PROPOSED PRIVATE PLAN CHANGE 84
SUPPLEMENTARY TRANSPORT ASSESSMENT

MANGAWHAI HILLS
MANGAWHAI

Project Information:

Client	Mangawhai Hills Limited
Job Number	220560
Title	Proposed Private Plan Change 84, Mangawhai Hills, Mangawhai
Prepared By	Peter Kelly
Date	April 2024
Report Status	Final

1.0 INTRODUCTION

The following is a supplementary transport assessment which has been prepared for the proposed Private Plan Change 84 (PC84) of the historical Frecklington Farm area, hereby referred to as Mangawhai Hills, in Mangawhai. The intent of this assessment is to provide additional consideration onto the potential effects of the development, in the event that identified future road connections do not come to fruition. Additionally, the analysis has looked at sensitivity testing, with existing traffic volumes being increased by a factor of 1.5x, and development yield being increased from 600 lots to 750 lots (1.25x sensitivity factor).

Further, as a result of receiving feedback from Council and submitters, the PC84 Structure Plan has been revised to allow for better connectivity through the site and to the wider area.

It is intended that this Supplementary Transport Assessment is read in conjunction with the original Transport Assessment prepared by Traffic Planning Consultants dated May 2023.

The subject site is currently zoned Rural and is proposed to be changed to Residential to enable higher density living. Approximately 218 hectares of land is seeking a plan change to facilitate the development of approximately 400-600 dwellings, within an area of approximately 106 hectares (with large areas of land within the PC84 area given as green space). **Figure 1** displays area subject to the PC84.

Figure 1: Site Location
Image Source: Kaipara District GIS

2.0 EXISTING TRANSPORT ENVIRONMENT

2.1 Traffic Volumes

Turning movement count data was collected in November 2022 for the intersections of:

- Moir Street and Insley Street (peak hour control intersection);
- Moir Street and Tara Road;
- Tara Road and Garbolino Road;
- Tara Road and Cove Road; and
- Old Waipu Road and Molesworth Drive.

Intersection turning movement counts were collected from 08:00 – 18:00 at the intersection of Moir Street and Insley Street in order to determine the peak hours for the morning and afternoon periods, and proportional changes in volumes in 15-minute intervals.

Intersection turning movement counts were then collected at other intersections for at least 30 minutes to determine turning movement distributions, and then had their volumes adjusted by a corresponding factor to the peak hour, as identified at the Moir Street and Insley Street control intersection. For example, at the intersection of Moir Street and Tara Road, during the morning, this intersection was counted between 08:00-08:30. Utilising the control intersection, it was determined that 08:00-08:30 represents 43% of the peak hour total volume. The collected volumes at Moir Street and Tara Road were then increased by a factor of 2.34 to represent the full peak hour.

These peak hour volumes were then compared to average daily traffic (ADT) volumes provided by Northland Transport Alliance (NTA), as well as volumes within MobileRoad.org for area roads as a verification.

For Saturday peak hour traffic volumes, the AM peak hour (busier of the two identified peaks), was factored by 1.25 to account for increased traffic as a result of Mangawhai having many holiday homes and increased weekend activity on the roads. Turning movement splits were compared against the AM and PM peaks, with the higher of the two taken and applied in both directions. As such, the Saturday peak represents the busiest scenario of the three peaks. It is noted that this Supplementary Assessment has only considered the Saturday peak hour as it is the busiest and therefore would suitably capture the need for any network improvements

Figure 2 displays the Saturday peak hour traffic volumes within the study area as this represents the busiest period. Additionally, a sensitivity factor of 1.5 was applied to allow for a conservative assessment approach. The existing Saturday-Sensitivity peak hour volumes are displayed in **Figure 3**.

Volumes in these figures are best viewed digitally, allowing for increased legibility utilising zoom functions.

Looking forward to 2033, background traffic represents the non-site traffic increase is the generalized traffic growth in Mangawhai. The generalized traffic growth will follow the average increase in population within the area. Background growth was taken as 1% per annum compounded. The 2023 Background traffic volumes are shown in Figure 4 and Figure 5, for the baseline and 1.5x sensitivity scenarios.
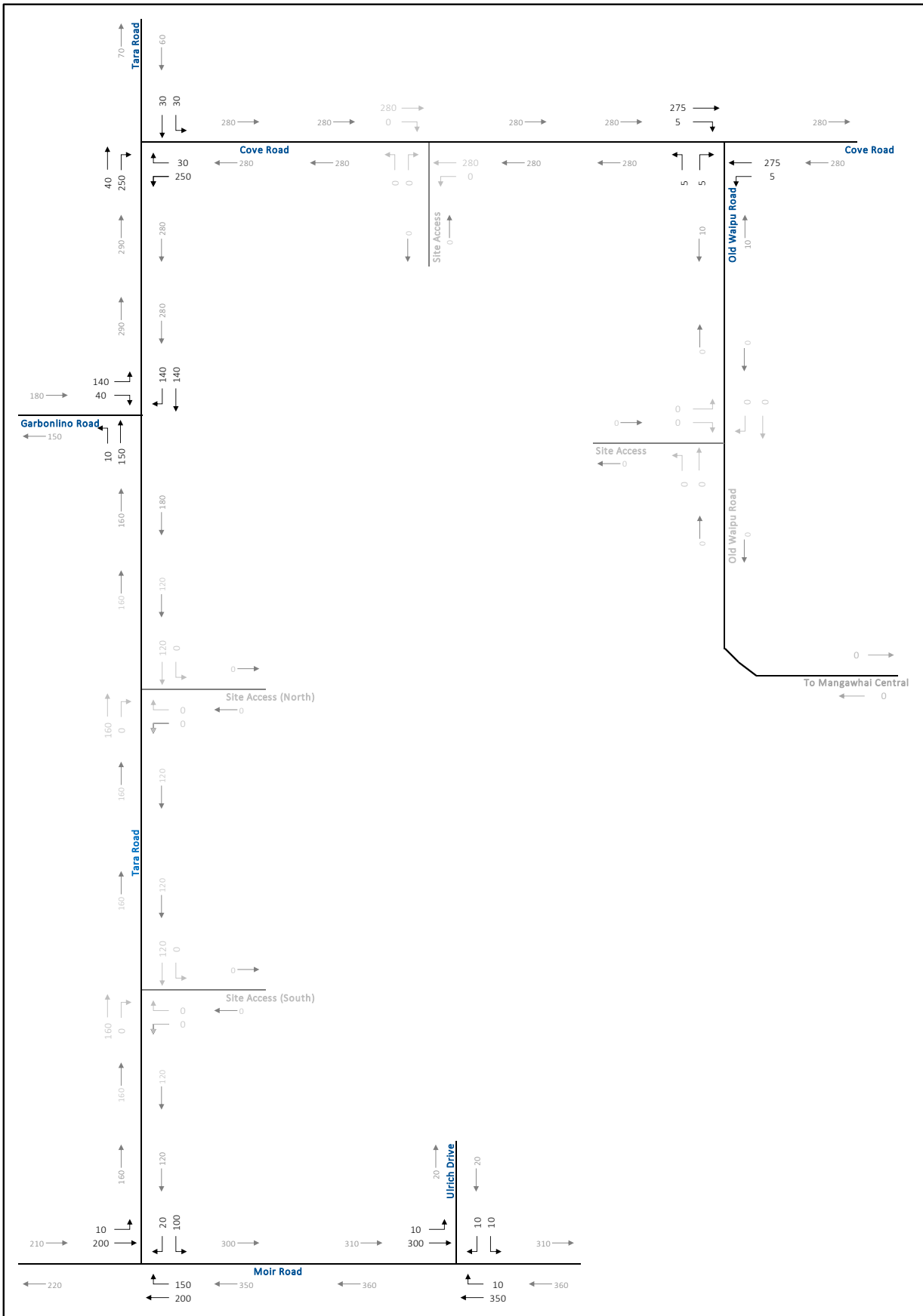
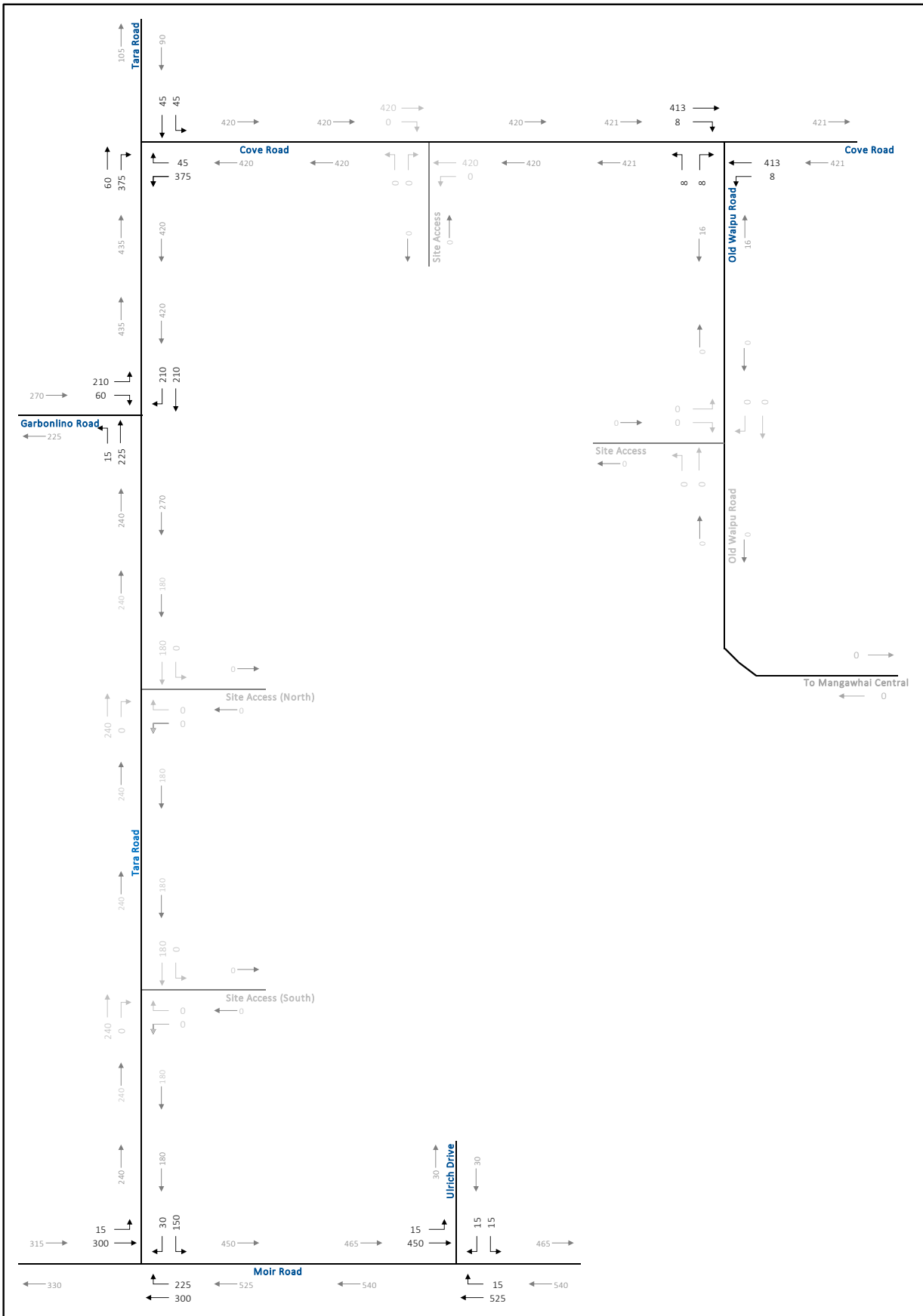Figure 2: Existing Saturday Peak Hour Traffic Volumes

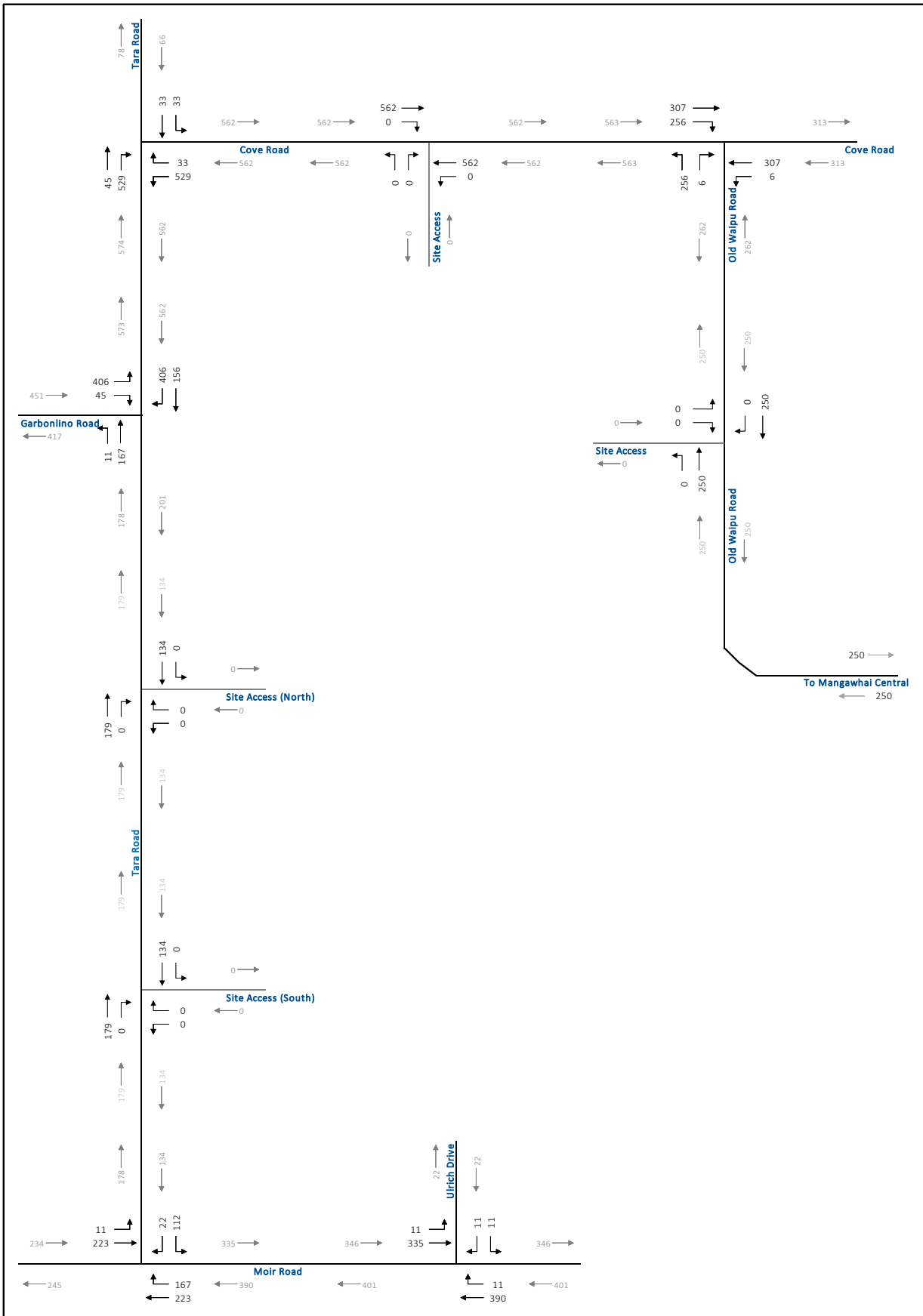Figure 3: Existing Saturday-Sensitivity Peak Hour Traffic Volumes

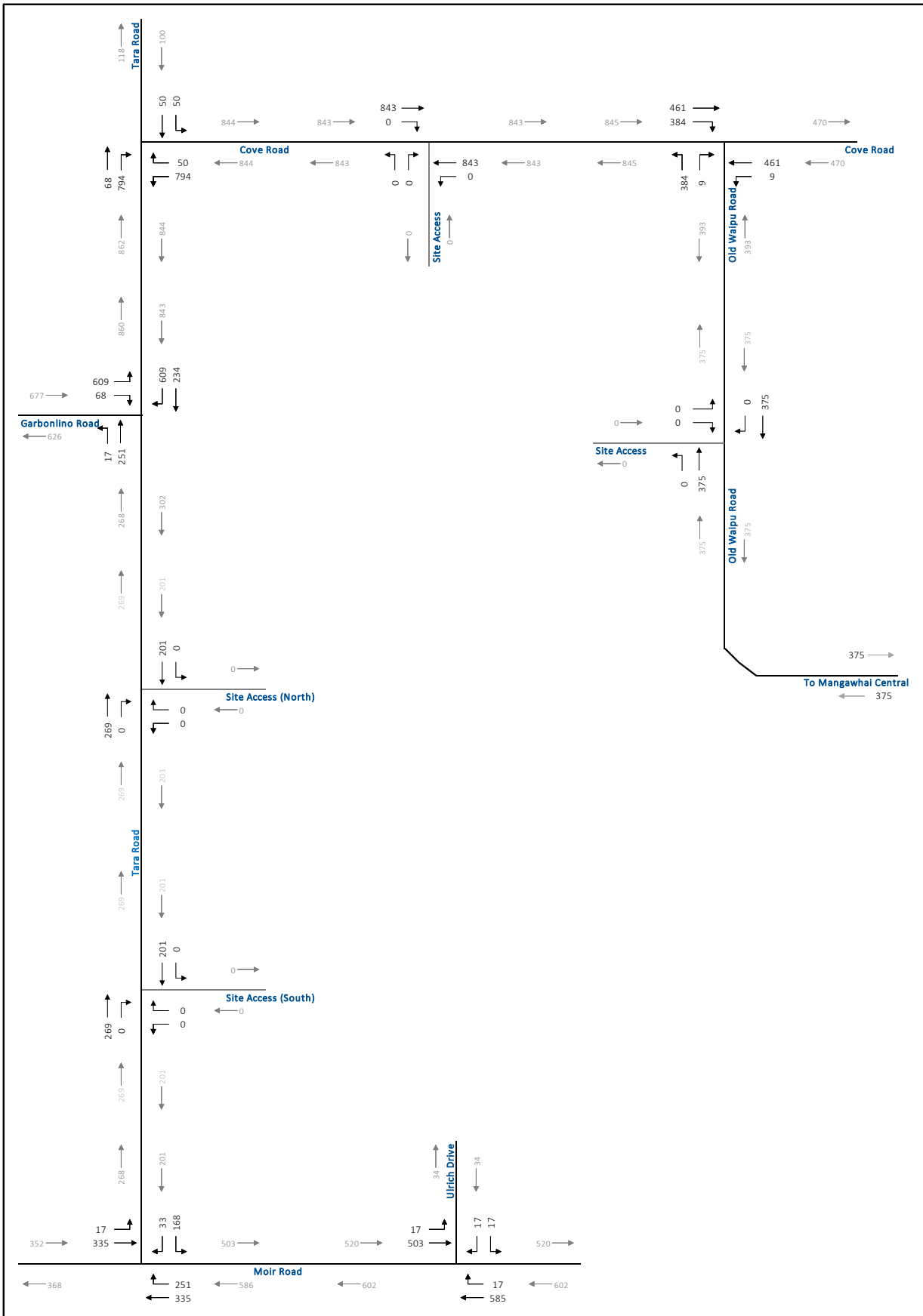Figure 4: 2033 Saturday Background Baseline Peak Hour Traffic Volumes

Figure 5: 2033 Saturday Background Sensitivity Peak Hour Traffic Volumes

3.0   THE PROPOSAL

The proposal consists of rezoning approximately 218 hectares of Rural zoning to Residential zoning. Based on the site area and the existing environmental consideration, it is estimated that approximately 106 hectares of land within the area will be made available for residential use. Of this 40-60% of the land will be made directly available for residential development, with the balance being applied to roading, open space, and other site supporting infrastructure needs. From a minimum lot size of 1,000 m^2, this yields approximately 425-640 lots available to be created. However, given the topographical constraints within the plan change area, it is expected that many lots will result is land areas greater than 1,000 m^2, as such, approximately 400-600 lots will be created as a result of the plan change.

