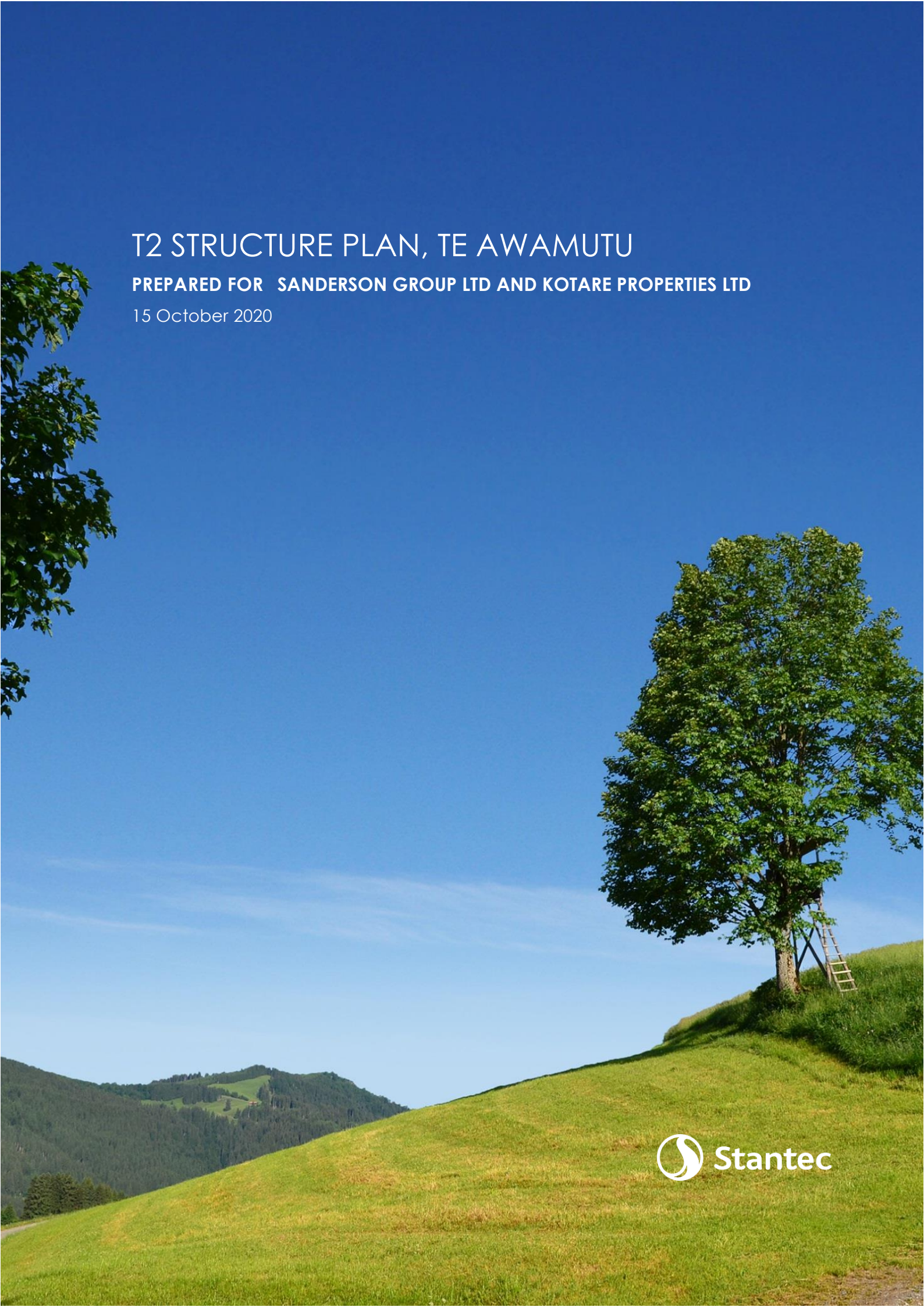
T2 STRUCTURE PLAN, TE AWAMUTU

PREPARED FOR SANDERSON GROUP LTD AND KOTARE PROPERTIES LTD

15 October 2020



This document has been prepared for the benefit of Sanderson Group Ltd and Kotare Properties Ltd. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.

This disclaimer shall apply notwithstanding that the report may be made available to Waipa District Council and other persons for an application for permission or approval to fulfil a legal requirement.

QUALITY STATEMENT

PROJECT MANAGER	PROJECT TECHNICAL LEAD
Mark Apeldoorn	Anna Wilkins

PREPARED BY		
Anna Wilkins and Mark Apeldoorn	.....	15/10/2020
CHECKED BY		
Mark Apeldoorn	.....	15/10/2020
REVIEWED BY		
Mark Apeldoorn	.....	15/10/2020
APPROVED FOR ISSUE BY		
Mark Apeldoorn	.....	15/10/2020

HAMILTON
468 Tristram Street, Whitiora, Hamilton 3200
PO Box 13-052, Armagh, Christchurch 8141
TEL +64 7 839 0241, FAX +64 7 839 4234

REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	27/7/20	Client Draft	MA/AW	MA	MA	MA
1	11/08/20	Final for Lodgement	MA/AW	MA	MA	MA
2	15/10/20	Final SP for Notification	MA/AW	MA	MA	MA

Abbreviations

AADT	Annual Average Daily Traffic
CAS	Crash Analysis System
COPTTM	Code of Practice for Temporary Traffic Management
CTMP	Construction Traffic Management Plan
DP	District Plan
HCVs	Heavy Commercial Vehicles
HGV	Heavy Goods Vehicle
ITA	Integrated Transportation Assessment
km/h	Kilometers per hour
RLTP	Regional Land Transport Plan
RPTP	Regional Public Transport Plan
RPS	Regional Policy Statement
vpd	Vehicles per day
vph	Vehicles per hour
WDC	Waipa District Council

Sanderson Group Ltd and Kotare Properties Ltd and Kotare Properties Ltd

T2 Structure Plan, Te Awamutu

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. Introduction

Sanderson Group is a family orientated, leading provider of high-quality retirement villages in New Zealand. Established in 1987, Sanderson have been involved in a number of retirement village developments in Tauranga, Queenstown and Hamilton. They currently operate the Omokoroa Country Estate and the Tamahere Country Club is currently under construction. The Waikato population has shown a strong interest for a Sanderson Group retirement village to be established in Te Awamutu.

Kotare Properties Ltd is a residential subdivision land development business. It has a well-established track record of producing residential living environments aligned with safe, multi-modal, integrated arrangements.

The site located at 10 Frontier Road and 52 Frontier Road, at the western extent of Te Awamutu has been identified as being an ideal location for the village and residential subdivision. The site is mostly vacant and is currently operated as part of a dairy farm, however it contains an existing dwelling at the northern part of the site.

The site is within the boundaries of the Waipa District and is therefore subject to the objectives, policies and rules of the Waipa District Plan.

Sanderson Group together with Kotare Properties propose a plan change to the Waipa District Plan to rezone the Growth Cell and insert a Structure Plan, opening it up for residential development to occur now. Sanderson's have been unable to find a suitable site in the currently zoned area of Te Awamutu or in any of the open growth cells. They require a large land area of some 9ha. Therefore, the proposed retirement village will take up approximately one quarter of Growth Cell T2 providing the critical mass for extension of services from neighbouring land. The plan change will be Plan Change 12 to the Waipa District Plan.

Once the Plan Change is made operative, the Growth Cell will be zoned Residential and will therefore be subject to the objectives, policies and rules of the Residential Zone. An application will then be made for resource consent for the retirement village and also the Kotare Properties residential portion of the land with frontage to Frontier Road.

This report is the Integrated Transportation Assessment (ITA) for the Plan Change. By way of an overall summary, it is concluded that the traffic and transport elements of the plan change have been appropriately established by way of the proposed Structure Plan, ensuring future multi-modal integration of the T2 growth cell with the greater Te Awamutu urban area and appropriate alignment with the objectives and policies of the relevant Regional and District Plans.

2. Site Location

The Structure Plan area is located on Frontier Road (in the south) and Pirongia Road (in the north) on the western wide of Te Awamutu. The site location is shown on Figure 2-1.

