

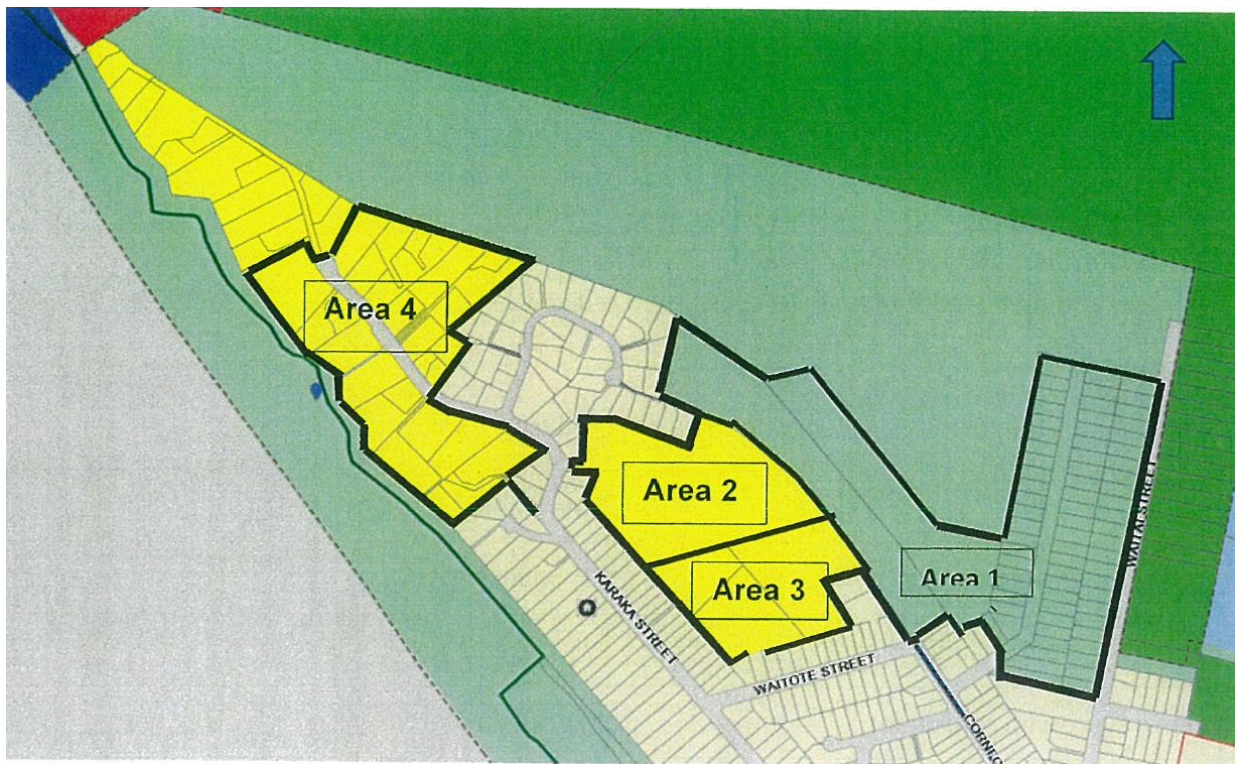
Project Number: 5-W1100.15

# Castlecliff Plan Change

## Transport Assessment

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CONFIDENTIAL



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## Executive Summary

WSP has been appointed by Whanganui District Council to conduct an investigation into the transportation infrastructure required to support the development of up to 558 residential dwellings in Castlecliff, a suburb located at the north-western edge of the Whanganui urban area.

The full development is to be implemented in several phases although the transport investigations have been completed assuming the full development is operational to assess the worst-case scenario.

The residential densities planned for each of the development phases have been used to predict the likely trip generation for the site. The final development has been assessed as generating 670 vehicles trips in the AM and PM peak hours. These trips have been distributed into the surrounding road network within the wider area.

The new internal roads are likely to be a combination of 6m and 5.5m wide roads providing access for the site and connecting into the existing surrounding road network. The development phasing is such that each phase can be serviced by a fully operational intersection, as well as a secondary route.

Public transport provision within the area is presently poor; however, current and proposed provisions for walking and cycling within the study area is relatively good. The masterplan recognises the important role walking and cycling plays in the movement of people living in this area. The town planning layout supports and encourages such modes of transport.

At this early Conceptual stage, it has been assumed that the entire site will be allocated for residential use and no non-residential land-uses have been assumed.

The analysis has identified the need for some geometric requirements such as road realignment of Longbeach Drive as well as intersection upgrades at the Waitote Street / Cornfoot Street bend.

Localised improvements are also proposed at the Cornfoot Street / Awatea Street and Cornfoot Street / Waitai Street intersections in terms of signage and roadmarkings.

Overall, these initial traffic investigations have not identified any 'showstoppers' limiting the development. There is therefore nothing to suggest that the proposed rezoning of the land to residential to support development of the type and scale proposed could not be supported in this location from a transportation perspective.



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## Disclaimers and Limitations

This report ('**Report**') has been prepared by WSP exclusively for Whanganui District Council ('**Client**') in relation to the Outer Castlecliff Plan Change ('**Purpose**') and in accordance with the Offer of Service dated 27 March 2019. The findings in this Report are based on and are subject to the assumptions specified in the Report. WSP accepts no liability whatsoever for any reliance on or use of this Report, in whole or in part, for any use or purpose other than the Purpose or any use or reliance on the Report by any third party.

# 1 Introduction

Whanganui District Council (WDC) is seeking to rezone land for residential purposes in Castlecliff, on vacant land located along the north-western edge of the Whanganui urban area.

The proposed development within the Plan Change area will require new provisions for access and will generate new traffic demands through the network. WSP has been commissioned to provide an early assessment of the potential transport effects of the development. This has included an initial review against the key transport provisions of the WDC District Plan.

This assessment has been particularly directed towards providing input into the Masterplan requirements, which in turn will determine the lots sizes and road widths. The assessment therefore has a focus on the current roading infrastructure in the vicinity of the site, identifies planned network upgrades, assesses the expected traffic which the site could yield, and determines what infrastructure upgrades may be necessary to support the development of the site for residential activity.

## 1.1 Extent of Study Area

The study area was agreed to include the primary access routes into Castlecliff, including the following key intersections on the network:

- Cornfoot Street / Waitai Street;
- Cornfoot Street / Awatea Street;
- Cornfoot Street / Manuka Street;
- Cornfoot Street / Bryce Street / Morgan Street;
- Karaka Street / Waitote Street; and
- Karaka Street / Manuka Street

The development areas all fall within the Castlecliff North Ward (sometimes called Area Unit). The 2013 census data indicated that 1,722 people live within the ward and this represents 4.6% of Wanganui District's population of 42,150.