This assessment has been based off of a presumed 750 lots, as part of a conservative approach sensitivity analysis (1.25x), and to allow for greater flexibility within the planning of the proposed Plan Change. The 750 lots were utilised for both the Baseline and Sensitivity analysis.

3.1   Trip Generation

Residential trip generation data taken from the NZ Transport Agency publication "Trips and Parking Related to Land-Use", provides trip generation estimates for outer suburban dwellings. The publication indicates an 85th percentile rate of 0.9 peak hour trips and 8.2 daily trips. The 85th percentile rates have been utilised due to no local public transportation infrastructure and higher reliance on personal vehicles for travel within this area. Further, utilising the higher rate, represents a more conservative approach within the following assessment, as it is not likely that each future dwelling in this area will have the 85th percentile trip generation rate in practice.

Overall, the site is estimated to generate 6,150 daily trips and 675 peak hour trips. For the Saturday peak hour, a 50-50 inbound-outbound split has been utilised.

3.2   Trip Distribution

Trips to and from the subject lands have been distributed to the wider road network based on trip attractors within the area, census data, engineering judgement, and experience based on likely travel routes factoring in road quality and travel time. From this, **Table 2** summarises the trip distribution which was applied to the site generated traffic volumes. It is noted that this distribution is based on the full build out of the subject lands and internal road network. As part of this supplementary assessment, varying trip distributions were considered based on the development scenario. These distributions are identified later.

Table 1: Mangawhai Hills Trip Distribution Estimates

Route	Trip Distribution
North via Cove Road	15%
West via Garbolino Road	10%
West via Kaiwaka Mangawhai Road	5%
East via Moir Street	35%
East via Mangawhai Central Future Connection	35%

3.3 Site Access to Public Road Network

The subject site is provided with road frontage onto Tara Road, Cove Road, and Old Waipu Road, as well as has the potential for a road connection with Urlich Drive. Considering this and general master planning for the Mangawhai Hills area, the site is likely to have road connections to the wider existing public road network as shown in **Figure 6**.
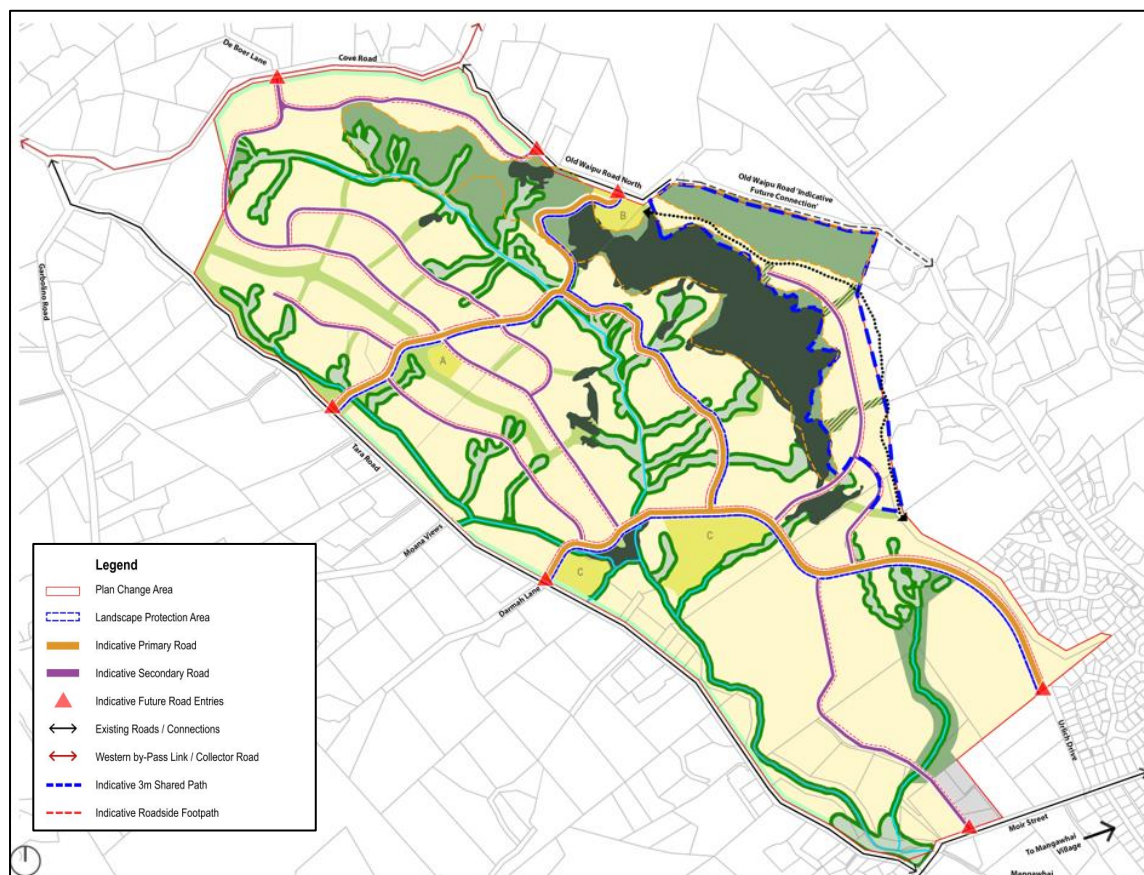
Figure 6: Conceptual Structure Plan
Internal road network and road connection locations subject to change following detailed design

3.4 Site Generated Traffic Volumes

Applying the estimated trip generation for the site, the estimated trip generation to the surrounding road network, and the indicative internal site road layout, traffic volumes at area intersections can be estimated following the full build-out of the subject site. The site generated Saturday peak hour traffic volumes are included **Figure 7**.
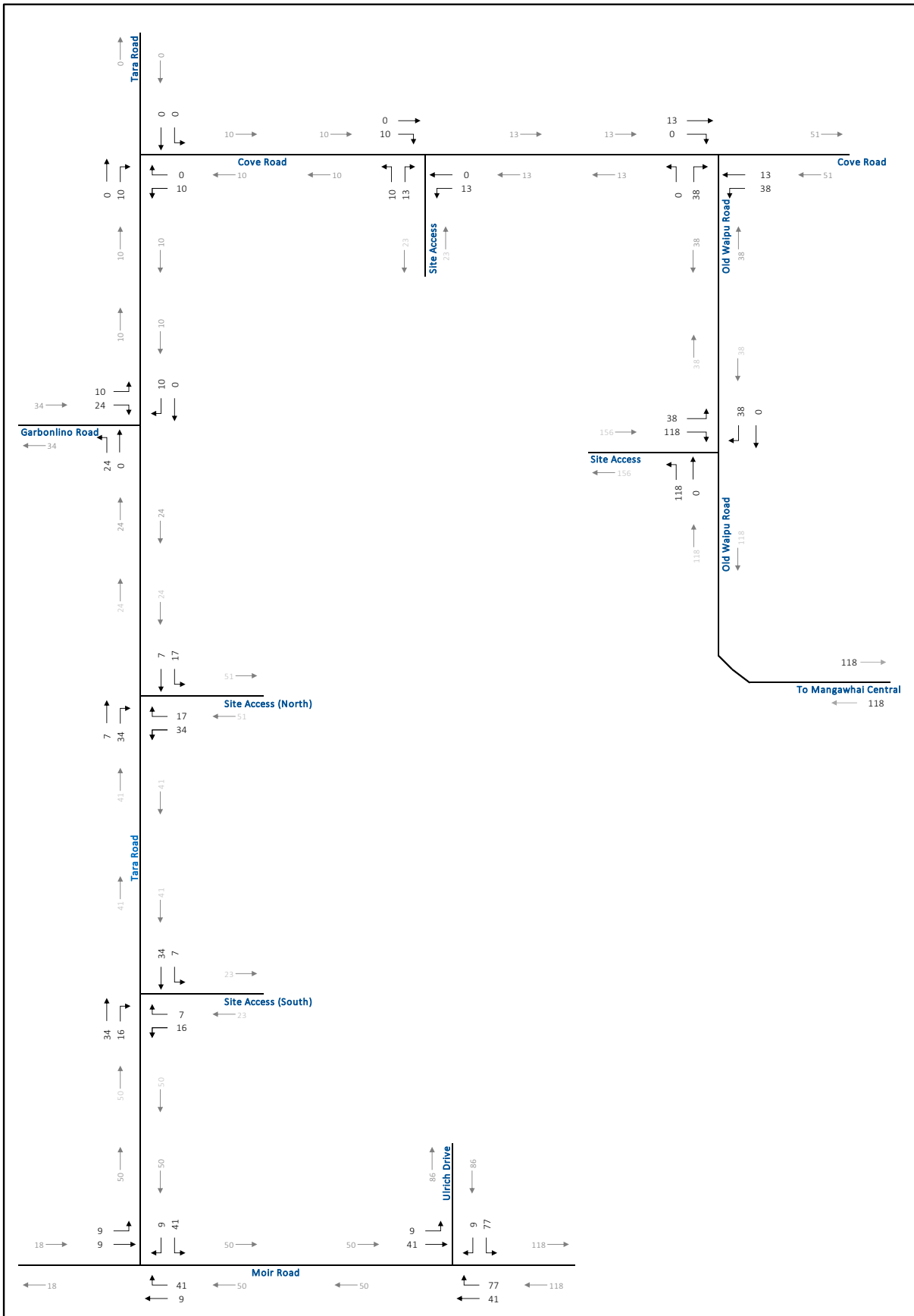
Figure 7: Saturday Peak Hour Site Generated Traffic Volume Estimates (Full Build Out)

4.0   TRAFFIC OPERATIONS

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented, if they are feasible. LOS E is typically used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for right-turn movements at peak times, depending on delays.

The operations of intersections in the study area were evaluated with the existing turning movement volumes using Sidra.

The intersection analysis considered three measures of performance:

- The degree of saturation (volume to capacity ratio) for each intersection.
- The LOS for each turning movement (LOS is based on the average delay per vehicle).
- The 95th percentile queue length.

4.1   Studied Intersections and Scenarios

The following intersections were modelled total traffic volumes, under both the baseline conditions and the sensitivity analysis conditions (1.5x existing traffic):

- Tara Road and Moir Road
- Tara Road and Garbolino Road
- Tara Road and Cove Road
- Cove Road and Old Waipu Road (North)
- Moir Drive and Ulrich Drive

The above intersections were then assessed under four different development scenarios to identify any potential network effects:

- Full Precinct Plan road buildout
- No Mangawhai Central connection and Urlich Drive connection constructed (Scenario 1)
- No Urlich Drive connection and Mangawhai Central connection constructed (Scenario 2)
- No Mangawhai Central connection and no Urlich Drive connection (Scenario 3)

Site generated traffic volumes for Scenario 1 are included in **Figure 8**; for Scenario 2 in **Figure 9**, and for Scenario 3 in **Figure 10**. It is noted that for both Scenario 1 and Scenario 3, with no connection to Mangawhai Central the traffic volumes associated with the heavy vehicle route have been removed along Garbolino Road, Tara Road, Cove Road, and Old Waipu Road (North).

Scenario 1: No connection to Mangawhai Central

Tara Road

Cove Road

Cove Road

Site Access

Old Waipu Road

Garbonlino Road

Site Access

Old Waipu Road

To Mangawhai Central

Site Access (North)

Tara Road

Site Access (South)

