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Planning. Traffic. Development.

Integrated Transport Assessment

prepared for

CARTER GROUP LIMITED

104 Ryans Road, Christchurch

06 March 2025

Integrated Transport Assessment

prepared for:

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Introduction

1. Carter Group Limited (CGL) has commissioned Novo Group to prepare an Integrated Transport Assessment (ITA) for the subdivision of 55.5ha of *Rural Urban Fringe* land and land use consent for industrial purposes. **Appendix 1** sets out the skills and experience of the authors of this report.

2. This report provides an assessment of the transport aspects of the proposed development. It also describes the transport environment in the vicinity of the Site, the transport related components of the proposal and identifies compliance issues with the transport provisions in the District Plan. It has been prepared broadly in accordance with the Integrated Transportation Assessment Guidelines specified in New Zealand Transport Agency Research Report 422, November 2010.

3. It is proposed to subdivide the Application Site and use it for industrial purposes (as defined in the planning AEE and in paragraph 31). The subdivision consists of 126 proposed Lots ranging in size from 1000m^2 to 4.76ha.

4. The Site location is illustrated in **Figure 1** (highlighted in red) and the proposed Subdivision layout in **Figure 2** (also **Appendix 2**).

Figure 1: Site Location
[Background aerial image sourced from canterburymaps.govt.nz]

Figure 2: Proposed Subdivision Layout
[Image from Capture Subdivision Plans]

5. The proposed development is predicted to generate 774 vehicle movements per hour in the AM peak, 705 vehicles per hour in the PM peak and 8,804 vehicles per day.

6. The remainder of this report is structured as follows:

- **Existing Transport Network:** This sets out the context of the current transport network surrounding the Application Site and on the key corridors to get to / from the Strategic Transport Network;
- **Future Transport Network:** This section discusses the known / planned transport improvements in the vicinity of the Site;
- **Proposed Development:** Sets out the transport aspects of the proposed subdivision and industrial activities;
- **Assessment of Transport Effects:** Discusses the transport effects of the proposed activity; and
- **Summary & Conclusions:** Draws together the key findings of this assessment.

Existing Transport Environment

Existing Road Network

7. The following discusses the existing transport network in the vicinity of the Site. This considers the key transport corridors to get to / from the Strategic Transport networks and the review area is illustrated in **Figure 3**.

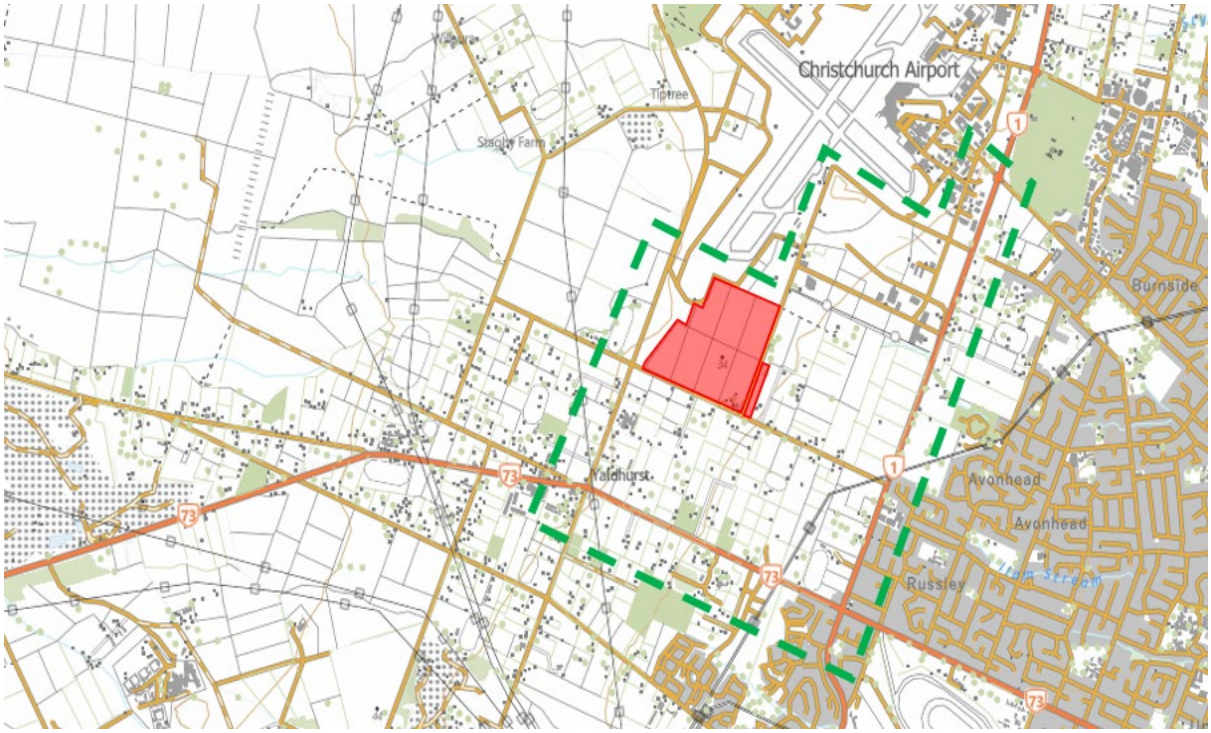


Figure 3: Study Area
[Application site in red, review area in dashed green lines]

Road Corridors

8. The key characteristics of Ryans Road, Grays Road, and Pound Road are summarised in **Table 1** below.

Table 1: Ryans Road, Grays Road, and Pound Road Characteristics

Key Feature	Ryans Road	Grays Road	Pound Road
Road Classification	Local Road	Local Road	Minor Arterial Road
Cross-Section Description	***Site Frontage*** Two traffic lanes in an approximately 8.75mcarriageway (5.0m eastbound lane and 3.75m westbound lane). An 84.0m long section of shoulder widening (approx. 1.5m wide). ***SH1 to Site*** Two traffic lanes in a 6.2m carriageway.	***Ryans Road to George Bellew Road*** Two traffic lanes in a 9m to 10m carriageway. Localised seal widening and demarcated shoulders at the speed limit threshold.	***South of Ryans Road*** Two traffic lanes in a 7.0m carriageway, with varying shoulder widths. ***North of Ryans Road*** Two traffic lanes in a 7.0m carriageway, with varying shoulder widths.
Traffic Volumes	***East of Pound Road*** Peak volumes of 740 to 751 vehicles per hour. Daily volumes of 2,925 vehicles[1].	***Ryans Road to George Bellew Road*** Peak volumes of 296 to 371 vehicles per hour. Daily volumes of 3,672 vehicles[2].	***South of Ryans Road*** Peak volumes of 1,029 to 1,164 vehicles per hour. Daily volumes of 11,189 vehicles[3]. ***North of Ryans Road*** Peak volumes of 495 to 621 vehicles per hour. Daily volumes of 5,779 vehicles[4].
Speed	Posted speed limit of 80km/h between SH1 and Pound Road. This decreases to 60km/h west of Pound Road. Mean operating speed of 71km/h.	Posted speed limit of 80km/h. Reduces to 50km/h approximately 280m south of George Bellew Road. Mean operating speeds between 78km/h and 86km/h.	Posted speed limit of 60km/h between SH73 and approx. 300m north of Ryans Road. This increases to 80km/h approx. 300m north of Ryans Road. Mean operating speed of 72km/h (south of Ryans Road) and 73km/h (north of Ryans Road).
Cycling Infrastructure	No facilities along Ryans Road.	No facilities along Grays Road.	No facilities along Pound Road.
Pedestrian Infrastructure	No facilities along Ryans Road.	No facilities along Grays Road.	No facilities along Pound Road.
Public Transport	None.	None.	None.
Environment	Rural.	Rural.	Rural.

9. The key characteristics of George Bellew Road, Syd Bradley Road, and Ron Guthrey Road are summarised in **Table 2** below.

[1]Novo peak period traffic count in 2023 and daily traffic estimate from Mobileroad.org.
[2]Christchurch City Council traffic count in 2017.
[3]Christchurch City Council traffic count in 2019.
[4]Christchurch City Council traffic count in 2022.

Table 2: George Bellew Road, Syd Bradley Road, and Ron Guthrey Road Characteristics

Key Feature	George Bellew Road	Syd Bradley Road	Ron Guthrey Road
Road Classification	Local Road	Local Road between Ron Guthrey Road and the SH1 on-ramp (Private Road elsewhere).	Local Road between George Bellew Road and Syd Bradley Road (Private Road elsewhere).
Cross-Section Description	Approximately 15.0m wide carriageway, with this narrowing near the SH1 on and off-ramp. On-street parking is not permitted, with no-stopping restrictions on both sides of the road.	Approximately 7.0m wide carriageway, with 1.5m wide shoulders. The carriageway widens to approximately 7.5m for the SH1 on and off-ramp (includes painted flush median). On-street parking is not permitted, with no-stopping restrictions on both sides of the road.	Approximately 11.5m wide carriageway. On-street parking is not permitted, with no-stopping restrictions on both sides of the road.
Traffic Volumes	***West of Ron Guthrey Road*** Peak volumes of 315 to 434 vehicles per hour. Daily volumes of 4,187 vehicles[5]. ***East of Ron Guthrey Road*** Peak volumes of 333 to 470 vehicles per hour. Daily volumes of 4,702 vehicles[6].	***East of Ron Guthrey Road*** Peak volumes of 167 to 274 vehicles per hour. Daily volumes of 2,828 vehicles[7].	None available.
Speed	Posted speed limit of 50km/h. Mean operating speeds between 60km/h and 61km/h.	Posted speed limit of 50km/h. Mean operating speeds between 56km/h and 61km/h.	Posted speed limit of 50km/h.
Cycling Infrastructure	No facilities along George Bellew Road.	No facilities along Syd Bradley Road.	No facilities along Ron Guthrey Road.
Pedestrian Infrastructure	A 1.5m wide footpath is provided on the southern side of George Bellew Road. In addition, a 1.8m wide footpath is provided on the northern side of George Bellew Road, between Ron Guthrey Road and the SH1 on-ramp.	No facilities along Syd Bradley Road, east of Ron Guthrey Road.	A 1.5m wide footpath is provided along the western side of Ron Guthrey Road.
Public Transport	None.	None.	None.
Environment	Urban.	Urban.	Urban.

10. The key characteristics of State Highway 1 (Russley Road) and State Highway 73 (Yaldhurst Road) are summarised in **Table 3** below.

[5]Christchurch City Council Traffic count in 2017.
[6]Christchurch City Council Traffic count in 2019.
[7]Christchurch City Council Traffic count in 2019.

Table 3: SH1 & SH73 Characteristics

Key Feature	SH1 (Russley Road)	SH73 (Yaldhurst Road)
Road Classification	Major Arterial	Major Arterial
Cross-Section Description	***North of Ryans Road*** Two northbound lanes, with a carriageway width of 10.0m. Western shoulder width of 2.8m and eastern shoulder width of 0.5m. The cross-section is the same for the two southbound lanes, with a wider shoulder on the eastern side and narrower shoulder on the western side. ***South of Ryans Road*** Two northbound lanes, with a carriageway width of 9.5m. Western shoulder width of 2.5m (includes cycle lane). Two south bound lanes, with a carriageway width of 8.5m. Eastern shoulder width of 1.5m. Both sections have lanes separated by median islands and wire rope-barrier in the 80km/h zone. Widening occurs at intersections and on/off-ramps to accommodate turning and slip lanes.	Indicatively 9.3m wide carriageway with 1.0m wide sealed shoulders. Widening occurs at intersections to accommodate turning lanes.
Traffic Volumes	***Northbound*** 19,368 vehicles per day[8]. ***Southbound*** 21,179 vehicles per day[9].	Two-way volume of 13,561 vehicles per day[10]
Speed	Posted speed limits change at approx. 50m south of Ryans Road, with 80km/h north of this point and 60km/h to the south.	Posted speed limit of 80km/h between east of Pound Road and west of Sir John Mackenzie Drive. The posted speed limit is 60km/h through the SH73 / Pound Road intersection and from west of Sir John Mackenzie Drive to SH1.
Pedestrian & Cycling Infrastructure	No pedestrian infrastructure. Cycle lanes on both sides of the road, as well as the on and off-ramps at the interchange with George Bellew Road and Syd Bradley Road.	No pedestrian or cycle infrastructure.
Public Transport	None.	Route 86.
Environment	Peri-urban.	Peri-urban.

Intersections

11. The key intersections in the vicinity of the Site are briefly discussed in the following sections.

Pound Road / Ryans Road Intersection

12. The Pound Road / Ryans Road intersection is a priority-controlled cross-roads, with Pound Road having the priority, as illustrated in **Figure 4**. This indicates that no right turn bays are provided

[8]NZ Transport Agency count in 2022.
[9]NZ Transport Agency count in 2022.
[10]NZ Transport Agency count in 2022.

on Pound Road and there is limited space to accommodate right turn queueing on this road. The intersection is within a 60km/h speed limit area.

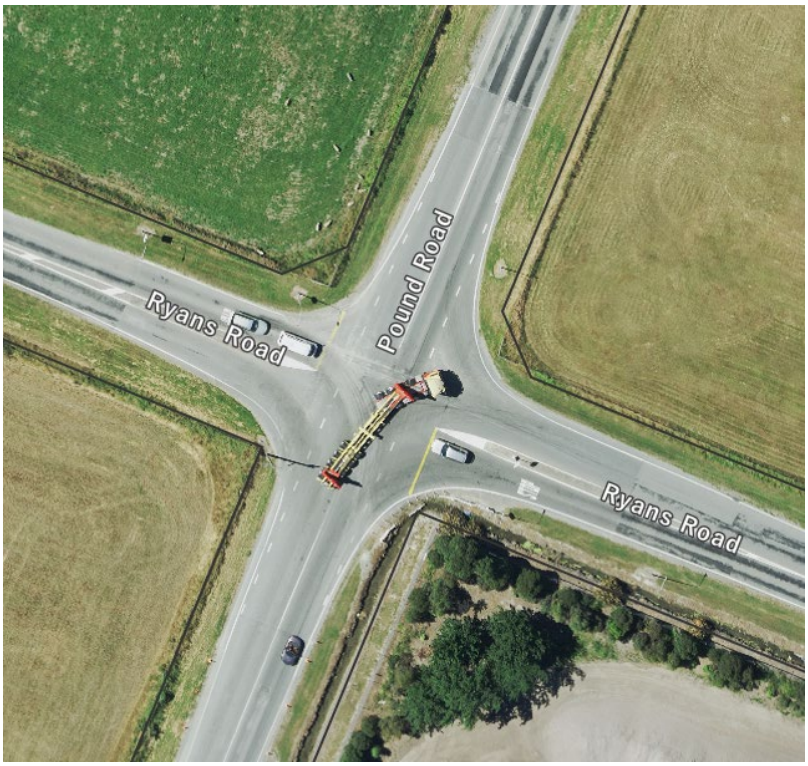


Figure 4: Pound Rd / Ryans Rd Intersection
[Aerial image sourced from canterburymaps.govt.nz]

13. We are aware (through our involvement in Resource Consents for the quarries to the west of Pound Road) that the Christchurch City Council (the Council) has previously investigated constructing a roundabout in this location, with **Figure 5** illustrating the Preliminary Roundabout Design (see also **Appendix 3**).

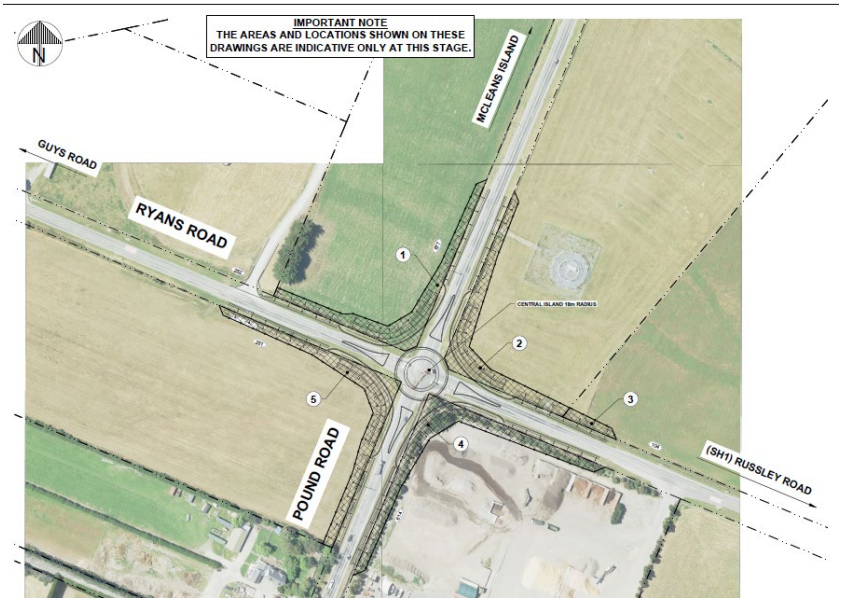


Figure 5: Future Pound Rd / Ryans Rd Intersection
[Image sourced from GHD plan prepared for the Council]

14. We understand that the Council are in the process of acquiring land for this upgrade (as the current landowner of 104 Ryans Road has been approached by the Council), but it is not funded in the Long Term Plan.

Ryans Road / Grays Road Intersection

15. The Ryans Road / Grays Road intersection is illustrated in **Figure 6**, which indicates it is a priority controlled 'T' intersection. No turning bays are provided and the intersection is within an 80km/h speed limit area.

Figure 6: Ryans Road / Pound Road Intersection
[Aerial image sourced from canterburymaps.govt.nz]

Ryans Road / SH1 Intersection

16. The Ryans Road / SH1 intersection is illustrated in **Figure 7**, which indicates Ryans Road is limited to left in / left out movements only. There is a deceleration lane on SH1 northbound to reduce the effects of vehicles slowing to turn left into Ryans Road. This intersection is in an 80km/h speed limit area.

Figure 7: Ryans Road / SH1 Intersection
[Aerial image sourced from canterburymaps.govt.nz]

Other Intersections

17. Other important intersections that traffic associated with the Application Site will rely on are:

    i. SH1 / George Bellew Road / Syd Bradley Road Interchange: This provides all movement access to SH1 via slip lanes to / from the state highway;

    ii. SH1 / SH73 Intersection: Traffic signal controlled at-grade intersection; and

    iii. SH73 / Pound Road Intersection: Roundabout controlled intersection.

Crash History

18. The NZ Transport Agency Crash Analysis System (CAS) has been reviewed to identify crashes that have been reported on the review area in the most recent five-year period (01/09/2019 to 01/09/2024). The CAS collision diagram is included as **Figure 8**.

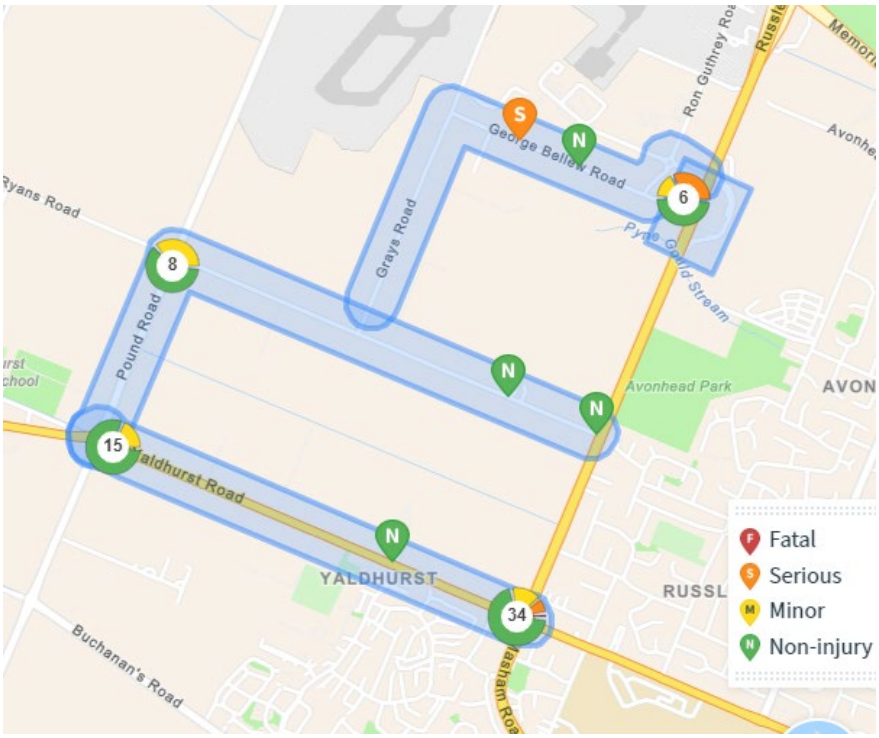


Figure 8: CAS Diagram

19. A review of the reported crashes is included in **Appendix 4**, which identifies 66 crashes, including one Fatality, five Serious injury crashes and twelve Minor injury crashes[11]. The key trends in the reported crashes were:

    i. 48 of the crashes (71%) occurred at intersections;

    ii. 16 crashes (24%) were rear-end collision / hitting obstructions; and

    iii. 29 crashes (43%) were crossing / turning crashes.

20. Key points to note from the crash review are:

[11] Two crashes occurred on Strathcarron Place and are not considered to be part of the study area.

i. The SH1 / SH73 intersection had 29 reported crashes. A significant proportion of these related to vehicles failing to give way turning right from SH1 to SH73 westbound and from SH73 to SH1 northbound;

ii. Twelve crashes were reported at the SH73 / Pound Road intersection; and

iii. Seven crashes were reported at the Pound Road / Ryans Road intersection.

21. The fatality occurred on a straight section of SH73 and involved a vehicle that appeared to be speeding and losing control.

Alternative Transport Modes

22. The Site is reasonably remote from existing passenger transport routes and Major Cycle routes. The closest bus service is Route 86 along SH73 (Yaldhurst Road), which operates between Darfield and the Central City with one bus in each direction per day. Other bus services in the wider area travel to / from the Airport, although these are not considered further in this report because of the walking distance between these routes and the Application Site.

23. Cycle lanes are provided on the eastern SH73 (Yaldhurst Road) approach to SH1, although these do not continue further. Cycle lanes are also provided on SH1, including past Ryans Road and at the George Bellew / Syd Bradley Road interchange.

Future Transport Network

Long Term Plan 2024-2034

24. The Christchurch City Council's Long Term Plan (LTP) 2024-2034 has proposed approximately $7.8 million for corridor improvements along Pound Road and Ryans Road from 2024 to 2031, and $18,000 for intersection safety improvements at the Pound Road / Ryans Road intersection from 2024-2025. These improvements were seal widening along these corridors and at the intersection and have been completed.

25. As noted above the upgrade of the Ryans Road / Pound Road intersection to a roundabout is not currently in the LTP.

State Highway Investment Proposal 2024-2034

26. Improvements at the SH1 / SH73 intersection have been included in the NZ Transport Agency's State Highway Investment proposal for 2024-2034. The proposal indicates that preliminary design will occur from 2024-2027, with detailed design and construction occurring from 2027-2034. Funding for this project is sought through the National Land Transport Fund.

Road Network Operation

27. Traffic modelling of the road network has been undertaken by QTP, as set out in the report contained in **Appendix 5**. That modelling included a 2038 'without development' scenario, which included the 'generic' traffic growth already allowed for in the CAST model plus an additional allowance for further development in Dakota Park, Waterloo Park and further south (between Main South Road and Shands Road, north of Marshs Road).

28. Figures 3.12 and 3.13 of that report indicate:

    i. Increases in traffic of between 30 to 70 vehicles per hour on Ryans Road (Pound Road to Grays Road), although decreases of between 10 to 80 vehicles per hour on Ryans Road (Grays Road to SH1);

    ii. Increases in traffic of between 80 to 100 vehicles per hour on Grays Road; and

    iii. Increases in traffic of between 50 to 220 vehicles per hour on Pound Road (south of Ryans Road).

29. Growth in the use of Grays Road, Ryans Road and Pound Road for southbound traffic in the PM peak is attributed to traffic seeking alternate routes to the SH1 / SH73 intersection, which is a location of delay in the network[12].

30. The report also indicates the following operation at key intersections[13]:

    iv. Pound Road / Ryans Road intersection: The Ryans Road eastern approach is currently over-capacity and continues to be over-capacity in 2038 (although changes in travel patterns lead to a slightly improved operation);

    v. SH73 / Pound Road intersection: All approaches and movements at this intersection currently operate satisfactorily. The Pound Road southern approach is predicted to operate at Level of Service F[14] during the PM peak hour in 2038; and

    vi. SH1 / SH73 intersection: This intersection is currently over-capacity and this is exacerbated by background traffic growth to 2038.

Proposed Development

31. It is proposed to subdivide the 55.5ha site into 126 Lots and enable activities permitted in the *Industrial General* Zone (of the Christchurch District Plan), other than;

    i. Residential Activities / Residential Units (including for management / security purposes),

    ii. Pre-schools;

    iii. Service Stations;

    iv. Yard-based landscape/ garden suppliers;

    v. Heavy Industrial Activities (Fish Processing or Packing Plants and Abattoirs or Freezing Works); and

    vi. Any activity with a high wastewater discharge (as set out in the AEE).

32. The above activities are proposed on the land to the west of Grays Road. The smaller parcel of land to the east of Grays Road will accommodate a Stormwater Utility Reserve plus Water Utility Reserve and otherwise continue to accommodate permitted *Rural Urban Fringe Zone* activities.

33. The District Plan Transport Chapter will continue to apply to the Site, as it applies District wide. That said, the proposed Conditions for this Application will require that these Transport Rules and Standards apply as if the Site has an Urban zoning rather than the underlying *Rural Urban Fringe* zone.

[12] Para 3.7.11 of the QTP report.
[13] Refer to Tables 5.4 to 5.6 in the QTP report.
[14] Where Level of Service A is generally considered excellent operation, 'E' is at or approaching capacity and 'F' is over-capacity.

Trip Generation

34. The predicted traffic generation of the proposed industrial use of the Site has been based on data from the TRICS database. The traffic generation data is contained in **Appendix 6**, with the resultant traffic generation set out in **Table 4**. This includes traffic generation in half hourly intervals, plus an hourly total (some rounding errors occur).

Table 4: Predicted Traffic Generation of the Proposed Development

Peak	½ Hour Starting	Arrivals	Departures	Total	Hourly Total	% Heavies
AM Peak	07:00	202	77	279		
	07:30	279	132	411	690	9%
	08:00	231	132	363	774	9%
	08:30	198	115	312	676	8%
Interpeak	13:00	140	174	314		
	13:30	140	113	253	566	10%
PM Peak	15:00	129	193	323		
	15:30	140	167	307	630	10%
	16:00	143	237	380	687	10%
	16:30	115	211	325	705	7%
	17:00	95	214	308	634	6%
	17:30	86	161	247	555	6%
	18:00	70	123	193	440	8%
	18:30	58	98	156	349	9%
Daily		4,402	4,402	8,804		9%

35. The distribution of Site generated traffic has been undertaken by QTP using the CAST model, as described in **Appendix 5**. **Table 5** sets out the key distribution routes to / from the Site during the peak hours[15].

[15] Refer to Figure 5.3 to 5.6 of the QTP report and commentary at paragraph 5.2.3.

Table 5: Site Traffic Distribution

Direction	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Pound Road (North of Ryans Road via Ryans Road west of Grays Road)	3%	1%	4%	1%
Pound Road (South of Ryans Road via Ryans Road west of Grays Road)	42%	40%	29%	46%
Ryans Road (east of Grays Road)	28%	29.5%	25%	26.5%
Grays Road (to Interchange)	27%	29.5%	42%	26.5%
Total	***100%***	***100%***	***100%***	***100%***

Site Layout

Proposed Cross-Sections

36. The subdivision includes four internal roads, which are all proposed to be *Industrial Local Roads*. Upgrades are also proposed to Ryans Road and Grays Road along the Site frontage. The proposed cross-sections for these roads are included in **Appendix 2** and summarised in **Table 6** (and compared to the District Plan cross-section requirement).

Table 6: Proposed Road Cross-Sections

Road	Corridor width	Carriageway width	Footpaths	Amenity Strip	Cycle Facilities
Ryans Road (along the Site frontage)	20.1m	10.5m 3.5m lane plus 1.5m sealed shoulder on the southern side & 5.5m on the northern side.	Northern side only	Yes	No
Grays Road (along the Site frontage)	20.1m	10.5m 3.5m lane plus 1.5m sealed shoulder on the eastern side & 5.5m on the western side.	Western side only	Yes	No
Roads 1 to 4 (refer to Figure 2)	21.5m	11m (2 x 5.5m lanes)	Eastern or southern side only.	Yes	No
Local Road – Industrial (District Plan[16])	18 – 25m	11 – 14m[17]	Both sides	Yes	Considered at Subdivision

37. No stopping lines will be provided throughout the subdivision (including on the development side of Ryans Road and Grays Road). In addition, there is a cul-de-sac at the southern end of Road 4 that has a radius of 15m and therefore complies with the requirements of New Zealand Standard 4404:2010[18].

[16] Appendix 8.10.3 (New road standards) of the Christchurch District Plan.
[17] Excludes parking.
[18] NZ Standard for Land Development and Subdivision Infrastructure.

38. It is assumed that the Council will reduce the speed limits on Ryans Road and Grays Road to ideally 50km/h speed limits (although potentially 60km/h) along the Site frontage as a result of this subdivision urbanising this area[19], as per feedback from the Council during preliminary design stages for this project. This would require a speed threshold treatment similar to that illustrated in **Figure 9** to be located on Ryans Road east of the Grays Road intersection.

Figure 9: RTS 15 Speed Threshold Treatment

Intersection Arrangements

Ryans Road / Grays Road Intersection, Ryans Road & Grays Road Site Access Intersections

39. The Ryans Road / Grays Road intersection, plus the Ryans Road and Grays Road site access intersections are indicatively illustrated in **Figure 10** to **Figure 12**. These indicate that 15m radii have been provided to accommodate semi-articulated trucks turning, although the Ryans Road / Grays Road intersection requires a bespoke arrangement for the eastern radii to accommodate the transition to a rural road width at that location. Widening is also provided opposite the minor arms (at all intersections) to facilitate passing of a vehicle waiting to turn right into the minor arm.

[19] We understand that the speed limit would be reviewed as part of the Council preparing its three-yearly Speed Management Plans. The current Speed Management Plan is draft and has been paused, awaiting guidance on the recent *Speed Setting Rule*.

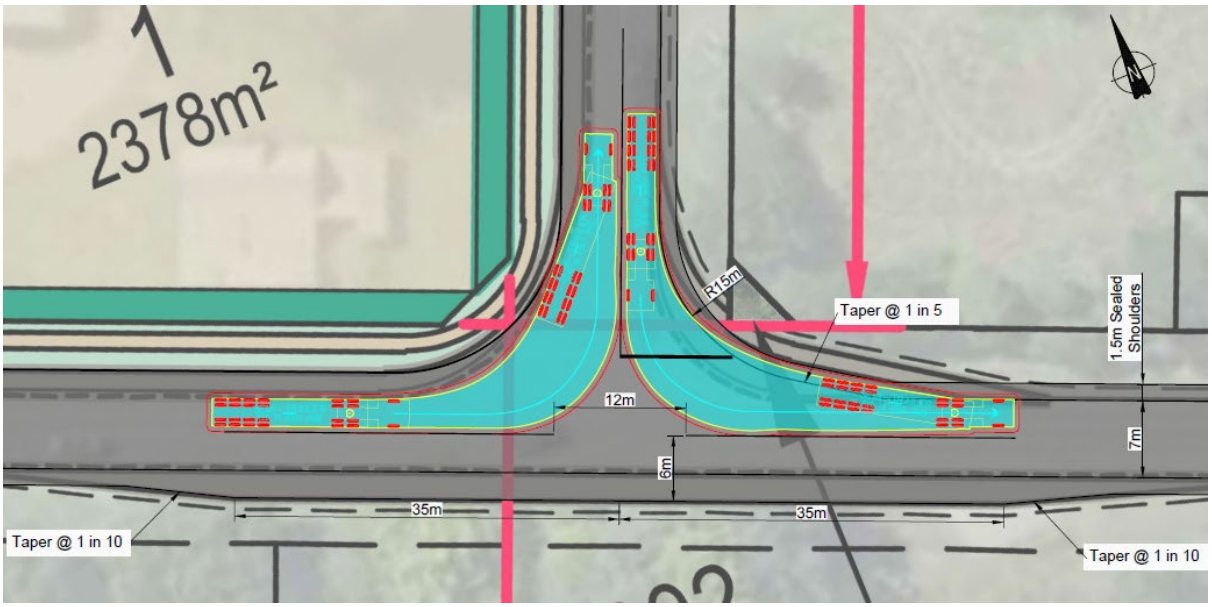


Figure 10: Proposed Ryans Road / Grays Road Intersection

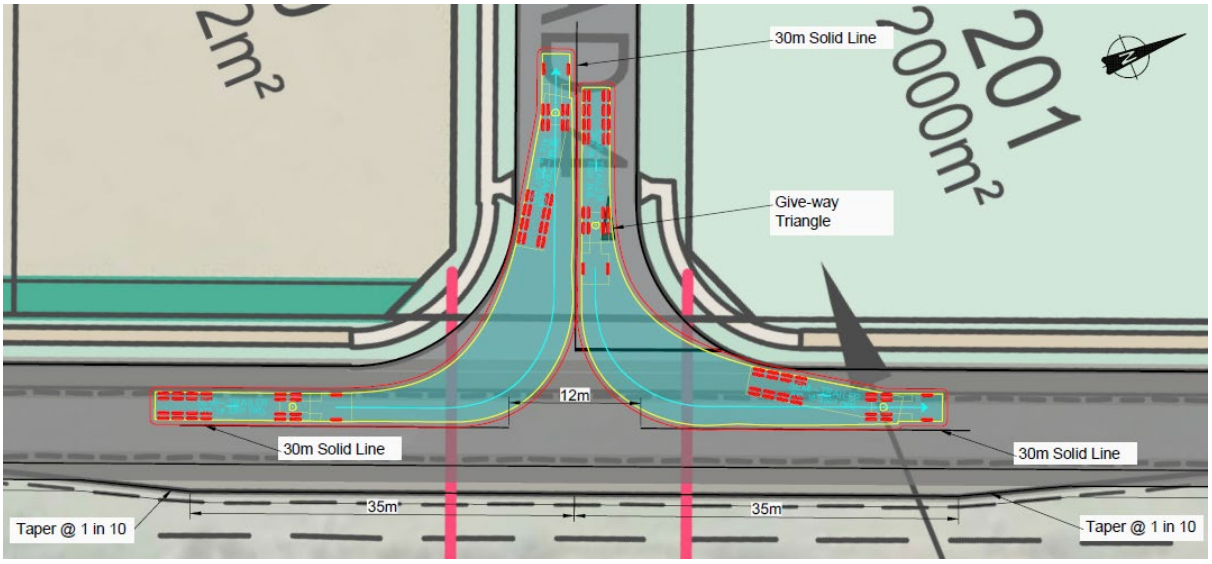


Figure 11: Proposed Grays Road / Site Access Road Intersection (Typical)

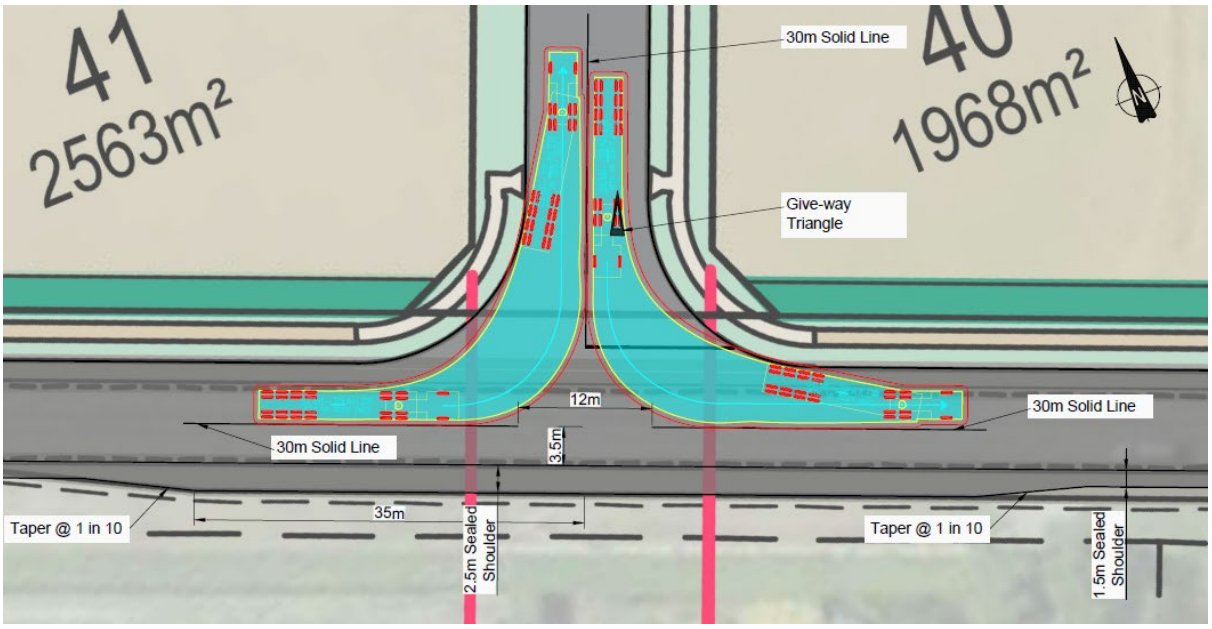


Figure 12: Proposed Ryans Road / Site Access Road Intersection (Typical)

40. Drawings of the above intersection concepts are included in **Appendix 7**. The sight distances out of these intersections will be at least 123m, which is the Safe Intersection Sight Distance required by Austroads for a 50km/h speed limit area. That said, the straight and flat alignment of these roads means that sufficient sight distance is available for a 60km/h environment if required. Sight distances will be confirmed through subsequent Road Safety Audit processes, which is typical of subdivision developments.

41. These intersections are separated by at least 121m, which is the distance between the two proposed Ryans Road site access intersections. This compares to a minimum separation requirement of 40m in the Christchurch City Council *Infrastructure Design Standard* (IDS).

Road 3 & Road 4 Internal Intersections

42. The internal intersections will be priority controlled and again provide radii of 15m. The following priorities will be provided:

    i. Roads 3 and 4 will have the priority at the intersections with Roads 1 and Road 2; and

    ii. Road 4 will have the priority at the intersection with Road 3.

43. The minimum separation of these intersections is 122m. Sight distances of at least 97m will be provided within the Site, consistent with the proposed internal speed limit of 50km/h.

District Plan Compliance

44. The proposed subdivision and use of this land for industrial purposes has been assessed against the transport rules of the Christchurch District Plan. A full assessment of the transport related rules is included in **Appendix 8**, with the non-compliances for which consent is being sought set out in **Table 7**.

Table 7: District Plan Transport Non-Compliances

Rule / Standard	Comment
7.4.3.8 Vehicle crossings	The sight distance requirements (of 113m) for a 50km/h road may not be achieved for sites on the inside of the bend in Road 4.
8.6.4 Roads	The proposed formed width of Ryans Road and Grays Road is 10.5m rather than the 11m required by the District Plan. A footpath is only proposed on one side of the roads, rather than both sides required by the District Plan.
17.5.2.7 Vehicle trips	The industrial (non-rural) use of the sites are likely to generate greater than 100 vehicle movements per day.

45. Furthermore, the following Matters of Control for subdivision are relevant to the assessment[20]:

i. Whether the provision, location, design, safety and efficiency of any road, frontage road, access (including access for fire-fighting), pedestrian access way, service lane, cycle way/route/lane, corner rounding, intersections, landscaping or parking area including the formation and construction, is suited to the development it serves and is acceptable to the Council;

ii. Whether service lanes, cycle ways and pedestrian access ways are required or appropriate and are located and constructed in a safe and efficient manner;

iii. Whether the subdivision layout and road network supports walking, cycling and public transport, including access to reserves, facilities, commercial areas, public transport facilities;

iv. Whether provision of a cycle way or pedestrian access way encourages active modes of transport, including to community facilities; and

v. Any works or upgrades to the Council's road network required, including in relation to any network utility, state highway or rail line.

Assessment of Transport Effects

46. The following provides an assessment of the transport effects of the proposed subdivision and use for industrial purposes. This adopts the headings of the Full ITA assessment matters set out in the District Plan as a framework for this assessment.

Access & Manoeuvring

> ***Access and manoeuvring (safety and efficiency):*** *Whether the provision of access and on-site manoeuvring area associated with the activity, including vehicle loading and servicing deliveries, affects the safety, efficiency, accessibility (including for people whose mobility is restricted) of the site, and the transport network (including considering the road classification of the frontage road).*

47. Future development of the Lots will either comply with the transport access and layout Standards of the District Plan (based on the Urban standards of the District Plan) or will need to address non-compliances through future Resource Consent processes. The following provides an assessment of these matters primarily in relation to the proposed subdivision.

[20] Associated with the District Plan section 8.7.4.4.

Carriageway Widths

48. The proposed road widths on Ryans Road and Grays Road are 10.5m, whereas the District Plan requires a carriageway width of at least 11m for *Industrial Local Roads*. The proposed width comprises a 5.5m wide lane on the same side of the road as the subdivision, with a 5m wide (3.5m wide traffic lane plus 1.5m wide shoulder) sealed lane on the opposite side.

49. The proposed lane width on the development side of the road is consistent with a half road width for the minimum required carriageway. As such, that width is considered acceptable.

50. The proposed lane width on the opposite side of the road is consistent with the Austroads[21] requirements for a rural road that accommodates greater than 3,000 vehicles per day. This is considered acceptable on the basis of the land opposite the Site remaining *Rural Urban Fringe* zoned. It is expected that the road would be further upgraded should that land become *Urban* zoned (noting the Applicant has no knowledge of any intention of this).

Sight Distances

51. A potential non-compliance has been identified regarding sight distances out of some of the proposed Lots to Road 4, which occurs because of the bend in that road. The required sight distance requirement is 113m and this applies to Rural roads. The land will remain zoned *Rural Urban Fringe* and the sight distance requirement in the District Plan only relates to *Rural Roads*[22].

52. The above non-compliance would potentially affect Lots 111 to 114, which are on the inside of the bend in Road 4. Road Traffic Standard 6[23] requires a minimum sight distance of 40m for a high-volume access to a Local Road (with a 50km/h speed limit). The speed limit will be 50km/h and the operating speeds will be constrained by the bend in the road. This indicates that a 40m sight distance will be satisfactory and an access could be located on each of the above Lots that complies with this requirement.

53. We also note that the urbanising of the Site means that the District Plan Transport Standard relating to sight distance would not typically be required and it is proposed to have a Condition that requires the Transport Rules and Standards apply as if the Site has an Urban zoning. This further reinforces that the effects of sight distances will acceptable.

Intersection Spacing

54. The spacing of the intersections within the Site, as well as to Ryans Road and Grays Road are all greater than the 40m minimum requirement of the Christchurch IDS. The proposed intersection separation of at least 121m is considered sufficient to avoid confusion regarding turning movements.

Subdivision Assessment Matters

55. The layout is considered to be acceptable for the intended industrial activities. The block lengths are broadly 320m long by 160m wide, which is considered acceptable given there will likely be low pedestrian demand in area. As such, no service lanes or pedestrian accessways are considered necessary within the Site.

[21] Guide to Road Design Part 3: Geometric Design – Table 4.5.
[22] means all roads outside the existing urban area as shown on Map A of Chapter 6 of the Canterbury Regional Policy Statement, except for roads adjoining any residential and/or commercial zone in Christchurch District.
[23] Guidelines for visibility at driveways.

Design & Layout

> ***Design and Layout:*** *Whether the design and layout of the proposed activity maximises opportunities, to the extent practicable, for travel other than by private car, including providing safe and convenient access for travel by such modes.*

56. The District Plan requires footpaths on both sides of the roads, whereas the proposal is for footpaths on one side only. This is considered acceptable on the basis there will be low pedestrian demands because the Site is remote from walking origins / destinations, such as Residential land. Nor is on-street car parking proposed, which may have generated a pedestrian demand.

57. There may be a low level of pedestrian demand within the Site, say for access to / from food and beverage activities that may establish. However, the provision of a footpath on one-side of the road is considered sufficient to accommodate this. This is also consistent with George Bellew Road and Syd Bradley Road, which are similarly located Industrial areas.

58. No cycle lanes are provided within the Site or on the adjacent road network, although the traffic lanes are wide enough to enable cars and trucks to safely pass cyclists. Cycle volumes are also anticipated to be low in the subdivision given the distance to cycling origins / destinations, as well as the 'barrier' created by SH1.

Heavy Vehicles

> ***Heavy vehicles:*** *For activities that will generate more than 250 heavy vehicle trips per day, whether there are any effects from these trips on the roading infrastructure.*

Ryans Road & Grays Road

59. The proposed activity is anticipated to generate approximately 830 heavy vehicle movements per day. Ryans Road and Grays Road are proposed to be upgraded along the Site boundary with kerb and channel adjacent to the Site and additional shoulder width opposite the Site to better accommodate heavy vehicle traffic and avoid pavement damage, such as edge-break.

60. The existing carriageway widths of Ryans Road and Grays Road have been set out in **Table 1** and these will be retained beyond the Site. The eastbound lane on Ryans Road is 5.0m wide, with widening recently constructed to assist in preventing edge-break[24] because of existing heavy vehicle traffic. The westbound lane on Ryans Road is approximately 3.75m wide and the increase in heavy vehicle traffic associated with this development will likely lead to a need for additional maintenance of the carriageway, or widening to better accommodate this increase in heavy traffic.

61. The Grays Road carriageway is approximately 9.0m wide to 10.0m wide. Again, the increase in heavy traffic on this road will likely result in a need for additional maintenance, although to a lesser extent than Ryans Road because of the wider existing traffic lanes.

Wider Road Network

62. Pound Road and SH1 are both Arterial Roads and have a function of accommodating heavy vehicles. Pound Road has recently been widened to better accommodate these vehicles and it

[24] Damage or cracking occurring at the edge of the carriageway where it meets the shoulder.

is considered that this road (along with SH1) can satisfactorily accommodate the increase in heavy traffic.

63. George Bellew Road and the other roads within Dakota Park (leading to the interchange) have been constructed to an Industrial standard and are again considered to be able to satisfactorily accommodate the increase in heavy traffic.

Accessibility of the Location

Accessibility of the location: *Whether the proposed activity has demonstrated the accessibility of the site by a range of transport modes and whether the activity's location will minimise or reduce travel to and from the activity by private vehicles and encourage public and active transport use.*

64. The Site location has good access to the road network, including the Strategic Network of Arterials Roads and state highways. It is therefore well located to accommodate the types of traffic anticipated by the proposed industrial activities. The Site is also in close proximity to the Airport and the activities at the proposed Site could therefore be well located for airfreight and / or aerospace industries.

65. The Site is not well located in terms of accommodating trips by walking, cycling or public transport. These linkages may be provided over time, as Dakota Park develops and if the surrounding area is also rezoned for Industrial activities. In the short-term, pedestrians travelling between Dakota Park and the Site will need to use the berms on Grays Road, although these pedestrian demands are anticipated to be very low. Travel to / from the Site will predominantly rely on private vehicle travel in the short to medium term.

Network Effects

Network effects: *Having particular regard to the level of additional traffic generated by the activity and whether the activity is permitted by the zone in which it is located, whether measures are proposed to adequately mitigate the actual or potential effects on the transport network arising from the anticipated trip generation (for all transport modes) from the proposed activity, including consideration of cumulative effects with other activities in the vicinity, proposed infrastructure, and construction work associated with the activity.*

66. Prior to commenting on the effects of the proposed activity on the wider transport network, we note that this assessment adopts generic traffic generation rates for the industrial use of the subdivision. However, the High Trip Generator rule of the District Plan will still apply to future activities on the Lots and this provides a safeguard should individual activities be proposed that warrant further assessment.

67. The traffic effects of the proposed subdivision and industrial activities has been assessed in the QTP report (see **Appendix 5**). That modelling identified that the site accesses are predicted to operate satisfactorily with the development traffic on the network. As such, the primary focus of this section is on the locations where capacity concerns have been identified and the mitigation required to address these concerns.

Ryans Road / Grays Road Intersection

68. Traffic capacity results for the Ryans Road / Grays Road intersection are included in the QTP report (**Appendix 5**)[25]. These results indicate that the intersection is predicted to have all movements operating at Level of Service A with the subdivision traffic added to the network. This confirms the operation of this intersection will be acceptable.

Pound Road / Ryans Road Intersection

69. The Pound Road / Ryans Road intersection has been assessed using SIDRA as set out in the QTP report[26]. That modelling indicates that the intersection is over-capacity in 2024 and 2038 without the development in place and remains over-capacity when adding the development generated traffic to the network. The critical movements are considered to be:

    i. **AM Peak:**

        (a) Ryans Road (eastern arm) through and right turns, with delays of 58 and 176 seconds although volumes of 1 and 3 vehicles per hour respectively; and

        (b) Ryans Road (western arm) right turn, with a delay of 74 seconds and a volume of 1 vehicle per hour.

    ii. **PM Peak:**

        (a) Ryans Road (eastern arm) through and right turns, with delays of 51 and 133 seconds although volumes of 1 and 3 vehicles per hour respectively; and

        (b) Ryans Road (western arm) right turn, with a delay of 79 seconds and a volume of 1 vehicle per hour.

70. We have also used the *priority controlled crossroads* product of flow model in the NZ Transport Agency Crash Estimation Compendium to understand the potential increase in crashes at this intersection. This used the 2038 without and the 2038 with development traffic volumes from the QTP model. The outcome is an additional 0.06 Serious and Fatal crashes over a five-year period as a result of the development (compared to the without development model). This is not considered significant.

71. The above delays are not ideal, although they affect few vehicles. They also represent a scenario of 14 years traffic growth plus full development of the subdivision, so they will occur incrementally (although they are comparable to the existing operation of the intersection).

72. The proposed solution is construction of the roundabout discussed in paragraph 13. As indicated earlier, we understand that the Council are in the process of acquiring land for this upgrade. We assume that Development Contributions (or another financial mechanism) would assist with the funding of this roundabout to bring it forward to assist in accommodating the traffic associated with this proposal.

73. Overall, it is considered acceptable to commence the subdivision and enable industrial activities at this Site without the need to defer or delay development. The Council is already in the process of upgrading this intersection and the interim effects (until that upgrade occurs) are considered acceptable.

[25] Table 5.2 of the QTP report.
[26] Table 5.4 of the QTP report.

SH73 / Pound Road Roundabout

74. The SH73 / Pound Road intersection has also been assessed using SIDRA as set out in the QTP report[27]. That modelling indicates that the intersection is over-capacity in the 2038 PM peak without the development in place and remains over-capacity when adding the development generated traffic to the network. The critical movements are the through and right turn from the Pound Road southern approach. The delays on the through and right turns are 137 and 143 seconds in the 2038 base model (475 and 59 vehicles per hour respectively), increasing to 195 and 200 seconds with the development added (459 and 65 vehicles per hour respectively).

75. The QTP report identifies potential mitigation as altering the lane markings on the Pound Road north and south approach, which also requires two circulating lanes around the roundabout[28]. This is also illustrated in **Figure 13** to **Figure 14** and **Appendix 9**.

Figure 13: Existing SH73 / Pound Road Markings

[27] Table 5.5. of the QTP report
[28] See section 5.1.6 of the QTP report.

Figure 14: Suggested SH73 / Pound Road Alterations

76. The above works relate to a state highway and therefore need to be undertaken by the NZ Transport Agency. These works are also identified as being required regardless of the proposed development and we consider they should be undertaken *as a matter of course*. Therefore, we consider there is no need to delay the subdivision and development of this Site, with the NZ Transport Agency simply needing to undertake the altered line-marking to optimise the operation of this intersection.

SH1 / SH73 Intersection

77. The SH1 / SH73 intersection has been identified as being over-capacity in 2024 and 2038 without the development traffic added to the surrounding road network. The inclusion of the development related traffic to the 2038 model exacerbates these issues, but not significantly[29]. For example:

    i. The highest increase in delays in the AM peak is on the SH73 east approach right turn (to SH1 north), which increase from 174 seconds delay in the 2038 base model to 205 seconds delay when the development is added. Other increases in delay are no more than six seconds and the overall intersection delay remains at 103 seconds; and

    ii. The most noteworthy increase in delay in the PM peak is on the SH1 north approach through movement, which increase from 105 seconds delay in the 2038 base model to 117 seconds delay when the development is added. The overall intersection delay increases from 95 seconds to 102 seconds with the development included on the network.

78. As set out at paragraph 26, funding for the investigation and implementation of improvements at this intersection has been allocated through the State Highway Investment Programme. An indicative scheme has also been assessed in the QTP report, which indicates there is an option to improve the capacity at this location and this would also have wider network benefits[30].

[29] See Table 5.6 of the QTP report.
[30] Discussed at paragraphs 5.1.7 to 5.1.13 as well as 5.7.15 to 5.7.17 of the QTP report.

79. The effects of the proposed development at this intersection are considered acceptable given the reasonably low scale deterioration in operation as a result of the proposed development and the certainty provided that the NZ Transport Agency are actively planning and funding an upgrade.

SH1 / Ryans Road Intersection

80. The QTP report includes modelling results of the SH1 / Ryans Road intersection. This confirms there are no significant capacity issues at this location[31].

SH1 / George Bellew Road / Syd Bradley Road Interchange

81. The traffic modelling predicts negligible change in the operation of the SH1 / George Bellew Road / Syd Bradley Road Interchange. The diagrams that illustrated the change in link delays because of the development[32] do not highlight any change at this interchange, meaning the changes in delay were two seconds or less.

82. Small increases in delay are identified on the George Bellew Road approach to Ron Guthrey Road, although this is a maximum of twelve seconds increase and the road network in this area is predicted to continue to operate satisfactorily[33].

Strategic Framework

Strategic framework: *Whether the proposal is consistent with the local and regional transport policy framework.*

83. The proposed Site location sits well with the Freight Network in Figure 5.4 of the Christchurch Transport Strategic Plan 2012 – 2042 (the *Plan*), which is reproduced below. This illustrates the Site as being between Strategic Freight Routes along the state highways and the Potential Strategic Freight Route along Pound Road (now completed with the Broughs Road and Pound Road / Barters Road realignments).

[31] See section 5.7.5 of the QTP report.
[32] Figures 5.15 to 5.18 of the QTP report.
[33] See Figures 5.11 to 5.14 of the QTP report.

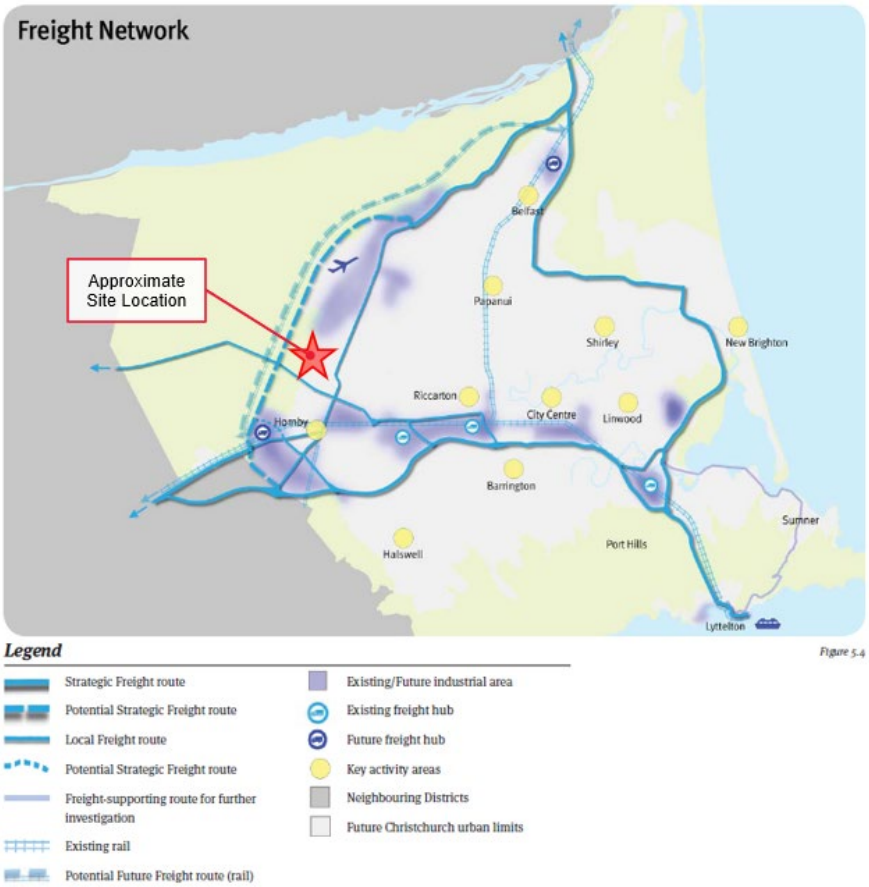


Figure 15: Extract from Christchurch Transport Strategic Plan

84. The strategic road network (state highways and Arterial roads) prioritise the movement of freight to and from key locations, such as the Christchurch International Airport and Lyttelton Port. The Plan indicates that increasing Government investment in the Roads of National Significance (such as SH1) will further improve freight reliability.

85. Providing industrial activity near the Airport with good connections to the Strategic Road network aligns with the Plan to improve the efficiency of freight movement particularly for activities connected to air transport. Additionally, locating activities near the Airport would facilitate the efficient and reliable transfer of goods by air (Plan Action 1.1.1).

86. We accept that the Site location does not align well with other Goals of the Plan, such as providing a choice of transport modes (Goal 1). However, this will ultimately need to be balanced with the locational benefits related to the Freight Network.

Summary & Conclusion

Summary

87. This report assesses the transport effects of the subdividing 55.5ha of *Rural Urban Fringe* land and land use consent for industrial purposes. The Site is located in the north-western corner of the Ryans Road / Grays Road intersection, which is south of the Christchurch International Airport. The proposed development is predicted to generate 774 vehicle movements per hour in the AM Peak, 705 vehicles per hour in the PM peak and 8,804 vehicles per day.

Site Layout

88. The proposed Site layout is considered acceptable for the intended industrial activities. The intersection spacings more than comply with the minimum requirements of the Christchurch IDS and the intersections themselves are anticipated to operate safely and efficiently.

89. Non-compliances have been identified regarding the carriageway width on Ryans Road and Grays Road and because footpaths are only provided one side of the road. The carriageway width on the development side of the road meets the requirements for a *Local Industrial Road* and is therefore considered acceptable. The carriageway on the opposite side of the road will be consistent with the Austroads requirements for a rural road and are also considered acceptable.

90. The provision of footpaths on one side of the road throughout the development will accommodate walking trips within the Site. The pedestrian volumes are anticipated to be sufficiently low that the proposed arrangement will be acceptable. It is also a similar arrangement to that provided in Dakota Park (also industrial use), to the north-east of the Site.

91. Sight distances out of future Lots have been assessed and are considered acceptable. Although the sight lines out of Lots 111 to 114 is limited by being on the inside of the bend in Road 4, there is sufficient frontage to achieve at least 40m sight distance and therefore comply with the requirements of RTS 6.

Off-site Effects

92. The Site will increase heavy vehicle volumes on Grays Road and Ryans Road. It is proposed to upgrade these roads along the Site frontage to better accommodate this heavy traffic and therefore mitigate the effects of this increase. The existing Ryans Road and Grays Road carriageway will be retained beyond the Site boundary and will likely require more regular maintenance (than currently occurs) or widening to prevent edge-break occurring. The roads beyond Ryans and Grays Road have already been constructed to an appropriate standard and can accommodate the increase in heavy traffic.

93. The operation of the Pound Road / Ryans Road intersection is not predicted to be significantly affected by the proposed development. Although delays will increase on some movements, these are low volume and the increase is therefore considered tolerable. The safety record is also not anticipated to be significantly different to the 'no development' scenario. The Council is in the process of upgrading this intersection to a roundabout and the subdivision would provide development contributions that could be used for that upgrade. That said, it is considered that the development can progress prior to that upgrade occurring.

94. Capacity concerns identified at the SH73 / Pound Road roundabout (in 2038 both without and with the development) can be addressed with changes to the line-marking on the Pound Road north and south approaches. It is anticipated that the NZ Transport Agency can undertake these with relative ease and so there is again no need to delay the development until these occur.

95. The operation of the SH1 / SH73 intersection has been identified as currently over-capacity and this is exacerbated by background traffic growth plus the development traffic. The effects of the proposed development at this intersection are considered acceptable given the reasonably low scale deterioration in operation because of the proposed development and the certainty provided that the NZ Transport Agency are actively planning and funding an upgrade.

96. The proposal has been reviewed against the policy set out in the Christchurch Strategic Transport Plan. The Site location fits well with the aspirations for the freight network, including proximity to that network and the Airport.

Conclusion

97. Overall, it is considered that the proposed activity will have acceptable and no more than minor transport effects. Those effects are at the SH1 / SH73 intersection, SH73 / Pound Road intersection and to a lesser extent the Pound Road / Ryans Road intersection. Those effects relate to safety and capacity until such time as the suggested mitigation is constructed.

Appendix 1: Author's Skills & Experience

Nick Fuller

Nick Fuller is a Principal Transport Engineer with over two decades of experience in traffic and transportation engineering across New Zealand, the United Kingdom, Australia, and the Pacific Islands. He specialises in land development projects and has a strong background in providing transport advice to developers, as well as the New Zealand Transport Agency and local authorities in Christchurch and Auckland. Nick's expertise includes Integrated Transport Assessments, concept intersection layouts, and Road Safety Audits.

Throughout his career, Nick has worked on numerous significant Plan Change applications, providing expert transport advice and assessments. Some of the notable recent projects include:

i. West of Rolleston Residential Plan Changes: Rural to Residential rezoning to permit 3,770 dwellings plus associated local commercial centres to the west of Rolleston;

ii. Two Chain Road Industrial Plan Change: Rezoning of 98Ha of Rural land to permit Industrial purposes to the north-west of Rolleston;

iii. Lincoln South Plan Change: 1,710 dwellings plus associated commercial centres to the south of Lincoln, Selwyn; and

iv. iPort Extension Plan Change: Rezoning of 27Ha of Rural land to permit Industrial purposes to the north of Rolleston

Nick has provided Transport Assessments for a range of subdivisions, including industrial and residential developments. He has also completed training in Safe Systems Assessments and is a Road Safety Auditor and regularly undertakes Road Safety Audits for subdivisions.

Nick also has experience of providing Integrated Transport Assessments through the Fast Track process. Notably, he led the transport advice and prepared the Integrated Transport Assessments for the New Dunedin Hospital.

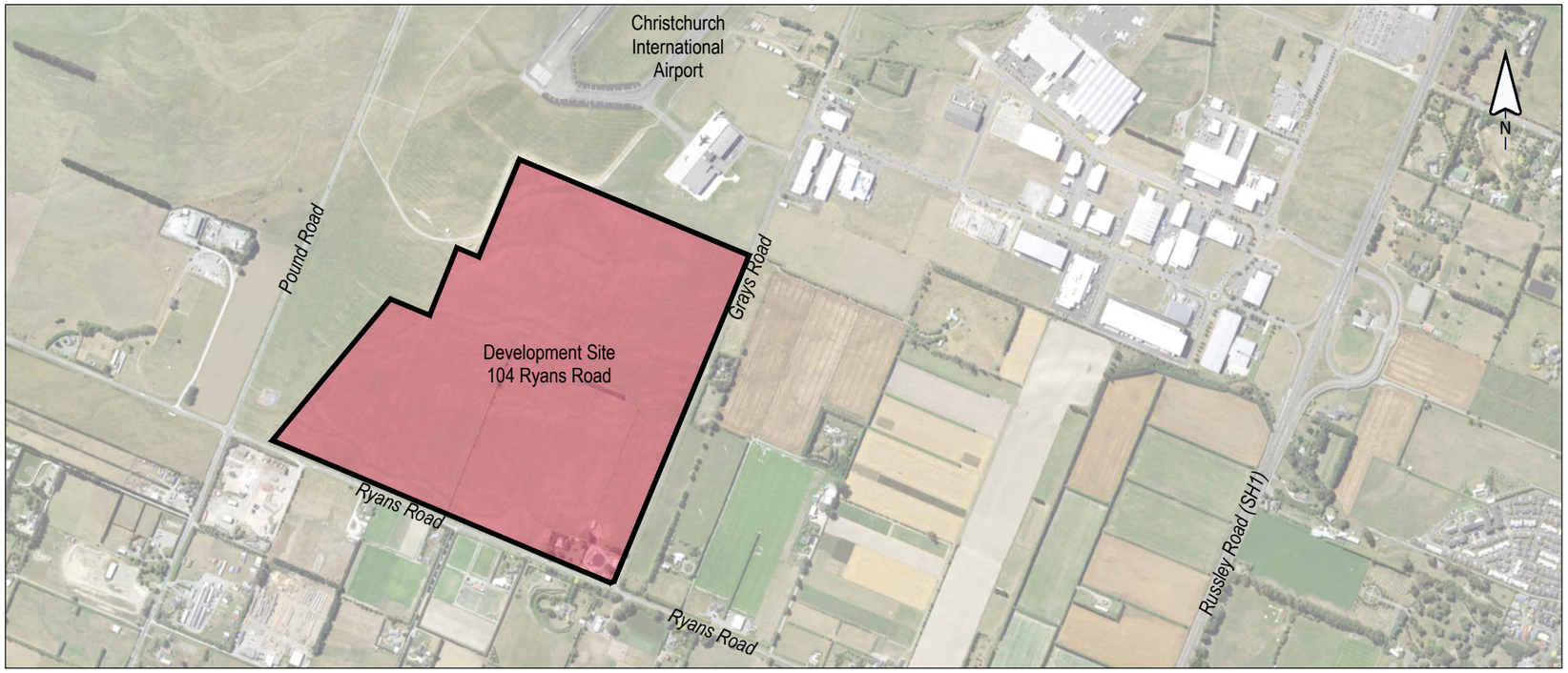
Rhys Chesterman

Rhys Chesterman is an experienced Director and Transport Engineer with over 20 years in the planning and traffic engineering field. His expertise is centred on land use development and subdivisions, where he provides design and technical advice, prepares traffic impact assessments, and offers expert evidence for Council and Environment Court.

His project experience is diverse, covering supermarkets, shopping malls, hotels, motels, retirement villages, hospitals, pre-schools, holiday parks, educational institutions, residential and business plan changes, residential show homes, quarry developments, wind farms, and various retail, commercial, and industrial developments.

Appendix 2: Subdivision Plans

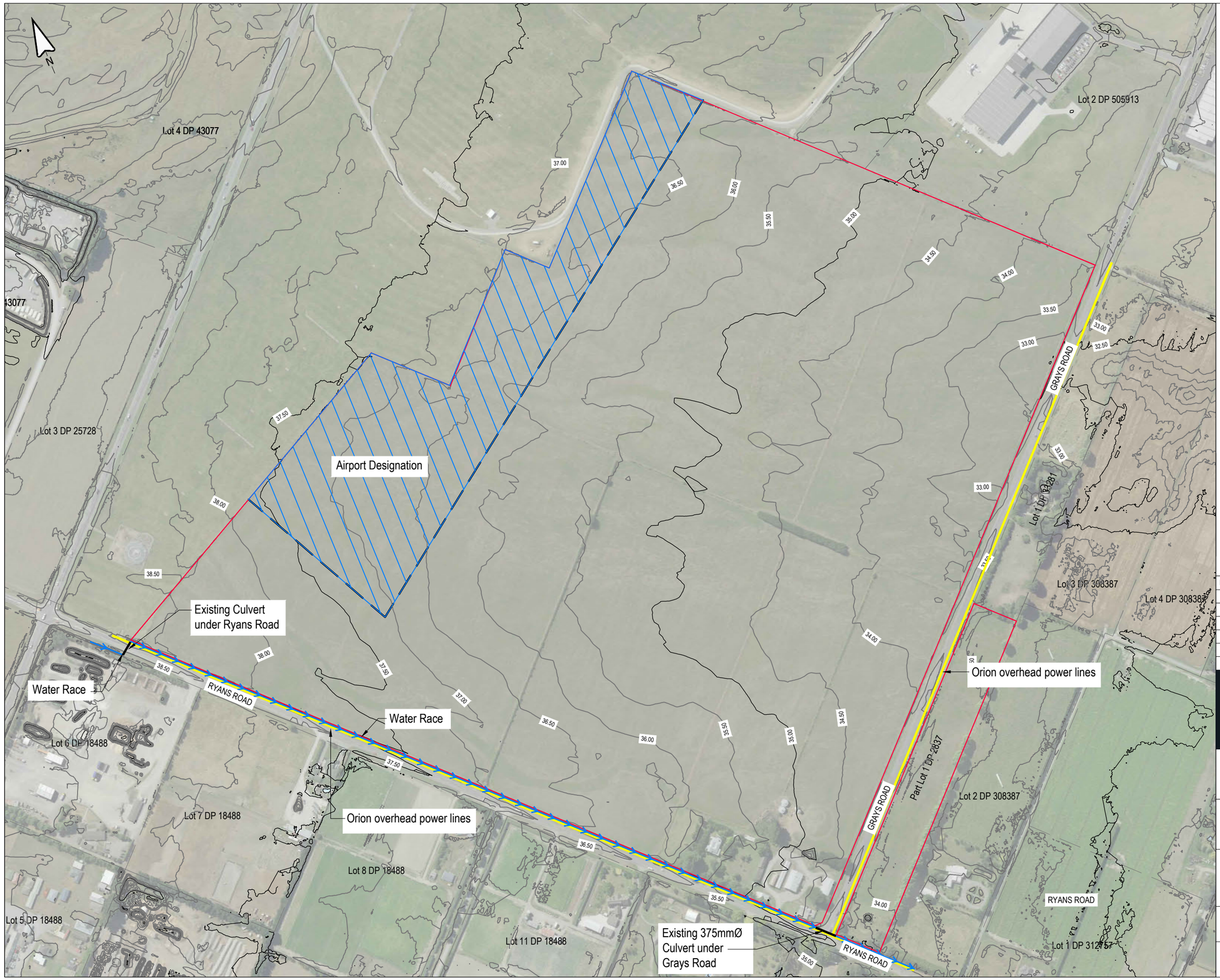
CARTER GROUP LIMITED
104 RYANS ROAD HAREWOOD



CARTER GROUP

CAPTURE
Land Development Consultants

DATE 06/03/2025
CIVIL APPROVAL PLAN SET
JOB No: 1252



Notes:

1. Levels are in terms of NZVD2016.
2. Existing contours are based on topographical survey and lidar data.

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

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CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
TOPOGRAPHICAL PLAN

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	1:4000	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RCPG100	A

LEGEND :

AIRPORT DESIGNATION

3.0m WIDE PLANTING STRIP ALONG RYANS AND GRAYS ROAD FRONTAGES

NOTES :

1. SCHEME PLAN ONLY, AREAS & DIMENSIONS ARE APPROXIMATE & SUBJECT TO FINAL SURVEY.
2. LOTS 200-201 ARE TO BE VESTED AS LOCAL PURPOSE UTILITY RESERVES (STORMWATER)
3. LOTS 300-301 ARE TO BE VESTED AS ROAD
4. LOT 400 IS TO BE VESTED AS LOCAL PURPOSE UTILITY RESERVE (WATER)
5. LOT 500 IS A BALANCE LOT.

ROADS TO BE VESTED

LOT 300 AREA = 22,444m²
LOT 301 AREA = 32,338m²
LOT 302 AREA = 18m²

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE Land Development Consultants

CLIENT

CARTER GROUP LIMITED

PROJECT

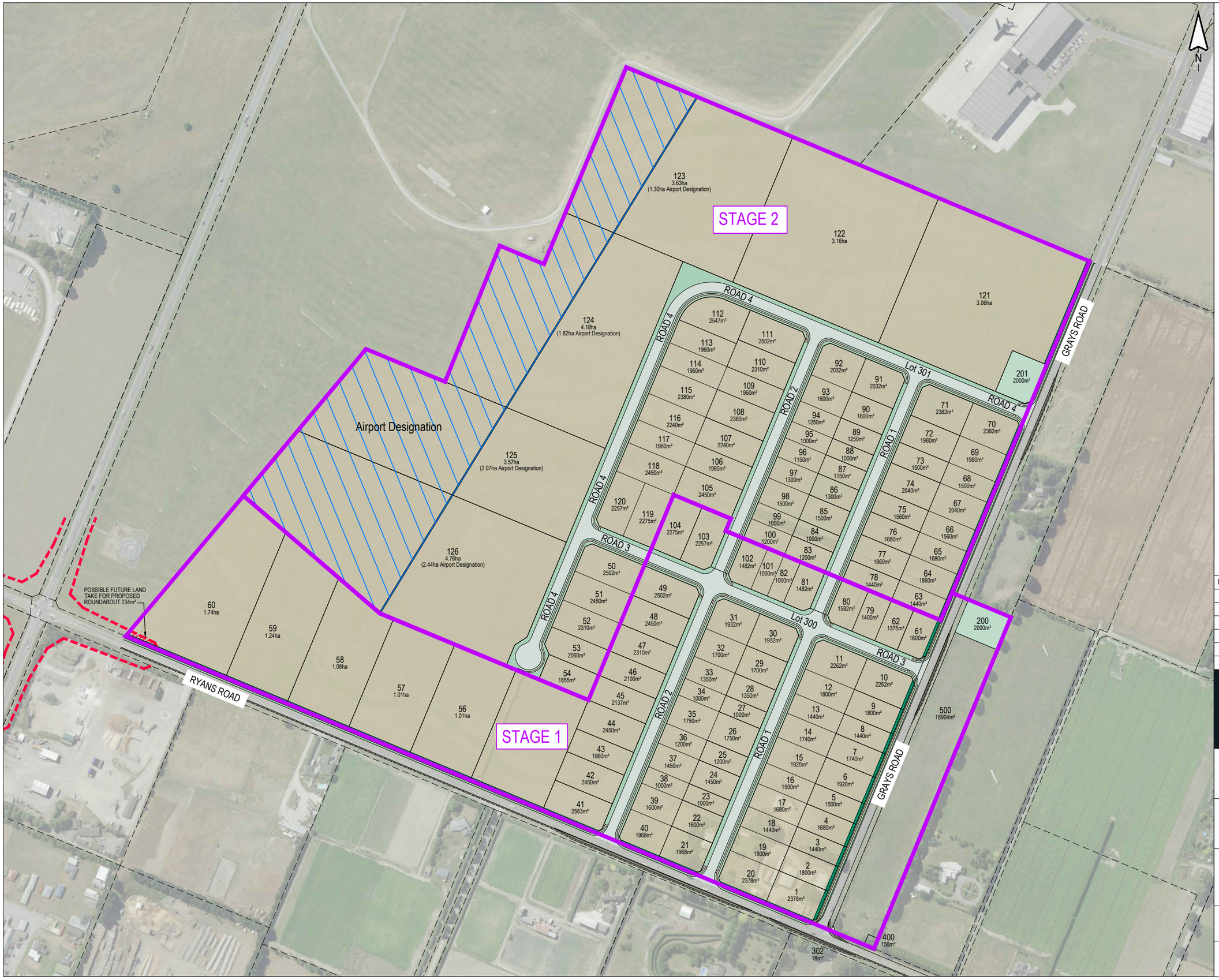
104 RYANS ROAD, HAREWOOD

PROPOSED SUBDIVISION OF PART LOT 3 & LOT 4 DP 22679 & PART LOT 1 DP 2837 (COMPRISED IN RT'S CB13A/1098 & CB7A/401)

STATUS	SCALE	SIZE
FOR APPROVAL	1:4000	A3

PROJECT	DRAWING NO	REVISION
1252	RC-PG110	A

c:_cam jobs\1252 - carter group ryans road\rc plans\1252 rc sheet 110



LEGEND :

STAGE BOUNDARIES

NOTES :

1. SCHEME PLAN ONLY, AREAS & DIMENSIONS ARE APPROXIMATE & SUBJECT TO FINAL SURVEY.

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

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PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
PROPOSED SUBDIVISION STAGING

STATUS	SCALE	SIZE
FOR APPROVAL	1:4000	A3

PROJECT	DRAWING NO	REVISION
1252	RC-PG115	A

Notes:

1. Levels are in terms of NZVD2016.
2. Existing contours are based on topographical survey and lidar data.
3. Proposed contours are finished design surface.

Legend:

Existing Contours (0.25m)

Proposed Contours (0.25m)

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

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PROJECT

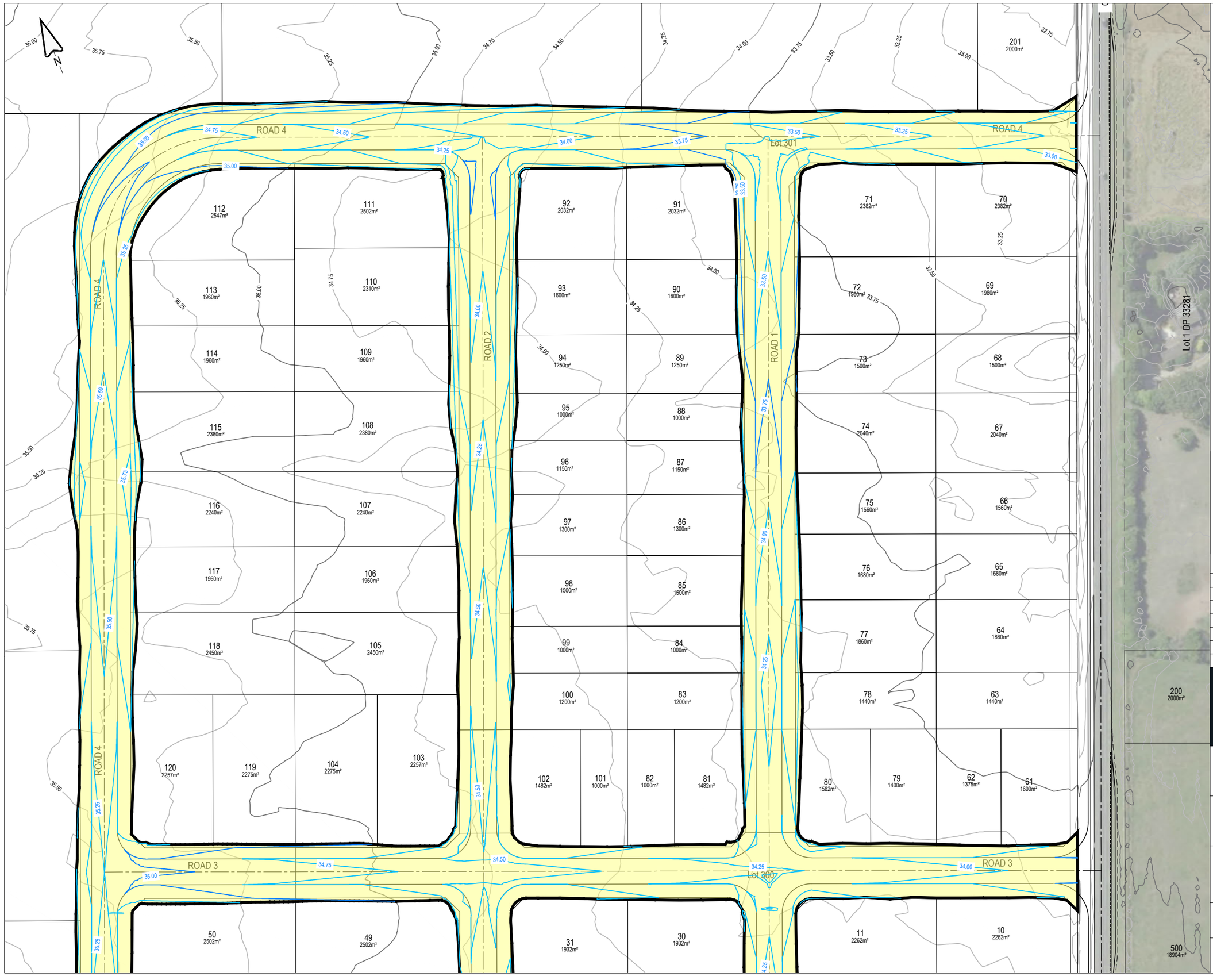
104 RYANS ROAD, HAREWOOD

DRAWING TITLE

EXISTING & PROPOSED CONTOURS (SHEET 1 OF 2)

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	1:1500	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RC-EW201	A



Notes:

1. Levels are in terms of NZVD2016.
2. Existing contours are based on topographical survey and lidar data.
3. Proposed contours are finished design surface.

