

20 March 2026

Peter Skilton
Private Bag 2402
Te Awamutu
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Dear Peter

RE: Ōhaupō Private Plan Change – Request for Further Information Response

Thank you for your letter dated 13 January 2026 requesting further information in relation to the Ōhaupō Private Plan Change (“**the Plan Change** or **PPC**”) application. The matters from your letter are addressed below.

Transportation

Safety effects of delays for right turning vehicles at Ryburn Road / Ōhaupō Road intersection

The ITA indicates there is currently a significant delay for traffic wanting to turn right into SH3 (Ōhaupō Road) at peak times. The intersection has a single lane for traffic to queue to turn left or right. The SIDRA intersection modelling shows 10m of separate lanes for left and right turning traffic and as such is somewhat flawed. Increased traffic movements could result in a right-turning vehicle blocking all left turning traffic. When delays exceed 60 seconds the following safety effects could arise:

- > *Drivers are more likely to take risks and accept smaller gaps to enter the traffic flow on SH3.*
- > *Left turn vehicles will try and squeeze by right turning vehicles (perhaps mounting kerb and footpath) and making turns with visibility restricted by right turning vehicles.*
- > *Vehicles on SH3 are travelling at 70kph or greater making potential collision risks greater.*

1. *Please amend the ITA to include identification, assessment and identification of mitigation measures (if any) of the issues discussed above.*
2. *Please amend the ITA to consider the potential for traffic to divert along Charles Edwards Street to avoid the Ryburn Road / SH3 intersection and potential impacts on that route.*
3. *Please confirm if the amended ITA has been submitted to NZTA and if so please provide correspondence from them of this and whether their original assessment remains valid.*
4. *Please amend the ITA to evaluate changing the road speed environment to ensure all traffic approaches at a safe speed within available sightlines so that vegetation and fixed obstructions are not an issue that needs to be changed.*
5. *Please amend the ITA to evaluate effects of the intersection / entranceway separation and road widening. To this effect the assessment would benefit from the provision of a diagram illustrating the design of the new intersection relative to the requirements of RITS.*
6. *Please amend the ITA to evaluate the safety of the crossing of Ryburn Road by pedestrians and cyclists and identify mitigation measures to ensure that safe crossing of the road is designed and provided for as part of any subsequent subdivision.*
7. *Please amend the ITA to evaluate the appropriate grade acceptable for pedestrians and identify mitigation measures to ensure that this is designed and catered for as part of any subsequent subdivision.*

RESPONSE

CKL have provided a response to all matters requested above. This information can be found in **Attachment A**.

Stormwater from roads

8. *Please amend the ITA, Te Miro Waters Report or geotechnical report as necessary and appropriate to consider, evaluate and identify mitigation measures to ensure that all of the stormwater issues and concerns identified above are designed and catered for as part of any subsequent subdivision.*
9. *Please provide maps overlaying where proposed swale locations intersect with areas of poor soakage and provide further feasibility detail of what the alternative design solutions are proposed for steep road sections and low-lying areas where soakage is likely to be ineffective.*

Stormwater Management / Flood Risks

10. *Please confirm how the structure plan / subdivision design will ensure that stormwater runoff is managed entirely within the development footprint and does not adversely affect adjacent properties or infrastructure.*
11. *Please provide soakage tests to confirm that the stormwater management strategy / philosophy for future development and subdivision is achievable and manageable.*

12. *In the event that soakage tests result in soakage not being viable please identify an alternative stormwater management philosophy for consideration and assessment.*
13. *Please provide information to demonstrate what the post development flood prone levels will be and confirm if building platforms and on-site wastewater disposal areas will be located clear of flood prone land and wetland areas.*
14. *Please provide post-development flood modelling for the 10 year and 100 year (plus climate change) storm events, showing flood extents within the site boundaries.*

RESPONSE

With regard to the stormwater management at the site, Te Miro Water (“**TMW**”) have provided a response to the matters raised within the RFI¹ and following the review of information by Waipā District Council (“**WDC**”) an updated Three Waters Assessment can be prepared.

Soakage swale²

The WDC comments on soakage constraints have been understood and based on this it has been proposed that the roadside swales are for 10yr conveyance and water quality treatment.

Flood assessment for pre and post development³

WDC raised concerns about the flood levels for pre and post development scenarios to assess whether or not the generated runoff will be contained within the development and does not impact the adjacent properties or infrastructure.

To assess the displacement impacts, TMW developed a site specific TUFLOW flood model for 2, 10 and 100-year ARI (RCP6) storms. The model includes the flows coming to the site from the upstream catchments, and the pipes, roads and railway culverts crossings, and specifically the Ryburn Road bridge are incorporated into the 2D TUFLOW flood model. The flood maps are provided in **Figure 1 to Figure 6**. Based on the flood levels, and the 100-year flood depth difference (**Figure 7**), it can be seen that the impact of the proposed development on flood displacement is nominal.

Additionally, the proposed buildings platforms can be placed outside the 100-year flood hazard zones and overland flow paths (**Figure 8**). Only in the west and southwest (Lots 12-19 according to the lots layout) is it proposed to put the building platforms on void piles above the flood level + 500 mm minimum freeboard, with required setbacks from the wetlands.

¹ Items 8-14

² Items 8 and 9

³ Items 10-14

Wastewater treatment⁴

Setbacks from the wetlands and water bodies to avoid risk of contamination from the effluent disposal area will be provided for within the design. The proposed wastewater systems (including treatment units and land application areas) will be placed outside the 20-year flood levels (for secondary treated effluent), in accordance with AS/NZS 1547 and Auckland Onsite Wastewater Management Guideline 2021 (Table 14).

In the lots that are flooded (lots 12-19), advanced secondary systems with disposal to raised earth mound systems is an option for design. Another option is advanced tertiary treatment (nutrient reduction and disinfection unit such as chlorination or UV) which require less disposal field compared to the secondary and primary systems. Advanced Tertiary wastewater treatment systems require a reduced 10m setback from the surface water (streams, wetlands, overland flow paths, measured from the edge of the waterway) and 1.5 m from the property boundary and buildings (Table 14 - Auckland Onsite Wastewater Management Guideline 2021).