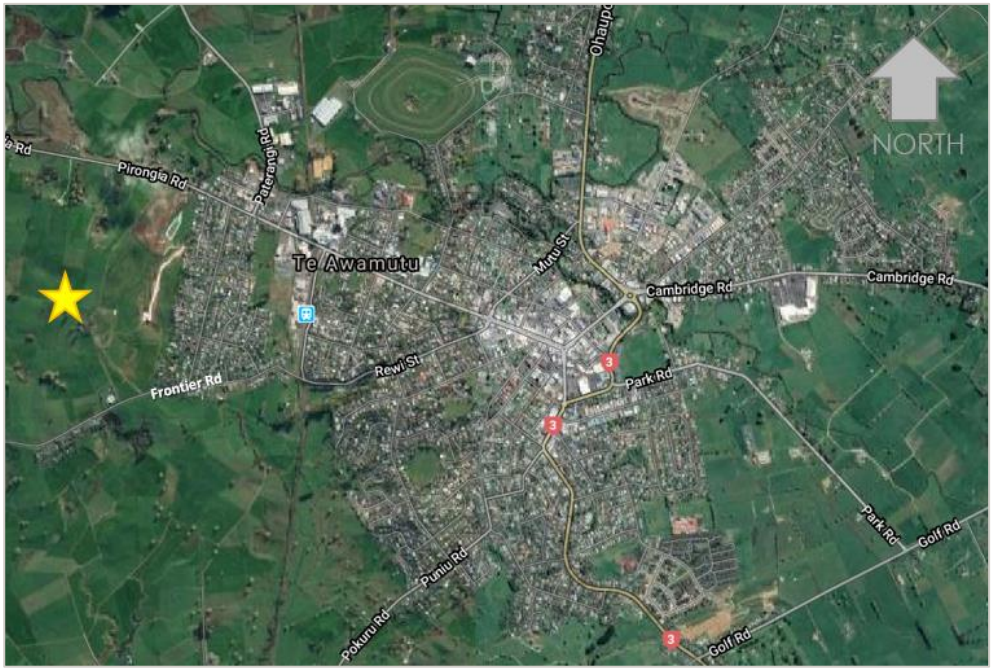


Figure 2-1: Site Location

The area is zoned Deferred Residential by the Waipa District Council District Plan. It sits adjacent to the T1 growth cell, which has an approved Structure Plan in place for residential use and is currently under construction in stages, commencing from the northern Pirongia Road end.

The area is currently used for farming, with associated rural dwellings and buildings. The local context, title boundaries and growth cell boundary are shown on Figure 2-2. The approved layout of the T1 cell is also shown.

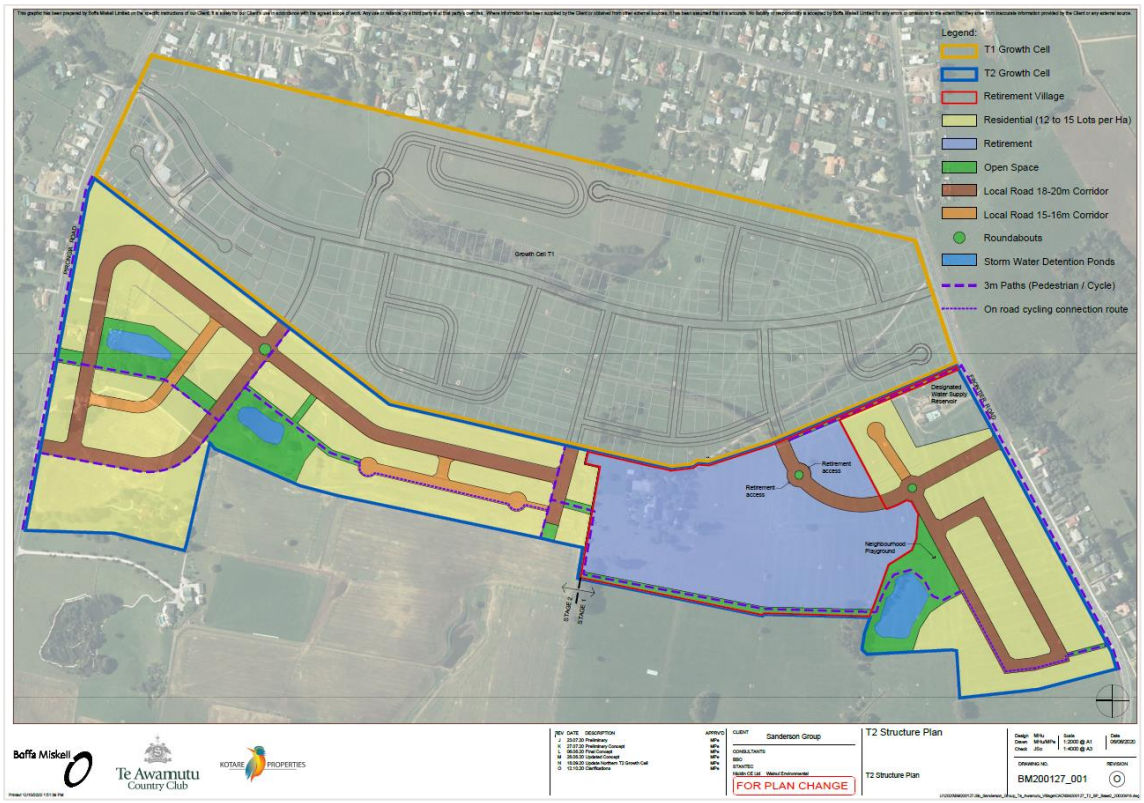


Figure 2-2: Structure Plan area

The surrounding land use is predominantly rural to the west and urban to the east. There is also a strip of residential properties on the southern side of Frontier Road opposite the site.

The Plan Change includes the following properties:

- 52 Frontier Road (Lot 1 DPS 487281), with an area of 15.6786ha; and
- 10 Frontier Road (Lot 1 DPS 487281), with an area of 2.5307ha;
- No physical address (Lot 7 DPS 461400), with an area of 9.3ha (2.8334ha of which is in T2);
- 1/51 and 65 Pirongia Road (Lot 2 DPS 534367), with an area of 11.7887ha (5.9648ha of which is in T2);
- No physical address (Lot 3 DPS 478844), with an area of 0.788ha;
- 2/51 Pirongia Road (Lot 1 DPS 534367), with an area of 0.7288 ha (0.1617 ha of which s in T2);
- 67 Pirongia Road (Lot 1 DPS 514120), with an area of 1.6389ha;
- 39 Pirongia Road (Lot 1 DPS 327266) with an area of 0.9743ha; and
- No physical address (Lot 2 DPS 457600) with an area of 4.0637ha.

3. Strategic Planning Context

3.1 Waipa 2050 District Growth Strategy

Waipa 2050 provides direction as to how and where an additional 25,000 people will be accommodated in the Waipa District (between 2017 and 2050), whilst retaining the special features of the District.

Te Awamutu and Kihikihi are expected to grow to a total of 18,400 people by 2050, an increase of 5,400 on the 2017 population. This is equivalent to annual growth of 104 households. Compact housing such as retirement villages is expected to make up 20% of the growth in Te Awamutu.

The site is within the 'T2' area of the Urban Growth Plan. This a 41ha growth cell identified for future residential development (beyond 2035. As shown on Figure 3-1 below, T2 sits on the western edge of Te Awamutu, abutting the T1 growth cell currently under construction.

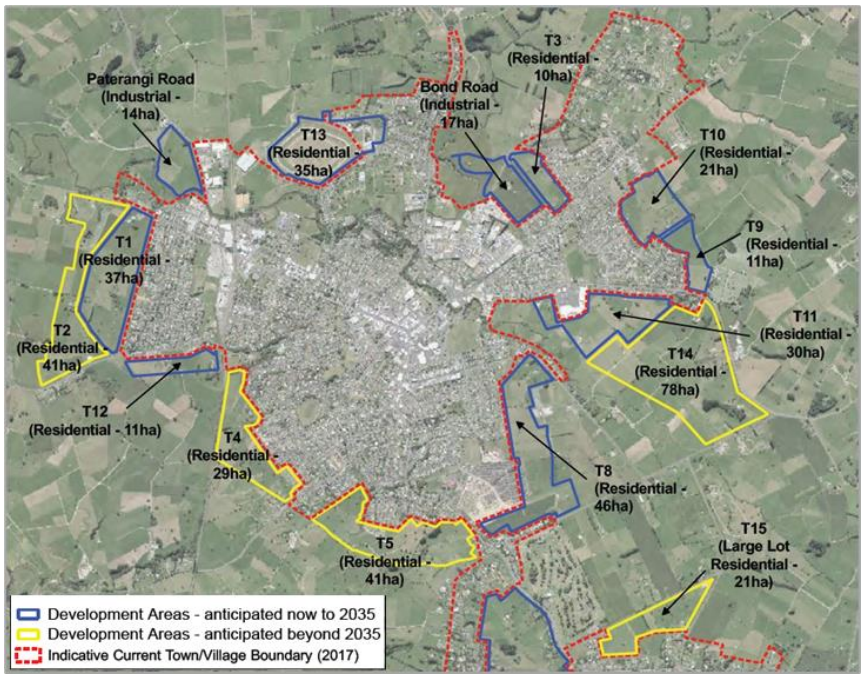


Figure 3-1: Urban Growth Plan (Waipa 2050 Figure 5)

The T1 growth cell accommodates some 37ha of residential land. It is identified for growth before 2035 and it has an approved structure plan in place.