Legend:

Existing Contours (0.25m)

Proposed Contours (0.25m)

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

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Land Development Consultants

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CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

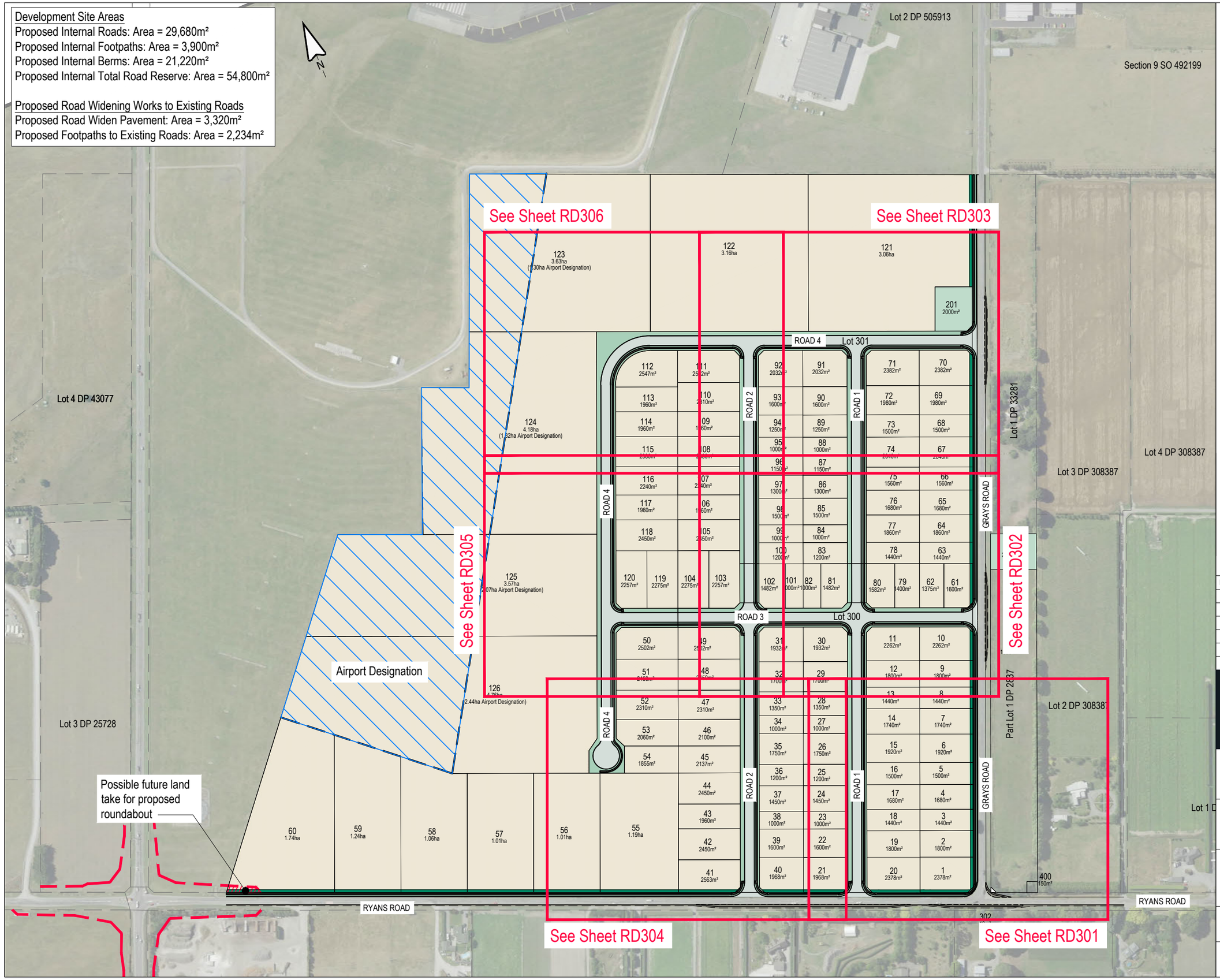
DRAWING TITLE
EXISTING & PROPOSED CONTOURS (SHEET 2 OF 2)

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	1:1500	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RC-EW202	A

Development Site Areas
Proposed Internal Roads: Area = 29,680m²
Proposed Internal Footpaths: Area = 3,900m²
Proposed Internal Berms: Area = 21,220m²
Proposed Internal Total Road Reserve: Area = 54,800m²

Proposed Road Widening Works to Existing Roads
Proposed Road Widen Pavement: Area = 3,320m²
Proposed Footpaths to Existing Roads: Area = 2,234m²



NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE Land Development Consultants

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PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD LAYOUT PLAN (OVERALL)

STATUS	SCALE	SIZE
FOR APPROVAL	1:4000	A3

PROJECT	DRAWING NO	REVISION
1252	RC-RD300	A

NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL
B	06/03/25	AMENDMENTS	TL

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PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD LAYOUT PLAN
(SHEET 1 OF 6)

STATUS	SCALE	SIZE
FOR APPROVAL	1:1000	A3

PROJECT	DRAWING NO	REVISION
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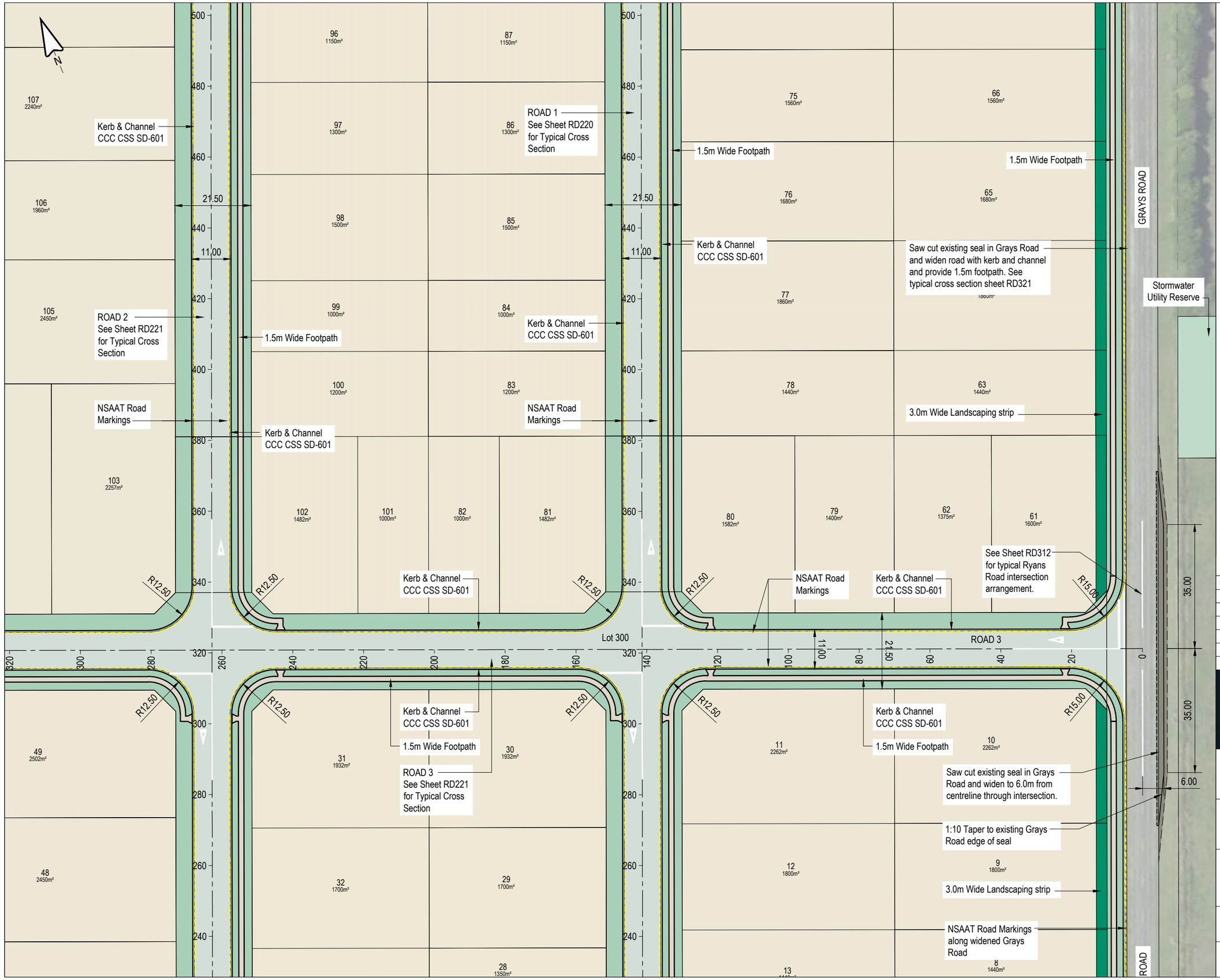


NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE Land Development Consultants

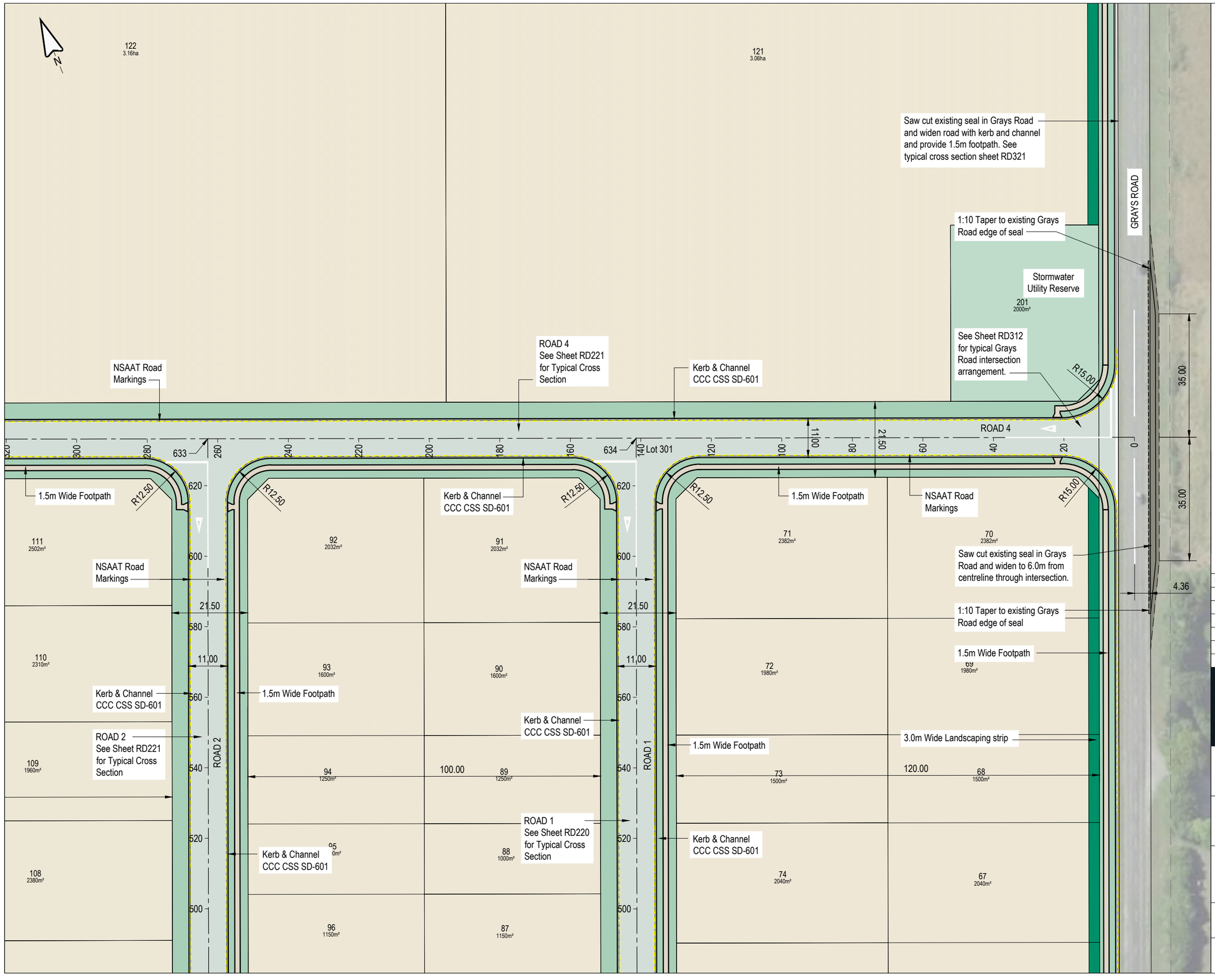
CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD LAYOUT PLAN
(SHEET 2 OF 6)

STATUS	SCALE	SIZE
FOR APPROVAL	1:1000	A3

PROJECT	DRAWING NO	REVISION
1252	RC-RD302	A



NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

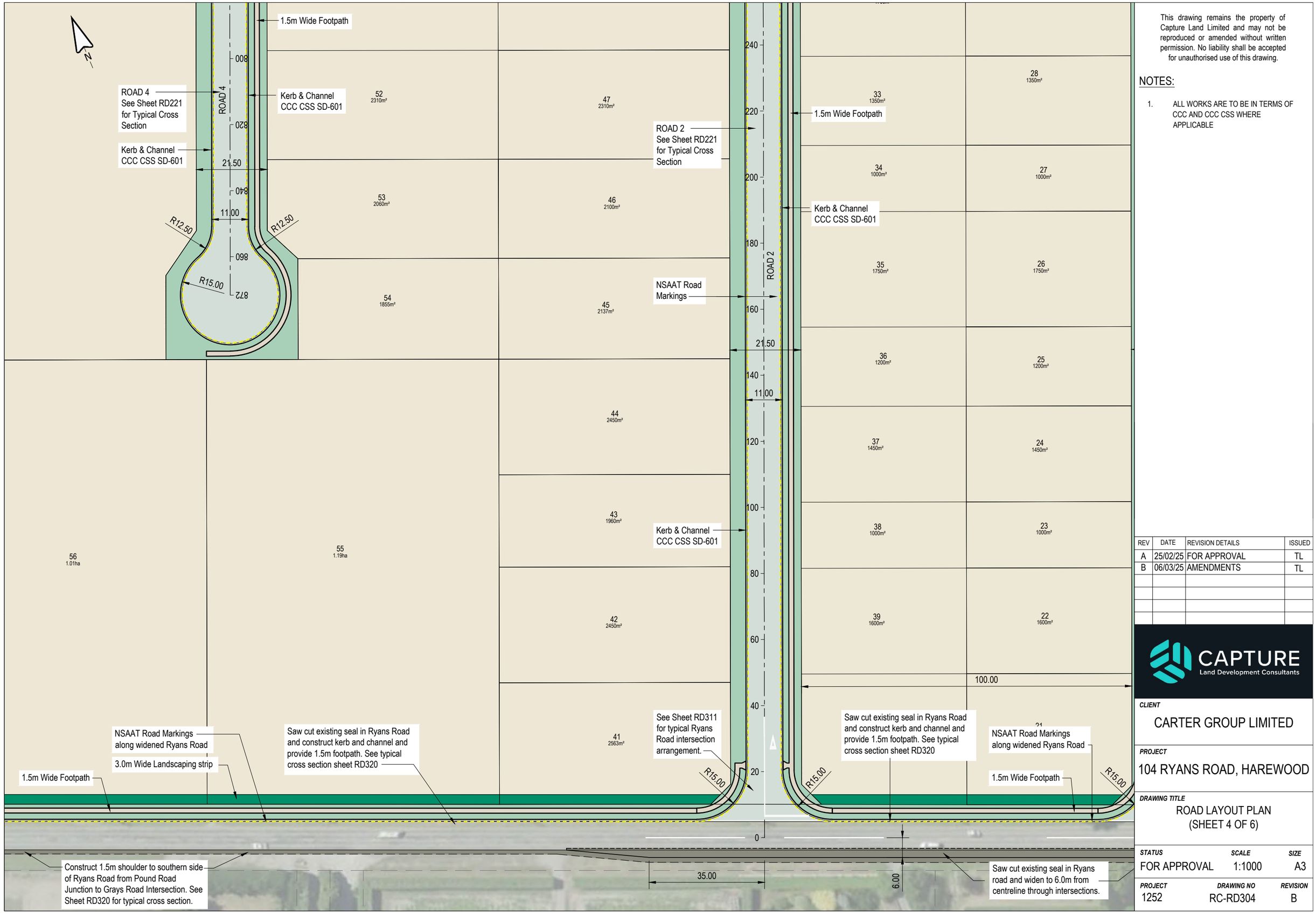
CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD LAYOUT PLAN
(SHEET 3 OF 6)

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	1:1000	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RC-RD303	A



NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL
B	06/03/25	AMENDMENTS	TL

CAPTURE
Land Development Consultants

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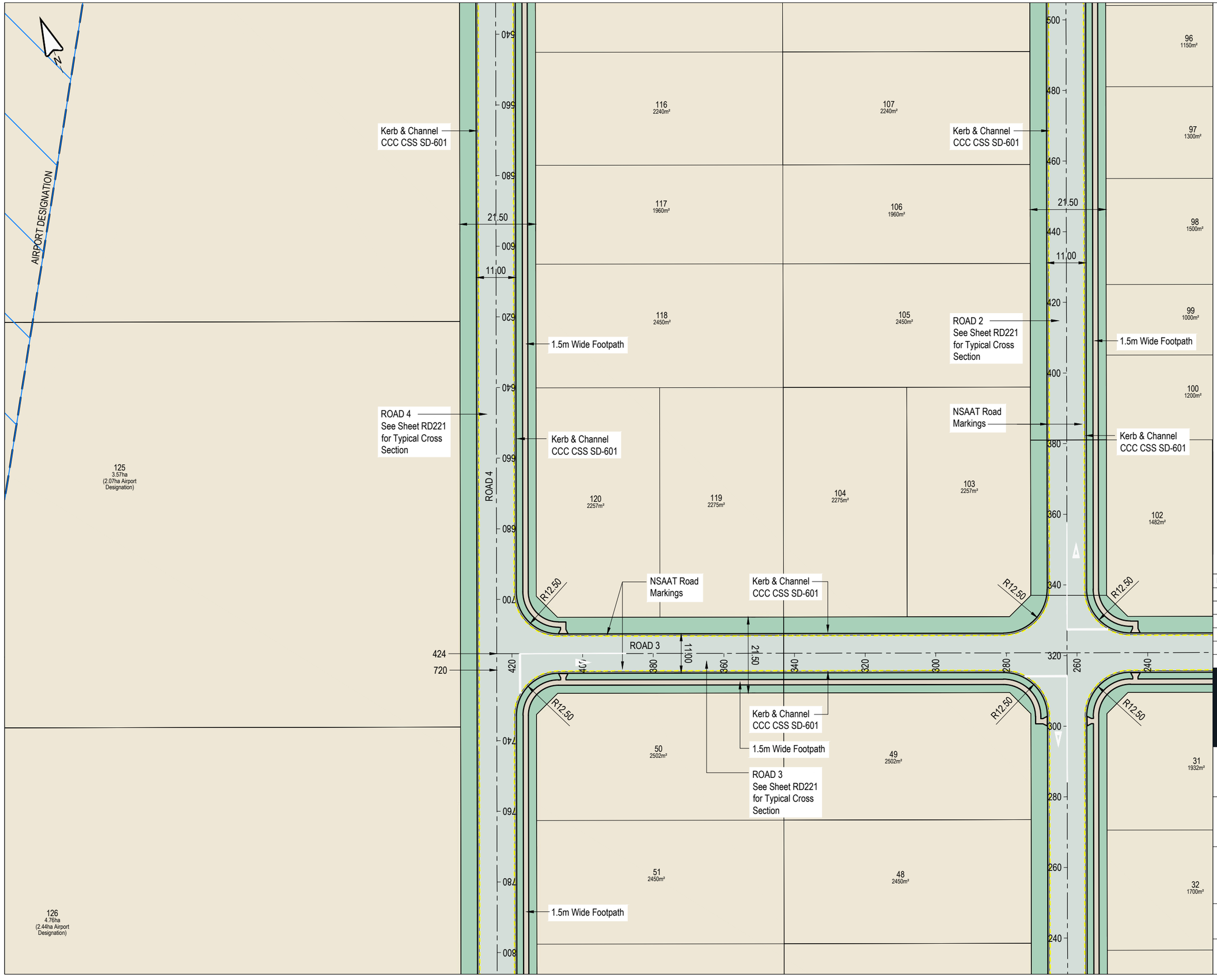
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD LAYOUT PLAN
(SHEET 4 OF 6)

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	1:1000	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RC-RD304	B



NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD LAYOUT PLAN
(SHEET 5 OF 6)

STATUS	SCALE	SIZE
FOR APPROVAL	1:1000	A3

PROJECT	DRAWING NO	REVISION
1252	RC-RD305	A

NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

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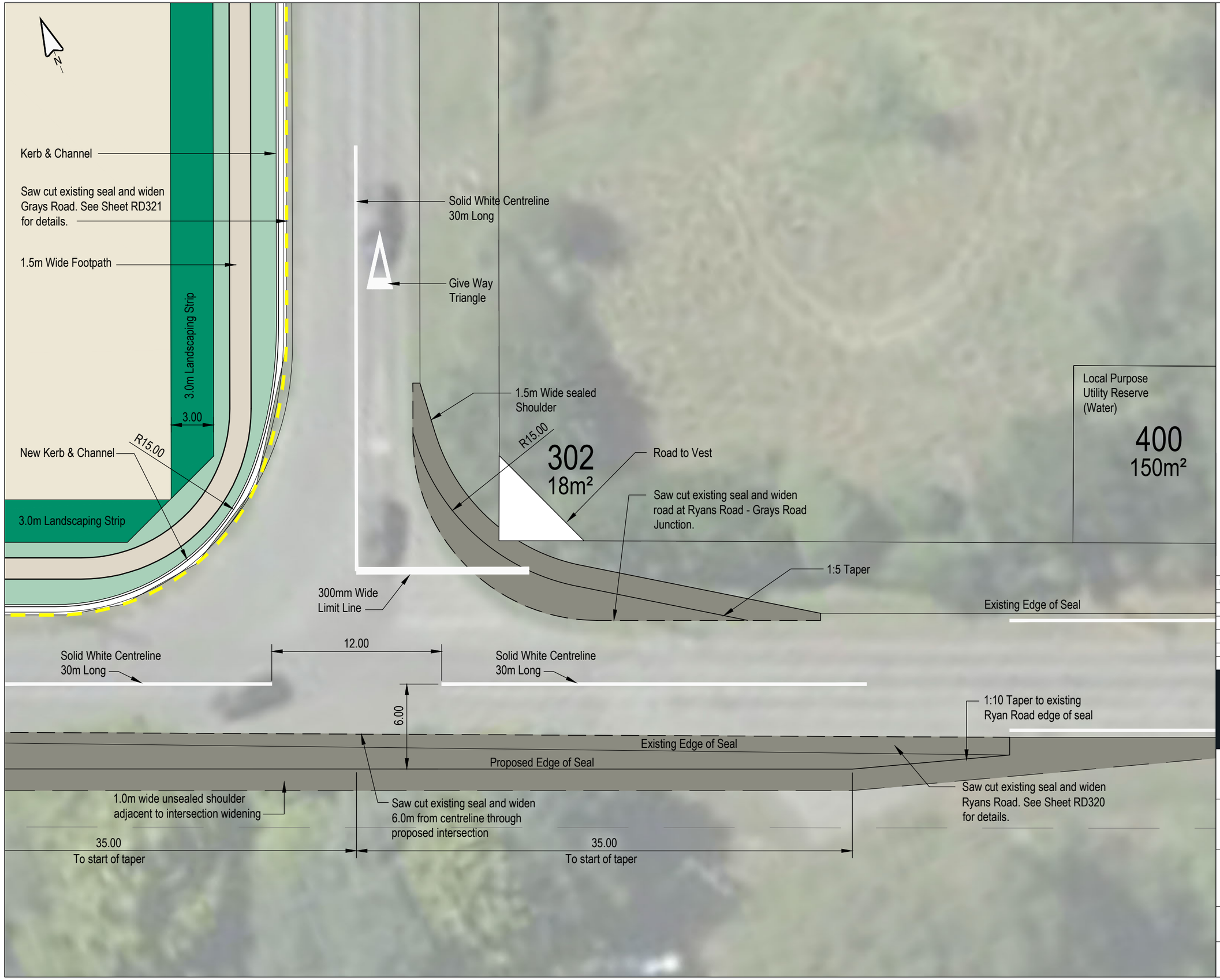
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD LAYOUT PLAN
(SHEET 6 OF 6)

STATUS	SCALE	SIZE
FOR APPROVAL	1:1000	A3

PROJECT	DRAWING NO	REVISION
1252	RC-RD306	A



NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL
B	06/03/25	AMENDMENTS	TL

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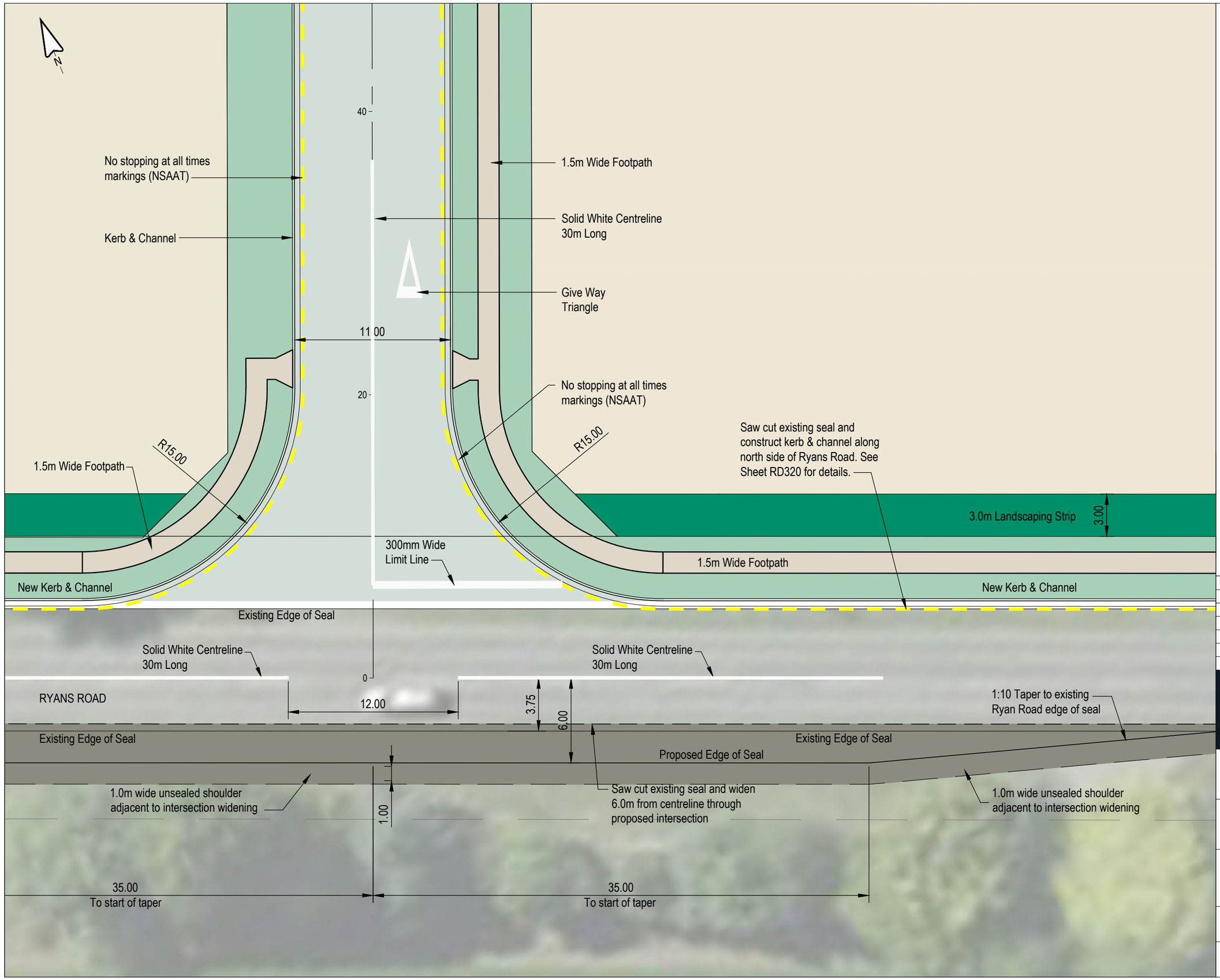
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
RYANS ROAD & GRAYS ROAD INTERSECTION

STATUS	SCALE	SIZE
FOR APPROVAL	1:250	A3

PROJECT	DRAWING NO	REVISION
1252	RC-RD310	B



NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

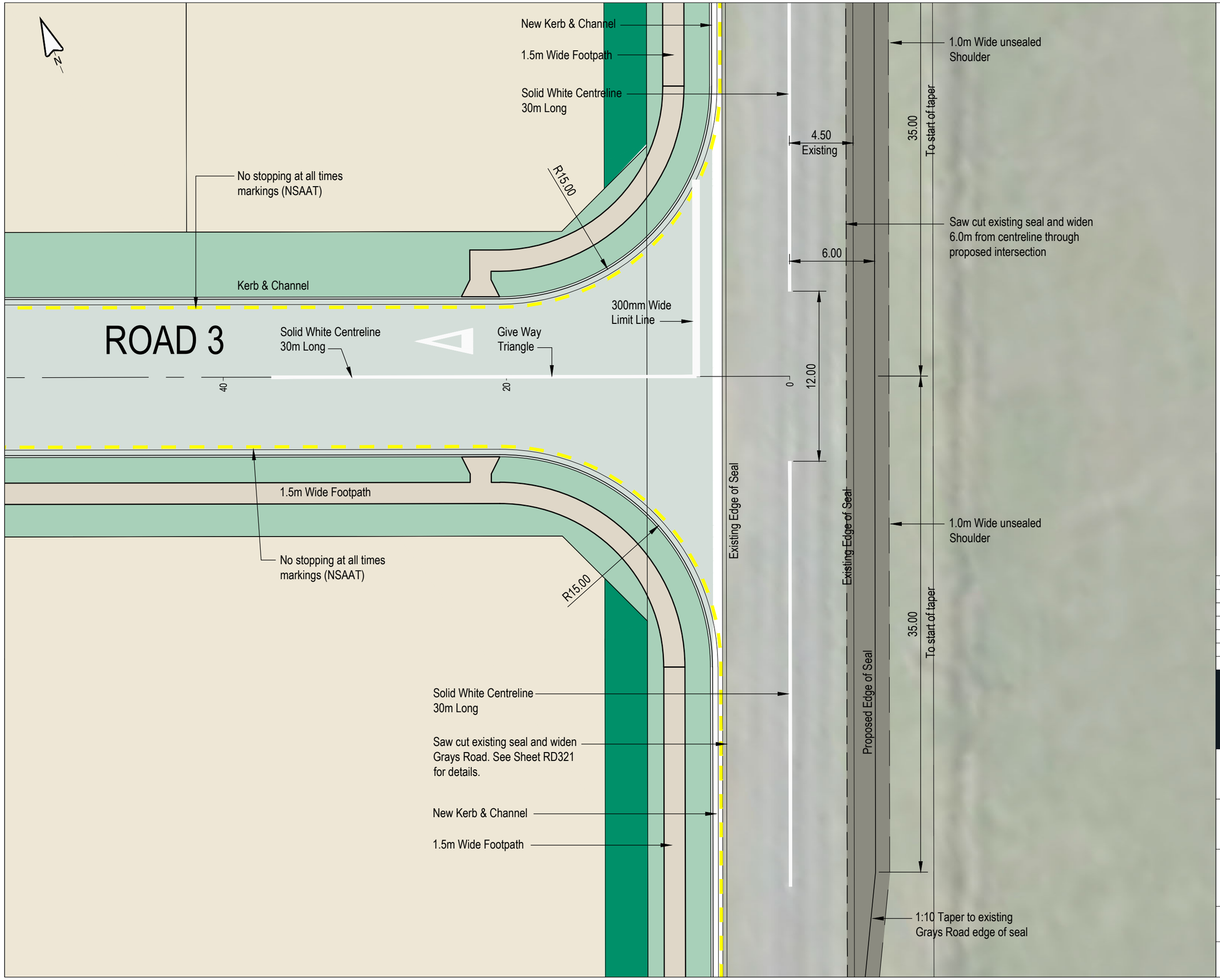
CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
TYPICAL RYANS ROAD INTERSECTION

STATUS	SCALE	SIZE
FOR APPROVAL	1:250	A3

PROJECT	DRAWING NO	REVISION
1252	RC-RD311	A



NOTES:

1. ALL WORKS ARE TO BE IN TERMS OF CCC AND CCC CSS WHERE APPLICABLE

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

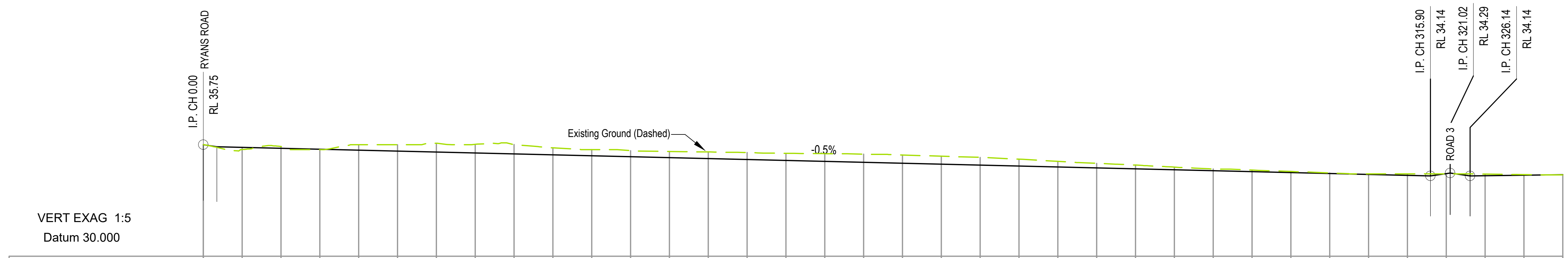
CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
TYPICAL GRAYS ROAD INTERSECTION

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	1:250	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RC-RD312	A



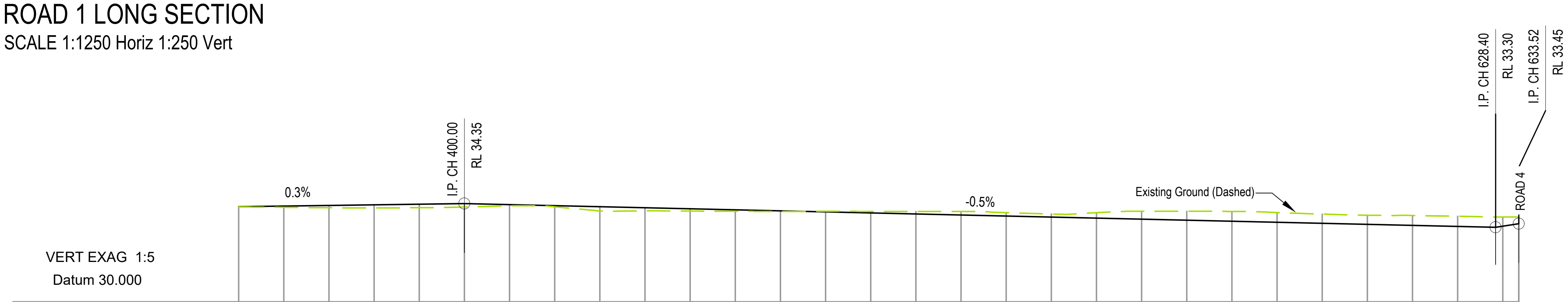
CHAINAGE	EXISTING LEVEL	PROPOSED LEVEL	CUT	FILL
0	35.75	35.75	0.00	0.00
10	35.50	35.61		0.11
20	35.66	35.57	0.09	
30	35.50	35.52		0.02
40	35.75	35.47	0.28	
50	35.75	35.42	0.33	
60	35.83	35.37	0.45	
70	35.77	35.33	0.45	
80	35.76	35.28	0.48	
90	35.59	35.23	0.36	
100	35.50	35.18	0.32	
110	35.44	35.13	0.31	
120	35.40	35.08	0.32	
130	35.38	35.04	0.34	
140	35.35	34.99	0.36	
150	35.31	34.94	0.37	
160	35.29	34.89	0.40	
170	35.26	34.84	0.42	
180	35.22	34.79	0.43	
190	35.16	34.75	0.41	
200	35.10	34.70	0.40	
210	35.01	34.65	0.36	
220	34.89	34.60	0.29	
230	34.79	34.55	0.24	
240	34.70	34.51	0.19	
250	34.60	34.46	0.14	
260	34.50	34.41	0.09	
270	34.45	34.36	0.09	
280	34.37	34.31	0.06	
290	34.30	34.26	0.03	
300	34.25	34.22	0.03	
310	34.25	34.17	0.08	
320	34.25	34.26		0.01
330	34.24	34.15	0.09	
340	34.21	34.18	0.03	
350	34.19	34.21		0.01

HORIZONTAL GEOMETRY: 633.5 22°33'40"

VERTICAL GEOMETRY: -3.00% | -0.48% | 3.00% | -3.00% | 0.28%

ROAD 1 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert



CHAINAGE	EXISTING LEVEL	PROPOSED LEVEL	CUT	FILL
350	34.19	34.21		0.01
360	34.18	34.23		0.05
370	34.16	34.26		0.10
380	34.15	34.29		0.14
390	34.16	34.32		0.16
400	34.19	34.35		0.16
410	34.24	34.30		0.06
420	34.20	34.25		0.05
430	34.02	34.21		0.19
440	34.02	34.16		0.14
450	34.02	34.12		0.10
460	34.00	34.07		0.07
470	34.00	34.03		0.03
480	34.00	33.98	0.02	
490	34.00	33.93	0.07	
500	34.00	33.89	0.11	
510	34.00	33.84	0.16	
520	33.95	33.80	0.15	
530	33.88	33.75	0.13	
540	33.94	33.71	0.24	
550	34.00	33.66	0.34	
560	34.00	33.61	0.39	
570	34.00	33.57	0.43	
580	33.95	33.52	0.43	
590	33.88	33.48	0.40	
600	33.83	33.43	0.40	
610	33.82	33.38	0.43	
620	33.78	33.34	0.44	
630	33.75	33.35	0.40	
634	33.75	33.45	0.30	

HORIZONTAL GEOMETRY: 633.5 22°33'40"

VERTICAL GEOMETRY: 0.28% | -0.46% | 3.00%

ROAD 1 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE Land Development Consultants

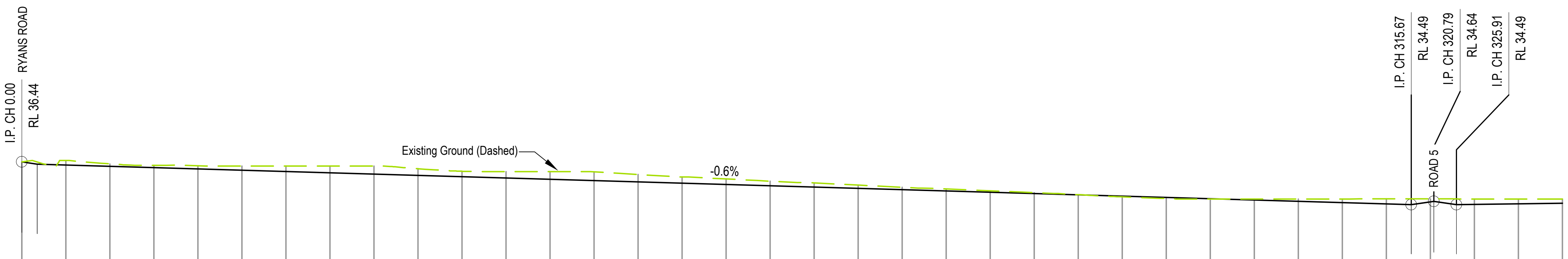
CLIENT: CARTER GROUP LIMITED

PROJECT: 104 RYANS ROAD, HAREWOOD

DRAWING TITLE: ROAD 1 LONGSECTION

STATUS: FOR APPROVAL | SCALE: AS SHOWN | SIZE: A3

PROJECT: 1252 | DRAWING NO: RC-RD315 | REVISION: A



VERT EXAG 1:5
Datum 30.000

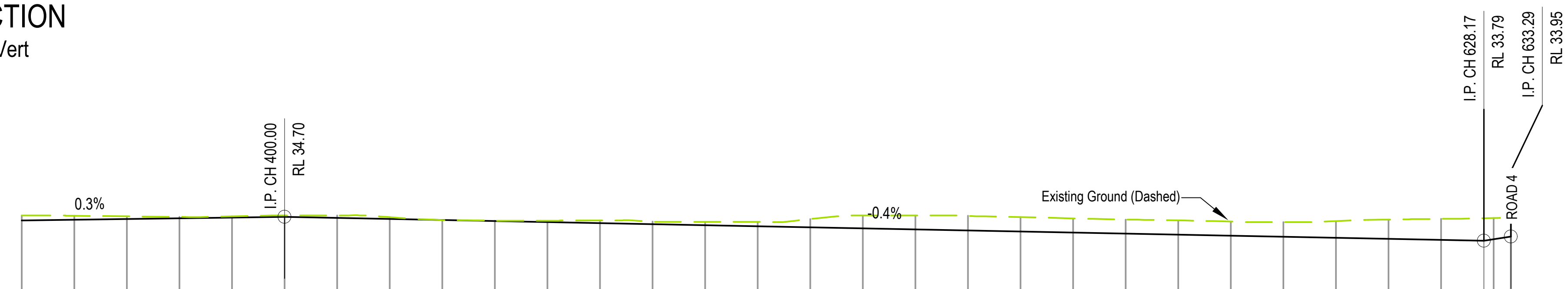
CHAINAGE	EXISTING LEVEL	PROPOSED LEVEL	CUT	FILL
0	36.44	36.44	0.00	0.00
10	36.50	36.30	0.21	
20	36.35	36.24	0.11	
30	36.28	36.18	0.10	
40	36.27	36.12	0.15	
50	36.25	36.06	0.19	
60	36.25	36.00	0.25	
70	36.25	35.94	0.31	
80	36.25	35.88	0.37	
90	36.13	35.82	0.31	
100	36.01	35.76	0.25	
110	36.00	35.70	0.30	
120	36.00	35.65	0.35	
130	35.99	35.59	0.40	
140	35.87	35.53	0.34	
150	35.75	35.47	0.28	
160	35.66	35.41	0.25	
170	35.56	35.35	0.21	
180	35.48	35.29	0.19	
190	35.38	35.23	0.15	
200	35.29	35.17	0.11	
210	35.21	35.11	0.09	
220	35.12	35.06	0.07	
230	35.04	35.00	0.04	
240	34.95	34.94	0.01	
250	34.85	34.88		0.03
260	34.77	34.82		0.05
270	34.75	34.76		0.01
280	34.75	34.70	0.05	
290	34.75	34.64	0.11	
300	34.75	34.58	0.17	
310	34.76	34.52	0.24	
320	34.76	34.62	0.14	
330	34.75	34.50	0.25	
340	34.75	34.53	0.22	
350	34.75	34.56	0.19	

HORIZONTAL GEOMETRY: 633.3, 22°33'40"

VERTICAL GEOMETRY: -3.00%, -0.59%, 3.00%, 3.00%, 0.28%

ROAD 2 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert



VERT EXAG 1:5
Datum 30.000

CHAINAGE	EXISTING LEVEL	PROPOSED LEVEL	CUT	FILL
350	34.75	34.56	0.19	
360	34.74	34.59	0.15	
370	34.72	34.61	0.10	
380	34.70	34.64	0.05	
390	34.72	34.67	0.05	
400	34.75	34.70	0.05	
410	34.75	34.66	0.09	
420	34.68	34.62	0.07	
430	34.57	34.58		0.01
440	34.56	34.54	0.02	
450	34.55	34.50	0.05	
460	34.57	34.46	0.11	
470	34.52	34.42	0.10	
480	34.51	34.38	0.13	
490	34.50	34.34	0.16	
500	34.61	34.30	0.31	
510	34.75	34.26	0.49	
520	34.75	34.22	0.53	
530	34.74	34.18	0.55	
540	34.69	34.14	0.55	
550	34.64	34.10	0.54	
560	34.60	34.06	0.53	
570	34.56	34.02	0.54	
580	34.52	33.98	0.53	
590	34.50	33.94	0.56	
600	34.53	33.90	0.63	
610	34.60	33.87	0.73	
620	34.62	33.83	0.79	
630	34.65	33.85	0.81	
633	34.67	33.95	0.72	

HORIZONTAL GEOMETRY: 633.3, 22°33'40"

VERTICAL GEOMETRY: 0.28%, -0.40%, 3.00%

ROAD 2 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE Land Development Consultants

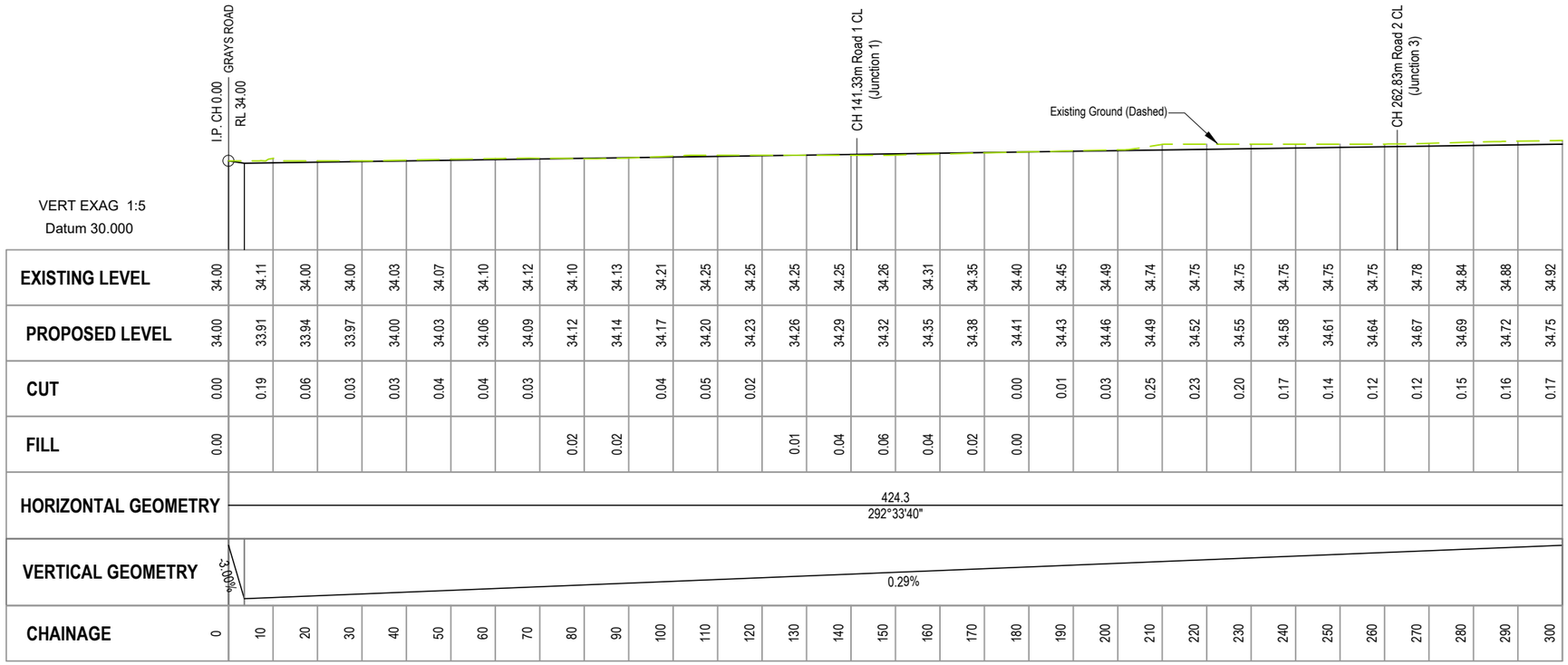
CLIENT: CARTER GROUP LIMITED

PROJECT: 104 RYANS ROAD, HAREWOOD

DRAWING TITLE: ROAD 2 LONGSECTION

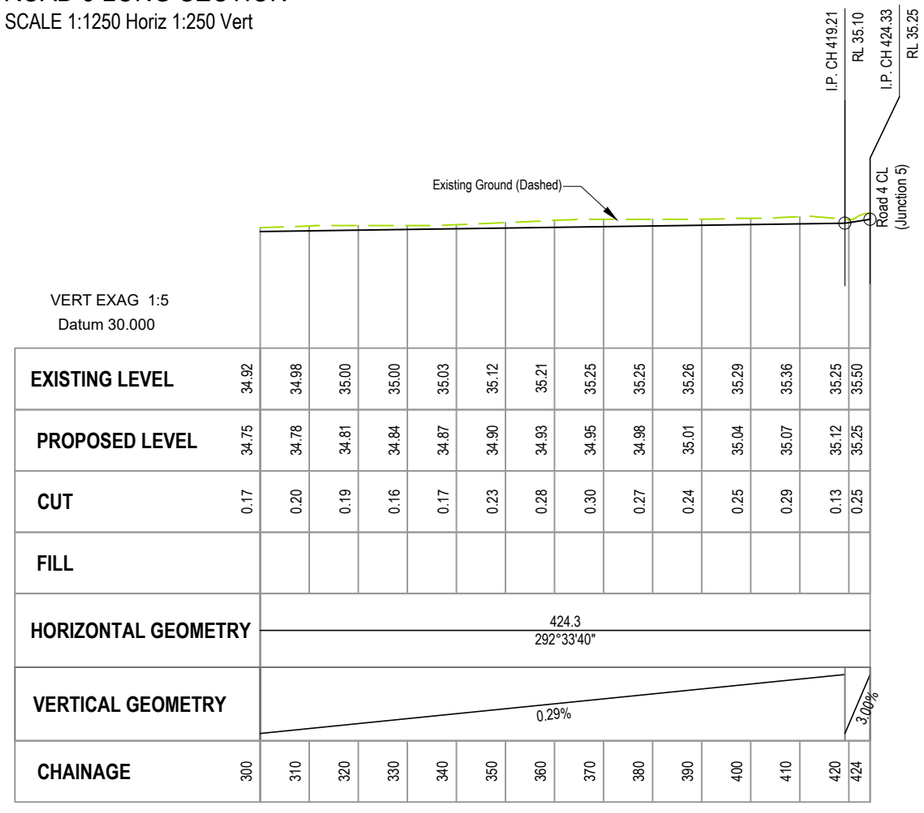
STATUS	SCALE	SIZE
FOR APPROVAL	AS SHOWN	A3

PROJECT	DRAWING NO	REVISION
1252	RC-RD316	A



ROAD 3 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert



ROAD 3 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

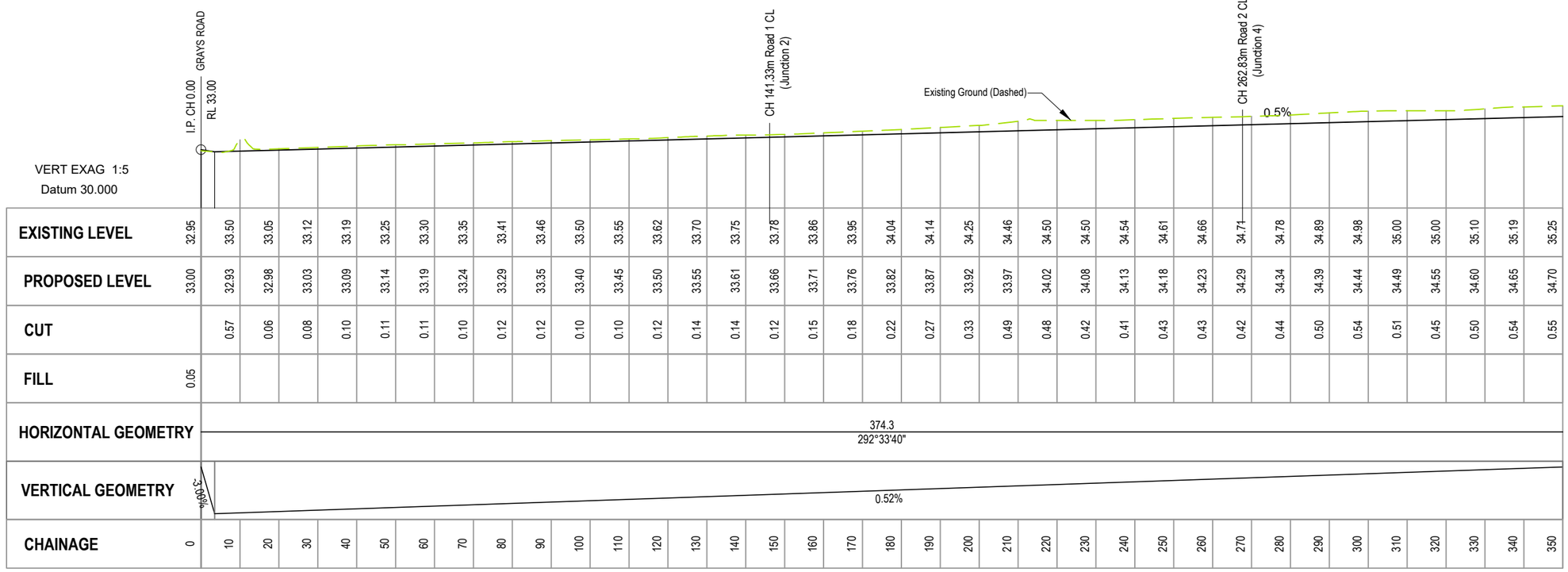
CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD 3 LONGSECTION

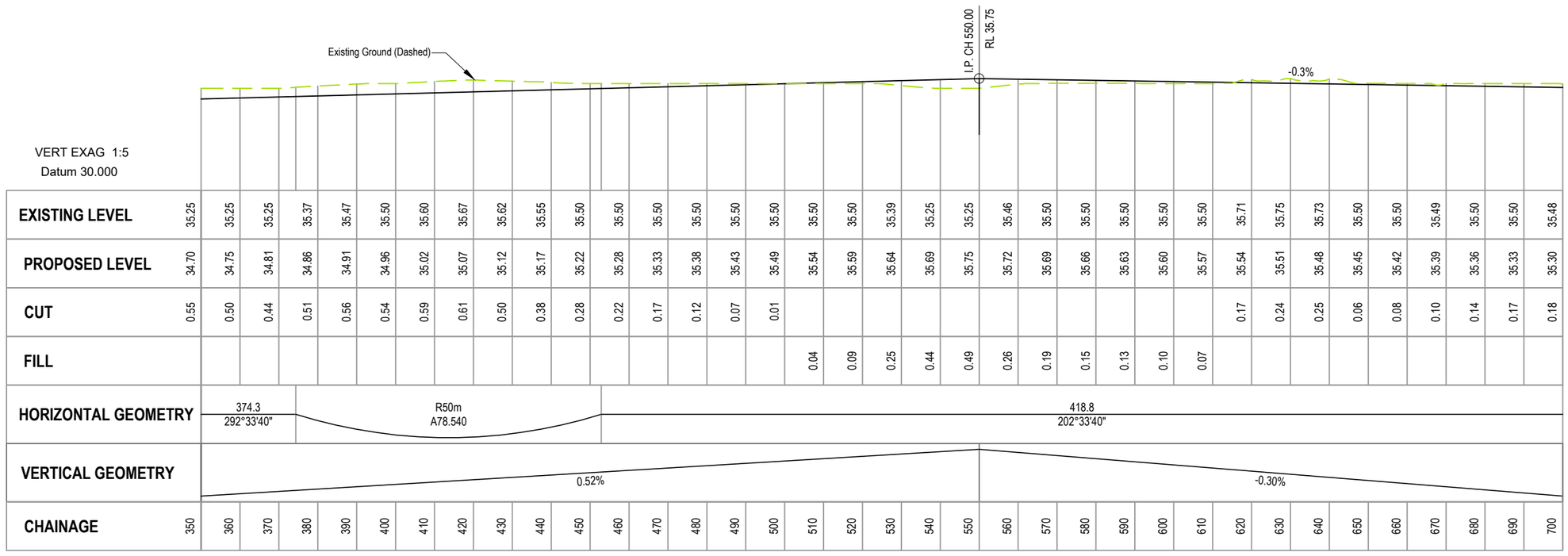
STATUS	*SCALE*	*SIZE*
FOR APPROVAL	AS SHOWN	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RC-RD317	A



ROAD 4 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert



ROAD 4 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

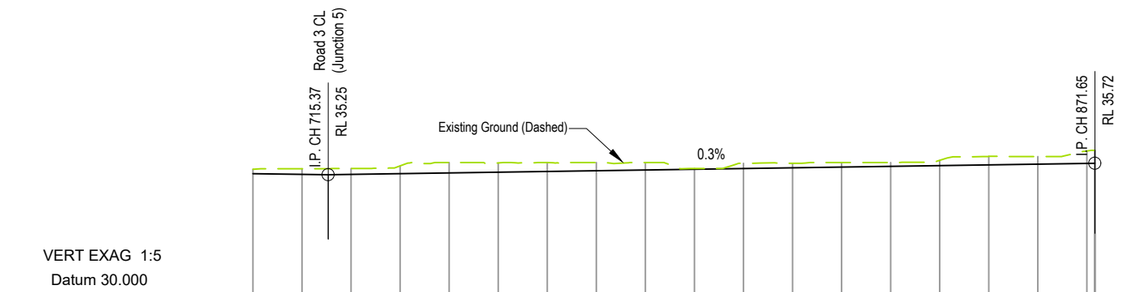
CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD 4 LONGSECTION
(SHEET 1 OF 2)

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	AS SHOWN	A3

PROJECT	*DRAWING NO*	*REVISION*
1252	RC-RD318	A



VERT EXAG 1:5
Datum 30.000

EXISTING LEVEL	35.48	35.50	35.50	35.61	35.75	35.73	35.75	35.75	35.75	35.50	35.72	35.72	35.75	35.75	35.84	36.00	36.00	36.22 36.25
PROPOSED LEVEL	35.30	35.27	35.26	35.29	35.32	35.35	35.38	35.41	35.44	35.47	35.50	35.53	35.56	35.59	35.62	35.65	35.68	35.71 35.72
CUT	0.18	0.23	0.24	0.31	0.43	0.38	0.37	0.34	0.31	0.03	0.21	0.18	0.19	0.16	0.21	0.34	0.31	0.51 0.53
FILL																		
HORIZONTAL GEOMETRY		418.8 202°33'40"																
VERTICAL GEOMETRY		-0.30%		0.30%														
CHAINAGE	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870 872

ROAD 4 LONG SECTION

SCALE 1:1250 Horiz 1:250 Vert

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

CAPTURE
Land Development Consultants

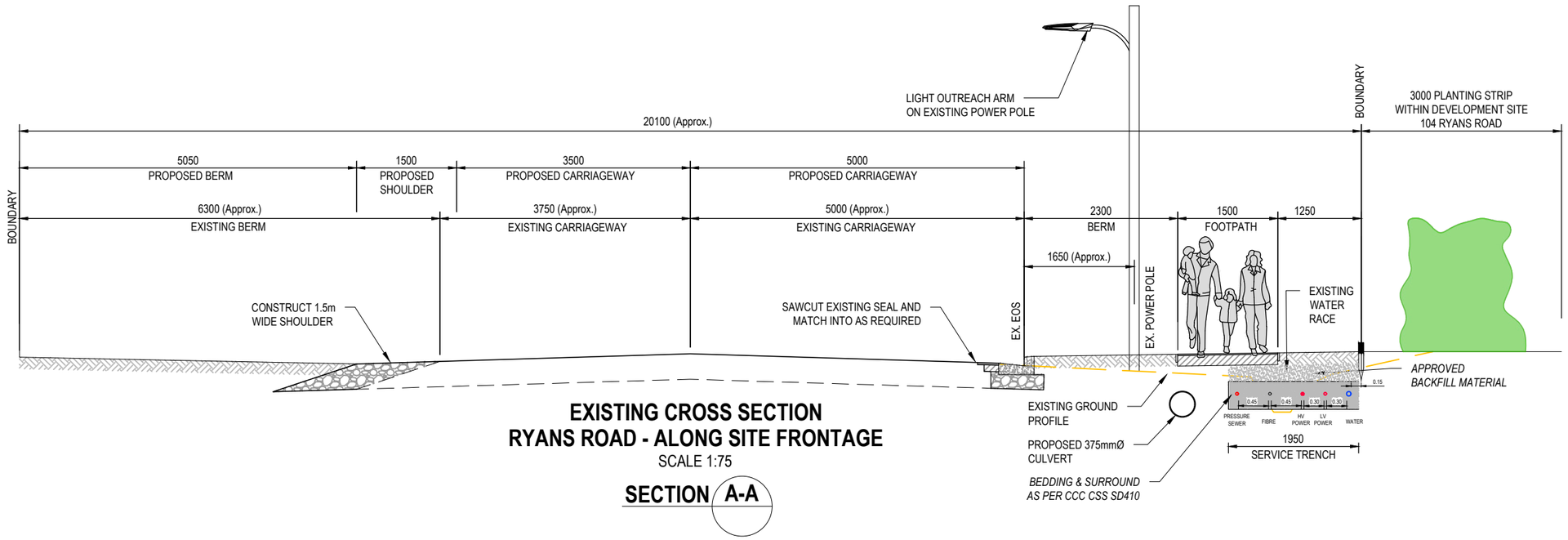
CLIENT
CARTER GROUP LIMITED

PROJECT
104 RYANS ROAD, HAREWOOD

DRAWING TITLE
ROAD 4 LONGSECTION
(SHEET 2 OF 2)

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	AS SHOWN	A3

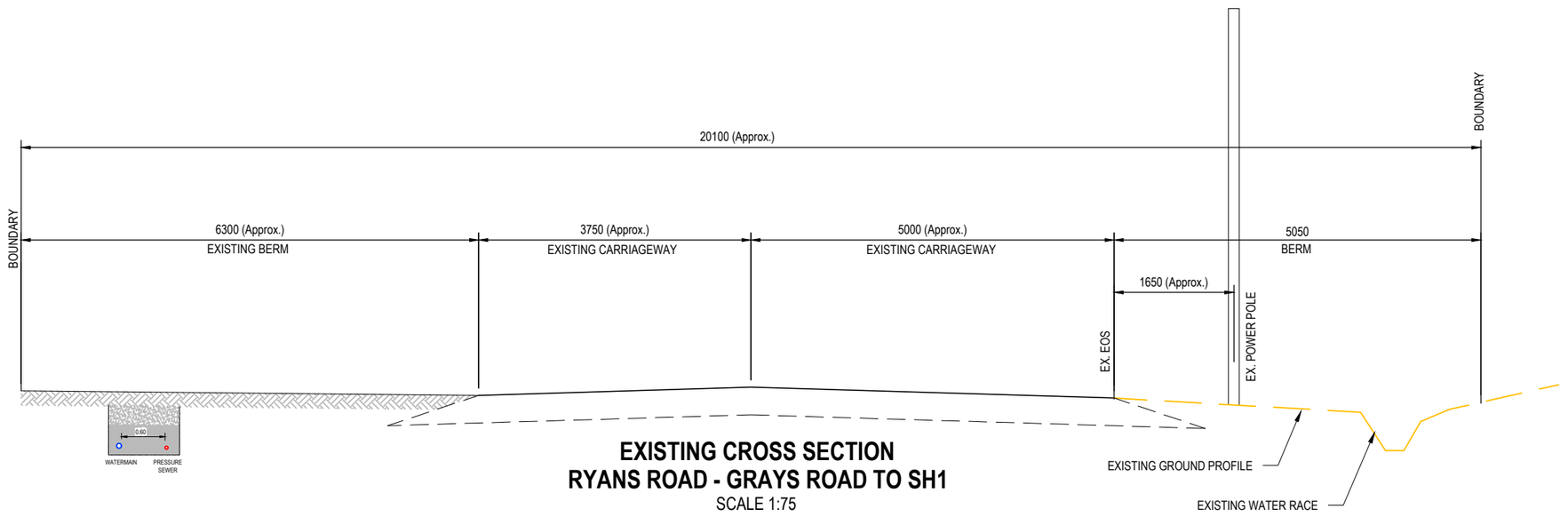
PROJECT	*DRAWING NO*	*REVISION*
1252	RC-RD319	A



EXISTING CROSS SECTION
RYANS ROAD - ALONG SITE FRONTAGE

SCALE 1:75

SECTION A-A



EXISTING CROSS SECTION
RYANS ROAD - GRAYS ROAD TO SH1

SCALE 1:75

SECTION B-B

CLIENT

CARTER GROUP LIMITED

104 RYANS ROAD
HAREWOOD
CHRISTCHURCH

PROJECT

RYANS ROAD
INDUSTRIAL PARK

CAPTURE
Land Development Consultants

REV	DATE	REVISION DETAILS	ISSUED
B	06/03/25	AMENDMENTS	TL
A	25/02/25	FOR APPROVAL	TL

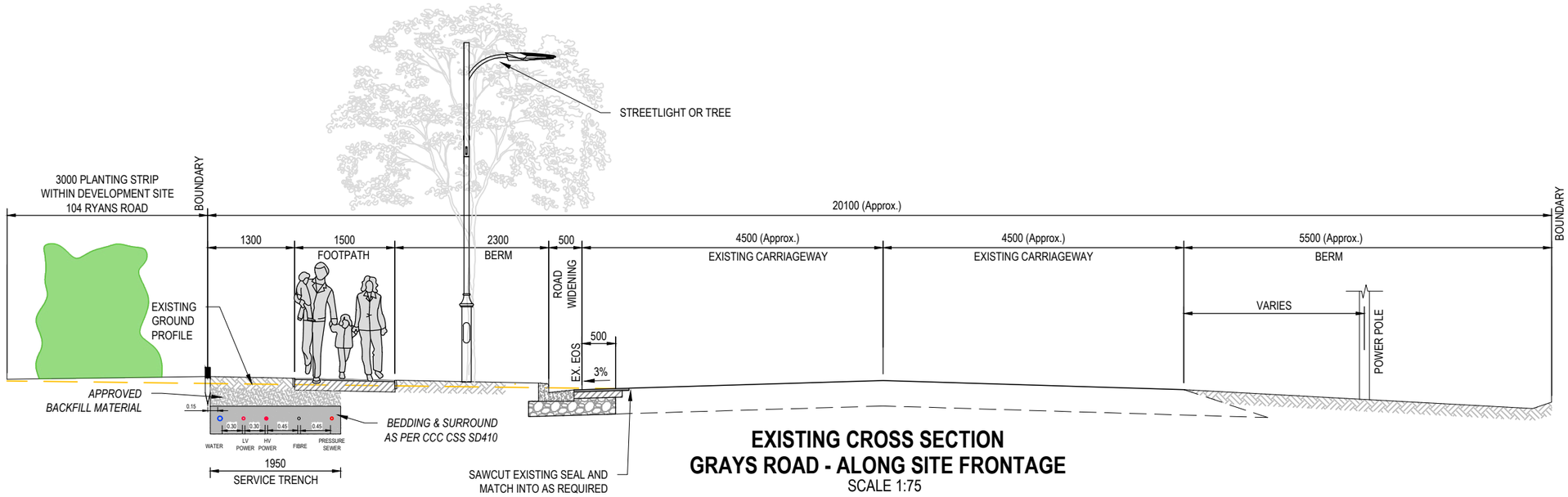
DRAWING TITLE

PROPOSED ROAD WIDENING
TYPICAL CROSS SECTIONS

STATUS	*SCALE*	*SIZE*
FOR APPROVAL	As Shown	A3

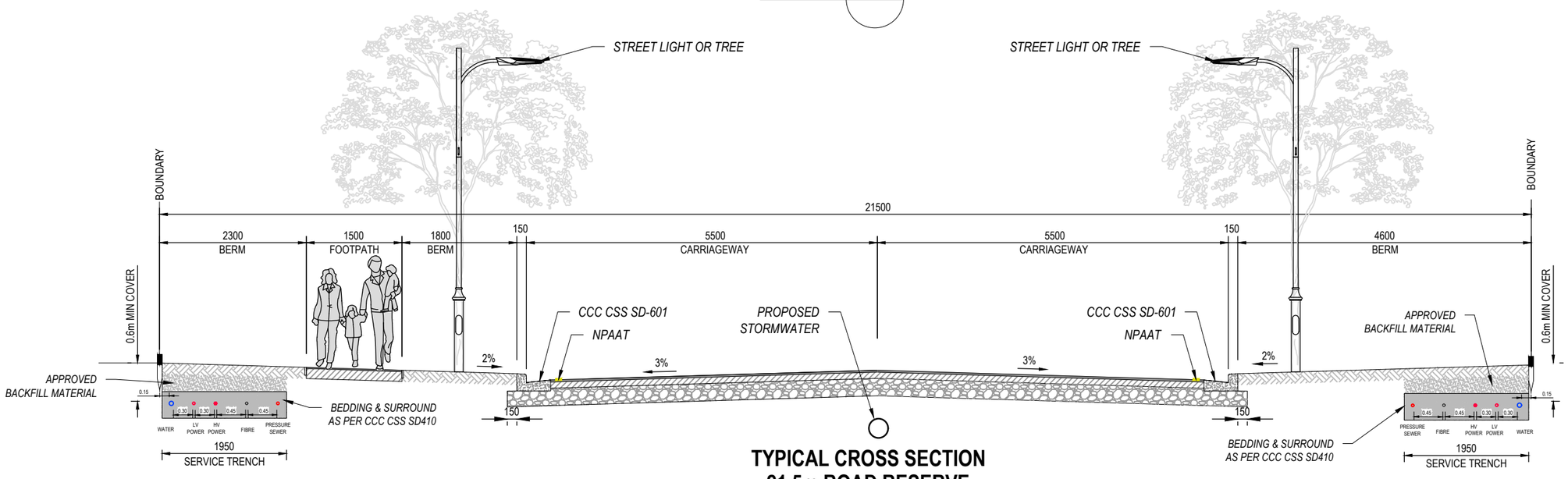
PROJECT NO	*DRAWING NO*	*REVISION*
1252	RC-RD320	B

1252 RC Sheet 320.dwg



EXISTING CROSS SECTION
GRAYS ROAD - ALONG SITE FRONTAGE
SCALE 1:75

SECTION C-C



TYPICAL CROSS SECTION
21.5m ROAD RESERVE
ROADS 1-4
SCALE 1:75

SECTION D-D

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CLIENT
CARTER GROUP LIMITED

104 RYANS ROAD
HAREWOOD
CHRISTCHURCH

PROJECT
RYANS ROAD
INDUSTRIAL PARK

CAPTURE
Land Development Consultants

REV	DATE	REVISION DETAILS	ISSUED
A	25/02/25	FOR APPROVAL	TL

DRAWING TITLE
PROPOSED ROADING
TYPICAL CROSS SECTIONS

STATUS	SCALE	SIZE
FOR APPROVAL	As Shown	A3

PROJECT NO	DRAWING NO	REVISION
1252	RC-RD321	A

1252 RC Sheet 320.dwg

Appendix 3: Pound Road / Ryans Road Intersection Upgrade

Appendix 4: Crash Review

Location	Comments	Severity
Ryans Rd / Russley Rd Intersection	Rear-end collision on Ryans Road approach to SH1	1 x Non-injury
Ryans Rd Mid-block	Loss of control whilst parking	1 x Non-injury
Ryans Rd / Pound Rd Intersection	Failure to stop at intersection on Ryans Rd westbound	1 x Minor injury
	Failure to give-way pulling out of Ryans Rd eastbound	1 x Minor injury
	Failure to slow for traffic ahead. That traffic was turning right from Pound Rd to Ryans Rd.	1 x Minor injury
	Failure to slow for traffic ahead (westbound on Ryans Rd).	1 x Non-injury
	Failure to give-way turning right into Ryans Rd west (obscured by queue on right turn to Ryans Rd east).	1 x Non-injury
	A driver was distracted by an earlier crash and crossed the centreline, leading to a head-on collision.	1 x Non-injury
	Failure to give-way turning right out of Ryans Rd (westbound).	1 x Non-injury
George Bellew Rd Mid-block	Medical event	1 x Serious injury
	Loss of control.	1 x Non-injury
	A cyclist has hot the rear of a stationary truck.	1 x Serious injury
Ron Guthrey Rd / Syd Bradley Dr Intersection	A driver on Ron Guthrey Rd (south) failed to give-way to circulating traffic.	1 x Minor injury
SH1 / George Bellew Rd / Syd Bradley Rd Interchange	Medical event (southbound on SH1)	1 x Non-injury
	Loss of control by a motorcycle on the bend of the southbound off-ramp	1 x Serious injury
	Medical event on the bend of the southbound off-ramp	1 x Non-injury
	Loss on control (northbound on SH1)	1 x Non-injury
SH1 / SH73 Intersection – SH1 North	Head-on collision where a driver travelled north in the southbound lane	1 x Non-injury
	Rear-end when failing to stop for queued traffic (including one with alcohol as a factor)	4 x Non-injury
	Rear-end using the u-turn facility in the median	1 x Non-injury
	Failure to give-way turning right	1 x Serious injury, 2 x Minor & 5 x Non-injury
	Loss of control	1 x Non-injury

Location	Comments	Severity
SH1 / SH73 Intersection – SH73 West	Loss of control turning left to SH1	1 x Non-injury
	Side-swipe at merge of give-way left turn	1 x Non-injury
	Failure to stop at red signal	1 x Non-injury
SH1 / SH73 Intersection – SH1 South	Side-swipe whilst lane changing	1 x Non-injury
		1 x Non-injury
SH1 / SH73 Intersection – SH73 East	Rear-end when failing to stop for queued traffic	1 x Non-injury
	Failure to give-way turning right	1 x Serious injury, 2 x Minor injury & 5 x Non-injury
	Failure to stop at red signal	1 x Minor injury
SH73 (Yaldhurst Rd) Midblock (SH1 to Sir John McKenzie Ave)	Side-swipe where westbound lanes merge	1 x Non-injury
	Speeding eastbound driver lost control	1 x Fatal
	Side-swipe when a driver failed to check when pulling out of parking.	1 x Non-injury
SH73 / Sir John McKenzie Ave Intersection	A driver on SH73 eastbound failed to stop at red signals	1 x Non-injury
SH73 (Yaldhurst Rd) Midblock (Sir John McKenzie Ave to Pound Rd)	Loss of control (alcohol suspected)	1 x Non-injury
	Pedestrian walked into the road heedless of traffic	1 x Minor injury
	Deliberate rear end collision	1 x Non-injury
SH73 / Pound Rd Intersection – Pound Rd North	Head-on collision when a driver travelled the wrong way around the roundabout	1 x Non-injury
	Loss of control departing the roundabout. One when evading the Police, one in a stolen vehicle.	3 x Non-injury
SH73 / Pound Rd Intersection – SH73 East	Loss of control departing the roundabout. Alcohol suspected in one crash	2 x Non-injury
	Failure to give-way when entering the roundabout	1 x Non-injury
SH73 / Pound Rd Intersection – Pound Rd South	Rear-end when failing to stop for queued traffic	1 x Non-injury
	Failure to give-way when entering the roundabout	1 x Minor injury
SH73 / Pound Rd Intersection – SH73 West	Failure to give-way when entering the roundabout	1 x Minor injury
	Failure to give-way exiting a property	1 x Non-injury
	Failure to give-way when u-turning out of parking	1 x Non-injury

Appendix 5: QTP Traffic Modelling Report

Quality Transport Planning

Ryans Road Fast-track Application

Traffic Network Effects Modelling Technical Report

March 2025

Ref: 2024-018

Document Issue Record

Version No	Prepared By	Description	Date
00a	Paul Roberts	Internal working draft (initial modelling)	4 November 2024
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Document Verification

Role	Name	Signature	Date
Preparation	Paul Roberts		21 November 2024
Reviewer	Tim Wright		21 November 2024
Approval	Paul Roberts		21 November 2024

Contents

Appendices

1 Executive Summary

1.1 QTP Ltd have been appointed to undertake traffic modelling to assist in the identification of the traffic effects of developing Rural Urban Fringe land in the west of Christchurch for industrial purposes. The area of land comprises approximately 55ha, and lies between Pound, Ryans and Grays Roads and the Christchurch International Airport.

1.2 Novo Group provided a schematic plan for the purpose of informing the traffic impact modelling, with the site anticipated to be accessed via three principal points of access from the surrounding road network.

1.3 Modelling has been undertaken based upon the latest version of the Christchurch Assignment and Simulation Traffic model (**CAST**). This model is owned and managed by the Model Management Group comprising members of the Christchurch, Selwyn and Waimakariri District Councils, Waka Kotaki and Ecan. The model covers Greater Christchurch, including all roads with a significant through-traffic function, whilst having strong simulation capabilities at an intersection turning level.

1.4 The generic v23 CAST model has been refined in the vicinity of the proposed development site to provide a project-specific model able to simulate the impacts of the proposed development on the operation of the local and wider road network, in addition to the operation of the key intersections in the immediate area of the proposed development.

1.5 A current year (2024) project model (still covering the full modelled area of greater Christchurch) has been created to form the basis of this study. This takes the v23 2024 vehicle model network and uses an interpolated demand estimate (between existing 2021 and 2028 forecast years) as a starting point for estimating 2024 demands. These vehicle demands have been adjusted locally to better match (where required) recent (2022-2024) traffic counts in the south-western and western sectors of the City.

1.6 Model vs count comparisons of the resulting 2024 project base models have been undertaken for the local network with reference to Waka Kotahi's Transport Model Development Guidelines (**TMDG**). The calibrated 2024 base models largely meet the guideline criteria. Overall, we consider that the model is reflecting count data with appropriate accuracy and provides a suitable basis for (future) assessment of the development proposal.

1.7 Traffic conditions were observed in the vicinity of the proposed development during the AM and PM peak periods on Tuesday and Wednesday 17-18th September 2024. Observations were by way of 'sweeps' of the road network to note operational issues. Further comparisons have been made to TomTom traffic speed data for the AM and PM peak hours. Overall, the 2024 base model appears to reasonably reflect the capacity constraints observed on the road network in the vicinity of the site.

1.8 Assessment of the impacts of the proposed development has been undertaken for the 'medium-term' CAST model horizon year of 2038. The base (without development) demands for this scenario have been adjusted from the generic ('v23') model forecasts by:

- Carrying forward (in an additive fashion) the adjustments found to be required for 2024

to better match current observed demands on the western-sector road network; and

- Making additional allowance for further development in Dakota Park (zoned SPA) to the north-east of the Site, and to the south, within Waterloo Park (zoned IG) and the (currently largely-vacant) IH-zoned land formerly referred to as CB2/7[1].

1.9 It is however important to note that the generic future (2038) assumptions used as the basis for the above adjustments *only consider existing land use zoning*. They currently make no allowance for recently-announced 'Fast-track' residential or industrial developments within the greater Christchurch area, nor as-yet-unapproved potential Private Plan Changes, such changes being anticipated to be subject to further statutory planning processes prior to approval.

1.10 The level of trip making associated with the proposed development has been advised by Novo Group, being a two-way peak hour trip rate of 12.7-13.9 vph/ha and heavy vehicle proportions of between 7-10%. The site is expected to generate around 8,800 2-way trips on a typical weekday. The expected directionality (arrivals and departures) of the trip making has also been informed by estimates provided by Novo Group. The distribution of the development trips across Christchurch has been based on analysis of modelled trips to the neighbouring Dakota Park.

1.11 Our modelling confirms that no significant capacity issues are anticipated at the assumed priority-controlled principal Site access points (one on Grays Rd and two on Ryans Rd). Here we make an implicit assumption that these will be subject to detailed design at the appropriate stage and observe that the seal width on both roads may require adjustment to safely accommodate both these access points and site traffic potentially accessing lots abutting these roads directly (as suggested on the indicative outline plan provided).

1.12 At the Pound Rd/Ryans Rd intersection, traffic generated by the proposed development site is not expected to markedly affect the performance of the intersection as whole, nor of the highest-demand traffic movements. However, given the wider network performance under the 'No Mitigation' scenarios (and irrespective of site-generated traffic), minor movements are predicted to be suffer a deterioration in the level of service over time, perhaps most notably from Ryans Rd E into Pound Rd N, under the present Stop-controlled priority configuration. This could be expected to increase the crash risk and, in practice, likely increase existing issues arising for traffic exiting Ryans Rd seeking to separately queue for left and right turns at peak times, in what is currently a very limited seal width (marked lane 3.2m, max seal width 4m), particularly given a forecast increase in heavy vehicle use. We therefore have assumed that this intersection should and would be upgraded to a roundabout configuration in the 'Mitigation' network scenarios we have examined, to provide a safer facility. Under such

[1] Note that additional allowance for these areas external to the Site was considered warranted given both their now-existing zoning and the fact that the 'generic' 2038 models (still essentially based on a 2017-origin CCC business growth model) do not yet appear to adequately account for their potential traffic generation. However, notably, this additional allowance has been applied at only around half of the rate(s) advised for the proposed Site. This assumption better reflects 'average' model expectations on 'full' development of similar industrial-area zones. We note that the Site generation estimates provided by Novo do however appear consistent with '85%ile' rates at (large-format) industrial sites (e.g. in 2022 surveys conducted by Transport for NSW to support their recent Guide for Transport Impact Assessment), and as such we consider these to be an appropriate basis on which to estimate the potential Site impact at this early stage of assessment.

roundabout control, the intersection is forecast to operate with a high-level of service, even with additional traffic generated by the Site – albeit at the 'cost' of imposing some additional modest delay for Pound Road through movements (not associated with the Site), compared to the current arrangements.

1.13 It is fair to observe that, irrespective of the proposed development, significant pressure is likely to be expected on the wider road network, given currently-anticipated growth in the south-western and western sector of greater Christchurch. A key 'pinch-point' is the intersection of SH1 (Russley/Masham Road) with SH73 Yaldhurst Road. A lack of capacity to service the projected demands at this location prompts drivers to seek alternatives – including the use of the (broadly parallel) Pound Road. The effects of this can already be evidenced by recent observed growth rates on Pound Road. This, together with on-going anticipated development in turn however combine to place increasing pressure on another key intersection local to the proposed development site itself, this being the Pound Road/SH73 roundabout.

1.14 The modelling analysis confirms that the Pound Road S (northbound) approach of the existing intersection is particularly sensitive to added demand, both that on the approach itself and the westbound circulating traffic it must give-way to. This approach is projected to be well above capacity (LoS F) in the PM peak hour by 2038. In such situations the addition of only modest amounts of additional traffic, such as that generated to and from the Site, causes a disproportionate rise in the average delay incurred by all vehicles. However, we have identified capacity improvements, described in more detail within the report, that could potentially be affected with relative ease by the road controlling authority (NZTA). Compared to the existing configuration, these could yield significant benefits, including accommodation of some traffic that would otherwise add to congestion on the SH1 route, as well as mitigation of the potential impact of additional traffic generated by the proposed development (if the existing roundabout configuration was retained).

1.14.1 The capacity of the SH1/73 intersection is more difficult to address, within the confines of the existing road reserve. This signal-controlled intersection currently seeks to accommodate demand of around 5,000 vehicle trips in peak hours. It is managed by NZTA to reduce RT delays from Russley N into SH73 W (that can still at times queue beyond the extent of a 150m-long long right-turn lane) and the heavy right-turn demand from Yaldhurst Rd E (into Russley Rd N). In turn, this means that at peak times the Nbnd SH1 traffic (Masham approach) only gets approximately 2/3 of the time afforded to the Russley N approach, despite having similar through-movement demands. This is the principal reason why extensive queuing and delay currently occur on Masham Road during peak times.

1.14.2 As our modelling analysis shows, these issues are only forecast to get worse with ongoing demand growth (even without the proposed development traffic generation) and thus, we suggest, are likely to require addressing by NZTA anyway. Our understanding is that the Agency have identified funding to investigate these issues (and others emerging in the Western corridor) in more detail at some point over the next 3 years.

1.14.3 Without improvement (and/or relocation of some demand using the intersection), although not particularly high, traffic generated by the Site is expected to add directly to the forecast high delays, most directly to the right turn northbound from Yaldhurst Rd (East) in the morning peak and the through movement southbound from Russley Rd (North) in the evening peak.

1.14.4 We have however identified a (nominal) scheme which could enable significant capacity improvement at this location via relocation of the direct right-turns from Yaldhurst Road that are currently provided for. This would in turn allow reallocation of the proportion of the signal cycle to other movements and an overall reduction in peak hour cycle times, thus reducing overall queuing and delay. It is stressed this is indicative of feasibility-stage planning only (for the purposes of modelling the broad scale of potential effects for this development investigation). As such, it should not be interpreted to be a fully-developed scheme, nor the only way that similar benefits might be achieved.

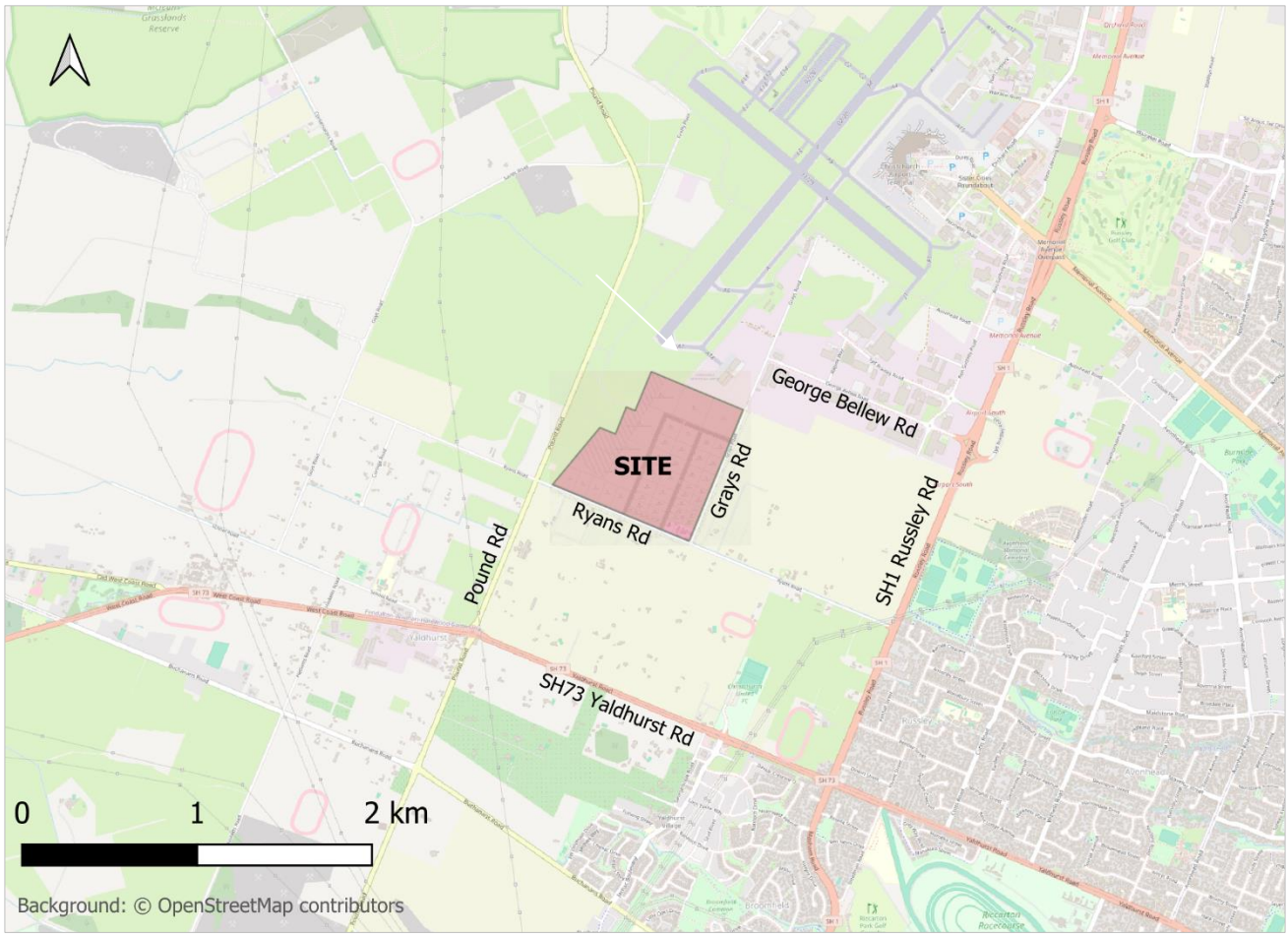
1.14.5 Nevertheless, preliminary modelling does suggest that such an arrangement, or similar, may have the potential for significant benefits. Importantly, the additional capacity created would mean that (the impact of) any additional traffic at this location (including that to and from the proposed development site) would be much lower than it would otherwise be.

2 Introduction

2.1 QTP Ltd have been appointed to undertake traffic modelling to assist in the identification of the traffic effects of developing Rural Urban Fringe land in the west of Christchurch for industrial purposes.

2.2 The area of land comprises approximately 55ha, and lies between Pound, Ryans and Grays Roads and the Christchurch International Airport. Novo Group have provided the schematic plan shown below for the purpose of informing the traffic impact modelling.

Figure 2.1: Site Location and Outline Plan Road Network



2.3 In essence, QTP's brief is as follows:

- Briefly consider the level of modelled flows vs counts correlation in the generic 2018 CAST base year model in the vicinity of the site
- Refine the zonal and network resolution in the immediate study area of versions of Council's CAST models for 2024 and 2038
- Field-check and compare the current network performance to that modelled for 2024
- Calibrate 2024 (and 2038) models to the count data as required
- Manipulate the CAST model demands to reflect 'base' and 'with development' scenarios for 2038
- Modify the CAST model networks to reflect 'base' and 'with development' road networks

- Test the network operation and development impacts with and without the proposed development
- Produce outputs from the CAST models to indicate network operation and the effects of the proposed development
- Cross-check modelling of critical intersections using SIDRA Intersection modelling software
- Provide summary reporting (this document) describing the methodology employed and the network operation and effects.

3 Base Models Review

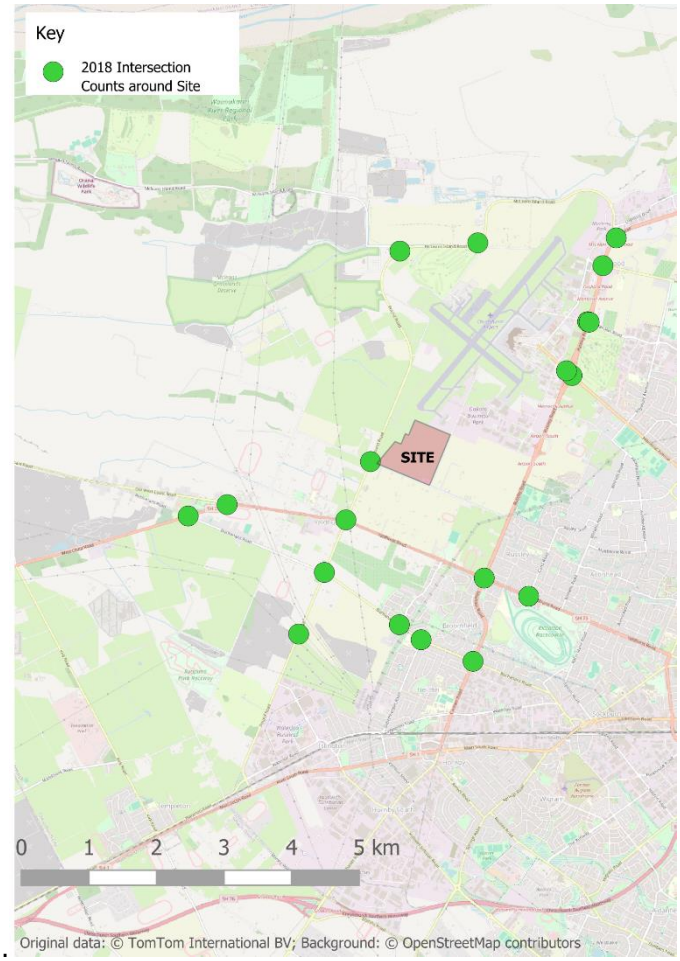
3.1 CAST Model Version

3.1.1 The latest CAST model version (v23) has been used as the basis to develop project models for analysis of the proposed development. V23 is a minor update to the v21 model, undertaken in 2023 to address relatively minor issues noted in the application of the model between 2021 and 2023. The previous model update, v21, was completed in 2021, with the model base year being 2018. 2018 was the last census year for which full demographic data required by the Christchurch transport models is presently available. The initial estimates of travel demands for the CAST model come from a parent Christchurch Transportation Model (**CTM**) which uses demographic inputs as the basis of estimating travel demands in Greater Christchurch. The CAST model uses a refined zone system, network representation and simulation to better reflect the operation of the road network. The v23 2018 CAST model is calibrated to over 4,000 individual turning counts in each model period, separately for light and heavy vehicles.

3.2 2018 Model vs Count Comparison

3.2.1 The following diagram illustrates the location of 19 intersection counts around the proposed development site used in the calibration of the wider 2018 CAST model, these being used to consider of the performance of the v23 2018 base model around the proposed development.

Figure 3.1: Location of v23 2018 Calibration Counts Local to Site



3.2.2 The following Table summarises the performance of this model against Waka Kotahi's Transport Model Development Guidance (**TMDG**) key criteria for turning counts for the Type E: Small Area / Corridor model category. Further detail, including individual count comparisons may be found in **Appendix A**.

Table 3.1: 2018 Model Local Performance Against TMDG Criteria

Criteria	Target Type E	AM	IP	PM
R^2	>0.95	0.983	0.977	0.984
y = **M**x	0.95-1.05	1.013	0.999	0.996
GEH<5	>85%	78%	81%	82%
GEH<7.5	>90%	90%	89%	91%
GEH<10	>95%	95%	94%	95%
GEH<12	100%	99%	96%	97%
RMSE	<15%	21%	24%	20%
AAE	-	14%	15%	12%
Total Δ	-	-2%	-5%	-2%
No.Counts	-	146	146	144

3.2.3 As noted within the v21 CAST Model Update Report, it is rarely the case that a large model meets the GEH <5 criteria unless subject to matrix estimation. The reason for this is that there is too much variability in count data itself for a model to be expected to closely match a given count. By way of example, a count may be recorded as 250 on one occasion and 340 on another (different days of the week, different months, different years) and would have a GEH value >5 based on varying count volumes, irrespective of model inaccuracies.

3.2.4 The TMDG categorises models by purpose and has different count comparison by criteria for these model types. The (wider) generic CAST model is categorised as a Type C model, described as an Urban Area model. Type E models are described as Small Area or Corridor models. The GEH<5 criteria are 80% for Type C Urban Area model, this being met in the IP and PM periods and only very narrowly missed in the AM peak hour. For the Type E Small Area model, the criteria of 85% is, however, not met in any of the periods.

3.2.5 The GEH <7.5 measure is considered more informative given fluctuations in count data. The >85% of turns for Urban Area models is met for all periods and the >90% of turns is narrowly missed in the interpeak hour only (89%).

3.2.6 The RMSE value is not a particularly intuitive measure of error in the model. TMDG notes that for Type E models values between 15 and 25% (as is the case for this project model) 'require clarification', whilst for Type C Urban Area models the acceptable value is 20%.

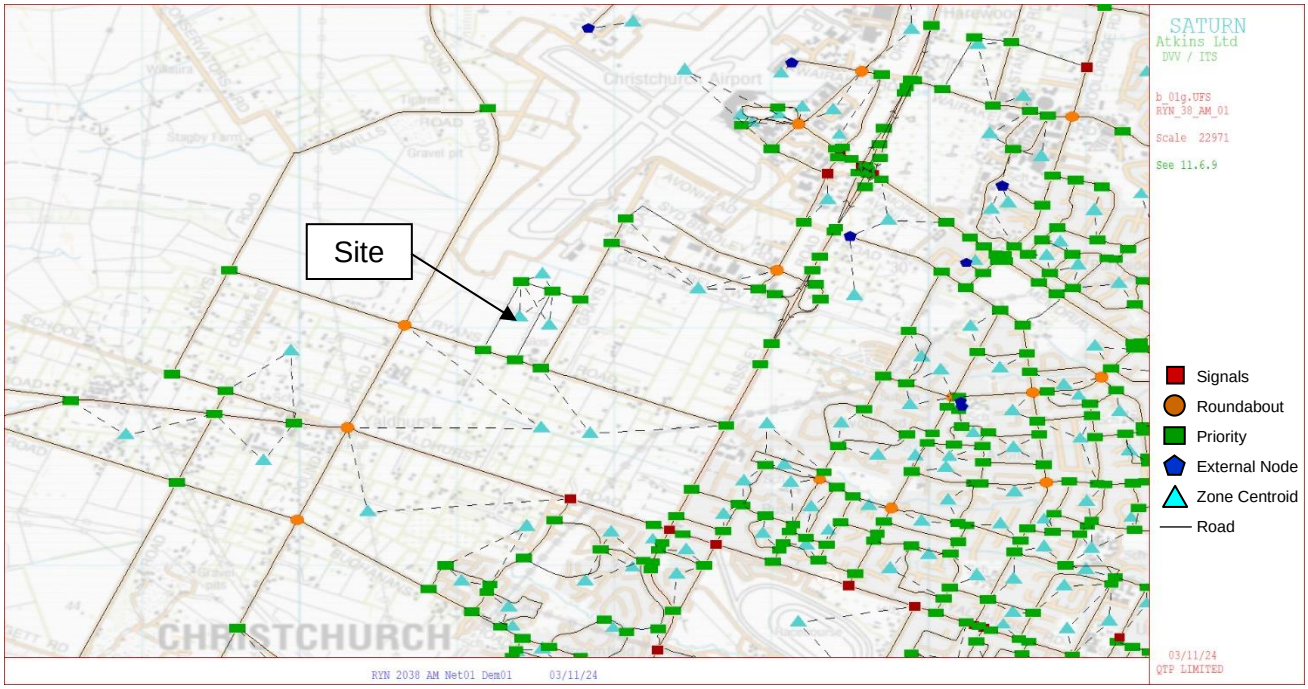
3.2.7 A more intuitive value of error is also presented, being the average (absolute) error (**AAE**), or difference between counts and flows, being the sum of the absolute differences compared to the sum of the counts, this statistic indicating an 'average' error of 12 to 15%.

3.3 Network and Zonal Refinement

3.3.1 For assessment of the proposed development, 2024 and 2038 models have been prepared to reflect both traffic demands and potential future networks within and around the Site. Specification of three separate zones representing the proposed development site allows the operation and potential effects of the draft Outline Plan internal road network to be modelled[2].

3.3.2 The resulting refined network and zone loading (this example being implemented within (one of) the with-development traffic models) is illustrated within the following figure.

Figure 3.2: Project Model (Future) Network and Zone Loading



3.3.3 Development of the future year demands is described within the following Chapter.

[2] Note that the zone loading currently adopted is intended for broad analysis only, focused on wider potential network effects. More-refined representation would be required to more-accurately reflect detailed assignment of site traffic immediately within and around the Site - not least given a supplied Outline Plan lot arrangement which indicates some lots abutting Ryans and Grays Roads may be required to take access directly from these network roads, rather than internal site roads.

