TRAFFIC PLANNING CONSULTANTS LTD

PROPOSED PLAN CHANGE

79 ORMISTON ROAD

FLAT BUSH

MANUKAU

INTEGRATED TRANSPORT ASSESSMENT

Prepared By:
Bryce Hall and
Andrew Temperley

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Auckland Office:
P O Box 60-255, Titirangi, Auckland 0642
Level 1, 400 Titirangi Road, Titirangi Village
Tel: (09) 817 2500
Fax: (09) 817 2504
www.trafficplanning.co.nz

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TABLE OF CONTENTS

Table of Figures

Attachments

1. 2026 Traffic Flows – Consented Development
2. 2026 Traffic Flows – Proposed Plan Change
3. 2026 SIDRA Analysis Results – Consented Development
4. 2026 SIDRA Analysis Results – Proposed Plan Change
5. Travel Plan Strategy

1.0 INTRODUCTION

This report examines and describes the traffic and parking effects of a proposal to rezone the site at 79 Ormiston Road in Flat Bush from Business – Light Industry to Business – Mixed Use under the Auckland Unitary Plan – Operative in Part (AUP-OIP) to enable a range of retail, commercial, and residential type activities to establish on the site, which are described in more detail in Section 4.0 of this report. The site previously had a Business zoning that allowed for mixed use development under the former Manukau City Council District Plan.

The report specifically describes the existing traffic environment, the proposal, Unitary Plan provisions, an assessment of traffic related effects and an assessment against the relevant Unitary Plan criteria.

The location of the development site is shown in Figure 1.

Source: https://unitaryplanmaps.aucklandcouncil.govt.nz/upviewer/

Figure 1 – Site Location

By way of a summary of the detail contained within this report, it can be stated that the potential transportation effects of the activities contemplated by a Mixed Use zone can be accommodated on the road network without compromise to its function, capacity or safety.

2.0 PLANNING CONTEXT

2.1 AUP-OIP Business – Mixed Use Zone Provisions and Objectives

The AUP-OIP provides the following description and objectives associated with a Business – Mixed Use Zone, in relation to its geographical, land-use and transport context:

The Business – Mixed Use Zone is typically located around centres and along corridors served by public transport. It acts as a transition area, in terms of scale and activity, between residential areas and the Business – City Centre Zone, Business – Metropolitan Centre Zone and Business – Town Centre Zone.

Development at 79 Ormiston Road would serve to fulfil these objectives based on its strategic location at the intersection of two arterial road corridors:

- **Te Irirangi Drive Corridor**, which provides strategic north-south linkage between the Metropolitan Centre Zones of Manukau and Botany. The proposed Airport to Botany Rapid Transit project, discussed in the following section of this report, will enhance the strategic linkage between these two Metropolitan Centres and the subject site.

- **Ormiston Road Corridor**, which provides a strategic linkage between the Business – Town Centre Zones of Otara and Ormiston, as well as serving Residential – Terrace Housing and Apartment Building and Business – Light Industry Zones. The corridor also has existing bus service provision between Middlemore Hospital, Otara, Flat Bush and Mission Heights.

The Strategic Planning Context of the subject site is illustrated in Figure 2.

The proposed mix of land-use activities at 79 Ormiston Road would serve to provide appropriate land-use transition and integration along both corridors, as well as providing opportunity for enhanced public transport provision and usage.

Provisions for Building height within the Business – Mixed Use Zone

The Business – Mixed Use Zone includes the following provisions in relation to building heights:

There is a range of possible building heights depending on the context. Provisions typically enable heights up to four storeys. Greater height may be enabled in areas close to the city centre, metropolitan centres and larger town centres.

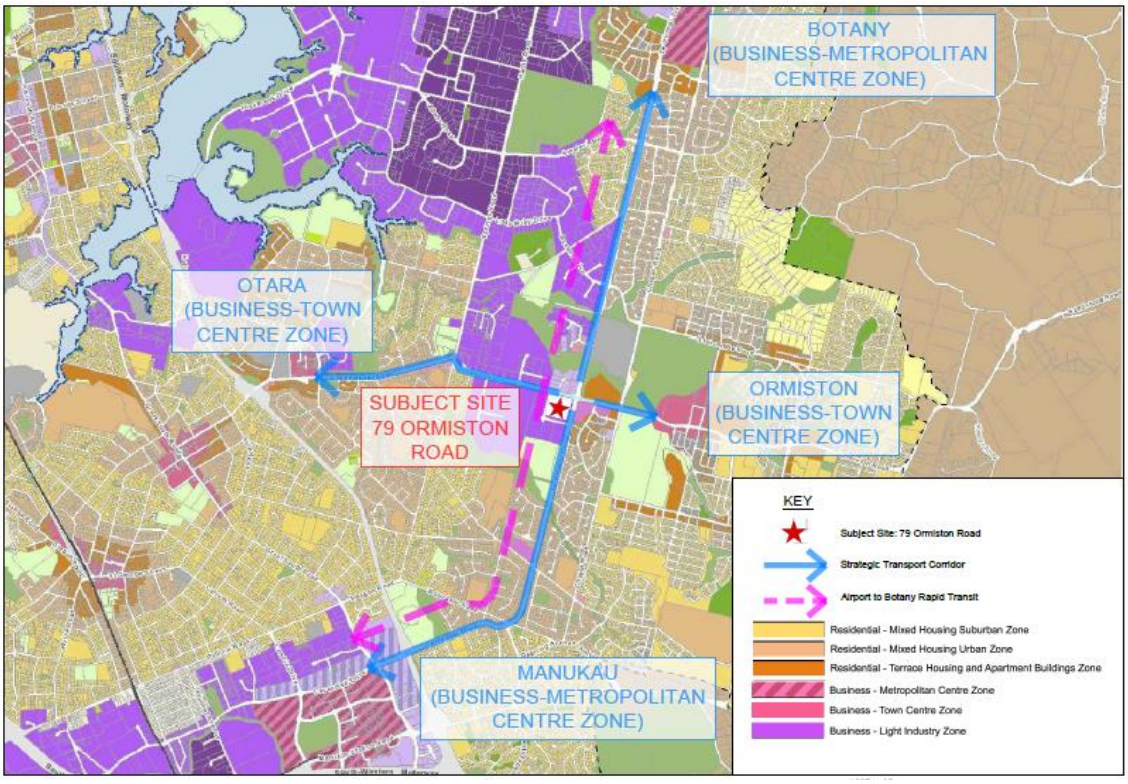


Figure 2 – 79 Ormiston Road Strategic Planning Context

The zone provisions allow for a building height greater than the standard zone height through the Height Variation Control, provided that this supports key criteria. These include efficient use of land, support towards public transport, support towards key amenities and support by the status of the centre in the centres hierarchy, as described above, in relation to the role of the Business – Mixed Use Zone as a transition area. Additional height provisions for the development at 79 Ormiston Road would hence support the transition between the Metropolitan Centre and Town Centre zones along the Te Irirangi Drive and Ormiston Road corridors, through increased scale of activity and support towards key amenities.

Support towards objectives of adjacent AUP-OIP Zonings

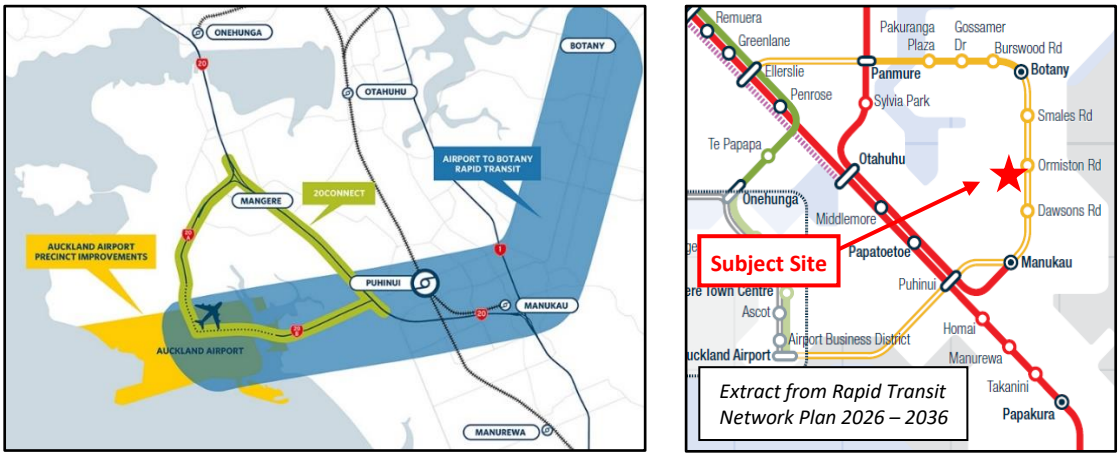
The additional retail, employment and residential opportunities provided by the development at 79 Ormiston Road also support the objectives of adjacent zones. These include the following:

- **'Business Local Centre' Zone (Botany Junction Shopping Centre)** on the opposite side of Te Irirangi Drive – The zone primarily provides for the local convenience needs of surrounding residential areas and includes local retail, commercial and employment opportunities. Additional residential activity at 79 Ormiston Road would hence reinforce demand for local retail and amenities of this zone within a walkable distance of the subject site.

- **'Terrace Housing and Apartment Buildings' (THAB) Zones**, which apply off Ormiston Road to the east – THAB objectives include efficient use of land and infrastructure, through increasing the capacity and density of housing, ensuring that residents have convenient access to services, employment, education facilities, retail and entertainment opportunities. Development at 79 Ormiston Road would hence serve to further improve the choice of services, employment and retail opportunities within convenient and walkable access of residents.

2.2 Airport to Botany Rapid Transit Project

Auckland Transport are currently developing proposals for a future mass rapid transit system, connecting Auckland Airport, Manukau and Botany, as part of Auckland's Rapid Transit Network (RTN) as shown in Figure 3. This project is currently in the early stages of investigation and business case development.



Source: https://at.govt.nz/projects-roadworks/airport-to-botany-rapid-transit/

Figure 3 – Airport to Botany Rapid Transit Project

The exact route and mode choice for the corridor between Manukau and Botany are not yet confirmed, although it is currently expected to be bus rapid transit, and that it will include a stop on either Ormiston Road or Te Irirangi Drive in the vicinity of the subject site. It is currently envisaged to be delivered between 2026 and 2036.

The Airport to Botany Rapid Transit corridor is recognised as a key strategic component of the Auckland Transport Alignment Project (ATAP), which previously recognised the need to protect the route. The updated ATAP package in April 2018 includes the provision of bus lanes from the airport to Botany, although the exact corridor is not confirmed.

The proposed rapid transit project would have notable benefits for the subject site, in enhancing public transport accessibility and encouraging greater levels of modal shift in local travel patterns. Furthermore, it would serve to enhance the strategic role of the subject site as a Business – Mixed Use Zone, in fulfilling the function of a 'transition area'

on the public transport corridor connecting the Business – Metropolitan Centres of Manukau and Botany. Reciprocally, intensified residential development under the proposed plan change would enhance the case for a high volume strategic public transport service along the Te Irirangi Drive corridor.

3.0 EXISTING TRANSPORT ENVIRONMENT

3.1 Road Network

The site is bound by Te Irirangi Drive to the east and Ormiston Road to the north, as shown in Figure 4.

Source: https://unitaryplanmaps.aucklandcouncil.govt.nz/upviewer/

Figure 4 – Local Traffic Environment

3.1.1 Te Irirangi Drive

Te Irirangi Drive is an arterial road with the primary function to connect the retail centres of Manukau and Botany. Between Manukau and Botany, Te Irirangi Drive travels primarily through residential areas, as well as some retail and industrial areas, with most primary access taking place at signalised intersections, including the signalised intersection with Ormiston Road at the north-eastern corner of the subject site.

It is a four-lane median separated road as shown in Figure 5, with additional lanes provided on the approaches to key intersections. It is subject to an 80 km/hr speed limit in the vicinity of the subject site.

Figure 5 – Te Irirangi Drive Traffic Environment

Traffic flows on Te Irirangi Drive are in the order of 30,000 vehicles per day, based on 2017 traffic counts obtained from Auckland Transport. Weekday peak hour traffic flows are in the order of 2,800 vehicles per hour during both morning and evening peak times.

3.1.2 Ormiston Road

Ormiston Road is an arterial road which follows an east-west axis between industrial areas of East Tamaki and the residential suburbs of Ormiston, Flat Bush and Mission Heights. It is a four-lane road with a painted median in the vicinity of the subject site as shown in Figure 6, with additional lanes provided on the approach to the signalised intersection with Te Irirangi Drive. It is subject to a 60 km/hr speed limit.

Figure 6 – Ormiston Road Traffic Environment

Traffic counts on Ormiston Road are in the order of 17,500 vehicles per day with morning and evening peak hour traffic flows in the order of 1,400 vehicles per hour, based on 2017 data.

3.2 Future Traffic Flows

Forecast future traffic flow data for 2026, based on information supplied by Auckland Transport from the Saturn model for the area, has been obtained. Future peak hour traffic flows on Te Irirangi Drive are in the order of 3,200 vehicles per hour during both morning and evening peak times in 2026, which corresponds with a forecast daily traffic flow of 34,300 vehicles per day. This represents an increase in traffic on Te Irirangi Drive of 14.4% compared to recorded 2017 traffic flows.

Peak hour traffic flows on Ormiston Road are in the order of 1,500 vehicles per hour during both morning and evening peak times in 2026, which corresponds with a forecast daily flow of 17,500 vehicles per day. This is similar to traffic levels recorded on Ormiston Road in 2017.

3.3 Traffic Safety

Information from the New Zealand Transport Agency's "Crash Analysis System" for the five-year period, January 2013 to December 2017, was obtained for the sections of Te Irirangi Drive and Ormiston Road adjoining the subject site.

3.3.1 Te Irirangi Drive Crashes

Four crashes have been recorded along Te Irirangi Drive in the immediate vicinity of the intersection serving the subject site. However, none of these crashes were related to the intersection as it has only recently been constructed.

Three involved vehicles losing control on the northbound carriageway and the other was a three-car rear end crash in the northbound direction.

None of the crashes involved pedestrians or cyclists.

3.3.2 Ormiston Road Crashes

Ten crashes have been recorded along Ormiston Road in the immediate vicinity of the intersection with subject site's spine road. However, none of these crashes were related to the intersection with the spine road.