In relation to transport, Waipa 2050 recognises "maintain, develop and enhance efficient transport networks" as a key District Challenge (Table 5). The consequential matter to consider is implementation of sustainable transport networks.

The implementation of Waipa 2050 is enabled primarily by the District Plan, as well as Structure Plans and the Council's 10-year Plan.

3.2 Future Proof Sub-Regional Growth Strategy

The Future Proof Strategy is a 30-year growth management and implementation plan specific to the Hamilton, Waipa and Waikato sub-region. Future Proof sets out how the area should develop into the future.

In relation to Te Awamutu and transport, the Strategy includes better public transport and improved opportunities for walking and cycling, and increased densities within the existing town boundaries including a range of housing choices and densities.

In relation to residential development generally, Future Proof includes the following relevant principles:

- Promote increased densities in new residential development and more intensive redevelopment of existing urban areas.
- Ensure development is planned to support safe and efficient transport infrastructure, including public transport provision and reduced dependence on motor vehicles.
- Recognise the need for stronger links between land-use and transport in respect of the settlement pattern and ensure capacity is matched with development potential.

3.3 Regional Policy Statement (RPS)

The purpose of the RPS is to provide an overview of the how the Waikato Region will manage its natural and physical resources. It describes the issues, policies and methods to achieve integrated management. The RPS must be given effect to by the Waipa District Council District Plan.

The RPS (Policy 6.1) recognises the importance of planned and co-ordinated subdivisions and integrating land use development with transport infrastructure. A key aspect of information required to support new urban development is the demonstration of multi-modal transport connections with the subdivision, to neighbouring areas and to existing transport infrastructure.

3.4 Waikato Regional Land Transport Plan (RLTP)

The Regional Land Transport Plan (RLTP) sets the strategic direction for land transport in the Region. It was most recently updated in 2018. It describes what the region is aiming to achieve for the land transport system and how this will contribute to an effective, efficient and safe land transport system, as required under the Land Transport Management Act 2003 (LTMA).

The RLTP includes two projects of relevance to Te Awamutu. The Hamilton to Te Awamutu and Te Awamutu to Kihikihi sections of SH3 are both identified for safer corridor works. Implementation is indicated in the 2020/21 year.

3.5 Waikato Regional Public Transport Plan (RPTP)

The Waikato Regional Public Transport Plan (RPTP) sets the objectives and policies for public transport in the Waikato region. It outlines a future plan for the public transport network and development plans for the next 10 years (2018-2028).

In relation to Te Awamutu it includes a vision to implement mass transit start up projects including frequent public transport service between Te Awamutu and Hamilton, in the next 10 years.

3.6 Waipa District Council 10-year Plan

The 10-year Plan sets Council's direction over the ten-year period 2018-2028. It explains what Council's activities will be and how they will be funded.

The Plan does not contain any specific transport projects in the vicinity of the site. As expected, the Plan does not include any works to support the T2 growth cell, as it identified in Council's planning as being beyond a 35-year horizon.

4. Existing Transport Environment

4.1 Road Hierarchy

Frontier Road is classified as a Local Road, adjacent to the site, in the District Plan Road Hierarchy (Appendix T5). Approximately 300m east of the site it changes into Rewi Street which is classified as a Collector Road.

Pirongia Road is classified as a Collector for its full length from Te Awamutu to Pirongia. At its eastern end it changes into Alexandra Street which is a Minor Arterial.

State Highway 3 (SH3) forms the north-south Major Arterial route through Te Awamutu. It is supported by Park Road and Cambridge Road, which provide east-west connections. The site location in the context of the road hierarchy is shown on Figure 4-1 below.

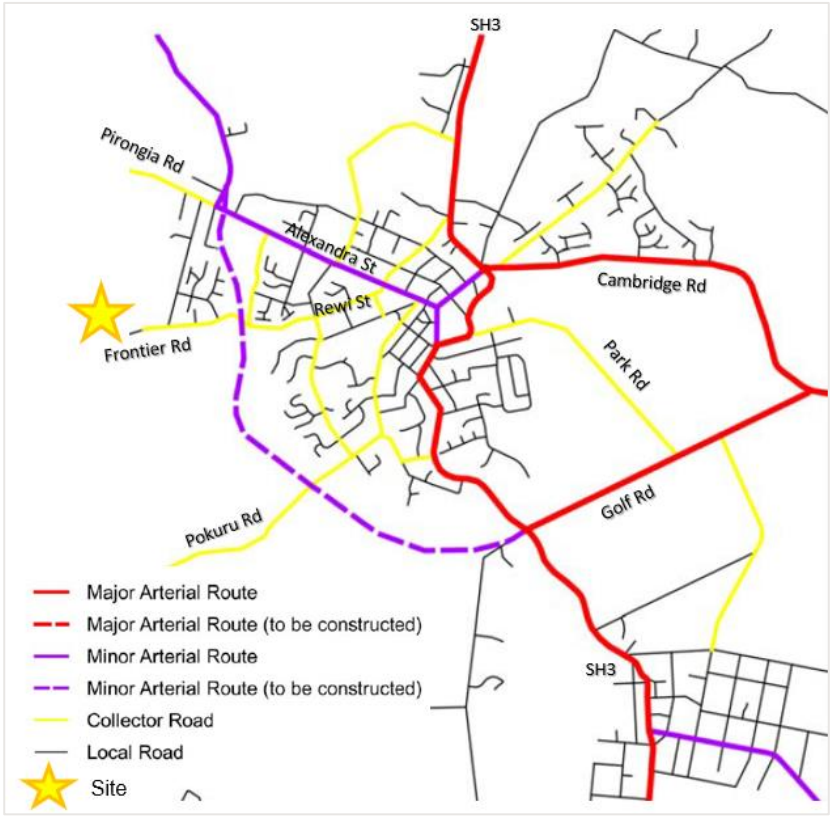


Figure 4-1: Site location in context of WDC Road Hierarchy

The proposed minor arterial route (shown with a dashed purple line) is the Western Arterial Designation (DN154). A corridor is designated to connect Paterangi Road in the north to Kihikihi Road in the south.

The road hierarchy for the adjacent T1 growth cell has a central 'spine road' connecting between Frontier Road and Pirongia Road. The approved Structure Plan is illustrated on Figure 4-2.

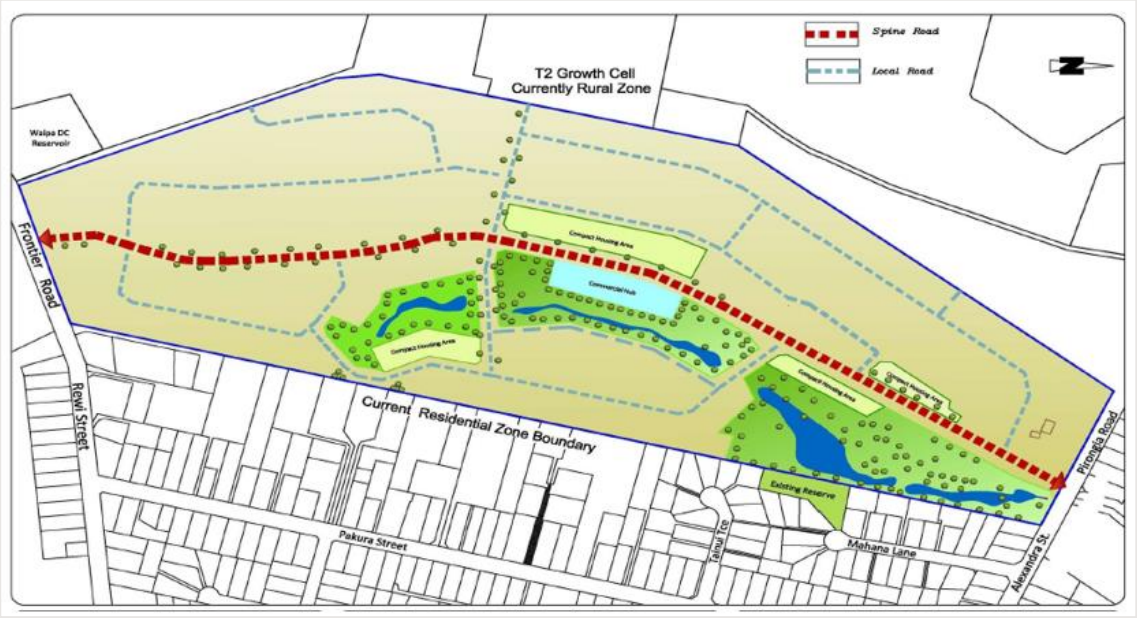


Figure 4-2: T1 Structure Plan (Source: District Plan Appendix S17)

Provision has been made in the approved T1 Structure Plan for three local road connections into the T2 growth cell.

