



**13 Cresta Avenue and 96 Beach Haven Road,
Beach Haven
Residential Development**

Transportation Assessment Report

16 February 2022





Suite 16, 160 Broadway, Newmarket 1023

PO Box 128259, Remuera 1541, Auckland

Ph. 09 869 2825

www.commute.kiwi

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Report Status	Prepared By	Reviewed By	Approved By
Final Report	Shu Mak	Mike Nixon	Mike Nixon

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1 INTRODUCTION

Commute Transportation Consultants (Commute) has been engaged by Bentley Studios Limited (BSL) to prepare a Transportation Assessment (TA) for a proposed residential development at 13 Cresta Avenue and 96 Beach Haven Road, Beach Haven, Auckland (referred to as the 'site').

The proposed development comprises the following:

- 18 x studio apartments;
- 39 x one bedroom apartments;
- 24 x two bedroom apartments;
- 63 x parking spaces, and
- 81 x bicycle parking spaces.

All vehicle access is proposed to occur via a single Cresta Avenue vehicle crossing, while pedestrian access is proposed to both Cresta Avenue and Beach Haven Road.

Rubbish is proposed to be collected on-site using a private contractor such as Green Gorilla or Rubbish Direct. Rubbish compounds and one loading space are provided on-site.

This report assesses the transport-related matters of the proposal, including:

- A description of the site and its surrounding transport environment;
- A description of the key transport-related aspects of the proposed development;
- The likely trip generating potential of the site and effects on the road network;
- The parking and loading provisions of the development and compliance with Unitary Plan standards, and
- The proposed form of access arrangements for vehicles and pedestrians, and compliance with Unitary Plan standards.

These and other matters are addressed in detail in this report. By way of summary, it is considered that the proposed development, as detailed in this report, will have minor traffic effects to the function, capacity, and safety of the surrounding transport network.

2 EXISTING ENVIRONMENT

2.1 SITE LOCATION

Figure 1 shows the location of the site in relation to the surrounding road environment.

Figure 1: Site Location



The site is located in Beach Haven, Auckland. As noted, the site comprises two lots at 13 Cresta Avenue and 96 Beach Haven Road, Beach Haven with a total area of 7,147 m². The site is bounded by 'Residential – Single House Zone' land to the north, 'Residential – Mixed Housing Urban Zone' land to the east and south, and 'Residential – Mixed Housing Suburban Zone' land to the west.

2.2 ROAD NETWORK

2.2.1 BEACH HAVEN ROAD

The section of Beach Haven Road, east of the Beach Haven Road/ Rangatira Road roundabout, is classified as an Arterial Road in the Unitary Plan however west of the roundabout, Beach Haven Road is classified as a 'Secondary Collector' (as per the One Network Road Classification or ONRC)¹. Beach Haven Road serves an important east-west connection to higher classification roads to the east such as Glenfield Road.

¹ <https://nzta.maps.arcgis.com/apps/webappviewer/index.html?id=95fad5204ad243c39d84c37701f614b0>

Beach Haven Road in front of the site has a road reserve width of approximately 20 m with a sealed carriageway of approximately 8.0 m. Beach Haven Road near the site is unmarked and caters for a single lane traffic in each direction, and provides uncontrolled kerbside parking on both sides of the road. This restricts two-way traffic flow at intermittent locations.

Pedestrian footpaths are provided on both sides of Beach Haven Road. There are a pair of bus stops on Beach Haven Road just west of the Beach Haven Road/ Rangatira Road roundabout as well as on Rangatira Road just south of the roundabout. Beach Haven Road has a posted speed limit of 50 km/hr. Photograph 1 shows the existing layout of Beach Haven Road.

Photograph 1: Beach Haven Road – Looking East



2.2.2 CRESTA AVENUE

Cresta Avenue is a cul-de-sac running in a north-south direction and connecting to Beach Haven Road at its southern end and Shepherds Park at its northern end. Cresta Avenue is not classified as an arterial road in the Unitary Plan and is classified as a 'Low Volume' road in the ONRC. Cresta Avenue primarily provides vehicle access to residential properties and local recreation activities.

Cresta Avenue in front of the site has a road reserve width of approximately 20 m with a sealed carriageway of approximately 13.0 m. Cresta Avenue near the site is unmarked and caters for a single lane traffic in each direction, and provides uncontrolled kerbside parking on both sides of the road.

Pedestrian footpaths are provided on both sides of Cresta Avenue. The Beach Haven Road/ Cresta Avenue intersection is uncontrolled however the vehicle priorities are obvious given its T-intersection arrangement. Cresta Avenue has a posted speed limit of 50 km/hr. Photograph 2 shows the existing layout of Cresta Avenue and Photograph 3 shows the Beach Haven Road/ Cresta Avenue intersection.

Photograph 2: Cresta Avenue – Looking North



Photograph 3: Beach Haven Road/ Cresta Avenue Intersection



2.3 ACCESSIBILITY

2.3.1 PRIVATE VEHICLES

The site is well connected to the wider Auckland Region via the nearby arterial roads at Beach Haven Road (east of Rangatira Road) and Rangatira Road. Further east, these roads provide connections to Kaipatiki Road and Glenfield Road which provide links to State Highway 1 and State Highway 18. The site is some 14 km from the Auckland City Centre, 12 km from the Albany Metropolitan Centre and 9 km from the Takapuna Metropolitan Centre.

At peak times, travel times between the site and the City Centre approximately range from 20 minutes to 45 minutes as traffic flows are sensitive to traffic demands on Onewa Road.

2.3.2 PUBLIC TRANSPORT

Figure 2 shows public transport services currently operating near the site. A pair of bus stops (shelters on eastern side and shop canopies on eastern side) are located within 150 m walking distance from the site along Rangatira Road which provide services to the following routes:

- Route 97R/B is a frequent service² connecting Birkdale Rd, Beach Haven, Rangatira Rd, Highbury, Onewa Rd, and Britomart
- Route 941 is a connector service³ connecting Beach Haven, Kaipātiki Rd, Glenfield shops, Smales Farm Station, North Shore Hospital and Takapuna
- Route 942 is a connector service connecting Beach Haven, Highbury, Onewa Rd, Northcote, Akoranga Station, and Takapuna
- Route 966 is a peak hour service⁴ connecting Beach Haven, Onewa Rd, Ponsonby Rd, Karangahape Rd, Auckland City Hospital, and Newmarket

Pedestrian provisions are acceptable with footpaths along the route to the above stops however there is no pedestrian 'cut through' on the splitter island on the western approach of the Rangatira Road/ Beach Haven Road roundabout.

Another pair of bus stops (no shelters) on Beach Haven Road are located outside the site access strip fronting Beach Haven Road. Route 933 serves these bus stops from Monday to Friday with a frequency of 15 minutes during morning peak hours and lower frequencies at other times. Route 933 connects to Beach Haven Wharf and University of Auckland via Verbena Rd, Onewa Rd, and Customs St.

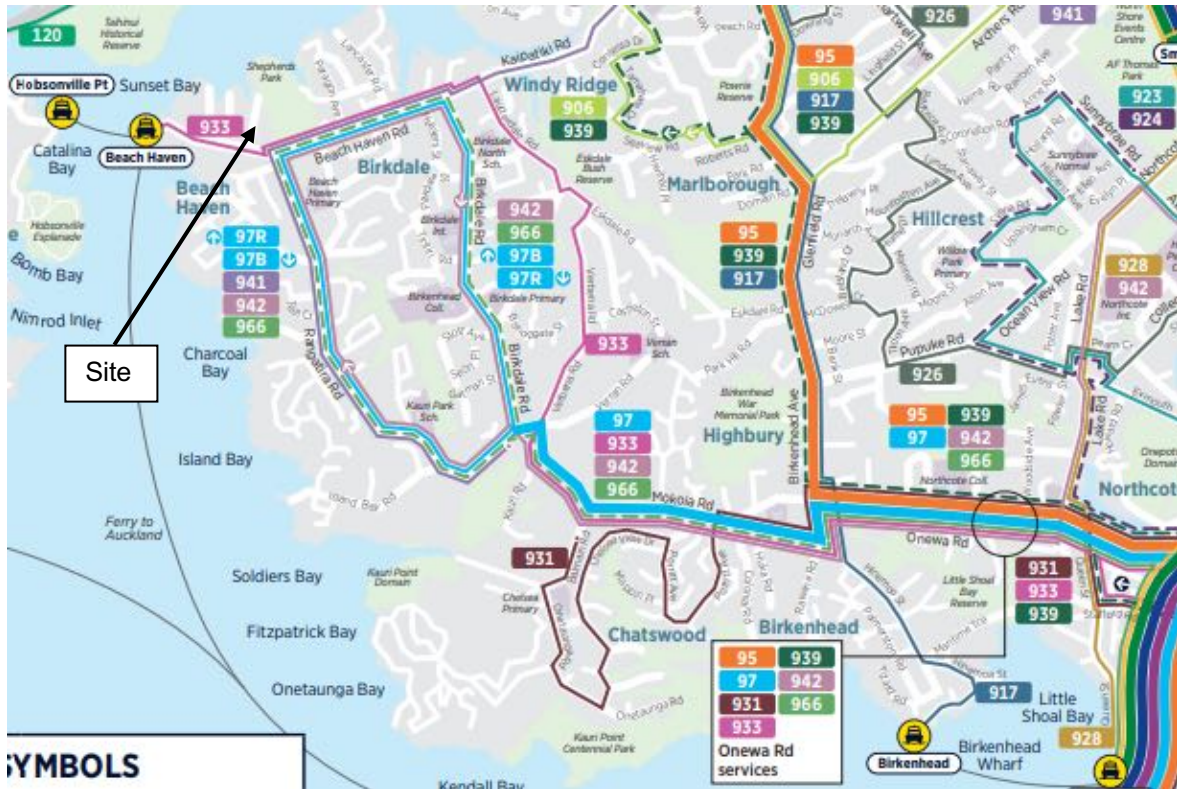
Beach Haven Wharf is located approximately 800 m from the site and provides a direct connection to Hobsonville Ferry Terminal and Auckland City Ferry Terminal. The Hobsonville and Beach Haven ferry service operates hourly during peak morning and evening hours from Monday to Friday and once every two hours on weekends and public holidays.

² Frequent services operate at least every 15 minutes, 7am – 7pm, 7 days a week, with lower frequencies at early morning and evening hours.

³ Connector services operate at least every 30 minutes, 7am – 7pm, 7 days a week, with lower frequencies at early morning and evening hours.