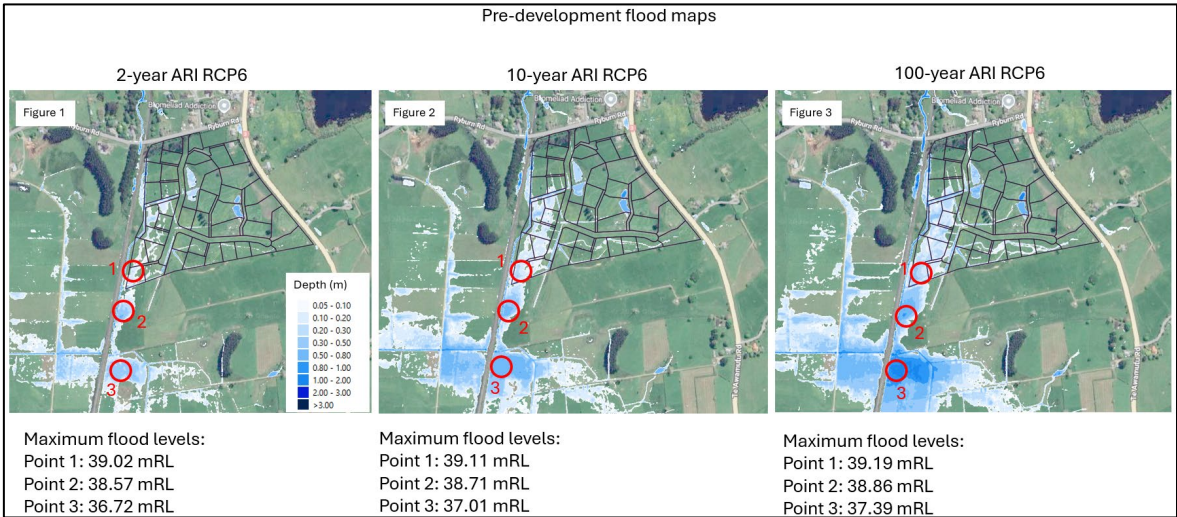


Figure 1 to Figure 3: Pre-development Flood Maps

⁴ Item 13

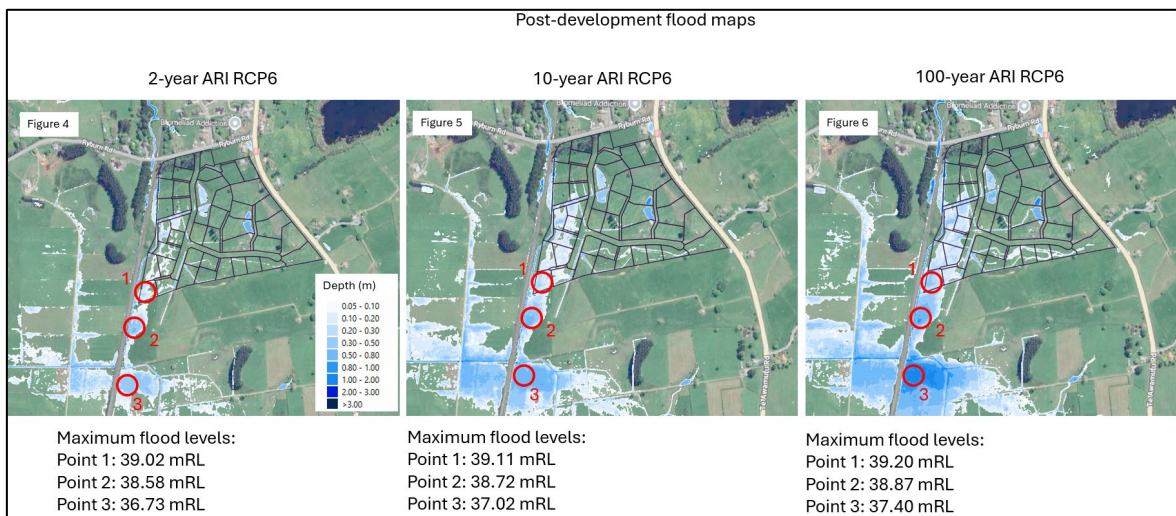


Figure 4 to Figure 6: Post Development Flood Maps

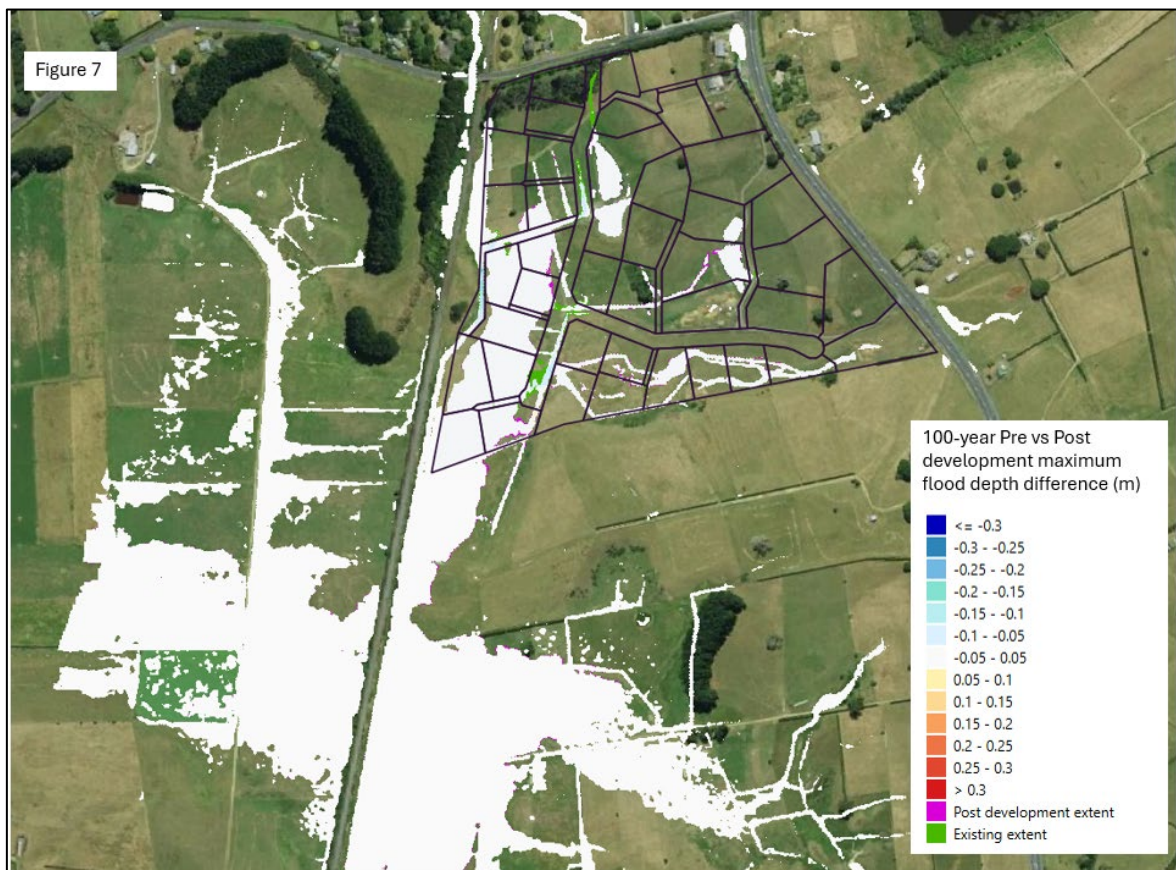


Figure 7: Pre and Post Development Flood Depth Difference



Figure 8: 100-year Flood Hazard Zones and Overland Flow Paths

In summary:

- > The flood assessment confirms negligible displacement effects outside the site boundary in terms of maximum flood depth and flow rate. This includes the rail corridor;
- > Development platforms will be required in certain lots for flood resilience in relation to finished floor levels and dry access;
- > Soakage function is no longer recommended for swale design - swales are for treatment only; and
- > Wastewater systems will be designed for flood safety and environmental protection in accordance with AS/NZS 1547.

Reserve Provisions

- > *The application provides a statement that public access to the wetland and stream areas will be improved, providing enhanced recreational and cultural opportunities. It is unclear if the intention to do this needs to be captured in an associated ruleset or if there would be sufficient grounds to request these elements at subdivision stage.*
- > *The ecological report notes the importance of protecting the permanent stream, pond and wetland areas. The proposed plan change shows stormwater reserve areas over the pond, and part of the western stream however does not provide reservation over the wetland area/s or the southern portion of the western stream (which are instead shown as standard LLRZ zoning). It is unclear how the stream and wetland areas will be adequately protected or provided with required buffer from development, in alignment with the requirements of the ecological report.*
- > *Ahu Ake signals the eventual planned expansion of the cycleway network linking Pironga, Lake Ngā Roto, Ōhaupō and Te Awamutu. The indicative route from Lake Ngā Roto connects through Ryburn Road past the proposed plan change area. Any roading design should be mindful of future connections to the southwest out Ryburn Road to allow for potential connections.*
- > *It is noted that the proposed removal of the landscape area overlay (State Highway 3 Scenic Corridor Landscape Overlay) is not in alignment with requests within the Cultural Impact Assessment that requires assurance that the site will be developed in a manner than protects viewlines to surrounding maunga.*

15. *Please provide assessment on how the structure plan and proposed provisions will ensure that the outcomes and recommendations of specialist reports relating to cultural impact, ecology, landscape will be achieved by future development and subdivision. In this respect please consider:*

- > *The use of native plantings to reinforce traditional ecology and whakapapa.*
- > *Development of an area that has cultural connection and viewlines to Mt Pirongia.*
- > *A pou whenua or sculpture.*
- > *Incorporation of play elements, rest areas, picnic areas.*
- > *Accessible walking loop track.*
- > *Improvement of connectivity by incorporating access legs off cul-de-sac heads near reserves.*
- > *Protection and enhancement of all wetland areas, and provision of appropriate buffers.*
- > *Provision of connection to land to the south for potential cycleway to lake Ngaroto.*

RESPONSE

It is agreed that the matters identified above are important matters with regard to development of a greenfield site. It is however considered that the level of detail sought by these matters is beyond the scope of a Plan Change Application, which is simply seeking to rezone the land. These matters will form part of any subsequent sub-division application where, if it is not considered the matters have been adequately addressed, WDC have the ability to request the information.

Furthermore, in response to the pre-amble prior to the requested information, it is noted:

- > There is no intention to include additional provisions to the Waipā District Plan (“**WDP**”) to manage the wetland and stream areas. These areas are not identified for development as part of the Structure Plan which any subsequent subdivision application is required to be in accordance with (refer the general comment below).
- > For simplicity it has been proposed to zone the whole of the Plan Change area as Large Lot Residential, however as set out above, any subdivision is to be developed in accordance with the Structure Plan which does not provide for housing within the areas identified for protection as part of the Ecological Assessment.
- > The detailed design of any roading and associated cycleway will be undertaken as part of the subdivision consent process, and it is not considered this is required as part of the Plan Change.
- > The Cultural Impact Assessment (“**CIA**”) was prepared on the basis of the State Highway 3 Scenic Corridor being removed, with the CIA confirming support for the project. Furthermore, the mitigations as set out in the Landscape and Visual Assessment will provide for the view lines to Mount Pirongia being protected (as discussed below).

16. *Please provide assessment on how the existing views from SH3 across the site will be maintained to ensure that the outcomes of the SH3 scenic corridor overlay are maintained. In this respect, please identify how measures could be incorporated into plan provisions to ensure that views from SH3 are not restricted through erection of barriers such as solid screen fences and the planting of shelterbelts / hedges and other structures adjacent to and along the road boundary.*

RESPONSE

It is sought as part of the Plan Change to remove the State Highway 3 Scenic Corridor Landscape Overlay. This position is supported by the Landscape and Visual Assessment prepared by Boffa Miskell and also supported by Mana Whenua as set out in the CIA. It is however proposed that at the stage of subdivision mitigation of landscape and visual effects will include:

- > The cutting of building platforms to sit in the landscape;
- > The use of semi-open fencing with planting and shrubs utilised;
- > Single story buildings along State Highway 3 with a maximum height of 5 m;
- > Building design controls (including limits on roof pitches, colours of materials and glazing requirements);
- > The provision of landscape concept plans, including:
 - > Design approach.