The ten crashes that occurred are summarised as follows:

- Four were related to vehicles manoeuvring at or approaching the intersection with Laidlaw Way;
- Four were associated with vehicle turning manoeuvres at the intersection with Bishop Lenihan Place;
- One involved a vehicle overtaking on Ormiston Road; and

- The other involved a vehicular collision on the pedestrian footway immediately to the west of the intersection with the spine road, which was suspected to be drug related.

None of the crashes involved pedestrians or cyclists.

3.3.3 Te Irirangi Drive / Ormiston Road Intersection Crashes

Sixty-six crashes have been recorded at the intersection of Te Irirangi Drive / Ormiston Road over the 5-year period, reflecting high traffic usage of two arterial roads.

The most prominent crash types occurring at the intersection were rear end / obstruction crashes and crossing / turning crashes, which accounted for 58% and 27% of all crash types respectively. From these crashes, the following key observations can be made:

- The majority of these were associated with 'straight' manoeuvres t through the intersection, namely the north-to-south and south-to-north manoeuvres on Te Irirangi Drive and the west-to-east manoeuvre on Ormiston Road;
- The latter two of these manoeuvres would become more heavily trafficked as a result of the development;
- The east-to-west manoeuvre on Ormiston Road was not associated with any recurring crash patterns; and
- None of the left-turn or right-turn manoeuvres through the intersection appear to have been associated with any recurring crash patterns.

Of particular interest are the right-turn manoeuvres from Te Iriririrangi Drive north into Ormiston Road west and from Ormiston Road west into Te Irirangi Drive South, which would be subject to the greatest material increases in traffic as a result of the proposal.

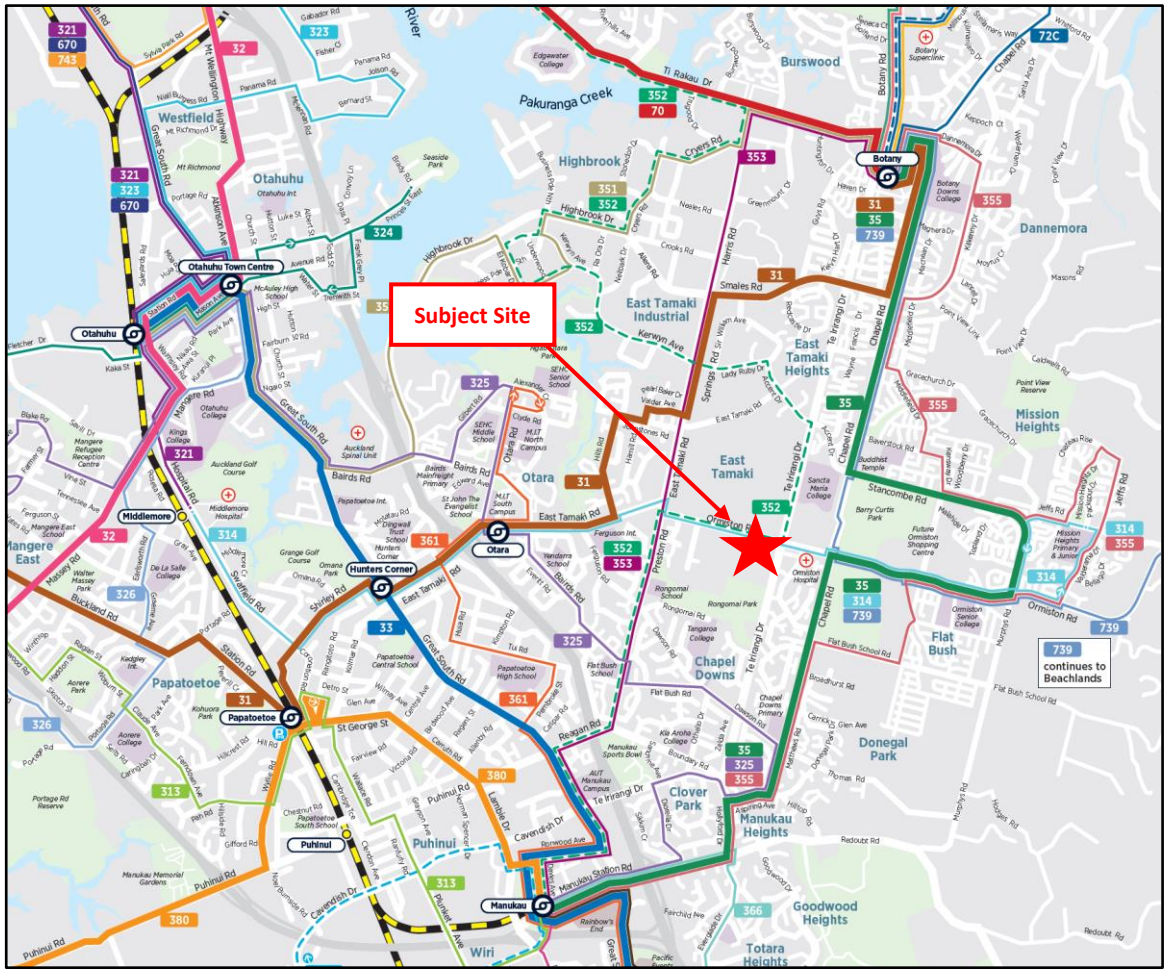
The remaining 16% of crashes related to overtaking and loss of control, the numbers and specific locations of which do not appear to indicate any existing traffic safety problems.

None of the crashes involved pedestrians or cyclists.

Overall, the reported crash history would suggest an existing traffic safety problem related to rear end crashes, on the Te Irirangi Drive through movements and the Ormiston Road eastbound through movements, which should be investigated by the Road Controlling Authority.

3.4 Public Transport Accessibility

Information from Auckland Transport's website for public transport routes in the vicinity of the subject site are shown in Figure 7.



Source: https://at.govt.nz/bus-train-ferry/timetables/#South

Figure 7 – Flat Bush Public Transport

The site is served by bus stops on Ormiston Road, located approximately 100 metres to the east of Florence Carter Avenue site, which are served by two bus routes, namely the routes 352 and 314.

An additional pair of bus stops is provided on Ormiston Road to the east of Te Irirangi Drive, opposite the Botany Junction Shopping Centre, which are served only by the Route 314.

Route 352 operates between Panmure and Manukau, travelling via Highbrook and East Tamaki, during morning and afternoon peak times only, at a typical frequency of three buses per hour and the Route 314 operates between Mission Heights and Middlemore Hospital, at a typical daytime frequency of two buses per hour.

There are no bus stops on Te Irirangi Drive in the vicinity of the subject site.

Based on the above, the site can be considered to be appropriately accessible to the passenger transport network in this immediate location and the wider Auckland Region, with passenger transport interchange connections at Otara, Botany and the Manukau City centre. Public transport accessibility is expected to be enhanced by the future Airport to Botany Rapid Transit project, although the exact location of a stops in the vicinity of the subject site are still to be confirmed.

3.5 Pedestrian Facilities

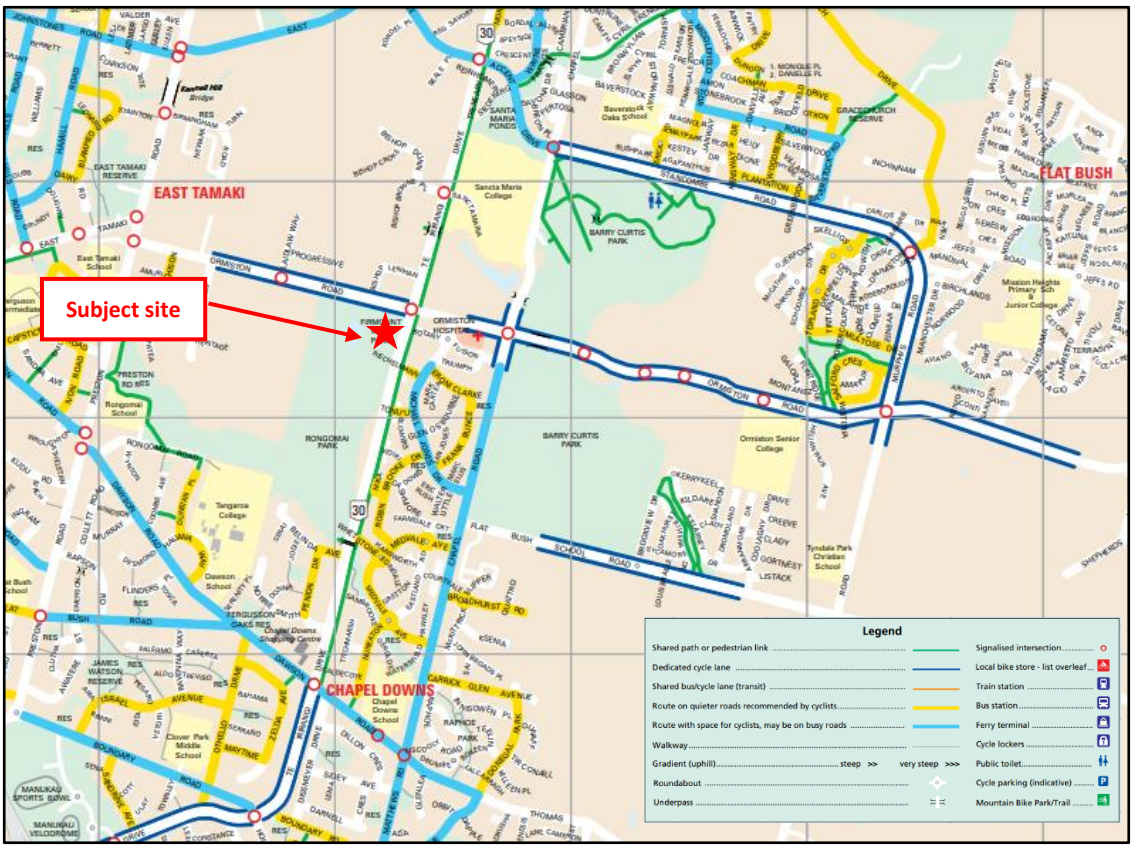
Footpaths are provided along both sides of Te Irirangi Drive and Ormiston Road in the vicinity of the subject site, as well as along Florence Carter Road providing access through the site itself. Pedestrian crossing phases are included at the signalised intersection of Te Irirangi Drive and Ormiston Road and at the traffic signals provided on Ormiston Road to access the subject site.

3.6 Cyclist Facilities

The cycle routes available in the vicinity of the subject site are shown in Figure 8. This includes on-road cycle lanes along Ormiston Road, which provide a continuous connection between East Tamaki, Ormiston Town Centre, and Flat Bush.

A shared pedestrian and cycle path runs along the length of Te Irirangi Drive, which forms part of a continuous cycleway connection between Botany Town Centre and Manukau City Centre.

The site can therefore be considered to be accessible by bicycle, for those who choose to travel by this mode.



Source: https://at.govt.nz/cycling-walking/cycle-walking-maps/

Figure 8 – Ormiston Road Cycling Environment

3.7 Walking and Cycling Accessibility

The accessibility of the site by walking and cycling is illustrated in Figure 9. In general, 1,000 metres is accepted as being the maximum desirable walking distance and 5,000 metres the maximum desirable cycling distance.

Key destinations within desirable walking distance of the site include the Botany Junction Shopping Centre, industrial areas to the west on Ormiston Road, and nearby residential areas to the south and west of the site.

Key destinations within desirable cycling distance of the subject site include the town centre areas of Manukau, Botany, Ormiston and Otara, which are all within a cycling time of around 20 minutes. This level of accessibility further serves to enhance the strategic role of the subject site as a Business – Mixed Use Zone, acting as a 'transition area' between the key Business – Metropolitan Centres and town centre areas.

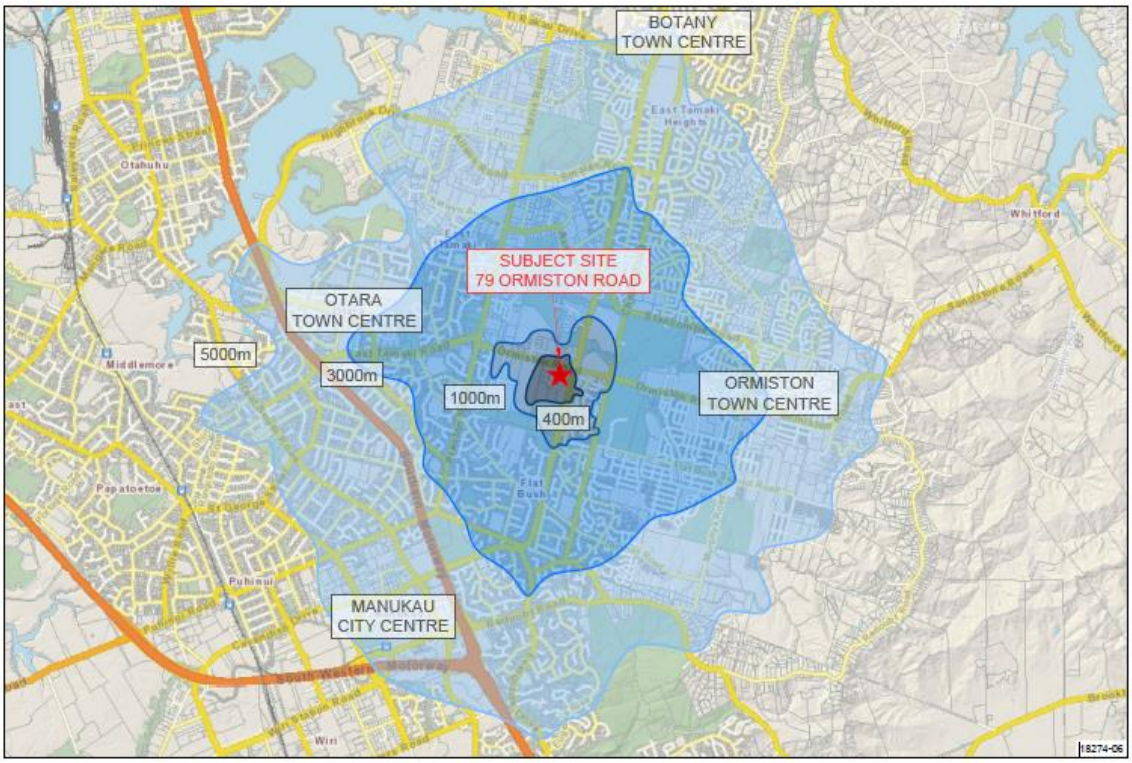


Figure 9 – Walking and Cycling Isochrones

4.0 THE PROPOSAL

4.1 Previous Consents Granted for Development of the Site

Between August 2016 and June 2017, a series of consents were granted for mixed land-use activities on the site of 79 Ormiston Road across the five blocks shown in Figure 10.