3.4 2024 Base Model Calibration

3.4.1 Having reviewed available count data for the local area within CCC's intersection traffic counts website, the NZTA's TMS portal and available recent local counts provided by Novo Group, it is apparent that fairly significant traffic growth has occurred on the road network local to the site (even since 2021, when demand was somewhat affected by Covid restrictions). This is a result of on-going growth and development, particularly in the South-West and Western sectors of Christchurch.

3.4.2 We therefore considered it wise to base the assessment of the proposed Development using an updated project model, representing 'present-day' (2024) traffic demands and networks, rather than adopt, say, the generic v23 2021 model as a project assessment base.

3.4.3 A preliminary 2024 vehicle model network (v24a) has recently been prepared by QTP to support the update of the CAST-based Christchurch Cycle Model on behalf of NZTA and CCC. This network represents only very modest changes to the v23 road network described above, to make it consistent with the now-integral Christchurch Cycle Model. Whilst it does not represent a fully-updated and calibrated or validated vehicle model for this year, it is considered to be the most-suitable network basis for modelling 'current' traffic demands, given suitable adjustment (described below).

3.4.4 Some changes were made to this CAST v24a 2024 vehicle network, to form the 2024 project model Base Network:

- Adoption of a new and comprehensive GIS base to represent all modelled links. This is now fully consistent with LINZ centreline data and recent Network Management Plan spatial data produced on behalf of NZTA. Effectively it provides 'curved' (and accurate) links for every model link in the network - rather than the selection of 'curved' links represented (in a more crude fashion) in preceding CAST (including v24a) networks.
- Intermediate nodes were added at the location of the potential future Site connections. Such nodes incur no delay in 'Without-development' scenarios, their purpose in these scenarios being only to provide consistency with future 'With-development' scenario networks to assist illustration of differences e.g. in traffic volumes.
- Link Types (Capacity Indices) on Pound , Ryans and Grays Roads were adjusted to reflect now-posted speed limits adjacent to the Site.

3.4.5 An initial estimate of (2024) demands adopted as the starting point for this project Base Model simply interpolates between demands available from the latest available 2021 and 2028 generic (v23a) CAST models (which reflect runs of the relevant parent CTM model scenarios).

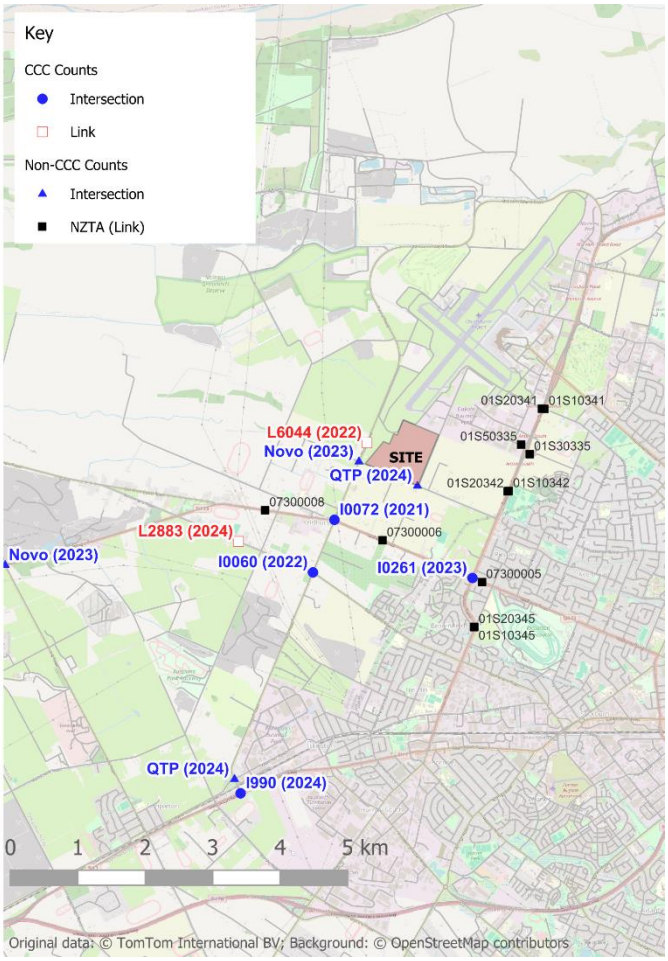
3.4.6 These initial 2024 demands have then been adjusted, where necessary, using a process called matrix estimation (**ME**), to better reflect recent traffic counts available within the likely area of influence of the site (and indeed around the wider Western SH1 sector of the City).

3.4.7 **Figure 3.3** illustrates the available (classified) counts from the past 3 years, in the immediate study area of the Site only. They include a recent intersection survey at the Grays/Ryans intersection[3] conducted specifically to support this assessment, along with a similar survey

[3] Conducted on Tuesday 17 September 2024 on behalf of QTP by Lowdown Ltd, using Miovision video technology.

conducted in April 2023 at the Pound/Ryans intersection[4].

Figure 3.3: Local Counts Used in 2024 Project Model Calibration



3.4.8 While ideally all counts would be for 2024, there are limited turning counts available for this year. Furthermore, the 'ME' process 'averages out' any differences (inconsistencies) between counts.

3.4.9 It should be noted that, given the forecast Site generation and inspection of the local counts revealed an earlier morning peak than adopted within the generic CAST models (at a majority of intersections[5]), the AM peak hour adopted for assessment of the proposed development represents **0730-0830** (rather than the generic CAST model morning peak hour of 0800-0900). Broad differences may be seen in **Table 3.2**.

[4] Conducted on Thursday 27 April 2023 on behalf of Novo Group by Lowdown Ltd, using Miovision video technology.

[5] Note that the values tabulated represent total observed inflows from intersection counts (apart from the forecast Site Generation) and the peak hour for individual turning movements may vary.

Table 3.2: Estimated 2-way Site Generation & Local Traffic Counts for Alternative AM Peak Hours

	AM Hour Total (pcu)		
Site	0700-0800	0730-0830	0800-0900
Site Traffic Generation (Novo)	690	774	676
Pound/Ryans	1,492	1,564	1,519
Grays/Ryans	669	728	661
Pound/Yaldhurst	2,923	3,060	2,701
SH1/Yaldhurst	4,683	4,947	4,774
Buchanans/Pound	1,985	1,992	1,803
Kirk/Miners	1,258	1,301	1,090
Pound/Roberts	954	943	798
Pound/Waterloo	1,732	1,706	1,589
Barters/Waterloo	544	581	460
Barters/Hasketts	365	363	301
Barters/Main Sth	2,362	2,397	2,260
Pound/Main Sth	2,450	2,520	2,317
Jones/Dawson	406	394	377
Kirk/Waterloo	685	731	754
Kirk/Main Sth	2,419	2,361	2,236
HJR/Main Sth	2,174	2,191	2,075
All	27,850	28,620	26,445

3.4.10 The initial (Pre-ME) 0730-0830 demands thus take half of the generic model hourly demand rate (for the 0730-0800 period) and adds this to the observed local proportion of demand of the 0800-0900 occurring within the 0800-0830 period (51%).

3.4.11 The following Table summarises the performance of the initial ('Pre-ME') 2024 project model against the TMDG criteria for the turning counts illustrated above. Again, further detail, including individual count comparisons, may be found in **Appendix A**.

Table 3.3: Initial 2024 Model (Pre-ME) Performance Against TMDG Criteria

Criteria	Target Type E	AM	IP	PM
R^2	>0.95	0.966	0.976	0.969
y = **M**x	0.95-1.05	0.991	0.931	1.017
GEH<5	>85%	62%	65%	60%
GEH<7.5	>90%	77%	79%	82%
GEH<10	>95%	90%	92%	91%
GEH<12	100%	94%	95%	95%
RMSE	<15%	31%	35%	30%
AAE	-	21%	19%	20%
Total Δ	-	-8%	-14%	-3%
No.Counts	-	112	112	110

3.4.12 The apparent relatively-poor comparison of this initial 2024 model against Type E criteria is by no means unexpected, not least given the initial demands they reflect are the very simple interpolation between two now fairly-dated forecast scenarios (2021 and 2028). Perhaps the

most-pertinent comparison is that revealed by the overall ('Total Δ') comparison, which indicates that (generally) these initial modelled demands are 9-14% too low (for AM and IP hours respectively), compared to the counts. Whilst closer in the PM peak (-3%), there is still an apparent under-estimation of the true observed demand (over all locations shown in **Figure 3.3**). This overall trend for apparent under-estimation is however an indicator that traffic growth within the area surrounding the Site over the period 2021-2024 has likely been higher than anticipated by the generic model forecast assumptions (made in 2021).

3.4.13 To address this, as noted above the modelling technique called 'Matrix Estimation' or 'ME' has been adopted, whereby the above initial 2024 demands (passing through the area covered by calibration counts) have been mathematically adjusted to better match the available counts – i.e. local calibration of the model. The results following this process are summarised in **Table 3.4** below, with further detail of model vs count comparisons and XY scatter plots being provided within **Appendix A**.

Table 3.4: 2024 Calibrated (Post-ME) Model Performance Against TMDG Criteria

Criteria	Target Type E	AM	IP	PM
R^2	>0.95	0.995	0.994	0.996
y = **M**x	0.95-1.05	0.994	1.030	0.998
GEH<5	>85%	91%	88%	91%
GEH<7.5	>90%	95%	96%	96%
GEH<10	>95%	97%	100%	100%
GEH<12	100%	100%	100%	100%
RMSE	<15%	12%	19%	11%
AAE	-	7%	8%	7%
Total Δ	-	-2%	2%	-1%
No.Counts	-	112	112	110

3.4.14 As noted above, the TMDG categorises models by purpose and has different count comparison criteria for these model types. Following the applied ME process, all criteria for Type E models are met for all periods, with the exception of the RMSE statistic in the representative IP hour.

3.4.15 A review of the modelled turning flows vs counts (Appendix A, Post-ME comparison) indicates no apparent significant under or over-estimation estimation of flows around the Site, with the following exceptions:

- Minor turning movements where the modelled demand is zero vs counts of generally <10 pcu/hr (including at Pound/Ryans). This occurs because the ME process cannot adjust model demands to fit a count, if no routes (under the initial Pre-ME demands) use that turn.
- In the morning peak (only), under-estimation of the LT demand from SH73 Yaldhurst Rd (W) to SH1 Russley Rd (N), by approximately 200 pcu/hr. This occurs for two reasons: (i) the generic model capacity for the LT from Ryans Rd into Russley Rd (N) has been calibrated (increased) to ensure estimated observed flows[6] and delays are more-

[6] A recent actual count does not exist at this location but the LT (Eastbound) Ryans demand has been assumed to be that revealed by the recent Grays/Ryans survey (as Ryans/Pound is left in/left out only). This counts (together with NZTA TMS data on SH1) can also

accurately reflected as this is likely to be a key potential exit route for northbound traffic (With-development); (ii) The ME process 'makes-up' for a lack of modelled demand for the LT at Russley/Yaldhurst by increasing other turning movement demands (within limits set by the modeller), because it also seeks to satisfy the NZTA SH1 link counts N Ryans, also included as ME 'targets' (Site 01S0342).

3.4.16 Overall, however, these statistics indicate that the '2024' study base model reflects count data with (what we consider to be) reasonable accuracy for the intended application. Further improvements could be made if, for example, we relaxed adopted criteria regarding how much the initial (pre-ME) demands could be modified, added more-refined zone representations etc., etc. However, we do not consider these to be necessary, not least as this 2024 base ('post-ME') model is intended to serve *only* as the basis for adjustment of future base scenario (2038) demands.

3.5 Model Performance Field-Check

3.5.1 Traffic conditions were observed in the vicinity of the proposed development on Tuesday and Wednesday 17-18th September 2024. Observations were by way of 'sweeps' of the road network including along SH1 & SH73, Pound, Ryans, Grays and George Bellew Roads,

- The morning of the 17th (only) was particularly wet and during such times the capacity of the network, particularly at traffic signals, can be a little lower than during dryer conditions.
- During both peaks, rolling queues existed on Pound Rd (in both north and southbound directions) at the Pound Rd/Yaldhurst Rd (SH73) roundabout and extensive queuing was also observed on both SH1 approaches to Yaldhurst Rd (SH73) – these being most extensive on the northbound Masham Rd (S) approach in the PM peak but also high on the Yaldhurst Rd (E) approach.
- In the morning peak (only) the northbound RT into Ryans Road (East) from Pound Rd were observed to (sporadically and for short periods) extend back up to approximately 18-20 vehicles, an estimated distance of around 120-140m, as a result of the need to give priority to what appeared to be reasonably-high Sbnd Pound Rd demand (with many vehicles potentially exceeding the 60kph speed limit now in place and therefore requiring greater caution from crossing drivers). These queues are exacerbated by a (current) lack of seal width, meaning northbound through vehicles can be delayed behind RT vehicles whenever there is more than 1-2 vehicles waiting to turn right into Ryans Rd.

3.5.2 Our observations are (generally) reflected by the 'typical' traffic speeds (normally) displayed by Google Maps Traffic layers. However, these layers do lose definition (over segments affected by congestion) at the lower level of zooms sufficient to indicate the potential area of influence of the Site. Furthermore (at the time of writing) they reflect the effects of a current closure of Pound Rd between Yaldhurst Rd and Ryans Rd for road reconstruction[7].

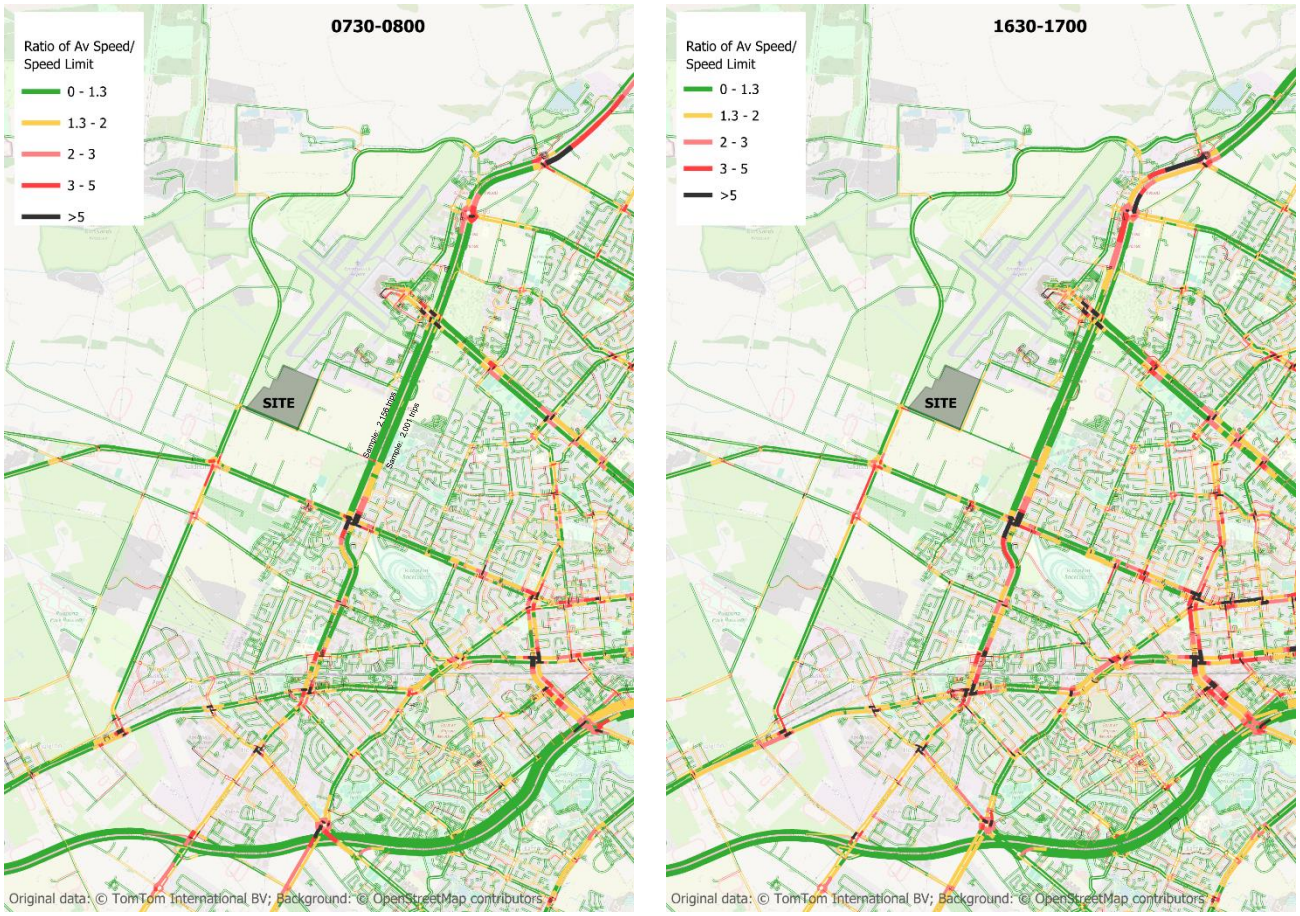
3.5.3 Therefore as an alternative, below we have shown sample data available from TomTom,

be used to indicate that the TomTom travel time data at this location (used to estimate observed delays) represents an approximate 10-14% sample of all traffic (depending upon the time of day).

[7] This total road closure, between SH73 and McLeans Island Road, commenced on 14 October 2024 and is due to run until 15 November 2024

illustrated by colour based on the average travel time of sampled vehicles compared to the speed limit (with the width of lines proportional to the sample size). Although this data may be considered a little dated (being based upon data gathered over 4 weeks and comprising 20 non-holiday weekdays) in October 2022, it represents data gathered from an estimated 10-14% of all vehicles using the whole Christchurch network and offers more precision over the display of the location and scale of congestion 'hot-spots', compared to Google Maps (as Google do not make clear the basis of their colour-coding nor calculation methods). More recent TomTom data (October 2023) for selected approaches at key capacity constraint locations (SH1/SH73 and Pound Rd/Yaldhurst Rd) has also been used to confirm these illustrations[8].

Figure 3.4: TomTom Sample Typical Traffic Speeds (Non-holiday Weekdays, October 2022)



3.5.4 We note that the AM peak diagram does not fully reflect the (queuing and) delay we observed (in mid-Sept 2024) on the Pound Rd N (Sbnd) approach to Yaldhurst Rd, nor on the Pound Rd S (Nbnd) approach to Ryans Rd. However, given it reflects samples of 458 Sbnd and 795 Nbnd trips (travelling in this 30 minute period) using these approaches, it is likely to reflect a much more-accurate 'average' representation than the impression gained from limited observation during our Site visits.

[8] Although similar data from October 2024 is available, it is not considered appropriate to use as the basis for assessment and comparison (to the comprehensive 2022 data), as a closure of Pound Rd commenced on 14 October and has clearly led to current a-typical routing and congestion in the area.

3.6 2024 Base Model Performance

3.6.1 The CAST models have been run as hourly assignments. For the purposes of providing SIDRA comparisons (and SIDRA demand inputs), default 'peak profile' factors have also been invoked for delay modelling. This reflects the same default factoring of input (hourly) flows that occurs within the Australasian industry-standard isolated intersection modelling software SIDRA to account for 'peaking within the peak'. In simple terms, the input peak hour volumes are increased by around 5.3%.

3.6.2 The following plots, output from the latter models, indicate the level of current (2024) delays forecast on the sections of road network in the vicinity of the proposed development. The link delays include average delays encountered on approach to intersections and are colour-coded to a simplified Level of Service (LoS) as follows:

- LoS A-C (<30s) – Green
- LoS D (30-50s) – Orange
- LoS E (50-70s) – Red
- LoS F (>70s) – Black

3.6.3 Note that for the sake of clarity, **only** modelled delays greater than 25 seconds have been illustrated. Note also that modelled delays are average approach delays, weighted by the demand and delays for individual turns.

Figure 3.5: Modelled Average Link Delays, 2024 AM Peak Hour

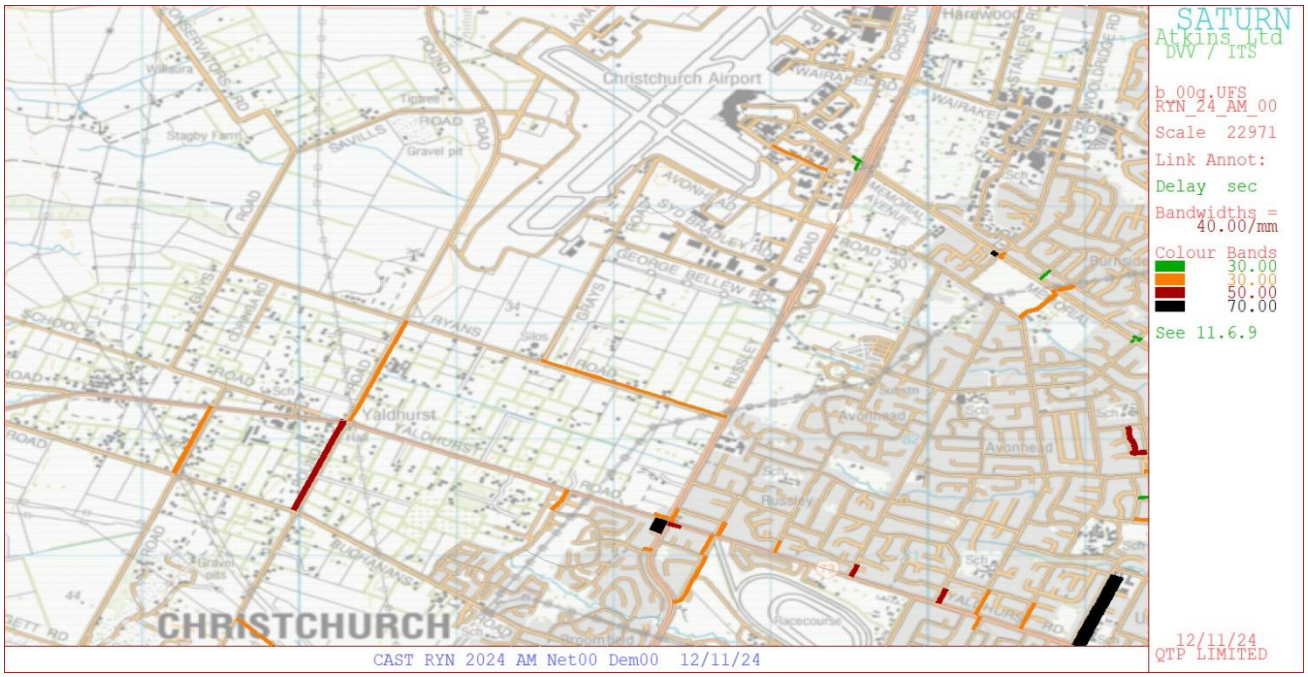
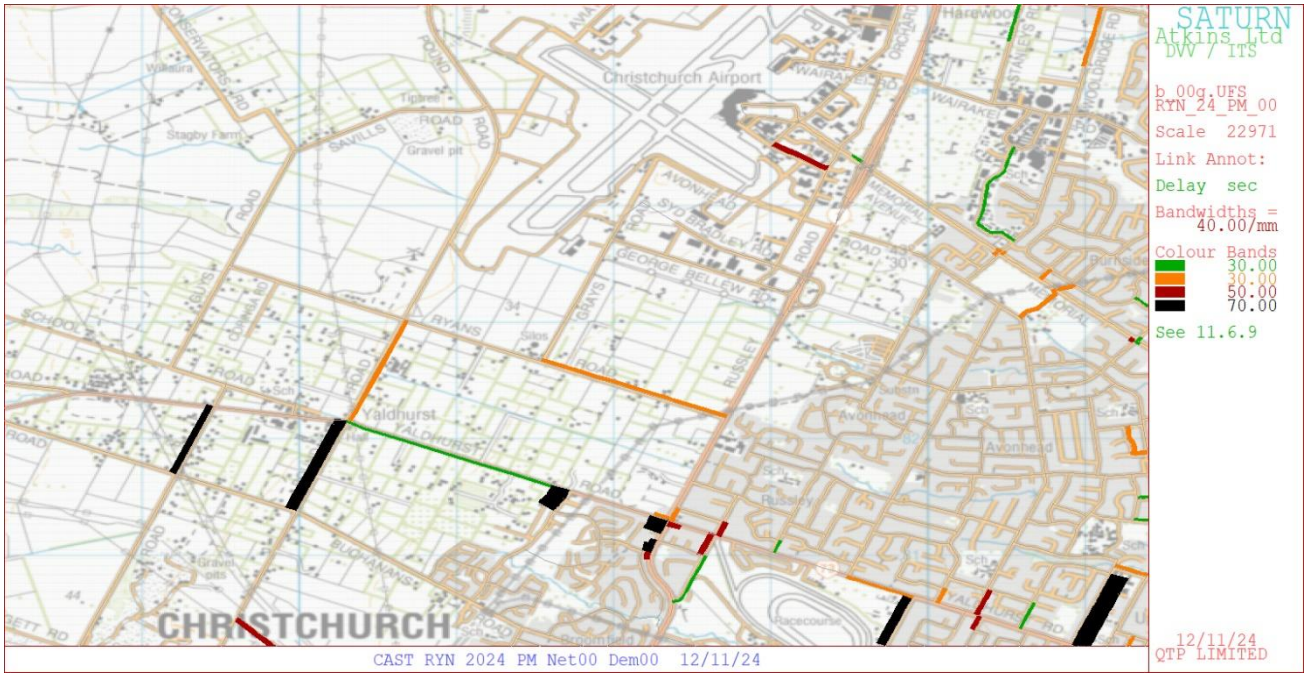


Figure 3.6: Modelled Average Link Delays, 2024 PM Peak Hour



3.6.4 From the above plots we note the following:

- At the SH1/Ryans Rd intersection:
  - Modelled 2024 delays (30-40s) exiting Ryans Rd north onto SH1 are slightly higher than the 25-35 s/veh implied from TomTom (October 2022) data.
- At the Pound Rd/Yaldhurst Rd (SH73) intersection:
  - The 2024 modelled delays and travel time for the Pound Rd N (Sbnd) approach to Yaldhurst Rd are marginally higher than TomTom sample data for the AM Peak travel time (2024 model travel time 87s vs 2022 observed 80s & 2023 observed 79s). For the PM Peak, modelled values fall between the 2022 and 2023 observed values (2024 model 92s vs 2022 observed 87s and 2023 observed 114s).
  - For the Pound Rd S (Nbnd) approach to Yaldhurst Rd SH73, the current 2024 PM peak hour model (mean) travel time of about 2.8 minutes between Buchanans Rd and Yaldhurst Rd compares to an observed TomTom mean of around 3.2 minutes (2022 and 2023). The median (50%ile) observed travel time of 2.8 minutes is lower (and comparable to the model), as in practice, high delays appear to be incurred by a reasonable proportion of drivers, the 85%ile travel time being 5.4 minutes and 95%ile 7.2 minutes. In the AM peak, the 2024 model journey time of 1.7 minutes lies between the observed mean data (2022=1.6 minutes, 2023 = 1.9 minutes.
- At the Russley Rd (SH1)/Yaldhurst Rd (SH73) intersection.
  - The 2024 AM peak hour model estimates a travel time of 3.7 minutes for vehicles travelling between Buchanans Rd and Yaldhurst Rd - the Masham Rd S approach to this intersection. This lies between observed 2022 and 2023 values (3.1 minutes and 3.9 minutes respectively). However, in the PM peak hour, the current model estimate of 7.3 minutes for this travel time is higher than the mean travel

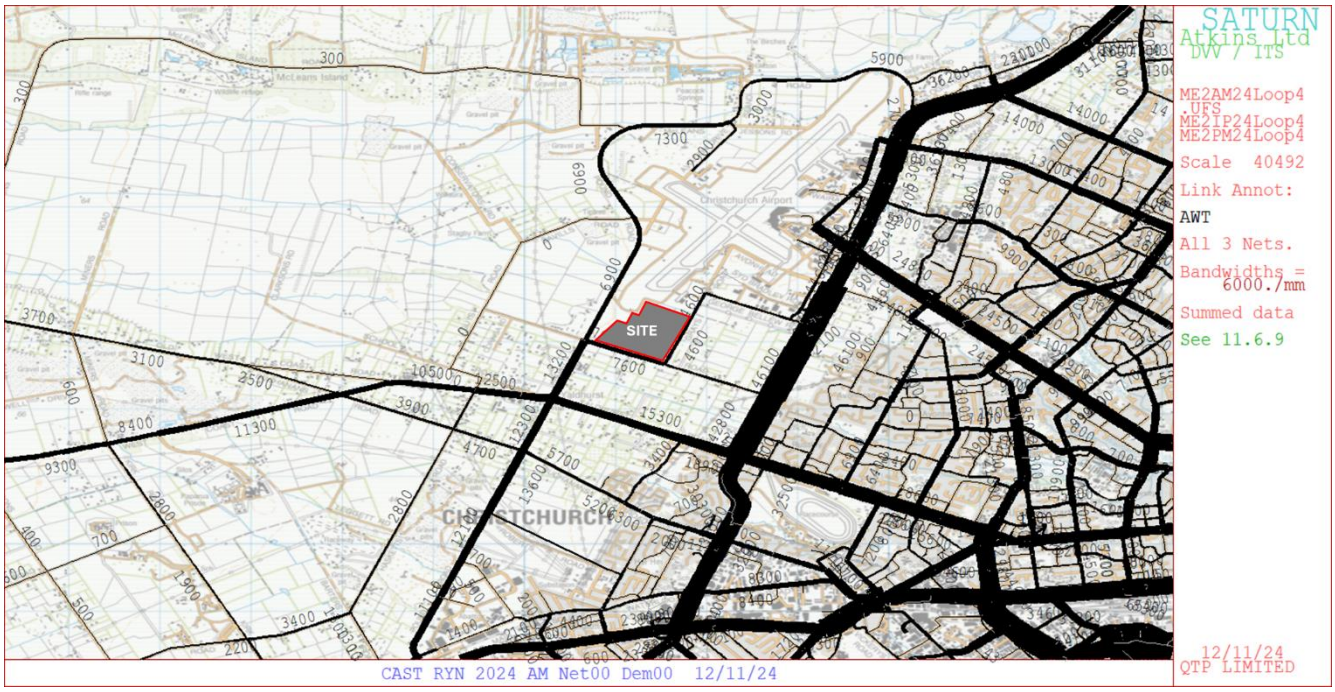
time of 5.2 minutes[9] (2022 & 2023). The modelled travel time however accords with the 70%ile observed and as such is still considered reasonably representative of the likely perceived travel time during this peak.

3.6.5 Overall, we consider that the current 2024 Project Base model reasonably reflects the demands observed on the road network and the capacity of key potential constraints in the vicinity of the Site, notably the Pound/SH73 Yaldhurst and the SH1 Russley/SH73 Yaldhurst intersections.

[9] The 5.2 minute observed mean is greater than the median (50%ile) travel time (3 minutes), because of very high delays incurred by a reasonable proportion of drivers, 15% of drivers taking longer than 10 and 5% longer than 17 minutes (in October 2023).

3.6.6 Combination of the 3 modelled periods allows an estimate of (weekday) daily traffic volumes to be provided, the 2024 weekday traffic volumes surrounding the site so derived being shown in **Figure 3.5**. This is for the purposes of information & illustration only, given that the principal focus of the models is to reflect changes in traffic volumes and network performance within the specific modelled periods. These daily estimates are based upon application of different expansion factors applied to light, heavy and bus traffic in the peak hour and representative interpeak model hours. However, it should be noted that the same global factors are applied to all trips throughout the model area, when, in practice, these factors can vary in different areas. In other words, the daily vehicle estimates shown should be viewed as an approximate guide only.

Figure 3.7: Current Average Two-Way Weekday Traffic Volume Estimates



3.7 2038 Base Model

3.7.1 Assessment of the impacts of the proposed development has been undertaken for the 'medium-term' CAST model horizon year of 2038.

3.7.2 The base (without the proposed development) demands for this scenario have been adjusted from generic v23 2038 base model demand forecasts by:

- Carrying forward (in an additive fashion) the 'ME' adjustments found to be required for the 2024 project model to better match current observed demands on the western-sector road network; and
- Making additional allowance for further potential zoned development over the period 2024-2038 (compared to that in the generic v23 2038 model)
  - In the Dakota Park area (zoned SPA)
  - In the Waterloo Park area to the south of the proposed site (zoned IG)
  - In the (currently largely-vacant) IH-zoned land to the south of Main South Rd (formerly referred to as CB2/7)

3.7.3 Additional allowance for these areas external to the Site was considered warranted given both their now-existing zoning and the fact that the 'generic' 2038 models (still essentially based on a 2017-origin CCC business growth model) do not yet appear to adequately account for their traffic generation potential.

3.7.4 The additional allowance for further Dakota Park traffic generation (by 2038) above the 2024 ME2-adjusted model forecast is anticipated to be a *minimum* potential addition. It is a broad estimate only, based upon visual inspection, shown below, of 'current' (or near-current) development in the area (zoned SPA). This suggests that around 39.5ha of land within this area may be currently vacant (shaded brown). This compares to around 100ha in total, which excludes roads and indeed the SPA-zoned parcels to the west of Grays Rd. Hence however our 'minimum' expectation being taken to be around +40% over existing development traffic generation. If we included the NW corner in the vacant land (which we have not), or excluded it from the 'total', the potential additional increase in developed land over that existing (in 2023) might otherwise actually be as high as 92% (i.e. almost double the existing developed land area).

Figure 3.8: Current and Potential Future Development in Dakota Park

3.7.5 It should be noted that additional allowances for these areas equate to only around half of the vehicle trip generation rates advised by Novo Group for the proposed Site itself. This assumption better reflects 'average' model expectations on 'full' development of similar industrial-area zones.

3.7.6 A further important note is that the generic future (2038) assumptions on which this assessment is based consider only existing land use zoning. They make no allowance for other recently-announced 'Fast-Track' residential or industrial developments within the greater Christchurch area, nor indeed for as-yet-unapproved potential Private Plan Changes, such changes being subject to further statutory planning processes prior to approval.

3.7.7 The following diagrams illustrate the modelled peak hour traffic flows (in vehicles per hour) on the local road network at 2038, without the proposed development[10]. Traffic volumes are indicated as directional bands, with the widths of the bands proportional to the directional flows illustrated.

[10] Illustrated link volumes may not include localised traffic loading to/from model zones loading to a link. The volumes are however included at the intersection 'nodes' for the purpose of simulation of intersection performance and are included in the turning volumes in the model vs count analysis.

Figure 3.9: Modelled Flows, No Development, 2038 AM Peak Hour (No Mitigation Network)

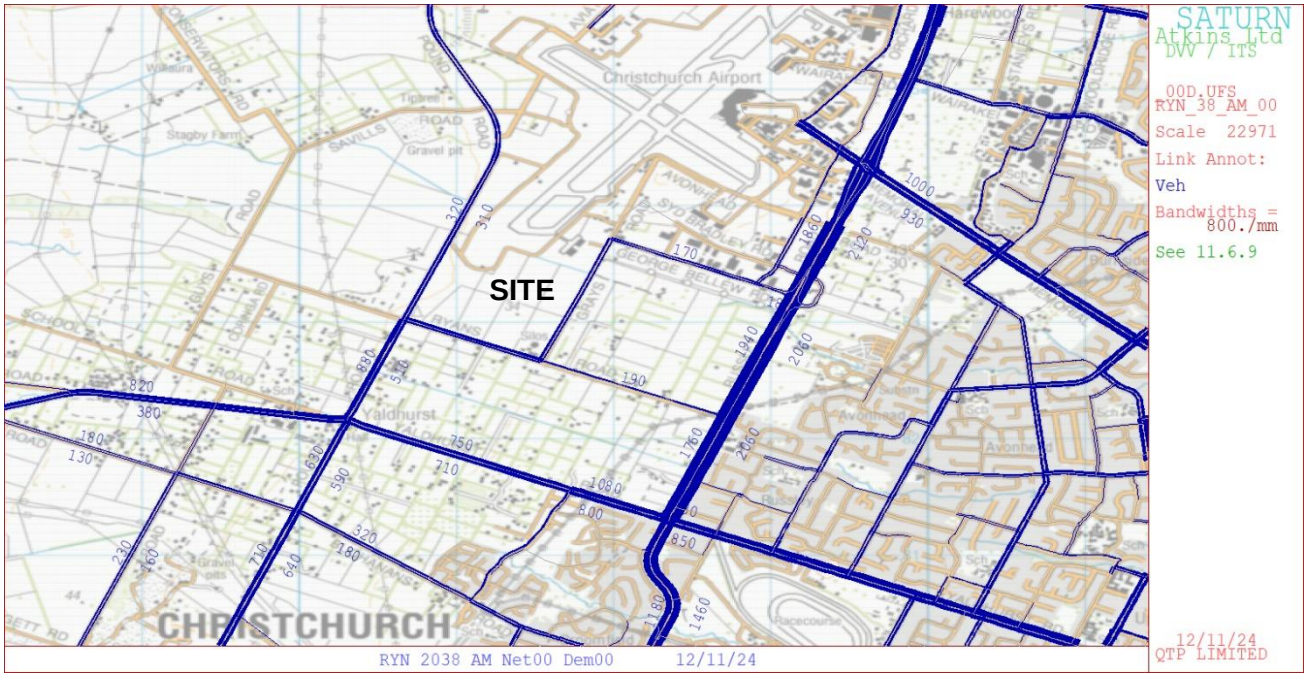


Figure 3.10: Modelled Flows, No Development, 2038 PM Peak Hour (No Mitigation Network)

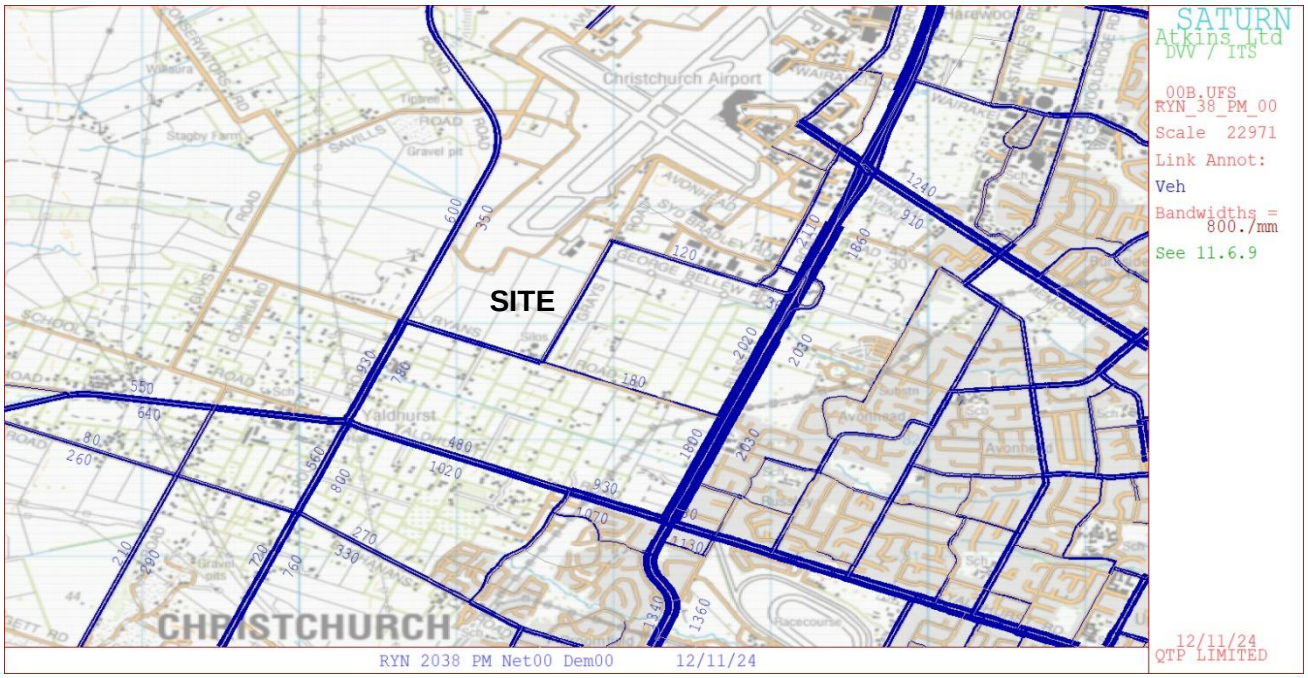
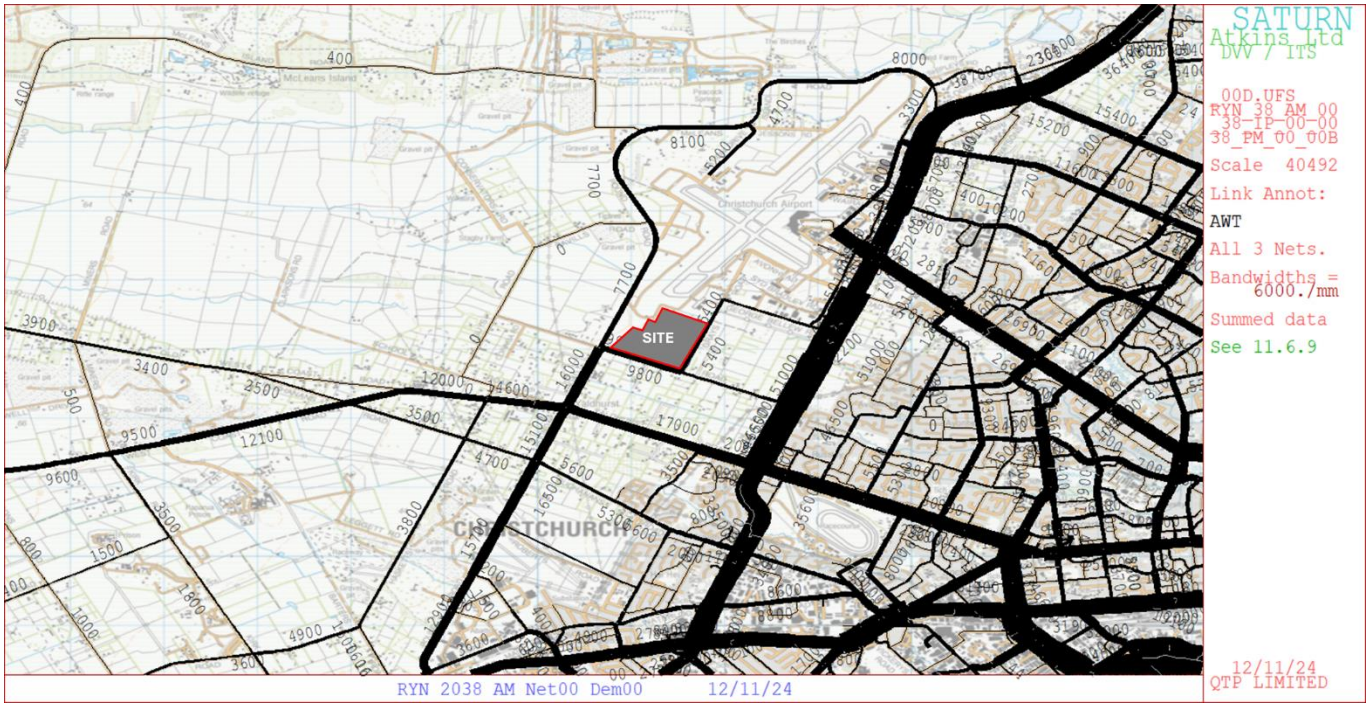


Figure 3.11: 2038 Average Two-Way Weekday Traffic Volume Estimates (Without Development)



3.7.8 By way of context, the following diagrams illustrate the **changes** in modelled peak hour traffic flows between the 2024 base models and the 2038 assessment year. Red bands illustrate increases in traffic flow and green reductions, with the width of the bands being proportional to the changes in directional traffic flows. Please note the different scale adopted from the diagrams above, adopted to emphasise the changes.

Figure 3.12: Modelled Changes in Base Model Traffic Flows 2024 to 2038, AM Peak Hour

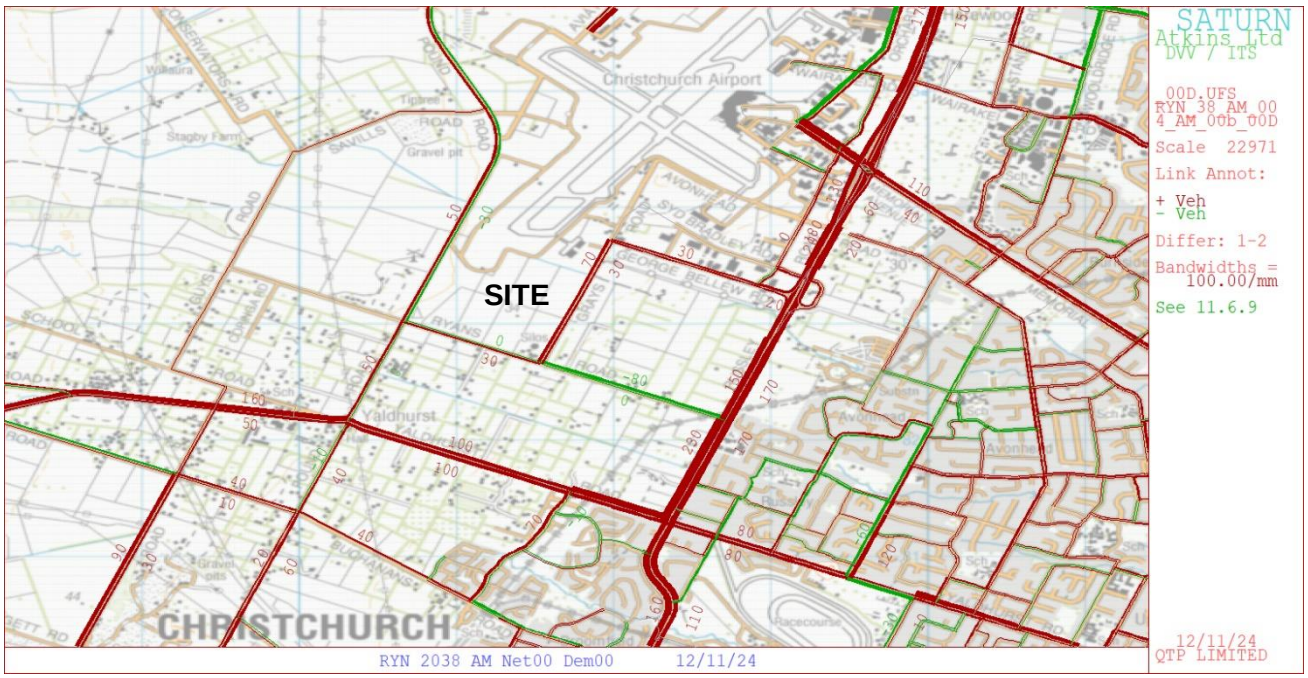
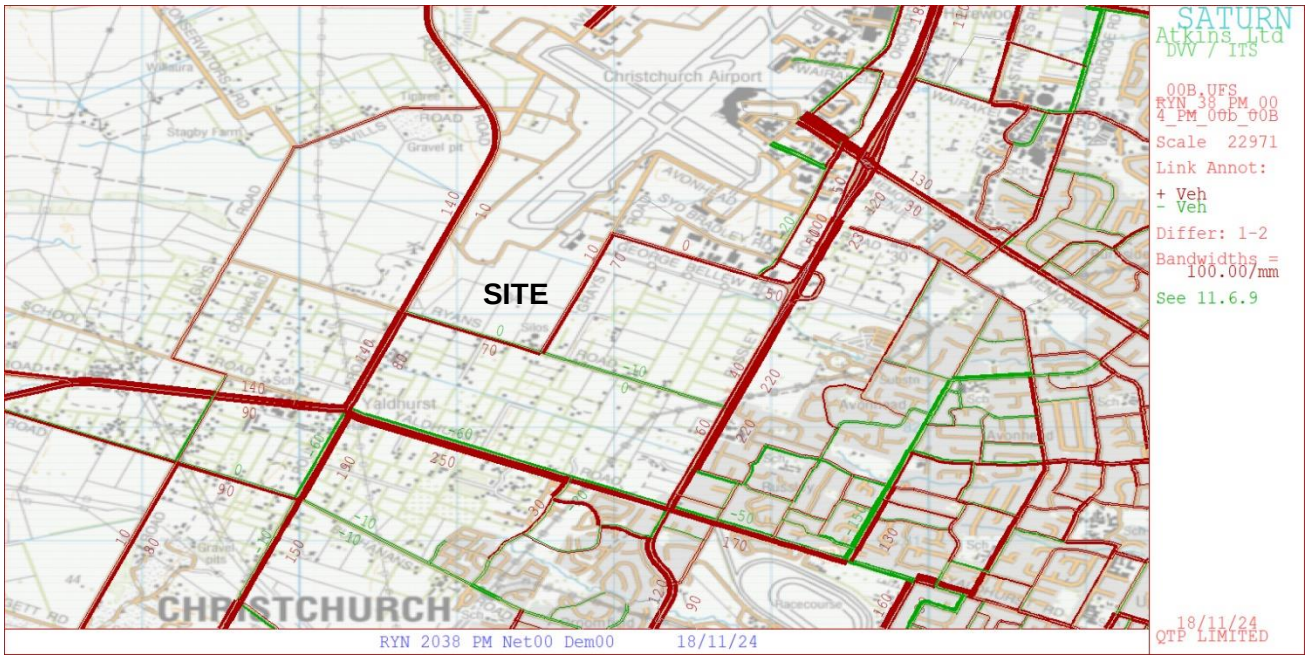


Figure 3.13: Modelled Changes in Base Model Traffic Flows 2024 to 2038, PM Peak Hour



3.7.9 As would be anticipated, under anticipated population and employment growth to 2038, traffic volumes in the area are generally forecast to increase, as indicated by the annotated red bands, but (unless capacity issues are addressed) these will be potentially constrained.

3.7.10 Pound Rd growth is forecast to be lower in the AM peak (despite the fact that Nbnd delays at Yaldhurst Rd are higher in the PM peak), because there is relatively more Nbnd capacity on the SH1 route in this period, compared to the PM peak when significant delays are forecast at the SH1/SH73 intersection and the resulting preference for (some) drivers to use alternative routes.

3.7.11 Growth in the use of Grays, Ryans and Pound Rds for Sbnd routes is forecast to become notably higher in the PM peak as drivers seek to avoid forecast delays for the Sbnd RT from Russley Rd SH1 at its existing intersection with Yaldhurst Rd SH73, and Nbnd drivers seek alternative routes to avoid the significant delays forecast on the Masham Rd approach to this intersection (and the Pound Rd approach to Yaldhurst Rd).

3.7.12 The following diagrams illustrate the modelled delays for the 2038 base models (without the proposed development). Delays (compared to 2024) are modelled to increase significantly at the Pound Rd/SH73 intersection south of the proposed development site. More detail on the extent of these changes will be found in the section on SIDRA modelling to follow.

Figure 3.14: Modelled Average Link Delays, No Development, 2038 AM Peak Hour

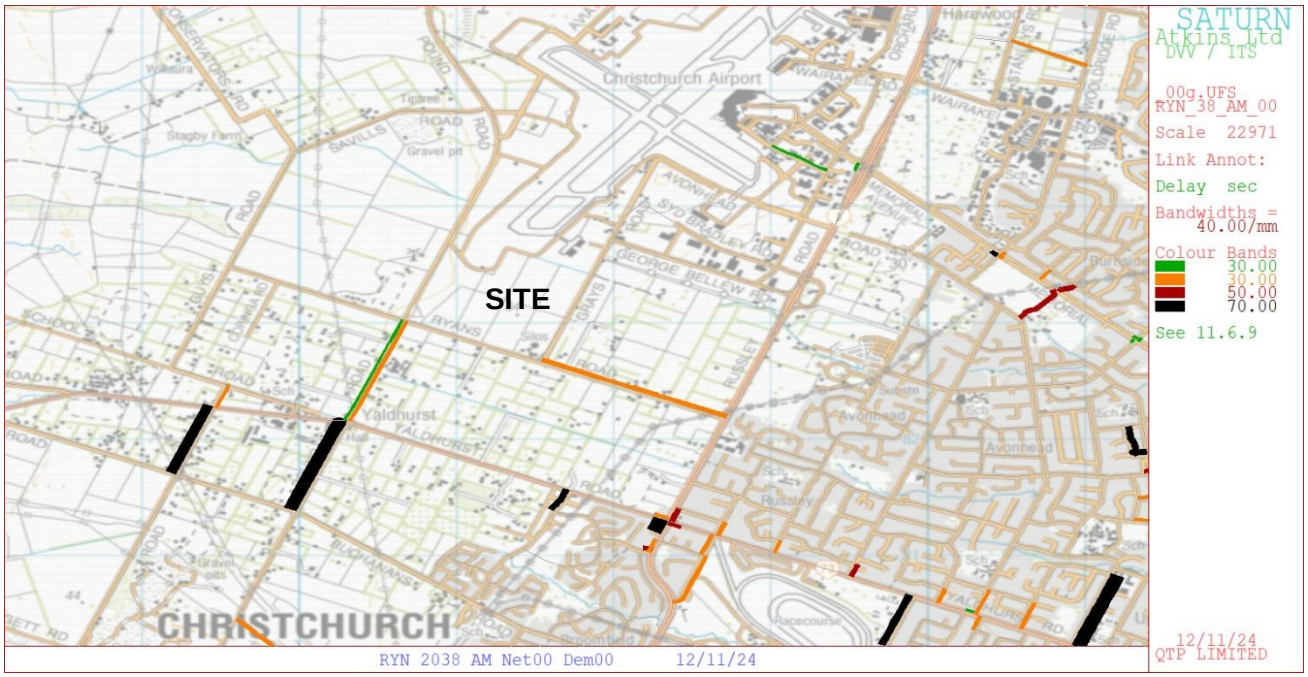
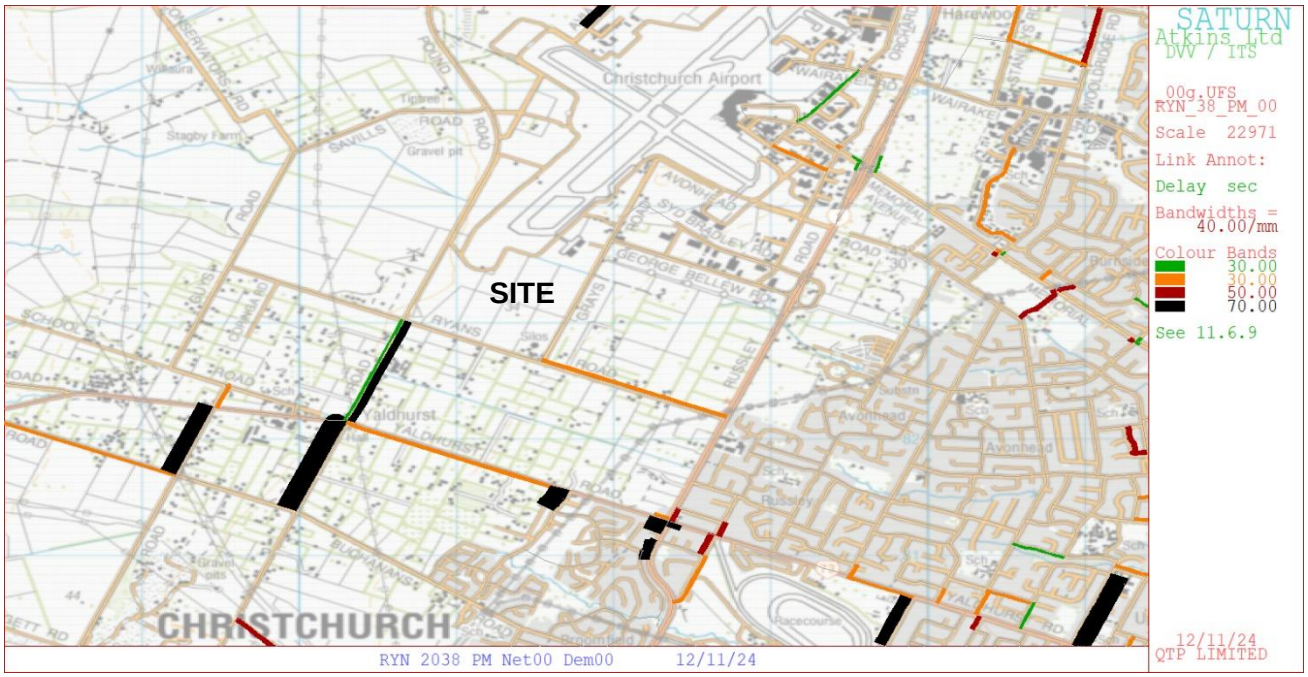


Figure 3.15: Modelled Average Link Delays, No Development, 2038 PM Peak Hour



4 'With Development' Demand Adjustments

4.1 Approach

4.1.1 The approach adopted to developing the 'With development' demand scenarios is summarised as follows:

- Dakota Park 2038 base demands, represented by CAST zone 4681 (following adjustment to provide total generation 40% higher than the 2024 ME modelled demands for this zone), are used as a template zone and have been factored to provide estimated trips to and from each of three zones used to represent the total proposed development.

4.2 Trip Generation Rates

4.2.1 Trip generation assumptions have been provided by Novo Group and may be summarised as follows

- A total developable site area of 55.53ha.
- Total two-way vehicle trip generation is anticipated to be at a rate of 158.6 vpd/ha over an average weekday. Whilst Novo suggested this may reflect daily directional trip rate of 81.3vpd/ha IN and 77.3 vpd/ha OUT, for modelling purposes we have assumed that in practice this would be 50/50 over a typical weekday.
- Hourly peak two-way trip rates varying between 13.9 vph/ha (AM peak) and 12.7vph (PM peak) per ha have been applied to yield total peak hour site trip generation of up to 774 vph two-way (in the AM peak hour).
- Heavy vehicles are assumed to comprise 8.7% of the two-way trips in the AM peak hour, 10.1% in the representative interpeak hour and 7.1% in the PM peak hour.
- The total site trip generation has been split between the three zones representing the proposed development (5081, 5082 & 5083), at this stage based simply on their respective gross areas (30.9ha[11], 13.5ha & 11.2ha).

[11] This is a somewhat crude attribution, as it assumes e.g. that land shown hatched on the provided outline plan (potentially to be used for airside operations?) is included within zone 5081 and would be developed and generate traffic at the same rate as all other parts of the Site. However, the splitting to 3 zones in any event is more about preparing for more detail to be *potentially* added in the future (including more-refined network loading), given many details at this stage of planning will be as yet uncertain.

4.2.2 The total two-way trips for light and heavy vehicles have been apportioned to inbound and outbound trips to/from the site based on the split of in and out traffic of the Dakota Park 'template' zone described above. The resulting total assumed Site trips are summarised in **Table 4.1**.

4.2.3 The traffic model determines performance taking into account vehicle composition through use of what are known as Passenger Car Units (PCU), each light vehicle being 1.0 PCU. For this purpose, we adopt a generic assumption that each HV is equivalent to 2.0 PCU.

Table 4.1: Modelled Development Development Vehicle Trips

Period	Light Vehicles			Heavy Vehicles			Total Vehicles		
	In	Out	2-Way	In	Out	2-Way	In	Out	2-Way
AM Peak Hour (0730-0830)	484	222	**707**	25	42	**67**	510	264	**774**
Interpeak Hour (1300-1400)[12]	255	254	**563**	25	32	**63**	280	287	**566**
PM Peak Hour (1630-1730)[13]	230	425	**724**	28	23	**56**	257	448	**705**
Average Weekday (24 hr)	**3,985**	**3,985**	**7,969**	**417**	**417**	**834**	**4,402**	**4,402**	**8,804**

[12] The trip generation provided by Novo for this hour has been assumed to equate to an average interpeak hour (0900-1600) for the purposes of our modelling.

[13] This adopted PM peak site generation actually accords with the peak hour estimates supplied by Novo for 1600-1700. However, to be somewhat conservative we have assumed that this level of generation *could* occur slightly later, coincident with the network peak of 1630-1730. In practice it is likely to depend ultimately on the exact nature and mix of the industry/business that would be established on the Site.

5 Modelled Development Traffic Effects

5.1 With-development Network Assumptions

5.1.1 Two sets of Network assumptions have been modelled to support 2038 'With-development' assessment, representing 'No-mitigation' & 'Mitigation' scenarios. These have been compared to scenarios assuming the same wider networks in each case, but without the development.

Table 5.1: Modelled 2038 Scenarios

Assumed Network	Assumed 2038 Demands	
	No Development	With Development
No Network Mitigation	Scenario 38-00	Scenario 38-01
With Network Mitigation	Scenario 38-02	Scenario 38-03

5.1.2 The 'No-mitigation' scenario with the proposed development (Network 38-01), assumes simple priority-controlled access points for the principal site access locations (one on Grays Road and two on Ryans Rd). Where roads immediately adjacent to the Site currently have an 80kph limit, this is also assumed to be reduced to 60kph for 'With-development' scenarios.

5.1.3 The 'No-mitigation' scenario also assumes retention of the existing Stop-control priority intersection at Pound Rd/Ryans Rd. Beyond this, no further major adjustments to the base (planned) network[14] for 2038 have been assumed within this scenario.

5.1.4 The 'Mitigation' network (Network 38-03), assumes the existing Stop-controlled access at Pound Rd/Ryans Rd[15] would be replaced with a roundabout, of similar (single circulating lane) configuration to that currently at Buchanans Rd/Pound Rd intersection to the South.

5.1.5 Further afield, given that both the Pound Rd/Yaldhurst Rd (SH73) and Russley Rd/Masham Rd (SH1) / Yaldhurst Rd (SH73) intersections currently have approaches operating close to, at or above capacity at peak times and as such the addition of any traffic (from anticipated growth, as well as the site) therefore potentially will have a marked effect on performance, measures to reduce the impact of any additional traffic (including that from the Site) in the over-congested (Peak) conditions) have been assumed.

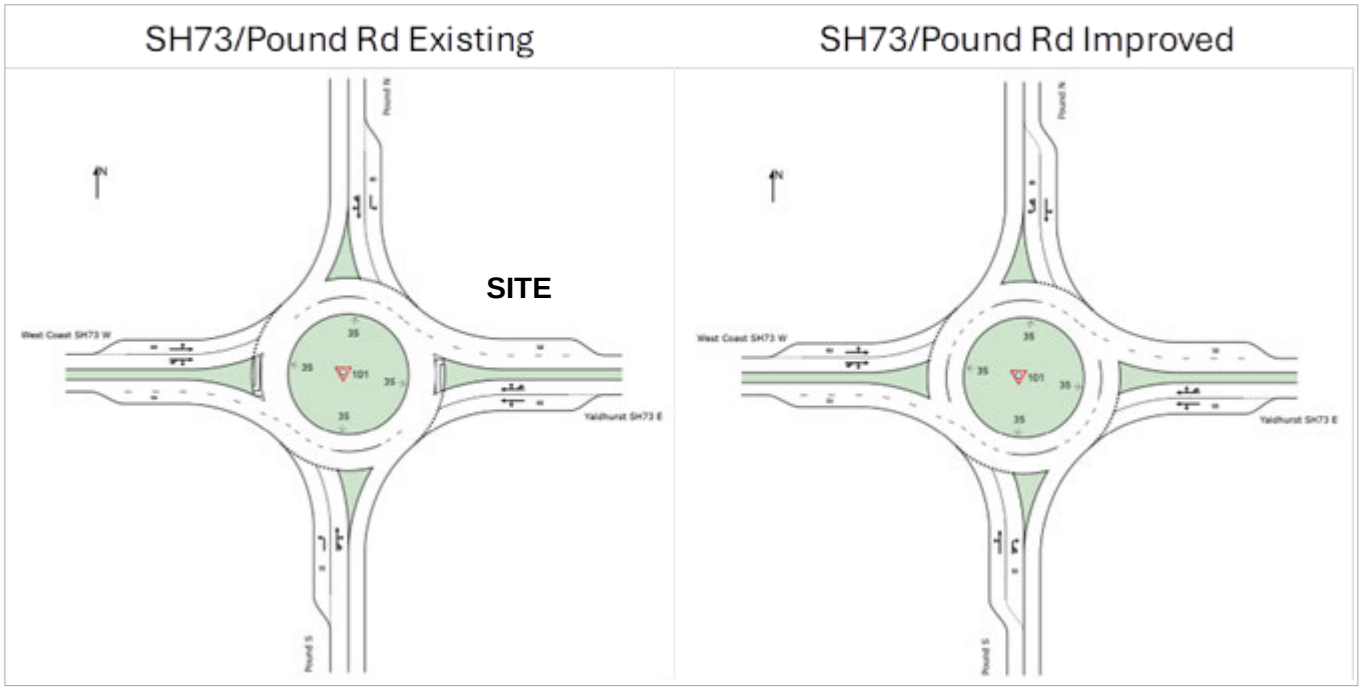
5.1.6 At the Pound Rd/Yaldhurst Rd (SH73) intersection, the existing capacity is constrained by a single circulating lane for Pound Rd traffic and confining around 90% of the Pound Rd demands (through and right turns) from both N and S directions into a single lane. However, given its construction, it could be relatively easily converted to provide two circulating lanes (for N-S traffic) and this coupled with remarking of Pound Rd approach to separate through and right-turning Pound Rd traffic, could offer significant improvements in capacity (by at least 30%).

[14] Note that this 'No Mitigation' assumption represents an adjustment to the 2038 'generic' models (including the parent CTM model), within which a new roundabout improvement was assumed at this location (but is no longer explicitly programmed).

[15] CCC have approved $7.8m (24/25-30/31) in their current capital programme for 'Addressing the Pound Road and Ryans Road corridors'. However, our understanding is that the exact nature of the measures which may ultimately be funded from this budget has yet to be established. Work in this financial year (currently underway) to reconstruct Pound Rd at its intersection with Ryans Rd retains a priority intersection (albeit with potential seal-widening that may provide for establishment of a marked right turn lane into Ryans Rd).

Further options to improve the capacity for Pound Rd traffic beyond these assumptions also exist, such as implementing peak-hour metering signals on the Yaldhurst Rd approaches, but have not yet been explored further, as part of this modelling study.

Figure 5.1: Pound Rd/Yaldhurst Rd Assumed Mitigation



5.1.7 The capacity of the SH1/73 intersection is more difficult to address, within the confines of the existing road reserve. This signal-controlled intersection is currently managed by NZTA to reduce RT delays from Russley N into SH73 W (that can still at times queue beyond the extent of a 150m-long long RT lane) and the heavy RT demand from Yaldhurst Rd E (into Russley Rd N).

5.1.8 In turn, this means that at peak times the Nbnd SH1 traffic (Masham approach) only gets approximately 2/3 of the time afforded to the Russley N approach, despite having similar through-movement demands. This is the principal reason why extensive queuing and delay occur on Masham Road during peak times.

5.1.9 These issues are only forecast to get worse with ongoing growth (even without the potential proposed development traffic generation) and thus, we suggest, are likely to require addressing by NZTA anyway. Our understanding is that the Agency have identified funding to investigate these issues (and others emerging in the Western corridor) in more detail at some point over the next 3 years.

5.1.10 One potential way of improving the capacity would be to ‘free up’ some time within the signal cycle by removing the Yaldhurst RT’s (from this location) - and facilitating those movements elsewhere.

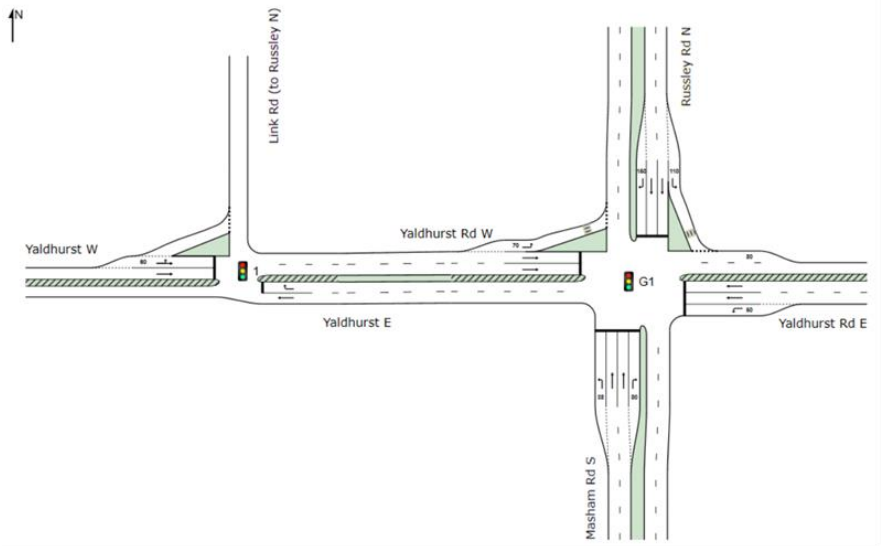
5.1.11 A nominal scheme to achieve this is shown in the diagrams below. It is stressed this is indicative of feasibility-stage planning only (for the purposes of modelling the broad scale of potential effects for this development investigation). As such, it should not be taken to be a fully-developed scheme, nor the only way that similar benefits might be achieved.

5.1.12 Nevertheless, preliminary modelling and economic analysis does suggest that such an

arrangement, or similar, may have the potential for significant benefits, not least as the peak hour signal cycle time could be reduced from the currently-adopted 120s-130s, to around 80s.

5.1.13 Importantly the additional capacity created would mean that (the impact of) any additional traffic at this location (including that to and from the proposed development site) would be lower than it would otherwise be.

Figure 5.2: Russley Rd / Masham Rd (SH1) / Yaldhurst Rd (SH73) Assumed Link Road



5.2 Development Traffic Trip Distribution

5.2.1 The following model plots illustrate (in terms of Total PCU), the modelled trips to and from the proposed development site (separately) in the AM and PM peak hours. Note that, for brevity, these are shown only for the 'Mitigation' network (Scenario 38-03) described above[16].

Figure 5.3: Modelled Routing of Inbound Trips To Site, 2038 AM Peak Hour

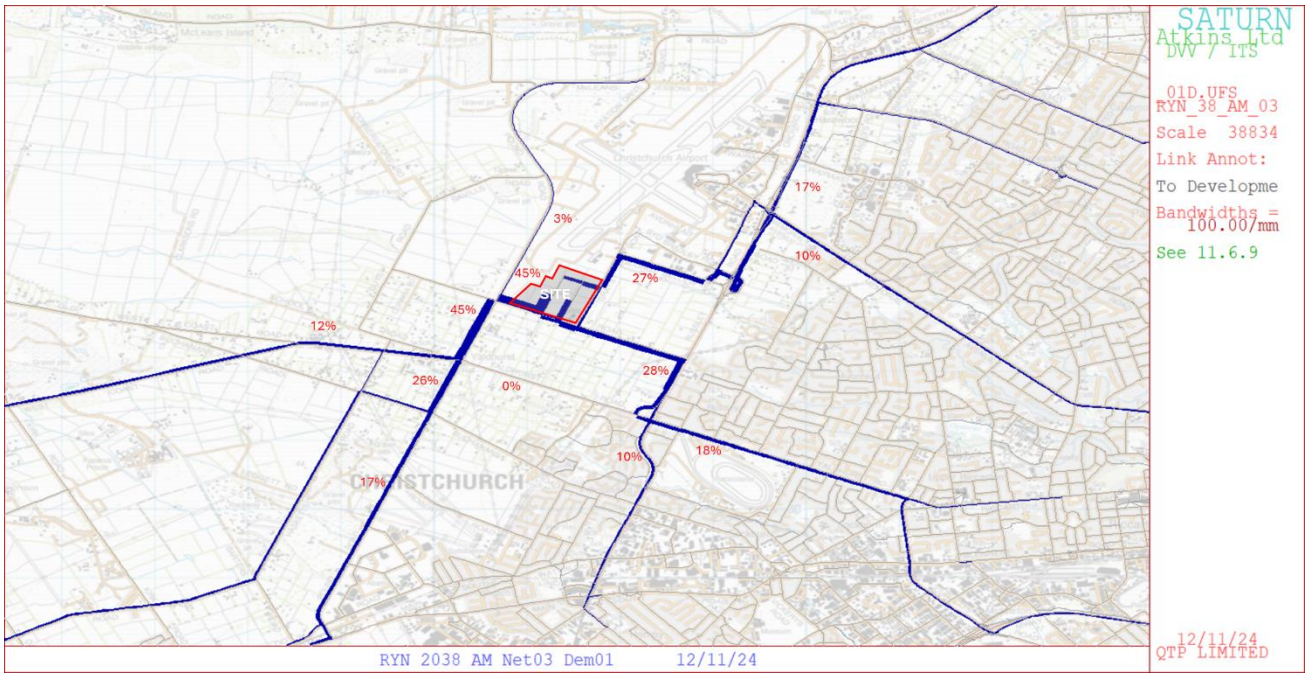
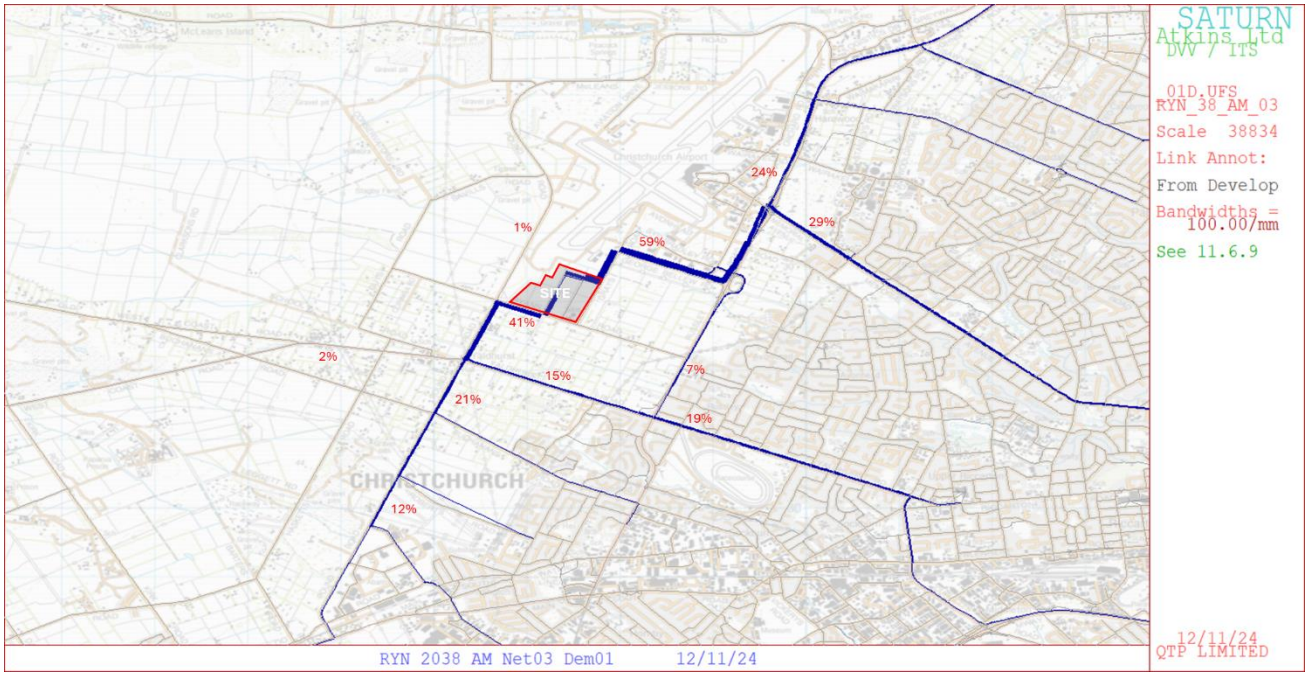


Figure 5.4: Modelled Routing of Outbound Trips From Site, 2038 AM Peak Hour



[16] The local site traffic distribution under a 'No Mitigation' scenario is different given the capacity issues forecast, at Pound Rd/SH73 and SH1/SH73 in particular.

Figure 5.5: Modelled Routing of Inbound Trips To Site, 2038 PM Peak Hour

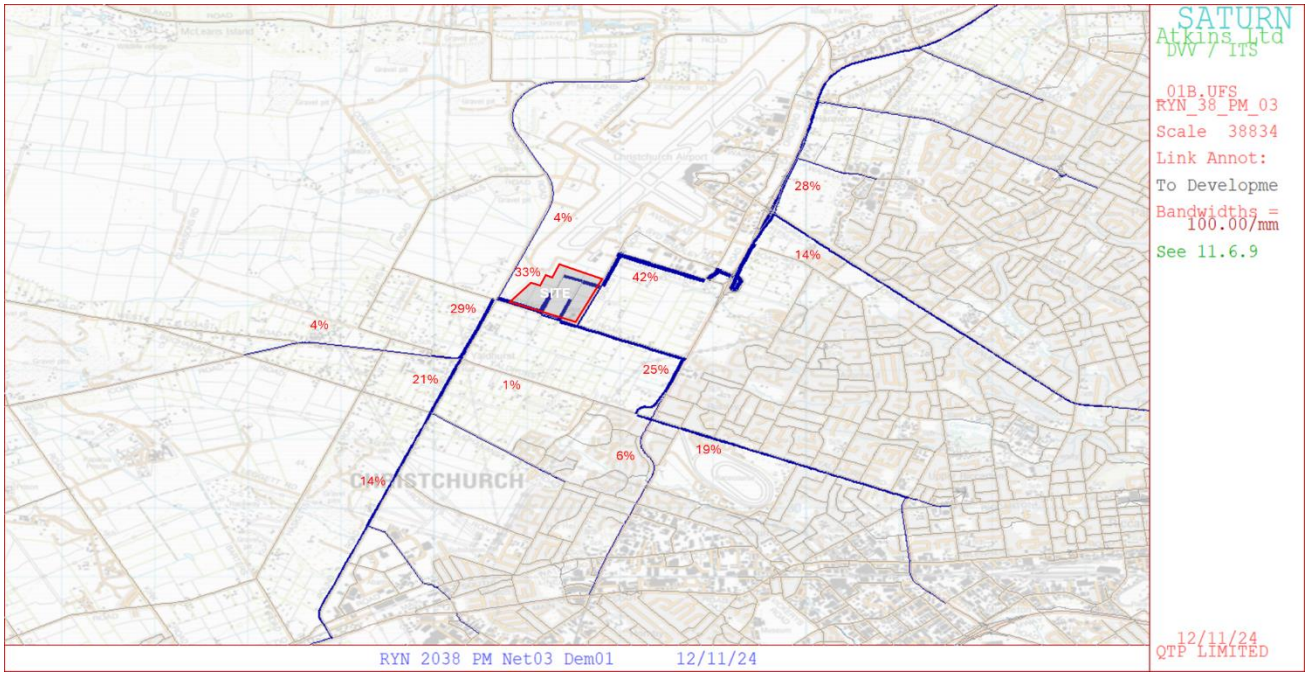
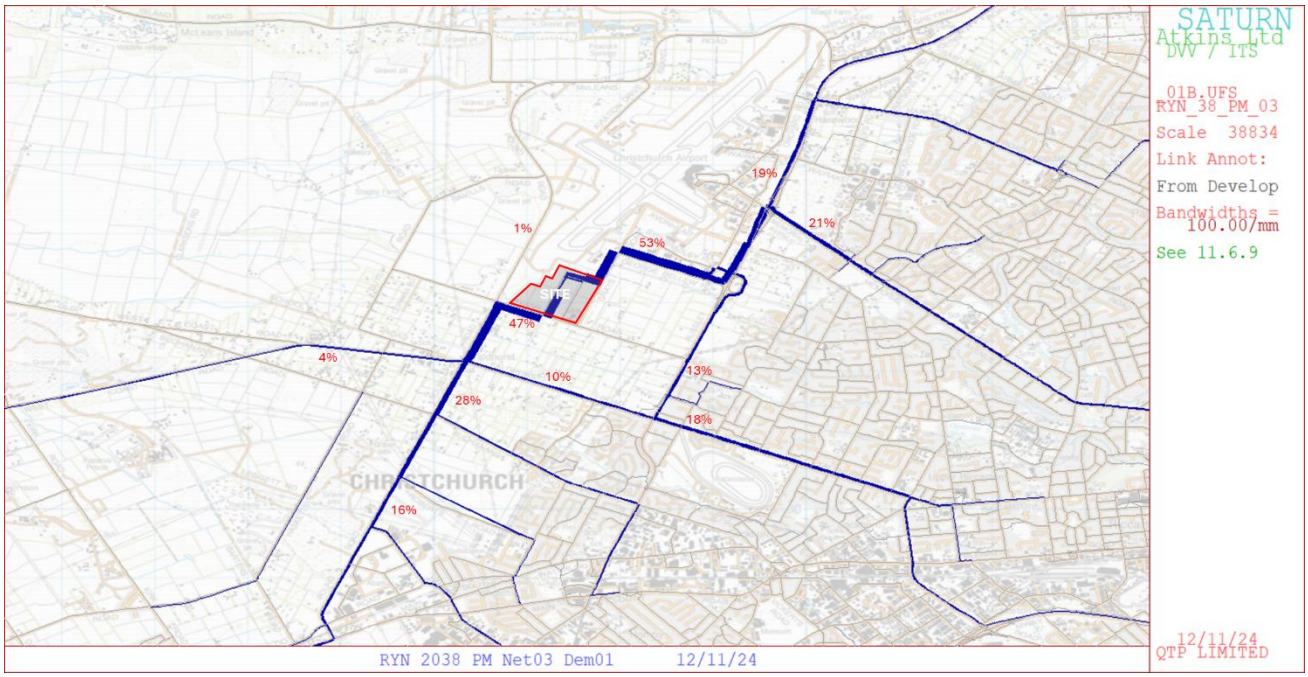


Figure 5.6: Modelled Routing of Outbound Trips From Site, 2038 PM Peak Hour



5.2.2 These distributions (locations where trips are coming from and going to) are based on the same distribution projected (in 2038) for the adjacent Dakota Park zone (4681). Routing through the transport network is however undertaken based on the optimal routes between origins and destinations (considering predicted travel times of alternative routes considering all traffic on the network), to the Site itself.

5.2.3 Note that full assignment of traffic leaving the Site to the East (and North) to George Bellew Drive and as a result, the (lack of) assignment of more such traffic using Ryans Rd (E) reflects the current fairly-simplistic modelling of Site zones. In practice (or given more-refined modelling), perhaps half of the traffic with destinations towards the N could be expected to use

Ryans Rd, as from the south of the Site it is actually (marginally) quicker than and a similar distance to travelling via Dakota Park.

5.2.4 Overall, on a daily basis the proposed development is projected to generate approaching 9,650 2-way PCU movements on an average weekday (8,800 vpd), of which around 41% are to & from the East, 25% to & from the South, 27% to & from the North and 7% to & from the West.

5.3 Daily Traffic Volumes with Development

5.3.1 Estimated total daily traffic volumes for each of the 'With-development' Scenarios are shown below. Note that these are shown in terms of Vehicles (per day), rather than PCU.

Figure 5.7: 2038 Average Two-Way Weekday Traffic Volume Estimates (With Development, No Mitigation Network)

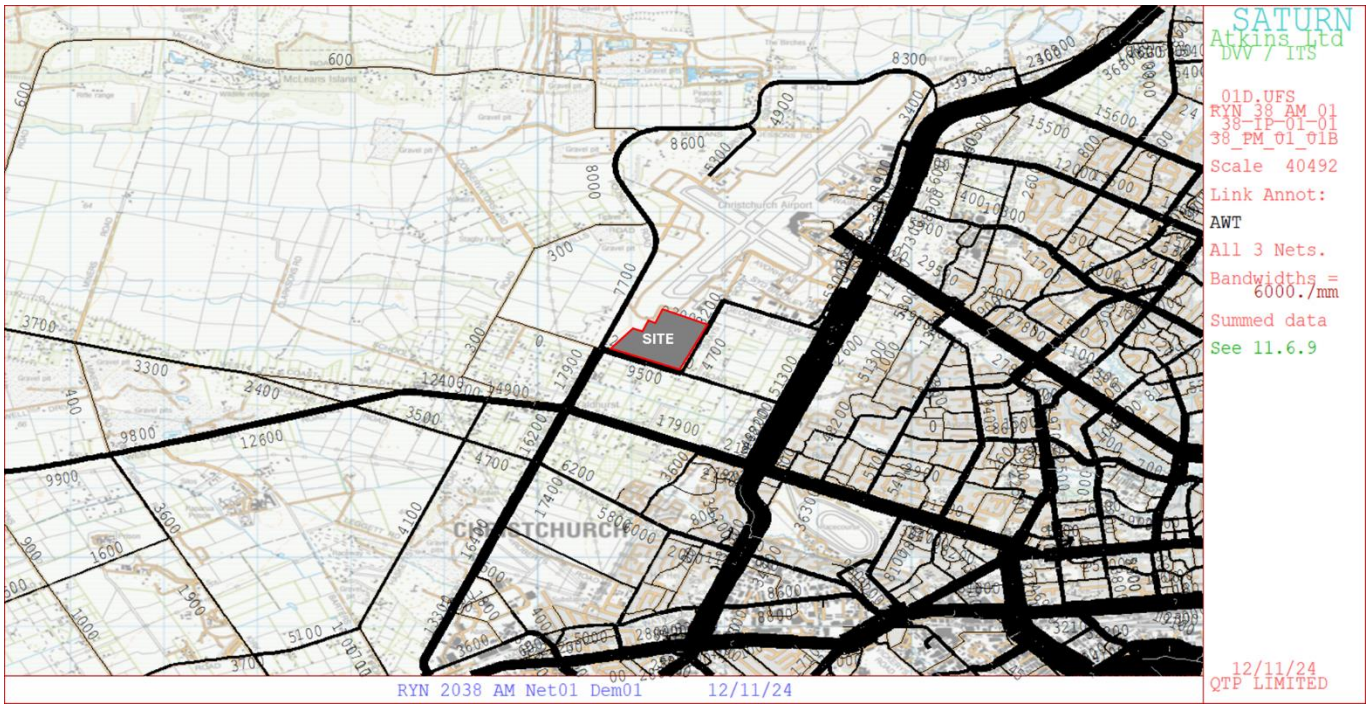
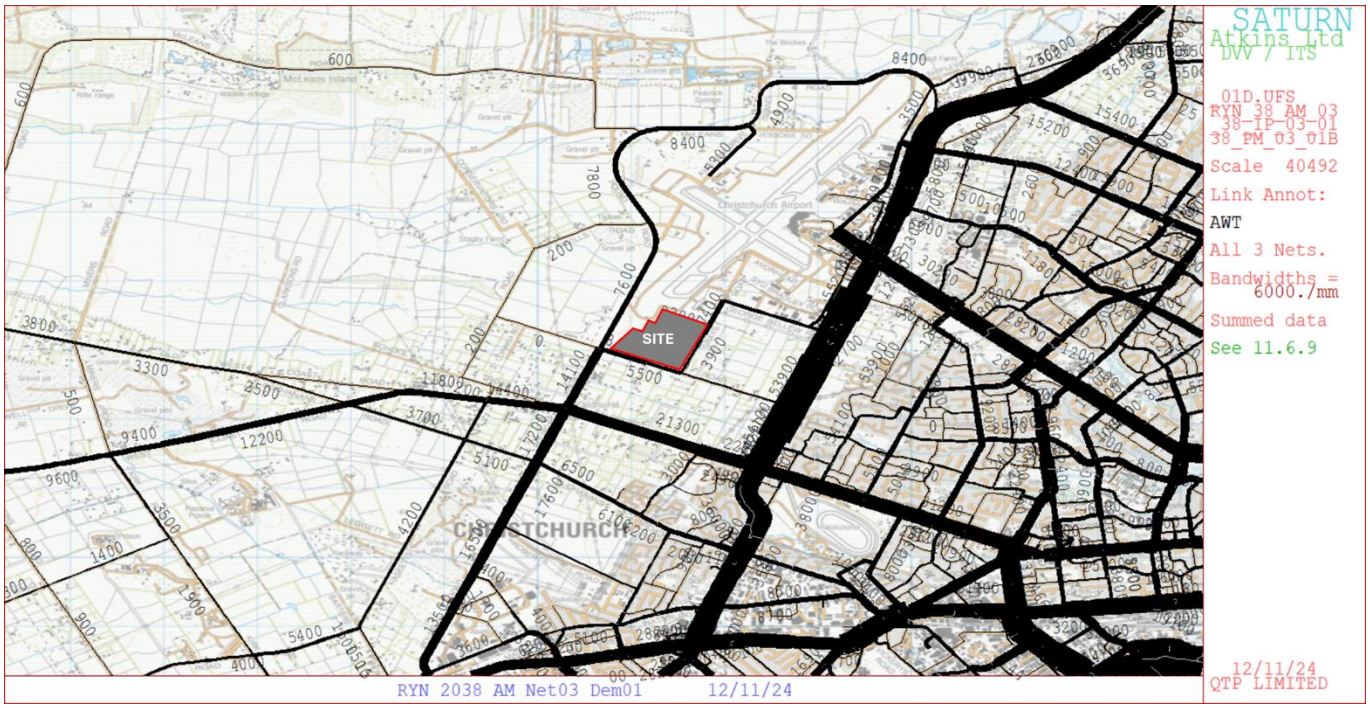


Figure 5.8: 2038 Average Two-Way Weekday Traffic Volume Estimates (With Development, Mitigation Network)



5.3.2 It will be noted that traffic past the Site is predicted to be notably lower given the 'Mitigation' network assumptions (e.g. 5,500vpd vs 9,500vpd), mainly because the capacity improvements at SH1/SH73 are predicted by the model to promote greater use of Yaldhurst Rd (between Pound Road and SH1) and SH1 itself, and thus reducing the incentive to use Pound Rd (and Ryans/Grays Rds) as an alternative.

5.4 Traffic Flow Changes

5.4.1 The following model plots illustrate the change in modelled peak hour traffic volumes (in PCU) under development of the site for the approximately 55ha of industrial land, per the traffic generation assumptions set out in the previous chapter. Again, these are only here compared for the 2038 'Mitigation' (With-Development) Scenario 38-03 only, for brevity.

