



301 & 303 Buckland Road Proposed Plan Change

Integrated Transportation Assessment Report

3 November 2021





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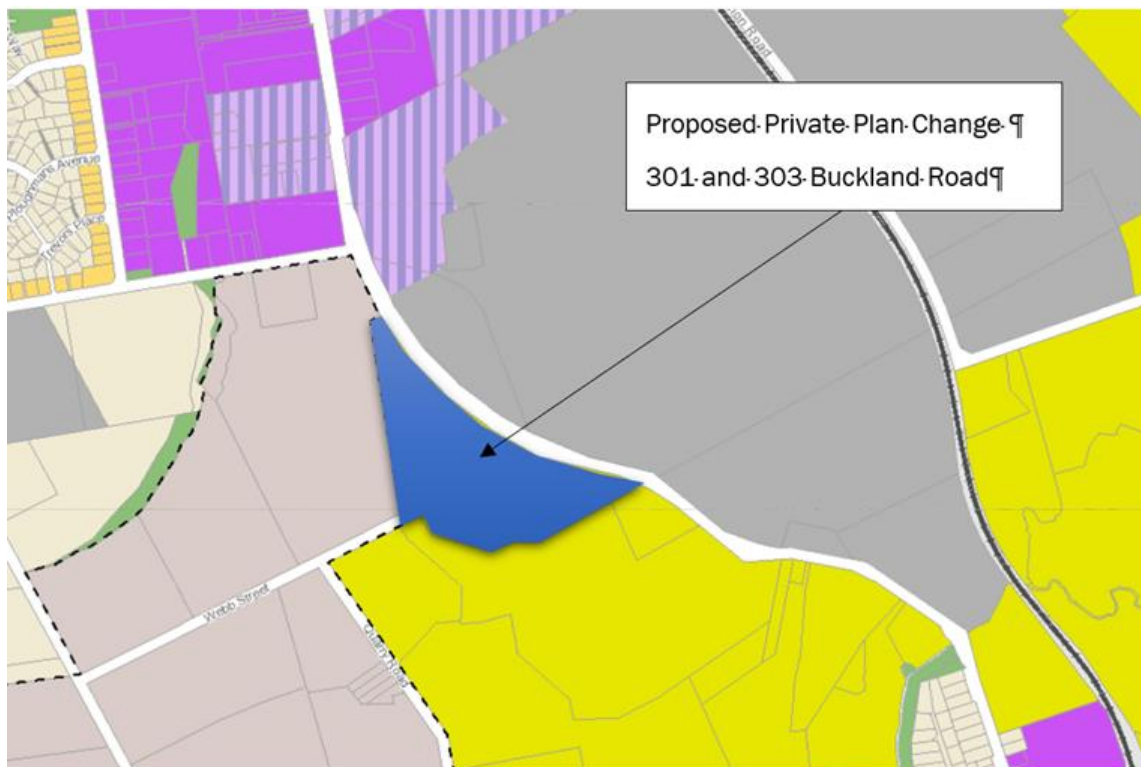
EXECUTIVE SUMMARY

PROPOSAL

Commute Transportation Consultants have been commissioned to prepare an Integrated Transport Assessment (“ITA”) for a proposed Plan Change (“PPC”) at 301 & 303 Buckland Road in Pukekohe, Auckland. The PPC area is approximately 7.9ha and is currently zoned as ‘Future Urban Zone’ in the Auckland Unitary Plan operative in part¹ (Unitary Plan), and the proposal intends to rezone this portion of land to ‘Business – General Business’ zoning to allow for a mixture of retail, commercial and light industrial activities.

Figure A shows the boundary of the PPC area.

Figure A: PPC area



While the activity proposed within the site is not yet been finalised, these are expected to cater for a mixture of employment-based activities enabled in the zone including large format retail, car sales/ showrooms, warehouse/ distribution, office activity and trade retail sales etc.

The key transportation considerations of the proposed Plan Change are considered to be:

- The ability of Manukau Road and Buckland Road to accommodate additional traffic generated by the activities enabled in the proposed re-zoned land; and
- Integration of any proposed development on the re-zoned land with wider transport network plans, and land use plans (Structure Plans), in Pukekohe.

¹ Auckland Unitary Plan Operative in part (Updated 26 October 2018)

ROAD NETWORK

Buckland Road typically runs in a north-south alignment connecting to Manukau Road to the north and George Street to the south.

The posted speed limit along Buckland Road is 80 km/hr. With reference to the Unitary Plan, Buckland Road is classified as an 'Arterial Road'. Based on these volumes, the major access locations to the PPC area will likely require higher level intersection treatments such as roundabouts which the roading environment would be able accommodate in the future.

TRAFFIC GENERATION

Rule E.27.6.1 "Trip Generation" of the Unitary plan sets out the trip generation limits as to when resource consent for a restricted discretionary activity is required. For retail (non-drive through), this limit is 1667 m² GFA therefore the likely development that would follow rezoning is likely to meet the threshold and trigger assessment under this rule.

A detailed analysis of the expected traffic generation is currently being undertaken. However, based on the analysis and size of the Pukekohe Racecourse Plan Change to General Business Zone (recently approved) opposite the site, the PPC is likely to generate up to 700 vehicles per hour. However, this assumes a high proportion of large format retail and the final make-up of the site may be significantly less should other permitted activities such as light industry and office activity be established.

ACCESS FORM

The bulk of the retail, warehouse or commercial activities within the PPC area are recommended to be served either directly off Buckland Road or by new roundabout at the extension of PU-NS-2 Road extension to Buckland Road. The establishment of a roundabout will enable safer access to and from the site as well as the Pukekohe Racecourse opposite.

Roundabouts are considered to integrate well with the existing road network and in this case provide a threshold into the south of Pukekohe. In general, it is considered that there is sufficient land area within road reserve, or within the site, to accommodate single lane roundabout.

SPEED LIMIT

As a result of the PPC, it is suggested that the posted speed limit of 50 km/hr would be extended south along the entire frontage of the PPC.

INTERNAL ROAD NETWORK

Internal public roads within the site (if required) are recommended to be 16-21 m wide in accordance with the Auckland Transport Roads and Streets Framework standard for greenfield sites.

PU-NS-2 Road extension should be extended through the site to Buckland Road with a future roundabout constructed at Buckland Road. This is in accordance with the Structure

Plan and allows roading access to both sites (it essentially splits the overall site in two). Figure B shows this road as per the Structure Plan ITA.

Figure B: PPC area



As this road is anticipated to be a collector road it should be 21m in width as per Structure Plan ITA.

PEDESTRIAN PROVISION

Due to the site being immediately outside the current Rural Urban Boundary there is currently no pedestrian access along Buckland Road (adjacent to the site). It is therefore recommended to extend the existing footpath along the western side of Buckland Road along the entire site frontage and linking to Kitchener Road (where an existing footpath exists on Manukau Road). The extended footpath should be 1.8 m wide (similar to that existing on Manukau Road).

From a pedestrian perspective (provided the above is incorporated), the site is well-connected and provides for a safe environment. It is expected that this would be required/implemented when the land is first developed or subdivided.

PUBLIC TRANSPORT

There are two existing bus routes that pass by the site with the nearest bus stop located some 1km north of the most northern portion of the site on Manukau Road. With further development likely to occur near the proposed site (at Pukekohe Park), it is recommended that consideration be given to providing bus stops fronting the site to encourage the use of public transport when travelling to and from the site. It is therefore recommended that, as the road frontage is upgraded to include a flush median (subject to any new access being established at the on Buckland Road) a bus stop should be incorporated into the design to encourage the use of public transport to and from the site. This could be implemented when the land is developed.

WIDER EFFECTS

In terms of the wider impacts (including the northern section of Manukau Road) the Drury-Opāheke and Pukekohe-Paerata Structure Plan including the “Draft Integrated Transport Assessment and Addendum” dated 2nd April 2019 contains information on the site. Of particular note are a number of projects in the wider area including:

- Electrification of the rail line to Pukekohe (already funded)
- Pukekohe Expressway linking Pukekohe with a new interchange on SH1 (medium to long term)
- Pukekohe ring road (providing a new alternative to travel around the Pukekohe Town Centre) *;
- General safety improvements on Buckland Road and
- Upgrade of Mill road (linking to Bombay)*

* At the time of writing it is uncertain if these two projects will proceed.

These upgrades are considered appropriate to cater for the growth in Pukekohe in the long term.

IMPLEMENTATION PLAN

Table 1 summarises the PPC Implementation Plan. It sets out local works that will need to be addressed as part of development of this site.

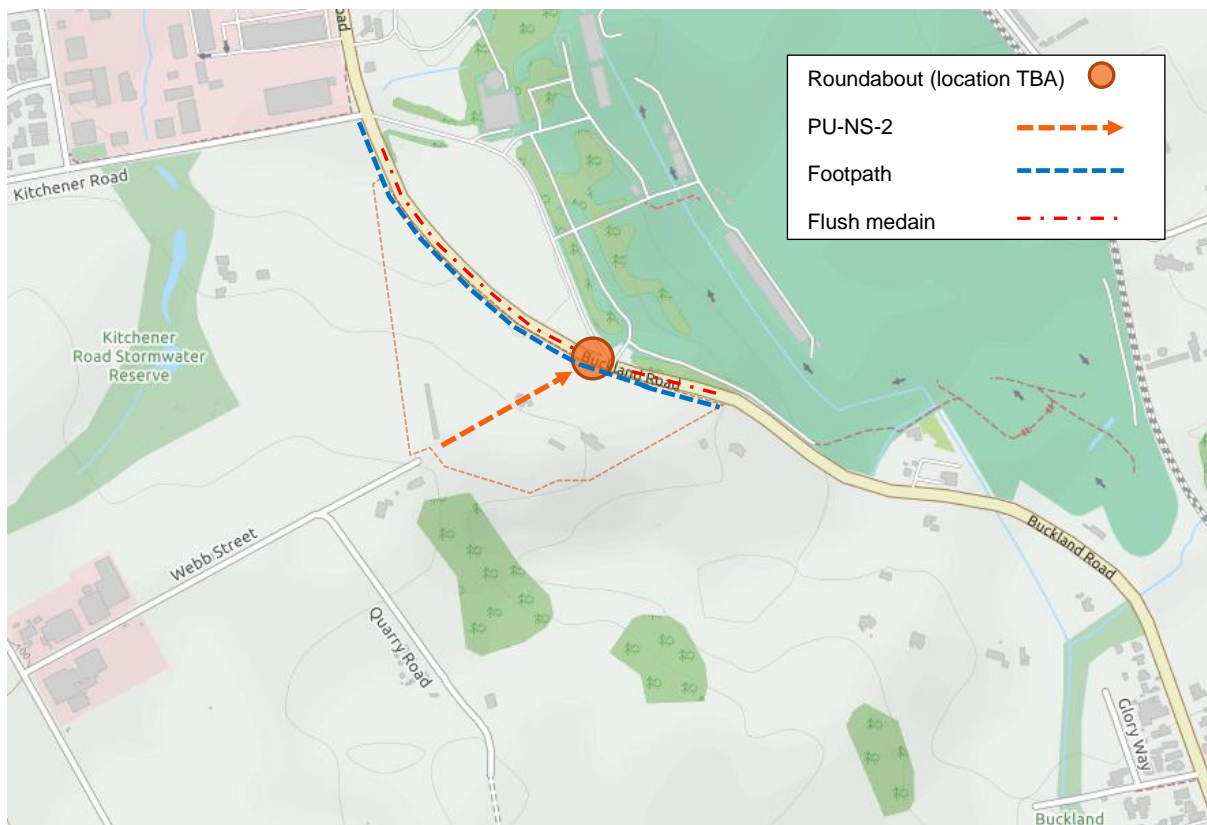
Table 1: Implementation plan

Trigger	Upgrade	Comments	Funder
Any new access on Buckland Road	Buckland Road upgraded to accommodate a painted flush median / right turn bay.	Will be required as part of initial development.	Developer
Commencement of development	Footpaths to link site(s) to existing footpath on Manukau Road (1.8 m wide)	Will be required as part of initial development and as required	Developer
Initial development	Reduce speeds past the site to 50km/hr	Speed reduction can only be instigated by Road Controlling Authority (Auckland Transport)	Auckland Transport
To be assessed at Recourse Consent (likely)	Provide roundabout on Buckland Road	Highly dependent on exact land-use. Also provides an	Developer

needed early in development)		appropriate threshold to 50km/hr area.	
To be assessed at Recourse Consent (unlikely to be directly needed by development but needs to be accounted for	Provide PU-NS-2 Collector Road to Buckland Road	Highly dependent on exact land-use.	Developer
To be assessed at Recourse Consent	Upgrade Webb Street	Upgraded to local road standard, site frontage.	Developer / Other Developers on Webb Street
Considered as part of subsequent developments near the development site	Provision of bus stops (fronting the site)	To encourage the use of public transport when travelling to and from the area surrounding the site	Auckland Transport

These are shown in Figure C below.