Ulrich Drive

Moir Road
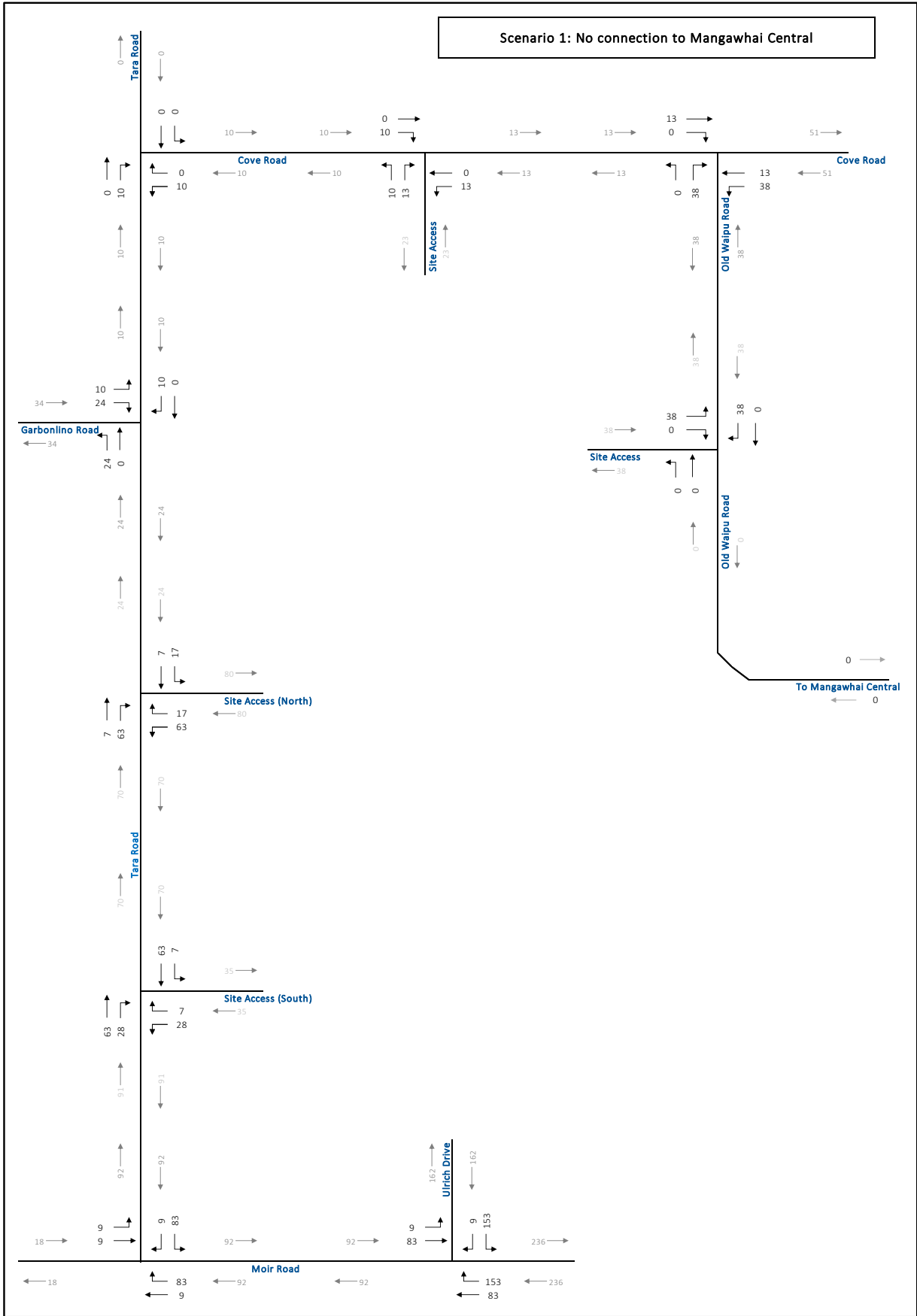
Figure 8: Saturday Peak Hour Site Generated Traffic Volume Estimates (Scenario 1)
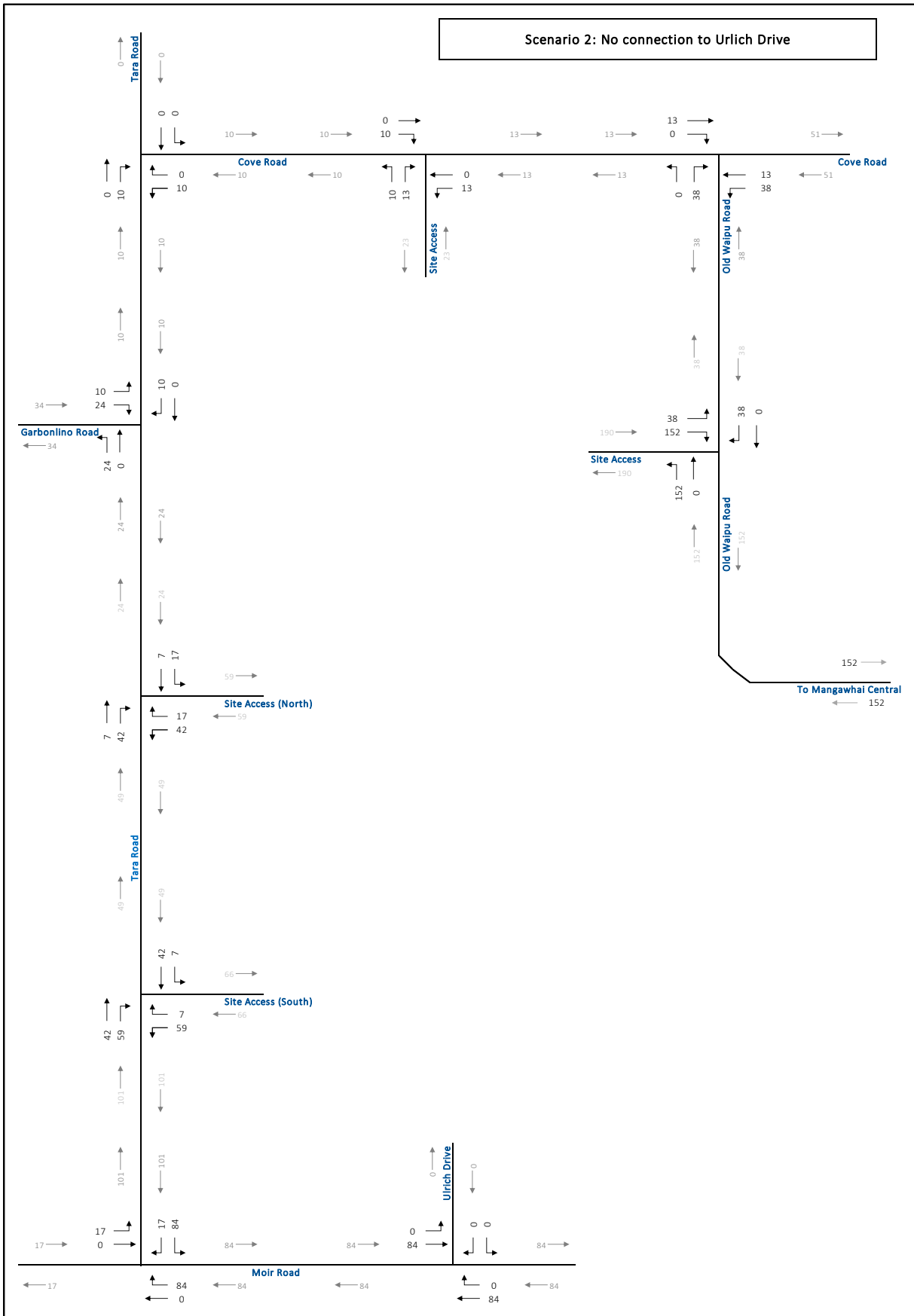
Figure 9: Saturday Peak Hour Site Generated Traffic Volume Estimates (Scenario 2)
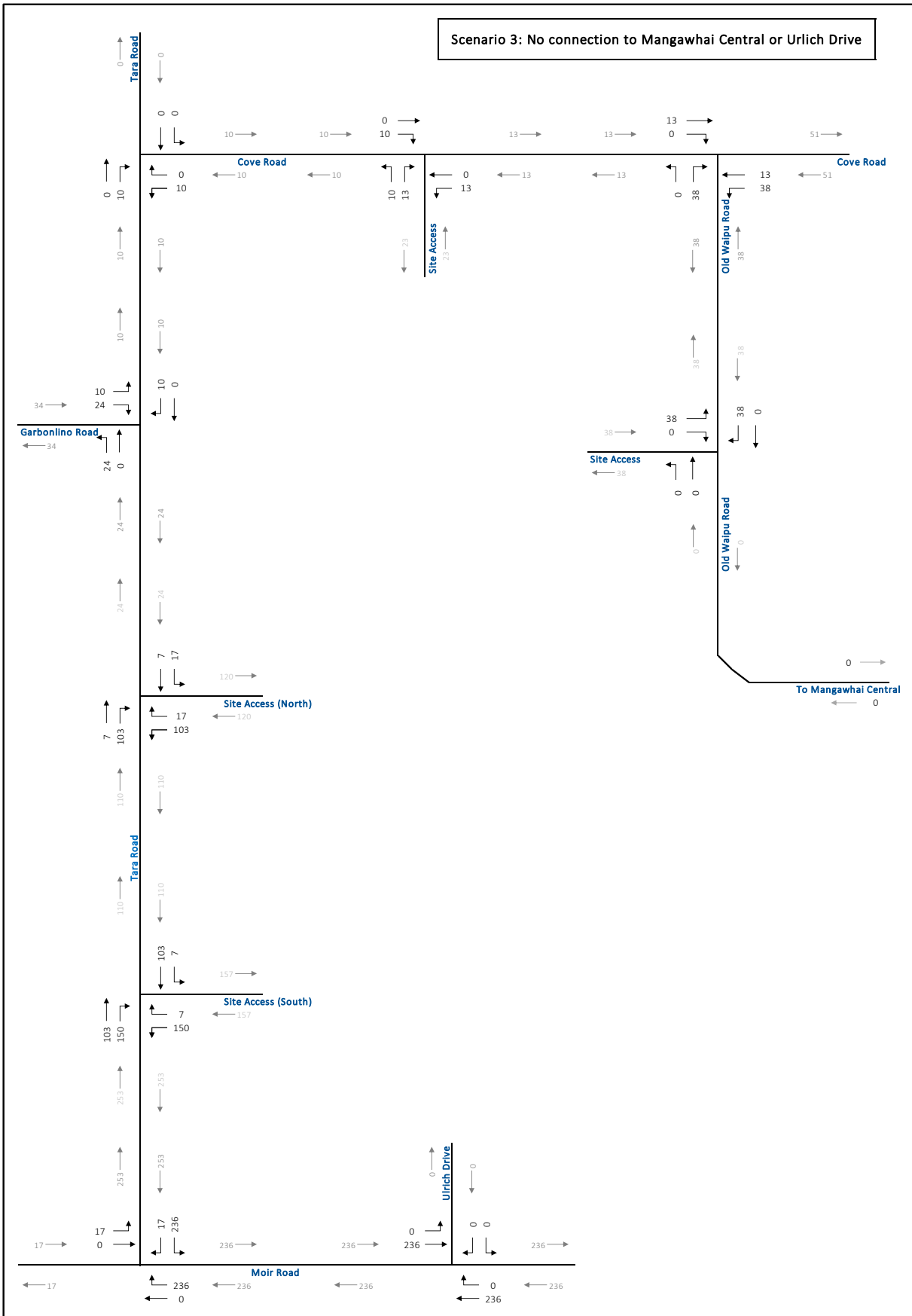
Figure 10: Saturday Peak Hour Site Generated Traffic Volume Estimates (Scenario 3)

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TPC TRAFFIC PLANNING CONSULTANTS LTD

4.2   Future Total Traffic Operations (Full Build-out) – Baseline Traffic

Figure 11 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 7**) to the background traffic (existing traffic + 10 years of generalised growth, as shown in **Figure 4**). Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 2**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 1** contains the detailed Sidra reports.

Table 2: Total 2033 – Full Build-Out Baseline Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	B	-	A	A	0.289	12 metres (2 veh)
Tara Road and Garbolino Road	A	A	-	B	0.456	22 metres (3 veh)
Tara Road and Cove Road	A	A	B	-	0.419	18 metres (3 veh)
Cove Road and Old Waipu Road	-	B	A	A	0.397	20 metres (3 veh)
Moir Road and Urlich Drive	B	-	A	A	0.317	8 metres (2 veh)

From the analysis, it was determined that intersections within the study area will operate well, with saturation and queue lengths remaining within acceptable levels. As volumes are less during the AM and PM peak hours, it can be deduced that these periods also operate at similar levels.

Figure 11: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Full Build-out, Baseline)

4.3 Future Total Traffic Operations (Full Build-out) – Sensitivity Traffic

Figure 12 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 7**) to the background traffic (existing traffic + 10 years of generalised growth, with a 1.5x sensitivity factor applied, as shown in **Figure 5**). Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 3**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 2** contains the detailed Sidra reports.
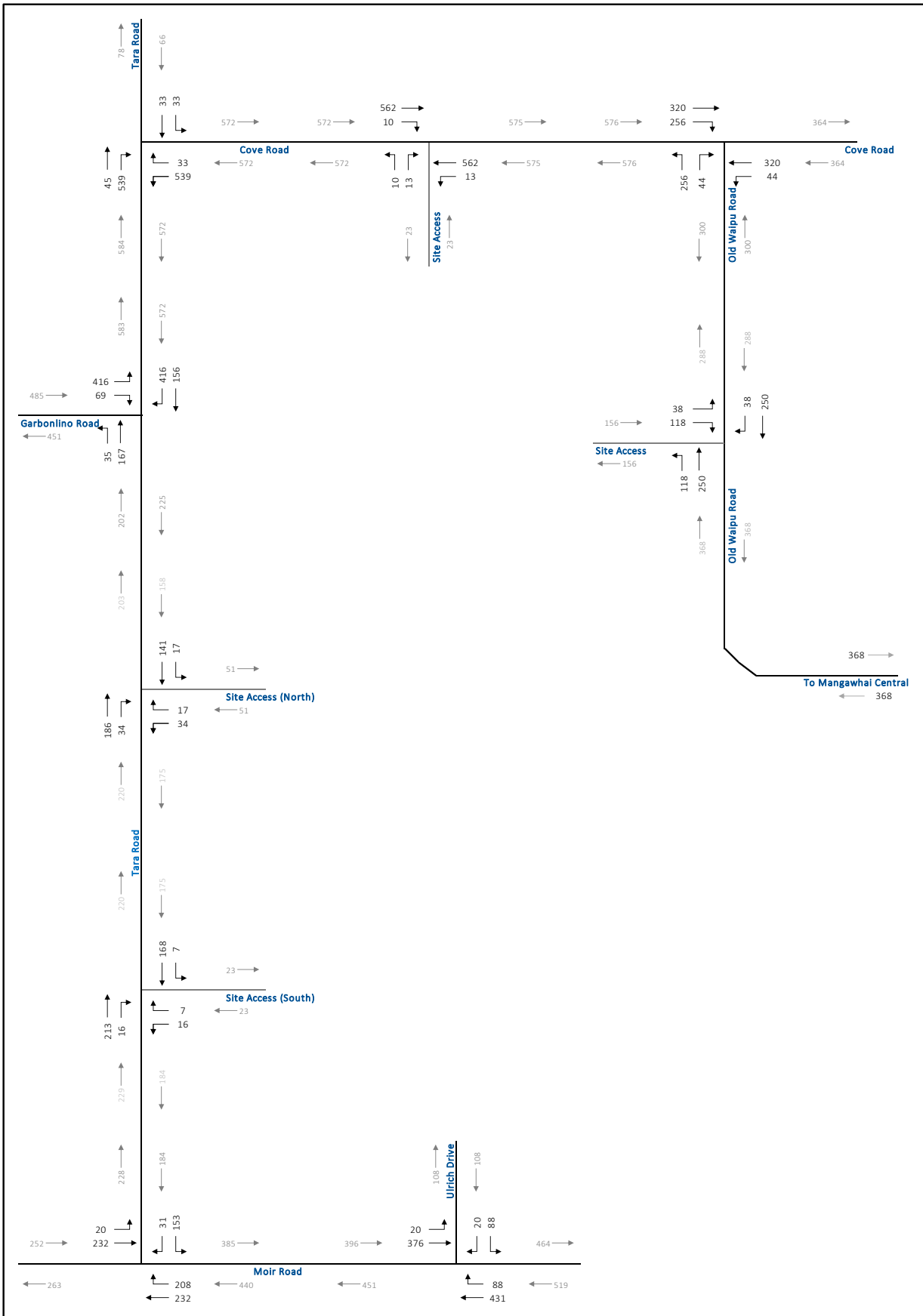
Table 3: Total 2033 – Full Build-Out Sensitivity Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	C	-	A	A	0.449	27 metres (4 veh)
Tara Road and Garbolino Road	A	A	-	E	0.877	135 metres (19 veh)
Tara Road and Cove Road	A	A	D	-	0.698	71 metres (10 veh)
Cove Road and Old Waipu Road	-	D	A	B	0.670	63 metres (9 veh)
Moir Road and Urlich Drive	C	-	A	A	0.452	16 metres (3 veh)

From the analysis, it was determined that the intersections of Tara Road and Moir Road, and Moir Road and Urlich Drive will operate well, with saturation and queue lengths remaining within acceptable levels.

For Tara and Garbolino Road, the west approach sees LOS E (average delay of 40 seconds) for right turns onto Tara Road and large queue lengths. This reduced operation is largely attributed to the background growth and additional traffic added to account for the future heavy vehicle route connection into Mangawhai Central. The PC84 area will see approximately 70 vehicle movements added to this intersection, where background volumes were approximately 1,790 vehicles; with approximately 750 of these being associated with the heavy vehicle route (sensitivity factor of 1.5x also applied to this baseline volume). It is acknowledged that the traffic volumes at this intersection are likely overestimated from what would practically be seen in the 2033 horizon, however the above indicates that there is potential for the intersection to start operating at suboptimal levels and may require some improvements. The intersections of Tara Road and Cove Road, and Cove Road and Old Waipu Road also operate with increased delays of LOS D, however this is also largely attributed to the volume assigned for the Heavy Vehicle Route, for which relatively no data was available for at time of the original proposal and at present.

Considering this, it is recommended that should the Mangawhai Central connection be made, and a Heavy Vehicle Route be formalised, additional assessment on the three intersections of; Cove Road and Tara Road, Cove Road and Old Waipu Road, and Tara Road and Garbolino Road be completed as part of those works, which is noted to site outside of this Plan Change application.

Figure 12: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Full Build-out, Sensitivity)

4.4 Future Total Traffic Operations (Scenario 1) – Baseline Traffic

Figure 13 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 8**) to the background traffic (existing traffic + 10 years of generalised growth, as shown in **Figure 4**). With the removal of the connection to Mangawhai Central, the trip distribution for the PC84 area was revised to account for the adjusted road network. **Table 4** indicates the revised distribution.

Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 5**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 3** contains the detailed Sidra reports.

Table 4: Mangawhai Hills Trip Distribution Estimates

Route	Trip Distribution
North via Cove Road	15%
West via Garbolino Road	10%
West via Kaiwaka Mangawhai Road	5%
East via Moir Street (split between Tara Rd and Urlich Drive)	70%
East via Mangawhai Central Future Connection	0%

Table 5: Total 2033 – Scenario 1 Baseline Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	B	-	A	A	0.321	13 metres (2 veh)
Tara Road and Garbolino Road	A	A	-	A	0.224	8 metres (2 veh)
Tara Road and Cove Road	A	A	A	-	0.235	8 metres (2 veh)
Cove Road and Old Waipu Road	-	A	A	A	0.201	2 metres (1 veh)
Moir Road and Urlich Drive	B	-	A	A	0.417	19 metres (3 veh)

From the analysis, it was determined that intersections within the study area will operate well, with saturation and queue lengths remaining within acceptable levels. As volumes are less during the AM and PM peak hours, it can be deduced that these periods also operate at similar levels.

Figure 13: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Scenario 1, Baseline)

4.5 Future Total Traffic Operations (Scenario 1) – Sensitivity Traffic

Figure 14 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 8**) to the background traffic (existing traffic + 10 years of generalised growth, with a 1.5x sensitivity factor applied, as shown in **Figure 5**). Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 6**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 4** contains the detailed Sidra reports.

This scenario follows the same trip distributions as identified within Section 4.4.

Table 6: Total 2033 – Scenario 1 Sensitivity Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	D	-	A	A	0.486	32 metres (5 veh)
Tara Road and Garbolino Road	A	A	-	B	0.382	15 metres (2 veh)
Tara Road and Cove Road	A	A	A	-	0.371	14 metres (2 veh)
Cove Road and Old Waipu Road	-	B	A	A	0.287	3 metres (1 veh)
Moir Road and Urlich Drive	D	-	B	A	0.575	35 metres (5 veh)

From the analysis, it was determined that intersections within the study area will operate generally well, with saturation and queue lengths remaining within acceptable levels. It is noted that for the intersections of Tara Road and Moir Road, as well as Moir Road and Urlich Drive, the north approach leg, begins to see LOS D ratings, connected to vehicles tuning right. These delays were on average 26 seconds on Tara Road and 30 seconds on Urlich Drive. While these delays remain within generally acceptable levels, they are at a level where consideration should be given to further monitoring to ensure that the intersection operates as expected.

Within Scenario 1, it can be seen that the intersections of Tara Road and Garbolino Road, Tara and Cove Road, and Cove Road and Old Waipu Road all operate at good levels. Comparatively to the "Full Build-out" scenario where these intersections had reduced operations, it can be more easily seen the potential effect resulting from the Heavy Vehicle Route, should it be implemented.

As volumes are less during the AM and PM peak hours, it can be deduced that these periods also operate at similar levels.

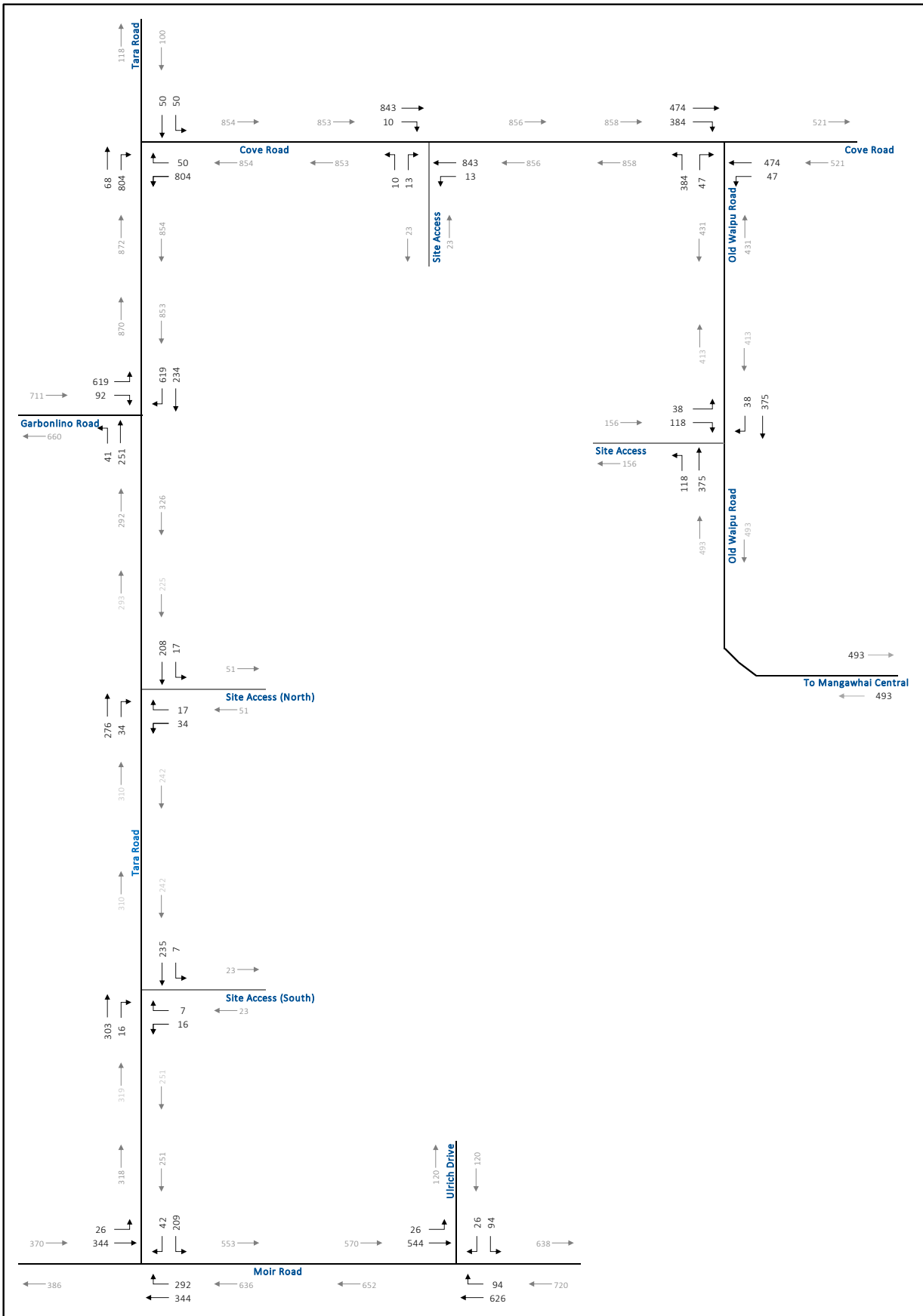Figure 14: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Scenario 1, Sensitivity)

4.6   Future Total Traffic Operations (Scenario 2) – Baseline Traffic

Figure 15 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 9**) to the background traffic (existing traffic + 10 years of generalised growth, as shown in **Figure 4**). With the removal of the connection to Urlich Drive, the trip distribution for the PC84 area was revised to account for the adjusted road network. **Table 7** indicates the revised distribution.

Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 8**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 5** contains the detailed Sidra reports.

Table 7: Mangawhai Hills Trip Distribution Estimates

Route	Trip Distribution
North via Cove Road	15%
West via Garbolino Road	10%
West via Kaiwaka Mangawhai Road	5%
East via Moir Street (all to Tara Rd)	35%
East via Mangawhai Central Future Connection	35%

Table 8: Total 2033 – Scenario 2 Baseline Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	B	-	A	A	0.317	13 metres (2 veh)
Tara Road and Garbolino Road	A	A	-	B	0.456	22 metres (3 veh)
Tara Road and Cove Road	A	A	B	-	0.419	18 metres (3 veh)
Cove Road and Old Waipu Road	-	B	A	A	0.397	20 metres (3 veh)
Moir Road and Urlich Drive	B	-	A	A	0.270	1 metre (1 veh)

From the analysis, it was determined that intersections within the study area will operate well, with saturation and queue lengths remaining within acceptable levels. As volumes are less during the AM and PM peak hours, it can be deduced that these periods also operate at similar levels.
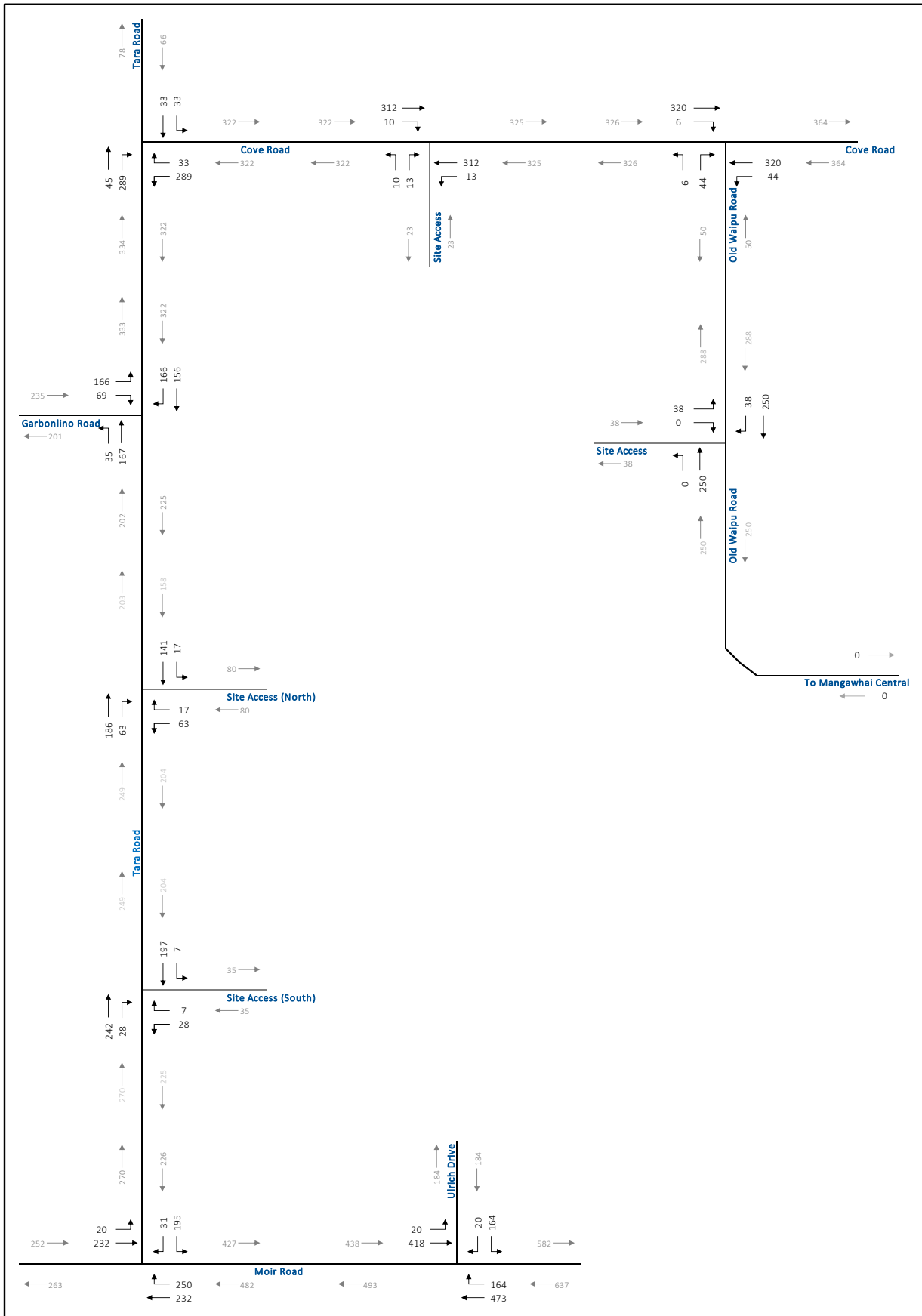
Figure 15: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Scenario 2, Baseline)

4.7   Future Total Traffic Operations (Scenario 2) – Sensitivity Traffic

Figure 16 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 9**) to the background traffic (existing traffic + 10 years of generalised growth, with a 1.5x sensitivity factor applied, as shown in **Figure 5**). Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 9**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 6** contains the detailed Sidra reports.

This scenario follows the same trip distributions as identified within **Section 4.6**.

Table 9: Total 2033 – Scenario 2 Sensitivity Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	D	-	A	A	0.481	32 metres (5 veh)
Tara Road and Garbolino Road	A	A	-	E	0.877	135 metres (19 veh)
Tara Road and Cove Road	A	A	D	-	0.698	71 metres (10 veh)
Cove Road and Old Waipu Road	-	D	A	B	0.670	63 metres (9 veh)
Moir Road and Urlich Drive	C	-	A	A	0.387	3 metres (1 veh)

From the analysis, it was determined that the intersection of Tara Road and Moir Road starts to see reduced performance, however, is still considered to be within the acceptable range. The LOS D (average delay of 26 seconds) relates to vehicles turning right onto Moir Road from Tara Road.

For Tara Road and Garbolino Road, the west approach sees LOS E (average delay of 40 seconds) for right turns onto Tara Road and large queue lengths. The intersections of Cove Road and Tara Road, and Cove Road and Old Waipu Road also begin to operate at reduced levels. This reduced operation is largely attributed to the background growth and additional traffic added to account for the future heavy vehicle route connection into Mangawhai Central, as identified within the 'Full Build-out' scenario.

Considering this, it is recommended that should the Mangawhai Central connection be made, and a Heavy Vehicle Route be formalised, additional assessment on the three intersections of; Cove Road and Tara Road, Cove Road and Old Waipu Road, and Tara Road and Garbolino Road be completed as part of those works, which is noted to site outside of this Plan Change application.
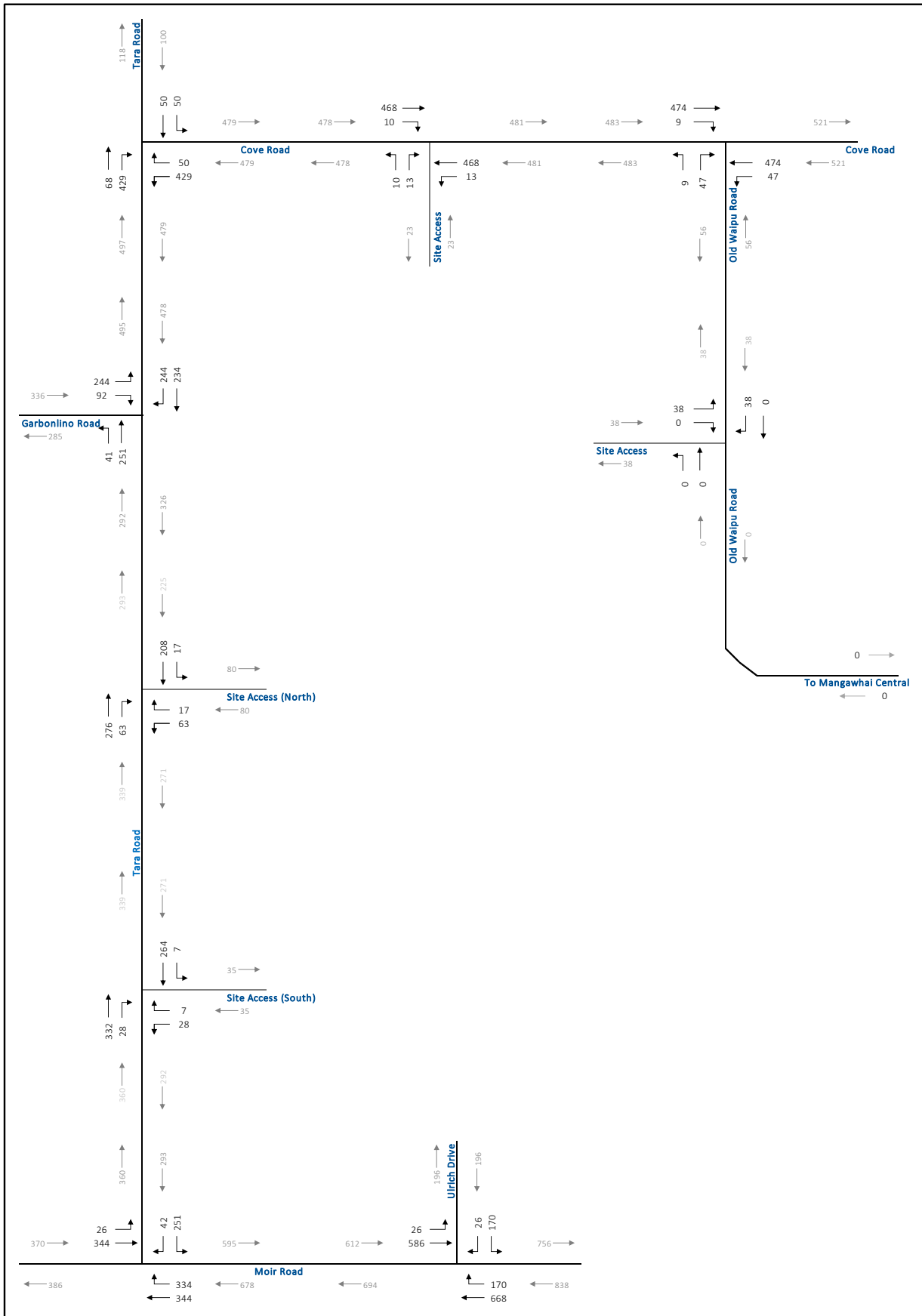
Figure 16: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Scenario 2, Sensitivity)

4.8 Future Total Traffic Operations (Scenario 3) – Baseline Traffic

Figure 17 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 10**) to the background traffic (existing traffic + 10 years of generalised growth, as shown in **Figure 4**). With the removal of the connection to Mangawhai Central and Urlich Drive, the trip distribution for the PC84 area was revised to account for the adjusted road network. **Table 7** indicates the revised distribution.

Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 11**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 7** contains the detailed Sidra reports.

Table 10: Mangawhai Hills Trip Distribution Estimates

Route	Trip Distribution
North via Cove Road	15%
West via Garbolino Road	10%
West via Kaiwaka Mangawhai Road	5%
East via Moir Street (all to Tara Rd)	70%
East via Mangawhai Central Future Connection	0%

Table 11: Total 2033 – Scenario 3 Baseline Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	C	-	A	A	0.444	23 metres (4 veh)
Tara Road and Garbolino Road	A	A	-	B	0.456	22 metres (3 veh)
Tara Road and Cove Road	A	A	B	-	0.419	18 metres (3 veh)
Cove Road and Old Waipu Road	-	B	A	A	0.397	20 metres (3 veh)
Moir Road and Urlich Drive	C	-	A	A	0.355	2 metres (1 veh)

