BEFORE THE CENTRAL OTAGO DISTRICT COUNCIL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of Proposed Plan Change 15
Request for a Private Plan Change
by **The Clyde Claim Limited**
Houlahan Enterprises Limited
Colin Fredrick Foster & Vicki Anne Geytha Gillies
And Ostex Corporation Limited

EVIDENCE FOR THE REQUESTORS

November 2020

Paterson Pitts Limited Partnership
P O Box 103, Alexandra 9340
Ph (027) 377 910

peter.dymock@ppgroup.co.nz

1. The following documents are submitted as evidence:
   - The minutes of a pre hearing traffic experts' conference held on 23 October 2020.
   - The Requestors' response to requests for additional information arising out of the pre-hearings conference (WSP dated 4 November 2020).

2. The Requestors' submitted an indicative Outline Development Plan (ODP) with their further submission to the submission of Waka Kotahi/NZTA.

   - Two revised indicative ODP's are attached, showing all vehicular access to be onto Sunderland Street, are now submitted.

     - A proposed retirement village development of the site.
     - A proposed residential subdivision of the site (in the event that the retirement village proposed does not eventuate).

3. The Requestors' emphasise that these ODP's are indicative only at this stage and that the final ODP submitted to Council in accordance with proposed new Rule 7.3.5(viii) (b) is likely to differ in its details from these now submitted.

4. A report under Sec 42A of the Resource Management Act 1991 dated 19 October 2020 has been prepared in respect of Plan Change 15 and has been circulated to the Requestors and to the Submitters.

5. The Requestors agree with the contents of the Sec 42A Report, and adopt the Sec 42A Report as evidence for the Requestors, subject to the following paragraph 6.

6. Proposed new Rule 7.3.6(vi)(h) be amended to read:

   "(h) No residential lots on Lot 2 DP 18990, Lot 1 DP 525753, Lot 2 DP 525753, Lot 1 DP 331535, Lot 2 DP 331535 and part of Mutton town Road (to be stopped) near Clyde shall have direct access to State Highway 8, Sunderland Street and Mutton Town Road. Road access to any subdivision and residential development in Lot 2 DP 18990, Lot 1 DP 525753, Lot 2 DP 525753, Lot 1 DP 331535, Lot 2 DP 331535 and part of Mutton Town Road (to be stopped) shall be achieved *only* onto Sunderland Street ~~only~~ *until such time as the Mutton Town Road intersection with State Highway 8 is either closed or reconfigured to the requirements of Waka Kotahi/New Zealand Transport Agency*".

   (The Requestor's proposed additions to the rule are highlighted in italics).

PETER L DYMOCK
(For the Requestors)

5 November 2020

Minutes of Meeting

Project Name	Plan Change 15 Mutton Town Road, Clyde
Project Number	
Date	23/10/2020
Time	11:00
Venue	Online
Subject	PC15 Mutton Town Road Pre-hearing Traffic Discussion
Attendees	Gemma Kean – GK (Waka Kotahi), Antoni Facey – AF (Avanzar), Lisa Clifford – LC (Waka Kotahi), Peter Dymock – PD (PP Group), Chris Baker – CB (WSP)
Apologies	
Distribution	

Discussion	Action

1. Mutton Town Road/SH8 Intersection

1.1 Concerns pertain to increased crash risk at the substandard Mutton Town Road/SH8 intersection resulting from increased traffic movements caused by development of the PC15 site.

1.2 Waka Kotahi considers it likely that, if access is provided from the PC15 site onto Mutton Town Road, southbound development traffic would use the substandard intersection to access the highway.

1.3 The intersection is inherently unsafe due to the high-speed environment (100km/h) and insufficient sight distance to the north (currently 170m).

1.4 Mutton Town Road is a remnant of the previous State Highway alignment and no longer serves a network purpose. It provides no primary access function, other than to the 12 properties accessed directly off it. While the road links to the hospital from the south, it offers marginal travel time benefit over the SH8 - Sunderland Street route.

1.5 A WSP assessment found that the only feasible options to improve safety at the intersection are to implement "left in, left out" access or to close access from Mutton Town Road altogether. It was agreed that closing the Mutton Town Road/SH8 intersection is the preferred solution to Waka Kotahi's safety concerns with PC15 from a technical

perspective; however, Waka Kotahi recommends that the intersection closure should be considered further as part of the Spatial Planning exercise and should be done prior to any development south of Sunderland Street. The intersection closure would need to be discussed with CODC and taken through a public process as others will be affected. Therefore, the outcome is uncertain, and details of costings/consents are unknown. This lies outside the remit of the PC15 applicant and is therefore not possible to guarantee as part of the plan change.

1.6 Consultation on the Vincent spatial plan is underway but at an early stage (original date for presentation to Council March 2021). It is unknown how the intersection fits with the spatial plan and closure would need to would be discussed with CODC, and will need to go through a public process as others will be affected. Therefore, the outcome is uncertain and details of costings/consents are unknown..

1.7 The solution is considered to be in the best interests of all parties involved in this application, as well as the wider existing Clyde township. Waka Kotahi should be able to physically close the road at minimal cost (subject to relevant internal approvals) within the highway road reserve, pending appropriate investigations and local consultation. Alternatively, CODC could progress the closure within their road reserve.

Waka Kotahi (GK) to seek clarification on the internal process behind closing access at the intersection vs officially stopping the road

2. Site Access via Sunderland Street

2.1 Given that it would not be possible for the applicant to guarantee the closure or upgrade of Mutton Town Road (due to it being outside of their remit), alternatives within the applicant's control were sought.

2.2 CB and the applicant argued that providing access to the PC15 site via Sunderland Street only would address Waka Kotahi's concerns regarding the increased use of the Mutton Town Road/SH8, as southbound traffic from the PC15 would instead use the Sunderland Street/SH8 intersection. Although Waka Kotahi recognises that providing access to Sunderland Street until such time as Mutton Town Road is closed (if closure does take place) is one possible solution, further information is required to demonstrate that if the whole area subject to the plan change were developed that the effects on the Sunderland Street intersection would not be more than minor.

2.3 Waka Kotahi indicated that they would not support access to the PC15 site from Sunderland Street due to the prevalence of right-turn movements out of the site onto an increasingly busy road, particularly by older drivers (considering the potential retirement village). However, Waka Kotahi acknowledged this resolution would sit outside their discretion

and would address safety issues at the Mutton Town Road/SH8 intersection.

2.4 It was acknowledged that Lot 2 DP 331535 can only be accessed from Mutton Town Road due to separation between lots by private property. The proposed level of development for Lot 2 DP 331535 is 25 lots, which represents 16.7% of the total PC15 yield. This results in an increase in modelled crash rate of 27%, rather than the 360% under the full PC15 yield.

2.5 It was noted that an appropriate plan to mitigate Waka Kotahi concerns regarding use of the Mutton Town Road/SH8 intersection may be to provide access to the PC15 site via Sunderland Street only, until such time that a process is undertaken to determine if closure of the Mutton Town Road intersection with SH8 is the appropriate course of action from a network perspective. As noted in 2.2, Waka Kotahi's recommendation is that this should be considered further as part of the Spatial Planning exercise and should be done prior to any development south of Sunderland Street. It was noted following the call that this may be dictated by the Vincent spatial plan.

3. Sunderland Street/SH8 Intersection

3.1 It was agreed that a truly 'safe systems' approach to the intersection, a rural intersection in a 100km/h speed zone, would be a roundabout, but that this would be excessive for the level of development proposed by the plan change and inappropriate for the location, given the low population served by the intersection and low existing crash risk.

3.2 It was agreed that implementing a median-separated left turn lane on the westbound SH8 approach to Sunderland Street was an appropriate upgrade to address Waka Kotahi's safety concerns and that no further upgrade would be required. It was raised that the upgrade would be of benefit to the overall Clyde township, not just the PC15 development.

4. Active Modes

4.1 Waka Kotahi is concerned that the gap in the rail trail fence directly opposite the Sunderland Street/SH8 intersection encourages unsafe crossing of the highway by pedestrians and cyclists, the incidence of which may increase following PC15.

