BEFORE AN INDEPENDENT HEARINGS COMISSIONER
ON BEHALF OF SELWYN DISTRICT COUNCIL

UNDER	the Resource Management Act 1991
IN THE MATTER	a request by Hughes Development Limited for a private plan change to the Selwyn District Plan to rezone 163 Halkett Road and 1066 West Coast Road in West Melton for the development of approximately 124 lots
AND	**Hughes Development Limited** (Applicant)

EVIDENCE OF SIMON DE VERTEUIL ON BEHALF OF HUGHES DEVELOPMENT LIMITED

Transport

13 March 2023

Counsel acting:
I M Gordon Barrister
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Introduction

1. My name is Simon John de Verteuil.

2. I am a Senior Transport Engineer at Novo Group Limited and have worked on traffic planning and engineering projects for 20 years.

3. My experience has largely focussed on development planning and includes the preparation and peer review of Traffic and Transport Assessments associated with resource consent applications.

4. My qualifications include a Bachelor of Science (BSc) from Newcastle University and a Master of Geographical Information Science (MSc) from Nottingham University. I am an Incorporated Engineer (IEng) with the Institution of Civil Engineers in the UK (MICE) and a Chartered Engineer Technologist with Engineering New Zealand.

5. Novo Group was engaged by Hughes Developments Limited (**HDL**) to provide an integrated traffic assessment (**ITA**) in relation to its proposal to enable residential development at the subject site (being 163 Halkett Road and 1066 West Coast Road) (the **Site**). That ITA was provided in support of HDL's private plan change request to the Operative Selwyn District Plan (**PC74**).

6. I prepared the ITA for the Site.

Scope of evidence

7. My evidence is presented on behalf of HDL. It summarises the key findings of my ITA and responds to traffic matters raised in the Council's Section 42A report and the submissions received on PC74.

8. In preparing this evidence, I have reviewed:

   (a) PC74 ITA (November 2020) by Novo Group.

   (b) PC74 Response to Request for Further Information (**RFI**): Traffic Assessment (29 March 2021).

   (c) PC74: HDL – Transportation Hearing Report (November 2022) by Flow Transportation Specialists.

(d) The submissions and further submissions lodged in relation PC74.

(e) The Council Officer's section 42A report.

9. My evidence covers the following:

(a) A summary of the existing transport environment.

(b) An overview of the transport elements of the proposal.

(c) Response to matters raised in the Council's Transport Hearing Report and Section 42A report.

(d) Response to original submissions where they relate to transport matters.

Code of conduct

10. I have read the Environment Court's Code of Conduct for Expert Witnesses, contained in Part 9 of the Environment Court Te Kōti Taiao o Aotearoa Practice Note 2023, and agree to comply with it. My qualifications as an expert are set out above. Other than where I state that I am relying on the advice of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Executive summary

11. If PC74 is accepted, the Site will be rezoned to Living West Melton under the Operative District Plan (**Operative Plan**) and will be subject to the Outline Development Plan (**ODP**), described in the evidence of Mr Brown. That rezoning proposal will enable approximately 124 homes to be delivered on the Site.

12. As a summary of my evidence, I consider that the transport effects of the proposed rezoning on the transport network will be acceptable, subject to the ODP amendments and a Road Safety Audit of the State Highway 73 (**SH73**)/Halkett Road intersection, discussed in this evidence.

Transport Environment

13. The Site is located immediately to the east of the existing West Melton urban area and bounded by West Coast Road (State Highway 73) to the south and Halkett Road to the north as depicted in **Figure 1**.

14. Halkett Road is a Local Road between SH73 and Weedons Ross Road. Weedons Ross Road is classified as a Local Road in Council's roading hierarchy of the Operative District Plan and as an Arterial Road in the Proposed District Plan. Weedons Ross Road provides access to SH73, west of the Site.

15. The intersection of Weedons Ross Road with SH73 is currently being upgraded to a signalised intersection as per **Attachment A**. This includes stopping up West Melton Road (south of SH73). The works are due for completion by middle of 2023.

16. The posted speed limits, in proximity to the Site, are shown in **Figure 1**.

Figure 1: Existing Speed Limits Adjacent to the Site

17. The intersection of SH73/Halkett Road is controlled with stop signs and give priority to SH73. There is no right turn lane facility. Around 60-70m east of this intersection, there is one residential driveway and two intersections (Curraghs Road and Lawford Road) on opposite sides of the road, off SH73.

18. Traffic surveys conducted on 16 June 2022 reported the following two-way traffic volumes adjacent to the Site:

    - SH73 carries 774 and 797 vehicles in the AM and PM peaks, respectively.

- Halkett Road carries 143 and 135 vehicles in the AM and PM peaks, respectively.

Integrated Transport Assessment

19. As noted, the proposed residential zoning would enable the development of approximately 124 residential lots at the Site. The traffic generation of this development is estimated to be 117 vehicle movements per hour in the peak hours and 1,066 vehicle movements per day.

20. The Site will take primary access from SH73 and Halkett Road, with a secondary access to Rossington Drive. The Halkett Road and Rossington Drive accesses will be all movements, but the SH73 access will be restricted to left-in / left-out only. Further road links are proposed to the eastern boundary to allow for future development beyond the Site. This layout is proposed within the ODP, as per **Figure 2**.

Figure 2: ODP Proposed for the Site

21. In addition, the ODP for the Site includes the following:

    (a) Internal walking/cycling connections, including:

        (i) Two shared pedestrian/cycle link connections to Halkett Road (with one adjacent to the road access).

        (ii) One shared pedestrian/cycle link to Rossington Drive (to the west and adjacent to the road link).

        (iii) Two shared pedestrian/cycle link connections to the east adjoining property (adjacent to the road links).

    (b) External walking/cycling connections:

        (i) A shared pedestrian/cycle link on Halkett Road between Rossington Drive and the eastern edge of the Site's frontage.

    (c) Road links:

        (i) One road link to Rossington Drive (to the west).

        (ii) Two road links to the east adjoining property.

22. There were no transport safety and efficiency issues identified within the ITA.

Response to Council's Transport Review

23. Mr Collins (of Flow Transportation Specialists Ltd) reviewed transportation matters associated with PC74 and the proposed rezoning on behalf of the Council.

24. Mr Collins confirms that the local transport effects of the development are likely to be minor. From a transport perspective, Mr Collins appears to be generally supportive of the proposal, provided various changes to the ODP are implemented. I discuss Mr Collins' recommendations below, focussing primarily on the points of disagreement.

<u>SH73/Halkett Road Intersection Modelling</u>

25. Mr Collins requested that traffic modelling be undertaken of the

SH73/Halkett Road intersection. This is because the ITA assumed an all-movement access from the Site to SH73, whereas (through discussions with Waka Kotahi) the proposal is now for a left-in/left-out intersection and this leads to additional turning movements at the SH73/Halkett Road intersection.

26. I have undertaken traffic modelling of the SH73/Halkett Road intersection (see modelling report as **Attachment B**). The modelling indicates that the intersection will operate with an acceptable Level of Service (**LOS**) in 2033 (future year scenario) with and without a right turn lane facility on SH73. The LOS is between A-C[1] on all arms, apart from the right turn from Halkett Road. The LOS on this right turn changes from C to D if the intersection is upgraded to include a right turn lane on SH73. However, the volume of traffic performing this manoeuvre is negligible and is also related to the minor road arm. I consider this to be an acceptable LOS for an existing intersection. Therefore, I consider that this intersection will operate with a satisfactory level of capacity in the future (2033) when the Site is fully developed.

SH73/Halkett Road Intersection Safety

27. Mr Collins recommends that a Road Safety Audit of the SH73/Halkett Road intersection should be undertaken to confirm that it will operate safely with the rezoning traffic on the network. A detailed assessment of the intersection of SH73/Halkett Road shall be undertaken as part of the subdivision consent process to identify any improvements or upgrades necessary. The assessment of this intersection shall be done in consultation with Waka Kotahi and Selwyn District Council and require a safety audit. I agree with Mr Collins' former comments that a Road Safety Audit be conducted of the intersection to determine whether an upgrade is required.

28. I note that comments by Mr Collins on the timing of the intersection upgrade (if required) are inconsistent. On page 9, he states that should improvements be required, a District Plan rule is included to ensure these are delivered in conjunction with development within

[1] Where LOS 'A' is considered excellent operation, 'E' is at or approaching capacity and 'F' is over-capacity.

PC74. On page 12 however, Mr Collins states that the SH73/Halkett Road intersection will be upgraded prior to any development within the ODP.

29. In my opinion, if an upgrade is required to the SH73/Halkett Road intersection, that should be delivered in conjunction with the development. I believe the most suitable timing for the upgrade is prior to the issue of 224 certificates for the Site. This will ensure that any upgrade to the intersection (if required) is completed prior to any occupation on the Site, thus any effects due to the development are mitigated.

Rossington Drive Connection

30. Mr Collins recommends inclusion of a roading connection to Rossington Drive alongside the shared footpath/cycleway proposed in the ODP. I agree with this road connection through to Rossington Drive. For clarity, this road connection was already included within the ODP notified.

Halkett Road Shared Path

31. I agree with Mr Collins on providing a shared footpath/cycleway along Halkett Road between Wylies Road and Rossington Drive. This will provide access to the bus stop located adjacent to Rossington Drive, approximately 200m from the Site (see **Figure 3**Error! Reference source not found. for location of bus stops near the Site).

32. Furthermore, I recommend that this ties in with the end of the existing footpath on the west side of Rossington Drive, thus creating a complete link.

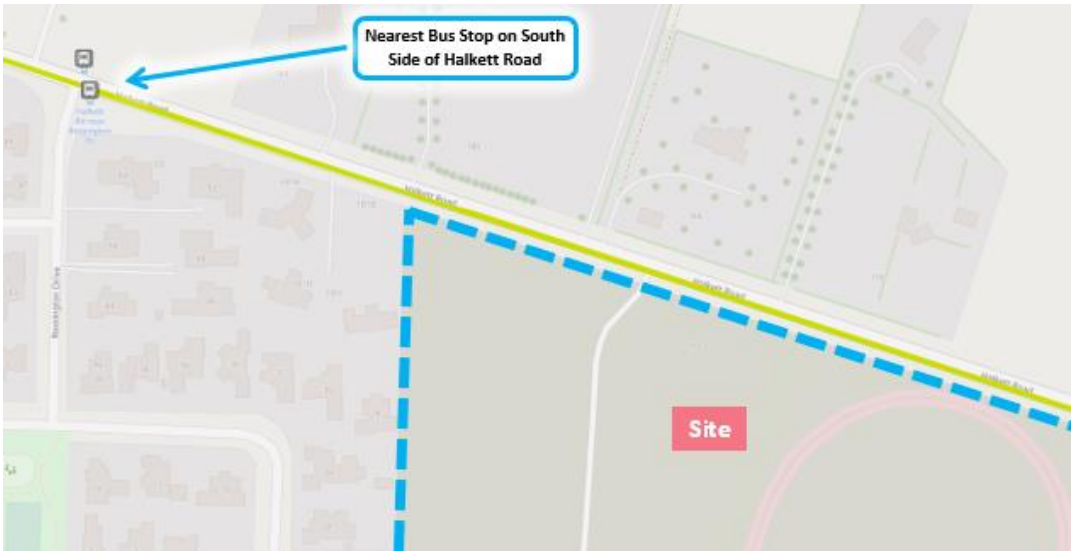


Figure 3: Location of Bus Stops to the Site (Background Source: Online Metro Bus Map)

Eastern Roading Connections

33. Mr Collins recommended that two roading connections be provided to the eastern Site boundary. These have been added to the ODP.

Primary Road Traffic Calming

34. Mr Collins requested that traffic calming be provided on the primary north-south road to prevent rat running (i.e., drivers using side roads not intended as shortcuts) through the Site. I question the need for this considering that the left-in/left-out access arrangement on SH73, which limits the benefits of this road as a short-cut. However, I consider that the need for traffic calming on this road could be reviewed at the time of seeking engineering approval for the proposed internal road network.

Central Reserve Walking & Cycling Link

35. Mr Collins recommended that a walking and cycling link be provided through the central reserve. He also recommended that the walking and cycling network be extended to the eastern boundary to accommodate future extensions. I agree with these recommendations, and these are shown on the ODP.

Environment Canterbury Liaison

36. I agree with Mr Collins that additional bus stops are unlikely to be required on Halkett Road. The Applicant is proposing a shared

pedestrian/cycle link between the Site and Rossington Drive. This will pass where the bus stop is located on the south side of Halkett Road. Residents will therefore be able to walk/cycle to the bus stop from the Site. The existing bus stop is within 200m of the Site, a distance of 400m is typically accepted as a comfortable distance to access a bus stop.

ODP Narrative Alterations

37. Mr Collins recommends that the ODP narrative be updated to require liaison with Council regarding relocation of the existing speed limit transition (see **Figure 4**Error! Reference source not found.) on Halkett Road to the east of the Site. Currently, the speed limit transition is around 80m east of the western Site boundary. I agree with this recommendation in principle, but this is a council function and not something the Applicant can implement.