The consented development included:

- Ten Lots (Lots 1 to 10) ranging in size from approximately 7,236m^2 to 29,056m^2;
- Two access roads (Road 1 and Road 2) connecting Te Irirangi Drive to Ormiston Road through the site; and
- A roundabout that connects the internal Road 1 and Road 2.

4.1.1 Consented Transport Infrastructure

The existing vehicle access to Te Irirangi Drive is approximately 250 metres south of the Te Irirangi Drive / Ormiston Road intersection.

The intersection of Florence Carter Avenue with Te Irirangi Drive is priority controlled and allows left in / left out movements only. A 100 metre-long deceleration lane has

been provided for left turn vehicle movements into the site. A 70-degree high angle slip lane approach is provided for left turn movements out of the site.

The existing vehicle access to Ormiston Road is approximately 240 metres west of the Te Irirangi Drive / Ormiston Road intersection and 310 metres east of the Ormiston Road / Laidlaw Way intersection. The Give Way controlled intersection of Bishop Lenihan Place and Ormiston Road is approximately 80 metres east of the Florence Carter Avenue intersection with Ormiston Road.

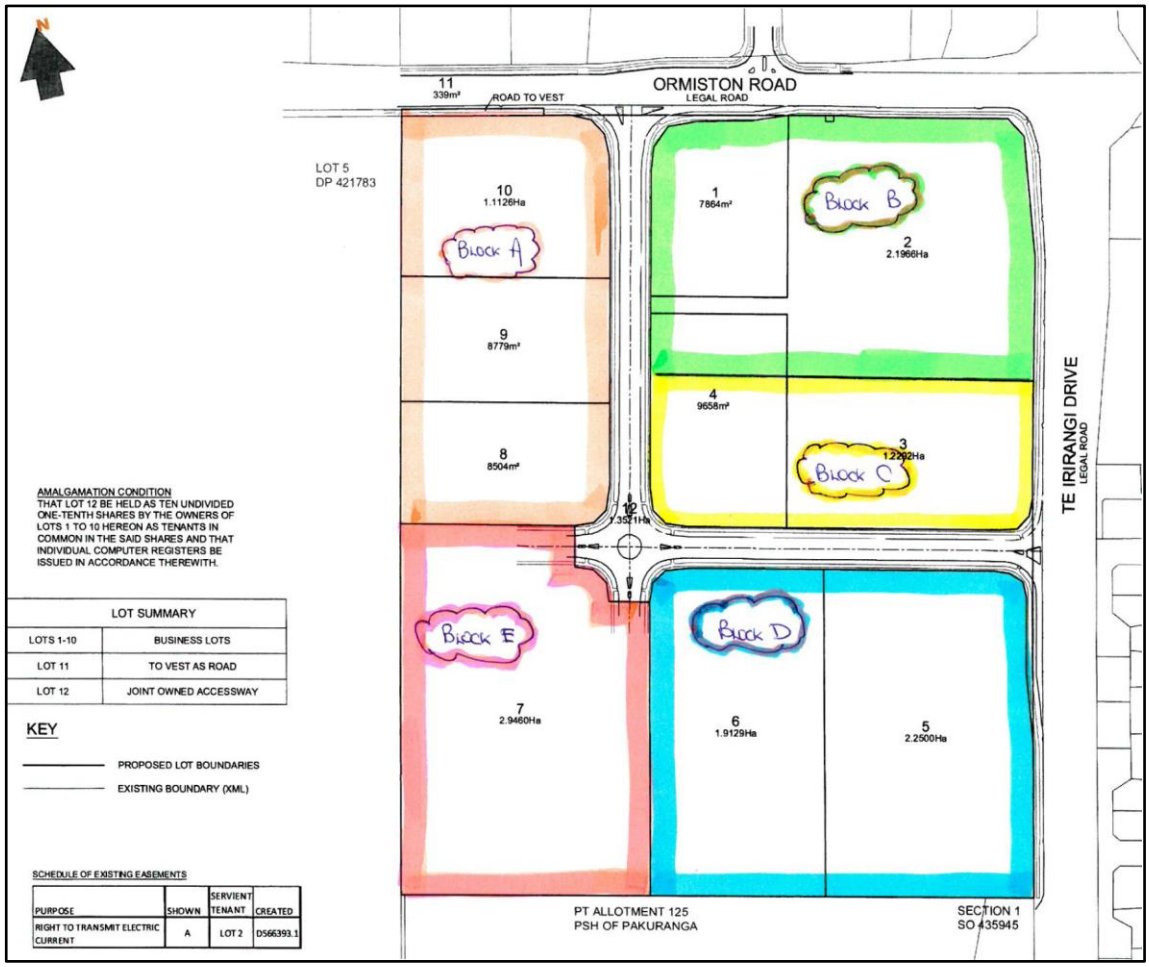


Figure 10 – Consented Subdivision and Site Arrangement

The Florence Carter Avenue intersection with Ormiston Road is traffic signal controlled. The intersection allows for full turning movements to and from the site and provides for pedestrians. A 60 metre-long deceleration lane is provided for left turn vehicle movements into the site and a 70 degree high angle slip lane approach is provided for left turn movements out of the site.

Both access intersections with Te Irirangi Drive and Ormiston Road are designed to accommodate semi-trailer trucks.

The intersections and roads have been formed as shown in Figure 11.


Figure 11 – Consented Development Infrastructure

4.1.2 Consented Land-Use

A range of different activities were consented for each Block as summarised below:

Block A (Application numbers 50566, P50566 and LUC60290893)

- A retail development (2.84 hectares), including a supermarket, a department store and other commercial activities;
- 492 parking spaces;
- Two new vehicle access driveways and service vehicle access from internal roads, service vehicle exit onto Ormiston Road; and
- Approved on 29 June 2017.

Block B (Application numbers 50394 & P50394)

- A mixed-use commercial development;
- 651 parking spaces;
- A new vehicle access driveway, a service vehicle access and basement parking access from internal roads; and
- Approved on 18 August 2016.

Block C (Application numbers 50539 & P50539)

- A traveller's accommodation development;
- 206 parking spaces;
- A new vehicle access driveway and a service vehicle access from internal roads; and
- Approved on 19 August 2016.

Block D (Application numbers 50536 & P50536)

- A hotel development;
- 524 parking spaces;
- A new vehicle access driveway and a service vehicle access from internal roads; and

- Approved on 19 August 2016.

Block E (Application numbers 50391 & P50391)

- A mixed-use commercial development, based around a bulk trade retail development, with an associated café and office;
- 225 parking spaces;
- A new vehicle access driveway and a service vehicle access from internal roads; and
- Approved on 7 September 2017.

4.2 Proposed Mixed Use Zone

As described earlier, the proposal involves rezoning the site from Business – Light Industry to Business – Mixed Use. There are a range of permitted activities within the Mixed-Use zone as indicated in the AUP-OIP and summarised in Table 1 below.

Table 1 – Mixed-Use Zone Permitted Activities

Activity	
Accommodation	Dwellings
	Integrated residential development
	Supported residential care
	Visitor accommodation and boarding houses
Commerce	Commercial services
	Drive-through restaurants
	Entertainment facilities
	Food and beverage
	Offices up to 500m^2 Gross Floor Area (GFA) per site
	Retail up to 200m^2 GFA per tenancy
	Supermarkets up to 450m^2 GFA per tenancy
Community	Artworks
	Care centres
	Community facilities
	Education facilities
	Healthcare facilities
	Recreation facility
	Tertiary education facility
Industry	Industrial laboratories
	Light manufacturing and servicing
	Repair and maintenance services
	Warehousing and storage

While in most Plan Change proposals, there is a level of uncertainty in relation to what types and quantum of future activities may be anticipated, the current applicant aspirations for the site are not dissimilar to those described above for the consented development activities with the likely mix of activities described in Table 2.

Table 2 – Current Applicant Development Aspirations

Block	Consented Activity	Size (m^2)	Plan Change Activity	Size (m^2)
Block A	Slow Trade Retail	5,365	Slow Trade Retail	5,365
	Supermarket	3,891	Supermarket	3,891
	Specialty Retail	2,778	Specialty Retail	2,778
	Office	2,382	Office	2,382
	Subtotal	*14,507*		*14,507*
Block B	Specialty Retail	11,553	Specialty Retail	11,553
	Office	11,203	Office	11,203
	Subtotal	*22,756*		*22,756*
Block C	Travellers' Accommodation	240 Units	Residential Apartments	114 Units
Block D	Hotel	490 Units	Retirement Home	474 Units
Block E	Large Format Hardware	11,090	Large Format Hardware	11,090
	Specialty Retail	2,302	Specialty Retail	2,302
	Subtotal	*13,392*		*13,392*

In essence the current applicant aspirations for the site replace previously consented Travelers Accommodation with Residential Apartments (approximately 114 units) on Block C and the previously consented Hotel on Block D with a Retirement Village of approximately 474 units.

The Plan Change also anticipates additional height above the current 18 metre height limit. The areas of additional height are shown in Figure 12 with the height graduated away from Ormiston Road and Te Irirangi Drive on the eastern part of the site.

Heights of up to 28 metres could be achieved across parts of the site or an additional 10 metres from that anticipated under the provisions of a Mixed-use zone.

The areas of additional height cover Blocks B, C and D.

To provide a basis for determining the potential activity that may arise from the additional height, the previously consented building footprints for these Blocks have been used and then extended to the height limit. This results in an additional two to three building levels depending on the floor to floor height adopted. This results in the additional activities from that indicated in Table 2 as shown in Table 3.

Figure 12 – Areas of Additional Height

Table 3 – Potential Additional Activities Arising from Additional Height

Location	Activity Type	Potential Additional Size
Block B	Office	+ 6,718m^2
Block C	Residential Apartments	+ 85 units
Block D	Retirement Village	+ 208 units

The potential additional activity sizes indicated in Table 3 have been added to the Plan Change activity mix shown in Table 2 to determine the potential levels of traffic generation that may arise from the site as a result of the activities enabled by the Plan Change.

4.3 Traffic Generation Potential – Consented Development

A further breakdown of land-use activities within each of the five blocks for the consented developed is summarised below in Table 4 together with the trip generating potential of the consented development. The information summarised in Table 4 has been taken from the Transport Assessments prepared for the consented developments.

The Transport Assessments for the previously consented development of the site focussed solely on the weekday PM Peak Hour which was identified as the period of highest traffic generation. However, for completeness for this assessment, traffic generation of the weekday AM Peak Hour has also been included based on standard traffic generation rates for the anticipated activities.

Table 4 – Peak hour traffic generation potential of Consented Development

Block	Consented Activity	Size (sqm)	AM Peak Hour Trip Generation Rate	AM Peak Hour Trip Generation	PM Peak Hour Trip Generation Rate	PM Peak Hour Trip Generation
Block A	Slow Trade Retail	5,365	0.5/100sqm	27	1.5/100sqm	80
	Supermarket	3,891	1/100sqm	39	11.6/100sqm	452
	Specialty Retail	2,778	1/100sqm	28	3.5/100sqm	96
	Office	2,382	2/100sqm	48	2/100sqm	49
	Subtotal	*14, 507*		*142*		*678*
Block B	Specialty Retail	11,553	1/100sqm	116	3.5/100sqm	399
	Office	11,203	2/100sqm	224	2/100sqm	224
	Subtotal	*22, 756*		*340*		*623*
Block C	Travellers' Accommodation	240 Units	0.5 / unit	120	0.4 / unit	96
Block D	Hotel	490 Units	0.2 per unit	98	0.6 per unit	294
Block E	Large Format Hardware	11,090	2.05/100sqm	227	4.8/100sqm	536
	Specialty Retail	2,302	1/100sqm	23	3.5/100sqm	79
	Subtotal	*13, 392*		*250*		*615*
Total Peak Hour Traffic Generation				**950**		**2,306**

On this basis, the consented development would have a weekday AM Peak Hour traffic generation of about 950 traffic movements per hour and a weekday PM Peak Hour generation of about 2,300 traffic movements per hour.

4.4 Traffic Generating Potential – Proposed Plan Change

As indicated above, in terms of potential land use activities following the plan change, most of these will remain the same as those allowed under the current consent, with the exception of the addition of a retirement village in place of the proposed hotel and residential units in the place of traveller's accommodation.

To provide a basis for estimating the traffic generation potential of the change in activities on the site, typical traffic generation rates have been sourced from:

- The New Zealand Trips and Parking Database (NZTPD);
- New Zealand Transport Agency research report 453 "Trips and Parking related to Land Use" released in November 2011 (NZTA 453);
- New South Wales Road and Maritime Services publication "Guide to Traffic Generating Developments" (RMS); and
- Institution of Transport Engineers (ITE) "Trip Generation Manual".

4.4.1 Retirement Village

Traffic generation rates appropriate to a retirement village development have been obtained from a survey carried out by Traffic Planning Consultants Ltd in November 2013 for Summerset Retirement Village in Manukau.

This survey indicates traffic generation rates of 0.2 trips per unit during the morning peak hour, 0.3 trips per unit during the middle of day and 0.25 trips per unit during the evening peak hour, based on traffic generated by non-serviced apartments, serviced apartments and care units.

4.4.2 Residential

The traffic generation potential of residential dwellings varies depending on the type of unit and the location of the development. The NZTPD indicates typical daily traffic generation rates of 8 to 10 traffic movements per dwelling per day with corresponding peak hour traffic generation rates of about 1 traffic movement per unit per hour.

In respect of directionality, typically in the morning peak hour 75% of the movements will be departures and 25% arrivals. In the evening peak hour, 65% will be arrivals and 35% departures.

The RMS publication indicates that traffic generation rates of smaller sized medium density residential developments can realistically be expected to be in the range of 4 to

5 traffic movements per unit per day with peak hour traffic generation in the range of 0.4 to 0.5 traffic movements per unit per hour.

For high density residential units in Metropolitan Regional (CBD) Centres the RTA publication indicates peak hour traffic generation rates of 0.24 traffic movements per unit and for Metropolitan Sub-Regional Centres it indicates peak hour traffic generation rates of 0.29 traffic movements per unit per hour. No daily traffic generation rates are provided but given standard relationships between peak hour and daily traffic generation rates; these would typically be in the range of 2 to 3 traffic movements per unit per day.