4.2 The proximity of the site to the Otago Rail Trail increases the likelihood of pedestrians and cyclists crossing the highway from the PC15 site. However, it was acknowledged that the rail trail is unlikely to be used as a commuter route due to its gravel surface and the 7km distance between Alexandra and the site.

4.3 It was considered more likely that users of the rail trail from the PC15 site would be visitors who are unfamiliar with the area and more likely to follow published directions to the Daphne underpass on Albert Drive. No pedestrian/cyclist surveys have been carried out but PD noted that local cyclists cross the highway via the underpass rather than at grade. It is considered that, in spite of the additional 2 minutes travel time to access the underpass, this would be the preferred route for cyclists if well signposted.

4.4 The origin of gap in the rail trail fence directly opposite Sunderland Street is unknown but is understood to be used by occasional joggers only. It was proposed that closing the gap in the fence opposite Sunderland Street would be the easiest solution to minimise crossing in this location. Waka Kotahi retain concerns that insufficient evidence is available to determine if this would address all potential safety issues, and whether the gap in the fence would be opened again. Following the conference call, AF noted that aerial photography suggests use of the crossing by cyclists as well as joggers and that further investigation is required to understand effects of the proposed closure. However, it was acknowledged that this is an issue for Waka Kotahi. It is understood that Waka Kotahi are looking into sourcing camera surveys of crossing demand at the location.

5. Outline Development Plan (ODP)

5.1 Following the conference call, AF noted that he does not consider the ODP to be adequate and that the ODP should be presented as part of a subdivision plan if PC15 is approved. AF also noted the potential retirement village materially changing the impacts covered by the ODP.

6. Summary

- It was agreed that closing the Mutton Town Road/SH8 intersection is the preferred solution to Waka Kotahi's safety concerns at that intersection. Waka Kotahi would investigate the required steps to implement

- It was noted that an appropriate plan to mitigate Waka Kotahi concerns regarding use of the Mutton Town Road/SH8 intersection may be to provide access to the PC15 site via Sunderland Street only, until such time that a process is undertaken to determine if closure of the Mutton Town Road intersection with SH8 is the appropriate course of action from a network perspective. As noted in 2.2, Waka Kotahi's recommendation is that this should be considered further as part of the Spatial Planning exercise and should be done prior to any development south of

Sunderland Street. It was noted following the call that this may be dictated by the Vincent spatial plan.

- It was agreed that implementing a median-separated left turn lane on the westbound SH8 approach to Sunderland Street was an appropriate upgrade to address Waka Kotahi's safety concerns and that no further upgrade would be required.
- It was agreed that closing the gap in the fence opposite Sunderland Street would be the simplest solution to minimise crossing of the highway by pedestrians and cyclists at this location. However, Waka Kotahi retain concerns that insufficient evidence is available to determine if this would address all potential safety issues, and whether the gap in the fence would be opened again.

Memorandum

To	Peter Dymock
Copy	Gemma Kean, Lisa Clifford, Antoni Facey
From	Chris Baker
Office	Queenstown
Date	4 November 2020
File/Ref	6-XZ581.00
Subject	**PC15 Mutton Town Road Pre-hearing Traffic Discussion: Response to request for additional information**

1 Purpose

This memorandum presents additional evidence regarding traffic impacts from the Plan Change 15 proposal at Mutton Town Road, Clyde, as requested following the PC15 Mutton Town Road Pre-hearing Traffic Discussion conference call on 23/10/2020. The additional evidence relates to potential impacts on the Sunderland Street/SH8 intersection resulting from traffic generated by the full PC15 development proposal, and the addition of Lot 1 DP 525753 to the plan change enabling access to isolated Lot 2 DP 331535 via Sunderland Street.

2 Evidence

1 The ITA provided with the original application included assessment of the Sunderland Street intersection using SIDRA Intersection software, which found that all traffic from the full proposed PC15 development using the intersection would cause no discernible change to Level of Service, average delays or queuing. Further assessment has since been carried out using SIDRA to account for 10 years' growth in traffic at 4% per year on State Highway 8 (a conservative assumption based on 5 years of traffic data from the Cromwell Gorge) and 2% per year on Sunderland Street. This assessment also found no discernible change to Level of Service, average delays or queuing in the foreseeable future (the only material change being the right turn from Sunderland Street dropping from LOS A to LOS B in the AM peak; all other movements are constant). Input reports and movement summaries from the analysis are attached to this memo.

2 The ITA provided with the original application also included assessment of the increased crash risk at the Sunderland Street intersection as a result of increased traffic volumes from the PC15 development. Crash models from Waka Kotahi's Crash Estimation Compendium show the modelled annual injury crash rate for the *crossing – vehicle turning* type increasing from 0.04 to 0.09, assuming traffic from the full development of the PC15 site using Sunderland Street for access to SH8 and allowing for 10 years of growth on SH8 at 4% per annum. A follow-up assessment using a general crash model for *High-speed (Rural) Priority and Signalised Cross roads and T-junctions (≥ 80km/h on main road)* shows the modelled annual injury crash rate increasing from 0.05 to 0.07.

WSP
Queenstown
Level 1, Five Mile Centre
Grant Road, Frankton
Queenstown 9349, New Zealand
+64 3 451 0360
wsp.com/nz

However, the Crash Estimation Compendium states that crash reduction of 50% or more can be achieved by appropriately designed Left Turn Slip Lanes (i.e. a separated left turn lane as proposed by the applicant) for this crash type. Figures also suggest an additional 20% reduction in overall crash risk can be achieved for a reduction in speed from 100km/h to 80km/h, which Waka Kotahi are understood to be investigating for this area.

3 The Waka Kotahi Planning Policy Manual sets out recommended minimum distances between accessways and intersections on state highways. *Diagram B: Accessway Separation from Intersection and Other Accessways* shows a minimum distance between an accessway and the State Highway boundary of 60m. The PC15 development accessway on Sunderland Street is proposed to be 150m from the State Highway and as such, meets Waka Kotahi guidelines.

4 Based on the assessments set out in 1-3 above, the traffic effects resulting from full development of the PC15 site on the Sunderland Street/SH8 intersection are expected to be less than minor.

5 Item 2.2 of the PC15 Mutton Town Road Pre-hearing Traffic Discussion minutes stated that Lot 2 DP 331535 could only be accessed via Mutton Town Road due to severance caused by private property Lot 1 DP 525753, which was not covered by PC15. This parcel has since been incorporated into PC15, enabling access to Lot 2 DP 331535 via Sunderland Street. Access to the entire PC15 development site can now be provided via Sunderland Street until such time that a process is undertaken to determine if closure of the Mutton Town Road intersection with SH8 is the appropriate course of action from a network perspective (refer to items 2.2 and 2.5 of the PC15 Mutton Town Road Pre-hearing Traffic Discussion minutes.