Figure 4: Existing Speed Limit Change (60/80km/h) Along Halkett Road

38. Mr Collins suggested several other alterations to the ODP narrative, which I generally agree with. These relate to:

- Improvements to the SH73/Halkett Road intersection, if required.
- A roading connection to Rossington Drive alongside the shared footpath/cycleway. For clarity, the road and the shared footpath/cycleway were already included within the ODP notified.
- Two road connections to the east adjoining property.

- A shared footpath/cycleway along the Site frontage with Halkett Road that extends to Rossington Drive.

- A walking and cycling link be provided through the central reserve and extension of the walking and cycling network to the eastern boundary.

39. These are shown on the ODP and described within the ODP text appended to Mr Brown's evidence.

Effects Assessment

40. Mr Collins states that the transport effects of the rezoning are minor in the local context (i.e., that the additional traffic generated by the development can be accommodated by the local network). However, he considers that the cumulative effect of large-scale urban development outside the anticipated urban boundary (as proposed by multiple plan changes in the Selwyn District) could have a significant effect on the wider transport network.

41. I agree that the traffic generated can be accommodated by the local network. However, for those effects further afield, I consider that these are not possible to ascertain as traffic essentially disperses with distance from the Site.

Joint Witness Statement

42. Through the Proposed Selwyn District Plan Rezoning Hearing for this Site, joint witness conferencing occurred between HDL and SDC's traffic experts (Mr de Verteuil and Mr Collins) on 28 February 2023. A copy of the joint statement is included as **Attachment C**.

43. In summary, there were no points of disagreement. The experts agreed on the following:

a) The intersection of SH73/Halkett Road will operate with an acceptable Level of Service (LoS) both with and without the right turn lane facility on SH73. The transport efficiency effects of the Plan Change on the SH73/Halkett Road intersection are acceptable.

b) The potential safety effects at the intersection of SH73/Halkett Road can be assessed during future subdivision stages. This requires the Applicant to undertake a road safety audit in consultation with Waka Kotahi and Selwyn Council, and implement any recommendations of the audit, prior to the issue of any 224 certificate for the site.

c) A shared path is to be constructed along Halkett Road from Wylies Road (east of the Site) to the west, to the intersection with Rossington Drive with a connection to be made to the existing footpath within Rossington Drive.

d) A road connection and shared pedestrian/cycle link to the west is proposed within the parcel - Lot 2 DP 557426 of the Gainsborough subdivision.

e) Traffic calming along the north-south primary road can be addressed through the future subdivision and engineering plan review processes.

f) Liaison between the Developer and Council is required regarding relocation of the existing speed limit transition on Halkett Road.

g) A footpath along SH73 is not essential.

Response to Section 42A report

44. I have read the relevant sections of the s42A Report, which has been prepared by Mr Friedel.

45. I agree with Mr Friedel's following recommendations:

- A safety audit of the SH73/Halkett Road intersection is undertaken, as per Mr Collins' transport review.
- That a roading connection to Rossington Drive includes a shared footpath/cycleway to improve site connectivity.
- Two road connections are required to the eastern site boundary, to allow for extension should urbanisation occur.

- A cycling and pedestrian route through the central reserve is required to allow future extensions of the cycling and pedestrian network to the east of the site.

- The applicant consults with SDC regarding the relocation of the speed limit transition on Halkett Road.

46. Mr Friedel has further agreed that a shared path along SH73 (between the Site and the pedestrian refuge and crossing point on SH73) is not necessary.

Response to residual matters raised by submitters

47. I have reviewed the relevant submissions in respect of the rezoning request and have identified the following topics raised in the submissions:

a) Capacity and safety of Halkett Road / SH73 Intersection

b) Capacity and Safety of Halkett Road Site Access

c) Capacity and Safety of the Road Connection to the West with Rossington Drive (part of Halket Grove Subdivision)

d) Minimum Intersection Spacing - Road Connection to the West with Rossington Drive (part of Halket Grove Subdivision)

e) Traffic Congestion and Safety on Weedons Ross Road

f) Road Network Capacity with Plan Changes

g) Pedestrian and Cycle Safety Across SH73

h) Speeding along SH73

<u>Capacity and Safety of Halkett Road/SH73 Intersection</u>

48. Several submitters have concern about the capacity and safety of the SH73/ Halkett Road intersection in its current state and have concerns what the impacts on PC74 will have on this intersection.

49. I undertook modelling of the intersection of Halkett Road and SH73. The intersection will operate with an acceptable Level of Service (LoS)

both with and without the right turn lane facility on SH73. The transport efficiency effects of the Plan Change on the SH73/Halkett Road intersection are acceptable (as agreed with the SDC's traffic expert – see **Paragraph 43** of my evidence).

50. I further reviewed the wider transport network to the Site regarding the crash history for the last five years. The only potential crash trend identified were the two crashes involving drivers waiting to turn right from SH73 onto Halkett Road. Vehicles following behind failed to stop on two instances, resulting in non-injury crashes. The crash record does not identify a definite safety issue at the intersection but raises a potential concern. As per **Paragraph 27** of my evidence, the intersection is recommended to be assessed at subdivision consent stage with a Road Safety Audit. This will be in consultation with Waka Kotahi and Selwyn Council (as agreed with the SDC's traffic expert – see **Paragraph 43** of my evidence).

Capacity and Safety of Halkett Road Site Access

51. A total of 52 trips is anticipated as returning to the Site in the PM peak. Assuming a worst scenario of 48 vehicles returning to the site on Halkett Road (based on the likely distribution of traffic on the wider transport network), that equates to one vehicle almost every 1 minute and 15 seconds. This does not pose a capacity issue (as was stated in the ITA), so congestion will not be an issue at the access with Halkett Road

52. The crash history for Halkett Road for the last five years identified no crash trends. This study area included the existing Halkett Grove subdivision. This information combined with the low traffic volumes anticipated at the Site access along Halkett Road, mean that I have no safety concerns at this access with development of the Site.

Capacity and Safety of the Road Connection to the West with Rossington Drive (part of the Gainsborough Subdivision)

53. The ODP includes a road link to Rossington Drive. Rossington Drive and surrounding roads within the Gainsborough and Halkett Grove subdivisions are typically 7.5-8.0m wide and provide access for around 200 dwellings. According to NZS 4404:2010 Land Development

and Subdivision Infrastructure guide, the road design is most similar to Type E12. An E12 road type serves between 1 to 200 dwellings, with a movement lane of 5.5-5.7m (i.e. two way) and allows shared parking in the movement lane. This type of road is typically classed as a Local Road and is able to accommodate 2,000 vehicles per day (vpd), although this is an 'amenity' threshold rather than a traffic capacity limit as these roads can physically accommodate much higher traffic volumes.

54. A traffic survey conducted in the week of 10-16 June 2022, identified an average of 600 vpd entering and 600 vpd departing the Gainsborough and Halkett Grove subdivisions daily i.e. 1,200 vpd. As this local road can accommodate up to 2,000 vehicles, the Gainsborough and Halkett Grove subdivisions can effectively accommodate another 800 vpd. Vehicle trips to and from the Site (via the new road linkage to Rossington Drive) are expected to be in the low 10s across the day and thus significantly below the spare 'capacity' of 800 vpd. I am therefore satisfied that the effects of the new road linkage through to the Gainsborough subdivision are acceptable and less than minor.

55. Modelling was completed for the intersection of Halkett Road/SH73. As part of the process, the Site's main access on SH73 was modelled as a left in/left out. A total of 52 trips are anticipated as returning to the Site in the PM peak. As turning movements are restricted at the main site access onto SH73, a large majority of these trips will return to the site via Halkett Road, particularly as most residents work in Christchurch (based on census data). If we estimate that 20% of trips (conservative) in the peak PM period return to the Site via West Melton town centre and Rossington Drive, that would equate to 10 trips. Across a 1-hour peak period, this would be the equivalent of 1 vehicle every 6 minutes. In my opinion, an additional 1 vehicle every 6 minutes does not pose a safety issue to existing users or residents of the Gainsborough subdivision, noting that there are footpaths along Rossington Drive, Brampton Drive, Rotherham Drive and Brinsworth Avenue (i.e. along the full route between Weedons Ross Road and the Site via the Gainsborough subdivision). I, therefore, conclude that I have no safety concerns with traffic travelling between the Site and

Rossington Drive.

56. It is worth further noting that the number of trips expected to be generated by the Site is based on actual trip observations on the adjacent Gainsborough & Halkett Grove subdivisions, thus the data used is fit for purpose.

Minimum Intersection Spacing - Road Connection to the West with Rossington Drive (part of Halket Grove Subdivision)

57. The intersection spacing between the new access road (onto Rossington Drive) and Brampton Drive is around 39m (measured centreline to centreline). This intersection distance does not meet the District Plan requirements for Selwyn District Council. However, a distance of 40m is commonly accepted in residential subdivisions in and around Canterbury and is consistent with the Infrastructure Design Standards (IDS)[2] for Christchurch City Council that requires 40m between two local roads.

58. I consider that a spacing of 39m between the Rossington Drive intersections with the proposed road and Brampton Drive to be acceptable because:

- Brampton Drive and the proposed road are on opposite sides of Rossington Drive, so there will be no confusions as to where drivers are proposing to turn;
- The traffic volumes on the road network are low and queuing between the intersections is not expected; and
- Traffic speeds on Rossington Drive are in the order of 30km/h (see **Figure 5**), meaning there is ample time for drivers to comprehend the road network.

[2] https://ccc.govt.nz/assets/Documents/Consents-and-Licences/construction-requirements/IDS/Infrastructure-Design-Standard/Part-8-Roading.pdf

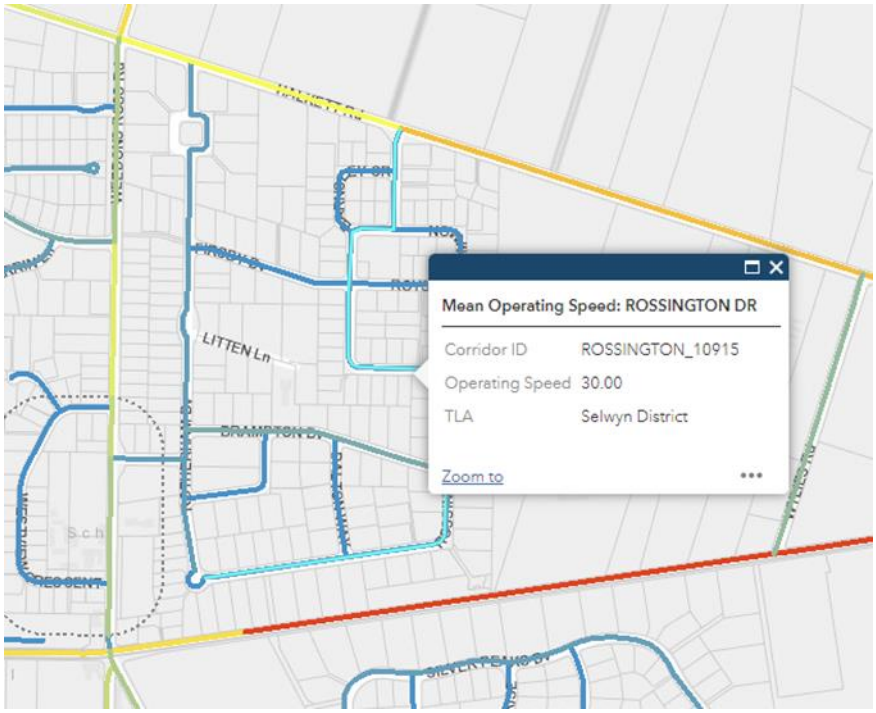


Figure 5: Rossington Drive Mean Operating Speed (Source: Waka Kotahi Megamaps)

59. I consider this non-compliance as acceptable with effects less than minor.

Traffic Congestion and Safety on Weedons Ross Road

60. There have been no crashes reported between Weedons Ross Road and Brinsworth Avenue in the last 5 full years so there are no crash trends that can be identified and therefore safety concerns.

61. The centre of the Site is within 1.1km walking distance from the shops and the school. I consider this an acceptable distance for walking and cycling to and from the shopping centre and the school. A fit, healthy adult will generally travel at a mean speed of 1.5 m/s (15th percentile: 1.3m/s)[3] which equates to walking between 1170m-1350m in 15 minutes. I have chosen 15 minutes based on the urban planning concept of 15-minute neighbourhoods which aim to make cities more liveable. The Site is therefore within 15 minutes walking distance of the shopping centre and school. If traffic congestion is an issue (at certain times), this will encourage shopping centre users and school parents to assess other means of travel, which could include walking or cycling.