The ITE manual includes traffic generation information on a range of residential type accommodation. This information is summarised in Table 5.

Table 5 – ITE Peak Hour Residential Traffic Generation Rates

Classification	AM Peak Hour Rate	PM Peak Hour Rate
Low-Rise Apartment	0.47	0.58
High-Rise Apartment	0.30	0.35
Mid-Rise Apartment	0.30	0.39
Low-Rise Residential Condominium	0.66	0.83
High-Rise Residential Condominium	0.34	0.38
Average	0.41	0.51
85th Percentile	**0.52**	**0.64**

The ITE data suggests an overall average peak generation rate of 0.46 traffic movements per unit per hour and an 85th percentile rate of 0.63 traffic movements per unit per hour.

To provide a basis for assessment purposes, traffic generation rates of 6 to 8 traffic movements per unit per day have been used with peak hour traffic generation rates of 0.65 traffic movements per hour.

4.4.3 Summary of Traffic Generation with Plan Change

Given the above, Table 6 summarises the differences in trip generation associated with the land-use activities under the proposed Plan Change.

Table 6 – Peak hour traffic generation potential under Proposed Plan Change

Block	Land-Use Activity	Size (sqm)	AM Peak Hour Trip Generation Rate (per 100sqm or unit)	AM Peak Hour Trip Generation	PM Peak Hour Trip Generation Rate (per 100sqm or unit)	PM Peak Hour Trip Generation
Consented Development						
Block B	Office	11,202m^2	2	224	2	224
Block C	Travellers' Accommodation	240 Units	0.5 / unit	120	0.4 / unit	96
Block D	Hotel	490 Units	0.2 / unit	98	0.6 / unit	294
		Subtotals		*442*		*614*
Proposed Plan Change						
Block B	Office	17,920m^2	2	358	2	358
Block C	Residential Apartments	199 Units	0.65 / unit	130	0.65 / unit	130
Block D	Retirement Home	682 Units	0.2 / unit	136	0.25 / unit	171
		Subtotals		*624*		*659*
		Difference in Trip Generation (Blocks B, C & D)		***+182***		***+45***
		Whole Site Trip Generation under Current Consent		*950*		*2,306*
		Whole Site Trip Generation under Proposed Plan Change		**1,131**		**2,355**

Overall, the applicant development aspirations for the Plan Change generates 182 additional AM peak hour trips and 50 additional PM peak hour trips than the currently consented activities for the site.

The differences in land use activity and in turn the traffic generation potential can be attributed to the changes in activity for Blocks C and D and the additional office GFA enabled by the additional height proposed in Block B.

4.5 Vehicle Access

Vehicle access to the subject site is via two formed access roads, now known as Florence Carter Avenue, connecting Te Irirangi Drive and Ormiston Road, which were the subject of a previous consent. The consented and constructed intersection with Ormiston Road is shown in Figure 13 and that for Te Irirangi Drive is shown in Figure 14.

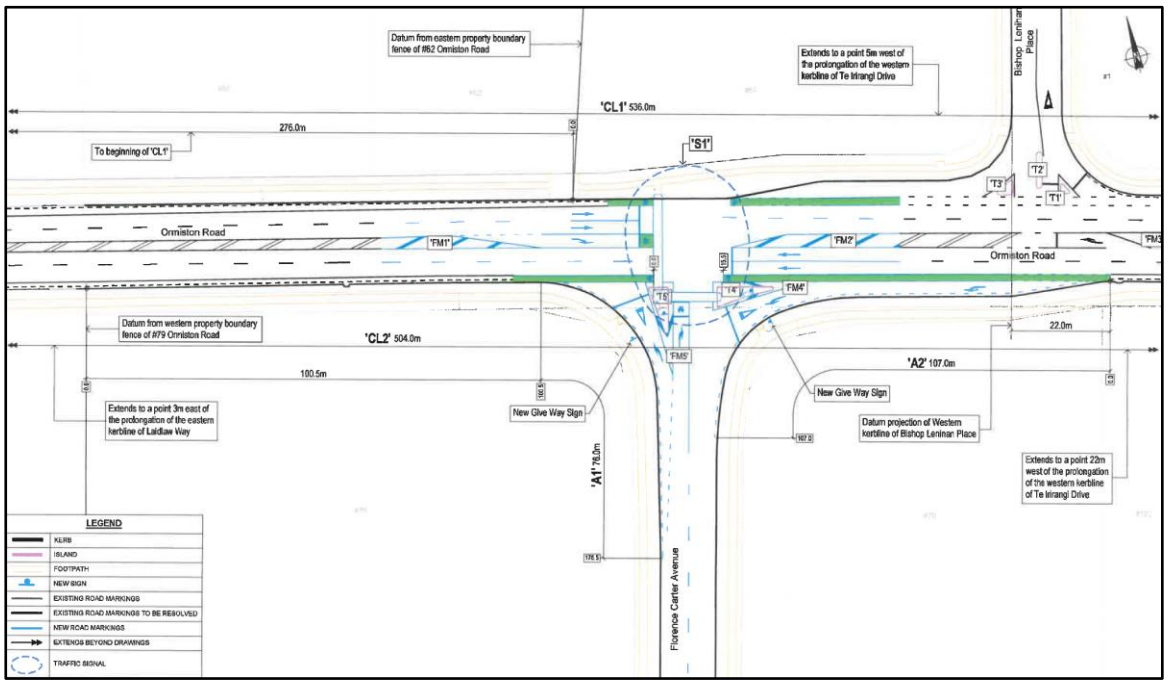


Figure 13 – Ormiston Road / Florence Carter Avenue Intersection

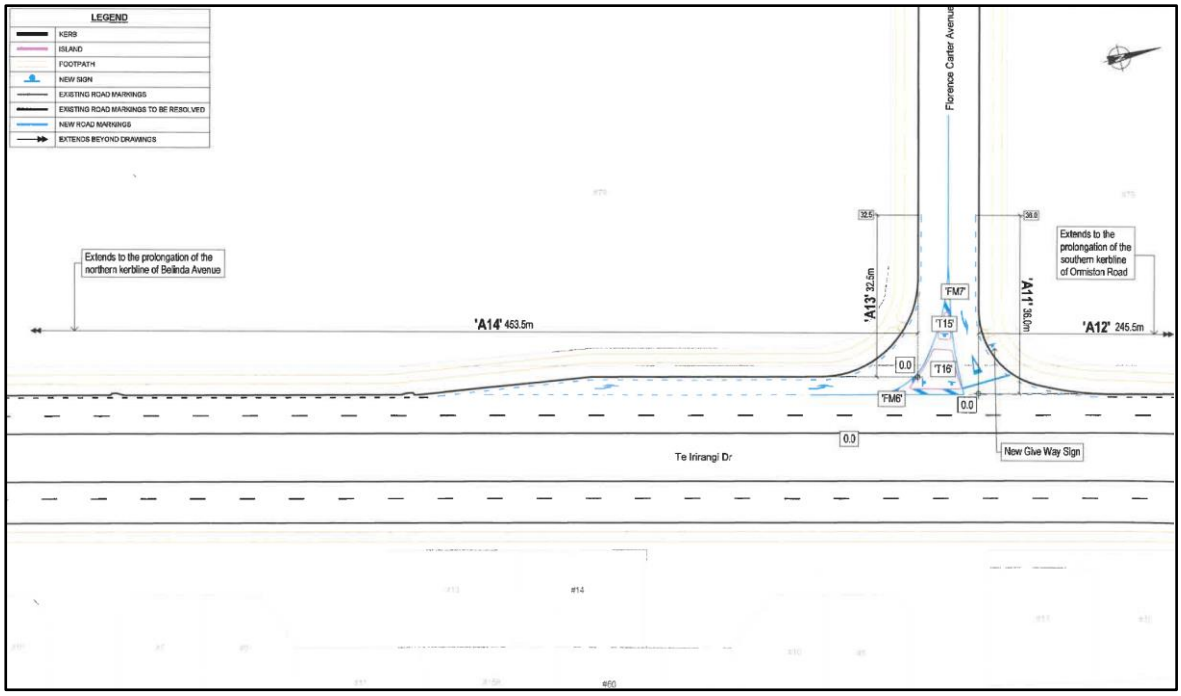


Figure 14 – Te Irirangi Drive / Florence Carter Avenue Intersection

Florence Carter Avenue follows a north-south axis south of Ormiston Road, at a recently constructed intersection, which is a full movement signalised intersection. The intersection also includes provision for pedestrian crossing movements, as well as a 60 metre long deceleration lane for left-turn vehicle movements into the site and a 70-degree high angle slip lane approach for left-turn movements out of the site.

Florence Carter Avenue follows an east-west axis, west of Te Irirangi Drive, from a left-in / left-out priority intersection. This intersection includes a 100 metre-long deceleration lane for left-turn movements into the site and a 70 degree high angle slip lane for left-turn movements out of the site.

Both access intersections with Te Irirangi Drive and Ormiston Road are designed to accommodate semi-trailer trucks and both have been constructed in accordance with the respective Engineering Plan Approvals granted by Auckland Council.

Where the two legs of Florence Carter Avenue intersect within the site, a roundabout has been provided.

Both roads will be vested as public roads.

4.6 Walking and Cycling Connections

As identified in Section 3.7 of this report, the site already benefits from continuous walking and cycling connections along both Ormiston Road and Te Irirangi Drive, which provide respective east-west and north-south strategic linkage for the site together with traffic signal controlled pedestrian crossings across Ormiston Road and Te Irirangi Drive. These routes provide linkage to a number of nearby local centres within a 20-minute cycling distance from the subject site.

The change in land-use activities proposed under the Plan Change, from short-term accommodation to residential land uses, would be expected to result in a greater generation of cycling trips. It would also contribute towards more of a balance between cycle trip generation and cycle trip attraction associated with the development as a whole.

5.0 AUCKLAND UNITARY PLAN - OPERATIVE IN PART

5.1 Traffic Generation

Standard E27.6.1 of the AUP-OIP sets out when resource consents as a restricted discretionary activity are required based on traffic generation. Such consent is required where an activity generates more than 100 vehicle movements in any hour where there is not a requirement for an assessment of transport or trip generation effects.

As the Proposed Plan Change generates more than 100 vehicle movements per hour, this Standard will be applicable and the relevant assessment criteria are considered later in this assessment.

5.2 Other AUP-OIP Standards

A range of standards exist under the AUP-OIP for the activities that will be developed on the site including those related to:

- Car parking (Standard E27.6.2 of the AUP-OIP);
- Cycle parking (Standard E27.6.2 (6) of the AUP-OIP);
- Loading and Servicing (Standard E27.6.3 of the AUP-OIP); and
- Vehicle Access (Standard E27.6.4 of the AUP-OIP);

Developments on the site would be anticipated to comply with the above standards unless a Resource Consent was granted for a non-compliance.

6.0 TRAFFIC EFFECTS OF THE PROPOSED PLAN CHANGE

6.1 Analysis Methodology

6.1.1 Assessment Process

The predominant effect of the proposal will be that associated with vehicles turning to and from the site on Ormiston Road and Te Irirangi Drive.

A four-step process has been used in the methodology to assess the traffic related effects of the Plan Change:

1. Trip Generation;
2. Trip Distribution;
3. Trip Assignment; and
4. Access and intersection operation of assigned trips.

In the first step, the amount of traffic generated is estimated. In the second step, the directions the trips use to approach and depart the development are estimated. In the third step, the trips are assigned to specific street segments and intersection turning movements. The fourth step involves analysing the impacts on vehicle access and intersection capacity associated with the development.

6.1.2 Future Design Year

While a timeframe for development completion under the Business-Mixed Use zone is unknown at this point in time, 2026 has been adopted as the future design year for assessment purposes. This design year is consistent with the future traffic flows available in the area from Auckland Transport and provides a timeframe of 8 years from 2018 for development to be completed.

The Auckland Transport Saturn model for the area only provides future "link" traffic flows and not future turning movements, particularly at the traffic signal controlled intersection of Ormiston Road and Te Irirangi Drive.

To derive these future turning movements at the intersection of Ormiston Road and Te Irirangi Drive, the turning movement counts that were carried out in the immediate area in 2015 as part of the Transport Assessments prepared for the consented developments on the site have been scaled up to reflect traffic growth on the underlying network as described in Section 3.2 of this report.

The site has an underlying Business – Light Industry zone. It is anticipated that the 2026 forecast traffic flows in the Auckland Transport model would include development on the subject site consistent with its underlying zone.

In assessing the traffic generating potential of the underlying zone, the following development parameters have been used:

- Total Gross Site Area 152,742m^2;
- Building Coverage 40%; and
- Single Level Buildings.

From these parameters, the activity mix shown in Table 7 has been used as a basis for estimating traffic generation potential of the underlying zone.

Table 7 – Business – Light Industry Activity Mix

Activity	Proportion of Area	GFA
Business Park	30%	18,330m^2
Warehouse / Industry	45%	27,495m^2
Factory Outlet Centre	25%	15,275m^2
TOTAL	100%	61,100m^2

Table 8 indicates traffic generation rates derived from the RMS and ITE publications for the anticipated activities.

Table 8 – AM and PM Peak Hour Trip Rates

Activity	AM Peak Hour	PM Peak Hour
Business Park	1.2 trips per 100m^2 GFA	1.1 trips per 100m^2 GFA
Warehouse / Industry	0.5 trips per 100m^2 GFA	1.0 trips per 100m^2 GFA
Factory Outlet Centre	0.7 trips per 100m^2 GFA	2.5 trips per 100m^2 GFA

On this basis, Table 9 indicates the anticipated traffic generation of the underlying Business zone that has been allowed for in the 2026 Saturn model.

Table 9 – AM and PM Peak Hour Traffic Generation

Activity	AM Peak Hour	PM Peak Hour
Business Park	220	202
Warehouse / Industry	137	275
Factory Outlet Centre	107	382
TOTAL	464	859

In terms of assessing effects of the proposal on the intersection of Te Irirangi Drive and Ormiston Road, the “net” increase in traffic between the underlying zone, the consented development and the anticipated Plan Change development has been used.