Figure 5.9: Modelled Changes in Traffic Flows Due to Development, 2038 AM Peak Hour

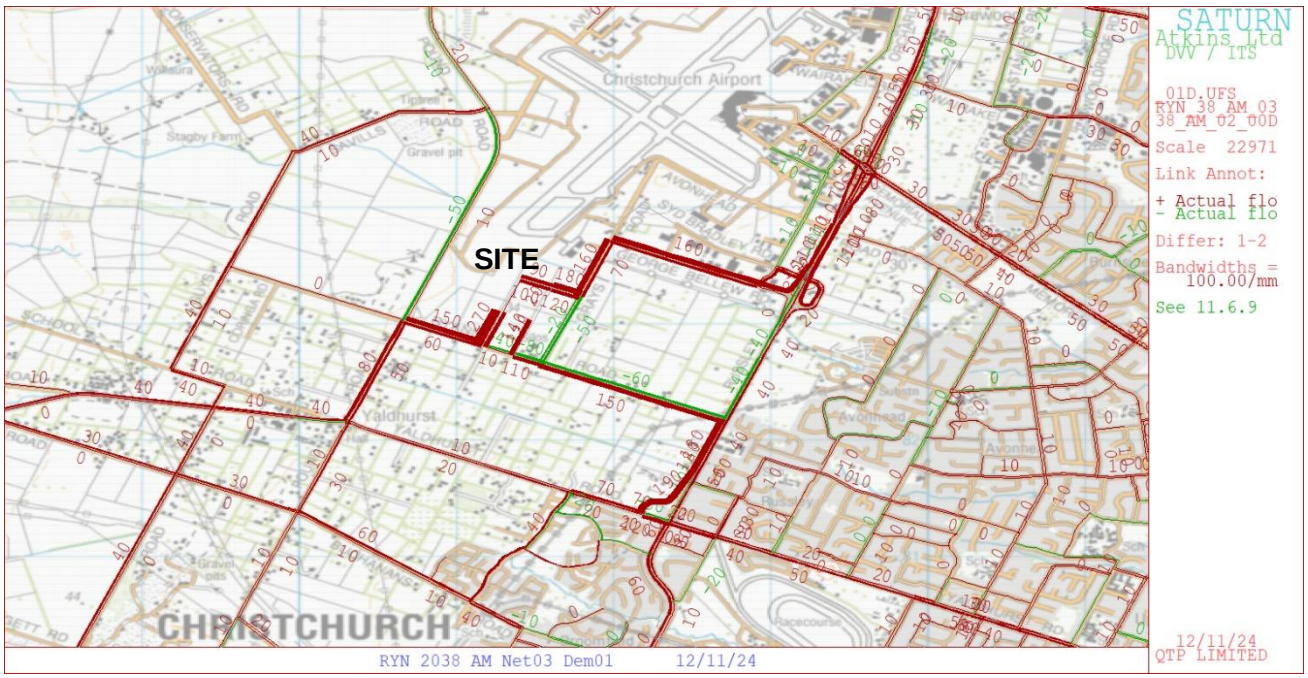
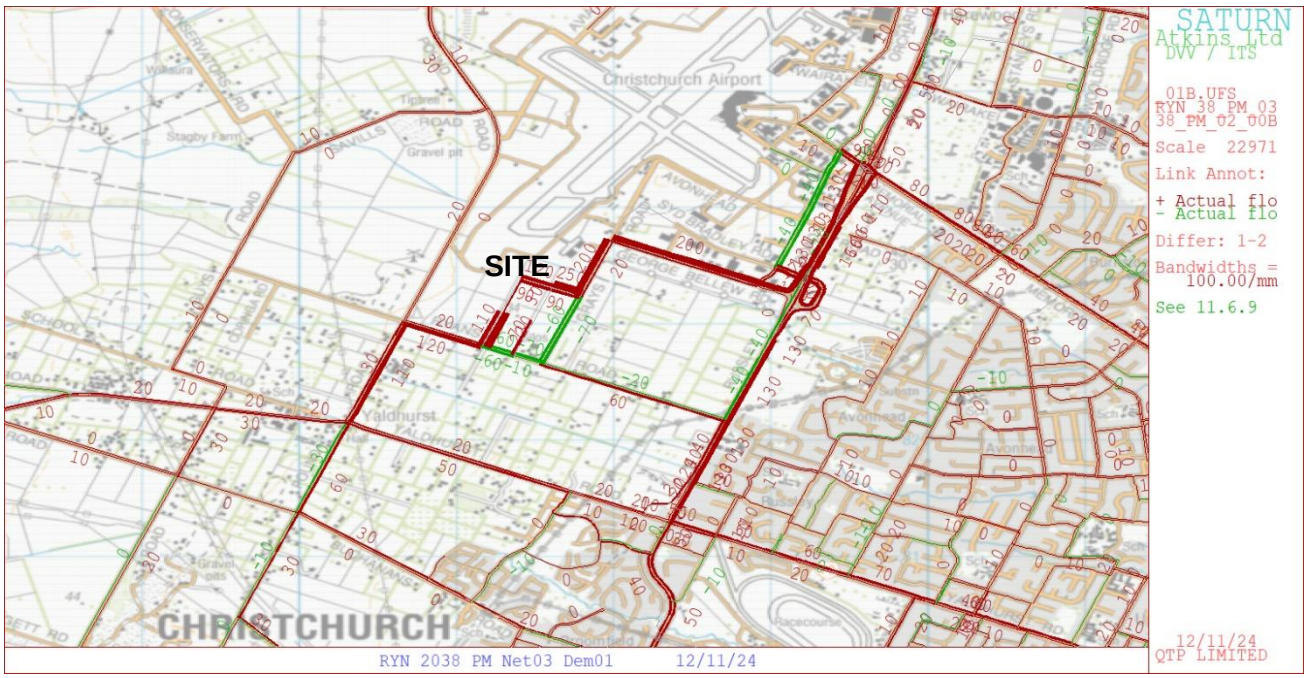


Figure 5.10: Modelled Changes in Traffic Flows Due to Development, 2038 PM Peak Hour



5.4.2 These change plots represent the net effects of additional development traffic **and** the assumed road network changes for this Scenario, the latter including a roundabout at Pound/Ryans (rather than the current Stop priority control) and the capacity improvements

discussed above at both the Pound/SH73 and SH1/SH73 intersections.

5.4.3 Annotated trips are rounded to the nearest 10 PCU per hour. On the site access roads the values sum to values slightly higher than the two-way trips listed in **Table 4.1** above: Referring to **Table 4.1**, it can be seen that with heavy vehicles comprising around 67 vehicle trips in the AM peak hour, that total 2-way trips should equal around 840 PCUs per hour. Given the rounding applied, they actually equal around 830 PCU/hr in the diagram above.

5.5 Modelled Approach Delays

5.5.1 The following plots illustrate the modelled delays around the network at an intersection approach level, in the same manner as those presented earlier within this report for the 2024 present-day model and the 2038 base model. Note that these 'approach' delays represent delays averaged across all turning movements to each intersection. As such they will not highlight delays for specific turning movements, such as those projected to occur for traffic turning North from Ryans Road onto Pound Rd. These are described more fully in following sections.

Figure 5.11: Modelled Average Link Delays, With Development & No Mitigation, 2038 AM Peak Hour

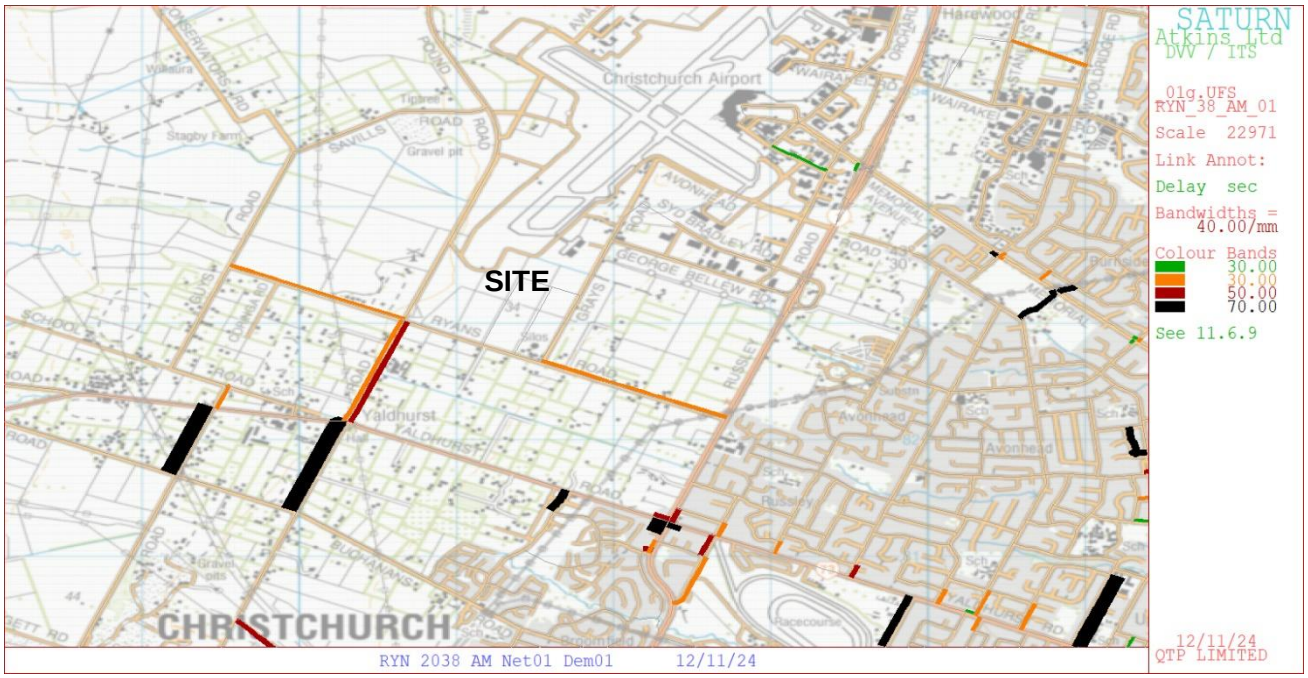


Figure 5.12: Modelled Average Link Delays, With Development & Mitigation, 2038 AM Peak Hour

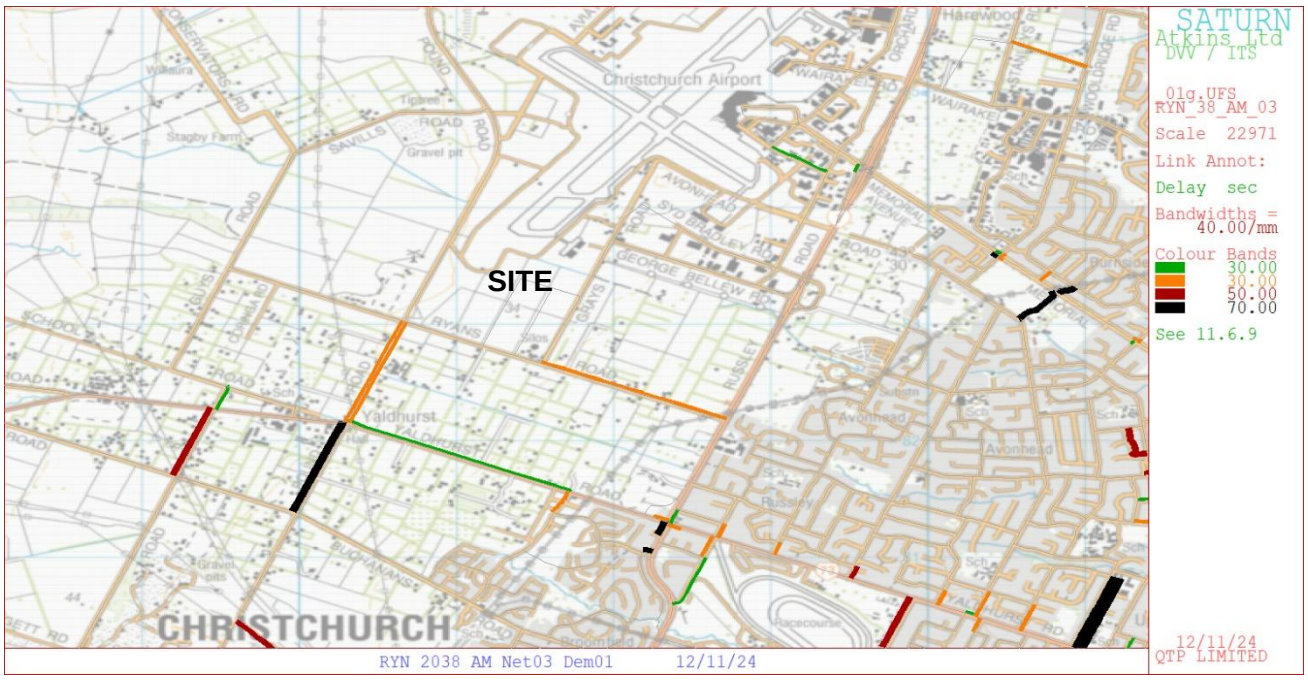


Figure 5.13: Modelled Average Link Delays, With Development & No Mitigation 2038 PM Peak Hour

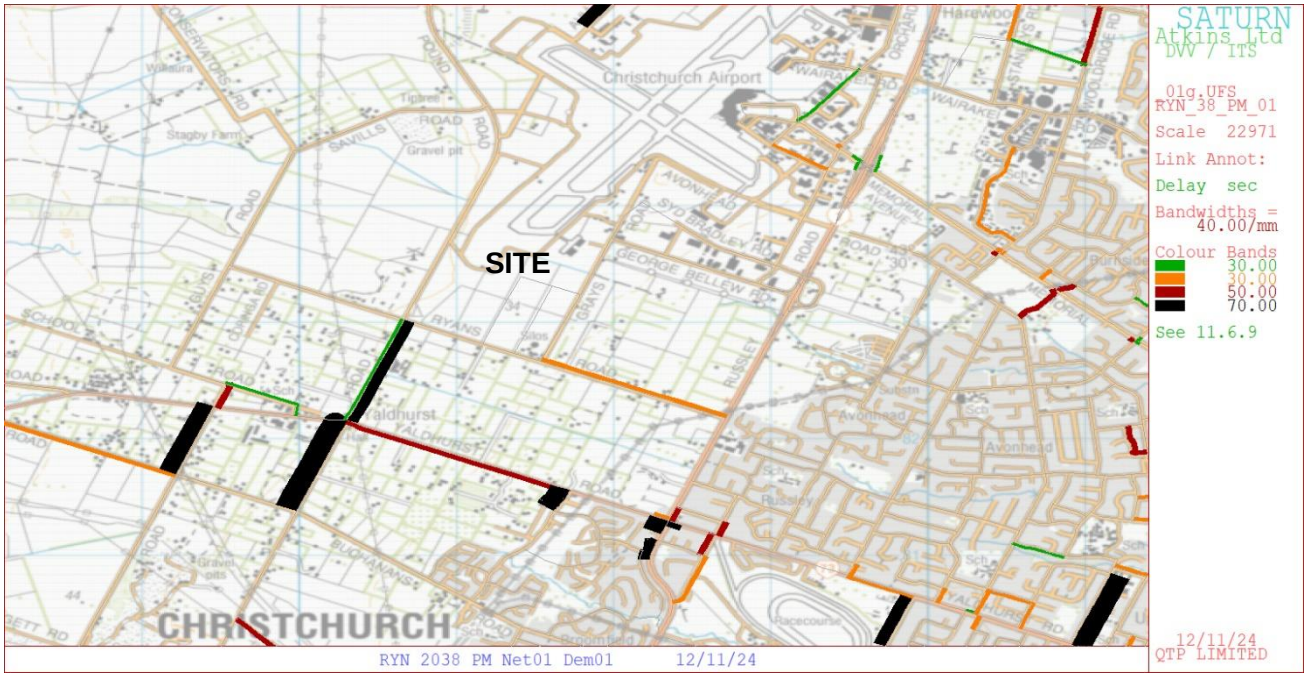
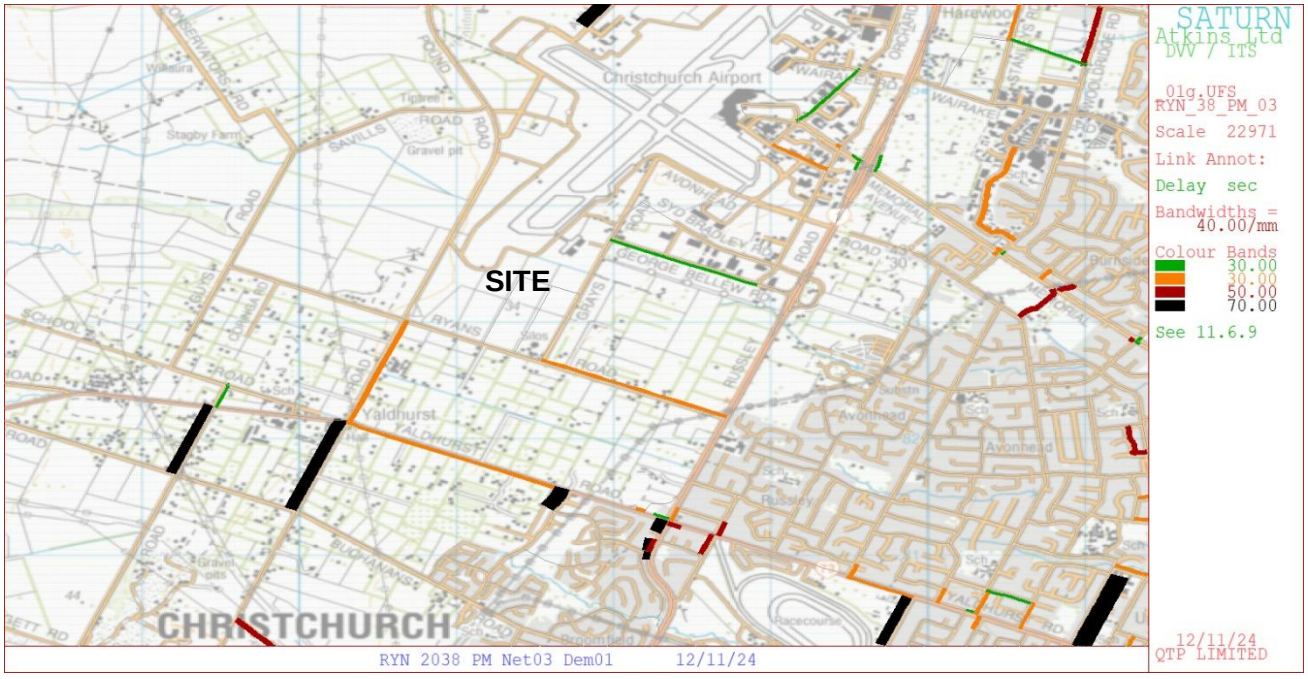


Figure 5.14: Modelled Average Link Delays, With Development & Mitigation, 2038 PM Peak Hour



5.5.2 The above diagrams confirm that given the Mitigation network assumptions the forecast delays (and impacts of development traffic) would be substantially less than the 'Without Mitigation' scenarios. However, whilst the wider capacity improvements assumed at SH73 intersections with Pound Road and SH1 certainly improve the performance, they are far from complete panacea - with a relatively poor level of service still forecast at these locations.

5.5.3 The above illustrated modelled link delays are most useful when considered together with the relative **changes** in delays due to the proposed development (presented next). In this way, locations of material changes can be considered in the context of the level of delay forecast.

5.6 Modelled Delay Changes

5.6.1 The following plots illustrate the modelled changes in approach delays in the vicinity of the proposed development site. Only delay changes greater than ±2 seconds are illustrated. Delay changes are shown as annotated bands, with the width of the bands proportional to the change in delay forecast. Increases in delay are illustrated as red bands, with reductions in green.

Figure 5.15: Change in Link Delays With Development & Mitigation vs. No Development & No Mitigation 2038 AM Peak Hour

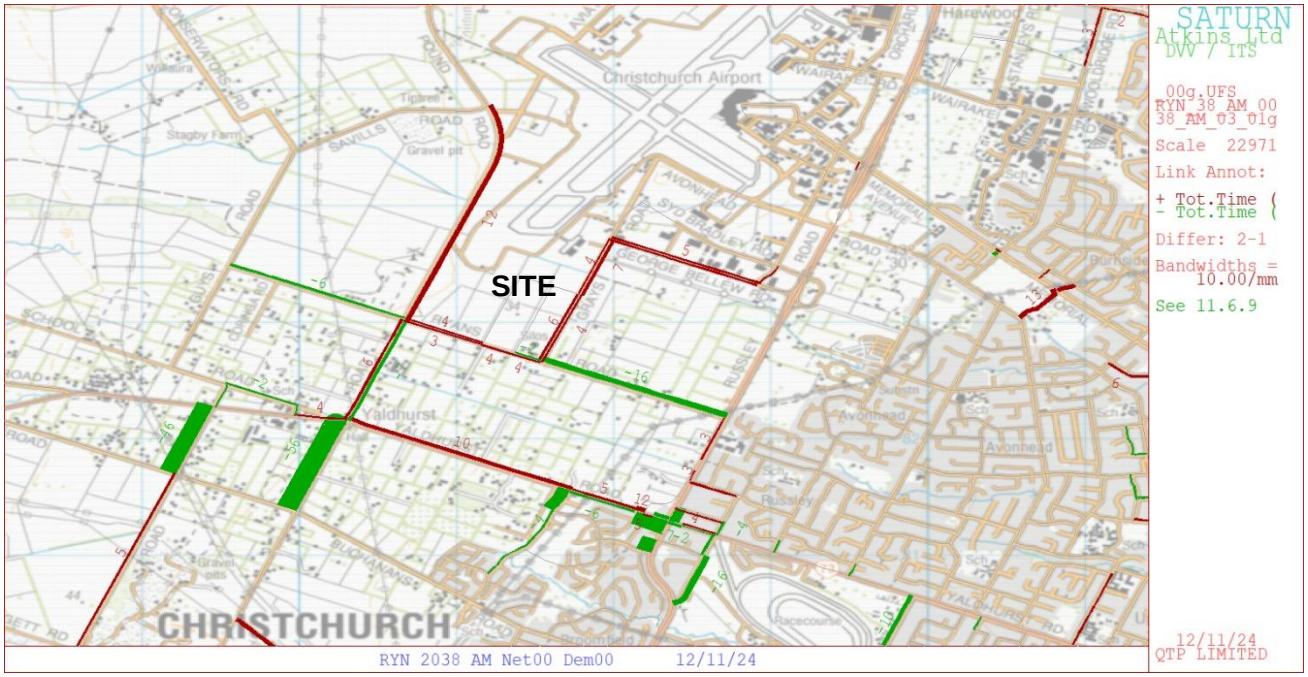
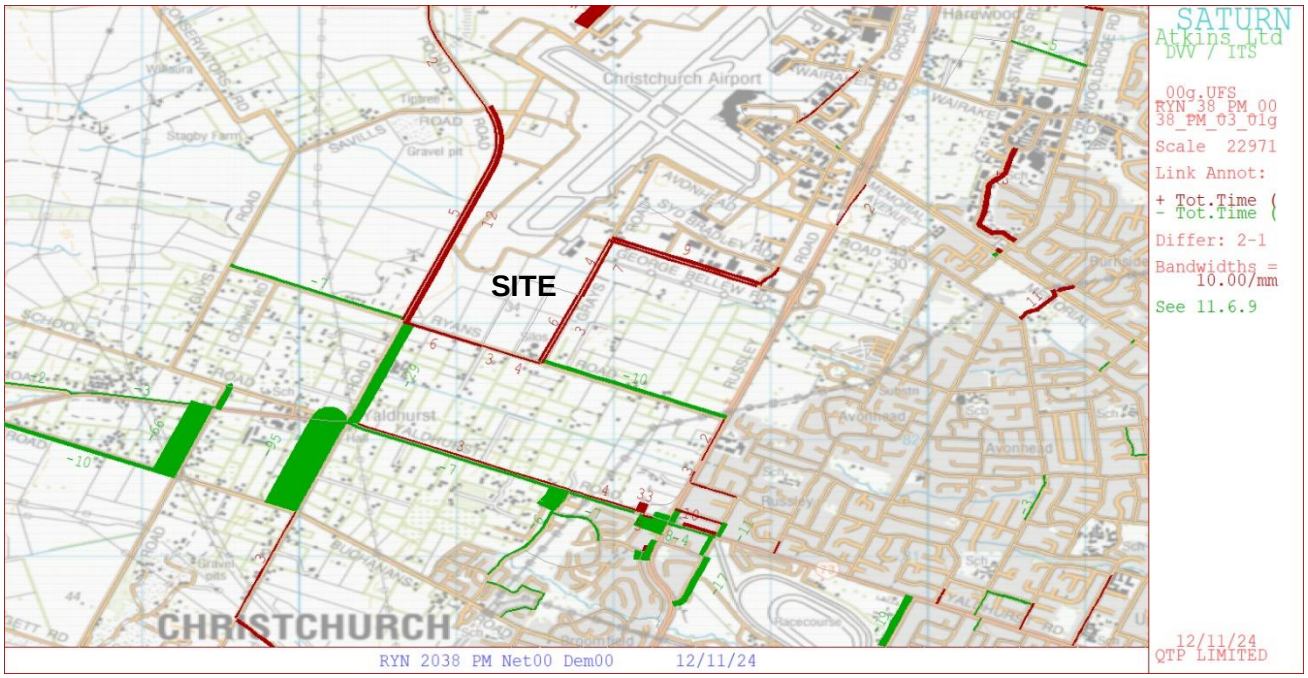


Figure 5.16: Change in Link Delays With Development & Mitigation vs. No Development & No Mitigation 2038 PM Peak Hour



5.6.2 It will be seen that the CAST modelling suggests that a roundabout at Pound/Ryans will add between 6-12 seconds delay to (non-site) traffic using Pound Rd, the extent depending upon the direction of approach and period.

5.6.3 On Grays, Ryans and George Bellew Rds, changes in delay are, we suggest, forecast to be relatively very modest.

5.6.4 Elsewhere, (generally) the wider capacity improvements assumed would yield lower delays than with No Mitigation, even with the additional traffic assumed to be generated by the proposed development.

5.6.5 The following plots illustrate the CAST model delay changes with the development traffic generation, compared to a situation without the development traffic generation, if the wider mitigation measures outlined above (in section 5.1) were implemented by the RCA's.

5.6.6 In these plots, it can be seen that the Site traffic is forecast to increase delays over the assumed base scenario (With Mitigation but without development traffic), but, we suggest, not to an 'excessive' degree: The largest increases are the delays added to both Pound Rd approaches to SH73, amount to between 6-18 seconds/vehicle (the range depending upon the approach and period).

5.6.7 For context, 18 additional seconds, for Pound Rd Nbnd travel between Buchanans Rd and Yaldhurst Rd, would be against a forecast PM peak average travel time of approaching 2.6 minutes in 2038 for this segment, given the capacity improvements outlined above in place, but no development traffic (+12%).

5.6.8 The models suggest that the PM peak hour performance (for this approach) of the improved intersection in 2038 given projected growth *and* the development traffic generation, would be broadly comparable to that of the current intersection, under the lower 2024 demands (171 seconds vs. 166 seconds average travel time).

Figure 5.17: Change in Link Delays With Development & Mitigation vs. No Development & No Mitigation 2038 AM Peak Hour

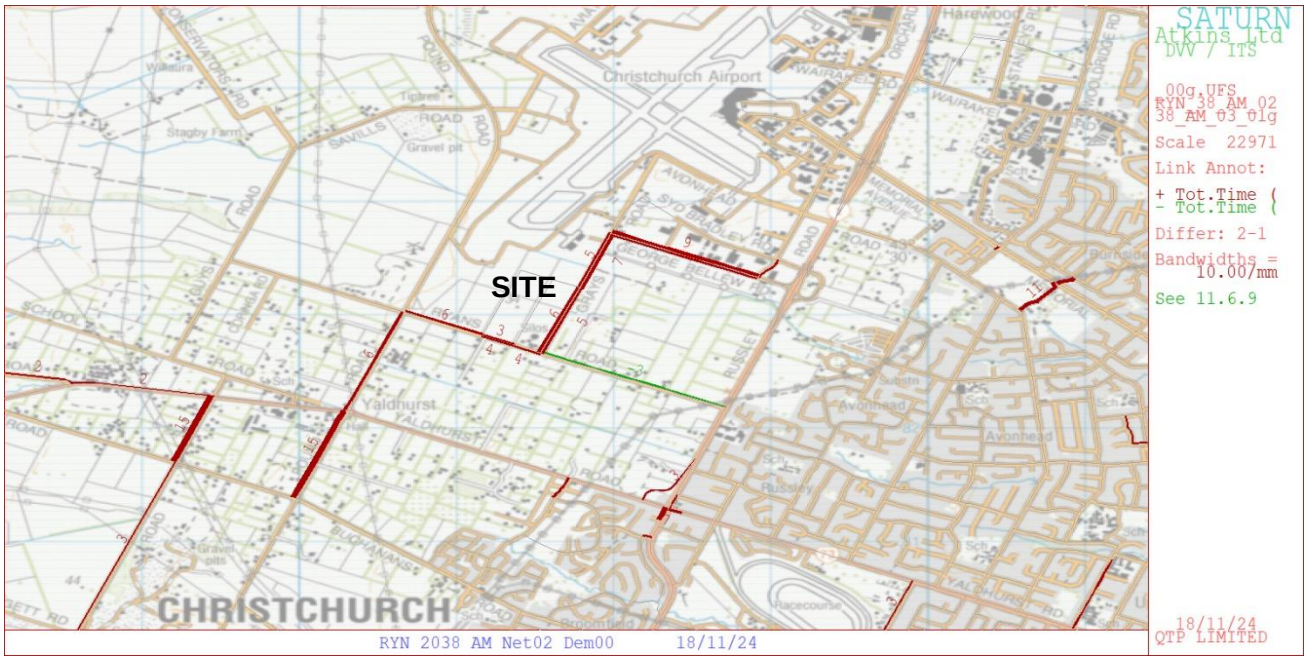
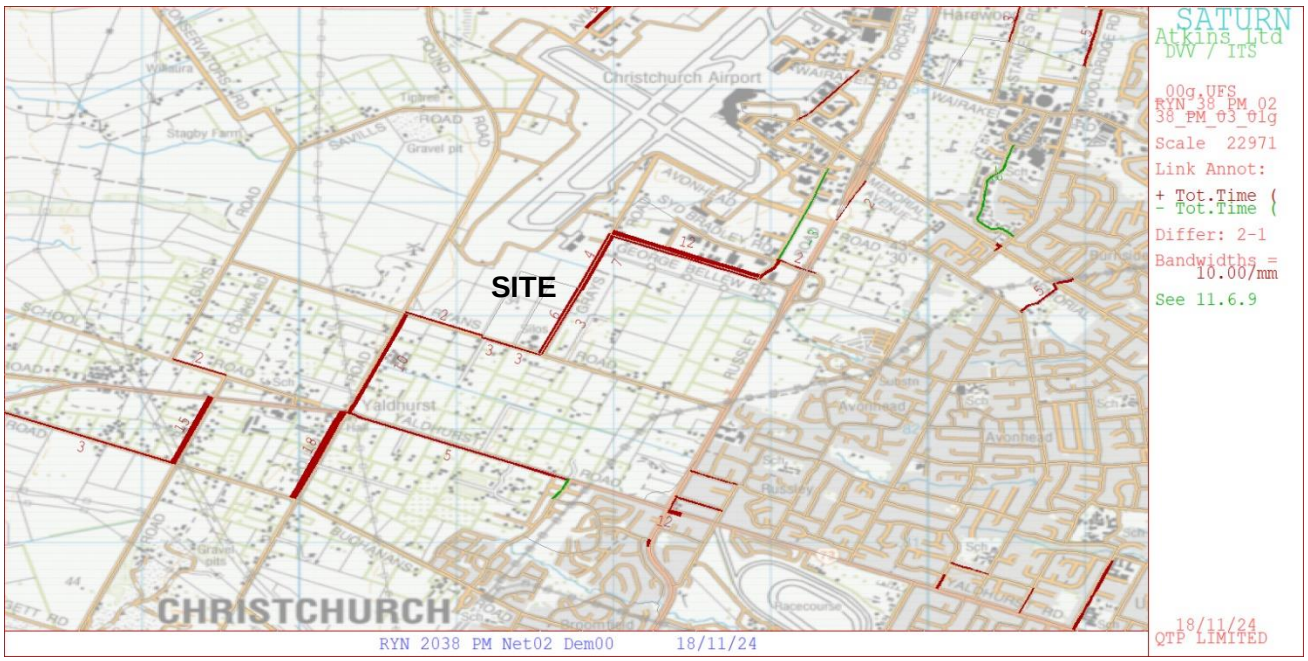


Figure 5.18: Change in Link Delays With Development & Mitigation vs. No Development & No Mitigation 2038 PM Peak Hour



5.7 Sidra Intersection Modelling Cross-Checks

5.7.1 By way of a cross-check of the CAST modelled operation, the following key intersections around the Site have been modelled using the SIDRA intersection software:

- Grays Rd / Ryans Rd
- Russley Rd SH1 / Ryans Rd
- Pound Rd / Ryans Road;
- Pound Rd / Yaldhurst Rd (SH73); and
- Russley Rd / Masham Rd (SH1) / Yaldhurst Rd (SH73)

5.7.2 SIDRA has been applied, using separate LV and HV traffic volumes predicted from relevant CAST SATURN model scenarios. Note that this exercise provides a cross-check of the modelled intersection performance for the assumed set of flows. In practice, the CAST modelling calculates the delays that are in-turn influential to the assigned traffic volumes through the intersection. That is to say, the modelled flows in CAST are in equilibrium with the modelled intersection performance. Any significant discrepancy between modelled delays in the SIDRA modelling and those of the CAST modelling would not, in practice, occur to the same extent, because higher delays would result in some traffic taking alternative routes to the intersection being modelled (in SIDRA), which in-turn would reduce the modelled delays. Similarly, lower delays as modelled in SIDRA would likely attract increased volumes than with the CAST model, which in-turn would increase delays to some degree.

5.7.3 The assumed intersection layouts for each scenario, along with SIDRA modelling movement summaries and movement delay plots are provided within **Appendix B**.

5.7.4 The SIDRA modelling of the **Grays Rd/Ryans Rd intersection** is summarised (for the critical right turn from Grays Rd N to Ryans Rd E only) in **Table 5.2**. This confirms that no capacity issues are forecast at this location.

Table 5.2: Grays/Ryans: Summary of SIDRA modelling Results (critical movement only)

Peak Hour	Scenario	Mitigation	Development	VPH	Delay	LOS
AM	2024	N	N	116	9	A
	2038-00	N	N	210	10	A
	2038-01	N	Y	410	7	A
	2038-02	Y	N	346	7	A
	2038-03	Y	Y	476	6	A
PM	2024	N	N	401	9	A
	2038-00	N	N	457	9	A
	2038-01	N	Y	201	9	A
	2038-02	Y	N	188	7	A
	2038-03	Y	Y	480	6	A

5.7.5 The SIDRA modelling of the **Russley Rd SH1/Ryans Rd intersection** is summarised (for the critical left turn out from Ryans Rd W to Russley Rd N only) in **Table 5.3**. This confirms that no significant peak hour capacity issues are forecast for this movement, albeit that under a 'No Mitigation' scenario, the higher use of Ryans Rd in the PM peak (including some additional site traffic), compared to the 'Mitigation' scenarios, is forecast to lead to a modest forecast deterioration, from Level of Service D to E (the threshold between D and E being an average delay of 35 seconds/vehicle for sign-controlled intersection movements).

Table 5.3: Russley/Ryans: Summary of SIDRA modelling Results (critical movement only)

Period	Scenario	Mitigation	Development	VPH	Delay	LOS
AM	2024	N	N	291	35	D
	2038-00	N	N	179	28	D
	2038-01	N	Y	201	29	D
	2038-02	Y	N	81	33	D
	2038-03	Y	Y	30	29	D
PM	2024	N	N	203	29	D
	2038-00	N	N	217	30	D
	2038-01	N	Y	260	39	E
	2038-02	Y	N	73	33	D
	2038-03	Y	Y	62	32	D

5.7.6 The SIDRA modelling of the **Pound Rd/Ryans Rd intersection** is summarised in **Table 5.4**.

5.7.7 Under the existing Stop-control, traffic generated by the proposed development site is not expected to markedly affect the performance of the intersection as whole, nor or of the highest-demand traffic movements. However, given the wider network performance under the 'No Mitigation' scenarios, minor movements *are* predicted to be suffer a deterioration in the level of service, perhaps most notably from Ryans Rd E into Pound Rd N. This could be expected to increase the crash risk and, in practice, likely increase existing issues arising for traffic exiting Ryans Rd seeking to separately queue for left and right turns, in what is currently a very limited seal width (marked lane 3.2m, max seal width 4m), particularly given an forecast increase in heavy vehicle use.

5.7.8 However, the SIDRA analysis, which aligns with that of the CAST modelling, confirms that under *roundabout* control, the intersection is forecast with a high-level of service, even with additional traffic generated by the Site – albeit at the 'cost' of imposing some additional modest delay for Pound Road through movements (not associated with the Site).

5.7.9 These delays could be further reduced (and the level of service for Site traffic also improved) with a roundabout layout that had dual circulating lanes on the West side (with a flare of the Pound S approach to provide separate Through and Right-turn Nbnd movements), rather than the single-lane layout assumed. However, this would require even more land (beyond the limits of the existing road reserve) and such an arrangement is *not* reflected in the results presented below.

Table 5.4: Pound/Ryans: Summary of SIDRA modelling Results

			Stop-Control									Roundabout Control					
			2024			2038 No Development			2038 With Development			2038 No Development			2038 With Development		
Period	Approach	Turn	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS
AM Peak	Pound S	L	4	11	B	1	10	B	1	12	B	1	4	A	1	4	A
		T	294	5	A	299	5	A	267	6	A	301	4	A	264	4	A
		R	593	11	B	602	10	B	766	12	B	460	9	A	603	9	A
	Ryans E	L	171	12	B	217	11	B	272	12	B	203	6	A	2448	7	A
		T	3	83	F	1	38	E	1	58	F	1	6	A	1	6	A
		R	2	129	F	1	46	E	3	176	F	11	11	B	5	12	B
	Pound N	L	14	6	A	7	6	A	17	6	A	7	9	A	17	13	B
		T	361	0	A	315	0	A	309	0	A	311	9	A	309	12	B
		R	2	6	A	1	6	A	1	6	A	1	12	B	1	15	B
	Ryans W	L	1	9	A	1	9	A	1	9	A	1	9	A	1	10	B
		T	7	32	D	1	31	D	1	41	E	1	9	A	1	10	B
		R	2	48	E	1	49	E	1	74	F	1	14	B	1	15	B
	Intersection	All	1454	7	n/a	1447	7	n/a	1640	9	n/a	1299	7	A	1452	8	A
PM Peak	Pound S	L	14	11	B	1	9	A	1	9	A	1	5	A	1	5	A
		T	596	4	A	579	3	A	580	3	A	603	5	A	600	5	A
		R	318	10	B	369	9	A	360	9	A	156	9	A	168	9	A
	Ryans E	L	455	14	B	461	11	B	508	12	B	480	10	A	577	10	B
		T	5	60	F	1	50	E	1	51	F	1	10	A	1	10	B
		R	5	70	F	1	60	F	3	133	F	70	15	B	66	15	B
	Pound N	L	31	6	A	4	6	A	14	6	A	5	5	A	19	5	A
		T	421	0	A	325	0	A	280	0	A	403	5	A	351	6	A
		R	2	11	B	1	6	A	1	6	A	1	10	A	1	10	A
	Ryans W	L	2	11	B	1	11	B	1	11	B	1	10	A	1	10	A
		T	3	36	E	1	32	D	1	30	D	1	10	A	1	10	A
		R	1	84	F	1	78	F	1	79	F	1	14	B	1	14	B
	Intersection	All	1853	7	n/a	1745	6	n/a	1751	7	n/a	1723	7	A	1787	8	A

5.7.10 The SIDRA modelling of the **Pound Rd/West Coast Road/Yaldhurst Rd SH73 intersection** is summarised in **Table 5.5**.

5.7.11 This analysis confirms that the Pound S approach of the existing intersection ('No Mitigation' scenarios) is very sensitive to added demand, being projected to be well above capacity (LoS F) in the PM peak hour by 2038. In such situations the addition of only modest amounts of additional traffic, such as that generated to and from the Site, causes a disproportionate rise in the average delay incurred by all vehicles.

5.7.12 Indeed, it is very important to note that the analyses presented below adopt SIDRA 'program-default' estimates of gap-acceptance, for all scenarios and approaches, to ensure consistency. However, these are significantly lower than the gap-acceptance parameters we find are required to replicate existing high observed AM and PM peak delays on the Pound Rd S approach.

5.7.13 Thus, the capacity in this SIDRA modelling (at least for the existing layout arrangement, adopted for the 'No Mitigation' scenarios) is higher than that which appears to prevail in practice. As a consequence, the effects of any additional traffic (2038 Scenarios both Without and With the development) could potentially be higher than shown – and occur in both peaks.

Table 5.5: Pound/Yaldhurst SH73: Summary of SIDRA modelling Results

			No Mitigation Network									Mitigation Network					
			2024			2038 No Development			2038 With Development			2038 No Development			2038 With Development		
Period	Approach	Turn	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS
AM Peak	Pound S	L	26	7	A	22	8	A	18	8	A	32	8	A	31	9	A
		T	458	8	A	486	11	B	569	12	B	467	8	A	536	9	A
		R	160	14	B	111	17	B	37	18	B	360	13	B	296	13	B
	Yaldhurst E	L	217	5	A	250	6	A	266	6	A	276	4	A	277	4	A
		T	369	4	A	421	5	A	429	6	A	417	4	A	425	4	A
		R	66	10	B	101	11	B	112	12	B	69	10	A	72	10	A
	Pound N	L	56	8	A	26	7	A	61	7	A	21	12	B	62	16	B
		T	343	7	A	365	10	A	377	9	A	350	11	B	362	14	B
		R	175	13	B	176	16	B	178	14	B	176	14	B	167	15	B
	West Coast W	L	332	8	A	335	9	A	384	11	B	224	6	A	264	6	A
		T	526	7	A	633	11	B	633	13	B	661	7	A	655	8	A
		R	9	13	B	9	17	B	9	19	B	9	13	B	9	14	B
	Intersection	All	2741	8	A	2939	10	A	3077	10	B	3066	8	A	3160	9	A
PM Peak	Pound S	L	1	12	B	5	14	B	6	14	B	40	23	C	29	35	D
		T	457	15	B	475	137	F	459	195	F	554	22	C	541	34	C
		R	128	21	C	59	143	F	65	200	F	189	17	B	185	18	B
	Yaldhurst E	L	231	7	A	328	9	A	335	9	A	353	6	A	320	6	A
		T	518	9	A	585	28	C	618	50	E	569	6	A	605	8	A
		R	159	15	B	230	34	C	246	56	E	64	12	B	106	14	B
	Pound N	L	104	5	A	67	5	A	77	5	A	92	8	A	101	8	A
		T	409	5	A	488	6	A	517	6	A	513	7	A	578	7	A
		R	236	11	B	228	12	B	194	12	B	276	11	B	249	11	B
	West Coast W	L	276	8	A	304	9	A	297	9	A	175	6	A	160	6	A
		T	359	6	A	441	7	A	457	7	A	458	5	A	468	6	A
		R	25	12	B	27	13	B	26	13	B	26	11	B	26	11	B
	Intersection	All	2907	10	A	3241	35	C	3301	49	D	3313	10	A	3372	12	B

5.7.14 That said, the SIDRA analysis clearly confirms that the 'Mitigation Network' assumptions, which include the capacity improvements for this roundabout described, could yield significant benefits and accommodate the additional traffic from the Site.

5.7.15 The SIDRA modelling of the **Russley/ Masham Rd (SH1)/Yaldhurst Rd (SH73) intersection** is summarised in **Table 5.6**.

Table 5.6: SH1/ SH73: Summary of SIDRA modelling Results[17]

			No Mitigation Network									Mitigation Network					
			2024			2038 No Development			2038 With Development			2038 No Development			2038 With Development		
Period	Approach	Turn	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS	VPH	Delay(s)	LoS
AM Peak	Masham S	L	24	72	E	41	74	E	5	73	E	39	41	D	93	42	D
		T	1002	105	F	1009	145	F	1008	133	F	1323	108	F	1271	118	F
		R	89	51	D	185	184	F	158	105	F	215	37	D	239	40	D
	Yaldhurst E	L	53	29	C	108	30	C	101	30	C	38	38	D	42	42	D
		T	370	26	C	454	27	C	468	28	C	735	54	D	799	97	F
		R	330	122	F	362	174	F	388	205	F						
	Russley N	L	356	21	C	400	34	C	411	35	D	386	20	C	380	20	C
		T	1091	39	D	1336	126	F	1343	130	F	1417	36	D	1440	40	D
		R	340	99	F	359	142	F	363	148	F	450	63	E	464	54	D
	Yaldhurst W	L	476	30	C	523	34	C	517	35	C	4	13	B	6	13	B
		T	602	73	E	595	73	E	589	74	E	655	74	E	649	92	F
		R	20	74	E	22	74	E	23	74	E						
	Intersection	All	4753	64	E	5395	103	F	5376	103	F	5262	63	E	5383	73	E
PM Peak	Masham S	L	44	83	F	2	79	E	1	79	E	21	44	D	14	47	D
		T	1026	203	F	962	161	F	965	161	F	1256	112	F	1262	153	F
		R	117	52	D	12	54	D	13	54	D	58	28	C	63	31	C
	Yaldhurst E	L	77	34	C	64	35	C	65	35	D	65	45	D	65	44	D
		T	505	31	C	691	37	D	728	41	D	1004	134	F	1026	119	F
		R	380	123	F	440	220	F	441	225	F						
	Russley N	L	364	16	B	471	23	C	532	25	C	420	13	B	490	14	B
		T	1107	37	D	1351	105	F	1355	117	F	1343	22	C	1394	26	C
		R	380	43	D	449	69	E	454	72	E	527	59	E	535	60	E
	Yaldhurst W	L	495	27	C	517	27	C	541	73	E	5	12	B	3	11	B
		T	439	72	E	443	76	E	452	77	E	499	33	C	501	32	C
		R	34	78	E	37	86	F	42	91	F						
	Intersection	All	4966	79	E	5440	95	F	5589	102	F	5199	70	E	5353	77	E

5.7.16 This analysis confirms that under the 'No Mitigation' network assumptions (i.e. the existing intersection configuration and signal phasing at this location), delays are projected to get even worse than they already currently are (particularly in the AM peak), given on-going traffic growth (without the development). Note that the volume inputs are drawn from the wider CAST modelling, and thus reflect the CAST-modelled delays as described previously.

5.7.17 The analysis also confirms the potential benefits of the comparable 'Mitigation Network' scenario assumptions (with relocation of right turns from Yaldhurst Rd from this intersection and a 'Link Rd', accessed via traffic signals located to the West). – notwithstanding that the traffic generated by the development site is still projected to increase delays, if compared to a No Development scenario.

[17] Refer to Appendix B for fuller reporting on the 'Mitigation Network' scenarios, where the adjacent 'Link Road' signals are also included in network (2-signal) analyses.

5.8 Impact on Travel Times

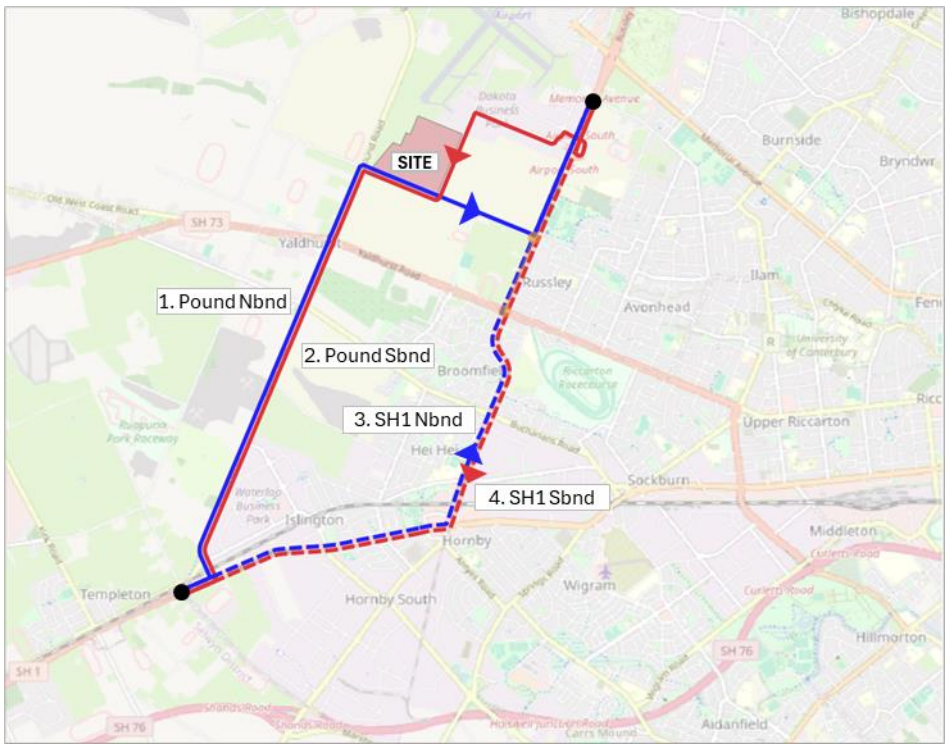
5.8.1 As noted above, the modelled flows in CAST are in equilibrium with the modelled intersection performance, for each scenario examined.

5.8.2 To facilitate comparison of the potential impact of additional Site development traffic and potential capacity enhancements examined in the context of wider journeys, we have extracted the model results to compare predicted journey times over four alternative sample routes between two points which may represent 'typical' journeys (or parts thereof), for each modelled scenario, these being between:

- the Marshs Rd/SH1 Main Sth Rd intersection, to the SW of Pound Rd; and
- SH1 Russley Rd, where it crosses the former Avonhead Rd, south of Memorial Av.

5.8.3 In practice of course there are many (more) alternative routes between these intersections that could be considered that are taken into account within the model assignments (e.g. SH1-Yaldhurst Rd-Pound Rd).

Figure 5.19: Sample Alternative Travel Routes

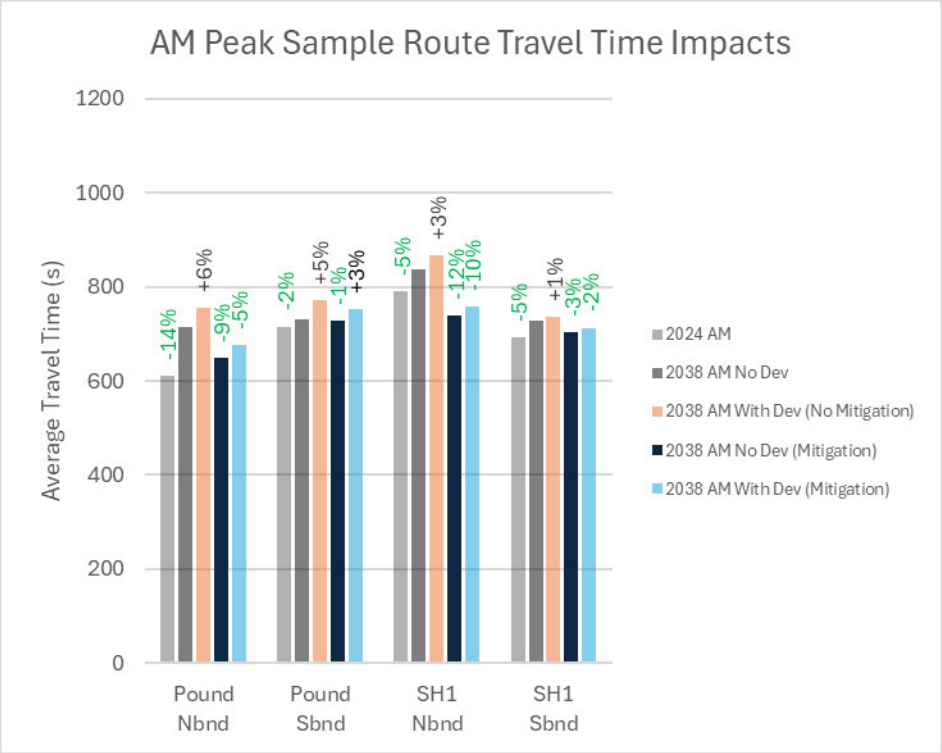


5.8.4 The total travel time results (for the complete journey) of the modelling for each scenario are tabulated in **Table 5.7**:

Table 5.7: Sample Route Travel Time Comparisons

Scenario	Travel Time (s)				Impacts (Relative to 2038 Base)				Route Speed (kph)			
	Pound Nbnd	Pound Sbnd	SH1 Nbnd	SH1 Sbnd	Pound Nbnd	Pound Sbnd	SH1 Nbnd	SH1 Sbnd	Pound Nbnd	Pound Sbnd	SH1 Nbnd	SH1 Sbnd
2024 AM	611	716	791	693	-14%	-2%	-5%	-5%	57	52	40	45
2038 AM No Dev	714	732	837	728					49	51	38	43
2038 AM With Dev (No Mitigation)	755	771	866	736	+6%	+5%	+3%	+1%	46	48	36	43
2038 AM No Dev (Mitigation)	648	727	739	704	-9%	-1%	-12%	-3%	54	51	43	45
2038 AM With Dev (Mitigation)	676	753	757	713	-5%	+3%	-10%	-2%	52	49	42	44
2024 IP	546	695	674	672	-3%	-1%	-2%	-3%	64	53	47	47
2038 IP No Dev	562	705	691	691					62	53	46	46
2038 IP With Dev (No Mitigation)	572	730	696	695	+2%	+4%	+1%	+1%	61	51	45	45
2038 IP No Dev (Mitigation)	567	702	677	667	+1%	-0%	-2%	-3%	62	53	46	47
2038 IP With Dev (Mitigation)	574	723	678	670	+2%	+3%	-2%	-3%	61	51	46	47
2024 PM	662	736	944	713	-16%	-4%	-9%	-4%	53	50	33	44
2038 PM No Dev	785	767	1034	743					45	48	30	42
2038 PM With Dev (No Mitigation)	803	815	1057	762	+2%	+6%	+2%	+3%	44	46	30	41
2038 PM No Dev (Mitigation)	678	746	899	727	-14%	-3%	-13%	-2%	52	50	35	43
2038 PM With Dev (Mitigation)	702	784	917	741	-11%	+2%	-11%	-0%	50	47	34	42

Figure 5.20: Comparison of Total Sample Route Travel Times (AM Peak Hour)



5.8.5 These (sample) journey time results indicate that:

- Without the proposed development, given forecast growth overall travel times on the corridors (routes) sampled are expected to deteriorate further, by between (about[18]) 14-16% between 2024 and 2038.
- With the development in place but without the wider mitigation measures examined, at 2038 the additional traffic generated by the development site could:
  - Add 2-6% (up to about 48 seconds) to the total journey times both Nbnd and Sbnd via Pound Rd

[18] To be precise, the % differences tabulated and shown are calculated relative to the predicted **2038** scenario. Hence when 2038 is measured relative to the (lower) 2024 travel times, the % are actually a little higher - but are within 1% of those shown.

- Add between 1-3% (up to about 30 seconds), to the travel time of vehicles routing entirely via SH1

However, with the wider potential mitigation measures discussed in previous sections in place, these increases are predicted to be (about) 10-15 seconds lower.

5.8.6 Similar results to the AM peak hour modelling described above were found for both the representative interpeak and PM peak hour scenarios. These results may be seen in **Appendix C** - where comparisons between the scenarios along each route may also be found.

5.9 Modelling Results Summary

5.10 Our modelling confirms that no significant capacity issues are anticipated at the assumed priority-controlled principal Site access points (one on Grays Rd and two on Ryans Rd) - albeit that there is an implicit assumption that these will be subject to detailed design at the appropriate stage, that the seal width on both roads may require adjustment to safely accommodate both these access points and site traffic potentially accessing lots abutting these roads directly (as suggested on the indicative outline plan provided).

5.11 At the Pound Rd/Ryans Rd intersection, traffic generated by the proposed development is not expected to markedly affect the performance of the intersection as whole, nor or of the highest-demand traffic movements. However, given the wider network performance under the 'No Mitigation' scenarios (and irrespective of site-generated traffic), minor movements are predicted to be suffer a deterioration in the level of service over time, perhaps most notably from Ryans Rd E into Pound Rd N, under the present Stop-controlled priority configuration. This could be expected to increase the crash risk and, in practice, likely increase existing issues arising for traffic exiting Ryans Rd seeking to separately queue for left and right turns, in what is currently a very limited seal width (marked lane 3.2m, max seal width 4m), particularly given a forecast increase in heavy vehicle use. We therefore have assumed that this intersection should and would be upgraded to a roundabout configuration in 'Mitigation' network scenarios examined, to provide a safer facility. Under such roundabout control, the intersection is forecast to operate with a high-level of service, even with additional traffic generated by the Site – albeit at the 'cost' of imposing some additional modest delay for Pound Road through movements (not associated with the Site), compared to the current arrangements.

5.12 It is fair to observe that, irrespective of the proposed development, significant pressure is likely to be expected on the wider road network, given currently-anticipated growth in the south-western and western sector of greater Christchurch. A key 'pinch-point' is the intersection of SH1 (Russley/Masham Road) with SH73 Yaldhurst Road. A lack of capacity to service the projected demands at this location prompts drivers to seek alternatives – including the use of the (broadly parallel) Pound Road. The effects of this can already be evidenced by recent observed growth rates on Pound Road. This, together with on-going anticipated development in turn however combine to place increasing pressure on another key intersection local to the proposed development itself, this being the Pound Road/ SH73 Yaldhurst Road roundabout.

5.13 The modelling analysis confirms that the Pound Road S (northbound) approach of the existing intersection is particularly sensitive to added demand - both on the approach itself and west and northbound circulating traffic it must give-way to. This approach is projected to be well above capacity (LoS F) in the PM peak hour by 2038. In such situations the addition of only modest amounts of additional traffic, such as that generated to and from the Site, causes a disproportionate rise in the average delay incurred by all vehicles. However, capacity improvements described in more detail above, could potentially be affected with relative ease by the road controlling authority (NZTA). Compared to the existing configuration, these could yield significant benefits, including accommodation of some traffic that would otherwise add to congestion on the SH1 route, as well as mitigation of the potential impact of additional traffic generated by the proposed development (if the existing roundabout configuration was

retained).

5.13.1 The capacity of the SH1/73 intersection is more difficult to address, within the confines of the existing road reserve. This signal-controlled intersection is currently managed by NZTA to reduce RT delays from Russley N into SH73 W (that can still at times queue beyond the extent of a 150m-long long RT lane) and the heavy RT demand from Yaldhurst Rd E (into Russley Rd N). In turn, this means that at peak times the Nbnd SH1 traffic (Masham approach) only gets approximately 2/3 of the time afforded to the Russley N approach, despite having similar through-movement demands. This is the principal reason why extensive queuing and delay currently occur on Masham Road during peak times.

5.13.2 As our modelling analysis shows, these issues are only forecast to get worse with ongoing growth (even without the proposed development traffic generation) and thus, we suggest, are likely to require addressing by NZTA anyway. Our understanding is that the Agency have identified funding to investigate these issues (and others emerging in the Western corridor) in more detail at some point over the next 3 years.

5.13.3 Without improvement (and/or relocation of some demand using the intersection), although not particularly high, traffic generated by the Site is expected to add directly to the forecast high delays, most directly to the right turn northbound from Yaldhurst Rd (East) in the morning peak and the through movement southbound from Russley Rd (North) in the evening peak.

5.13.4 We have however identified a (nominal) scheme which could enable significant capacity improvement at this location via relocation of the direct right-turns from Yaldhurst Road that are currently provided for. This would in turn allow reallocation of the proportion of the signal cycle to other movements and an overall reduction in peak hour cycle times, thus reducing overall queuing and delay. It is stressed this is indicative of feasibility-stage planning only (for the purposes of modelling the broad scale of potential effects for this development investigation). As such, it should not be interpreted to be a fully-developed scheme, nor the only way that similar benefits might be achieved.

5.13.5 Nevertheless, preliminary modelling does suggest that such an arrangement, or similar, may have the potential for significant benefits. Importantly the additional capacity created would mean that (the impact of) any additional traffic at this location (including that to and from the proposed development site) would be much lower than it would otherwise be.

Appendix A: Local Area Model vs Count Comparisons

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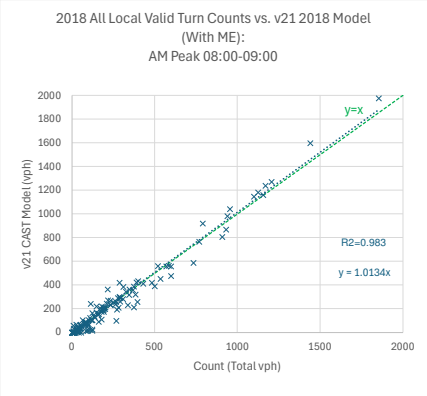
2018 Base Model vs Counts

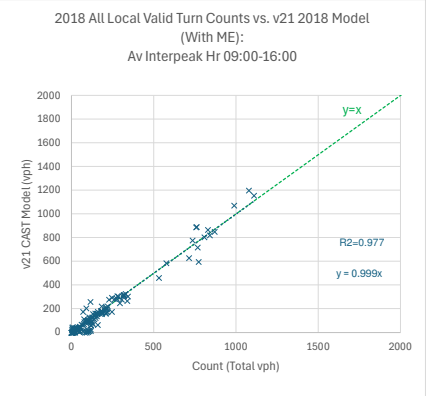
Key
GEH<
5
7.5
10
12

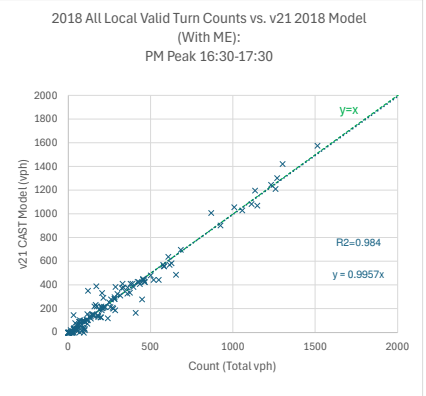
Criteria	Target Type C	Target Type E	AM	Criteria	Target Type C	Target Type E	IP	Criteria	Target Type C	Target Type E	PM
R^2	>0.95	>0.95	0.983	R^2	>0.95	>0.95	0.977	R^2	>0.95	>0.95	0.984
y = **Mx**	0.90-1.10	0.95-1.05	1.013	y = **Mx**	0.90-1.10	0.95-1.05	0.999	y = **Mx**	0.90-1.10	0.95-1.05	0.996
GEH<5	>80%	>85%	78%	GEH<5	>80%	>85%	81%	GEH<5	>80%	>85%	82%
GEH<7.5	>85%	>90%	90%	GEH<7.5	>85%	>90%	89%	GEH<7.5	>85%	>90%	91%
GEH<10	>90%	>95%	95%	GEH<10	>90%	>95%	94%	GEH<10	>90%	>95%	95%
<12	n/a	n/a	99%	<12	n/a	n/a	96%	<12	n/a	n/a	97%
RMSE	<20%	<15%	21%	RMSE	<20%	<15%	24%	RMSE	<20%	<15%	20%
AAE	-	-	14%	AAE	-	-	15%	AAE	-	-	12%
Total Δ	-	-	-2%	Total Δ	-	-	-5%	Total Δ	-	-	-2%
No.Counts	*146*	-	146	No.Counts	*146*	-	146	No.Counts	*144*	-	144

							AM Peak 08:00-09:00				Av Interpeak Hr 09:00-16:00				PM Peak 16:30-17:30			
Intersection	Approach	Turn	NO.	A Node	B Node	C Node	Count	Model	Diff	GEH	Count	Model	Diff	GEH	Count	Model	Diff	GEH
Harewood/ Johns/ Russley	SH1 Russley S	U	1	8650	1311	8650	10	31	21	5	10	27	17	4	-	-	-	-
		T	2	8650	1311	8651	789	921	132	5	759	888	129	4	1303	1422	119	3
		R	3	8650	1311	8653	289	291	2	0	210	198	-11	1	628	585	-42	2
		L	4	8650	1311	8654	29	29	0	0	55	41	-13	2	15	20	5	1
	SH1 Russley N	T	5	8651	1311	8650	1440	1598	158	4	762	891	129	4	869	1010	141	5
		U	6	8651	1311	8651	2	0	-1	2	4	0	-3	3	6	0	-5	3
		L	7	8651	1311	8653	84	13	-70	10	41	13	-27	5	70	3	-66	11
	Harewood E	R	8	8651	1311	8654	347	365	18	1	247	294	47	3	167	235	68	5
		L	9	8653	1311	8650	287	301	14	1	141	139	-1	0	205	188	-16	1
		R	10	8653	1311	8651	135	134	0	0	129	82	-46	5	183	142	-40	3
		T	11	8653	1311	8654	172	203	31	2	112	117	5	1	88	97	9	1
	Harewood W	R	12	8654	1311	8650	114	104	-9	1	155	136	-18	2	69	69	0	0
		L	13	8654	1311	8651	172	187	15	1	265	283	18	1	300	326	26	1
		T	14	8654	1311	8653	32	45	13	2	97	97	0	0	207	334	127	8
Masham/ Russley/ Yaldhurst	SH1 Russley N	T	15	7079	1348	7963	1169	1240	71	2	871	849	-21	1	1135	1199	64	2
		L	16	7079	1348	7964	287	421	134	7	221	222	1	0	362	379	17	1
		R	17	7079	1348	7965	215	364	149	9	230	277	47	3	327	374	47	3
	SH1 Russley S	T	18	7963	1348	7079	1100	1147	47	1	842	819	-22	1	1260	1213	-46	1
		R	19	7963	1348	7964	293	294	1	0	204	185	-18	1	336	380	44	2
		L	20	7963	1348	7965	29	24	-4	1	29	21	-7	2	53	22	-30	5
	Yaldhurst E	R	21	7964	1348	7079	368	360	-7	0	276	286	10	1	287	386	99	5
		L	22	7964	1348	7963	81	75	-5	1	93	75	-17	2	114	104	-9	1
		T	23	7964	1348	7965	344	319	-24	1	295	248	-46	3	520	444	-75	3
	Yaldhurst W	L	24	7965	1348	7079	210	245	35	2	117	260	143	10	171	391	220	13
		R	25	7965	1348	7963	45	12	-32	6	38	18	-19	4	56	14	-41	7
		T	26	7965	1348	7964	585	563	-21	1	341	266	-74	4	501	484	-16	1
Cutts/ Yaldhurst	Yaldhurst W	T	27	1332	1349	1350	1124	1181	57	2	715	629	-85	3	1114	1086	-27	1
		L	28	1332	1349	7083	80	89	9	1	40	45	5	1	117	156	39	3
	Yaldhurst E	T	29	1350	1349	1332	908	806	-101	4	769	719	-49	2	1057	1030	-26	1
		R	30	1350	1349	7083	88	87	0	0	71	63	-7	1	209	204	-4	0
	Cutts N	R	31	7083	1349	1332	44	35	-8	2	24	38	14	3	28	14	-13	3
		L	32	7083	1349	1350	181	220	39	3	77	69	-7	1	110	111	1	0
Buchanans/ Pound	Pound N	T	33	1390	1388	7007	482	421	-60	3	344	304	-39	2	462	430	-31	2
		U	34	1390	1388	1390	-	-	-	-	-	-	-	-	1	0	0	0
		R	35	1390	1388	8157	52	53	1	0	25	35	10	2	96	102	6	1
		L	36	1390	1388	8731	57	59	2	0	31	37	6	1	56	63	7	1
	Pound S	T	37	7007	1388	1390	534	452	-81	4	319	318	0	0	608	640	32	1
		U	38	7007	1388	7007	1	0	0	0	-	-	-	-	-	-	-	-
		L	39	7007	1388	8157	38	19	-18	4	34	18	-15	3	33	31	-1	0
		R	40	7007	1388	8731	29	22	-6	1	18	12	-5	2	38	34	-3	1
	Buchanans W	L	41	8157	1388	1390	91	77	-13	2	26	28	2	0	66	69	3	0
		R	42	8157	1388	7007	38	17	-20	4	36	17	-18	4	49	30	-18	3
		T	43	8157	1388	8731	202	213	11	1	77	114	37	4	131	131	0	0
	Buchanans E	R	44	8731	1388	1390	81	87	6	1	28	36	8	1	75	87	12	1
		L	45	8731	1388	7007	29	14	-14	3	41	23	-17	3	52	35	-16	3
		T	46	8731	1388	8157	102	106	4	0	123	124	1	0	261	281	20	1
		U	47	8731	1388	8731	2	0	-1	2	1	0	0	0	-	-	-	-
Buchanans/ SH73 West Coast	West Coast E	R	48	1393	1389	1588	9	11	2	1	6	37	31	7	6	0	-5	3
		L	49	1393	1389	8157	-	-	-	-	-	-	-	-	4	0	-3	3
		T	50	1393	1389	8186	429	414	-14	1	308	278	-29	2	617	573	-43	2
	Buchanans N	L	51	1588	1389	1393	11	0	-10	5	4	22	18	5	5	0	-4	3
		T	52	1588	1389	8157	36	38	2	0	28	30	2	0	38	34	-3	1
		R	53	1588	1389	8186	-	-	-	-	4	0	-3	3	-	-	-	-
	Buchanans S	T	54	8157	1389	1588	26	25	0	0	35	35	0	0	59	61	2	0
		L	55	8157	1389	8186	90	79	-10	1	90	92	2	0	174	220	46	3
	West Coast W	T	56	8186	1389	1393	570	558	-11	0	312	305	-6	0	466	427	-38	2
		L	57	8186	1389	1588	-	-	-	-	2	0	-1	2	-	-	-	-
		R	58	8186	1389	8157	123	163	40	3	79	90	11	1	67	92	25	3
Pound/ West Coast/ Yaldhurst	Pound S	T	59	1388	1390	2123	383	322	-60	3	220	173	-46	3	435	411	-23	1
		L	60	1388	1390	7006	92	73	-18	2	40	32	-7	1	52	31	-20	3
		R	61	1388	1390	8737	148	222	74	5	72	176	104	9	121	354	233	15
	Pound N	T	62	2123	1390	1388	290	262	-27	2	148	146	-1	0	375	336	-38	2
		R	63	2123	1390	7006	178	111	-66	6	121	60	-60	6	286	189	-96	6
		L	64	2123	1390	8737	49	38	-10	2	55	42	-12	2	103	92	-10	1
	West Coast W	R	65	7006	1390	1388	47	29	-17	3	32	24	-7	2	38	38	0	0
		L	66	7006	1390	2123	267	100	-166	12	162	64	-97	9	242	120	-121	9
		T	67	7006	1390	8737	519	560	41	2	323	318	-4	0	421	430	9	0
	Yaldhurst E	L	68	8737	1390	1388	113	242	129	10	91	206	115	9	159	222	63	5
		R	69	8737	1390	2123	81	60	-20	3	52	14	-37	7	54	48	-5	1
		T	70	8737	1390	7006	374	388	14	1	321	311	-9	1	582	561	-20	1
Buchanans/ Gilberthorpes	Buchanans W	T	71	1371	1391	3770	326	344	18	1	182	184	2	0	203	210	7	0
		R	72	1371	1391	7015	76	73	-2	0	30	25	-4	1	116	76	-39	4
	Buchanans E	T	73	3770	1391	1371	178	176	-1	0	161	175	14	1	390	413	23	1
		L	74	3770	1391	7015	134	133	0	0	124	95	-28	3	183	133	-49	4
	Giberthorpes S	L	75	7015	1391	1371	101	69	-31	3	52	45	-6	1	138	118	-19	2
		R	76	7015	1391	3770	157	147	-9	1	91	97	6	1	178	145	-32	3
Buchanans/ Carmen	Carmen S	R	77	8006	1392	8007	65	105	40	4	99	99	0	0	70	95	25	3
		T	78	8006	1392	8008	954	1042	88	3	736	776	40	1	1269	1304	35	1
		L	79	8006	1392	8009	49	64	15	2	100	104	4	0	157	152	-4	0
	Buchanans E	L	80	8007	1392	8006	122	106	-15	1	139	112	-26	2	144	148	4	0
		R	81	8007	1392	8008	72	75	3	0	63	68	5	1	147	155	8	1
		T	82	8007	1392	8009	161	155	-5	0	188	166	-21	2	379	414	35	2
	Carmen N	T	83	8008	1392	8006	1155	1160	5	0	831	866	35	1	1009	1058	49	2
		L	84	8008	1392	8007	54	63	9	1	53	52	0	0	58	59	1	0
		R	85	8008	1392	8009	161	158	-2	0	108	105	-2	0	188	195	7	0
	Buchanans W	R	86	8009	1392	8006	109	123	14	1	108	128	20	2	86	96	10	1
		T	87	8009	1392	8007	278	292	14	1	145	162	17	1	150	150	0	0
		L	88	8009	1392	8008	252	254	2	0	158	160	2	0	225	216	-8	1
Old West Coast/ SH73 West Coast	West Coast W	L	89	1389	1393	1588	2	0	-1	2	2	0	-1	2	1	0	0	0
		T	90	1389	1393	2563	598	558	-39	2	331	326	-4	0	430	427	-2	0
	Old West Coast N	R	91	1588	1393	1389	1	0	0	0	-	-	-	-	-	-	-	-
		L	92	1588	1393	2563	162	92	-69	6	70	12	-57	9	98	94	-3	0
	West Coast E	T	93	2563	1393	1389	389	424	35	2	317	314	-2	0	578	573	-4	0
		R	94	2563	1393	1588	108	24	-83	10	109	14	-94	12	200	130	-69	5
Russley N Wairakei	Nbnd	T	95	8642	2120	8661	1206	1272	66	2	1110	1154	44	1	2044	2043	0	0
Pound/ Ryans	Pound S	T	96	1390	2123	2432	373	213	-159	9	211	168	-42	3	550	445	-104	5
		R	97	1390	2123	7001	395	258	-136	8	132	71	-60	6	197	128	-68	5
		L	98	1390	2123	7005	14	0	-13	5	13	0	-12	5	23	0	-22	7
	Pound N	T	99	2432	2123	1390	337	231	-105	6	210	159	-50	4	450	281	-168	9
		L	100	2432	2123	7001	16	1	-14	5	24	1	-22	7	22	1	-20	6
		R	101	2432	2123	7005	1	0	0	0	-	-	-	-	-	-	-	-
	Ryans E	L	102	7001	2123	1390	148	169	21	2	121	86	-34	3	360	330	-29	2
		R	103	7001	2123	2432	16	0	-15	6	20	4	-15	4	8	0	-7	4
		T	104	7001	2123	7005	1	0	0	0	4	0	-3	3	6	0	-5	3
	Ryans W	R	105	7005	2123	1390	2	0	-1	2	13	0	-12	5	1	0	0	0
		L	106	7005	2123	2432	-	-	-	-	1	0	0	0	1	0	0	0
		T	107	7005	2123	7001	7	0	-6	4	5	0	-4	3	5	0	-4	3
SH1 Johns/ McLeans Island	McLeans N	L	108	5270	3845	8656	281	211	-69	4	247	174	-72	5	282	299	17	1
	Johns S	L	109	8651	3845	5270	266	259	-6	0	185	182	-2	0	316	313	-2	0
		T	110	8651	3845	8656	939	983	44	1	990	1071	81	3	1514	1577	63	2
	Johns N	T	111	8656	3845	8651	1853	1976	123	3	1079	1198	119	4	1233	1248	15	0
McLeans Island/ Pound	Pound S	T	112	2432	5533	2437	194	213	19	1	181	173	-7	1	454	446	-7	0
		L	113	2432	5533	4021	54	0	-53	10	83	0	-82	13	36	0	-35	8
	McLeans E	T	114	2437	5533	2432	232	232	0	0	156	160	4	0	281	282	1	0
		R	115	2437	5533	4021	122	16	-105	13	102	4	-97	14	85	41	-43	5
	McLeans W	R	116	4021	5533	2432	41	0	-40	9	94	0	-93	14	96	0	-95	14
		L	117	4021	5533	2437	94	23	-70	9	118	28	-89	11	101	31	-69	9
Pound/ Roberts	Pound N	L	118	1388	7007	3772	25	66	41	6	18	37	19	4	43	82	39	5
		T	119	1388	7007	5089	310	385	75	4	279	307	28	2	330	413	83	4
	Roberts E	R	120	3772	7007	1388	9	58	49	8	8	45	37	7	34	147	113	12
		L	121	3772	7007	5089	27	4	-22	6	48	4	-43	9	16	8	-7	2
	Pound S	T	122	5089	7007	1388	399	435	36	2	285	304	19	1	583	558	-24	1
		R	123	5089	7007	3772	32	8	-23	5	50	6	-43	8	19	7	-11	3

							AM Peak 08:00-09:00				Av Interpeak Hr 09:00-16:00				PM Peak 16:30-17:30			
Intersection	Approach	Turn	NO.	A Node	B Node	C Node	Count	Model	Diff	GEH	Count	Model	Diff	GEH	Count	Model	Diff	GEH
Memorial/ SH1 Russley E Signals	Memorial W	R	124	8645	8644	8643	191	204	13	1	213	209	-3	0	214	293	79	5
	Memorial E	L	125	8647	8644	8643	271	193	-77	5	187	156	-30	2	274	202	-71	5
		T	126	8647	8644	8665	734	589	-144	6	532	462	-69	3	655	488	-166	7
	Russley N	T	127	8663	8644	8643	123	106	-16	2	102	102	0	0	249	256	7	0
		L	128	8663	8644	8647	264	239	-24	2	128	129	1	0	218	219	1	0
		R	129	8663	8644	8665	192	176	-15	1	148	123	-24	2	214	211	-2	0
	Memorial W	T	130	8666	8644	8647	930	870	-59	2	809	803	-5	0	1148	1072	-75	2
Memorial/ SH1 Russley W Signals	Memorial E	R	131	8644	8645	8648	190	192	2	0	160	161	1	0	256	215	-40	3
	Memorial W	L	132	8646	8645	8648	98	59	-38	4	118	63	-54	6	139	137	-1	0
		T	133	8646	8645	8666	598	478	-119	5	774	595	-178	7	925	904	-20	1
	Russley S	L	134	8660	8645	8646	217	272	55	4	185	221	36	3	203	221	18	1
		T	135	8660	8645	8648	2	0	-1	2	2	0	-1	2	1	0	0	0
		R	136	8660	8645	8666	499	392	-106	5	208	208	0	0	410	167	-242	14
	Memorial E	T	137	8665	8645	8646	769	765	-3	0	577	585	8	0	684	698	14	1
Russley/ Wairakei	Russley N	L	138	8661	8662	9222	232	270	38	2	133	155	22	2	73	106	33	3
	Wairakei E	L	139	9222	8662	8663	199	199	0	0	218	197	-20	1	461	443	-17	1
Buchanans/ Jarnac/ Mary Carpenter	Buchanans E	T	140	1371	8730	8731	186	192	6	0	185	174	-10	1	396	387	-8	0
		R	141	1371	8730	8734	42	44	2	0	32	32	0	0	121	106	-14	1
	Buchanans W	T	142	8731	8730	1371	309	282	-26	2	174	158	-15	1	270	209	-60	4
		L	143	8731	8730	8734	12	0	-11	5	3	0	-2	2	27	0	-26	7
	Jarnac N	L	144	8734	8730	1371	83	83	0	0	31	31	0	0	81	67	-13	2
		R	145	8734	8730	8731	13	0	-12	5	10	0	-9	4	15	0	-14	5
Aviation Drive/McLeans Island	McLeans E	L	146	2436	2437	2431	122	26	-95	11	102	16	-85	11	85	17	-67	9
		T	147	2436	2437	5533	232	235	3	0	156	155	0	0	281	287	6	0
	McLeans W	T	148	5533	2437	2436	194	202	8	1	181	181	0	0	454	452	-1	0
	Aviation S	R	149	5533	2437	2431	54	34	-19	3	83	19	-63	9	36	25	-10	2
		L	150	2431	2437	5533	41	14	-26	5	94	8	-85	12	96	37	-58	7
		R	151	2431	2437	2436	94	12	-81	11	118	13	-104	13	101	22	-78	10







2024 Pre-ME Model vs Counts

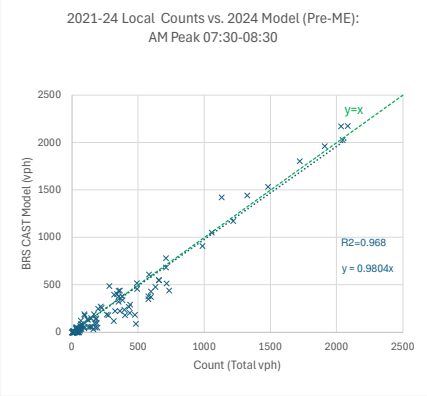
Ryans Road Proposed Plan Change Study Area

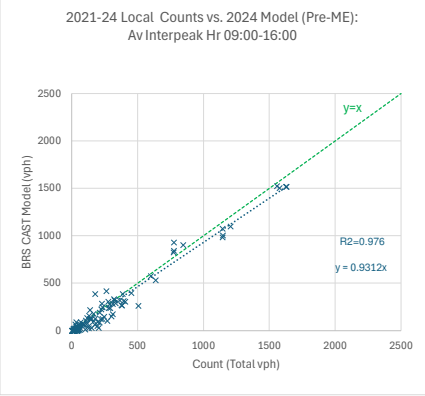
Key
GEH<
5
7.5
10
12

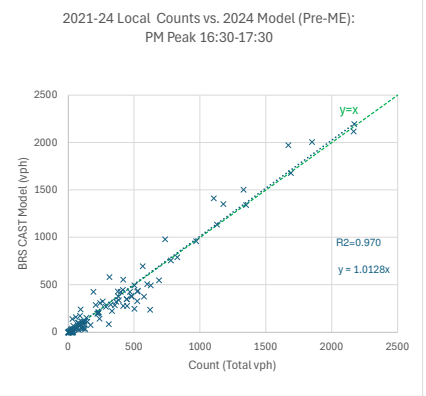
Criteria	Target Type C	Target Type E	AM	Criteria	Target Type C	Target Type E	IP	Criteria	Target Type C	Target Type E	PM
R^2	>0.95	>0.95	0.968	R^2	>0.95	>0.95	0.976	R^2	>0.95	>0.95	0.970
y = **Mx**	0.90-1.10	0.95-1.05	0.980	y = **Mx**	0.90-1.10	0.95-1.05	0.931	y = **Mx**	0.90-1.10	0.95-1.05	1.013
GEH<5	>80%	>85%	62%	GEH<5	>80%	>85%	65%	GEH<5	>80%	>85%	65%
GEH<7.5	>85%	>90%	76%	GEH<7.5	>85%	>90%	79%	GEH<7.5	>85%	>90%	83%
GEH<10	>90%	>95%	88%	GEH<10	>90%	>95%	92%	GEH<10	>90%	>95%	93%
<12	n/a	n/a	93%	<12	n/a	n/a	95%	<12	n/a	n/a	95%
RMSE	<20%	<15%	30%	RMSE	<20%	<15%	35%	RMSE	<20%	<15%	29%
AAE	-	-	20%	AAE	-	-	19%	AAE	-	-	19%
Total Δ	-	-	-9%	Total Δ	-	-	-14%	Total Δ	-	-	-3%
No.Counts	*112*	-	112	No.Counts	*112*	-	112	No.Counts	*110*	-	110

							AM Peak 07:30-08:30				Av Interpeak Hr 09:00-16:00				PM Peak 16:30-17:30			
Intersection	Approach	Turn	NO.	A Node	B Node	C Node	Count	Model	Diff	GEH	Count	Model	Diff	GEH	Count	Model	Diff	GEH
Pound/ Waterloo	Pound Rd N	L	1	4500	8846	8851	9	0	-8	4	12	0	-11	5	-	-	-	-
		T	2	4500	8846	8845	428	271	-156	8	381	266	-114	6	529	437	-91	4
		R	3	4500	8846	3505	38	52	14	2	36	24	-11	2	103	44	-58	7
	Waterloo Rd E	L	4	8851	8846	8845	64	34	-29	4	93	69	-23	3	113	91	-21	2
		T	5	8851	8846	3505	54	24	-29	5	41	29	-11	2	104	48	-55	6
		R	6	8851	8846	4500	23	0	-22	7	14	0	-13	5	32	0	-31	8
	Pound Rd S	L	7	8845	8846	3505	33	11	-21	5	48	20	-27	5	77	105	28	3
		T	8	8845	8846	4500	576	381	-194	9	376	270	-105	6	469	429	-39	2
		R	9	8845	8846	8851	67	88	21	2	65	65	0	0	21	27	6	1
	Waterloo Rd W	L	10	3505	8846	4500	171	98	-72	6	31	21	-9	2	75	101	26	3
		T	11	3505	8846	8851	147	59	-87	9	35	15	-19	4	37	26	-10	2
		R	12	3505	8846	8845	96	179	83	7	33	92	59	7	32	142	110	12
Kirk/ Miners/ West Coast SH73	Miners Rd N	L	13	8156	2042	8186	28	4	-23	6	41	1	-39	9	25	1	-23	7
		T	14	8156	2042	2446	47	7	-39	8	50	5	-44	9	31	13	-17	4
		R	15	8156	2042	2425	8	0	-7	4	13	0	-12	5	3	0	-2	2
	West Coast Rd SH73 E	L	16	8186	2042	2446	90	62	-27	3	51	53	2	0	58	162	104	10
		T	17	8186	2042	2425	217	274	57	4	227	287	60	4	565	699	134	5
		R	18	8186	2042	8156	47	1	-45	9	35	2	-32	8	16	5	-10	3
	Kirk Rd S	L	19	2446	2042	2425	32	43	11	2	32	49	17	3	83	71	-11	1
		T	20	2446	2042	8156	39	4	-34	7	50	9	-40	8	17	12	-4	1
		R	21	2446	2042	8186	61	68	7	1	43	39	-3	1	63	49	-13	2
	West Coast Rd SH73 W	L	22	2425	2042	8156	10	0	-9	4	18	0	-17	6	3	0	-2	2
		T	23	2425	2042	8186	657	554	-102	4	232	251	19	1	288	269	-18	1
		R	24	2425	2042	2446	65	125	60	6	26	68	42	6	38	70	32	4
Pound/ Main Sth SH1	Pound Rd N	L	25	8846	8845	7037	164	192	28	2	147	121	-25	2	89	175	86	7
		R	26	8846	8845	2395	439	292	-146	8	404	306	-97	5	626	496	-129	6
	Main Sth Rd SH1 E	T	27	7037	8845	2395	490	519	29	1	598	577	-20	1	780	760	-19	1
		R	28	7037	8845	8846	176	49	-126	12	174	65	-108	10	147	113	-33	3
	Main Sth Rd SH1 W	L	29	2395	8845	8846	596	431	-164	7	332	290	-41	2	416	449	33	2
		T	30	2395	8845	7037	655	548	-106	4	451	398	-52	3	482	376	-105	5
Buchanans/ Pound	Pound Rd N	L	31	1390	1388	8731	32	35	3	1	30	10	-19	5	43	38	-4	1
		T	32	1390	1388	7007	596	374	-221	10	393	315	-77	4	600	510	-89	4
		R	33	1390	1388	8157	55	0	-54	10	35	0	-34	8	111	39	-71	8
	Buchanans Rd E	L	34	8731	1388	7007	51	23	-27	5	50	22	-27	5	57	35	-21	3
		T	35	8731	1388	8157	114	139	25	2	115	135	20	2	209	289	80	5
		R	36	8731	1388	1390	30	45	15	3	31	22	-8	2	65	36	-28	4
	Pound Rd S	L	37	7007	1388	8157	52	30	-21	3	51	35	-15	3	74	53	-20	3
		T	38	7007	1388	1390	714	515	-198	8	363	320	-42	2	689	551	-137	6
		R	39	7007	1388	8731	54	37	-16	3	24	19	-4	1	124	44	-79	9
	Buchanans Rd W	L	40	8157	1388	1390	37	0	-36	9	40	0	-39	9	37	15	-21	4
		T	41	8157	1388	8731	196	249	53	4	105	107	2	0	125	118	-6	1
		R	42	8157	1388	7007	61	43	-17	3	63	30	-32	5	30	39	9	2
Pound/ Yaldhurst	Pound Rd N	L	43	2123	1390	8737	92	43	-48	6	88	60	-27	3	96	85	-10	1
		T	44	2123	1390	1388	437	204	-232	13	219	121	-97	8	445	351	-93	5
		R	45	2123	1390	7006	187	96	-90	8	83	75	-7	1	229	198	-30	2
	Yaldhurst Rd SH73 E	L	46	8737	1390	1388	263	188	-74	5	210	193	-16	1	229	213	-15	1
		T	47	8737	1390	7006	361	443	82	4	319	334	15	1	418	556	138	6
		R	48	8737	1390	2123	71	59	-11	1	60	10	-49	9	80	27	-52	7
	Pound Rd S	L	49	1388	1390	7006	29	52	23	4	39	30	-8	2	21	30	9	2
		T	50	1388	1390	2123	492	457	-34	2	309	284	-24	1	504	496	-7	0
		R	51	1388	1390	8737	192	51	-140	13	127	28	-98	11	171	76	-94	9
	West Coast Rd SH73 W	L	52	7006	1390	2123	351	324	-26	1	137	219	82	6	242	309	67	4
		T	53	7006	1390	8737	575	351	-223	10	309	177	-131	8	334	224	-109	7
		R	54	7006	1390	1388	10	18	8	2	40	11	-28	6	25	23	-1	0
Masham SH1 / Russley SH1 / Yalhurst SH73	Russley Rd SH1 N	L	55	7079	1348	7964	379	380	1	0	286	280	-5	0	365	325	-39	2
		T	56	7079	1348	7963	1130	1425	295	8	845	905	60	2	1105	1415	310	9
		R	57	7079	1348	7965	351	379	28	1	321	323	2	0	376	430	54	3
	Yaldhurst Rd SH73 E	L	58	7964	1348	7963	54	42	-11	2	78	65	-12	2	72	81	9	1
		T	59	7964	1348	7965	381	341	-39	2	278	241	-36	2	524	432	-91	4
		R	60	7964	1348	7079	338	406	68	4	277	306	29	2	398	427	29	1
	Masham Rd SH1 S	L	61	7963	1348	7965	30	5	-24	6	19	10	-8	2	19	6	-12	4
		T	62	7963	1348	7079	1056	1053	-2	0	771	828	57	2	973	960	-12	0
		R	63	7963	1348	7964	92	193	101	8	165	179	14	1	96	244	148	11
	Yaldhurst Rd SH73 W	L	64	7965	1348	7079	482	90	-391	23	203	30	-172	16	524	331	-192	9
		T	65	7965	1348	7964	630	478	-151	6	290	241	-48	3	480	383	-96	5
		R	66	7965	1348	7963	24	6	-17	4	26	28	2	0	33	8	-24	6
Johns SH1 / Sawyers Arms	Johns Rd SH1 E	L	67	8657	1265	6356	16	0	-15	6	24	0	-23	7	25	0	-24	7
		T	68	8657	1265	8656	1323	1444	121	3	774	930	156	5	737	980	243	8
		R	69	8657	1265	5271	396	238	-157	9	177	128	-48	4	239	146	-92	7
	Sawyers Arms Rd S	L	70	6356	1265	8656	351	438	87	4	222	225	3	0	233	211	-21	1
		T	71	6356	1265	5271	274	183	-90	6	139	125	-13	1	122	90	-31	3
		R	72	6356	1265	8657	75	84	9	1	68	92	24	3	355	285	-69	4
	Johns Rd SH1 W	L	73	8656	1265	5271	58	17	-40	7	100	15	-84	11	39	0	-38	9
		T	74	8656	1265	8657	708	784	76	3	774	845	71	3	1178	1354	176	5
		R	75	8656	1265	6356	317	397	80	4	385	388	3	0	382	379	-2	0
	Sawyers Arms Rd N	L	76	5271	1265	8657	161	35	-125	13	124	48	-75	8	130	32	-97	11
		T	77	5271	1265	6356	123	57	-65	7	116	77	-38	4	323	292	-30	2
		R	78	5271	1265	8656	179	139	-39	3	233	124	-108	8	222	197	-24	2
Pound / Ryans	Pound Rd N	L	79	2432	2123	4512	15	1	-13	5	20	1	-18	6	30	1	-28	7
		T	80	2432	2123	1390	400	183	-216	13	245	150	-94	7	447	280	-166	9
		R	81	2432	2123	7005	2	0	-1	2	1	0	0	0	3	0	-2	2
	Ryans Rd E	L	82	4512	2123	1390	181	149	-31	3	167	103	-63	5	444	349	-94	5
		T	83	4512	2123	7005	4	0	-3	3	5	0	-4	3	5	0	-4	3
		R	84	4512	2123	2432	3	0	-2	2	12	18	6	1	5	9	4	2
	Pound Rd S	L	85	1390	2123	7005	6	0	-5	3	9	0	-8	4	16	0	-15	6
		T	86	1390	2123	2432	361	225	-135	8	211	87	-123	10	621	240	-380	18
		R	87	1390	2123	4512	582	611	29	1	262	417	155	8	313	583	270	13
	Ryans Rd W	L	88	7005	2123	2432	1	0	0	0	2	0	-1	2	2	0	-1	2
		T	89	7005	2123	4512	7	0	-6	4	4	0	-3	3	3	0	-2	2
		R	90	7005	2123	1390	2	0	-1	2	2	0	-1	2	-	-	-	-
Grays / Ryans	Grays Rd N	L	91	4510	7001	2185	4	2	-1	1	4	3	0	1	4	6	2	1
		R	92	4510	7001	4511	119	135	16	1	195	96	-98	8	384	340	-43	2
	Ryans Rd E	T	93	2185	7001	4511	5	14	9	3	13	25	12	3	14	18	4	1
		R	94	2185	7001	4510	3	0	-2	2	8	0	-7	4	3	0	-2	2
	Ryans Rd W	L	95	4511	7001	4510	316	122	-193	13	150	31	-118	13	138	155	17	1
		T	96	4511	7001	2185	281	490	209	11	175	388	213	13	191	429	238	14