4.2 Physical Road Environment

4.2.1 Frontier Road

Frontier Road has a 20m legal width. The posted speed limit along the Structure Plan area frontage is 60km/h. This changes to 50km/h east of the site as Frontier Road enters the urban area of Te Awamutu. To the west of the Structure Plan area, and beyond the existing residential properties on Frontier Road, it increases to 80km/h.

The connection point to the Structure Plan area is located approximately 80m west of the existing reservoir access. In this area, Frontier Road provides two 3.5m wide traffic lanes. It has sealed shoulders typically 1.2m on the southern side and 0.6m on the northern side. There is a 1.2m wide concrete footpath on the southern side of the road. This changes to asphalt surfacing to the east. The form of Frontier Road in this area is shown below in Figure 4-3.

Figure 4-3: Frontier Road looking west towards Structure Plan area

4.2.2 Pirongia Road

Pirongia Road has a 20m legal width and a typically 7.6m wide carriageway along the frontage of the Structure Plan area. At the eastern end of the Structure Plan area the posted speed limit is 50km/h. This changes to 100km/h (in the form of a speed derestriction sign) just to the east of 51 Pirongia Road.

The connection point to the Structure Plan area is located to the west of the existing access to 51 Pirongia Road. In this area, Pirongia Road provides one traffic lane in each direction with minimal sealed shoulders. Figure 4-3 shows the form of Pirongia Road approaching the Structure Plan area.

Figure 4-4: Pirongia Road looking west towards Structure Plan area

4.2.3 Walking/Cycling Facilities

There is a footpath on the southern side of Frontier Road, with a mixture of concrete and asphalt surfacing. There is a concrete footpath on the northern side of Pirongia Road, starting opposite the Structure Plan area at the existing extent of the urban area.

Cyclists currently share the road carriageway with general traffic on both Frontier Road and Pirongia Road.

4.2.4 Public Transport Services

There are no public transport services in the vicinity of the site. Te Awamutu is serviced by a regional service connection to Hamilton. This stops in the town centre, around 3km from the site.

5. Future Transport Environment

The Waipa Integrated Transport Strategy identifies future projects for Te Awamutu. Near the site, these projects are:

- The Proposed Te Awamutu Western Arterial;
- Minor safety improvements at the Alexandra Street/Tawhaio Street intersection; and
- Mutu Street roundabout redesign.

Frontier Road and Pirongia Road are both identified as future rural cycle routes (racing and training) along the frontage of the T1 and T2 growth cells. In these environments, and for these cycle demands, cycling will typically be planned for and accommodated within the wider carriageway space.

The adjacent T1 growth Cell is understood to be establishing a 3.0m shared path for walking and recreational cycling across both the Pirongia Road and Frontier Road frontages. Development of the transport aspects of the Structure Plan will appropriately have regard for integration with these planned facilities.

6. Traffic Volumes

Frontier Road was most recently counted by Council in February 2020. It had an average daily volume of 1,654 vehicles per day (vpd) (two-way). Heavy commercial vehicles (HCVs) made up 8% of the total. Frontier Road was previously counted in 2017 and had a volume of 1,484 vpd. This indicates an annual linear growth rate of 3.8% between 2017 and 2020.

Pirongia Road was most recently counted in September 2017. It had an average daily volume of 2,271 and 10.5% HCV.

Traffic demands at these levels on the respective carriageways are readily within the operating capacity of the two road corridors and are aligned with the road hierarchy definitions in the District Plan.

7. Road Safety

The current form of the local road safety environment expected to be impacted by the proposal has been assessed. A search has been made of the NZTA Crash Analysis System (CAS) database to determine the characteristics of the most recent five years (2015 to 2019, and any available data form 2020) of crash records over a wide area.

The area included Frontier Road (including a section of Rewi Street) and Pirongia Road for the full length of the T2 Structure Plan area frontages, plus 250m in either direction. This gives a total search length of approximately 1km along each road.

The search revealed no crashes on this section of Pirongia Road. There were three crashes reported on Frontier Road. One crash resulted in a minor injury and two resulted in no injury. The specific details of the crashes were:

- An eastbound cyclist on Rewi Street failed to give way to a westbound car, approximately 50m west of the Rewi Street/Pakura Street intersection. No injuries resulted.
- Approximately 150m west of Pakura Street, a westbound driver failed to give way to another westbound vehicle when manouevuring. No injuries results.
- Two people sustained minor injuries when a westbound driver approached the 70km/h to 50km/h transition (160m west of Pakura Street). The driver attempted to brake, lost control, collided with parked vehicles and came to rest inside a private property.

Overall there is little commonality in the crash types and contributing factors. They do however share a broad geographic location, all occuring in the vicinity of the urban/rural speed transition where there is currently a crest curve and change in the road's horizontal alignment. The development of the T1 cell and the proposed development of the T2 cell should have regard for the potential to move the urban speed limit further west, which could be beneficial to the safety performance of this area.

8. Proposed Structure Plan

8.1 Overview

The Structure Plan includes residential areas in the north and south, with a retirement community in the middle. The layout of the proposed transport network is shown as Figure 8-1.

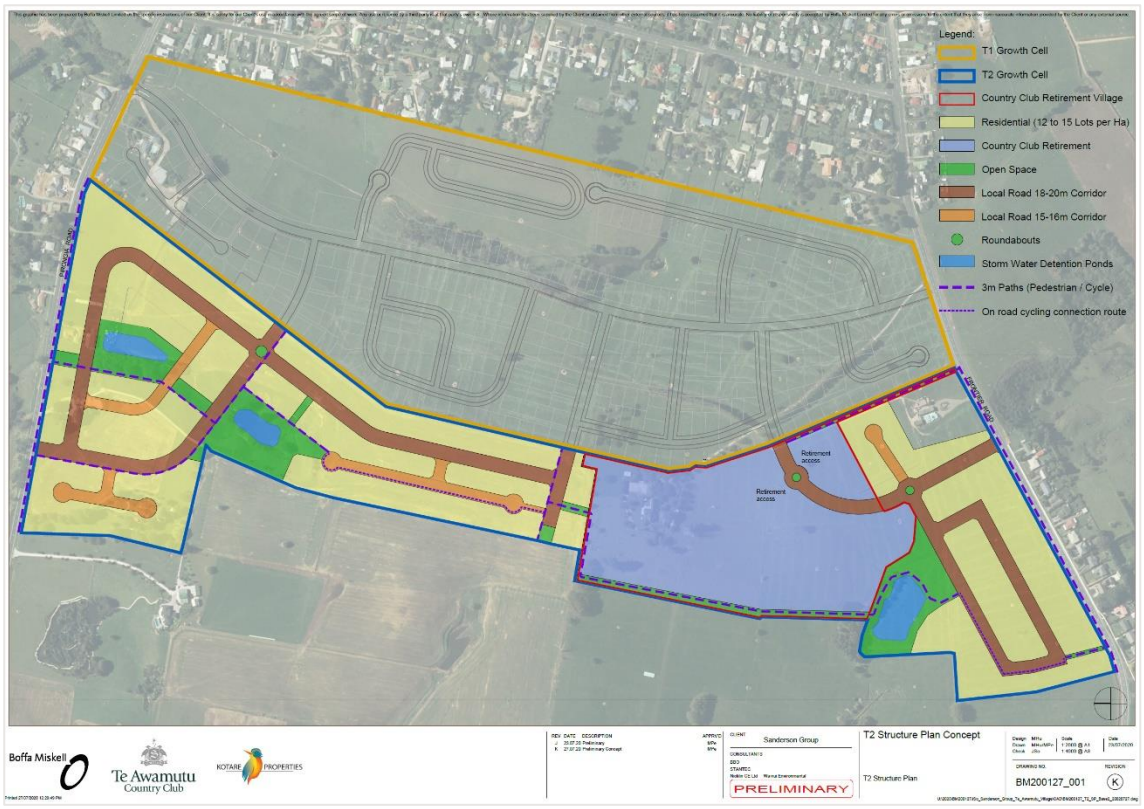


Figure 8-1: Proposed Structure Plan Layout

The features of the proposed transport network are:

- One new intersection on Pirongia Road;
- One new intersection on Frontier Road;
- Three local road connections into the adjacent (planned and provided for) T1 Growth Cell;
- A supporting network of local roads, cul-de-sacs and private ROWs providing property access;
- 3m wide shared paths on the southern side of Pirongia Road and the northern side of Frontier Road; and
- A supporting network of on and off-road paths throughout the Structure Plan area connecting to both road frontages and the T1 Growth Cell at multiple points.