From the analysis, it was determined that intersections within the study area will operate well, with saturation and queue lengths remaining within acceptable levels. As volumes are less during the AM and PM peak hours, it can be deduced that these periods also operate at similar levels.
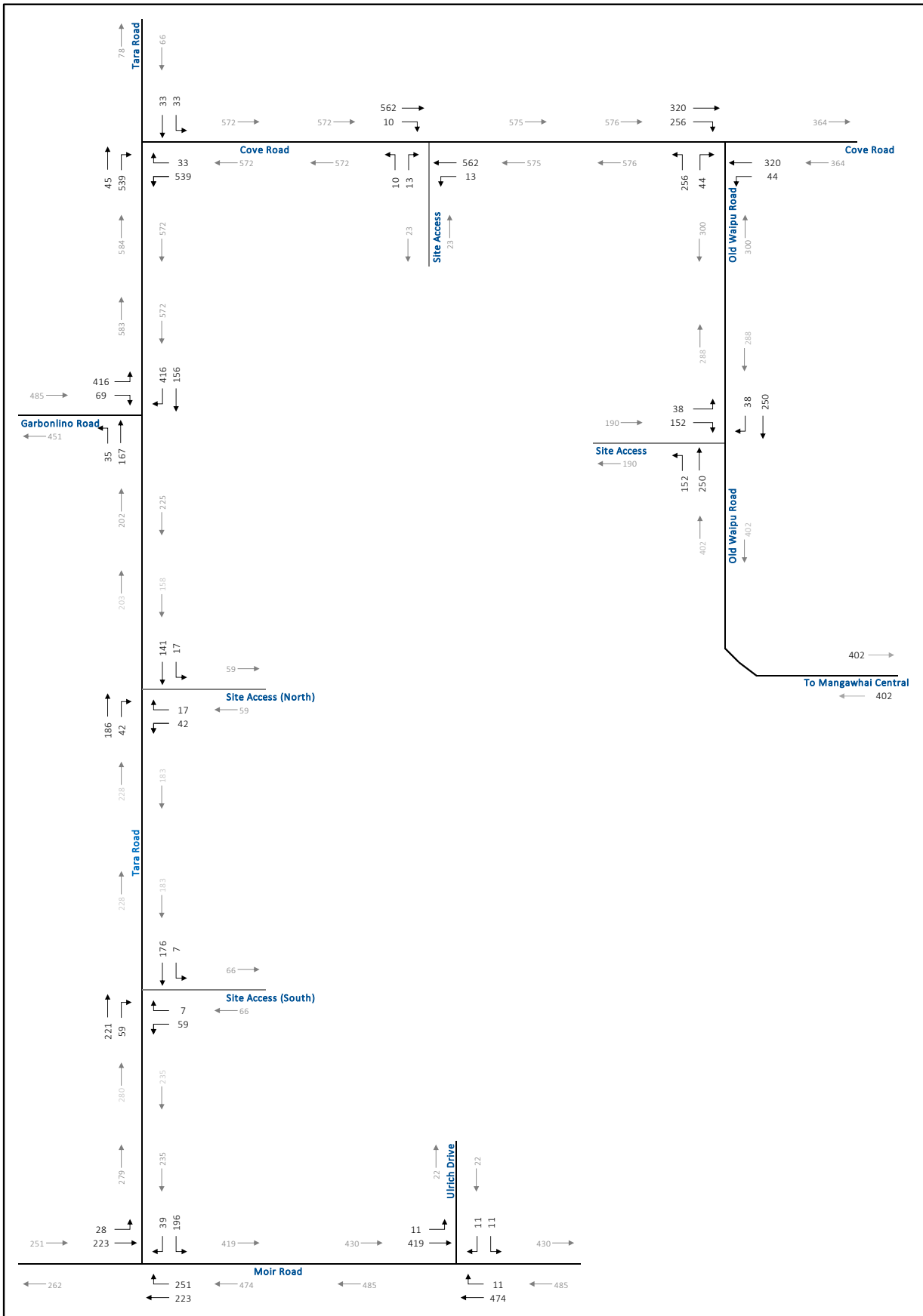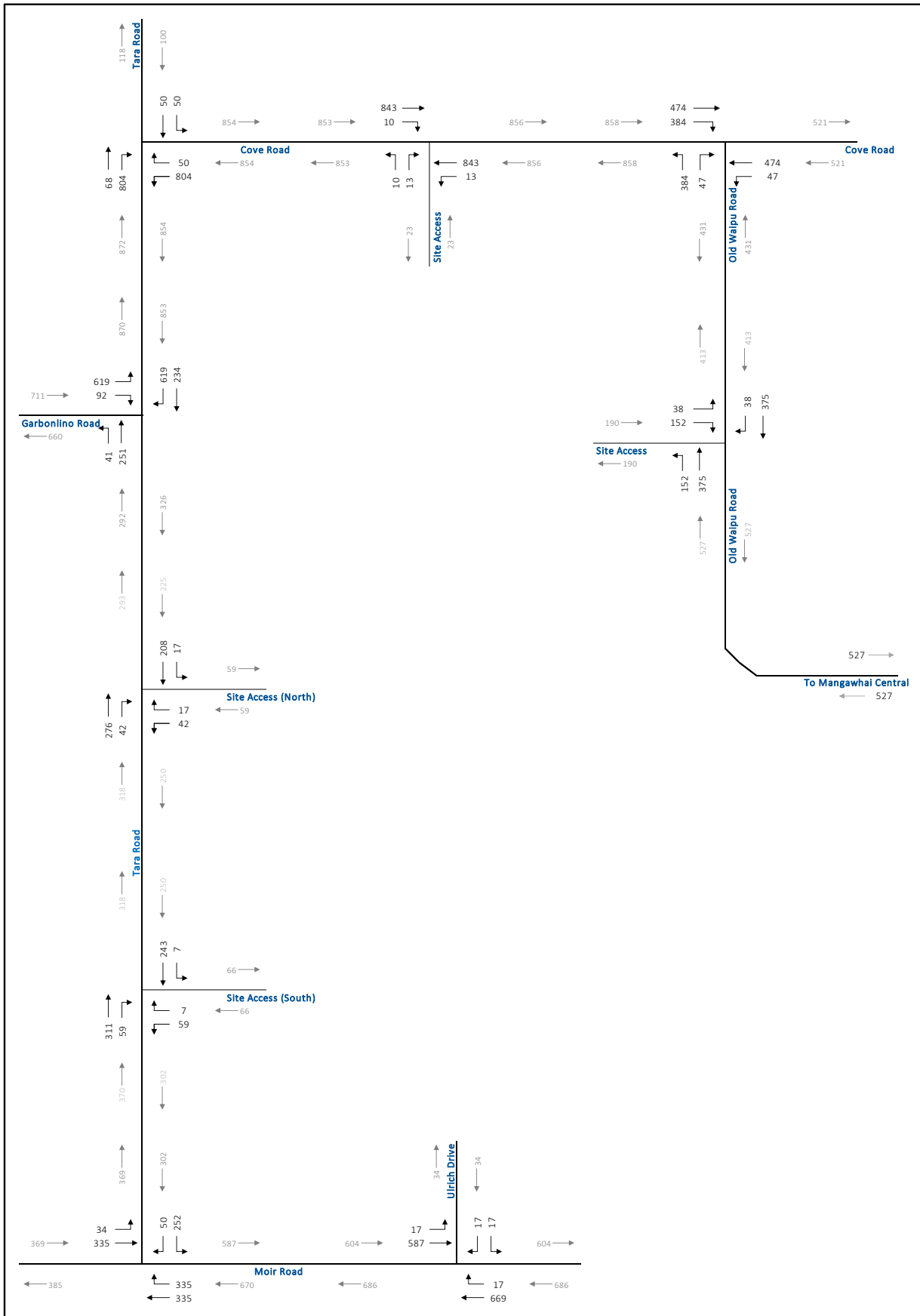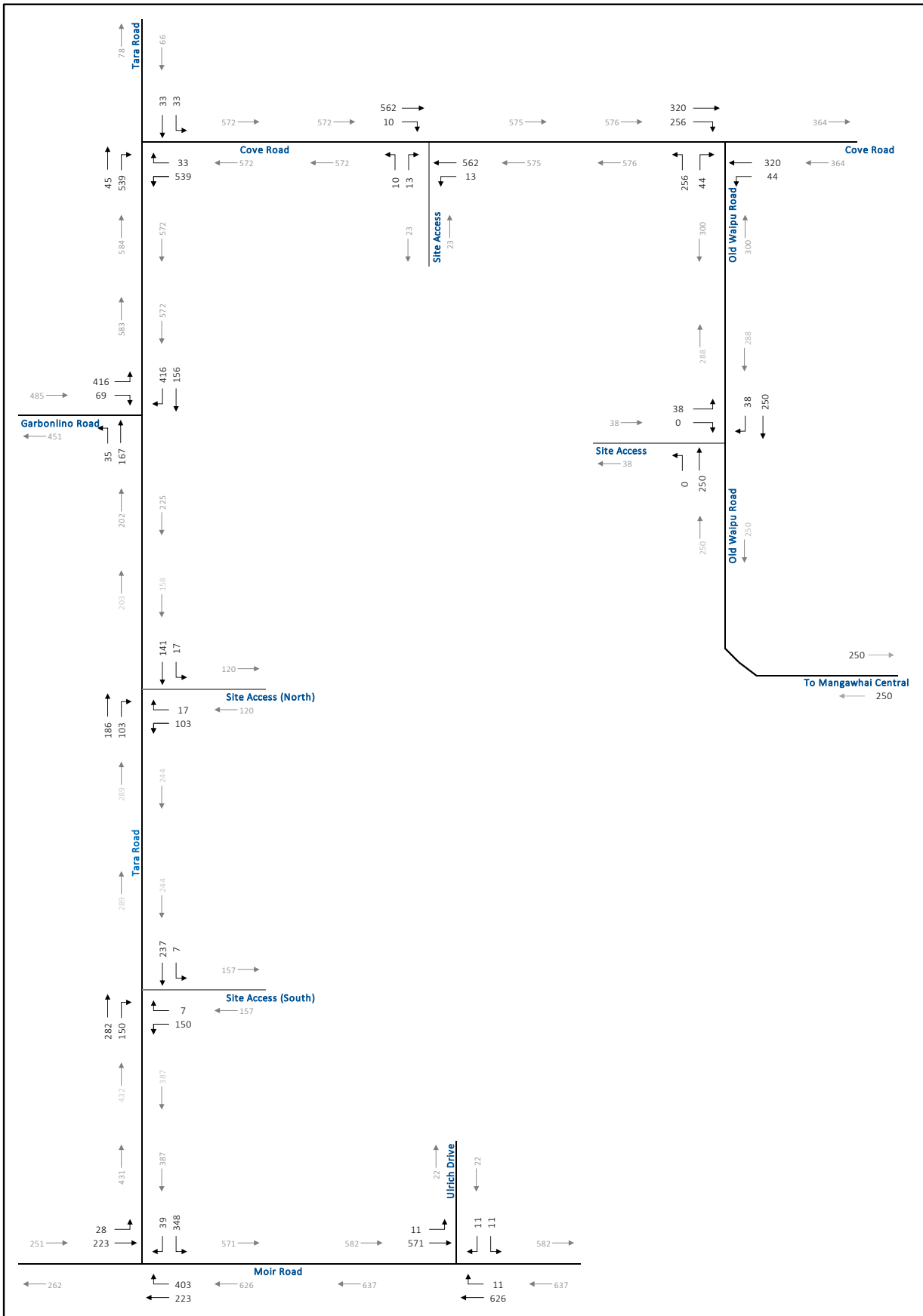
Figure 17: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Scenario 3, Baseline)

4.9   Future Total Traffic Operations (Scenario 3) – Sensitivity Traffic

Figure 18 displays the total traffic expected in 2033 with full build-out of the PC84 area and with baseline traffic volume. Total traffic is the addition of the development traffic (**Figure 10**) to the background traffic (existing traffic + 10 years of generalised growth, with a 1.5x sensitivity factor applied, as shown in **Figure 5**). Based on these traffic volumes, LOS analyses have been conducted using Sidra to determine the Saturday peak hour conditions for the intersections within the study area and are summarised in **Table 9**. LOS values are based on the worst reported individual turning movement for that approach leg, where degree of saturation and queue length are based on the highest reported through the whole intersection. **Attachment 8** contains the detailed Sidra reports.

This scenario follows the same trip distributions as identified within Section 4.4.

Table 9: Total 2033 – Scenario 3 Sensitivity Intersection Operations

Intersection	Approach Leg Level of Service				Overall Degree of Saturation	Highest 95th Queue Length
	North	South	East	West		
Tara Road and Moir Road	E	-	A	A	0.732	56 metres (8 veh)
Tara Road and Garbolino Road	A	A	-	B	0.363	13 metres (2 veh)
Tara Road and Cove Road	A	A	A	-	0.371	14 metres (2 veh)
Cove Road and Old Waipu Road	-	B	A	A	0.287	3 metres (1 veh)
Moir Road and Urlich Drive	D	-	B	A	0.476	5 metres (1 veh)

From the analysis, it was determined that intersections (apart from intersection of Tara Road and Moir Road) within the study area will operate well, with saturation and queue lengths remaining within acceptable levels.

At the intersection of Tara Road and Moir Road operations for vehicles turning right onto Moir Road from Tara Road, decline to LOS E (average delay of 44 seconds). It is considered that at this level of operation and the volumes seen travelling through the intersection it would be appropriate to implement remedial measures to improve overall operations and increase safety. While improvements would be subject to further detailed design work and site investigation, it is anticipated that the intersection would be able to be realigned having Tara Road and Moir Road being the main direction of travel and Kaiwaka-Mangawhai Road having Stop control, or alternatively form the intersection as a roundabout. Given that the required civil works would be generally similar, the preferred option would likely be a roundabout. However, it is noted that this improvement is only triggered under the Scenario 3 – Sensitivity modelling.
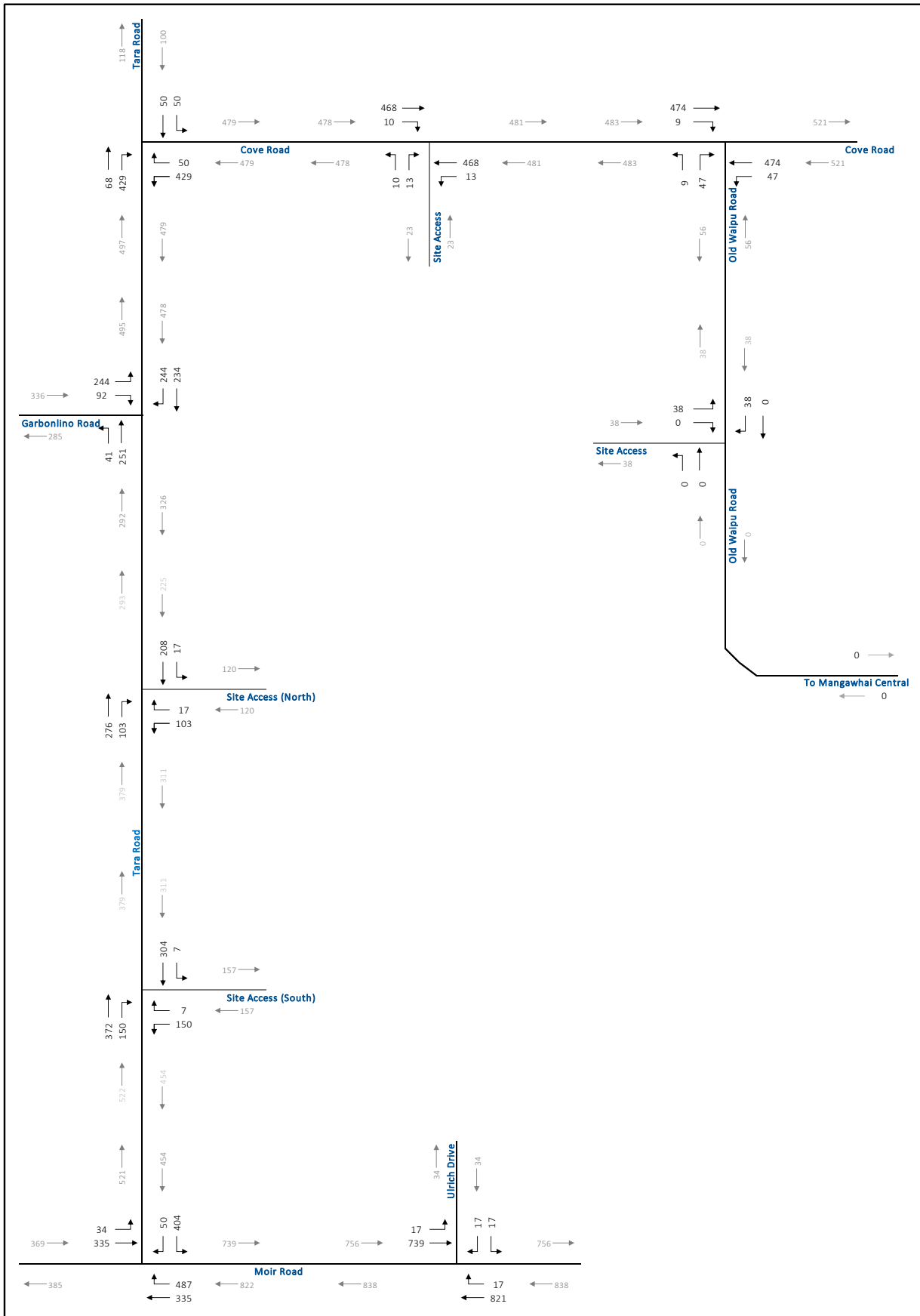
Figure 18: Estimated 2033 Total Saturday Peak Hour Traffic Volumes (Scenario 3, Sensitivity)

5.0   IDENTIFIED NETWORK IMPROVEMENTS

Following the completion of the sensitivity operations assessment (**Section 4**) and the Safe System Assessment (**previous Transport Assessment**), the following network improvements are likely to be required (subject to more detailed assessment and engineering design at subsequent subdivision stages, where more detail is known, along with coordination with NTA with respect to the implementation of the Heavy Vehicle Route):

- Tara Road and Moir Road:
  - Install a right turn bay / localised widening.
  - Improved street lighting.
  - Install double centreline markings (and signs) through the intersection.
  - Remove vegetation/cut-back berm west of Tara Road to increase visibility to the west.
  - Potential intersection realignment or implementation of roundabout if no other connections from Plan Change Area are made beyond Tara Road.
- Tara Road and Garbolino Road (remedial measures attributed to existing concerns, not significantly exacerbated by proposal):
  - Install right turn bay / localised widening.
  - Speed reduction to 70 km/h or 60 km/h.
  - Barriers to protect unrecoverable slopes.
  - Improved street lighting.
  - Install double centreline markings through the intersection.
  - Potential larger improvements integrated with Tara Road and Cove Road intersection as part of establishing Heavy Vehicle Route.
- Tara Road and Cove Road (remedial measures attributed to existing concerns, not significantly exacerbated by proposal):
  - Install right turn bay / localised widening,
  - Speed reduction to 70 km/h or 60 km/h.
  - Barriers to protect unrecoverable slopes.
  - Improved street lighting.
  - Install double centreline markings through the intersection.
  - Potential larger improvements integrated with Tara Road and Garbolino Road intersection as part of establishing Heavy Vehicle Route.
- Cove Road and Old Waipu Road:
  - Install right turn bay / localised widening.
  - Speed reduction to 70 km/h or 60 km/h.
  - Improved street lighting.
  - Install double centreline markings through the intersection.
  - Remove vegetation/cut-back berm as required to increase visibility.
- Moir Road and Urlich Drive:
  - Install right turn bay / localised widening.
  - Install pedestrian crossing facilities.
  - Improved street lighting.

- o Install improved road markings and signs through the staggered intersection.
- ▪ Area footpaths:
  - o Extend existing footpath along Tara Road to connect to future internal site footpath/trail network and new road connections as developed. See **Figure 19**.
  - o If existing footpath on west side of Tara Road is to be extended, then pedestrian crossing facilities should be provided at new intersections to facilitate the safe movement of pedestrians across Tara Road.

Through the implementation of these improvements, the existing transport network can continue to operate at a suitable operational level, as well as have its overall safety improved. It is noted that these identified improvements are preliminary as specific details of the ultimate development are unknown. To ensure that future development of the plan change area is assessed in greater detail at later stages, the Precinct Provisions have specified that any subsequence subdivision which requires establishment of a new public road, shall require an Integrated Transport Assessment and Safe System Assessment to be provided. This approach will allow for appropriately scaled improvements and road upgrades to occur, relative to the scale of the proposed development, as compared to potentially requiring all road network improvements to occur from Day 1 or providing development thresholds; which may not be accurate dependent upon the area of land being developed and established road connections.
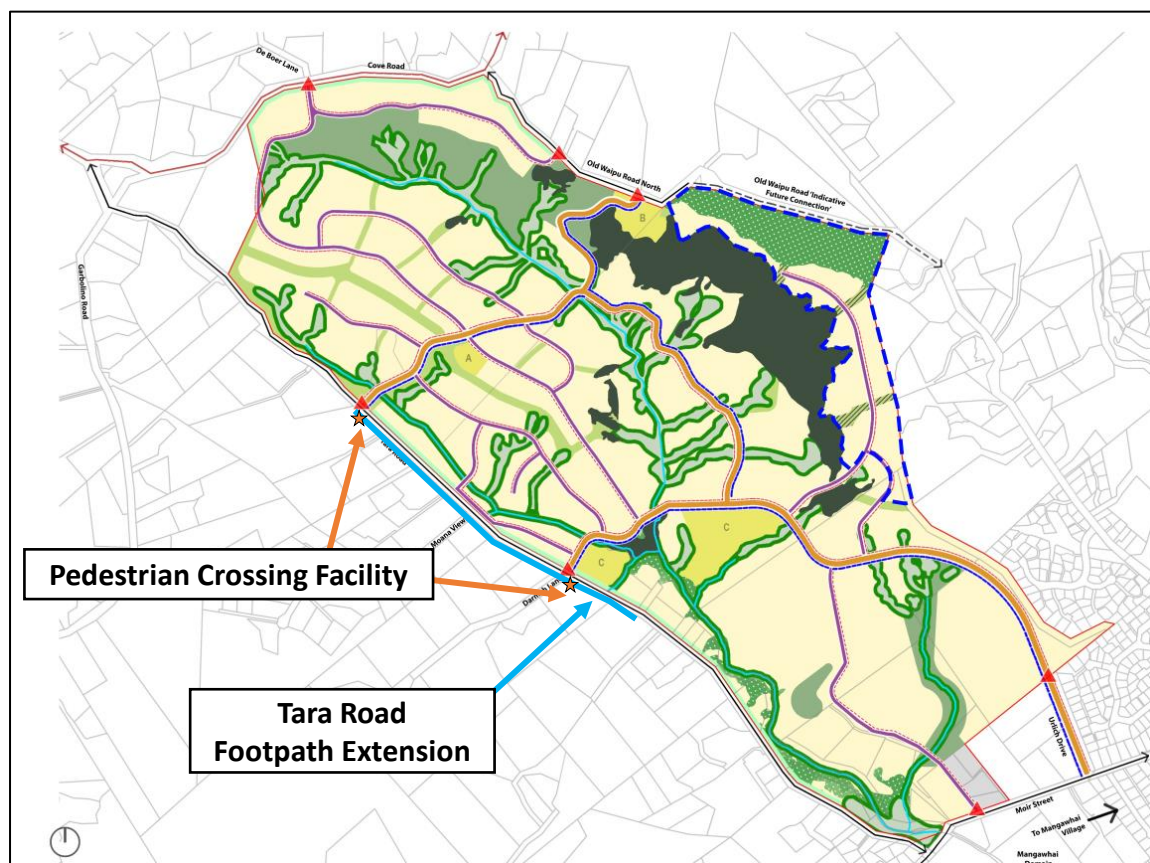
Figure 19: Tara Road Footpath Extension

6.0   CONCLUSION

Based on the investigations carried out as part of this assessment the following is concluded:

- The proposed plan change for approximately 218 hectares of rural land, will enable the creation of approximately 400-600 residential lots. This has been analysed with a sensitivity factor of 1.25, resulting in 750 lots. It is estimated that 750 lots will generate approximately 6,150 daily trips and 675 peak hour trips.

