LANDEV Consulting
(09) 889 1177
info@landev.co.nz
www.landev.co.nz

Traffic Assessment Report

40 Mahi Road, Helensville

Date: 23/11/2025

Rev: F

Project Number: 24240

Revision History

The following table outlines the revision history of this document:

Rev	Date	Comments	Prepared By	Reviewed By
A	21/08/2024	first issue	MP	OA
B	29/09/2024	Second issue	MP	OA
C	18/02/2025	Third Issue	MP	OA
D	14/03/2025	Fourth Issue	MP	OA
E	04/08/2025	Fifth Issue	MP	OA
F	23/11/2025	Sixth Issue	MP	OA

Prepared by: LANDEV Consulting
Level 2, 6 Clayton Street,
Newmarket, Auckland 1023
DDI: 09 889 1177
www.landev.co.nz
info@landev.co.nz

Approved by: Osama Abdullatif

Transportation Design Engineer, BE(Hons), CPEng

This report has been prepared for the sole benefit of Hounslow Holdings in support of a particular brief and it may not be relied upon in other contexts for any other purpose without LANDEV's prior review and agreement. LANDEV Consulting, nor any employee or sub-consultant accept any responsibility with respect to its use, either in full or in part, by any other person or entity. This disclaimer shall apply notwithstanding that the report may be made available to other persons for an application for permission or approval or to fulfil a legal requirement. We trust that the above is satisfactory to your needs. Should you have any queries please contact this office.

Table of Contents

Appendices

Appendix 1 – Auckland Council GIS plan

Appendix 2 – Existing Zoning Plan

Appendix 3 – Proposed Zoning Plan

Appendix 4 – Proposed Precinct Plan

Appendix 5 – Proposed Concept Master Plan

1.0 Introduction

LANDEV was engaged by Hounslow Holdings to undertake a traffic assessment report for proposed changes to the Auckland Unity Plan (AUP) zones at 40 Mahi Road, Helensville. This report will review:

- The existing traffic patterns.
- Predict the additional traffic that may be generated by the proposed development, and the potential effect it may have to the roading network.

2.0 Site Description

The site (legally described as LOT 2 DP 586879) has an area of 173660 m^2 and is currently not accessible without traversing other properties. In the future, the site will be accessible by a new road currently under development (Mahi Road). An Auckland Council GIS plan has been attached, refer to Appendix 1.

Location:	40 Mahi Road, Helensville
Legal Description:	LOT 2 DP 586879
Size:	173660 m2

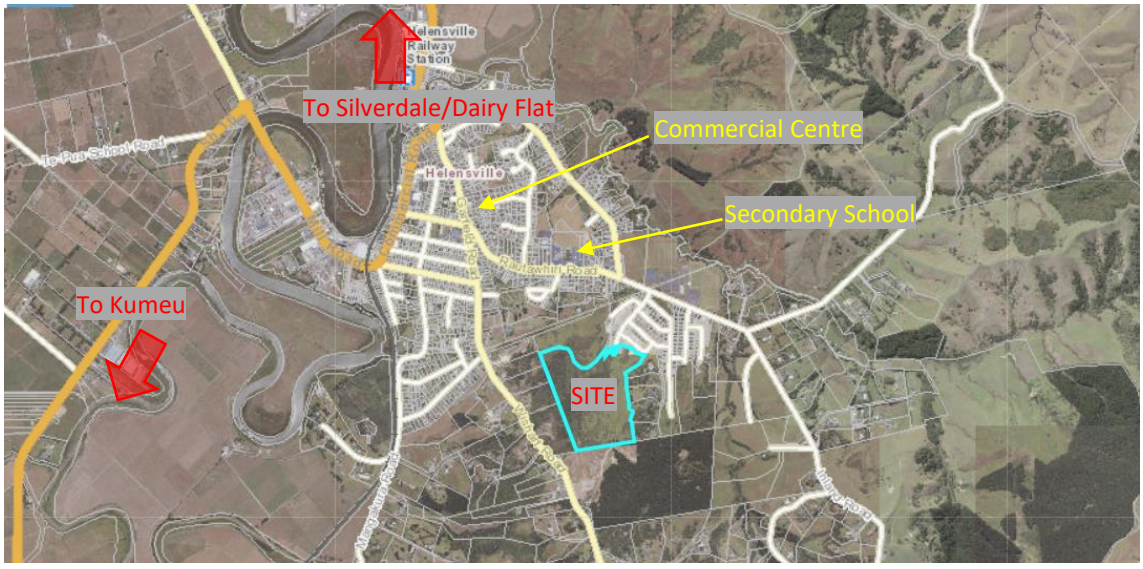


Figure 1: Locality Map (image source: Auckland Council Geo Maps)

3.0 Current Auckland Unitary Plan Zoning

The current Auckland unitary plan divides the site into two separate zones (figure 2). The two zones are:

1. Future Urban Zone,
2. Rural - Countryside Living Zone

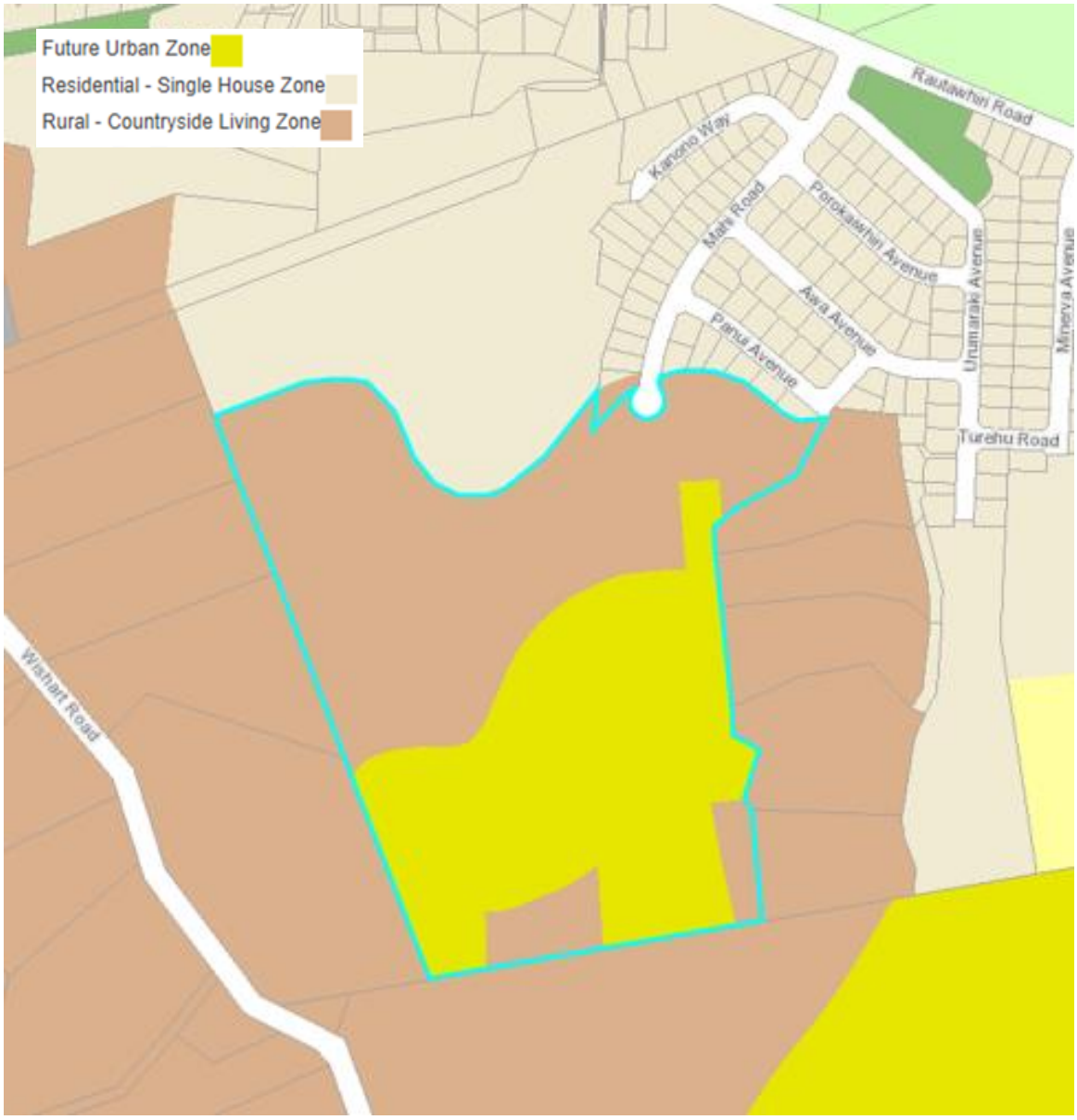


Figure 2: Current Auckland Unitary Plan Zones within the property

3.0 Future Urban Zone

Section H18.1. of the AUP describes the future urban zone as a zone that is *"applied to greenfield land that has been identified as suitable for urbanisation. The Future Urban Zone is a transitional zone. Land may be used for a range of general rural activities but cannot be used for urban activities until the site is rezoned for urban purpose".*

3.1 Residential - Single House Zone

Section H3.1. of the AUP describes *"Residential – Single House Zone is to maintain and enhance the amenity values of established residential neighbourhoods in number of locations. The particular amenity values of a neighbourhood may be based on special character informed by the past, spacious sites with some large trees, a coastal setting or other factors such as established neighbourhood character. To provide choice for future residents, Residential – Single House Zone zoning may also be applied in greenfield developments. To support the purpose of the zone, multi-unit development is not anticipated, with additional housing limited to the conversion of an existing dwelling into two dwellings and minor dwelling units. The zone is generally characterised by one to two storey high buildings consistent with a suburban built character".*

3.2 Rural – Countryside Living Zone

Section H19.7.1 of the AUP describes the rural – countryside living zone as the *"zone provides for rural lifestyle living in identified areas of rural land which are generally closer to urban Auckland or rural and coastal towns. There is a diversity of topography, land quality and landscape character within the zone which results in a diversity of site sizes. The zone is the receiver area for transferable rural site subdivision from other zones. This zone incorporates a range of rural lifestyle developments, characterised as low density rural lifestyle dwellings on rural land. These rural lifestyle sites include scattered rural dwellings sites, farm lets and horticultural sites, bush dwelling sites and papakāinga. Some parts of the zone reflect historical subdivision patterns, while other areas were established on rural land that did not have significant rural production values, and was often associated with steep topography and poor soils. Bush lots enabled the protection of indigenous vegetation cover as part of the subdivision process".*

4.0 Proposed Auckland Unitary Plan Changes

It is proposed to replace the Future Urban Zoned land with a combination of countryside Living, single and mixed housing suburban zones. It is also proposed that some of the existing countryside living zone in replaced with single housing zone. Figure 3 displays the proposed changed to the AUP. Table 1 highlights the key changes in land area zoning that requires analysis.