[3] https://www.nzta.govt.nz/assets/resources/pedestrian-planning-guide/docs/chapter-3.pdf

Road Network Capacity with Plan Changes

62. **Figure 6** shows the various plan changes approved and proposed in West Melton including this application (PC74). PC59 was approved in June 2021. PC67 was approved in May 2022.

Figure 6: West Melton Plan Changes approved and proposed.

63. Within the PC74: HDL – Transportation Hearing Report (November 2022), QTP modelled two potential scenarios in 2038 that indicated the following:

a) Selwyn travel patterns in both Scenarios are indicated to remain similar to 2021, but with an increased magnitude proportional to population increase (increase of around 32% of peak hour trips).

b) Halkett Road and SH73 are expected to experience little change in forecast traffic growth, when comparing a 2038 scenario with 10,000 additional dwellings more than forecast.

64. In my modelling of the SH73/Halkett Road intersection, I assigned a growth rate of 2.2% compound (27% overall) for the future year 2033. I therefore consider that my modelling effectively covers the traffic growth that could be expected of the other plan changes and rezoning requests in Selwyn.

65. This is further corroborated by Mr Collins who states that regional modelling by QTP indicates that Halkett Road and SH73 are expected to experience little change in forecast traffic growth, when comparing a 2038 scenario with 10,000 additional dwellings more than forecast.

66. I am therefore reasonably satisfied that this Plan Change will not lead to network constraints.

Pedestrian and Cycle Safety Across SH73

67. I consider there are no safety concerns regarding pedestrian/cyclist safety at the refuge across SH73, for the following reasons:

- The refuge located on the east side of the Weedons Ross Road/SH73 intersection appears to have been constructed in and around 2019 (from Google Street maps). The Waka Kotahi Crash database has indicated that there have been no crashes at this refuge since it was built.

- The intersection of Weedons Ross Road/SH73 is currently being upgraded to a signalised intersection (as of January 2023), as part of these improvements, a new shared path is proposed on the south side of SH73 that ties in with the existing refuge. This will provide pedestrians and cyclists an alternative route to crossing SH73 at the refuge, as well as safe crossing facilities at the intersection.

- The existing refuge crossing is >500m from the proposed SH73 Site access. Any turning movements at the proposed access will not have an impact on the refuge crossing and thus pedestrian/cycle safety.

Speeding along SH73

68. The mean operating speed along SH73 adjacent to the Site is 92km/h, according to the Waka Kotahi (NZ Transport Agency) online Megamaps. The mean operating speed along Halkett Road is 72km/h. These speeds are based on TomTom data and are averaged along the sections of road. The posted speed limits are 100km/h and 80km/hr along SH73 and Halkett Road, respectively (adjacent to the

Site). These mean operating speeds suggest that motorists are driving less than the posted speed limits. This supports my opinion that speeding is not an issue near to the Site, which is further corroborated by the safety crash record.

Conclusion

69. In conclusion, I consider that the transport effects of the proposed rezoning of the Site (as sought through PC74) will be acceptable, and that the amendments to the ODP discussed in this evidence are appropriate.

Simon de Verteuil
13 March 2023

Attachment A

Proposed SH73/West Melton Intersection Improvements

Key features

A. Traffic signals at the SH73/Weedons Ross Road intersection with pedestrian crossings on all four legs of the intersection making it safer for pedestrians and cyclists to cross at the intersection.

B. Piping of stockwater races to improve safety and allow widening of roads and shared paths.

C. A cul-de-sac at the northern end of West Melton Road improving on-street parking (the current West Melton Road intersection with Weedons Ross Road would be too close to the new traffic signals).

D. Weedons Ross Road (south of SH73) and West Melton Road widened and reshaped.

E. A new link road between Weedons Ross Road and West Melton Road opposite Kingsdowne Drive (to the south of St Paul's Church).

F. A new single lane roundabout at the intersection of the new link road and Weedons Ross Road opposite Kingsdowne Drive, with crossing points for pedestrians.

Attachment B

30 January 2023

Novo Group Limited
Level 1, 279 Montreal Street
PO Box 365, Christchurch 8140
O - 03 365 5570
info@novogroup.co.nz

MEMO

TO:	Mat Collins
FROM:	Simon de Verteuil, Senior Transport Engineer
PROJECT REF:	033020

MODELLING OF SH73 & HALKETT ROAD
PLAN CHANGE 74
163 HALKETT ROAD, WEST MELTON

Introduction

1. The purpose of this memorandum is to show the performance of the intersection of SH73 and Halkett Road at a future year – 2033 (with development) for Plan Change 74. This analysis was not provided (not required) as part of the Integrated Transport Assessment (ITA) for the site (dated 11 November 2020).

Existing Counts

2. Traffic counts were conducted at the following locations:

   - Tube counters were placed at the following three locations (see **Figure 1**) in the week of 10-16 June 2022:
     - Brinsworth Avenue
     - Rossington Drive
     - Rotherham Drive
   - Rossington Drive & Halkett Road intersection on 16 June 2022.
   - SH73 & Halkett Road intersection on 16 June 2022. The percentage of heavies observed were 4% and 6% travelling eastbound and westbound respectively.

   The traffic surveys are included in **Appendix 1**.

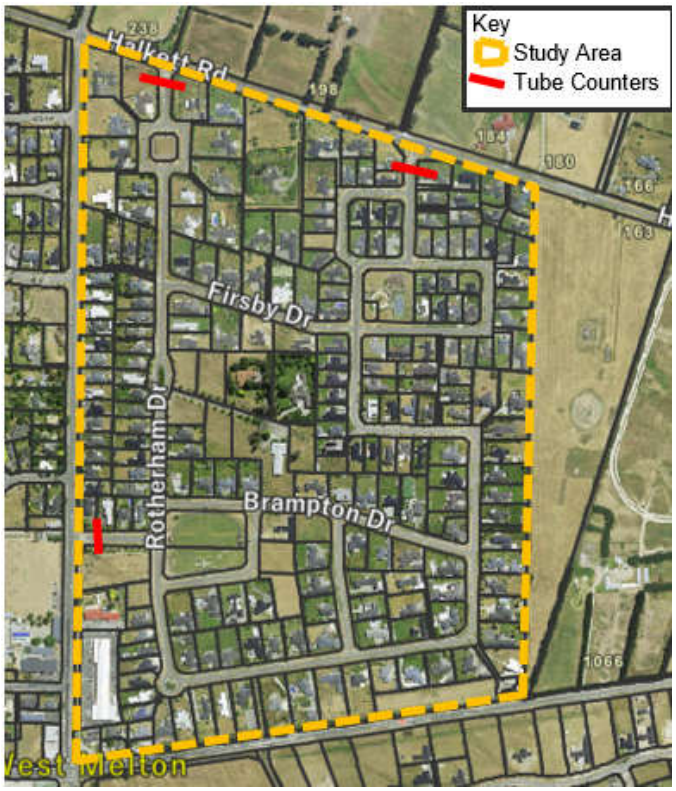


Figure 1: Traffic Surveys of an Adjacent Residential Development

3. The purpose of surveying an adjacent residential development to the Application Site was to determine a more accurate trip rate for the Application Site, thus a more accurate assessment can be made of development traffic generated and the impact on the intersection of SH73 & Halkett Road.

Trip Generation & Distribution

4. **Table 1** sets out a comparison of the trips anticipated in the original ITA and using the observed (average) trip rates for the proposed 130 lot development.

Table 1: Comparison of Development Trips Anticipated at the Application Site (Previous versus Updated Trip Rates)

Scenario (130 lots)	Original ITA Development Trips			Updated Development Trips (Observed)		
	In	Out	Total	In	Out	Total
AM Peak Hour	23	94	117	15	62	76
PM Peak Hour	76	41	117	51	30	81
Daily	533	533	1,066	594	588	1,182

5. **Figure 2** shows the anticipated development trips on the network, specifically at the intersection of SH73 & Halkett Road.

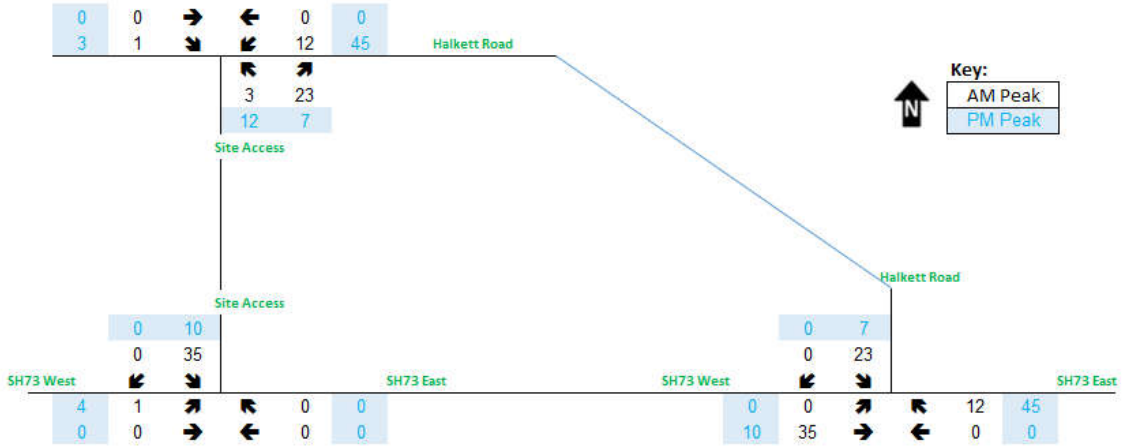


Figure 2: Development Trips

6. Waka Kotahi has a traffic monitoring site nearby – "West Melton – East of Dawsons Road" (ID: 07300013). This count station is located between Kirk Road and Dawsons Road, along SH73, approximately 4.35km east of the application site.

7. The Average Annual Daily Traffic (AADT) volumes recorded between 2014 - 2021 is set out in **Table 2**. The compound growth for SH73 is estimated to be between 1.2% - 2.2%. The higher number was used to provide a more robust analysis.

Table 2: Annual Average Daily Traffic for SH73

Year	AADT
2014	9910
2015	10,340
2016	11,027
2017	11,236
2018	9,424
2019	13,250
2020	10,249*
2021	10,779
Compound Growth	1.2% - 2.2%

Note: 2020 traffic volumes are 'suspect' due to the pandemic so were omitted from growth calculations.

8. **Figure 3** shows the Total (Future Year 2033 + Development) traffic volumes on the adjacent road network including the intersection of SH73 & Halkett Road.

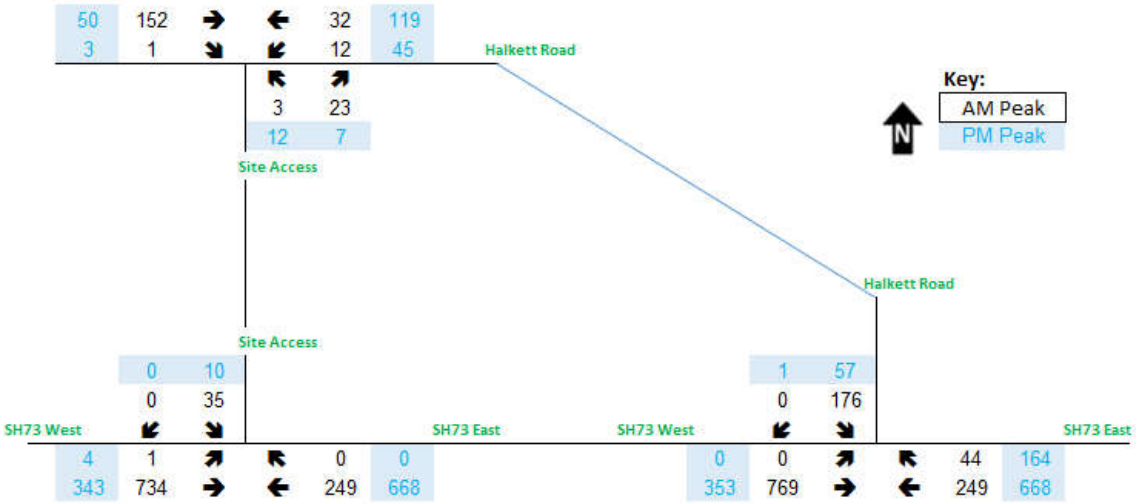


Figure 3: Total Traffic Volumes 2033

Roading Network Capacity

9. The traffic effects of the proposed development have been modelled using SIDRA 9.0 – an industry standard computer-based analysis tool for assessing the traffic capacity of an intersection. The intersection has been modelled as existing and if upgraded with a right turn lane facility.

10. The results presented in this report include the Level of Service ('LOS') provided by the intersection. LOS is a generalised function of delay where LOS A and B are very good and indicative of free-flow conditions; C is good; D is acceptable; and E and F are typically indicative of congestion and unstable conditions, although the former is often accepted in the peak hours.