Figure C: Implementation for PPC



In general, none of these projects are currently in the Regional Land Transport Programme (RLTP) and thus are considered to be the responsibility of developers as they progress.

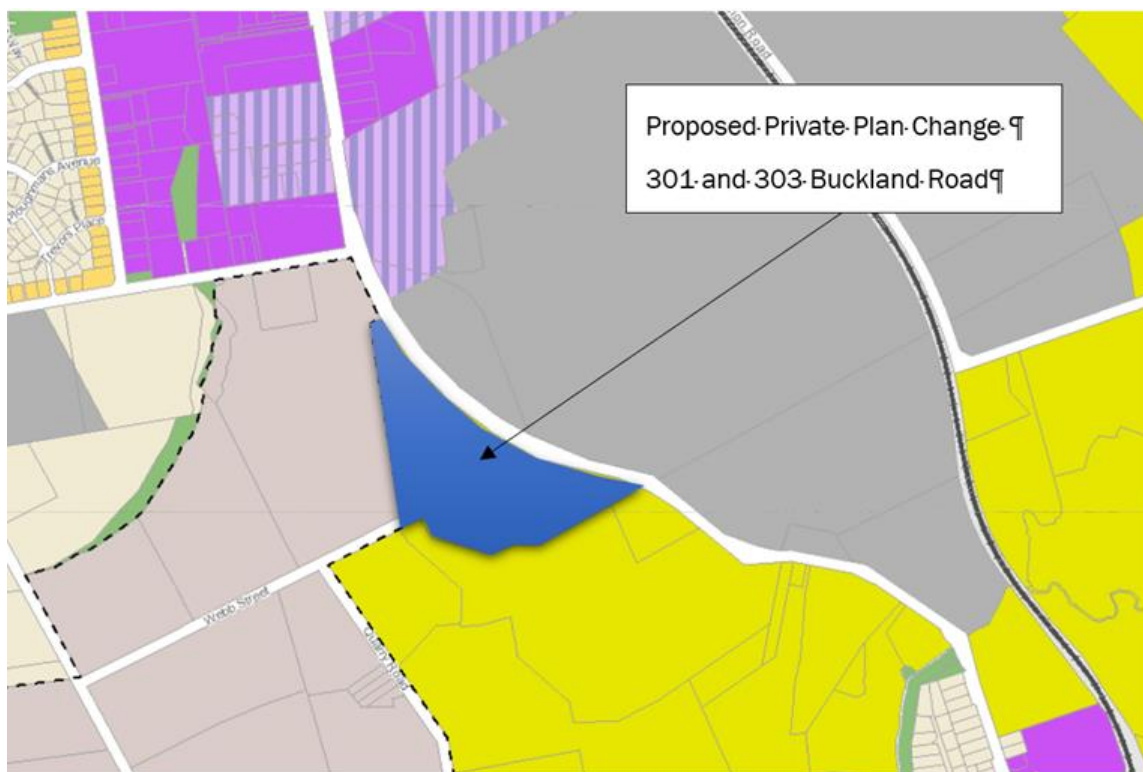
With the above in place it is considered that there is no traffic engineering or transportation planning reason to preclude the proposed rezoning of the land from Future Urban Zone to General Business Zone.

1 INTRODUCTION

Commute Transportation Consultants have been commissioned to prepare an Integrated Transport Assessment (“ITA”) for a proposed Plan Change (“PPC”) at 301 & 303 Buckland Road in Pukekohe, Auckland. The PPC area is approximately 7.9ha and is currently zoned as ‘Future Urban Zone’ in the Auckland Unitary Plan operative in part² (Unitary Plan), and the proposal intends to rezone this portion of land to ‘Business – General Business’ zoning to allow for a mixture of large format retail, commercial and light industrial activities.

Figure shows the boundary of the PPC area (indicated by orange dotted line).

Figure 0-1: PPC area



While the activity proposed within the site is not yet been finalised, these are expected to cater for a mixture of activities enabled in the zone including large format retail, car sales/showrooms, warehouse/ distribution, office activity and trade retail sales etc.

The key transportation considerations of the proposed Plan Change are considered to be:

- The ability of Manukau Road and Buckland Road to accommodate additional traffic generated by the activities enabled in the proposed re-zoned land; and

² Auckland Unitary Plan Operative in part (Updated 26 October 2018)

- Integration of any proposed development on the re-zoned land with wider transport network plans, and land use plans (Structure Plans), in Pukekohe.

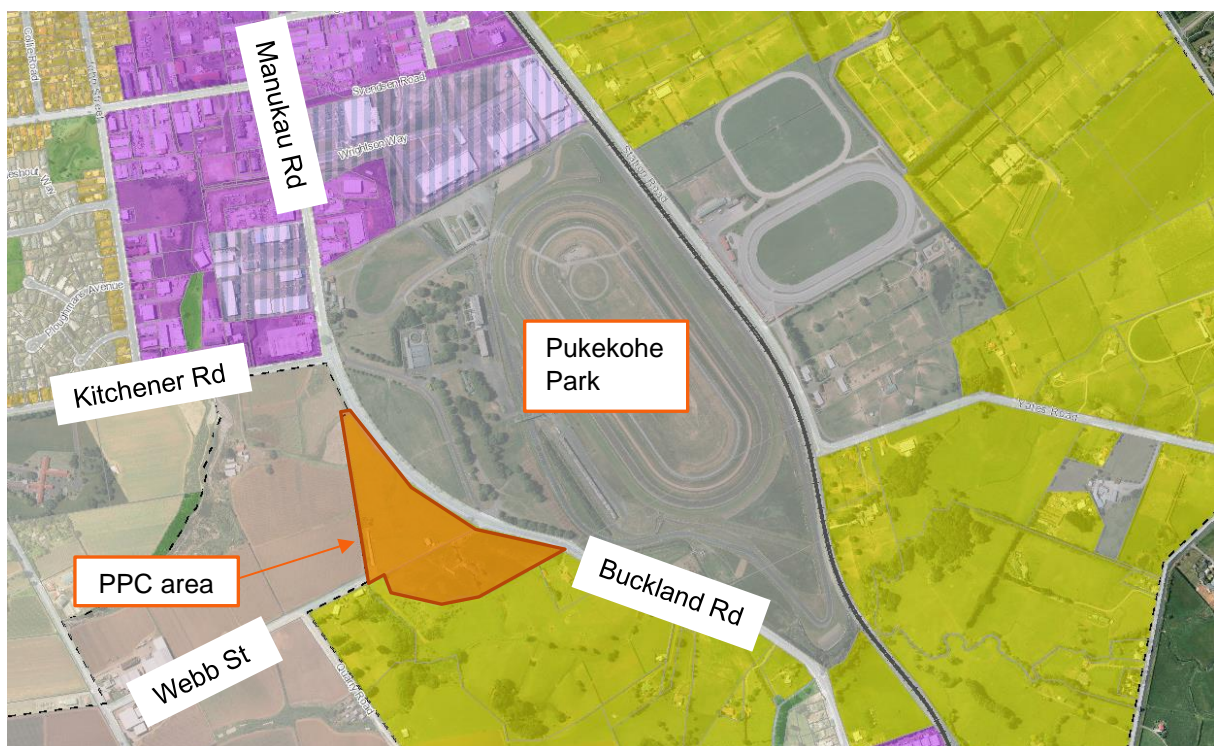
These and other matters are addressed in detail in this report. By way of summary, it is considered that the PPC and accompanying potential development, as outlined in this report (with mitigation measures), is likely to have minimal adverse effects to the function, capacity and safety of the surrounding transport network.

2 EXISTING ENVIRONMENT

2.1 SITE LOCATION

Figure 0-2 shows the location of the PPC area (referred to as the 'site') in relation to the surrounding road environment.

Figure 0-2: Site Location



The site is located at the south-western side of Buckland Road near Pukekohe Park in Pukekohe, Auckland. The area is bounded by Buckland Road and Manukau Road to the east, Business zoned land to the north, future urban to the south and Pukekohe Park to the east.

The PPC area is currently zoned as 'Future Urban Zone (FUZ)' in the Unitary Plan.

The site currently has access to Buckland Road and Webb Street.

2.2 ROAD NETWORK

2.2.1 BUCKLAND ROAD

Buckland Road typically runs in a north-south alignment connecting to Manukau Road to the north and George Street to the south. South of Kitchener Road, Buckland Road is

essentially an extension of Manukau Road. It provides a road reserve width of approximately 30 m adjacent to the PPC area, with a sealed carriageway of approximately 16 m width. Buckland Road provides a single lane in each direction for the entirety of its length. Near the vicinity of the site, there are no pedestrian footpaths provided on either side of Buckland Road. On-street parking is permitted on both sides of Buckland Road.

The posted speed limit along Buckland Road varies near the vicinity of the site. Approximately 55 m south of the intersection with Kitchener Road (and Racecourse Gate 2 access) the speed limit is 80 km/hr (continuing southbound); north of this point the speed limit is 50 km/hr (approaching the Pukekohe town centre).

With reference to the Unitary Plan, Buckland Road is classified as an 'Arterial Road'.

Photograph 1 and Photograph 2 show the typical layout of Buckland Road, adjacent to the PPC area.

Photograph 1: Northern direction along Buckland Road (northern end)



Photograph 2: Southern direction along Buckland Road (northern end)



2.2.2 MANUKAU ROAD

Buckland Road continues onto Manukau Road near the southern boundary of the PPC area and the intersection with Kitchener Road. Manukau Road typically extends in the north south direction connecting to the Stadium Dr/ Massey Ave/ King St roundabout to the north and the Buckland Road/ Kitchener Road intersection (South). It provides a road reserve width of approximately 25m (adjacent to the PPC area) with a sealed width of some 12.5 m. Manukau Road provides a single lane in each direction with additional lanes provided at intersection approaches.

Pedestrian footpaths are provided on the western side of Manukau Road only near the PPC area, while on-street parking is permitted on both sides of Manukau Road within the site's vicinity.

With reference to the Unitary Plan, Manukau Road is classified as an 'Arterial Road' in the Unitary Plan. Manukau Road has a posted speed limit of 50 km/hr.

Photograph 3 show Manukau Road to the north of the Plan Change area.

Photograph 3: Manukau Road (north of the site)



2.2.3 WEBB STREET

Webb Street is located at the western edge of the Plan change area. It is a dead-end rural road that is connected to Tuakau Road at its western end. It provides a road reserve width of approximately 20m (adjacent to the PPC area) with a sealed width of some 4.8 m. Webb Street provides a single lane in each direction.

Pedestrian footpaths or parking is not provided for on Webb Street.

With reference to the Unitary Plan, Manukau Road is not classified as an 'Arterial Road' in the Unitary Plan. Webb Street has a posted speed limit of 50 km/hr.

Photograph 3 show Webb Street in the vicinity of the Plan Change area.

Photograph 4: Manukau Road (north of the site)



2.3 ACCESSIBILITY

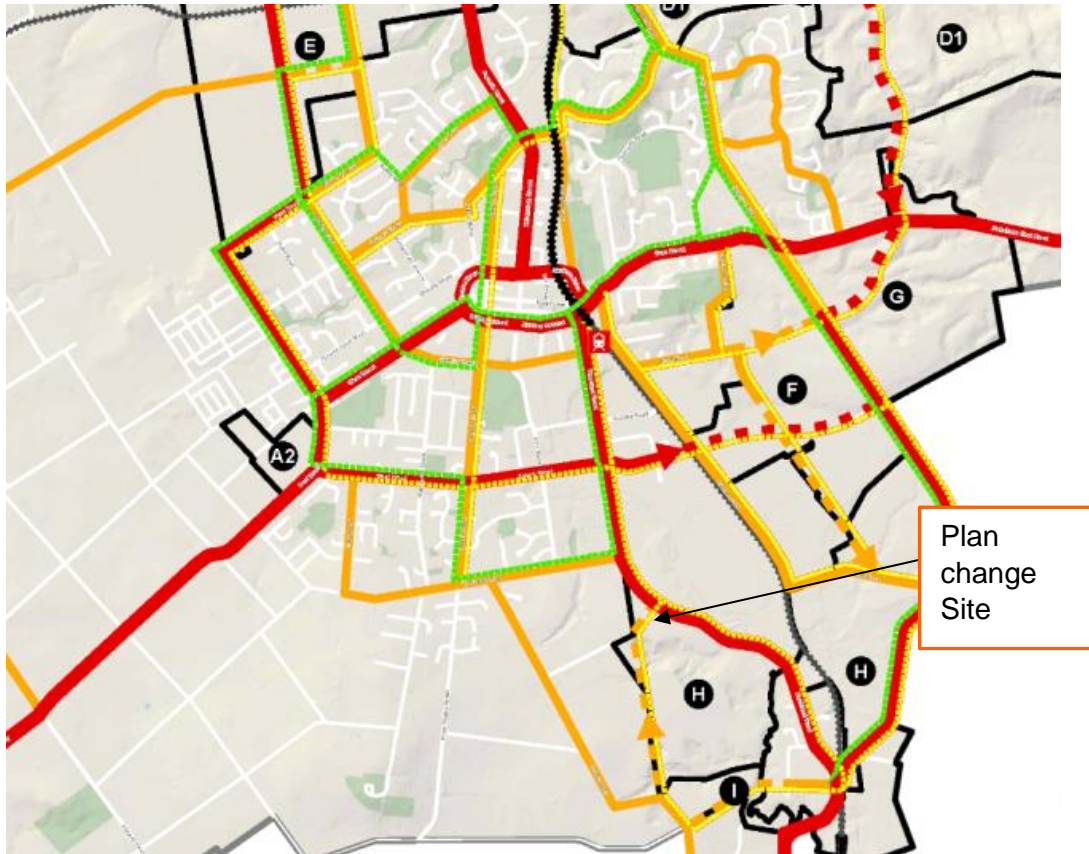
2.3.1 PRIVATE VEHICLES

The site is well located with regards to road connectivity to the wider Auckland Region. The site is located in Pukekohe, approximately 2.5 km south from SH22 and 8.9 km west from the SH1 Mill Road interchange. The SH1 Mill Road interchange connects to the Waikato expressway extending between Waikato to the south and Auckland to the north. The SH1 Mill Road interchange is located some 46 km from the Auckland city centre and 26 km from the Manukau metropolitan centre.