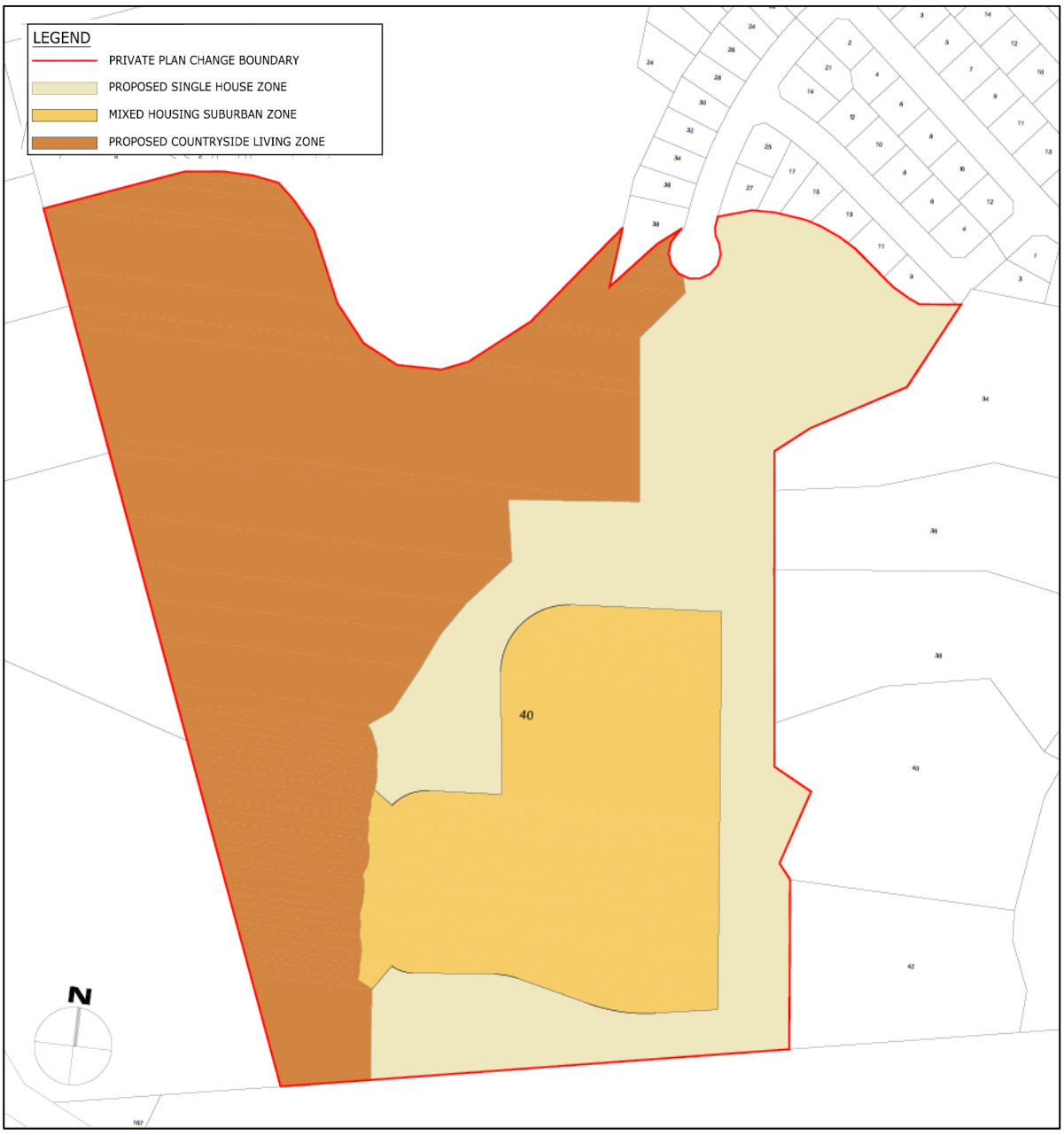


Figure 3: Proposed Changes to the Auckland Unitary Plan Zones within the property

Table 1 – comparison between planning zones existing vs proposed. Calculated areas are estimated.

	Future Urban Zone	Residential Single House Zone	Residential Mixed House Zone	Rural Countryside Living Zone
Area Prior to Proposal (m^2)	76507	0	0	97153
Area as per Proposal (m^2)	0	53363	36159	84138

5.0 Traffic Review of the Existing Network

Figure 4 highlights the key attractions and destinations that road users may wish to travel too. Generally, traffic volumes will be higher at these locations. If we compare figure 4 with figure 5, which highlights the key daily traffic trends, we see they correlate as expected apart from the schools. The traffic around schools is probably low due to the traffic only being high during a 30min period before school starts, and 15min period at the end of the school day. Due to the rural location, the schools also do not have a significantly high pupil count.

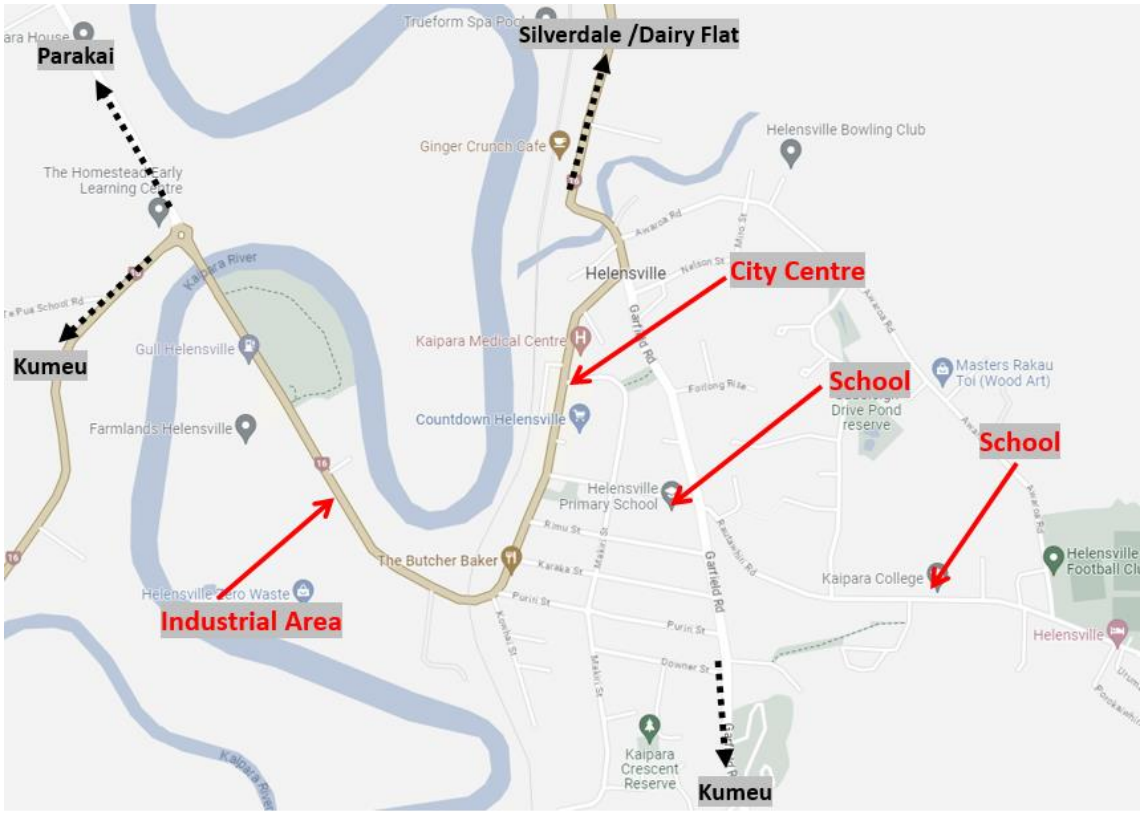


Figure 4: Attractions & Destinations

Using traffic count data from Waka Kotahi (NZTA), Auckland Transport (AT) website and mobileroad.org figure 5 was developed to display traffic trends across Helensville. Figure 5 highlights that the highest traffic volumes are seen on SH16. Helensville experiences a notable level of traffic movement to and from the adjoining areas of Kumeu and Parakai (from the west). A lower amount of traffic volumes enters and exits from the Silverdale/Dairy Flats (from the north). Some traffic from Auckland enters the Helensville via Garfield Road/Wishhart Road.
Based on the key attractions and destinations, along with traffic trends, the key intersection that will need to be reviewed as part of this report will be:

(1) Rautawhiri Road/Garfield Road/Rata Street
(2) Rata Street/ SH16
(3) Garfield Road/SH16
(4) SH16 / Parkhurst Road

Figure 5: AADT trends across Helensville

Based on the infrastructure built recently on nearby connecting developments, and upgrades to Rautawhiri Road, pedestrian facilities are what is expected in urban environments to ensure pedestrians have a safe walkable surface. Accessibility to most local facilities is limited, and the distances involved are significant. As a result, only highly motivated pedestrians are likely to undertake these walking trips.

Within the recently developed areas, dedicated cycle facilities have not been provided. However, the road reserve layout, characterised by narrower carriageway widths and the inclusion of parking bays, does offer some level of cyclist encouragement as it creates a low speed environment. Despite this, only confident or experienced cyclists are likely to travel beyond the new developments, as Rautawhiri Road does not currently provide adequate cycling infrastructure to accommodate a wider range of rider abilities. As a result, only a limited number of cyclists are expected to travel to the broader range of local facilities.

5.1 Traffic Counts at Rautawhiri Road, Garfield Road and Rata Street

Table 2 and Table 3 display the traffic counts collected at the intersection of Rautawhiri Road, Garfield Road, and Rata Street. The data was collected at this intersection as it is a critical junction with already high traffic volumes in the area. Traffic counts were taken during peak periods of the day, specifically during school drop-off and pick-up times, as well as during typical morning and afternoon travel peak periods. Table 2 also highlights the pedestrians using the pedestrian crossing on Garfield Road and Rata Road during these periods.

Current traffic volumes are sufficiently low, indicating that the intersection has significant spare capacity. Site observations highlight the following:

- Garfield Road experiences free-flow conditions during peak periods, maintaining the permanent speed limit of 50 km/h.
- Traffic queues at the Rautawhiri Road and Rata Street approaches are minimal, with one to three vehicles stacked behind the limit line. on average delays were around 10 seconds.
- Outside of peak periods, the intersection is sparsely used, with very few vehicle movements. Queues and delay times are typically limited to one vehicle and around 8 seconds, respectively.

Table 2 - Hourly Traffic Volumes per approach at the intersection of Rautawhiri Road, Garfield Road and Rata Street and pedestrian numbers using crossings on Garfield Road and Rata Street. This data was collected on a typical school day (16th July 2025).

	Approach				Pedestrians	
	Garfield Road (Southern)	Garfield Road (Northern)	Rata Street	Rautawhiri Road	Garfield Road (Northern)	Rata Street
7:30-8:30	128	68	38	93	5	7
8:30-9:30	108	70	59	118	17	21
2:30 - 3:30	173	76	98	169	6	12
3:30-4:30	137	71	117	122	33	41
4:30-5:30	116	77	99	180	4	6

Table 3 - Hourly Traffic Volumes Per traffic movement at the intersection of Rautawhiri Road, Garfield Road and Rata Street, collected on a typical school day (16th July 2025).

	Approach											
	Garfield Road (Southern)			Garfield Road (Northern)			Rata Street			Rautawhiri Road		
	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT
7:30-8:30	43	20	65	35	22	11	22	2	14	44	39	10
8:30-9:30	40	32	36	33	19	18	47	4	8	52	49	17
2:30 - 3:30	38	30	105	38	24	14	66	16	16	77	63	29
3:30-4:30	45	21	71	50	17	4	102	7	8	62	47	13
4:30-5:30	**37**	**36**	**43**	**46**	**29**	**2**	**75**	**12**	**12**	**88**	**77**	**15**

6.0 Traffic Generation

6.1 Private Passenger Vehicle Trip Generation

Based on the concept master plan developed by Ian Munro and Civix, it is expected that there will be around 110 dwellings. The true number of dwellings has not been finalized, however the number of dwelling is likely to be lower than, but not exceed 110.

Figure 6 highlights the master plan, with potential property plot locations. Table 4 displays the estimated number of vehicles trip that may occur, based on statistical data highlighted in NZTA Research Report 453. The trip generation statistics from research report 435 is likely to be conservative for a development like this as statics are for urban areas for more urbanised environment, like inner suburbs found within Auckland inner suburbs.