- > Street tree and amenity planting.
- > Boundary treatments including planting and fencing.
- > Reserve design, including pond, planting and opportunity for seating and pathways.
- > Fencing plan.

It is considered that the provision of these matters during the subdivision phase would maintain the views of the wider area to an appropriate level.

As a general comment in regard to the reserve provisions, an amended Structure Plan is included in **Attachment B**, this amendment includes the Structure Plan figure as well as the key ecological, landscape, visual and servicing provisions. These provisions have been included within the Structure Plan to ensure that any subdivision is developed in accordance with the information provided in the Plan Change Application. No additional provisions to the WDP provisions are considered necessary to support the inclusion of these provisions as the WDP already requires activities to be undertaken in general accordance with the relevant Structure Plan.

Conclusion

We trust the information within this letter satisfies the Request for Further Information, however, please reach out if anything further is required or you would like to discuss the information.

Yours sincerely,



Madi Lawry

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ATTACHMENT A | CKL TRANSPORT RESPONSE

Our Ref: B24106

19 March 2026

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Issued via: madison.lawry@mitchelldaysh.co.nz

Dear Madi

13 Ryburn Road, Ohaupo – Section 92 (s92) Further Information Request Response

This letter addresses the transportation aspects of a Section 92 Request for Additional Information from Waipa District Council (WDC) in relation to the proposed private plan change associated with the proposed residential subdivision located at 13 Ryburn Road, Ohaupo. The transport-related request headings from WDC are provided in bold, italicised text, with the information for consideration also italicised and numbering used to match that within the request, and a response is provided below each item.

Safety effects of delays for right turning vehicles at Ryburn Road / Ōhaupō Road intersection

The ITA indicates there is currently a significant delay for traffic wanting to turn right into SH3 (Ōhaupō Road) at peak times. The intersection has a single lane for traffic to queue to turn left or right. The SIDRA intersection modelling shows 10m of separate lanes for left and right turning traffic and as such is somewhat flawed. Increased traffic movements could result in a right-turning vehicle blocking all left turning traffic. When delays exceed 60 seconds the following safety effects could arise:

- *Drivers are more likely to take risks and accept smaller gaps to enter the traffic flow on SH3.*
- *Left turn vehicles will try and squeeze by right turning vehicles (perhaps mounting kerb and footpath) and making turns with visibility restricted by right turning vehicles.*
- *Vehicles on SH3 are travelling at 70kph or greater making potential collision risks greater. Widening of the intersection to alleviate congestion is not recommended as the collision risk is much greater where vehicles are frequently side by side vying for a gap in traffic and blocking each others' visibility.*

These issues have not been adequately addressed by the ITA and they should be canvassed in the application and information shared with NZTA.

- Please amend the ITA to include identification, assessment and identification of mitigation measures (if any) of the issues discussed above.***

Capacity

The Ryburn Road / SH3 intersection is an existing stop-controlled intersection which facilitates both left and right turn movements and incorporates a 3m wide right turn bay from SH3.

Section 4 of the ITA assesses the traffic effects of the proposed development using a conservative assessment approach to include up to 50 residential dwellings although only 41 are proposed. SIDRA modelling was also included within Section 4 of the ITA, where the lane arrangement showed separate left and right turn lanes to reflect observed behaviours. To address the concern raised by this existing behaviour, the SIDRA modelling has been updated assuming a shared turn lane, with the dual turn lane and associated dual queuing at the stop line removed. This is presented in Tables 1 and 2 below.

The summarized results are shown in Table 1 and Table 2 below.

Table 1: Ryburn Road / SH3 AM SIDRA Results – Single Lane Ryburn Road Approach

Approach	Movement	No Plan Change			With Plan Change		
		Ave Delay (s)	LOS	95% Q (m)	Ave Delay (s)	LOS	95% Q (m)
SH3 (South)	Left	6.5	A	0.0	6.5	A	0.0
	Through	0.2	A	0.0	0.2	A	0.0
SH3 (North)	Through	0.1	A	0.0	0.1	A	0.0
	Right	12.8	B	0.7	12.3	B	1.3
Ryburn Rd (West)	Left	21.8	C	9.2	26.3	D	16.5
	Right	93.2	F	9.2	98.2	F	16.5
All Vehicles		1.8	NA	9.2	3.0	NA	16.5

Table 2: Ryburn Road / SH3 PM SIDRA Results - Single Lane Ryburn Road Approach

Approach	Movement	No Plan Change			With Plan Change		
		Ave Delay (s)	LOS	95% Q (m)	Ave Delay (s)	LOS	95% Q (m)
SH3 (South)	Left	6.5	A	0.0	6.5	A	0.0
	Through	0.1	A	0.0	0.1	A	0.0
SH3 (North)	Through	0.1	A	0.0	0.1	A	0.0
	Right	9.7	A	1.3	9.8	A	2.6
Ryburn Rd (West)	Left	16.9	C	5.9	16.8	C	8.4
	Right	66.3	F	5.9	73.2	F	8.4
All Vehicles		1.2	NA	5.9	1.7	NA	8.4

SIDRA modelling of the existing Ryburn Road / SH3 intersection demonstrates the Ryburn Road approach operates with a level of service (LOS) of C LOS F for left and right turns out respectively. This analysis highlights existing delays at the intersection of around 66 seconds to 93 seconds for the

right turn out of Ryburn Road, however, it is noted that the overall queue length is limited to 1 – 2 vehicles.

The analysis demonstrates the addition of the development traffic is likely to result in minor changes to both experienced queue lengths and delay times. Delays for the right turn out of Ryburn Road are expected to increase by some 5 seconds – 8 seconds and queue lengths are expected to remain at around 1 – 3 vehicles. It is also noted that when this modelling is compared to that included in section 4 of the ITA (i.e. allowing separate left and right turn out queuing at the Ryburn Road stop line), whilst there is some benefit to the left turning traffic of around 5 seconds to 12 seconds, there is a marginal change in delay for right turning traffic.

As such, the operation of the Ryburn Road approach to the intersection is unlikely to be significantly affected by the proposed development, regardless of whether dual queueing at the stop line is allowed.

The SIDRA outputs for both the shared turn lane and dual turn lane scenarios are attached.

Crash Prediction

Assessment of the effects of the development traffic at this intersection has also been considered in terms of crash risk estimation using the NZTA Crash Estimation Compendium (CEC). To conduct this analysis, crash statistics for the previous 5 years between 2021 and 2026 within a 50m radius of the Ryburn Road / SH3 intersection were obtained via the NZTA Crash Analysis System (CAS) and compared to the projected crash estimations using the CEC conflicting flow models for a 70km/hr urban environment. This allows for specific consideration of crashes associated with right turn exits from the minor approach (crossing model) and for right turns in to minor approach (right turn against model) which are shown in Figure 1 and Figure 2 respectively below.

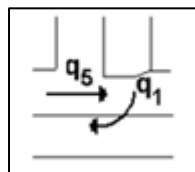


Figure 1: Crossing Model

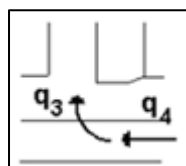


Figure 2: Right Turn Against Model

This data is summarised in Table 3 below.

Table 3: Crash Risk Estimation Calculations – Ryburn Road

Intersection	Existing Crash Records (2021 to 2026)	Calculated Injury Crashes with Existing Traffic		Calculated Injury Crashes including Development Traffic	
		Crossing Model	Right Turn Against Model	Crossing Model	Right Turn Against Model
Ryburn Road / SH3	1 non-injury	0.963 per year i.e. 1 per year	0.0043 per year i.e. 1 per 235 years	0.967 per year i.e. 1 per year	0.0061 per year i.e. 1 per 165 years

As shown in Table 3, the CAS analysis demonstrates that only one non-injury crash is reported at the Ryburn Road intersection and that the intersection is performing better than might typically be expected. Table 3 also demonstrates that the addition of development traffic does not have a measurable effect, with the predicted crossing crashes from right turns onto SH3 remaining at one predicted injury crash per year when rounded, with the increase in crash risk being 0.004. This means it would take approximately 250 years for an additional injury crash to occur as a result of the development when considered from a mathematical perspective. In terms of the right turn in from SH3, it is acknowledged that the injury crash rate has increased, however it is also noted that the level of risk is still extremely low with one injury crash being predicted to occur every 165 years with the development in place. It is therefore reasonably concluded that this intersection is operating better than expected with no reasonable expectation that the addition of development traffic will exacerbate any operational or safety issues.

Findings

The following conclusions have been drawn in relation to the operation of the Ryburn Road / SH3 intersection from a road safety and capacity perspective:

- There is no evidence to suggest that the current road safety record at the intersection is being adversely affected by drivers waiting side by side at the Ryburn Road stop line.
- The increase in traffic arising from the proposed development is likely to have a negligible effect on both the right turn in and right turn out of Ryburn Road. The right turn out might increase crash risk by one additional injury crash every 168 years, with the increase in right turn in crashes being one additional injury crash every 556 years.
- The intersection already operates with some turning manoeuvres at LOS F. There is no evidence of this creating an undue road safety risk. It is also noted that the effect of the proposed development on this turning movement is to increase delay by up to 8 seconds for the right turn out of Ryburn Road. This is assessed as being a less than minor change in intersection operation.