Total Year 2033 - Existing Layout

11. SIDRA results are summarised below in **Table 3**. This is of a Future Year 2033 scenario and the site being fully operational. The layout modelled is shown in **Figure 4**. The results indicate that the intersection of SH73 & Halkett Road can accommodate the additional development traffic from the Application Site easily. The main road (SH73) operates with a LOS A while the side road (Halkett Road) operates between a LOS A-C with the maximum average delay being 24.9s in the PM peak for the right turn from SH73.

12. Note that the SIDRA model assumes that right turners from SH73 (into Halkett Road) will block traffic following behind. However, this is not the case. As shown in **Figure 5**, traffic is not blocked, traffic following behind can use the wide shoulder to pass vehicles waiting to turn right. Thus, the intersection operates at a better LOS than modelled.

13. The LOS is considered acceptable for the existing intersection.

Table 3: SIDRA Results at SH73 / Halkett Road Intersection (Existing Layout) – Total Year 2033

Road and Movement	Turn	AM			PM		
		Average Delay (s)	95 %tile Queue (vehicle)	Level of Service	Average Delay (s)	95 %tile Queue (vehicle)	Level of Service
SH73 East	R	13.2	0.9	B	10.6	3.1	B
Halkett Road	L	18.0	1.8	C	10.7	0.2	B
	R	20.4	0.0	C	24.9	0.0	C
SH73 West	L	7.9	0.0	A	7.9	0.0	A

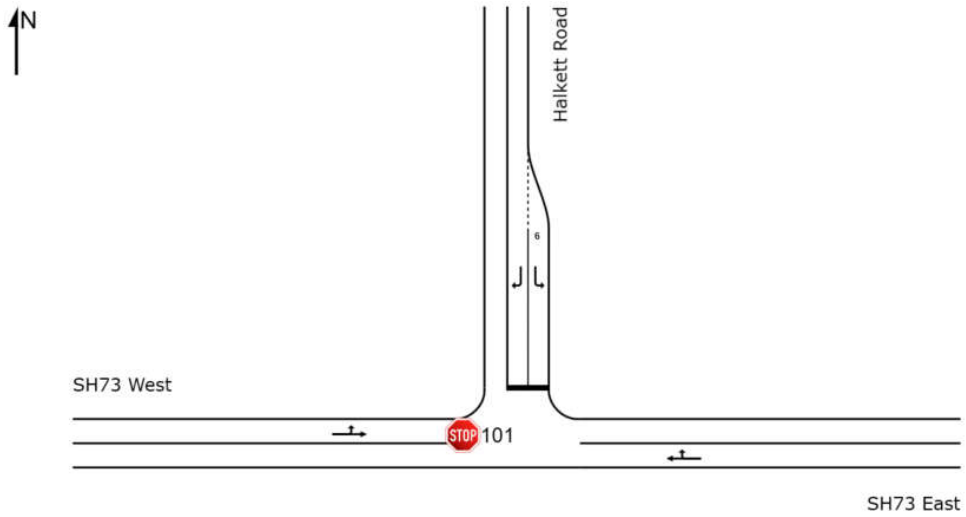


Figure 4: Existing SH73 / Halkett Road Intersection Modelled in SIDRA

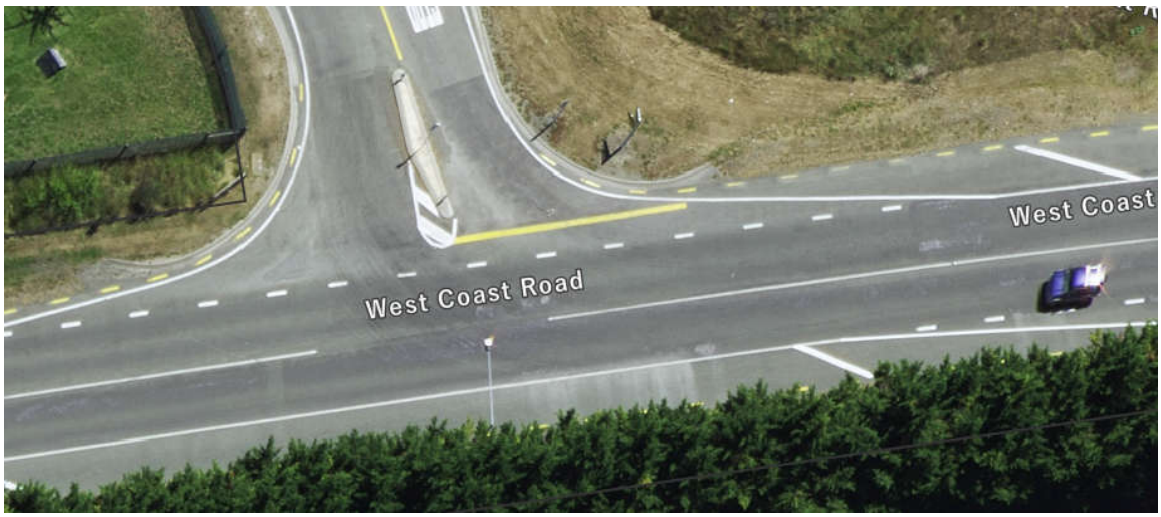


Figure 5: Aerial of the SH73 / Halkett Road Intersection

Total Year 2033 - Upgraded Layout

14. SIDRA results are summarised below in **Table 4**. The layout modelled is shown in **Figure 6**. This includes a new right turn facility at the intersection. The main road operates with a LOS A or B. The LOS (and thus average delay) does increase for the right turn from Halkett Road from C to D, although there are minimal vehicles performing this manoeuvre. The results do indicate that having the right turn lane reduces the average delay for those waiting to turn right into Halkett Road with the LOS improving from B to A in the PM peak.

15. The LOS is considered acceptable for the upgraded intersection.

Table 4: SIDRA Results at SH73 / Halkett Road Intersection (Upgraded Layout) – Total Year 2033

Road and Movement	Turn	AM			PM		
		Average Delay (s)	95 %tile Queue (vehicle)	Level of Service	Average Delay (s)	95 %tile Queue (vehicle)	Level of Service
SH73 East	R	12.2	0.3	B	9.1	0.6	A
Halkett Road	L	18.0	1.8	C	10.7	0.2	B
	R	28.3	0.0	D	32.4	0.0	D
SH73 West	L	7.9	0.0	A	7.9	0.0	A

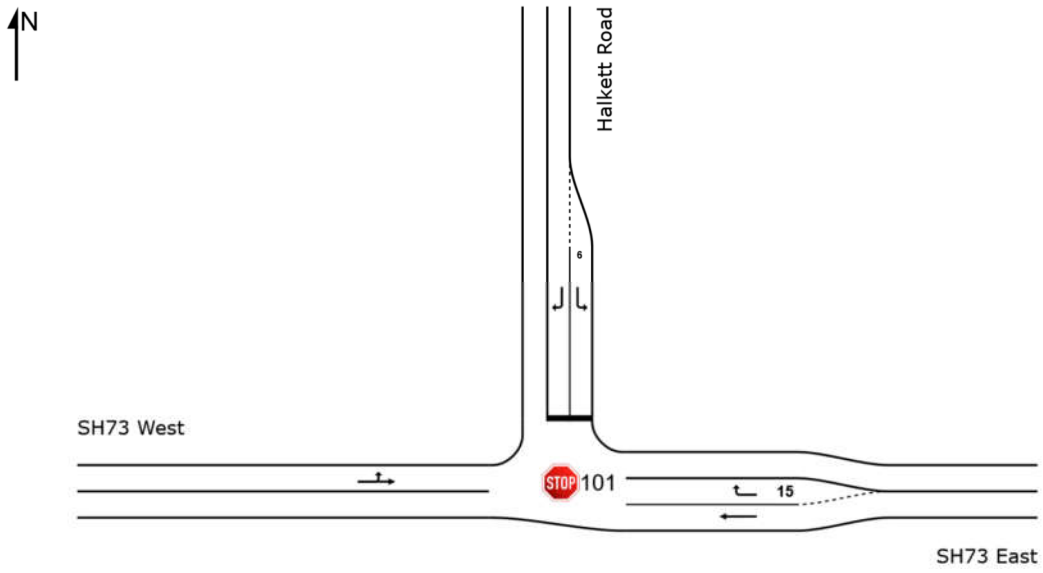


Figure 6: Upgraded SH73 / Halkett Road Intersection Modelled in SIDRA

16. All SIDRA modelling is included in **Appendix 2**.

Appendix 1 – 2022 Traffic Survey

Study Name Novo Halkett Rd - West Coast Rd
Start Date 06/16/2022
Start Time 6:30 AM
Site Code Lights

	West Coast Rd Westbound Westbound			West Coast Rd Eastbound Eastbound			Halkett Rd Eastbound Southeastbound		
Start Time	Thru	Bear Right	U-Turn	Hard Left	Thru	U-Turn	Bear Left	Hard Right	U-Turn
6:30 AM	36	2	0	0	77	0	20	0	0
6:45 AM	40	2	0	0	82	0	16	0	0
7:00 AM	37	2	0	0	120	0	23	0	0
7:15 AM	28	4	0	0	129	0	33	0	0
7:30 AM	50	5	0	0	143	0	27	0	0
7:45 AM	57	7	0	0	149	0	32	0	0
8:00 AM	39	5	0	0	142	0	27	0	0
8:15 AM	37	5	0	1	105	0	24	0	0
8:30 AM	44	13	0	0	78	0	24	0	0
8:45 AM	67	12	0	1	75	0	20	0	0
9:00 AM	60	5	0	1	65	0	8	0	0
9:15 AM	46	3	0	0	67	0	9	0	0
3:30 PM	110	13	0	0	48	0	15	0	0
3:45 PM	108	17	0	0	56	0	12	0	0
4:00 PM	121	15	0	1	53	0	9	0	0
4:15 PM	130	18	0	0	64	0	7	0	0
4:30 PM	115	14	0	0	63	0	8	0	0
4:45 PM	126	30	0	0	79	0	12	0	0
5:00 PM	135	24	0	0	62	0	7	0	0
5:15 PM	136	20	0	0	54	0	4	1	0
5:30 PM	124	18	0	0	64	0	12	0	0
5:45 PM	127	24	0	0	52	0	10	0	0
6:00 PM	97	17	0	0	33	0	5	0	0
6:15 PM	77	9	0	0	34	0	4	0	0
6:30 PM	0	0	0	0	0	0	0	0	0

Study Name **Novo Halkett Rd - West Coast Rd**
Start Date **06/16/2022**
Start Time **6:30 AM**
Site Code **Totals**

	West Coast Rd Westbound Westbound			West Coast Rd Eastbound Eastbound			Halkett Rd Eastbound Southeastbound		
Start Time	Thru	Bear Right	U-Turn	Hard Left	Thru	U-Turn	Bear Left	Hard Right	U-Turn
6:30 AM	37	2	0	0	77	0	20	0	0
6:45 AM	50	2	0	0	82	0	16	0	0
7:00 AM	44	2	0	0	121	0	23	0	0
7:15 AM	33	4	0	0	133	0	33	0	0
7:30 AM	56	7	0	0	147	0	28	0	0
7:45 AM	63	8	0	0	150	0	32	0	0
8:00 AM	44	6	0	0	148	0	27	0	0
8:15 AM	50	5	0	1	108	0	24	0	0
8:30 AM	54	14	0	0	78	0	24	0	0
8:45 AM	76	12	0	1	78	0	21	0	0
9:00 AM	66	5	0	1	72	0	8	0	0
9:15 AM	51	3	0	0	69	0	9	0	0
3:30 PM	114	13	0	0	53	0	16	0	0
3:45 PM	112	17	0	0	59	0	13	0	0
4:00 PM	127	15	0	1	60	0	9	0	0
4:15 PM	134	19	0	0	70	0	8	0	0
4:30 PM	120	14	0	0	66	0	8	0	0
4:45 PM	129	30	0	0	86	0	12	0	0
5:00 PM	136	25	0	0	63	0	9	0	0
5:15 PM	136	21	0	0	55	0	5	1	0
5:30 PM	125	18	0	0	66	0	13	0	0
5:45 PM	129	24	0	0	55	0	10	0	0
6:00 PM	99	17	0	0	36	0	5	0	0
6:15 PM	79	9	0	0	35	0	4	0	0
6:30 PM	0	0	0	0	0	0	0	0	0

Study Name Novo Halkett Rd - Rossington Dr
Start Date 06/16/2022
Start Time 7:00 AM
Site Code Lights