⁴ Peak Hour services operate weekdays only, during morning and afternoon peak

Figure 2: Public Transport

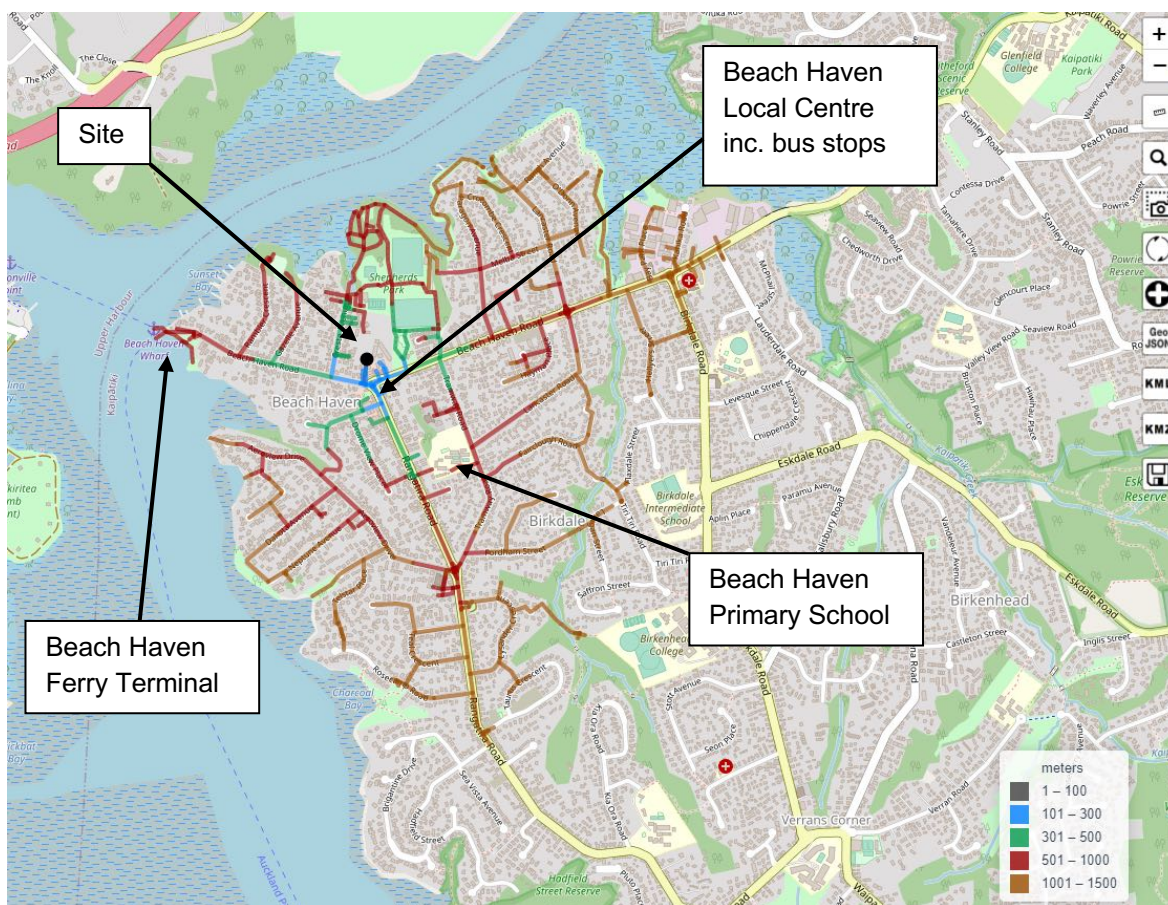


2.3.3 WALKING

The Austroads Guide to Traffic Engineering Practice Part 13 – Pedestrians indicates that the practical walking distance for non-recreational walking trips is in the order of 1.5 km. Using the practical walking distance of 1.5 km and the 15th percentile walking speed of a typical fit, healthy adult of 1.3 m/s, gives a journey time of some 20 minutes. This is in line with New Zealand data in the Pedestrian Planning and Design Guide, which states that for walking trips, half are more than 10 minutes and 18% are more than 20 minutes.

Figure 3 overleaf shows the walking catchment from the site.

Figure 3: Walking Catchment



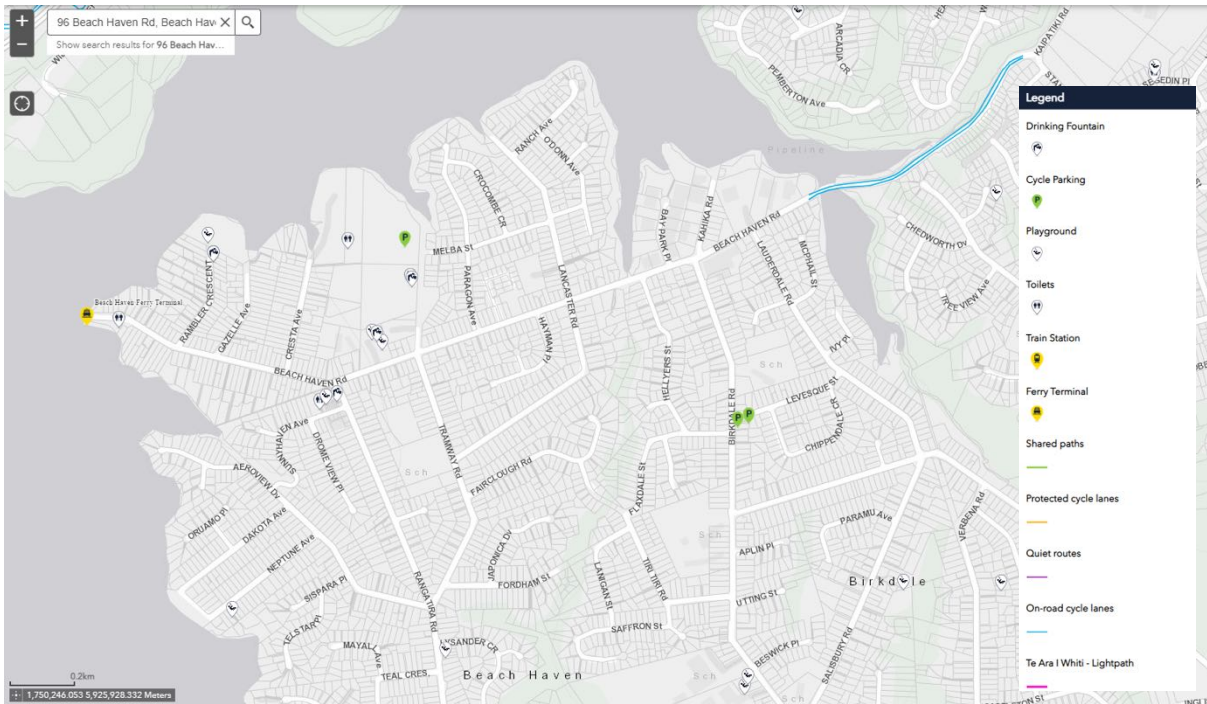
As shown above, a number of activities are within walking distance of the site.

2.3.4 CYCLING

The Auckland Transport Cycleway Map⁵ does not identify any specific cycle facilities near the site apart from some on-road cycle lanes on Beach Haven Road approximately 1.5 km east of the site. Figure 4 shows an excerpt of the Auckland Transport Cycleway Map near the site.

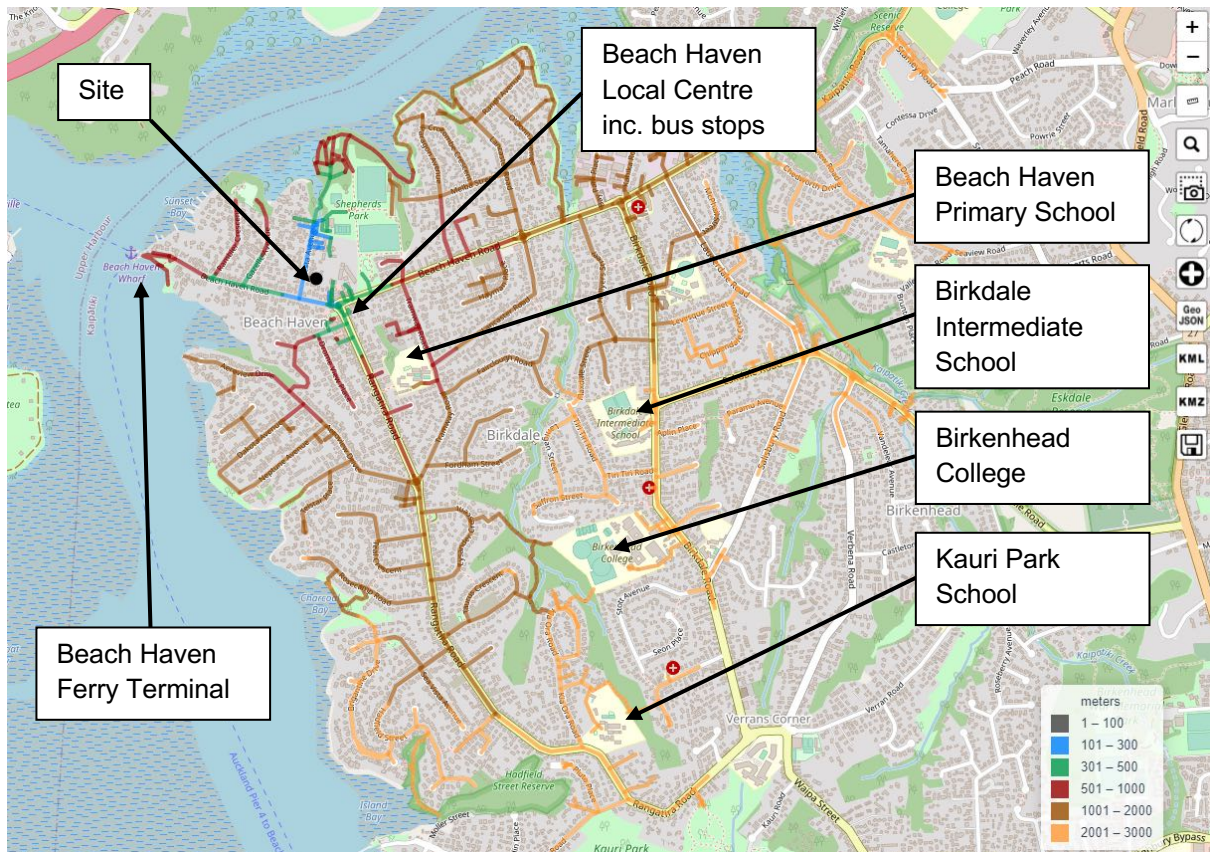
⁵ <https://maps.at.govt.nz/arcgis/apps/webappviewer/index.html?id=88a582e934f6473dba32cb3ab909890a>

Figure 4: Auckland Transport Cycleway Map



Based on New Zealand Transport Agency Research Report 426, the average cycling trip length is approximately 3 km. Figure 5 shows a 3 km cycling catchment from the site.