6.1.3 Trip Generation

As discussed in Section 4.0 of this assessment, weekday peak hour traffic generation of the Plan Change is anticipated to be in the order of 1,100 and 2,360 traffic movements per hour during the weekday AM and PM peak hours respectively.

As noted earlier, the applicant development aspirations for the Plan Change generates approximately 150 and 50 additional peak hour trips in the AM and PM Peak Hours respectively than the currently consented development for the site.

6.1.4 Traffic Distribution and Assignment

All peak hour development traffic has been distributed onto the local road network in a manner consistent with that shown in Figure 15.

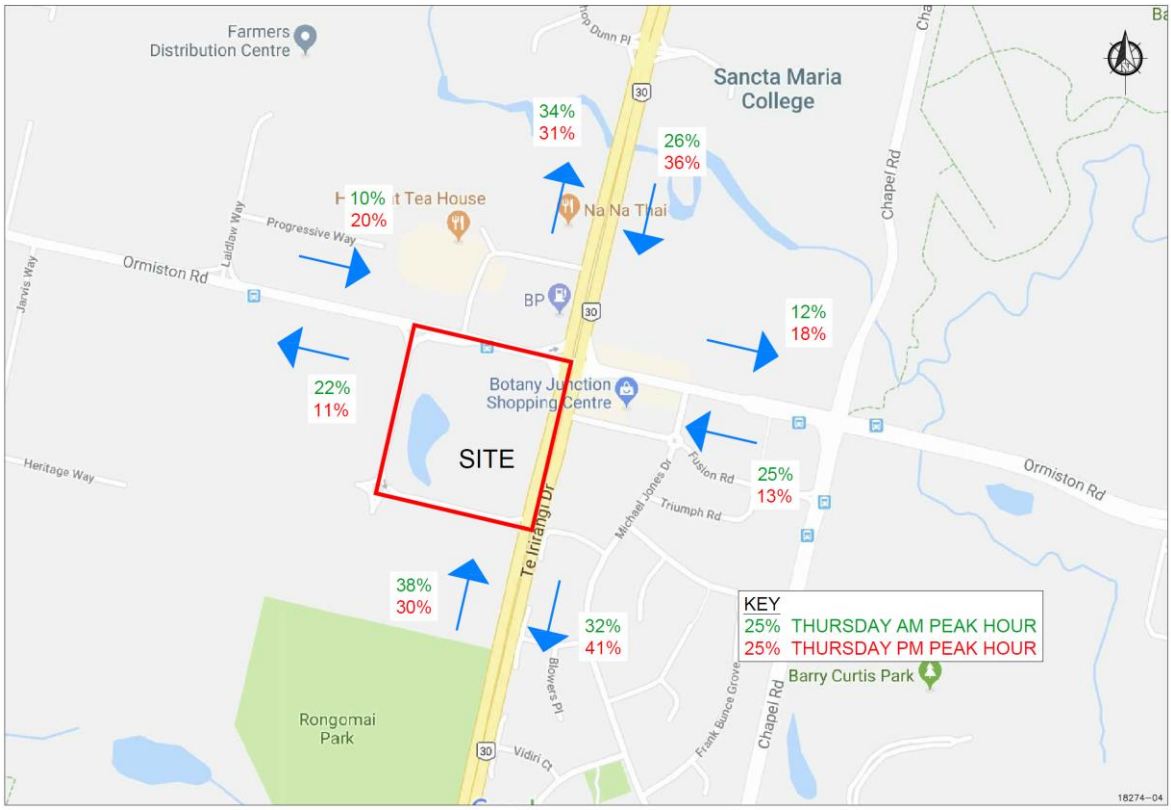


Figure 15 – Traffic Distribution

Traffic generated by the development has then been assigned to the road network according to intersection capacity, existing levels of congestion, trip type and the locations of major attractions and sources of trip productions and based on the 2026 Saturn model distributions for this location as obtained from Auckland Transport.

The traffic assignment has thus been based on achieving a "realistic" distribution of trips over the road network, rather than simply assigning traffic to the arterial routes irrespective of existing congestion. This is shown in Figure 16.

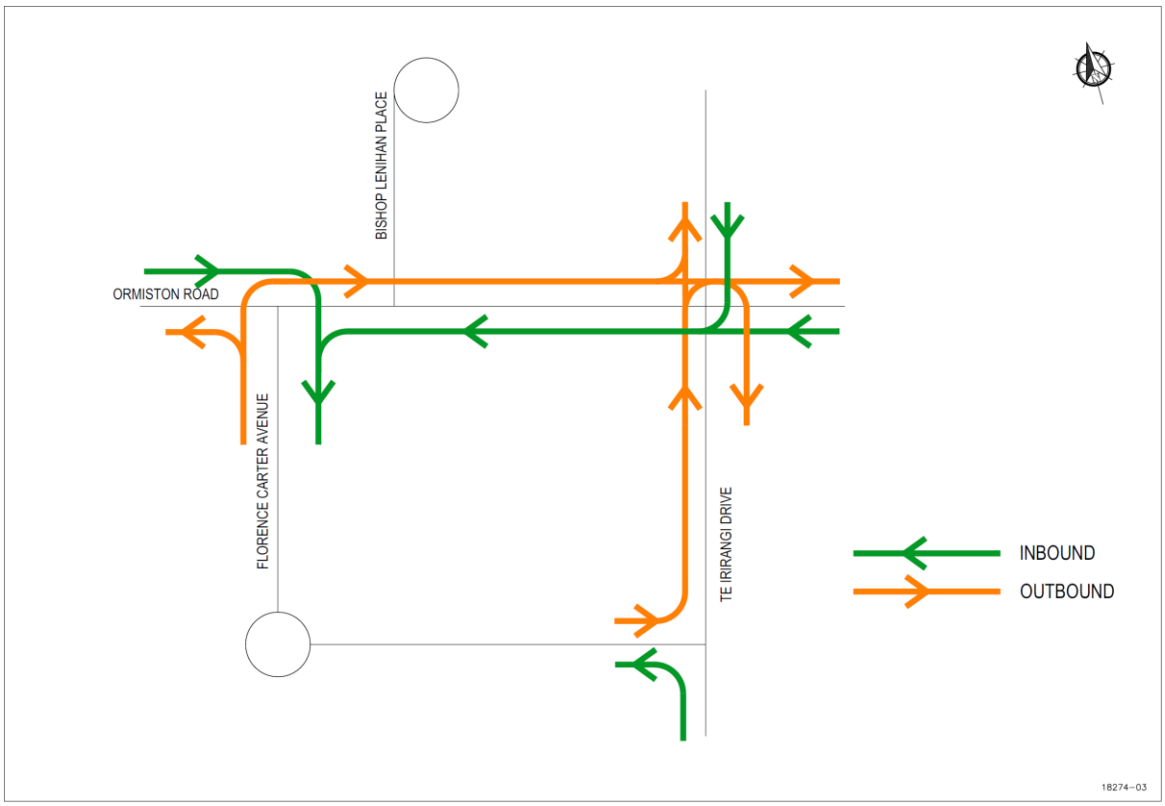


Figure 16 – Traffic Assignment

As can be seen from Figure 16, traffic generated by the proposed development is widely dispersed through the road network in this location.

Traffic generated by the proposed development would access the road network at the two formed intersections, with the northbound carriageway of Te Irirangi Drive and with the signalised intersection of Florence Carter Avenue with Ormiston Road. In addition, the signalised intersection of Te Irirangi Drive / Ormiston Road will be subject to additional traffic movements on all approaches.

The most notable changes in traffic flows on the adjoining road network during the peak hours are:

- 320 vehicles turning left from Ormiston Road into the site during the morning peak, with 640 additional vehicles turning right out of the site into Ormiston Road eastbound during the evening peak.

- 160 vehicles turning right into the site from Ormiston Road eastbound during the morning peak, with 320 additional vehicles turning left into Ormiston Road eastbound during the evening peak.

- 226 additional vehicles turning right from Te Irirangi Drive from the north into Ormiston Road westbound, with 60 additional vehicles turning left in the reverse direction and from south on Te Irirangi Drive during the evening peak.

- 230 additional vehicles travelling westbound on Ormiston Road towards the site, from east of Te Irirangi Drive, with 150 additional vehicles travelling in the reverse direction during the evening peak.

Traffic generated by the activities enabled by the Plan Change has been assigned to the three key intersections identified above, on a similar basis to that anticipated for the Light Industrial zoning.

From this assignment, likely turning movements at the site intersections and the intersection of Te Irirangi Drive and Ormiston Road have been derived as indicated on the plans included in Attachment 1 for the Consented site development and in Attachment 2 for the Plan Change.

6.2 Local Intersection Analysis Results

To test the ability of the intersections of Florence Carter Avenue with Ormiston Road and Te Irirangi Drive to accommodate the traffic generated by the proposal, they have been analysed using the SIDRA Intersection software package based on the traffic flows included in Attachment 1 and Attachment 2. The results of the SIDRA analysis are discussed as follows.

6.2.1 Te Irirangi Drive / Florence Carter Avenue (Left-in / Left-out Access)

The results of the SIDRA analysis for the vehicle access are summarised in Table 10 and shown in detail in Attachment 3 for the consented development and Attachment 4 for the Plan Change.

Table 10 – Te Irirangi Drive / Site Access Performance

Approach	Lane	AM Peak Hour				PM Peak Hour			
		Deg. Satn.	Ave. Delay	LOS	Queue Length	Deg. Satn.	Ave. Delay	LOS	Queue Length
Performance under Existing Consented Activities									
Site Access (eastbound)	LT	0.181	9.1s	A	0.7 vehs	0.504	11.7s	B	3.0 vehs
Te Irirangi Drive (northbound)	LT / TH	0.361	0.8s	NA	0 vehs	0.373	1.1s	NA	0 vehs
Intersection		0.361	1.5s	NA	0.7 vehs	0.504	3.0s	NA	3.0 vehs
Performance under Proposed Plan Change									
Site Access (eastbound)	LT	0.204	9.2s	A	0.8 vehs	0.528	11.9s	B	3.3 vehs
Te Irirangi Drive (northbound)	LT / TH	0.361	0.7s	NA	0 vehs	0.373	1.1s	NA	0 vehs
Intersection		0.361	0.9	NA	0.8 vehs	0.396	3.1s	NA	3.3 vehs

The following provides a key to the items shown in the table:

LT – Left Turn Traffic Movement
TH – Through Traffic Movement
RT – Right Turn Traffic Movement

Deg. Satn. – Movement Degree of Saturation
Ave. Delay – Average Delay (in seconds) per vehicle
Queue Length – 95 percent queue length (in vehicles)
LOS – Level of Service

The results of the analysis indicate that the intersection will operate well within its overall capacity following development of the site.

6.2.2 Ormiston Road / Florence Carter Avenue Traffic Signal Controlled Vehicle Access

The results of the SIDRA analysis for the Ormiston Road vehicle access are summarised in Table 11 and shown in detail in Attachment 3 for the consented development and Attachment 4 for the Plan Change.

Table 11 – Ormiston Road / Florence Carter Avenue Intersection Performance

Approach	Lane	AM Peak Hour				PM Peak Hour			
		Deg. Satn.	Ave. Delay	LOS	Queue Length	Deg. Satn.	Ave. Delay	LOS	Queue Length
Performance under Existing Consented Activities									
Florence Carter (northbound)	LT / RT	0.798	24.4	C	5.8	0.905	37.4	C	40.8
Ormiston Road (westbound)	LT / TH	0.803	9.8	A	11.9	0.866	23.9	C	15.2
Ormiston Road (eastbound)	TH / RT	0.255	3.4	A	1.3	0.891	27.2	C	12.2
Intersection		0.803	10.5	B	11.9	0.905	29.2	C	40.8
Performance under Proposed Plan Change									
Florence Carter (northbound)	LT / RT	0.786	23.9	C	6.4	0.923	46.0	D	58.6
Ormiston Road (westbound)	LT / TH	0.848	11.5	B	13.5	0.902	32.7	C	27.1
Ormiston Road (eastbound)	TH / RT	0.316	4.1	A	1.6	0.883	37.8	D	17.4
Intersection		0.848	11.8	B	13.5	0.923	38.5	D	58.6

The results of the analysis indicate that the intersection will operate in a manner similar to that of the previously consented development although the additional traffic generated by the proposed additional height does mean that queues on the Florence Carter Avenue approach extend back and through the roundabout controlled intersection at the junction of the two legs of Florence Carter Avenue. This is not ideal.

This queuing can be addressed by increasing the number of right turn exit lanes on Florence Carter Avenue from 1 to 2 when traffic reaches a certain threshold. This changed intersection arrangement is shown in Figure 17.

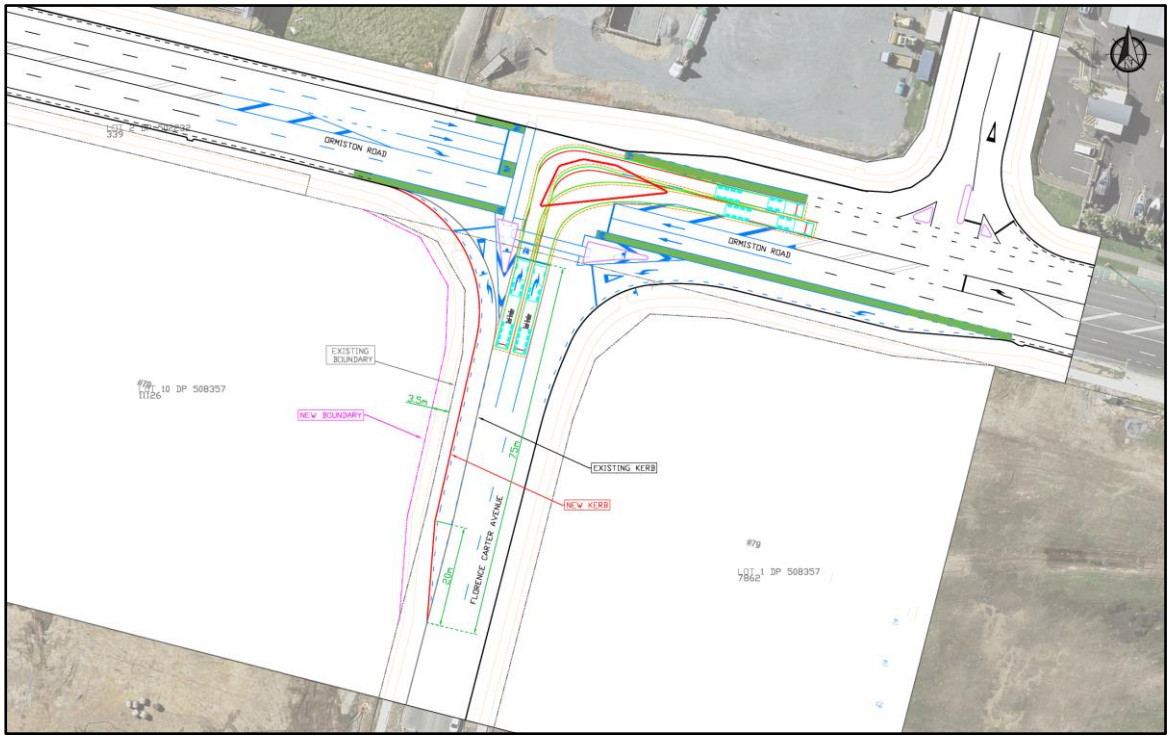


Figure 17 – Ormiston Road / Florence Carter Avenue Double Right Turn

With the double right turn exit in place, the performance of the intersection is shown in Table 12.