## 1.2 District Plan Principles

Chapter 13 of the Wanganui District Plan sets the objectives and Performance Standards for Subdivisions and Infrastructure. Some of the key transport specific objectives in the District Plan include:

- the promotion of street design that integrates functions with adjoining land uses in a manner that is appropriate;
- encouraging the development of liveable streets to create a sense of place, safety and integration of people with the transportation network;
- require transport corridors to be designed and operated in accordance with their intended function in the roading hierarchy; and
- connectivity of new streets and public accessways with existing infrastructure that does not compromise future subdivision or development of surrounding areas.



## 2 The Site

The site is within the seaside suburb of Castlecliff, located to the west of Whanganui City Centre. Castlecliff is popular due to offering numerous beach activities, including fishing and surfing. The site is shown within its regional context in **Figure 1** below. Castlecliff is also the final destination for the Mountain to Sea Great Rides, a 231km cycle trail from Mt Ruapehu to Whanganui and is one of New Zealand's 22 Great Rides.

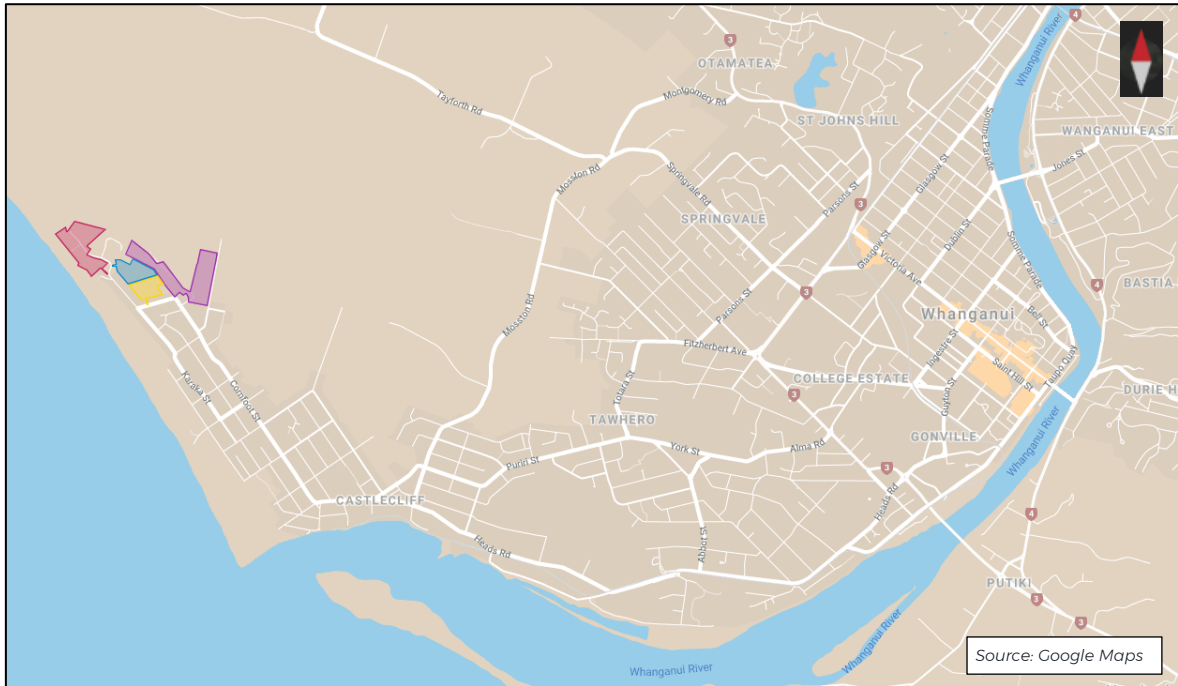


Figure 1: Site Location Regional Context



Figure 2: Site Location Local Context

The Castlecliff sub-division comprises four primary areas as shown in **Figure 2**. Area 1 is bounded by the golf course to the north, Waitai Street to the east and Cornfoot Street to the south. Areas 2 and 3 are bounded by Area 1 to the north and existing residential properties along Karaka Street to the south. Area 4 is located towards the end of Longbeach Drive, and having already been subdivided, comprises existing residential properties.

Collectively the areas proposed for subdivision comprises approximately 34 ha of land currently zoned 'Rural Residential' in the District Plan. The surrounding land-uses are shown in **Figure 3** below. Given that Area 4 has already been subdivided, the plan change for this area is merely the ratification for the change of land-use from Rural Residential to Residential.