Figure 5: Cycling Catchment



As shown previous, a number of activities are within cycling distance of the site, particularly educational activities.

2.4 TRAFFIC VOLUMES

2.4.1 AUCKLAND TRANSPORT TRAFFIC VOLUMES

Table 1 outlines traffic volumes for Beach Haven Road near the site. These volumes have been recorded on a section of Beach Haven Road east of Rangatira Road where it is classified as an arterial road.

Table 1: Auckland Transport Traffic Volumes

Road	Location	Date	7-Day ADT (veh/ day)	Peak Hour Volume (veh / hr)	
Beach Haven Road	Between Tramway Road and Paragon Avenue	March 2017	9,070	782 (AM)	963 (PM)

As shown above, Beach Haven Road carries approximately 9,000 vehicles per day (vpd) which is typical of an arterial road in Auckland.

2.4.2 SURVEYED TRAFFIC VOLUMES

Turning count surveys were undertaken at the Beach Haven Road/ Cresta Avenue intersection and Beach Haven Road/ Rangatira Road roundabout on Tuesday 9 March 2021. The results of the surveys are summarised in Figure 6 and Figure 7.

Figure 6: Traffic Volumes – Morning Peak Hour

AM Peak Hour 8:00 to 9:00am

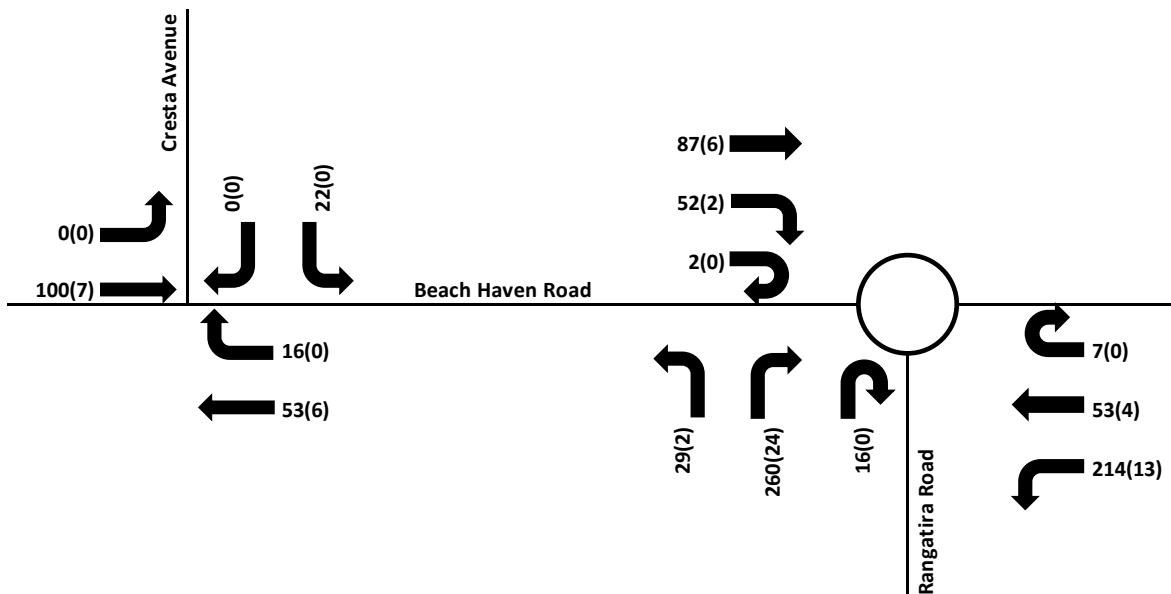
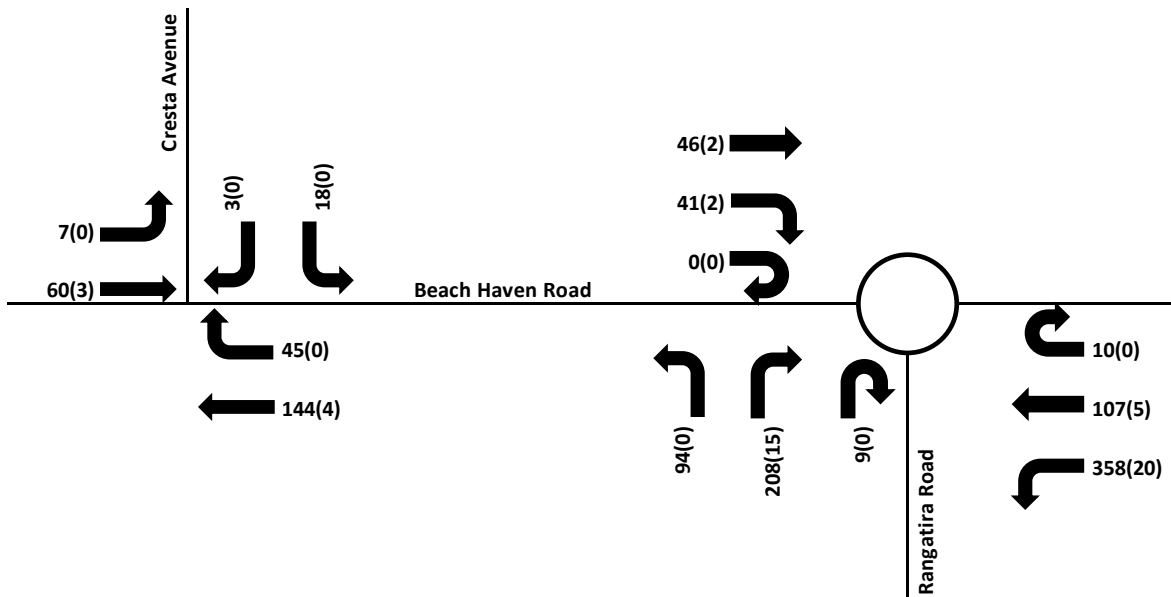


Figure 7: Traffic Volumes – Evening Peak Hour

PM Peak Hour 5:00 to 6:00pm



The traffic volumes suggest that Cresta Avenue carries approximately 600 vpd and Beach Haven Road carries approximately 2,700 vpd. These volumes are not high and indicate ample capacity to accommodate additional traffic volumes.

2.5 CRASH HISTORY

A search of the road safety record using the Waka Kotahi Crash Analysis System (CAS). The search has been carried out to identify all reported crashes near the site in the five-year period from 2016 to 2020 as well as any crashed entered for 2021. The search area included the full length of Cresta Avenue and Beach Haven Road between Cresta Avenue and Rangatira Road. It also included any crashes within 50 m of the following intersections:

- Beach Haven Road/ Cresta Avenue intersection;
- Beach Haven Road/ Rangatira Road roundabout; and
- Rangatira Road/ Sunnyhaven Avenue intersection.

A total of eight crashes were identified. Table 2 summarises these crashes.

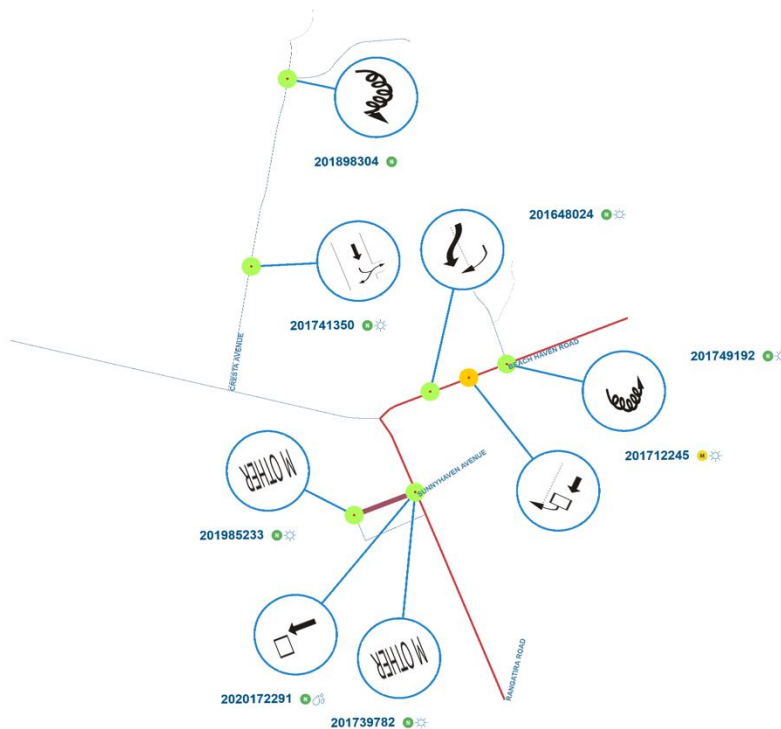
Table 2: Crash Summary

Location	Number of Crashes/ Predominant Crash Types	Injuries
Cresta Avenue midblock	2 crashes 50% reverse manoeuvre from driveway into oncoming vehicle 50% loss of control crash due to vehicle malfunction	2 non-injury crashes 0 crashes involving pedestrians

Location	Number of Crashes/ Predominant Crash Types	Injuries
Beach Haven Road midblock	3 crashes 33% rear end into vehicle slowing to turn into driveway 33% loss of control turning into driveway 33% overtaking manoeuvre due to vehicle turning into driveway	1 minor crash and 2 non-injury crash 0 crashes involving pedestrians
Sunnyhaven Avenue midblock	3 crashes 100% reverse manoeuvre into parked vehicle	3 non-injury crash 0 crashes involving pedestrians

The predominant cause of crashes were parked vehicles manoeuvring out of parking spaces and into oncoming vehicles. The majority of these crashes occurred within the Beach Haven Road local centre. No crashes occurred at the intersections within the crash study area. The crash history does not reflect a particular traffic safety concern with the area surrounding the site.

Figure 8: Crash Collision Diagram



As will be described, the proposed development is considered to add relatively small additional traffic movements onto Cresta Avenue and is therefore not expected to significantly affect the operation and safety of the nearby intersections.