Table 12 – Ormiston Road / Florence Carter Avenue Double Right Turn

Approach	Lane	AM Peak Hour				PM Peak Hour			
		Deg. Satn.	Ave. Delay	LOS	Queue Length	Deg. Satn.	Ave. Delay	LOS	Queue Length
Performance under Proposed Plan Change									
Florence Carter (northbound)	LT / RT	0.449	21.4	C	2.8	0.775	23.2	C	10.4
Ormiston Road (westbound)	LT / TH	0.803	9.6	A	11.9	0.780	12.3	B	7.3
Ormiston Road (eastbound)	TH / RT	0.316	4.1	A	1.6	0.772	11.2	B	5.8
Intersection		0.803	10.2	B	11.9	0.780	15.8	B	10.4

The trigger for the need for the double right turn lane is around the level of traffic generated by the previously consented development for the site being 2,300 traffic movements per hour during the weekday PM Peak Hour. It would therefore be

appropriate to include a Traffic Generation Threshold provision as part of the Plan Change so that these works can be provided, if required.

With the intersection upgraded to include a double right turn, the traffic generated by the proposal can be accommodated by the intersection with little or no effect.

6.3 Ormiston Road / Te Irirangi Drive Intersection Effects

The operational performance of the intersection of Te Irirangi Drive and Ormiston Road has been analysed using the SIDRA Intersection software package. The detailed results of this analysis are included in Attachment 3 for the consented development and Attachment 4 for the potential traffic generated by the activities enabled by the Plan Change.

The results of the SIDRA analysis for the intersection are summarised in Table 13.

Table 13 – Ormiston Road / Te Irirangi Drive Intersection Performance

Approach	Lane	AM Peak Hour				PM Peak Hour			
		Deg. Satn.	Ave. Delay	LOS	Queue Length	Deg. Satn.	Ave. Delay	LOS	Queue Length
Performance under Existing Consented Activities									
Te Irirangi Drive (northbound)	LT / TH / RT	1.050	92.2	F	61.4	1.063	100.4	F	64.6
Ormiston Road (westbound)	LT / TH / RT	1.049	84.2	F	40.6	1.097	109.0	F	48.7
Te Irirangi Drive (southbound)	LT / TH / RT	1.007	49.8	D	40.0	1.032	50.9	D	37.9
Ormiston Road (eastbound)	LT / TH / RT	0.997	69.7	E	19.7	1.064	88.2	F	25.4
Intersection		1.050	74.9	E	61.4	1.097	87.4	F	64.6
Performance under Proposed Plan Change									
Te Irirangi Drive (northbound)	LT / TH / RT	1.051	95.4	F	66.1	1.074	108.2	F	68.5
Ormiston Road (westbound)	LT / TH / RT	1.060	94.6	F	36.7	1.080	102.8	F	36.7
Te Irirangi Drive (southbound)	LT / TH / RT	1.036	47.0	D	25.2	1.022	42.5	D	23.5
Ormiston Road (eastbound)	LT / TH / RT	1.039	81.3	F	26.7	1.097	90.0	F	32.3
Intersection		1.060	79.0	E	66.1	1.097	85.1	F	68.5

The results of the analysis indicate that the intersection operates at capacity under traffic generated by the consented development. During the weekday PM Peak Hour, the intersection performance with the activities enabled by the Plan Change is broadly consistent with that anticipated for the previously consented development.

During the weekday AM Peak Hour, the intersection performance with the activities enabled by the Plan Change degrades compared to the consented development with overall intersection delay increasing by about 5 seconds per vehicle and queue lengths increasing by about 4 vehicles.

Under the Proposed Plan change, the activities enabled by the additional height result in an additional AM Peak Hour traffic generation of about 180 traffic movements per hour of which 120 additional traffic movements are associated with the additional office GFA anticipated.

The additional office GFA enabled by the height equates to some 6,700m^2 which would likely result in a tenant driven parking demand for an additional 170 car parking spaces to be provided on the site or the equivalent of an additional basement parking level of two. The applicant does not currently anticipate a demand for the additional office space in this location.

To manage peak hour traffic generation of the activities on the site, a suitable Travel Demand Management (TDM) Plan could be developed in association with the future tenants. This would enable a range of measures to be implemented to reduce private vehicle travel resulting in less congestion on the road network than the current traffic modelling indicates. A Travel Plan Strategy is included in Attachment 5.

The purpose of the Travel Plan Strategy is to lay the foundation for the development of a framework for individual travel plans for each building as they become operational. The process of TPS development is shown in Figure 18.

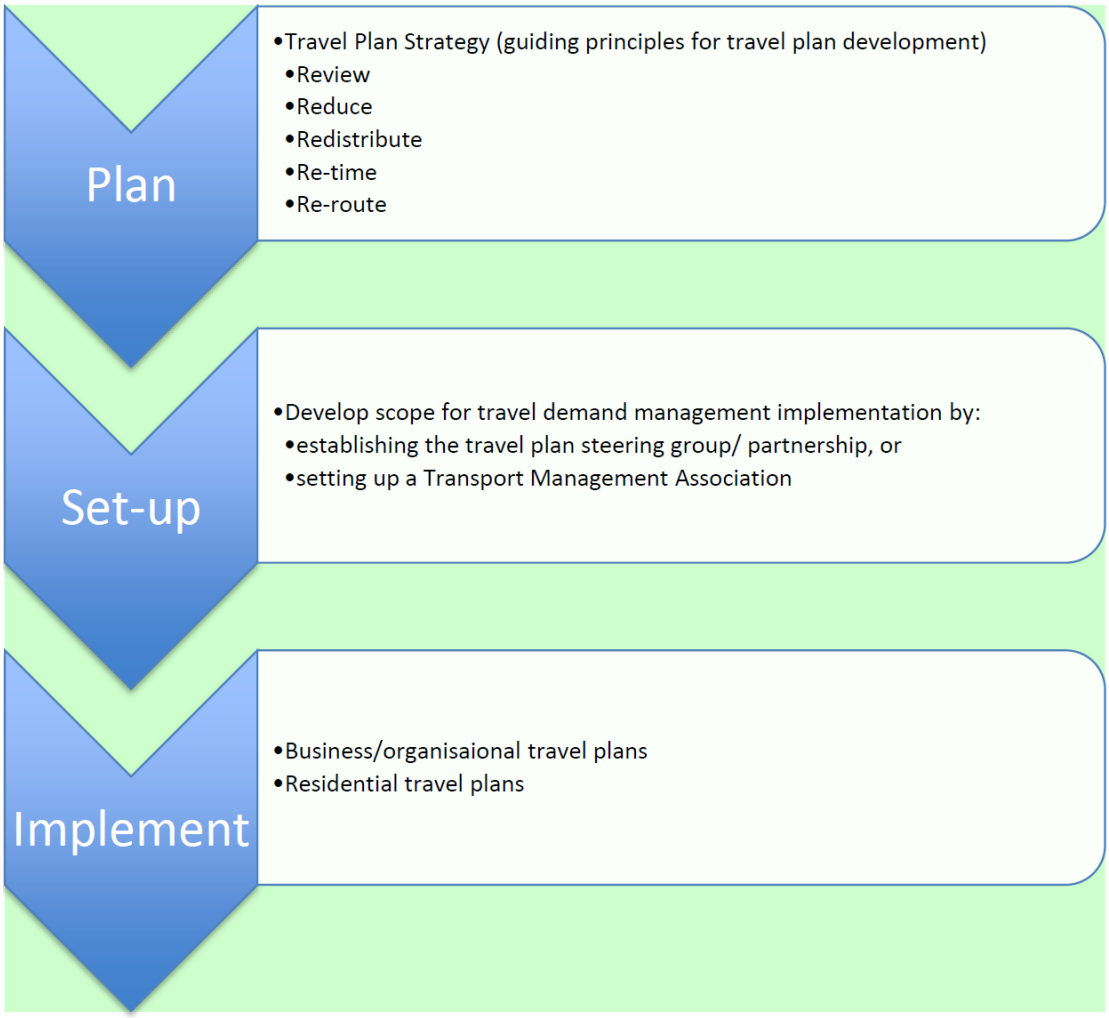


Figure 18 – Strategic travel plan development

The aims of the TPS would be to:

- enable future commuters and residents to make informed travel choices;
- to influence long terms sustainable travel behaviour to and from the site; and
- to align with future workplace/residential accessibility.

The successful implementation of a Travel Plan can result in peak hour traffic movements being reduced by 5% to 15%. Such a reduction in this location would mean that traffic generation associated with the activities enabled by the Plan Change would not be dissimilar to that generated by the consented development with associated effects that would be similar.

Overall, the analysis indicates that it would be beneficial to implement TDM measures for the future commercial activities on the site to better manage overall traffic flows in this location.

7.0 AUP-OIP ASSESSMENT CRITERIA

Section E27.8.2 of the AUP-OIP indicates the assessment criteria for a range of traffic and parking non-compliance. The activities enabled for the site by the Plan Change will have a traffic generation that exceeds 100 vehicles per hour and for completeness, an assessment has been made against the relevant assessment criteria indicated in the AUP-OIP.

7.1 Exceeding Trip Generation Thresholds

Standard E27.8.2(3) of the AUP-OIP sets out assessment criteria for any activity or subdivision which exceeds the trip generation thresholds under Standard E27.6.1. The infringement relates to peak hour trip generation exceeding 100 vehicles per hour.

The assessment criteria are:

(a) the effects on the function and the safe and efficient operation of the transport network including pedestrian movement, particularly at peak traffic times;

The capacity assessments undertaken in Section 6.0 of this report confirm that the traffic generated by the activities enabled by the Plan Change results in traffic effects that are broadly similar to those previously consented for the development on the site.

The analysis does indicate that there would be benefit in developing a TDM Plan for the commercial activities on the site in the future to manage overall travel demands that may arise from the activities enabled by the Proposed Plan Change.

On this basis, the traffic effects of the Proposed Plan Change can be safely accommodated on the adjoining road network without adversely compromising its function, safety or capacity.

(b) the implementation of mitigation measures proposed to address adverse effects which may include measures such as travel planning, providing alternatives to private vehicle trips including accessibility to public transport, staging development, or contributing to improvements to the local transport network; or

Mitigation measures in the form of site access upgrades were provided previously for the consented site development. The implementation of TDM measures for the commercial activities on the site would enable transport effects to be further mitigated.

(c) the trip characteristics of the proposed activity on the site.

As noted earlier in Section 4.0 of this assessment, weekday peak hour traffic generation of the Plan Change is anticipated to be in the order of 1,150 and 2,360

traffic movements per hour during the weekday AM and PM peak hours respectively.

Compared to the previously consented development for the site, the applicant development aspirations for the Plan Change generates approximately 180 and 45 additional peak hour trips in the AM and PM Peak Hours respectively. Most of this increase is associated with the additional office floor area that arises from the height limits sought as part of the Plan Change which the applicant currently does not intend to provide.

8.0 CONCLUSIONS

Based on the analyses described in this report, the following conclusions can be made in respect of the Proposed Plan Change to enable mixed-use development on the site at 79 Ormiston Road:

- The weekday peak hour traffic generation of the activities enabled by the Plan Change will be in the order of 1,150 and 2,360 traffic movements per hour in the AM and PM Peak hours respectively. This is 180 and 45 traffic movements per hour higher in the AM and PM Peak hours respectively than that anticipated for the currently consented development of the site.

- To cater for PM Peak Hour traffic generation above that previously consented for the site the intersection of Florence Carter Avenue and Ormiston Road will need to be upgraded to include a double right turn exit from Florence Carter Avenue onto Ormiston Road. A Traffic Generation Threshold provision should be included in the Plan Change such that if anticipated traffic flows exceed the trigger level, the upgrade works are carried out.

- The intersection of Florence Carter Avenue and Te Irirangi Drive will continue to operate with adequate capacity to cater for the anticipated additional traffic generated by the Proposed Plan Change.

- An analysis of the potential traffic effects of the Plan Change traffic on the intersection of Te Irirangi Drive and Ormiston Road indicates that the traffic effects associated with the activities enabled by the Plan Change are similar to those anticipated for the previously consented development.

- To appropriately manage transport demands generated by the commercial activities that may be developed on the site, TDM measures can be implemented to appropriately mitigate the effects of transport demands in this location.

- Development enabled by the Plan Change will be served by parking, loading and servicing arrangements designed to an appropriate standard consistent with the

requirements of the AUP-OIP or as otherwise approved by way of a Resource Consent.

Overall, it is considered that the traffic engineering effects of the potential activities enabled by the Proposed Plan Change can be accommodated on the road network without compromising its function, capacity or safety. Therefore, the proposal is considered to have a less than minor impact.