At peak times, travel times to and from the Auckland city are inconsistent with regular commuting times in the order of 1.5 hours.

Auckland Council, the NZ Transport Agency (NZTA) and Auckland Transport (AT) are currently assessing future transport networks for planned growth areas such as Pukekohe. The above parties, together with private consultancies, have formed the Supporting Growth Alliance (SGA) to implement the preferred transport networks for these growth areas. Map 5 of the Draft Pukekohe-Paerata Structure Plan outlines the indicative transport network for Pukekohe as shown in the Figure 0-3 below. Furthermore, various other upgrades are provided as part of the SGA and are provided in **Attachment A**.

Figure 0-3: Preferred Transport Network for Pukekohe



In relation to the PPC, the key transport network improvements identified above are:

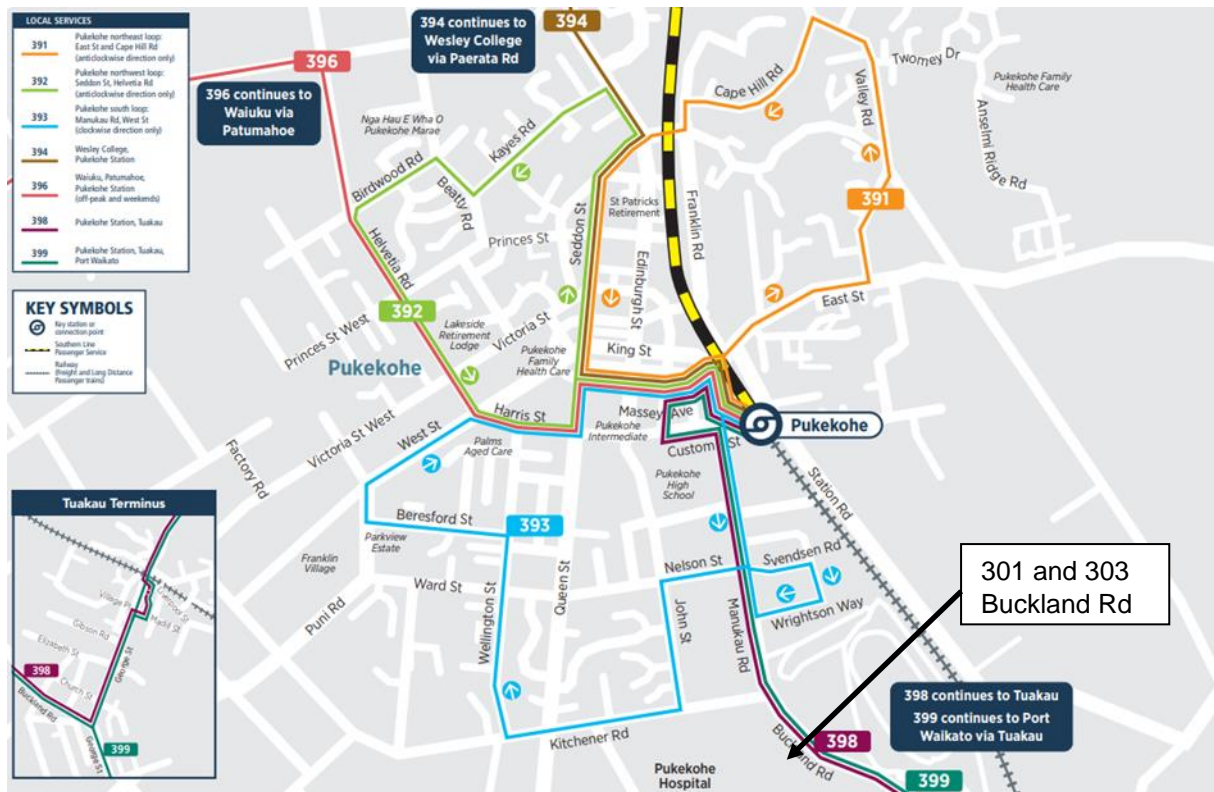
- New arterial road connections through Pukekohe, including north of the site (shown as Item F – red dotted line).
- New collector road to the south-west and through the site
- Walking and cycling network on the new collector road
- Increased rail capacity to four tracks between Wiri and Pukekohe; and
- New rail station at Paerata in addition to the existing station at Pukekohe to enable rapid/frequent rail services.

As shown above, the indicative transport plan identifies a new arterial road extending from Svendsen Road to the east across the NIMT as the preferred arterial alignment to the east of Pukekohe. This new arterial will serve to reduce traffic volumes on Manukau Road north of Svendsen Road by providing an alternative arterial route to the north and east of Pukekohe.

2.3.2 PUBLIC TRANSPORT

Auckland Transport's Network for South Auckland (including Pukekohe) is shown in Figure 2-3.

Figure 0-4: New Network for South Auckland (Pukekohe)



As shown above, bus routes 398 and 399 pass the site and link to Pukekohe Station (providing access to additional bus and passenger rail services). Route 398 is a peak period service operating Monday to Friday only to/from Tuakau while Route 399 is a Thursday only service to/from Port Waikato. Route 393, while not passing the site, operates daily on nearby Manukau Road and Wrightson Way from 5:30 am to 9:00 pm (with nominal frequencies of 30 minutes and up to 20 minutes during peak times).

The nearest bus stop for Route 393 is located some 800 m north of the Plan Change area outside 153 Manukau Road. This is considered to be within moderate walking distance (8-10-minute walk) from the site.

Of note the Pukekohe Rail station is located some 1.7km from the site. Currently it is served by diesel locomotives through to Papakura where passengers then change to electric trains.

As noted above, one of the key transport network improvements identified in the area is upgrading the capacity of the rail corridor between Wiri and Pukekohe and providing a new rail station at Wiri to enable rapid / frequent rail services. The Regional Land Transport Plan (RLTP 2018-2028) also identifies the electrification of the rail line to Pukekohe station, additional electric trains, and rail corridor improvements between Wiri and Quay Park which will collectively enable frequent trains to Pukekohe, to be one of the key priority areas.

As such, while the existing public transport provisions near the site are considered minimal, the potential upgrades outlined in the draft Pukekohe-Paerata Structure Plan will improve connections to the wider areas. In relation to the bus services near the site, it is considered that the PPC will encourage further use of the existing routes and potentially drive demand to enable increased service frequencies. As will be noted, if an upgrade of the road reserve is required to provide a flush median (subject to establishing a new access on Manukau

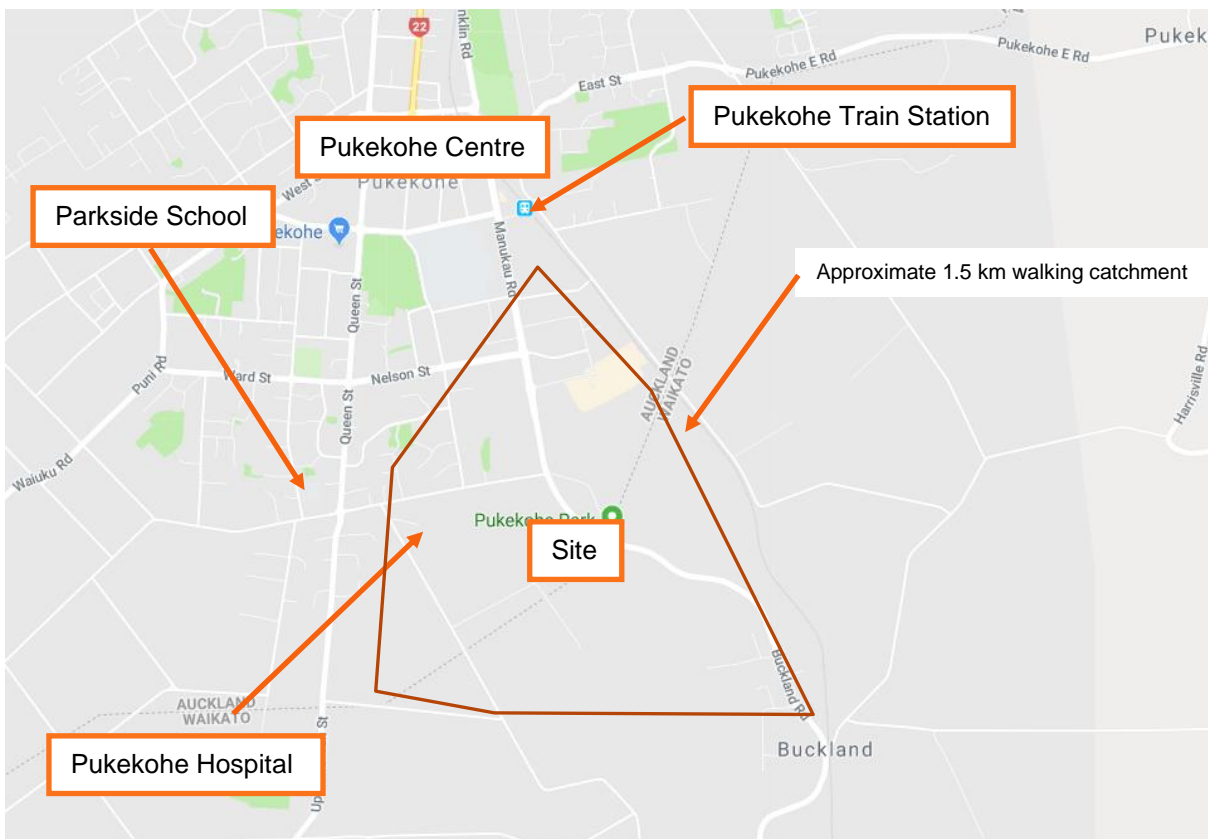
Road) it is recommended to incorporate a new bus stop (in front of the site) to encourage the use of public transport to and from the site.

2.3.3 WALKING

Using a practical walking distance of 1.5km and the 15th percentile walking speed of a typical fit, healthy adult of 1.3m/s, gives a journey time of some 20 minutes. This is generally 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.

The primary catchment area for pedestrians has therefore been based on a 1.5 km walking distance from the site as shown in Figure 0-5 below.

Figure 0-5: Walking Catchment



As shown above, the Pukekohe centre and the train station is just outside of walking distance of the site.