3 PROPOSED DEVELOPMENT

The proposed development comprises 81 dwellings and includes the following:

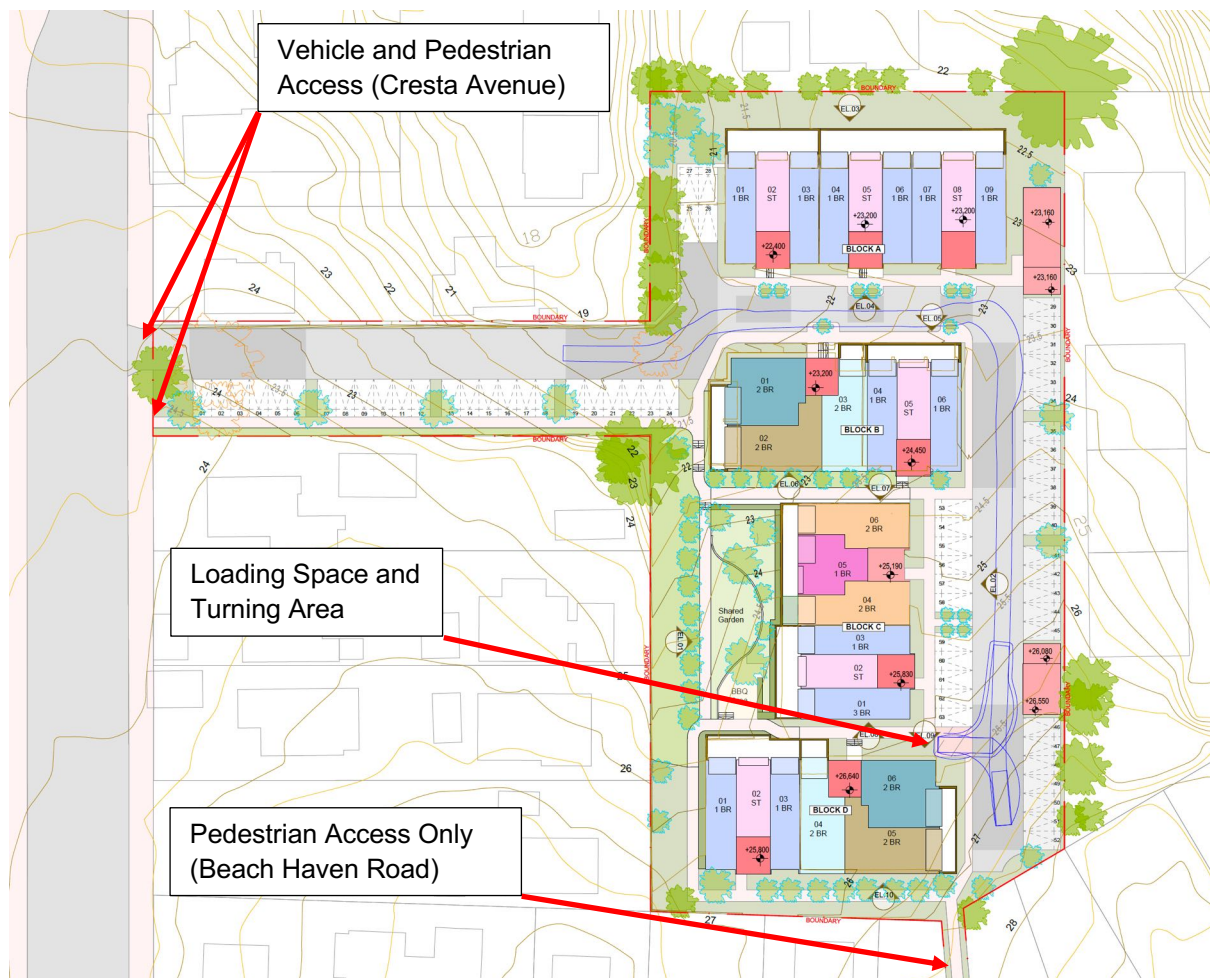
- 18 x studio apartments;
- 39 x one bedroom apartments;
- 24 x two bedroom apartments;
- 63 x parking spaces, and
- 81 x bicycle parking spaces.

All vehicle access is proposed to occur via a single Cresta Avenue vehicle crossing, while pedestrian access is proposed to both Cresta Avenue and Beach Haven Road.

Rubbish is proposed to be collected on-site using a private contractor such as Green Gorilla or Rubbish Direct. Rubbish compounds and one loading space are provided on-site.

Figure 9 shows the proposed development.

Figure 9: Proposed Development



4 TRIP GENERATION

4.1 GUIDELINES

The RTA Guide⁶ is commonly used by traffic engineering practitioners in Australasia to assess the traffic generating potential of various land uses. In New Zealand, the RTA Guide is frequently used for assessing residential developments.

The two existing dwellings on-site are considered to be “*dwelling houses*” while the proposed development is best represented by “*medium density residential flat buildings*” due to their smaller size and lower number of occupants. With respect to the assessment of permitted development on the site, given the lot sizes, larger dwellings with a greater number of parking spaces are provided. As such, this assessment also uses “*dwelling house*” rates.

4.2 EXISTING SITE TRIP GENERATION

The site currently comprises two lots with two dwellings. The trip generation has been estimated using the RTA Guide rates for *dwelling houses* as follows:

- Peak hour trip generation – 0.85 trips per dwelling
- Daily trip generation – 9 trips per dwelling.

The two dwellings are therefore estimated to generate 2 trips in the peak hour and 18 trips per day.

4.3 PERMITTED DEVELOPMENT SCENARIO TRIP GENERATION

The site is permitted to develop residential dwellings in accordance with the current ‘Residential – Single House Zone’. The total area of the site is 7,147 m² made up of 13 Cresta Avenue (4,896 m²) and 96 Beach Haven Road (2,251 m²).

Assuming that 20% of the total site is required for vehicle access and circulation (1,429 m²), the remaining 5,718 m² would be available for residential development. With a 600 m² lot size (Table E38.8.2.3.1), this would suggest 9 lots, and therefore 9 dwellings, could be developed in accordance with the existing zoning. The trip generation of the permitted development has been estimated using the RTA Guide rates for *dwelling houses* as follows:

- Peak hour trip generation – 0.65 trips per dwelling
- Daily trip generation – 6.5 trips per dwelling.

The 9 dwellings are therefore estimated to generate 6 trips in the peak hour and 59 trips per day.

4.4 PROPOSED TRIP GENERATION

As noted previously, 81 dwellings are proposed on-site. The trip generation has been estimated using the RTA Guide rates for *medium density residential flat buildings* as follows:

- Peak hour trip generation – 0.5 trips per dwelling (for 57 x studio and one bedroom apartments), and 0.65 trips per dwelling (for 24 x two bedroom apartments), and

⁶ The Roads and Traffic Authority of New South Wales – Guide to Traffic Generating Developments (RTA), Version 2.2, October 2002

- Daily trip generation – 5 trips per dwelling (for 57 x studio and one bedroom apartments, and 6.5 trips per dwelling (for 24 x two bedroom apartments)

The 81 dwellings are therefore estimated to generate 45 trips in the peak hour and 441 trips per day. The weighted trip generation for the proposed development is 0.56 trips per dwelling in the peak hour and 5.4 trips per dwelling per day.

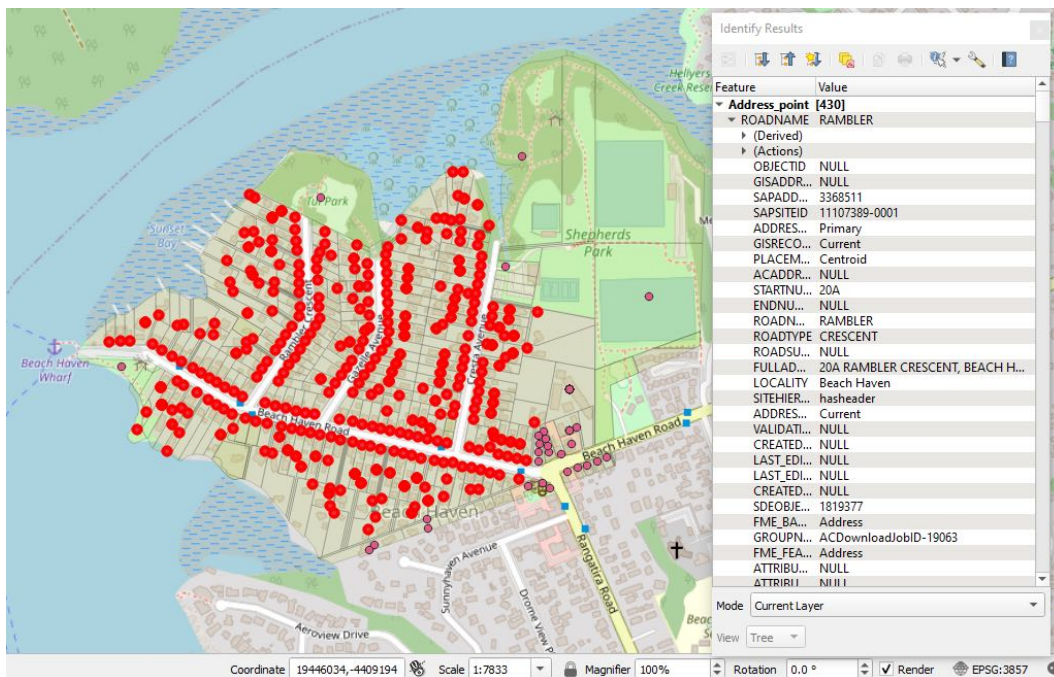
4.5 ACCEPTABILITY OF PROPOSED RTA RATES

The RTA rates have been compared to rates calculated using the traffic survey data in Figure 6 and Figure 7, and the number of unique addresses at the western end of Beach Haven Road. Based on the traffic volume data:

- There are a total of 237 movements in and out of Beach Haven Road (west of Rangatira Road) in the morning peak hour, and
- There are a total of 297 movements in and out of Beach Haven Road (west of Rangatira Road) in the evening peak hour.

Dwellings have not been counted as it is difficult on some sites to determine how many dwellings there are. Instead, 'address points' available in Auckland Council Geomaps have been extracted and inserted into a GIS program (QGIS). Figure 10 shows the address points (the highlighted red points are the unique addresses).