							AM Peak 07:30-08:30				Av Interpeak Hr 09:00-16:00				PM Peak 16:30-17:30			
Intersection	Approach	Turn	NO.	A Node	B Node	C Node	Count	Model	Diff	GEH	Count	Model	Diff	GEH	Count	Model	Diff	GEH
Link Counts	Buchanans W Hasketts (L2883)	NWbnd	97	8157	1389	0	143	151	8	1	129	158	29	2	262	327	65	4
		SEbnd	98	1389	8157	0	224	260	36	2	137	124	-12	1	102	118	16	2
	Pound N Ryans (L6044)	Nbnd	99	2123	2432	0	325	225	-99	6	269	104	-164	12	504	249	-254	13
		Sbnd	100	2432	2123	0	474	184	-289	16	299	151	-147	10	419	281	-137	7
	SH73 E Pound (TMS 07300006)	Wbnd	101	8737	1390	0	710	685	-24	1	635	535	-99	4	828	792	-35	1
		Ebnd	102	1390	8737	0	734	442	-291	12	504	262	-241	12	575	379	-195	9
	Carmen SH1 S Steadman (01S00345)	Sbnd	103	1329	9782	0	1480	1534	54	1	1205	1101	-103	3	1331	1506	175	5
		Nbnd	104	9782	1329	0	1217	1174	-42	1	1142	986	-155	5	1350	1341	-8	0
	Russley SH1 N Ryans (01S00342)	Sbnd	105	9230	2185	0	2031	2171	140	3	1625	1520	-104	3	1851	2007	156	4
		Nbnd	106	2185	9230	0	2043	2026	-16	0	1630	1517	-112	3	2167	2119	-47	1
	George Bellew SH1 Ramps	Sbnd	107	9233	8945	0	137	57	-79	8	193	50	-142	13	309	87	-221	16
		Nbnd	108	9232	9231	0	72	36	-35	5	57	50	-6	1	120	110	-9	1
	Russley SH1 S Memorial (01S00341)	Sbnd	109	1269	2430	0	2082	2176	94	2	1556	1524	-31	1	1672	1972	300	7
		Nbnd	110	2430	1269	0	1909	1964	55	1	1575	1506	-68	2	2172	2197	25	1
	Johns SH1 S Sawyers Arms (01S00337)	Sbnd	111	8657	1265	0	1720	1805	85	2	1143	1077	-65	2	1131	1136	5	0
		Nbnd	112	1265	8657	0	985	912	-72	2	1145	1005	-139	4	1690	1681	-8	0







2024 Post-ME Model vs Counts

Ryans Road Proposed Plan Change Study Area

Key
GEH<
5
7.5
10
12

nb All Count and Model Flows in Total pcu

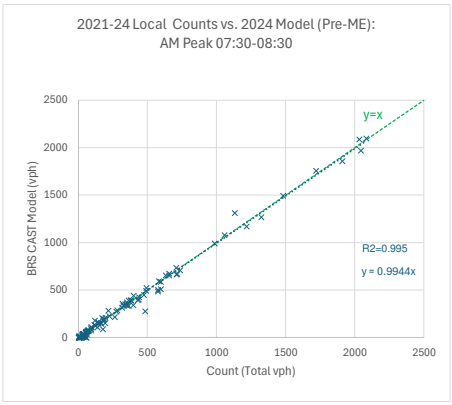
Criteria	Target Type C	Target Type E	AM
R^2	>0.95	>0.95	0.995
y = **M**x	0.90-1.10	0.95-1.05	0.994
GEH<5	>80%	>85%	91%
GEH<7.5	>85%	>90%	95%
GEH<10	>90%	>95%	97%
<12	n/a	n/a	100%
RMSE	<20%	<15%	12%
AAE	-	-	7%
Total Δ	-	-	-2%
No.Counts	*112*	-	112

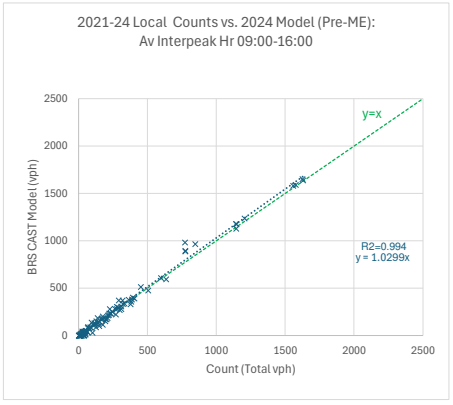
Criteria	Target Type C	Target Type E	IP
R^2	>0.95	>0.95	0.994
y = **M**x	0.90-1.10	0.95-1.05	1.030
GEH<5	>80%	>85%	88%
GEH<7.5	>85%	>90%	96%
GEH<10	>90%	>95%	100%
<12	n/a	n/a	100%
RMSE	<20%	<15%	19%
AAE	-	-	8%
Total Δ	-	-	2%
No.Counts	*112*	-	112

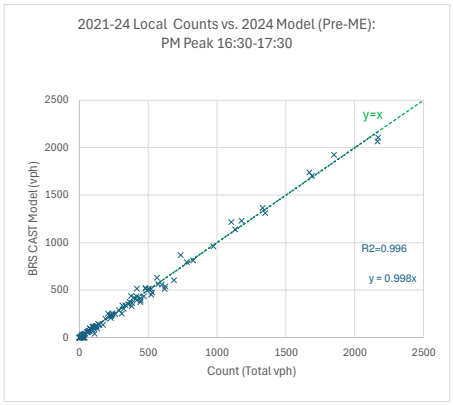
Criteria	Target Type C	Target Type E	PM
R^2	>0.95	>0.95	0.996
y = **M**x	0.90-1.10	0.95-1.05	0.998
GEH<5	>80%	>85%	91%
GEH<7.5	>85%	>90%	96%
GEH<10	>90%	>95%	100%
<12	n/a	n/a	100%
RMSE	<20%	<15%	11%
AAE	-	-	7%
Total Δ	-	-	-1%
No.Counts	*110*	-	110

Intersection	Approach	Turn	NO.	A Node	B Node	C Node	AM Peak 07:30-08:30 Count	Model	Diff	GEH	Av Interpeak Hr 09:00-16:00 Count	Model	Diff	GEH	PM Peak 16:30-17:30 Count	Model	Diff	GEH
Pound/ Waterloo	Pound Rd N	L	1	4500	8846	8851	9	0	-8	4	12	0	-11	5	-	-	-	-
		T	2	4500	8846	8845	428	396	-31	2	381	360	-20	1	529	477	-51	2
		R	3	4500	8846	3505	38	41	3	1	36	36	0	0	103	119	16	2
	Waterloo Rd E	L	4	8851	8846	8845	64	64	0	0	93	139	46	4	113	113	0	0
		T	5	8851	8846	3505	54	61	7	1	41	45	4	1	104	96	-7	1
		R	6	8851	8846	4500	23	0	-22	7	14	0	-13	5	32	0	-31	8
	Pound Rd S	L	7	8845	8846	3505	33	35	2	0	48	36	-11	2	77	98	21	2
		T	8	8845	8846	4500	576	485	-90	4	376	332	-43	2	469	434	-34	2
		R	9	8845	8846	8851	67	76	9	1	65	83	18	2	21	35	14	3
	Waterloo Rd W	L	10	3505	8846	4500	171	206	35	3	31	34	3	1	75	69	-5	1
		T	11	3505	8846	8851	147	149	2	0	35	30	-4	1	37	35	-1	0
		R	12	3505	8846	8845	96	107	11	1	33	43	10	2	32	35	3	1
Kirk/ Miners/ West Coast SH73	Miners Rd N	L	13	8156	2042	8186	28	7	-20	5	41	4	-36	8	25	4	-20	5
		T	14	8156	2042	2446	47	22	-24	4	50	17	-32	6	31	29	-1	0
		R	15	8156	2042	2425	8	0	-7	4	13	0	-12	5	3	0	-2	2
	West Coast Rd SH73 E	L	16	8186	2042	2446	90	90	0	0	51	51	0	0	58	59	1	0
		T	17	8186	2042	2425	217	282	65	4	227	281	54	3	565	631	66	3
		R	18	8186	2042	8156	47	5	-41	8	35	7	-27	6	16	13	-2	1
	Kirk Rd S	L	19	2446	2042	2425	32	35	3	0	32	35	3	0	83	87	4	0
		T	20	2446	2042	8156	39	16	-22	4	50	10	-39	7	17	17	0	0
		R	21	2446	2042	8186	61	63	2	0	43	43	0	0	63	63	0	0
	West Coast Rd SH73 W	L	22	2425	2042	8156	10	0	-9	4	18	0	-17	6	3	0	-2	2
		T	23	2425	2042	8186	657	655	-1	0	232	233	1	0	288	290	2	0
		R	24	2425	2042	2446	65	68	3	0	26	27	1	0	38	38	0	0
Pound/ Main Sth SH1	Pound Rd N	L	25	8846	8845	7037	164	143	-20	2	147	151	4	0	89	86	-2	0
		R	26	8846	8845	2395	439	424	-14	1	404	391	-12	1	626	539	-86	4
	Main Sth Rd SH1 E	T	27	7037	8845	2395	490	491	1	0	598	610	12	0	780	797	17	1
		R	28	7037	8845	8846	176	87	-88	8	174	114	-59	5	147	132	-14	1
	Main Sth Rd SH1 W	L	29	2395	8845	8846	596	508	-87	4	332	338	6	0	416	434	18	1
		T	30	2395	8845	7037	655	675	20	1	451	514	63	3	482	521	39	2
Buchanans/ Pound	Pound Rd N	L	31	1390	1388	8731	32	38	6	1	30	30	0	0	43	42	0	0
		T	32	1390	1388	7007	596	587	-8	0	393	402	9	0	600	560	-39	2
		R	33	1390	1388	8157	55	0	-54	10	35	0	-34	8	111	41	-69	8
	Buchanans Rd E	L	34	8731	1388	7007	51	47	-3	1	50	49	0	0	57	53	-3	0
		T	35	8731	1388	8157	114	133	19	2	115	132	17	2	209	253	44	3
		R	36	8731	1388	1390	30	30	0	0	31	31	0	0	65	59	-5	1
	Pound Rd S	L	37	7007	1388	8157	52	52	0	0	51	52	1	0	74	71	-2	0
		T	38	7007	1388	1390	714	670	-43	2	363	378	15	1	689	604	-84	3
		R	39	7007	1388	8731	54	51	-2	0	24	24	0	0	124	116	-7	1
	Buchanans Rd W	L	40	8157	1388	1390	37	2	-34	8	40	0	-39	9	37	1	-35	8
		T	41	8157	1388	8731	196	208	12	1	105	108	3	0	125	124	0	0
		R	42	8157	1388	7007	61	30	-30	5	63	38	-24	4	30	30	0	0
Pound/ Yaldhurst	Pound Rd N	L	43	2123	1390	8737	92	73	-18	2	88	86	-1	0	96	111	15	1
		T	44	2123	1390	1388	437	401	-35	2	219	216	-2	0	445	415	-29	1
		R	45	2123	1390	7006	187	194	7	0	83	89	6	1	229	236	7	0
	Yaldhurst Rd SH73 E	L	46	8737	1390	1388	263	214	-48	3	210	186	-23	2	229	205	-23	2
		T	47	8737	1390	7006	361	392	31	2	319	372	53	3	418	516	98	5
		R	48	8737	1390	2123	71	68	-2	0	60	41	-18	3	80	94	14	2
	Pound Rd S	L	49	1388	1390	7006	29	29	0	0	39	38	0	0	21	3	-17	5
		T	50	1388	1390	2123	492	522	30	1	309	282	-26	2	504	512	8	0
		R	51	1388	1390	8737	192	151	-40	3	127	88	-38	4	171	136	-34	3
	West Coast Rd SH73 W	L	52	7006	1390	2123	351	338	-12	1	137	185	48	4	242	256	14	1
		T	53	7006	1390	8737	575	502	-72	3	309	309	0	0	334	339	5	0
		R	54	7006	1390	1388	10	10	0	0	40	30	-9	2	25	23	-1	0
Masham SH1 / Russley SH1 / Yalhurst SH73	Russley Rd SH1 N	L	55	7079	1348	7964	379	387	8	0	286	298	12	1	365	377	12	1
		T	56	7079	1348	7963	1130	1312	182	5	845	965	120	4	1105	1219	114	3
		R	57	7079	1348	7965	351	346	-4	0	321	334	13	1	376	437	61	3
	Yaldhurst Rd SH73 E	L	58	7964	1348	7963	54	54	0	0	78	78	0	0	72	72	0	0
		T	59	7964	1348	7965	381	396	15	1	278	305	27	2	524	514	-9	0
		R	60	7964	1348	7079	338	352	14	1	277	282	5	0	398	420	22	1
	Masham Rd SH1 S	L	61	7963	1348	7965	30	13	-16	4	19	19	0	0	19	2	-16	5
		T	62	7963	1348	7079	1056	1080	24	1	771	982	211	7	973	960	-12	0
		R	63	7963	1348	7964	92	107	15	2	165	169	4	0	96	79	-16	2
	Yaldhurst Rd SH73 W	L	64	7965	1348	7079	482	277	-204	11	203	172	-30	2	524	452	-71	3
		T	65	7965	1348	7964	630	654	24	1	290	372	82	5	480	516	36	2
		R	66	7965	1348	7963	24	23	0	0	26	46	20	3	33	32	0	0
Johns SH1 / Sawyers Arms	Johns Rd SH1 E	L	67	8657	1265	6356	16	0	-15	6	24	0	-23	7	25	0	-24	7
		T	68	8657	1265	8656	1323	1268	-54	2	774	889	115	4	737	870	133	5
		R	69	8657	1265	5271	396	339	-56	3	177	180	3	0	239	244	5	0
	Sawyers Arms Rd S	L	70	6356	1265	8656	351	371	20	1	222	234	12	1	233	230	-2	0
		T	71	6356	1265	5271	274	273	0	0	139	139	0	0	122	118	-3	0
		R	72	6356	1265	8657	75	76	1	0	68	93	25	3	355	352	-2	0
	Johns Rd SH1 W	L	73	8656	1265	5271	58	0	-57	11	100	32	-67	8	39	0	-38	9
		T	74	8656	1265	8657	708	734	26	1	774	896	122	4	1178	1232	54	2
		R	75	8656	1265	6356	317	356	39	2	385	384	0	0	382	329	-52	3
	Sawyers Arms Rd N	L	76	5271	1265	8657	161	155	-5	0	124	127	3	0	130	93	-36	3
		T	77	5271	1265	6356	123	123	0	0	116	114	-1	0	323	303	-19	1
		R	78	5271	1265	8656	179	179	0	0	233	234	1	0	222	224	2	0
Pound / Ryans	Pound Rd N	L	79	2432	2123	4512	15	6	-8	3	20	20	0	0	30	4	-25	6
		T	80	2432	2123	1390	400	441	41	2	245	251	6	0	447	391	-55	3
		R	81	2432	2123	7005	2	0	-1	2	1	0	0	0	3	0	-2	2
	Ryans Rd E	L	82	4512	2123	1390	181	193	12	1	167	175	8	1	444	373	-70	4
		T	83	4512	2123	7005	4	0	-3	3	5	0	-4	3	5	0	-4	3
		R	84	4512	2123	2432	3	3	0	0	12	12	0	0	5	1	-3	2
	Pound Rd S	L	85	1390	2123	7005	6	0	-5	3	9	0	-8	4	16	0	-15	6
		T	86	1390	2123	2432	361	335	-25	1	211	213	2	0	621	511	-109	5
		R	87	1390	2123	4512	582	595	13	1	262	286	24	1	313	338	25	1
	Ryans Rd W	L	88	7005	2123	2432	1	0	0	0	2	0	-1	2	2	0	-1	2
		T	89	7005	2123	4512	7	0	-6	4	4	0	-3	3	3	0	-2	2
		R	90	7005	2123	1390	2	0	-1	2	2	0	-1	2	-	-	-	-
Grays / Ryans	Grays Rd N	L	91	4510	7001	2185	4	5	1	0	4	4	0	0	4	4	0	0
		R	92	4510	7001	4511	119	177	58	5	195	173	-21	2	384	363	-20	1
	Ryans Rd E	T	93	2185	7001	4511	5	18	13	4	13	15	2	1	14	11	-2	1
		R	94	2185	7001	4510	3	0	-2	2	8	0	-7	4	3	0	-2	2
	Ryans Rd W	L	95	4511	7001	4510	316	313	-2	0	150	101	-48	4	138	144	6	0
		T	96	4511	7001	2185	281	288	7	0	175	205	30	2	191	198	7	1

							AM Peak 07:30-08:30				Av Interpeak Hr 09:00-16:00				PM Peak 16:30-17:30			
Intersection	Approach	Turn	NO.	A Node	B Node	C Node	Count	Model	Diff	GEH	Count	Model	Diff	GEH	Count	Model	Diff	GEH
Link Counts	Buchanans W Hasketts (L2883)	NWbnd	97	8157	1389	0	143	160	17	1	129	153	24	2	262	245	-16	1
		SEbnd	98	1389	8157	0	224	225	1	0	137	136	0	0	102	100	-1	0
	Pound N Ryans (L6044)	Nbnd	99	2123	2432	0	325	338	13	1	269	225	-43	3	504	513	9	0
		Sbnd	100	2432	2123	0	474	447	-26	1	299	270	-28	2	419	395	-23	1
	SH73 E Pound (TMS 07300006)	Wbnd	101	8737	1390	0	710	664	-45	2	635	595	-39	2	828	813	-14	1
		Ebnd	102	1390	8737	0	734	708	-25	1	504	478	-25	1	575	564	-10	0
	Carmen SH1 S Steadman (01S00345)	Sbnd	103	1329	9782	0	1480	1496	16	0	1205	1237	32	1	1331	1366	35	1
		Nbnd	104	9782	1329	0	1217	1170	-46	1	1142	1178	36	1	1350	1312	-37	1
	Russley SH1 N Ryans (01S00342)	Sbnd	105	9230	2185	0	2031	2088	57	1	1625	1653	28	1	1851	1925	74	2
		Nbnd	106	2185	9230	0	2043	1969	-73	2	1630	1640	10	0	2167	2067	-99	2
	George Bellew SH1 Ramps	Sbnd	107	9233	8945	0	137	109	-27	3	193	152	-40	3	309	253	-55	3
		Nbnd	108	9232	9231	0	72	66	-5	1	57	52	-4	1	120	116	-3	0
	Russley SH1 S Memorial (01S00341)	Sbnd	109	1269	2430	0	2082	2100	18	0	1556	1581	25	1	1672	1740	68	2
		Nbnd	110	2430	1269	0	1909	1860	-48	1	1575	1591	16	0	2172	2108	-63	1
	Johns SH1 S Sawyers Arms (01S00337)	Sbnd	111	8657	1265	0	1720	1757	37	1	1143	1129	-13	0	1131	1141	10	0
		Nbnd	112	1265	8657	0	985	990	5	0	1145	1177	32	1	1690	1705	15	0







Appendix B: SIDRA Movement Summary Tabulations and Delay Diagrams

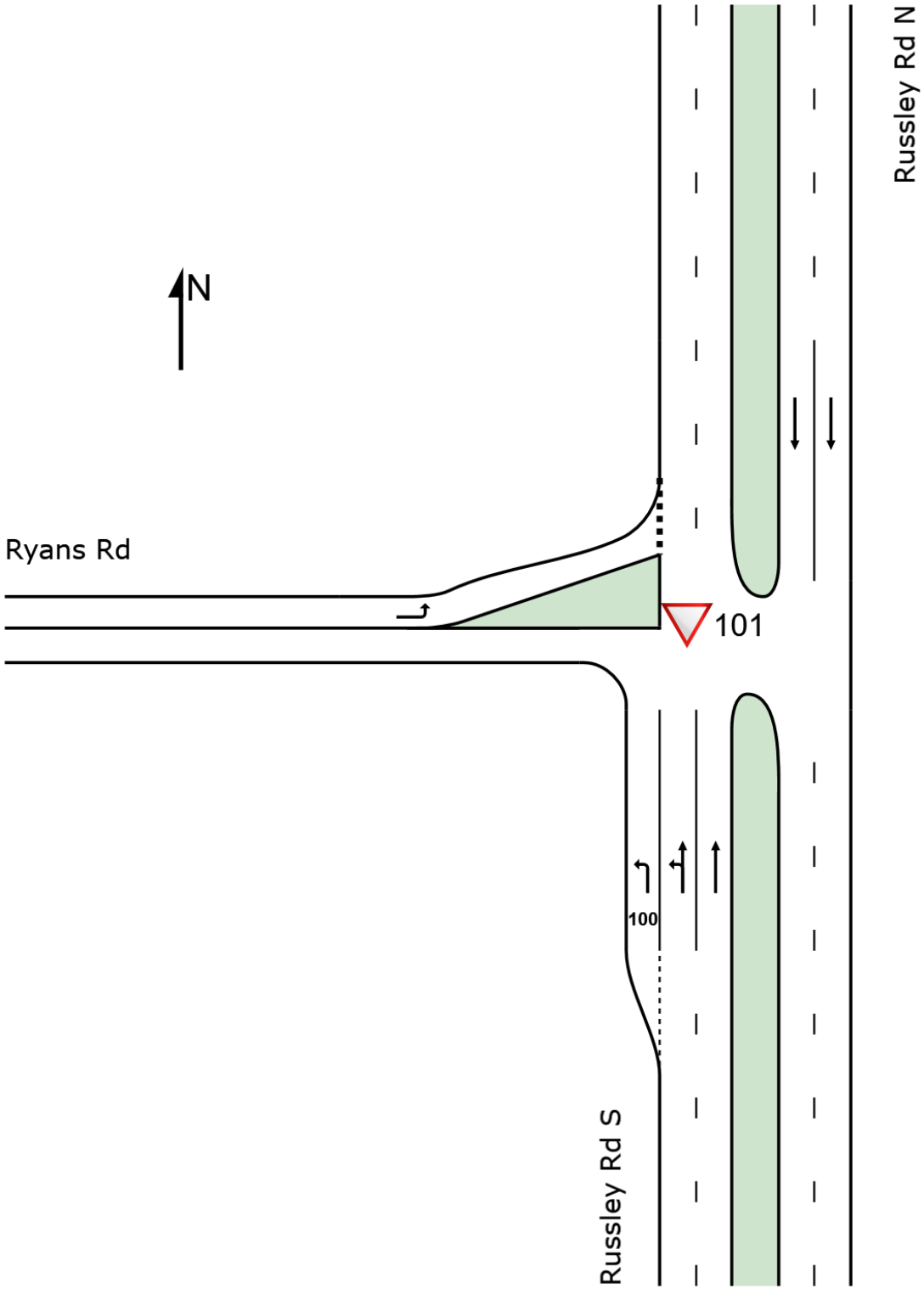
Appendix B Overview of Content:

SITE LAYOUT

Site: 101 [Russley/Ryans 2024 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

Russley/Ryans 2024 Observed PM
Site Category: (None)
Give-Way (Two-Way)

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

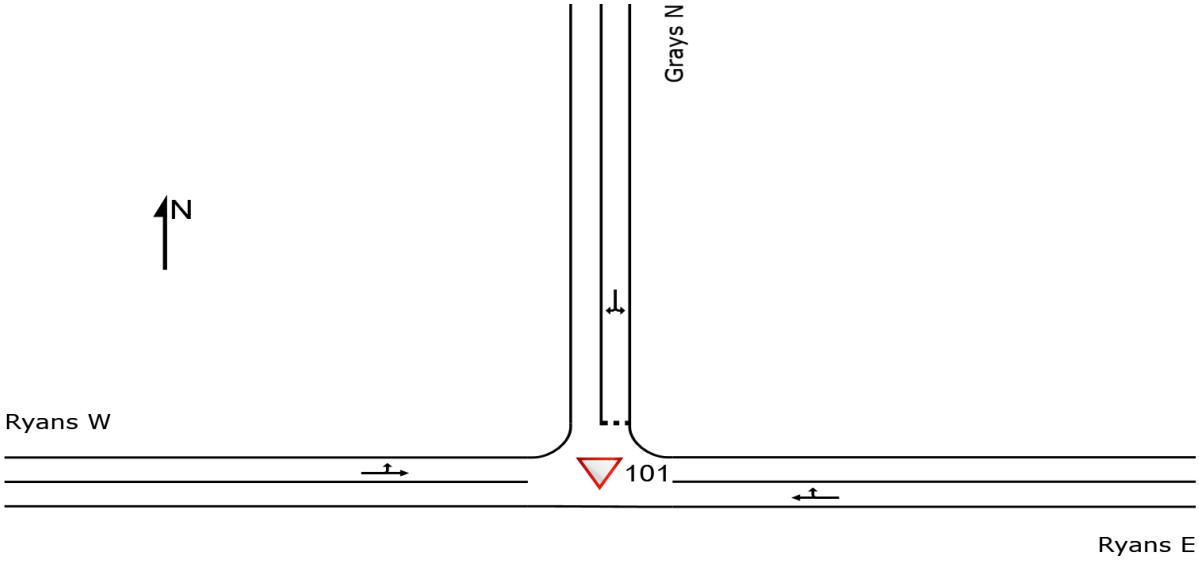


SITE LAYOUT

Site: 101 [Grays/Ryans 2024 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

Grays/Ryans 2024 Observed PM
Site Category: (None)
Give-Way (Two-Way)

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



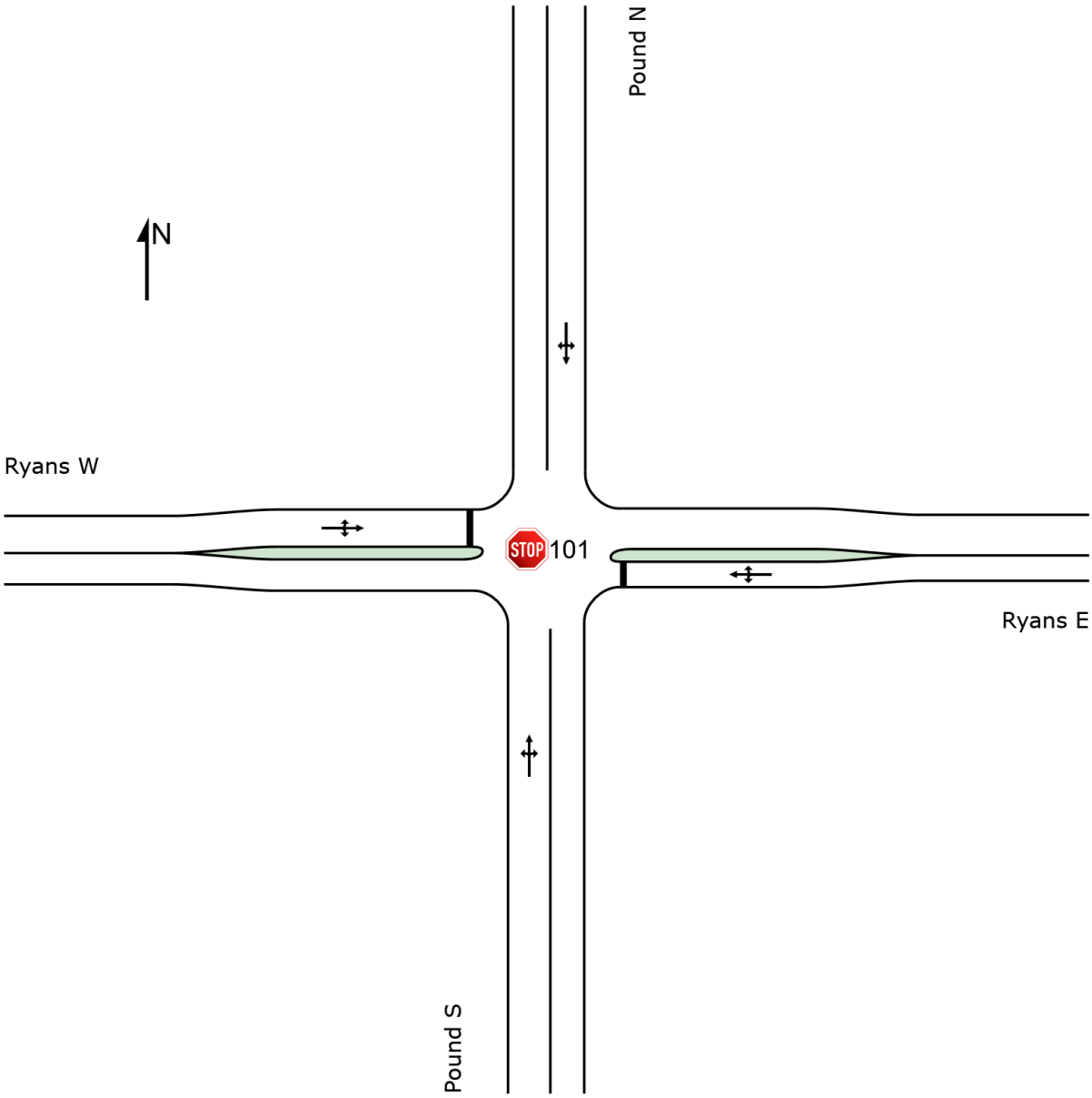
Organisation: QTP LTD | Licence: PLUS / 1PC | Created: Thursday, 21 November 2024 9:41:41 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

SITE LAYOUT

Site: 101 [Pound/Ryans - 2023 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

Pound/Ryans - 2023 Observed PM
Site Category: (None)
Stop (Two-Way)

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

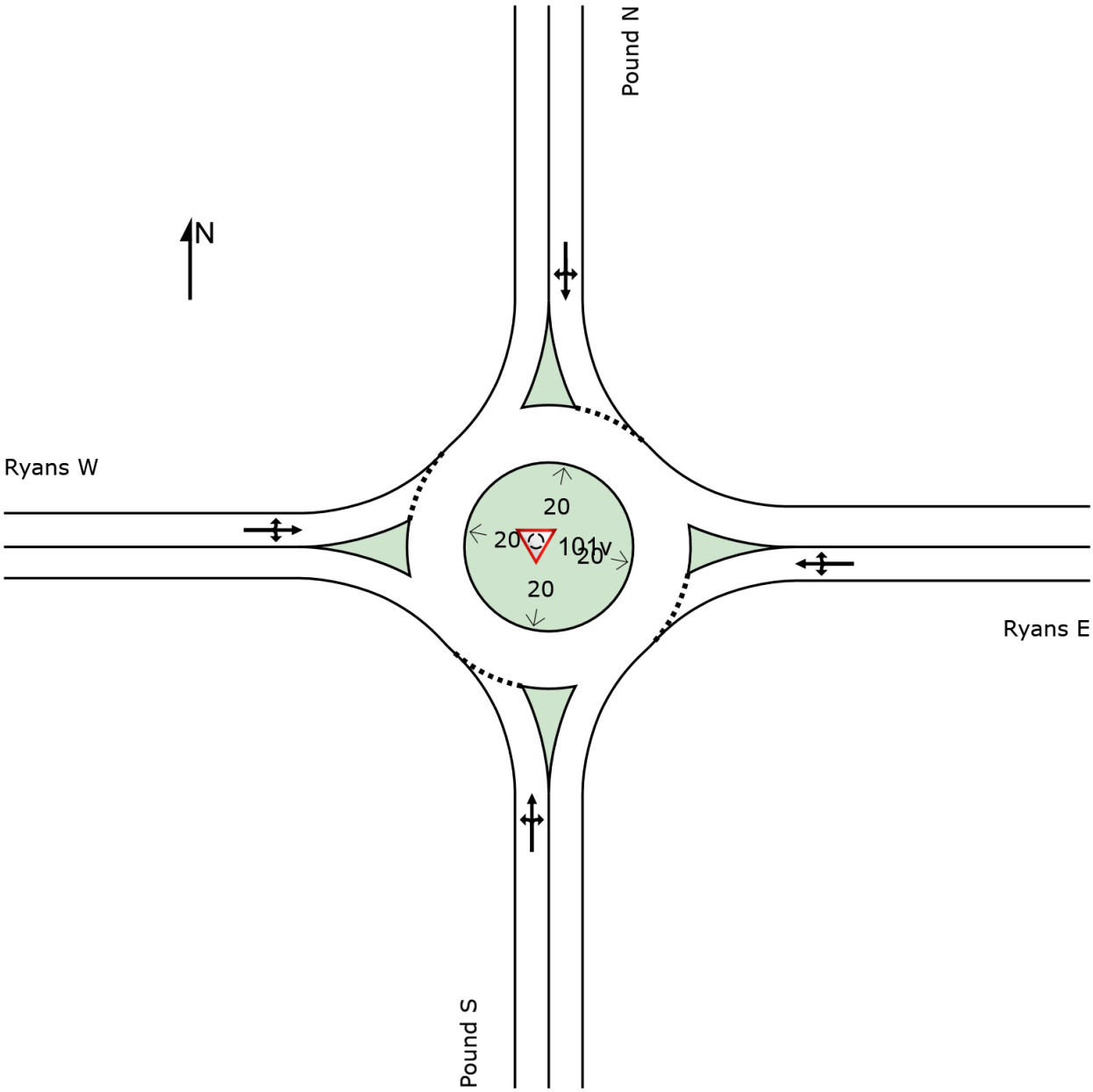


SITE LAYOUT

Site: 101v [Pound/Ryans - 2023 Observed PM - Roundabout (Site Folder: Ryans Proposed Private Plan Change)]

Pound/Ryans - 2023 Observed PM - Roundabout
Site Category: (None)
Roundabout

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



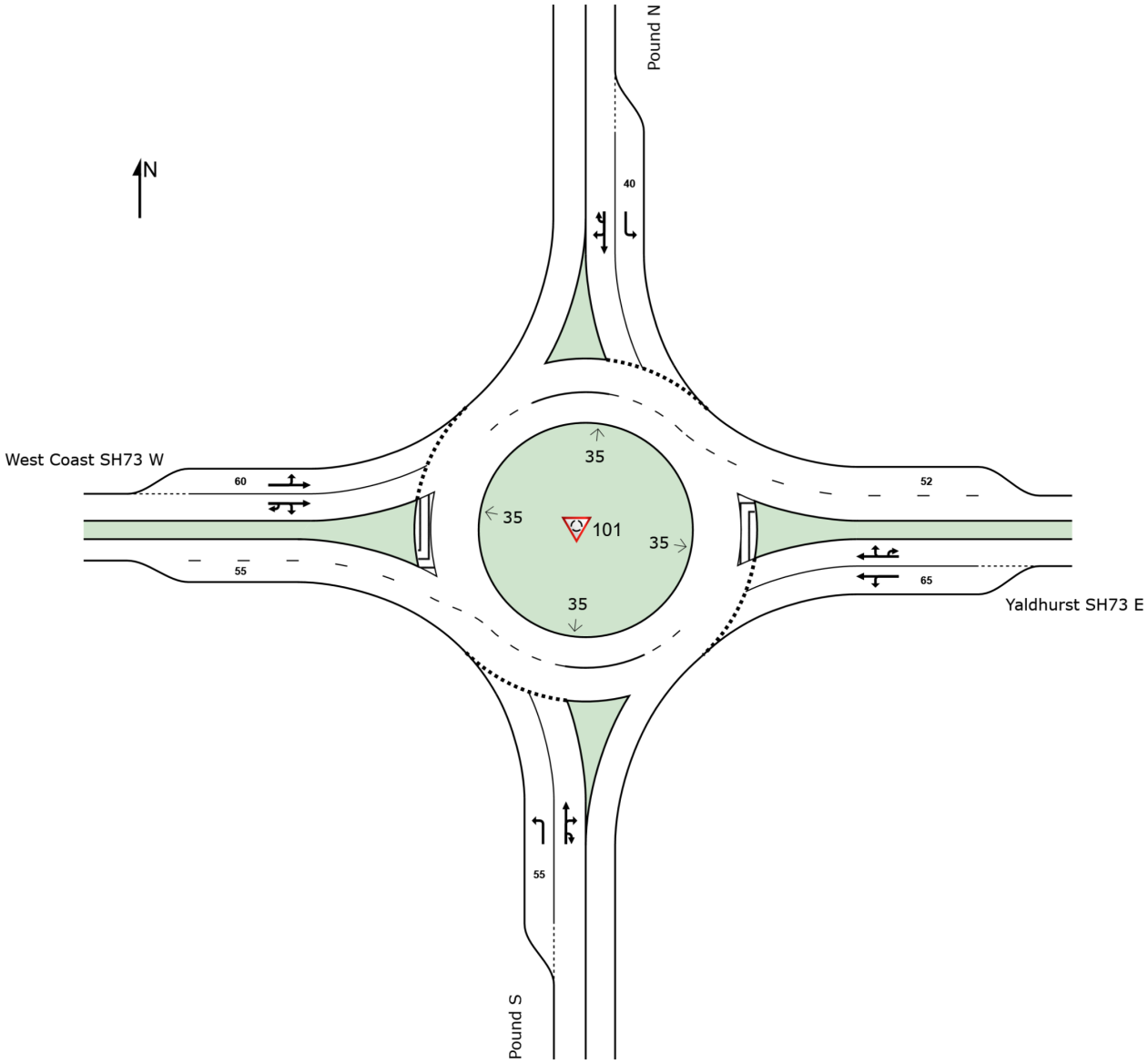
Organisation: QTP LTD | Licence: PLUS / 1PC | Created: Thursday, 21 November 2024 9:41:42 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

SITE LAYOUT

Site: 101 [Pound/Yaldhurst 2024 Model PM (Site Folder: Ryans Proposed Private Plan Change)]

Pound/Yaldhurst 2024 Model PM
Site Category: (None)
Roundabout

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



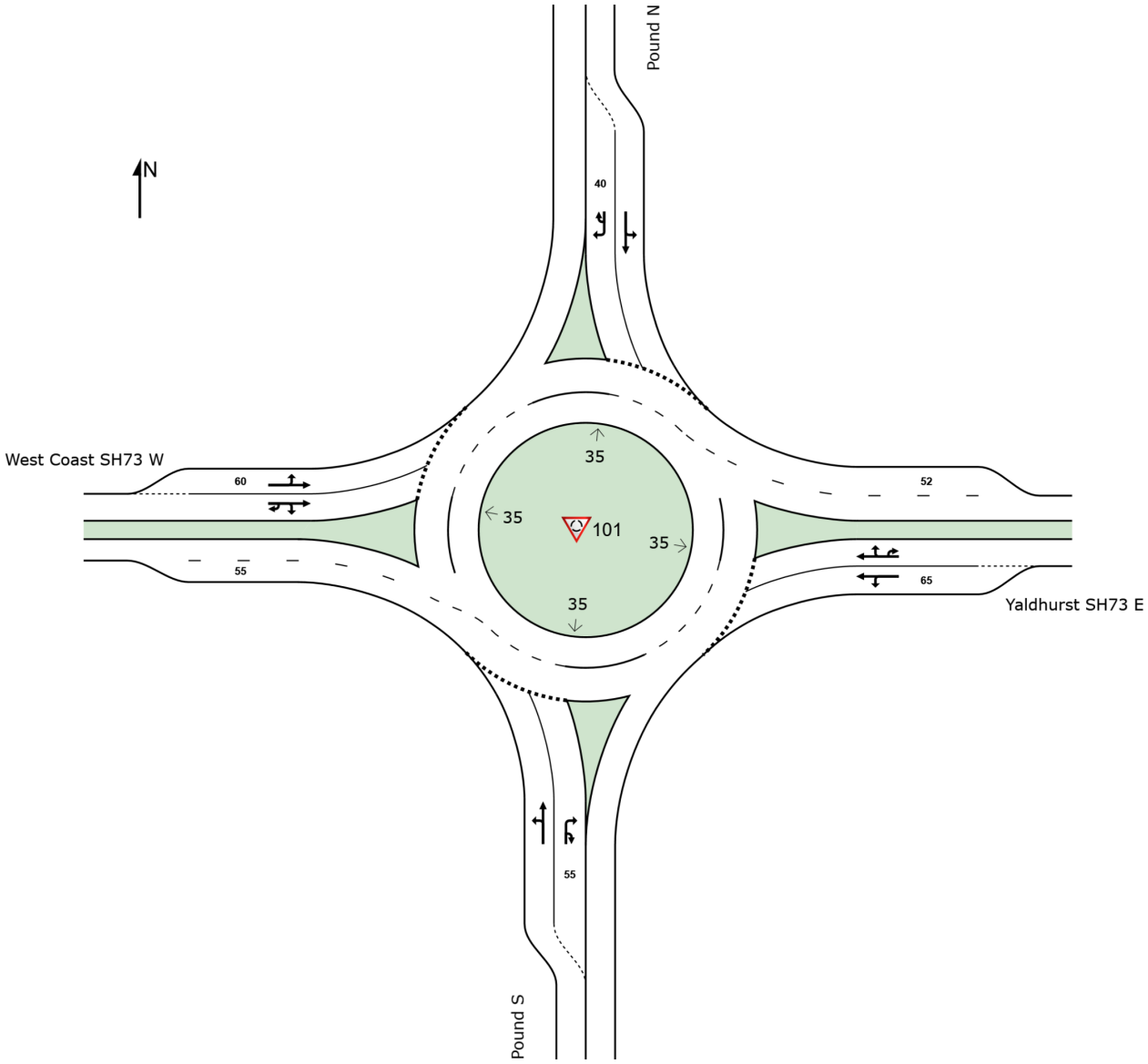
Organisation: QTP LTD | Licence: PLUS / 1PC | Created: Thursday, 21 November 2024 9:41:43 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

SITE LAYOUT

Site: 101 [Pound/Yaldhurst 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Pound/Yaldhurst 2038 PM No Development - Mitigation
Site Category: (None)
Roundabout

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



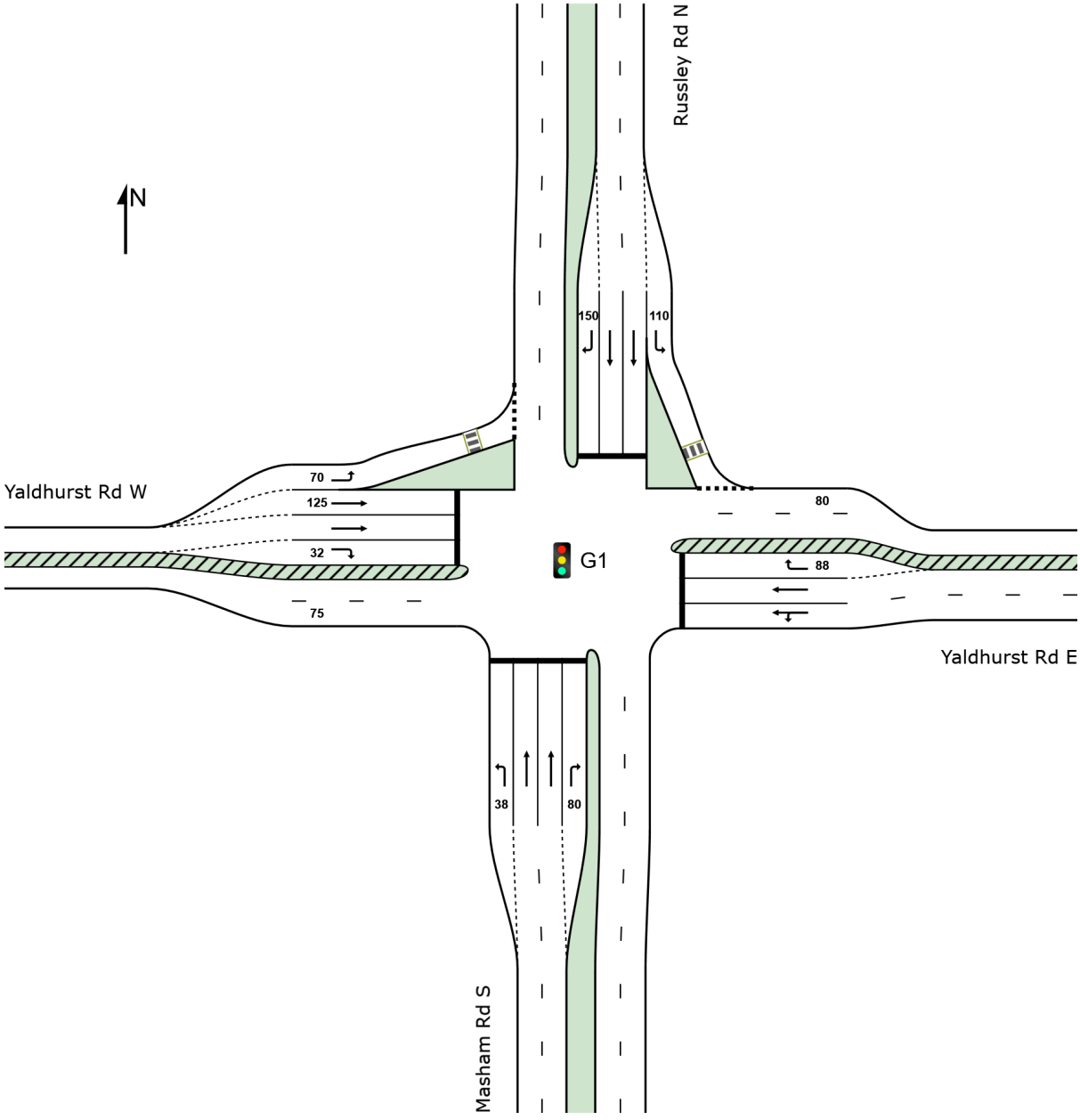
Organisation: QTP LTD | Licence: PLUS / 1PC | Created: Thursday, 21 November 2024 9:41:43 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

SITE LAYOUT

Site: G1 [SH1/SH73 2023 Observed PM 1615-1715 - Replicate Observed Delay (Site Folder: Ryans Proposed Private Plan Change)]

SH1/SH73 2023 Observed PM 1615-1715 - Replicate Observed Delay
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



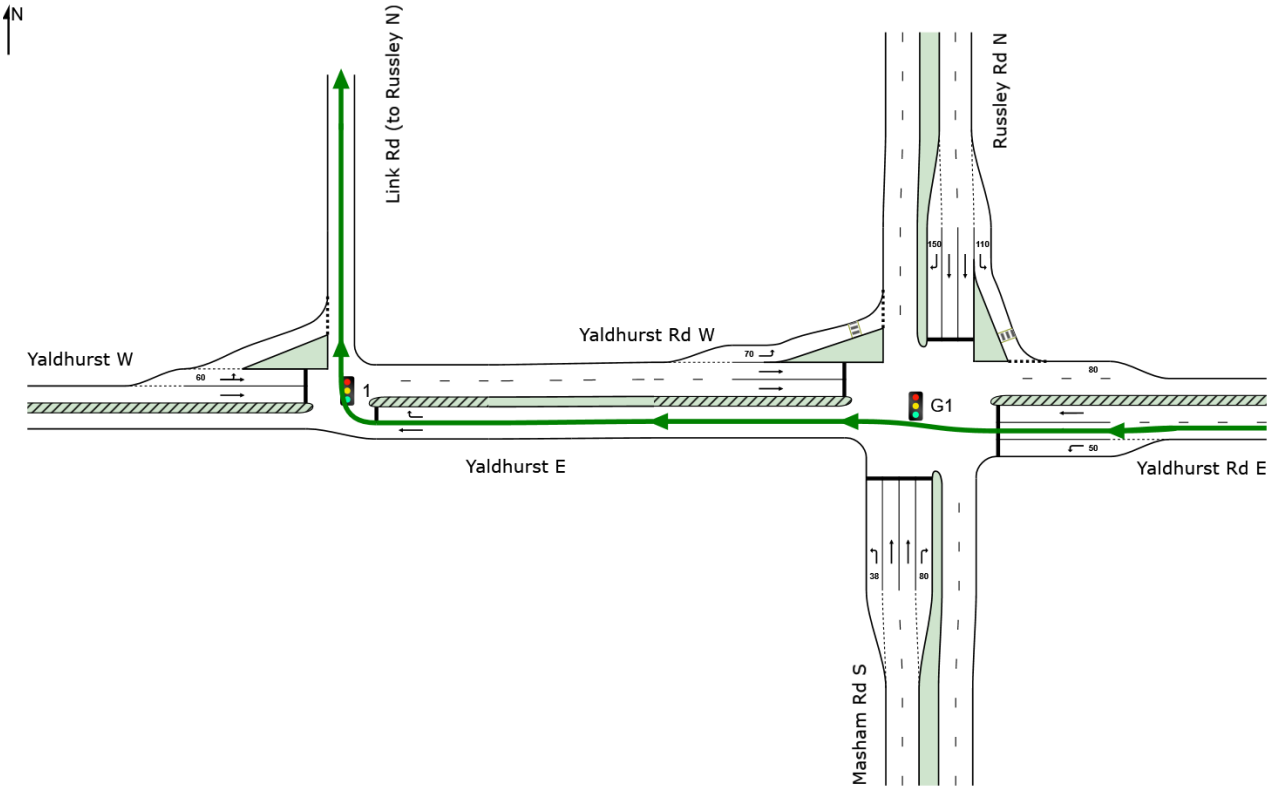
ROUTE LAYOUT

Route: R101 [Yaldhurst RT]

Network: N101 [SH1/73 with Link Rd (PM 1615-1715 2023 Demands) (Network Folder: General)]

New Route
Network Category: (None)

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



Route line positions do not imply specific lane use.

SITES ON ROUTE		
Site ID	**CCG ID**	**Site Name**
G1	NA	SH1/SH73 2023 Observed PM 1615-1715 - No Yaldhurst RT F-F2-A-E
1	NA	SH1 Link Rd/Yaldhurst SH73-2023 Observed PM 1615-1715