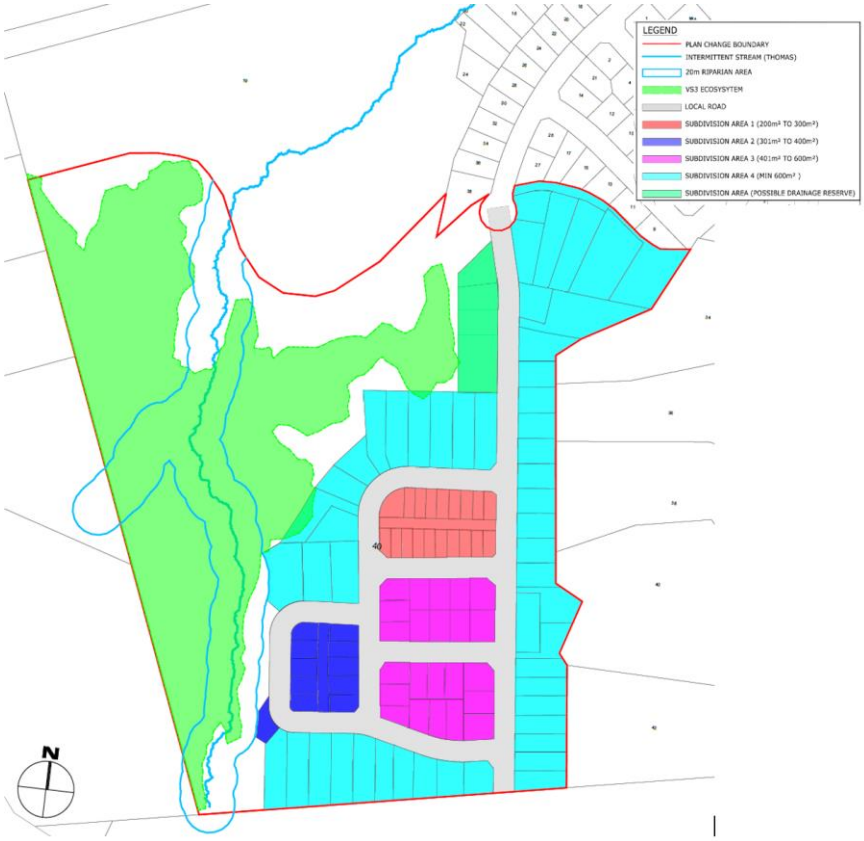


Figure 6: Proposed Subdivision concept master plan

Table 4 highlights that by using statistics from research report 435, it can be conservatively estimated that the number of vehicles driving in and out of the proposed development during the peak hours will be around 99 vehicles per hour, The statistics point to the number of daily vehicle trips in and out of the proposed development will be around 902 per day.

The Statistics within research report 435 do not provide data on off-peak hourly traffic volumes. Within table 4, the off-peak hourly traffic volume is estimated by subtracting the sum of two peaks from the total estimated trips per day and then dividing the volume by 12. By completing this sum we can understand what traffic volumes could be seen throughout the day. The off-peak hourly traffic volume is relatively low, with only 58 vehicle trips per hour.

Table 4 – Possible number of vehicles trips (in + out) to be generated by the proposed sub-division at 40 Mahi Road.

No. Houses	NZTA Research Report 453 – Outer suburban Residential Trip Generation Values		Estimated Off-peak trips generation (Veh/hr)
	Peak Hour = 0.9 Veh/Hr	Daily = 8.2 Veh/day	
In the order of 110	99	902	58

6.2 Trip generation to existing developments nearby

When looking at traffic generation we need to account for the traffic generation for properties that have or are being developed nearby. From the Auckland Council Geo Map tools, the number of properties that have or are being developed can be determined (as shown in figure 7). In total, 210 residential dwellings have been or will be built.

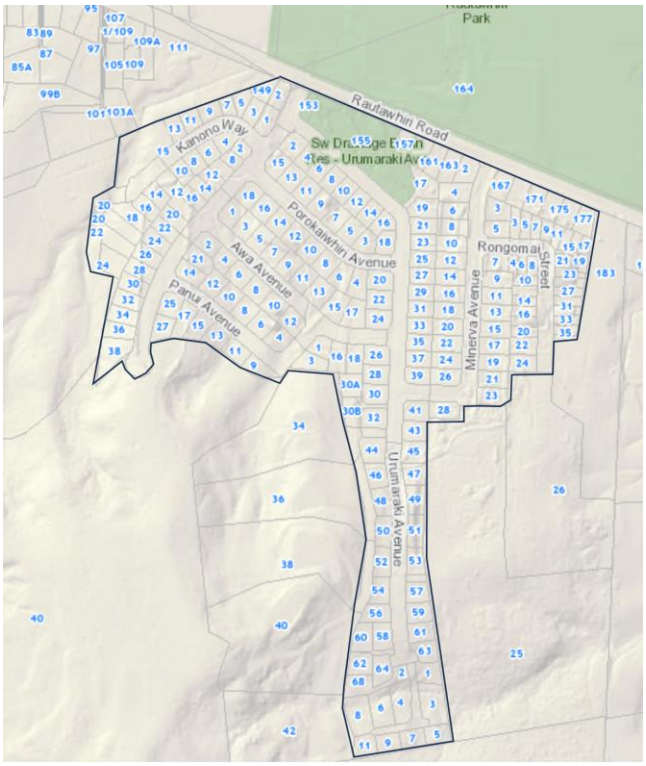


Figure 7: Nearby subdivision developments as per Auckland Council Geo-maps August 2025

Using the same assumptions from section 7.1, table 5 is created to determine traffic volume forecasts for the existing developments. Table 5 highlights that the peak hour could generate 189 vehicle trips in and out the area, with total daily trips of 1722 vehicles per day.

Table 5 – Possible number of vehicles trips (in + out) that could be generated by the nearby developments.

No. Houses	NZTA Research Report 453 – Outer suburban Residential Trip Generation Values per house		Estimated Off-peak trips generation (Veh/hr)
	Peak Hour = 0.9 Veh/Hr	Daily = 8.2 Veh/day	
In the order of 210	189	1722	128

6.3 Total traffic forecast on Rautawhiri Road

By looking at the traffic count data from sections 5.0 and 5.1, and the traffic volume forecast from sections 7.1 and 7.2, it can be estimated that:

- During the PM and AM peak hour traffic volumes on Rautawhiri Road could be 695 and 508 vehicle per hour in both directions respectively.
- Daily Traffic volumes on Rautawhiri Road could be 5143 vehicles per day in both directions.

When reviewing the potential traffic volumes that could be generated on Rautawhiri Road (and the wider network), the potential for any significant delay is very unlikely as there is ample spare vehicle capacity. Road users are likely to face additional delays once the development is live of around 30 sections to 60 seconds (conservatively).

6.4 Pedestrian & Active Mode Trip Generation

Pedestrian trip generation will be like existing, new and future developments in Helensville. Pedestrians' facilities of connecting developments, and the relatively recent upgrades to pedestrian facilities on Rautawhiri Road will allow pedestrian trips to access:

- Nearby Bus-stops (refer to section 10)
- Local schools (Kaipara College)
- Rautawhiri Park (and associated facilities like the local rugby club, tennis courts etc.)

The Helensville town center is 1.7km away from the development, and for some future residents it is still walkable within 20mintes. Other future residents could reach the town center by other active modes (bicycle, electric scooters etc.) within 9 minutes or so.

6.5 Public Transport Trip Generations

The development is about 740m away from the nearest bus-stop, which is within walking distance for most public transport users. The development will likely increase patronage of the existing bus routes, which increases the viability of the existing service and potentially help increase further investment for increasing trip frequency or additional services.

Refer to section 10 of the report for further details on public transport in the area near the site.

7.0 Roading (Intersection) Network Review

The issue that may cause traffic congestion will relate to the traffic generated during peak hours. Table 4 and 5 highlight that the additional peak volume in the area could be around 288 Vehicle per hour (at a high level). This is not a significant volume if we are to compare it with the current capacity and current traffic volumes. Based on the current AUP, the amount of land that is currently earmarked for future housing outside of this current and proposed development is limited and will not increase the number of trips significantly on the current local network, thus has been ignored.

7.1 Assumptions within the Analysis.

7.1.1 Calculation to determine existing hourly traffic Volumes

There are three traffic counts components to the intersection analysis below. They are:

1. Existing AADT volumes & Traffic Counts
2. Traffic volumes created from the proposed developments
3. Traffic volumes created from the developments that are currently being constructed

The existing AADT volumes have been extracted from mobile roads.org (as shown in figure 5), with the exclusion of the intersection of Rautawhiri Road, Garfield Road and Rata Street where physical counts were undertaken. AADT traffic counts look at total traffic volume in both directions over an average 24 hour period, thus this data needs to be transformed to account for hourly traffic volumes. To estimate the hourly peak hour traffic volume in both directions during the peak hour, the following calculation was completed; hourly peak hour = AADT/10.

Traffic volumes for the proposed developments and developments that are under construction have been estimated from statics and are shown in tables 4 and 5

To determine the directional traffic volume during the peak hour, ratios were derived from the traffic data collected at the intersection of Rautawhiri Road, Garfield Road and Rata Street. Further calculations are highlighted within section 8.2.

7.1.2 Direction of Traffic flow

Based on section 5 of the report, due to the existing attractions/destinations shown within figure 4, For the purposes of this analysis, 99% of vehicles exiting the subdivision will make trips between Mahi Road and the town center. This assumption is made by reviewing:

1. Figure 5 where AADT volumes show the closer you get to the town center, the higher the traffic volumes.
2. Figure 4: Attractions & Destinations, we see that the majority of facilities are located in the town centre.
3. To access the wider facilities of Auckland region, the majority of vehicles travel through the city centre then access highway 16 to west Auckland, and to a lesser extinct towards Silverdale/Dairy flat.

As vehicles get closer to the local town center, traffic will start to distribute, which is hard to predict. The intersection analysis tries to distribute the traffic through the streets in proportionate to current AADT volumes

The captions of figures 8 through to 17 highlight further assumptions for each traffic analysis.

7.2 Intersection Analysis

To determine the traffic volumes at each intersection, directional flow ratios were developed using the available traffic count data at the intersections of Garfield Road, Rata Street, and Rautawhiri Road. These ratios were applied to establish the proportion of vehicles travelling eastbound and westbound. The resulting percentages were then multiplied by the AADT volumes at these same intersections to derive representative turning volumes. These calculated volumes were subsequently transposed and applied to the remaining intersections for the purpose of the traffic analysis.

At the intersection of Garfield Road, Rata Street and Rautawhiri Road, some minor additional delays are expected during the PM peak. The inbound and outbound traffic volumes are approximately the same for most movements, with the exception of the right turn from Garfield Road onto Rautawhiri Road, which is notably higher. This suggests that returning traffic during the evening is bypassing the town centre and instead using local roads to reach their destinations.

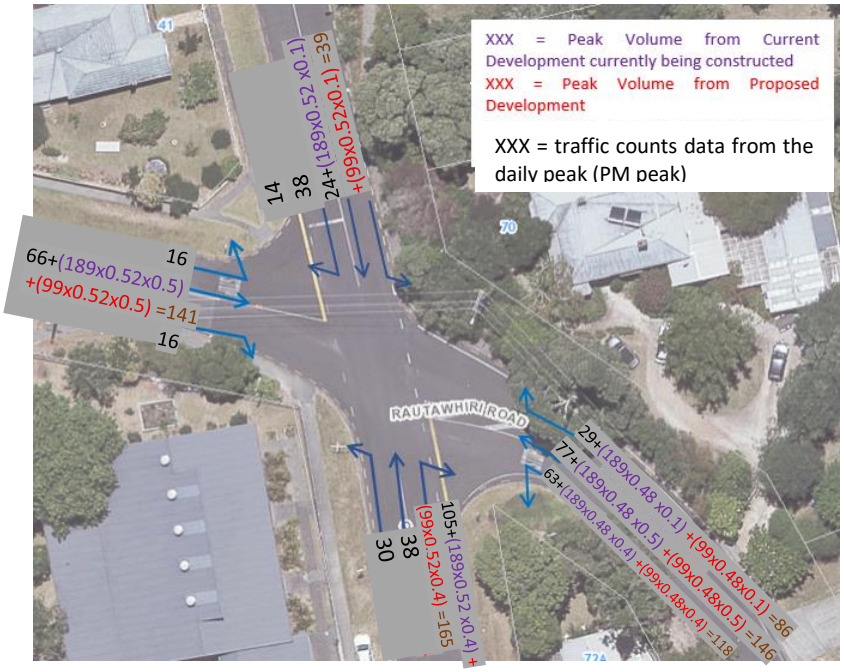


Figure 8: Estimated PM peak hourly traffic volumes at Intersection of Garfield Road, Rata Street and Rautawhiri Road. Traffic flows were determined by (1) using traffic count data collected during the peak hour between 2:30pm and 3:30pm, and (2) proportioning out the estimated traffic volumes generated by the current and proposed development on the approx. proportions of the current intersection trends.

At the same intersection during the AM peak, a similar pattern is observed. Traffic volumes are generally consistent across all approaches; however, there is a slightly higher flow originating from the Rautawhiri Road approach, indicating that residents are leaving the nearby development area during the morning peak period.