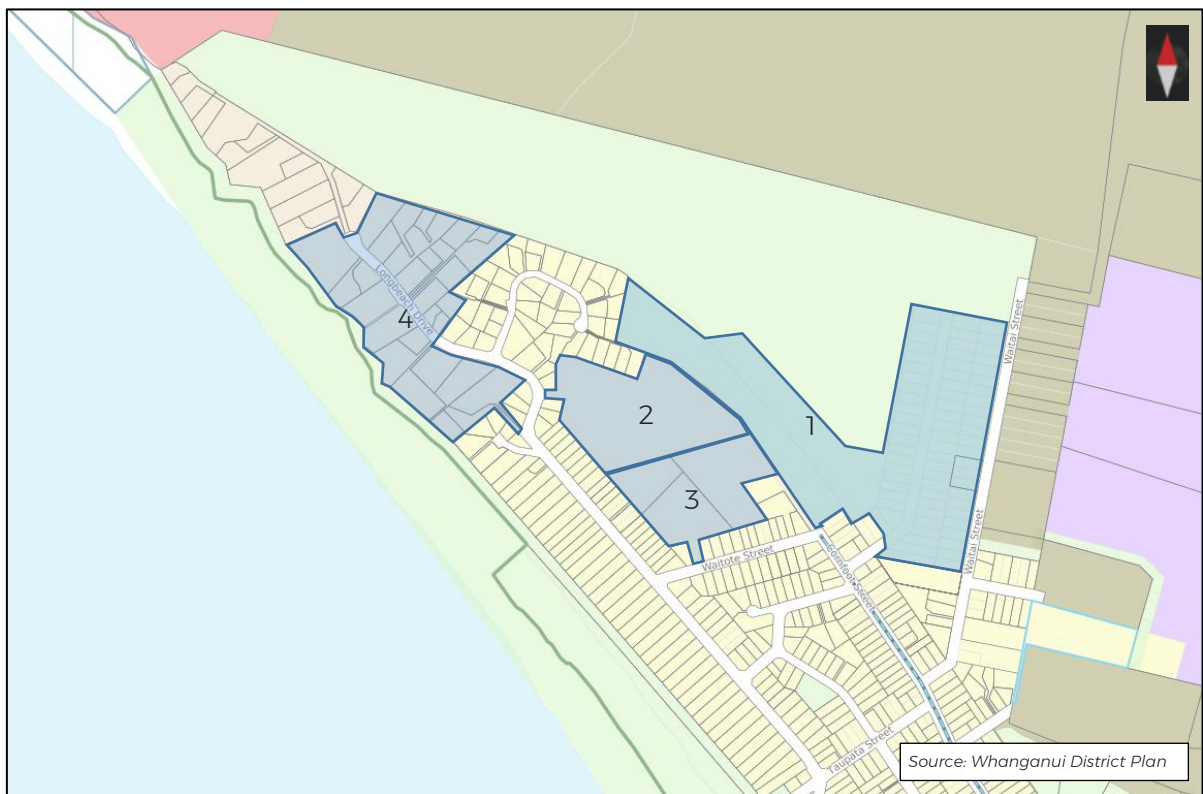


Figure 3 : Site Location within the current District Plan

All roads fronting the sites are within WDC's control.

No specific Structure Plan exists for the area. However, a conceptual sub-division plan is available for Areas 1 and 2 as shown in **Appendix A**.

## 3 Existing Transportation Environment

### 3.1 Road Hierarchy

Figure 4 shows the site location within the context of the surrounding road hierarchy.

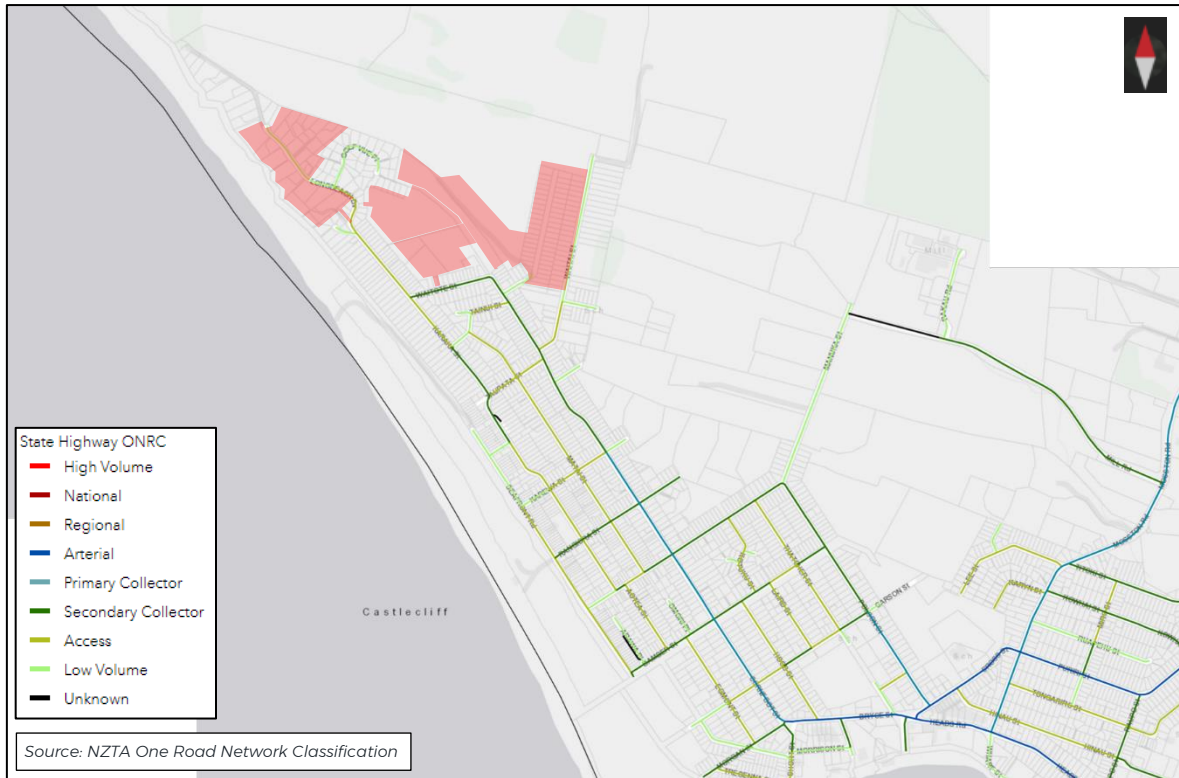


Figure 4 : Road Hierarchy

#### 3.1.1 Karaka Street

Karaka Street extends from Manuka Street in the south to Kapiti Terrace in the north, a distance of some 1.62km. Along its length the road hierarchy varies as shown below:

Start	End	Road Hierarchy	Width
Manuka Street	Ngaio Street	Access Road	9.6m
Ngaio Street	Tainui Street	Secondary Collector	8.8m – 9.3m
Tainui Street	Kapiti Terrace	Access Road	9.3m

After Kapiti Terrace, Karaka Street becomes Longbeach Drive. Karaka Street varies its width along its length, with the section closest to Longbeach Drive being 9.3m comprising one trafficked lane in each direction and no road markings other than on the approaches to curves and intersections.

A concrete footpath exists along the southern edge while both sides have wide grass verges, given that the road reserve is 20m

### 3.1.2 Longbeach Drive

As shown in **Figure 4**, Longbeach Drive is classified as an Access Road and therefore only serves the private residential properties along its length. Longbeach Drive is 580m long starting at the intersection with Kapiti Terrace and terminating by way of a Cul-de-sac.

Longbeach Drive has an 18m road reserve width together with kerb to kerb width of 8.4m comprising one lane in each direction. The portion of Longbeach Drive north of Golf Vue Place has mountable kerbs both sides. Concrete footpaths are present along both sides, separated by a grass verge.

After the Cul-de-sac, Longbeach Drive becomes a private road serving a gated community comprising residential properties along its length. The road reserve width also reduces to 9m on this section.

### 3.1.3 Waitote Street / Cornfoot Street

Waitote Street is only 300m long and connects Karaka Street to the west and becomes Cornfoot Street to the east. The road is 9.4m wide within a 20m road reserve and classified as a Secondary Collector within the ONRC.