	Southbound Approach Southbound				Halkett Rd Westbound Westbound				Rossington Dr Northbound				Halkett Rd Eastbound Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
7:00 AM	0	0	1	0	1	0	0	0	0	0	9	0	0	17	0	0
7:15 AM	0	0	0	0	0	8	0	0	0	0	13	0	0	17	0	0
7:30 AM	0	0	0	0	0	2	0	0	0	0	5	0	0	20	0	0
7:45 AM	0	0	1	0	1	7	0	0	2	0	8	0	0	26	0	0
8:00 AM	0	0	0	0	1	4	0	0	0	1	7	0	0	19	0	0
8:15 AM	0	0	0	0	0	11	0	0	0	0	4	0	0	17	0	0
8:30 AM	1	0	0	0	1	10	0	0	1	0	3	0	0	24	1	0
8:45 AM	0	0	1	0	1	11	0	0	0	0	6	0	1	13	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	1	14	1	0	2	0	1	0	1	8	2	0
4:15 PM	0	0	0	0	8	8	0	0	1	0	2	0	0	6	1	0
4:30 PM	0	0	0	0	2	10	1	0	0	0	3	0	0	12	0	0
4:45 PM	1	0	0	0	6	17	0	0	0	0	2	0	0	12	0	0
5:00 PM	1	0	0	0	8	22	0	0	2	0	1	0	0	6	2	0
5:15 PM	0	0	1	0	9	14	0	0	1	0	0	0	1	8	1	0
5:30 PM	1	0	2	0	5	14	0	0	2	0	4	0	0	7	0	0
5:45 PM	0	0	0	0	9	14	0	0	1	0	0	0	2	11	1	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name Novo Halkett Rd - Rossington Dr
Start Date 06/16/2022
Start Time 7:00 AM
Site Code Totals

	Southbound Approach Southbound				Halkett Rd Westbound Westbound				Rossington Dr Northbound				Halkett Rd Eastbound Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
7:00 AM	0	0	1	0	1	0	0	0	0	0	9	0	0	17	0	0
7:15 AM	0	0	0	0	0	8	0	0	0	0	13	0	0	17	0	0
7:30 AM	0	0	0	0	1	2	0	0	0	0	5	0	0	21	0	0
7:45 AM	0	0	1	0	1	7	0	0	3	0	8	0	0	27	0	0
8:00 AM	0	0	0	0	1	4	0	0	0	1	7	0	0	19	0	0
8:15 AM	0	0	0	0	0	12	0	0	0	0	4	0	0	17	0	0
8:30 AM	1	0	0	0	1	10	0	0	1	0	3	0	0	24	1	0
8:45 AM	0	0	1	0	2	11	0	0	0	0	6	0	1	13	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	1	15	1	0	2	0	1	0	1	10	2	0
4:15 PM	0	0	0	0	8	9	0	0	2	0	2	0	1	6	1	0
4:30 PM	0	0	0	0	2	10	1	0	0	0	3	0	0	12	0	0
4:45 PM	1	0	0	0	6	17	0	0	0	0	2	0	0	12	0	0
5:00 PM	1	0	0	0	8	22	0	0	2	0	1	0	0	8	2	0
5:15 PM	0	0	1	0	9	16	0	0	1	0	0	0	1	9	1	0
5:30 PM	1	0	2	0	5	14	0	0	2	0	4	0	0	8	0	0
5:45 PM	0	0	0	0	9	14	0	0	1	0	0	0	2	11	1	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

15 Minute Counts - BRINSWORTH AVE - BETWEEN WEEDONS ROSS RD AND ROTHERHAM DR

15 Minute Intervals		Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			7 Day Average		
From	To	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes	East bound	West bound	Both Lanes
0000	0015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
0015	0030	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0030	0045	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0045	0100	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0100	0115	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0115	0130	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
0130	0145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0145	0200	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0200	0215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0215	0230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0230	0245	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0245	0300	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0300	0315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0315	0330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0330	0345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0345	0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0400	0415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0415	0430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0430	0445	0	0	0	0	0	0	0	1	1	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0
0445	0500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0
0500	0515	1	0	1	0	0	0	0	1	1	0	1	1	0	2	2	1	0	1	0	0	0	0	1	1	0	1	1
0515	0530	0	3	3	0	1	1	0	0	0	0	2	2	0	1	1	0	2	2	0	0	0	0	2	2	0	1	1
0530	0545	0	1	1	0	0	0	0	0	0	0	1	1	0	2	2	0	1	1	0	1	1	0	1	1	0	1	1
0545	0600	0	2	2	0	0	0	1	0	1	0	2	2	0	2	2	0	2	2	0	2	2	0	2	2	0	1	2
0600	0615	0	3	3	1	0	1	1	0	1	1	2	3	0	1	1	1	3	4	0	3	3	0	2	3	1	2	2
0615	0630	1	2	3	0	2	2	0	0	0	1	3	4	0	4	4	0	4	4	0	6	6	0	4	4	0	3	3
0630	0645	1	3	4	0	2	2	0	0	0	3	4	7	2	5	7	1	4	5	1	5	6	2	4	6	1	3	4
0645	0700	0	4	4	1	1	2	1	1	2	2	3	5	1	4	5	0	3	3	0	1	1	1	3	4	1	2	3
0700	0715	1	5	6	0	1	1	0	0	0	1	14	15	0	8	8	2	7	9	2	6	8	1	8	9	1	6	7
0715	0730	1	12	13	0	1	1	0	0	0	3	6	9	3	6	9	5	8	13	2	11	13	3	9	11	2	6	8
0730	0745	3	10	13	1	2	3	1	0	1	5	9	14	4	9	13	5	16	21	0	12	12	3	11	15	3	8	11
0745	0800	2	12	14	0	6	6	0	1	1	3	11	14	2	10	12	3	14	17	5	19	24	3	13	16	2	10	13
0800	0815	3	10	13	1	2	3	0	3	3	2	8	10	5	11	16	3	9	12	2	13	15	3	10	13	2	8	10
0815	0830	7	9	16	2	5	7	1	3	4	5	14	19	4	12	16	3	12	15	3	10	13	4	11	16	4	9	13
0830	0845	1	11	12	2	8	10	0	2	2	5	16	21	6	13	19	6	11	17	5	12	17	5	13	17	4	10	14
0845	0900	3	7	10	2	9	11	2	5	7	7	10	17	4	13	17	9	10	19	7	4	11	6	9	15	5	8	13
0900	0915	3	8	11	3	7	10	1	4	5	4	5	9	5	4	9	6	7	13	3	6	9	4	6	10	4	6	9
0915	0930	5	5	10	6	10	16	1	10	11	3	2	5	3	4	7	1	7	8	5	6	11	3	5	8	3	6	10
0930	0945	6	7	13	2	6	8	1	10	11	3	3	6	3	6	9	4	3	7	1	7	8	3	5	9	3	6	9
0945	1000	3	5	8	3	16	19	3	5	8	8	13	21	4	6	10	1	4	5	5	7	12	4	7	11	4	8	12
1000	1015	8	5	13	5	9	14	2	5	7	4	8	12	5	1	6	6	4	10	4	5	9	5	5	10	5	5	10
1015	1030	3	6	9	6	9	15	1	8	9	2	5	7	2	7	9	4	10	14	2	2	4	3	6	9	3	7	10
1030	1045	3	6	9	10	11	21	6	7	13	0	4	4	4	5	9	5	4	9	3	7	10	3	5	8	4	6	11
1045	1100	3	5	8	8	8	16	5	7	12	5	2	7	2	2	4	3	7	10	5	7	12	4	5	8	4	5	10
1100	1115	11	9	20	9	8	17	4	5	9	1	5	6	1	8	9	5	2	7	7	3	10	5	5	10	5	6	11
1115	1130	6	6	12	7	6	13	9	7	16	5	5	10	8	5	13	4	5	9	2	6	8	5	5	10	6	6	12

15 Minute Counts - BRINSWORTH AVE - BETWEEN WEEDONS ROSS RD AND ROTHERHAM DR

15 Minute Intervals		Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			7 Day Average		
		East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both
1130	1145	6	4	10	9	12	21	7	2	9	7	4	11	6	7	13	3	4	7	3	5	8	5	5	10	6	5	11
1145	1200	4	3	7	9	9	18	6	3	9	6	2	8	6	2	8	4	5	9	4	3	7	5	3	8	6	4	9
1200	1215	2	4	6	11	1	12	6	6	12	4	3	7	4	9	13	5	5	10	8	5	13	5	5	10	6	5	10
1215	1230	3	8	11	5	6	11	8	10	18	5	4	9	6	7	13	2	4	6	12	8	20	6	6	12	6	7	13
1230	1245	10	4	14	7	11	18	9	5	14	6	6	12	6	5	11	7	4	11	3	4	7	6	5	11	7	6	12
1245	1300	3	5	8	6	9	15	7	3	10	2	6	8	7	3	10	7	5	12	7	6	13	5	5	10	6	5	11
1300	1315	3	6	9	5	7	12	10	2	12	6	1	7	4	10	14	7	3	10	5	3	8	5	5	10	6	5	10
1315	1330	5	6	11	5	9	14	6	9	15	4	4	8	4	2	6	4	2	6	1	4	5	4	4	7	4	5	9
1330	1345	8	3	11	4	3	7	10	3	13	7	12	19	2	6	8	5	7	12	7	4	11	6	6	12	6	5	12
1345	1400	5	3	8	7	1	8	9	7	16	4	5	9	5	3	8	4	3	7	4	5	9	4	4	8	5	4	9
1400	1415	2	4	6	5	5	10	8	11	19	6	4	10	4	1	5	12	2	14	7	3	10	6	3	9	6	4	11
1415	1430	3	1	4	4	6	10	5	4	9	4	2	6	10	6	16	6	8	14	5	5	10	6	4	10	5	5	10
1430	1445	8	7	15	8	2	10	8	10	18	3	3	6	3	7	10	8	7	15	6	7	13	6	6	12	6	6	12
1445	1500	10	6	16	15	9	24	3	6	9	7	6	13	8	10	18	5	5	10	6	13	19	7	8	15	8	8	16
1500	1515	14	5	19	8	1	9	7	4	11	13	9	22	13	7	20	11	7	18	15	2	17	13	6	19	12	5	17
1515	1530	9	2	11	6	6	12	5	6	11	10	7	17	5	3	8	15	7	22	10	9	19	10	6	15	9	6	14
1530	1545	14	7	21	6	5	11	5	8	13	7	6	13	8	6	14	13	12	25	10	6	16	10	7	18	9	7	16
1545	1600	7	13	20	6	6	12	5	2	7	9	6	15	11	2	13	4	6	10	10	9	19	8	7	15	7	6	14
1600	1615	8	10	18	12	7	19	6	10	16	8	5	13	13	6	19	14	7	21	5	8	13	10	7	17	9	8	17
1615	1630	15	3	18	8	7	15	7	2	9	8	9	17	7	8	15	3	5	8	16	4	20	10	6	16	9	5	15
1630	1645	15	9	24	8	5	13	9	4	13	9	7	16	6	7	13	10	8	18	8	5	13	10	7	17	9	6	16
1645	1700	15	8	23	10	8	18	6	6	12	12	2	14	13	4	17	11	14	25	13	9	22	13	7	20	11	7	19
1700	1715	9	8	17	9	10	19	3	3	6	14	6	20	13	5	18	11	5	16	7	9	16	11	7	17	9	7	16
1715	1730	17	10	27	8	9	17	4	4	8	10	5	15	10	11	21	15	8	23	20	5	25	14	8	22	12	7	19
1730	1745	9	4	13	9	6	15	3	2	5	15	2	17	12	5	17	5	3	8	6	6	12	9	4	13	8	4	12
1745	1800	8	7	15	10	6	16	5	5	10	3	3	6	11	6	17	13	4	17	15	6	21	10	5	15	9	5	15
1800	1815	16	4	20	6	3	9	4	4	8	12	7	19	11	9	20	17	8	25	13	5	18	14	7	20	11	6	17
1815	1830	13	3	16	3	4	7	5	1	6	5	4	9	6	3	9	10	3	13	6	6	12	8	4	12	7	3	10
1830	1845	11	2	13	6	2	8	5	3	8	7	5	12	8	4	12	11	5	16	6	5	11	9	4	13	8	4	11
1845	1900	12	5	17	6	5	11	1	0	1	7	5	12	6	2	8	8	3	11	6	3	9	8	4	11	7	3	10
1900	1915	9	4	13	7	3	10	2	0	2	4	2	6	5	7	12	6	4	10	10	4	14	7	4	11	6	3	10
1915	1930	8	9	17	1	3	4	2	2	4	1	1	2	7	1	8	4	1	5	7	1	8	5	3	8	4	3	7
1930	1945	3	3	6	5	2	7	2	2	4	6	3	9	5	2	7	5	4	9	5	2	7	5	3	8	4	3	7
1945	2000	5	2	7	3	1	4	5	0	5	2	2	4	6	0	6	4	2	6	5	1	6	4	1	6	4	1	5
2000	2015	2	2	4	3	2	5	2	1	3	0	0	0	3	1	4	4	0	4	1	1	2	2	1	3	2	1	3
2015	2030	3	1	4	0	0	0	2	0	2	3	3	6	1	2	3	4	2	6	4	2	6	3	2	5	2	1	4
2030	2045	3	2	5	1	0	1	3	2	5	2	0	2	3	1	4	1	0	1	1	1	2	2	1	3	2	1	3
2045	2100	3	0	3	1	0	1	0	3	3	1	0	1	3	0	3	1	2	3	4	0	4	2	0	3	2	1	3
2100	2115	3	1	4	2	1	3	0	1	1	5	1	6	4	3	7	3	2	5	4	0	4	4	1	5	3	1	4
2115	2130	4	1	5	4	2	6	0	0	0	5	0	5	3	1	4	0	1	1	4	2	6	3	1	4	3	1	4
2130	2145	5	3	8	1	1	2	0	2	2	1	1	2	3	0	3	2	0	2	3	0	3	3	1	4	2	1	3
2145	2200	4	1	5	2	0	2	0	0	0	1	0	1	0	0	0	4	1	5	1	0	1	2	0	2	2	0	2
2200	2215	4	2	6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	1	1	2	1	0	1
2215	2230	0	0	0	0	0	0	0	0	0	3	0	3	1	0	1	1	0	1	0	0	0	1	0	1	1	0	1
2230	2245	2	0	2	4	1	5	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	1	0	1
2245	2300	1	0	1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1
2300	2315	1	2	3	1	0	1	1	0	1	0	0	0	0	0	0	1	0	1	0	1	1	0	1	1	1	0	1