Prepared by:

Bryce Hall

Andrew Temperley

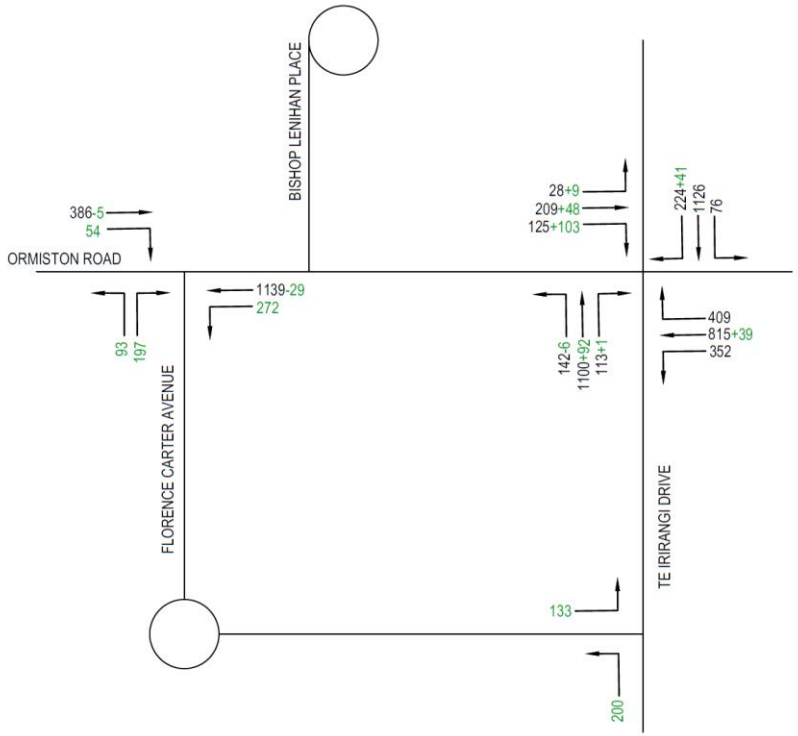
ATTACHMENT 1

2026 Turning Movements – Consented Development

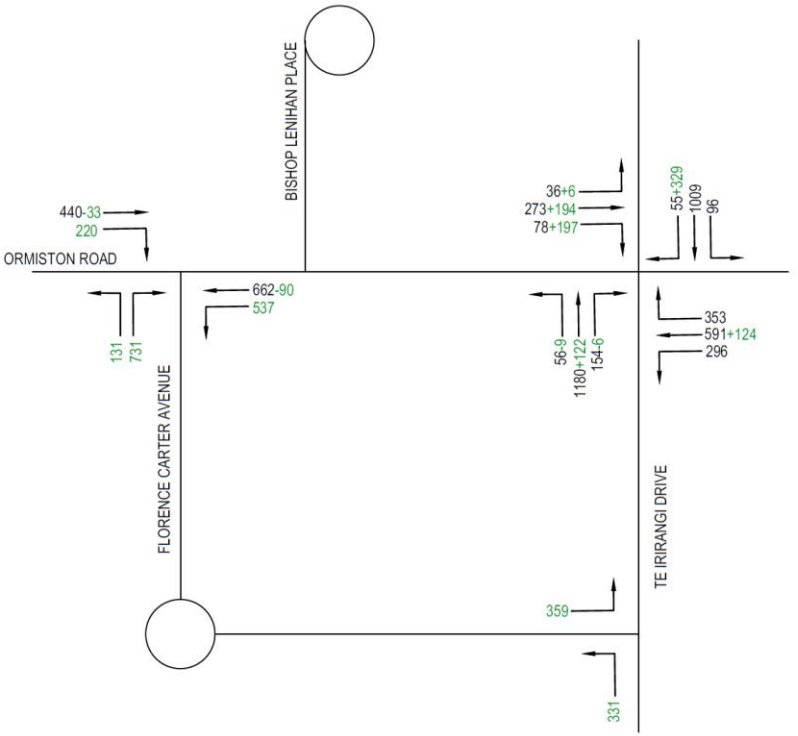
KEY

28+37

2026 FLOWS + 37 CONSENTED DEVELOPMENT



AM PEAK HOUR



PM PEAK HOUR

Rev	Revisions	By	Date

TPC TRAFFIC PLANNING CONSULTANTS LTD

Level 1, 400 Titirangi Rd, Titirangi, P.O Box 60-255, Auckland 0604
Phone: 09 817-2500 www.trafficplanning.co.nz

Project Title: PROPOSED PLAN CHANGE
79 ORMISTON ROAD

Sheet Title: 2026 CONSENTED DEVELOPMENT TURNING MOVEMENTS

Designed	B Hall	Drawn	A Zhong	Project No# Sheet No	Scales NTS
Checked	B Hall	Approved	B Hall	18274-01	Date 14.11.18

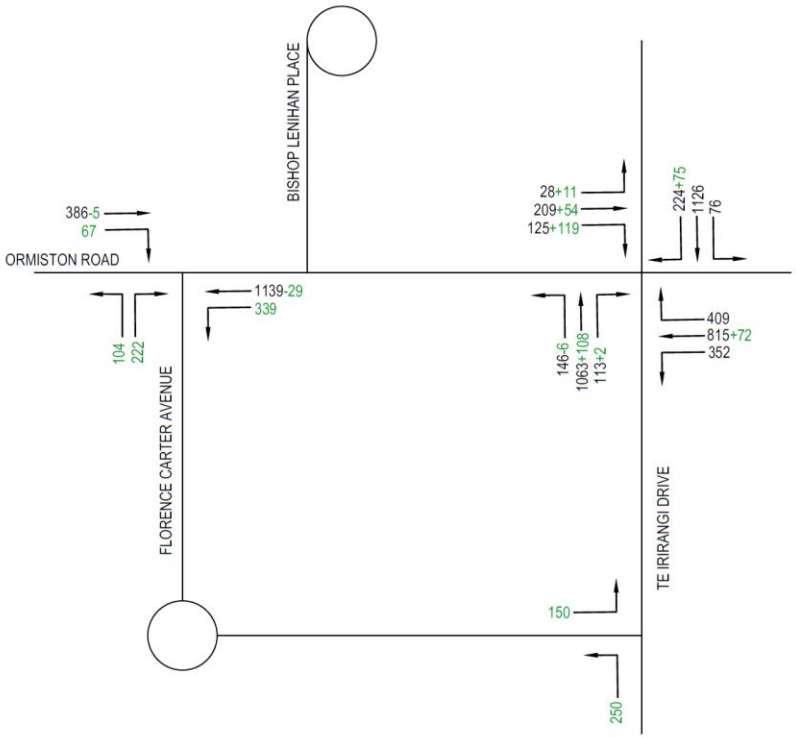
ATTACHMENT 2

2026 Turning Movements – Proposed Plan Change

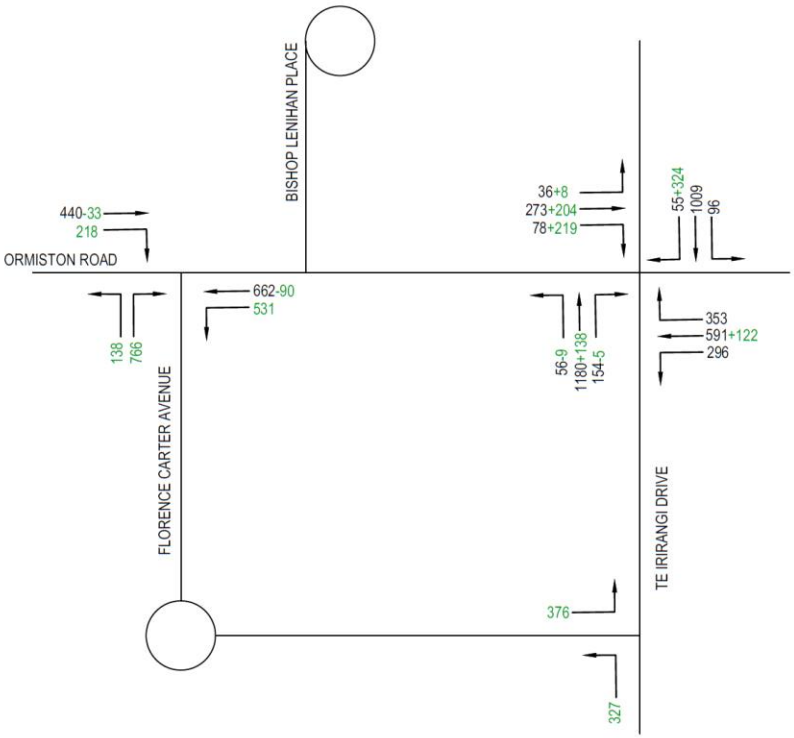
KEY

28+37

2026 FLOWS + 37 PLAN CHANGE



AM PEAK HOUR



PM PEAK HOUR

Rev	Revisions	By	Date

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Level 1, 400 Titirangi Rd, Titirangi, P.O Box 60-255, Auckland 0604
Phone: 09 817-2500 www.trafficplanning.co.nz

Project Title: PROPOSED PLAN CHANGE
79 ORMISTON ROAD

Sheet Title: 2026 PLAN CHANGE TURNING MOVEMENTS

Designed	B Hall	Drawn	A Zhong	Project No# Sheet No	18274-02
Checked	B Hall	Approved	B Hall	Scales	NTS
				Date	17.10.18

ATTACHMENT 3

2026 SIDRA Intersection Analysis Results – Consented Development

Ormiston Road / Florence Carter Avenue

MOVEMENT SUMMARY

Site: 18274-1 [Omiston Rd / Subdivision Int - AM - 2026 Consent]

18274 - Omiston Road / New Subdivision - AM Peak
Site Category: AM - 2026 - Consented
Signals - Fixed Time Coordinated Cycle Time = 50 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Subdivision Road												
1	L2	98	0.0	0.106	8.6	LOS A	1.0	6.7	0.52	0.65	0.52	44.8
3	R2	207	0.0	0.798	31.9	LOS C	5.8	40.3	1.00	0.98	1.37	34.6
Approach		305	0.0	0.798	24.4	LOS C	5.8	40.3	0.84	0.87	1.10	37.3
East: Omiston Road												
4	L2	286	0.0	0.202	4.6	LOS A	0.1	0.7	0.03	0.50	0.03	47.2
5	T1	1168	2.9	0.803	11.1	LOS B	11.9	85.4	0.80	0.77	0.90	43.4
Approach		1455	2.3	0.803	9.8	LOS A	11.9	85.4	0.65	0.72	0.72	44.1
West: Omiston Road												
11	T1	401	12.1	0.179	0.2	LOS A	0.1	0.9	0.03	0.02	0.03	49.8
12	R2	57	0.0	0.255	25.6	LOS C	1.3	8.8	0.88	0.72	0.88	36.7
Approach		458	10.6	0.255	3.4	LOS A	1.3	8.8	0.13	0.11	0.13	47.7
All Vehicles		2218	3.7	0.803	10.5	LOS B	11.9	85.4	0.57	0.61	0.65	43.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	19.4	LOS B	0.1	0.1	0.88	0.88
P4	West Full Crossing	53	19.4	LOS B	0.1	0.1	0.88	0.88
All Pedestrians		105	19.4	LOS B			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Ormiston Road / Florence Carter Avenue – PM Peak

MOVEMENT SUMMARY

Site: 18274-1 [Omiston Rd / Subdivision Int - PM - 2026 Consent]

18274 - Omiston Road / New Subdivision - PM Peak
Site Category: PM - 2026 - Consented
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Subdivision Road												
1	L2	138	0.0	0.099	7.2	LOS A	1.6	11.1	0.29	0.58	0.29	45.6
3	R2	769	0.0	0.905	42.8	LOS D	40.8	285.3	0.92	0.98	1.13	31.4
Approach		907	0.0	0.905	37.4	LOS D	40.8	285.3	0.83	0.92	1.00	33.0
East: Omiston Road												
4	L2	565	0.0	0.390	4.8	LOS A	0.6	4.2	0.03	0.53	0.10	47.1
5	T1	602	1.6	0.866	41.8	LOS D	15.2	107.8	1.00	0.95	1.15	31.8
Approach		1167	0.8	0.866	23.9	LOS C	15.2	107.8	0.53	0.75	0.64	37.8
West: Omiston Road												
11	T1	428	7.6	0.303	13.8	LOS B	4.7	35.2	0.48	0.40	0.48	42.1
12	R2	232	0.0	0.891	52.2	LOS D	12.2	85.6	1.00	0.93	1.23	29.0
Approach		660	4.9	0.891	27.2	LOS C	12.2	85.6	0.66	0.59	0.74	36.3
All Vehicles		2735	1.5	0.905	29.2	LOS C	40.8	285.3	0.66	0.77	0.79	35.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	44.3	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		105	44.3	LOS E			0.94	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Te Irirangi Drive / Florence Carter Avenue – AM Peak

MOVEMENT SUMMARY

Site: 101 [Te Irirangi Drive / Subdivision - AM - 2026 Consented]

Te Irirangi Drive / Subdivision
Site Category: AM - 2026 - Consented
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Drive												
1	L2	211	0.0	0.113	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
2	T1	1373	4.1	0.361	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1583	3.6	0.361	0.8	NA	0.0	0.0	0.00	0.08	0.00	59.0
West: Subdivision												
10	L2	140	0.0	0.181	9.1	LOS A	0.7	4.9	0.59	0.83	0.59	50.9
Approach		140	0.0	0.181	9.1	LOS A	0.7	4.9	0.59	0.83	0.59	50.9
All Vehicles		1723	3.3	0.361	1.5	NA	0.7	4.9	0.05	0.14	0.05	58.2

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Te Irirangi Drive / Florence Carter Avenue – PM Peak

MOVEMENT SUMMARY

▽ Site: 101 [Te Irirangi Drive / Subdivision - PM - 2026 Consented]

Te Irirangi Drive / Subdivision
Site Category: PM - 2026 - Consented
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Drive												
1	L2	348	0.0	0.188	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
2	T1	1411	4.8	0.373	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1759	3.8	0.373	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.5
West: Subdivision												
10	L2	378	0.0	0.504	11.7	LOS B	3.0	21.2	0.70	1.00	1.09	49.2
Approach		378	0.0	0.504	11.7	LOS B	3.0	21.2	0.70	1.00	1.09	49.2
All Vehicles		2137	3.2	0.504	3.0	NA	3.0	21.2	0.12	0.27	0.19	56.6

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Te Irirangi Drive / Ormiston Road – AM Peak – Consented Development

MOVEMENT SUMMARY

Site: 101 [Ormiston Rd / Te Irirangi Dr - AM - 2026 - Consented]