INPUT REPORT

▽ Site: 101 [SH8 / Sunderland Street Development AM]

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

Intersection - Site Data	
Site Name	SH8 / Sunderland Street Development AM
Site ID	101
Site Category	(None)
Site Title	New Site

Intersection - Site Properties	
Site (Intersection) Type	Give-Way (Two-Way)
Setup Name	Standard Left
Base Setup	NA
Drive Rule	Left-hand side of the road
HCM Version	No
Units	Metric
First Created	----------
Date	3/11/2020 9:13:11 AM
Created By	aucjb0
Organisation	WSP NEW ZEALAND LIMITED
Version	9.0.2.9732
Last Modified	----------
Date	3/11/2020 9:13:11 AM
Modified By	aucjb0
Organisation	WSP NEW ZEALAND LIMITED
Version	9.0.2.9732

Intersection - Approach & Exit Data

Location	Name	Type	No. of App. Lanes	No. of Exit Lanes	Approach Distance m	Extra Bunching (Site Analysis) %	Extra Bunching (Network Analysis) %	Exit Distance m	Approach Control	Area Type Factor
South	SH8 South	Two-way	2	1	500.0	0	–	–	Major Road	–
North	SH8 North	Two-way	2	1	500.0	0	–	–	Major Road	–
West	Sunderland Street	Two-way	1	1	500.0	0	–	–	Give-Way	–

Movement Definitions - Included Movement Classes

Name	ID	Model Designation	Type
Light Vehicles	LV	Light Vehicle	Standard
Heavy Vehicles	HV	Heavy Vehicle	Standard

Movement Definitions - Origin-Destination Movements

To Approach	Turn	OD Mov ID
From: South	SH8 South	
West	L2	1
North	T1	2
From: North	SH8 North	
South	T1	8
West	R2	9

From: West	Sunderland Street	
North	L2	10
South	R2	12

Approach	U-Turn Before Intersection	Exclude U-Turn Before Intersection From Signal Analysis
South	-	-
North	-	-
West	-	-

Lane Geometry - Lane Configuration

Leg Item	Configuration	Type	Control	Slip/ Bypass Control	Length m	Width m	Grade %	Full Lane [ID	Full Lane Col]	[Front Width m	Island Back Width m	Island Fill Style	Island Cnct To	Island For Ped Sign	Island Short Strip Isl]
South	SH8 South														
App. Lane 1	Short Lane	Slip/ Bypass (High Angle)	Continuous	Give-Way	–	3.3	0	–	–	–	–	–	–	–	–
App. Lane 2	Full-Length	Normal	Continuous	–	500	3.3	0			–	–	–	–	–	–
Exit Lane 1	Full-Length	–	–	–	500	3.3	0			–	–	–	–	–	–
North	SH8 North														
App. Lane 1	Full-Length	Normal	Continuous	–	500	3.3	0			–	–	–	–	–	–
App. Lane 2	Short Lane	Normal	Continuous	–	–	3.3	0	–	–	–	–	–	–	–	–
Exit Lane 1	Full-Length	–	–	–	500	3.3	0			–	–	–	–	–	–
West	Sunderland Street														
App. Lane 1	Full-Length	Slip/ Bypass (High Angle)	Give-Way	Give-Way	500	3.3	0			–	–	–	–	–	–
Exit Lane 1	Full-Length	–	–	–	500	3.3	0			–	–	–	–	–	–

Lanes are numbered from left to right in the direction of travel.

Lane Geometry - Lane Configuration - Short Lanes and Two-Segment Lanes

Leg Item	Configuration	Short Lane / Segment 1 [Length m	Overflow/ Merge Lane Number	ID	Colour]	Segment 2 [Length m	ID	Colour]
South	SH8 South							
App. Lane 1	Short Lane	60	2			–	–	–
North	SH8 North							
App. Lane 2	Short Lane	60	1			–	–	–

Lane Geometry - Lane Disciplines

To Approach	Turn	Free Queue Distance m	Movement Class(es)
From: South	App. Lane 1		
West	L2	–	LV, HV
From: South	App. Lane 2		
North	T1	–	LV, HV
From: North	App. Lane 1		
South	T1	–	LV, HV
From: North	App. Lane 2		
West	R2	–	LV, HV

From: West	App. Lane 1		
North	L2	0	LV, HV
South	R2	0	LV, HV

Lane Geometry - Lane Data

Approach Lane Data

Approach Lane	Basic Satn Flow	Util Ratio	Satn Speed	Capacity Adj	Use Given Cap Adj in Network Analysis	Apply Satn Flow Est	Short Lane Capacity	Delay Model Param
	tcu/h	%	km/h	%				
South	SH8 South							
App. Lane 1	–	–	–	0.0	No	–	–	–
App. Lane 2	1950	–	–	0.0	No	Yes	–	–
North	SH8 North							
App. Lane 1	1950	–	–	0.0	No	Yes	–	–
App. Lane 2	1950	–	–	0.0	No	Yes	–	–
West	Sunderland Street							
App. Lane 1	–	–	–	0.0	No	–	–	–

Merge Analysis

Exit Lane	Merge Lane Number	Apply Merge Analysis	Merge Type	Percent Opposing in Short Lane	Percent Opposing in Merge Lane	Critical Gap	Follow-up Headway	Minimum Departures
				%	%	sec	sec	veh/min
South	SH8 South							
Exit Lane 1	–	–	–	–	–	–	–	–
North	SH8 North							
Exit Lane 1	–	–	–	–	–	–	–	–
West	Sunderland Street							
Exit Lane 1	–	–	–	–	–	–	–	–

Lane Movements - Flow Proportions

Exit Lane	To Exit Leg South %	North %	West %
Light Vehicles (LV)			
From: South	App. Lane 1		
Exit Lane 1	–	–	100
From: South	App. Lane 2		
Exit Lane 1	–	100	–
From: North	App. Lane 1		
Exit Lane 1	100	–	–
From: North	App. Lane 2		
Exit Lane 1	–	–	100
From: West	App. Lane 1		
Exit Lane 1	100	100	–
Heavy Vehicles (HV)			
From: South	App. Lane 1		
Exit Lane 1	–	–	100
From: South	App. Lane 2		
Exit Lane 1	–	100	–
From: North	App. Lane 1		
Exit Lane 1	100	–	–
From: North	App. Lane 2		
Exit Lane 1	–	–	100

From: West	App. Lane 1		
Exit Lane 1	100	100	–

Lane Movements - Blockage Calibration

Exit Lane	To Exit Leg South	North	West
From: South	App. Lane 1		
Exit Lane 1	–	–	1.0
From: South	App. Lane 2		
Exit Lane 1	–	1.0	–
From: North	App. Lane 1		
Exit Lane 1	1.0	–	–
From: North	App. Lane 2		
Exit Lane 1	–	–	1.0
From: West	App. Lane 1		
Exit Lane 1	1.0	1.0	–

Pedestrians - Pedestrian Movements

Unit Time for Volumes: 60 minutes
Peak Flow Period: 30 minutes

Main Crossing/ Slip/Bypass Lane Crossing	Volume	Peak Flow	Flow Scale	Growth Rate
	ped	%	%	%
No Ped Movements				

Pedestrians - Pedestrian Movement Data

Main Crossing/ Slip/ Bypass Lane Crossing	Mov. ID	Crossing Distance	Conflict Zone Length	Oppng Ped.Fac.	P.Deg. Satn	Walking Speed	App. Trav. Distance	Downst. Distance	Queue Space
		m	m			m/sec	m	m	m
No Ped Movements									

Volumes - Vehicle Volumes

Unit Time for Volumes: 60 minutes
Peak Flow Period: 30 minutes
Volume Data Method: Total and %

Movement Class	To Exit Leg South veh	North veh	West veh
From: South	SH8 South		
Total (veh)	–	174.0	60.0
LV (%)	–	95.000	95.000
HV (%)	–	5.000	5.000
From: North	SH8 North		
Total (veh)	161.0	–	25.0
LV (%)	95.000	–	95.000
HV (%)	5.000	–	5.000
From: West	Sunderland Street		
Total (veh)	111.0	34.0	–
LV (%)	99.000	99.000	–
HV (%)	1.000	1.000	–

Volumes - Volume Factors

To Approach	Peak Flow Factor %	Flow Scale %	Growth Rate %/year
Light Vehicles (LV)			
From: South	SH8 South		
West	95.0	100.00	2.00
North	95.0	100.00	4.00
From: North	SH8 North		
South	95.0	100.00	4.00
West	95.0	100.00	2.00
From: West	Sunderland Street		
North	95.0	100.00	2.00
South	95.0	100.00	2.00
Heavy Vehicles (HV)			
From: South	SH8 South		
West	95.0	100.00	2.00
North	95.0	100.00	4.00
From: North	SH8 North		
South	95.0	100.00	4.00
West	95.0	100.00	2.00
From: West	Sunderland Street		
North	95.0	100.00	2.00
South	95.0	100.00	2.00