No additional mitigation measures are therefore considered to be required on behalf of the developer to maintain operation of either intersection.

2. Please amend the ITA to consider the potential for traffic to divert along Charles Edwards Street to avoid the Ryburn Road / SH3 intersection and potential impacts on that route.

In terms of the potential effects of development traffic diverting to use Charles Edwards Street and avoiding the Ryburn Road / SH3 intersection, this is likely for the left turn out and right turn in manoeuvres only i.e traffic travelling to and from the north. This is likely to represent some 51vph –

53vph in the AM and PM peak hours respectively. This equates to approximately one extra vehicle on Charles Edwards Street per minute during the peak hours of the day.

Charles Edwards Street has an existing average daily traffic (ADT) volume of 603 vehicles per day (vpd) as per Mobileroads. As Mobileroads does not provide peak hour traffic volumes, it has been estimated, in accordance with industry practice, that the road network will experience up to 12% of the daily traffic volumes during the network peak hours. This equates to 72 vph. A single traffic lane is considered able to support up to 1,000vph. Assuming a 50 / 50 directional split of existing traffic, Charles Edwards Street is considered to be operating at approximately 3.6% of available lane capacity given it operates one lane in each travel direction. The addition of 51vph – 53vph, is therefore considered to have a less than minor effect to this road corridor.

To assess the effects of this detour via Charles Edwards Street on the Great Collins Road / SH3 intersection, additional SIDRA analysis has been undertaken using the diverted turning movements from the Ryburn Road intersection. This additional SIDRA modelling is presented in Table 4 and Table 5 below as a ‘sensitivity case’.

Table 4: Great Collins / SH3 AM SIDRA Results

Approach	Movement	No Plan Change			Sensitivity Case		
		Ave Delay (s)	LOS	95% Q (m)	Ave Delay (s)	LOS	95% Q (m)
SH3 (South)	Left	6.5	A	0.0	6.5	A	0.0
	Through	0.2	A	0.0	0.2	A	0.0
SH3 (North)	Through	0.1	A	0.0	0.1	A	0.0
	Right	13.5	B	0.4	12.4	B	1.0
Great Collins Street (West)	Left	19.8	C	5.7	20.5	C	9.4
	Right	99.9	F	5.7	107.9	F	9.4
All Vehicles		1.2	NA	5.7	1.9	NA	9.4

Table 5: Great Collins / SH3 PM SIDRA Results

Approach	Movement	No Plan Change			Sensitivity Case		
		Ave Delay (s)	LOS	95% Q (m)	Ave Delay (s)	LOS	95% Q (m)
SH3 (South)	Left	6.5	A	0.0	6.5	A	0.0
	Through	0.1	A	0.0	0.1	A	0.0
SH3 (North)	Through	0.1	A	0.0	0.1	A	0.0
	Right	9.5	A	0.8	9.7	A	2.0
Great Collins Street (West)	Left	17.0	C	4.9	17.4	C	6.7
	Right	95.4	F	4.9	104.9	F	6.7
All Vehicles		1.1	NA	4.9	1.5	NA	6.7

SIDRA modelling of the existing Great Collins Street / SH3 intersection shows that the right turn out of Great Collins Street is already operating at LOS F in both the AM and PM peak hours, with delays of some 95 seconds -100 seconds. With the development in place, this is increased by some 8 seconds to 9 seconds, with queue lengths of 1 – 2 vehicles. It is assessed that if all development traffic to and from the north were to use the Great Collins Street / SH3 intersection instead of the Ryburn Road / SH3 intersection, there is a negligible effect on its operation.

The CEC assessment of expected injury crash rates and the comparison to existing injury crash rates has been repeated, allowing for the diversion of traffic to and from the north diverting to the Great Collins Street / SH3 intersection. The results of this analysis are shown in Table 6 below.

Table 6: Crash Risk Estimation Calculations - Great Collins Street

Intersection	Existing Crash Records (2021 to 2026)	Calculated Injury Crashes with Existing Traffic		Calculated Injury Crashes including Development Traffic	
		Crossing Model	Right Turn Against Model	Crossing Model	Right Turn Against Model
Great Collins Street / SH3	1 non-injury	0.206 i.e. 1 per 5 years	0.032 i.e. 1 per 31 years	0.206 i.e. 1 per 5 years	0.044 i.e. 1 per 23 years

As shown in Table 6, the CAS analysis demonstrates only one non-injury crash is reported at the Great Collins Street / SH3 intersection and at worst, the intersection is operating the way it is expected to. Table 6 also demonstrates that the addition of development traffic has a negligible effect on right turns from SH3, with it taking approximately 83 years for there to be an additional injury crash based on the CEC model predictions. The right turn out from Great Collins Street is assessed as not being affected as southbound development traffic would be unlikely to divert to the north. It is therefore reasonably concluded that this intersection is operating better than expected in terms of road safety and that the effect of diverting development traffic on the operation of this intersection is likely to be negligible.

3. Please confirm if the amended ITA has been submitted to NZTA and if so please provide correspondence from them of this and whether their original assessment remains valid.

Correspondence with NZTA has been initiated and is ongoing. WDC will be advised of the outcome once this is known.

New local road intersection

In relation to the proposed new road intersection with Ryburn Road:

- *The ITA recommends vegetation trimming to provide 190m visibility to the proposed intersection. The vegetation is on private land and should be permanently removed to avoid sight line restrictions in the future.*
 - *The view line for eastbound traffic approaching a stationary vehicle waiting to turn right into the proposed road is 150m. This view line cannot be increased due to fixed obstructions.*
 - *The structure plan shows the new intersection close to and opposite the existing vehicle entrance to 24 Ryburn Road. This is non-compliant with RITS for separation between entrances and intersections and creates potential conflicts for intersection and driveway use.*
 - *Ryburn Road narrows by 1.5m west of the Charles Street intersection. The ITA does not discuss the necessary road widening to accommodate a new intersection. Road widening is an effect on adjacent neighbours that should be highlighted.*
- 4. Please amend the ITA to evaluate changing the road speed environment to ensure all traffic approaches at a safe speed within available sightlines so that vegetation and fixed obstructions are not an issue that needs to be changed.**

Section 5 of the ITA assesses the required sight distances from the proposed development intersection with Ryburn Road. As stipulated within the ITA, the intersection of Ryburn Road / SH3 is approximately 200m to the east with the corridor being located within a 50km/h posted speed environment. Using a design speed of 60km/h to the east, the required sight distance is 123m. With approximately 190m to 200m unobstructed sight distance, this requirement is satisfied. An illustration of the available Sight Distance (SISD) to the east of the site is provided in Figure 3 below.



Figure 3: Available SISD East of Site

As outlined in Section 5 of the ITA, sightlines to the west may be restricted to approximately 176m due to existing vegetation. However, a recent site visit shows that this vegetation has been trimmed and that fully compliant visibility of 190m based on the observed operational speed of 83km/h can be achieved.

If the vegetation is maintained in a trimmed state, then appropriate visibility to and from the proposed site access can be achieved. However, from GRIP mapping, it appears that the vegetation in question may be located within private property and not within the road reserve. Trimming of overhanging vegetation is allowed under the Local Government Act and allows Council to act if the landholder does not. As an alternative, a reduction in the posted speed limit to 50 km/h along Ryburn Road on the approach to the proposed site access is recommended. This would reduce visibility requirements and improve safety for vehicles entering and exiting the site. It would also better align with the emerging road environment, protect existing property accesses along Ryburn Road, and support pedestrian connectivity between the site and Charles Edwards Street.

5. ***Please amend the ITA to evaluate effects of the intersection / entranceway separation and road widening. To this effect the assessment would benefit from the provision of a diagram illustrating the design of the new intersection relative to the requirements of RITS.***

A concept intersection design has been undertaken using both the requirements of WDC District Plan for the provision of a public local road corridor and RITS to provide the required kerb radius. RITS V2 Section 3.3.9, requires the kerb radius in a residential area to be 6m as shown in Figure 4 below. RITS Section 3.3.9.7 also requires the separation distance between opposing intersections on a local road to be a minimum distance of 30m. This separation distance also aligns with the 30m separation distance between intersections specified in WDC ODP Rule 16.4.2.5. The concept design is also able to exceed this separation requirement. A high-level concept intersection design is shown in Figure 4 below.