Cornfoot Street is 1.96km in length can classified as a Secondary Collector between Waitote Street and Karewa Street, thereafter becoming a Primary Collector on account that it provides direct access towards Wanganui CBD. The road width is 9.2m nearest Waitote Street increasing to 9.6m approaching Rangiora Street. The section between Rangiora Street and Manuka Street is 12.7m, the additional width being to accommodate a 1.75m flush median. South of Manuka Street Cornfoot Street becomes 13.8m which can accommodate on-street parking, although no formal linemarkings are present.

Concrete footpaths are available both sides along the entire length.

### 3.1.4 Waitai Street

Waitai Street is 770m in length and connects with Cornfoot Street by way of an unmarked priority controlled intersection. No Stoplines or Give Way markings are present. The portion of Waitai Street between Cornfoot Street and Aranui Avenue is classified as an Access Road while the portion north of Aranui Avenue is deemed a Low Volume road. Waitai Street sits within a 20m road reserve and is 8m wide between Cornfoot Street and Aranui Avenue, thereafter reducing to a rural cross section only 5m wide, no kerbing and open drains.

## 3.2 Existing Link Volumes

Traffic data has been sourced from both the WDC RAMM database<sup>1</sup> as well as Mobile Roads. The approximate Average Annual Daily Traffic (AADT) volumes are summarised in **Table 1** below.

Road	Section	Traffic Volume (veh/day)
Longbeach Drive	Kapiti Terrace to Golf Vue Place	254
Kapiti Terrace	-	50
Karaka Street	Waitote Street to Kapiti Terrace	393
Awatea	-	166

<sup>1</sup> Road Assessment and Maintenance Management software used to manage road assets

Cornfoot Street	Taupata Street to Kamahi Street	2,057
Cornfoot Street	Carson Street to Bryce Street	3,122
Waitote Street	Karaka Street to Cornfoot Street	650
Waitai Street	Cornfoot Street to Aranui Avenue	526
Manuka Street	Cornfoot Street to Karaka Street	700

Table 1 : Average Annual Daily Traffic Volumes

Based on the daily volumes it can be seen that Cornfoot Street, as the primary collector through Castlecliff, carries significantly higher traffic volumes than the surrounding roads. Waitote Street and the developed portion of Waitai Street carry moderate volumes of traffic per day.

### 3.3 Road Safety

The NZTA Crash Analysis System (CAS) was searched to determine the pattern of crashes occurring within the study area. The full 10-year period from 2009 – 2018, including the latest data for 2019 was assessed. The crash locations are shown in **Figure 5**. A full detailed breakdown of the crashes is available upon request.

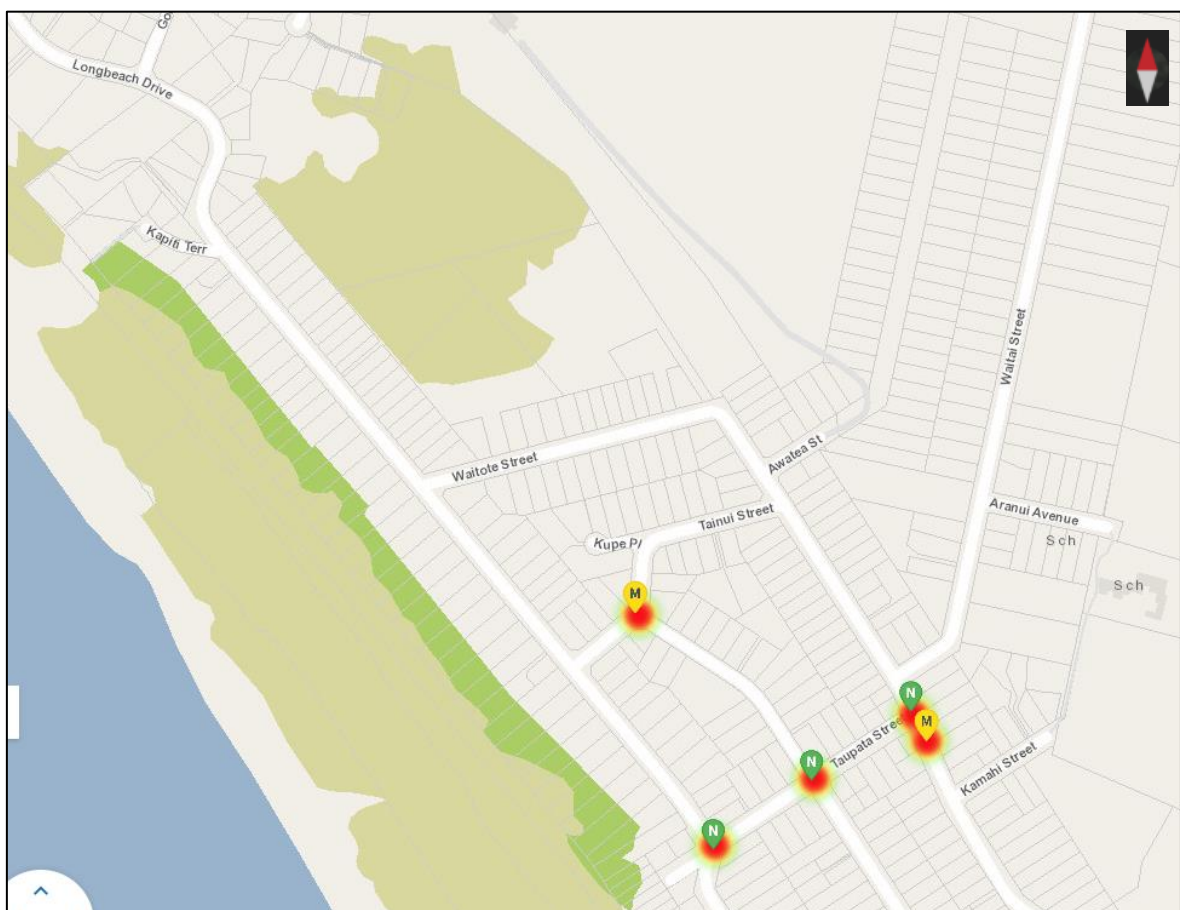


Figure 5: 10-Year Crash Locations

The 10-year review shows no distinct trends with only five crashes being recorded over the analysis period.

Crash Type	Number	% All Crashes
Overtaking	0	0%
Straight Road Lost Control / Head On	1	20%
Bend Lost Control / Head On	3	60%
Rear End/ Obstruction	0	0%
Crossing / Turning	1	20%
Pedestrian	0	0%
Miscellaneous	0	0%
<b>Total</b>	<b>5</b>	<b>100%</b>

Table 2: Crash Type

As shown in **Table 2**, one (20%) crash occurred due to a driver failing to give way at the Tainui Street / Matai Street intersection due to travelling in a car with no brakes or suspension. One Crash occurred due to a driver failing to give way at the Taupata Street / Matai Street intersection and was hit from the side.