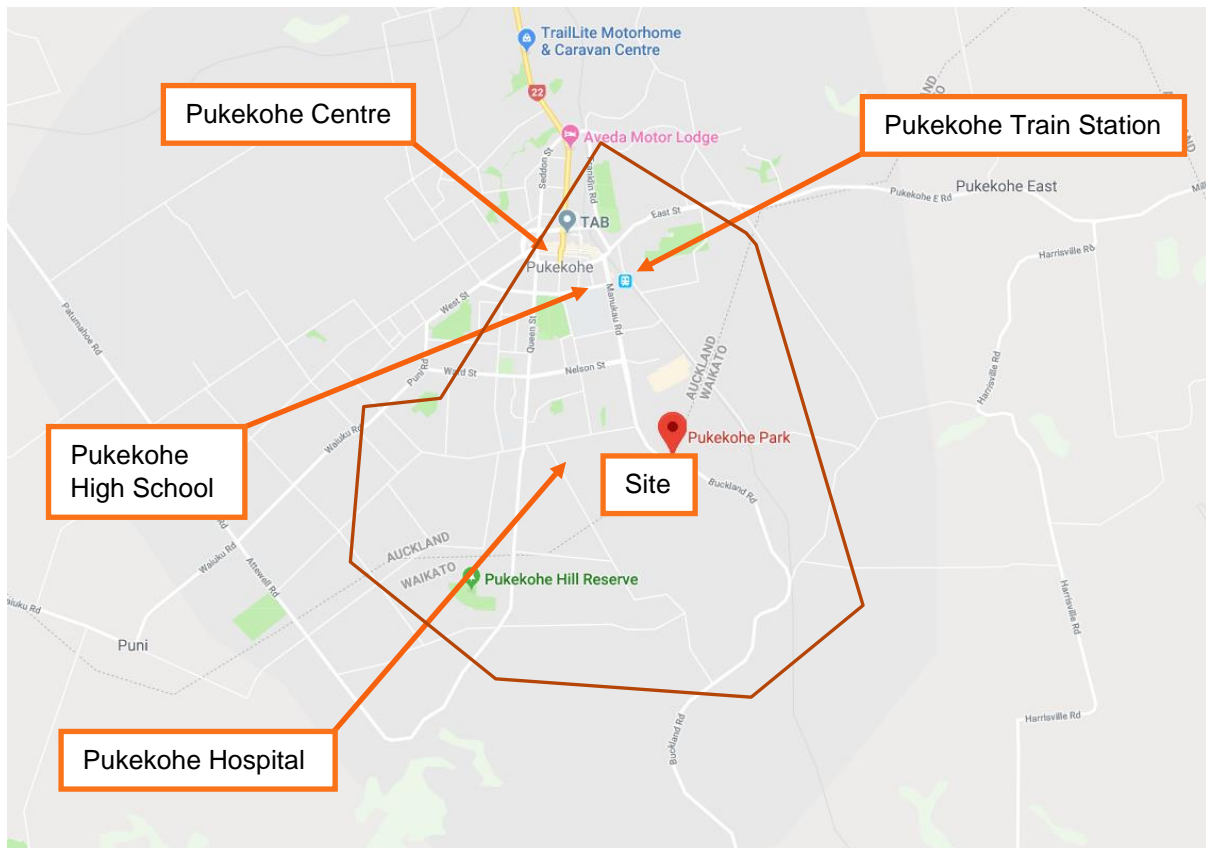
Currently, there are no footpaths along Buckland Road, however footpaths are provided along the western side of Manukau Road near the site. Given the planned urbanisation of the area, 1.8 m wide footpaths are recommended to be established along the Buckland Road and Manukau Road frontages as well as internally within the site. It is also noted that, as part of the Pukekohe Park plan change (pC30) site (opposite the PPC area), a new pedestrian footpath is planned along Buckland Road, south of the intersection with Kitchener Road.

2.3.4 CYCLING

The Auckland Regional Cycle Network does not classify roads surrounding the site as cycle routes. It is however noted that nearby roads such as Kitchener Road, Station Road, Queen Street and Nelson Street provide sufficient cycling space or are quiet roads recommended by cyclists. Therefore, the nearby roads provide safe cycle connectivity to nearby schools and Pukekohe Train Station. Due to the nature of the activities, marked cycle lanes with a painted buffer are not necessary along Buckland Road and Manukau Road near the site.

Based on New Zealand Transport Agency Research Report 426, the average cycling trip length is approximately 3 km. Figure 2-5 shows an indicative cycling catchment for the site.

Figure 0-6: Cycling Catchment



As shown above, the Pukekohe centre and Pukekohe Train Station are within cycling distance of the site. As a result, the site is considered to offer excellent cycling connectivity to a wider range of residential, employment, education, recreational and commercial activities.

2.4 TRAFFIC VOLUMES

2.4.1 AUCKLAND TRANSPORT

The latest traffic volumes for Manukau Road and Buckland Road have been obtained from Auckland Transport. The volumes are summarised in Table 1 below.

Table 2: Traffic Volumes

Road	Location	Date	Daily	AM Peak Hour	PM Peak Hour
Manukau Road	Between Wrightson Way and Kitchener Road	March 2019	11,983	1,017	1,152
Buckland Road	Between Hamilton's Bridge and Glencairn Place	May 2017	8,350	776	829

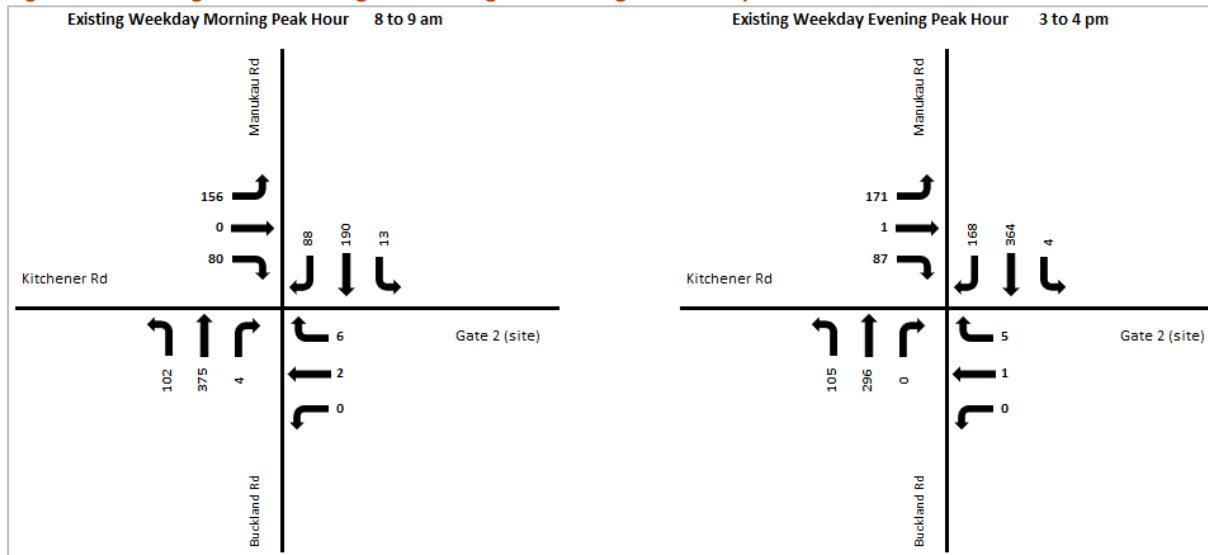
As can be seen, the road in front of the site is busy and caters for traffic volumes in the order of 10,000 vehicles per day (vpd). Based on these volumes, the major access locations to the PPC area will likely require higher level intersection treatments such as roundabouts.

2.4.2 SURVEY RESULTS

Traffic surveys were undertaken on Thursday 22nd November 2018 at the Manukau Road/ Kitchener Road/ Buckland Road intersection during the morning peak period (7-9am) and evening peak period (3-6pm). A weekend survey was also undertaken on Saturday 24th November between 10am – 3pm. These surveys were undertaken by Commute as part of an adjacent Plan Change for Pukekohe Park (PC30).

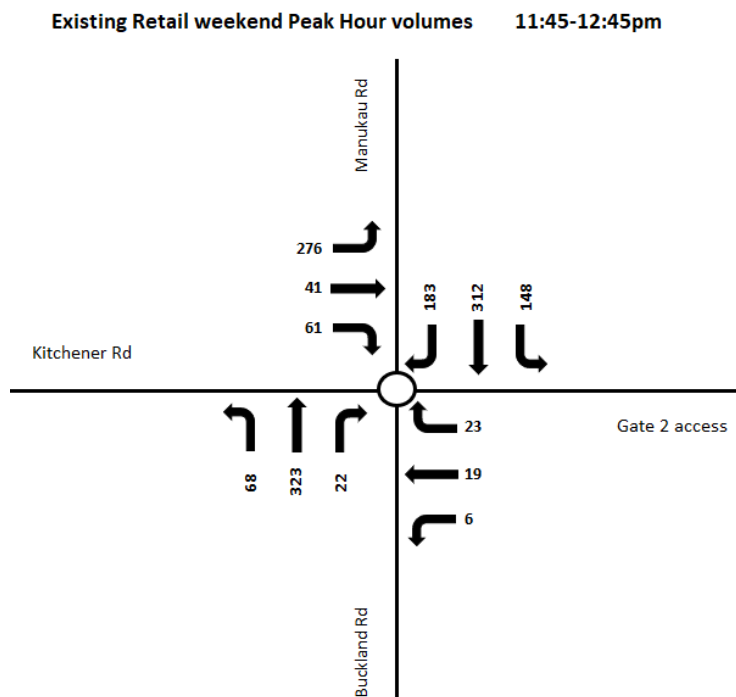
The results of the weekday and weekend survey are provided in Figure 0-7 and Figure 0-8 below.

Figure 0-7: Existing volumes during the morning and evening commuter peak hour



As shown above, there is a northbound bias along Buckland Road / Manukau Road during the morning peak hour and southbound bias during the evening peak. This is likely to be commuters travelling to and from the Pukekohe town centre.

Figure 0-8: Existing volumes during the weekend peak hour



2.5 CRASH HISTORY

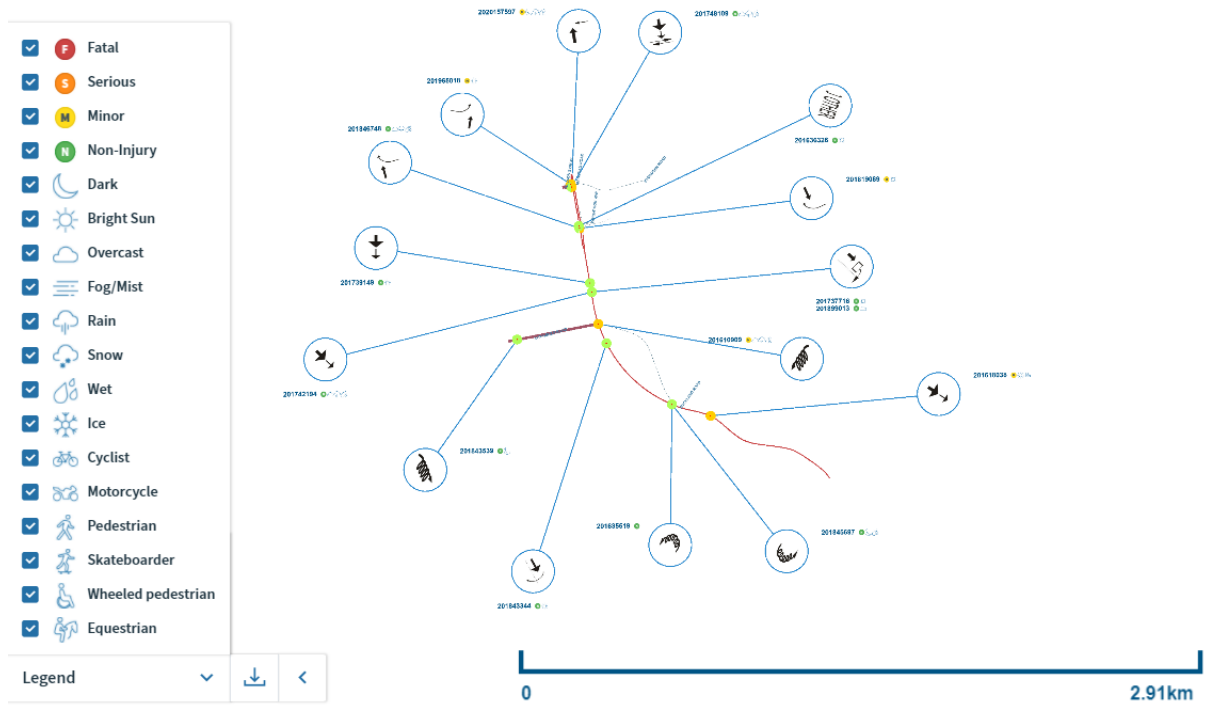
A search was made of the NZTA Crash Analysis System (CAS) for all reported crashes occurring on Manukau Road and Buckland Road in front of the site for the five-year period from 2015 to 2019 inclusive. Any crashes entered into the system from 2020 were also included.

A total of 15 crashes were identified. A summary of the crash history is provided as follows:

- 6 crashes occurred on Manukau Road between Wrightson Way and Kitchener Road. One crash was a minor injury crash while the remaining 5 crashes were non-injury crashes. The predominant crash types were right turn crashes from the centreline (2 crashes) and rear end collisions (2 crashes);
- crashes occurred on Kitchener Road between Manukau Road and John Street. Both crashes were loss of control crashes, one of which resulted in serious injury. The other crash was non-injury;
- 1 crash occurred at the Manukau Road/ Kitchener Road intersection and resulted in serious injuries. It involved a northbound vehicle on Buckland Road turning left into Kitchener Road and side swiping a cyclist, and
- 6 crashes occurred on Buckland Road between Kitchener Road and Hamilton's Bridge. There was 1 serious crash, 1 minor crash and 4 non-injury crashes. The predominant crash type was loss of control (4 crashes). The serious crash involved a southbound vehicle losing control near the Gate 3 entrance to Pukekohe Park.

The collision diagram is shown in Figure 0-9 below.

Figure 0-9: Collision Diagram



Overall, the crash history exhibits the typical characteristics of sites that are near urban and rural roads. Loss of control crashes are common on rural roads with higher speed limits and reduced street lighting. Rear end collisions and turning crashes are common in urban environments where property access creates conflicts with through movement of vehicles.

As will be described, it is recommended that a painted flush median be installed along Buckland Road / Manukau Road along the site frontage together with a reduction in speed limit thereby reducing the severity of any crashes that did occur and generally improving safety in the area.