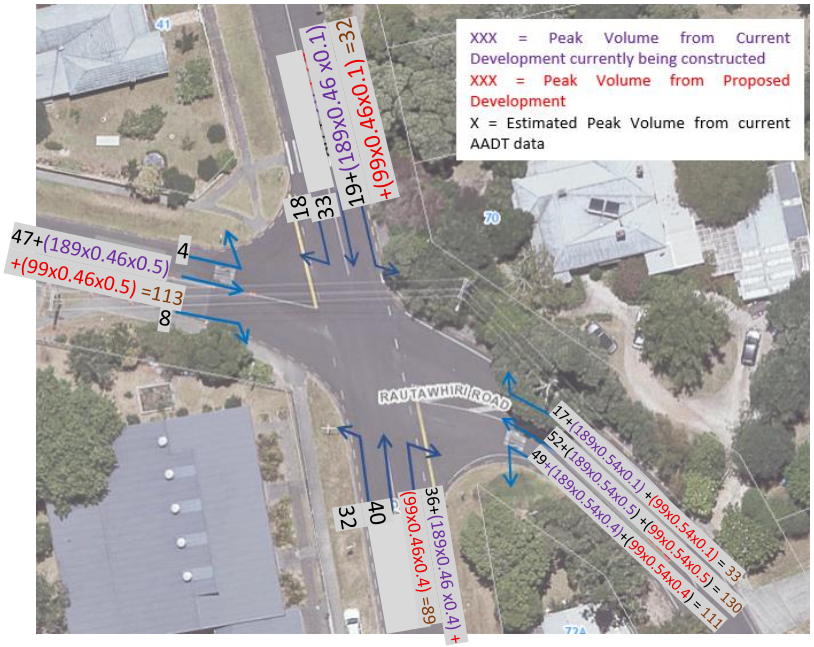


Figure 9: Estimated AM peak hourly traffic volumes at Intersection of Garfield Road, Rata Street and Rautawhiri Road. Traffic flows were determined by (1) using traffic count data collected during the peak hour between 8:30am and 9:30am, and (2) proportioning out the estimated traffic volumes generated by the current and proposed development on the approx. proportions of the current intersection trends.

Currently Mahi Road and Rautawhiri Road intersection are significantly underutilized due to its low traffic volume. Figures 10 and 11 display the current vs predicted volumes exiting Rautawhiri Road during the AM and PM peak hours.

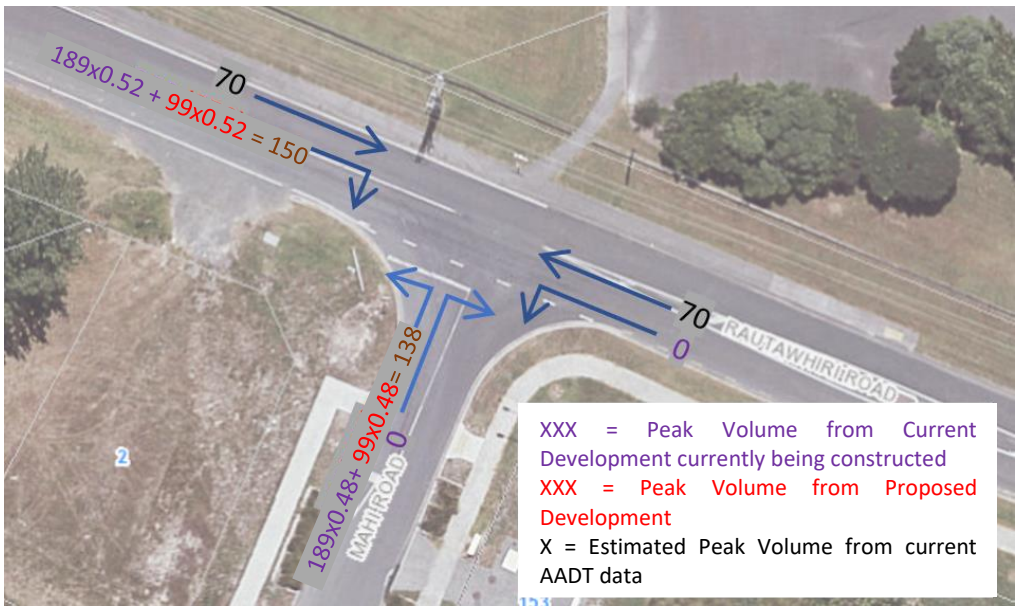


Figure 10: Estimated PM peak hourly traffic volumes at Intersection of Mahi Road and Rautawhiri Road. It is assumed that all traffic will be flowing towards the town centre.

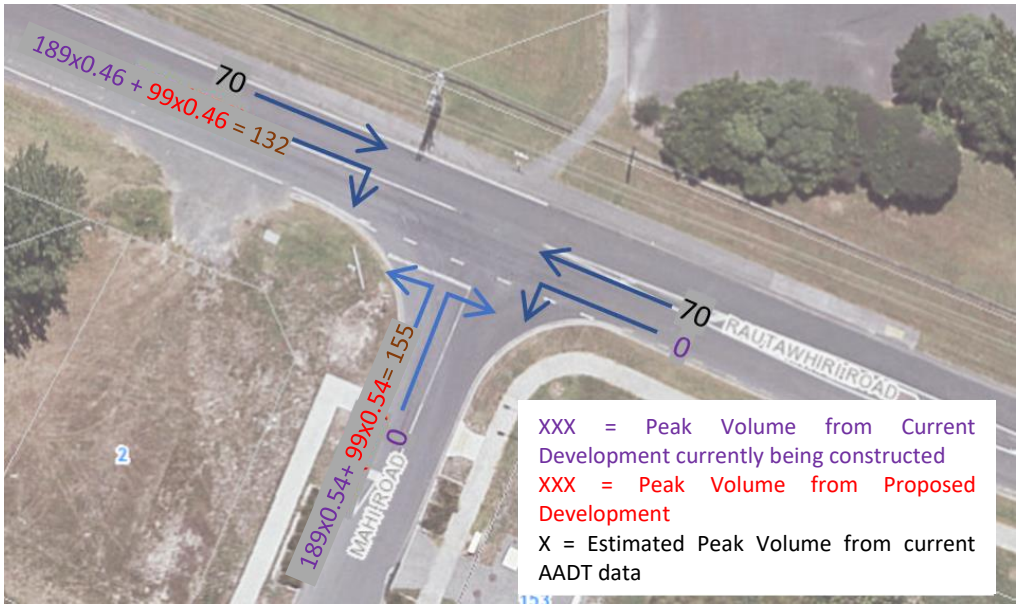


Figure 11: Estimated AM peak hourly traffic volumes at Intersection of Mahi Road and Rautawhiri Road. It is assumed that all traffic will be flowing towards the town centre.

It is likely that minor delays are to occur on the Rata Street Leg, at the intersection of Rata Street and SH16 due to the increase in traffic volume (figure 10 and 11). Traffic delay will remain about the same for traffic on SH16 for southbound vehicles, but there might be an increase in delay for northbound vehicles due to the increase in right turning vehicles onto Rata Street. This is likely to be mitigated by road users using alternative routes over time, as there are about four alternative routes that can be used. Determining the hourly peak northbound and southbound traffic flow in each direction at this intersection is difficult due to the lack of reliable data. Volumes in the north and south bound directions is significantly higher than the development and the volumes originating from the side roads and therefore dividing the assumed peak hour volume into 2 for each direction will be sufficient for this analysis.

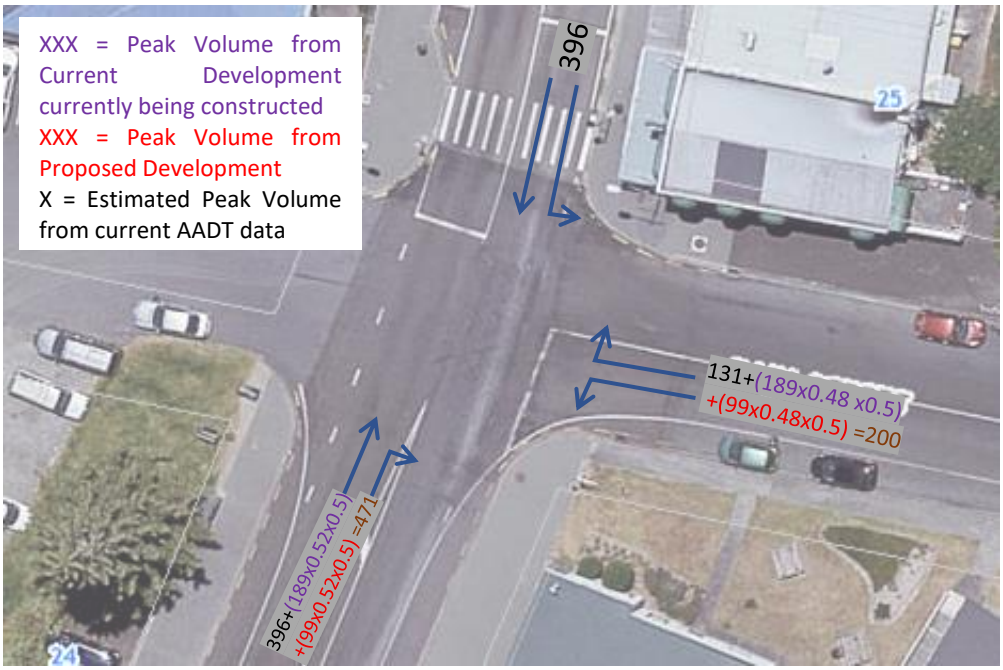


Figure 12: Estimated PM peak hourly traffic volumes at Intersection of Rata Street and SH16. Traffic flows from the proposed and current development are based on the flows derived from the intersection of Garfield Road, Rata Street and Rautawhiri Road.

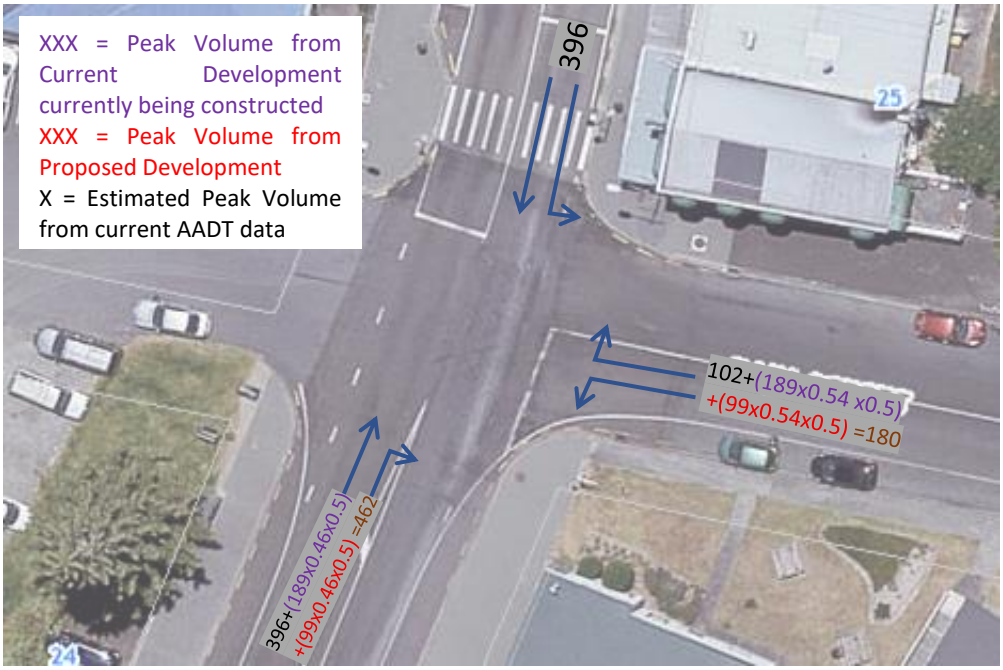


Figure 13: Estimated AM peak hourly traffic volumes at Intersection of Rata Street and SH16. Traffic flows from the proposed and current development are based on the flows derived from the intersection of Garfield Road, Rata Street and Rautawhiri Road.

The increase in hourly traffic volume at the intersection of Garfield Road and SH16 will be minimal and will not cause any significant delay (figures 14 and 15).