15 Minute Counts - BRINSWORTH AVE - BETWEEN WEEDONS ROSS RD AND ROTHERHAM DR

15 Minute Intervals		Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			AVERAGES (Veh/15min) 7 Day Average		
		East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both	East	West	Both
2315	2330	0	2	2	1	1	2	0	1	1	0	0	0	0	0	0	1	5	6	0	0	0	0	1	2	0	1	2
2330	2345	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
2345	2400	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

15 Minute Counts - ROSSINGTON DRIVE - BETWEEN BARNSLEY CRES AND HALKETT RD

15 Minute Intervals		Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			AVERAGES (Veh/15min) 7 Day Average		
From	To	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes
0000	0015	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0015	0030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0030	0045	0	0	0	0	1	1	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0045	0100	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0100	0115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0115	0130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0130	0145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0145	0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0200	0215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0215	0230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0230	0245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0245	0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0300	0315	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0315	0330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0330	0345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0345	0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0400	0415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0415	0430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0430	0445	0	0	0	1	0	1	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0445	0500	2	0	2	0	0	0	0	0	0	2	0	2	2	0	2	2	0	2	1	0	1	2	0	2	1	0	1
0500	0515	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
0515	0530	1	0	1	0	0	0	0	0	0	1	0	1	2	0	2	1	0	1	1	0	1	1	0	1	1	0	1
0530	0545	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
0545	0600	1	0	1	0	0	0	0	0	0	2	0	2	3	0	3	2	0	2	1	0	1	2	0	2	1	0	1
0600	0615	1	0	1	0	0	0	0	0	0	0	0	0	2	0	2	3	0	3	2	0	2	2	0	2	1	0	1
0615	0630	1	0	1	0	0	0	1	0	1	6	0	6	0	0	0	1	0	1	2	0	2	2	0	2	2	0	2
0630	0645	3	1	4	0	1	1	1	0	1	2	1	3	2	1	3	6	2	8	5	1	6	4	1	5	3	1	4
0645	0700	4	1	5	1	0	1	0	0	0	3	0	3	3	0	3	3	0	3	3	0	3	3	0	3	2	0	3
0700	0715	4	1	5	3	1	4	2	0	2	6	2	8	4	1	5	3	1	4	3	2	5	4	1	5	4	1	5
0715	0730	10	1	11	1	0	1	1	0	1	8	0	8	12	0	12	9	0	9	12	0	12	10	0	10	8	0	8
0730	0745	6	1	7	2	0	2	0	0	0	12	0	12	11	0	11	10	0	10	10	0	10	10	0	10	7	0	7
0745	0800	10	1	11	2	1	3	1	2	3	7	0	7	6	1	7	9	1	10	9	2	11	8	1	9	6	1	7
0800	0815	7	1	8	0	0	0	0	0	0	6	2	8	11	0	11	10	2	12	10	1	11	9	1	10	6	1	7
0815	0830	6	0	6	4	2	6	1	0	1	4	1	5	4	1	5	4	0	4	3	0	3	4	0	5	4	1	4
0830	0845	6	1	7	4	0	4	3	0	3	4	1	5	6	2	8	6	0	6	5	1	6	5	1	6	5	1	6
0845	0900	10	3	13	6	0	6	1	1	2	10	1	11	6	2	8	1	2	3	5	3	8	6	2	9	6	2	7
0900	0915	5	2	7	5	1	6	3	0	3	3	2	5	4	0	4	3	1	4	2	0	2	3	1	4	4	1	4
0915	0930	4	0	4	4	2	6	1	1	2	4	2	6	6	3	9	5	2	7	2	0	2	4	1	6	4	1	5
0930	0945	4	4	8	6	1	7	2	0	2	3	1	4	4	1	5	5	4	9	3	2	5	4	2	6	4	2	6
0945	1000	5	2	7	6	1	7	5	0	5	6	2	8	7	0	7	2	2	4	3	0	3	5	1	6	5	1	6
1000	1015	3	2	5	5	1	6	1	2	3	2	1	3	3	3	6	0	1	1	1	0	1	2	1	3	2	1	4
1015	1030	1	1	2	2	2	4	5	2	7	2	0	2	2	0	2	2	0	2	2	1	3	2	0	2	2	1	3
1030	1045	3	1	4	2	3	5	2	2	4	3	1	4	4	1	5	2	0	2	1	2	3	3	1	4	2	1	4
1045	1100	4	4	8	0	0	0	4	2	6	3	3	6	4	2	6	2	1	3	1	1	2	3	2	5	3	2	4
1100	1115	4	4	8	4	3	7	4	3	7	4	2	6	3	1	4	0	2	2	1	2	3	2	2	5	3	2	5

15 Minute Counts - ROSSINGTON DRIVE - BETWEEN BARNSLEY CRES AND HALKETT RD

15 Minute Intervals	Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			7 Day Average		
	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both
1115 1130	4	4	8	1	3	4	1	0	1	1	2	3	3	1	4	2	0	2	3	2	5	3	2	4	2	2	4
1130 1145	5	4	9	6	4	10	4	2	6	2	2	4	2	5	7	0	1	1	1	3	4	2	3	5	3	3	6
1145 1200	0	2	2	3	2	5	2	2	4	0	3	3	5	2	7	3	1	4	1	1	2	2	2	4	2	2	4
1200 1215	2	0	2	2	5	7	6	7	13	2	0	2	1	4	5	2	3	5	2	4	6	2	2	4	2	3	6
1215 1230	1	1	2	4	1	5	1	2	3	0	4	4	2	4	6	1	1	2	1	4	5	1	3	4	1	2	4
1230 1245	3	2	5	2	2	4	4	1	5	1	2	3	2	1	3	2	3	5	1	1	2	2	2	4	2	2	4
1245 1300	6	0	6	4	1	5	2	3	5	3	0	3	2	5	7	2	1	3	1	2	3	3	2	4	3	2	5
1300 1315	2	0	2	3	5	8	0	2	2	2	2	4	0	4	4	2	1	3	3	5	8	2	2	4	2	3	4
1315 1330	2	5	7	1	3	4	4	2	6	0	2	2	0	2	2	4	1	5	4	2	6	2	2	4	2	2	5
1330 1345	3	5	8	5	7	12	4	3	7	3	1	4	4	0	4	3	3	6	3	4	7	3	3	6	4	3	7
1345 1400	3	3	6	5	6	11	3	3	6	3	1	4	1	4	5	3	3	6	4	4	8	3	3	6	3	3	7
1400 1415	1	3	4	3	4	7	1	2	3	2	4	6	3	2	5	2	4	6	9	5	14	3	4	7	3	3	6
1415 1430	2	2	4	4	5	9	2	5	7	4	4	8	2	4	6	0	7	7	2	3	5	2	4	6	2	4	7
1430 1445	4	6	10	2	3	5	1	1	2	2	6	8	4	3	7	3	3	6	3	6	9	3	5	8	3	4	7
1445 1500	3	7	10	6	4	10	1	2	3	5	5	10	3	4	7	4	1	5	2	1	3	3	4	7	3	3	7
1500 1515	2	3	5	1	1	2	7	3	10	2	4	6	3	5	8	3	5	8	3	3	6	3	4	7	3	3	6
1515 1530	1	6	7	2	5	7	2	2	4	3	3	6	5	2	7	2	3	5	1	3	4	2	3	6	2	3	6
1530 1545	1	3	4	0	6	6	1	4	5	2	7	9	4	4	8	3	1	4	4	1	5	3	3	6	2	4	6
1545 1600	4	2	6	5	6	11	3	2	5	3	8	11	0	13	13	4	7	11	7	5	12	4	7	11	4	6	10
1600 1615	1	6	7	4	4	8	1	2	3	3	4	7	5	7	12	6	4	10	2	3	5	3	5	8	3	4	7
1615 1630	0	6	6	1	5	6	0	3	3	2	4	6	0	11	11	1	4	5	5	4	9	2	6	7	1	5	7
1630 1645	3	4	7	3	3	6	4	2	6	2	6	8	4	6	10	5	4	9	2	7	9	3	5	9	3	5	8
1645 1700	3	8	11	5	3	8	2	2	4	1	10	11	1	4	5	3	7	10	4	2	6	2	6	9	3	5	8
1700 1715	3	5	8	4	6	10	1	5	6	1	5	6	4	4	8	1	4	5	2	10	12	2	6	8	2	6	8
1715 1730	2	3	5	2	2	4	2	5	7	1	4	5	1	4	5	2	4	6	1	8	9	1	5	6	2	4	6
1730 1745	1	3	4	2	5	7	2	0	2	2	7	9	2	8	10	1	10	11	4	10	14	2	8	10	2	6	8
1745 1800	1	4	5	2	6	8	1	2	3	0	9	9	1	10	11	1	5	6	4	10	14	1	8	9	1	7	8
1800 1815	3	5	8	3	2	5	0	2	2	3	3	6	2	4	6	2	6	8	2	3	5	2	4	7	2	4	6
1815 1830	3	15	18	1	3	4	1	2	3	1	3	4	0	2	2	0	2	2	0	6	6	1	6	6	1	5	6
1830 1845	1	3	4	4	2	6	0	1	1	0	6	6	3	5	8	1	9	10	0	4	4	1	5	6	1	4	6
1845 1900	2	1	3	0	4	4	0	0	0	0	2	2	1	2	3	0	4	4	0	0	0	1	2	2	0	2	2
1900 1915	0	1	1	1	1	2	0	2	2	1	3	4	1	2	3	2	4	6	1	2	3	1	2	3	1	2	3
1915 1930	3	3	6	1	6	7	1	0	1	0	1	1	0	0	0	2	3	5	2	1	3	1	2	3	1	2	3
1930 1945	0	1	1	0	1	1	0	2	2	0	1	1	0	2	2	1	2	3	1	4	5	0	2	2	0	2	2
1945 2000	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2	0	1	1	0	1	1	0	1	1	0	1	1
2000 2015	0	2	2	0	1	1	0	0	0	0	0	0	0	1	1	1	0	1	0	2	2	0	1	1	0	1	1
2015 2030	0	3	3	1	0	1	0	0	0	0	1	1	0	2	2	0	1	1	1	0	1	0	1	2	0	1	1
2030 2045	0	0	0	0	0	0	2	0	2	0	2	2	0	1	1	0	0	0	0	1	1	0	1	1	0	1	1
2045 2100	1	2	3	0	2	2	0	1	1	1	0	1	1	1	2	1	0	1	0	1	1	1	1	2	1	1	2
2100 2115	3	1	4	0	1	1	0	0	0	0	3	3	0	2	2	0	0	0	1	2	3	1	2	2	1	1	2
2115 2130	1	0	1	1	0	1	1	1	2	0	2	2	0	1	1	0	0	0	0	1	1	0	1	1	0	1	1
2130 2145	0	1	1	0	1	1	0	0	0	0	0	0	1	1	2	0	1	1	0	1	1	0	1	1	0	1	1
2145 2200	2	0	2	1	0	1	0	0	0	0	0	0	0	1	1	1	2	3	0	1	1	1	1	1	1	1	1
2200 2215	1	2	3	1	1	2	0	0	0	0	0	0	1	1	2	0	0	0	0	1	1	0	1	1	0	1	1
2215 2230	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
2230 2245	1	1	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	1

15 Minute Counts - ROSSINGTON DRIVE - BETWEEN BARNSLEY CRES AND HALKETT RD

15 Minute Intervals	Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			AVERAGES (Veh/15min) 7 Day Average		
	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both
2245 2300	0	0	0	0	1	1	0	2	2	0	1	1	0	0	0	1	1	2	0	1	1	0	1	1	0	1	1
2300 2315	0	1	1	0	2	2	1	0	1	0	0	0	0	1	1	0	0	0	0	1	1	0	1	1	0	1	1
2315 2330	0	0	0	1	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2330 2345	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
2345 2400	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