  - o Trip generation has been calculated based on the 85th percentile trip generation rate for each of the 700 dwellings; thereby representing a conservative approach to effect determination.

- A review of the area crash history did not suggest any inherent road safety issues, which would likely result in serious injury or death.

- When these trips are assigned to the wider road network, there were generally no noticeable effects onto the studied intersections, as they continue to operate at acceptable levels.

- Assessing various scenarios with the baseline and sensitivity traffic volumes, intersections were found to operate at generally acceptable levels. Where operational declines were observed the intersections were more impacted by traffic volumes associated with the potential Heavy Vehicle Route as opposed to the traffic generated by the Plan Change Area.

- Area roads (intersections) where accommodating turning movements associated with the Plan Change Area, should be provided with auxiliary right turn bays to increase the general safety of vehicle movements, along with increased lighting and safety barriers (where appropriate).

- With the full development of the PC84 area, should no other road connections be made to either Urlich Drive or Mangawhai Central, the intersection of Tara Road and Moir Road would likely need to be upgraded to respond to the increases in traffic movements, from a safety perspective, as it operations were still on the cusp of acceptability.

- Tara Road shall have its footpath extended to connect to the proposed Plan Change Area's public footpath/trail network, along with pedestrian crossing facilities, as required.

- Subsequent subdivision applications involving public roads to be vested shall provide an Integrated Transport Assessment and Safe System Assessment to ensure more detailed assessment is carried out with respect to the proposal.

Prepared by,

Peter Kelly
Senior Transportation Engineer

ATTACHMENT 1:

2033 TOTAL TRAFFIC FULL BUILD-OUT
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	[HV] %	DEMAND FLOWS [Total] veh/h	[HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	[Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	232	2.0	244	2.0	0.289	0.9	LOS A	1.6	11.2	0.38	0.29	0.38	47.6
6	R2	208	3.0	219	3.0	0.289	5.8	LOS A	1.6	11.2	0.38	0.29	0.38	46.7
Approach		440	2.5	463	2.5	0.289	3.2	NA	1.6	11.2	0.38	0.29	0.38	47.2
North: Tara Road														
7	L2	153	0.0	161	0.0	0.212	8.6	LOS A	0.9	6.1	0.40	0.90	0.40	44.4
9	R2	31	7.0	33	7.0	0.212	13.6	LOS B	0.9	6.1	0.40	0.90	0.40	43.9
Approach		184	1.2	194	1.2	0.212	9.4	LOS A	0.9	6.1	0.40	0.90	0.40	44.3
West: Kaiwaka Mangawhai Road														
10	L2	20	0.0	21	0.0	0.138	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
11	T1	232	2.0	244	2.0	0.138	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		252	1.8	265	1.8	0.138	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		876	2.0	922	2.0	0.289	3.7	NA	1.6	11.2	0.27	0.35	0.27	47.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tara Road														
21	L2	35	3.0	37	3.0	0.112	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	48.9
22	T1	167	3.0	176	3.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.4
Approach		202	3.0	213	3.0	0.112	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.3
North: Tara Road														
28	T1	156	3.0	164	3.0	0.390	1.0	LOS A	2.5	17.7	0.42	0.44	0.42	46.9
29	R2	416	3.0	438	3.0	0.390	5.7	LOS A	2.5	17.7	0.42	0.44	0.42	45.9
Approach		572	3.0	602	3.0	0.390	4.4	NA	2.5	17.7	0.42	0.44	0.42	46.2
West: Garbolino Road														
30	L2	416	3.0	438	3.0	0.456	5.9	LOS A	3.0	21.4	0.37	0.62	0.44	45.3
32	R2	69	3.0	73	3.0	0.456	12.6	LOS B	3.0	21.4	0.37	0.62	0.44	44.9
Approach		485	3.0	511	3.0	0.456	6.9	LOS A	3.0	21.4	0.37	0.62	0.44	45.2
All Vehicles		1259	3.0	1325	3.0	0.456	4.8	NA	3.0	21.4	0.34	0.45	0.36	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
2	T1	45	3.0	47	3.0	0.366	0.3	LOS A	2.3	16.7	0.23	0.49	0.23	46.8
3	R2	539	3.0	567	3.0	0.366	4.9	LOS A	2.3	16.7	0.23	0.49	0.23	45.9
Approach		584	3.0	615	3.0	0.366	4.6	NA	2.3	16.7	0.23	0.49	0.23	45.9
East: Cove Road														
4	L2	539	3.0	567	3.0	0.419	4.8	LOS A	2.4	17.2	0.12	0.51	0.12	46.3
6	R2	33	3.0	35	3.0	0.419	10.9	LOS B	2.4	17.2	0.12	0.51	0.12	45.9
Approach		572	3.0	602	3.0	0.419	5.1	LOS A	2.4	17.2	0.12	0.51	0.12	46.3
North: Tara Road														
7	L2	33	3.0	35	3.0	0.037	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	33	3.0	35	3.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		66	3.0	69	3.0	0.037	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1222	3.0	1286	3.0	0.419	4.7	NA	2.4	17.2	0.16	0.49	0.16	46.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Old Waipu Road														
1	L2	256	0.0	269	0.0	0.332	6.3	LOS A	1.6	11.0	0.48	0.70	0.54	45.1
3	R2	44	0.0	46	0.0	0.332	13.1	LOS B	1.6	11.0	0.48	0.70	0.54	44.7
Approach		300	0.0	316	0.0	0.332	7.3	LOS A	1.6	11.0	0.48	0.70	0.54	45.0
East: Cove Road														
4	L2	44	0.0	46	0.0	0.201	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.1
5	T1	320	3.0	337	3.0	0.201	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		364	2.6	383	2.6	0.201	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.5
West: Cove Road														
11	T1	320	3.0	337	3.0	0.397	1.7	LOS A	2.8	20.0	0.49	0.33	0.56	47.3
12	R2	256	0.0	269	0.0	0.397	6.9	LOS A	2.8	20.0	0.49	0.33	0.56	46.5
Approach		576	1.7	606	1.7	0.397	4.0	NA	2.8	20.0	0.49	0.33	0.56	46.9
All Vehicles		1240	1.5	1305	1.5	0.397	3.8	NA	2.8	20.0	0.34	0.34	0.39	47.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	431	2.0	454	2.0	0.317	0.7	LOS A	1.1	7.6	0.24	0.11	0.25	48.8
6	R2	88	2.0	93	2.0	0.317	6.9	LOS A	1.1	7.6	0.24	0.11	0.25	47.8
Approach		519	2.0	546	2.0	0.317	1.7	NA	1.1	7.6	0.24	0.11	0.25	48.6
North: Ulrich Drive														
7	L2	88	2.0	93	2.0	0.131	6.1	LOS A	0.5	3.4	0.47	0.67	0.47	45.2
9	R2	20	2.0	21	2.0	0.131	11.3	LOS B	0.5	3.4	0.47	0.67	0.47	44.7
Approach		108	2.0	114	2.0	0.131	7.1	LOS A	0.5	3.4	0.47	0.67	0.47	45.1
West: Moir Street														
10	L2	20	2.0	21	2.0	0.217	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.2
11	T1	376	2.0	396	2.0	0.217	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		396	2.0	417	2.0	0.217	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.7
All Vehicles		1023	2.0	1077	2.0	0.317	1.7	NA	1.1	7.6	0.17	0.14	0.17	48.6

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ATTACHMENT 2:

2033 TOTAL TRAFFIC FULL BUILD-OUT – SENSITIVITY
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	[HV] %	DEMAND FLOWS [Total] veh/h	[HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	[Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Vehicle Movement Performance														
East: Moir Street														
5	T1	344	2.0	362	2.0	0.449	2.2	LOS A	3.7	26.7	0.53	0.36	0.66	47.0
6	R2	292	3.0	307	3.0	0.449	7.4	LOS A	3.7	26.7	0.53	0.36	0.66	46.1
Approach		636	2.5	669	2.5	0.449	4.6	NA	3.7	26.7	0.53	0.36	0.66	46.6
North: Tara Road														
7	L2	209	0.0	220	0.0	0.388	10.4	LOS B	2.0	14.0	0.56	1.01	0.72	42.9
9	R2	42	7.0	44	7.0	0.388	22.8	LOS C	2.0	14.0	0.56	1.01	0.72	42.5
Approach		251	1.2	264	1.2	0.388	12.5	LOS B	2.0	14.0	0.56	1.01	0.72	42.9
West: Kaiwaka Mangawhai Road														
10	L2	26	0.0	27	0.0	0.203	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
11	T1	344	2.0	362	2.0	0.203	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		370	1.9	389	1.9	0.203	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		1257	2.0	1323	2.0	0.449	4.9	NA	3.7	26.7	0.38	0.39	0.48	46.6

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV %	DEMAND FLOWS [Total] veh/h	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
21	L2	41	3.0	43	3.0	0.162	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
22	T1	251	3.0	264	3.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		292	3.0	307	3.0	0.162	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.4
North: Tara Road														
28	T1	234	3.0	246	3.0	0.628	3.5	LOS A	8.3	59.9	0.65	0.63	0.94	45.7
29	R2	619	3.0	652	3.0	0.628	8.2	LOS A	8.3	59.9	0.65	0.63	0.94	44.8
Approach		853	3.0	898	3.0	0.628	6.9	NA	8.3	59.9	0.65	0.63	0.94	45.1
West: Garbolino Road														
30	L2	619	3.0	652	3.0	0.877	17.7	LOS C	18.8	134.9	0.64	1.42	2.22	38.7
32	R2	92	3.0	97	3.0	0.877	40.1	LOS E	18.8	134.9	0.64	1.42	2.22	38.4
Approach		711	3.0	748	3.0	0.877	20.6	LOS C	18.8	134.9	0.64	1.42	2.22	38.6
All Vehicles		1856	3.0	1954	3.0	0.877	11.2	NA	18.8	134.9	0.54	0.85	1.28	42.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Tara Road														
2	T1	68	3.0	72	3.0	0.563	0.7	LOS A	4.5	32.6	0.36	0.50	0.36	46.5
3	R2	804	3.0	846	3.0	0.563	5.3	LOS A	4.5	32.6	0.36	0.50	0.36	45.6
Approach		872	3.0	918	3.0	0.563	4.9	NA	4.5	32.6	0.36	0.50	0.36	45.6
East: Cove Road														
4	L2	804	3.0	846	3.0	0.698	6.4	LOS A	9.8	70.2	0.22	0.53	0.27	44.9
6	R2	50	3.0	53	3.0	0.698	26.8	LOS D	9.8	70.2	0.22	0.53	0.27	44.5
Approach		854	3.0	899	3.0	0.698	7.6	LOS A	9.8	70.2	0.22	0.53	0.27	44.9
North: Tara Road														
7	L2	50	3.0	53	3.0	0.056	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	50	3.0	53	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		100	3.0	105	3.0	0.056	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1826	3.0	1922	3.0	0.698	6.0	NA	9.8	70.2	0.28	0.50	0.30	45.4

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Vehicle Movement Performance															
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Waipu Road														
1	L2	384	0.0	404	0.0	0.670	11.4	LOS B	5.3	37.3	0.69	1.17	1.45	41.7
3	R2	47	0.0	49	0.0	0.670	34.1	LOS D	5.3	37.3	0.69	1.17	1.45	41.3
Approach		431	0.0	454	0.0	0.670	13.9	LOS B	5.3	37.3	0.69	1.17	1.45	41.6
East: Cove Road														
4	L2	47	0.0	49	0.0	0.287	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	474	3.0	499	3.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
Approach		521	2.7	548	2.7	0.287	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.5
West: Cove Road														
11	T1	474	3.0	499	3.0	0.666	5.3	LOS A	8.8	62.8	0.74	0.52	1.36	45.1
12	R2	384	0.0	404	0.0	0.666	11.1	LOS B	8.8	62.8	0.74	0.52	1.36	44.3
Approach		858	1.7	903	1.7	0.666	7.9	NA	8.8	62.8	0.74	0.52	1.36	44.7
All Vehicles		1810	1.6	1905	1.6	0.670	7.2	NA	8.8	62.8	0.52	0.54	0.99	45.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Moir Street														
5	T1	626	2.0	659	2.0	0.452	1.4	LOS A	2.2	15.7	0.28	0.10	0.39	48.4
6	R2	94	2.0	99	2.0	0.452	9.5	LOS A	2.2	15.7	0.28	0.10	0.39	47.4
Approach		720	2.0	758	2.0	0.452	2.5	NA	2.2	15.7	0.28	0.10	0.39	48.2
North: Ulrich Drive														
7	L2	94	2.0	99	2.0	0.229	7.4	LOS A	0.8	5.8	0.62	0.82	0.65	43.5
9	R2	26	2.0	27	2.0	0.229	20.1	LOS C	0.8	5.8	0.62	0.82	0.65	43.1
Approach		120	2.0	126	2.0	0.229	10.1	LOS B	0.8	5.8	0.62	0.82	0.65	43.4
West: Moir Street														
10	L2	26	2.0	27	2.0	0.312	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	49.2
11	T1	544	2.0	573	2.0	0.312	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Approach		570	2.0	600	2.0	0.312	0.3	NA	0.0	0.0	0.00	0.02	0.00	49.7
All Vehicles		1410	2.0	1484	2.0	0.452	2.3	NA	2.2	15.7	0.19	0.13	0.25	48.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ATTACHMENT 3:

2033 TOTAL TRAFFIC SCENARIO 1
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	232	2.0	244	2.0	0.321	1.0	LOS A	1.8	13.2	0.41	0.32	0.41	47.4
6	R2	250	3.0	263	3.0	0.321	5.9	LOS A	1.8	13.2	0.41	0.32	0.41	46.5
Approach		482	2.5	507	2.5	0.321	3.5	NA	1.8	13.2	0.41	0.32	0.41	47.0
North: Tara Road														
7	L2	195	0.0	205	0.0	0.257	8.7	LOS A	1.1	7.6	0.41	0.90	0.41	44.3
9	R2	31	7.0	33	7.0	0.257	14.6	LOS B	1.1	7.6	0.41	0.90	0.41	43.8
Approach		226	1.0	238	1.0	0.257	9.5	LOS A	1.1	7.6	0.41	0.90	0.41	44.3
West: Kaiwaka Mangawhai Road														
10	L2	20	0.0	21	0.0	0.138	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
11	T1	232	2.0	244	2.0	0.138	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		252	1.8	265	1.8	0.138	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		960	2.0	1011	2.0	0.321	4.1	NA	1.8	13.2	0.30	0.38	0.30	47.0

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
21	L2	35	3.0	37	3.0	0.112	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	48.9
22	T1	167	3.0	176	3.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.4
Approach		202	3.0	213	3.0	0.112	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.3
North: Tara Road														
28	T1	156	3.0	164	3.0	0.208	0.7	LOS A	1.1	7.6	0.33	0.30	0.33	47.6
29	R2	166	3.0	175	3.0	0.208	5.4	LOS A	1.1	7.6	0.33	0.30	0.33	46.7
Approach		322	3.0	339	3.0	0.208	3.1	NA	1.1	7.6	0.33	0.30	0.33	47.2
West: Garbolino Road														
30	L2	166	3.0	175	3.0	0.224	5.3	LOS A	0.9	6.6	0.32	0.59	0.32	45.8
32	R2	69	3.0	73	3.0	0.224	7.6	LOS A	0.9	6.6	0.32	0.59	0.32	45.4
Approach		235	3.0	247	3.0	0.224	5.9	LOS A	0.9	6.6	0.32	0.59	0.32	45.7
All Vehicles		759	3.0	799	3.0	0.224	3.4	NA	1.1	7.6	0.24	0.34	0.24	47.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Tara Road														
2	T1	45	3.0	47	3.0	0.208	0.3	LOS A	1.1	8.0	0.19	0.46	0.19	47.0
3	R2	289	3.0	304	3.0	0.208	4.8	LOS A	1.1	8.0	0.19	0.46	0.19	46.1
Approach		334	3.0	352	3.0	0.208	4.2	NA	1.1	8.0	0.19	0.46	0.19	46.2
East: Cove Road														
4	L2	289	3.0	304	3.0	0.235	4.7	LOS A	1.1	7.9	0.10	0.51	0.10	46.3
6	R2	33	3.0	35	3.0	0.235	6.9	LOS A	1.1	7.9	0.10	0.51	0.10	45.9
Approach		322	3.0	339	3.0	0.235	4.9	LOS A	1.1	7.9	0.10	0.51	0.10	46.3
North: Tara Road														
7	L2	33	3.0	35	3.0	0.037	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	33	3.0	35	3.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		66	3.0	69	3.0	0.037	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		722	3.0	760	3.0	0.235	4.4	NA	1.1	8.0	0.13	0.47	0.13	46.4