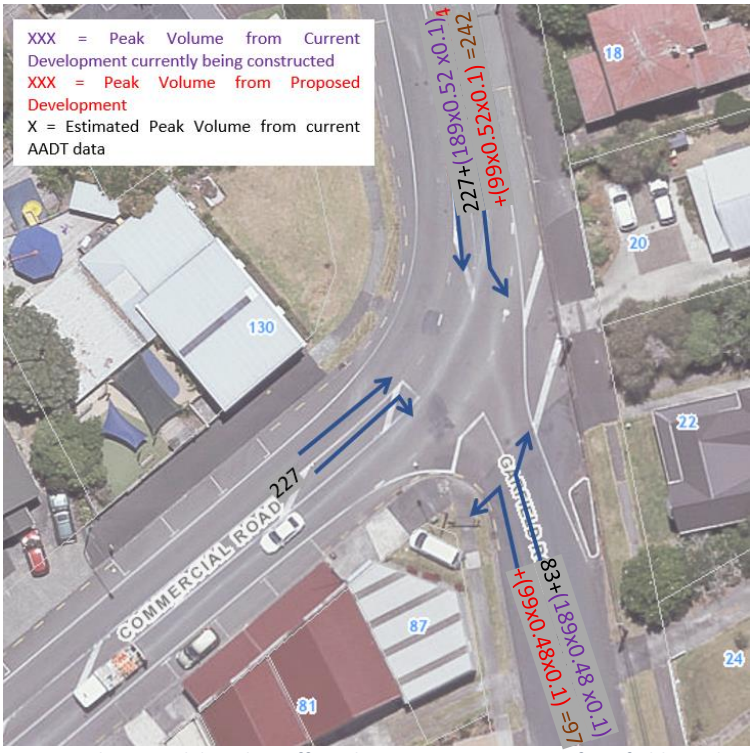


Figure 14: Estimated PM peak hourly traffic volumes at Intersection of Garfield Road and SH16. Traffic flows from the proposed and current development are based on the flows derived from the intersection of Garfield Road, Rata Street and Rautawhiri Road.

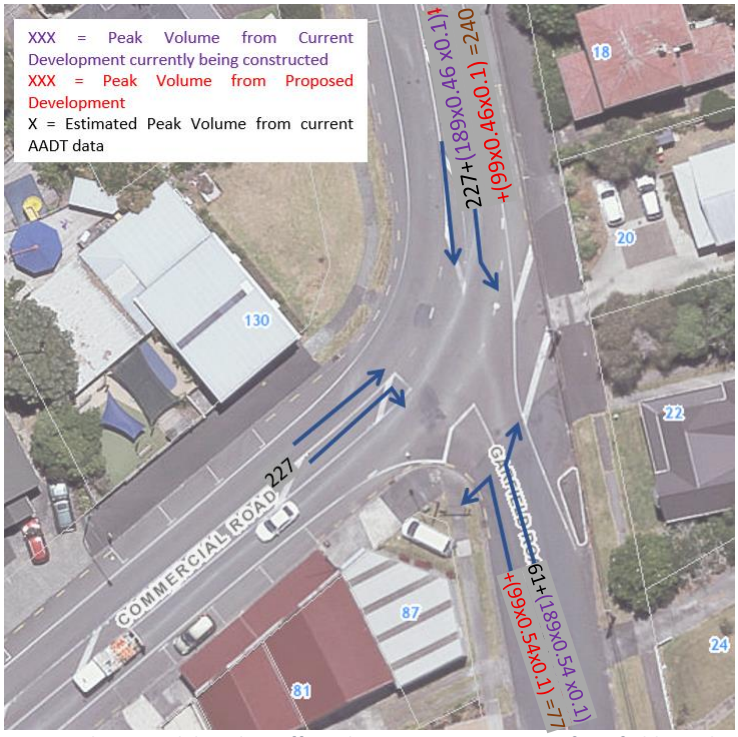


Figure 15: Estimated AM peak hourly traffic volumes at Intersection of Garfield Road and SH16. Traffic flows from the proposed and current development are based on the flows derived from the intersection of Garfield Road, Rata Street and Rautawhiri Road.

Figures 16 and 17 display the potential traffic volume at the roundabout of SH16 and Pinehurst Road. Due to the roundabout's geometry, this roundabout is significantly underutilized, thus the additional traffic that may go through will not be an issue.

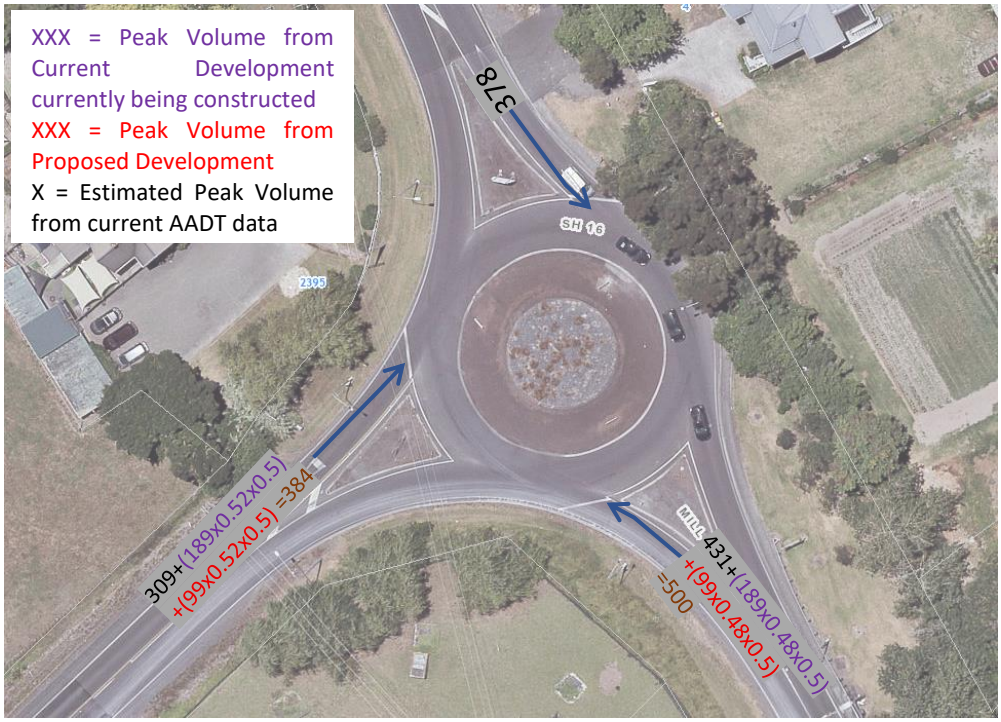


Figure 16: Estimated PM peak hourly traffic volumes at Intersection of Garfield Road and SH16 . Traffic flows from the proposed and current development are based on the flows derived from the intersection of Garfield Road, Rata Street and Rautawhiri Road.

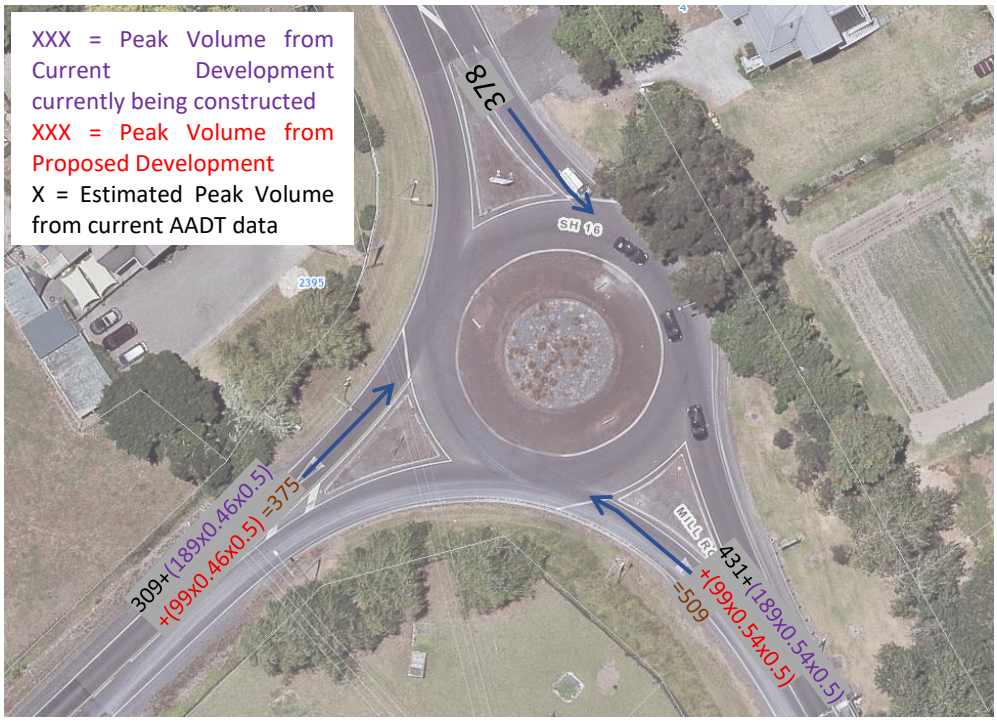


Figure 17: Estimated AM peak hourly traffic volumes at Intersection of Garfield Road and SH16 . Traffic flows from the proposed and current development are based on the flows derived from the intersection of Garfield Road, Rata Street and Rautawhiri Road.

7.3 Traffic Modelling of *Garfield Road, Rata Street and Rautawhiri Road.*

Four high level traffic models were completed using SIDRA Intersection 9 software. The output from each traffic model are shown on tables 6-17. The models created cover both AM and PM peaks for the proposed development.

The base model initially provides a benchmark for comparing the traffic model outputs with actual on-site observations which will ensure that the models are accurate in repeating the current situation on site. The base models for both the AM and PM peak periods align closely with observed site conditions, with delays ranging between 1 and 8 seconds on each approach.

Figure 18 below presents the traffic model layout developed in SIDRA Intersection 9. Please note that this diagram is not to scale. While the actual site geometry has been accurately represented within the model, the illustration does not depict the true lengths of the road segments.

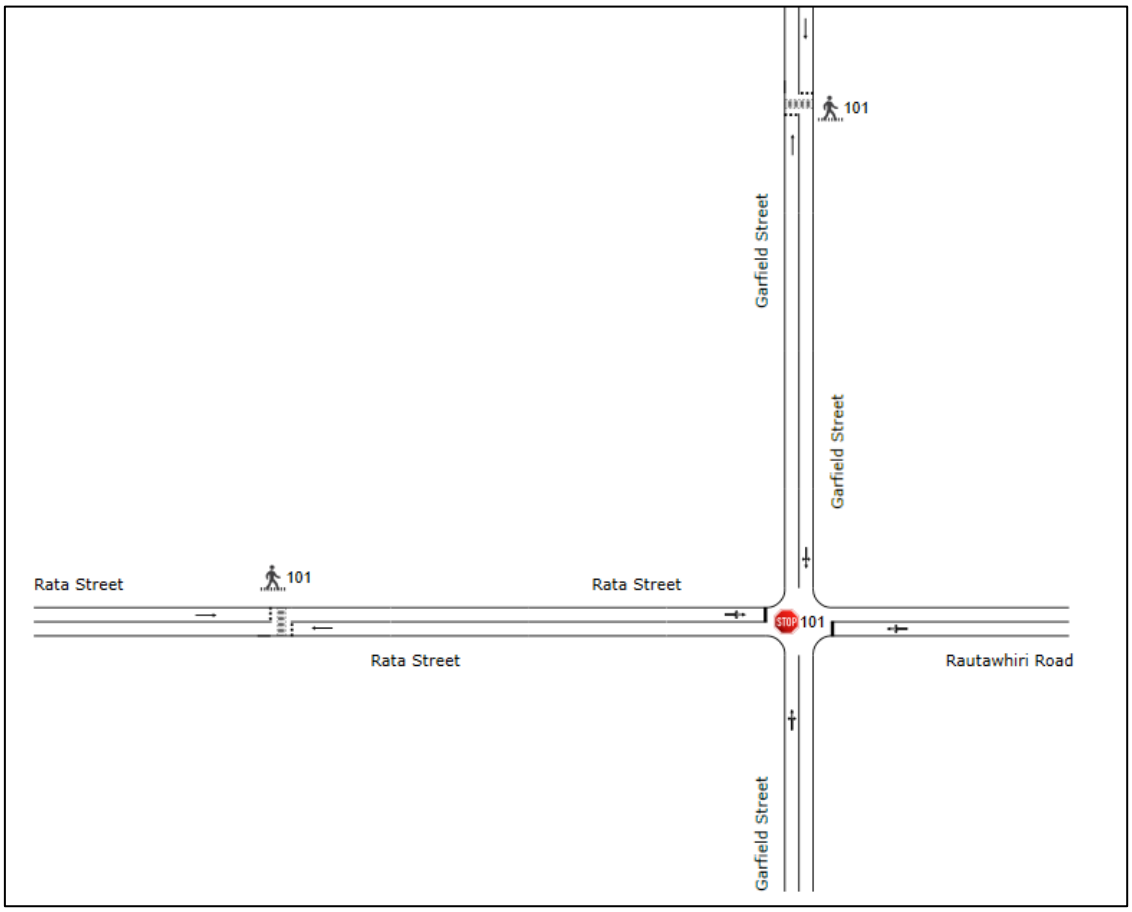


Figure 18: Traffic model layout for the intersection of Garfield Road, Rata Street and Rautawhiri Road using SIDRA Intersection 9.