The planned retirement village is proposed to be gated overnight, either side of the local road transport corridor that passes through it. Continuity of public traffic movement is maintained by way of a proposed local road. Provision has also been made for continuity of the shared path network by running the 3m path around the periphery of the retirement village. Walking and cycling access is also proposed via a strip

of land running along the eastern side of the reservoir. Collectively, these features provide for a connected community with continuous access to a range of local walking and cycling circuits.

8.2 Internal Road Network

The Structure Plan uses a road hierarchy of public roads comprising:

- Local Road (18-20m)
- Local Road (15-16m)

Roads within the retirement village area are expected to be private. Their layout and design will be the subject of a future resource consent application process.

The proposed cross-section for each road is summarised below with a comparison against District Plan requirements and the recommendations of NZS4404.

8.2.1.1 Local Road (18-20m)

The intended form of the 18-20m wide local roads is summarised below. This is an indicative cross-section that would be subject to further design and approval by WDC.

Table 8-1: Local Road (18-20m) cross-section summary

Road Element	WDC Requirements	NZS4404 Standards	Proposed
Road reserve width	21m	15m	18-20m
Carriageway width	11m	11m max	5.7m
Lane width	2 @ 3.0m	5.5m – 5.7m total width	5.7m total width in the 18m corridor. 9m inclusive of a 1.5-2.0m central planted median on the 20m corridor linking Frontier Rd to T1. Carriageway cross sections in the northern part of the Structure Plan area are as yet undefined, however the corridor width provisions enable implementation of the standard WDC cross sections or alternate specific design outcomes aligned with resource consent applications for development of those areas.
Cycleway width	Shared environment	Shared environment	Shared environment plus off-carriageway paths
Street parking width	2.5m, 1 park per lot	Shared parking in the movement lane up to 100 dwellings	2.2m indented bays
Front berm	Both sides	-	1.0 both sides
Footpath width	2 @ 1.5m	1.5m each side > 20 dwellings	2 @ 1.5m
Utilities corridor	2.1m minimum both sides	-	Minimum 2.55m both sides

The principal road corridor in the south linking Frontier Road with the T1 Growth cell is planned with a 20m width. It is proposed this be established with a central planted median, contributing to an enhanced amenity environment and also towards achieving a safer speed outcome.

The local access road to the west of this is planned as an 18m cross-section with recessed parking bays, these to be detailed as part of the residential development resource consent intended to follow. The proposed carriageway width in these areas are planned as 5.7m, consistent with the recommendations of NZS4404:2010 and intended to manage speeds to levels commensurate with the local residential access environment.

Aligned with this safer speed environment, and to achieve safe management of turning movements at cross-road intersections, local road roundabouts are proposed at two locations. These are at the cross-road intersections within the residential areas at the southern and northern areas of the Structure Plan. A roundabout is also proposed to control, manage and define the point of access for the planned retirement area.

There is sufficient width in the corridor to provide for parking, footpaths, berms and utilities. It is expected that the details of these elements would be confirmed in consultation with WDC associated with corresponding resource consent applications.

8.2.1.2 Local Road (15-16m)

The intended form of the 15-16m wide local roads is summarised below. This is an indicative cross-section that would be subject to further design and approval by WDC.

Table 8-2: Local Road (15-16m) cross-section summary

Road Element	WDC Requirements	NZS4404 Standards	Proposed
Road reserve width	21m	15m	15-16m
Carriageway width	11m	11m max	5.7m
Lane width	2 @ 3.0m	5.5m – 5.7m total width	5.7m total width
Cycleway width	Shared environment	Shared environment	Shared environment
Street parking width	2.5m, 1 park per lot	Shared parking in the movement lane up to 100 dwellings	2.2m indented bays
Front berm	Both sides	-	-
Footpath width	2 @ 1.5m	1.5m each side > 20 dwellings	2 @ 1.5m
Utilities corridor	2.1m minimum both sides	-	Minimum 2.55m both sides

It is assessed that there is sufficient width in the planned corridors to provide for parking, footpaths, berms and utilities that are aligned with the traffic demand expectations on these shorter and lower-use environments. It is expected that the details of these elements would be confirmed in consultation with WDC and aligned with resource consent processes.

8.3 External Road Network

Key features of the external road network are summarised as follows.

8.3.1 Frontier Road

Frontier Road is proposed to be upgraded along the frontage of the Structure Plan area. The 50km/h speed zone is proposed to be extended further west to encompass the full length of the T2 frontage, and the existing residential properties on the southern side of the road.

The proposed cross-section has been developed in consultation with WDC officers and would be subject to further design approvals. The proposed cross-section features are summarised as follows.

Table 8-3: Frontier Road cross-section summary

Road Element	WDC Requirements	NZS4404 Standards	Proposed
Road reserve width	25m	20m	20m (existing)
Carriageway width	15m	13m	10.8m
Lane width	2 @ 3.5m	2 @ 4.2m	2 @ 3.2m
Cycleway width	1.5 both sides	Separate provision where Council defined cycle route	3.0m shared path north side
Street parking width	2.5m wide, 1 park per lot	2.4m both sides	2.2m recessed on northern side and within the standard road shoulder on the southern side
Front berm	Both sides	-	1.0m north side, no change to the southern side
Footpath width	2 @ 1.5m	2.0m both sides	3.0m shared path north side and existing southern side
Utilities corridor	2.1m minimum both sides	-	

The existing corridor width of 20m is to be retained. The proposed cross-section creates a new shared path on the north side and retains the existing arrangements on the southern side. The existing traffic lane widths are generally maintained.

The design intent is to create a clear transition between the rural and urban areas. To support this, a gateway treatment is proposed with landscaped kerb build outs and speed signs on both sides of the road. The placement of this would be subject to approval by WDC, but it is expected to be located to the west of 67 Frontier Road where approaching traffic eastbound on Frontier Road will have clear forward visibility of the transition from the rural to urban road environments.

8.3.2 Pirongia Road

Pirongia Road is proposed to be upgraded along the frontage of the Structure Plan area. The current 50km/h speed zone position is proposed to be retained, with a new 60km/h speed zone established from the western boundary area of the site to encompass the full length of the T2 frontage. Consultation with Waipa District Council has indicated that with no property access directly to Pirongia Road a lower speed limit will be difficult to achieve, although a further reduction at some future point to 50km/h could be implemented subject to how the environment develops.

The proposed cross-section has been developed in consultation with WDC officers and would be subject to further design approvals. The proposed cross-section features are summarised as follows.

Table 8-4: Pirongia Road cross-section summary

Road Element	WDC Requirements	NZS4404 Standards	Proposed
Road reserve width	25m (20m existing)	20m	20m (no change from existing)
Carriageway width	15m	13m	10m (2 lanes of traffic with 1.5m sealed shoulder each side)
Lane width	2 @ 3.5m	2 @ 4.2m	2 @ 3.5m
Cycleway width	1.5 both sides	Separate provision where Council defined cycle route	3.0m shared path south side linking the T2 intersection east to the T1 boundary
Street parking width	2.5m wide, 1 park per lot	2.4m both sides	Nil
Front berm	Both sides	-	-
Footpath width	2 @ 1.5m	2.0m both sides	3.0m shared path southern side linking the T2 intersection east to the T1 boundary
Utilities corridor	2.1m minimum both sides	-	2.0m both sides

The existing corridor width of 20m is to be retained. The proposed cross-section creates a new shared path on the south side and retains the existing arrangements on the northern side. The existing traffic lane widths of about 3.5m are generally maintained.