Te Irirangi Rd / Ormiston Rd Intersection
Site Category: AM - 2026 - Consented
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Dr												
1	L2	140	7.9	0.149	10.2	LOS B	1.4	10.3	0.15	0.58	0.15	50.6
2	T1	1155	2.9	1.050	103.2	LOS F	61.4	440.2	1.00	1.32	1.54	22.1
3	R2	114	8.8	0.761	81.8	LOS F	4.2	31.5	1.00	0.80	1.13	25.5
Approach		1409	3.8	1.050	92.2	LOS F	61.4	440.2	0.92	1.20	1.37	23.7
East: Ormiston Rd												
4	L2	352	1.7	0.336	6.2	LOS A	0.7	5.0	0.03	0.56	0.03	53.8
5	T1	854	2.1	1.049	105.5	LOS F	40.6	289.4	0.89	1.21	1.47	21.9
6	R2	409	2.4	1.041	106.8	LOS F	37.3	266.3	0.91	1.10	1.46	21.6
Approach		1615	2.1	1.049	84.2	LOS F	40.6	289.4	0.71	1.04	1.16	25.1
North: Te Irirangi Dr												
7	L2	76	5.3	0.053	5.8	LOS A	0.1	0.6	0.02	0.55	0.02	53.9
8	T1	1126	1.0	0.912	39.5	LOS D	40.0	282.1	0.92	0.91	1.03	36.5
9	R2	265	1.1	1.007	105.8	LOS F	11.6	81.9	1.00	1.04	1.54	21.8
Approach		1467	1.2	1.007	49.8	LOS D	40.0	282.1	0.89	0.91	1.07	33.0
West: Ormiston Rd												
10	L2	37	13.5	0.062	6.3	LOS A	0.1	0.4	0.02	0.55	0.02	53.3
11	T1	257	6.6	0.506	55.2	LOS E	7.8	57.9	0.92	0.74	0.92	31.6
12	R2	228	6.1	0.997	96.3	LOS F	19.7	145.1	1.00	1.04	1.44	23.2
Approach		522	6.9	0.997	69.7	LOS E	19.7	145.1	0.89	0.86	1.08	28.0
All Vehicles		5013	2.8	1.050	74.9	LOS E	61.4	440.2	0.84	1.03	1.18	26.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P3	North Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Ormiston Rd / Te Irirangi Dr - AM - 2026 - Plan Change - Height]

Te Irirangi Rd / Ormiston Rd Intersection
Site Category: AM - 2026 - Plan Change - Height
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Dr												
1	L2	140	7.9	0.149	10.2	LOS B	1.4	10.3	0.15	0.58	0.15	50.6
2	T1	1171	2.8	1.063	113.0	LOS F	64.6	462.9	1.00	1.37	1.60	20.9
3	R2	115	8.7	0.767	81.9	LOS F	4.2	31.8	1.00	0.80	1.14	25.4
Approach		1426	3.8	1.063	100.4	LOS F	64.6	462.9	0.92	1.24	1.42	22.5
East: Ormiston Rd												
4	L2	352	1.7	0.337	6.2	LOS A	0.7	5.0	0.03	0.56	0.03	53.8
5	T1	887	2.0	1.097	141.9	LOS F	48.7	346.6	0.90	1.37	1.69	17.9
6	R2	409	2.4	1.067	125.9	LOS F	40.4	288.5	0.92	1.16	1.58	19.4
Approach		1648	2.1	1.097	109.0	LOS F	48.7	346.6	0.72	1.14	1.31	21.3
North: Te Irirangi Dr												
7	L2	76	5.3	0.053	5.8	LOS A	0.1	0.6	0.02	0.55	0.02	53.9
8	T1	1126	1.0	0.892	35.9	LOS D	37.9	267.5	0.90	0.87	0.98	37.9
9	R2	299	1.0	1.032	119.1	LOS F	14.0	99.2	1.00	1.08	1.61	20.0
Approach		1501	1.2	1.032	50.9	LOS D	37.9	267.5	0.87	0.89	1.06	32.6
West: Ormiston Rd												
10	L2	39	12.8	0.064	6.3	LOS A	0.1	0.4	0.02	0.55	0.02	53.4
11	T1	263	6.5	0.518	55.3	LOS E	8.0	59.3	0.92	0.74	0.92	31.6
12	R2	244	5.7	1.064	136.8	LOS F	25.4	186.3	1.00	1.16	1.69	18.2
Approach		546	6.6	1.064	88.2	LOS F	25.4	186.3	0.89	0.91	1.20	24.3
All Vehicles		5121	2.8	1.097	87.4	LOS F	64.6	462.9	0.84	1.07	1.26	24.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P3	North Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

ATTACHMENT 4

2026 SIDRA Intersection Analysis Results – Plan Change

Ormiston Road / Florence Carter Avenue - AM Peak

MOVEMENT SUMMARY

Site: 18274-1 [Omiston Rd / Subdivision Int - AM - 2026 Plan Change - Height]

18274 - Omiston Road / New Subdivision - AM Peak
Site Category: AM - 2026 - Plan Change - Height
Signals - Fixed Time Coordinated Cycle Time = 50 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Subdivision Road												
1	L2	109	0.0	0.116	9.0	LOS A	1.1	7.9	0.54	0.65	0.54	44.6
3	R2	234	0.0	0.786	30.8	LOS C	6.4	44.7	1.00	0.97	1.32	35.0
Approach		343	0.0	0.786	23.9	LOS C	6.4	44.7	0.85	0.87	1.07	37.6
East: Omiston Road												
4	L2	357	0.0	0.254	4.6	LOS A	0.1	0.9	0.03	0.50	0.03	47.2
5	T1	1168	2.9	0.848	13.6	LOS B	13.5	96.7	0.87	0.87	1.03	42.1
Approach		1525	2.2	0.848	11.5	LOS B	13.5	96.7	0.67	0.79	0.79	43.2
West: Omiston Road												
11	T1	401	12.1	0.185	0.2	LOS A	0.1	0.9	0.03	0.02	0.03	49.8
12	R2	71	0.0	0.316	25.9	LOS C	1.6	11.1	0.89	0.73	0.89	36.7
Approach		472	10.3	0.316	4.1	LOS A	1.6	11.1	0.15	0.13	0.15	47.3
All Vehicles		2340	3.5	0.848	11.8	LOS B	13.5	96.7	0.60	0.67	0.70	43.0

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	19.4	LOS B	0.1	0.1	0.88	0.88
P4	West Full Crossing	53	19.4	LOS B	0.1	0.1	0.88	0.88
All Pedestrians		105	19.4	LOS B			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Ormiston Road / Florence Carter Avenue – PM Peak

MOVEMENT SUMMARY

Site: 18274-1 [Omiston Rd / Subdivision Int - PM - 2026 PlanChange - Height]

18274 - Omiston Road / New Subdivision - PM Peak
Site Category: PM - 2026 - Plan Change - Height
Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Subdivision Road												
1	L2	145	0.0	0.104	9.0	LOS A	2.7	18.7	0.29	0.58	0.29	44.6
3	R2	806	0.0	0.923	52.7	LOS D	58.6	410.1	0.90	0.95	1.04	28.9
Approach		952	0.0	0.923	46.0	LOS D	58.6	410.1	0.80	0.89	0.92	30.6
East: Omiston Road												
4	L2	559	0.0	0.370	4.9	LOS A	0.9	6.6	0.03	0.54	0.10	47.0
5	T1	602	1.6	0.902	58.6	LOS E	27.1	192.2	0.95	0.93	1.10	27.7
Approach		1161	0.8	0.902	32.7	LOS C	27.1	192.2	0.51	0.74	0.62	34.6
West: Omiston Road												
11	T1	428	7.6	0.298	19.6	LOS B	6.8	50.6	0.47	0.40	0.47	39.4
12	R2	229	0.0	0.883	72.0	LOS E	17.4	122.1	1.00	0.90	1.15	25.1
Approach		658	5.0	0.883	37.8	LOS D	17.4	122.1	0.65	0.57	0.71	32.9
All Vehicles		2771	1.5	0.923	38.5	LOS D	58.6	410.1	0.64	0.75	0.74	32.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	69.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		105	69.3	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Te Irirangi Drive / Florence Carter Avenue – AM Peak

MOVEMENT SUMMARY

▽ Site: 101 [Te Irirangi Drive / Subdivision - AM - 2026 Plan Change - Height]

Te Irirangi Drive / Subdivision
Site Category: AM - 2026 - Plan Change - Height
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Drive												
1	L2	263	0.0	0.142	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
2	T1	1373	4.1	0.361	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1636	3.5	0.361	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.8
West: Subdivision												
10	L2	158	0.0	0.204	9.2	LOS A	0.8	5.5	0.60	0.83	0.60	50.9
Approach		158	0.0	0.204	9.2	LOS A	0.8	5.5	0.60	0.83	0.60	50.9
All Vehicles		1794	3.2	0.361	1.7	NA	0.8	5.5	0.05	0.16	0.05	58.0

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Te Irirangi Drive / Florence Carter Avenue – PM Peak

MOVEMENT SUMMARY

▽ Site: 101 [Te Irirangi Drive / Subdivision - PM - 2026 Plan Change - Height]

Te Irirangi Drive / Subdivision
Site Category: PM - 2026 - Plan Change - Height
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Drive												
1	L2	344	0.0	0.185	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
2	T1	1411	4.8	0.373	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1755	3.8	0.373	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.5
West: Subdivision												
10	L2	396	0.0	0.528	11.9	LOS B	3.3	23.0	0.71	1.01	1.14	49.0
Approach		396	0.0	0.528	11.9	LOS B	3.3	23.0	0.71	1.01	1.14	49.0
All Vehicles		2151	3.1	0.528	3.1	NA	3.3	23.0	0.13	0.28	0.21	56.5

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Te Irirangi Drive / Ormiston Road – AM Peak

MOVEMENT SUMMARY

Site: 101 [Ormiston Rd / Te Irirangi Dr - AM - 2026 - Plan Change - Height]

Te Irirangi Rd / Ormiston Rd Intersection
Site Category: AM - 2026 - Plan Change - Height
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Dr												
1	L2	140	7.9	0.149	10.2	LOS B	1.4	10.3	0.15	0.58	0.15	50.6
2	T1	1171	2.8	1.063	113.0	LOS F	64.6	462.9	1.00	1.37	1.60	20.9
3	R2	115	8.7	0.767	81.9	LOS F	4.2	31.8	1.00	0.80	1.14	25.4
Approach		1426	3.8	1.063	100.4	LOS F	64.6	462.9	0.92	1.24	1.42	22.5
East: Ormiston Rd												
4	L2	352	1.7	0.337	6.2	LOS A	0.7	5.0	0.03	0.56	0.03	53.8
5	T1	887	2.0	1.097	141.9	LOS F	48.7	346.6	0.90	1.37	1.69	17.9
6	R2	409	2.4	1.067	125.9	LOS F	40.4	288.5	0.92	1.16	1.58	19.4
Approach		1648	2.1	1.097	109.0	LOS F	48.7	346.6	0.72	1.14	1.31	21.3
North: Te Irirangi Dr												
7	L2	76	5.3	0.053	5.8	LOS A	0.1	0.6	0.02	0.55	0.02	53.9
8	T1	1126	1.0	0.892	35.9	LOS D	37.9	267.5	0.90	0.87	0.98	37.9
9	R2	299	1.0	1.032	119.1	LOS F	14.0	99.2	1.00	1.08	1.61	20.0
Approach		1501	1.2	1.032	50.9	LOS D	37.9	267.5	0.87	0.89	1.06	32.6
West: Ormiston Rd												
10	L2	39	12.8	0.064	6.3	LOS A	0.1	0.4	0.02	0.55	0.02	53.4
11	T1	263	6.5	0.518	55.3	LOS E	8.0	59.3	0.92	0.74	0.92	31.6
12	R2	244	5.7	1.064	136.8	LOS F	25.4	186.3	1.00	1.16	1.69	18.2
Approach		546	6.6	1.064	88.2	LOS F	25.4	186.3	0.89	0.91	1.20	24.3
All Vehicles		5121	2.8	1.097	87.4	LOS F	64.6	462.9	0.84	1.07	1.26	24.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P3	North Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	64.3	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		211	64.3	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Te Irirangi Drive / Ormiston Road – PM Peak

MOVEMENT SUMMARY

Site: 101 [Ormiston Rd / Te Irirangi Dr - PM - 2026 - Plan Change - Height]

Te Irirangi Rd / Ormiston Rd Intersection
Site Category: PM - 2026 - Plan Change - Height
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Te Irirangi Dr												
1	L2	47	6.4	0.045	7.0	LOS A	0.1	1.1	0.06	0.56	0.06	53.0
2	T1	1318	3.6	1.074	115.6	LOS F	68.5	493.9	1.00	1.44	1.68	20.6
3	R2	149	9.4	0.795	75.0	LOS E	5.1	38.3	1.00	0.83	1.16	26.7
Approach		1514	4.2	1.074	108.2	LOS F	68.5	493.9	0.97	1.35	1.58	21.5
East: Ormiston Rd												
4	L2	296	0.0	0.276	6.0	LOS A	0.5	3.3	0.03	0.56	0.03	54.0
5	T1	713	0.7	1.072	125.7	LOS F	36.7	258.3	0.98	1.33	1.73	19.4
6	R2	353	5.9	1.080	137.5	LOS F	35.8	263.2	0.99	1.23	1.78	18.2
Approach		1362	1.9	1.080	102.8	LOS F	36.7	263.2	0.78	1.13	1.37	22.1
North: Te Irirangi Dr												
7	L2	96	9.4	0.074	6.0	LOS A	0.1	0.8	0.02	0.55	0.02	53.7
8	T1	1009	1.7	0.739	21.8	LOS C	23.5	166.6	0.71	0.63	0.71	44.3
9	R2	379	0.3	1.022	106.7	LOS F	16.4	115.1	1.00	1.08	1.59	21.6
Approach		1484	1.8	1.022	42.5	LOS D	23.5	166.6	0.74	0.74	0.89	35.2
West: Ormiston Rd												
10	L2	44	15.9	0.069	6.8	LOS A	0.1	0.9	0.04	0.55	0.04	52.9
11	T1	477	3.6	0.856	56.7	LOS E	15.5	111.6	1.00	0.91	1.13	31.2
12	R2	297	0.3	1.097	155.8	LOS F	32.3	226.6	1.00	1.25	1.87	16.6
Approach		818	3.1	1.097	90.0	LOS F	32.3	226.6	0.95	1.02	1.34	24.0
All Vehicles		5178	2.7	1.097	85.1	LOS F	68.5	493.9	0.85	1.07	1.29	24.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P3	North Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		211	59.3	LOS E			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

ATTACHMENT 5

Travel Plan Strategy