Table 6: Traffic modelling output for Garfield Road, Rata Street and Rautawhiri Road, PM peak pre-development

Lane Use and Performance	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	182	0.0	182	0.0	1767	0.103	100	3.8	LOS A	0.2	1.4	Full	500	0.0	0.0
Approach	182	0.0	182	0.0		0.103		3.8	NA	0.2	1.4				
East: Rautawhiri Road															
Lane 1	178	0.0	178	0.0	817	0.218	100	8.4	LOS A	0.3	2.0	Full	500	0.0	0.0
Approach	178	0.0	178	0.0		0.218		8.4	LOS A	0.3	2.0				
North: Garfield Street															
Lane 1	80	0.0	80	0.0	1860	0.043	100	1.1	LOS A	0.0	0.3	Full	10	0.0	0.0
Approach	80	0.0	80	0.0		0.043		1.1	NA	0.0	0.3				
West: Rata Street															
Lane 1	103	0.0	103	0.0	615	0.168	100	7.9	LOS A	0.1	1.0	Full	50	0.0	0.0
Approach	103	0.0	103	0.0		0.168		7.9	LOS A	0.1	1.0				
All Vehicles	543	0.0	543	0.0		0.218		5.7	NA	0.3	2.0				

Table 7: Traffic modelling output for Garfield Road pedestrian crossing, PM peak pre-development

Lane Use and Performance	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	87	0.0	87	0.0	1774	0.049	100	1.1	LOS A	0.1	0.5	Full	10	0.0	0.0
Approach	87	0.0	87	0.0		0.049		1.1	LOS A	0.1	0.5				
North: Garfield Street															
Lane 1	80	0.0	80	0.0	1774	0.045	100	3.2	LOS A	0.1	0.5	Full	500	0.0	0.0
Approach	80	0.0	80	0.0		0.045		3.2	LOS A	0.1	0.5				
All Vehicles	167	0.0	167	0.0		0.049		2.1	NA	0.1	0.5				

Table 8: Traffic modelling output for Rata Road pedestrian crossing, PM peak pre-development

Lane Use and Performance	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Rata Street															
Lane 1	127	0.0	127	0.0	1764	0.072	100	2.6	LOS A	0.1	0.8	Full	50	0.0	0.0
Approach	127	0.0	127	0.0		0.072		2.6	LOS A	0.1	0.8				
West: Rata Street															
Lane 1	103	0.0	103	0.0	1764	0.058	100	3.3	LOS A	0.1	0.6	Full	250	0.0	0.0
Approach	103	0.0	103	0.0		0.058		3.3	LOS A	0.1	0.6				
All Vehicles	231	0.0	231	0.0		0.072		2.9	NA	0.1	0.8				

Table 9: Traffic modelling output for Garfield Road, Rata Street and Rautawhiri Road, PM peak once development is complete

Lane Use and Performance															
	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	245	0.0	245	0.0	1731	0.142	100	4.1	LOS A	0.3	2.0	Full	500	0.0	0.0
Approach	245	0.0	245	0.0		0.142		4.1	NA	0.3	2.0				
East: Rautawhiri Road															
Lane 1	368	0.0	368	0.0	710	0.519	100	11.0	LOS B	1.4	9.6	Full	500	0.0	0.0
Approach	368	0.0	368	0.0		0.519		11.0	LOS B	1.4	9.6				
North: Garfield Street															
Lane 1	96	0.0	96	0.0	1861	0.051	100	1.3	LOS A	0.0	0.3	Full	10	0.0	0.0
Approach	96	0.0	96	0.0		0.051		1.3	NA	0.0	0.3				
West: Rata Street															
Lane 1	182	0.0	182	0.0	640	0.284	100	8.8	LOS A	0.3	2.4	Full	50	0.0	0.0
Approach	182	0.0	182	0.0		0.284		8.8	LOS A	0.3	2.4				
All Vehicles	892	0.0	892	0.0		0.519		7.6	NA	1.4	9.6				

Table 10: Traffic modelling output for Garfield Road pedestrian crossing, PM peak once development is complete

Lane Use and Performance															
	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	147	0.0	147	0.0	1774	0.083	100	1.1	LOS A	0.1	0.9	Full	10	0.0	0.0
Approach	147	0.0	147	0.0		0.083		1.1	LOS A	0.1	0.9				
North: Garfield Street															
Lane 1	96	0.0	96	0.0	1774	0.054	100	3.2	LOS A	0.1	0.6	Full	500	0.0	0.0
Approach	96	0.0	96	0.0		0.054		3.2	LOS A	0.1	0.6				
All Vehicles	243	0.0	243	0.0		0.083		2.0	NA	0.1	0.9				

Table 11: Traffic modelling output for Rata Road pedestrian crossing, PM peak once development is complete

Lane Use and Performance															
	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Rata Street															
Lane 1	200	0.0	200	0.0	1764	0.113	100	2.6	LOS A	0.2	1.2	Full	50	0.0	0.0
Approach	200	0.0	200	0.0		0.113		2.6	LOS A	0.2	1.2				
West: Rata Street															
Lane 1	182	0.0	182	0.0	1764	0.103	100	3.3	LOS A	0.2	1.1	Full	250	0.0	0.0
Approach	182	0.0	182	0.0		0.103		3.3	LOS A	0.2	1.1				
All Vehicles	382	0.0	382	0.0		0.113		2.9	NA	0.2	1.2				

Table 12: Traffic modelling output for Garfield Road, Rata Street and Rautawhiri Road, AM peak pre-development

Lane Use and Performance	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	114	0.0	114	0.0	1829	0.062	100	3.0	LOS A	0.1	0.7	Full	500	0.0	0.0
Approach	114	0.0	114	0.0		0.062		3.0	NA	0.1	0.7				
East: Rautawhiri Road															
Lane 1	124	0.0	124	0.0	1096	0.113	100	7.9	LOS A	0.2	1.3	Full	500	0.0	0.0
Approach	124	0.0	124	0.0		0.113		7.9	LOS A	0.2	1.3				
North: Garfield Street															
Lane 1	74	0.0	74	0.0	1840	0.040	100	1.2	LOS A	0.1	0.4	Full	10	0.0	0.0
Approach	74	0.0	74	0.0		0.040		1.2	NA	0.1	0.4				
West: Rata Street															
Lane 1	62	0.0	62	0.0	986	0.063	100	7.3	LOS A	0.1	0.6	Full	50	0.0	0.0
Approach	62	0.0	62	0.0		0.063		7.3	LOS A	0.1	0.6				
All Vehicles	374	0.0	374	0.0		0.113		5.0	NA	0.2	1.3				

Table 13: Traffic modelling output for Garfield Road pedestrian crossing, AM peak pre-development

Lane Use and Performance	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	64	0.0	64	0.0	1793	0.036	100	1.1	LOS A	0.1	0.4	Full	10	0.0	0.0
Approach	64	0.0	64	0.0		0.036		1.1	LOS A	0.1	0.4				
North: Garfield Street															
Lane 1	74	0.0	74	0.0	1793	0.041	100	3.2	LOS A	0.1	0.4	Full	500	0.0	0.0
Approach	74	0.0	74	0.0		0.041		3.2	LOS A	0.1	0.4				
All Vehicles	138	0.0	138	0.0		0.041		2.2	NA	0.1	0.4				

Table 14: Traffic modelling output for Rata Road pedestrian crossing, AM peak pre-development

Lane Use and Performance	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Rata Street															
Lane 1	107	0.0	107	0.0	1788	0.060	100	2.5	LOS A	0.1	0.6	Full	50	0.0	0.0
Approach	107	0.0	107	0.0		0.060		2.5	LOS A	0.1	0.6				
West: Rata Street															
Lane 1	62	0.0	62	0.0	1788	0.035	100	3.2	LOS A	0.1	0.4	Full	250	0.0	0.0
Approach	62	0.0	62	0.0		0.035		3.2	LOS A	0.1	0.4				
All Vehicles	169	0.0	169	0.0		0.060		2.8	NA	0.1	0.6				

Table 15: Traffic modelling output for Garfield Road, Rata Street and Rautawhiri Road, AM peak once development is complete

Lane Use and Performance															
	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	169	0.0	169	0.0	1774	0.096	100	3.6	LOS A	0.2	1.3	Full	500	0.0	0.0
Approach	169	0.0	169	0.0		0.096		3.6	NA	0.2	1.3				
East: Rautawhiri Road															
Lane 1	288	0.0	288	0.0	1032	0.279	100	8.4	LOS A	0.5	3.7	Full	500	0.0	0.0
Approach	288	0.0	288	0.0		0.279		8.4	LOS A	0.5	3.7				
North: Garfield Street															
Lane 1	87	0.0	87	0.0	1844	0.047	100	1.3	LOS A	0.1	0.4	Full	10	0.0	0.0
Approach	87	0.0	87	0.0		0.047		1.3	NA	0.1	0.4				
West: Rata Street															
Lane 1	132	0.0	132	0.0	910	0.145	100	7.9	LOS A	0.2	1.6	Full	50	0.0	0.0
Approach	132	0.0	132	0.0		0.145		7.9	LOS A	0.2	1.6				
All Vehicles	677	0.0	677	0.0		0.279		6.2	NA	0.5	3.7				

Table 16: Traffic modelling output for Garfield Road pedestrian crossing, AM peak once development is complete

Lane Use and Performance															
	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Garfield Street															
Lane 1	81	0.0	81	0.0	1793	0.045	100	1.1	LOS A	0.1	0.5	Full	10	0.0	0.0
Approach	81	0.0	81	0.0		0.045		1.1	LOS A	0.1	0.5				
North: Garfield Street															
Lane 1	87	0.0	87	0.0	1793	0.049	100	3.2	LOS A	0.1	0.5	Full	500	0.0	0.0
Approach	87	0.0	87	0.0		0.049		3.2	LOS A	0.1	0.5				
All Vehicles	168	0.0	168	0.0		0.049		2.2	NA	0.1	0.5				

Table 17: Traffic modelling output for Rata Road pedestrian crossing, AM peak once development is complete

Lane Use and Performance															
	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Rata Street															
Lane 1	189	0.0	189	0.0	1788	0.106	100	2.6	LOS A	0.2	1.2	Full	50	0.0	0.0
Approach	189	0.0	189	0.0		0.106		2.6	LOS A	0.2	1.2				
West: Rata Street															
Lane 1	132	0.0	132	0.0	1788	0.074	100	3.2	LOS A	0.1	0.8	Full	250	0.0	0.0
Approach	132	0.0	132	0.0		0.074		3.2	LOS A	0.1	0.8				
All Vehicles	321	0.0	321	0.0		0.106		2.8	NA	0.2	1.2				

As shown in figure 8, during the AM peak, we see a marginally higher volume of traffic travel from this intersection in westbound direction. This highlights the assumptions made in earlier sections which state that majority of the traffic flows towards town center during the morning.

Comparing base model of AM peak with the traffic model results post-development, traffic delays increases slightly (from 7.9 seconds to 8.4 seconds). This highlights that while delays have increased, they are not noticeable to any road users at the intersection.

As shown in figure 9, during the PM peak, we see a marginally higher volume of traffic travel from this intersection in eastbound direction. This highlights the assumptions made in earlier sections which state that majority traffic flows back into the neighborhood during the evening.