3 PROPOSED DEVELOPMENT

The proposal intends to rezone the site at 301 & 303 Buckland Road. The PPC area is currently zoned as Future Urban Zone 'FUZ' in the Unitary Plan, and the proposal intends to rezone this to Business – General Business Zoning to enable for a mixture of Retail, Commercial and light industrial activities.

There is no specific development plan for the site. Given the proposed Business - General Business Zoning is exactly the same that has recently been assessed (by Commute) on the Pukekohe Racecourse Land (Plan Change 30) a similar methodology has been applied.

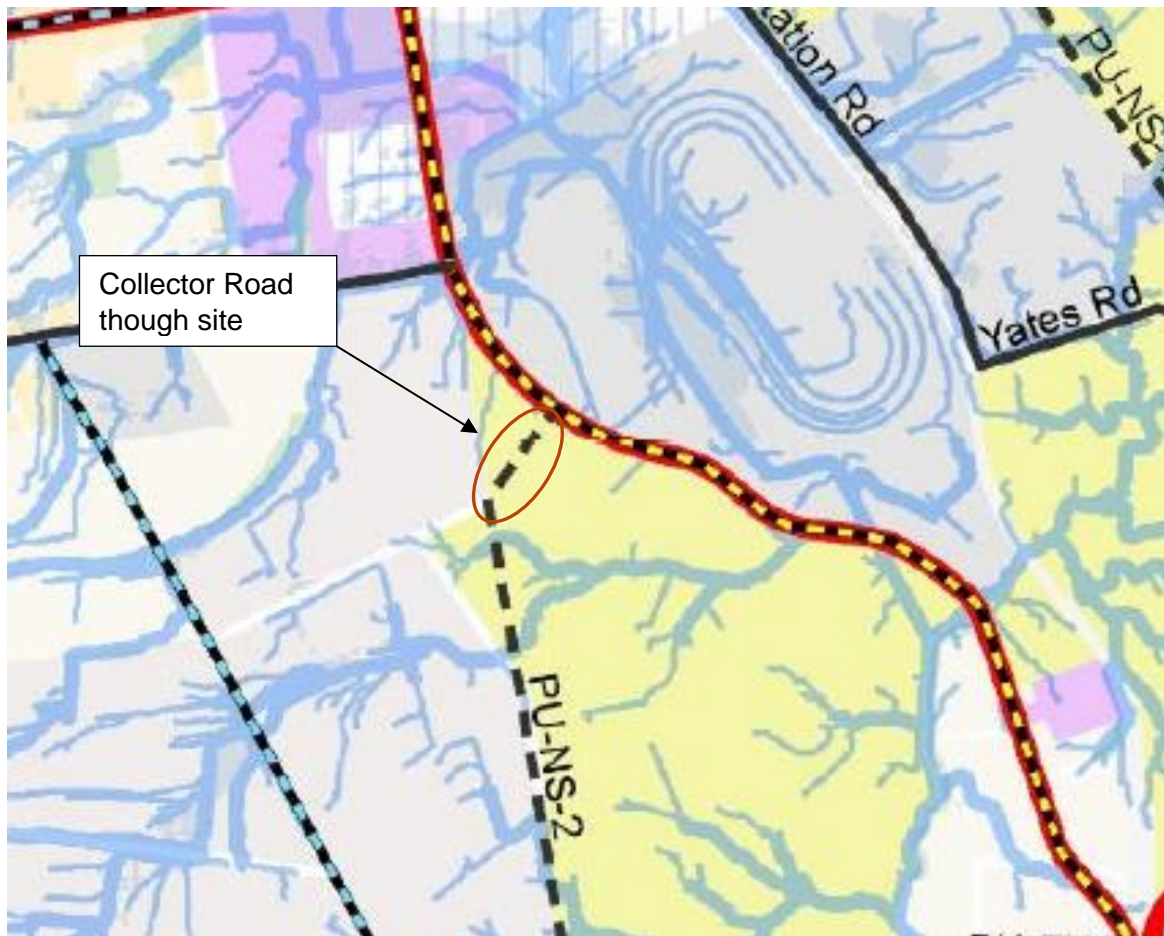
Essentially PC30 reviewed two scenarios (a low and high scenario). Given the high scenario is critical this has been used in the analysis. The areas proposed have been factored by 36% from PC30 which had a land area of 5.8ha (rather than 7.9ha proposed on the subject site).

4 INTERNAL ROAD NETWORK

Internal public roads within the site are recommended to be 16-21 m wide in accordance with the Auckland Transport Roads and Streets Framework standard for greenfield sites.

A new road is proposed (PU-NS-2) to be extended through the site to Buckland Road with an intersection constructed at Buckland Road. This is in accordance with the Structure Plan and allows roading access to both sites (it essentially splits the overall site in two). Figure 4-1 shows this road (PU-NS-2) as per the Structure Plan ITA.

Figure 4-1: PPC area (PU-NS-2)



As this road is anticipated to be a collector road it should be 21m in width as per Structure Plan ITA.

The exact point the new road (PU-NS-2) connects to Buckland Road is considered to be a matter for consideration in the development of the subject site.

5 TRIP GENERATION

5.1 GUIDELINES

The trip generating potential of the site has been estimated using the predictive models contained within the RTA Guide³. The RTA Guide is commonly used by transport engineering practitioners in New Zealand to estimate the traffic generating potential of various land use activities.

For warehouse / storage activities, the RTA predicts the following:

- 4 / 100m² GFA for daily vehicle trips; and
- 0.5 / 100m² GFA for peak hour trips.

For factories, the RTA predicts the following:

- 5 / 100m² GFA for daily vehicle trips; and
- 1 / 100m² GFA for peak hour trips.

For retail stores (shopping centres), the RTA predicts the following:

- 121 / 100m² GFA for daily vehicle trips; and
- 12.5 / 100m² GFA for peak hour trips.

5.2 EXISTING

Currently, the site is occupied by a farm and two houses and generates minimal levels of traffic. As this traffic volume is low it has essentially been ignored.

5.3 LEVEL OF GENERATION

The activity within each lot has not yet been finalised however a high-level traffic generating scenarios is outlined below (based on previous work on PC30):

Option A (scenario C: light industry / retail) – high level

- 6500 m² GFA of Light industrial/ vehicle sales activity;
- 4900 m² GFA of Retail activity; and
- 1000 m² GFA of commercial activity.

³ Road and Traffic Authority of New South Wales, Guide to Traffic Generating Developments, Version 2.2, October 2002

The likely trip generation for the site is defined as follows:

Table 3: Light industry / Retail: Estimated Trip Generation - PM

Activity	RTA Rate	Number / GFA	Peak Hour Vehicle Trips	Daily Vehicle Trips
Motor showroom	<i>Evening peak hour rate of 0.7 per 100 m² GFA.</i>	3250 m ² GFA	23	230 ⁴
Retail	<i>'12.5/ 100m² GFA for peak hour & 121 / 100m² GFA for daily trips'</i>	4900 m ² GFA	612	5,929
Warehouse activity	<i>'0.5 / 100m² GFA for peak hour & 4 / 100m² GFA for daily trips'</i>	3250 m ² GFA	16	130
Commercial and office activity	<i>'2 / 100m² GFA for peak hour & 10 / 100m² GFA for daily trips'</i>	1000 m ² GFA	20	100
Total			671 trips	6,389 trips

Based on the above, is expected to generate in the order of 671 trips during the peak hour and 6389 trips daily.

Of note the AM peak has been assumed to be the same as the PM peak with the exception that the retail traffic generation has been assumed to be 33% of the PM (due to the retail being unlikely to be operating anywhere near peak in the AM period).

5.4 TRAFFIC DISTRIBUTION

5.4.1 DISTRIBUTION ASSUMPTIONS

All trips associated with the proposed development have been added to the surveyed intersection summarised previously.

In terms of inbound / outbound percentages, the following have been assumed for the evening peak period.

- Inbound and outbound traffic volumes have been distributed according to the type of activity. The proportional splits are as follows:

⁴ Assuming that the peak hour volume is approximately 10% of ADT

- Warehouse activity - 20% inbound, 80% outbound;
- Commercial/ office activity – 20% inbound, 80% outbound;
- Retail Stores/ motor show rooms (shopping centres) – 50% inbound, 50% outbound;

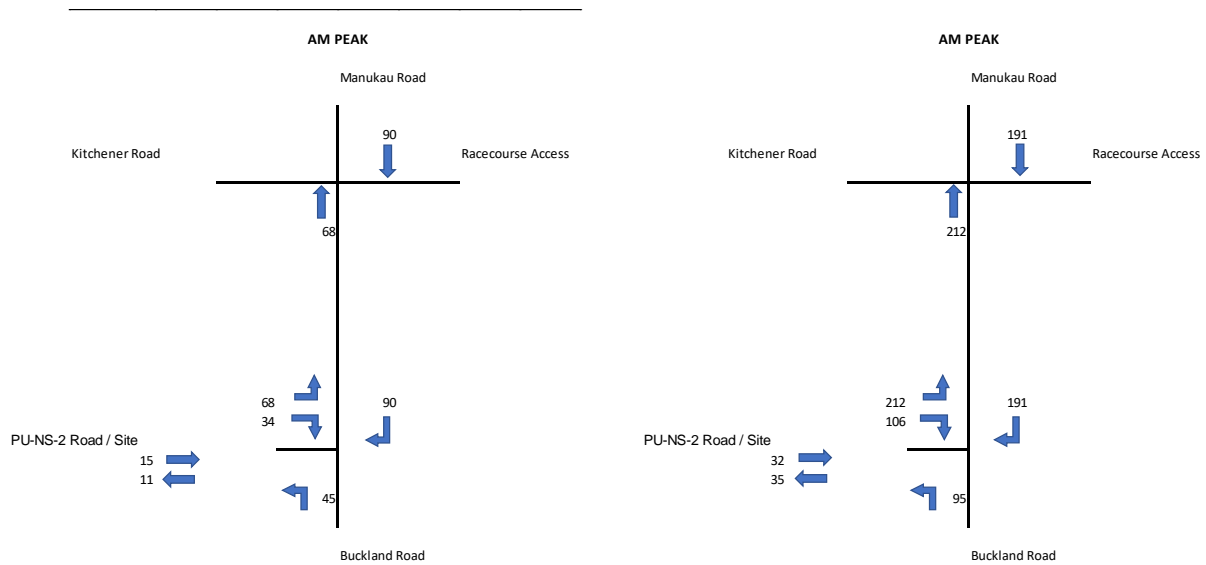
Given the location of the site, the directional split of volumes has conservatively been estimated as a 60/30/10 split with 60% of vehicles approaching the site from the north (Manukau Road), 30% from the south (Buckland Road) and 10% from the west (Webb Street or the new PU-NS-2 road) with the reverse occurring during the morning peak hour, and is shown in Table 4 below.

Table 4: Directional split of volumes entering/ leaving the site

North (Manukau Rd)	South (Buckland Rd)	West (Webb Street)
60%	30%	10%

The split of vehicle movements generated by the site is outlined in Figure below.

Figure 5-1: Weekday Peak Hour Trip Generation - AM & PM



5.5 TRAFFIC EFFECTS

Rule E.27.6.1 “Trip Generation” of the Unitary plan sets out the trip generation limits as to when resource consent for a restricted discretionary activity is required. For retail (non-drive through), this limit is 1667 m² GFA therefore the development meets the threshold and triggers this rule.

The following sections assess the effects of the proposed development on the Manukau Road / Kitchener Road / Buckland Road intersection as well as the new site road (PU-NS-2) with Buckland Road. For note as PC30 has been approved, this has been used as a base.

5.6 TRAFFIC MODELLING RESULTS

5.6.1 GENERAL

The performance of the Manukau Road/ Kitchener Road/ Buckland Road intersection as well as the new PU-NS-2 Road / Buckland Road intersection has been modelled using SIDRA Intersection 6.0 (Sidra), an industry standard tool for assessing the performance characteristics of intersections and road networks.

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 priority (sign) controlled intersections, a degree of saturation of less than 0.8 is considered to be acceptable. LOS A and B are very good and inactive of free flow conditions; C is good; D is acceptable; and E and F are indicative of congestion and unstable conditions.

It is noted that performance of the Manukau Road / Kitchener Road / Buckland Road intersection is based on the proposed traffic volumes from PC30, for the morning and afternoon peak hour respectively.

5.6.2 MANUKAU ROAD/ KITCHENER ROAD/ BUCKLAND ROAD INTERSECTION

Table 5 and Table 6 shows the performance of Manukau Road/ Kitchener Road/ Buckland Road intersection (upgraded to roundabout as part of PC30) during the morning and afternoon peak hour respectively. The existing “Ex” volumes are with PC30 already fully developed while the proposed (Pro) results including the additional traffic generation for the subject site.