Figure 10: Unique Addresses on Beach Haven Road Catchment

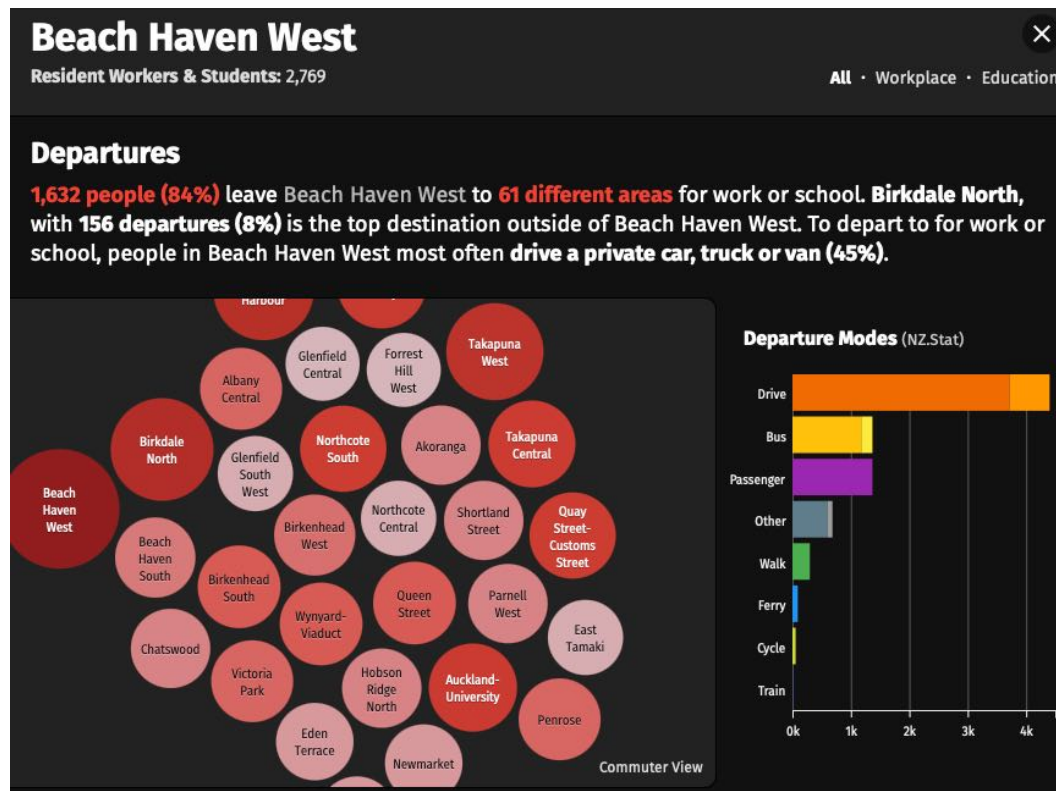


Based on the above, it is estimated that there are 430 dwellings in the residential catchment west of Rangatira Road. Using the surveyed counts, this translates to a trip rate of 0.55 trips per dwelling in the morning peak hour, and 0.69 trips per dwelling in the evening peak hour. Based on these existing trip rates for the catchment (and which comprises a higher number of larger dwellings), the RTA trip rates are considered reasonable.

Furthermore, we have analysed the 2018 'commuter waka' data from Statistics NZ to understand travel to work and education patterns in the Beach Haven West statistical area. There is relatively

high usage of public transport with some 17% of departures from the area i.e. residents, using buses or ferries. There are also high levels of ride sharing with some 17% of departures being as a passenger in a car, truck, van or company bus. Figure 11 shows this data.

Figure 11: Census Transport Patterns for Beach Haven West



4.6 TRIP DISTRIBUTION / MODEL GENERATION

4.6.1 DISTRIBUTION ASSUMPTIONS

All trips associated with the proposed development (81 dwellings) have been added to the existing road network traffic volumes summarised in Section 2.4.2. It is noted that the existing trips generated by the site have not been removed from the network therefore resulting in a conservative analysis.

In terms of inbound/outbound percentages, the following has been assumed:

- Morning Peak Hour – 70% outbound, 30% inbound
- Evening Peak Hour – 30% outbound, 70% inbound.

The key intersections for assessment are the Beach Haven Road/ Cresta Avenue intersection and Beach Haven Road/ Rangatira Road roundabout. Additional vehicle movements at the intersections have been assigned to the network based on existing turning movement patterns as follows.

4.6.2 ADDITIONAL TRAFFIC MOVEMENTS

Figure 12 and Figure 13 show the estimated additional traffic movements generated by the development.

Figure 12: Additional Traffic Movements – Weekday Morning Peak Hour

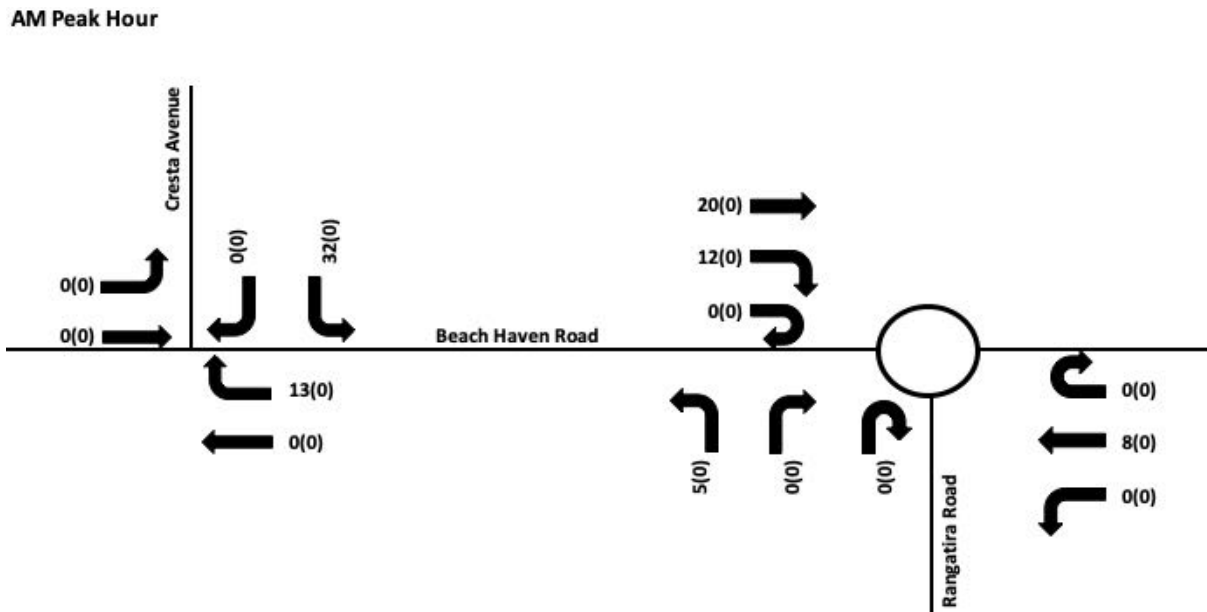
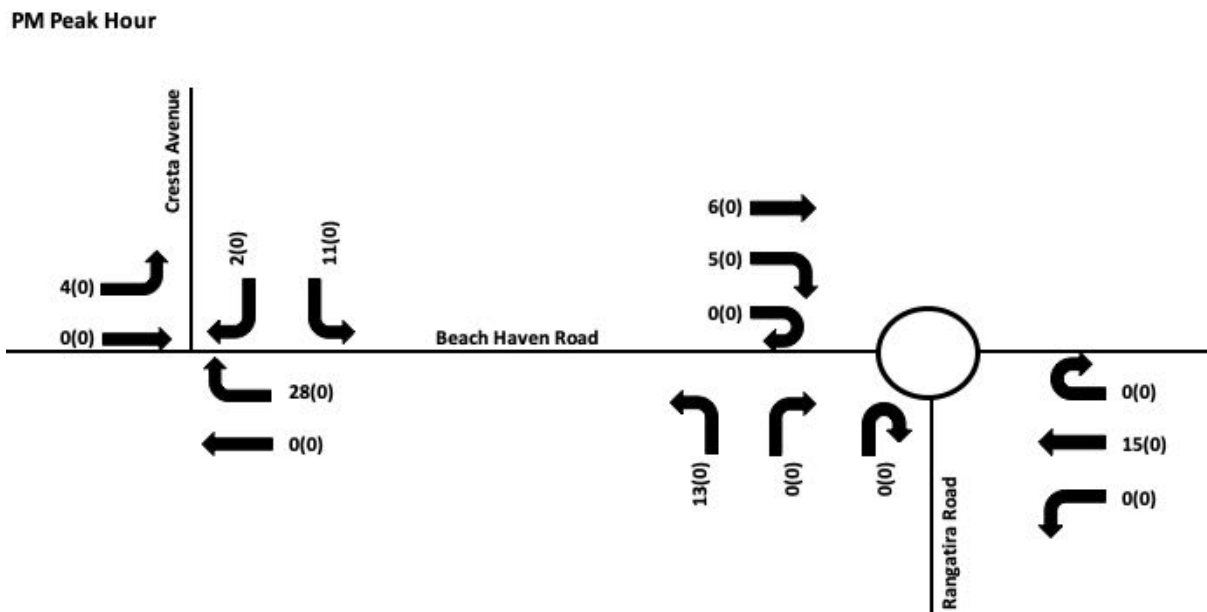


Figure 13: Additional Traffic Movements – Weekday Evening Peak Hour



4.6.3 PROPOSED TRAFFIC MOVEMENTS

Figure 14 and Figure 15 show the proposed traffic movements (existing traffic movements shown in Section 2.4.2 plus the additional traffic movements shown in Section 4.6.2).