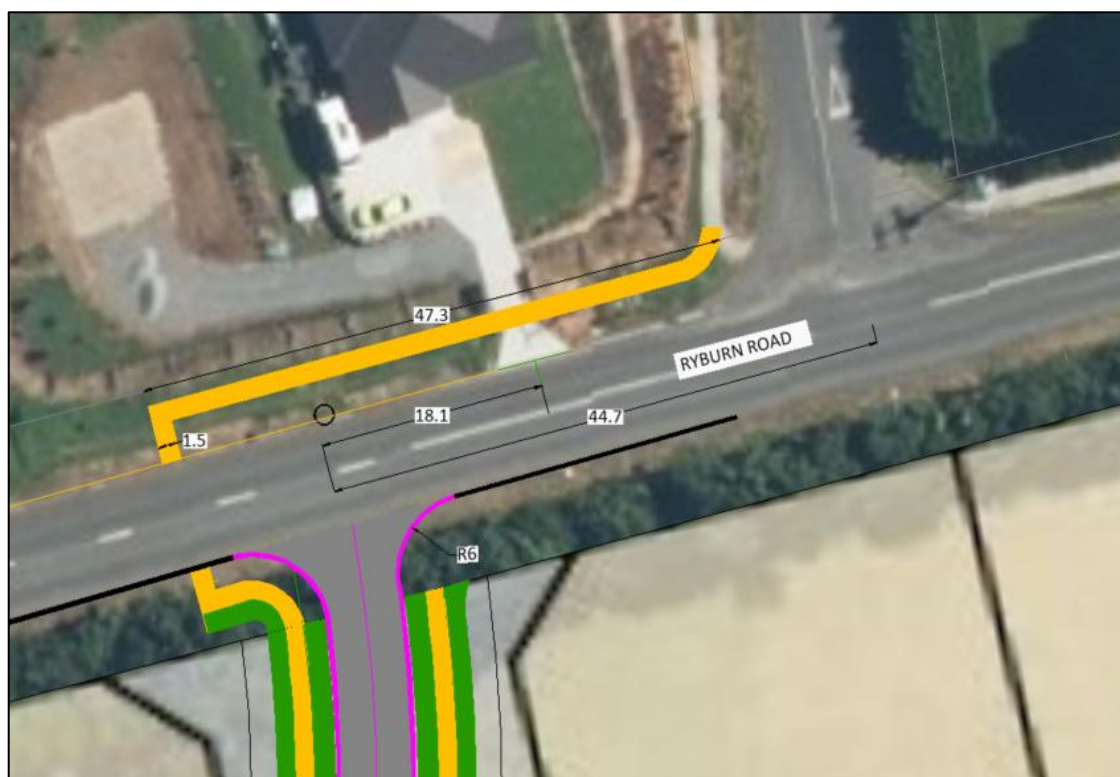


Figure 4: Concept Subdivision Intersection Design

WDC ODP Rule 16.4.2.5 also requires a separation of 30m between an intersection and an opposing accessway. Figure 4 above demonstrates a separation distance of approximately 18m. This non-compliance occurs within the posted 50km/h section of Ryburn Road and it is noted that there are unobstructed sightlines between the proposed intersection and the existing residential accessway.

It is also noted that this location for the site access has been chosen in order to ensure there is appropriate separation to the Charles Edwards Street and SH3 intersections with Ryburn Road, whilst also maximising visibility. If the site access were to be located at least 30m to the north of Charles Edwards Street, then visibility to the north is significantly reduced due to the vertical alignment of Ryburn Road. It is also noted that there would be additional non-compliances in relation to the separation distances from multiple, rather than one vehicle crossings. As such, it is assessed that the proposed access road is located in the best position available along the site frontage.

It is considered that the concept layout is sufficient for plan change purposes and that additional detail regarding the layout of the intersection and vehicle swept path analysis can be undertaken at the time a subdivision consent is being sought.

Pedestrian / Cycle facilities

The ITA makes brief mention about including a footpath on internal roads to integrate with the wider footpath network and recommends that a footpath be extended to tie into the path of Charles Edwards Street. The ITA does not say how pedestrians and cyclists will cross Ryburn Road.

The ITA notes that the new road into the subdivision will require substantial earthworks to achieve a suitable grade as the land falls away steeply. While a 1 in 8 grade is negotiable by vehicle, it is quite steep for pedestrians, and there needs to be consideration of how a good standard of path grade can be provided.

- 6. Please amend the ITA to evaluate the safety of the crossing of Ryburn Road by pedestrians and cyclists and identify mitigation measures to ensure that safe crossing of the road is designed and provided for as part of any subsequent subdivision.***

The concept intersection design includes the provision of a pram crossing immediately west of the intersection to facilitate pedestrian movements across Ryburn Road. This will also require the provision of an approximately 35m long, 1.5m wide footpath on the northern side of Ryburn Road to the existing footpath on the western side of Charles Edward Street, to be constructed within the road reserve. This provides onwards connectivity to the centre of Ohaupo.

Ryburn Road is approximately 8m wide at the proposed pram crossing, which, assuming a 1.2m/s standard walking speed, will take a pedestrian approximately 6.6 seconds to cross. Assuming a vehicle approaching from the west at the 85th percentile speed of 83km/h with the full 190m sight distance being provided, it will take the vehicle 8 seconds to travel the 190m, 1.4 seconds slower than the pedestrian, assuming there is no effort to brake or take evasive action. The travel time at 50km/hr assuming a reduced speed limit is in place would be less. As such, it is assessed that the proposed pram crossing is suitable to provide connectivity between the site and the rest of Ohaupo for pedestrians and cyclists.

- 7. Please amend the ITA to evaluate the appropriate grade acceptable for pedestrians and identify mitigation measures to ensure that this is designed and catered for as part of any subsequent subdivision.***

RITS V2 Section 3.3.2.5 specifies the maximum gradient of a residential road centerline is 12.5% or 1:8. It is expected that the detailed design of the road corridor will align with this requirement. There is no requirement within RITS for footpaths to be provided at a lesser grade.

We trust the above provides all the information you require but if you have any questions or if we can be of further assistance, please do not hesitate to contact us.

Yours sincerely

CKL Planning | Surveying | Engineering | Environmental



Mike Clapp
Senior Transportation Engineer
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Judith Makinson
Director
judith.makinson@ckl.co.nz

Attached:

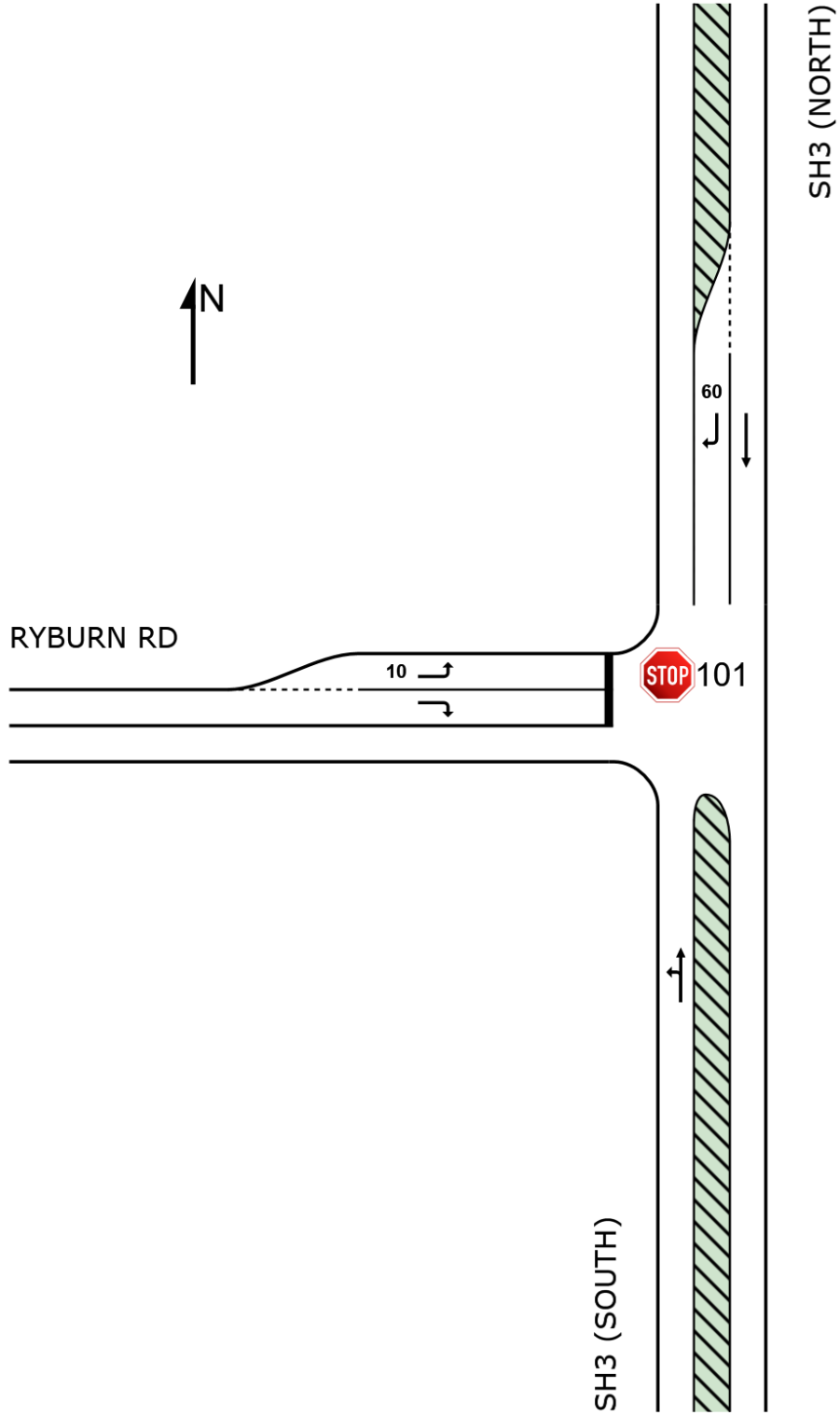
- SIDRA Calculations

SITE LAYOUT

Site: 101 [Ryburn Rd / SH3 BASE AM (Site Folder: 1. Existing ITA - Dual Lane)]