Table 5: Proposed performance of the Manukau Road/ Kitchener Road/ Buckland Road roundabout AM

Leg	Movement	Degree of Saturation (v/c)	Average Delay (s)	LOS	95 th %ile Queue (m)
		Ex (Pro)	Ex (Pro)	Ex (Pro)	Ex (Pro)
Buckland Road (South)	LT	0.513 (0.575)	5.7 (5.9)	A (A)	32.0 (38.6)
	TH	0.513 (0.575)	5.8 (6.0)	A (A)	32.0 (38.6)
	RT	0.513 (0.575)	11.5 (11.7)	B (B)	32.0 (38.6)
Gate 2 (main site access) (east)	LT	0.254 (0.279)	5.8 (6.6)	A (A)	12.5 (14.2)
	TH	0.254 (0.279)	6.0 (6.7)	A (A)	12.5 (14.2)
	RT	0.254 (0.279)	11.7 (12.4)	B (B)	12.5 (14.2)
Manukau Road (north)	LT	0.379 (0.453)	4.8 (4.9)	A (A)	21.6 (28.0)
	TH	0.379 (0.453)	5.0 (5.1)	A (A)	21.6 (28.0)
	RT	0.379 (0.453)	10.6 (10.8)	B (B)	21.6 (28.0)
Kitchener Rd (west)	LT	0.350 (0.384)	8.1 (9.0)	A (A)	19.0 (21.5)
	TH	0.350 (0.384)	8.3 (9.1)	A (A)	19.0 (21.5)
	RT	0.350 (0.384)	14.0 (14.8)	B (B)	19.0 (21.5)

Table 6: Proposed performance of the Manukau Road/ Kitchener Road/ Buckland Road roundabout PM

Leg	Movement	Degree of Saturation (v/c)	Average Delay (s)	LOS	95 th %ile Queue (m)
		Ex (Pro)	Ex (Pro)	Ex (Pro)	Ex (Pro)
Buckland Road (South)	LT	0.484 (0.696)	6.4 (9.4)	A (A)	28.5 (65.7)
	TH	0.484 (0.696)	6.5 (9.5)	A (A)	28.5 (65.7)
	RT	0.484 (0.696)	12.2 (15.2)	B (B)	28.5 (65.7)
Gate 2 (main site access) (east)	LT	0.359 (0.484)	8.3 (13.0)	A (B)	19.7 (32.4)
	TH	0.359 (0.484)	8.4 (13.20)	A (B)	19.7 (32.4)
	RT	0.359 (0.484)	14.1 (18.8)	B (B)	19.7 (32.4)
Manukau Road (north)	LT	0.568 (0.724)	5.1 (5.9)	A (A)	40.0 (67.5)
	TH	0.568 (0.724)	5.3 (6.1)	A (A)	40.0 (67.5)
	RT	0.568 (0.724)	11.0 (11.7)	B (B)	40.0 (67.5)
Kitchener Rd (west)	LT	0.348 (0.470)	7.4 (11.3)	A (B)	18.7 (30.5)
	TH	0.348 (0.470)	7.5 (11.4)	A (B)	18.7 (30.5)
	RT	0.348 (0.470)	13.2 (17.1)	B (B)	18.7 (30.5)

As shown above, the upgraded roundabout (from PC30) intersection is expected to perform at a good level of service LOS A or B. The maximum delay is 18.8 seconds and occurs during the evening peak at the right turn approach at the racecourse access. As such, the proposed upgrade of the intersection to a roundabout control is considered adequate to cater for the additional vehicle movements generated by the development.

5.6.3 PU-NS-2 ROAD / BUCKLAND ROAD INTERSECTION

Table 7 and Table 8 shows the performance of the new PU-NS-2 Road / Buckland Road intersection during the morning and afternoon peak hour respectively. The intersection has initially been modelled as a priority intersection with full right turn bay and critical gaps / follow-up headway based on Austroads.

Table 7: Proposed performance of the PU-NS-2 Road / Buckland Road intersection AM (Priority intersection)

Leg	Movement	Degree of Saturation (v/c)	Average Delay (s)	LOS	95 th %ile Queue (m)
		Ex (Pro)	Ex (Pro)	Ex (Pro)	Ex (Pro)
Buckland Road (South)	LT	0.309	5.6	A	0
	TH	0.309	0	A	0
	RT	0.001	6.8	A	0
Racecourse Gate	LT	0.008	7.3	A	0.2
	TH	0.008	14.1	B	0.2
	RT	0.008	15.6	C	0.2
Buckland Road (north)	LT	0.164	5.6	A	0
	TH	0.164	0	A	0
	RT	0.138	9.3	A	3.8
Site access (PU-NS-2 Road) (west)	LT	0.238	10.3	B	6.4
	TH	0.238	15.6	C	6.4

	RT	0.238	16.7	C	6.4
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Table 8: Proposed performance of the PU-NS-2 Road / Buckland Road intersection PM (priority intersection)

Leg	Movement	Degree of Saturation (v/c)	Average Delay (s)	LOS	95 th %ile Queue (m)
Buckland Road (South)	LT	0.293	5.6	A	0
	TH	0.293	0	A	0
	RT	0.001	8.1	A	0
Racecourse Gate	LT	0.013	9.0	A	0.3
	TH	0.013	19.7	C	0.3
	RT	0.013	25.0	C	0.3
Buckland Road (north)	LT	0.266	5.6	A	0
	TH	0.266	0	A	0
	RT	0.278	9.6	A	8.9
Site access (PU-NS-2 Road) (west)	LT	0.824	23.1	C	57.3
	TH	0.824	39.1	E	57.3
	RT	0.824	40.3	E	57.3

The result of the modelling shows while the AM period the intersection performs to a satisfactory level, in the PM peak hour the intersection is essentially at capacity. Of note this assumes minimal traffic on the Racecourse Gate opposite this intersection.

As such an additional assessment of the PM peak has been undertaken assuming the intersection is upgraded to a roundabout. The result of this is contained in Table 9.

Table 9: Proposed performance of the PU-NS-2 Road / Buckland Road intersection PM (roundabout)

Leg	Movement	Degree of Saturation (v/c)	Average Delay (s)	LOS	95 th %ile Queue (m)
Buckland Road (South)	LT	0.446	5.0	A	27.2
	TH	0.446	5.1	A	27.2
	RT	0.446	10.8	B	27.2
Racecourse Gate	LT	0.005	8.7	A	0.2
	TH	0.005	8.8	A	0.2
	RT	0.005	14.5	B	0.2
Buckland Road (north)	LT	0.510	4.4	A	37.6
	TH	0.510	4.5	A	37.6
	RT	0.510	10.2	B	37.6
Site access (PU-NS-2 Road) (west)	LT	0.357	6.6	A	19.4
	TH	0.357	6.7	A	19.4
	RT	0.357	12.4	B	19.4

The results show the roundabout intersection performs well below capacity.

5.6.4 SUMMARY

The above assessment shows that an upgrade of the Buckland Road / Manukau Road / Kitchener Road roundabout as proposed by PC30 is still appropriate.

The assessment also shows the priority intersection of PU-NS-2 Road / Buckland Road is appropriate to cater for the traffic in the short term but nears capacity in the medium / long

term. It is considered appropriate to allow for this intersection to be roundabout controlled in the future as a result of other development in the area including from the collector PU-NS-2 Road. The need for this roundabout should be continually assessed in each Recourse Consent application.

6 WIDER EFFECTS

It is recognised that the above assessment only includes an assessment of local impacts. In terms of the wider impacts (including the northern section of Manukau Road), the investigation as outlined previously will provided significant changes / improvements to the wider area and the level of traffic anticipated (even in the high scenarios) are unlikely to change any of this investigation / upgrades.

The proposal also is an employment zone and thus will create jobs in the Pukekohe area and thus keep residents in the Pukekohe area (and thus not need to travel on the wider network).

7 GENERAL ACCESS

7.1 EXISTING ACCESS

The entire site has access via either Buckland Road or Webb Street. Given the site location, it is considered the majority of traffic will use Buckland Road.

7.2 ACCESS FORM

The bulk of the retail, warehouse or commercial activities within the PPC area are recommended to be served either directly off Buckland Road or by new intersection at PU-NS-2 Road extension.

Initially the PU-NS-2 / Buckland Road intersection can be priority controlled but will need to allow for future land connections to the PU-NS-2 Road and thus allow for a roundabout. The roundabout will enable safer access to and from the site as well as future development.

It is considered that the best location for this roundabout is opposite the Racecourse entrance on Buckland Road to maximise the use of the roundabout.

Roundabouts are considered to integrate well with the existing road network, particularly the crossroads intersections. In general, it is considered that there is sufficient land area within road reserve, or within the site, to accommodate a single lane roundabout.

7.3 SPEED LIMIT

As a result of the PPC, it is suggested that the posted speed limit of 50 km/hr would be extended south by approximately 500 m. In the future the access at the Buckland Road/ PU-NS-2 Road intersection would be an appropriate rural-urban threshold and would be an appropriate location at which to reduce the posted speed limit from 80 km/hr to 50 km/hr. The inclusion of a roundabout in this location aids in this threshold.

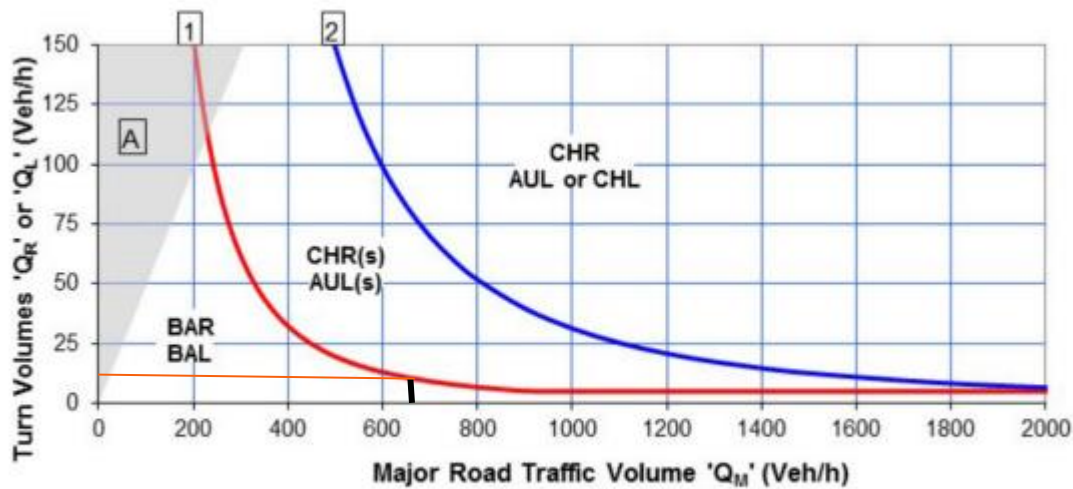
7.4 INTERNAL ROAD NETWORK

Internal public roads within the site are recommended to be in accordance with the Auckland Transport Roads and Streets Framework 'Mixed-Use Collector' standard for greenfield sites. This can be considered at future Resource Consent stages.

7.5 RIGHT TURN BAY / MEDIAN

Figure 2.26 of Austroads Part 6 Intersections Interchanges and crossings (shown below) outlines the warrant for a turning bay. For the subject site, comprising an operating speed limit of 60 km/hr (reduced) and estimated hourly volume on Manukau Road and Buckland Road of 664 vehicles per hour, a maximum of 11 turning movements are permitted per hour before a turning bay is required.

Figure 7-1: Right turn warrant



(c) Design Speed ≤ 70 km/h

As a result of the proposal this is likely to change therefore consideration must be given to providing a turning bay as part of the PPC, along Manukau Road / Buckland Road along the site frontage, if the number of right turn movements into any lot exceed 11 movements per hour. This is similar to the existing volume and a relatively low level of traffic and as such the median / right turn bay should be constructed with any new access on Buckland Road.

7.6 WEBB STREET

From on-site observations, Webb Street is not considered appropriate for significant additional traffic without a significant upgrade. From a review of the land-use and Structure Plan ITA, it is apparent the Webb Street is intended to remain rural in nature with the new Structure Plan PU-NS-2 road taking the traffic from the Future Urban Zoned land. As such no connection to Webb Street is considered appropriate, but rather the network should allow for the PU-NS-2 road.

8 PARKING

The parking supply for the potential activities in the PPC area can be addressed at land use consent stage however the parking provisions should be in accordance with Unitary Plan requirements (Tables E27.6.2.3 and E27.6.2.5).