Figure 14: Proposed Traffic Movements – Weekday Morning Peak Hour

AM Peak Hour

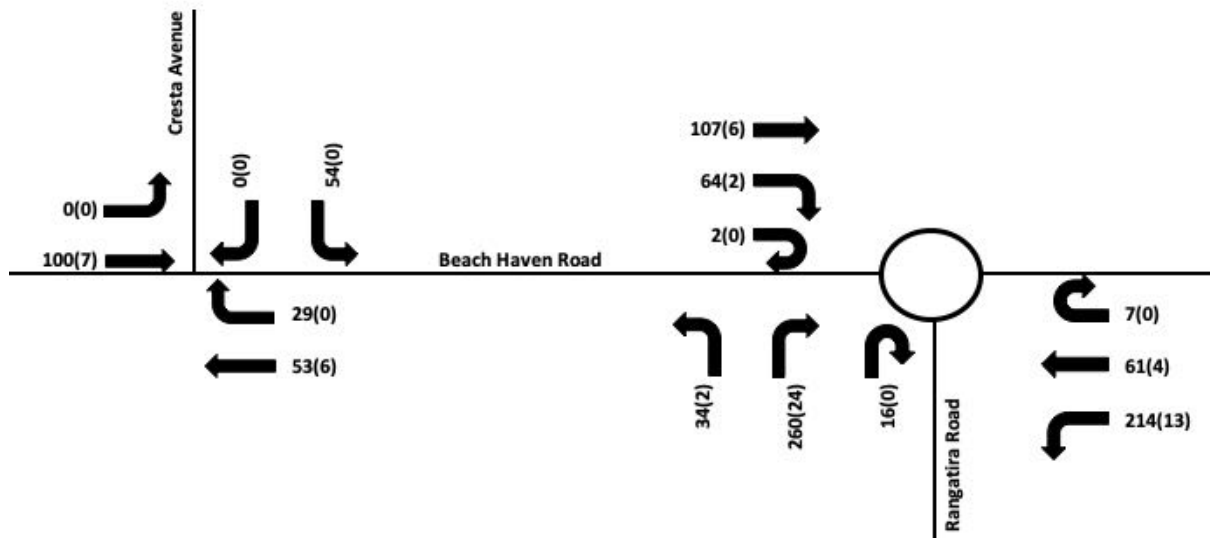
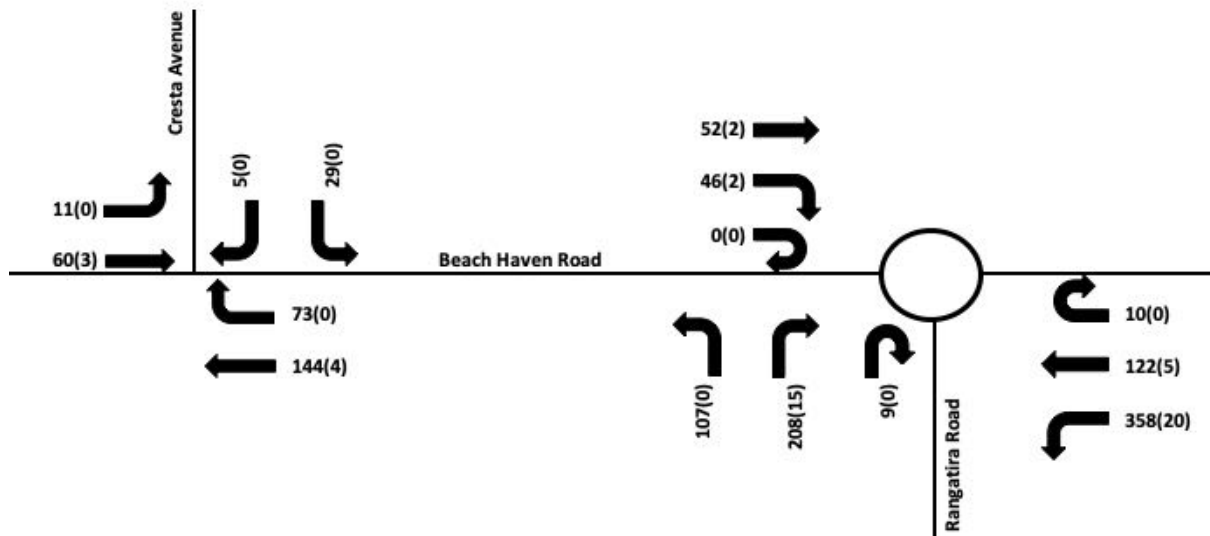


Figure 15: Proposed Traffic Movements – Weekday Evening Peak Hour

PM Peak Hour



5 ASSESSMENT OF EFFECTS

5.1 ASSESSMENT METHODOLOGY

The traffic effects of the proposed development (81 dwellings) on the performance of the Beach Haven Road/ Cresta Avenue intersection and Beach Haven Road/ Rangatira Road roundabout have been assessed using the traffic modelling software SIDRA.

The results presented in this report include the Degree of Saturation, which is a measure of available capacity and the Level of Service (“LOS”), which is a generalised function of delay. For signal-controlled intersections, a Degree of Saturation of less than 0.90 is considered to be acceptable. LOS A and B are very good and indicative of free-flow conditions; C is good; D is acceptable; and E and F are indicative of congestion and unstable conditions.

The assessment below identifies the effect of the additional vehicle trips.

5.2 ROAD NETWORK ASSESSMENT

5.2.1 BEACH HAVEN ROAD/ CRESTA AVENUE INTERSECTION

5.2.1.1 EXISTING INTERSECTION PERFORMANCE

The Beach Haven Road/ Cresta Avenue intersection is a priority-controlled T-intersection. Table 3 and Table 4 summarise the existing intersection performance.

Table 3: Beach Haven Road/ Cresta Avenue Intersection Performance – Existing Morning Peak Hour

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] veh/h	[Total veh/h]	[HV] %				[Veh. veh]	[Dist] m				
East: Beach Haven Road														
5	T1	59	6	62	10.2	0.044	0.1	LOS A	0.1	0.7	0.10	0.12	0.10	49.0
6	R2	16	0	17	0.0	0.044	4.9	LOS A	0.1	0.7	0.10	0.12	0.10	48.3
Approach		75	6	79	8.0	0.044	1.1	NA	0.1	0.7	0.10	0.12	0.10	48.9
North: Cresta Avenue														
7	L2	22	0	23	0.0	0.016	4.9	LOS A	0.1	0.4	0.20	0.50	0.20	46.1
9	R2	1	0	1	0.0	0.001	5.4	LOS A	0.0	0.0	0.29	0.51	0.29	45.6
Approach		23	0	24	0.0	0.016	4.9	LOS A	0.1	0.4	0.21	0.50	0.21	46.1
West: Beach Haven Road														
10	L2	1	0	1	0.0	0.061	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
11	T1	107	7	113	6.5	0.061	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		108	7	114	6.5	0.061	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		206	13	217	6.3	0.061	1.0	NA	0.1	0.7	0.06	0.10	0.06	49.1

Table 4: Beach Haven Road/ Cresta Avenue Intersection Performance – Existing Evening Peak Hour

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 veh/h]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
East: Beach Haven Road														
5	T1	148	4	156	2.7	0.110	0.1	LOS A	0.3	2.1	0.09	0.13	0.09	49.0
6	R2	45	0	47	0.0	0.110	4.8	LOS A	0.3	2.1	0.09	0.13	0.09	48.3
Approach		193	4	203	2.1	0.110	1.2	NA	0.3	2.1	0.09	0.13	0.09	48.9
North: Cresta Avenue														
7	L2	18	0	19	0.0	0.012	4.7	LOS A	0.0	0.3	0.15	0.49	0.15	46.3
9	R2	3	0	3	0.0	0.004	5.9	LOS A	0.0	0.1	0.35	0.54	0.35	45.4
Approach		21	0	22	0.0	0.012	4.9	LOS A	0.0	0.3	0.18	0.50	0.18	46.2
West: Beach Haven Road														
10	L2	7	0	7	0.0	0.039	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	49.2
11	T1	63	3	66	4.8	0.039	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
Approach		70	3	74	4.3	0.039	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.6
All Vehicles		284	7	299	2.5	0.110	1.3	NA	0.3	2.1	0.07	0.14	0.07	48.8

As shown above, the performance of the intersection during the morning and evening peak hour is excellent. Intersection queuing, average delays and degrees of saturation are very low indicating the ability to accommodate additional traffic movements.

5.2.1.2 PROPOSED INTERSECTION PERFORMANCE

Table 5 and Table 6 summarise the proposed intersection performance.

Table 5: Beach Haven Road/ Cresta Avenue Intersection Performance – Proposed Morning Peak Hour

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 veh/h]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
East: Beach Haven Road														
5	T1	59	6	62	10.2	0.053	0.2	LOS A	0.2	1.3	0.15	0.18	0.15	48.5
6	R2	29	0	31	0.0	0.053	4.9	LOS A	0.2	1.3	0.15	0.18	0.15	47.9
Approach		88	6	93	6.8	0.053	1.7	NA	0.2	1.3	0.15	0.18	0.15	48.3
North: Cresta Avenue														
7	L2	54	0	57	0.0	0.038	4.9	LOS A	0.2	1.1	0.21	0.50	0.21	46.1
9	R2	1	0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.30	0.51	0.30	45.6
Approach		55	0	58	0.0	0.038	4.9	LOS A	0.2	1.1	0.21	0.50	0.21	46.1
West: Beach Haven Road														
10	L2	1	0	1	0.0	0.061	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
11	T1	107	7	113	6.5	0.061	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		108	7	114	6.5	0.061	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		251	13	264	5.2	0.061	1.7	NA	0.2	1.3	0.10	0.17	0.10	48.5

Table 6: Beach Haven Road/ Cresta Avenue Intersection Performance – Proposed Evening Peak Hour

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] veh/h	[Total veh/h]	[HV] %				[Veh.] veh	[Dist] m				
East: Beach Haven Road														
5	T1	148	4	156	2.7	0.128	0.1	LOS A	0.4	3.2	0.13	0.18	0.13	48.6
6	R2	73	0	77	0.0	0.128	4.8	LOS A	0.4	3.2	0.13	0.18	0.13	48.0
Approach		221	4	233	1.8	0.128	1.7	NA	0.4	3.2	0.13	0.18	0.13	48.4
North: Cresta Avenue														
7	L2	29	0	31	0.0	0.020	4.7	LOS A	0.1	0.5	0.15	0.50	0.15	46.3
9	R2	5	0	5	0.0	0.006	6.1	LOS A	0.0	0.1	0.37	0.56	0.37	45.3
Approach		34	0	36	0.0	0.020	4.9	LOS A	0.1	0.5	0.18	0.51	0.18	46.1
West: Beach Haven Road														
10	L2	11	0	12	0.0	0.041	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
11	T1	63	3	66	4.8	0.041	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach		74	3	78	4.1	0.041	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.4
All Vehicles		329	7	346	2.1	0.128	1.8	NA	0.4	3.2	0.10	0.19	0.10	48.4

As shown above, the intersection continues to operate very well. No movement operates at worse than LOS A and the average delays increase by no more than 0.7 seconds. Queues are still less than one vehicle. Overall, the effects of the proposed development volumes on the existing intersection are considered negligible. As such, no mitigation works are considered to be required for this intersection.

5.2.2 BEACH HAVEN ROAD/ RANGATIRA ROAD ROUNDABOUT

5.2.2.1 EXISTING INTERSECTION PERFORMANCE

The Beach Haven Road/ Rangatira Road intersection is a single lane roundabout. Table 7 and Table 8 summarise the existing roundabout performance.