Three crashes (60%) were recorded as drivers losing control of their vehicle. One crash was as a result of a dog chasing a moped, causing the driver to crash. The second crash occurred due to a driver attempting to out run the police and was eventually stuck by a patrol vehicle. The third crash involved a driver of a stolen vehicle travelling at speed and losing control while turning a corner.

No fatalities or serious crashes were recorded within the study area, with two crashes being recorded as minor injuries.

In summary, a review of the crash history showed that the crash rate is comparatively low and no underlying safety concerns were identified which could be prevented through changes in the road geometry. It is expected that additional traffic from the residential dwellings should not adversely affect the safety of road users.

### 3.4 Existing Footpaths and Cycle Routes

Generally, the wider Whanganui area has a moderate proportion of active users who presently make use of existing walking paths.

However, few on and off road cycle lanes exist within the study area. The WDC Active Transport Strategy 2017 details the future aspirations for the wider Whanganui area and includes an Infrastructure Development Plan as shown in **Figure 6**. The strategy indicates on-road cycle lanes are proposed to be developed along Cornfoot Street in the next five years. In addition, North Mole to the south of Castlecliff provides an off road shared path connection to Whanganui town centre which is well utilised.

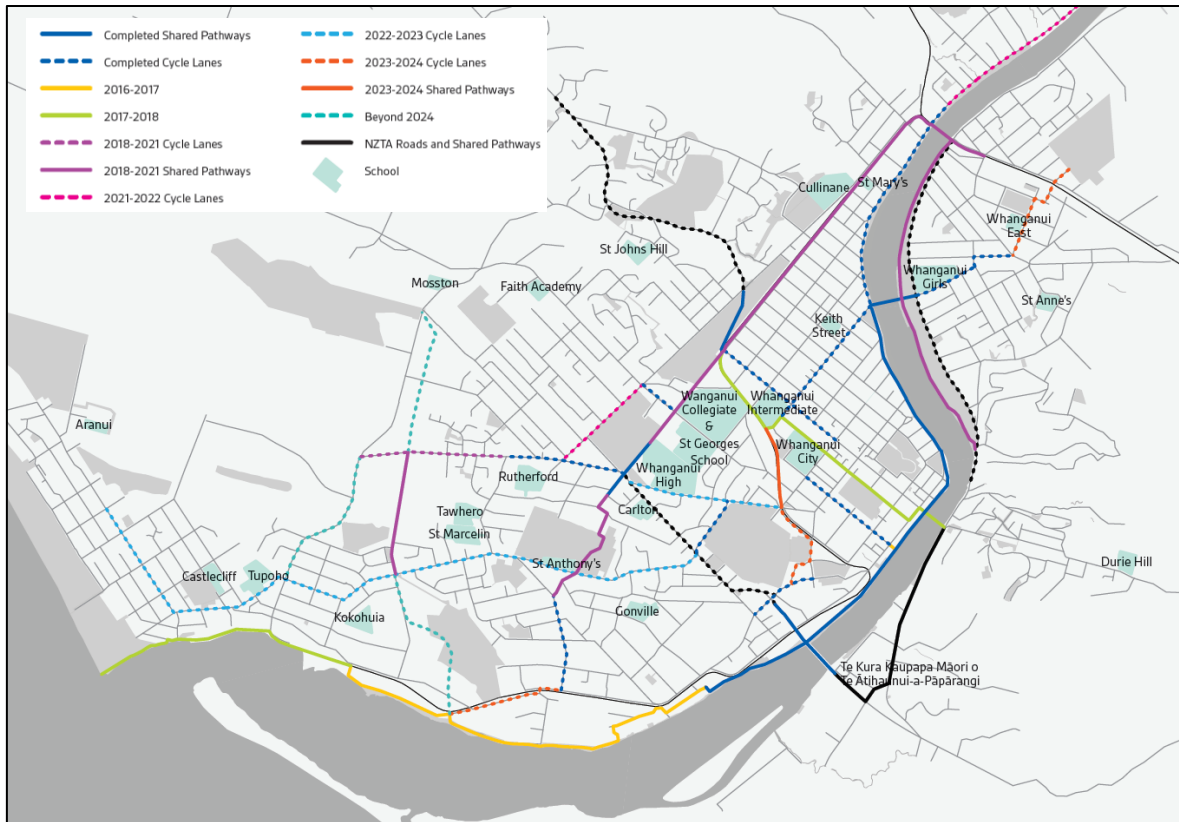


Figure 6: Active Transport Development Plan

### 3.5 Existing Public Transport

Two bus services operate within close proximity of the development area. The nearest bus stops are located along Waitoea Street and Cornfoot Street. These bus stops are however outside the preferred maximum walking distance of 500m set out in the Horizons Regional Council's Public Transport Plan 2015-2025<sup>2</sup>. These stops are serviced by Route Castlecliff (Blue) and Castlecliff (Pink) which operates between Trafalgar Square in Wanganui Town Centre. These services operate from hourly between 7:00am to 6:00pm on Monday to Friday, and roughly every 2-3 hours from 8am to 4pm on a Saturday, with no services Sundays and on public holidays.

In addition to the commuter busses, some school busses operate locally within the area primarily along Cornfoot Street. Rutherford High, Whanganui Girls College and Whanganui High School all have dedicated bus services.

<sup>2</sup> Page 38, Aspect 3

## 4 Development Proposal

Site planning and design are currently in the early stages of development. As shown by an early site masterplan, the development is expected to comprise a mixture of 2-bed, 3-bed and 4-bed dwellings. Collectively, the land proposed for rezoning could result in up to 558 dwelling units, distributed across the four proposed development areas as summarised in Table 3 below. For reference the development areas 1, 2, 3 and 4 are also shown diagrammatically on **Figure 2**. The various Areas all comprise a mixture of low and medium density residential units.