Organisation: QTP LTD | Licence: PLUS / 1PC | Created: Thursday, 21 November 2024 9:43:10 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2024 Observed AM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2024 Observed AM
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	8	0.0	8	0.0	0.005	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	64.6
2	T1	All MCs	1597	10.8	1597	10.8	0.450	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.6
Approach			1605	10.8	1605	10.8	0.450	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.5
North: Russley Rd N															
8	T1	All MCs	1987	10.6	1987	10.6	0.559	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
Approach			1987	10.6	1987	10.6	0.559	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.3
West: Ryans Rd															
10	L2	All MCs	291	3.3	291	3.3	0.833	34.6	LOS D	7.1	51.4	0.93	1.35	2.59	43.2
Approach			291	3.3	291	3.3	0.833	34.6	LOS D	7.1	51.4	0.93	1.35	2.59	43.2
All Vehicles			3883	10.1	3883	10.1	0.833	2.8	NA	7.1	51.4	0.07	0.10	0.19	74.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:13 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2024 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2024 Observed PM
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	17	6.3	17	6.3	0.010	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	62.5
2	T1	All MCs	1820	5.3	1820	5.3	0.487	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach			1837	5.3	1837	5.3	0.487	0.2	NA	0.0	0.0	0.00	0.01	0.00	79.3
North: Russley Rd N															
8	T1	All MCs	1903	6.5	1903	6.5	0.516	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach			1903	6.5	1903	6.5	0.516	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.5
West: Ryans Rd															
10	L2	All MCs	203	1.0	203	1.0	0.679	29.2	LOS D	3.9	27.3	0.90	1.14	1.71	46.4
Approach			203	1.0	203	1.0	0.679	29.2	LOS D	3.9	27.3	0.90	1.14	1.71	46.4
All Vehicles			3943	5.6	3943	5.6	0.679	1.7	NA	3.9	27.3	0.05	0.06	0.09	76.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:14 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	16	0.0	16	0.0	0.009	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	64.6
2	T1	All MCs	1780	10.7	1780	10.7	0.501	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach			1796	10.6	1796	10.6	0.501	0.2	NA	0.0	0.0	0.00	0.01	0.00	79.3
North: Russley Rd N															
8	T1	All MCs	2124	11.4	2124	11.4	0.602	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
Approach			2124	11.4	2124	11.4	0.602	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.2
West: Ryans Rd															
10	L2	All MCs	179	2.8	179	2.8	0.624	28.3	LOS D	3.2	23.2	0.89	1.10	1.55	46.7
Approach			179	2.8	179	2.8	0.624	28.3	LOS D	3.2	23.2	0.89	1.10	1.55	46.7
All Vehicles			4099	10.7	4099	10.7	0.624	1.4	NA	3.2	23.2	0.04	0.05	0.07	76.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	3	0.0	3	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	64.6
2	T1	All MCs	1808	5.2	1808	5.2	0.484	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach			1811	5.2	1811	5.2	0.484	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.5
North: Russley Rd N															
8	T1	All MCs	2154	7.6	2154	7.6	0.590	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
Approach			2154	7.6	2154	7.6	0.590	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.3
West: Ryans Rd															
10	L2	All MCs	217	0.5	217	0.5	0.708	30.1	LOS D	4.3	30.2	0.90	1.17	1.84	46.0
Approach			217	0.5	217	0.5	0.708	30.1	LOS D	4.3	30.2	0.90	1.17	1.84	46.0
All Vehicles			4182	6.2	4182	6.2	0.708	1.7	NA	4.3	30.2	0.05	0.06	0.10	76.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	139	7.9	139	7.9	0.082	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	62.0
2	T1	All MCs	1662	11.6	1662	11.6	0.472	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach			1801	11.3	1801	11.3	0.472	0.7	NA	0.0	0.0	0.00	0.05	0.00	77.8
North: Russley Rd N															
8	T1	All MCs	2154	11.6	2154	11.6	0.612	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
Approach			2154	11.6	2154	11.6	0.612	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.2
West: Ryans Rd															
10	L2	All MCs	201	7.5	201	7.5	0.668	28.7	LOS D	3.8	27.9	0.89	1.14	1.70	45.8
Approach			201	7.5	201	7.5	0.668	28.7	LOS D	3.8	27.9	0.89	1.14	1.70	45.8
All Vehicles			4156	11.3	4156	11.3	0.668	1.8	NA	3.8	27.9	0.04	0.08	0.08	75.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	37	32.4	37	32.4	0.027	7.5	LOS A	0.0	0.0	0.00	0.63	0.00	55.2
2	T1	All MCs	1783	5.6	1783	5.6	0.479	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach			1820	6.1	1820	6.1	0.479	0.3	NA	0.0	0.0	0.00	0.01	0.00	78.8
North: Russley Rd N															
8	T1	All MCs	2298	6.9	2298	6.9	0.625	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
Approach			2298	6.9	2298	6.9	0.625	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.2
West: Ryans Rd															
10	L2	All MCs	260	0.8	260	0.8	0.833	38.6	LOS E	6.8	48.0	0.94	1.36	2.69	41.6
Approach			260	0.8	260	0.8	0.833	38.6	LOS E	6.8	48.0	0.94	1.36	2.69	41.6
All Vehicles			4378	6.2	4378	6.2	0.833	2.5	NA	6.8	48.0	0.06	0.09	0.16	74.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM No Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	27	3.7	27	3.7	0.015	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.4
2	T1	All MCs	2172	10.9	2172	10.9	0.613	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
Approach			2199	10.8	2199	10.8	0.613	0.3	NA	0.0	0.0	0.00	0.01	0.00	78.9
North: Russley Rd N															
8	T1	All MCs	2203	11.7	2203	11.7	0.626	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	79.1
Approach			2203	11.7	2203	11.7	0.626	0.3	NA	0.0	0.0	0.00	0.00	0.00	79.1
West: Ryans Rd															
10	L2	All MCs	81	0.0	81	0.0	0.438	33.4	LOS D	1.7	11.7	0.90	1.02	1.19	44.3
Approach			81	0.0	81	0.0	0.438	33.4	LOS D	1.7	11.7	0.90	1.02	1.19	44.3
All Vehicles			4483	11.1	4483	11.1	0.626	0.9	NA	1.7	11.7	0.02	0.02	0.02	77.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM No Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	68	14.7	68	14.7	0.043	7.2	LOS A	0.0	0.0	0.00	0.63	0.00	60.0
2	T1	All MCs	2221	5.9	2221	5.9	0.598	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
Approach			2289	6.2	2289	6.2	0.598	0.4	NA	0.0	0.0	0.00	0.02	0.00	78.5
North: Russley Rd N															
8	T1	All MCs	2184	7.3	2184	7.3	0.596	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
Approach			2184	7.3	2184	7.3	0.596	0.2	NA	0.0	0.0	0.00	0.00	0.00	79.2
West: Ryans Rd															
10	L2	All MCs	73	1.4	73	1.4	0.409	33.4	LOS D	1.5	10.6	0.90	1.01	1.15	44.1
Approach			73	1.4	73	1.4	0.409	33.4	LOS D	1.5	10.6	0.90	1.01	1.15	44.1
All Vehicles			4546	6.6	4546	6.6	0.598	0.9	NA	1.5	10.6	0.01	0.03	0.02	77.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM With Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	159	7.5	159	7.5	0.093	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	62.1
2	T1	All MCs	2175	10.8	2175	10.8	0.613	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
Approach			2334	10.5	2334	10.5	0.613	0.7	NA	0.0	0.0	0.00	0.04	0.00	77.7
North: Russley Rd N															
8	T1	All MCs	2234	11.5	2234	11.5	0.634	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	79.1
Approach			2234	11.5	2234	11.5	0.634	0.3	NA	0.0	0.0	0.00	0.00	0.00	79.1
West: Ryans Rd															
10	L2	All MCs	30	3.3	30	3.3	0.179	29.2	LOS D	0.5	3.9	0.87	0.96	0.90	46.1
Approach			30	3.3	30	3.3	0.179	29.2	LOS D	0.5	3.9	0.87	0.96	0.90	46.1
All Vehicles			4598	11.0	4598	11.0	0.634	0.7	NA	0.5	3.9	0.01	0.03	0.01	78.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Russley/Ryans 2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM With Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Russley Rd S															
1	L2	All MCs	117	12.0	117	12.0	0.071	7.2	LOS A	0.0	0.0	0.00	0.63	0.00	60.8
2	T1	All MCs	2221	5.6	2221	5.6	0.597	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
Approach			2338	5.9	2338	5.9	0.597	0.6	NA	0.0	0.0	0.00	0.03	0.00	78.1
North: Russley Rd N															
8	T1	All MCs	2333	7.0	2333	7.0	0.635	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	79.1
Approach			2333	7.0	2333	7.0	0.635	0.3	NA	0.0	0.0	0.00	0.00	0.00	79.1
West: Ryans Rd															
10	L2	All MCs	62	1.6	62	1.6	0.348	31.9	LOS D	1.2	8.7	0.89	1.00	1.08	44.9
Approach			62	1.6	62	1.6	0.348	31.9	LOS D	1.2	8.7	0.89	1.00	1.08	44.9
All Vehicles			4733	6.4	4733	6.4	0.635	0.8	NA	1.2	8.7	0.01	0.03	0.01	77.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2024 Observed AM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2024 Observed AM
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	5	0.0	5	0.0	0.006	1.7	LOS A	0.0	0.2	0.44	0.43	0.44	72.7
6	R2	All MCs	3	0.0	3	0.0	0.006	9.1	LOS A	0.0	0.2	0.44	0.43	0.44	67.1
Approach			8	0.0	8	0.0	0.006	4.5	NA	0.0	0.2	0.44	0.43	0.44	70.5
North: Grays N															
7	L2	All MCs	4	0.0	4	0.0	0.156	8.0	LOS A	0.5	3.9	0.46	0.76	0.46	62.2
9	R2	All MCs	116	8.2	116	8.2	0.156	9.3	LOS A	0.5	3.9	0.46	0.76	0.46	59.4
Approach			120	7.9	120	7.9	0.156	9.2	LOS A	0.5	3.9	0.46	0.76	0.46	59.5
West: Ryans W															
10	L2	All MCs	324	2.6	324	2.6	0.333	7.1	LOS A	0.0	0.0	0.00	0.34	0.00	67.4
11	T1	All MCs	286	3.3	286	3.3	0.333	0.1	LOS A	0.0	0.0	0.00	0.34	0.00	73.8
Approach			611	2.9	611	2.9	0.333	3.8	NA	0.0	0.0	0.00	0.34	0.00	70.2
All Vehicles			739	3.7	739	3.7	0.333	4.7	NA	0.5	3.9	0.08	0.41	0.08	68.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2024 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2024 Observed PM
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	14	7.7	14	7.7	0.010	0.3	LOS A	0.0	0.2	0.17	0.20	0.17	76.5
6	R2	All MCs	3	0.0	3	0.0	0.010	7.7	LOS A	0.0	0.2	0.17	0.20	0.17	70.3
Approach			17	6.3	17	6.3	0.010	1.7	NA	0.0	0.2	0.17	0.20	0.17	75.2
North: Grays N															
7	L2	All MCs	4	0.0	4	0.0	0.410	8.2	LOS A	2.1	14.8	0.44	0.72	0.50	62.7
9	R2	All MCs	401	0.8	401	0.8	0.410	8.6	LOS A	2.1	14.8	0.44	0.72	0.50	62.3
Approach			405	0.8	405	0.8	0.410	8.6	LOS A	2.1	14.8	0.44	0.72	0.50	62.3
West: Ryans W															
10	L2	All MCs	141	3.0	141	3.0	0.182	7.0	LOS A	0.0	0.0	0.00	0.27	0.00	68.4
11	T1	All MCs	199	1.1	199	1.1	0.182	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	75.2
Approach			340	1.9	340	1.9	0.182	2.9	NA	0.0	0.0	0.00	0.27	0.00	72.2
All Vehicles			762	1.4	762	1.4	0.410	5.9	NA	2.1	14.8	0.24	0.51	0.27	66.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	19	5.3	19	5.3	0.011	0.2	LOS A	0.0	0.1	0.08	0.08	0.08	78.7
6	R2	All MCs	1	0.0	1	0.0	0.011	9.2	LOS A	0.0	0.1	0.08	0.08	0.08	72.2
Approach			20	5.0	20	5.0	0.011	0.7	NA	0.0	0.1	0.08	0.08	0.08	78.4
North: Grays N															
7	L2	All MCs	5	0.0	5	0.0	0.283	7.8	LOS A	1.1	8.6	0.49	0.77	0.52	61.7
9	R2	All MCs	210	15.7	210	15.7	0.283	9.8	LOS A	1.1	8.6	0.49	0.77	0.52	56.9
Approach			215	15.3	215	15.3	0.283	9.8	LOS A	1.1	8.6	0.49	0.77	0.52	57.0
West: Ryans W															
10	L2	All MCs	426	9.2	426	9.2	0.350	7.2	LOS A	0.0	0.0	0.00	0.45	0.00	63.8
11	T1	All MCs	183	2.7	183	2.7	0.350	0.1	LOS A	0.0	0.0	0.00	0.45	0.00	72.2
Approach			609	7.2	609	7.2	0.350	5.0	NA	0.0	0.0	0.00	0.45	0.00	66.1
All Vehicles			844	9.2	844	9.2	0.350	6.1	NA	1.1	8.6	0.13	0.52	0.13	63.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:28 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	9	0.0	9	0.0	0.005	0.2	LOS A	0.0	0.1	0.11	0.12	0.11	78.0
6	R2	All MCs	1	0.0	1	0.0	0.005	7.9	LOS A	0.0	0.1	0.11	0.12	0.11	71.6
Approach			10	0.0	10	0.0	0.005	1.0	NA	0.0	0.1	0.11	0.12	0.11	77.3
North: Grays N															
7	L2	All MCs	4	0.0	4	0.0	0.471	8.3	LOS A	2.8	20.2	0.47	0.74	0.58	62.3
9	R2	All MCs	457	2.2	457	2.2	0.471	9.0	LOS A	2.8	20.2	0.47	0.74	0.58	61.4
Approach			461	2.2	461	2.2	0.471	9.0	LOS A	2.8	20.2	0.47	0.74	0.58	61.4
West: Ryans W															
10	L2	All MCs	206	16.5	206	16.5	0.218	7.3	LOS A	0.0	0.0	0.00	0.36	0.00	62.8
11	T1	All MCs	167	0.6	167	0.6	0.218	0.0	LOS A	0.0	0.0	0.00	0.36	0.00	74.1
Approach			373	9.4	373	9.4	0.218	4.0	NA	0.0	0.0	0.00	0.36	0.00	67.4
All Vehicles			844	5.3	844	5.3	0.471	6.7	NA	2.8	20.2	0.26	0.56	0.32	64.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	123	11.4	123	11.4	0.071	2.1	LOS A	0.0	0.0	0.00	0.31	0.00	66.1
6	R2	All MCs	1	0.0	1	0.0	0.071	6.6	LOS A	0.0	0.0	0.00	0.31	0.00	62.6
Approach			124	11.3	124	11.3	0.071	2.1	NA	0.0	0.0	0.00	0.31	0.00	66.1
North: Grays N															
7	L2	All MCs	4	0.0	4	0.0	0.380	5.6	LOS A	1.7	12.0	0.32	0.60	0.32	57.1
9	R2	All MCs	410	1.7	410	1.7	0.380	6.5	LOS A	1.7	12.0	0.32	0.60	0.32	51.7
Approach			414	1.7	414	1.7	0.380	6.5	LOS A	1.7	12.0	0.32	0.60	0.32	51.8
West: Ryans W															
10	L2	All MCs	85	3.5	85	3.5	0.053	5.6	LOS A	0.0	0.0	0.00	0.52	0.00	53.2
11	T1	All MCs	10	0.0	10	0.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.52	0.00	55.5
Approach			95	3.2	95	3.2	0.053	5.0	NA	0.0	0.0	0.00	0.52	0.00	53.4
All Vehicles			633	3.8	633	3.8	0.380	5.4	NA	1.7	12.0	0.21	0.53	0.21	54.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:31 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	16	6.3	16	6.3	0.147	4.9	LOS A	0.6	4.8	0.56	0.77	0.56	58.8
6	R2	All MCs	126	8.7	126	8.7	0.147	9.6	LOS A	0.6	4.8	0.56	0.77	0.56	55.6
Approach			142	8.5	142	8.5	0.147	9.1	NA	0.6	4.8	0.56	0.77	0.56	55.9
North: Grays N															
7	L2	All MCs	5	20.0	5	20.0	0.289	6.9	LOS A	1.1	8.6	0.52	0.80	0.58	50.6
9	R2	All MCs	201	10.0	201	10.0	0.289	9.1	LOS A	1.1	8.6	0.52	0.80	0.58	49.7
Approach			206	10.2	206	10.2	0.289	9.1	LOS A	1.1	8.6	0.52	0.80	0.58	49.7
West: Ryans W															
10	L2	All MCs	356	1.7	356	1.7	0.302	5.6	LOS A	0.0	0.0	0.00	0.38	0.00	54.2
11	T1	All MCs	193	6.7	193	6.7	0.302	0.1	LOS A	0.0	0.0	0.00	0.38	0.00	56.4
Approach			549	3.5	549	3.5	0.302	3.7	NA	0.0	0.0	0.00	0.38	0.00	54.9
All Vehicles			897	5.8	897	5.8	0.302	5.8	NA	1.1	8.6	0.21	0.54	0.22	53.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:32 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	6	0.0	6	0.0	0.055	2.7	LOS A	0.2	1.9	0.31	0.60	0.31	60.4
6	R2	All MCs	70	15.7	70	15.7	0.055	7.6	LOS A	0.2	1.9	0.31	0.60	0.31	56.6
Approach			76	14.5	76	14.5	0.055	7.2	NA	0.2	1.9	0.31	0.60	0.31	56.9
North: Grays N															
7	L2	All MCs	4	0.0	4	0.0	0.334	6.0	LOS A	1.4	9.8	0.36	0.63	0.36	57.0
9	R2	All MCs	346	1.4	346	1.4	0.334	6.6	LOS A	1.4	9.8	0.36	0.63	0.36	51.6
Approach			350	1.4	350	1.4	0.334	6.6	LOS A	1.4	9.8	0.36	0.63	0.36	51.7
West: Ryans W															
10	L2	All MCs	78	23.1	78	23.1	0.108	5.8	LOS A	0.0	0.0	0.00	0.25	0.00	54.6
11	T1	All MCs	105	1.9	105	1.9	0.108	0.0	LOS A	0.0	0.0	0.00	0.25	0.00	58.0
Approach			183	10.9	183	10.9	0.108	2.5	NA	0.0	0.0	0.00	0.25	0.00	56.5
All Vehicles			609	5.9	609	5.9	0.334	5.5	NA	1.4	9.8	0.25	0.51	0.25	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:33 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM WNo Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	28	7.1	28	7.1	0.016	2.1	LOS A	0.0	0.1	0.04	0.33	0.04	65.7
6	R2	All MCs	1	0.0	1	0.0	0.016	8.3	LOS A	0.0	0.1	0.04	0.33	0.04	62.3
Approach			29	6.9	29	6.9	0.016	2.4	NA	0.0	0.1	0.04	0.33	0.04	65.6
North: Grays N															
7	L2	All MCs	5	0.0	5	0.0	0.209	5.8	LOS A	0.8	5.7	0.38	0.66	0.38	56.8
9	R2	All MCs	188	9.0	188	9.0	0.209	7.1	LOS A	0.8	5.7	0.38	0.66	0.38	51.1
Approach			193	8.8	193	8.8	0.209	7.1	LOS A	0.8	5.7	0.38	0.66	0.38	51.2
West: Ryans W															
10	L2	All MCs	384	2.1	384	2.1	0.255	5.6	LOS A	0.0	0.0	0.00	0.48	0.00	53.5
11	T1	All MCs	82	0.0	82	0.0	0.255	0.1	LOS A	0.0	0.0	0.00	0.48	0.00	55.7
Approach			466	1.7	466	1.7	0.255	4.7	NA	0.0	0.0	0.00	0.48	0.00	53.9
All Vehicles			688	3.9	688	3.9	0.255	5.2	NA	0.8	5.7	0.11	0.52	0.11	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM No Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	74	13.5	74	13.5	0.044	2.1	LOS A	0.0	0.1	0.01	0.31	0.01	66.0
6	R2	All MCs	1	0.0	1	0.0	0.044	6.7	LOS A	0.0	0.1	0.01	0.31	0.01	62.6
Approach			75	13.3	75	13.3	0.044	2.1	NA	0.0	0.1	0.01	0.31	0.01	66.0
North: Grays N															
7	L2	All MCs	4	0.0	4	0.0	0.434	5.6	LOS A	2.1	14.6	0.34	0.61	0.34	57.1
9	R2	All MCs	476	1.3	476	1.3	0.434	6.4	LOS A	2.1	14.6	0.34	0.61	0.34	51.7
Approach			480	1.3	480	1.3	0.434	6.4	LOS A	2.1	14.6	0.34	0.61	0.34	51.7
West: Ryans W															
10	L2	All MCs	139	2.9	139	2.9	0.088	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	53.3
11	T1	All MCs	21	0.0	21	0.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	55.6
Approach			160	2.5	160	2.5	0.088	4.9	NA	0.0	0.0	0.00	0.50	0.00	53.6
All Vehicles			715	2.8	715	2.8	0.434	5.6	NA	2.1	14.6	0.23	0.55	0.23	53.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:36 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Grays/Ryans 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM With Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ryans E															
5	T1	All MCs	74	13.5	74	13.5	0.044	2.1	LOS A	0.0	0.1	0.01	0.31	0.01	66.0
6	R2	All MCs	1	0.0	1	0.0	0.044	6.7	LOS A	0.0	0.1	0.01	0.31	0.01	62.6
Approach			75	13.3	75	13.3	0.044	2.1	NA	0.0	0.1	0.01	0.31	0.01	66.0
North: Grays N															
7	L2	All MCs	4	0.0	4	0.0	0.434	5.6	LOS A	2.1	14.6	0.34	0.61	0.34	57.1
9	R2	All MCs	476	1.3	476	1.3	0.434	6.4	LOS A	2.1	14.6	0.34	0.61	0.34	51.7
Approach			480	1.3	480	1.3	0.434	6.4	LOS A	2.1	14.6	0.34	0.61	0.34	51.7
West: Ryans W															
10	L2	All MCs	139	2.9	139	2.9	0.088	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	53.3
11	T1	All MCs	21	0.0	21	0.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	55.6
Approach			160	2.5	160	2.5	0.088	4.9	NA	0.0	0.0	0.00	0.50	0.00	53.6
All Vehicles			715	2.8	715	2.8	0.434	5.6	NA	2.1	14.6	0.23	0.55	0.23	53.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:37 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Pound/Ryans - 2023 Observed AM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2023 Observed AM
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	4	50.0	4	50.0	0.660	11.1	LOS B	9.1	70.3	0.67	0.87	1.16	48.5
2	T1	All MCs	294	29.4	294	29.4	0.660	4.8	LOS A	9.1	70.3	0.67	0.87	1.16	52.3
3	R2	All MCs	593	3.4	593	3.4	0.660	10.6	LOS B	9.1	70.3	0.67	0.87	1.16	50.1
Approach			891	12.2	891	12.2	0.660	8.7	NA	9.1	70.3	0.67	0.87	1.16	50.8
East: Ryans E															
4	L2	All MCs	171	11.7	171	11.7	0.310	11.6	LOS B	1.3	10.0	0.61	0.96	0.72	47.7
5	T1	All MCs	3	33.3	3	33.3	0.310	82.6	LOS F	1.3	10.0	0.61	0.96	0.72	46.9
6	R2	All MCs	2	50.0	2	50.0	0.310	129.1	LOS F	1.3	10.0	0.61	0.96	0.72	46.4
Approach			176	12.6	176	12.6	0.310	14.3	LOS B	1.3	10.0	0.61	0.96	0.72	47.6
North: Pound N															
7	L2	All MCs	14	15.4	14	15.4	0.202	5.8	LOS A	0.0	0.2	0.01	0.03	0.01	56.5
8	T1	All MCs	361	16.6	361	16.6	0.202	0.0	LOS A	0.0	0.2	0.01	0.03	0.01	59.7
9	R2	All MCs	2	0.0	2	0.0	0.202	5.9	LOS A	0.0	0.2	0.01	0.03	0.01	57.1
Approach			377	16.5	377	16.5	0.202	0.2	NA	0.0	0.2	0.01	0.03	0.01	59.6
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.079	9.4	LOS A	0.2	1.6	0.87	1.00	0.87	38.7
11	T1	All MCs	7	0.0	7	0.0	0.079	31.7	LOS D	0.2	1.6	0.87	1.00	0.87	38.7
12	R2	All MCs	2	0.0	2	0.0	0.079	47.6	LOS E	0.2	1.6	0.87	1.00	0.87	38.6
Approach			11	0.0	11	0.0	0.079	32.7	LOS D	0.2	1.6	0.87	1.00	0.87	38.7
All Vehicles			1454	13.3	1454	13.3	0.660	7.3	NA	9.1	70.3	0.49	0.66	0.80	52.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:39 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Pound/Ryans - 2023 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2023 Observed PM
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	14	23.1	14	23.1	0.603	10.6	LOS B	6.9	51.3	0.50	0.62	0.87	51.6
2	T1	All MCs	596	9.7	596	9.7	0.603	3.5	LOS A	6.9	51.3	0.50	0.62	0.87	54.6
3	R2	All MCs	318	3.6	318	3.6	0.603	10.4	LOS B	6.9	51.3	0.50	0.62	0.87	52.2
Approach			927	7.8	927	7.8	0.603	6.0	NA	6.9	51.3	0.50	0.62	0.87	53.7
East: Ryans E															
4	L2	All MCs	455	2.8	455	2.8	0.627	14.3	LOS B	5.3	38.0	0.73	1.14	1.29	47.1
5	T1	All MCs	5	0.0	5	0.0	0.627	59.9	LOS F	5.3	38.0	0.73	1.14	1.29	47.2
6	R2	All MCs	5	0.0	5	0.0	0.627	70.2	LOS F	5.3	38.0	0.73	1.14	1.29	47.2
Approach			465	2.7	465	2.7	0.627	15.5	LOS C	5.3	38.0	0.73	1.14	1.29	47.1
North: Pound N															
7	L2	All MCs	31	3.4	31	3.4	0.239	6.2	LOS A	0.1	0.6	0.02	0.06	0.02	56.8
8	T1	All MCs	421	11.8	421	11.8	0.239	0.1	LOS A	0.1	0.6	0.02	0.06	0.02	59.5
9	R2	All MCs	2	50.0	2	50.0	0.239	10.7	LOS B	0.1	0.6	0.02	0.06	0.02	54.5
Approach			454	11.4	454	11.4	0.239	0.5	NA	0.1	0.6	0.02	0.06	0.02	59.3
West: Ryans W															
10	L2	All MCs	2	0.0	2	0.0	0.055	11.4	LOS B	0.2	1.1	0.88	1.00	0.88	37.4
11	T1	All MCs	3	0.0	3	0.0	0.055	36.3	LOS E	0.2	1.1	0.88	1.00	0.88	37.4
12	R2	All MCs	1	0.0	1	0.0	0.055	83.5	LOS F	0.2	1.1	0.88	1.00	0.88	37.4
Approach			6	0.0	6	0.0	0.055	35.9	LOS E	0.2	1.1	0.88	1.00	0.88	37.4
All Vehicles			1853	7.4	1853	7.4	0.627	7.1	NA	6.9	51.3	0.44	0.61	0.77	53.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:40 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Pound/Ryans - 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 AM No Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.661	10.4	LOS B	9.5	74.1	0.66	0.84	1.11	50.6
2	T1	All MCs	299	27.4	299	27.4	0.661	4.6	LOS A	9.5	74.1	0.66	0.84	1.11	52.5
3	R2	All MCs	602	7.0	602	7.0	0.661	10.4	LOS B	9.5	74.1	0.66	0.84	1.11	50.2
Approach			902	13.7	902	13.7	0.661	8.5	NA	9.5	74.1	0.66	0.84	1.11	50.9
East: Ryans E															
4	L2	All MCs	217	10.1	217	10.1	0.254	10.7	LOS B	1.1	8.2	0.50	0.91	0.50	49.7
5	T1	All MCs	1	0.0	1	0.0	0.254	37.7	LOS E	1.1	8.2	0.50	0.91	0.50	50.0
6	R2	All MCs	1	0.0	1	0.0	0.254	45.5	LOS E	1.1	8.2	0.50	0.91	0.50	50.0
Approach			219	10.0	219	10.0	0.254	11.0	LOS B	1.1	8.2	0.50	0.91	0.50	49.7
North: Pound N															
7	L2	All MCs	7	28.6	7	28.6	0.184	5.9	LOS A	0.0	0.1	0.00	0.01	0.00	56.0
8	T1	All MCs	315	27.3	315	27.3	0.184	0.0	LOS A	0.0	0.1	0.00	0.01	0.00	59.8
9	R2	All MCs	1	0.0	1	0.0	0.184	5.7	LOS A	0.0	0.1	0.00	0.01	0.00	57.3
Approach			323	27.2	323	27.2	0.184	0.1	NA	0.0	0.1	0.00	0.01	0.00	59.7
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.021	9.4	LOS A	0.1	0.4	0.81	0.89	0.81	39.9
11	T1	All MCs	1	0.0	1	0.0	0.021	30.5	LOS D	0.1	0.4	0.81	0.89	0.81	39.9
12	R2	All MCs	1	0.0	1	0.0	0.021	49.2	LOS E	0.1	0.4	0.81	0.89	0.81	39.9
Approach			3	0.0	3	0.0	0.021	29.7	LOS D	0.1	0.4	0.81	0.89	0.81	39.9
All Vehicles			1447	16.2	1447	16.2	0.661	7.0	NA	9.5	74.1	0.49	0.66	0.77	52.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:45 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Pound/Ryans - 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 PM No Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.605	9.3	LOS A	7.1	54.3	0.49	0.57	0.76	53.0
2	T1	All MCs	579	11.2	579	11.2	0.605	2.9	LOS A	7.1	54.3	0.49	0.57	0.76	55.1
3	R2	All MCs	369	9.2	369	9.2	0.605	9.4	LOS A	7.1	54.3	0.49	0.57	0.76	52.5
Approach			949	10.4	949	10.4	0.605	5.5	NA	7.1	54.3	0.49	0.57	0.76	54.0
East: Ryans E															
4	L2	All MCs	461	1.3	461	1.3	0.481	11.3	LOS B	3.4	24.3	0.57	0.97	0.76	49.5
5	T1	All MCs	1	0.0	1	0.0	0.481	49.7	LOS E	3.4	24.3	0.57	0.97	0.76	49.5
6	R2	All MCs	1	0.0	1	0.0	0.481	60.2	LOS F	3.4	24.3	0.57	0.97	0.76	49.5
Approach			463	1.3	463	1.3	0.481	11.5	LOS B	3.4	24.3	0.57	0.97	0.76	49.5
North: Pound N															
7	L2	All MCs	4	25.0	4	25.0	0.173	6.0	LOS A	0.0	0.1	0.01	0.01	0.01	56.2
8	T1	All MCs	325	12.9	325	12.9	0.173	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
9	R2	All MCs	1	0.0	1	0.0	0.173	6.3	LOS A	0.0	0.1	0.01	0.01	0.01	57.3
Approach			330	13.0	330	13.0	0.173	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.8
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.031	11.3	LOS B	0.1	0.6	0.90	1.00	0.90	35.7
11	T1	All MCs	1	0.0	1	0.0	0.031	32.0	LOS D	0.1	0.6	0.90	1.00	0.90	35.7
12	R2	All MCs	1	0.0	1	0.0	0.031	78.4	LOS F	0.1	0.6	0.90	1.00	0.90	35.7
Approach			3	0.0	3	0.0	0.031	40.6	LOS E	0.1	0.6	0.90	1.00	0.90	35.7
All Vehicles			1745	8.5	1745	8.5	0.605	6.1	NA	7.1	54.3	0.42	0.57	0.62	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Ryans - 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 AM With Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.765	12.1	LOS B	14.5	109.5	0.74	1.02	1.49	49.1
2	T1	All MCs	267	27.7	267	27.7	0.765	6.4	LOS A	14.5	109.5	0.74	1.02	1.49	50.9
3	R2	All MCs	766	3.4	766	3.4	0.765	12.1	LOS B	14.5	109.5	0.74	1.02	1.49	48.9
Approach			1034	9.7	1034	9.7	0.765	10.6	NA	14.5	109.5	0.74	1.02	1.49	49.4
East: Ryans E															
4	L2	All MCs	272	14.7	272	14.7	0.421	12.3	LOS B	2.3	18.3	0.61	0.98	0.83	47.7
5	T1	All MCs	1	0.0	1	0.0	0.421	58.1	LOS F	2.3	18.3	0.61	0.98	0.83	48.2
6	R2	All MCs	3	33.3	3	33.3	0.421	175.6	LOS F	2.3	18.3	0.61	0.98	0.83	47.0
Approach			276	14.9	276	14.9	0.421	14.2	LOS B	2.3	18.3	0.61	0.98	0.83	47.7
North: Pound N															
7	L2	All MCs	17	35.3	17	35.3	0.187	6.0	LOS A	0.0	0.1	0.00	0.03	0.00	55.5
8	T1	All MCs	309	27.5	309	27.5	0.187	0.0	LOS A	0.0	0.1	0.00	0.03	0.00	59.7
9	R2	All MCs	1	0.0	1	0.0	0.187	5.7	LOS A	0.0	0.1	0.00	0.03	0.00	57.1
Approach			327	27.8	327	27.8	0.187	0.3	NA	0.0	0.1	0.00	0.03	0.00	59.5
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.032	9.2	LOS A	0.1	0.6	0.85	0.91	0.85	35.5
11	T1	All MCs	1	0.0	1	0.0	0.032	40.9	LOS E	0.1	0.6	0.85	0.91	0.85	35.5
12	R2	All MCs	1	0.0	1	0.0	0.032	73.5	LOS F	0.1	0.6	0.85	0.91	0.85	35.4
Approach			3	0.0	3	0.0	0.032	41.2	LOS E	0.1	0.6	0.85	0.91	0.85	35.5
All Vehicles			1640	14.1	1640	14.1	0.765	9.2	NA	14.5	109.5	0.57	0.82	1.08	50.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:48 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Pound/Ryans - 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 PM With Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.592	8.9	LOS A	6.6	50.8	0.47	0.52	0.67	53.4
2	T1	All MCs	580	11.4	580	11.4	0.592	2.5	LOS A	6.6	50.8	0.47	0.52	0.67	55.5
3	R2	All MCs	360	11.7	360	11.7	0.592	9.0	LOS A	6.6	50.8	0.47	0.52	0.67	52.8
Approach			941	11.5	941	11.5	0.592	5.0	NA	6.6	50.8	0.47	0.52	0.67	54.4
East: Ryans E															
4	L2	All MCs	508	3.0	508	3.0	0.556	11.8	LOS B	4.8	34.7	0.61	0.98	0.89	48.8
5	T1	All MCs	1	0.0	1	0.0	0.556	50.8	LOS F	4.8	34.7	0.61	0.98	0.89	48.9
6	R2	All MCs	3	33.3	3	33.3	0.556	133.3	LOS F	4.8	34.7	0.61	0.98	0.89	47.7
Approach			512	3.1	512	3.1	0.556	12.6	LOS B	4.8	34.7	0.61	0.98	0.89	48.8
North: Pound N															
7	L2	All MCs	14	21.4	14	21.4	0.155	5.9	LOS A	0.0	0.1	0.01	0.03	0.01	56.2
8	T1	All MCs	280	12.1	280	12.1	0.155	0.0	LOS A	0.0	0.1	0.01	0.03	0.01	59.7
9	R2	All MCs	1	0.0	1	0.0	0.155	6.5	LOS A	0.0	0.1	0.01	0.03	0.01	57.1
Approach			295	12.5	295	12.5	0.155	0.3	NA	0.0	0.1	0.01	0.03	0.01	59.5
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.031	11.3	LOS B	0.1	0.6	0.89	1.00	0.89	35.9
11	T1	All MCs	1	0.0	1	0.0	0.031	29.9	LOS D	0.1	0.6	0.89	1.00	0.89	35.9
12	R2	All MCs	1	0.0	1	0.0	0.031	79.2	LOS F	0.1	0.6	0.89	1.00	0.89	35.8
Approach			3	0.0	3	0.0	0.031	40.1	LOS E	0.1	0.6	0.89	1.00	0.89	35.8
All Vehicles			1751	9.2	1751	9.2	0.592	6.5	NA	6.6	50.8	0.43	0.57	0.62	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:49 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101v [Pound/Ryans -2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 AM No Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.499	3.9	LOS A	4.7	36.4	0.14	0.54	0.14	52.1
2	T1	All MCs	301	26.9	301	26.9	0.499	4.3	LOS A	4.7	36.4	0.14	0.54	0.14	51.9
3	R2	All MCs	460	1.5	460	1.5	0.499	8.7	LOS A	4.7	36.4	0.14	0.54	0.14	51.6
Approach			762	11.5	762	11.5	0.499	7.0	LOS A	4.7	36.4	0.14	0.54	0.14	51.7
East: Ryans E															
4	L2	All MCs	203	8.4	203	8.4	0.247	6.3	LOS A	1.5	11.4	0.60	0.61	0.60	52.6
5	T1	All MCs	1	0.0	1	0.0	0.247	6.2	LOS A	1.5	11.4	0.60	0.61	0.60	53.2
6	R2	All MCs	11	9.1	11	9.1	0.247	11.2	LOS B	1.5	11.4	0.60	0.61	0.60	52.0
Approach			215	8.4	215	8.4	0.247	6.6	LOS A	1.5	11.4	0.60	0.61	0.60	52.5
North: Pound N															
7	L2	All MCs	7	28.6	7	28.6	0.436	8.9	LOS A	2.8	23.9	0.70	0.67	0.73	50.5
8	T1	All MCs	311	27.7	311	27.7	0.436	9.0	LOS A	2.8	23.9	0.70	0.67	0.73	51.0
9	R2	All MCs	1	0.0	1	0.0	0.436	12.4	LOS B	2.8	23.9	0.70	0.67	0.73	50.8
Approach			319	27.6	319	27.6	0.436	9.0	LOS A	2.8	23.9	0.70	0.67	0.73	51.0
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.004	8.9	LOS A	0.0	0.2	0.69	0.60	0.69	50.0
11	T1	All MCs	1	0.0	1	0.0	0.004	9.1	LOS A	0.0	0.2	0.69	0.60	0.69	50.4
12	R2	All MCs	1	0.0	1	0.0	0.004	13.7	LOS B	0.0	0.2	0.69	0.60	0.69	49.6
Approach			3	0.0	3	0.0	0.004	10.6	LOS B	0.0	0.2	0.69	0.60	0.69	50.0
All Vehicles			1299	14.9	1299	14.9	0.499	7.4	LOS A	4.7	36.4	0.36	0.59	0.36	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101v [Pound/Ryans -2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 PM No Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.578	4.5	LOS A	6.1	45.8	0.45	0.46	0.45	52.4
2	T1	All MCs	603	9.5	603	9.5	0.578	4.8	LOS A	6.1	45.8	0.45	0.46	0.45	52.5
3	R2	All MCs	156	2.6	156	2.6	0.578	9.3	LOS A	6.1	45.8	0.45	0.46	0.45	51.8
Approach			760	8.0	760	8.0	0.578	5.7	LOS A	6.1	45.8	0.45	0.46	0.45	52.4
East: Ryans E															
4	L2	All MCs	480	1.3	480	1.3	0.635	9.7	LOS A	6.4	45.7	0.83	0.78	1.00	50.1
5	T1	All MCs	1	0.0	1	0.0	0.635	9.8	LOS A	6.4	45.7	0.83	0.78	1.00	50.4
6	R2	All MCs	70	14.3	70	14.3	0.635	15.2	LOS B	6.4	45.7	0.83	0.78	1.00	49.1
Approach			551	2.9	551	2.9	0.635	10.4	LOS B	6.4	45.7	0.83	0.78	1.00	50.0
North: Pound N															
7	L2	All MCs	5	20.0	5	20.0	0.372	5.4	LOS A	2.5	19.5	0.45	0.47	0.45	52.3
8	T1	All MCs	403	11.7	403	11.7	0.372	5.3	LOS A	2.5	19.5	0.45	0.47	0.45	53.0
9	R2	All MCs	1	0.0	1	0.0	0.372	9.7	LOS A	2.5	19.5	0.45	0.47	0.45	52.4
Approach			409	11.7	409	11.7	0.372	5.3	LOS A	2.5	19.5	0.45	0.47	0.45	52.9
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.005	9.5	LOS A	0.0	0.2	0.76	0.62	0.76	49.7
11	T1	All MCs	1	0.0	1	0.0	0.005	9.6	LOS A	0.0	0.2	0.76	0.62	0.76	50.0
12	R2	All MCs	1	0.0	1	0.0	0.005	14.2	LOS B	0.0	0.2	0.76	0.62	0.76	49.2
Approach			3	0.0	3	0.0	0.005	11.1	LOS B	0.0	0.2	0.76	0.62	0.76	49.6
All Vehicles			1723	7.3	1723	7.3	0.635	7.1	LOS A	6.4	45.8	0.57	0.57	0.62	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101v [Pound/Ryans -2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 AM With Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.549	3.9	LOS A	5.7	43.6	0.11	0.57	0.11	51.9
2	T1	All MCs	264	28.0	264	28.0	0.549	4.3	LOS A	5.7	43.6	0.11	0.57	0.11	51.7
3	R2	All MCs	603	1.8	603	1.8	0.549	8.7	LOS A	5.7	43.6	0.11	0.57	0.11	51.4
Approach			868	9.8	868	9.8	0.549	7.4	LOS A	5.7	43.6	0.11	0.57	0.11	51.5
East: Ryans E															
4	L2	All MCs	248	15.3	248	15.3	0.308	6.7	LOS A	2.0	15.7	0.64	0.62	0.64	52.3
5	T1	All MCs	1	0.0	1	0.0	0.308	6.3	LOS A	2.0	15.7	0.64	0.62	0.64	53.1
6	R2	All MCs	5	40.0	5	40.0	0.308	12.4	LOS B	2.0	15.7	0.64	0.62	0.64	50.7
Approach			254	15.7	254	15.7	0.308	6.8	LOS A	2.0	15.7	0.64	0.62	0.64	52.2
North: Pound N															
7	L2	All MCs	17	35.3	17	35.3	0.506	12.5	LOS B	3.7	32.3	0.79	0.81	0.96	48.2
8	T1	All MCs	309	27.8	309	27.8	0.506	12.2	LOS B	3.7	32.3	0.79	0.81	0.96	48.9
9	R2	All MCs	1	0.0	1	0.0	0.506	15.2	LOS B	3.7	32.3	0.79	0.81	0.96	48.7
Approach			327	28.1	327	28.1	0.506	12.2	LOS B	3.7	32.3	0.79	0.81	0.96	48.8
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.005	10.1	LOS B	0.0	0.2	0.73	0.61	0.73	49.2
11	T1	All MCs	1	0.0	1	0.0	0.005	10.3	LOS B	0.0	0.2	0.73	0.61	0.73	49.6
12	R2	All MCs	1	0.0	1	0.0	0.005	14.9	LOS B	0.0	0.2	0.73	0.61	0.73	48.8
Approach			3	0.0	3	0.0	0.005	11.8	LOS B	0.0	0.2	0.73	0.61	0.73	49.2
All Vehicles			1452	14.9	1452	14.9	0.549	8.4	LOS A	5.7	43.6	0.36	0.63	0.40	51.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:57 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101v [Pound/Ryans -2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 PM With Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
1	L2	All MCs	1	0.0	1	0.0	0.583	4.5	LOS A	6.3	47.9	0.44	0.46	0.44	52.4
2	T1	All MCs	600	10.0	600	10.0	0.583	4.8	LOS A	6.3	47.9	0.44	0.46	0.44	52.5
3	R2	All MCs	168	8.3	168	8.3	0.583	9.4	LOS A	6.3	47.9	0.44	0.46	0.44	51.6
Approach			769	9.6	769	9.6	0.583	5.8	LOS A	6.3	47.9	0.44	0.46	0.44	52.3
East: Ryans E															
4	L2	All MCs	577	2.6	577	2.6	0.699	10.1	LOS B	8.1	58.7	0.85	0.79	1.05	49.9
5	T1	All MCs	1	0.0	1	0.0	0.699	10.1	LOS B	8.1	58.7	0.85	0.79	1.05	50.3
6	R2	All MCs	66	10.6	66	10.6	0.699	15.3	LOS B	8.1	58.7	0.85	0.79	1.05	49.1
Approach			644	3.4	644	3.4	0.699	10.6	LOS B	8.1	58.7	0.85	0.79	1.05	49.8
North: Pound N															
7	L2	All MCs	19	15.8	19	15.8	0.350	5.4	LOS A	2.3	17.9	0.46	0.48	0.46	52.4
8	T1	All MCs	351	13.1	351	13.1	0.350	5.5	LOS A	2.3	17.9	0.46	0.48	0.46	52.9
9	R2	All MCs	1	0.0	1	0.0	0.350	9.8	LOS A	2.3	17.9	0.46	0.48	0.46	52.3
Approach			371	13.2	371	13.2	0.350	5.5	LOS A	2.3	17.9	0.46	0.48	0.46	52.9
West: Ryans W															
10	L2	All MCs	1	0.0	1	0.0	0.005	9.6	LOS A	0.0	0.2	0.77	0.62	0.77	49.6
11	T1	All MCs	1	0.0	1	0.0	0.005	9.7	LOS A	0.0	0.2	0.77	0.62	0.77	49.9
12	R2	All MCs	1	0.0	1	0.0	0.005	14.4	LOS B	0.0	0.2	0.77	0.62	0.77	49.1
Approach			3	0.0	3	0.0	0.005	11.2	LOS B	0.0	0.2	0.77	0.62	0.77	49.6
All Vehicles			1787	8.1	1787	8.1	0.699	7.5	LOS A	8.1	58.7	0.59	0.58	0.67	51.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:46:58 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2024 Model AM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2024 Model AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	26	11.5	26	11.5	0.043	6.9	LOS A	0.2	1.3	0.55	0.64	0.55	53.0
5	T1	All MCs	458	14.2	458	14.2	0.651	8.4	LOS A	6.0	46.1	0.82	0.82	1.02	51.1
6	R2	All MCs	160	1.3	160	1.3	0.651	14.3	LOS B	6.0	46.1	0.82	0.82	1.02	50.3
6u	U	All MCs	1	0.0	1	0.0	0.651	16.7	LOS B	6.0	46.1	0.82	0.82	1.02	50.3
Approach			645	10.9	645	10.9	0.651	9.8	LOS A	6.0	46.1	0.81	0.82	1.00	50.9
East: Yaldhurst SH73 E															
7	L2	All MCs	217	2.3	217	2.3	0.261	5.3	LOS A	1.7	12.4	0.73	0.63	0.73	46.0
8	T1	All MCs	369	11.9	369	11.9	0.424	4.3	LOS A	3.4	26.1	0.80	0.55	0.80	45.4
9	R2	All MCs	66	15.2	66	15.2	0.424	10.4	LOS B	3.4	26.1	0.80	0.55	0.80	44.8
9u	U	All MCs	1	0.0	1	0.0	0.424	12.1	LOS B	3.4	26.1	0.80	0.55	0.80	44.9
Approach			653	9.0	653	9.0	0.424	5.3	LOS A	3.4	26.1	0.77	0.58	0.77	45.5
North: Pound N															
10	L2	All MCs	56	37.5	56	37.5	0.110	7.7	LOS A	0.5	4.6	0.65	0.67	0.65	45.4
11	T1	All MCs	343	23.0	343	23.0	0.607	7.2	LOS A	5.6	46.0	0.87	0.84	1.06	44.4
12	R2	All MCs	175	16.0	175	16.0	0.607	13.0	LOS B	5.6	46.0	0.87	0.84	1.06	43.8
12u	U	All MCs	1	0.0	1	0.0	0.607	14.7	LOS B	5.6	46.0	0.87	0.84	1.06	43.9
Approach			575	22.3	575	22.3	0.607	9.0	LOS A	5.6	46.0	0.85	0.82	1.02	44.3
West: West Coast SH73 W															
1	L2	All MCs	332	6.9	332	6.9	0.474	8.3	LOS A	3.9	28.8	0.89	0.78	0.98	44.6
2	T1	All MCs	526	5.5	526	5.5	0.567	7.2	LOS A	6.0	43.8	0.95	0.80	1.09	45.1
3	R2	All MCs	9	11.1	9	11.1	0.567	13.3	LOS B	6.0	43.8	0.95	0.80	1.09	44.5
3u	U	All MCs	1	0.0	1	0.0	0.567	15.0	LOS B	6.0	43.8	0.95	0.80	1.09	44.6
Approach			868	6.1	868	6.1	0.567	7.7	LOS A	6.0	43.8	0.92	0.79	1.05	44.9
All Vehicles			2741	11.3	2741	11.3	0.651	7.9	LOS A	6.0	46.1	0.85	0.75	0.97	46.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2024 Model PM (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2024 Model PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	1	100.0	1	100.0	0.004	11.7	LOS B	0.0	0.2	0.67	0.64	0.67	48.0
5	T1	All MCs	457	8.5	457	8.5	0.790	15.3	LOS B	9.8	73.1	1.00	1.10	1.60	47.0
6	R2	All MCs	128	2.3	128	2.3	0.790	21.4	LOS C	9.8	73.1	1.00	1.10	1.60	46.3
6u	U	All MCs	1	0.0	1	0.0	0.790	23.7	LOS C	9.8	73.1	1.00	1.10	1.60	46.4
Approach			587	7.3	587	7.3	0.790	16.6	LOS B	9.8	73.1	1.00	1.10	1.60	46.9
East: Yaldhurst SH73 E															
7	L2	All MCs	231	2.6	231	2.6	0.333	6.5	LOS A	2.3	16.2	0.80	0.69	0.80	45.6
8	T1	All MCs	518	4.8	518	4.8	0.675	8.6	LOS A	8.4	61.7	0.96	0.89	1.24	44.1
9	R2	All MCs	159	11.3	159	11.3	0.675	14.8	LOS B	8.4	61.7	0.97	0.90	1.25	43.5
9u	U	All MCs	1	0.0	1	0.0	0.675	16.5	LOS B	8.4	61.7	0.97	0.90	1.25	43.6
Approach			909	5.4	909	5.4	0.675	9.2	LOS A	8.4	61.7	0.92	0.84	1.13	44.3
North: Pound N															
10	L2	All MCs	104	10.6	104	10.6	0.147	5.0	LOS A	0.7	5.0	0.55	0.57	0.55	46.4
11	T1	All MCs	409	7.3	409	7.3	0.584	4.6	LOS A	4.9	36.2	0.74	0.66	0.82	45.2
12	R2	All MCs	236	6.4	236	6.4	0.584	10.5	LOS B	4.9	36.2	0.74	0.66	0.82	44.6
12u	U	All MCs	1	0.0	1	0.0	0.584	12.4	LOS B	4.9	36.2	0.74	0.66	0.82	44.6
Approach			750	7.5	750	7.5	0.584	6.5	LOS A	4.9	36.2	0.71	0.65	0.78	45.1
West: West Coast SH73 W															
1	L2	All MCs	276	4.7	276	4.7	0.419	7.9	LOS A	3.2	23.6	0.90	0.76	0.94	44.8
2	T1	All MCs	359	2.5	359	2.5	0.429	5.6	LOS A	3.8	27.0	0.93	0.68	0.93	45.1
3	R2	All MCs	25	4.0	25	4.0	0.429	11.6	LOS B	3.8	27.0	0.93	0.68	0.93	44.5
3u	U	All MCs	1	0.0	1	0.0	0.429	13.5	LOS B	3.8	27.0	0.93	0.68	0.93	44.6
Approach			661	3.5	661	3.5	0.429	6.8	LOS A	3.8	27.0	0.92	0.72	0.93	45.0
All Vehicles			2907	5.9	2907	5.9	0.790	9.4	LOS A	9.8	73.1	0.88	0.82	1.09	45.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM No Development - No Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	22	13.6	22	13.6	0.041	7.7	LOS A	0.2	1.4	0.62	0.68	0.62	52.4
5	T1	All MCs	486	17.1	486	17.1	0.718	11.1	LOS B	7.8	60.9	0.92	0.94	1.27	49.7
6	R2	All MCs	111	0.9	111	0.9	0.718	16.9	LOS B	7.8	60.9	0.92	0.94	1.27	49.0
6u	U	All MCs	1	0.0	1	0.0	0.718	19.3	LOS B	7.8	60.9	0.92	0.94	1.27	49.0
Approach			620	14.0	620	14.0	0.718	12.0	LOS B	7.8	60.9	0.91	0.93	1.25	49.6
East: Yaldhurst SH73 E															
7	L2	All MCs	250	1.2	250	1.2	0.315	5.6	LOS A	2.2	15.6	0.78	0.66	0.78	45.9
8	T1	All MCs	421	11.9	421	11.9	0.534	5.4	LOS A	5.0	39.0	0.88	0.70	0.95	45.0
9	R2	All MCs	101	14.9	101	14.9	0.534	11.4	LOS B	5.0	39.0	0.88	0.70	0.95	44.3
9u	U	All MCs	1	0.0	1	0.0	0.534	13.1	LOS B	5.0	39.0	0.88	0.70	0.95	44.5
Approach			773	8.8	773	8.8	0.534	6.3	LOS A	5.0	39.0	0.85	0.69	0.90	45.2
North: Pound N															
10	L2	All MCs	26	15.4	26	15.4	0.050	6.9	LOS A	0.2	2.0	0.69	0.68	0.69	45.7
11	T1	All MCs	365	20.8	365	20.8	0.703	10.0	LOS A	7.8	63.7	0.98	0.97	1.31	43.1
12	R2	All MCs	176	16.5	176	16.5	0.703	15.8	LOS B	7.8	63.7	0.98	0.97	1.31	42.6
12u	U	All MCs	1	0.0	1	0.0	0.703	17.4	LOS B	7.8	63.7	0.98	0.97	1.31	42.7
Approach			568	19.2	568	19.2	0.703	11.7	LOS B	7.8	63.7	0.96	0.96	1.28	43.1
West: West Coast SH73 W															
1	L2	All MCs	335	8.1	335	8.1	0.512	9.4	LOS A	4.4	33.1	0.92	0.83	1.07	44.0
2	T1	All MCs	633	5.7	633	5.7	0.713	11.1	LOS B	9.9	72.7	1.00	1.00	1.39	43.5
3	R2	All MCs	9	11.1	9	11.1	0.713	17.3	LOS B	9.9	72.7	1.00	1.00	1.39	42.9
3u	U	All MCs	1	0.0	1	0.0	0.713	18.9	LOS B	9.9	72.7	1.00	1.00	1.39	43.0
Approach			978	6.5	978	6.5	0.713	10.6	LOS B	9.9	72.7	0.97	0.94	1.28	43.6
All Vehicles			2939	11.2	2939	11.2	0.718	10.0	LOS A	9.9	72.7	0.93	0.88	1.17	45.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM No Development - No Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	5	40.0	5	40.0	0.018	13.8	LOS B	0.1	0.8	0.80	0.75	0.80	48.5
5	T1	All MCs	475	13.9	475	13.9	1.036	136.8	LOS F	52.0	403.4	1.00	3.16	6.48	18.8
6	R2	All MCs	59	3.4	59	3.4	1.036	142.7	LOS F	52.0	403.4	1.00	3.16	6.48	18.7
6u	U	All MCs	1	0.0	1	0.0	1.036	144.9	LOS F	52.0	403.4	1.00	3.16	6.48	18.7
Approach			540	13.0	540	13.0	1.036	136.3	LOS F	52.0	403.4	1.00	3.13	6.43	18.9
East: Yaldhurst SH73 E															
7	L2	All MCs	328	1.2	328	1.2	0.486	8.6	LOS A	4.1	28.8	0.91	0.81	1.02	44.4
8	T1	All MCs	585	5.0	585	5.0	0.916	28.4	LOS C	24.9	182.4	1.00	1.68	2.47	35.8
9	R2	All MCs	230	7.4	230	7.4	0.916	34.4	LOS C	24.9	182.4	1.00	1.68	2.47	35.4
9u	U	All MCs	1	0.0	1	0.0	0.916	36.2	LOS D	24.9	182.4	1.00	1.68	2.47	35.4
Approach			1144	4.4	1144	4.4	0.916	23.9	LOS C	24.9	182.4	0.97	1.43	2.05	37.7
North: Pound N															
10	L2	All MCs	67	4.5	67	4.5	0.094	4.7	LOS A	0.4	3.1	0.56	0.58	0.56	46.4
11	T1	All MCs	488	5.9	488	5.9	0.669	5.6	LOS A	6.8	50.0	0.83	0.77	0.98	44.9
12	R2	All MCs	228	6.1	228	6.1	0.669	11.5	LOS B	6.8	50.0	0.83	0.77	0.98	44.3
12u	U	All MCs	1	0.0	1	0.0	0.669	13.4	LOS B	6.8	50.0	0.83	0.77	0.98	44.4
Approach			784	5.9	784	5.9	0.669	7.2	LOS A	6.8	50.0	0.81	0.76	0.94	44.8
West: West Coast SH73 W															
1	L2	All MCs	304	5.6	304	5.6	0.469	9.1	LOS A	3.8	28.0	0.91	0.81	1.02	44.1
2	T1	All MCs	441	2.0	441	2.0	0.523	7.2	LOS A	5.2	37.2	0.96	0.79	1.07	45.0
3	R2	All MCs	27	3.7	27	3.7	0.523	13.2	LOS B	5.2	37.2	0.96	0.79	1.07	44.4
3u	U	All MCs	1	0.0	1	0.0	0.523	15.1	LOS B	5.2	37.2	0.96	0.79	1.07	44.4
Approach			773	3.5	773	3.5	0.523	8.2	LOS A	5.2	37.2	0.94	0.80	1.05	44.6
All Vehicles			3241	6.0	3241	6.0	1.036	34.9	LOS C	52.0	403.4	0.93	1.40	2.27	34.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM With Development - No Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	18	16.7	18	16.7	0.035	8.0	LOS A	0.2	1.2	0.63	0.68	0.63	52.2
5	T1	All MCs	569	13.4	569	13.4	0.746	12.1	LOS B	8.6	67.3	0.95	0.98	1.37	49.5
6	R2	All MCs	37	10.8	37	10.8	0.746	18.4	LOS B	8.6	67.3	0.95	0.98	1.37	48.6
6u	U	All MCs	1	0.0	1	0.0	0.746	20.5	LOS C	8.6	67.3	0.95	0.98	1.37	48.8
Approach			625	13.3	625	13.3	0.746	12.4	LOS B	8.6	67.3	0.94	0.97	1.35	49.5
East: Yaldhurst SH73 E															
7	L2	All MCs	266	1.1	266	1.1	0.340	5.8	LOS A	2.4	17.1	0.80	0.67	0.80	45.9
8	T1	All MCs	429	11.9	429	11.9	0.561	6.0	LOS A	5.6	43.1	0.91	0.76	1.01	44.8
9	R2	All MCs	112	13.4	112	13.4	0.561	11.9	LOS B	5.6	43.1	0.91	0.76	1.01	44.2
9u	U	All MCs	1	0.0	1	0.0	0.561	13.6	LOS B	5.6	43.1	0.91	0.76	1.01	44.3
Approach			808	8.5	808	8.5	0.561	6.7	LOS A	5.6	43.1	0.87	0.73	0.94	45.1
North: Pound N															
10	L2	All MCs	61	18.0	61	18.0	0.113	6.6	LOS A	0.6	4.6	0.68	0.67	0.68	45.8
11	T1	All MCs	377	22.8	377	22.8	0.690	8.5	LOS A	7.4	60.8	0.95	0.92	1.22	43.9
12	R2	All MCs	178	16.9	178	16.9	0.690	14.4	LOS B	7.4	60.8	0.95	0.92	1.22	43.3
12u	U	All MCs	1	0.0	1	0.0	0.690	16.0	LOS B	7.4	60.8	0.95	0.92	1.22	43.4
Approach			617	20.6	617	20.6	0.690	10.1	LOS B	7.4	60.8	0.92	0.89	1.17	43.9
West: West Coast SH73 W															
1	L2	All MCs	384	2.6	384	2.6	0.574	10.5	LOS B	5.6	39.8	0.96	0.88	1.18	43.4
2	T1	All MCs	633	7.1	633	7.1	0.738	12.6	LOS B	10.8	80.4	1.00	1.06	1.46	42.7
3	R2	All MCs	9	11.1	9	11.1	0.738	18.7	LOS B	10.8	80.4	1.00	1.06	1.46	42.2
3u	U	All MCs	1	0.0	1	0.0	0.738	20.3	LOS C	10.8	80.4	1.00	1.06	1.46	42.3
Approach			1027	5.5	1027	5.5	0.738	11.9	LOS B	10.8	80.4	0.99	1.00	1.36	43.0
All Vehicles			3077	10.9	3077	10.9	0.746	10.3	LOS B	10.8	80.4	0.93	0.90	1.21	44.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM With Development - No Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	6	33.3	6	33.3	0.021	13.6	LOS B	0.1	1.0	0.81	0.76	0.81	48.6
5	T1	All MCs	459	15.7	459	15.7	1.077	194.5	LOS F	68.9	541.3	1.00	3.88	8.32	14.6
6	R2	All MCs	65	4.6	65	4.6	1.077	200.3	LOS F	68.9	541.3	1.00	3.88	8.32	14.6
6u	U	All MCs	1	0.0	1	0.0	1.077	202.5	LOS F	68.9	541.3	1.00	3.88	8.32	14.6
Approach			531	14.5	531	14.5	1.077	193.2	LOS F	68.9	541.3	1.00	3.85	8.23	14.7
East: Yaldhurst SH73 E															
7	L2	All MCs	335	1.2	335	1.2	0.499	8.7	LOS A	4.2	30.0	0.92	0.82	1.04	44.3
8	T1	All MCs	618	4.7	618	4.7	0.974	50.2	LOS E	40.8	299.6	1.00	2.37	3.74	29.7
9	R2	All MCs	246	8.1	246	8.1	0.974	56.2	LOS E	40.8	299.6	1.00	2.37	3.74	29.4
9u	U	All MCs	1	0.0	1	0.0	0.974	58.0	LOS E	40.8	299.6	1.00	2.37	3.74	29.5
Approach			1200	4.4	1200	4.4	0.974	39.9	LOS D	40.8	299.6	0.98	1.93	2.99	32.6
North: Pound N															
10	L2	All MCs	77	6.5	77	6.5	0.112	4.9	LOS A	0.5	3.8	0.58	0.59	0.58	46.4
11	T1	All MCs	517	7.0	517	7.0	0.678	5.9	LOS A	7.0	51.7	0.85	0.79	1.02	44.9
12	R2	All MCs	194	4.1	194	4.1	0.678	11.8	LOS B	7.0	51.7	0.85	0.79	1.02	44.3
12u	U	All MCs	1	0.0	1	0.0	0.678	13.7	LOS B	7.0	51.7	0.85	0.79	1.02	44.3
Approach			789	6.2	789	6.2	0.678	7.3	LOS A	7.0	51.7	0.82	0.77	0.97	44.9
West: West Coast SH73 W															
1	L2	All MCs	297	5.1	297	5.1	0.449	8.6	LOS A	3.5	25.7	0.90	0.78	0.98	44.4
2	T1	All MCs	457	2.6	457	2.6	0.531	7.2	LOS A	5.3	38.0	0.95	0.79	1.08	45.0
3	R2	All MCs	26	0.0	26	0.0	0.531	13.1	LOS B	5.3	38.0	0.95	0.79	1.08	44.5
3u	U	All MCs	1	0.0	1	0.0	0.531	15.1	LOS B	5.3	38.0	0.95	0.79	1.08	44.5
Approach			781	3.5	781	3.5	0.531	7.9	LOS A	5.3	38.0	0.93	0.79	1.04	44.8
All Vehicles			3301	6.2	3301	6.2	1.077	49.2	LOS D	68.9	541.3	0.93	1.69	2.89	30.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM No Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	32	9.4	32	9.4	0.551	8.4	LOS A	4.3	33.4	0.77	0.75	0.91	51.8
5	T1	All MCs	467	14.3	467	14.3	0.551	7.9	LOS A	4.3	33.4	0.77	0.75	0.91	52.2
6	R2	All MCs	360	4.7	360	4.7	0.447	13.3	LOS B	2.8	20.3	0.72	0.79	0.78	48.5
6u	U	All MCs	1	0.0	1	0.0	0.447	15.7	LOS B	2.8	20.3	0.72	0.79	0.78	48.6
Approach			860	10.1	860	10.1	0.551	10.2	LOS B	4.3	33.4	0.75	0.77	0.85	50.6
East: Yaldhurst SH73 E															
7	L2	All MCs	276	1.1	276	1.1	0.312	4.1	LOS A	1.5	10.6	0.59	0.58	0.59	46.4
8	T1	All MCs	417	12.5	417	12.5	0.474	3.7	LOS A	2.8	21.9	0.65	0.49	0.68	45.9
9	R2	All MCs	69	13.0	69	13.0	0.474	9.6	LOS A	2.8	21.9	0.65	0.49	0.68	45.3
9u	U	All MCs	1	0.0	1	0.0	0.474	11.3	LOS B	2.8	21.9	0.65	0.49	0.68	45.4
Approach			763	8.4	763	8.4	0.474	4.4	LOS A	2.8	21.9	0.63	0.52	0.65	46.0
North: Pound N															
10	L2	All MCs	21	14.3	21	14.3	0.558	12.4	LOS B	4.9	39.9	0.93	0.92	1.19	43.6
11	T1	All MCs	350	20.3	350	20.3	0.558	10.5	LOS B	4.9	39.9	0.93	0.92	1.19	43.8
12	R2	All MCs	176	16.5	176	16.5	0.347	14.3	LOS B	2.0	16.3	0.83	0.84	0.86	41.7
12u	U	All MCs	1	0.0	1	0.0	0.347	15.7	LOS B	2.0	16.3	0.83	0.84	0.86	41.8
Approach			548	18.8	548	18.8	0.558	11.8	LOS B	4.9	39.9	0.90	0.89	1.09	43.1
West: West Coast SH73 W															
1	L2	All MCs	224	5.4	224	5.4	0.363	6.0	LOS A	1.8	12.9	0.71	0.75	0.75	45.9
2	T1	All MCs	661	7.3	661	7.3	0.733	7.3	LOS A	6.5	48.0	0.87	0.95	1.19	45.3
3	R2	All MCs	9	11.1	9	11.1	0.733	13.3	LOS B	6.5	48.0	0.87	0.95	1.20	44.7
3u	U	All MCs	1	0.0	1	0.0	0.733	15.0	LOS B	6.5	48.0	0.87	0.95	1.20	44.8
Approach			895	6.8	895	6.8	0.733	7.1	LOS A	6.5	48.0	0.83	0.90	1.08	45.4
All Vehicles			3066	10.3	3066	10.3	0.733	8.1	LOS A	6.5	48.0	0.77	0.77	0.91	46.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM No Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	40	10.0	40	10.0	0.826	22.6	LOS C	12.7	95.7	1.00	1.25	1.90	43.9
5	T1	All MCs	554	9.0	554	9.0	0.826	21.5	LOS C	12.7	95.7	1.00	1.25	1.90	44.3
6	R2	All MCs	189	12.2	189	12.2	0.385	16.6	LOS B	2.3	17.5	0.81	0.86	0.88	46.5
6u	U	All MCs	1	0.0	1	0.0	0.385	18.5	LOS B	2.3	17.5	0.81	0.86	0.88	46.8
Approach			784	9.8	784	9.8	0.826	20.4	LOS C	12.7	95.7	0.95	1.15	1.65	44.8
East: Yaldhurst SH73 E															
7	L2	All MCs	353	1.1	353	1.1	0.457	5.6	LOS A	2.5	18.0	0.71	0.75	0.79	46.0
8	T1	All MCs	569	5.3	569	5.3	0.657	5.6	LOS A	5.1	37.7	0.80	0.77	1.00	45.4
9	R2	All MCs	64	6.3	64	6.3	0.657	11.5	LOS B	5.1	37.7	0.80	0.77	1.00	44.8
9u	U	All MCs	1	0.0	1	0.0	0.657	13.4	LOS B	5.1	37.7	0.80	0.77	1.00	44.8
Approach			987	3.9	987	3.9	0.657	6.0	LOS A	5.1	37.7	0.77	0.76	0.93	45.6
North: Pound N															
10	L2	All MCs	92	8.7	92	8.7	0.614	7.8	LOS A	5.8	42.7	0.84	0.79	1.02	45.2
11	T1	All MCs	513	5.8	513	5.8	0.614	6.7	LOS A	5.8	42.7	0.84	0.79	1.02	45.4
12	R2	All MCs	276	5.4	276	5.4	0.365	11.0	LOS B	2.1	15.4	0.71	0.74	0.71	43.2
12u	U	All MCs	1	0.0	1	0.0	0.365	12.9	LOS B	2.1	15.4	0.71	0.74	0.71	43.2
Approach			882	6.0	882	6.0	0.614	8.2	LOS A	5.8	42.7	0.80	0.77	0.92	44.7
West: West Coast SH73 W															
1	L2	All MCs	175	4.6	175	4.6	0.275	5.6	LOS A	1.4	9.9	0.70	0.71	0.70	46.1
2	T1	All MCs	458	3.5	458	3.5	0.535	5.2	LOS A	3.9	28.2	0.81	0.68	0.92	45.5
3	R2	All MCs	26	3.8	26	3.8	0.535	11.1	LOS B	3.9	28.2	0.81	0.68	0.92	44.9
3u	U	All MCs	1	0.0	1	0.0	0.535	13.0	LOS B	3.9	28.2	0.81	0.68	0.92	45.0
Approach			660	3.8	660	3.8	0.535	5.6	LOS A	3.9	28.2	0.78	0.68	0.86	45.6
All Vehicles			3313	5.8	3313	5.8	0.826	9.9	LOS A	12.7	95.7	0.82	0.84	1.09	45.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM With Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	31	9.7	31	9.7	0.625	9.4	LOS A	5.5	43.1	0.82	0.81	1.03	51.5
5	T1	All MCs	536	13.2	536	13.2	0.625	8.9	LOS A	5.5	43.1	0.82	0.81	1.03	52.0
6	R2	All MCs	296	6.1	296	6.1	0.395	13.1	LOS B	2.2	16.3	0.69	0.78	0.72	48.6
6u	U	All MCs	1	0.0	1	0.0	0.395	15.4	LOS B	2.2	16.3	0.69	0.78	0.72	48.8
Approach			864	10.6	864	10.6	0.625	10.4	LOS B	5.5	43.1	0.78	0.80	0.92	50.7
East: Yaldhurst SH73 E															
7	L2	All MCs	277	1.1	277	1.1	0.319	4.2	LOS A	1.6	11.0	0.60	0.59	0.60	46.4
8	T1	All MCs	425	10.8	425	10.8	0.487	3.7	LOS A	3.0	23.1	0.67	0.51	0.71	45.8
9	R2	All MCs	72	12.5	72	12.5	0.487	9.7	LOS A	3.0	23.1	0.67	0.51	0.71	45.2
9u	U	All MCs	1	0.0	1	0.0	0.487	11.5	LOS B	3.0	23.1	0.67	0.51	0.71	45.3
Approach			775	7.5	775	7.5	0.487	4.5	LOS A	3.0	23.1	0.64	0.53	0.67	46.0
North: Pound N															
10	L2	All MCs	62	16.1	62	16.1	0.665	16.0	LOS B	7.2	59.7	1.00	1.04	1.43	41.7
11	T1	All MCs	362	23.2	362	23.2	0.665	14.2	LOS B	7.2	59.7	1.00	1.04	1.43	41.9
12	R2	All MCs	167	18.6	167	18.6	0.350	14.8	LOS B	2.1	17.4	0.85	0.83	0.88	41.4
12u	U	All MCs	1	0.0	1	0.0	0.350	16.1	LOS B	2.1	17.4	0.85	0.83	0.88	41.6
Approach			592	21.1	592	21.1	0.665	14.6	LOS B	7.2	59.7	0.96	0.98	1.28	41.8
West: West Coast SH73 W															
1	L2	All MCs	264	2.3	264	2.3	0.402	6.3	LOS A	2.1	15.3	0.74	0.77	0.81	45.7
2	T1	All MCs	655	7.2	655	7.2	0.755	8.4	LOS A	7.2	53.9	0.90	1.00	1.29	44.9
3	R2	All MCs	9	11.1	9	11.1	0.755	14.4	LOS B	7.2	53.9	0.90	1.00	1.29	44.3
3u	U	All MCs	1	0.0	1	0.0	0.755	16.1	LOS B	7.2	53.9	0.90	1.00	1.29	44.4
Approach			929	5.8	929	5.8	0.755	7.9	LOS A	7.2	53.9	0.85	0.93	1.15	45.1
All Vehicles			3160	10.4	3160	10.4	0.755	9.0	LOS A	7.2	59.7	0.80	0.81	0.99	46.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Pound/Yaldhurst 2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM With Development - Mitigation
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Pound S															
4	L2	All MCs	29	13.8	29	13.8	0.892	35.0	LOS D	17.5	132.8	1.00	1.52	2.46	38.5
5	T1	All MCs	541	9.8	541	9.8	0.892	33.7	LOS C	17.5	132.8	1.00	1.52	2.46	38.8
6	R2	All MCs	185	12.4	185	12.4	0.420	18.1	LOS B	2.7	20.6	0.86	0.89	0.98	45.7
6u	U	All MCs	1	0.0	1	0.0	0.420	19.9	LOS B	2.7	20.6	0.86	0.89	0.98	46.0
Approach			756	10.6	756	10.6	0.892	29.9	LOS C	17.5	132.8	0.97	1.37	2.10	40.3
East: Yaldhurst SH73 E															
7	L2	All MCs	320	0.9	320	0.9	0.444	5.9	LOS A	2.5	17.4	0.73	0.76	0.81	45.9
8	T1	All MCs	605	4.8	605	4.8	0.764	7.6	LOS A	7.4	54.5	0.89	0.98	1.24	44.9
9	R2	All MCs	106	11.3	106	11.3	0.764	13.7	LOS B	7.4	54.5	0.89	0.98	1.24	44.3
9u	U	All MCs	1	0.0	1	0.0	0.764	15.4	LOS B	7.4	54.5	0.89	0.98	1.24	44.4
Approach			1032	4.3	1032	4.3	0.764	7.7	LOS A	7.4	54.5	0.84	0.91	1.11	45.1
North: Pound N															
10	L2	All MCs	101	8.9	101	8.9	0.673	8.1	LOS A	6.7	49.5	0.85	0.83	1.08	45.1
11	T1	All MCs	578	6.2	578	6.2	0.673	6.9	LOS A	6.7	49.5	0.85	0.83	1.08	45.4
12	R2	All MCs	249	6.0	249	6.0	0.338	10.7	LOS B	1.8	13.1	0.68	0.75	0.68	43.3
12u	U	All MCs	1	0.0	1	0.0	0.338	12.6	LOS B	1.8	13.1	0.68	0.75	0.68	43.3
Approach			929	6.5	929	6.5	0.673	8.1	LOS A	6.7	49.5	0.80	0.81	0.97	44.8
West: West Coast SH73 W															
1	L2	All MCs	160	6.3	160	6.3	0.273	5.9	LOS A	1.3	9.9	0.71	0.71	0.71	46.0
2	T1	All MCs	468	3.2	468	3.2	0.550	5.5	LOS A	4.1	29.7	0.82	0.72	0.95	45.4
3	R2	All MCs	26	3.8	26	3.8	0.550	11.4	LOS B	4.1	29.7	0.82	0.72	0.96	44.9
3u	U	All MCs	1	0.0	1	0.0	0.550	13.4	LOS B	4.1	29.7	0.82	0.72	0.96	44.9
Approach			655	4.0	655	4.0	0.550	5.9	LOS A	4.1	29.7	0.79	0.72	0.89	45.5
All Vehicles			3372	6.2	3372	6.2	0.892	12.4	LOS B	17.5	132.8	0.85	0.95	1.25	43.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2023 Observed AM 0730-0830 - Replicate Observed delay (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2023 Observed AM 0730-0830 - Replicate Observed delay
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	24	25.0	24	25.0	0.058	72.0	LOS E	1.1	9.1	0.75	0.70	0.75	34.8
2	T1	All MCs	1002	7.5	1002	7.5	* 1.006	104.8	LOS F	39.8	296.3	1.00	1.21	1.34	25.9
3	R2	All MCs	89	5.7	89	5.7	0.507	51.1	LOS D	3.2	23.7	0.94	0.77	0.94	37.3
Approach			1115	7.8	1115	7.8	1.006	99.8	LOS F	39.8	296.3	0.99	1.17	1.30	22.8
East: Yaldhurst Rd E															
4	L2	All MCs	53	3.8	53	3.8	0.173	29.3	LOS C	5.1	36.8	0.66	0.62	0.66	40.8
5	T1	All MCs	370	5.0	370	5.0	0.362	25.6	LOS C	11.8	86.1	0.71	0.62	0.71	42.2
6	R2	All MCs	330	4.6	330	4.6	* 1.154	122.3	LOS F	24.8	180.6	1.00	1.32	1.68	17.4
Approach			753	4.7	753	4.7	1.154	68.2	LOS E	24.8	180.6	0.83	0.93	1.13	25.9
North: Russley Rd N															
7	L2	All MCs	356	8.6	356	8.6	0.378	21.0	LOS C	9.6	71.9	0.58	0.78	0.58	44.4
8	T1	All MCs	1091	5.7	1091	5.7	0.796	39.2	LOS D	31.1	228.4	0.95	0.87	0.98	37.0
9	R2	All MCs	340	5.4	340	5.4	* 1.095	98.8	LOS F	24.7	181.0	1.00	1.22	1.56	19.6
Approach			1787	6.2	1787	6.2	1.095	46.9	LOS D	31.1	228.4	0.89	0.92	1.01	32.3
West: Yaldhurst Rd W															
10	L2	All MCs	476	3.4	476	3.4	0.577	30.2	LOS C	15.9	114.6	0.77	0.91	0.77	39.2
11	T1	All MCs	602	6.8	602	6.8	* 0.887	72.5	LOS E	25.9	191.8	0.96	0.92	1.07	32.3
12	R2	All MCs	20	20.0	20	20.0	0.086	74.3	LOS E	1.0	7.9	0.79	0.70	0.79	33.8
Approach			1098	5.6	1098	5.6	0.887	54.2	LOS D	25.9	191.8	0.88	0.91	0.94	31.6
All Vehicles			4753	6.2	4753	6.2	1.154	64.3	LOS E	39.8	296.3	0.90	0.98	1.08	28.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2023 Observed PM 1615-1715 - Replicate Observed Delay (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2023 Observed PM 1615-1715 - Replicate Observed Delay
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	44	46.5	44	46.5	0.153	82.8	LOS F	2.2	21.1	0.83	0.74	0.83	32.3
2	T1	All MCs	1026	3.8	1026	3.8	* 1.250	202.9	LOS F	49.7	359.3	1.00	1.53	1.84	15.6
3	R2	All MCs	117	0.9	117	0.9	0.478	51.9	LOS D	3.9	27.3	0.93	0.78	0.93	38.7
Approach			1187	5.1	1187	5.1	1.250	183.5	LOS F	49.7	359.3	0.99	1.43	1.71	15.0
East: Yaldhurst Rd E															
4	L2	All MCs	77	0.0	77	0.0	0.255	33.5	LOS C	7.7	54.4	0.72	0.67	0.72	39.0
5	T1	All MCs	505	2.2	505	2.2	0.533	31.2	LOS C	18.5	131.9	0.81	0.71	0.81	39.7
6	R2	All MCs	380	4.0	380	4.0	* 1.152	123.4	LOS F	29.2	211.6	1.00	1.31	1.67	17.6
Approach			961	2.8	961	2.8	1.152	67.8	LOS E	29.2	211.6	0.88	0.95	1.14	26.5
North: Russley Rd N															
7	L2	All MCs	364	2.8	364	2.8	0.353	15.7	LOS B	8.7	62.7	0.53	0.71	0.53	47.4
8	T1	All MCs	1107	4.5	1107	4.5	0.781	37.2	LOS D	30.7	223.0	0.94	0.85	0.96	37.7
9	R2	All MCs	380	2.4	380	2.4	* 0.774	43.1	LOS D	18.4	131.1	0.98	0.91	1.03	34.6
Approach			1851	3.7	1851	3.7	0.781	34.2	LOS C	30.7	223.0	0.87	0.84	0.89	38.2
West: Yaldhurst Rd W															
10	L2	All MCs	495	1.2	495	1.2	0.575	27.4	LOS C	15.5	109.6	0.74	0.89	0.74	40.5
11	T1	All MCs	439	2.1	439	2.1	* 0.852	72.0	LOS E	18.1	129.3	0.97	0.89	1.08	31.4
12	R2	All MCs	34	3.0	34	3.0	0.183	77.7	LOS E	1.8	12.8	0.87	0.74	0.87	31.7
Approach			967	1.7	967	1.7	0.852	49.4	LOS D	18.1	129.3	0.85	0.89	0.90	32.9
All Vehicles			4966	3.5	4966	3.5	1.250	79.3	LOS E	49.7	359.3	0.90	1.01	1.14	25.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 AM No Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	41	15.0	41	15.0	0.089	73.8	LOS E	1.8	14.3	0.76	0.72	0.76	34.9
2	T1	All MCs	1009	14.7	1009	14.7	1.117	145.0	LOS F	44.8	352.8	1.00	1.39	1.57	20.4
3	R2	All MCs	185	5.5	185	5.5	* 1.264	184.1	LOS F	14.0	102.8	1.00	1.32	1.93	14.0
Approach			1235	13.3	1235	13.3	1.264	148.5	LOS F	44.8	352.8	0.99	1.36	1.60	17.1
East: Yaldhurst Rd E															
4	L2	All MCs	108	0.9	108	0.9	0.235	30.0	LOS C	7.1	51.0	0.68	0.68	0.68	40.0
5	T1	All MCs	454	8.1	454	8.1	0.490	27.4	LOS C	16.6	124.6	0.76	0.68	0.76	41.3
6	R2	All MCs	362	6.2	362	6.2	* 1.279	174.4	LOS F	31.1	229.4	1.00	1.44	1.92	13.9
Approach			924	6.5	924	6.5	1.279	85.3	LOS F	31.1	229.4	0.85	0.98	1.21	23.3
North: Russley Rd N															
7	L2	All MCs	400	12.0	400	12.0	0.418	34.4	LOS C	11.0	84.6	0.60	0.81	0.60	43.2
8	T1	All MCs	1336	12.5	1336	12.5	* 1.121	125.6	LOS F	60.9	472.0	1.00	1.42	1.55	20.9
9	R2	All MCs	359	7.7	359	7.7	1.181	142.1	LOS F	28.8	214.8	1.00	1.29	1.73	16.6
Approach			2095	11.6	2095	11.6	1.181	111.0	LOS F	60.9	472.0	0.92	1.28	1.40	20.8
West: Yaldhurst Rd W															
10	L2	All MCs	523	4.5	523	4.5	0.642	34.3	LOS C	17.5	127.5	0.81	0.94	0.81	38.6
11	T1	All MCs	595	6.2	595	6.2	* 0.880	72.5	LOS E	25.2	186.1	0.96	0.91	1.07	32.4
12	R2	All MCs	22	13.6	22	13.6	0.105	74.1	LOS E	1.1	8.4	0.80	0.71	0.80	33.8
Approach			1141	5.5	1141	5.5	0.880	55.0	LOS E	25.2	186.1	0.89	0.92	0.94	31.4
All Vehicles			5395	9.8	5395	9.8	1.279	103.4	LOS F	60.9	472.0	0.92	1.17	1.32	21.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:47:25 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 PM No Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	2	0.0	2	0.0	0.005	79.4	LOS E	0.1	0.7	0.79	0.62	0.79	33.9
2	T1	All MCs	962	8.2	962	8.2	* 1.150	160.9	LOS F	42.5	318.4	1.00	1.40	1.64	18.8
3	R2	All MCs	12	16.7	12	16.7	0.066	53.5	LOS D	0.4	3.0	0.93	0.67	0.93	37.2
Approach			977	8.3	977	8.3	1.150	159.4	LOS F	42.5	318.4	1.00	1.39	1.63	16.7
East: Yaldhurst Rd E															
4	L2	All MCs	64	0.0	64	0.0	0.356	34.8	LOS C	11.2	80.1	0.76	0.68	0.76	38.9
5	T1	All MCs	691	2.8	691	2.8	0.745	37.3	LOS D	25.8	185.1	0.88	0.78	0.88	38.6
6	R2	All MCs	440	3.9	440	3.9	* 1.367	219.7	LOS F	42.0	303.8	1.00	1.49	2.06	12.3
Approach			1195	3.1	1195	3.1	1.367	104.3	LOS F	42.0	303.8	0.92	1.04	1.31	21.1
North: Russley Rd N															
7	L2	All MCs	471	2.8	471	2.8	0.394	23.4	LOS C	11.2	80.5	0.46	0.69	0.46	48.1
8	T1	All MCs	1351	6.3	1351	6.3	1.073	104.8	LOS F	59.1	436.1	1.00	1.34	1.45	23.4
9	R2	All MCs	449	4.8	449	4.8	* 0.937	69.2	LOS E	28.0	204.1	1.00	1.02	1.23	29.2
Approach			2271	5.3	2271	5.3	1.073	80.9	LOS F	59.1	436.1	0.89	1.14	1.20	25.8
West: Yaldhurst Rd W															
10	L2	All MCs	517	0.4	517	0.4	0.588	27.3	LOS C	16.2	113.7	0.74	0.90	0.74	40.5
11	T1	All MCs	443	4.8	443	4.8	* 0.894	75.7	LOS E	19.0	138.8	0.98	0.92	1.12	30.6
12	R2	All MCs	37	2.8	37	2.8	0.289	86.0	LOS F	2.1	15.2	0.93	0.75	0.93	29.8
Approach			997	2.5	997	2.5	0.894	51.0	LOS D	19.0	138.8	0.85	0.90	0.92	32.5
All Vehicles			5440	4.8	5440	4.8	1.367	94.6	LOS F	59.1	436.1	0.91	1.12	1.25	23.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:47:27 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 AM With Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	5	0.0	5	0.0	0.010	72.6	LOS E	0.2	1.5	0.73	0.64	0.73	35.7
2	T1	All MCs	1008	15.1	1008	15.1	* 1.084	132.5	LOS F	44.2	349.5	1.00	1.34	1.50	21.9
3	R2	All MCs	158	4.5	158	4.5	1.074	105.3	LOS F	9.0	65.4	1.00	1.20	1.59	19.9
Approach			1171	13.6	1171	13.6	1.084	128.6	LOS F	44.2	349.5	1.00	1.32	1.51	18.9
East: Yaldhurst Rd E															
4	L2	All MCs	101	1.0	101	1.0	0.238	30.0	LOS C	7.1	51.8	0.68	0.67	0.68	40.1
5	T1	All MCs	468	8.1	468	8.1	0.497	27.5	LOS C	16.9	126.6	0.76	0.68	0.76	41.3
6	R2	All MCs	388	3.7	388	3.7	* 1.349	204.8	LOS F	35.6	257.1	1.00	1.49	2.04	12.5
Approach			957	5.5	957	5.5	1.349	99.6	LOS F	35.6	257.1	0.85	1.01	1.27	21.3
North: Russley Rd N															
7	L2	All MCs	411	11.9	411	11.9	0.430	35.1	LOS D	11.3	87.2	0.61	0.82	0.61	43.0
8	T1	All MCs	1343	12.8	1343	12.8	1.131	130.0	LOS F	61.8	480.5	1.00	1.43	1.58	20.5
9	R2	All MCs	363	7.6	363	7.6	* 1.194	147.7	LOS F	29.5	220.1	1.00	1.30	1.76	16.2
Approach			2117	11.8	2117	11.8	1.194	114.6	LOS F	61.8	480.5	0.92	1.29	1.42	20.4
West: Yaldhurst Rd W															
10	L2	All MCs	517	7.1	517	7.1	0.648	34.7	LOS C	17.4	128.9	0.81	0.94	0.81	38.5
11	T1	All MCs	589	8.3	589	8.3	* 0.890	73.8	LOS E	25.3	190.1	0.96	0.92	1.08	32.2
12	R2	All MCs	23	13.0	23	13.0	0.110	74.4	LOS E	1.1	8.7	0.80	0.71	0.80	33.8
Approach			1130	7.9	1130	7.9	0.890	55.9	LOS E	25.3	190.1	0.89	0.93	0.95	31.2
All Vehicles			5376	10.2	5376	10.2	1.349	102.6	LOS F	61.8	480.5	0.92	1.17	1.31	21.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:47:29 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 PM With Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	1	0.0	1	0.0	0.002	79.4	LOS E	0.0	0.3	0.78	0.60	0.78	33.9
2	T1	All MCs	965	7.9	965	7.9	* 1.151	161.1	LOS F	42.7	319.1	1.00	1.40	1.64	18.8
3	R2	All MCs	13	7.7	13	7.7	0.067	53.5	LOS D	0.4	3.0	0.93	0.67	0.93	37.4
Approach			980	7.9	980	7.9	1.151	159.5	LOS F	42.7	319.1	1.00	1.39	1.63	16.7
East: Yaldhurst Rd E															
4	L2	All MCs	65	0.0	65	0.0	0.382	35.2	LOS D	12.2	87.0	0.77	0.69	0.77	38.8
5	T1	All MCs	728	3.1	728	3.1	0.799	41.0	LOS D	28.7	205.9	0.90	0.82	0.93	37.6
6	R2	All MCs	441	3.7	441	3.7	* 1.375	224.8	LOS F	42.4	306.1	1.00	1.49	2.08	12.1
Approach			1234	3.1	1234	3.1	1.375	106.4	LOS F	42.4	306.1	0.93	1.05	1.33	20.9
North: Russley Rd N															
7	L2	All MCs	532	5.2	532	5.2	0.453	24.8	LOS C	12.7	93.0	0.49	0.73	0.49	47.5
8	T1	All MCs	1355	8.3	1355	8.3	1.103	116.9	LOS F	61.4	460.3	1.00	1.39	1.51	21.8
9	R2	All MCs	454	4.5	454	4.5	* 0.945	72.3	LOS E	28.8	209.0	1.00	1.02	1.24	28.9
Approach			2341	6.8	2341	6.8	1.103	87.4	LOS F	61.4	460.3	0.88	1.17	1.23	24.6
West: Yaldhurst Rd W															
10	L2	All MCs	541	0.9	541	0.9	0.985	72.5	LOS E	34.5	243.6	1.00	1.12	1.29	27.3
11	T1	All MCs	452	3.6	452	3.6	* 0.904	77.1	LOS E	19.6	141.5	0.98	0.93	1.12	30.4
12	R2	All MCs	42	2.4	42	2.4	0.381	91.0	LOS F	2.5	18.1	0.97	0.76	0.97	28.7
Approach			1035	2.2	1035	2.2	0.985	75.3	LOS E	34.5	243.6	0.99	1.02	1.20	26.8
All Vehicles			5589	5.3	5589	5.3	1.375	102.0	LOS F	61.4	460.3	0.93	1.16	1.32	22.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 9:47:31 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SSH1/SH73 2038 AM No Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	39	2.6	39	2.6	0.059	40.9	LOS D	1.0	7.0	0.68	0.70	0.68	36.6
2	T1	All MCs	1323	13.3	1323	13.3	1.110	108.0	LOS F	44.1	343.5	1.00	1.55	1.83	23.5
3	R2	All MCs	215	6.2	215	6.2	*0.725	36.7	LOS D	5.3	39.3	1.00	0.88	1.11	39.9
Approach			1578	12.0	1578	12.0	1.110	96.7	LOS F	44.1	343.5	0.99	1.44	1.70	23.1
East: Yaldhurst Rd E															
4	L2	All MCs	38	2.7	38	2.7	0.097	38.0	LOS D	1.2	8.6	0.84	0.72	0.84	37.7
5	T1	All MCs	735	6.9	735	6.9	0.946	53.6	LOS D	18.4	136.3	1.00	1.13	1.41	26.9
Approach			772	6.7	772	6.7	0.946	52.8	LOS D	18.4	136.3	0.99	1.11	1.38	26.8
North: Russley Rd N															
7	L2	All MCs	386	12.4	386	12.4	0.471	20.3	LOS C	8.0	61.8	0.73	0.82	0.73	44.2
8	T1	All MCs	1417	12.5	1417	12.5	*0.915	36.3	LOS D	32.7	253.6	1.00	1.10	1.24	37.8
9	R2	All MCs	450	7.7	450	7.7	1.040	62.8	LOS E	22.6	168.5	1.00	1.25	1.65	19.8
Approach			2253	11.5	2253	11.5	1.040	38.9	LOS D	32.7	253.6	0.95	1.08	1.23	34.1
West: Yaldhurst Rd W															
10	L2	All MCs	4	0.0	4	0.0	0.005	13.1	LOS B	0.1	0.5	0.49	0.59	0.49	43.7
11	T1	All MCs	655	5.3	655	5.3	*1.096	73.5	LOS E	27.4	200.8	0.98	1.19	1.53	21.8
Approach			659	5.3	659	5.3	1.096	73.1	LOS E	27.4	200.8	0.98	1.19	1.52	21.9
All Vehicles			5262	10.2	5262	10.2	1.110	62.5	LOS E	44.1	343.5	0.97	1.21	1.43	27.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SSH1/SH73 2038 PM No Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	21	4.8	21	4.8	0.039	44.0	LOS D	0.6	4.2	0.72	0.68	0.72	35.1
2	T1	All MCs	1256	7.1	1256	7.1	* 1.118	111.8	LOS F	41.4	307.6	1.00	1.53	1.86	22.9
3	R2	All MCs	58	7.0	58	7.0	0.233	27.8	LOS C	1.1	7.8	0.84	0.74	0.84	43.7
Approach			1336	7.1	1336	7.1	1.118	107.1	LOS F	41.4	307.6	0.99	1.48	1.79	21.8
East: Yaldhurst Rd E															
4	L2	All MCs	65	0.0	65	0.0	0.155	44.9	LOS D	2.1	14.6	0.84	0.74	0.84	38.0
5	T1	All MCs	1004	2.8	1004	2.8	* 1.184	134.3	LOS F	36.4	261.0	1.00	1.57	2.10	14.7
Approach			1069	2.7	1069	2.7	1.184	128.9	LOS F	36.4	261.0	0.99	1.52	2.02	15.0
North: Russley Rd N															
7	L2	All MCs	420	4.9	420	4.9	0.421	13.0	LOS B	7.7	56.3	0.60	0.74	0.60	48.0
8	T1	All MCs	1343	8.9	1343	8.9	0.789	21.5	LOS C	23.5	177.0	0.90	0.86	0.96	44.5
9	R2	All MCs	527	4.1	527	4.1	* 1.027	58.9	LOS E	26.5	192.0	1.00	1.23	1.58	20.8
Approach			2290	7.0	2290	7.0	1.027	28.5	LOS C	26.5	192.0	0.87	0.92	1.04	37.8
West: Yaldhurst Rd W															
10	L2	All MCs	5	40.0	5	40.0	0.006	12.0	LOS B	0.1	0.7	0.44	0.58	0.44	43.4
11	T1	All MCs	499	3.1	499	3.1	0.772	33.0	LOS C	13.2	94.8	0.96	0.85	1.04	33.6
Approach			504	3.4	504	3.4	0.772	32.8	LOS C	13.2	94.8	0.96	0.85	1.03	33.7
All Vehicles			5199	5.8	5199	5.8	1.184	69.8	LOS E	41.4	307.6	0.93	1.18	1.43	25.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 AM With Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	93	1.1	93	1.1	0.145	42.0	LOS D	2.5	17.6	0.72	0.73	0.72	36.0
2	T1	All MCs	1271	13.8	1271	13.8	1.135	118.0	LOS F	43.5	340.3	1.00	1.59	1.92	22.1
3	R2	All MCs	239	6.0	239	6.0	* 0.753	39.5	LOS D	6.0	44.2	1.00	0.91	1.13	38.8
Approach			1603	11.9	1603	11.9	1.135	101.9	LOS F	43.5	340.3	0.98	1.44	1.73	22.2
East: Yaldhurst Rd E															
4	L2	All MCs	42	2.4	42	2.4	0.114	42.2	LOS D	1.4	9.7	0.85	0.72	0.85	37.3
5	T1	All MCs	799	6.8	799	6.8	1.092	96.9	LOS F	25.2	186.7	1.00	1.38	1.83	18.6
Approach			841	6.6	841	6.6	1.092	94.2	LOS F	25.2	186.7	0.99	1.34	1.78	18.7
North: Russley Rd N															
7	L2	All MCs	380	12.9	380	12.9	0.455	20.3	LOS C	7.9	61.2	0.72	0.82	0.72	44.4
8	T1	All MCs	1440	12.5	1440	12.5	* 0.934	40.0	LOS D	34.9	270.8	1.00	1.15	1.28	36.5
9	R2	All MCs	464	6.8	464	6.8	0.970	53.9	LOS D	20.5	152.1	1.00	1.12	1.44	25.4
Approach			2284	11.4	2284	11.4	0.970	39.5	LOS D	34.9	270.8	0.95	1.09	1.22	35.2
West: Yaldhurst Rd W															
10	L2	All MCs	6	16.7	6	16.7	0.007	13.0	LOS B	0.1	0.8	0.47	0.59	0.47	43.4
11	T1	All MCs	649	6.3	649	6.3	* 1.164	92.0	LOS F	30.0	221.2	0.99	1.27	1.68	18.8
Approach			655	6.4	655	6.4	1.164	91.3	LOS F	30.0	221.2	0.98	1.26	1.67	18.9
All Vehicles			5383	10.2	5383	10.2	1.164	73.0	LOS E	43.5	340.3	0.97	1.25	1.51	25.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 PM With Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	14	7.1	14	7.1	0.029	46.5	LOS D	0.4	3.0	0.74	0.67	0.74	34.3
2	T1	All MCs	1262	7.3	1262	7.3	* 1.214	152.7	LOS F	47.2	351.1	1.00	1.72	2.17	18.4
3	R2	All MCs	63	6.5	63	6.5	0.261	30.6	LOS C	1.2	9.0	0.88	0.74	0.88	43.0
Approach			1340	7.2	1340	7.2	1.214	145.8	LOS F	47.2	351.1	0.99	1.66	2.10	17.7
East: Yaldhurst Rd E															
4	L2	All MCs	65	0.0	65	0.0	0.147	43.9	LOS D	2.0	14.3	0.83	0.74	0.83	38.3
5	T1	All MCs	1026	2.9	1026	2.9	* 1.148	119.4	LOS F	35.5	254.7	1.00	1.52	1.98	16.1
Approach			1091	2.7	1091	2.7	1.148	114.9	LOS F	35.5	254.7	0.99	1.47	1.91	16.3
North: Russley Rd N															
7	L2	All MCs	490	4.6	490	4.6	0.489	13.8	LOS B	9.5	69.4	0.65	0.76	0.65	47.6
8	T1	All MCs	1394	8.3	1394	8.3	0.837	25.5	LOS C	26.8	200.9	0.94	0.94	1.05	42.4
9	R2	All MCs	535	3.8	535	3.8	* 0.998	59.6	LOS E	25.9	187.0	1.00	1.14	1.49	24.0
Approach			2418	6.5	2418	6.5	0.998	30.7	LOS C	26.8	200.9	0.90	0.95	1.07	38.5
West: Yaldhurst Rd W															
10	L2	All MCs	3	0.0	3	0.0	0.003	10.6	LOS B	0.0	0.3	0.41	0.58	0.41	45.7
11	T1	All MCs	501	3.3	501	3.3	0.735	31.5	LOS C	12.8	92.0	0.95	0.83	1.00	34.4
Approach			504	3.2	504	3.2	0.735	31.3	LOS C	12.8	92.0	0.94	0.82	0.99	34.4
All Vehicles			5353	5.6	5353	5.6	1.214	76.7	LOS E	47.2	351.1	0.94	1.22	1.49	24.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 1 [SH1 Link Rd/Yaldhurst SH73-2023 Observed PM 1615-1715 (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [SH1/73 with Link Rd (PM 1615-1715 2023 Demands) (Network Folder: General)]

SH1 Link Rd/Yaldhurst SH73-2023 Observed PM 1615-1715
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 80 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Yaldhurst E															
5	T1	All MCs	929	4.4	929	4.4	0.497	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.7
6	R2	All MCs	380	4.0	380	4.0	* 0.416	10.9	LOS B	3.0	21.6	0.63	0.74	0.63	39.6
Approach			1308	4.3	1308	4.3	0.497	3.2	LOS A	3.0	21.6	0.18	0.21	0.18	45.6
West: Yaldhurst W															
3	L2	All MCs	442	0.9	442	0.9	0.830	12.9	LOS B	9.9	69.9	0.87	0.89	0.98	38.2
4	T1	All MCs	526	2.3	526	2.3	* 0.830	24.9	LOS C	9.9	69.9	0.94	0.92	1.11	27.0
Approach			967	1.7	967	1.7	0.830	19.4	LOS B	9.9	69.9	0.91	0.90	1.05	33.6
All Vehicles			2276	3.2	2276	3.2	0.830	10.1	LOS B	9.9	69.9	0.49	0.51	0.55	39.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 10:20:38 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

MOVEMENT SUMMARY

Site: G1 [SH1/SH73 2023 Observed PM 1615-1715 - No Yaldhurst RT F-F2-A-E (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [SH1/73 with Link Rd (PM 1615-1715 2023 Demands) (Network Folder: General)]

SH1/SH73 2023 Observed PM 1615-1715 - No Yaldhurst RT F-F2-A-E
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 80 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Masham Rd S															
1	L2	All MCs	44	46.5	44	46.5	0.118	42.0	LOS D	0.8	7.6	0.76	0.72	0.76	31.6
2	T1	All MCs	1026	3.8	1026	3.8	* 0.938	53.4	LOS D	15.8	114.0	1.00	1.14	1.34	34.2
3	R2	All MCs	117	0.9	117	0.9	0.370	19.6	LOS B	1.3	9.1	0.82	0.76	0.82	44.7
Approach			1187	5.1	1187	5.1	0.938	49.6	LOS D	15.8	114.0	0.97	1.09	1.27	32.9
East: Yaldhurst Rd E															
4	L2	All MCs	77	0.0	77	0.0	0.163	38.5	LOS D	1.4	10.1	0.82	0.74	0.82	38.6
5	T1	All MCs	885	3.0	885	3.0	* 0.946	53.3	LOS D	13.7	98.6	1.00	1.14	1.38	23.3
Approach			961	2.8	961	2.8	0.946	52.1	LOS D	13.7	98.6	0.99	1.11	1.34	23.6
North: Russley Rd N															
7	L2	All MCs	364	2.8	364	2.8	0.394	12.4	LOS B	3.8	27.4	0.61	0.74	0.61	48.5
8	T1	All MCs	1107	4.5	1107	4.5	0.678	19.5	LOS B	10.7	77.5	0.86	0.76	0.86	45.5
9	R2	All MCs	380	2.4	380	2.4	* 0.768	29.6	LOS C	6.8	48.5	0.97	0.92	1.07	30.9
Approach			1851	3.7	1851	3.7	0.768	20.2	LOS C	10.7	77.5	0.83	0.79	0.85	43.7
West: Yaldhurst Rd W															
10	L2	All MCs	53	3.8	53	3.8	0.055	10.1	LOS B	0.4	2.7	0.34	0.61	0.34	46.1
11	T1	All MCs	472	2.2	472	2.2	0.652	21.5	LOS C	6.2	44.4	0.78	0.66	0.79	39.7
Approach			526	2.3	526	2.3	0.652	20.3	LOS C	6.2	44.4	0.74	0.65	0.74	40.3
All Vehicles			4524	3.7	4524	3.7	0.946	34.7	LOS C	15.8	114.0	0.89	0.92	1.05	35.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 10:20:38 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2024 Observed AM (Site Folder: Ryans Proposed Private Plan Change)]

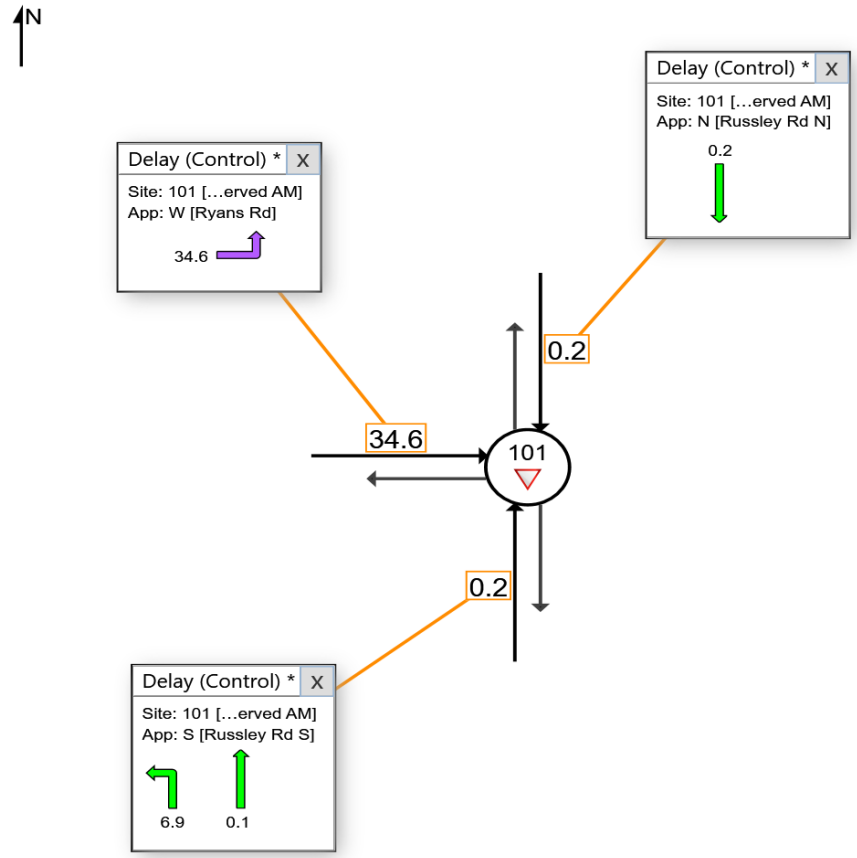
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2024 Observed AM
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2024 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

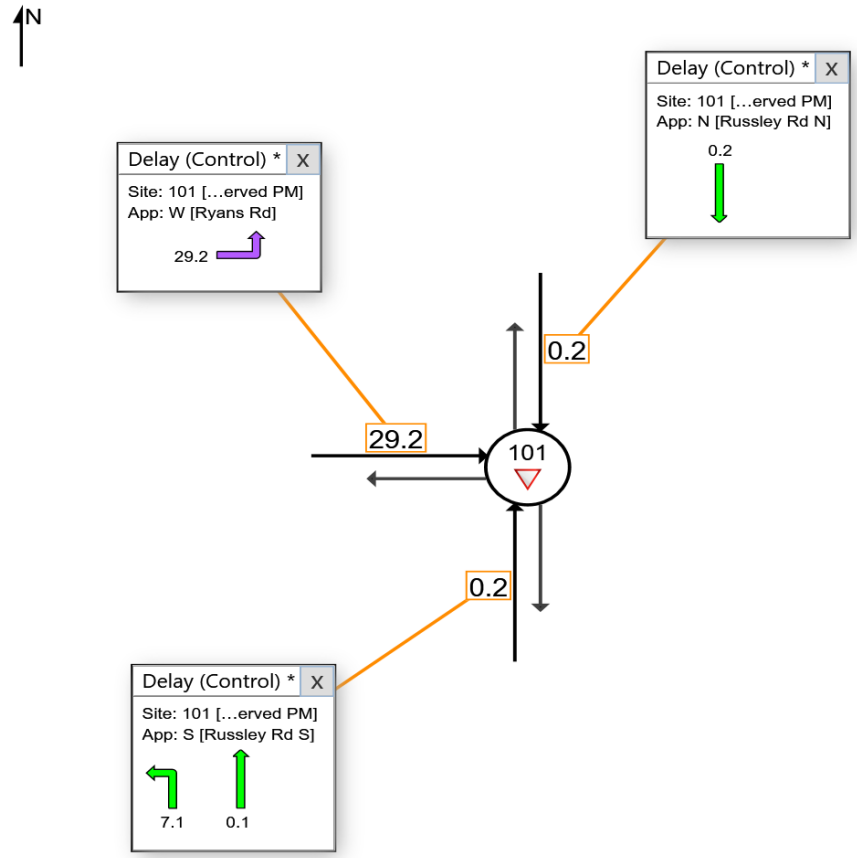
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2024 Observed PM
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

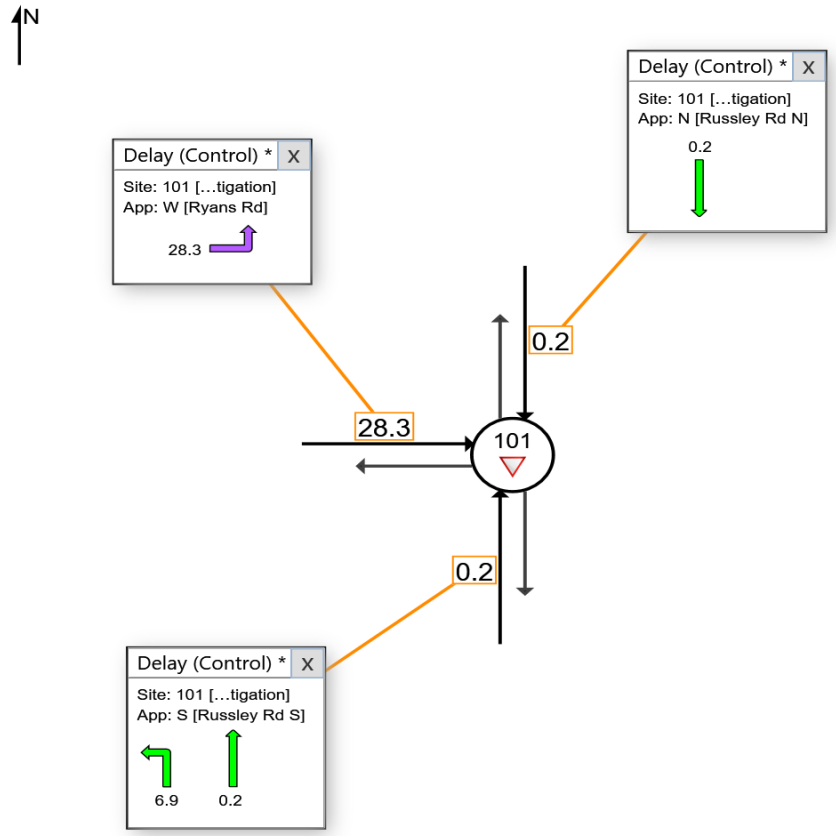
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

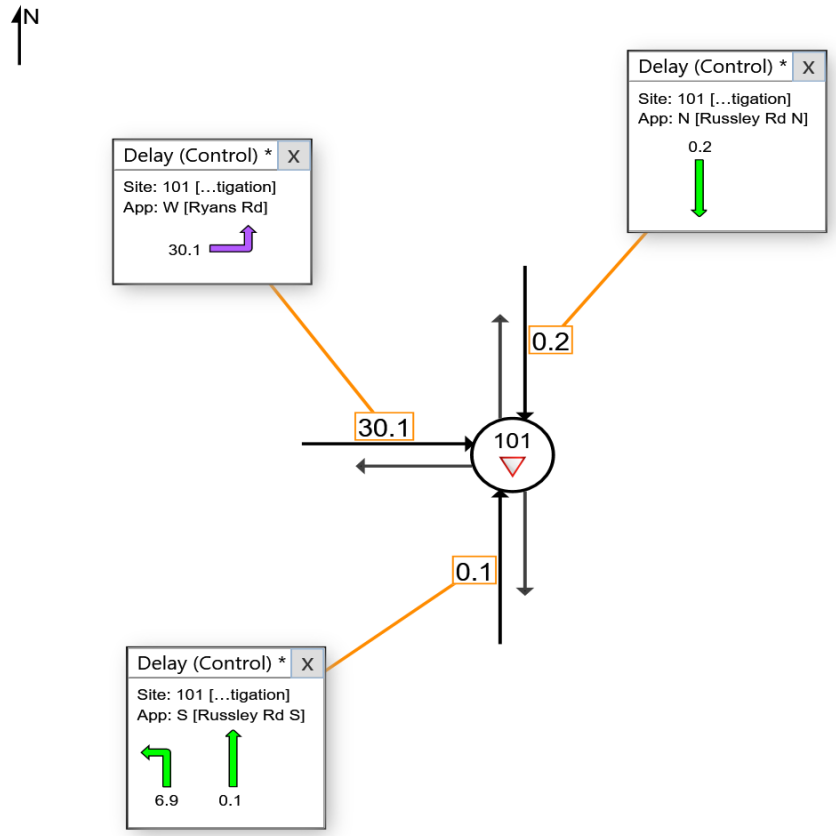
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

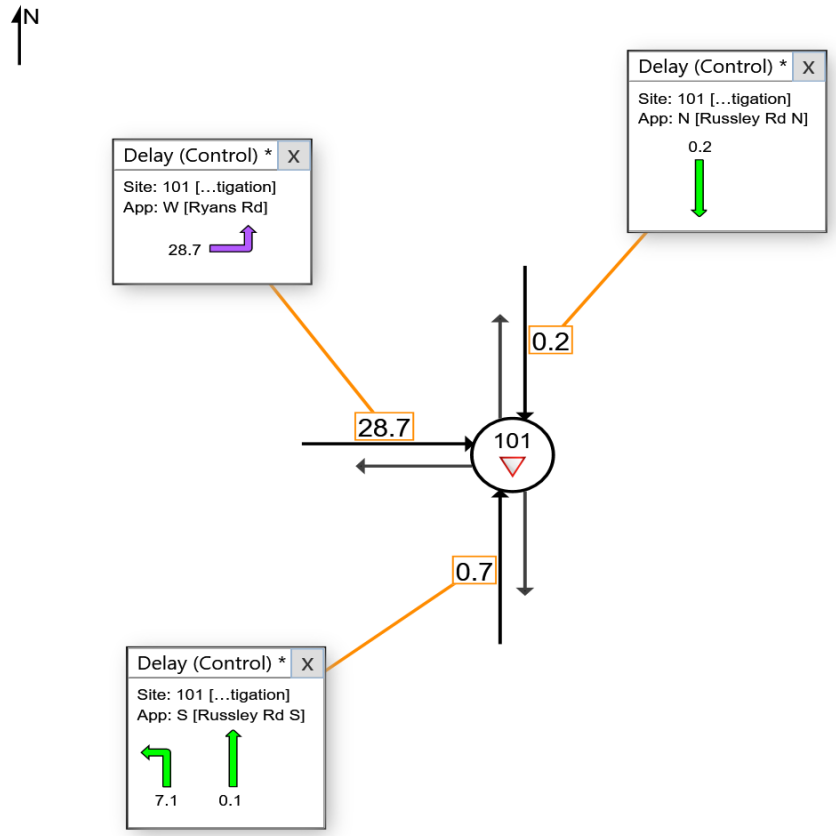
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

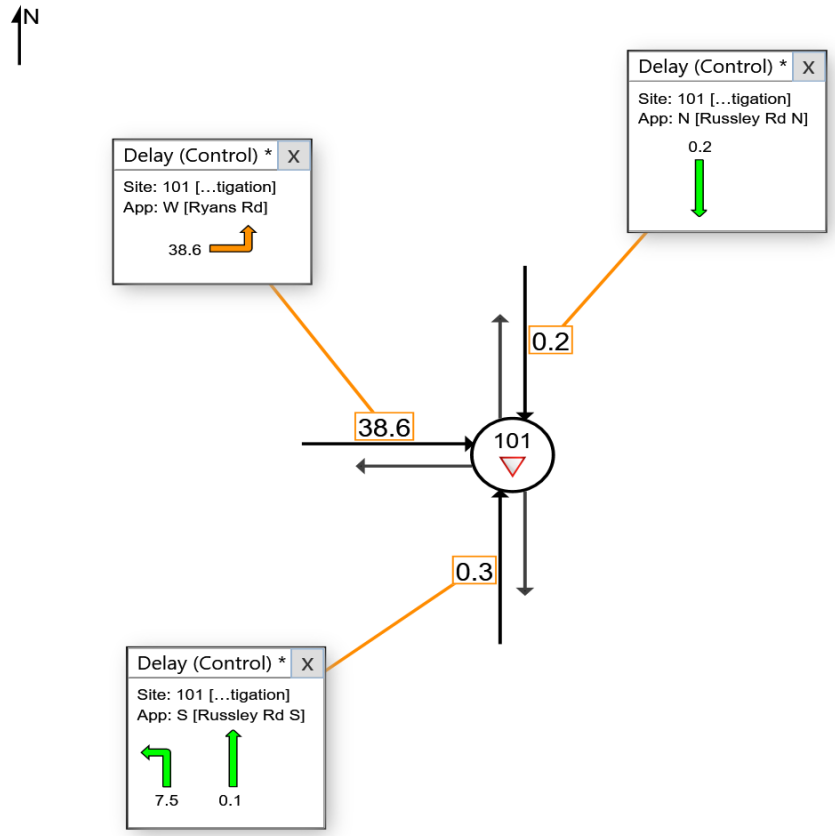
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

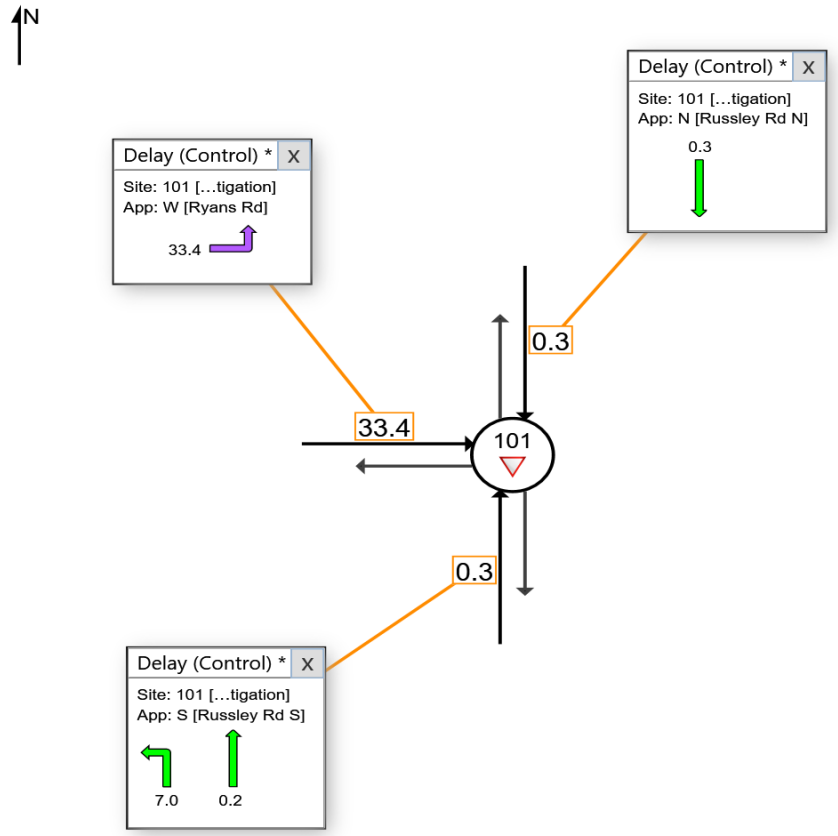
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM No Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

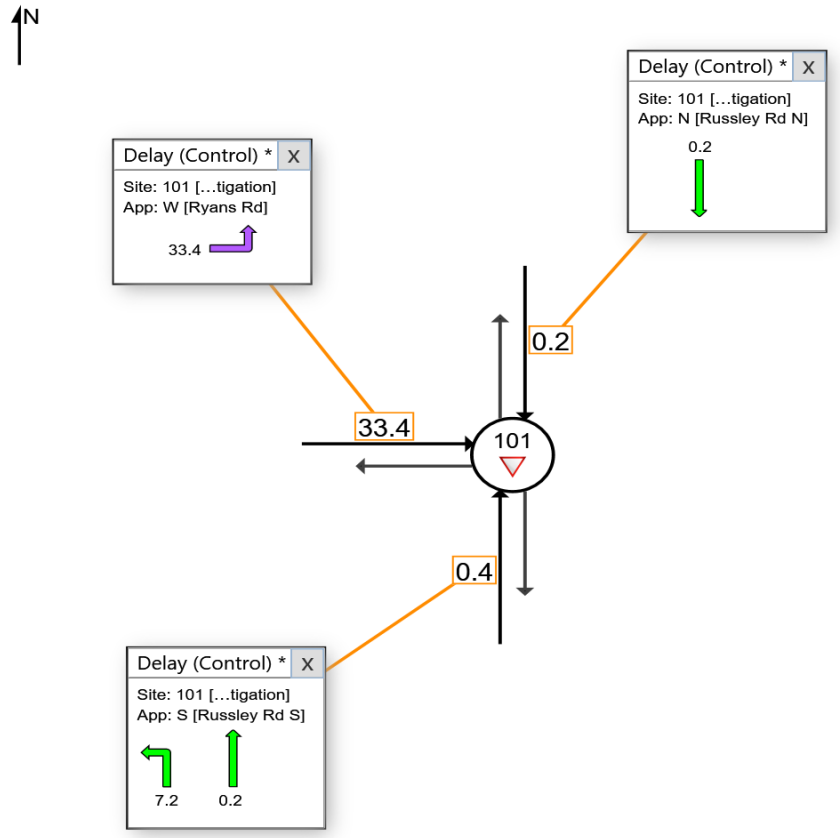
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM No Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

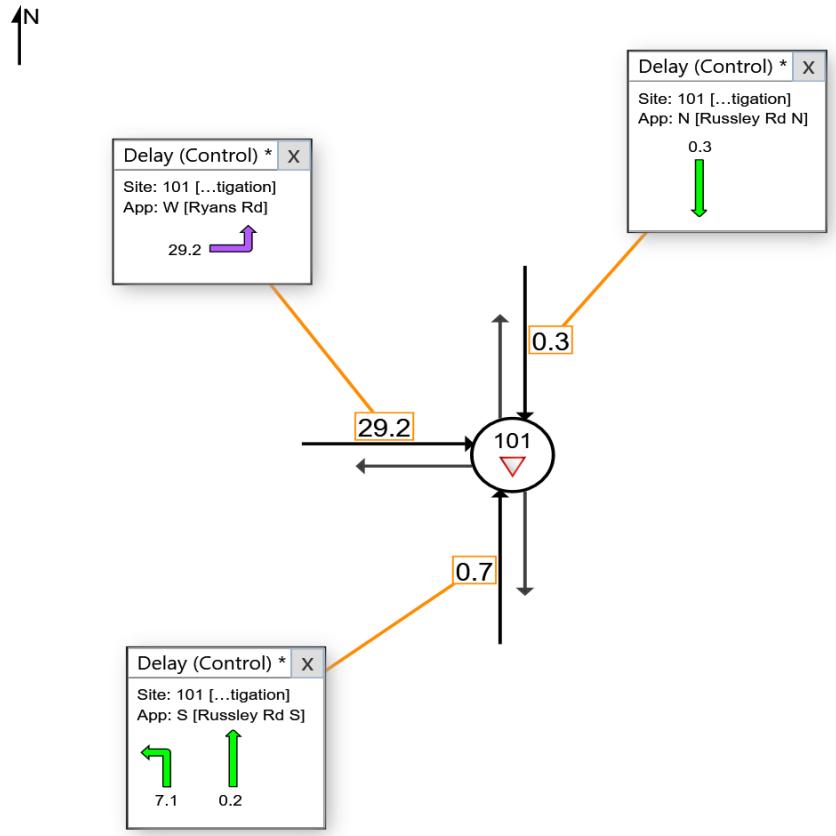
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 AM With Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Russley/Ryans 2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

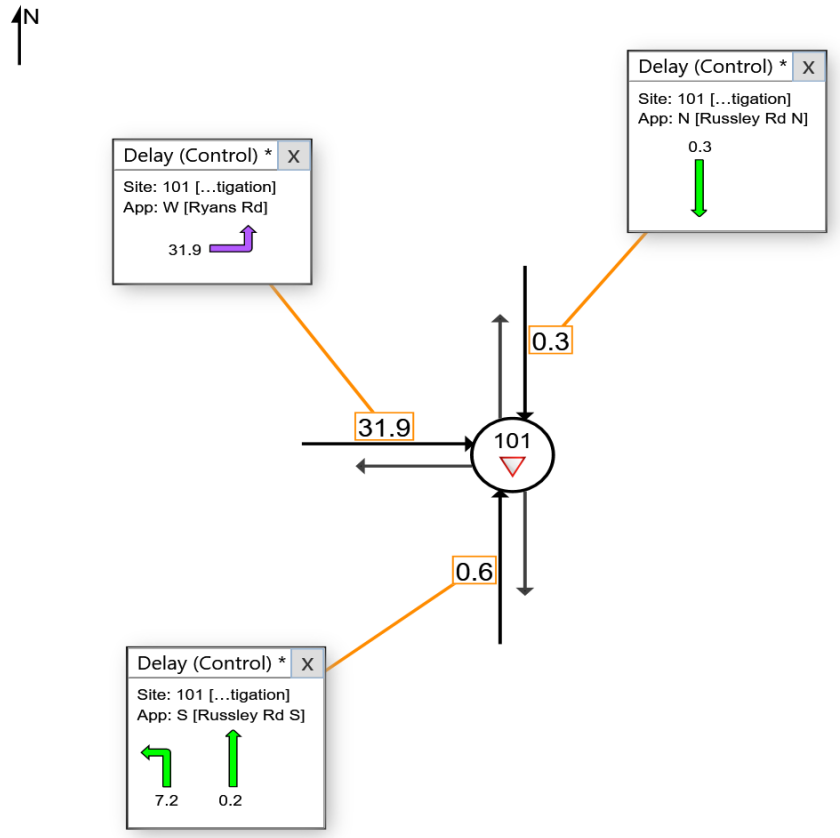
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Russley/Ryans 2038 PM With Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Grays/Ryans 2024 Observed AM (Site Folder: Ryans Proposed Private Plan Change)]