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

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



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MOVEMENT SUMMARY

 **Site: 101 [Ryburn Rd / SH3 BASE AM (Site Folder: 1. Existing ITA - Dual Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: SH3 (SOUTH)															
1	L2	All MCs	3	0.0	3	0.0	0.476	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	65.3
2	T1	All MCs	876	8.5	876	8.5	0.476	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			879	8.5	879	8.5	0.476	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	574	11.7	574	11.7	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
9	R2	All MCs	13	8.3	13	8.3	0.026	12.9	LOS B	0.1	0.7	0.71	0.84	0.71	47.1
Approach			586	11.7	586	11.7	0.317	0.4	NA	0.1	0.7	0.02	0.02	0.02	69.1
West: RYBURN RD															
10	L2	All MCs	43	2.4	43	2.4	0.114	16.1	LOS C	0.4	2.6	0.75	1.00	0.75	44.9
12	R2	All MCs	15	7.1	15	7.1	0.317	92.6	LOS F	0.8	5.6	0.96	1.03	1.07	23.0
Approach			58	3.6	58	3.6	0.317	35.6	LOS E	0.8	5.6	0.80	1.01	0.83	36.1
All Vehicles			1523	9.5	1523	9.5	0.476	1.6	NA	0.8	5.6	0.04	0.05	0.04	67.0

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.

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MOVEMENT SUMMARY

 **Site: 101 [Ryburn Rd / SH3 BASE PM (Site Folder: 1. Existing ITA - Dual Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: SH3 (SOUTH)															
1	L2	All MCs	12	0.0	12	0.0	0.381	6.5	LOS A	0.0	0.0	0.00	0.01	0.00	65.3
2	T1	All MCs	695	8.0	695	8.0	0.381	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.6
Approach			706	7.9	706	7.9	0.381	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	805	5.2	805	5.2	0.427	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
9	R2	All MCs	38	0.0	38	0.0	0.049	9.8	LOS A	0.2	1.3	0.60	0.78	0.60	49.2
Approach			843	5.0	843	5.0	0.427	0.6	NA	0.2	1.3	0.03	0.03	0.03	68.4
West: RYBURN RD															
10	L2	All MCs	16	13.3	16	13.3	0.033	13.8	LOS B	0.1	0.8	0.63	0.96	0.63	44.4
12	R2	All MCs	15	0.0	15	0.0	0.226	66.3	LOS F	0.7	4.6	0.95	1.01	1.01	27.9
Approach			31	6.9	31	6.9	0.226	39.1	LOS E	0.7	4.6	0.79	0.99	0.81	34.6
All Vehicles			1580	6.3	1580	6.3	0.427	1.2	NA	0.7	4.6	0.03	0.04	0.03	67.6

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 [Ryburn Rd / SH3 DEV AM (Site Folder: 1. Existing ITA - Dual Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: SH3 (SOUTH)															
1	L2	All MCs	5	0.0	5	0.0	0.477	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	65.3
2	T1	All MCs	876	8.5	876	8.5	0.477	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			881	8.5	881	8.5	0.477	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	574	11.7	574	11.7	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
9	R2	All MCs	29	3.6	29	3.6	0.056	12.4	LOS B	0.2	1.4	0.71	0.88	0.71	47.5
Approach			603	11.3	603	11.3	0.317	0.7	NA	0.2	1.4	0.03	0.04	0.03	68.2
West: RYBURN RD															
10	L2	All MCs	85	1.2	85	1.2	0.219	16.6	LOS C	0.8	5.5	0.77	1.02	0.83	44.8
12	R2	All MCs	20	5.3	20	5.3	0.409	95.5	LOS F	1.0	7.6	0.97	1.04	1.12	22.6
Approach			105	2.0	105	2.0	0.409	31.6	LOS D	1.0	7.6	0.81	1.02	0.88	37.8
All Vehicles			1589	9.1	1589	9.1	0.477	2.5	NA	1.0	7.6	0.07	0.09	0.07	65.4

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.

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MOVEMENT SUMMARY

 **Site: 101 [Ryburn Rd / SH3 DEV PM (Site Folder: 1. Existing ITA - Dual Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: SH3 (SOUTH)															
1	L2	All MCs	16	0.0	16	0.0	0.383	6.5	LOS A	0.0	0.0	0.00	0.01	0.00	65.3
2	T1	All MCs	695	8.0	695	8.0	0.383	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.5
Approach			711	7.9	711	7.9	0.383	0.3	NA	0.0	0.0	0.00	0.01	0.00	69.4
North: SH3 (NORTH)															
8	T1	All MCs	805	5.2	805	5.2	0.427	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
9	R2	All MCs	73	0.0	73	0.0	0.094	10.0	LOS A	0.4	2.6	0.61	0.82	0.61	49.0
Approach			878	4.8	878	4.8	0.427	0.9	NA	0.4	2.6	0.05	0.07	0.05	67.3
West: RYBURN RD															
10	L2	All MCs	37	5.7	37	5.7	0.069	13.0	LOS B	0.2	1.7	0.63	0.99	0.63	46.0
12	R2	All MCs	17	0.0	17	0.0	0.277	73.4	LOS F	0.8	5.7	0.96	1.02	1.04	26.5
Approach			54	3.9	54	3.9	0.277	31.9	LOS D	0.8	5.7	0.73	1.00	0.75	37.4
All Vehicles			1642	6.1	1642	6.1	0.427	1.7	NA	0.8	5.7	0.05	0.08	0.05	66.4

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.

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SITE LAYOUT

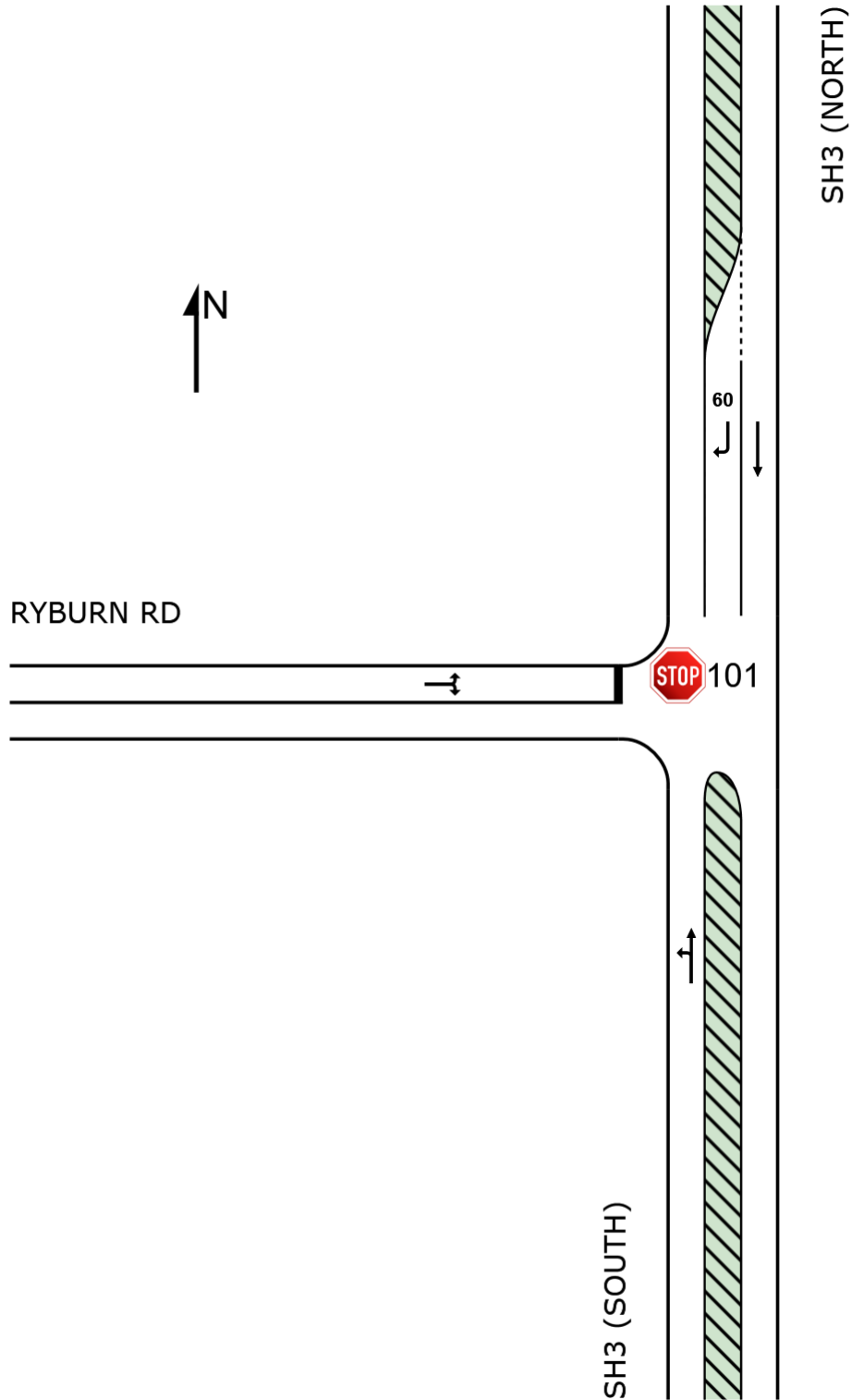
 **Site: 101 [Ryburn Rd / SH3 BASE AM (Site Folder: 2. S92 - Baseline - Shared Lane)]**