Table 7: Beach Haven Road/ Rangatira Road Roundabout Performance – Existing Morning Peak Hour

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 veh/h]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Rangatira Road														
1	L2	31	2	33	6.5	0.274	4.4	LOS A	1.7	12.5	0.26	0.59	0.26	44.7
3	R2	284	24	299	8.5	0.274	7.2	LOS A	1.7	12.5	0.26	0.59	0.26	45.1
3u	U	16	0	17	0.0	0.274	8.6	LOS A	1.7	12.5	0.26	0.59	0.26	45.7
Approach		331	26	348	7.9	0.274	7.0	LOS A	1.7	12.5	0.26	0.59	0.26	45.1
East: Beach Haven Road														
4	L2	227	13	239	5.7	0.243	4.4	LOS A	1.5	11.0	0.27	0.49	0.27	46.0
5	T1	57	4	60	7.0	0.243	4.2	LOS A	1.5	11.0	0.27	0.49	0.27	46.8
6u	U	7	0	7	0.0	0.243	8.6	LOS A	1.5	11.0	0.27	0.49	0.27	47.1
Approach		291	17	306	5.8	0.243	4.5	LOS A	1.5	11.0	0.27	0.49	0.27	46.2
West: Beach Haven Road														
11	T1	93	6	98	6.5	0.168	5.9	LOS A	0.9	6.6	0.51	0.64	0.51	45.5
12	R2	54	2	57	3.7	0.168	8.8	LOS A	0.9	6.6	0.51	0.64	0.51	45.3
12u	U	2	0	2	0.0	0.168	10.1	LOS B	0.9	6.6	0.51	0.64	0.51	45.8
Approach		149	8	157	5.4	0.168	7.0	LOS A	0.9	6.6	0.51	0.64	0.51	45.5
All Vehicles		771	51	812	6.6	0.274	6.1	LOS A	1.7	12.5	0.31	0.56	0.31	45.6

Table 8: Beach Haven Road/ Rangatira Road Roundabout Performance – Existing Evening Peak Hour

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 veh/h]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Rangatira Road														
1	L2	94	0	99	0.0	0.293	4.7	LOS A	1.8	13.1	0.36	0.60	0.36	44.9
3	R2	223	15	235	6.7	0.293	7.7	LOS A	1.8	13.1	0.36	0.60	0.36	45.3
3u	U	9	0	9	0.0	0.293	9.0	LOS A	1.8	13.1	0.36	0.60	0.36	45.8
Approach		326	15	343	4.6	0.293	6.9	LOS A	1.8	13.1	0.36	0.60	0.36	45.2
East: Beach Haven Road														
4	L2	378	20	398	5.3	0.388	4.3	LOS A	2.8	20.7	0.26	0.48	0.26	46.1
5	T1	112	5	118	4.5	0.388	4.1	LOS A	2.8	20.7	0.26	0.48	0.26	46.8
6u	U	10	0	11	0.0	0.388	8.5	LOS A	2.8	20.7	0.26	0.48	0.26	47.1
Approach		500	25	526	5.0	0.388	4.4	LOS A	2.8	20.7	0.26	0.48	0.26	46.3
West: Beach Haven Road														
11	T1	48	2	51	4.2	0.098	5.2	LOS A	0.5	3.7	0.44	0.60	0.44	45.7
12	R2	43	2	45	4.7	0.098	8.3	LOS A	0.5	3.7	0.44	0.60	0.44	45.4
12u	U	1	0	1	0.0	0.098	9.6	LOS A	0.5	3.7	0.44	0.60	0.44	45.9
Approach		92	4	97	4.3	0.098	6.7	LOS A	0.5	3.7	0.44	0.60	0.44	45.6
All Vehicles		918	44	966	4.8	0.388	5.5	LOS A	2.8	20.7	0.32	0.53	0.32	45.8

As shown above, the roundabout operates very well with the intersection performing at LOS A in both peak hours. All average delays were less than 10 seconds except for the u-turn movement on Beach Haven Road west (just over 10 seconds) and all queues are less than three vehicles.

5.2.2.1 PROPOSED INTERSECTION PERFORMANCE

Table 9 and Table 10 summarise the proposed intersection performance.

Table 9: Beach Haven Road/ Rangatira Road Roundabout Performance – Proposed Morning Peak Hour

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] veh/h	[Total veh/h]	[HV] %				[Veh. veh]	[Dist] m				
South: Rangatira Road														
1	L2	36	2	38	5.6	0.283	4.4	LOS A	1.8	13.2	0.28	0.59	0.28	44.7
3	R2	284	24	299	8.5	0.283	7.3	LOS A	1.8	13.2	0.28	0.59	0.28	45.1
3u	U	16	0	17	0.0	0.283	8.6	LOS A	1.8	13.2	0.28	0.59	0.28	45.7
Approach		336	26	354	7.7	0.283	7.1	LOS A	1.8	13.2	0.28	0.59	0.28	45.1
East: Beach Haven Road														
4	L2	227	13	239	5.7	0.256	4.5	LOS A	1.6	11.7	0.30	0.50	0.30	46.0
5	T1	65	4	68	6.2	0.256	4.3	LOS A	1.6	11.7	0.30	0.50	0.30	46.7
6u	U	7	0	7	0.0	0.256	8.7	LOS A	1.6	11.7	0.30	0.50	0.30	47.0
Approach		299	17	315	5.7	0.256	4.6	LOS A	1.6	11.7	0.30	0.50	0.30	46.2
West: Beach Haven Road														
11	T1	113	6	119	5.3	0.205	5.9	LOS A	1.1	8.3	0.53	0.65	0.53	45.5
12	R2	66	2	69	3.0	0.205	8.9	LOS A	1.1	8.3	0.53	0.65	0.53	45.3
12u	U	2	0	2	0.0	0.205	10.2	LOS B	1.1	8.3	0.53	0.65	0.53	45.8
Approach		181	8	191	4.4	0.205	7.0	LOS A	1.1	8.3	0.53	0.65	0.53	45.4
All Vehicles		816	51	859	6.3	0.283	6.1	LOS A	1.8	13.2	0.34	0.57	0.34	45.6

Table 10: Beach Haven Road/ Rangatira Road Roundabout Performance – Proposed Evening Peak Hour

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] veh/h	[Total veh/h]	[HV] %				[Veh. veh]	[Dist] m				
South: Rangatira Road														
1	L2	107	0	113	0.0	0.311	4.8	LOS A	1.9	14.1	0.39	0.61	0.39	44.9
3	R2	223	15	235	6.7	0.311	7.8	LOS A	1.9	14.1	0.39	0.61	0.39	45.3
3u	U	9	0	9	0.0	0.311	9.1	LOS A	1.9	14.1	0.39	0.61	0.39	45.8
Approach		339	15	357	4.4	0.311	6.9	LOS A	1.9	14.1	0.39	0.61	0.39	45.2
East: Beach Haven Road														
4	L2	378	20	398	5.3	0.403	4.4	LOS A	3.0	21.9	0.28	0.48	0.28	46.0
5	T1	127	5	134	3.9	0.403	4.2	LOS A	3.0	21.9	0.28	0.48	0.28	46.8
6u	U	10	0	11	0.0	0.403	8.6	LOS A	3.0	21.9	0.28	0.48	0.28	47.1
Approach		515	25	542	4.9	0.403	4.4	LOS A	3.0	21.9	0.28	0.48	0.28	46.2
West: Beach Haven Road														
11	T1	54	2	57	3.7	0.110	5.3	LOS A	0.6	4.2	0.45	0.60	0.45	45.7
12	R2	48	2	51	4.2	0.110	8.3	LOS A	0.6	4.2	0.45	0.60	0.45	45.4
12u	U	1	0	1	0.0	0.110	9.6	LOS A	0.6	4.2	0.45	0.60	0.45	45.9
Approach		103	4	108	3.9	0.110	6.7	LOS A	0.6	4.2	0.45	0.60	0.45	45.6
All Vehicles		957	44	1007	4.6	0.403	5.5	LOS A	3.0	21.9	0.34	0.54	0.34	45.8

As shown, the intersection continues to operate very well. The intersection continues to operate at LOS A and the average delays are the same overall. Queues are still less than three vehicles. Overall, the effects of the potential development volumes on the existing intersection are considered negligible. As such, no mitigation works are considered to be required for this intersection.

6 PARKING

6.1 PROPOSED AUCKLAND UNITARY PLAN REQUIREMENTS (E27.6.2)

As per the latest version of the Unitary Plan, all minimum parking requirements for residential activity in the 'Residential – Single House Zone' have been deleted (refer T46 and T46A table references in the Unitary Plan). Furthermore, there are no maximum parking requirements.

As a result of the above, any number of parking spaces could be provided on-site (including none at all) and satisfy the Unitary Plan parking standards. With 63 parking spaces proposed, the provision satisfies Unitary Plan parking requirements.

6.2 LIKELY PARKING DEMAND

Residential development can increase the demand for on-street parking if the parking demand of a site exceeds the parking supply available on that site. A contributing factor of this was the policy shift and the parking provisions in the Unitary Plan, which reduced the minimum parking requirements to levels which often do displace parking onto the street, and the recent National Policy Statement on Urban Development 2020 (NPS-UD) which essentially removes parking minimums from any development within major territorial authorities such as Auckland.

These were intentional moves to enable greater housing supply and reduce housing costs (by reducing the amount of space on-site needed for parking). There was an expectation that Auckland Council and specifically Auckland Transport would then manage on-street parking through parking controls (time limited parking, paid parking for example) if necessary.

Despite the above however, the likely parking demand has been estimated based on the housing typologies outlined in Section 3. The RTA parking demand rates have been used as these have been used for trip generation purposes, and are considered reasonable. The expected parking demand has been estimated using the 'medium density residential flat building' rates as follows:

"The recommended minimum number of off-street, resident parking spaces is 1 space for each unit, plus an additional 1 space per each 5 x 2 bedroom unit or part thereof. Also, an additional 1 space per each 2 x 3 or more bedroom unit or part thereof is recommended.

An additional one space per each five units for visitor parking or part thereof is recommended."

Therefore, for the 81 dwellings proposed, in the typologies outlined in Section 3, it is expected there would be a parking demand of 86 resident spaces and 16 visitor spaces (102 spaces in total). As the proposed development provides 63 parking spaces on-site, there could be an increased demand for up to 39 parking spaces on-street. Parking demand surveys were undertaken at various times and the results are shown in Table 11.

Table 11: Surveyed Parking Demand

Location	Parking Demand		Spaces Available	
	Thurs Evening	Sat Midday	Thurs Evening	Sat Midday
Cresta Avenue	19	21	39	37
Beach Haven Road	2	11	17	8
Total	21	32	56	45

As can be seen, on both weekday evening and Saturday midday periods, there is sufficient on-street parking on Crest Avenue and Beach Haven Road to accommodate additional parking if required.

6.3 BICYCLE PARKING (E27.6.2)

Table 12 outlines the Unitary Plan bicycle parking requirements for the proposed development.

Table 12: Unitary Plan Bicycle Parking Requirements

Activity	Short Stay (Visitors)	Long Stay (Residents)
Residential (Developments of 20 or more dwellings)	1 per 20 dwellings	1 per dwelling without a dedicated garage

With 81 dwellings on-site, a total of 81 resident bicycle parking spaces are required and 4 visitor bicycle parking spaces are required. A total of 81 resident parking spaces are provided on-site within a dedicated bicycle storage building. Visitor bicycle parking spaces are provided by way of two bicycle stands (for four bicycles) near the pedestrian accessway connections to Cresta Avenue and Beach Haven Road. The exact location is to be confirmed but there is ample space to accommodate these stands.

6.4 ACCESSIBLE PARKING

The Unitary Plan requires that accessible parking be provided as per the requirements of the Building Code and NZS 4121⁷. The Building Act⁸ states that accessible parking is not required for residential dwellings. No accessible spaces are proposed on-site.