Priorities

Opposed Movement	Opposing Movements South	North	West
South	SH8 South		
L2	–	R2	–
T1	–	–	–
North	SH8 North		
T1	–	–	–
R2	T1	–	–
West	Sunderland Street		
L2	T1	–	–
R2	T1	T1,R2	–

Gap Acceptance - Gap Acceptance Data

Gap Acceptance Data

Opposed Movement	Apply TWSC Calibration	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min	Exiting Flow Effect %	% Opp. By Nearest Lane %	Opng. Peds (UnSig)	Staged Crossing
South	SH8 South							
L2	Yes	5.000	3.000	0.10	0	0.00	Prg(Flow)	None
North	SH8 North							
R2	Yes	4.500	2.500	0.10	0	0.00	Prg(Flow)	None
West	Sunderland Street							
L2	Yes	5.000	3.000	0.10	50	100.00	Prg(Flow)	None
R2	Yes	7.000	4.000	0.10	50	0.00	Prg(Flow)	None

Gap Acceptance - Two-Way Sign Control Calibration

Level of Reduction with Opposing Flow Rate	None
Major Road Turning Flow Factor	1

Gap Acceptance - Two-Way Sign Control Parameter Adjs for Major Rd Number of Lanes

	Critical Gap Adjustment	Follow-up Headway Adjustment

Major Road Number of Lanes:	2-lane	3-lane	5-lane	6-lane or more	2-lane	3-lane	5-lane	6-lane or more
	sec	sec	sec	sec	sec	sec	sec	sec
Minor Road Left Turn	-0.5	-0.5	0.0	0.0	-0.5	-0.5	0.0	0.0
Minor Road Through	-1.5	-0.5	0.5	1.0	-0.5	-0.3	0.5	1.0
Minor Road Right Turn	-1.5	-0.5	0.5	1.0	-0.5	-0.3	0.5	1.0
Major Road Turn (Right or Left)	-0.5	–	–	1.0	-0.5	–	–	1.0

Gap Acceptance - Two-Way Sign Control Parameter Adjs for Geometry and Control

	Critical Gap Adjustment	Follow-up Headway Adjustment
	sec	sec
Give-Way Sign Control	-0.5	-0.3
One-Way Major Road	-0.5	-0.3
T Intersection (Minor Road Turn)	-0.7	-0.4
Entry Road Grade (for each per cent grade)	0.1	0.0
U Turn (Major Road)	1.5	0.9
User Adjustment	0.0	0.0

Gap Acceptance - Settings

Gap Acceptance Options

Gap Acceptance Capacity Model : SIDRA Standard (Akçelik M3D)

Merge Analysis & Zebra Crossing Analysis Parameters

Parameters	Zebra Crossing on Slip/ Bypass Lane	Midblock Zebra Crossing	Merge Analysis [Exit Short Lane	Merge Lane]
Light Vehicles				
Gap Acceptance Factor	1.0	1.0	1.0	1.0
Opposing Vehicle Factor	–	–	1.0	1.0
Continuous Lane Capacity	–	–	1800	1800
Heavy Vehicles				
Gap Acceptance Factor	1.5	1.5	1.5	1.5
Opposing Vehicle Factor	–	–	1.5	1.5
Continuous Lane Capacity	–	–	1800	1800

Vehicle Movement Data - Path Data

Turn	Approach Cruise Speed km/h	Exit Cruise Speed km/h	Negotiation Speed km/h	Negotiation Distance m	Downstream Distance m	Negotiation Radius m
Light Vehicles (LV)						
From: South	SH8 South					
L2	100.0	100.0	–	–	–	–
T1	100.0	100.0	–	–	–	–
From: North	SH8 North					
T1	100.0	100.0	–	–	–	–
R2	100.0	100.0	–	–	–	–
From: West	Sunderland Street					
L2	80.0	100.0	–	–	–	–
R2	80.0	100.0	–	–	–	–
Heavy Vehicles (HV)						
From: South	SH8 South					
L2	100.0	100.0	–	–	–	–
T1	100.0	100.0	–	–	–	–
From: North	SH8 North					
T1	100.0	100.0	–	–	–	–
R2	100.0	100.0	–	–	–	–

From: West	Sunderland Street					
L2	80.0	100.0	–	–	–	–
R2	80.0	100.0	–	–	–	–

Vehicle Movement Data - Calibration

Turn	Queue Space m	Vehicle Length m	Vehicle Occupancy pers/veh	Turn Veh Effect [Factor	Radius] m	Gap Accp Factor	Opng. Veh Factor	Prac. Deg. Of Satn.
Light Vehicles (LV)								
From: South	SH8 South							
L2	7.00	4.50	1.20	1.05	–	1	1	–
T1	7.00	4.50	1.20	1	–	1	1	–
From: North	SH8 North							
T1	7.00	4.50	1.20	1	–	1	1	–
R2	7.00	4.50	1.20	1.05	–	1	1	–
From: West	Sunderland Street							
L2	7.00	4.50	1.20	1.05	–	1	1	–
R2	7.00	4.50	1.20	1.05	–	1	1	–
Heavy Vehicles (HV)								
From: South	SH8 South							
L2	13.00	10.00	1.20	1.09	–	1.5	1.5	–
T1	13.00	10.00	1.20	1	–	1.5	1.5	–
From: North	SH8 North							
T1	13.00	10.00	1.20	1	–	1.5	1.5	–
R2	13.00	10.00	1.20	1.09	–	1.5	1.5	–
From: West	Sunderland Street							
L2	13.00	10.00	1.20	1.09	–	1.5	1.5	–
R2	13.00	10.00	1.20	1.09	–	1.5	1.5	–

Site Demand & Sensitivity

Analysis Method: Design Life

Design Life Analysis Objective	Final Year
Growth Model	Uniform
Number of Years	10
Const. No. of Years	–
Result For	Intersection (Vehicles)

Parameter Settings - Options

General Options	
Site Level of Service Method	Delay (SIDRA)
Site Level of Service Target	LOS D
Pedestrian Level of Service Target	LOS D
Site Performance Measure	Delay
Queue in Output	Average
Percentile Queue	95%
Hours per Year	480 h
Include Short Lanes in determining Approach Queue Storage Ratio	No

Parameter Settings - Model Parameters

Passenger Car Equivalents	
Light Vehicles (LV)	1.00 pcu/veh
Heavy Vehicles (HV)	1.65 pcu/veh
Queue Blockage	
Blockage Tolerance	0

Delay and Queue	
Exclude Geometric Delay	No
HCM Delay Formula	No
HCM Queue Formula	No
Midblock Detection Data	
Effective Detection Zone Length	2.0

Parameter Settings - Cost

Efficiency Parameters

Movement Class	Desired Speed km/h	Lower Limit of Speed Efficiency for TTI
Light Vehicles (LV)	-	0.1
Heavy Vehicles (HV)	-	0.1

Vehicle Cost Parameters

Movement Class	Veh Cost Method	Veh Operating Cost [Pump Price of Fuel $/L	Fuel Res. Cost Factor	Ratio of Running Cost to Fuel Cost]	Veh Time Cost [Avg. Income $/h	Time Value Factor]
Light Vehicles (LV)	Operating Cost	1.300	0.500	3.00	44.00	0.600
Heavy Vehicles (HV)	Operating Cost	1.300	0.500	3.00	44.00	0.600

Cost Options	
Cost Unit	$

Parameter Settings - Vehicle Parameters

Movement Class	Mass kg	Max Power kW	CO2 to Fuel Rate
Light Vehicles (LV)	1600.0	120	2.35
Heavy Vehicles (HV)	15000.0	170	2.633

Parameter Settings - Fuel Consumption

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1200	16	0.004	0.1
Heavy Vehicles (HV)	2300	200	0.009	0.075

Parameter Settings - CO Emission

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1620	-138	0.0743	0.294
Heavy Vehicles (HV)	25000	320	-0.06	0.04

Parameter Settings - HC Emission

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	340	-9	0.0031	0.029
Heavy Vehicles (HV)	3000	1	-0.0016	0.0013