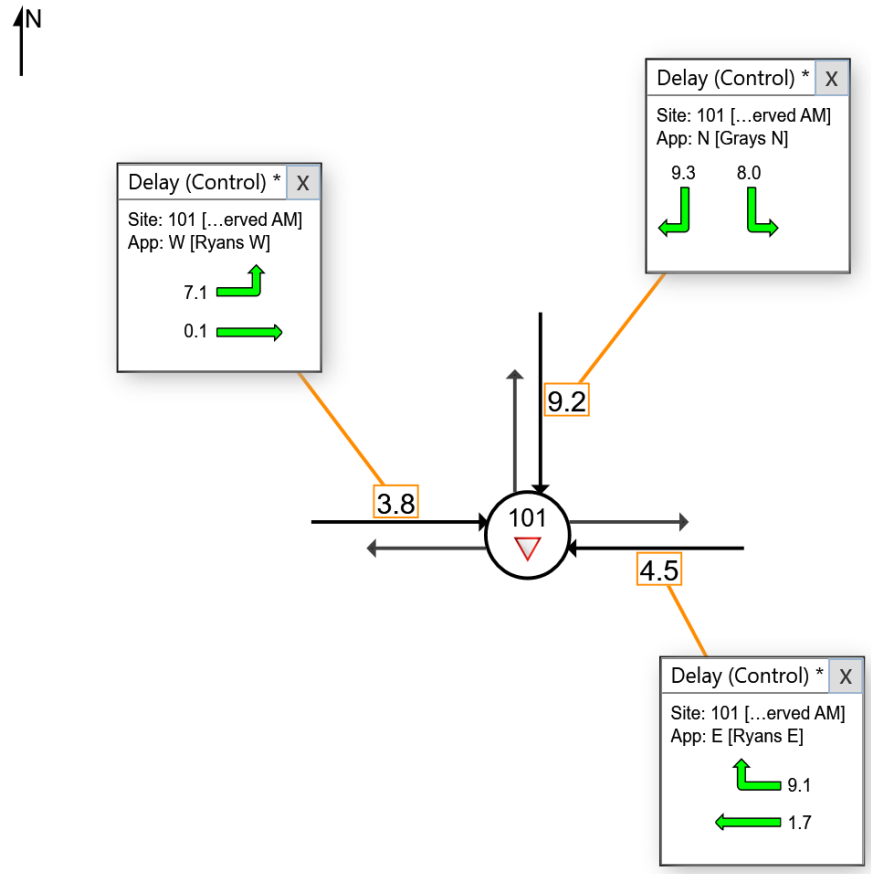
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2024 Observed AM
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Grays/Ryans 2024 Observed PM (Site Folder: Ryans Proposed Private Plan Change)]

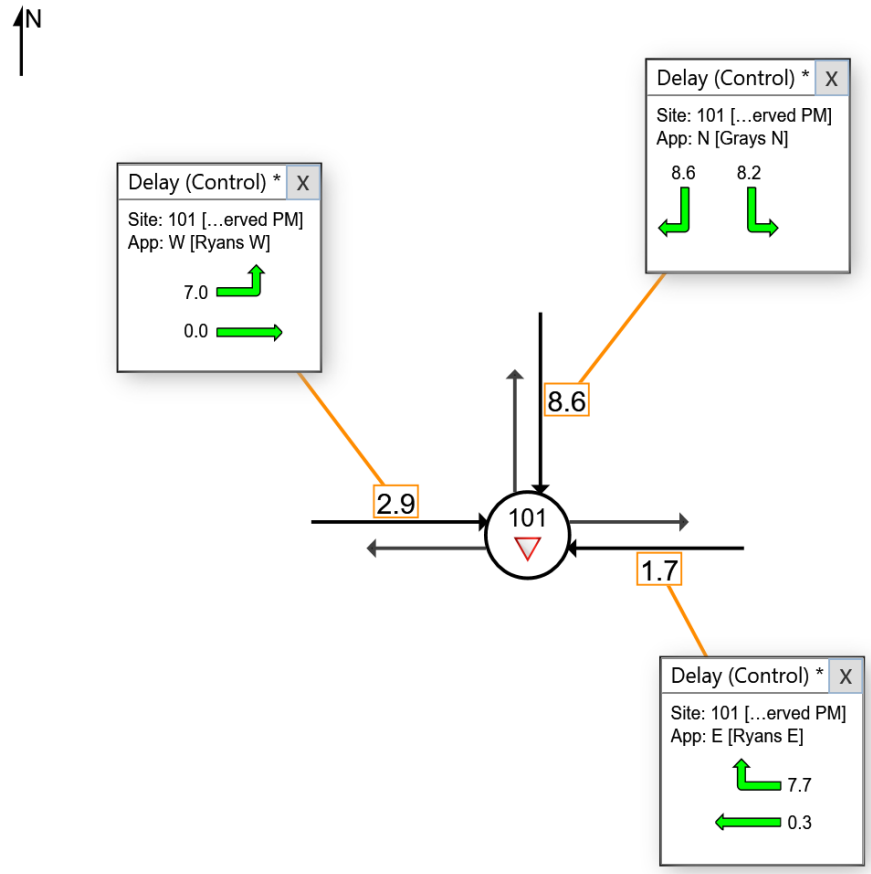
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2024 Observed PM
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

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DELAY - AVERAGE (CONTROL)

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Site: 101 [Grays/Ryans 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

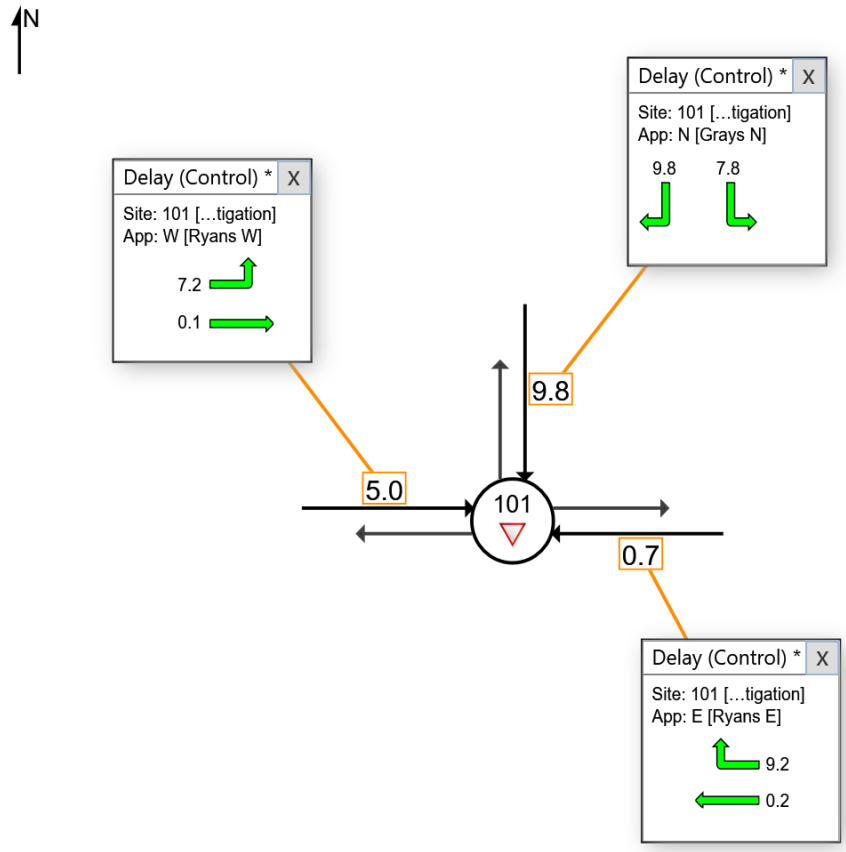
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

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Site: 101 [Grays/Ryans 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

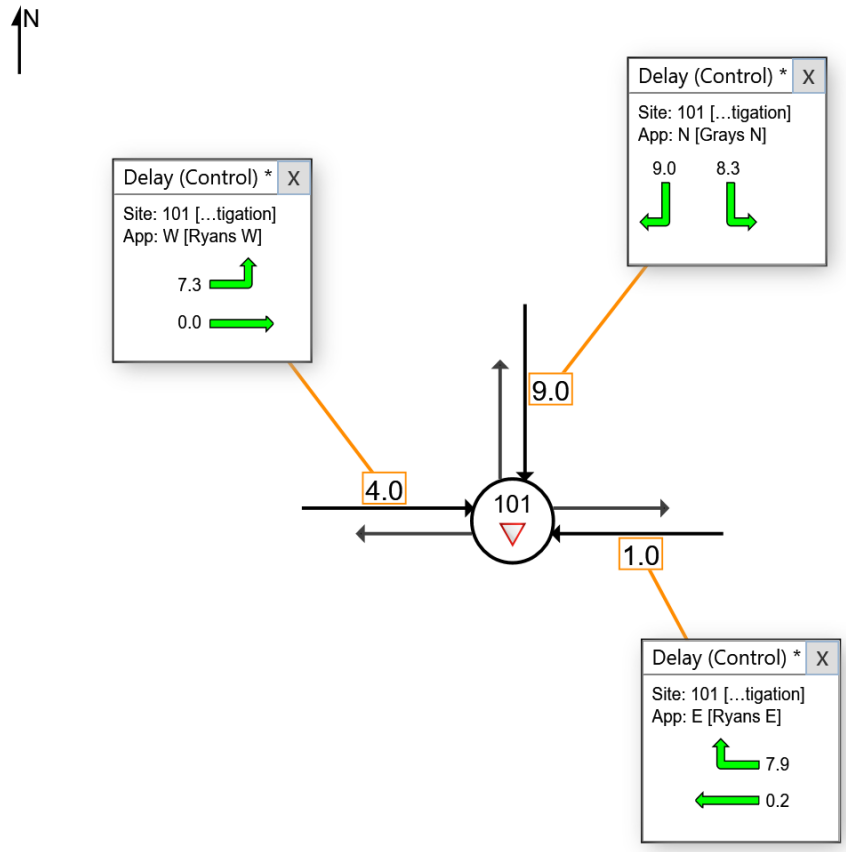
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM No Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

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DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Grays/Ryans 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

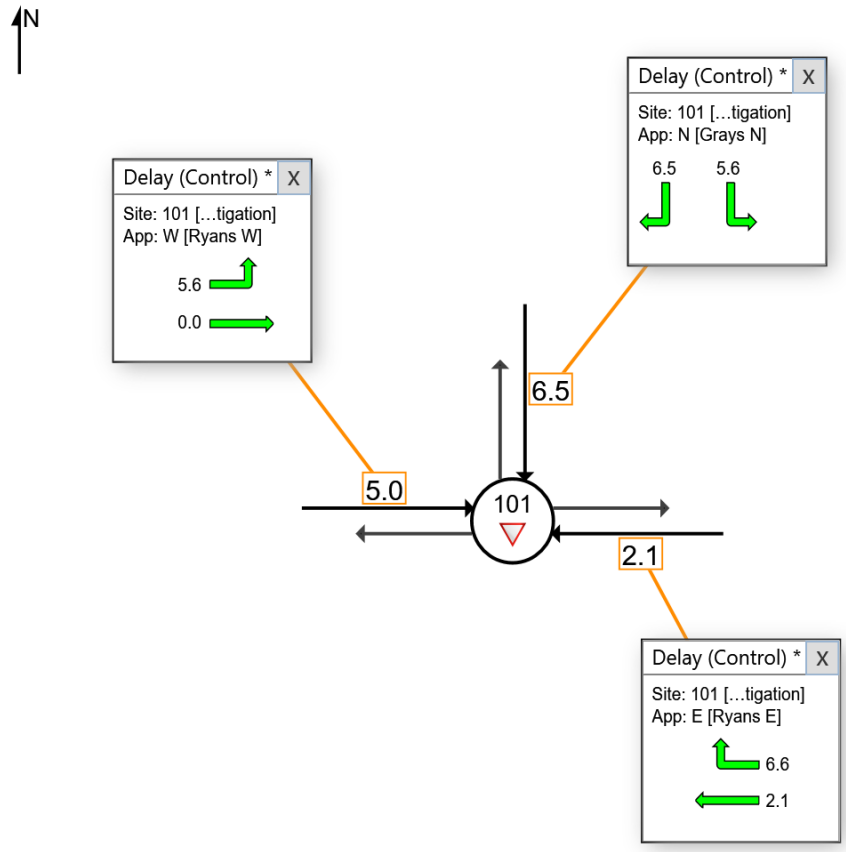
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

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Site: 101 [Grays/Ryans 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

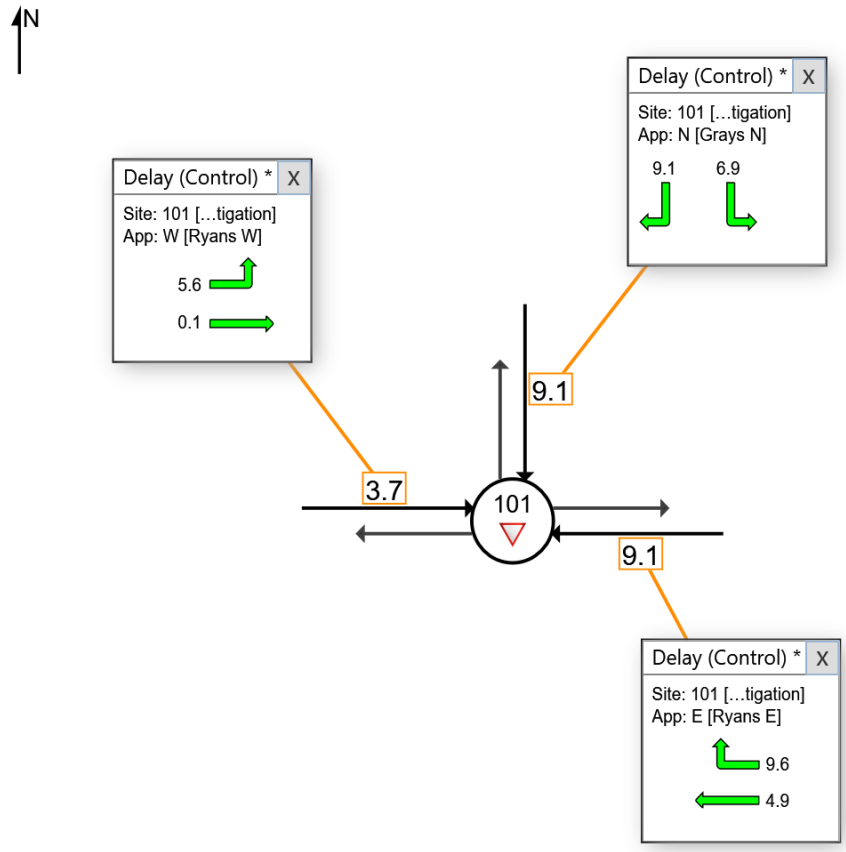
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

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Site: 101 [Grays/Ryans 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

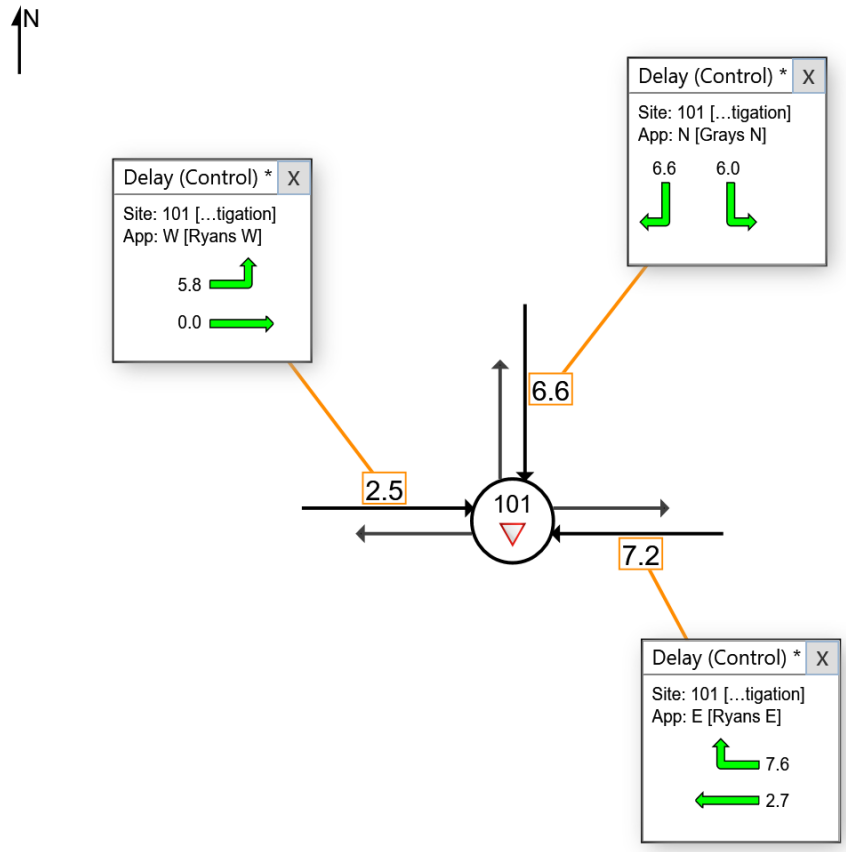
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM With Development - No Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Grays/Ryans 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

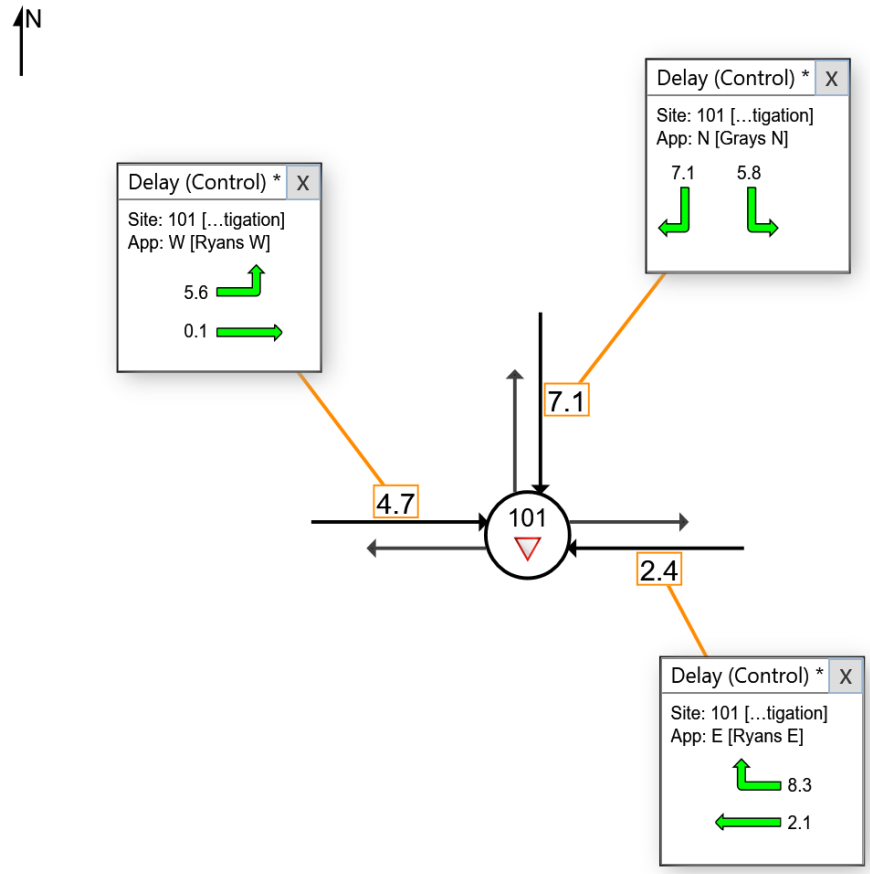
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM WNo Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Site: 101 [Grays/Ryans 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 PM No Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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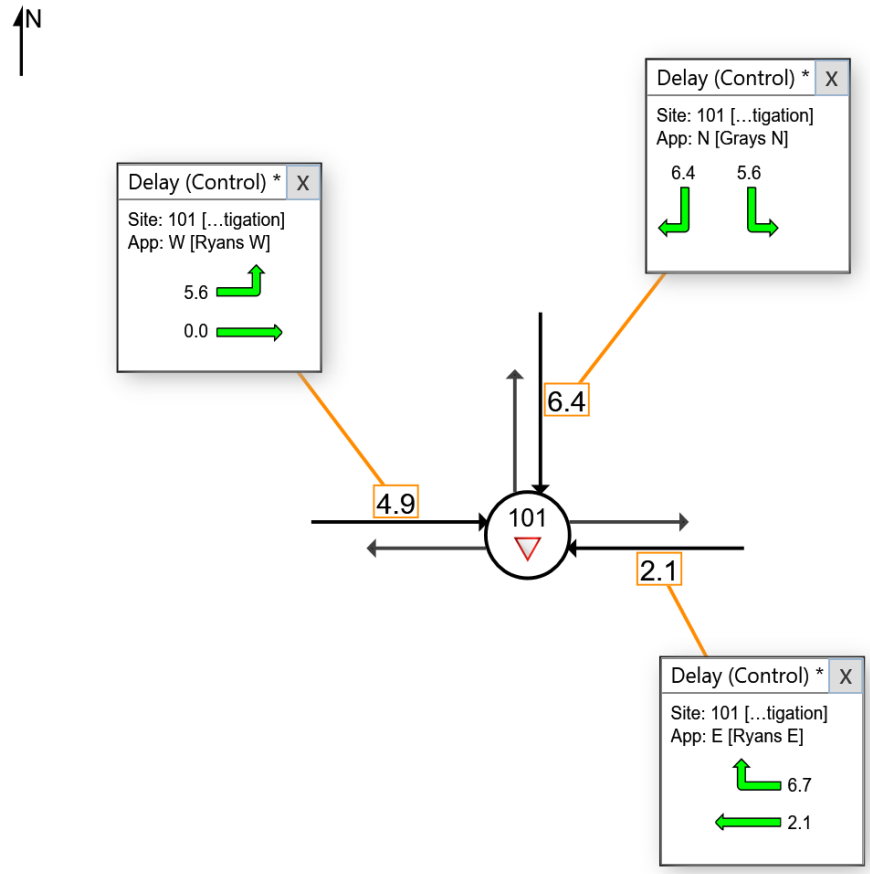
Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

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Site: 101 [Grays/Ryans 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Grays/Ryans 2038 AM With Development - Mitigation
Site Category: (None)
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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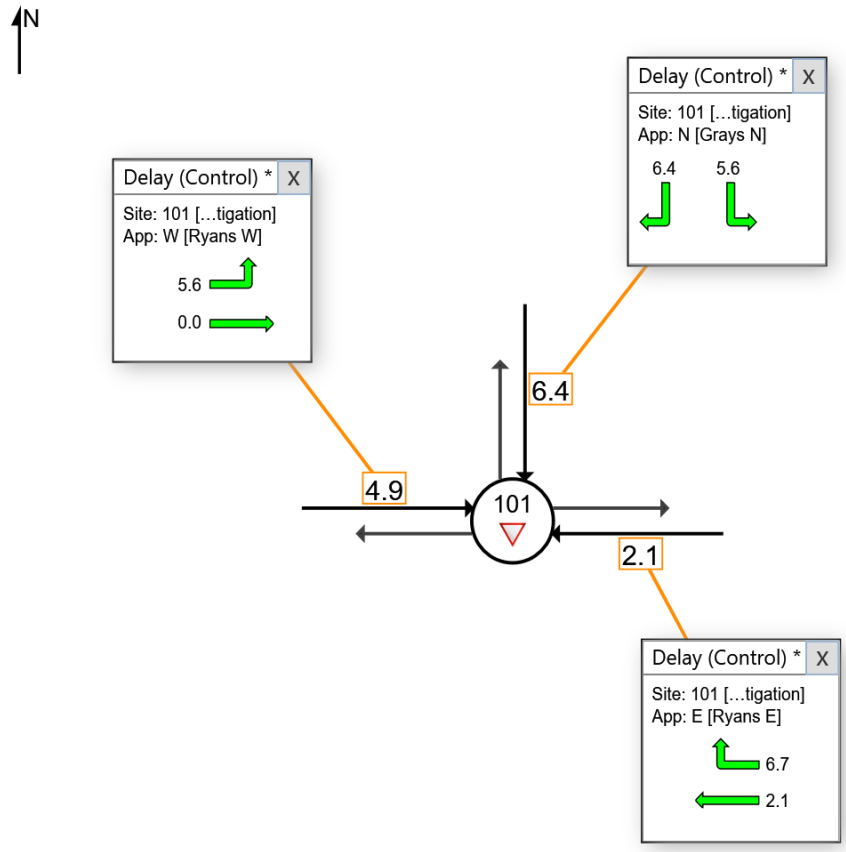
Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

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Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Ryans - 2023 Observed AM (Site Folder: Ryans Proposed Private Plan Change)]

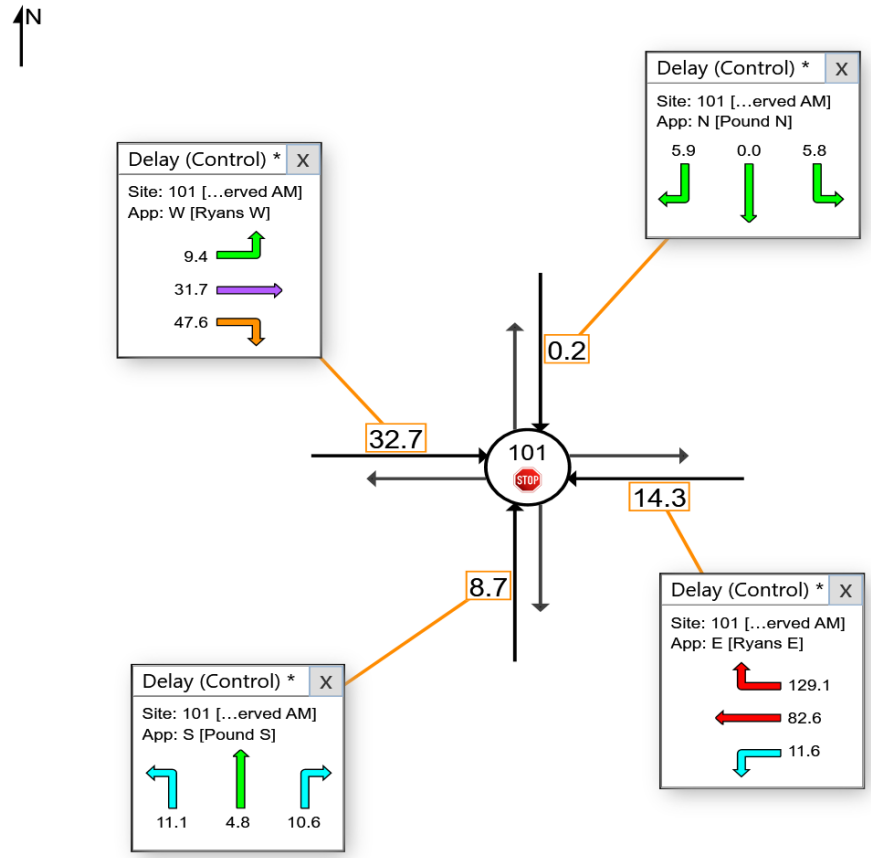
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2023 Observed AM
Site Category: (None)
Stop (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2023 Observed PM
Site Category: (None)
Stop (Two-Way)

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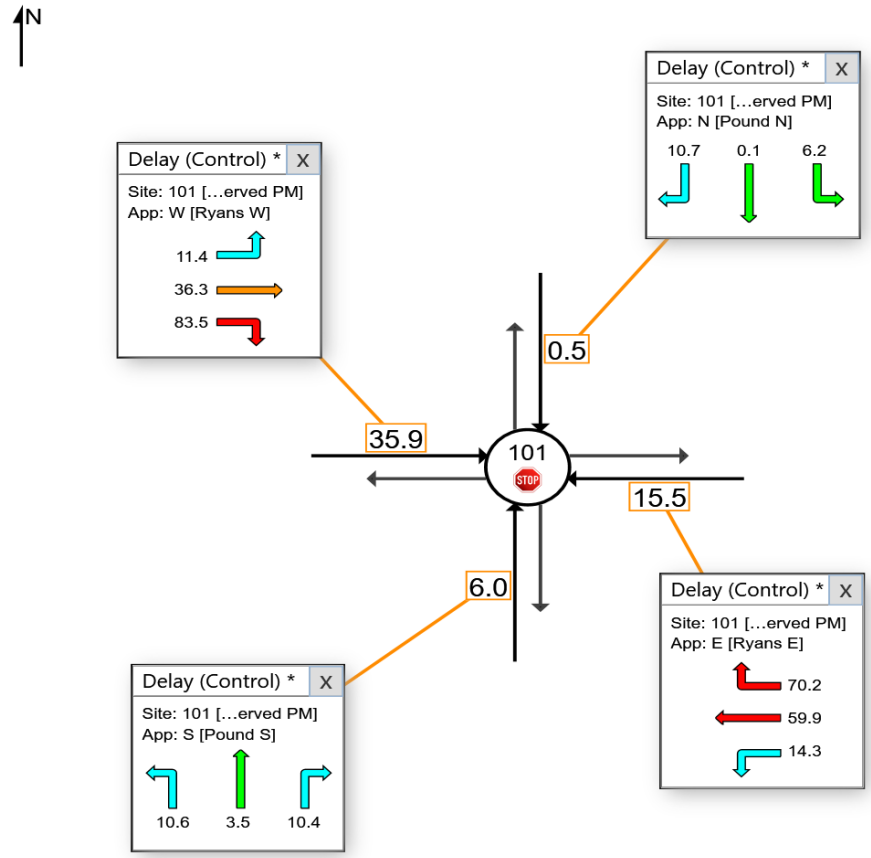
All Movement Classes (*)



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Site: 101 [Pound/Ryans - 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 AM No Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

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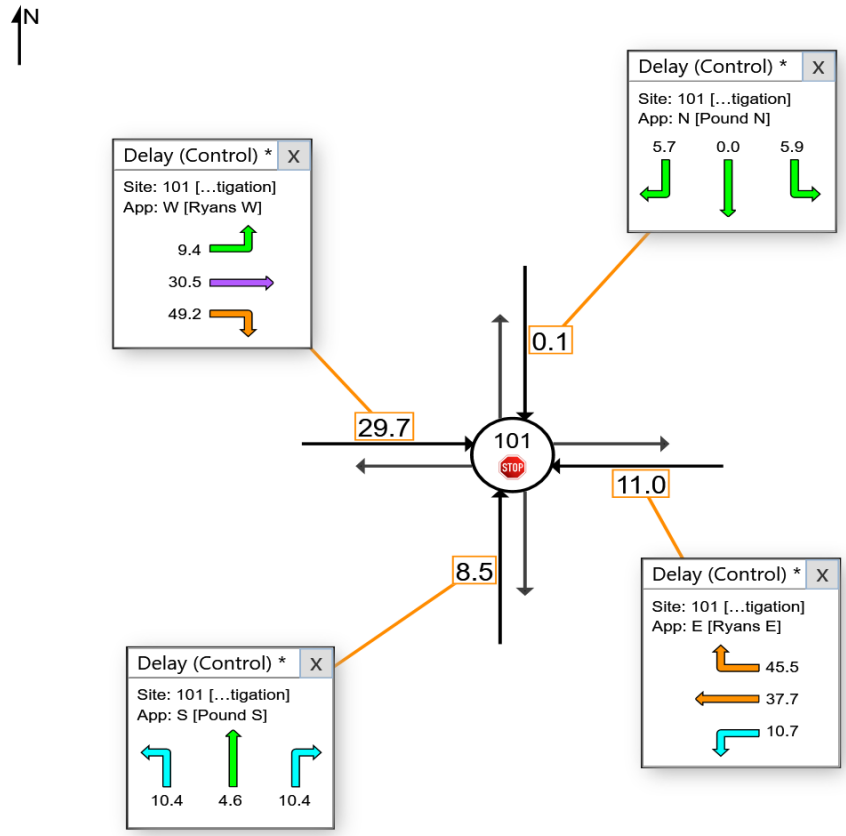
Close All Popups

All Movement Classes (*)



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Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 PM No Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

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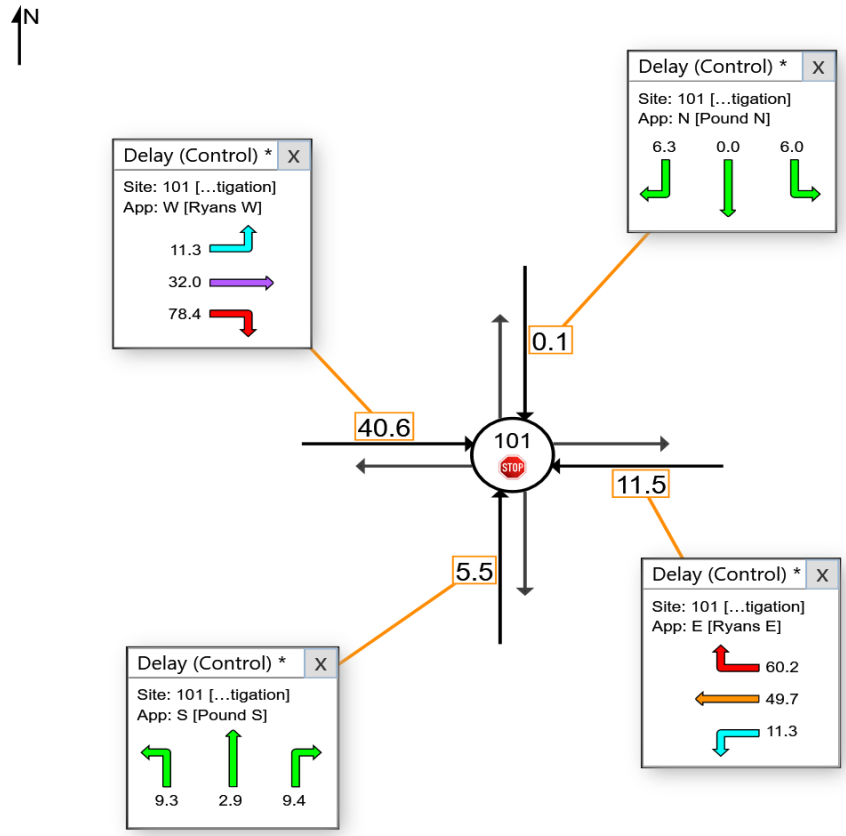
Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

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Site: 101 [Pound/Ryans - 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 AM With Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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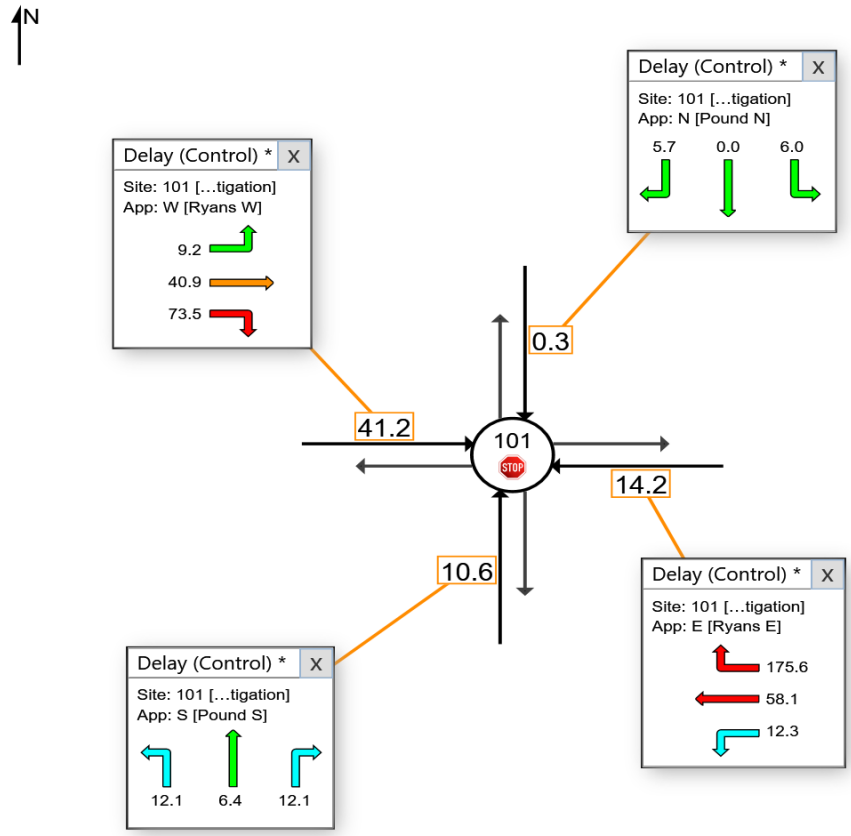
Close All Popups

All Movement Classes (*)



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Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Ryans - 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

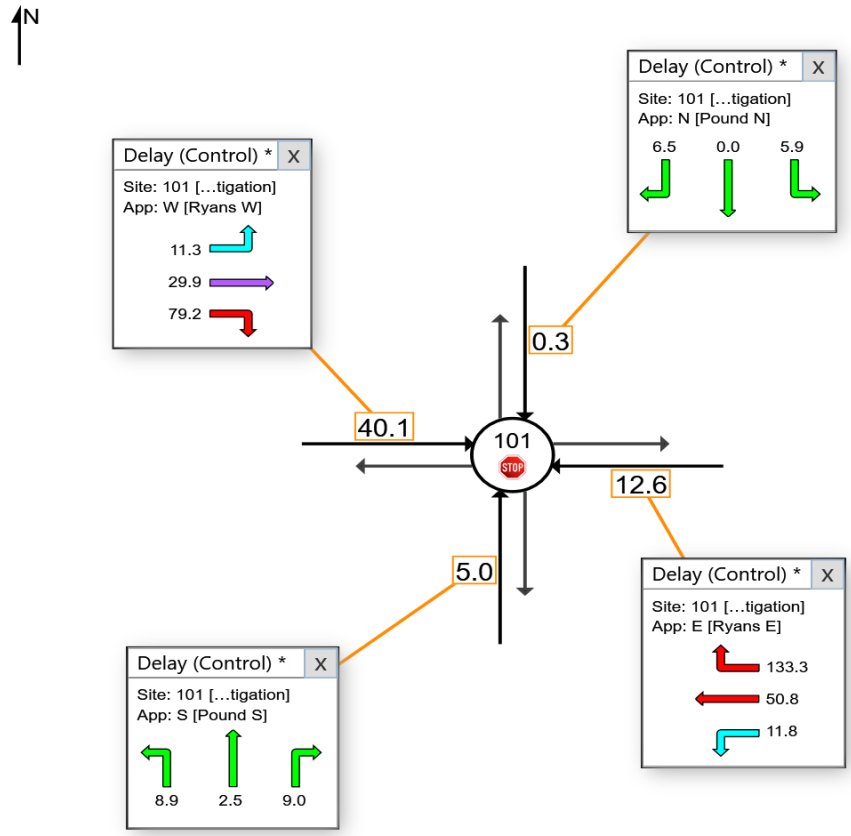
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans - 2038 PM With Development - No Mitigation
Site Category: (None)
Stop (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101v [Pound/Ryans -2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

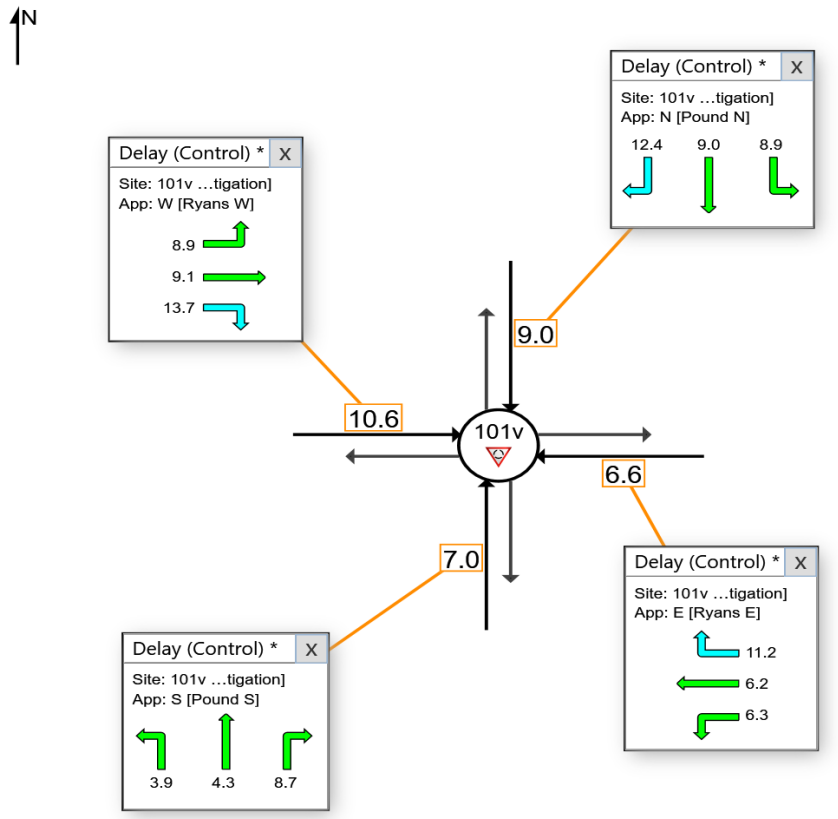
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 AM No Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101v [Pound/Ryans -2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

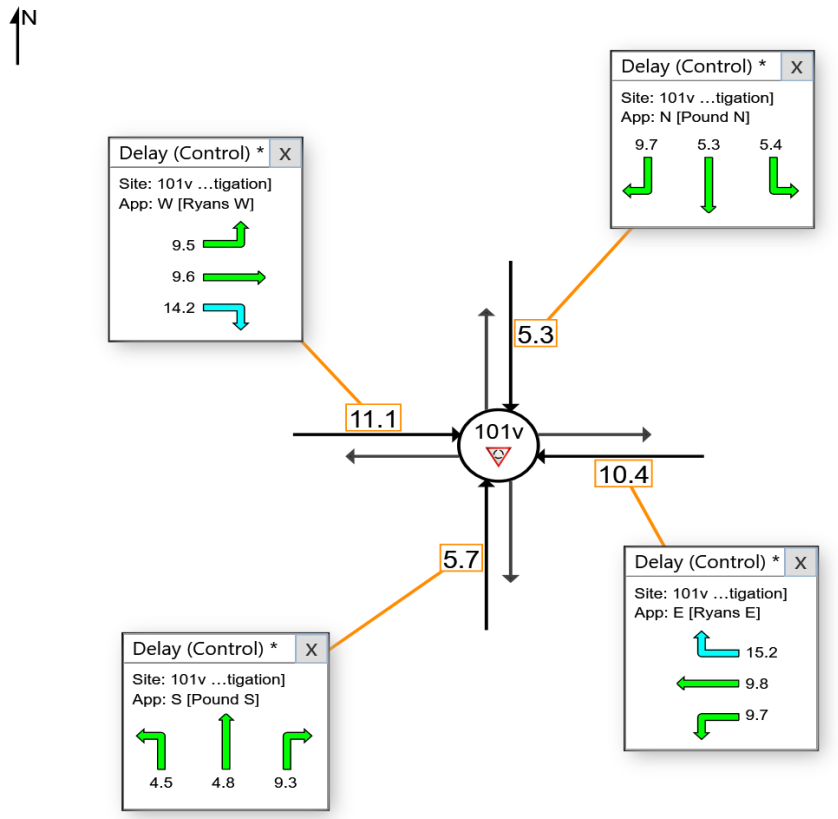
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 PM No Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101v [Pound/Ryans -2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

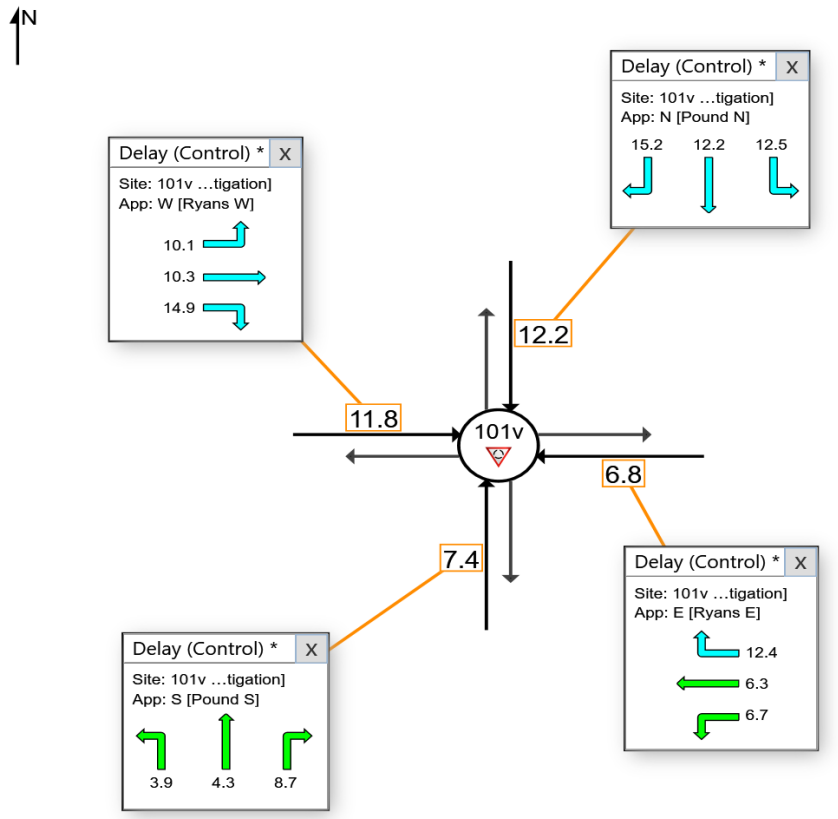
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 AM With Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101v [Pound/Ryans -2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

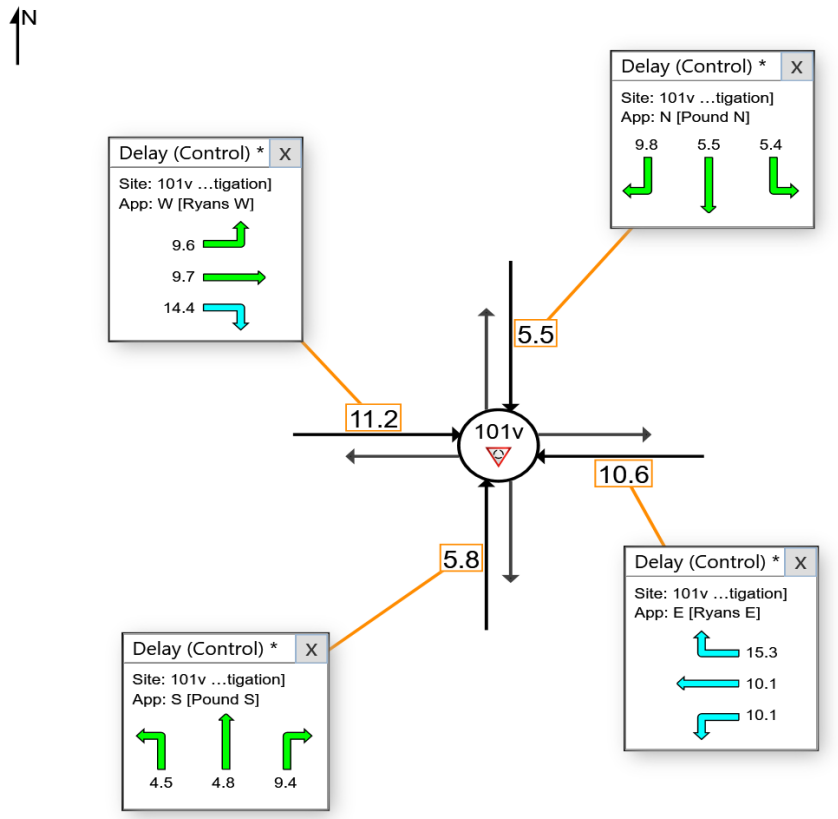
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Ryans -2038 PM With Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2024 Model AM (Site Folder: Ryans Proposed Private Plan Change)]

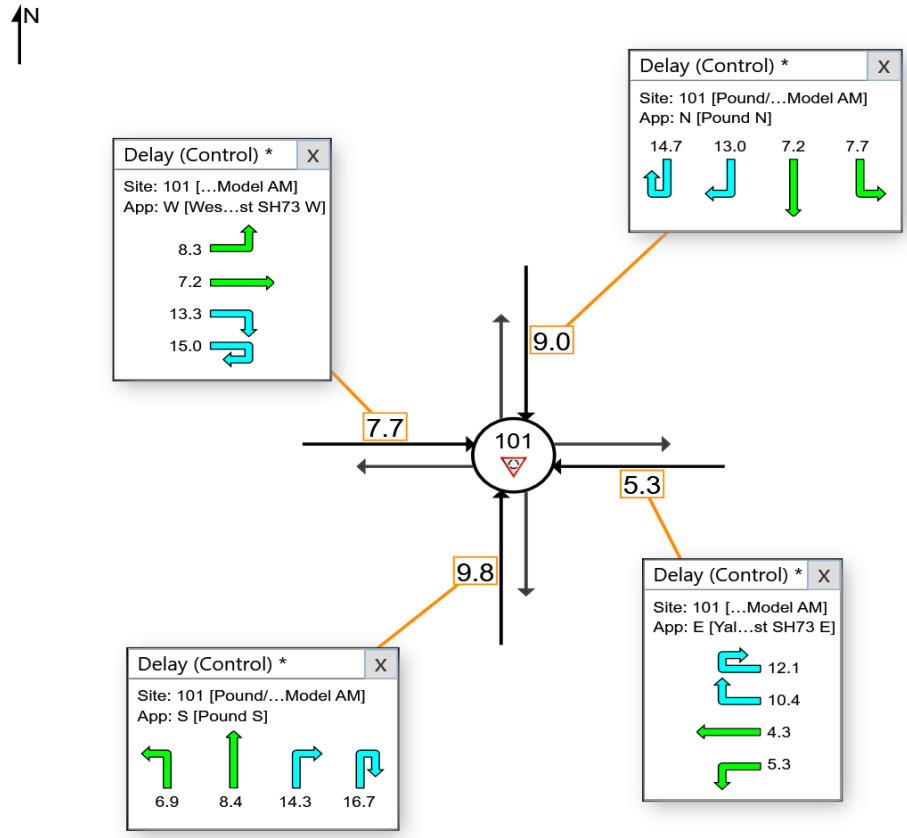
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2024 Model AM
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2024 Model PM (Site Folder: Ryans Proposed Private Plan Change)]

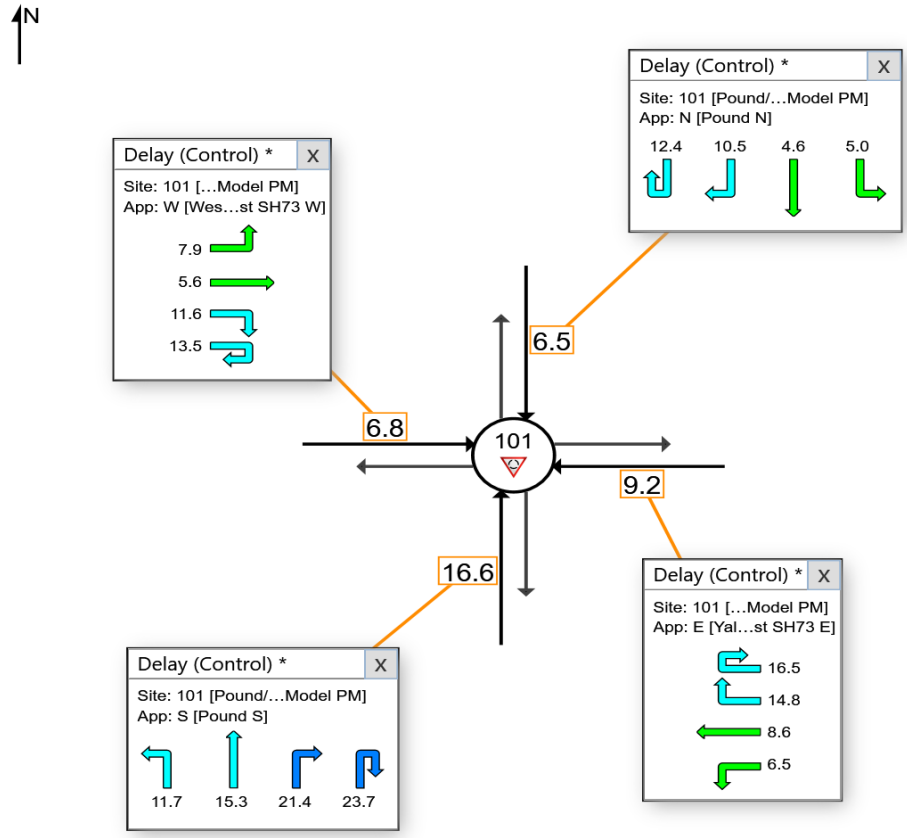
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2024 Model PM
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

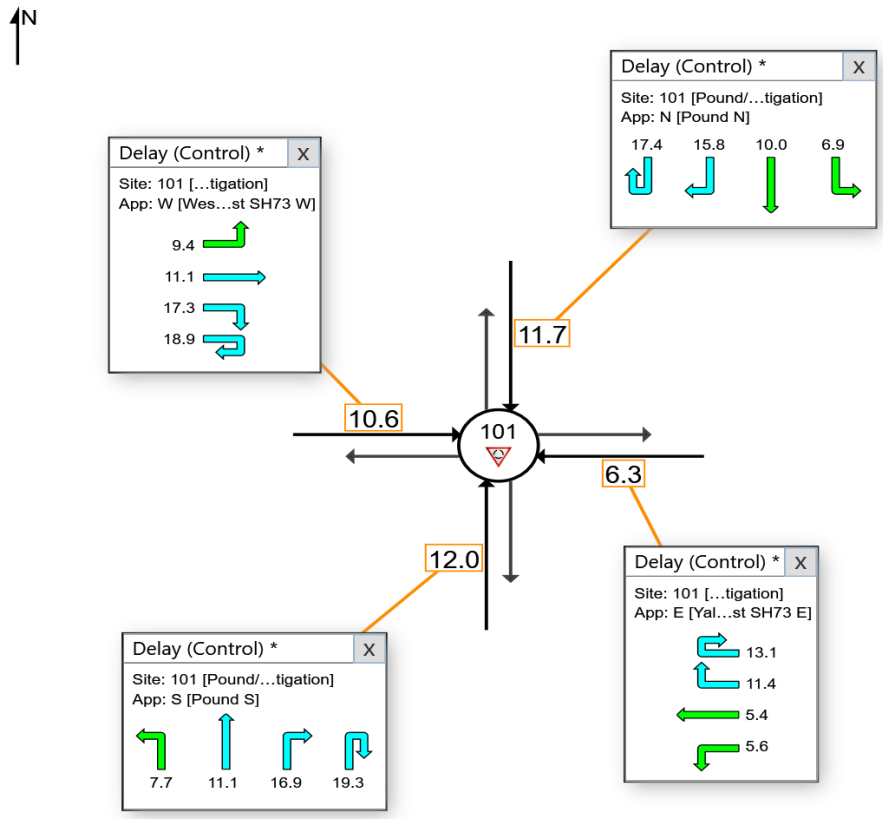
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM No Development - No Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

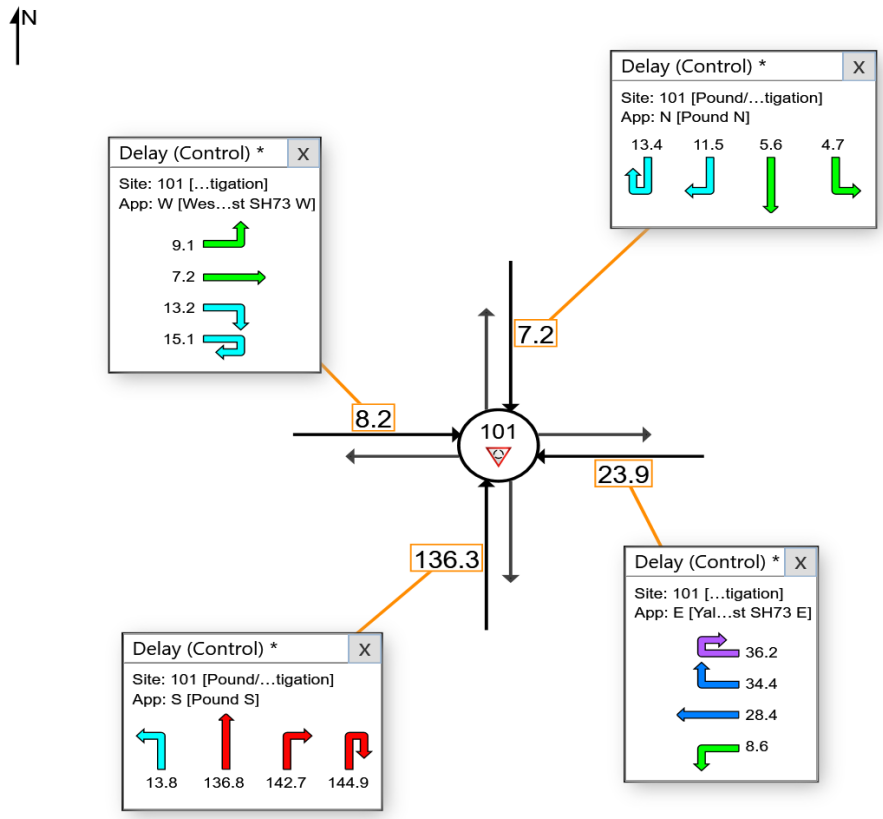
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM No Development - No Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

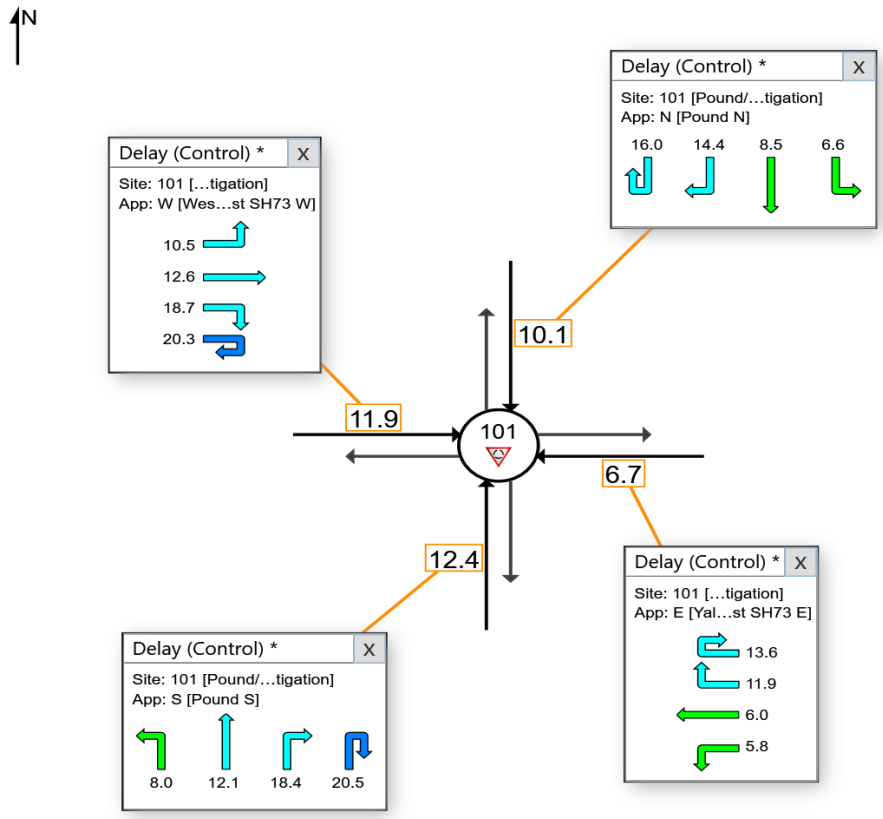
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM With Development - No Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

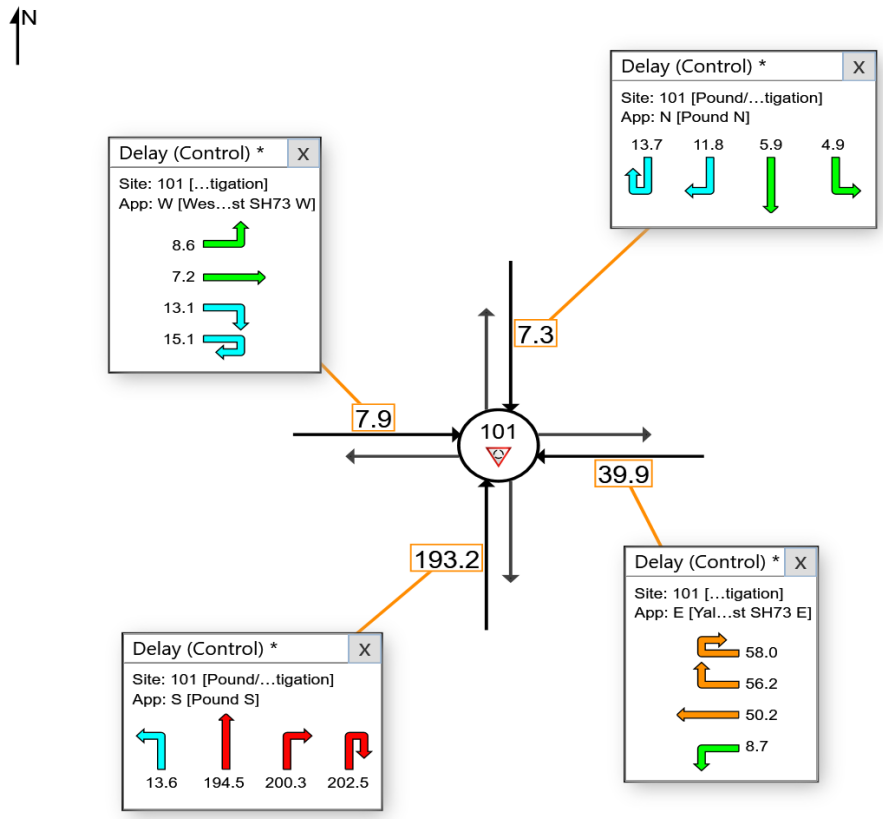
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM With Development - No Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

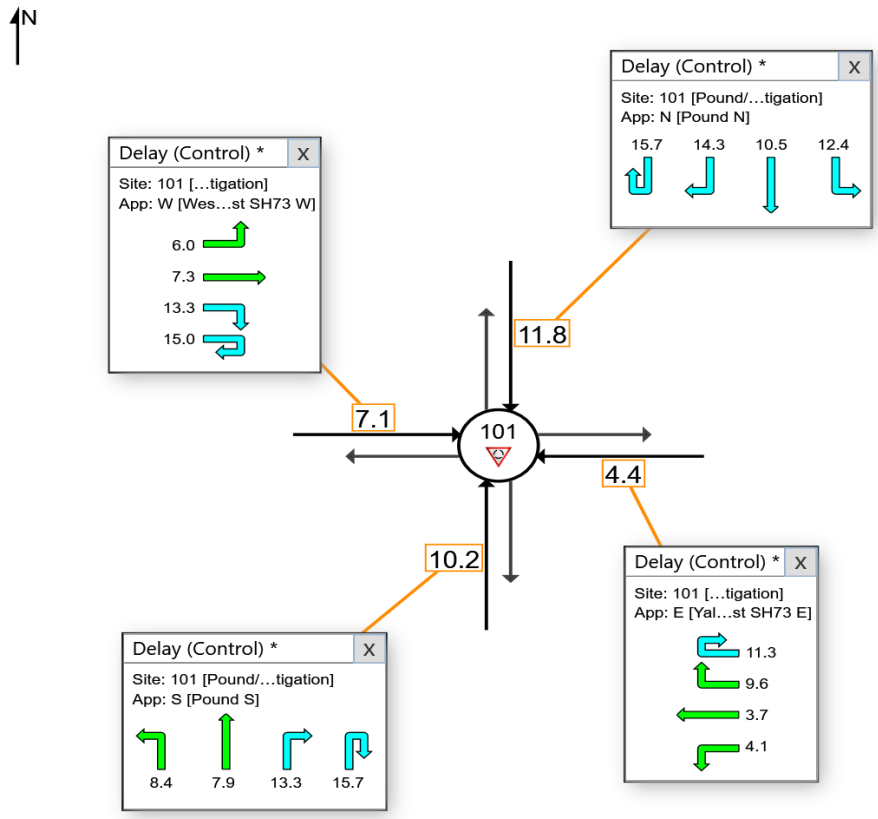
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM No Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

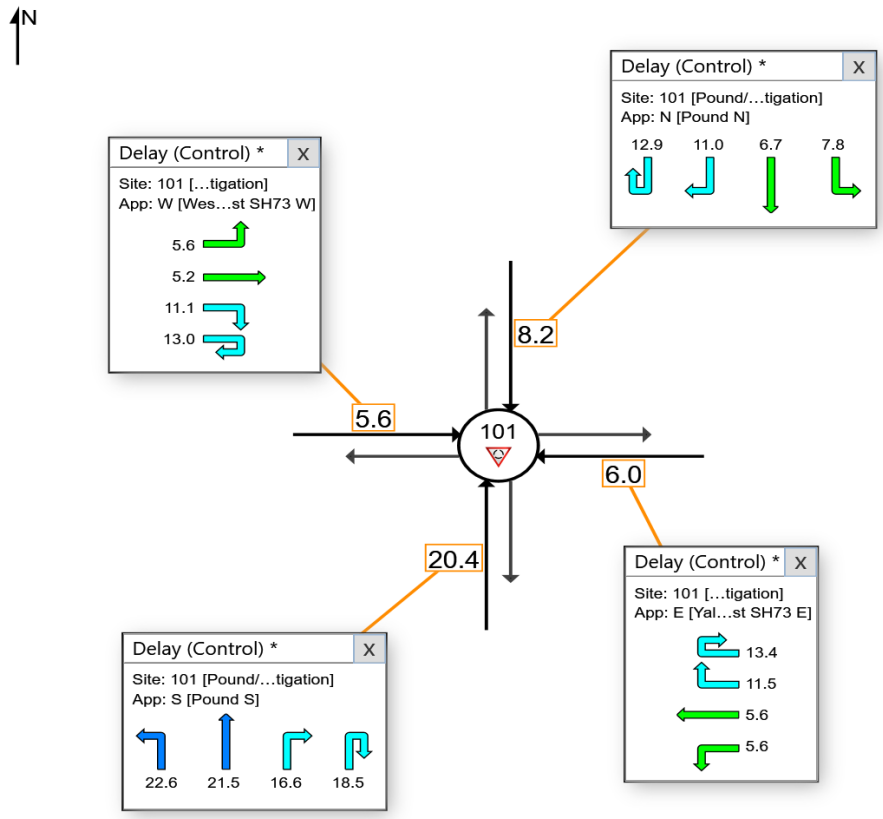
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM No Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

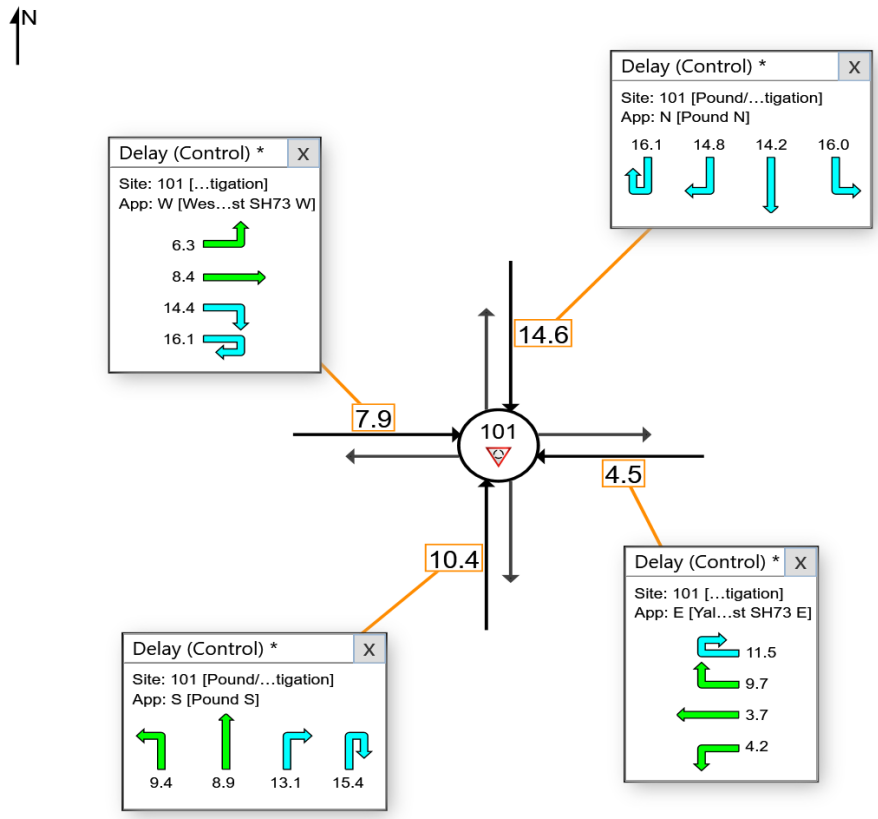
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 AM With Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 101 [Pound/Yaldhurst 2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

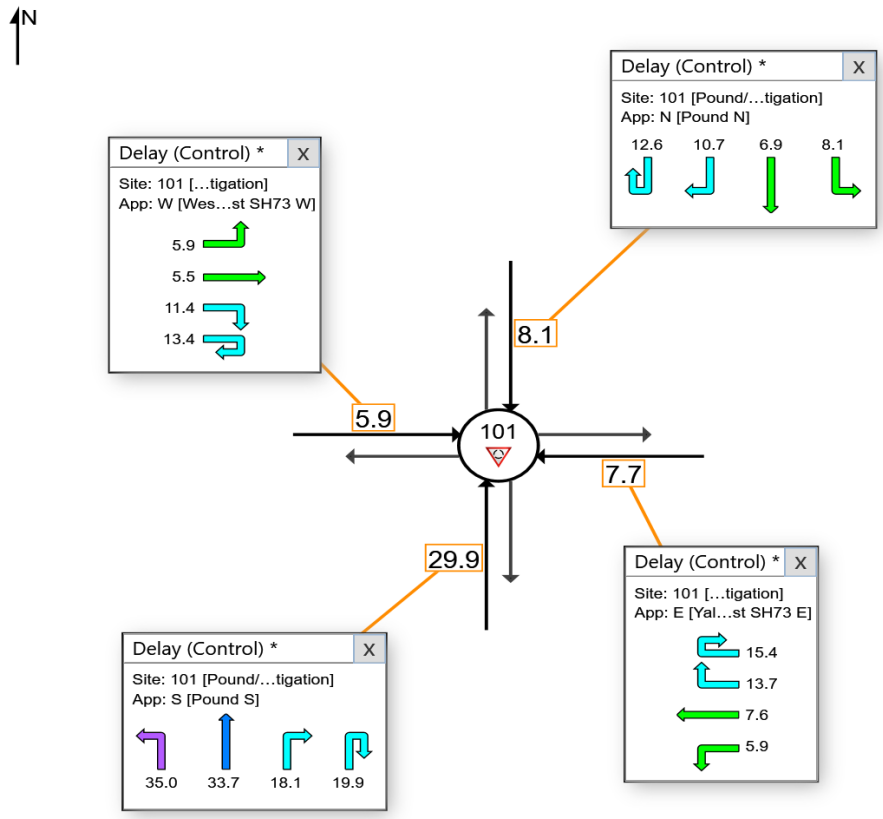
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Pound/Yaldhurst 2038 PM With Development - Mitigation
Site Category: (None)
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2023 Observed AM 0730-0830 - Replicate Observed delay (Site Folder: Ryans Proposed Private Plan Change)]

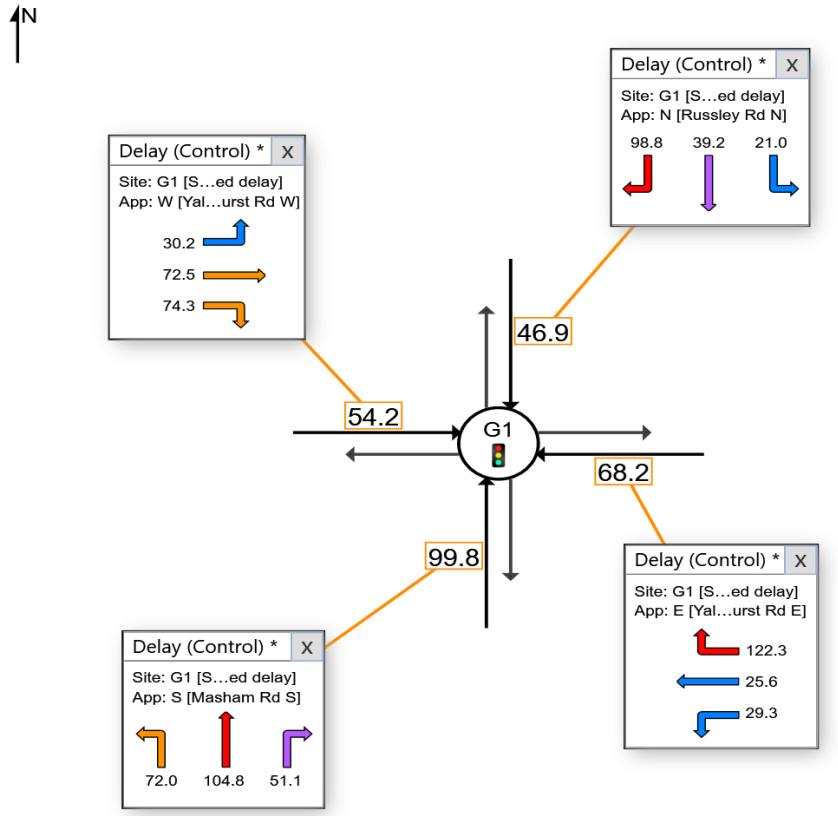
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2023 Observed AM 0730-0830 - Replicate Observed delay
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2023 Observed PM 1615-1715 - Replicate Observed Delay (Site Folder: Ryans Proposed Private Plan Change)]

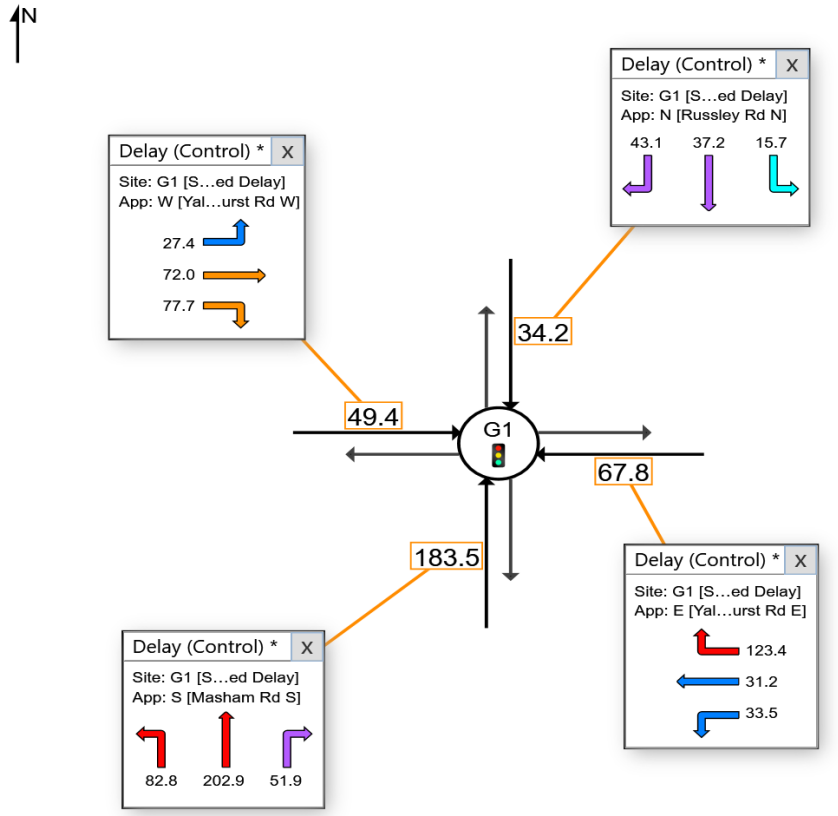
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2023 Observed PM 1615-1715 - Replicate Observed Delay
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 AM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

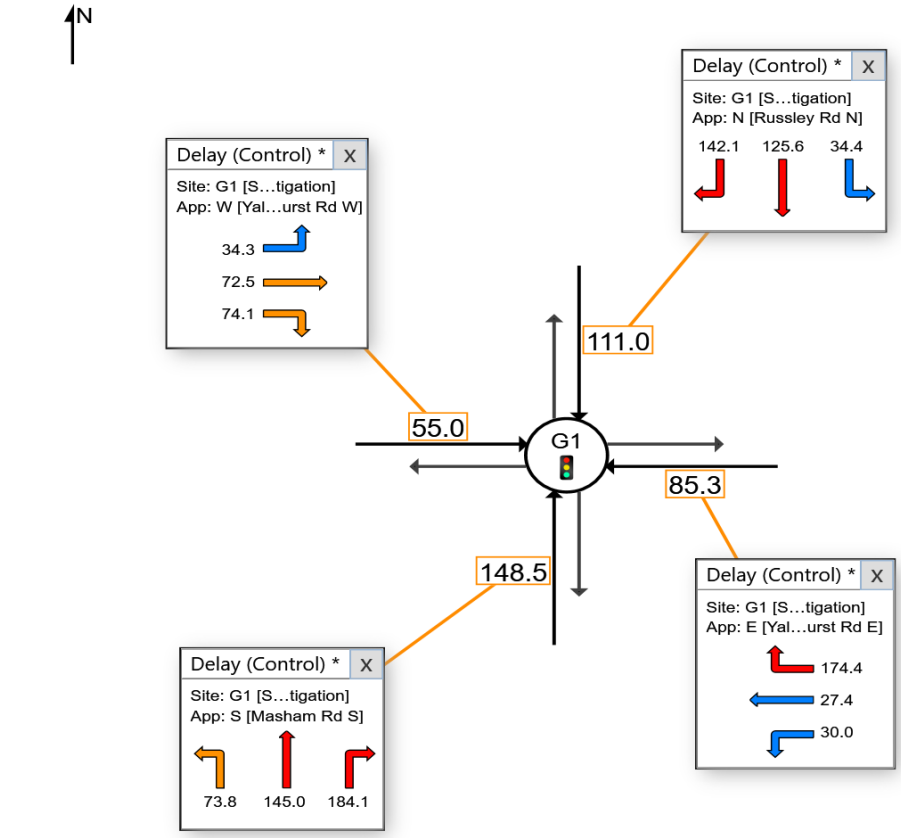
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 AM No Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 PM No Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

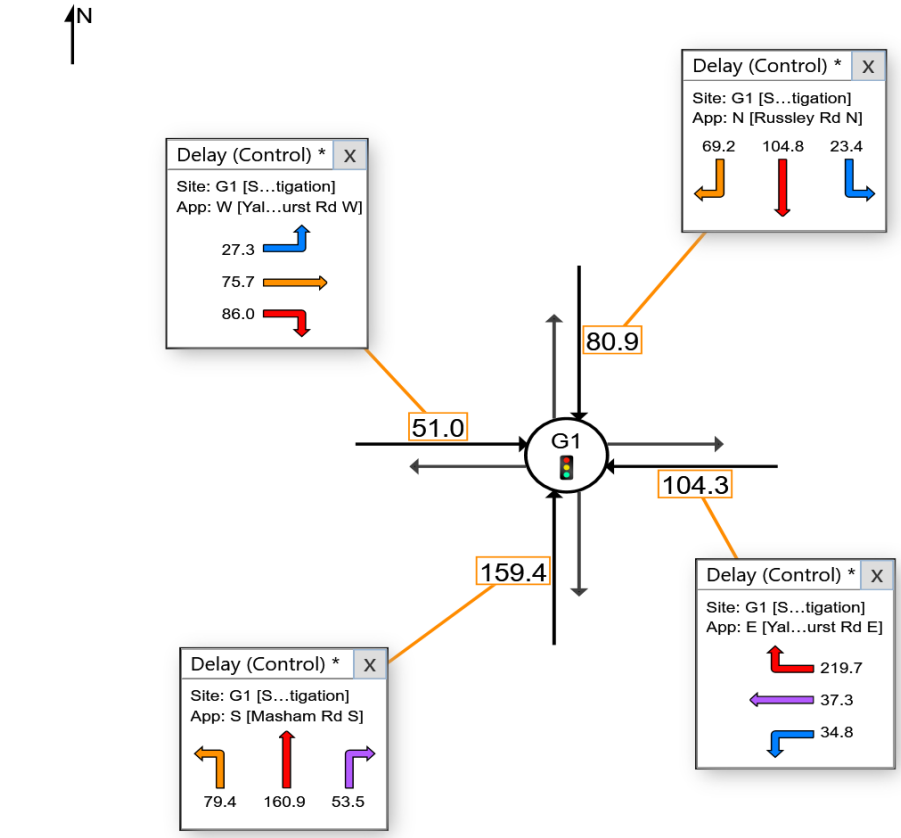
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 PM No Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 AM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 AM With Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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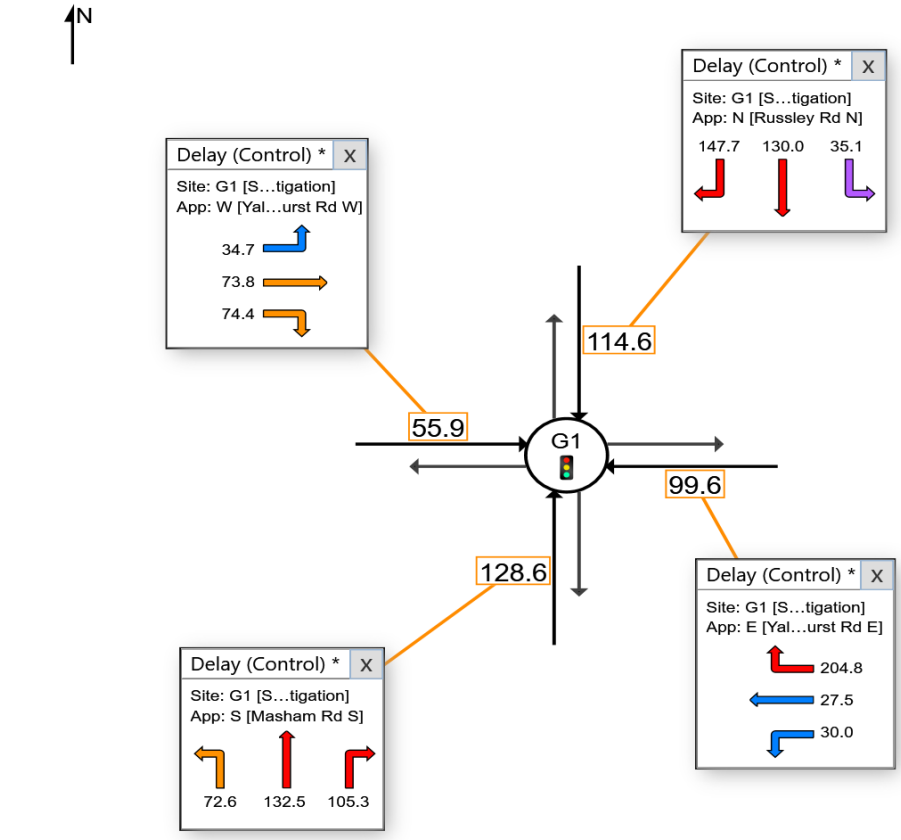
Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

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NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 PM With Development - No Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 PM With Development - No Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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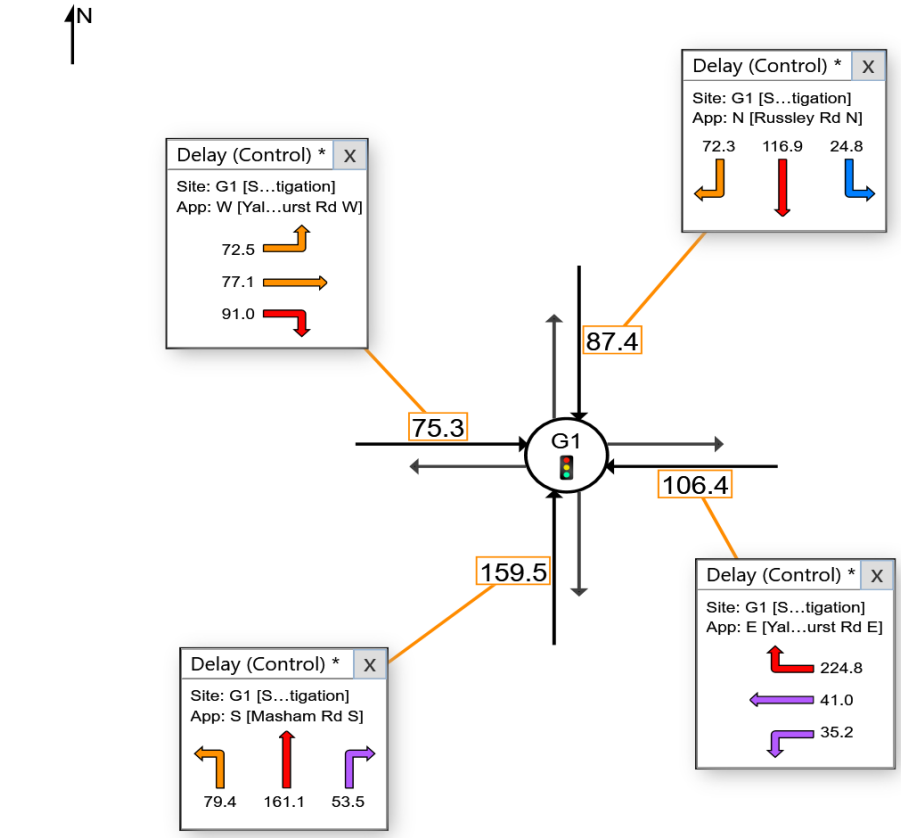
Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 AM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

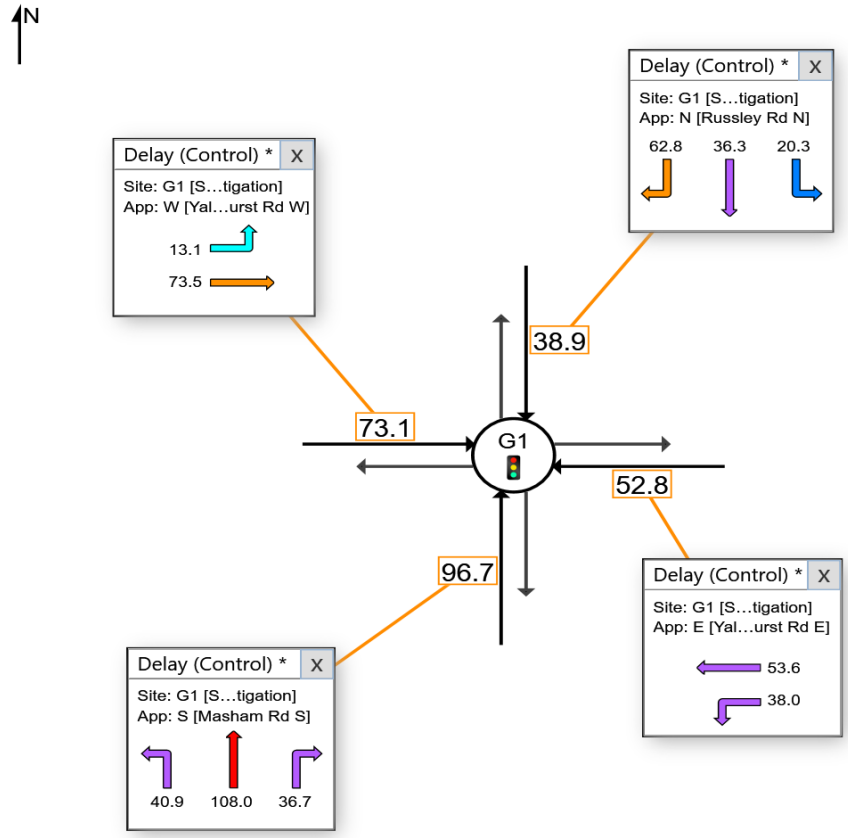
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SSH1/SH73 2038 AM No Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 PM No Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