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Waipu Road														
1	L2	6	0.0	6	0.0	0.078	5.7	LOS A	0.3	1.8	0.50	0.74	0.50	44.7
3	R2	44	0.0	46	0.0	0.078	8.2	LOS A	0.3	1.8	0.50	0.74	0.50	44.3
Approach		50	0.0	53	0.0	0.078	7.9	LOS A	0.3	1.8	0.50	0.74	0.50	44.4
East: Cove Road														
4	L2	44	0.0	46	0.0	0.201	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.1
5	T1	320	3.0	337	3.0	0.201	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		364	2.6	383	2.6	0.201	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.5
West: Cove Road														
11	T1	320	3.0	337	3.0	0.181	0.0	LOS A	0.1	0.5	0.02	0.01	0.02	49.9
12	R2	6	0.0	6	0.0	0.181	6.3	LOS A	0.1	0.5	0.02	0.01	0.02	48.9
Approach		326	2.9	343	2.9	0.181	0.2	NA	0.1	0.5	0.02	0.01	0.02	49.9
All Vehicles		740	2.6	779	2.6	0.201	0.9	NA	0.3	1.8	0.04	0.09	0.04	49.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	473	2.0	498	2.0	0.417	1.6	LOS A	2.6	18.6	0.39	0.19	0.49	47.9
6	R2	164	2.0	173	2.0	0.417	7.8	LOS A	2.6	18.6	0.39	0.19	0.49	47.0
Approach		637	2.0	671	2.0	0.417	3.2	NA	2.6	18.6	0.39	0.19	0.49	47.7
North: Ulrich Drive														
7	L2	164	2.0	173	2.0	0.227	6.5	LOS A	0.9	6.3	0.52	0.71	0.52	45.0
9	R2	20	2.0	21	2.0	0.227	15.0	LOS B	0.9	6.3	0.52	0.71	0.52	44.6
Approach		184	2.0	194	2.0	0.227	7.4	LOS A	0.9	6.3	0.52	0.71	0.52	44.9
West: Moir Street														
10	L2	20	2.0	21	2.0	0.240	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.2
11	T1	418	2.0	440	2.0	0.240	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	49.8
Approach		438	2.0	461	2.0	0.240	0.3	NA	0.0	0.0	0.00	0.02	0.00	49.7
All Vehicles		1259	2.0	1325	2.0	0.417	2.8	NA	2.6	18.6	0.27	0.21	0.33	47.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ATTACHMENT 4:

2033 TOTAL TRAFFIC SCENARIO 1 – SENSITIVITY
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	[HV] %	DEMAND FLOWS [Total] veh/h	[HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	[Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	344	2.0	362	2.0	0.486	2.5	LOS A	4.5	32.1	0.57	0.40	0.74	46.8
6	R2	334	3.0	352	3.0	0.486	7.7	LOS A	4.5	32.1	0.57	0.40	0.74	45.9
Approach		678	2.5	714	2.5	0.486	5.1	NA	4.5	32.1	0.57	0.40	0.74	46.3
North: Tara Road														
7	L2	251	0.0	264	0.0	0.450	10.9	LOS B	2.6	18.3	0.58	1.05	0.82	42.7
9	R2	42	7.0	44	7.0	0.450	25.8	LOS D	2.6	18.3	0.58	1.05	0.82	42.2
Approach		293	1.0	308	1.0	0.450	13.1	LOS B	2.6	18.3	0.58	1.05	0.82	42.6
West: Kaiwaka Mangawhai Road														
10	L2	26	0.0	27	0.0	0.203	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
11	T1	344	2.0	362	2.0	0.203	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		370	1.9	389	1.9	0.203	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		1341	2.0	1412	2.0	0.486	5.5	NA	4.5	32.1	0.41	0.44	0.56	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m		Rate		km/h
South: Tara Road														
21	L2	41	3.0	43	3.0	0.162	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
22	T1	251	3.0	264	3.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		292	3.0	307	3.0	0.162	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.4
North: Tara Road														
28	T1	234	3.0	246	3.0	0.327	1.2	LOS A	1.9	13.5	0.44	0.33	0.44	47.4
29	R2	244	3.0	257	3.0	0.327	6.1	LOS A	1.9	13.5	0.44	0.33	0.44	46.5
Approach		478	3.0	503	3.0	0.327	3.7	NA	1.9	13.5	0.44	0.33	0.44	46.9
West: Garbolino Road														
30	L2	244	3.0	257	3.0	0.382	6.2	LOS A	2.0	14.4	0.46	0.70	0.55	44.9
32	R2	92	3.0	97	3.0	0.382	11.3	LOS B	2.0	14.4	0.46	0.70	0.55	44.5
Approach		336	3.0	354	3.0	0.382	7.6	LOS A	2.0	14.4	0.46	0.70	0.55	44.7
All Vehicles		1106	3.0	1164	3.0	0.382	4.1	NA	2.0	14.4	0.33	0.38	0.36	46.8

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
2	T1	68	3.0	72	3.0	0.319	0.5	LOS A	1.9	13.7	0.27	0.47	0.27	46.8
3	R2	429	3.0	452	3.0	0.319	5.0	LOS A	1.9	13.7	0.27	0.47	0.27	45.9
Approach		497	3.0	523	3.0	0.319	4.4	NA	1.9	13.7	0.27	0.47	0.27	46.0
East: Cove Road														
4	L2	429	3.0	452	3.0	0.371	4.8	LOS A	1.9	13.9	0.15	0.52	0.15	46.2
6	R2	50	3.0	53	3.0	0.371	9.3	LOS A	1.9	13.9	0.15	0.52	0.15	45.7
Approach		479	3.0	504	3.0	0.371	5.3	LOS A	1.9	13.9	0.15	0.52	0.15	46.1
North: Tara Road														
7	L2	50	3.0	53	3.0	0.056	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	50	3.0	53	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		100	3.0	105	3.0	0.056	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1076	3.0	1133	3.0	0.371	4.6	NA	1.9	13.9	0.19	0.47	0.19	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Waipu Road														
1	L2	9	0.0	9	0.0	0.130	6.6	LOS A	0.4	2.9	0.67	0.84	0.67	43.1
3	R2	47	0.0	49	0.0	0.130	11.8	LOS B	0.4	2.9	0.67	0.84	0.67	42.7
Approach		56	0.0	59	0.0	0.130	10.9	LOS B	0.4	2.9	0.67	0.84	0.67	42.8
East: Cove Road														
4	L2	47	0.0	49	0.0	0.287	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	474	3.0	499	3.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
Approach		521	2.7	548	2.7	0.287	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.5
West: Cove Road														
11	T1	474	3.0	499	3.0	0.270	0.1	LOS A	0.1	1.0	0.03	0.01	0.03	49.8
12	R2	9	0.0	9	0.0	0.270	7.8	LOS A	0.1	1.0	0.03	0.01	0.03	48.9
Approach		483	2.9	508	2.9	0.270	0.3	NA	0.1	1.0	0.03	0.01	0.03	49.8
All Vehicles		1060	2.7	1116	2.7	0.287	0.9	NA	0.4	2.9	0.05	0.07	0.05	49.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	668	2.0	703	2.0	0.575	3.1	LOS A	4.9	35.1	0.50	0.18	0.81	46.9
6	R2	170	2.0	179	2.0	0.575	11.3	LOS B	4.9	35.1	0.50	0.18	0.81	46.0
Approach		838	2.0	882	2.0	0.575	4.8	NA	4.9	35.1	0.50	0.18	0.81	46.7
North: Ulrich Drive														
7	L2	170	2.0	179	2.0	0.384	9.1	LOS A	1.7	12.1	0.67	0.93	0.90	42.6
9	R2	26	2.0	27	2.0	0.384	30.2	LOS D	1.7	12.1	0.67	0.93	0.90	42.3
Approach		196	2.0	206	2.0	0.384	11.9	LOS B	1.7	12.1	0.67	0.93	0.90	42.6
West: Moir Street														
10	L2	26	2.0	27	2.0	0.335	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	49.2
11	T1	586	2.0	617	2.0	0.335	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Approach		612	2.0	644	2.0	0.335	0.3	NA	0.0	0.0	0.00	0.02	0.00	49.7
All Vehicles		1646	2.0	1733	2.0	0.575	4.0	NA	4.9	35.1	0.33	0.21	0.52	47.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Moir Street														
5	T1	344	2.0	362	2.0	0.486	2.5	LOS A	4.5	32.1	0.57	0.40	0.74	46.8
6	R2	334	3.0	352	3.0	0.486	7.7	LOS A	4.5	32.1	0.57	0.40	0.74	45.9
Approach		678	2.5	714	2.5	0.486	5.1	NA	4.5	32.1	0.57	0.40	0.74	46.3
North: Tara Road														
7	L2	251	0.0	264	0.0	0.450	10.9	LOS B	2.6	18.3	0.58	1.05	0.82	42.7
9	R2	42	7.0	44	7.0	0.450	25.8	LOS D	2.6	18.3	0.58	1.05	0.82	42.2
Approach		293	1.0	308	1.0	0.450	13.1	LOS B	2.6	18.3	0.58	1.05	0.82	42.6
West: Kaiwaka Mangawhai Road														
10	L2	26	0.0	27	0.0	0.203	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
11	T1	344	2.0	362	2.0	0.203	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		370	1.9	389	1.9	0.203	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		1341	2.0	1412	2.0	0.486	5.5	NA	4.5	32.1	0.41	0.44	0.56	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tara Road														
21	L2	41	3.0	43	3.0	0.162	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
22	T1	251	3.0	264	3.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		292	3.0	307	3.0	0.162	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.4
North: Tara Road														
28	T1	234	3.0	246	3.0	0.327	1.2	LOS A	1.9	13.5	0.44	0.33	0.44	47.4
29	R2	244	3.0	257	3.0	0.327	6.1	LOS A	1.9	13.5	0.44	0.33	0.44	46.5
Approach		478	3.0	503	3.0	0.327	3.7	NA	1.9	13.5	0.44	0.33	0.44	46.9
West: Garbolino Road														
30	L2	244	3.0	257	3.0	0.382	6.2	LOS A	2.0	14.4	0.46	0.70	0.55	44.9
32	R2	92	3.0	97	3.0	0.382	11.3	LOS B	2.0	14.4	0.46	0.70	0.55	44.5
Approach		336	3.0	354	3.0	0.382	7.6	LOS A	2.0	14.4	0.46	0.70	0.55	44.7
All Vehicles		1106	3.0	1164	3.0	0.382	4.1	NA	2.0	14.4	0.33	0.38	0.36	46.8

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road
2	T1	68	3.0	72	3.0	0.319	0.5	LOS A	1.9	13.7	0.27	0.47	0.27	46.8
3	R2	429	3.0	452	3.0	0.319	5.0	LOS A	1.9	13.7	0.27	0.47	0.27	45.9
Approach		497	3.0	523	3.0	0.319	4.4	NA	1.9	13.7	0.27	0.47	0.27	46.0
East: Cove Road
4	L2	429	3.0	452	3.0	0.371	4.8	LOS A	1.9	13.9	0.15	0.52	0.15	46.2
6	R2	50	3.0	53	3.0	0.371	9.3	LOS A	1.9	13.9	0.15	0.52	0.15	45.7
Approach		479	3.0	504	3.0	0.371	5.3	LOS A	1.9	13.9	0.15	0.52	0.15	46.1
North: Tara Road
7	L2	50	3.0	53	3.0	0.056	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	50	3.0	53	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		100	3.0	105	3.0	0.056	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1076	3.0	1133	3.0	0.371	4.6	NA	1.9	13.9	0.19	0.47	0.19	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Waipu Road														
1	L2	9	0.0	9	0.0	0.130	6.6	LOS A	0.4	2.9	0.67	0.84	0.67	43.1
3	R2	47	0.0	49	0.0	0.130	11.8	LOS B	0.4	2.9	0.67	0.84	0.67	42.7
Approach		56	0.0	59	0.0	0.130	10.9	LOS B	0.4	2.9	0.67	0.84	0.67	42.8
East: Cove Road														
4	L2	47	0.0	49	0.0	0.287	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	474	3.0	499	3.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
Approach		521	2.7	548	2.7	0.287	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.5
West: Cove Road														
11	T1	474	3.0	499	3.0	0.270	0.1	LOS A	0.1	1.0	0.03	0.01	0.03	49.8
12	R2	9	0.0	9	0.0	0.270	7.8	LOS A	0.1	1.0	0.03	0.01	0.03	48.9
Approach		483	2.9	508	2.9	0.270	0.3	NA	0.1	1.0	0.03	0.01	0.03	49.8
All Vehicles		1060	2.7	1116	2.7	0.287	0.9	NA	0.4	2.9	0.05	0.07	0.05	49.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ **Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]**

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

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	668	2.0	703	2.0	0.575	3.1	LOS A	4.9	35.1	0.50	0.18	0.81	46.9
6	R2	170	2.0	179	2.0	0.575	11.3	LOS B	4.9	35.1	0.50	0.18	0.81	46.0
Approach		838	2.0	882	2.0	0.575	4.8	NA	4.9	35.1	0.50	0.18	0.81	46.7
North: Ulrich Drive														
7	L2	170	2.0	179	2.0	0.384	9.1	LOS A	1.7	12.1	0.67	0.93	0.90	42.6
9	R2	26	2.0	27	2.0	0.384	30.2	LOS D	1.7	12.1	0.67	0.93	0.90	42.3
Approach		196	2.0	206	2.0	0.384	11.9	LOS B	1.7	12.1	0.67	0.93	0.90	42.6
West: Moir Street														
10	L2	26	2.0	27	2.0	0.335	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	49.2
11	T1	586	2.0	617	2.0	0.335	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Approach		612	2.0	644	2.0	0.335	0.3	NA	0.0	0.0	0.00	0.02	0.00	49.7
All Vehicles		1646	2.0	1733	2.0	0.575	4.0	NA	4.9	35.1	0.33	0.21	0.52	47.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ATTACHMENT 5:

2033 TOTAL TRAFFIC SCENARIO 2
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Moir Street														
5	T1	223	2.0	235	2.0	0.317	1.0	LOS A	1.8	13.0	0.41	0.33	0.41	47.4
6	R2	251	3.0	264	3.0	0.317	5.8	LOS A	1.8	13.0	0.41	0.33	0.41	46.5
Approach		474	2.5	499	2.5	0.317	3.6	NA	1.8	13.0	0.41	0.33	0.41	46.9
North: Tara Road														
7	L2	196	0.0	206	0.0	0.273	8.6	LOS A	1.1	8.1	0.41	0.90	0.41	44.3
9	R2	39	7.0	41	7.0	0.273	14.5	LOS B	1.1	8.1	0.41	0.90	0.41	43.8
Approach		235	1.2	247	1.2	0.273	9.6	LOS A	1.1	8.1	0.41	0.90	0.41	44.2
West: Kaiwaka Mangawhai Road														
10	L2	28	0.0	29	0.0	0.138	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	49.1
11	T1	223	2.0	235	2.0	0.138	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach		251	1.8	264	1.8	0.138	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.5
All Vehicles		960	2.0	1011	2.0	0.317	4.2	NA	1.8	13.0	0.30	0.40	0.30	46.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tara Road														
21	L2	35	3.0	37	3.0	0.112	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	48.9
22	T1	167	3.0	176	3.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.4
Approach		202	3.0	213	3.0	0.112	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.3
North: Tara Road														
28	T1	156	3.0	164	3.0	0.390	1.0	LOS A	2.5	17.7	0.42	0.44	0.42	46.9
29	R2	416	3.0	438	3.0	0.390	5.7	LOS A	2.5	17.7	0.42	0.44	0.42	45.9
Approach		572	3.0	602	3.0	0.390	4.4	NA	2.5	17.7	0.42	0.44	0.42	46.2
West: Garbolino Road														
30	L2	416	3.0	438	3.0	0.456	5.9	LOS A	3.0	21.4	0.37	0.62	0.44	45.3
32	R2	69	3.0	73	3.0	0.456	12.6	LOS B	3.0	21.4	0.37	0.62	0.44	44.9
Approach		485	3.0	511	3.0	0.456	6.9	LOS A	3.0	21.4	0.37	0.62	0.44	45.2
All Vehicles		1259	3.0	1325	3.0	0.456	4.8	NA	3.0	21.4	0.34	0.45	0.36	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
2	T1	45	3.0	47	3.0	0.366	0.3	LOS A	2.3	16.7	0.23	0.49	0.23	46.8
3	R2	539	3.0	567	3.0	0.366	4.9	LOS A	2.3	16.7	0.23	0.49	0.23	45.9
Approach		584	3.0	615	3.0	0.366	4.6	NA	2.3	16.7	0.23	0.49	0.23	45.9
East: Cove Road														
4	L2	539	3.0	567	3.0	0.419	4.8	LOS A	2.4	17.2	0.12	0.51	0.12	46.3
6	R2	33	3.0	35	3.0	0.419	10.9	LOS B	2.4	17.2	0.12	0.51	0.12	45.9
Approach		572	3.0	602	3.0	0.419	5.1	LOS A	2.4	17.2	0.12	0.51	0.12	46.3
North: Tara Road														
7	L2	33	3.0	35	3.0	0.037	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	33	3.0	35	3.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		66	3.0	69	3.0	0.037	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1222	3.0	1286	3.0	0.419	4.7	NA	2.4	17.2	0.16	0.49	0.16	46.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV %	DEMAND FLOWS [Total] veh/h	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Old Waipu Road														
1	L2	256	0.0	269	0.0	0.332	6.3	LOS A	1.6	11.0	0.48	0.70	0.54	45.1
3	R2	44	0.0	46	0.0	0.332	13.1	LOS B	1.6	11.0	0.48	0.70	0.54	44.7
Approach		300	0.0	316	0.0	0.332	7.3	LOS A	1.6	11.0	0.48	0.70	0.54	45.0
East: Cove Road														
4	L2	44	0.0	46	0.0	0.201	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.1
5	T1	320	3.0	337	3.0	0.201	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		364	2.6	383	2.6	0.201	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.5
West: Cove Road														
11	T1	320	3.0	337	3.0	0.397	1.7	LOS A	2.8	20.0	0.49	0.33	0.56	47.3
12	R2	256	0.0	269	0.0	0.397	6.9	LOS A	2.8	20.0	0.49	0.33	0.56	46.5
Approach		576	1.7	606	1.7	0.397	4.0	NA	2.8	20.0	0.49	0.33	0.56	46.9
All Vehicles		1240	1.5	1305	1.5	0.397	3.8	NA	2.8	20.0	0.34	0.34	0.39	47.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Moir Street														
5	T1	474	2.0	499	2.0	0.270	0.1	LOS A	0.1	1.0	0.04	0.01	0.04	49.8
6	R2	11	2.0	12	2.0	0.270	7.0	LOS A	0.1	1.0	0.04	0.01	0.04	48.8
Approach		485	2.0	511	2.0	0.270	0.3	NA	0.1	1.0	0.04	0.01	0.04	49.8
North: Ulrich Drive														
7	L2	11	2.0	12	2.0	0.037	6.2	LOS A	0.1	0.9	0.52	0.71	0.52	44.4
9	R2	11	2.0	12	2.0	0.037	10.6	LOS B	0.1	0.9	0.52	0.71	0.52	44.0
Approach		22	2.0	23	2.0	0.037	8.4	LOS A	0.1	0.9	0.52	0.71	0.52	44.2
West: Moir Street														
10	L2	11	2.0	12	2.0	0.235	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
11	T1	419	2.0	441	2.0	0.235	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
Approach		430	2.0	453	2.0	0.235	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
All Vehicles		937	2.0	986	2.0	0.270	0.4	NA	0.1	1.0	0.03	0.03	0.03	49.7