15 Minute Counts - ROTHERHAM DRIVE - BETWEEN HALKETT RD TO START OF ROTHERHAM SQUARE

15 Minute Intervals		Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			AVERAGES (Veh/15min) 7 Day Average		
From	To	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes
0000	0015	0	0	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0015	0030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0030	0045	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0045	0100	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0100	0115	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
0115	0130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0130	0145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0145	0200	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0200	0215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0215	0230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0230	0245	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0245	0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0300	0315	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0315	0330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0330	0345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0345	0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0400	0415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0415	0430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0430	0445	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0445	0500	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0500	0515	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0515	0530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0530	0545	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
0545	0600	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	2	2	4	1	0	1	1	0	1
0600	0615	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0
0615	0630	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0630	0645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0645	0700	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	0	0	1
0700	0715	0	0	0	0	0	0	0	0	0	1	1	2	2	0	2	1	1	2	1	0	1	1	0	1	1	0	1
0715	0730	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
0730	0745	4	0	4	1	0	1	0	0	0	2	0	2	3	1	4	2	0	2	0	0	0	2	0	2	2	0	2
0745	0800	1	0	1	0	0	0	1	0	1	7	2	9	5	2	7	3	0	3	4	0	4	4	1	5	3	1	4
0800	0815	1	2	3	1	0	1	0	0	0	6	2	8	4	3	7	4	1	5	3	4	7	4	2	6	3	2	4
0815	0830	1	0	1	1	1	2	0	0	0	1	1	2	2	0	2	2	1	3	0	1	1	1	1	2	1	1	2
0830	0845	1	0	1	0	0	0	0	0	0	1	2	3	3	2	5	3	0	3	5	2	7	3	1	4	2	1	3
0845	0900	0	0	0	0	0	0	0	0	0	3	0	3	3	1	4	1	1	2	3	1	4	2	1	3	1	0	2
0900	0915	2	0	2	2	0	2	0	2	2	0	1	1	0	2	2	2	1	3	3	0	3	1	1	2	1	1	2
0915	0930	1	2	3	0	0	0	3	1	4	0	0	0	2	1	3	4	1	5	0	0	0	1	1	2	1	1	2
0930	0945	2	0	2	3	0	3	2	0	2	0	0	0	3	2	5	0	0	0	2	0	2	1	0	2	2	0	2
0945	1000	0	1	1	1	0	1	0	0	0	1	0	1	4	1	5	2	0	2	2	2	4	2	1	3	1	1	2
1000	1015	1	2	3	2	1	3	2	1	3	3	0	3	0	2	2	1	0	1	0	1	1	1	1	2	1	1	2
1015	1030	1	0	1	2	2	4	1	1	2	0	0	0	1	1	2	0	1	1	1	3	4	1	1	2	1	1	2
1030	1045	1	0	1	4	1	5	3	2	5	0	0	0	3	1	4	4	3	7	1	0	1	2	1	3	2	1	3
1045	1100	0	0	0	2	0	2	1	1	2	0	1	1	2	1	3	1	0	1	0	1	1	1	1	1	1	1	1
1100	1115	2	0	2	0	0	0	1	1	2	0	2	2	0	0	0	1	0	1	2	3	5	1	1	2	1	1	2

15 Minute Counts - ROTHERHAM DRIVE - BETWEEN HALKETT RD TO START OF ROTHERHAM SQUARE

15 Minute Intervals	Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			7 Day Average		
	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both
1115 1130	2	0	2	3	2	5	1	1	2	2	1	3	0	0	0	0	1	1	2	1	3	1	1	2	1	1	2
1130 1145	1	0	1	1	1	2	1	1	2	2	1	3	1	0	1	0	2	2	0	1	1	1	1	2	1	1	2
1145 1200	1	0	1	2	1	3	2	0	2	1	0	1	1	0	1	1	4	5	0	0	0	1	1	2	1	1	2
1200 1215	0	0	0	0	1	1	1	3	4	1	0	1	1	1	2	4	0	4	4	2	6	2	1	3	2	1	3
1215 1230	0	2	2	1	0	1	1	3	4	1	3	4	2	0	2	0	3	3	1	0	1	1	2	2	1	2	2
1230 1245	2	1	3	0	0	0	0	1	1	2	1	3	0	2	2	0	1	1	0	3	3	1	2	2	1	1	2
1245 1300	1	1	2	1	2	3	2	1	3	0	0	0	1	2	3	4	2	6	4	0	4	2	1	3	2	1	3
1300 1315	1	2	3	1	2	3	1	0	1	0	2	2	1	1	2	0	0	0	2	1	3	1	1	2	1	1	2
1315 1330	1	0	1	1	1	2	0	2	2	0	0	0	1	1	2	1	3	4	0	0	0	1	1	1	1	1	2
1330 1345	1	0	1	2	0	2	0	1	1	0	1	1	0	3	3	0	0	0	2	2	4	1	1	2	1	1	2
1345 1400	1	0	1	2	4	6	1	1	2	1	2	3	3	0	3	2	0	2	0	4	4	1	1	3	1	2	3
1400 1415	0	2	2	1	1	2	1	1	2	1	2	3	4	0	4	0	0	0	2	3	5	1	1	3	1	1	3
1415 1430	1	1	2	2	1	3	1	1	2	0	0	0	1	1	2	0	0	0	0	1	1	0	1	1	1	1	1
1430 1445	3	0	3	0	2	2	4	1	5	2	0	2	1	1	2	4	0	4	1	2	3	2	1	3	2	1	3
1445 1500	2	1	3	2	1	3	2	1	3	2	0	2	2	1	3	2	3	5	3	2	5	2	1	4	2	1	3
1500 1515	0	1	1	0	0	0	2	1	3	1	1	2	0	2	2	0	2	2	0	1	1	0	1	2	0	1	2
1515 1530	0	3	3	2	1	3	1	1	2	3	3	6	0	1	1	1	7	8	1	5	6	1	4	5	1	3	4
1530 1545	0	0	0	5	3	8	1	1	2	2	1	3	1	0	1	2	2	4	0	0	0	1	1	2	2	1	3
1545 1600	0	4	4	1	2	3	1	3	4	2	2	4	0	5	5	1	2	3	1	3	4	1	3	4	1	3	4
1600 1615	1	1	2	2	1	3	2	2	4	3	1	4	0	2	2	2	1	3	0	1	1	1	1	2	1	1	3
1615 1630	1	2	3	1	0	1	0	1	1	1	3	4	0	1	1	0	2	2	1	1	2	1	2	2	1	1	2
1630 1645	0	2	2	0	3	3	0	0	0	3	2	5	0	2	2	2	2	4	2	0	2	1	2	3	1	2	3
1645 1700	0	1	1	0	1	1	1	3	4	0	1	1	0	0	0	1	2	3	2	4	6	1	2	2	1	2	2
1700 1715	3	0	3	0	3	3	0	1	1	3	1	4	1	4	5	1	3	4	2	2	4	2	2	4	1	2	3
1715 1730	1	2	3	1	1	2	0	0	0	2	4	6	3	2	5	4	1	5	0	4	4	2	3	5	2	2	4
1730 1745	1	3	4	3	1	4	0	1	1	0	4	4	1	4	5	1	1	2	0	3	3	1	3	4	1	2	3
1745 1800	1	2	3	0	1	1	0	1	1	1	1	2	0	0	0	2	1	3	1	2	3	1	1	2	1	1	2
1800 1815	0	2	2	1	0	1	0	1	1	1	3	4	1	1	2	0	1	1	2	2	4	1	2	3	1	1	2
1815 1830	3	3	6	0	0	0	0	0	0	0	3	3	2	2	4	1	1	2	0	1	1	1	2	3	1	1	2
1830 1845	0	0	0	0	2	2	0	0	0	0	2	2	1	1	2	2	3	5	1	0	1	1	1	2	1	1	2
1845 1900	0	1	1	1	0	1	0	0	0	1	1	2	0	0	0	0	2	2	1	1	2	0	1	1	0	1	1
1900 1915	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2	2	2	4	0	1	1	0	1	2	0	1	1
1915 1930	1	1	2	0	1	1	0	0	0	0	0	0	1	1	2	0	2	2	0	1	1	0	1	1	0	1	1
1930 1945	0	1	1	1	2	3	0	1	1	0	0	0	0	1	1	0	1	1	0	0	0	0	1	1	0	1	1
1945 2000	1	1	2	0	0	0	0	0	0	1	0	1	0	1	1	0	2	2	0	3	3	0	1	2	0	1	1
2000 2015	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2015 2030	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	2	3	0	1	1	0	0	1
2030 2045	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	2	0	1	1	0	1	1	0	1	1
2045 2100	0	0	0	0	0	0	1	0	1	0	0	0	0	1	1	1	1	2	0	2	2	0	1	1	0	1	1
2100 2115	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2115 2130	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2130 2145	0	1	1	1	1	2	0	0	0	0	0	0	1	1	2	0	0	0	3	0	3	1	0	1	1	0	1
2145 2200	0	0	0	1	0	1	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2200 2215	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2215 2230	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
2230 2245	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2	0	0	0	0	1	1	0	0	0

15 Minute Counts - ROTHERHAM DRIVE - BETWEEN HALKETT RD TO START OF ROTHERHAM SQUARE

15 Minute Intervals	Fri 10-Jun-22			Sat 11-Jun-22			Sun 12-Jun-22			Mon 13-Jun-22			Tue 14-Jun-22			Wed 15-Jun-22			Thu 16-Jun-22			AVERAGES (Veh/15min) 5 Day Average			AVERAGES (Veh/15min) 7 Day Average		
	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both	North	South	Both
2245 2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
2300 2315	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2315 2330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2330 2345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
2345 2400	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

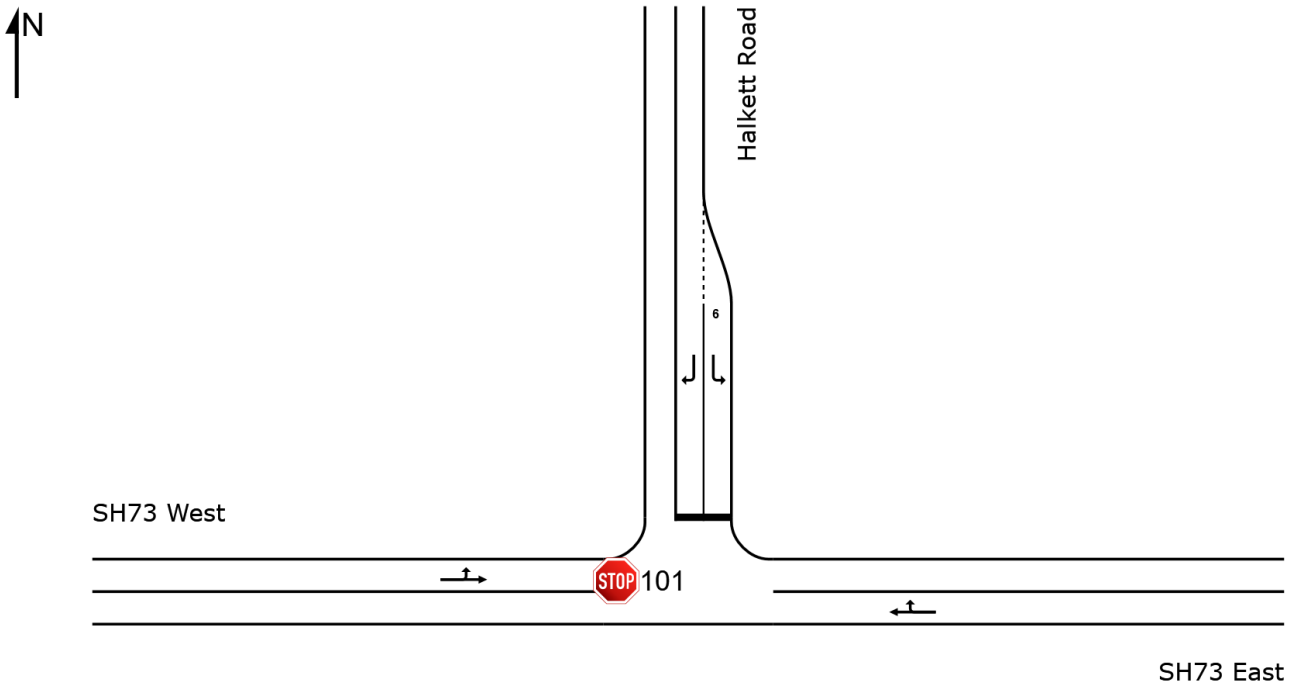
Appendix 2 – SIDRA Modelling

SITE LAYOUT

Site: 101 [SH73 & Halkett - Total 2033 AM - Exist (Site Folder: General)]

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

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



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Project: S:\Novo Projects\020-100 Favourites\033 Davie Lovell-Smith\033020 Hughes Developments West Melton\Analysis & Design\SIDRA \Existing layout - 2027\033020_2023.01.26_Halkett & SH_Opening 2033_V01.sip9