Consideration has been given to the merits of establishing a right turn bay at the T2 intersection with Pirongia Road. From a warrant perspective, the expected volume of traffic turning right into the T2 neighbourhood from the west on Pirongia Road is assessed to be below the typical 15 movements per hour threshold. Establishment of 60km/h speed limit at the site's western boundary introduces a reduced speed advisory at that point. The proposed intersection is shown to be located about 100m to the east of the speed transition point establishing a buffer zone between the speed limit and intersection access point.

In the absence of a painted right turn bay facility, additional shoulder widening would be recommended each side of the carriageway to accommodate turning vehicles. This is typically more suited to a low volume rural environment. In this case, the T2 area is to represent the long-term extent of the Te Awamutu urban area and therefore it is recommended it be established to effectively communicate the changed environment and expectations that result from that.

The design intent recommended is to create a clear transition between the rural and urban areas. To support this, a gateway treatment is proposed with landscaped kerb build outs and speed signs on both sides of the road. The placement of this would be subject to approval by WDC, at or about the western boundary of the T2 growth cell. Aligned with this, it is recommended that a painted right turn bay be established at the T2 intersection. This will further support communication of the reduced speed environment along with the changing nature of the local road environment and increased awareness of drivers to turning demands associated with the T2 intersection.

8.4 Network Connections

There are five new vehicular points of connection to the existing road network. The connections between the T1 and T2 growth cells are continuations of planned subdivision roads (i.e. they are not intersections).

The connections to Pirongia Road and Frontier Road are proposed to be priority-controlled T-intersections with single lane approaches on all legs. Raised table treatments are proposed to take the new shared user paths across the new local road intersections and to safely manage traffic speeds at these locations.

8.5 Pedestrian and Cycle Access

Pedestrians and cyclists will have access from two points on Pirongia Road, one through the new local road and one through the green space network.

Three pedestrian and cycle connections are proposed on Frontier Road. These are via the new local road, through the green space and through a connection east of the reservoir. The latter will form part of the retirement village but will be accessible by the general public.

A 3m wide shared path network runs throughout the Structure Plan and is supported by various on-road connections and standard footpaths. Two shared path connections and one local road connection provide access to the adjacent T1 Growth Cell.

The pedestrian and cycle network in the southern area is designed to enable movement around the perimeter of the retirement village. This enables a balance between public and private access, whilst supporting a permeable network through the site and to adjacent areas and facilities. Overall, is expected to create a sustainable and attractive network for pedestrians and cyclists.

9. Traffic Generation

9.1 Land Use Assumptions

The traffic generation potential of the Structure Plan area has been assessed by considering the Structure Plan in three parts:

- A northern residential area of 16.2 ha with potential for 197-246 lots;
- A retirement village of 9.45 ha including 98 villas, 30 care beds and integrated cafe; and
- A southern residential area of 8.76 ha with a proposed subdivision layout including 113 lots.

The retirement village and southern residential areas can be assessed with some certainty as planning for these areas is underway. Initial layout plans are available, and technical assessments have been undertaken to inform the capacity of each area.

Development of the northern area is not imminent and therefore a range of densities (12-15 dwellings per hectare) has been applied.

9.2 Traffic Generation Rates

9.2.1 Residential

Residential dwellings have been assessed on the basis of the RR453 'outer suburban' rates which are:

- Daily vehicle trips: 8.2 per dwelling; and
- Weekday road network peak hour vehicle trips: 0.9 per dwelling.

The northern residential area could generate 1,616 to 2,020 vehicle movements per day (vpd) (IN+OUT), including 177-222 vehicle movements per hour (vph) during the peak hour of the day.

The southern residential area could generate about 927 vpd and 102 vph.

9.2.2 Retirement Village

Retirement Village trip generation expectations are generally well understood, published and consistently represented in practice in New Zealand and Australia.

Australian industry-based trip rates for retirement villages can be sourced from the Roads and Maritime Services (RMS) of New South Wales' "Guide to Traffic Generating Developments" and related Technical Directions. Rates from these sources indicate trip generating demands in the order of:

- Daily vehicle trips 1 - 2 per dwelling; and
- Weekday road network peak hour vehicle trips: 0.1 - 0.2 per dwelling.

The NZTA Research Report 453 "Trips and Parking Related to Land Use" (RR453) contains more recently developed NZ trip generation rates for a range of activities including retirement accommodation. It indicates that retirement units are expected to generate 2.4 to 2.6 veh/d per unit and 0.3 to 0.4 veh/h per unit at the 85th percentile level.

The generation rates are slightly different depending on the extent to which a unit is an independent living unit or an assisted living unit. These variations are integrated into the following assessment. The more recent and higher trip generation data of RR453 has been adopted as the basis for calculating the expected level of trip generation for the proposed development.

The café has been assessed on the basis that it could have up to 25 seats and occupy up to 150m^2 of the clubhouse. The café will be open to the public but most of its use is expected to come from residents and their visitors and on-site staff.

A reduction factor of 50% has been applied to the RR453 rates for the cafe. This recognises a high proportion of internal use but also retains an allowance for external customers and visitors who may join a resident at the café. The adjusted RR453 rates adopted for the café are:

- Daily vehicle trips 6.1 per seat, reduced to 3.05 per seat; and
- Weekday road network peak hour vehicle trips: 0.5 per seat, reduced to 0.25 per seat.

On the basis of the RR453 trip generation rates the daily and peak hour trip generation for the proposal are as follows.

Table 9-1: Traffic Generation Assessment

Facility	Number	Unit Type	Daily		Hourly	
			Rate	vpd	Rate	vph
Villas	98	Units	2.6	255	0.3	29
Care facility	20	Beds	2.4	48	0.4	8
Dementia unit	10	Beds	2.4	24	0.4	4
Cafe	25	Seats	3.05	76	0.25	6
TOTAL	**-**	**-**	**-**	**403**	**-**	**48**

On these bases, the potential for trip generation arising from the proposed retirement development is assessed as being up to approximately 403 vpd in total (two-way), and up to approximately 48 trips in the peak hour (two-way total).

9.2.3 Total

The combined total traffic generation of the Structure Plan area is summarised in Table 9.2.

Table 9-2: Total T2 Growth Cell Traffic Generation

Area	Daily	Peak Hour
Northern Residential (Pirongia Road)	1,616 – 2,020	177 - 220
Retirement Village	403	48
Southern Residential (Frontier Road)	927	102
TOTAL	**2,946 – 3,350**	**327 - 371**

In total, the Structure Plan area could generate up to 3,350vpd (IN+OUT) including up to 371 vph during the morning and evening peak hours.

10. Transport Effects, Management and Design

10.1 Traffic Volumes

Traffic volumes have been assessed over a ten-year period from an assumed starting year of 2022. Volumes have been estimated on Frontier Road and Pirongia Road at points east, west and in between the T1 and T2 growth cells. Figure 10-1 and Figure 10-2 show the assessed locations along Frontier Road and Pirongia Road, respectively.

Figure 10-1: Traffic Volume Locations on Frontier Road in relation to T1 and T2

Figure 10-2: Traffic Volume Locations on Pirongia Road in relation to T1 and T2

Allowance has been made for three sources of traffic growth. These are:

- The consented T1 Growth Cell;
- The proposed T2 Growth Cell; and
- Other background traffic growth.

The ITA prepared for the T1 Growth Cell[1] assessed it as generating 3,641 vpd, including 400 vph during the peak hours of the day. This total traffic volume was distributed across Frontier Road and Pirongia Road and split between travel to/from the east and to/from the west. Most of the traffic was expected to travel to and from Te Awamutu, to the east.

As described in Section 6, Council's data suggests an annual growth rate of 3.8% per annum on Frontier Road. This rate has been applied to the existing traffic volume on Frontier Road and Pirongia Road.

Table 10-1 and Figure 10-3 present the analysis for Frontier Road.