Parameter Settings - NOx Emission

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	300	-14	0.0068	0.166
Heavy Vehicles (HV)	44000	2820	0.21	1.9

Parameter Settings - Advanced

Platoon Dispersion Model	
fpf	0.80
fpmin	1.00

fpmax	1.25
Lpmin	60.0 m
Lpmax	300.0 m
n	0.60
Exit (Downstream) Short Lane Model	
Minimum Downstream Utilisation Ratio	20 %
Minimum Downstream Distance	30 m
Distance for Full Lane Utilisation	200 m
Calibration Parameter	1.2

INPUT REPORT

▽ Site: 101 [SH8 / Sunderland Street Development PM]

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

Intersection - Site Data	
Site Name	SH8 / Sunderland Street Development PM
Site ID	101
Site Category	(None)
Site Title	New Site

Intersection - Site Properties	
Site (Intersection) Type	Give-Way (Two-Way)
Setup Name	Standard Left
Base Setup	NA
Drive Rule	Left-hand side of the road
HCM Version	No
Units	Metric
First Created	----------
Date	3/11/2020 9:13:13 AM
Created By	aucjb0
Organisation	WSP NEW ZEALAND LIMITED
Version	9.0.2.9732
Last Modified	----------
Date	3/11/2020 9:13:13 AM
Modified By	aucjb0
Organisation	WSP NEW ZEALAND LIMITED
Version	9.0.2.9732

Intersection - Approach & Exit Data

Location	Name	Type	No. of App. Lanes	No. of Exit Lanes	Approach Distance m	Extra Bunching (Site Analysis) %	Extra Bunching (Network Analysis) %	Exit Distance m	Approach Control	Area Type Factor
South	SH8 South	Two-way	2	1	500.0	0	–	–	Major Road	–
North	SH8 North	Two-way	2	1	500.0	0	–	–	Major Road	–
West	Sunderland Street	Two-way	1	1	500.0	0	–	–	Give-Way	–

Movement Definitions - Included Movement Classes

Name	ID	Model Designation	Type
Light Vehicles	LV	Light Vehicle	Standard
Heavy Vehicles	HV	Heavy Vehicle	Standard

Movement Definitions - Origin-Destination Movements

To Approach	Turn	OD Mov ID
From: South	SH8 South	
West	L2	1
North	T1	2
From: North	SH8 North	
South	T1	8
West	R2	9

From: West	Sunderland Street	
North	L2	10
South	R2	12

Approach	U-Turn Before Intersection	Exclude U-Turn Before Intersection From Signal Analysis
South	-	-
North	-	-
West	-	-

Lane Geometry - Lane Configuration

Leg Item	Configuration	Type	Control	Slip/ Bypass Control	Length m	Width m	Grade %	Full Lane [ID	Col]	[Front Width m	Back Width m	Island Fill Style	Cnct To	For Ped Stgn	Short Strip Isl]
South	SH8 South														
App. Lane 1	Short Lane	Slip/ Bypass (High Angle)	Continuous	Give-Way	–	3.3	0	–	–	–	–	–	–	–	–
App. Lane 2	Full-Length	Normal	Continuous	–	500	3.3	0			–	–	–	–	–	–
Exit Lane 1	Full-Length	–	–	–	500	3.3	0			–	–	–	–	–	–
North	SH8 North														
App. Lane 1	Full-Length	Normal	Continuous	–	500	3.3	0			–	–	–	–	–	–
App. Lane 2	Short Lane	Normal	Continuous	–	–	3.3	0	–	–	–	–	–	–	–	–
Exit Lane 1	Full-Length	–	–	–	500	3.3	0			–	–	–	–	–	–
West	Sunderland Street														
App. Lane 1	Full-Length	Slip/ Bypass (High Angle)	Give-Way	Give-Way	500	3.3	0			–	–	–	–	–	–
Exit Lane 1	Full-Length	–	–	–	500	3.3	0			–	–	–	–	–	–

Lanes are numbered from left to right in the direction of travel.

Lane Geometry - Lane Configuration - Short Lanes and Two-Segment Lanes

Leg Item	Configuration	Short Lane / Segment 1 [Length m	Overflow/ Merge Lane Number	ID	Colour]	Segment 2 [Length m	ID	Colour]
South	SH8 South							
App. Lane 1	Short Lane	60	2			–	–	–
North	SH8 North							
App. Lane 2	Short Lane	60	1			–	–	–

Lane Geometry - Lane Disciplines

To Approach	Turn	Free Queue Distance m	Movement Class(es)
From: South	App. Lane 1		
West	L2	–	LV, HV
From: South	App. Lane 2		
North	T1	–	LV, HV
From: North	App. Lane 1		
South	T1	–	LV, HV
From: North	App. Lane 2		
West	R2	–	LV, HV

From: West	App. Lane 1		
North	L2	0	LV, HV
South	R2	0	LV, HV

Lane Geometry - Lane Data

Approach Lane Data

Approach Lane	Basic Satn Flow	Util Ratio	Satn Speed	Capacity Adj	Use Given Cap Adj in Network Analysis	Apply Satn Flow Est	Short Lane Capacity	Delay Model Param
	tcu/h	%	km/h	%				
South	SH8 South							
App. Lane 1	–	–	–	0.0	No	–	–	–
App. Lane 2	1950	–	–	0.0	No	Yes	–	–
North	SH8 North							
App. Lane 1	1950	–	–	0.0	No	Yes	–	–
App. Lane 2	1950	–	–	0.0	No	Yes	–	–
West	Sunderland Street							
App. Lane 1	–	–	–	0.0	No	–	–	–

Merge Analysis

Exit Lane	Merge Lane Number	Apply Merge Analysis	Merge Type	Percent Opposing in Short Lane	Percent Opposing in Merge Lane	Critical Gap	Follow-up Headway	Minimum Departures
				%	%	sec	sec	veh/min
South	SH8 South							
Exit Lane 1	–	–	–	–	–	–	–	–
North	SH8 North							
Exit Lane 1	–	–	–	–	–	–	–	–
West	Sunderland Street							
Exit Lane 1	–	–	–	–	–	–	–	–

Lane Movements - Flow Proportions

Exit Lane	To Exit Leg: South %	North %	West %
Light Vehicles (LV)			
From: South	App. Lane 1		
Exit Lane 1	–	–	100
From: South	App. Lane 2		
Exit Lane 1	–	100	–
From: North	App. Lane 1		
Exit Lane 1	100	–	–
From: North	App. Lane 2		
Exit Lane 1	–	–	100
From: West	App. Lane 1		
Exit Lane 1	100	100	–
Heavy Vehicles (HV)			
From: South	App. Lane 1		
Exit Lane 1	–	–	100
From: South	App. Lane 2		
Exit Lane 1	–	100	–
From: North	App. Lane 1		
Exit Lane 1	100	–	–
From: North	App. Lane 2		
Exit Lane 1	–	–	100

From: West	App. Lane 1		
Exit Lane 1	100	100	–

Lane Movements - Blockage Calibration

Exit Lane	To Exit Leg South	North	West
From: South	App. Lane 1		
Exit Lane 1	–	–	1.0
From: South	App. Lane 2		
Exit Lane 1	–	1.0	–
From: North	App. Lane 1		
Exit Lane 1	1.0	–	–
From: North	App. Lane 2		
Exit Lane 1	–	–	1.0
From: West	App. Lane 1		
Exit Lane 1	1.0	1.0	–

Pedestrians - Pedestrian Movements

Unit Time for Volumes: 60 minutes
Peak Flow Period: 30 minutes

Main Crossing/ Slip/Bypass Lane Crossing	Volume ped	Peak Flow %	Flow Scale %	Growth Rate %
No Ped Movements				

Pedestrians - Pedestrian Movement Data

Main Crossing/ Slip/ Bypass Lane Crossing	Mov. ID	Crossing Distance m	Conflict Zone Length m	Oppng Ped.Fac.	P.Deg. Satn	Walking Speed m/sec	App. Trav. Distance m	Downst. Distance m	Queue Space m
No Ped Movements									