Description	Size (Ha)	Density	No. Lots
Area 1	17.75	400m <sup>2</sup>	355
Area 2	4.59	800m <sup>2</sup>	46
Area 3	3.95	400m <sup>2</sup>	79
Area 4	7.88	800m <sup>2</sup>	78
<b>Total</b>	<b>34.17</b>		<b>558</b>

Table 3: Proposed Development



## 5 Trip Generation and Distribution

It is understood that up to 558 dwellings could be constructed as part of the development. The expected traffic generation of the activities at the site has been estimated using Table C.1 from “Trips and parking related to land use – November 2011”. This table outlines the New Zealand trip generation and parking demand based on land use. To be conservative, the land use for the site has been classified as comprising ‘inner suburban’ residential dwellings. This land-use suggests a trip generation rate of 1.2 vehicle movements per dwelling per hour (vph) during peak hour periods and 10.9 vehicle movements per dwelling per day (vpd). Using this trip generation rate, the forecasted number of trips has been calculated for each area within the proposed rezoning area as shown in Table 4.

Area	No. Units	Peak Hour Trip Rate	No. of Trips Generated	Daily Trip Rate	No of Trips Generated
1	355	1.2 per unit	426	10.9 per unit	3,870
2	46		55		501
3	79		95		861
4	78		94		850
<b>Total</b>	<b>558</b>		<b>670</b>		<b>6,082</b>
<b>Total New Trips</b>			<b>576</b>		<b>5,232</b>

Table 4: Predicted Trip Generation

On this basis it would be expected that the 558 dwellings could generate up to 670 vph and similarly 6,082 vpd. It should also be mentioned that Area 4 is already occupied and the 850 vpd are in fact existing vehicle trips and would not add to the net impact.

The above volumes are total two-way volumes, and it is recognised that residential activity generates a tidal distribution throughout the day. The proportion of forecasted trips entering (inbound) and exiting (outbound) the site has been determined using the Institute of Transportation Engineers Trip Generation Manual (ITE). For single-family detached housing, as proposed, the ITE indicates a directional distribution of 25% inbound and 75% outbound for the AM peak and 63% inbound and 37% outbound for the PM peak.

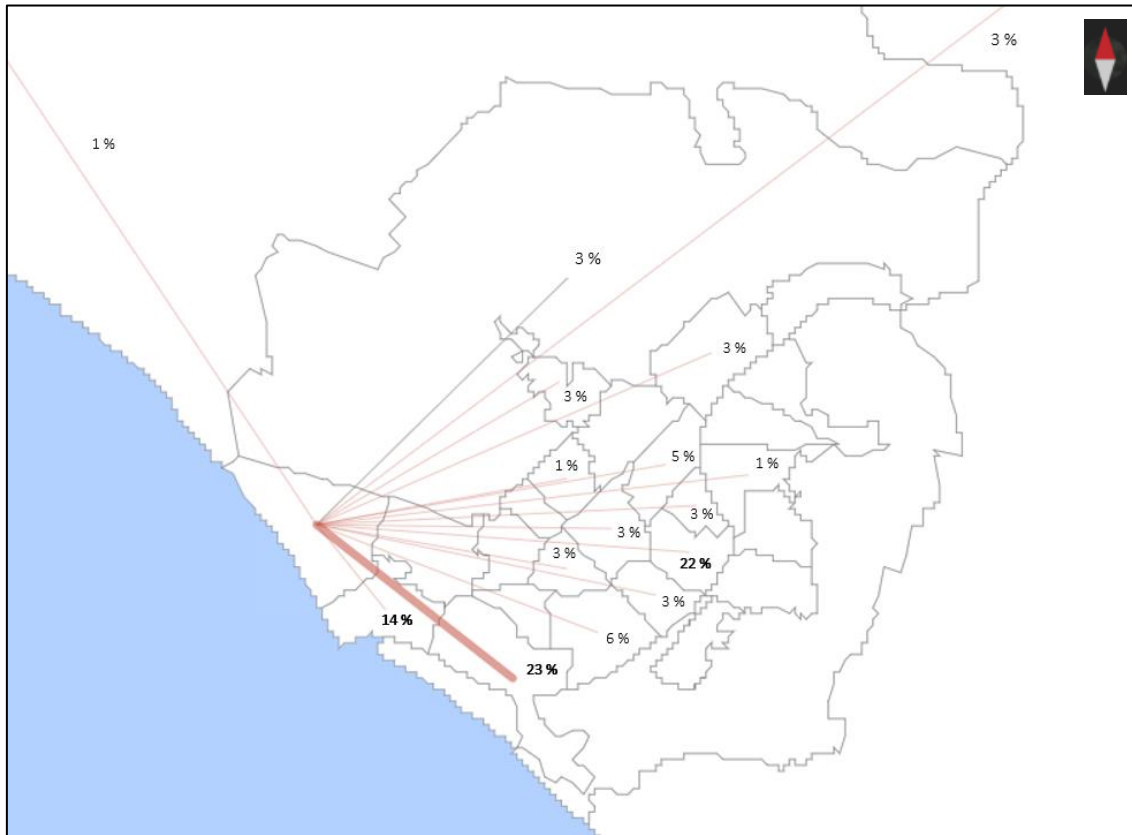
The peak hour flows are summarised in Table 5.

Period	Inbound	Outbound	Total
AM	167 vph	502 vph	670 vph
PM	422 vph	248 vph	670 vph

Table 5: Peak Hour Trip Generation and Distribution

In terms of distribution onto the wider road network it is clear that since the development would be bringing forward unplanned residential development, an internal road network will be required to support the development. As the primary access route into Castlecliff, a significant proportion of site traffic would be expected to use Cornfoot Road to connect to the Town Centre and other local business/industrial areas. In order to assess the likely

trip distribution for the site the 2013 census data has been used as an informant and is presented in **Figure 7**.



*Figure 7 : 2013 Census Data – Commuter Destinations*

The census data confirms that 95% of those living within the Castlecliff North ward travel to destinations within the wider Wanganui area with only 5% travelling to further out areas. The 2013 census data indicates that 1,722 people live within the ward, increasing to 1,875 for the 2018 census. Although no commuter data is yet available for the 2018 dataset, the 2013 data recorded 69 people lived and worked within the Castlecliff North ward, 507 people commute to destinations outside the ward with only 54 people commuting into the ward.

84% of those living within the ward drove themselves using either a private or company car, truck or van. A further 6% travelled as a passenger in a vehicle when going to work.

It has therefore been assessed that the town centre and surrounding areas serve as the primary destination and will attract 84% of all the trips generated by the site.

Using the aforementioned catchment area percentages, the number of trips exiting from the site to each destination and the number of trips from each destination entering the site has been established.

The generated traffic has been manually distributed onto the network based on the most attractive route to/from the desired destination. It has been assumed that inbound vehicles return along the same route as the outbound vehicles. This method of calculation resulted in an estimated future ADT.