Comparing base model of PM peak with the traffic model results post-development, traffic delays increases slightly (from 8.4 seconds to 11 seconds). This highlights that while delays have increased, they are not noticeable to any road users at the intersection.

When looking at all model results, we see marginal increases in both AM and PM peaks. In the AM peak, we see Rautawhiri Street has a delay of approximately 2 seconds while during the PM peak, we see a slight delay of approximately 3 seconds. Rautawhiri Road generally experiences greater delays than the other approaches. This is primarily due to the road geometry, the priority assigned to movements exiting Garfield Road, and the requirement for vehicles on Rautawhiri Road to give way.

There are no significant delays caused by the pedestrian crossings, as confirmed by both the SIDRA models and on-site observations. As demonstrated in the traffic models above, and as discussed earlier in the report, the intersection has sufficient capacity to accommodate additional traffic volumes should the proposed developments proceed.

8.0 Crash Analysis

Information from the New Zealand Transport Agency's "Crash Analysis System" between the years 2015 to 2021 in the vicinity of the site did not highlight any significant road safety concerns. There is only one crash near the site at the intersection of Rautawhiri Road and Inland Road. The reported crash led to a non-injury crash.

9.0 Construction Traffic

Normally sub-divisions of this size will require a Construction Traffic Management Plan (CTMP) and should be included in the conditions of consent. This CTMP is to be developed by the contractor and should be partially authored by a suitably qualified person who holds a NZTA Temporary Traffic Management Panner (TTMP) qualification or equivalent. The CTMP is to detail the following as a minimum:

- A parking management plan for construction traffic
- Provide appropriate loading / working areas to minimize disruption to traffic on the public roading network.
- Provide cleaning facilities within the site to thoroughly clean all vehicles prior to exit to prevent mud or other excavated material from being dropped on the road. In the event that material is dropped on the road, resources should be on hand to clean up as soon as possible.
- Provide traffic management plans in compliance with the latest edition of the NZTA "Code of Practice for Temporary Traffic Management" (COPTTM). It should be noted that these plans do not need to be approved by AT.
- Site access signposting
- Measures to be adopted to ensure that pedestrian access on the public footpaths in the vicinity of the site is safe during construction works.
- Pedestrian / cyclist movements and pedestrian control / safety on the surrounding roads
- Proposed access routes, numbers, and timing of truck movements throughout the day, including any necessary limits on movements during peak commuter periods.
- Location of vehicle and construction machinery access during the period of site works
- Storage and loading areas for materials and vehicles.
- Roles and responsibilities of traffic management persons on site
- How to obtain an AT approved Site-Specific Temporary Traffic Management Plan (SSTMP)

The CTMP is a guide on how traffic should be managed safely and effectively during construction. The CTMP is a living document and must be updated regularly to ensure information stays relevant as the project progresses. A CTMP can be completed before an approved SSTMP is obtained, as the CTMP is a guide to project staff of what temporary traffic is required.

10.0 Public Transport

Public transport currently services Helensville, with two bus routes as shown in figure 19. Bus Route 125 travels between Helensville and Westgate. People have the ability to use public transport to reach the wider Auckland network by transferring from the 125 service at Westgate. Bus Route 128 is a service between Helensville and the Hibiscus Coast Station. From the Hibiscus Coast Station, public transport users can transfer to a number of services including the northern bus-way to reach the wider AT network. AT does not penalize public transport users from one service to another, which will further encourage public transport use and allows services to run with relatively high frequency.

Route 125 is a service that runs every 30 minutes between the hours of 5am and 9pm, Monday to Friday. On weekends and public holidays, the service runs every hour, between the hours of 7am to 9pm.

Route 128 is a service that runs every hour between the hours of 8am and 9pm, Monday to Friday. On weekends and public holidays, the service runs every two hours, between the hours of 8am to 9pm.

Figure 20 displays the closest bus stop to the proposed development. It is approximately 740 meters from the top end of the proposed development, which takes approximately 10 minutes to walk. This ensures public transport usage is a viable option.

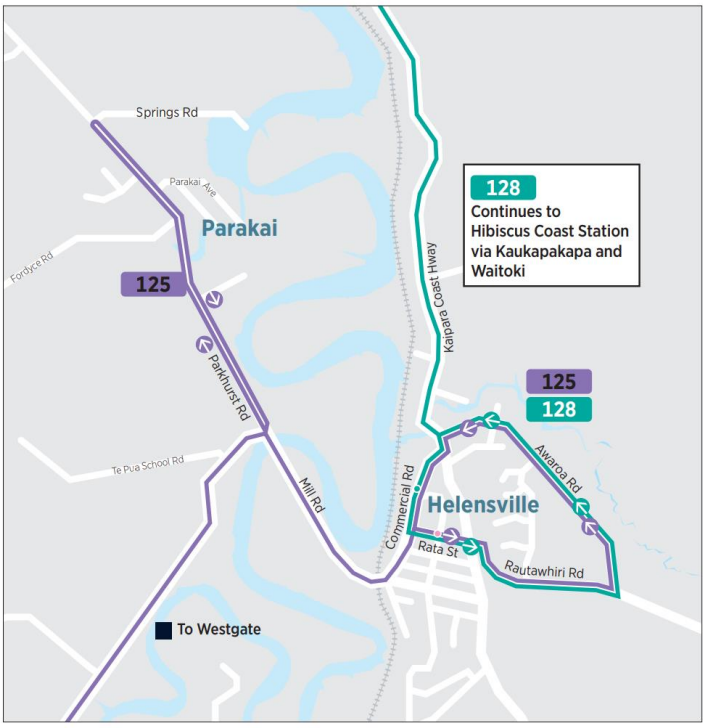


Figure 19: Existing bus routes near the proposed development

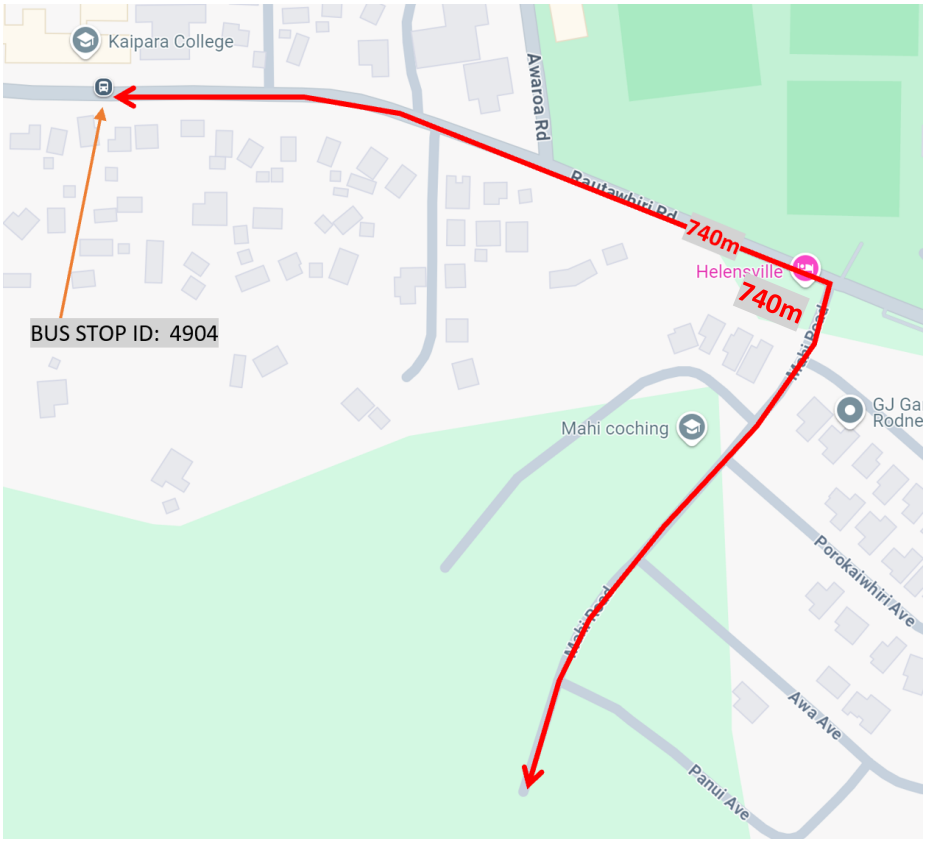


Figure 20: Existing bus stop in relation to the proposed development

11.0 Auckland Unitary Plan Provisions

The proposed areas available for roading, access and house platforms will need to comply with the appropriate traffic standards under the AUP, specifically section E27 Transport. This document has not been developed for resource consent, thus a detail analysis of the development against the AUP transport policies cannot be assessed. Detailed traffic assessments should be developed at the consent stage, ensuring suitable traffic outcomes are achieved, including the final provisions once PC79 is also fully operative.

12.0 Transport Emissions Reduction Pathway

Below is the 11 goals Auckland Transport has set out to enable more suitable forms of transport over roading network in Auckland. The 11 goals are:
1: Supercharge walking and cycling

2: Massively increase public transport patronage

3: Prioritise and resource sustainable transport

4: Reduce travel where possible and appropriate

5: Safe, low-traffic neighbourhoods for people

6: Build up not out

7: Electrify private vehicles

8: Enable new transport devices

9: Low-emissions public transport

10: Efficient freight and services

11: Empower Aucklanders to make sustainable transport choices

12.1 Review of each goal

Table 7 – 11 goals as part of the Transport Emissions Reduction Plan (TERP)

Goal	Comment
Supercharge walking and cycling.	Developments like this help increase the viability to upgrade pedestrian facilities on connecting roads.
Massively increase public transport patronage	The benefit of this type of proposal, there is an increases in the number of potential people who may use public transport, leading to increase cost benefits to increase frequency of services. This could potentially help increase patronage
Prioritise and resource sustainable transport	The development has the potential to increase number of PT users, thus bus utilisation becomes more sustainable.
Reduce travel where possible and appropriate	The development is relatively close to the local schools, which will encourage school pupils to walk to and from school.
Safe, low-traffic neighbourhoods for people	This development will have low traffic and low speeds, meaning safe environment for all road user types. The issue arises when this development connects to the wider Helensville network which has not been design for a low-speed environment. A development

	like this can help produce change during future road renewal programmes.
Build up not out	This development increase intensification in an area that would otherwise be lifestyle development.
Electrify private vehicles	Not applicable as part of this analysis and should be assessed during the consent application phase.
Enable new transport devices	Not applicable as part of this analysis and should be assessed during the consent application phase.
Low-emissions public transport	Not applicable as part of this analysis and should be assessed during the consent application phase.
Efficient freight and services	Not applicable as for this type of development, and needs to be assess at a Macro level
Empower Aucklanders to make sustainable transport choices	Due to Helensville proximity to the wider AT network this is not an issue for this proposal, but for the wider Helensville area. By increase the number of house in the area, the pool of people who wish to take public transport can significantly increase thus making sustainable transport choice more economical

13.0 Wider Policy Review

National Policy Statement Urban Development (NPSUD), the Future Urban Land Supply Strategy 2017 (FULSS), the Future Development Strategy 2023 (FDS), and the Regional Policy Statement (RPS) should be considered when reviewing a proposed AUP changes

13.1 NPSUD

This is referred in Section 5.1.1 of the AEE (Assessment of Environmental Effects), where objective 3 seeks "the area is well serviced by existing and planned public transport". As discussed in earlier sections of the report a plan change can help create new opportunity for public transport improvements due the potential increase in population.

13.2 FULSS/FDS

These are referred in Sections 5.2.2 and 5.2.3 of the AEE. These have links to relevant transportation documents including the National Land Transport Programme, Integrated Transport Programme. Regional Land Transport Plan, and the Auckland Transport Alignment Project and Supporting Growth. It is noted that the FDS extended time frame of 2035+ for live zoning also notes wastewater and water supply as pre-requisites for this later live zoning and transportation (including public transport) is not a prerequisite against live zoning, so must be considered suitable here.

13.3 Regional Policy Statement

The RPS is referred in Section 5.3.1 of the AEE and has relevance under Policy B2.2 Urban Growth and Form – where proximity to public transport is a consideration. Noting that the FDS and

FULSS seek to urbanise this PPC area public transport options must have been considered suitable for urbanisation.