Table 10-1: Traffic Volume Forecasts, Frontier Road

Scenario	Forecast Daily Volume (vpd, two-way)		
	Site 1	Site 2	Site 3
Existing 2020[2]	1,533	1,654	1,654
Seasonally adjusted existing 2020	1,472	1,588	1,588
Forecast 2022	1,584	1,709	1,709
Other growth at 3.8% pa to 2032	602	649	649
Forecast 2032	2,186	2,358	2,358
Expected generation of T1	524	524	932
Forecast 2032 + T1	2,710	2,882	3,290
Expected generation of T2 (residential)	250	584	584
Forecast 2032 + T2 (residential)	2,960	3,466	3,874
Expected generation of T2 (retirement)	109	254	254
Forecast 2032 + T1 + T2	**3,069**	**3,720**	**4,128**

[1] Frontier Developments Ltd, T1 Growth Cell Te Awamutu, Integrated Transport Assessment, TDG now Stantec (19 November 2018)

[2] Site 1 is located west of the existing residential properties, so an adjustment has been made to remove these movements from the count

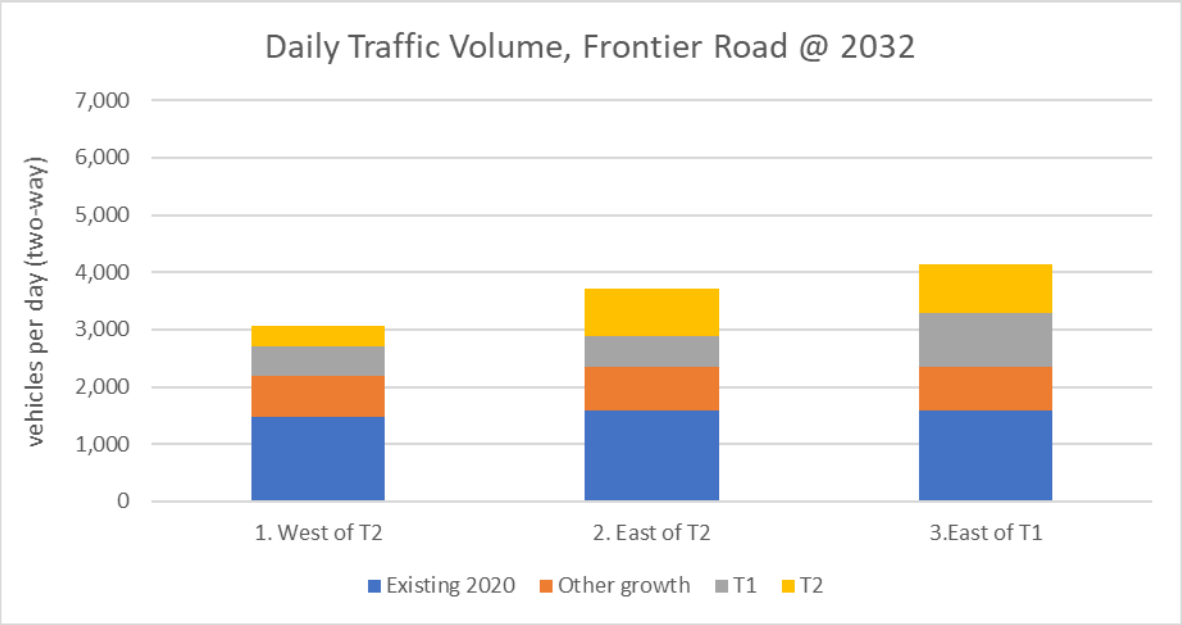


Figure 10-3: Forecast Traffic Volumes on Frontier Road

The analysis shows that with both the T1 and T2 growth cells in place, volumes on Frontier Road are expected to grow from the existing 1,500-1,600 vpd range to 3,000 – 4,200 vpd.

A daily volume of 3,000-4,200 vpd is well within the expected and acceptable range for a Collector Road. This volume can be suitably accommodated by the proposed cross-section which was described earlier in Section 8.3.1.

The corresponding assessment for Pirongia Road is as follows:

Table 10-2: Traffic Volume Forecasts, Pirongia Road

Scenario	Forecast Daily Volume (vpd, two-way)		
	Site 4	Site 5	Site 6
Existing 2020[3]	2,663	2,663	2,663
Seasonally adjusted existing 2020[4]	2,663	2,663	2,663
Forecast 2022	2,865	2,865	2,865
Other growth at 3.8% pa to 2032	1,089	1,089	1,089
Forecast 2032	3,954	3,954	3,954
Expected generation of T1	874	874	1,311
Forecast 2032 + T1	4,828	4,828	5,265
Expected generation of T2	549	1,281	1,281
Forecast 2032 + T1 + T2	**5,377**	**6,109**	**6,546**

The analysis shows that with both the T1 and T2 growth cells in place, volumes on Pirongia Road are expected to grow from an existing 2,660 vpd to 5,300 – 6,550 vpd.

A daily volume of 5,300 – 6,550 vpd is again, well within the expected and acceptable range for a Collector Road. This volume can be suitably accommodated by the proposed cross-section which was described earlier in Section 8.3.2

[3] The 2020 volume has been estimated from the 2017 count plus growth at 3.8% per annum.
[4] No seasonal adjustment applied

10.2 Intersection Operation

10.2.1 Frontier Road

The new intersection on Frontier Road has been modelled in SIDRA for the 2032 horizon year. The test volumes include all the sources of traffic growth in the previous section. The results are summarised in Table 10-3 and Table 10-4.

Table 10-3: Frontier Road SIDRA Analysis 2032 AM Peak Hour

Approach & Movement		Volume (vph)	Delay (s/veh)	LOS	95% Queue (m)	Degree of Saturation
Frontier Road (East)	T	103	0.2	A	1.5	0.079
	R	30	6.0	A	1.5	0.079
Local Road	L	61	5.9	A	1.4	0.052
	R	29	5.8	A	1.4	0.052
Frontier Road (West)	L	14	5.5	A	0	0.078
	T	124	0.0	A	0	0.078
Intersection		**362**	**2.2**	**-**	**-**	**0.079**

Table 10-4: Frontier Road SIDRA Analysis 2032 PM Peak Hour

Approach & Movement		Volume (vph)	Delay (s/veh)	LOS	95% Queue (m)	Degree of Saturation
Frontier Road (East)	T	166	0.2	A	3.1	0.136
	R	61	6.0	A	3.1	0.136
Local Road	L	30	5.9	A	0.7	0.025
	R	14	5.8	A	0.7	0.025
Frontier Road (West)	L	29	5.6	A	0.0	0.084
	T	118	0.0	A	0.0	0.084
Intersection		**419**	**2.0**	**-**	**-**	**0.136**

The tables show that the intersection operates well within its capacity during the morning and evening peak hours at 2032. The overall degree of saturation is no more than 0.136 (13.6%).

10.2.2 Pirongia Road

The new intersection on Pirongia Road has also been modelled in SIDRA for the 2032 horizon year. The test volumes include all the sources of traffic growth in the previous section. The results are summarised in the following Tables.

Table 10-5: Pirongia Road SIDRA Analysis 2032 AM Peak Hour

Approach & Movement		Volume (vph)	Delay (s/veh)	LOS	95% Queue (m)	Degree of Saturation
Local Road (South)	L	40	6.1	A	2.0	0.087
	R	94	6.1	A	2.0	0.087
Pirongia Road (East)	L	46	5.6	A	0	0.136
	T	189	0.0	A	0	0.136
Pirongia Road (West)	T	228	0.1	A	1.3	0.147
	R	20	6.4	A	1.3	0.147
Intersection		**633**	**2.0**		**-**	**0.147**

Table 10-6: Pirongia Road SIDRA Analysis 2032 PM Peak Hour

Approach & Movement		Volume (vph)	Delay (s/veh)	LOS	95% Queue (m)	Degree of Saturation
Local Road (South)	L	20	6.2	A	1.0	0.044
	R	46	6.1	A	1.0	0.044
Pirongia Road (East)	L	94	5.6	A	0	0.194
	T	243	0.0	A	0	0.194
Pirongia Road (West)	T	191	0.4	A	2.8	0.144
	R	40	7.0	A	2.8	0.144
Intersection		**617**	**2.0**	**-**	**-**	**0.194**

The tables show that the intersection operates well within its capacity during the morning and evening peak hours at 2032. The overall degree of saturation is no more than 0.194 (19.4%).

Overall, a high degree of efficiency and minimal delay outcomes are expected with the proposed intersection forms.

10.3 Visibility

Sight distance has been assessed based on the requirements of Austroads (Part 4A, Table 3.2), for the new intersections on Pirongia Road and Frontier Road. The proposed speed environment on both roads is 50km/h. In the absence of operating speed data, the posted speed limit plus 15% (57.5 km/h) is typically adopted for sight distance assessments. A conservative speed of 60km/h has been adopted in this case.

Based on a reaction time of 1.5 to 2 seconds, the required sight distance is:

- 114m to 123m in a 60km/hr environment.

The proposed Structure Plan access points to Frontier Road and Pirongia Road both have in excess of 123m available in both directions. This is more than adequate for an operating speed of up to 60km/h.