6.5 LOADING (E27.6.2)

The dwellings on the site have a GFA of approximately 4,520 m² and therefore no loading space is required ('all other activities' up to 5,000 m²).

⁷ NZS4121:2001, Design for Access and Mobility: Buildings and Associated Facilities

⁸ <https://www.legislation.govt.nz/act/public/2004/0072/latest/DLM309341.html>

Given the number of dwellings however, private rubbish collection is proposed. A Waste Management Plan has been prepared and it is assumed that a 7.35 m EV truck will service the site. A loading space for rubbish trucks is provided on-site as per the vehicle tracking in **Attachment A**.

6.6 PARKING SPACE DIMENSIONS (E27.6.3)

A total of 63 parking spaces are provided on-site comprising:

- 63 x 90 degree spaces (2.5 m wide x 5.0 m deep with 6.7 m manoeuvring aisle).

All spaces meet the minimum Unitary Plan parking dimensions.

The design has considered vehicle tracking and the spaces at the end of the aisle have therefore been widened to aide tracking to and from these spaces. There are two stacked pairs of parking spaces. E27.6.3.3 of the Unitary Plan states:

“Where a dwelling provides more than one parking space, these may be stacked. Stacked parking means access is required through another parking space.”

Each stacked pair of parking spaces is proposed to be allocated to the same resident to ensure cars can be moved easily when required.

7 ACCESS

7.1 GENERAL

A single 4.0 m wide vehicle access is proposed on Cresta Avenue to serve the development. Cresta Avenue is a cul-de-sac which connects to Beach Haven Road (the portion of which is not classified as an arterial road) via a priority-controlled intersection (although it is unmarked). It is proposed to mark this intersection as a give-way controlled intersection with associated give-way signage. Pedestrian and cyclist access is also proposed via an existing access strip (some 3.0 m wide) to Beach Haven Road.

7.2 UNITARY PLAN REQUIREMENTS

7.2.1 VEHICLE ACCESS RESTRICTIONS (E27.6.4.1)

Vehicle Access Restrictions apply, and vehicle crossings must not be constructed or used to provide vehicle access across that part of a site boundary, which:

- (a) is located within 10 m of any intersection as measured from the property boundary;
- (b) is subject to the following types of Vehicle Access Restriction as identified on the planning maps in the zones listed in Table E27.6.4.1.1;
- (c) has frontage to an arterial road as identified on the planning maps; or
- (d) is located closer than 30 m from a railway level crossing limit line.

The proposed vehicle crossing is approximately 130 m from the nearest intersection (Beach Haven Road/ Cresta Avenue), is not subject to any vehicle access restrictions on the planning maps, does not front an arterial road and is not near a level crossing.

Given the above, the proposed vehicle crossing is considered acceptable.

7.2.2 CROSSING SEPARATION AND NUMBER OF VEHICLE CROSSINGS (E27.6.4.2)

Table E27.6.4.2.1 specifies that one driveway per 25 m of frontage (or part thereof) can be provided for 'all other sites' not subject to a vehicle access restriction or within specific geographic locations in the central area. The site has a frontage of approximately 15 m onto Cresta Avenue, therefore one crossing is permitted. The proposed development provides for one vehicle crossing, therefore meeting the permitted standards of the Unitary Plan.

Table E27.6.4.2.1 also specifies that the minimum separation distances between vehicle crossings are 6 m where crossings serve the same site, and 2 m where they serve adjacent sites (however this can be combined to one crossing if it is 6 m in width or less).

Regarding separation to neighbouring sites, the following is provided:

- The proposed vehicle crossing is located some 2.5 m from the nearest crossing to the north (15 Cresta Avenue), and
- The proposed vehicle crossing is located some 9.0 m from the nearest crossing to the south (11 Cresta Avenue).

As there is only one vehicle crossing proposed, assessment of separation distances between crossings on the same site do not apply.

The proposed crossings therefore meet the permitted standards of the Unitary Plan.

7.2.3 VEHICLE CROSSING AND VEHICLE ACCESS WIDTHS (E27.6.4.3)

In relation to the proposed vehicle crossing on the site, the Unitary Plan requires the following:

For residential sites serving more than 10 parking spaces

- Minimum width of crossing at site boundary – 5.5 m (two-way);
- Maximum width of crossing at site boundary – 6.0 m (two-way), and
- Minimum formed access width – 5.5 m (providing for two-way movements).

The proposed vehicle crossing is 5.5 m wide at the site boundary, and the formed access width inside the site is 6.7 m (the manoeuvring aisle), therefore meeting the permitted standards of the Unitary Plan.

The vehicle crossing is proposed to be designed in accordance with AT TDM Standard VX0201 (commercial vehicle crossing).

7.2.4 GRADIENT OF ACCESS (E27.6.4.4)

Rule E27.6.4.4.1 of the Unitary Plan the requirement for the gradient of vehicle access. As such, the gradient of the access must not be steeper than 1 in 5 (20 per cent) for residential activities. To avoid the underside of the car striking the ground, access with a change in gradient exceeding 1 in 8 (greater than 12.5 per cent change) at a summit, or 1 in 6.7 (15 per cent change) at a sag must include transition sections to achieve adequate ground clearance. Typically, a transition section requires a minimum length of 2 m.

In terms of the Unitary Plan, all vehicles must be designed so that where the access adjoins the road there is sufficient space onsite for a platform so that vehicles can stop safely and check for pedestrians and other vehicles prior to exiting. The platform must have a maximum gradient no steeper than 1 in 20 (5 per cent) and a minimum length of 4 m for residential activities.

The following gradients are proposed:

- An average gradient of 3.6% (1:28) for the first 5 m into the site therefore satisfying safety platform requirements (refer Aireys Civil Engineering Plan RC310), and
- A maximum gradient of 6.25% (1:16) from approximately 11 m into the site to 52.5 m into the site therefore satisfying maximum gradient requirements (refer Aireys Civil Engineering Plan RC310).

The proposed access gradients therefore meet the permitted standards of the Unitary Plan.

With respect to parking however, some 90 degree parking has maximum gradients of 6.25%. The maximum gradient for parking in the Unitary Plan is 1:20 (5%) and therefore the gradients do not meet the Unitary Plan requirement.

However, the proposed gradients meet AS/NZS2890.1 design standards⁹ of 1:16 perpendicular to the direction of the spaces and are therefore considered acceptable. The spaces will all be allocated to residents and therefore regular users.

7.3 PEDESTRIAN ACCESS

As noted, pedestrian access routes are proposed between the site and Cresta Avenue, and between the site and Beach Haven Road. The Cresta Avenue pedestrian access is proposed to be 1.5 m wide and separated from the vehicle access. Lighting will be provided for personal safety and low level landscaping will also be provided to enhance its appearance.

The Beach Haven Road pedestrian access is proposed to be 1.5 m wide. Lighting and low level landscaping will be provided for personal safety and appearance.

7.4 SIGHT DISTANCE

The RTS-6 Guidelines for Visibility at Driveways document (RTS-6 Guide) states that for driveways accessing onto a 'Local Road' with a 50 km/h operating speed, the required sight distance is 40 m. It should be noted operating speeds were measured on-site to be 45 km/hr.

Photograph 4 shows the sight distance to the north along Cresta Avenue. Photograph 5 shows the sight distance to the south along Cresta Avenue.

⁹ Section 2.4.6, AS/NZS2890.1:2004

Photograph 4: Proposed Cresta Avenue Vehicle Access – Looking north



Photograph 5: Proposed Cresta Avenue Vehicle Access – Looking south



Analysis indicates that the available sight distance available will easily exceed the 40 m required in the RTS-6 guidelines for a 50 km/hr environment. It is noted that on local roads, RTS-6 does not consider parked vehicles to be 'permanent obstructions' and therefore parked vehicles can be within the sight lines.

8 CONSTRUCTION TRAFFIC

The development site is currently occupied by two residential dwellings, therefore demolition works would occur first followed by earth works and finally construction of the new dwellings.

Until land use consent is approved, a contractor cannot be appointed and therefore exact construction details are difficult to determine at this stage. Despite that, it is expected that all construction truck movements to and from the site will be via Cresta Avenue. The earth works phase is being applied for in a separate consent process and can be undertaken over an extended period to minimise traffic effects if necessary.

As is typical with a development of this scale, it is recommended that a Construction Traffic Management Plan (CTMP) should be developed to manage construction effects. As a minimum, it is considered that the Construction Traffic Management Plan should include the following:

- Construction dates and hours of operation including any specific non-working hours for traffic congestion/noise etc, aligned with normally accepted construction hours in the Auckland Region;
- Truck route diagrams between the site and external road network.
- Temporary traffic management signage/details for both pedestrians and vehicles, to manage the interaction of these road users with heavy construction traffic; and
- Details of site access/egress over the entire construction period and any limitations on truck movements. All egress points should be positioned to achieve appropriate sight distances.

Based on experience of constructing similar projects, and bearing in mind capacity within the existing road network, with the appropriate Construction Traffic Management Plan in place and the above measures implemented, it is considered that construction activities can be managed to ensure any generated traffic effects are appropriately mitigated.

9 CONCLUSIONS

Based on the assessments undertaken in this report, it is concluded:

- The crash history does not highlight any safety concerns near the site;
- The site has good accessibility to various transport modes: walking, cycling, bus, ferry and private vehicle;
- The development proposes 81 dwellings in a mix of typologies. The effects of the proposed increase in vehicles are expected to be negligible with all existing roads and intersections capable of accommodating this additional traffic;
- The level of parking on-site meets Unitary Plan requirements;
- In terms of likely parking demand, this can be satisfied by a combination of on-site parking, and available on-street parking resources near the site;
- A two-way vehicle access and pedestrian path can be provided from the development onto Cresta Avenue. Sight distance from the vehicle crossing is considered acceptable and meets relevant guidelines;
- Construction effects can be managed with a Construction Management Plan (CTMP).

From our assessment of the proposal, the generated traffic effects are considered to be negligible and there is no reason, from a transport perspective, to preclude approval of the development.

ATTACHMENT A – RUBBISH TRUCK VEHICLE TRACKING



Revision notes:		
Rev:	Date:	Notes:
A	21 SEPT 2021	FOR RESOURCE CONSENT
-		

Drawn by: MN J001845	Client: DA SILVA BUILDERS LIMITED
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Project: PROPOSED RESIDENTIAL DEVELOPMENT 13 CRESTA AVE & 96 BEACH HAVEN RD, BEACH HAVEN	Drawing Title: VEHICLE TRACKING 7m GREEN GORILLA WASTE TRUCK
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Date: 21 SEPTEMBER 2021	Scale @ A3: 1:500 @ A3
Revision: A - RESOURCE CONSENT	

commute
TRANSPORTATION CONSULTANTS