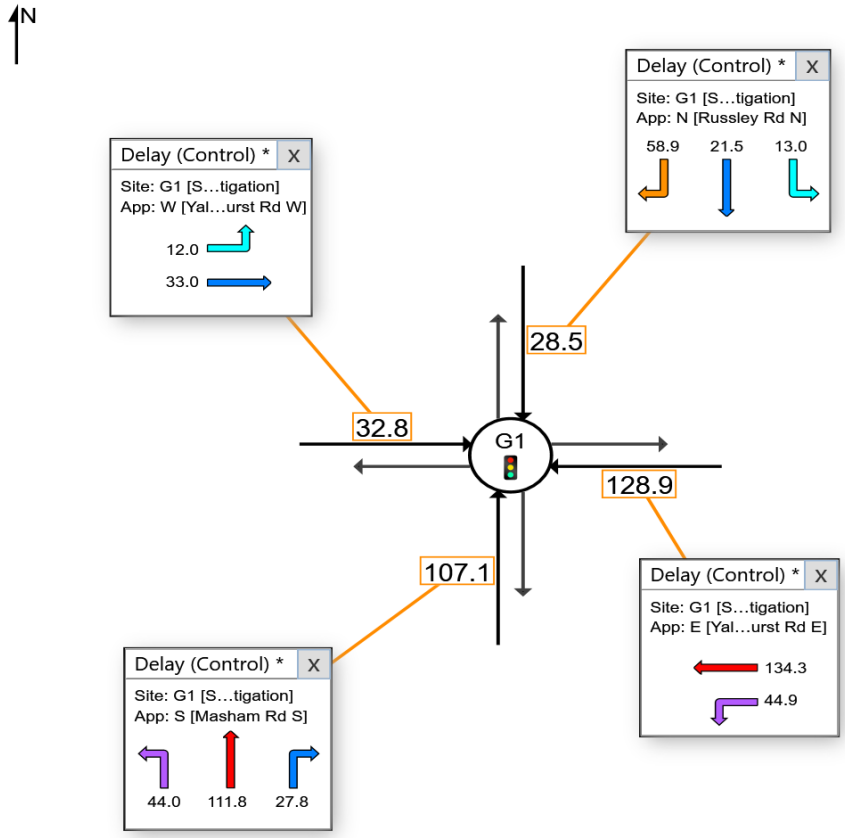
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SSH1/SH73 2038 PM No Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 AM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

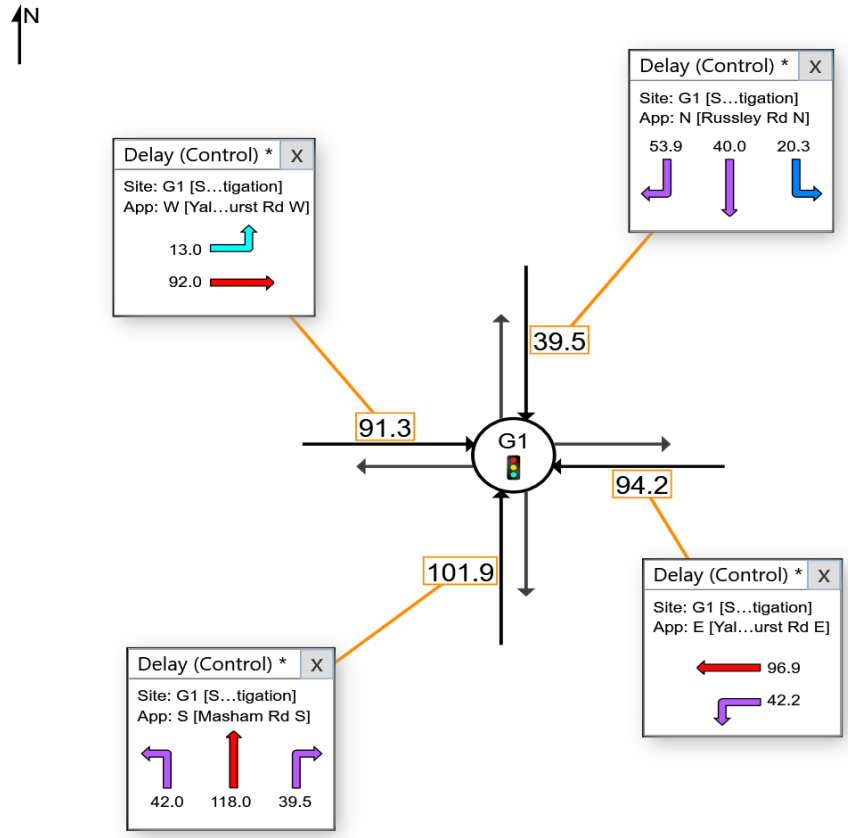
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 AM With Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Site: G1 [SH1/SH73 2038 PM With Development - Mitigation (Site Folder: Ryans Proposed Private Plan Change)]

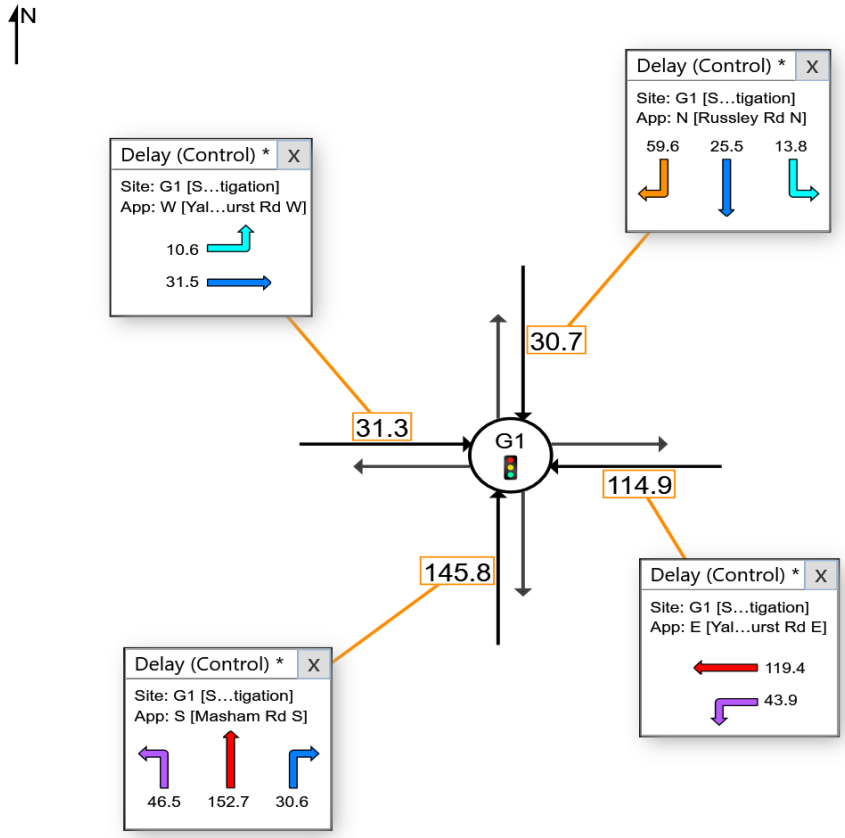
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SH1/SH73 2038 PM With Development - Mitigation
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site User-Given Cycle Time)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
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Pedestrian Level of Service Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

DELAY - AVERAGE (CONTROL)

Average control delay per vehicle, or average pedestrian delay (seconds)

Network: N101 [SH1/73 with Link Rd (PM 1615-1715 2023 Demands) (Network Folder: General)]

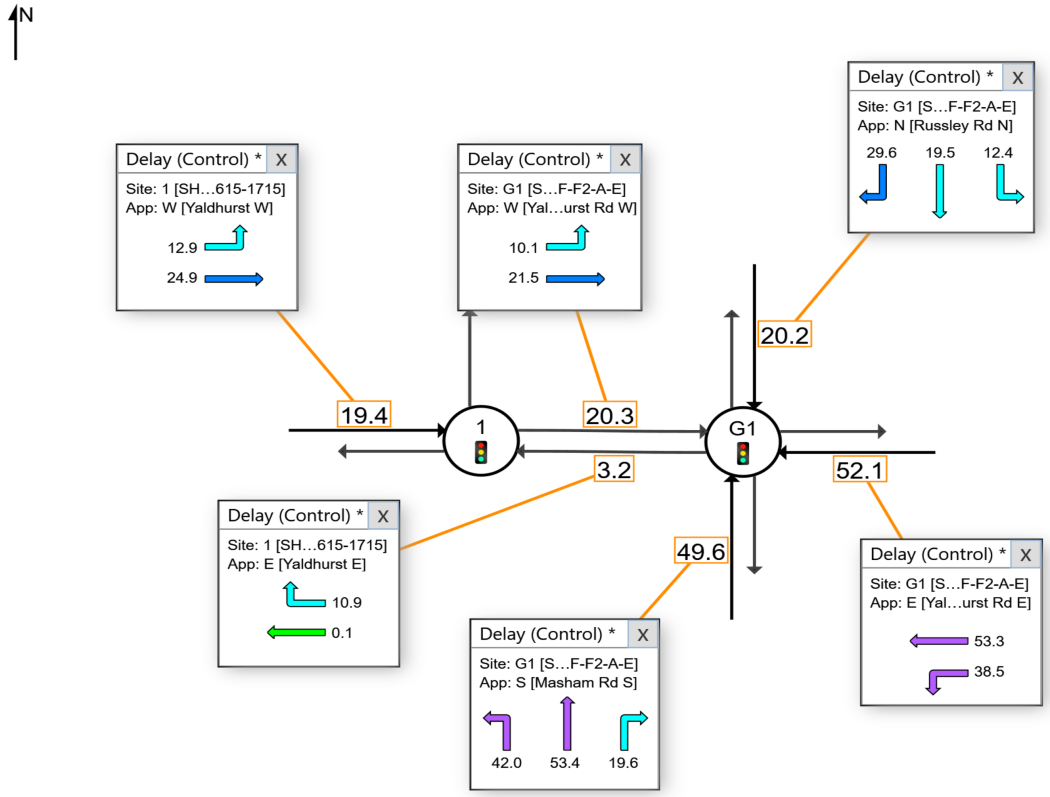
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)
Network Cycle Time = 80 seconds (Network User-Given Cycle Time)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (*)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

Organisation: QTP LTD | Licence: PLUS / 1PC | Processed: Thursday, 21 November 2024 10:20:38 am
Project: C:\Model\CAST\Ryans2\Ryans3.sip9

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Appendix C: Selected Route Travel Time Analyses

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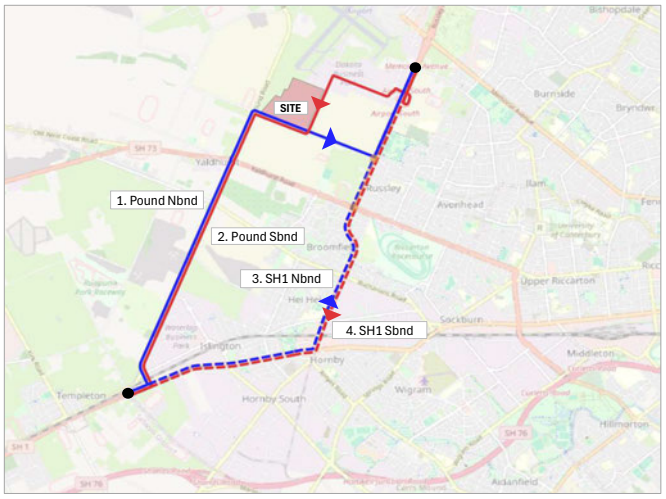
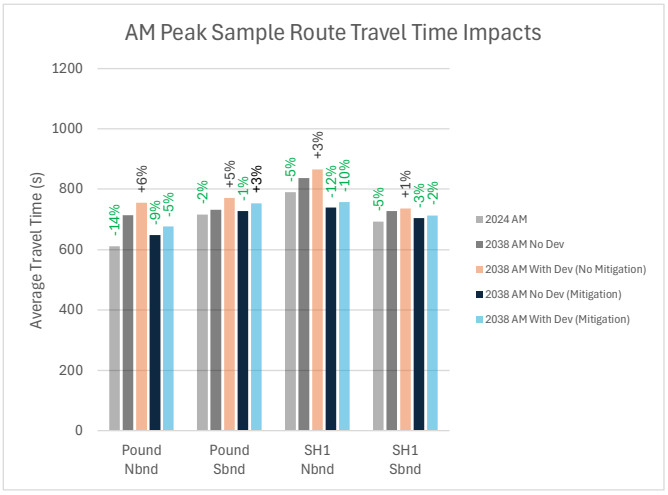
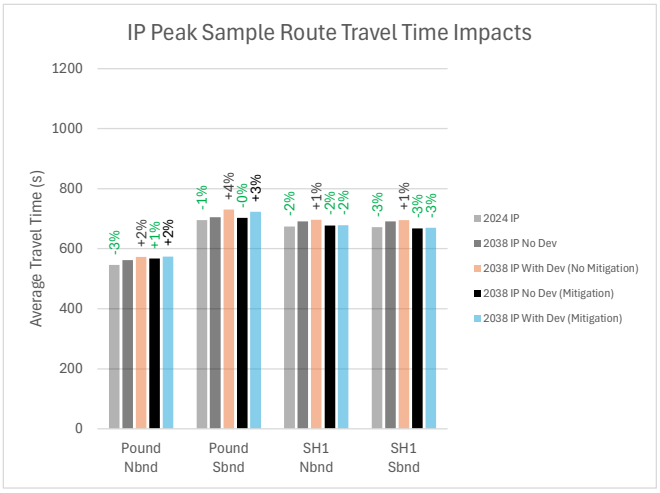
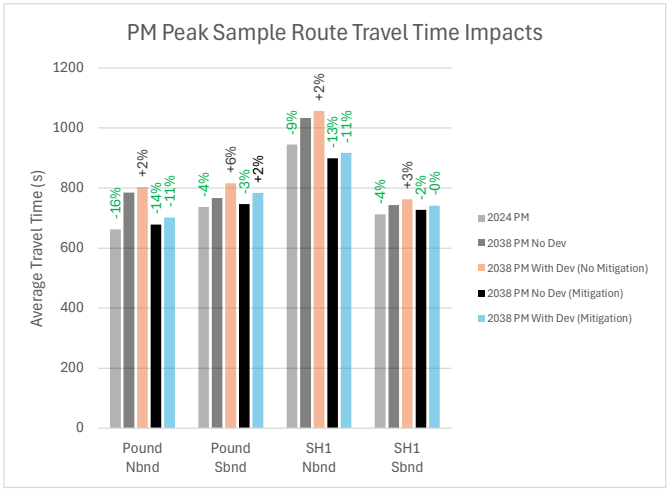
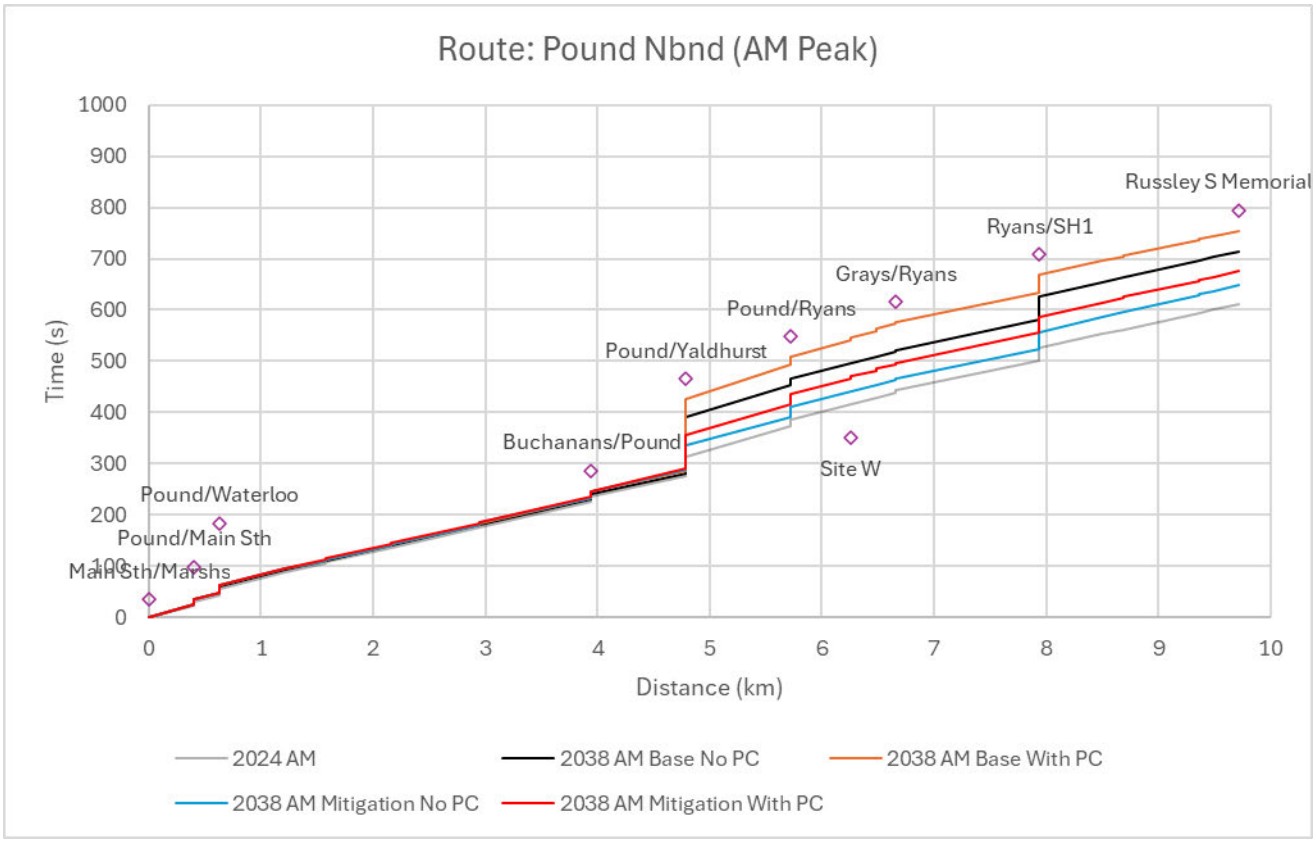
Scenario	Travel Time (s)				Impacts (Relative to 2038 Base)				Route Speed (kph)			
	Pound Nbnd	Pound Sbnd	SH1 Nbnd	SH1 Sbnd	Pound Nbnd	Pound Sbnd	SH1 Nbnd	SH1 Sbnd	Pound Nbnd	Pound Sbnd	SH1 Nbnd	SH1 Sbnd
2024 AM	611	716	791	693	-14%	-2%	-5%	-5%	57	52	40	45
2038 AM No Dev	714	732	837	728					49	51	38	43
2038 AM With Dev (No Mitigation)	755	771	866	736	+6%	+5%	+3%	+1%	46	48	36	43
2038 AM No Dev (Mitigation)	648	727	739	704	-9%	-1%	-12%	-3%	54	51	43	45
2038 AM With Dev (Mitigation)	676	753	757	713	-5%	+3%	-10%	-2%	52	49	42	44
2024 IP	546	695	674	672	-3%	-1%	-2%	-3%	64	53	47	47
2038 IP No Dev	562	705	691	691					62	53	46	46
2038 IP With Dev (No Mitigation)	572	730	696	695	+2%	+4%	+1%	+1%	61	51	45	45
2038 IP No Dev (Mitigation)	567	702	677	667	+1%	-0%	-2%	-3%	62	53	46	47
2038 IP With Dev (Mitigation)	574	723	678	670	+2%	+3%	-2%	-3%	61	51	46	47
2024 PM	662	736	944	713	-16%	-4%	-9%	-4%	53	50	33	44
2038 PM No Dev	785	767	1034	743					45	48	30	42
2038 PM With Dev (No Mitigation)	803	815	1057	762	+2%	+6%	+2%	+3%	44	46	30	41
2038 PM No Dev (Mitigation)	678	746	899	727	-14%	-3%	-13%	-2%	52	50	35	43
2038 PM With Dev (Mitigation)	702	784	917	741	-11%	+2%	-11%	-0%	50	47	34	42

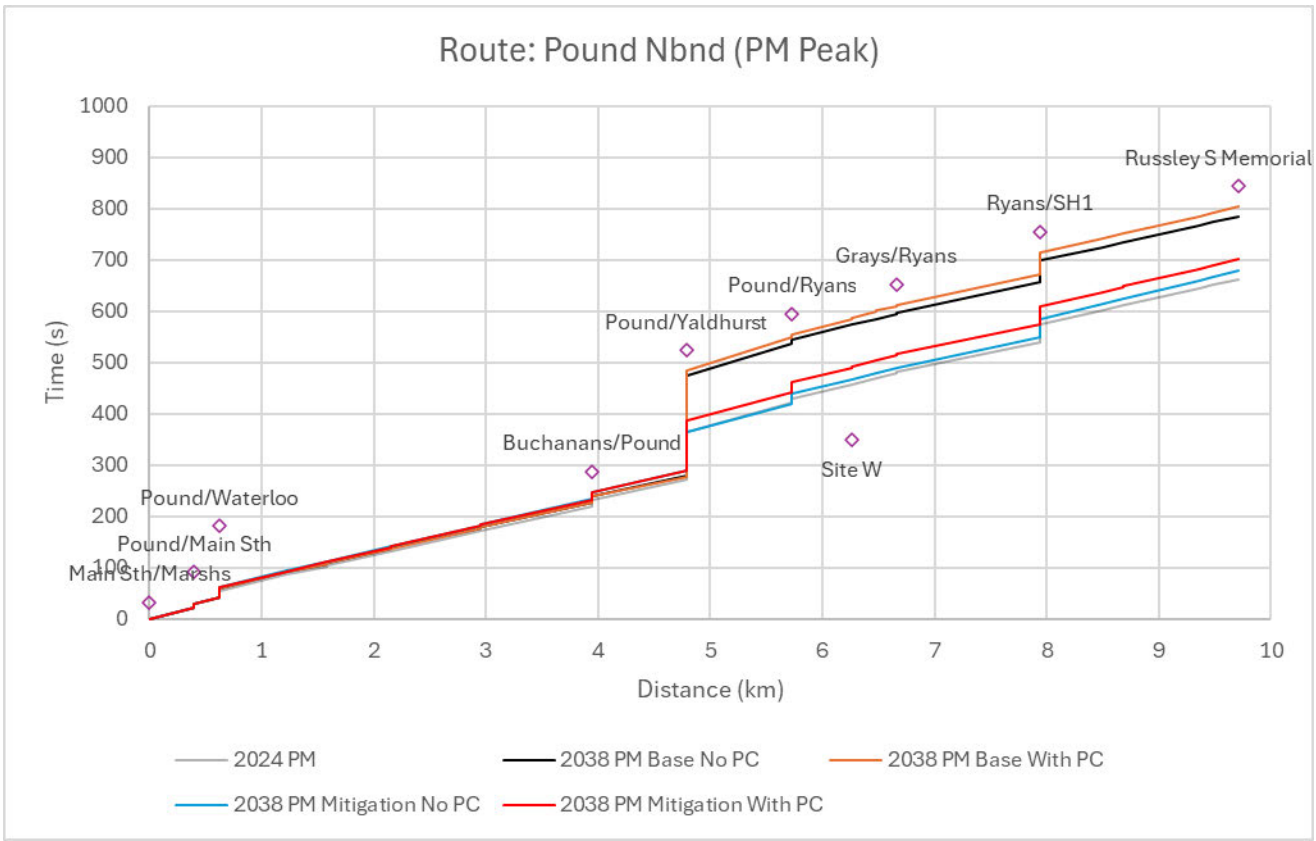


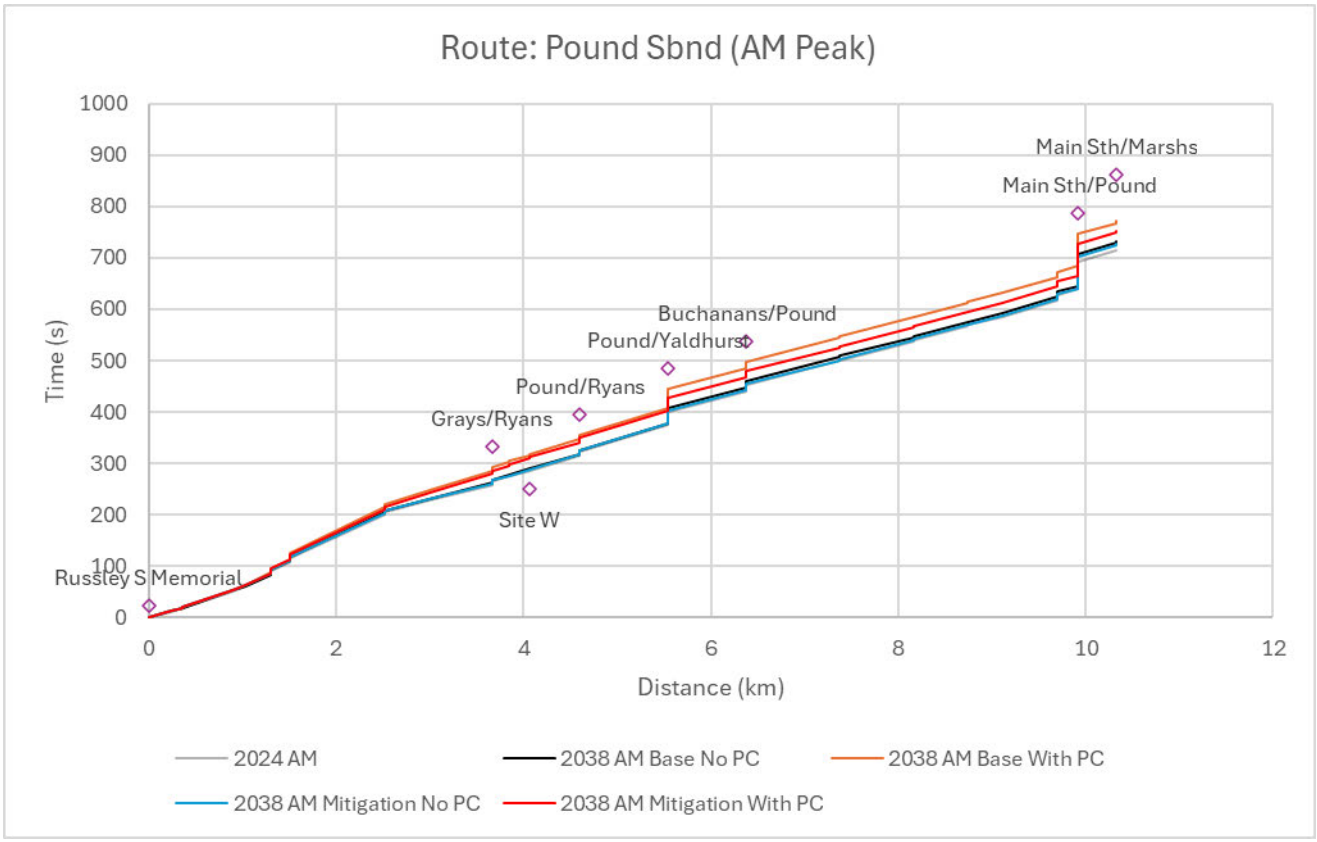


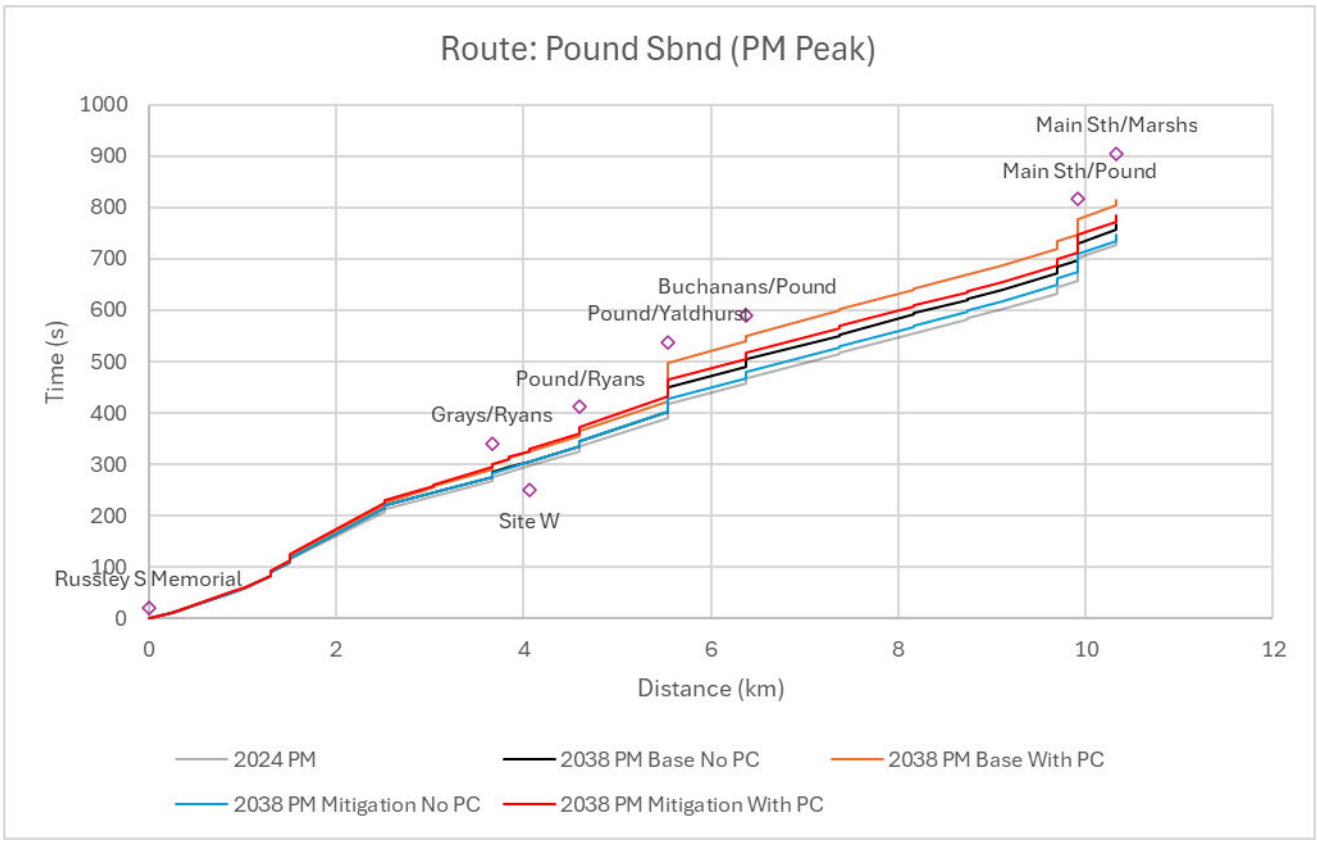


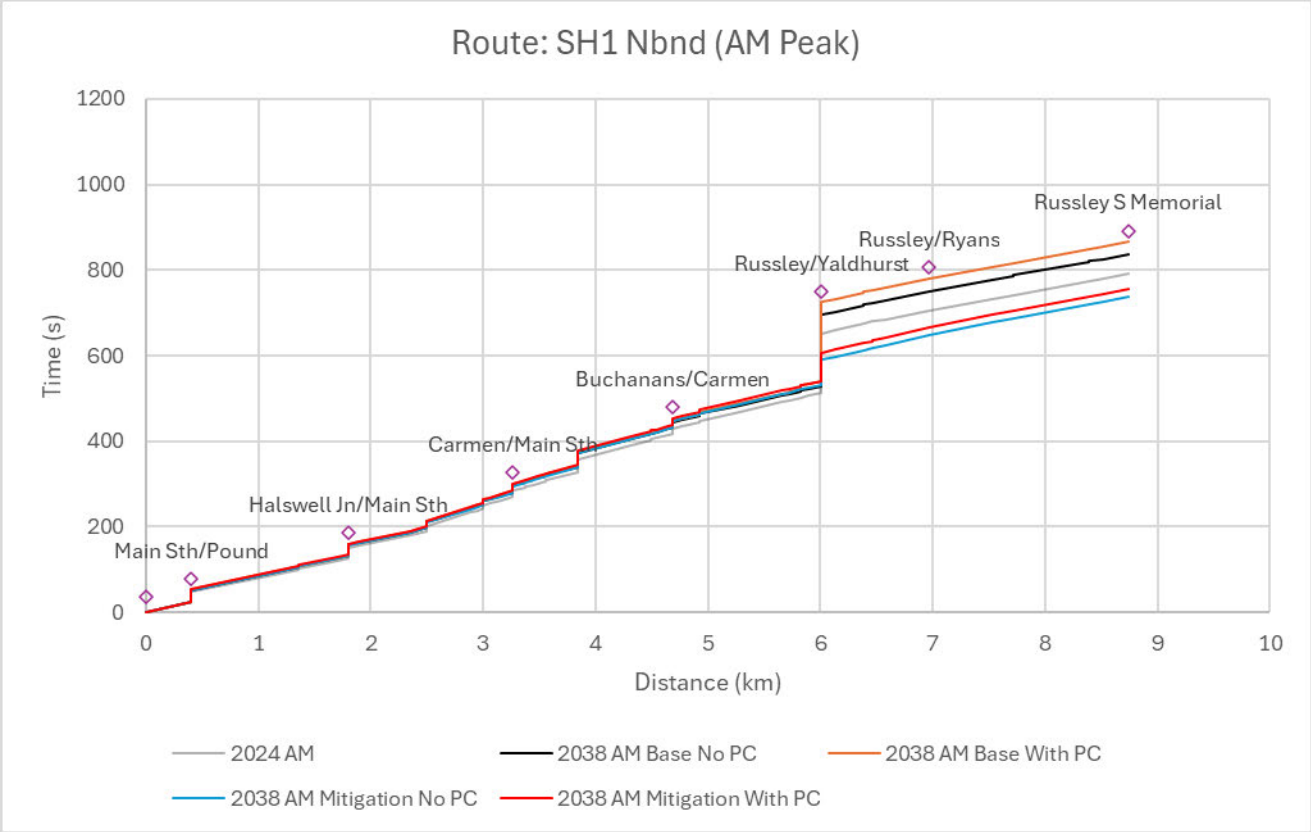


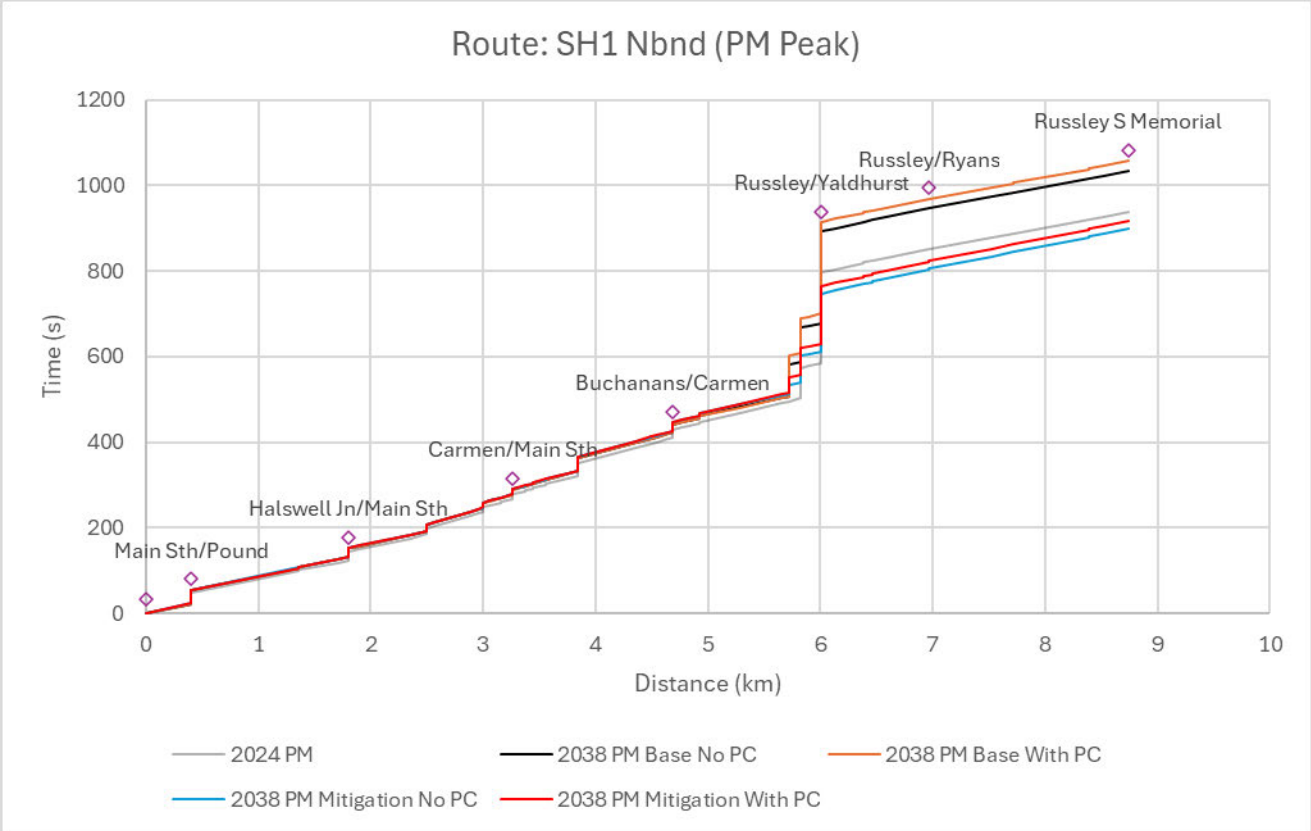

Route: Pound Nbnd (AM Peak)
Time (s)
Distance (km)
Main Sth/Marshs
Pound/Main Sth
Pound/Waterloo
Buchanans/Pound
Pound/Yaldhurst
Pound/Ryans
Grays/Ryans
Ryans/SH1
Russley S Memorial
Site W
2024 AM
2038 AM Base No PC
2038 AM Base With PC
2038 AM Mitigation No PC
2038 AM Mitigation With PC

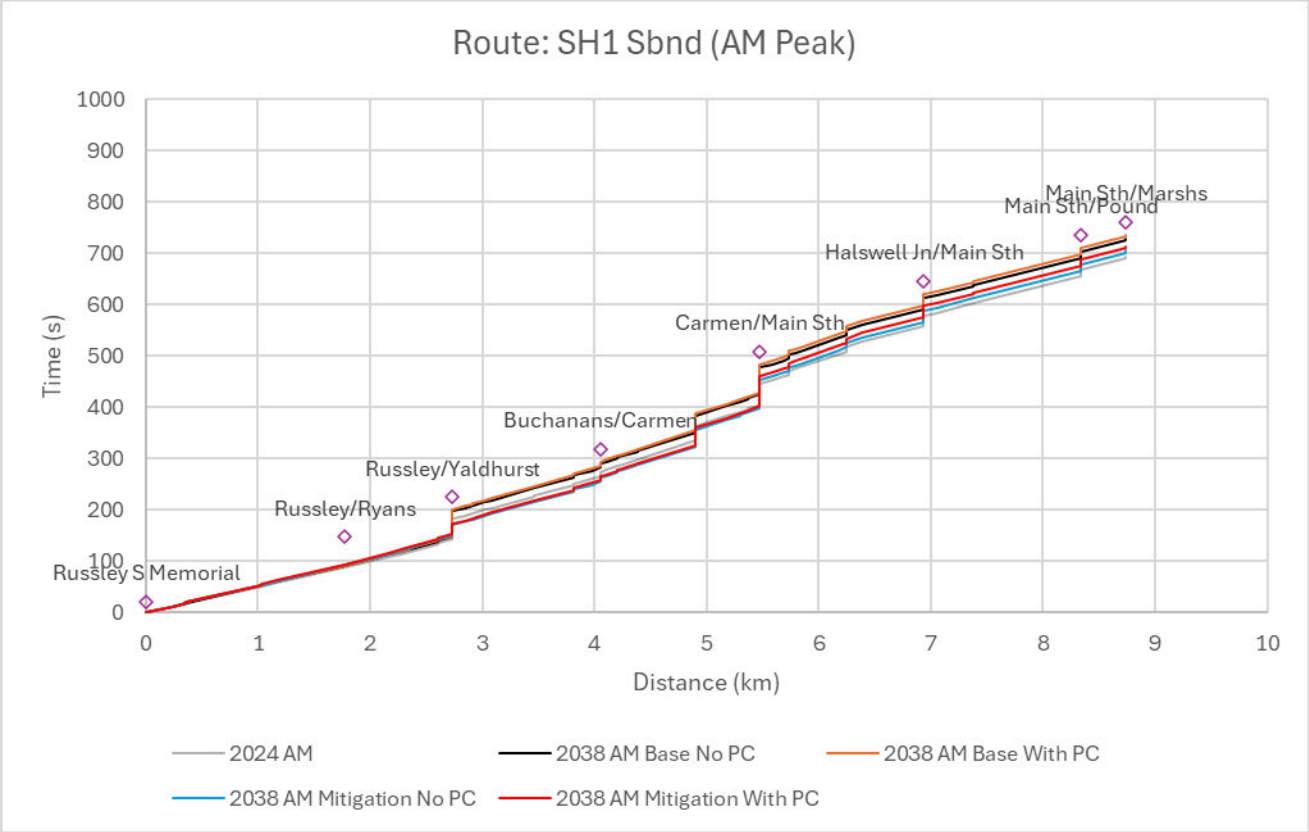

Route: Pound Nbnd (PM Peak)
Time (s)
Distance (km)
Main Sth/Marshs
Pound/Main Sth
Pound/Waterloo
Buchanans/Pound
Pound/Yaldhurst
Pound/Ryans
Grays/Ryans
Ryans/SH1
Russley S Memorial
Site W
2024 PM
2038 PM Base No PC
2038 PM Base With PC
2038 PM Mitigation No PC
2038 PM Mitigation With PC

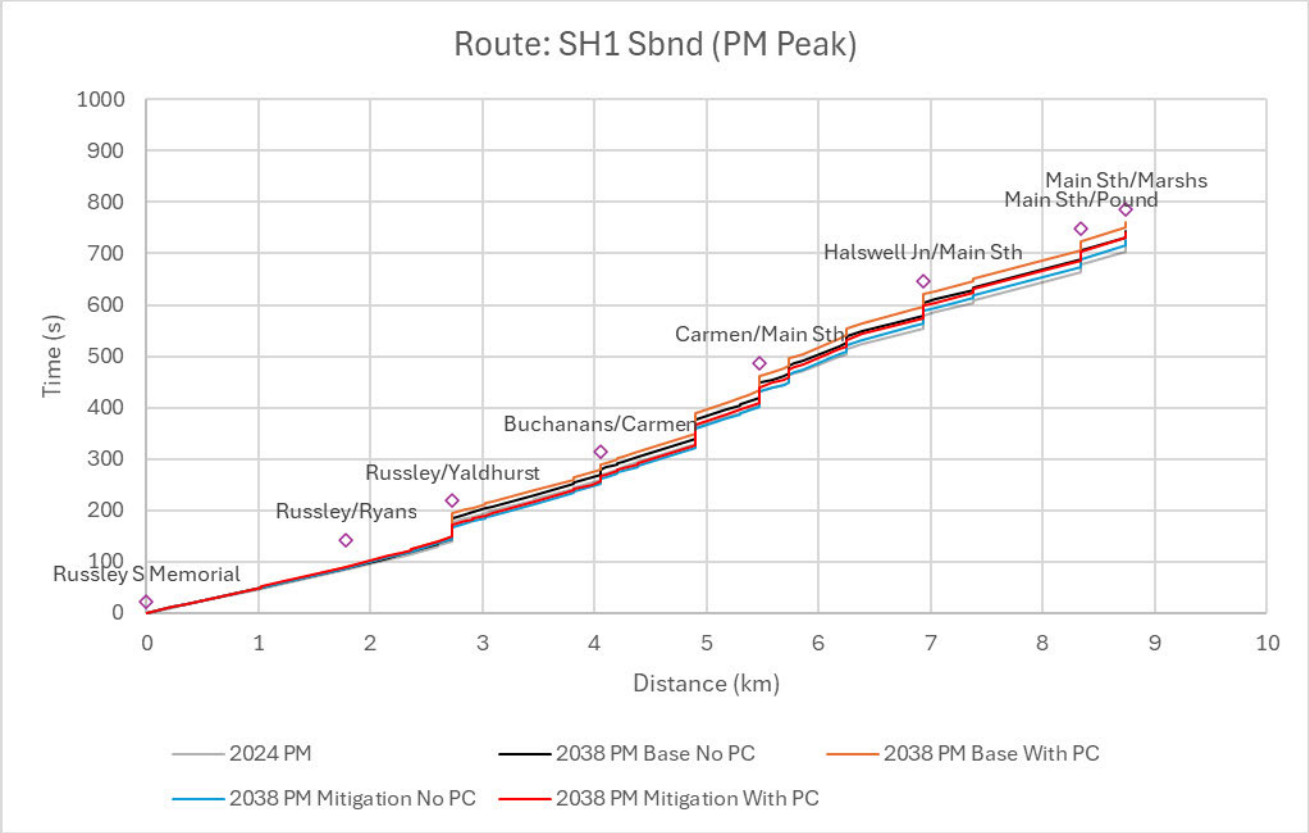

Route: Pound Sbnd (AM Peak)
Time (s)
Distance (km)
Main Sth/Marshs
Main Sth/Pound
Buchanans/Pound
Pound/Yaldhurst
Pound/Ryans
Grays/Ryans
Site W
Russley S Memorial
2024 AM
2038 AM Base No PC
2038 AM Base With PC
2038 AM Mitigation No PC
2038 AM Mitigation With PC


Route: Pound Sbnd (PM Peak)
Time (s)
Distance (km)
Main Sth/Marshs
Main Sth/Pound
Buchanans/Pound
Pound/Yaldhurst
Pound/Ryans
Grays/Ryans
Site W
Russley S Memorial
2024 PM
2038 PM Base No PC
2038 PM Base With PC
2038 PM Mitigation No PC
2038 PM Mitigation With PC


Route: SH1 Nbnd (AM Peak)
Time (s)
Distance (km)
Main Sth/Pound
Halswell Jn/Main Sth
Carmen/Main Sth
Buchanans/Carmen
Russley/Yaldhurst
Russley/Ryans
Russley S Memorial
2024 AM
2038 AM Base No PC
2038 AM Base With PC
2038 AM Mitigation No PC
2038 AM Mitigation With PC


Route: SH1 Nbnd (PM Peak)
Time (s)
Distance (km)
Main Sth/Pound
Halswell Jn/Main Sth
Carmen/Main Sth
Buchanans/Carmen
Russley/Yaldhurst
Russley/Ryans
Russley S Memorial
2024 PM
2038 PM Base No PC
2038 PM Base With PC
2038 PM Mitigation No PC
2038 PM Mitigation With PC


Route: SH1 Sbnd (AM Peak)
Time (s)
Distance (km)
Russley S Memorial
Russley/Ryans
Russley/Yaldhurst
Buchanans/Carmen
Carmen/Main Sth
Halswell Jn/Main Sth
Main Sth/Pound
Main Sth/Marshs
2024 AM
2038 AM Base No PC
2038 AM Base With PC
2038 AM Mitigation No PC
2038 AM Mitigation With PC


Route: SH1 Sbnd (PM Peak)
Time (s)
Distance (km)
Russley S Memorial
Russley/Ryans
Russley/Yaldhurst
Buchanans/Carmen
Carmen/Main Sth
Halswell Jn/Main Sth
Main Sth/Pound
Main Sth/Marshs
2024 PM
2038 PM Base No PC
2038 PM Base With PC
2038 PM Mitigation No PC
2038 PM Mitigation With PC

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Appendix 6: Trip Generation Data

Calculation Reference: AUDIT-191301-240813-0807

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : D - INDUSTRIAL ESTATE
TOTAL VEHICLES

Selected regions and areas:

09	NORTH		
	TV	TEES VALLEY	1 days
11	SCOTLAND		
	PK	PERTH & KINROSS	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Site area
Actual Range: 55.00 to 57.30 (units: hect)
Range Selected by User: 40 to 80 (units: hect)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/16 to 10/09/20

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Thursday	1 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	2 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town	1
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Village	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	X days - Selected
Servicing vehicles Excluded	2 days - Selected

Secondary Filtering selection:

Use Class:

Not Known	2 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Filter by Site Operations Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

5,001 to 10,000	1 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
125,001 to 250,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	2 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	2 days

This data displays the number of selected surveys with PTAL Ratings.

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

LIST OF SITES relevant to selection parameters

1 PK-02-D-01 INDUSTRIAL ESTATE PERTH & KINROSS
RUTHVENFIELD ROAD
PERTH
INVERALMOND
Edge of Town
No Sub Category
Total Site area: 57.30 hect
Survey date: THURSDAY *10/09/20* *Survey Type: MANUAL*

2 TV-02-D-03 INDUSTRIAL ESTATE TEES VALLEY
WYNYARD AVENUE
NEAR BILLINGHAM
WYNYARD
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Site area: 55.00 hect
Survey date: FRIDAY *04/09/20* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
TOTAL VEHICLES
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.140	1	57.30	0.052	1	57.30	0.192
00:30 - 01:00	1	57.30	0.157	1	57.30	0.087	1	57.30	0.244
01:00 - 01:30	1	57.30	0.157	1	57.30	0.000	1	57.30	0.157
01:30 - 02:00	1	57.30	0.227	1	57.30	0.052	1	57.30	0.279
02:00 - 02:30	1	57.30	0.227	1	57.30	0.070	1	57.30	0.297
02:30 - 03:00	1	57.30	0.192	1	57.30	0.070	1	57.30	0.262
03:00 - 03:30	1	57.30	0.209	1	57.30	0.017	1	57.30	0.226
03:30 - 04:00	1	57.30	0.244	1	57.30	0.122	1	57.30	0.366
04:00 - 04:30	1	57.30	0.349	1	57.30	0.052	1	57.30	0.401
04:30 - 05:00	1	57.30	0.384	1	57.30	0.140	1	57.30	0.524
05:00 - 05:30	1	57.30	0.803	1	57.30	0.489	1	57.30	1.292
05:30 - 06:00	1	57.30	1.012	1	57.30	0.366	1	57.30	1.378
06:00 - 06:30	1	57.30	2.199	1	57.30	0.838	1	57.30	3.037
06:30 - 07:00	1	57.30	4.450	1	57.30	1.204	1	57.30	5.654
07:00 - 07:30	2	56.15	3.642	2	56.15	1.389	2	56.15	5.031
07:30 - 08:00	2	56.15	5.022	2	56.15	2.378	2	56.15	7.400
08:00 - 08:30	2	56.15	4.159	2	56.15	2.386	2	56.15	6.545
08:30 - 09:00	2	56.15	3.562	2	56.15	2.066	2	56.15	5.628
09:00 - 09:30	2	56.15	2.903	2	56.15	2.618	2	56.15	5.521
09:30 - 10:00	2	56.15	2.333	2	56.15	2.422	2	56.15	4.755
10:00 - 10:30	2	56.15	2.511	2	56.15	2.547	2	56.15	5.058
10:30 - 11:00	2	56.15	2.084	2	56.15	2.689	2	56.15	4.773
11:00 - 11:30	2	56.15	2.128	2	56.15	2.858	2	56.15	4.986
11:30 - 12:00	2	56.15	2.422	2	56.15	3.010	2	56.15	5.432
12:00 - 12:30	2	56.15	2.600	2	56.15	3.357	2	56.15	5.957
12:30 - 13:00	2	56.15	2.591	2	56.15	2.716	2	56.15	5.307
13:00 - 13:30	2	56.15	2.520	2	56.15	3.134	2	56.15	5.654
13:30 - 14:00	2	56.15	2.520	2	56.15	2.030	2	56.15	4.550
14:00 - 14:30	2	56.15	2.422	2	56.15	3.224	2	56.15	5.646
14:30 - 15:00	2	56.15	2.351	2	56.15	3.019	2	56.15	5.370
15:00 - 15:30	2	56.15	2.333	2	56.15	3.482	2	56.15	5.815
15:30 - 16:00	2	56.15	2.529	2	56.15	3.001	2	56.15	5.530
16:00 - 16:30	2	56.15	2.573	2	56.15	4.274	2	56.15	6.847
16:30 - 17:00	2	56.15	2.066	2	56.15	3.793	2	56.15	5.859
17:00 - 17:30	2	56.15	1.710	2	56.15	3.847	2	56.15	5.557
17:30 - 18:00	2	56.15	1.558	2	56.15	2.894	2	56.15	4.452
18:00 - 18:30	2	56.15	1.264	2	56.15	2.208	2	56.15	3.472
18:30 - 19:00	2	56.15	1.042	2	56.15	1.772	2	56.15	2.814
19:00 - 19:30	1	57.30	1.536	1	57.30	2.094	1	57.30	3.630
19:30 - 20:00	1	57.30	1.291	1	57.30	1.449	1	57.30	2.740
20:00 - 20:30	1	57.30	0.838	1	57.30	0.541	1	57.30	1.379
20:30 - 21:00	1	57.30	0.785	1	57.30	0.366	1	57.30	1.151
21:00 - 21:30	1	57.30	0.925	1	57.30	0.279	1	57.30	1.204
21:30 - 22:00	1	57.30	0.855	1	57.30	0.401	1	57.30	1.256
22:00 - 22:30	1	57.30	0.803	1	57.30	0.349	1	57.30	1.152
22:30 - 23:00	1	57.30	0.908	1	57.30	0.471	1	57.30	1.379
23:00 - 23:30	1	57.30	0.785	1	57.30	0.297	1	57.30	1.082
23:30 - 24:00	1	57.30	1.030	1	57.30	0.349	1	57.30	1.379
Total Rates:			81.351			77.269			158.620

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	55.00 to 57.30 (units: hect)
Survey date date range:	01/01/16 - 10/09/20
Number of weekdays (Monday-Friday):	2
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
TAXIS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
00:30 - 01:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:00 - 01:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:30 - 02:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:00 - 02:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:30 - 03:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:00 - 03:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:30 - 04:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:00 - 04:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:30 - 05:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
05:00 - 05:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
05:30 - 06:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
06:00 - 06:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
06:30 - 07:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
07:00 - 07:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
07:30 - 08:00	2	56.15	0.009	2	56.15	0.000	2	56.15	0.009
08:00 - 08:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
08:30 - 09:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
09:00 - 09:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
09:30 - 10:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
10:00 - 10:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
10:30 - 11:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
11:00 - 11:30	2	56.15	0.018	2	56.15	0.009	2	56.15	0.027
11:30 - 12:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
12:00 - 12:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
12:30 - 13:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
13:00 - 13:30	2	56.15	0.009	2	56.15	0.009	2	56.15	0.018
13:30 - 14:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
14:00 - 14:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
14:30 - 15:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
15:00 - 15:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
15:30 - 16:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
16:00 - 16:30	2	56.15	0.009	2	56.15	0.000	2	56.15	0.009
16:30 - 17:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
17:00 - 17:30	2	56.15	0.009	2	56.15	0.000	2	56.15	0.009
17:30 - 18:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
18:00 - 18:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
18:30 - 19:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
19:00 - 19:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
19:30 - 20:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
20:00 - 20:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
20:30 - 21:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
21:00 - 21:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
21:30 - 22:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
22:00 - 22:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
22:30 - 23:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:00 - 23:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:30 - 24:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
Total Rates:			0.054			0.054			0.108

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
OGVS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
00:30 - 01:00	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
01:00 - 01:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:30 - 02:00	1	57.30	0.017	1	57.30	0.017	1	57.30	0.034
02:00 - 02:30	1	57.30	0.017	1	57.30	0.017	1	57.30	0.034
02:30 - 03:00	1	57.30	0.017	1	57.30	0.052	1	57.30	0.069
03:00 - 03:30	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
03:30 - 04:00	1	57.30	0.035	1	57.30	0.070	1	57.30	0.105
04:00 - 04:30	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
04:30 - 05:00	1	57.30	0.070	1	57.30	0.052	1	57.30	0.122
05:00 - 05:30	1	57.30	0.140	1	57.30	0.140	1	57.30	0.280
05:30 - 06:00	1	57.30	0.105	1	57.30	0.070	1	57.30	0.175
06:00 - 06:30	1	57.30	0.122	1	57.30	0.332	1	57.30	0.454
06:30 - 07:00	1	57.30	0.227	1	57.30	0.227	1	57.30	0.454
07:00 - 07:30	2	56.15	0.151	2	56.15	0.294	2	56.15	0.445
07:30 - 08:00	2	56.15	0.223	2	56.15	0.392	2	56.15	0.615
08:00 - 08:30	2	56.15	0.232	2	56.15	0.365	2	56.15	0.597
08:30 - 09:00	2	56.15	0.169	2	56.15	0.223	2	56.15	0.392
09:00 - 09:30	2	56.15	0.294	2	56.15	0.294	2	56.15	0.588
09:30 - 10:00	2	56.15	0.258	2	56.15	0.347	2	56.15	0.605
10:00 - 10:30	2	56.15	0.285	2	56.15	0.240	2	56.15	0.525
10:30 - 11:00	2	56.15	0.116	2	56.15	0.321	2	56.15	0.437
11:00 - 11:30	2	56.15	0.223	2	56.15	0.240	2	56.15	0.463
11:30 - 12:00	2	56.15	0.303	2	56.15	0.214	2	56.15	0.517
12:00 - 12:30	2	56.15	0.374	2	56.15	0.899	2	56.15	1.273
12:30 - 13:00	2	56.15	0.223	2	56.15	0.223	2	56.15	0.446
13:00 - 13:30	2	56.15	0.267	2	56.15	0.312	2	56.15	0.579
13:30 - 14:00	2	56.15	0.187	2	56.15	0.267	2	56.15	0.454
14:00 - 14:30	2	56.15	0.338	2	56.15	0.187	2	56.15	0.525
14:30 - 15:00	2	56.15	0.258	2	56.15	0.276	2	56.15	0.534
15:00 - 15:30	2	56.15	0.294	2	56.15	0.187	2	56.15	0.481
15:30 - 16:00	2	56.15	0.419	2	56.15	0.178	2	56.15	0.597
16:00 - 16:30	2	56.15	0.321	2	56.15	0.267	2	56.15	0.588
16:30 - 17:00	2	56.15	0.178	2	56.15	0.142	2	56.15	0.320
17:00 - 17:30	2	56.15	0.196	2	56.15	0.142	2	56.15	0.338
17:30 - 18:00	2	56.15	0.196	2	56.15	0.107	2	56.15	0.303
18:00 - 18:30	2	56.15	0.196	2	56.15	0.151	2	56.15	0.347
18:30 - 19:00	2	56.15	0.125	2	56.15	0.098	2	56.15	0.223
19:00 - 19:30	1	57.30	0.140	1	57.30	0.192	1	57.30	0.332
19:30 - 20:00	1	57.30	0.140	1	57.30	0.035	1	57.30	0.175
20:00 - 20:30	1	57.30	0.017	1	57.30	0.052	1	57.30	0.069
20:30 - 21:00	1	57.30	0.035	1	57.30	0.035	1	57.30	0.070
21:00 - 21:30	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
21:30 - 22:00	1	57.30	0.035	1	57.30	0.017	1	57.30	0.052
22:00 - 22:30	1	57.30	0.017	1	57.30	0.052	1	57.30	0.069
22:30 - 23:00	1	57.30	0.035	1	57.30	0.052	1	57.30	0.087
23:00 - 23:30	1	57.30	0.017	1	57.30	0.052	1	57.30	0.069
23:30 - 24:00	1	57.30	0.035	1	57.30	0.070	1	57.30	0.105
Total Rates:			7.115			7.900			15.015

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
PSVS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
00:30 - 01:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:00 - 01:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:30 - 02:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:00 - 02:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:30 - 03:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:00 - 03:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:30 - 04:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:00 - 04:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:30 - 05:00	1	57.30	0.000	1	57.30	0.017	1	57.30	0.017
05:00 - 05:30	1	57.30	0.000	1	57.30	0.157	1	57.30	0.157
05:30 - 06:00	1	57.30	0.017	1	57.30	0.105	1	57.30	0.122
06:00 - 06:30	1	57.30	0.122	1	57.30	0.122	1	57.30	0.244
06:30 - 07:00	1	57.30	0.052	1	57.30	0.140	1	57.30	0.192
07:00 - 07:30	2	56.15	0.018	2	56.15	0.071	2	56.15	0.089
07:30 - 08:00	2	56.15	0.018	2	56.15	0.045	2	56.15	0.063
08:00 - 08:30	2	56.15	0.018	2	56.15	0.071	2	56.15	0.089
08:30 - 09:00	2	56.15	0.018	2	56.15	0.027	2	56.15	0.045
09:00 - 09:30	2	56.15	0.045	2	56.15	0.053	2	56.15	0.098
09:30 - 10:00	2	56.15	0.018	2	56.15	0.009	2	56.15	0.027
10:00 - 10:30	2	56.15	0.053	2	56.15	0.036	2	56.15	0.089
10:30 - 11:00	2	56.15	0.036	2	56.15	0.036	2	56.15	0.072
11:00 - 11:30	2	56.15	0.053	2	56.15	0.036	2	56.15	0.089
11:30 - 12:00	2	56.15	0.018	2	56.15	0.036	2	56.15	0.054
12:00 - 12:30	2	56.15	0.027	2	56.15	0.027	2	56.15	0.054
12:30 - 13:00	2	56.15	0.036	2	56.15	0.018	2	56.15	0.054
13:00 - 13:30	2	56.15	0.045	2	56.15	0.045	2	56.15	0.090
13:30 - 14:00	2	56.15	0.045	2	56.15	0.018	2	56.15	0.063
14:00 - 14:30	2	56.15	0.027	2	56.15	0.036	2	56.15	0.063
14:30 - 15:00	2	56.15	0.018	2	56.15	0.027	2	56.15	0.045
15:00 - 15:30	2	56.15	0.018	2	56.15	0.071	2	56.15	0.089
15:30 - 16:00	2	56.15	0.018	2	56.15	0.045	2	56.15	0.063
16:00 - 16:30	2	56.15	0.080	2	56.15	0.053	2	56.15	0.133
16:30 - 17:00	2	56.15	0.062	2	56.15	0.018	2	56.15	0.080
17:00 - 17:30	2	56.15	0.036	2	56.15	0.027	2	56.15	0.063
17:30 - 18:00	2	56.15	0.027	2	56.15	0.009	2	56.15	0.036
18:00 - 18:30	2	56.15	0.062	2	56.15	0.027	2	56.15	0.089
18:30 - 19:00	2	56.15	0.080	2	56.15	0.009	2	56.15	0.089
19:00 - 19:30	1	57.30	0.192	1	57.30	0.035	1	57.30	0.227
19:30 - 20:00	1	57.30	0.035	1	57.30	0.017	1	57.30	0.052
20:00 - 20:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
20:30 - 21:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
21:00 - 21:30	1	57.30	0.000	1	57.30	0.017	1	57.30	0.017
21:30 - 22:00	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
22:00 - 22:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
22:30 - 23:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:00 - 23:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:30 - 24:00	1	57.30	0.000	1	57.30	0.035	1	57.30	0.035
Total Rates:			1.311			1.495			2.806

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
CYCLISTS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
00:30 - 01:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:00 - 01:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:30 - 02:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:00 - 02:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:30 - 03:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:00 - 03:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:30 - 04:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:00 - 04:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:30 - 05:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
05:00 - 05:30	1	57.30	0.035	1	57.30	0.000	1	57.30	0.035
05:30 - 06:00	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
06:00 - 06:30	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
06:30 - 07:00	1	57.30	0.000	1	57.30	0.035	1	57.30	0.035
07:00 - 07:30	2	56.15	0.009	2	56.15	0.000	2	56.15	0.009
07:30 - 08:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
08:00 - 08:30	2	56.15	0.018	2	56.15	0.009	2	56.15	0.027
08:30 - 09:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
09:00 - 09:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
09:30 - 10:00	2	56.15	0.009	2	56.15	0.009	2	56.15	0.018
10:00 - 10:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
10:30 - 11:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
11:00 - 11:30	2	56.15	0.009	2	56.15	0.000	2	56.15	0.009
11:30 - 12:00	2	56.15	0.027	2	56.15	0.027	2	56.15	0.054
12:00 - 12:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
12:30 - 13:00	2	56.15	0.009	2	56.15	0.018	2	56.15	0.027
13:00 - 13:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
13:30 - 14:00	2	56.15	0.009	2	56.15	0.009	2	56.15	0.018
14:00 - 14:30	2	56.15	0.000	2	56.15	0.036	2	56.15	0.036
14:30 - 15:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
15:00 - 15:30	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
15:30 - 16:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
16:00 - 16:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
16:30 - 17:00	2	56.15	0.018	2	56.15	0.018	2	56.15	0.036
17:00 - 17:30	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
17:30 - 18:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
18:00 - 18:30	2	56.15	0.000	2	56.15	0.036	2	56.15	0.036
18:30 - 19:00	2	56.15	0.009	2	56.15	0.009	2	56.15	0.018
19:00 - 19:30	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
19:30 - 20:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
20:00 - 20:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
20:30 - 21:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
21:00 - 21:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
21:30 - 22:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
22:00 - 22:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
22:30 - 23:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:00 - 23:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:30 - 24:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
Total Rates:			0.203			0.251			0.454

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
CARS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.140	1	57.30	0.052	1	57.30	0.192
00:30 - 01:00	1	57.30	0.140	1	57.30	0.087	1	57.30	0.227
01:00 - 01:30	1	57.30	0.157	1	57.30	0.000	1	57.30	0.157
01:30 - 02:00	1	57.30	0.209	1	57.30	0.035	1	57.30	0.244
02:00 - 02:30	1	57.30	0.209	1	57.30	0.035	1	57.30	0.244
02:30 - 03:00	1	57.30	0.157	1	57.30	0.017	1	57.30	0.174
03:00 - 03:30	1	57.30	0.192	1	57.30	0.017	1	57.30	0.209
03:30 - 04:00	1	57.30	0.209	1	57.30	0.052	1	57.30	0.261
04:00 - 04:30	1	57.30	0.332	1	57.30	0.052	1	57.30	0.384
04:30 - 05:00	1	57.30	0.314	1	57.30	0.052	1	57.30	0.366
05:00 - 05:30	1	57.30	0.558	1	57.30	0.140	1	57.30	0.698
05:30 - 06:00	1	57.30	0.785	1	57.30	0.157	1	57.30	0.942
06:00 - 06:30	1	57.30	1.483	1	57.30	0.192	1	57.30	1.675
06:30 - 07:00	1	57.30	3.421	1	57.30	0.436	1	57.30	3.857
07:00 - 07:30	2	56.15	2.858	2	56.15	0.499	2	56.15	3.357
07:30 - 08:00	2	56.15	3.544	2	56.15	0.988	2	56.15	4.532
08:00 - 08:30	2	56.15	2.743	2	56.15	1.051	2	56.15	3.794
08:30 - 09:00	2	56.15	2.743	2	56.15	1.086	2	56.15	3.829
09:00 - 09:30	2	56.15	1.906	2	56.15	1.398	2	56.15	3.304
09:30 - 10:00	2	56.15	1.434	2	56.15	1.407	2	56.15	2.841
10:00 - 10:30	2	56.15	1.523	2	56.15	1.683	2	56.15	3.206
10:30 - 11:00	2	56.15	1.380	2	56.15	1.647	2	56.15	3.027
11:00 - 11:30	2	56.15	1.327	2	56.15	1.888	2	56.15	3.215
11:30 - 12:00	2	56.15	1.443	2	56.15	2.004	2	56.15	3.447
12:00 - 12:30	2	56.15	1.487	2	56.15	1.674	2	56.15	3.161
12:30 - 13:00	2	56.15	1.799	2	56.15	1.932	2	56.15	3.731
13:00 - 13:30	2	56.15	1.621	2	56.15	2.173	2	56.15	3.794
13:30 - 14:00	2	56.15	1.710	2	56.15	1.220	2	56.15	2.930
14:00 - 14:30	2	56.15	1.523	2	56.15	2.262	2	56.15	3.785
14:30 - 15:00	2	56.15	1.434	2	56.15	2.084	2	56.15	3.518
15:00 - 15:30	2	56.15	1.532	2	56.15	2.663	2	56.15	4.195
15:30 - 16:00	2	56.15	1.541	2	56.15	2.110	2	56.15	3.651
16:00 - 16:30	2	56.15	1.451	2	56.15	3.197	2	56.15	4.648
16:30 - 17:00	2	56.15	1.469	2	56.15	3.232	2	56.15	4.701
17:00 - 17:30	2	56.15	1.095	2	56.15	3.277	2	56.15	4.372
17:30 - 18:00	2	56.15	1.149	2	56.15	2.458	2	56.15	3.607
18:00 - 18:30	2	56.15	0.784	2	56.15	1.817	2	56.15	2.601
18:30 - 19:00	2	56.15	0.650	2	56.15	1.496	2	56.15	2.146
19:00 - 19:30	1	57.30	1.030	1	57.30	1.710	1	57.30	2.740
19:30 - 20:00	1	57.30	0.977	1	57.30	1.239	1	57.30	2.216
20:00 - 20:30	1	57.30	0.785	1	57.30	0.436	1	57.30	1.221
20:30 - 21:00	1	57.30	0.733	1	57.30	0.262	1	57.30	0.995
21:00 - 21:30	1	57.30	0.855	1	57.30	0.227	1	57.30	1.082
21:30 - 22:00	1	57.30	0.768	1	57.30	0.366	1	57.30	1.134
22:00 - 22:30	1	57.30	0.750	1	57.30	0.262	1	57.30	1.012
22:30 - 23:00	1	57.30	0.838	1	57.30	0.384	1	57.30	1.222
23:00 - 23:30	1	57.30	0.733	1	57.30	0.227	1	57.30	0.960
23:30 - 24:00	1	57.30	0.977	1	57.30	0.227	1	57.30	1.204
Total Rates:			56.898			51.910			108.808

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
LGVS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
00:30 - 01:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:00 - 01:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:30 - 02:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:00 - 02:30	1	57.30	0.000	1	57.30	0.017	1	57.30	0.017
02:30 - 03:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:00 - 03:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:30 - 04:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:00 - 04:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:30 - 05:00	1	57.30	0.000	1	57.30	0.017	1	57.30	0.017
05:00 - 05:30	1	57.30	0.105	1	57.30	0.052	1	57.30	0.157
05:30 - 06:00	1	57.30	0.105	1	57.30	0.035	1	57.30	0.140
06:00 - 06:30	1	57.30	0.471	1	57.30	0.192	1	57.30	0.663
06:30 - 07:00	1	57.30	0.733	1	57.30	0.401	1	57.30	1.134
07:00 - 07:30	2	56.15	0.606	2	56.15	0.525	2	56.15	1.131
07:30 - 08:00	2	56.15	1.211	2	56.15	0.944	2	56.15	2.155
08:00 - 08:30	2	56.15	1.167	2	56.15	0.899	2	56.15	2.066
08:30 - 09:00	2	56.15	0.632	2	56.15	0.712	2	56.15	1.344
09:00 - 09:30	2	56.15	0.641	2	56.15	0.855	2	56.15	1.496
09:30 - 10:00	2	56.15	0.623	2	56.15	0.659	2	56.15	1.282
10:00 - 10:30	2	56.15	0.650	2	56.15	0.588	2	56.15	1.238
10:30 - 11:00	2	56.15	0.552	2	56.15	0.650	2	56.15	1.202
11:00 - 11:30	2	56.15	0.508	2	56.15	0.686	2	56.15	1.194
11:30 - 12:00	2	56.15	0.659	2	56.15	0.748	2	56.15	1.407
12:00 - 12:30	2	56.15	0.712	2	56.15	0.748	2	56.15	1.460
12:30 - 13:00	2	56.15	0.534	2	56.15	0.534	2	56.15	1.068
13:00 - 13:30	2	56.15	0.570	2	56.15	0.579	2	56.15	1.149
13:30 - 14:00	2	56.15	0.579	2	56.15	0.516	2	56.15	1.095
14:00 - 14:30	2	56.15	0.534	2	56.15	0.739	2	56.15	1.273
14:30 - 15:00	2	56.15	0.641	2	56.15	0.632	2	56.15	1.273
15:00 - 15:30	2	56.15	0.490	2	56.15	0.561	2	56.15	1.051
15:30 - 16:00	2	56.15	0.543	2	56.15	0.668	2	56.15	1.211
16:00 - 16:30	2	56.15	0.677	2	56.15	0.757	2	56.15	1.434
16:30 - 17:00	2	56.15	0.356	2	56.15	0.392	2	56.15	0.748
17:00 - 17:30	2	56.15	0.374	2	56.15	0.392	2	56.15	0.766
17:30 - 18:00	2	56.15	0.169	2	56.15	0.312	2	56.15	0.481
18:00 - 18:30	2	56.15	0.223	2	56.15	0.205	2	56.15	0.428
18:30 - 19:00	2	56.15	0.187	2	56.15	0.169	2	56.15	0.356
19:00 - 19:30	1	57.30	0.175	1	57.30	0.157	1	57.30	0.332
19:30 - 20:00	1	57.30	0.140	1	57.30	0.157	1	57.30	0.297
20:00 - 20:30	1	57.30	0.035	1	57.30	0.052	1	57.30	0.087
20:30 - 21:00	1	57.30	0.017	1	57.30	0.070	1	57.30	0.087
21:00 - 21:30	1	57.30	0.052	1	57.30	0.035	1	57.30	0.087
21:30 - 22:00	1	57.30	0.035	1	57.30	0.017	1	57.30	0.052
22:00 - 22:30	1	57.30	0.035	1	57.30	0.035	1	57.30	0.070
22:30 - 23:00	1	57.30	0.035	1	57.30	0.035	1	57.30	0.070
23:00 - 23:30	1	57.30	0.035	1	57.30	0.017	1	57.30	0.052
23:30 - 24:00	1	57.30	0.017	1	57.30	0.017	1	57.30	0.034
Total Rates:			15.828			15.776			31.604

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
MOTOR CYCLES
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 00:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
00:30 - 01:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:00 - 01:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
01:30 - 02:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:00 - 02:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
02:30 - 03:00	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
03:00 - 03:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
03:30 - 04:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:00 - 04:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
04:30 - 05:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
05:00 - 05:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
05:30 - 06:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
06:00 - 06:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
06:30 - 07:00	1	57.30	0.017	1	57.30	0.000	1	57.30	0.017
07:00 - 07:30	2	56.15	0.009	2	56.15	0.000	2	56.15	0.009
07:30 - 08:00	2	56.15	0.018	2	56.15	0.009	2	56.15	0.027
08:00 - 08:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
08:30 - 09:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
09:00 - 09:30	2	56.15	0.018	2	56.15	0.018	2	56.15	0.036
09:30 - 10:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
10:00 - 10:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
10:30 - 11:00	2	56.15	0.000	2	56.15	0.036	2	56.15	0.036
11:00 - 11:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
11:30 - 12:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
12:00 - 12:30	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
12:30 - 13:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
13:00 - 13:30	2	56.15	0.009	2	56.15	0.018	2	56.15	0.027
13:30 - 14:00	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
14:00 - 14:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
14:30 - 15:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
15:00 - 15:30	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
15:30 - 16:00	2	56.15	0.009	2	56.15	0.000	2	56.15	0.009
16:00 - 16:30	2	56.15	0.036	2	56.15	0.000	2	56.15	0.036
16:30 - 17:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
17:00 - 17:30	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
17:30 - 18:00	2	56.15	0.018	2	56.15	0.000	2	56.15	0.018
18:00 - 18:30	2	56.15	0.000	2	56.15	0.009	2	56.15	0.009
18:30 - 19:00	2	56.15	0.000	2	56.15	0.000	2	56.15	0.000
19:00 - 19:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
19:30 - 20:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
20:00 - 20:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
20:30 - 21:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
21:00 - 21:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
21:30 - 22:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
22:00 - 22:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
22:30 - 23:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:00 - 23:30	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
23:30 - 24:00	1	57.30	0.000	1	57.30	0.000	1	57.30	0.000
Total Rates:			0.151			0.135			0.286

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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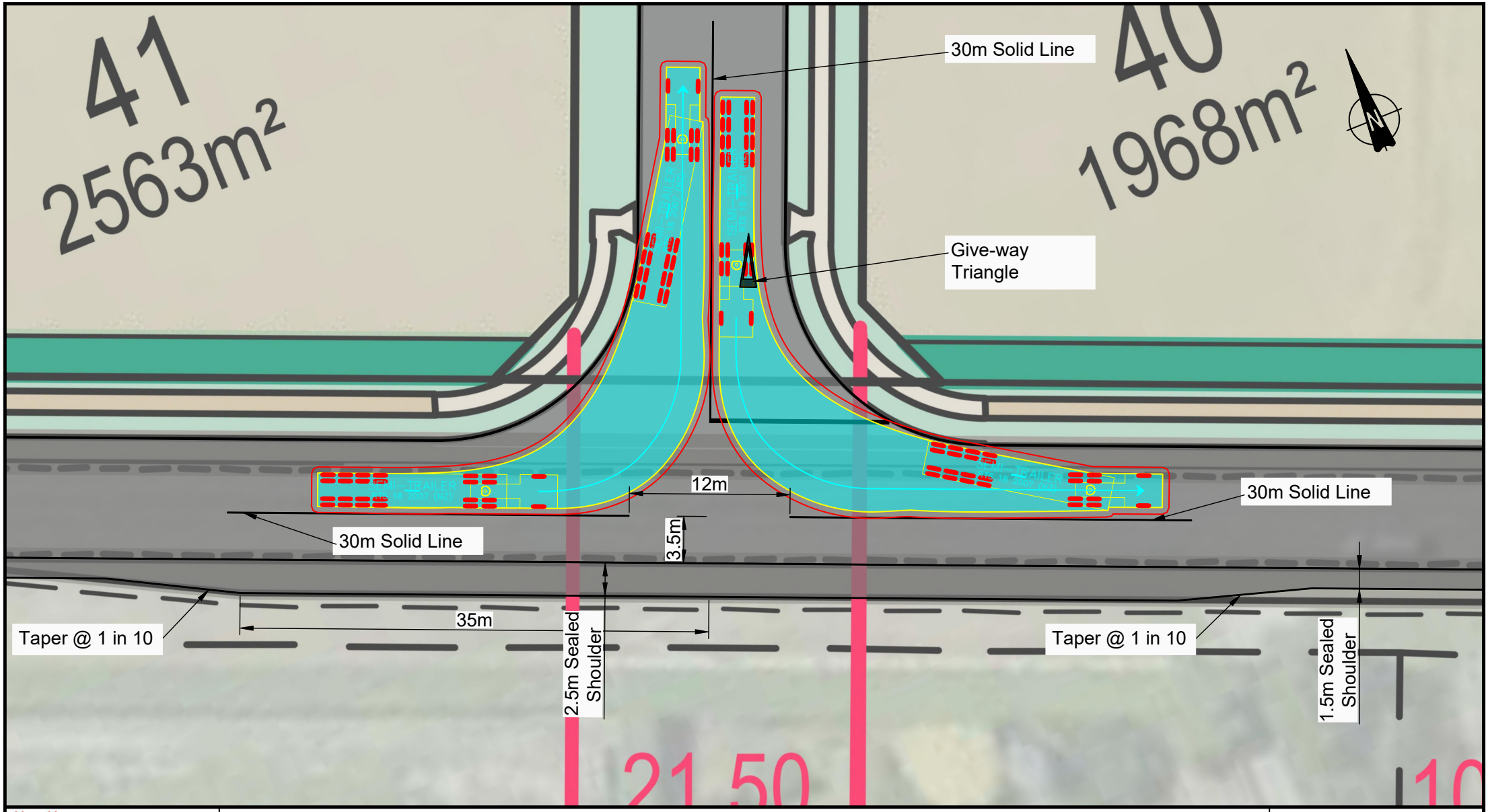
Appendix 7: Concept Intersection Arrangements



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Ryans Rd Subdivision
The Carter Group

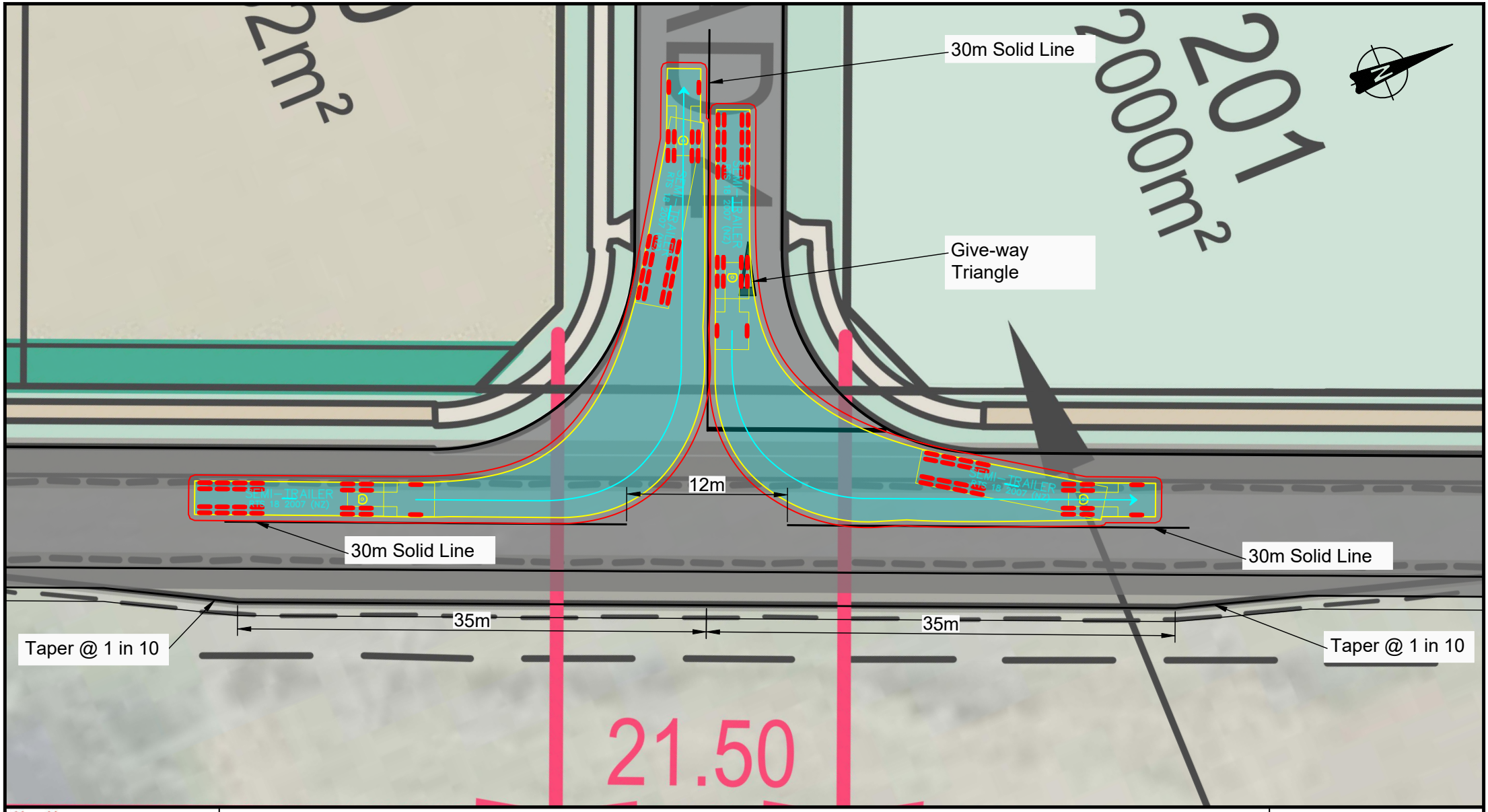
Typical Ryans Rd Intersection

For Information

Drawing: **0021-050 - Ryans - DWD100X-B**

Sheet
0021-050-SK1001-B

Scale @A4 1:400
Date 14/02/2025
By N Fuller
Project # 0021-050



Ryans Rd Subdivision
The Carter Group

Typical Grays Rd Intersection

For Information

Drawing: 0021-050 - Ryans - DWD100X-B

Sheet
0021-050-SK1002-B

Scale @A4 1:400
Date 14/02/2025
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Project # 0021-050

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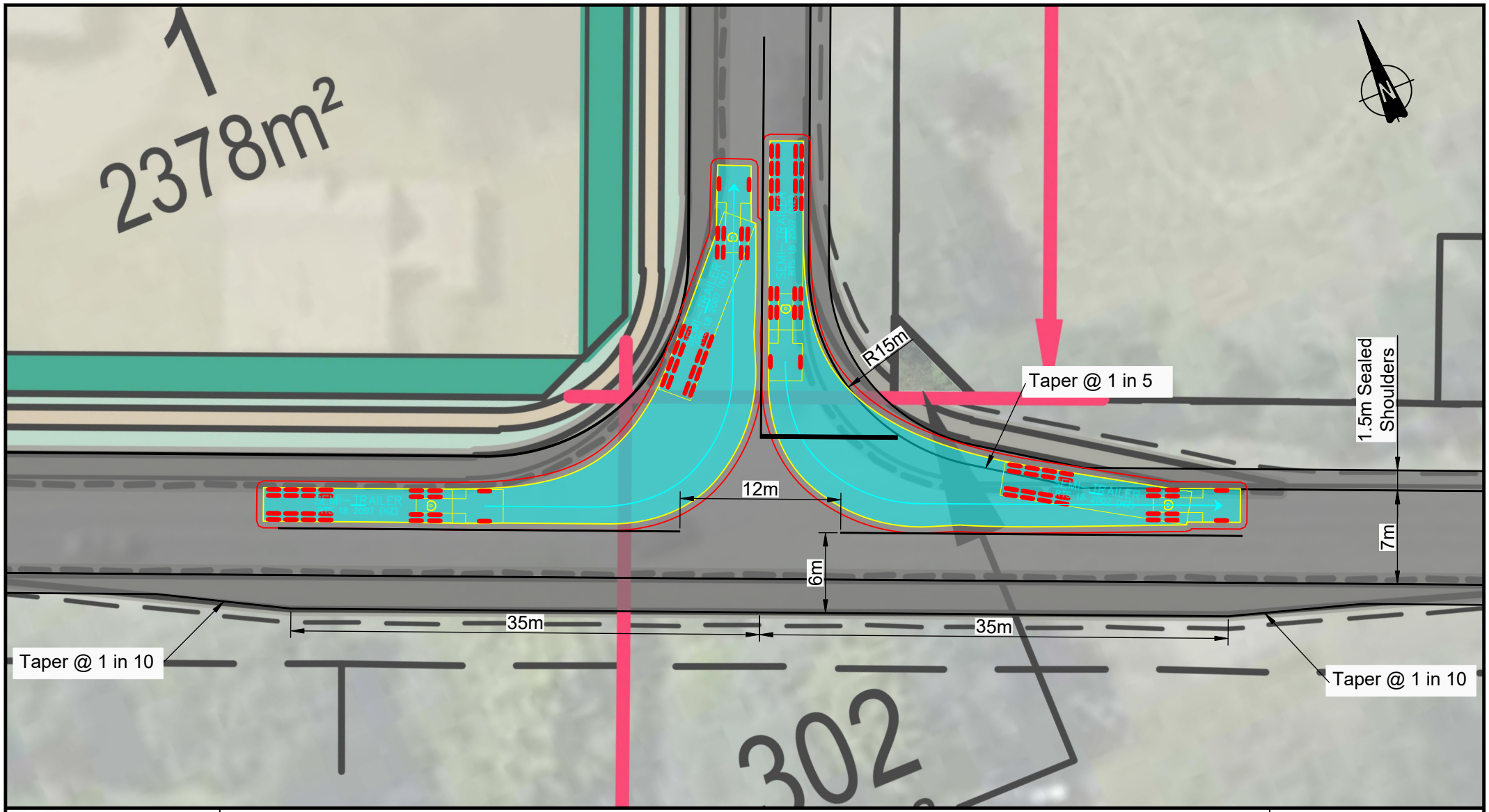

Ryans Rd Subdivision
The Carter Group

Ryans Rd / Grays Rd Intersection

For Information

Drawing: 0021-050 - Ryans - DWD100X-B

Sheet: 0021-050-SK1003-B

Scale @A4 1:400

Date 14/02/2025

By N Fuller

Project # 0021-050

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Appendix 8: District Plan Compliance

Rule / Standard	Comment	Complies?
7.4.3.1 Minimum and maximum number and dimensions of car parking spaces required	To be determined at Resource Consent stage for activities.	Assumed to comply
7.4.3.2 Minimum number of cycle parking facilities required	To be determined at Resource Consent stage for activities.	Assumed to comply
7.4.3.3 Minimum number of loading spaces required	To be determined at Resource Consent stage for activities.	Assumed to comply
7.4.3.4 Manoeuvring for parking and loading areas	To be determined at Resource Consent stage for activities.	Assumed to comply
7.4.3.5 Gradient of parking and loading areas	To be determined at Resource Consent stage for activities.	Assumed to comply
7.4.3.6 Design of parking areas and loading areas	To be determined at Resource Consent stage for activities.	Assumed to comply
7.4.3.7 Access design	To be determined at Resource Consent stage for activities.	Assumed to comply
7.4.3.8 Vehicle crossings	Assumed to generally comply on the basis the speed limit on Ryans Road and Grays Road is either the existing 60km/h or the proposed 50km/h. The standards only apply to speed environments of 70km/h or greater. The sight distance requirements for a 50km/h road may not be achieved for sites on the inside of the bend in Road 4.	May not comply
7.4.3.9 Location of buildings and access in relation to road/rail level crossings	There are no rail crossing near the site.	Complies
7.4.3.10 High trip generators	To be determined at Resource Consent stage for activities.	-
7.4.3.11 Vehicle access to sites fronting more than one street - Within the Central City	Not Applicable	N/A
7.4.3.12 Lane Formation - Within the Central City	Not Applicable	N/A
8.6.3 Access	*All sites shall have access which is able to allow vehicles to pass to and from a formed road, and such access shall be in accordance with Appendix 8.10.2 to this chapter and the standards set out in Chapter 7.* This references access strips, access lots and right of ways. These are not proposed.	N/A

Rule / Standard	Comment	Complies?
8.6.4 Roads	*All roads shall be laid out, constructed and vested in accordance with the standards set out in Appendix 8.10.3, and in Chapter 7, except where alternative standards are set out in an outline development plan.* The proposed formed width of the Ryans Road and Grays Road is 10.5m rather than the 11m required by the District Plan. A footpath is only proposed on one side of the roads, rather than both sides required by the District Plan.	**No**
17.5.2.7 Vehicle trips	*The maximum number of vehicle trips per site for all activities, other than for farming or Commercial Film or Video Production, shall be 100 per day.* The sites are likely to generate greater than 100 vehicle movements per day.	**No**

Appendix 9: Proposed SH73 / Pound Road Intersection Markings

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Ryans Road Subdivision
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Yaldhurst Road / Pound Road Intersection - Concept Lane Markings

For Information

Drawing: **0021-050 - Ryans - DWD100X-A**

Sheet **0021-050-SK1004-A**

Scale @A3 1/600

Date 09/01/2025

By N Fuller

Project #0021-050