Consideration has also been given to known infrastructure improvements such as the extension of Fitzherbert Avenue<sup>3</sup>. This extension is likely to attract a portion of Puriri Street traffic onto Mosston Road and Fitzherbert Avenue. For the purposes of this assessment the construction of the extension has been assumed to be complete.

Broadly, some 547 additional vph will be to / from the wider town centre area and similarly 30 vph travelling outside Whanganui. **Table 6** shows the approximate increase in vpd due to the development while **Figure 8** shows the outbound distribution diagrammatically.

Road	Current AADT	Assessed Additional Development Trips	Potential Total Volumes
Cornfoot Street	2,057	4,014	6,071
Karaka Street	393	1,138	1,531
Awatea Street	166	1,935	2,101
Waitote Street	650	1,478	2,128
Longbeach Dr	150	251	401
Bryce Street	5,031	5,232	10,263
Cross Street	4,196	3,296	7,492
Heads Street	5,759	1,936	7,695
Puriri Street	7,771	1,831	9,602
Mosston Road	3,323	1,256	4,579

*Table 6 : Potential Increases in Traffic Volumes on Key Routes Within Castlecliff (vpd)*

<sup>3</sup> [https://www.nzherald.co.nz/whanganui-district-council/news/article.cfm?c\\_id=1504487&objectid=12228580](https://www.nzherald.co.nz/whanganui-district-council/news/article.cfm?c_id=1504487&objectid=12228580)



Figure 8: Trip Distribution (Outbound only)

It can be seen that Cornfoot Street, Bryce Street and Cross Street are anticipated to experience a significant growth, as compared with their moderate existing volumes, which result in the additional traffic being a relatively high proportional increase.

The impact is further exacerbated due to these roads passing through existing established neighbourhoods. It is anticipated that these roads are still capable of accommodating the daily traffic volumes predicted. However, notwithstanding link capacity, some improvement works are required to improve visibility at curves for example, or at some intersections such as the Cornfoot Street / Bryce Street / Morgan Street intersection, which is likely to suffer capacity issues due to additional through traffic being introduced.

It should be mentioned that although traffic has been distributed using the most desirable or shortest routes, the roading network within Castlecliff is in a grid pattern, providing alternative routes for north-south travel, which ultimately reduces the dependency on Cornfoot Street.

With regards to timeframes it is clear that the construction of more than 500 dwellings would take several years to complete. It is possible that by the time the development reaches completion, WDC could have introduced some additional infrastructure. At this early stage however, the impact has been assessed on the existing network.

## 6 Infrastructure Improvements

A number of key infrastructure elements will be required to be constructed as part of the development of the site. As no structure plan exists for the area, the infrastructure upgrades proposed have been designed to best serve the development. The improvements have been described using the following sub-sections:

- Road Improvements;
- Intersection Improvements; and
- Walking and Cycling Provision.

### 6.1 Road Improvements

The proposed plan change will require numerous road improvements for the surrounding roads.

#### 6.1.1 Karaka Street

No improvements proposed.

#### 6.1.2 Longbeach Drive

No improvements proposed.

#### 6.1.3 Waitote Street / Cornfoot Street

Waitote Street – No improvements proposed.

Cornfoot Street - No improvements proposed.

#### 6.1.4 Waitai Street

Widen portion of Waitai Street fronting proposed new lots north of Aranui Avenue from 5m to 7.4m together with kerbs both sides and matching into existing cross section.

Construction of a new concrete footpath along western side extending from site frontage to Cornfort Street, a distance of 650m. Alternatively, consider a 440m long concrete footpath along the western side together with a formal crossing to link with the existing footpath along the eastern side.

#### 6.1.5 Internal Roads

All new internal local roads are intended to be 6m wide. Internal lanes (typically servicing less than 20 units) will be 5.5m wide as shown in **Figure 9**. These roads will include a segregated footpath along one berm. No dedicated cycle facilities are proposed and cyclists will be expected to cycle on-road with general traffic.

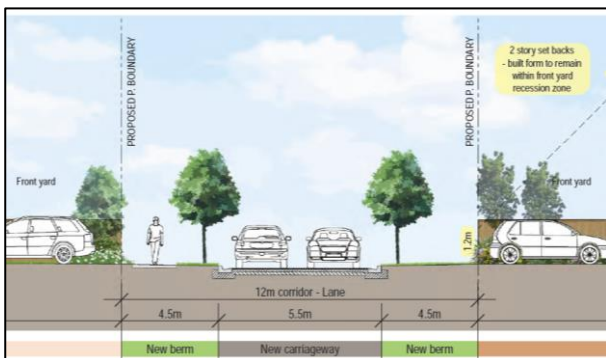


Figure 9 : Example of Typical Local Road Cross Section (12m Corridor)

### 6.1.6 Cross Section Summary

It is noted that the example cross sections are generally consistent with the road corridor requirements set out in Section 12.5.5 of the District Plan. However, variations to the prescribed cross sections can potentially be achieved, subject to discussions and agreement with WDC. It is recommended that these discussions be held at an early stage of development in order to set the required road corridor widths.

The proposed cross sections are consistent with New Zealand Standard 4404-2010 Appendix E guideline. This standard includes several cross sections for a variety of scenarios and Figures E12 and E13 echo the aspirations of a medium density environment.

It is concluded that the typical cross sections proposed are in line with current best practice, and broadly in line with WDC requirements.

## 6.2 Intersection Improvements

The District Plan requires properties with a road frontage to be more than 10m away from an intersection on Local/Collector roads and 15m from District Arterial roads. All new accesses or intersections to be upgraded will need to ensure that safe sightline distances can be achieved.

Based on forecast traffic volumes established for the proposed area for zoning, the following intersection upgrades are proposed:

### 6.2.1 Cornfoot Street / Waitai Street

No geometric improvements deemed necessary. However, some additional roadmarkings are proposed together with the appropriate give-way signage to reinforce the need for vehicles approaching from Waitai Street to give way to Cornfoot Street through traffic.

### 6.2.2 Cornfoot Street / Awatea Street

Formal give-way roadmarkings required together with give-way sign erected on the Awatea Street approach.

### 6.2.3 Cornfoot Street / Waitote Street / New Road

This intersection is considered the gateway to the development for vehicles travelling to and from Areas 2, 3 and parts of Area 1. It is likely that this new intersection will need careful consideration due to the moderate volumes predicted. It is likely that any intersection modelling will not require treatment beyond typical dimensions.

However, given the angle at which the new road will approach the intersection, safety concerns are likely to influence the intersection layout. A right turn bay is also likely to be required given the vehicle volumes which may be constrained by the existing road widths. It is recommended that this new intersection be designed as part of the masterplanning process to ensure that a safe intersection can be provided.