Under B2.4 Residential Growth similar outcomes are sought where growth is considered desirable where adequate transportation infrastructure is available.

B3 - Infrastructure, Transport, and Energy also notes that the PPC area is easily accessible to vehicles, pedestrian and active mode transportation, and has suitable public transport options (busses).

14.0 Conclusion

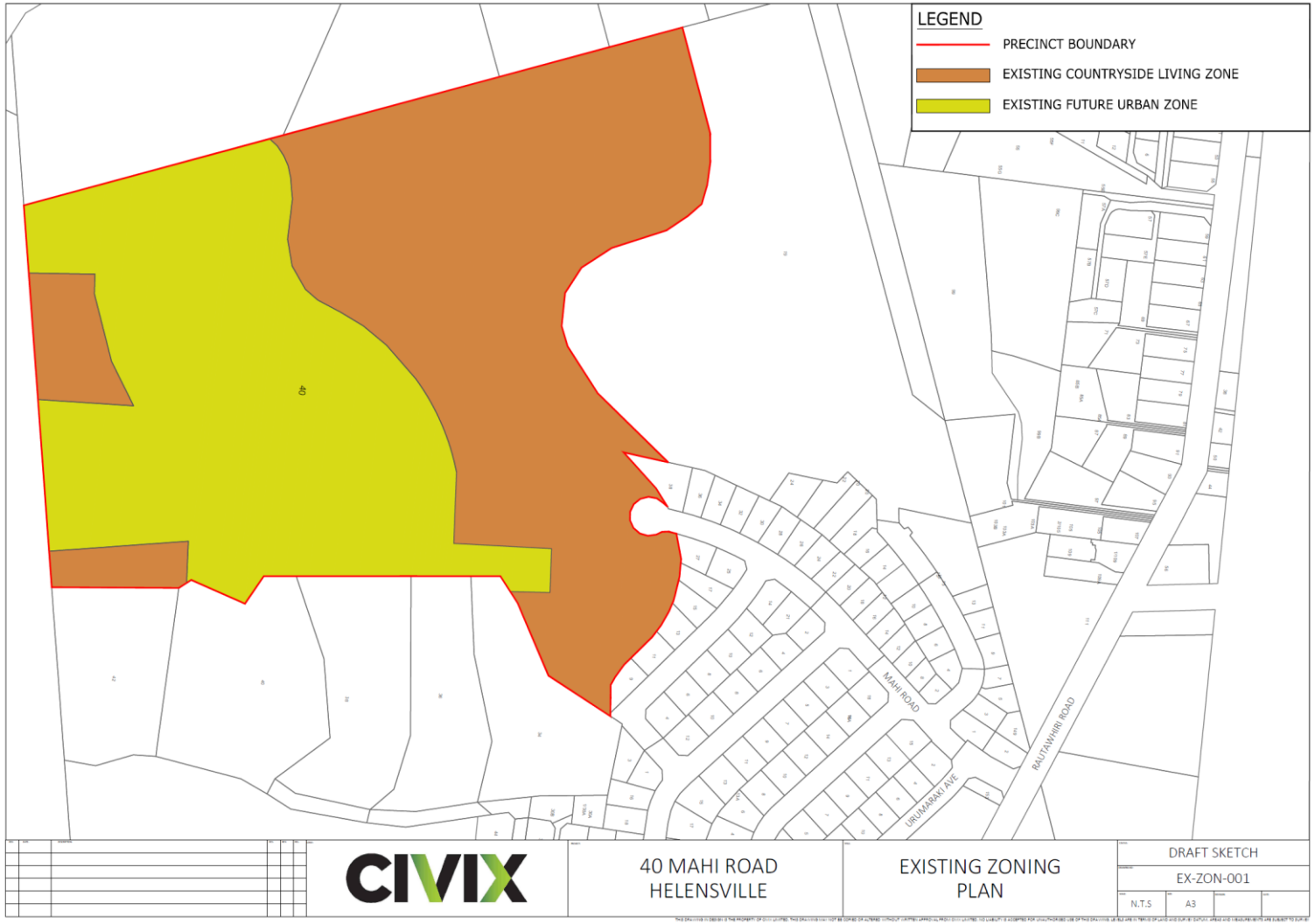
This report considers the traffic impact of the proposed changes to the Auckland Unity Plan (AUP) zones at 40 Mahi Road.

Overall, the proposal will construct around 110 Dwellings, and the resulting in traffic effects are likely to be minor in nature.

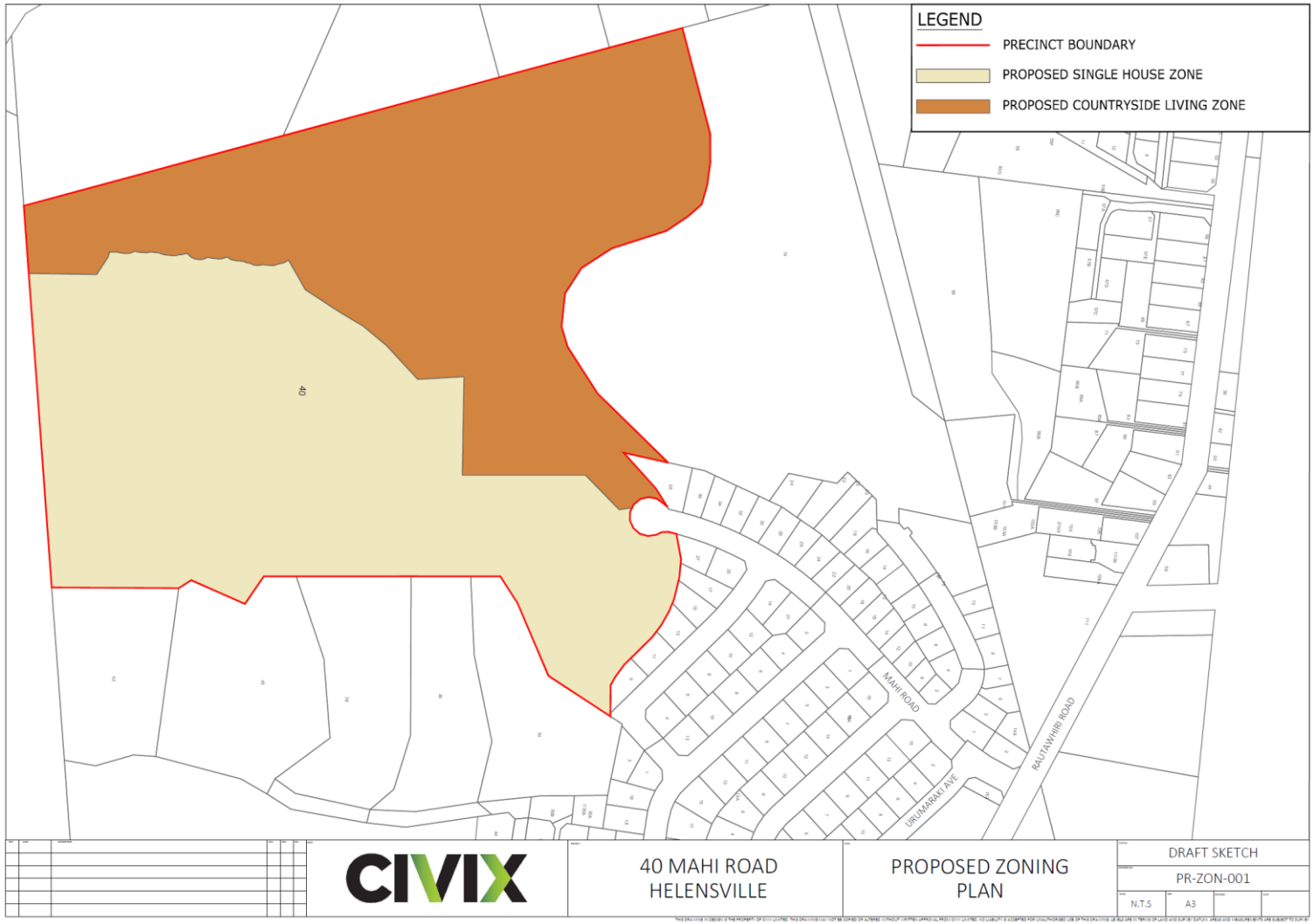
There is therefore no traffic-related reason why the proposed change should not be granted.

Appendix 1 – Auckland Council GIS plan

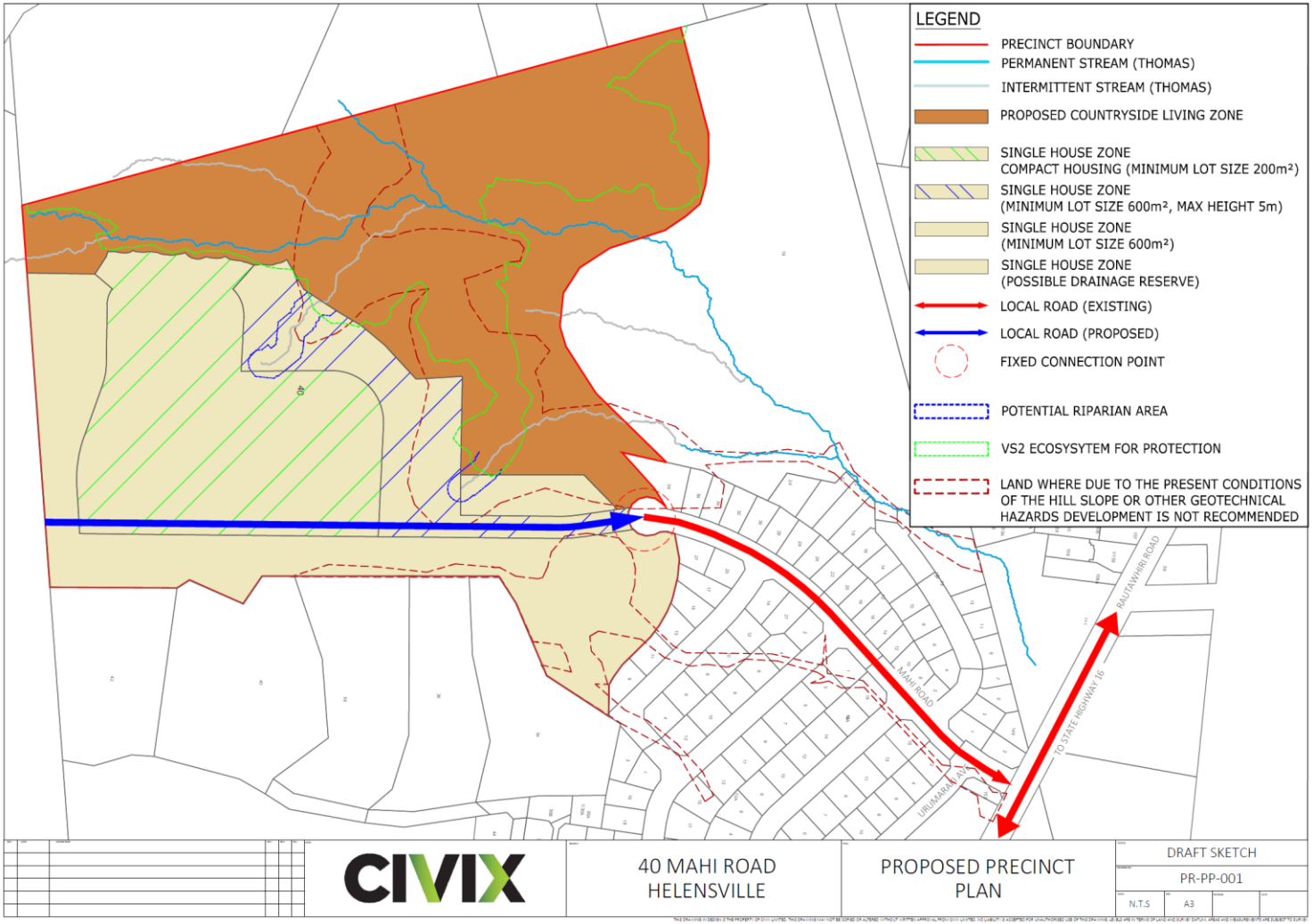
Appendix 2 – Existing Zoning Plan



Appendix 3 – Proposed Zoning Plan



Appendix 4 – Proposed Precinct Plan



Appendix 5 – Proposed Concept Master Plan