MOVEMENT SUMMARY

Site: 101 [SH73 & Halkett - Total 2033 AM - Exist (Site Folder: General)]

New Site
Site Category: (None)
Stop (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
East: SH73 East														
5	T1	249	6.0	262	6.0	0.208	1.9	LOS A	0.9	6.3	0.32	0.12	0.33	91.0
6	R2	44	0.0	46	0.0	0.208	13.2	LOS B	0.9	6.3	0.32	0.12	0.33	75.7
Approach		293	5.1	308	5.1	0.208	3.6	NA	0.9	6.3	0.32	0.12	0.33	88.4
North: Halkett Road														
7	L2	176	2.2	185	2.2	0.396	18.0	LOS C	1.8	12.6	0.77	1.06	1.03	57.5
9	R2	1	0.0	1	0.0	0.004	20.4	LOS C	0.0	0.1	0.79	0.91	0.79	55.6
Approach		177	2.2	186	2.2	0.396	18.0	LOS C	1.8	12.6	0.77	1.06	1.03	57.5
West: SH73 West														
10	L2	1	0.0	1	0.0	0.422	7.9	LOS A	0.0	0.0	0.00	0.00	0.00	88.0
11	T1	769	3.9	809	3.9	0.422	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
Approach		770	3.9	811	3.9	0.422	0.1	NA	0.0	0.0	0.00	0.00	0.00	99.7
All Vehicles		1240	3.9	1305	3.9	0.422	3.5	NA	1.8	12.6	0.19	0.18	0.22	88.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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 [SH73 & Halkett - Total 2033 PM - Exist (Site Folder: General)]

New Site
Site Category: (None)
Stop (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
East: SH73 East														
5	T1	668	6.0	703	6.0	0.510	1.2	LOS A	3.1	22.4	0.31	0.15	0.41	91.8
6	R2	164	0.0	173	0.0	0.510	10.6	LOS B	3.1	22.4	0.31	0.15	0.41	76.3
Approach		832	4.8	876	4.8	0.510	3.0	NA	3.1	22.4	0.31	0.15	0.41	88.4
North: Halkett Road														
7	L2	57	2.2	60	2.2	0.063	10.7	LOS B	0.2	1.7	0.44	0.89	0.44	64.5
9	R2	1	0.0	1	0.0	0.006	24.9	LOS C	0.0	0.1	0.84	0.95	0.84	52.0
Approach		58	2.2	61	2.2	0.063	11.0	LOS B	0.2	1.7	0.44	0.89	0.44	64.2
West: SH73 West														
10	L2	1	0.0	1	0.0	0.194	7.9	LOS A	0.0	0.0	0.00	0.00	0.00	88.0
11	T1	353	3.9	372	3.9	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
Approach		354	3.9	373	3.9	0.194	0.0	NA	0.0	0.0	0.00	0.00	0.00	99.8
All Vehicles		1244	4.4	1309	4.4	0.510	2.5	NA	3.1	22.4	0.23	0.14	0.30	89.9

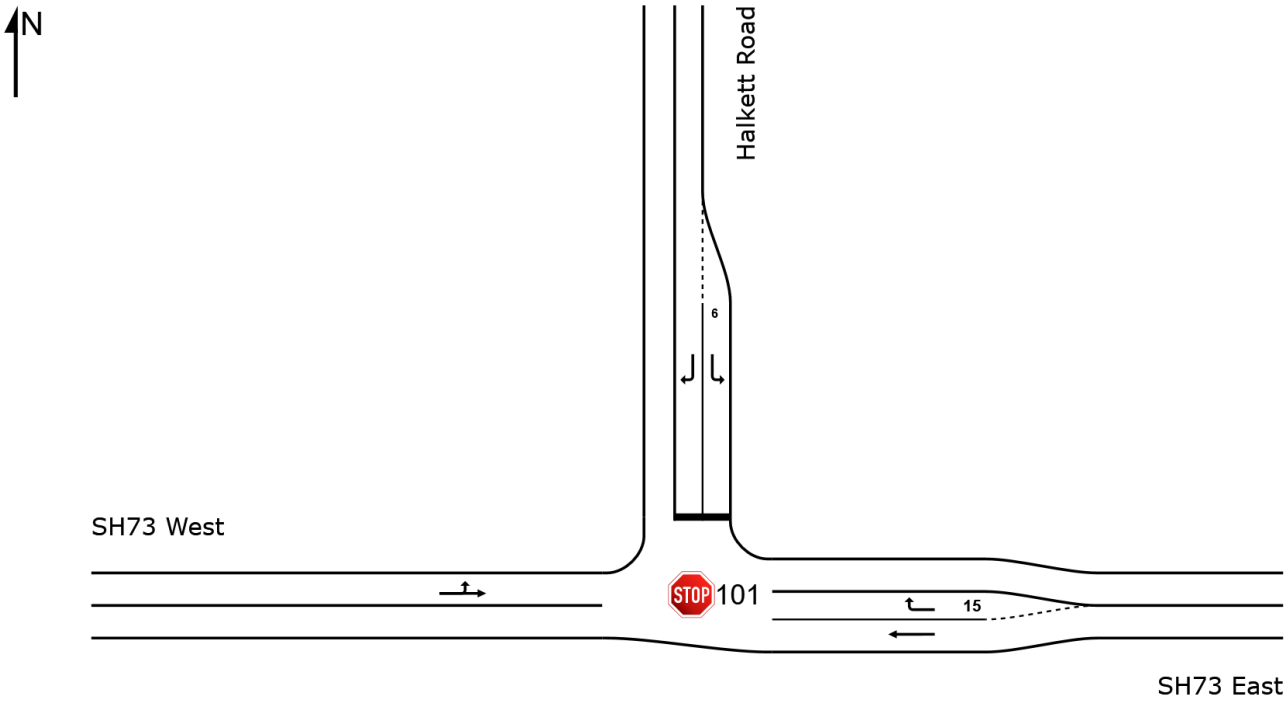
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and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

Site: 101 [SH73 & Halkett - Total 2033 AM - Upgrade (Site Folder: General)]

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

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



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Project: S:\Novo Projects\020-100 Favourites\033 Davie Lovell-Smith\033020 Hughes Developments West Melton\Analysis & Design\SIDRA \Existing layout - 2027\033020_2023.01.26_Halkett & SH_Opening 2033_V01.sip9

MOVEMENT SUMMARY

Site: 101 [SH73 & Halkett - Total 2033 AM - Upgrade (Site Folder: General)]

New Site
Site Category: (None)
Stop (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
East: SH73 East														
5	T1	249	6.0	262	6.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
6	R2	44	0.0	46	0.0	0.069	12.2	LOS B	0.3	1.8	0.65	0.86	0.65	63.8
Approach		293	5.1	308	5.1	0.139	1.8	NA	0.3	1.8	0.10	0.13	0.10	92.4
North: Halkett Road														
7	L2	176	2.2	185	2.2	0.396	18.0	LOS C	1.8	12.6	0.77	1.06	1.03	57.5
9	R2	1	0.0	1	0.0	0.006	28.3	LOS D	0.0	0.1	0.85	0.93	0.85	49.5
Approach		177	2.2	186	2.2	0.396	18.1	LOS C	1.8	12.6	0.77	1.06	1.03	57.4
West: SH73 West														
10	L2	1	0.0	1	0.0	0.422	7.9	LOS A	0.0	0.0	0.00	0.00	0.00	88.0
11	T1	769	3.9	809	3.9	0.422	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
Approach		770	3.9	811	3.9	0.422	0.1	NA	0.0	0.0	0.00	0.00	0.00	99.7
All Vehicles		1240	3.9	1305	3.9	0.422	3.1	NA	1.8	12.6	0.13	0.18	0.17	89.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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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 [SH73 & Halkett - Total 2033 PM - Upgrade (Site Folder: General)]

New Site
Site Category: (None)
Stop (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
East: SH73 East														
5	T1	668	6.0	703	6.0	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
6	R2	164	0.0	173	0.0	0.138	9.1	LOS A	0.6	4.4	0.46	0.70	0.46	67.2
Approach		832	4.8	876	4.8	0.373	1.8	NA	0.6	4.4	0.09	0.14	0.09	91.4
North: Halkett Road														
7	L2	57	2.2	60	2.2	0.063	10.7	LOS B	0.2	1.7	0.44	0.89	0.44	64.5
9	R2	1	0.0	1	0.0	0.008	32.4	LOS D	0.0	0.2	0.87	0.96	0.87	46.7
Approach		58	2.2	61	2.2	0.063	11.1	LOS B	0.2	1.7	0.44	0.89	0.44	64.1
West: SH73 West														
10	L2	1	0.0	1	0.0	0.194	7.9	LOS A	0.0	0.0	0.00	0.00	0.00	88.0
11	T1	353	3.9	372	3.9	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
Approach		354	3.9	373	3.9	0.194	0.0	NA	0.0	0.0	0.00	0.00	0.00	99.8
All Vehicles		1244	4.4	1309	4.4	0.373	1.8	NA	0.6	4.4	0.08	0.13	0.08	91.9

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

Attachment C

BEFORE THE INDEPENDENT HEARINGS PANEL
AT SELWYN DISTRICT COUNCIL

UNDER	the Resource Management Act 1991
IN THE MATTER	Submissions and further submissions on the proposed Selwyn District Plan
AND	**Hughes Development Limited** (DPR-0411)

JOINT WITNESS STATEMENT

Traffic

Hearing 30.6: Rezone – West Melton

28 February 2023

Background

1. This Joint Witness Statement (**JWS**) relates to the submission by Hughes Developments Limited (**HDL**) on the Proposed Selwyn District Plan (**PDP**) (DPR-0411) seeking that land located at 163 Halkett Road and 1066 West Coast Road, West Melton (the **Site**) be rezoned from General Rural (as notified) to General Residential.

2. At the request of HDL, the Panel issued directions for expert witness conferencing between the planning, urban design, economics and traffic experts for Selwyn District Council (**SDC**) and HDL.

3. This JWS relates to traffic matters.

4. Joint witness conferencing between HDL and SDC's traffic experts (Mr de Verteuil and Mr Collins) took place over 28 February, 2023.

5. This joint statement has been prepared in accordance with sections 9.4 and 9.5 of the Environment Court Practice Note 2023, which relates specifically to expert conferencing. The attendees confirm they have read, and agree to abide with, the updated Code of Conduct for Expert Witnesses included in Section 9 of the Environment Court Practice Note 2023.

Areas of Agreement

6. The following sets out the key areas of agreement between Mr de Verteuil and Mr Collins.

7. The intersection of SH73/Halkett Road will operate with an acceptable Level of Service (LoS) both with and without the right turn lane facility on SH73. The transport efficiency effects of the Plan Change on the SH73/Halkett Road intersection are acceptable.

8. The potential safety effects at the intersection of SH73/Halkett Road can be assessed during future subdivision stages. A planning mechanism (such as the ODP narrative) should be included that requires the Applicant to undertake a road safety audit in consultation with Waka Kotahi and Selwyn Council, and implement

any recommendations of the audit, prior to the issue of any 224 certificate for the site.

9. As part of development of the Site, a shared path is to be constructed along Halkett Road from Wylies Road (east of the Site) to the west, to the intersection with Rossington Drive with a connection to be made to the existing footpath within Rossington Drive.

10. Mr de Verteuil and Mr Collins agree with the amendments to the transport network (within the site), as shown in the updated Outline Development Plan (ODP), provided in Appendix A of Mr Brown's (Planning) evidence dated 14 February 2023, namely:
    a. Two roading connections are provided to the eastern Site boundary.
    b. A walking and cycling link through the central reserve and that this is extended to the eastern boundary to accommodate future extensions.
    c. One road link to Rossington Drive (to the west) alongside a shared pedestrian/cycle link, through Lot 2 DP 557426 of the Halkett Grove subdivision.

11. The ODP narrative identifies the road connection and shared pedestrian/cycle link to the west as proposed within the parcel - Lot 2 DP 557426 of the Halkett Grove subdivision.

12. Traffic calming along the north-south primary road can be addressed through the future subdivision and engineering plan review processes.

13. Liaison between the Developer and Council is required regarding relocation of the existing speed limit transition on Halkett Road. This should take place at the time of Subdivision consent. However, relocation of the speed limit is a Council function and not something the Applicant can implement.

14. Mr de Verteuil and Mr Collins agree that a footpath along SH73 is not essential.

Areas of Disagreement

15. There are no points of disagreement between Mr de Verteuil and Mr Collins.

16. Mr Collins recommends that the Commissioner consider whether the ODP narrative provides sufficient confidence that the road link

discussed in Paragraph 10.c and Paragraph 11 is delivered, and that Lot 2 DP 557426 would not be onsold.

DATED this 28th day of February 2023

Simon de Verteuil
Transport expert engaged by HDL

Mat Collins
Transport expert engaged by Selwyn District Council