Alternatively, consideration could be given to converting the intersection to a T-intersection with Waitote Street being the minor approach; however, the suitability of this arrangement would need to be modelled. Other alternative intersection control options could include the introduction of the roundabout, although third party land will be required. The provision of a roundabout may also have additional urban design/placemaking benefits, operating as a gateway to the future growth area and supporting a reduced speed environment.

### 6.2.4 Waitote Street / New Access

The indicative road layout proposes a new access between properties 3 and 5 Waitote Street to provide a new access to service Area 3. This intersection is some 75m from the Karaka Street intersection and therefore compliant with the District Plan's minimum intersection spacing.

### 6.2.5 Waitote Street / Karaka Street

Given that the majority of generated traffic will gravitate towards Cornfoot Street, some additional vehicular trips are expected to turn left into Waitote Street and right into Karaka Street. No geometric improvements are anticipated, although some roadmarkings and signage are required to reinforce compliance.

### 6.2.6 Longbeach Drive / New Access (Area 2)

A new intersection is proposed between properties 6 and 8 Longbeach Drive. This intersection is located on the outside of the bend at the optimal position to maximise sightline distances. However, the District Plan requires a minimum sightline distance of 97m for Local / Collector roads. The maximum achievable sightline distance to the left and right is only 77m and 80m respectively.

Given the substandard sightline distances it is recommended that the alignment of Longbeach Drive be changed to ease the horizontal curve. This will be the use of vacant land on the inside of the curve (properties 7 and 9 Longbeach Drive). Alternatively, in the event the curve easing is not possible, traffic speeds could be lowered on Longbeach Drive, either through changes to the posted speed limit or introduction of other physical roading features that could support lower speed environment. This however, is unlikely to be acceptable by WDC roading engineers. Alternatively, another option could be the complete relocation of the new intersection.

### 6.2.7 Longbeach Drive / New Access (Area 4)

This existing driveway crossing is intended to service Area 4. The current sightline distances were measured to be 90m to the left and in excess of 97m to the right. The possibility to ease the horizontal curve for the new access to Area 2 would also improve the sightline distance for this intersection.

## 6.3 Walking and Cycling

In addition to vehicle access, provision of pedestrians and cyclists has been considered. The future masterplan should consider the following walking provisions:

- New footpaths along all new road sections;
- Links to existing footpaths surrounding the site;
- Future pedestrian link to from Areas 2 and 3 to Castlecliff Golf Club;
- Ensuring links are available into the wider network of established footpaths;

The masterplan also includes the following cycling improvements:

- Consider extending Council's proposed extent of cycle lanes on Cornfoot Street to include the section of road between Waitote Street to Kamahi Street;
- Consideration should also be given to providing a preferred cycle route to local community areas such as the Whanganui Surf Lifesaving Club, which is easily accessed via Rangiora Street.

## 6.4 Public Transport

No discussions have been held with Horizon's Regional Council with regards to future bus services operating through the site. As noted previously, the majority of the areas identified for rezoning is slightly beyond the desired "walkable" catchment for public transport. Improving accessibility to the rezoned area could be achieved through diverting the buses via the new internal roads rather than Waitote Street. If this is a desired outcome, the masterplan would need to consider the suitability and arrangement of the internal road network for accommodating bus movements, including the suitability of the road to accommodate larger vehicles.

It is recommended that discussions be held with the Regional Council to explore either the introduction of a new bus route or extension of the existing routes to better serve the development.

## 6.5 Parking

For residential complexes, the District Plan requires that the following minimum provisions be made for on-site parking:

- Residential Dwelling units – 1 space per dwelling unit

Although a detailed site development plan has not yet been developed, it is anticipated that the development will comply with these standards.

## 6.6 Road Safety Summary

The development of additional residential growth within the proposed Plan Change area will introduce additional vehicle trips to the network. Assuming the proposed infrastructure upgrades of both Longbeach Drive and intersections along Cornfoot Street are improved, the lower speed environment and safer road geometry should assist in reducing the number (and severity) of crashes along these road segments. The existing 90-degree bend along Waitote Street will be removed as part of the development proposal and this alone is likely to offer significant safety benefits to road users. Overall, it is expected that the geometric improvements are likely to reduce crash rates, despite an increase in overall vehicular volumes on the surrounding roads.



## 7 Conclusion

This transport investigation has analysed the potential traffic issues and risks associated with the additional transportation demands associated with the potential rezoning of land from rural residential to residential as outlined within the proposed Castlecliff Plan Change. Consideration has been given to development of the site assuming the plan change is undertaken. No known infrastructure improvements within the immediate vicinity of the site are mentioned within the Whanganui District Plan or Castlecliff Plan Change information portal.

This assessment has highlighted the need for the following infrastructure improvements:

- The intersection of Waitote Street and Cornfoot Street be converted to a priority-controlled intersection with consideration for a roundabout;
- The existing intersections of Cornfoot Street with Awatea Street and Waitai Street be improved with signage and roadmarkings;
- New intersection to be located along Waitote Street;
- The section of Longbeach Drive be realigned to improve sightline distances for intersections accessing Areas 2 and 4, or alternatively implement improvements that encourage a lower speed environment;
- Awatea Street and Waitai Street be upgraded and widened to match typical urban cross sections together with off-street footpaths; and
- New walking and cycling facilities to best serve the site and integrate with the surrounding network.

It is further noted that the development has the potential to be staged, with conditions attached allowing additional stages subject to the improvements of critical roads/intersections to appropriate standards.

Recommended actions going forward at the appropriate time within the project:

- A site masterplan be developed, consider short term and long term roading layout and connections. Talk to WDC about the road network proposals and the proposed staging of development and infrastructure delivery;
- Conduct a design review to make sure that likely mitigations/infrastructure provision can be delivered within the site or road corridor;
- A Transport Impact Assessment (TIA) will be needed for any subdivision.

Overall, these initial traffic investigations have not identified any 'showstoppers' limiting the development. There is therefore nothing to suggest that a residential area of the type and scale proposed could not be supported in this location from a transportation perspective, noting that some mitigation improvements will need to be validated, as above.

# Appendix A

## Castlecliff Masterplan



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## Concept Plan Proposed Rezoning Castlecliff

Drawn by:	M O'S	Date:	15 Feb 2019
Scale:	(A3) 1:2500	Drawing No.	
Project No.			

Note: All areas and dimensions are subject to final survey. The Contractor shall check all dimensions on site.

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