Volumes - Vehicle Volumes

Unit Time for Volumes: 60 minutes
Peak Flow Period: 30 minutes
Volume Data Method: Total and %

Movement Class	To Exit Leg South veh	North veh	West veh
From: South	SH8 South		
Total (veh)	–	212.0	123.0
LV (%)	–	95.000	95.000
HV (%)	–	5.000	5.000
From: North	SH8 North		
Total (veh)	228.0	–	34.0
LV (%)	95.000	–	95.000
HV (%)	5.000	–	5.000
From: West	Sunderland Street		
Total (veh)	82.0	34.0	–
LV (%)	99.000	99.000	–
HV (%)	1.000	1.000	–

Volumes - Volume Factors

To Approach	Peak Flow Factor %	Flow Scale %	Growth Rate %/year
Light Vehicles (LV)			
From: South	SH8 South		
West	95.0	100.00	2.00
North	95.0	100.00	4.00
From: North	SH8 North		
South	95.0	100.00	4.00
West	95.0	100.00	2.00
From: West	Sunderland Street		
North	95.0	100.00	2.00
South	95.0	100.00	2.00
Heavy Vehicles (HV)			
From: South	SH8 South		
West	95.0	100.00	2.00
North	95.0	100.00	4.00
From: North	SH8 North		
South	95.0	100.00	4.00
West	95.0	100.00	2.00
From: West	Sunderland Street		
North	95.0	100.00	2.00
South	95.0	100.00	2.00

Priorities

Opposed Movement	Opposing Movements South	North	West
South	SH8 South		
L2	–	R2	–
T1	–	–	–
North	SH8 North		
T1	–	–	–
R2	T1	–	–
West	Sunderland Street		
L2	T1	–	–
R2	T1	T1,R2	–

Gap Acceptance - Gap Acceptance Data

Gap Acceptance Data

Opposed Movement	Apply TWSC Calibration	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min	Exiting Flow Effect %	% Opp. By Nearest Lane %	Opng. Peds (UnSig)	Staged Crossing
South	SH8 South							
L2	Yes	5.000	3.000	0.10	0	0.00	Prg(Flow)	None
North	SH8 North							
R2	Yes	4.500	2.500	0.10	0	0.00	Prg(Flow)	None
West	Sunderland Street							
L2	Yes	5.000	3.000	0.10	50	100.00	Prg(Flow)	None
R2	Yes	7.000	4.000	0.10	50	0.00	Prg(Flow)	None

Gap Acceptance - Two-Way Sign Control Calibration

Level of Reduction with Opposing Flow Rate	None
Major Road Turning Flow Factor	1

Gap Acceptance - Two-Way Sign Control Parameter Adjs for Major Rd Number of Lanes

	Critical Gap Adjustment	Follow-up Headway Adjustment

Major Road Number of Lanes:	2-lane sec	3-lane sec	5-lane sec	6-lane or more sec	2-lane sec	3-lane sec	5-lane sec	6-lane or more sec
Minor Road Left Turn	-0.5	-0.5	0.0	0.0	-0.5	-0.5	0.0	0.0
Minor Road Through	-1.5	-0.5	0.5	1.0	-0.5	-0.3	0.5	1.0
Minor Road Right Turn	-1.5	-0.5	0.5	1.0	-0.5	-0.3	0.5	1.0
Major Road Turn (Right or Left)	-0.5	–	–	1.0	-0.5	–	–	1.0

Gap Acceptance - Two-Way Sign Control Parameter Adjs for Geometry and Control

	Critical Gap Adjustment sec	Follow-up Headway Adjustment sec
Give-Way Sign Control	-0.5	-0.3
One-Way Major Road	-0.5	-0.3
T Intersection (Minor Road Turn)	-0.7	-0.4
Entry Road Grade (for each per cent grade)	0.1	0.0
U Turn (Major Road)	1.5	0.9
User Adjustment	0.0	0.0

Gap Acceptance - Settings

Gap Acceptance Options

Gap Acceptance Capacity Model : SIDRA Standard (Akçelik M3D)

Merge Analysis & Zebra Crossing Analysis Parameters

Parameters	Zebra Crossing on Slip/ Bypass Lane	Midblock Zebra Crossing	Merge Analysis [Exit Short Lane	Merge Analysis Merge Lane]
Light Vehicles				
Gap Acceptance Factor	1.0	1.0	1.0	1.0
Opposing Vehicle Factor	–	–	1.0	1.0
Continuous Lane Capacity	–	–	1800	1800
Heavy Vehicles				
Gap Acceptance Factor	1.5	1.5	1.5	1.5
Opposing Vehicle Factor	–	–	1.5	1.5
Continuous Lane Capacity	–	–	1800	1800

Vehicle Movement Data - Path Data

Turn	Approach Cruise Speed km/h	Exit Cruise Speed km/h	Negotiation Speed km/h	Negotiation Distance m	Downstream Distance m	Negotiation Radius m
Light Vehicles (LV)						
From: South	SH8 South					
L2	100.0	100.0	–	–	–	–
T1	100.0	100.0	–	–	–	–
From: North	SH8 North					
T1	100.0	100.0	–	–	–	–
R2	100.0	100.0	–	–	–	–
From: West	Sunderland Street					
L2	80.0	100.0	–	–	–	–
R2	80.0	100.0	–	–	–	–
Heavy Vehicles (HV)						
From: South	SH8 South					
L2	100.0	100.0	–	–	–	–
T1	100.0	100.0	–	–	–	–
From: North	SH8 North					
T1	100.0	100.0	–	–	–	–
R2	100.0	100.0	–	–	–	–

From: West	Sunderland Street					
L2	80.0	100.0	–	–	–	–
R2	80.0	100.0	–	–	–	–

Vehicle Movement Data - Calibration

Turn	Queue Space m	Vehicle Length m	Vehicle Occupancy pers/veh	Turn Veh Effect [Factor	Radius] m	Gap Accp Factor	Opng. Veh Factor	Prac. Deg. Of Satn.
Light Vehicles (LV)								
From: South	SH8 South							
L2	7.00	4.50	1.20	1.05	–	1	1	–
T1	7.00	4.50	1.20	1	–	1	1	–
From: North	SH8 North							
T1	7.00	4.50	1.20	1	–	1	1	–
R2	7.00	4.50	1.20	1.05	–	1	1	–
From: West	Sunderland Street							
L2	7.00	4.50	1.20	1.05	–	1	1	–
R2	7.00	4.50	1.20	1.05	–	1	1	–
Heavy Vehicles (HV)								
From: South	SH8 South							
L2	13.00	10.00	1.20	1.09	–	1.5	1.5	–
T1	13.00	10.00	1.20	1	–	1.5	1.5	–
From: North	SH8 North							
T1	13.00	10.00	1.20	1	–	1.5	1.5	–
R2	13.00	10.00	1.20	1.09	–	1.5	1.5	–
From: West	Sunderland Street							
L2	13.00	10.00	1.20	1.09	–	1.5	1.5	–
R2	13.00	10.00	1.20	1.09	–	1.5	1.5	–

Site Demand & Sensitivity

Analysis Method: Design Life

Design Life Analysis Objective	Final Year
Growth Model	Uniform
Number of Years	10
Const. No. of Years	–
Result For	Intersection (Vehicles)

Parameter Settings - Options

General Options	
Site Level of Service Method	Delay (SIDRA)
Site Level of Service Target	LOS D
Pedestrian Level of Service Target	LOS D
Site Performance Measure	Delay
Queue in Output	Average
Percentile Queue	95%
Hours per Year	480 h
Include Short Lanes in determining Approach Queue Storage Ratio	No

Parameter Settings - Model Parameters

Passenger Car Equivalents	
Light Vehicles (LV)	1.00 pcu/veh
Heavy Vehicles (HV)	1.65 pcu/veh
Queue Blockage	
Blockage Tolerance	0

Delay and Queue	
Exclude Geometric Delay	No
HCM Delay Formula	No
HCM Queue Formula	No
Midblock Detection Data	
Effective Detection Zone Length	2.0