New Site

Site Category: (None)

Stop (Two-Way)

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



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MOVEMENT SUMMARY

 **Site: 101 [Ryburn Rd / SH3 BASE AM (Site Folder: 2. S92 - Baseline - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: SH3 (SOUTH)															
1	L2	All MCs	3	0.0	3	0.0	0.476	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	65.3
2	T1	All MCs	876	8.5	876	8.5	0.476	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			879	8.5	879	8.5	0.476	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	574	11.7	574	11.7	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
9	R2	All MCs	13	8.3	13	8.3	0.026	12.8	LOS B	0.1	0.7	0.71	0.84	0.71	47.0
Approach			586	11.7	586	11.7	0.317	0.4	NA	0.1	0.7	0.02	0.02	0.02	69.1
West: RYBURN RD															
10	L2	All MCs	43	2.4	43	2.4	0.431	21.8	LOS C	1.3	9.2	0.91	1.08	1.17	34.8
12	R2	All MCs	15	7.1	15	7.1	0.431	93.2	LOS F	1.3	9.2	0.91	1.08	1.17	34.3
Approach			58	3.6	58	3.6	0.431	40.0	LOS E	1.3	9.2	0.91	1.08	1.17	34.7
All Vehicles			1523	9.5	1523	9.5	0.476	1.8	NA	1.3	9.2	0.04	0.05	0.05	66.8

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.

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MOVEMENT SUMMARY

 **Site: 101 [Ryburn Rd / SH3 BASE PM (Site Folder: 2. S92 - Baseline - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: SH3 (SOUTH)															
1	L2	All MCs	12	0.0	12	0.0	0.381	6.5	LOS A	0.0	0.0	0.00	0.01	0.00	65.3
2	T1	All MCs	695	8.0	695	8.0	0.381	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.6
Approach			706	7.9	706	7.9	0.381	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	805	5.2	805	5.2	0.427	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
9	R2	All MCs	38	0.0	38	0.0	0.049	9.7	LOS A	0.2	1.3	0.60	0.78	0.60	49.1
Approach			843	5.0	843	5.0	0.427	0.6	NA	0.2	1.3	0.03	0.04	0.03	68.4
West: RYBURN RD															
10	L2	All MCs	16	13.3	16	13.3	0.259	16.9	LOS C	0.8	5.9	0.91	1.03	1.00	33.5
12	R2	All MCs	15	0.0	15	0.0	0.259	66.3	LOS F	0.8	5.9	0.91	1.03	1.00	34.8
Approach			31	6.9	31	6.9	0.259	40.7	LOS E	0.8	5.9	0.91	1.03	1.00	34.1
All Vehicles			1580	6.3	1580	6.3	0.427	1.2	NA	0.8	5.9	0.03	0.04	0.03	67.5

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.

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MOVEMENT SUMMARY

 **Site: 101 [Ryburn Rd / SH3 DEV AM (Site Folder: 3. S92 - Future - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: SH3 (SOUTH)															
1	L2	All MCs	5	0.0	5	0.0	0.477	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	65.3
2	T1	All MCs	876	8.5	876	8.5	0.477	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			881	8.5	881	8.5	0.477	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	574	11.7	574	11.7	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
9	R2	All MCs	26	4.0	26	4.0	0.050	12.3	LOS B	0.2	1.3	0.71	0.88	0.71	47.4
Approach			600	11.4	600	11.4	0.317	0.6	NA	0.2	1.3	0.03	0.04	0.03	68.4
West: RYBURN RD															
10	L2	All MCs	85	1.2	85	1.2	0.626	26.3	LOS D	2.3	16.5	0.93	1.17	1.49	34.9
12	R2	All MCs	20	5.3	20	5.3	0.626	98.2	LOS F	2.3	16.5	0.93	1.17	1.49	34.5
Approach			105	2.0	105	2.0	0.626	40.0	LOS E	2.3	16.5	0.93	1.17	1.49	34.9
All Vehicles			1586	9.2	1586	9.2	0.626	3.0	NA	2.3	16.5	0.07	0.09	0.11	64.8

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.

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MOVEMENT SUMMARY

 **Site: 101 [Ryburn Rd / SH3 DEV PM (Site Folder: 3. S92 - Future - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: SH3 (SOUTH)															
1	L2	All MCs	16	0.0	16	0.0	0.383	6.5	LOS A	0.0	0.0	0.00	0.01	0.00	65.3
2	T1	All MCs	695	8.0	695	8.0	0.383	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.5
Approach			711	7.9	711	7.9	0.383	0.3	NA	0.0	0.0	0.00	0.01	0.00	69.4
North: SH3 (NORTH)															
8	T1	All MCs	805	5.2	805	5.2	0.427	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
9	R2	All MCs	73	0.0	73	0.0	0.094	9.8	LOS A	0.4	2.6	0.61	0.82	0.61	49.0
Approach			878	4.8	878	4.8	0.427	0.9	NA	0.4	2.6	0.05	0.07	0.05	67.3
West: RYBURN RD															
10	L2	All MCs	37	5.7	37	5.7	0.346	16.8	LOS C	1.2	8.4	0.89	1.06	1.07	36.4
12	R2	All MCs	17	0.0	17	0.0	0.346	73.2	LOS F	1.2	8.4	0.89	1.06	1.07	37.0
Approach			54	3.9	54	3.9	0.346	34.5	LOS D	1.2	8.4	0.89	1.06	1.07	36.5
All Vehicles			1642	6.1	1642	6.1	0.427	1.7	NA	1.2	8.4	0.06	0.08	0.06	66.3

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.

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SITE LAYOUT

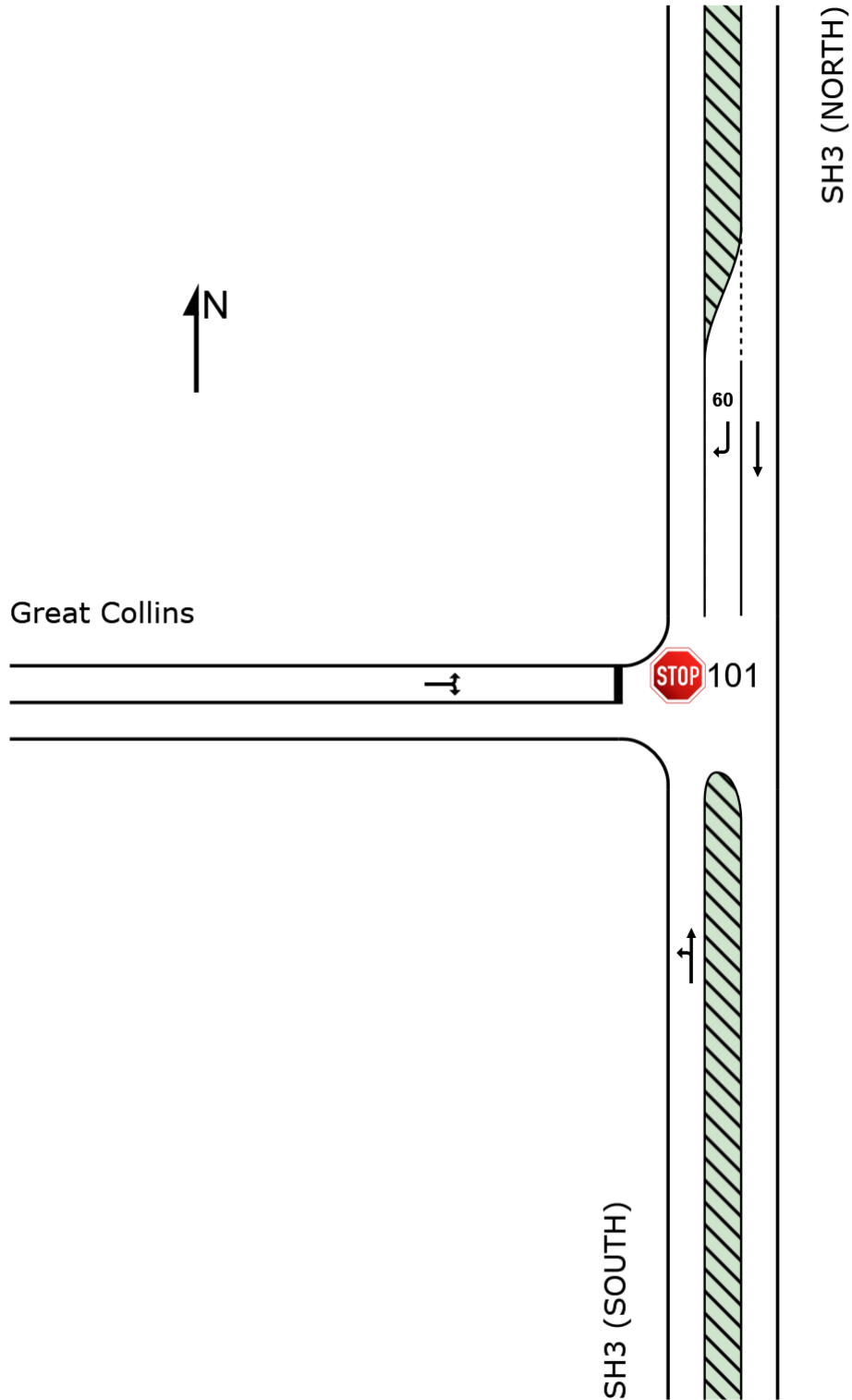
 **Site: 101 [Great Collins / SH 3 BASE AM (Site Folder: 2. S92 - Baseline - Shared Lane)]**