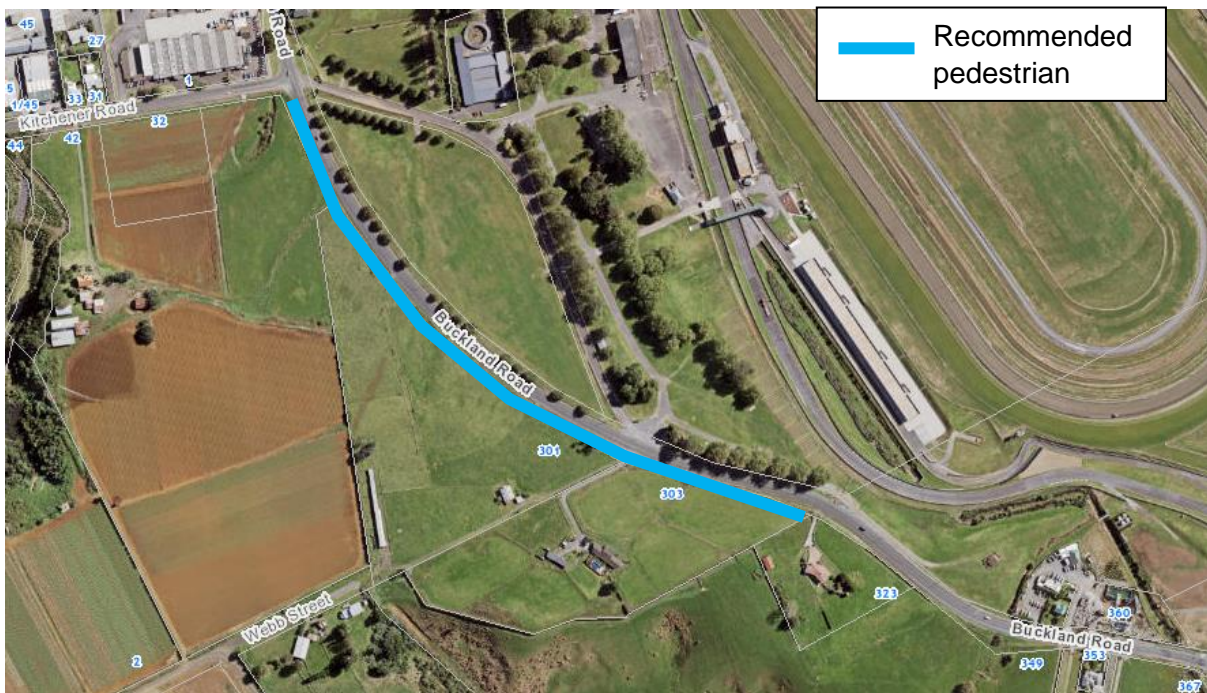
In addition, loading space provisions should also be in accordance with Unitary Plan requirements (Table E27.6.2.7).

The parking space dimensions of car park spaces and loading spaces should to satisfy Unitary plan requirements and mobility parking spaces are proposed to be provided in accordance with NZS4121.

9 PEDESTRIAN PROVISION

There are currently no pedestrian provisions on Manukau Road or Buckland Road (adjacent to the site). It is therefore recommended to extend the existing footpath along the western side of Manukau Road up to the south boundary of the PPC (as outlined in Figure) to encourage alternative modes of travel to and from the site. The extended footpath should be 1.8 m wide (similar to that existing on Manukau Road).

Figure 9-1: Proposed pedestrian provisions



From a pedestrian perspective (provided the above is incorporated), the site is well-connected and provides for a safe environment.

10 PUBLIC TRANSPORT

As outlined in section 2.3.2 above, there are two existing bus routes that pass the site with the nearest bus stop located some 800 m north of the site on Manukau Road. With further development likely to occur near the proposed site (at Pukekohe Park), it is recommended that consideration be given to providing bus stops fronting the site (as part of subsequent developments near the development site) to encourage the use of public transport when travelling to and from the site. It is therefore recommended that, as the road frontage is upgraded to include a flush median (subject to any new access being established at the on Manukau Road) a bus stop should be incorporated into the design to encourage the use of public transport to and from the site.

11 INTEGRATION WITH FUTURE TRANSPORT NETWORK

11.1 GENERAL

The following section provides a review of established policy and plans in relation to the proposed development. The documents reviewed comprise:

- Auckland Plan 2012;
- Auckland Regional Policy Statement 1999;
- Auckland Regional Land Transport Strategy 2010;
- Auckland Regional Public Transport Plan 2013;
- Sustainable Transport Plan 2006-2016;
- Proposed Auckland Unitary Plan Decision Version 19 August 2016 (referred to as the 'Unitary Plan' in this report); and
- Auckland Design Manual 2014.

11.2 AUCKLAND PLAN

The Auckland Plan 2012 is Auckland Council's 30-year strategy to create the world's most liveable city. It shows how Auckland will prepare for an expected one million additional people by 2040 and the additional 400,000 new homes needed to accommodate this increased population. The Auckland Plan also provides guidance with respect to the location and timing of investment in infrastructure, such as transport facilities.

The Auckland Plan comprises 13 chapters, of which Chapter 11 outlines the transport vision.

The strategic direction for transport is to achieve the following five targets by 2040:

- Increase non-car trips in the peak period from 23% to 37%;
- Increase PT mode share of traffic travelling into the City Centre during the morning peak from 47% to 69%;
- Reduce road deaths from 61 p.a. to no more than 40 p.a. and serious injury accidents from 483 p.a. to no more than 283 p.a.;
- Reduce freight congestion in peak periods by 20%; and
- Increase the number of centres with Quality Transit Network or Rapid Transit Network services from 44% to 80%.

The Auckland Wide Development Strategy Map identifies Pukekohe as one of two 'Satellite Towns' with future residential development occurring around this hub.

11.3 REGIONAL POLICY STATEMENT

Although now superseded by the Unitary Plan, the transport section of the Auckland Regional Policy Statement 1999 ("RPS") contains four transport-orientated objectives, as outlined below:

- to develop a transport network that supports a compact sustainable urban form;
- to avoid, remedy, or mitigate the adverse effects of transport on the environment;

- to develop a transport network which provides an acceptable level of accessibility for all sections of the community within and across the region by encouraging transport choices that are efficient, convenient or practical; and
- to develop a transport network which is as safe as is practicable and which promotes better physical health for the community.

As noted, the site is located within walking distance of proposed local shops and schools and is located near the proposed Pukekohe Station providing connectivity to longer distance routes such as the City Centre. Bus routes are also proposed to run near the site. The Pukekohe centre and Pukekohe Station are also within cycling distance of the site.

Overall, the site location is therefore considered to support a compact sustainable urban form but also offer viable transport alternatives to the private motor vehicle.

11.4 AUCKLAND REGIONAL LAND TRANSPORT PLAN

The Auckland Regional Land Transport Plan (“RLTP”) forms part of the National Land Transport Programme and represents the combined intentions of the NZ Transport Agency (the Transport Agency), Auckland Transport (AT), and KiwiRail to respond to growth and other challenges facing Auckland in the next 10 years.

Some of the specific projects noted are the Pukekohe Station and electrification of the network between Papakura and Pukekohe. In conjunction with the proposed improvements to local bus services connecting to Pukekohe Station, the development site offers a wide range of alternative transport modes to the private vehicle.

11.5 AUCKLAND REGIONAL PUBLIC TRANSPORT PLAN

The Auckland Regional Public Transport Plan 2015 (“RPTP”) seeks to deliver an improved public transport network in Auckland by increasing public transport frequency along key transport corridors and simplifying ticketing to improve user experience.

The vision of the RPTP is to deliver “*An integrated, efficient and effective public transport network that offers a wider range of trips and is the mode of choice for an increasing number of Aucklanders*”. To achieve this vision, Auckland’s public transport system needs to deliver:

- services that align with future land use patterns;
- services that meet customer needs;
- increased passenger numbers;
- increased public transport mode share; and
- improved value for money.

As noted, the New Network for Pukekohe proposes half hourly bus services with accessibility to Pukekohe and the Rapid Transit Network (RTN) rail services to the city centre.

Further employment within close proximity of public transport services and residential will assist in encouraging their use and increasing passenger numbers. The proposed Plan Change is therefore considered to be supportive of the vision of the RPTP.

11.6 AUCKLAND UNITARY PLAN

The Auckland Unitary Plan will replace the Regional Policy Statement and the District Plans of the 13 legacy Auckland Councils.

The Proposed Auckland Unitary Plan Operative in part (the latest iteration of the Unitary Plan) has the following objectives with regard to the region's transport infrastructure:

- Land use and all modes of transport are integrated in a manner that enables:
 - a. the benefits of an integrated transport network to be realised; and
 - b. the adverse effects of traffic generation on the transport network to be managed.
- An integrated public transport, including public transport, walking, cycling, private vehicles and freight, is provided for.
- Parking and loading supports urban growth and the quality compact urban form.
- The provision of safe and efficient parking, loading and access is commensurate with the character, scale and intensity of the zone.
- Pedestrian safety and amenity along public footpaths is prioritised.
- Road/rail crossings operate safely with neighbouring land use and development.

The development is therefore considered to align well with the transport objectives of the Unitary Plan. The proposed zoning aligns well with neighbouring zones.

11.7 AUCKLAND DESIGN MANUAL

The Auckland Design Manual 2014 is currently being developed to sit alongside the Unitary Plan and provides practical advice, best practice processes and detailed design guidance to enable informed choices, to help build houses and develop streets and neighbourhoods that not only look good but are built to last, sustainable and give the best return on investment.

To date, it gives the following transport-based design outcomes:

- **Connections and connectivity** - Subdivisions that provide movement choice and connectivity, while balancing costs, safety, and privacy;
- **Walkable neighbourhoods** – Prioritisation of pedestrian convenience and access to destinations in the design of subdivisions;
- **Legible hierarchies** - A clear and consistent road hierarchy to create accessible, legible and safe subdivisions and helps people understand how to get to, and when they are on, main routes;
- **Managing speed and modes** - Subdivision design ensures the safety of pedestrians and cyclists by managing vehicle travel speed, and provides equally for the four major modes (walking, cycling, passenger transport, vehicles) in a way that will appeal to the users of each;
- **Vehicle emissions and road layout** - Movement networks are designed to minimise the costs and environmental impacts of unnecessary travel; and
- **Public access** – Streets provide public movement and access throughout a subdivision.

The PPC and any subsequent development intends to follow these design guidelines and the site promotes connectivity with the existing employment, retail, community and recreational activities in the local and wider area. Traffic calming is proposed to be investigated to promote pedestrian movement and slow traffic within the site.

12 CONSTRUCTION TRAFFIC

The construction methodology for the development has not been finalised as it will depend on a range of factors, including any resource consent requirements. As such, it is proposed that provision be made in the resource consent conditions for a Construction Traffic Management Plan to be developed for the works anticipated. It is considered that this Traffic Management Plan should include:

- i. 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.
- ii. Truck route diagrams both internal to the site and external to the local road network.
- iii. Temporary traffic management signage / details for both pedestrians and vehicles to appropriately manage the interaction of these road users with heavy construction traffic.
- iv. Details of site access / egress over the entire construction period. Noting that all egress points to be positioned so that they achieve appropriate sight distance as per the Land Transport Safety Authority “Guidelines for visibility at Driveways” RTS document.

Based on experience and bearing in mind capacity within the existing roading network, with the appropriate Construction Traffic Management Plan in place and the above measures implemented, it is considered that construction activities will be managed to ensure an appropriately low level of traffic effects.

Of note, the construction activities are temporary and with appropriate measures in place are able to be managed and therefore the construction effects are considered less than minor.

13 IMPLEMENTATION PLAN

Table 1 summarises the PPC Implementation Plan. It sets out local and wider area works that will need to be addressed as part of development of this site.

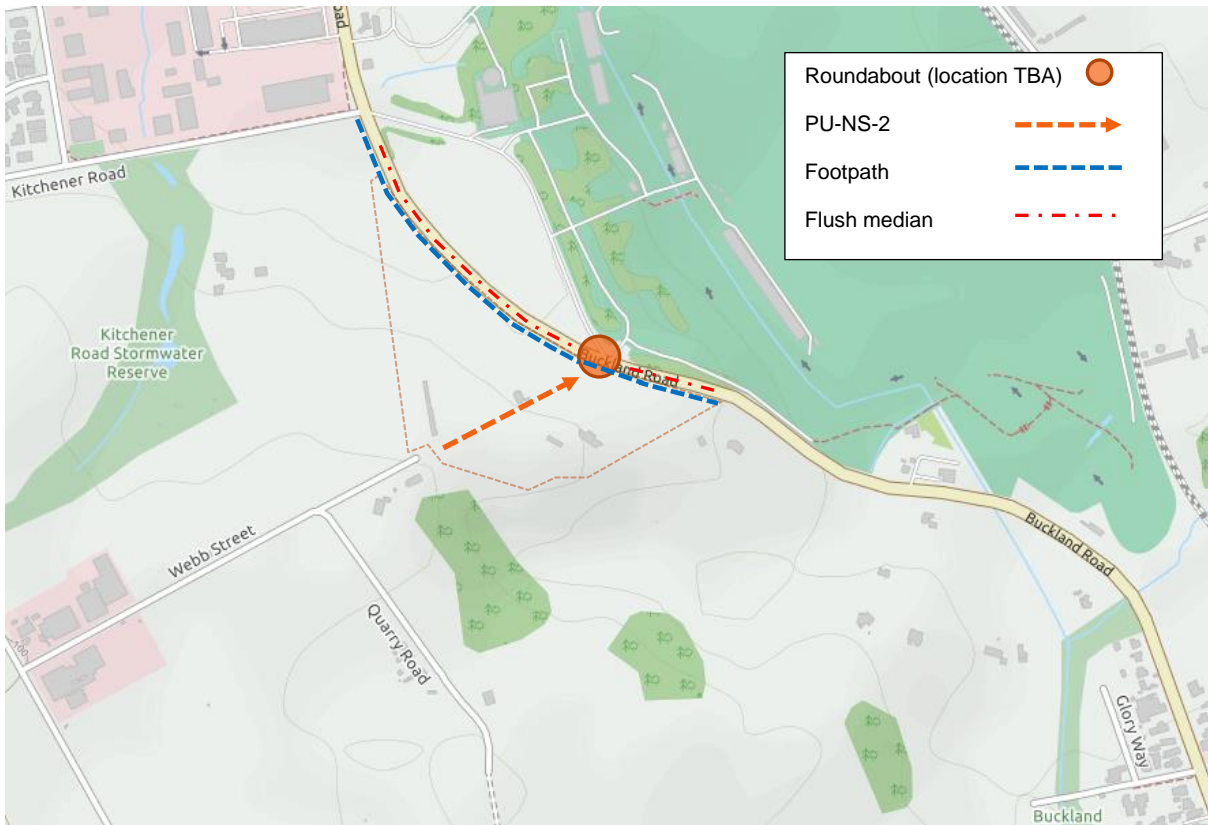
Table 92: Implementation plan

Trigger	Upgrade	Comments	Funder
Any new access on Buckland Road	Buckland Road upgraded to accommodate a painted flush median / right turn bay.	Will be required as part of initial development.	Developer
Commencement of development	Footpaths to link site(s) to existing footpath on Manukau Road (1.8 m wide)	Will be required as part of initial development and as required	Developer
Initial development	Reduce speeds past the site to 50km/hr	Speed reduction can only be instigated by Road Controlling Authority (Auckland Transport)	Auckland Transport
To be assessed at Recourse Consent (likely needed early in development)	Provide roundabout on Buckland Road	Highly dependent on exact land-use. Also provides an appropriate threshold to 50km/hr area.	Developer