Parameter Settings - Cost

Efficiency Parameters

Movement Class	Desired Speed km/h	Lower Limit of Speed Efficiency for TTI
Light Vehicles (LV)	-	0.1
Heavy Vehicles (HV)	-	0.1

Vehicle Cost Parameters

Movement Class	Veh Cost Method	Veh Operating Cost [Pump Price of Fuel $/L	Fuel Res. Cost Factor	Ratio of Running Cost to Fuel Cost]	Veh Time Cost [Avg. Income $/h	Time Value Factor]
Light Vehicles (LV)	Operating Cost	1.300	0.500	3.00	44.00	0.600
Heavy Vehicles (HV)	Operating Cost	1.300	0.500	3.00	44.00	0.600

Cost Options

Cost Unit	$

Parameter Settings - Vehicle Parameters

Movement Class	Mass kg	Max Power kW	CO2 to Fuel Rate
Light Vehicles (LV)	1600.0	120	2.35
Heavy Vehicles (HV)	15000.0	170	2.633

Parameter Settings - Fuel Consumption

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1200	16	0.004	0.1
Heavy Vehicles (HV)	2300	200	0.009	0.075

Parameter Settings - CO Emission

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1620	-138	0.0743	0.294
Heavy Vehicles (HV)	25000	320	-0.06	0.04

Parameter Settings - HC Emission

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	340	-9	0.0031	0.029
Heavy Vehicles (HV)	3000	1	-0.0016	0.0013

Parameter Settings - NOx Emission

Movement Class	fi	A	B	Beta
Light Vehicles (LV)	300	-14	0.0068	0.166
Heavy Vehicles (HV)	44000	2820	0.21	1.9

Parameter Settings - Advanced

Platoon Dispersion Model	
fpf	0.80
fpmin	1.00

fpmax	1.25
Lpmin	60.0 m
Lpmax	300.0 m
n	0.60
Exit (Downstream) Short Lane Model	
Minimum Downstream Utilisation Ratio	20 %
Minimum Downstream Distance	30 m
Distance for Full Lane Utilisation	200 m
Calibration Parameter	1.2

MOVEMENT SUMMARY

▽ Site: 101 [SH8 / Sunderland Street Development AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h]	HV [ ] %	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: SH8 South														
1	L2	60	5.0	63	5.0	0.040	8.5	LOS A	0.2	1.2	0.09	0.61	0.09	72.1
2	T1	174	5.0	183	5.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach		234	5.0	246	5.0	0.097	2.2	LOS A	0.2	1.2	0.02	0.16	0.02	90.9
North: SH8 North														
8	T1	161	5.0	169	5.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
9	R2	25	5.0	26	5.0	0.018	8.1	LOS A	0.1	0.6	0.29	0.61	0.29	71.3
Approach		186	5.0	196	5.0	0.090	1.1	NA	0.1	0.6	0.04	0.08	0.04	94.8
West: Sunderland Street														
10	L2	34	1.0	36	1.0	0.186	8.0	LOS A	0.8	5.4	0.45	0.71	0.45	66.2
12	R2	111	1.0	117	1.0	0.186	9.9	LOS A	0.8	5.4	0.45	0.71	0.45	65.7
Approach		145	1.0	153	1.0	0.186	9.4	LOS A	0.8	5.4	0.45	0.71	0.45	65.8
All Vehicles		565	4.0	595	4.0	0.186	3.7	NA	0.8	5.4	0.14	0.27	0.14	83.8

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

MOVEMENT SUMMARY

▽ Site: 101 [SH8 / Sunderland Street Development AM (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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: SH8 South														
1	L2	60	5.0	76	5.0	0.049	8.5	LOS A	0.2	1.5	0.10	0.61	0.10	72.0
2	T1	174	5.0	256	5.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach		234	5.0	332	5.0	0.136	2.0	LOS A	0.2	1.5	0.02	0.14	0.02	91.7
North: SH8 North														
8	T1	161	5.0	237	5.0	0.127	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
9	R2	25	5.0	32	5.0	0.023	8.4	LOS A	0.1	0.7	0.35	0.63	0.35	71.0
Approach		186	5.0	269	5.0	0.127	1.0	NA	0.1	0.7	0.04	0.07	0.04	95.4
West: Sunderland Street														
10	L2	34	1.0	43	1.0	0.270	8.5	LOS A	1.2	8.3	0.55	0.80	0.58	64.3
12	R2	111	1.0	140	1.0	0.270	11.9	LOS B	1.2	8.3	0.55	0.80	0.58	63.8
Approach		145	1.0	183	1.0	0.270	11.1	LOS B	1.2	8.3	0.55	0.80	0.58	63.9
All Vehicles		565	4.0	784	4.1	0.270	3.8	NA	1.2	8.3	0.15	0.27	0.16	84.2

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

MOVEMENT SUMMARY

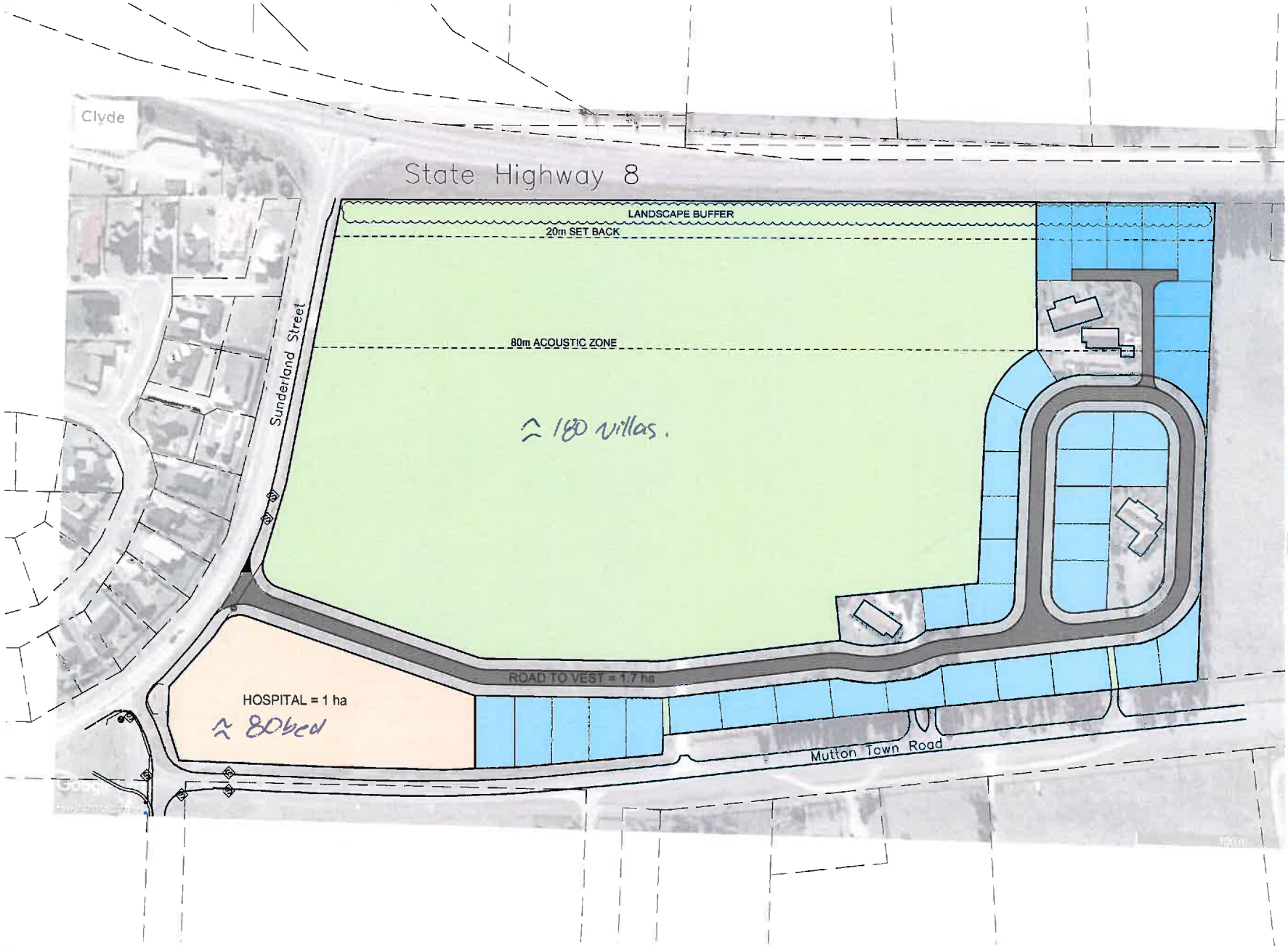
▽ Site: 101 [SH8 / Sunderland Street Development PM (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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: SH8 South														
1	L2	123	5.0	155	5.0	0.101	8.6	LOS A	0.4	3.1	0.12	0.60	0.12	71.9
2	T1	212	5.0	312	5.0	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach		335	5.0	468	5.0	0.165	2.9	LOS A	0.4	3.1	0.04	0.20	0.04	88.4
North: SH8 North														
8	T1	228	5.0	336	5.0	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
9	R2	34	5.0	43	5.0	0.033	8.6	LOS A	0.1	1.0	0.40	0.65	0.40	70.7
Approach		262	5.0	379	5.0	0.179	1.0	NA	0.1	1.0	0.04	0.07	0.04	95.4
West: Sunderland Street														
10	L2	34	1.0	43	1.0	0.272	8.9	LOS A	1.1	8.1	0.60	0.83	0.67	62.0
12	R2	82	1.0	104	1.0	0.272	14.9	LOS B	1.1	8.1	0.60	0.83	0.67	61.6
Approach		116	1.0	147	1.0	0.272	13.2	LOS B	1.1	8.1	0.60	0.83	0.67	61.7
All Vehicles		713	4.3	993	4.4	0.272	3.7	NA	1.1	8.1	0.13	0.24	0.14	85.3