New Site

Site Category: (None)

Stop (Two-Way)

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



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\B24106-TR- -SIDRA.sip9

MOVEMENT SUMMARY

 **Site: 101 [Great Collins / SH 3 BASE AM (Site Folder: 2. S92 - Baseline - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				km/h
			veh/h	%	veh/h	%	v/c	sec			m				
South: SH3 (SOUTH)															
1	L2	All MCs	2	0.0	2	0.0	0.475	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	65.3
2	T1	All MCs	876	8.5	876	8.5	0.475	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			878	8.5	878	8.5	0.475	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	574	11.7	574	11.7	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
9	R2	All MCs	7	14.3	7	14.3	0.017	13.5	LOS B	0.1	0.4	0.72	0.82	0.72	46.5
Approach			581	11.8	581	11.8	0.317	0.3	NA	0.1	0.4	0.01	0.01	0.01	69.3
West: Great Collins															
10	L2	All MCs	25	4.2	25	4.2	0.304	19.8	LOS C	0.8	5.7	0.90	1.04	1.05	34.1
12	R2	All MCs	9	11.1	9	11.1	0.304	99.9	LOS F	0.8	5.7	0.90	1.04	1.05	33.4
Approach			35	6.1	35	6.1	0.304	41.7	LOS E	0.8	5.7	0.90	1.04	1.05	33.9
All Vehicles			1494	9.7	1494	9.7	0.475	1.2	NA	0.8	5.7	0.02	0.03	0.03	67.8

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.

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MOVEMENT SUMMARY

 **Site: 101 [Great Collins / SH 3 BASE PM (Site Folder: 2. S92 - Baseline - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: SH3 (SOUTH)															
1	L2	All MCs	7	0.0	7	0.0	0.379	6.5	LOS A	0.0	0.0	0.00	0.01	0.00	65.4
2	T1	All MCs	695	8.0	695	8.0	0.379	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.6
Approach			702	7.9	702	7.9	0.379	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.6
North: SH3 (NORTH)															
8	T1	All MCs	805	5.2	805	5.2	0.427	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
9	R2	All MCs	22	0.0	22	0.0	0.028	9.5	LOS A	0.1	0.8	0.59	0.75	0.59	49.2
Approach			827	5.1	827	5.1	0.427	0.4	NA	0.1	0.8	0.02	0.02	0.02	68.9
West: Great Collins															
10	L2	All MCs	11	10.0	11	10.0	0.272	17.4	LOS C	0.6	4.9	0.92	1.04	1.03	29.6
12	R2	All MCs	11	10.0	11	10.0	0.272	95.4	LOS F	0.6	4.9	0.92	1.04	1.03	29.5
Approach			21	10.0	21	10.0	0.272	56.4	LOS F	0.6	4.9	0.92	1.04	1.03	29.6
All Vehicles			1551	6.4	1551	6.4	0.427	1.1	NA	0.6	4.9	0.02	0.03	0.02	67.9

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 [Great Collins / SH 3 DEV AM (Site Folder: 4. S92 - Sensitivity - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: SH3 (SOUTH)															
1	L2	All MCs	2	0.0	2	0.0	0.475	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	65.3
2	T1	All MCs	876	8.5	876	8.5	0.475	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			878	8.5	878	8.5	0.475	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: SH3 (NORTH)															
8	T1	All MCs	574	11.7	574	11.7	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
9	R2	All MCs	21	5.0	21	5.0	0.041	12.4	LOS B	0.1	1.0	0.70	0.87	0.70	47.3
Approach			595	11.5	595	11.5	0.317	0.5	NA	0.1	1.0	0.02	0.03	0.02	68.6
West: Great Collins															
10	L2	All MCs	67	3.1	67	3.1	0.421	20.5	LOS C	1.3	9.4	0.89	1.09	1.16	37.9
12	R2	All MCs	9	11.1	9	11.1	0.421	107.9	LOS F	1.3	9.4	0.89	1.09	1.16	36.9
Approach			77	4.1	77	4.1	0.421	31.3	LOS D	1.3	9.4	0.89	1.09	1.16	37.7
All Vehicles			1549	9.4	1549	9.4	0.475	1.9	NA	1.3	9.4	0.05	0.07	0.07	66.4

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.

MOVEMENT SUMMARY

 **Site: 101 [Great Collins / SH 3 DEV PM (Site Folder: 4. S92 - Sensitivity - Shared Lane)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: SH3 (SOUTH)															
1	L2	All MCs	7	0.0	7	0.0	0.379	6.5	LOS A	0.0	0.0	0.00	0.01	0.00	65.4
2	T1	All MCs	695	8.0	695	8.0	0.379	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.6
Approach			702	7.9	702	7.9	0.379	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.6
North: SH3 (NORTH)															
8	T1	All MCs	805	5.2	805	5.2	0.427	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
9	R2	All MCs	58	0.0	58	0.0	0.074	9.7	LOS A	0.3	2.0	0.60	0.80	0.60	49.1
Approach			863	4.9	863	4.9	0.427	0.8	NA	0.3	2.0	0.04	0.05	0.04	67.7
West: Great Collins															
10	L2	All MCs	32	10.0	32	10.0	0.334	17.0	LOS C	0.9	6.7	0.88	1.06	1.06	34.5
12	R2	All MCs	11	10.0	11	10.0	0.334	104.9	LOS F	0.9	6.7	0.88	1.06	1.06	34.4
Approach			42	10.0	42	10.0	0.334	38.9	LOS E	0.9	6.7	0.88	1.06	1.06	34.4
All Vehicles			1607	6.4	1607	6.4	0.427	1.5	NA	0.9	6.7	0.04	0.06	0.05	66.8

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.

ATTACHMENT B | AMENDED ŌHAUPŌ SOUTH STRUCTURE PLAN

ŌHAUPŌ SOUTH STRUCTURE PLAN

Subdivision and development of the Ōhaupō South Structure Plan is to be undertaken in general accordance with the Structure Plan depicted in Figure 1¹ and Outcomes Sought.

Outcomes Sought

The following outcomes are sought for residential development within the Structure Plan:

Transport and Access

- > The provision of a T-intersection connecting to Ryburn Road;
- > The extension of the footpath from within the site to be opposite the Charles Edwards Street intersection with dropped kerbs to integrate with the existing footpath on Charles Edwards Street; and
- > The removal of the existing vehicle crossings to SH3.

Stormwater

The provision for roadside swales for 10- year conveyance of water and water quality treatment.

Wastewater

Wastewater is to be managed on-lot through private engineered wastewater disposal systems providing a secondary level of treatment.

Water Supply

To be provided through either trickle fed through the public main or from rainwater harvesting.

Ecology

- > A 10 m wide buffer around Wetland 1;
- > The retaining of the overland flow path / stream (on the western boundary) with a 5 m wide buffer area for riparian planting; and
- > The maintaining of the two large ponds on the site.

Landscape

- > The earthworks for the building platforms being kept to a minimum. With the building platform being cut to sit the building down 'in' the landscape, rather than 'on' the landscape. The cut and

¹ Waipa District Council to update reference as required.



fill slopes are to be carefully shaped to blend the building sites into the surrounding natural landform, avoiding artificial bumps and banks.

- > The earthworks required to form access ways to the building sites are to be kept to a minimum. With any cut and fill faces being hydro-seeded or planted, to ensure that earthworks scars are vegetated to integrate with the adjacent land cover.
- > Along the SH3 boundary, single-story buildings are to be a maximum building height of 5 m and fencing and hedge planting limited to a height of 1.2 m along road frontage (in accordance with the WDP standards).
- > Implementing building design controls (including limits on roof pitches, colours of materials and glazing requirements).
- > The undertaking of works in accordance with landscape concept plans.



LEGEND

- Plan Change Extent
- Large Lot Residential Zone
- Wetland
- Stormwater Reserve Areas
- Indicative Road Layout



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Ōhaupō South Structure Plan

4336 Ohaupo Road, 5, 7 & 13 Ryburn Road, Ohaupo

PREPARED FOR: Honey Comb Developments LP

SCALE: 1:2500

ORIGINAL PLAN SIZE: A3
SHEET: 1 of 1

DRAWN: BV
DESIGNED:
CHECKED: AW

DATE: Nov 2025

NOTE: BOUNDARIES AND DIMENSIONS AND AREAS ARE APPROXIMATE AND SUBJECT TO ALTERATION BY APPROVAL OR SURVEY.
LEVELS ARE IN TERMS OF N/A.
ORIGIN OF LEVELS - N/A.

REV: B

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