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ATTACHMENT 6:

2033 TOTAL TRAFFIC SCENARIO 2 – SENSITIVITY
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h]	HV %	DEMAND FLOWS [Total veh/h]	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	335	2.0	353	2.0	0.481	2.5	LOS A	4.4	31.5	0.57	0.41	0.74	46.8
6	R2	335	3.0	353	3.0	0.481	7.6	LOS A	4.4	31.5	0.57	0.41	0.74	45.9
Approach		670	2.5	705	2.5	0.481	5.1	NA	4.4	31.5	0.57	0.41	0.74	46.3
North: Tara Road														
7	L2	252	0.0	265	0.0	0.476	11.2	LOS B	2.8	20.1	0.58	1.07	0.86	42.4
9	R2	50	7.0	53	7.0	0.476	25.7	LOS D	2.8	20.1	0.58	1.07	0.86	42.0
Approach		302	1.2	318	1.2	0.476	13.6	LOS B	2.8	20.1	0.58	1.07	0.86	42.3
West: Kaiwaka Mangawhai Road														
10	L2	34	0.0	36	0.0	0.202	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
11	T1	335	2.0	353	2.0	0.202	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
Approach		369	1.8	388	1.8	0.202	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.6
All Vehicles		1341	2.0	1412	2.0	0.481	5.7	NA	4.4	31.5	0.41	0.46	0.56	46.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
21	L2	41	3.0	43	3.0	0.162	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
22	T1	251	3.0	264	3.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		292	3.0	307	3.0	0.162	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.4
North: Tara Road														
28	T1	234	3.0	246	3.0	0.628	3.5	LOS A	8.3	59.9	0.65	0.63	0.94	45.7
29	R2	619	3.0	652	3.0	0.628	8.2	LOS A	8.3	59.9	0.65	0.63	0.94	44.8
Approach		853	3.0	898	3.0	0.628	6.9	NA	8.3	59.9	0.65	0.63	0.94	45.1
West: Garbolino Road														
30	L2	619	3.0	652	3.0	0.877	17.7	LOS C	18.8	134.9	0.64	1.42	2.22	38.7
32	R2	92	3.0	97	3.0	0.877	40.1	LOS E	18.8	134.9	0.64	1.42	2.22	38.4
Approach		711	3.0	748	3.0	0.877	20.6	LOS C	18.8	134.9	0.64	1.42	2.22	38.6
All Vehicles		1856	3.0	1954	3.0	0.877	11.2	NA	18.8	134.9	0.54	0.85	1.28	42.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Tara Road														
2	T1	68	3.0	72	3.0	0.563	0.7	LOS A	4.5	32.6	0.36	0.50	0.36	46.5
3	R2	804	3.0	846	3.0	0.563	5.3	LOS A	4.5	32.6	0.36	0.50	0.36	45.6
Approach		872	3.0	918	3.0	0.563	4.9	NA	4.5	32.6	0.36	0.50	0.36	45.6
East: Cove Road														
4	L2	804	3.0	846	3.0	0.698	6.4	LOS A	9.8	70.2	0.22	0.53	0.27	44.9
6	R2	50	3.0	53	3.0	0.698	26.8	LOS D	9.8	70.2	0.22	0.53	0.27	44.5
Approach		854	3.0	899	3.0	0.698	7.6	LOS A	9.8	70.2	0.22	0.53	0.27	44.9
North: Tara Road														
7	L2	50	3.0	53	3.0	0.056	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	50	3.0	53	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		100	3.0	105	3.0	0.056	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1826	3.0	1922	3.0	0.698	6.0	NA	9.8	70.2	0.28	0.50	0.30	45.4

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Old Waipu Road														
1	L2	384	0.0	404	0.0	0.670	11.4	LOS B	5.3	37.3	0.69	1.17	1.45	41.7
3	R2	47	0.0	49	0.0	0.670	34.1	LOS D	5.3	37.3	0.69	1.17	1.45	41.3
Approach		431	0.0	454	0.0	0.670	13.9	LOS B	5.3	37.3	0.69	1.17	1.45	41.6
East: Cove Road														
4	L2	47	0.0	49	0.0	0.287	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	474	3.0	499	3.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
Approach		521	2.7	548	2.7	0.287	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.5
West: Cove Road														
11	T1	474	3.0	499	3.0	0.666	5.3	LOS A	8.8	62.8	0.74	0.52	1.36	45.1
12	R2	384	0.0	404	0.0	0.666	11.1	LOS B	8.8	62.8	0.74	0.52	1.36	44.3
Approach		858	1.7	903	1.7	0.666	7.9	NA	8.8	62.8	0.74	0.52	1.36	44.7
All Vehicles		1810	1.6	1905	1.6	0.670	7.2	NA	8.8	62.8	0.52	0.54	0.99	45.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	669	2.0	704	2.0	0.387	0.3	LOS A	0.4	2.9	0.06	0.01	0.08	49.7
6	R2	17	2.0	18	2.0	0.387	9.6	LOS A	0.4	2.9	0.06	0.01	0.08	48.7
Approach		686	2.0	722	2.0	0.387	0.5	NA	0.4	2.9	0.06	0.01	0.08	49.6
North: Ulrich Drive														
7	L2	17	2.0	18	2.0	0.097	7.3	LOS A	0.3	2.1	0.71	0.84	0.71	42.2
9	R2	17	2.0	18	2.0	0.097	18.3	LOS C	0.3	2.1	0.71	0.84	0.71	41.8
Approach		34	2.0	36	2.0	0.097	12.8	LOS B	0.3	2.1	0.71	0.84	0.71	42.0
West: Moir Street														
10	L2	17	2.0	18	2.0	0.331	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	49.2
11	T1	587	2.0	618	2.0	0.331	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Approach		604	2.0	636	2.0	0.331	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.7
All Vehicles		1324	2.0	1394	2.0	0.387	0.7	NA	0.4	2.9	0.05	0.04	0.06	49.4

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ATTACHMENT 7:

2033 TOTAL TRAFFIC SCENARIO 3
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h]	HV %	DEMAND FLOWS [Total veh/h]	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	223	2.0	235	2.0	0.434	1.5	LOS A	3.2	23.1	0.48	0.42	0.52	46.9
6	R2	403	3.0	424	3.0	0.434	6.2	LOS A	3.2	23.1	0.48	0.42	0.52	46.0
Approach		626	2.6	659	2.6	0.434	4.5	NA	3.2	23.1	0.48	0.42	0.52	46.3
North: Tara Road														
7	L2	348	0.0	366	0.0	0.444	9.5	LOS A	2.8	19.9	0.46	0.95	0.58	43.8
9	R2	39	7.0	41	7.0	0.444	20.8	LOS C	2.8	19.9	0.46	0.95	0.58	43.3
Approach		387	0.7	407	0.7	0.444	10.7	LOS B	2.8	19.9	0.46	0.95	0.58	43.7
West: Kaiwaka Mangawhai Road														
10	L2	28	0.0	29	0.0	0.138	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	49.1
11	T1	223	2.0	235	2.0	0.138	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach		251	1.8	264	1.8	0.138	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.5
All Vehicles		1264	1.9	1331	1.9	0.444	5.6	NA	3.2	23.1	0.38	0.51	0.43	46.1

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
21	L2	35	3.0	37	3.0	0.112	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	48.9
22	T1	167	3.0	176	3.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.4
Approach		202	3.0	213	3.0	0.112	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.3
North: Tara Road														
28	T1	156	3.0	164	3.0	0.390	1.0	LOS A	2.5	17.7	0.42	0.44	0.42	46.9
29	R2	416	3.0	438	3.0	0.390	5.7	LOS A	2.5	17.7	0.42	0.44	0.42	45.9
Approach		572	3.0	602	3.0	0.390	4.4	NA	2.5	17.7	0.42	0.44	0.42	46.2
West: Garbolino Road														
30	L2	416	3.0	438	3.0	0.456	5.9	LOS A	3.0	21.4	0.37	0.62	0.44	45.3
32	R2	69	3.0	73	3.0	0.456	12.6	LOS B	3.0	21.4	0.37	0.62	0.44	44.9
Approach		485	3.0	511	3.0	0.456	6.9	LOS A	3.0	21.4	0.37	0.62	0.44	45.2
All Vehicles		1259	3.0	1325	3.0	0.456	4.8	NA	3.0	21.4	0.34	0.45	0.36	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
2	T1	45	3.0	47	3.0	0.366	0.3	LOS A	2.3	16.7	0.23	0.49	0.23	46.8
3	R2	539	3.0	567	3.0	0.366	4.9	LOS A	2.3	16.7	0.23	0.49	0.23	45.9
Approach		584	3.0	615	3.0	0.366	4.6	NA	2.3	16.7	0.23	0.49	0.23	45.9
East: Cove Road														
4	L2	539	3.0	567	3.0	0.419	4.8	LOS A	2.4	17.2	0.12	0.51	0.12	46.3
6	R2	33	3.0	35	3.0	0.419	10.9	LOS B	2.4	17.2	0.12	0.51	0.12	45.9
Approach		572	3.0	602	3.0	0.419	5.1	LOS A	2.4	17.2	0.12	0.51	0.12	46.3
North: Tara Road														
7	L2	33	3.0	35	3.0	0.037	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	33	3.0	35	3.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		66	3.0	69	3.0	0.037	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1222	3.0	1286	3.0	0.419	4.7	NA	2.4	17.2	0.16	0.49	0.16	46.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV %	DEMAND FLOWS [Total] veh/h	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Old Waipu Road														
1	L2	256	0.0	269	0.0	0.332	6.3	LOS A	1.6	11.0	0.48	0.70	0.54	45.1
3	R2	44	0.0	46	0.0	0.332	13.1	LOS B	1.6	11.0	0.48	0.70	0.54	44.7
Approach		300	0.0	316	0.0	0.332	7.3	LOS A	1.6	11.0	0.48	0.70	0.54	45.0
East: Cove Road														
4	L2	44	0.0	46	0.0	0.201	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.1
5	T1	320	3.0	337	3.0	0.201	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		364	2.6	383	2.6	0.201	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.5
West: Cove Road														
11	T1	320	3.0	337	3.0	0.397	1.7	LOS A	2.8	20.0	0.49	0.33	0.56	47.3
12	R2	256	0.0	269	0.0	0.397	6.9	LOS A	2.8	20.0	0.49	0.33	0.56	46.5
Approach		576	1.7	606	1.7	0.397	4.0	NA	2.8	20.0	0.49	0.33	0.56	46.9
All Vehicles		1240	1.5	1305	1.5	0.397	3.8	NA	2.8	20.0	0.34	0.34	0.39	47.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	626	2.0	659	2.0	0.355	0.2	LOS A	0.2	1.7	0.04	0.01	0.05	49.8
6	R2	11	2.0	12	2.0	0.355	9.0	LOS A	0.2	1.7	0.04	0.01	0.05	48.8
Approach		637	2.0	671	2.0	0.355	0.3	NA	0.2	1.7	0.04	0.01	0.05	49.8
North: Ulrich Drive														
7	L2	11	2.0	12	2.0	0.056	7.2	LOS A	0.2	1.2	0.67	0.80	0.67	42.7
9	R2	11	2.0	12	2.0	0.056	16.1	LOS C	0.2	1.2	0.67	0.80	0.67	42.4
Approach		22	2.0	23	2.0	0.056	11.6	LOS B	0.2	1.2	0.67	0.80	0.67	42.6
West: Moir Street														
10	L2	11	2.0	12	2.0	0.319	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
11	T1	571	2.0	601	2.0	0.319	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
Approach		582	2.0	613	2.0	0.319	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
All Vehicles		1241	2.0	1306	2.0	0.355	0.5	NA	0.2	1.7	0.03	0.02	0.04	49.6

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ATTACHMENT 8:

2033 TOTAL TRAFFIC SCENARIO 3 – SENSITIVITY
INTERSECTION OPERATIONS

MOVEMENT SUMMARY

🛑 Site: 101 [TOT_SAT Peak (Site Folder: Moir Street - Tara Road)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	[HV] %	DEMAND FLOWS [Total] veh/h	[HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	[Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	335	2.0	353	2.0	0.615	3.9	LOS A	7.8	55.9	0.68	0.57	1.05	45.7
6	R2	487	3.0	513	3.0	0.615	8.8	LOS A	7.8	55.9	0.68	0.57	1.05	44.9
Approach		822	2.6	865	2.6	0.615	6.8	NA	7.8	55.9	0.68	0.57	1.05	45.2
North: Tara Road														
7	L2	404	0.0	425	0.0	0.732	16.0	LOS C	7.8	54.8	0.67	1.37	1.61	39.9
9	R2	50	7.0	53	7.0	0.732	43.9	LOS E	7.8	54.8	0.67	1.37	1.61	39.5
Approach		454	0.8	478	0.8	0.732	19.1	LOS C	7.8	54.8	0.67	1.37	1.61	39.9
West: Kaiwaka Mangawhai Road														
10	L2	34	0.0	36	0.0	0.202	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
11	T1	335	2.0	353	2.0	0.202	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
Approach		369	1.8	388	1.8	0.202	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.6
All Vehicles		1645	1.9	1732	1.9	0.732	8.8	NA	7.8	55.9	0.53	0.67	0.97	44.4

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Garbolino - Tara Road)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Tara Road														
21	L2	41	3.0	43	3.0	0.162	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
22	T1	251	3.0	264	3.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		292	3.0	307	3.0	0.162	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.4
North: Tara Road														
28	T1	234	3.0	246	3.0	0.319	1.2	LOS A	1.8	13.0	0.43	0.32	0.43	47.4
29	R2	234	3.0	246	3.0	0.319	6.1	LOS A	1.8	13.0	0.43	0.32	0.43	46.5
Approach		468	3.0	493	3.0	0.319	3.6	NA	1.8	13.0	0.43	0.32	0.43	47.0
West: Garbolino Road														
30	L2	224	3.0	236	3.0	0.363	6.1	LOS A	1.8	13.0	0.45	0.69	0.53	44.9
32	R2	92	3.0	97	3.0	0.363	10.9	LOS B	1.8	13.0	0.45	0.69	0.53	44.5
Approach		316	3.0	333	3.0	0.363	7.5	LOS A	1.8	13.0	0.45	0.69	0.53	44.8
All Vehicles		1076	3.0	1133	3.0	0.363	4.0	NA	1.8	13.0	0.32	0.36	0.34	46.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Tara - Cove)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tara Road														
2	T1	68	3.0	72	3.0	0.319	0.5	LOS A	1.9	13.7	0.27	0.47	0.27	46.8
3	R2	429	3.0	452	3.0	0.319	5.0	LOS A	1.9	13.7	0.27	0.47	0.27	45.9
Approach		497	3.0	523	3.0	0.319	4.4	NA	1.9	13.7	0.27	0.47	0.27	46.0
East: Cove Road														
4	L2	429	3.0	452	3.0	0.371	4.8	LOS A	1.9	13.9	0.15	0.52	0.15	46.2
6	R2	50	3.0	53	3.0	0.371	9.3	LOS A	1.9	13.9	0.15	0.52	0.15	45.7
Approach		479	3.0	504	3.0	0.371	5.3	LOS A	1.9	13.9	0.15	0.52	0.15	46.1
North: Tara Road														
7	L2	50	3.0	53	3.0	0.056	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	48.0
8	T1	50	3.0	53	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.5
Approach		100	3.0	105	3.0	0.056	2.3	NA	0.0	0.0	0.00	0.27	0.00	48.2
All Vehicles		1076	3.0	1133	3.0	0.371	4.6	NA	1.9	13.9	0.19	0.47	0.19	46.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Cove - Old Waipu)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Waipu Road														
1	L2	9	0.0	9	0.0	0.130	6.6	LOS A	0.4	2.9	0.67	0.84	0.67	43.1
3	R2	47	0.0	49	0.0	0.130	11.8	LOS B	0.4	2.9	0.67	0.84	0.67	42.7
Approach		56	0.0	59	0.0	0.130	10.9	LOS B	0.4	2.9	0.67	0.84	0.67	42.8
East: Cove Road														
4	L2	47	0.0	49	0.0	0.287	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.1
5	T1	474	3.0	499	3.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.6
Approach		521	2.7	548	2.7	0.287	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.5
West: Cove Road														
11	T1	474	3.0	499	3.0	0.270	0.1	LOS A	0.1	1.0	0.03	0.01	0.03	49.8
12	R2	9	0.0	9	0.0	0.270	7.8	LOS A	0.1	1.0	0.03	0.01	0.03	48.9
Approach		483	2.9	508	2.9	0.270	0.3	NA	0.1	1.0	0.03	0.01	0.03	49.8
All Vehicles		1060	2.7	1116	2.7	0.287	0.9	NA	0.4	2.9	0.05	0.07	0.05	49.2

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [TOT_SAT Peak (Site Folder: Moir - Urlich)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total] veh/h	HV] %	DEMAND FLOWS [Total] veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh.] veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Moir Street														
5	T1	821	2.0	864	2.0	0.476	0.5	LOS A	0.7	4.7	0.07	0.01	0.11	49.5
6	R2	17	2.0	18	2.0	0.476	13.4	LOS B	0.7	4.7	0.07	0.01	0.11	48.5
Approach		838	2.0	882	2.0	0.476	0.7	NA	0.7	4.7	0.07	0.01	0.11	49.5
North: Ulrich Drive														
7	L2	17	2.0	18	2.0	0.173	9.0	LOS A	0.5	3.5	0.84	0.93	0.85	38.7
9	R2	17	2.0	18	2.0	0.173	32.1	LOS D	0.5	3.5	0.84	0.93	0.85	38.4
Approach		34	2.0	36	2.0	0.173	20.5	LOS C	0.5	3.5	0.84	0.93	0.85	38.6
West: Moir Street														
10	L2	17	2.0	18	2.0	0.414	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.2
11	T1	739	2.0	778	2.0	0.414	0.2	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
Approach		756	2.0	796	2.0	0.414	0.3	NA	0.0	0.0	0.00	0.01	0.00	49.7
All Vehicles		1628	2.0	1714	2.0	0.476	0.9	NA	0.7	4.7	0.06	0.03	0.07	49.3

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.