposed Subdivision Plan 38 Industrial Lots. 1 Environmental Lot & 1 Substation Lot
Revision B, 7 October 2021, adw Johnson

239590-SSK-001(A)

Lot 82
D.P.627799

Lot 81
D.P.627799

Lot 119
D.P.1154904

Lot 1392
D.P.1126633

Lot 2
D.P.1260203

Lot 1
D.P.811514

Lot 13
D.P.1260203

Lot 4
D.P.847676

Lot 30
D.P.870411

LAND EXCLUDES MINERALS AND RESERVATIONS & CONDITIONS IN FAVOUR OF THE CROWN (EXCEPT LAND BELOW A DEPTH OF 30.48 METRES)

EASEMENT FOR TRANSMISSION LINE 45.72 WIDE VIDE GAZ. 18 MARCH 1966

LOT 119 D.P.1154904 (HWC)

EASEMENT FOR ENERGY TRANSMISSION LINE 60 WIDE AND VARIABLE (DP1136226)

PROPOSED EASEMENT TO DRAIN WATER (10 WIDE)

PROPOSED RIGHT OF ACCESS & EASEMENT FOR SERVICES (23 WIDE)

PROPOSED EASEMENT FOR ELECTRICAL SERVICES (30 WIDE)

PROPOSED EASEMENT FOR ACCESS (6 WIDE)

SUBSTATION LOT

PROPOSED CONNECTION TO ADJOINING SUBDIVISION (BY OTHERS)

PROPOSED SUBDIVISION APPROVED UNDER CITY OF NEWCASTLE DA 2020-01497-1

JOHN RENSHAW DRIVE

601	5.2Ha	
602	4.1Ha	
603	5.1Ha	
604	5.7Ha	
605	3.0Ha	
606	5.0Ha	
20	34.7Ha	
301	5.2Ha	
302	6.4Ha	
303	6.2Ha	
304	4.6Ha	
305	3.2Ha	
306	3.0Ha	
307	1.2Ha	
401	4.9Ha	
402	5.1Ha	
403	5.1Ha	
404	5.0Ha	
405	5.0Ha	
406	5.0Ha	
501	2.9Ha	
502	3.0Ha	
503	5.3Ha	
504	5.3Ha	
505	5.4Ha	
506	5.3Ha	
PT.701	(4.6 ha.)	
PT.701	(1.3 ha.)	
PT.701	(35.0 ha.) TOTAL 40.9 ha.	
101	5.8Ha	
102	3.7Ha	
103	2.0Ha	
104	2.1Ha	
105	1.9Ha	
106	2.6Ha	
201	3.7Ha	
202	3.7Ha	
203	3.7Ha	
204	4.9Ha	
205	3.6Ha	
206	2.8Ha	
207	2.7Ha	
208	3.3Ha	

LEGEND

- EXISTING LOT BOUNDARY
- PROPOSED LOT BOUNDARY
- STAGE 1 (6 LOTS)
- STAGE 2 (8 LOTS)
- STAGE 3 (6 LOTS + 1 SUBSTATION LOT)
- STAGE 4 (6 LOTS)
- STAGE 5 (6 LOTS)
- STAGE 6 (6 LOTS)
- ENVIRONMENTAL CONSERVATION LOT (E2 ZONED LAND WHOLLY CONTAINED WITHIN LOT 3)
- EXISTING EASEMENT
- PROPOSED EASEMENT

MGA

DIAL 1100 BEFORE YOU DIG

PLAN

SCALE 1:4000

FOR APPROVAL

100mm AT FULL SIZE

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	06.08.2021	INITIAL ISSUE	A.M.	R.K.	Z.J.	R.K.
B	07.10.2021	STAGING AMENDMENTS	A.M.	R.K.	Z.J.	R.K.

DESIGN FILE N:\239590\Design\12D\

SCALES 0 100 200 A1 / A3 1:4000 / 1:8000

ALL DIMENSIONS ARE IN METRES. DO NOT SCALE

adw Johnson

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Warners Bay N.S.W. 2282
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Fax: (02) 4978 5199
email:hunter@adwjohnson.com.au
www.adwjohnson.com.au
ABN 62 129 445 398

CLIENT
BROADEN MANAGEMENT PTY LTD

PROPERTY DESCRIPTION
BLACK HILL INDUSTRIAL SUBDIVISION
PROPOSED SUBDIVISION OF LOT 1 DP 1260203, JOHN RENSHAW DRIVE, BLACK HILL
DEVELOPMENT APPLICATION

SURVEYED: ADW Johnson
DATUM: A.H.D.

PROJECT
BLACK HILL CENG PLANS

PLAN TITLE
PROPOSED SUBDIVISION PLAN 38 INDUSTRIAL LOTS, 1 ENVIRONMENTAL LOT & 1 SUBSTATION LOT

PROJECT No.	DISCIPLINE	NUMBER	REV.
239590	CENG	004	B

Plotted By: anthonym Plot Date: 07/10/21 – 16:39 Cad File: N:\239590\Drawings\Engineering\Civil\CONCEPT\CENG\239590-SSK-001(A).dwg

239590-CENG-101(A)

SEE SHEET 102

SEE SHEET 103

208

207

104

105

106

PT.701

ROAD MC06

ROAD MC01

ROAD MC09

201

102

101

LEGEND

- EXISTING LOT BOUNDARY
- PROPOSED LOT BOUNDARY
- LIMIT OF CONSTRUCTION
- PROPOSED KERB
- DESIGN SURFACE CONTOURS
- EXISTING WATERCOURSE
- EXTENT OF BATTER
- 27.84 PROPOSED PAD LEVELS