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



APPROXIMATE AREAS

VILLAGE	= 8.8 ha
HOSPITAL	= 1.0 ha
SUBDIVISION (36 Sections)	= 2.1 ha
EXISTING (3 Existing Houses)	= 0.8 ha
ROADING	= 1.7 ha

CONCEPT

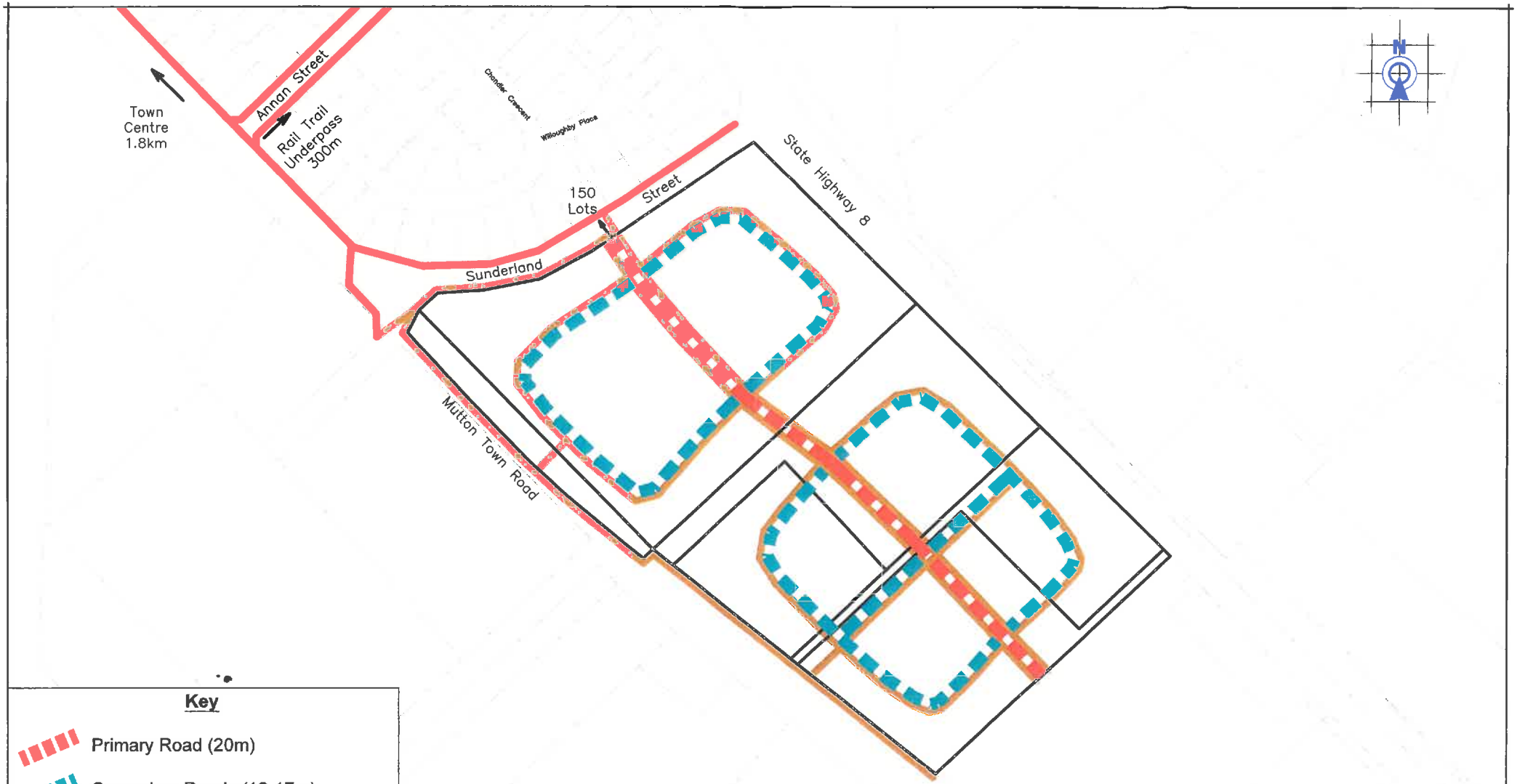
NOTES:	REVISION	DESCRIPTION	DATE	REVISION	DESCRIPTION	DATE
DO NOT SCALE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK Contractors and Sub Contractors: to ensure all restricted building works are to be carried out by approved licensed building practitioners.						

HPA Services
PO Box 54108
Bucklands Beach
MANUKAU, 2014

09 974 3641
www.hpa.co.nz
info@hpa.co.nz

CONSULTANTS	CLIENT	PROJECT TITLE	SHEET TITLE
Structural Engineer . Surveying Engineer . Quantity Surveyor . Town Planner . Civil Engineer . Traffic Engineer . Other Engineer .	.	CLYDE LIFESTYLE VILLAGE	PROPOSED SITE PLAN

PROJECT NO.	SHEET NO.
3680	A001
DESIGNED	DRAWN / CHECKED
SK/RY	SK/RY / HPA
SCALE	DATE / REVISION
1:2000@ A3	02-11-2020



PATERSONPITTSGROUP
Surveying • Planning • Engineering
Your Land Professionals
www.ppgroup.co.nz
0800 PPGROUP

CROMWELL BRANCH
30 The Mall,
or
PO Box 84,
Cromwell 9342
T 03 445 1826
E cromwell@ppgroup.co.nz

Client/Location: Proposed Plan Change 15

Purpose/Drawing Title: Indicative Outline Development Plan

Surveyed by:	-
Designed by:	PD
Drawn by:	KWG
Checked by:	PD
Approved by:	MS

Original Size: A3

Scale: 1:3000 DO NOT SCALE

Job Ref: A4702_PLAN

Sheet No: 4

Revision No: A

Date Created: 02/11/2020

PLOT DATE: 02 November, 2020 - 3:01 PM BY: Kathryn Garmonsway

J:\A_4702 LAING & BRAID\CAD\A4702_PLAN_4A_MOVE.DWG