<p>To be assessed at Recourse Consent (unlikely to be directly needed by development but needs to be accounted for)</p>	<p>Provide PU-NS-2 Collector Road to Buckland Road</p>	<p>Highly dependent on exact land-use.</p>	<p>Developer</p>
<p>Considered as part of subsequent developments near the development site</p>	<p>Provision of bus stops (fronting the site)</p>	<p>To encourage the use of public transport when travelling to and from the area surrounding the site</p>	<p>Auckland Transport</p>

These are shown in Figure 11-1 below.

Figure 11-1: Implementation for PPC



In general, none of these projects are currently in the Regional Land Transport Programme (RLTP) and thus are considered to be the responsibility of developers as they progress.

With the above in place, it is considered that there is no traffic engineering or transportation planning reason to preclude the proposed rezoning of the land from Future Urban Zone to General Business Zone.

14 CONCLUSIONS AND RECOMMENDATIONS

The descriptions, analyses and assessments provided in this report have shown that:

- The existing road network will partly provide for accessibility of the site by various transport modes: walking, cycling, bus and private vehicle;
- the extent of development proposed can be accommodated by the surrounding road network while maintaining acceptable levels of safety and performance (with mitigation); and
- the proposed development is consistent with and encourages key regional and district transport policies.

It is recommended that the transport network upgrades described in section 11 of this assessment be provided to enable the proposal to be appropriately supported by the road network. These can be addressed through the relevant resource consent applications.

The full extent of development enabled by the proposal will be appropriately supported by the existing road network and upgrades to existing road network (as detailed above) to maintain appropriate levels of safety and efficiency on the surrounding road network.

Accordingly, it is concluded that there is no traffic engineering or transportation planning reason to preclude acceptance of this proposal.

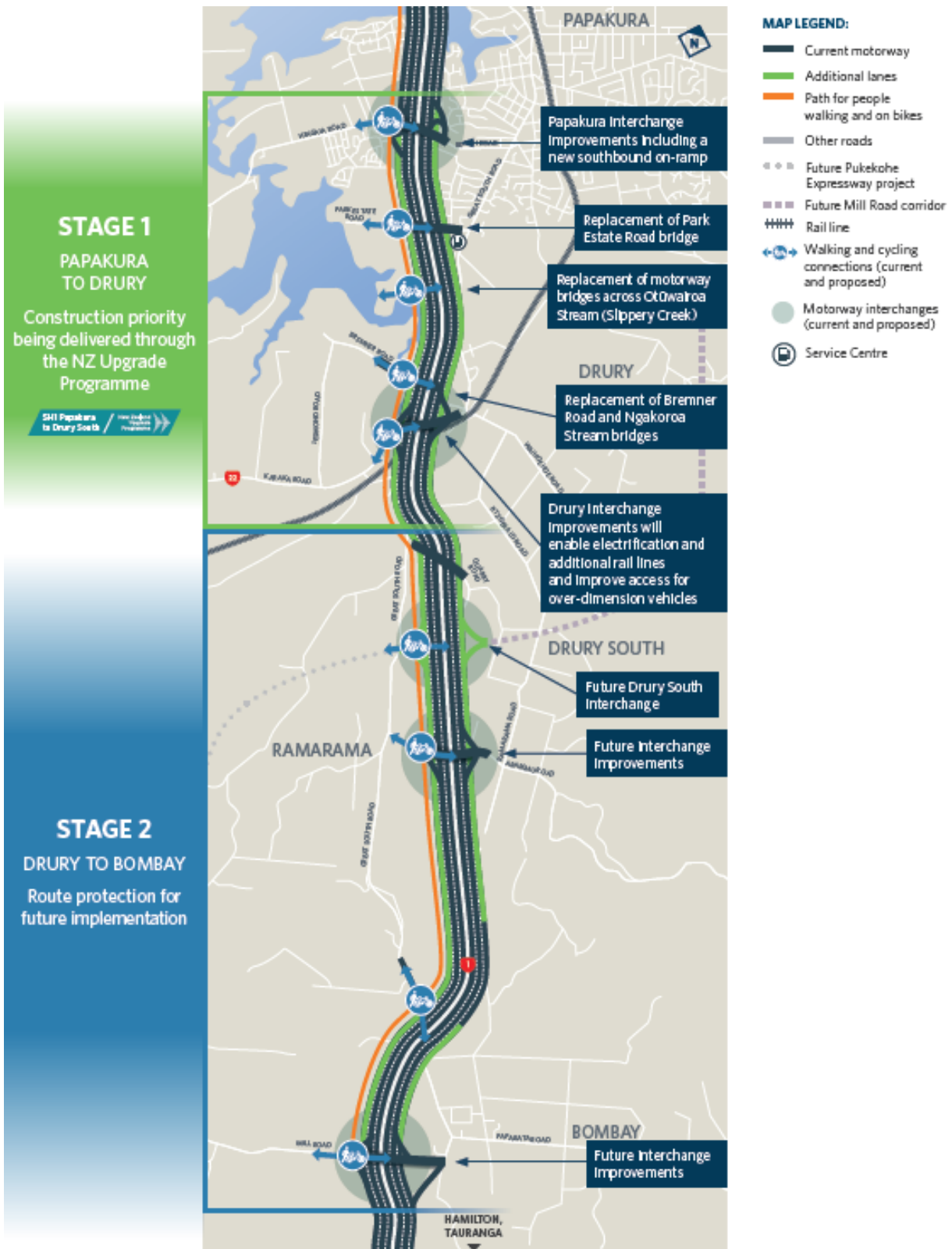
Commute Transportation Consultants

ATTACHMENT A – POTENTIAL WIDER IMPROVEMENTS

PREFERRED SH22 IMPROVEMENTS (DRURY TO PAERATA)



PREFERRED SH1 IMPROVEMENTS (PAPAKURA TO BOMBAY)



ACCESS TO PUKEKOHE IMPROVEMENT OPTIONS



Read this poster alongside 'Improving Connections to Pukekohe - Paerata' poster.

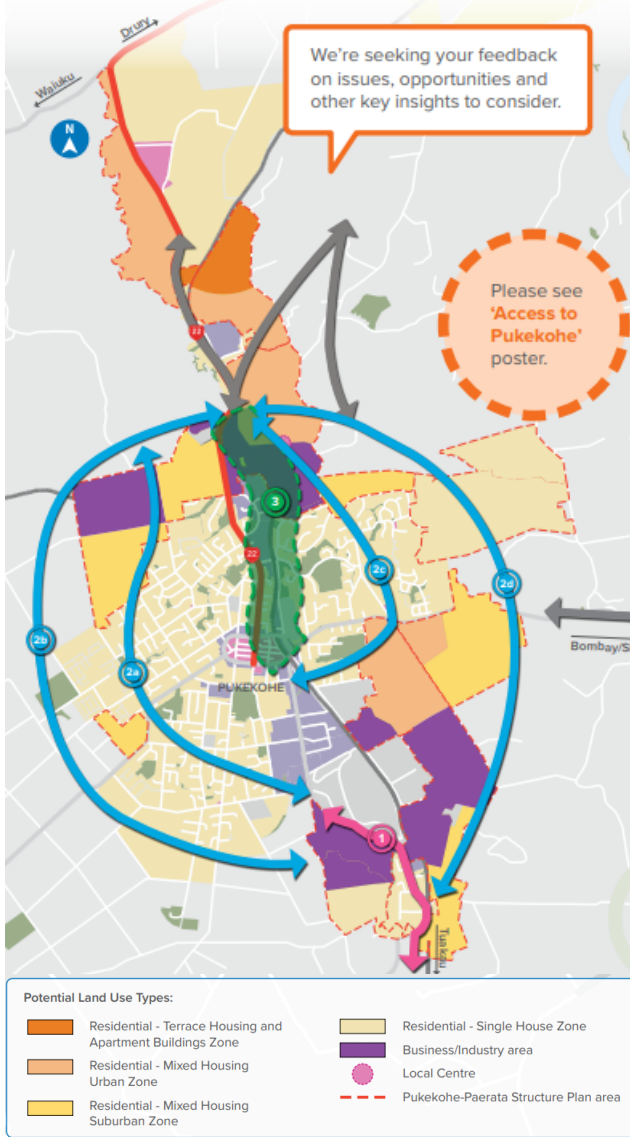
Options for this include:

- 1 Upgrade of Pukekohe East/Mill Road:**
 An upgrade of Pukekohe East/Mill Road between Pukekohe and the Bombay Interchange. This option provides direct connection for freight and business access to Pukekohe and State Highway 1 via Bombay.
- 2 Pukekohe Expressway:**
 A new corridor between Pukekohe and State Highway 1 (Pukekohe Expressway) potentially connecting to a new interchange south of Drury or the Ramarama interchange. There are **three options** for connecting to Pukekohe, either at:
 - 2a State Highway 22 to Mill Road**
 - Provides direct connection from Pukekohe North, Pukekohe West and Paerata to a new interchange south of Drury
 - 2b Pukekohe East Road to Mill Road**
 - Provides direct connection from Pukekohe East to a new interchange south of Drury
 - Passes through the middle of the Eastern Pukekohe Future Urban Area
 - 2c Pukekohe East Road to Ramarama**
 - Provides direct connection from Pukekohe East through steep terrain to the Ramarama interchange.
- 3 Upgrades to State Highway:**
 The Safe Roads SH22 Project is investigating safety and access improvements for this corridor. Any options for longer term upgrades would need to consider the increasing urban function SH22 will need to provide.

	New growth area		Special purpose area
	Residential area		Outside urban area
	Town centre area		Structure Plan area
	Employment area		State Highway
	Public open spaces		

PUKEKOHE-PAERATA CONNECTION IMPROVEMENT OPTIONS

We are planning how we can best deliver the infrastructure for both the existing and future communities to have safe, connected and attractive transport choices to key destinations in and beyond the town.



1

Buckland Road

Significant levels of growth are currently planned for Pokeno and Tuakau. More residential development in North Waikato will likely lead to an increase in traffic along Buckland Road. We are exploring how we can improve the road not only for vehicles but for other users too (e.g. cyclists).

2

New Pukekohe Ring Roads

The main route from one side of Pukekohe to the other currently requires drivers to travel through the town centre. This causes congestion, which will increase as the community grows. We are looking for opportunities for improving road alignments to relieve town centre congestion.

We are considering up to four ring road options:

2a

Western inner ring road

Utilising existing roads from Buckland Road to the strategic network north of Pukekohe. This option travels through the existing urbanised areas of Pukekohe

2b

Western outer ring road

This option is a new road outside the future urban zone of west Pukekohe from Buckland Road and connecting to State Highway 22 north of Pukekohe

2c

Eastern inner ring road

Existing roads from Manukau Road to connect to East Street and the strategic network north of Pukekohe. This option travels through the existing urbanised areas of Pukekohe

2d

Eastern outer ring road

This option is a new road outside the future urban zone of east Pukekohe from Buckland Road and connecting to the strategic network north of Pukekohe.

3

East-west connections

With the upgrading of the rail corridor we are looking at opportunities to improve connections from east to west over the rail corridor. This could include improving existing crossings, creating new crossing opportunities for all forms of transport or, if required, removing unsafe crossings.