CONTOUR INTERVAL = 0.5m

DIAL 1100 BEFORE YOU DIG

MGA

20m BUFFER TO BUILDING PAD

EXTENT OF EASTERN INTERSECTION REFER DRAWING 239590-RD-0501

JOHN RENSHAW DRIVE

Lot 1392 D.P.1126633

Lot 13 D.P.1097621

Lot 4 D.P.847676

Lot 30 D.P.870411

PROPOSED EASEMENT FOR ELECTRICAL SERVICES (30 WIDE)

EASEMENT FOR ENERGY TRANSMISSION LINE 60 WIDE AND VARIABLE (DP1136226)

PROPOSED SUBDIVISION APPROVED UNDER CITY OF NEWCASTLE DA 2020-01497-1

MATCH ROAD LEVEL & GRADE SHOWN ON NORTHROP DRAWING NL166552-C4.13

MATCH ROAD LEVEL & GRADE SHOWN ON NORTHROP DRAWING NL166552-C5.11

PLAN

SCALE 1:1000

FOR APPROVAL

100mm AT FULL SIZE

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	15.10.2021	INITIAL ISSUE	A.M.	R.K.	Z.J.	R.K.

SCALES: 0 25 50 A1 / A3 1:1000 / 1:2000

DESIGN FILE N:\239590\Design\12D\

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adw Johnson

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email:hunter@adwjohnson.com.au
www.adwjohnson.com.au
ABN 62 129 445 398

CLIENT: BROADEN MANAGEMENT PTY LTD

PROPERTY DESCRIPTION: BLACK HILL INDUSTRIAL SUBDIVISION PROPOSED SUBDIVISION OF LOT 1 DP 1260203, JOHN RENSHAW DRIVE, BLACK HILL DEVELOPMENT APPLICATION

SURVEYED: ADW Johnson

DATUM: A.H.D.

PROJECT: BLACK HILL CENG PLANS

PLAN TITLE: DETAIL PLAN - SHEET 1

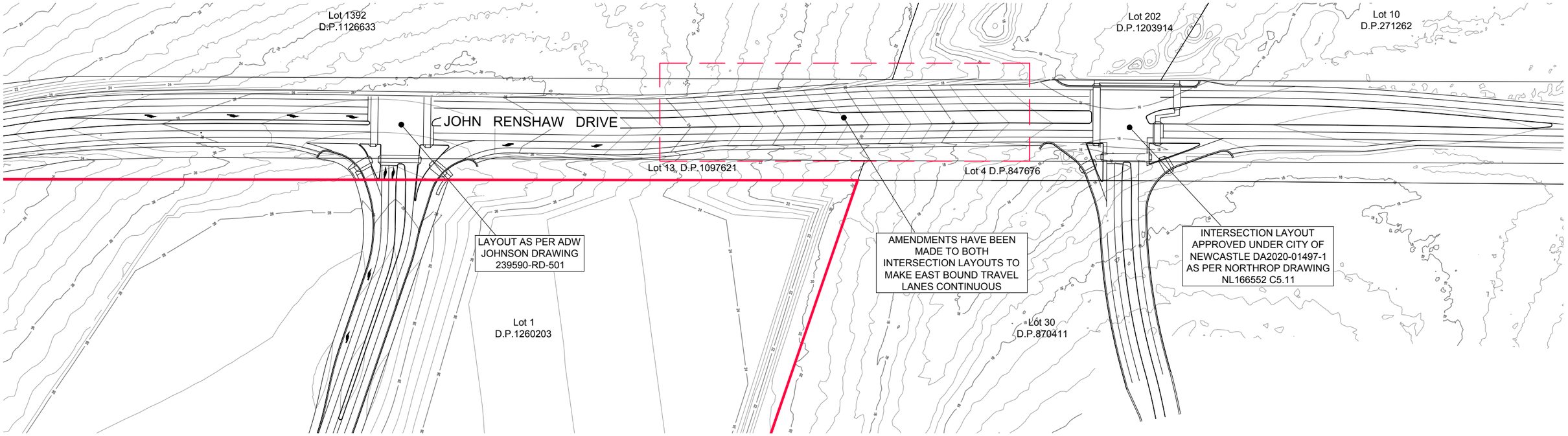
PROJECT No.	DISCIPLINE	NUMBER	REV.
239590	CENG	101	A

Plotted By: anthonym Plot Date: 15/10/21 – 16:14 Cad File: C:\Users\anthonym\appdata\local\temp\AcPublish_13280\239590-CENG-101(A).dwg

239590-CENG-109(A)

DIAL 1100
BEFORE YOU DIG

MGA



PLAN
SCALE 1:1000

FOR APPROVAL

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY
A	15.10.2021	INITIAL ISSUE	A.M.	R.K.	Z.J.	R.K.

SCALES: 0 25 50 A1 / A3 1:1000 / 1:2000

DESIGN FILE N:\239590\Design\12D\

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CLIENT
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PROPERTY DESCRIPTION
BLACK HILL INDUSTRIAL SUBDIVISION
PROPOSED SUBDIVISION OF LOT 1 DP 1260203, JOHN RENSHAW DRIVE, BLACK HILL
DEVELOPMENT APPLICATION

SURVEYED: ADW Johnson
DATUM: A.H.D.

PROJECT: BLACK HILL CENG PLANS
PLAN TITLE: INTERSECTION INTERFACE PLAN

PROJECT No.	DISCIPLINE	NUMBER	REV.
239590	CENG	109	A

Plotted By: anthonym Plot Date: 15/10/21 – 16:17 Cad File: N:\239590\Drawings\Engineering\Civil\CONCEPT\239590(2)-CENG\239590-CENG-109(A).dwg

100mm AT FULL SIZE