A similar assessment has been made with respect to the potential western-most residential property with access to Frontier Road. The full sight distance requirement both west and east of the access has been assessed as being able to be accommodated wholly within the road corridor. Visibility to the west from the access will require some vegetation removal along the boundary fence line as it exists at present. This is expected to occur as part of the development of the subdivision in any event.

Therefore individual property access on Frontier Road is also expected to meet the minimum safe sight distance criteria.

10.4 Intersection Spacing

The *"Waikato Regional Infrastructure Technical Specifications - RITS"* document includes recommended minimum spacing between intersections on different types of roads.

On Pirongia Road, which is classified as a Collector Road, intersections should be 90m apart where they are on the same side of the road, and 45m apart where they are on the opposite side of the road.

The proposed access into the Structure Plan is located more than 500m from the nearest intersection, which is the proposed new intersection serving the T1 cell.

On Frontier Road, which is classified as a local road, intersections should be 60m apart where they are on the same side of the road (90m for a Collector Road), and 30m apart where they are on the opposite side (45m for a Collector Road.

The proposed eastern access is 250m from the nearest intersection, which is the proposed new access to the T1 growth cell.

Intersections within the Structure Plan have also been placed to comply with these minimums.

10.5 Road Safety Effects

The existing road safety record on both Pirongia Road and Frontier Road in the vicinity of the Structure Plan area has identified only three crashes occurring within the past five years. No underlying issues were identified that could be exacerbated by the proposed Structure Plan.

Both Frontier Road and Pirongia Road are proposed to be upgraded to urban cross-sections when land within the Structure Plan is developed. Speed limits are also proposed to be reduced to reflect a move from rural to urban land use.

New access points have been designed and located with appropriate visibility and spacing. These are also to include rural/urban threshold features and in the case of Pirongia Road, establishment of a painted right turn bay at the T2 intersection. Road cross-sections and a network of shared use paths have been planned and designed to provide for safe and efficient movement of people and vehicles.

Overall, it is concluded that the planned transport networks, and proposed upgrades to existing networks, are appropriate to accommodate the activity generated by the growth cell.

11. District Plan

11.1 Rules

The following table assesses the proposed Structure Plan area against the relevant transport rules of the District Plan.

Table 11-1: District Plan Rule Assessment

Rule	Assessment
Road Hierarchy	
16.4.2.1 All structure plans, plan changes, developments, and subdivisions must be consistent with the road hierarchy, as contained in Appendix T5.	Complies The proposed road layout is consistent with the existing hierarchy and provides appropriate level roads to connect with the existing road hierarchy.
16.4.2.2 To maintain the effectiveness of the road hierarchy, a road network must be designed so that a road connects to a road at the same level in the hierarchy, or directly above or below its place in the hierarchy.	Complies Local roads are proposed to connect to both Frontier Road (a local Road) and Pirongia Road (a collector road).
16.4.2.3 To maintain the effectiveness of the road hierarchy, when a site has two road frontages, vehicle access and egress must be from the lesser road type.	Technically non-compliant. The Structure Plan area has two road frontages and access is proposed to both rather than the one with a higher classification. This rule is more applicable to single site applications and accordingly is assessed as an irrelevant consideration in this regard.
Vehicular access to sites in all zones	
16.4.2.4 Every site shall be provided with vehicle access to a formed road that is constructed to a permanent standard. The vehicle access shall be designed to accommodate the demands of all traffic from the activity on that site, taking into account the form and function of the road.	Complies The proposed local roads provide access to formed roads (Pirongia Road and Frontier Road). It is demonstrated that these formed roads can accommodate the expected traffic from the Structure Plan. Compliance expected Roads within the development are expected to be constructed to permanent standards. Driveways for each individual lots are not yet designed, however all lots have frontage to a formed road and it is expected that driveways or these lots will be provided to the formed roads.
Vehicle entrance separation from intersections and other vehicle entrances	
16.4.2.5 The minimum distance of a vehicle entrance (accessway) from an intersection or other entrance shall be as follows: (posted speed limit of 50km/h or 60km/h): 30m from the intersection (on the major road), and 20m from the intersection (on the minor road). Accesses should be less than 4m apart or greater than 11m apart.	Does not comply – mitigation recommended at subdivision consent stage. It is recommended that the residential lots numbered Lot 83 and Lot 105 either side of the proposed T2 intersection to Frontier Road be established with access on the new minor road. Notwithstanding this, these corner lots and potentially each adjacent lot will need to be established with access marginally within the minimum separations of this rule. The new side road intersection is proposed to be established as a raised table contributing to a safe and reduced speed environment for movement to and from the new side road. On the Frontier Road frontage, formed recessed parking areas are proposed to be established, enhancing the driveway sightline viewing position. With these measures in place, an appropriately safe property access environment is assessed to be achievable.
Parking, loading and manoeuvring areas	
16.4.2.13 All activities that involve the erection, construction or substantial reconstruction, alteration or addition to a building on any site, or changes the use of any land or building, shall provide parking and	Compliance expected The residential lots within Structure Plan are expected to be able to comply with these requirements.

Rule	Assessment
loading / unloading for vehicles on the site at the rates specified in Appendix T1.	Parking requirements associated with the retirement village will be addressed in the Resource Consent application for that development. There is nothing in the proposed Structure Plan layout that would preclude compliance with these rules.
16.4.2.14 Where assessment of the number of parking spaces required results in a fractional space being calculated, any fraction less than one-half shall be disregarded, and any fraction greater than or equal to one- half shall be counted as one space.	Compliance expected
16.4.2.15 Vehicle parking, loading / unloading, and manoeuvring areas shall: (a) Not encroach on any yard setback, outdoor living area, vehicle or bicycle parking spaces; or other loading / unloading areas; and (b) Be designed, formed, and constructed in accordance with Appendix T2 and ensure that the surface of the required area provides a dust free environment; and (c) Provide for the safe and efficient disposal of surface stormwater clear of any adjoining access or road surface in a way that does not result in ponding or scouring; and (d) Be constructed to accommodate the anticipated use of the area by all traffic likely to access the site in the zone in which it is located, including construction traffic taking into account pavement, surfacing, demarcation of spaces, aisles and circulation roads; and (e) Be provided on the site on which the building, activity or proposal is located.	Compliance expected Parking and loading requirements associated with the retirement village will be addressed in the Resource Consent application for that development. There is nothing in the proposed Structure Plan layout that would preclude compliance with these rules.
16.4.2.16 The design and layout of sites shall ensure that access to each required vehicle parking, loading and unloading space is directly from the required access or manoeuvring area.	Compliance expected Parking and loading arrangements for the individual lots have not yet been determined, however there nothing in the proposed Structure Plan layout that would preclude compliance with these rules Parking and loading requirements associated with the retirement village will be addressed in the Resource Consent application for that development.
16.4.2.17 Vehicle manoeuvring space, including those spaces located in a garage, and loading and unloading spaces, shall be provided on a site, of a standard adequate to accommodate a 90-percentile car, or a 99-percentile truck, as described in Appendix T2, in order to ensure that all vehicles have the ability to access the adjoining road in a forward direction after no more than a three-point turning manoeuvre on the site.	Compliance expected Driveways and parking for the individual lots have not yet been determined, however there nothing in the proposed Structure Plan layout that would preclude compliance with these rules Parking and loading requirements associated with the retirement village will be addressed in the Resource Consent application for that development.
16.4.2.18 All required carparks shall be marked or delineated on site, except in the Residential Zone.	The site is located within the residential zone. However, the matter of parking space marking and delineation will be addressed in the

Rule	Assessment
	Resource Consent for the retirement village, in relation to non-residential parking areas.
Carpark landscaping and lighting	
16.4.2.21 All carparks must: Provide at least one tree planted for every 5 car parking spaces at a grade of no less than PB95. For the avoidance of doubt, PB95 is equivalent to a tree that is at least 1.5m tall at the time of planting; and Ensure lighting is designed to avoid shading areas or isolating areas of public use.	Compliance expected This will be addressed in a Resource Consent application specific to the retirement village.
Provision of bicycle parking facilities	
16.4.2.22 In areas other than the Rural Zone and Pedestrian Frontages, activities employing more than ten people must provide bicycle parking facilities at a rate of one bicycle park for every ten people employed.	Compliance expected This will be addressed in the resource consent for the retirement village, if applicable.
Provision of an integrated transportation assessment	
16.4.2.23 A Simple or Broad Integrated Transport Assessment (ITA) shall be prepared for activities as required by this rule.	Complies As the expected daily trip generation is more than 1,500vpd Broad ITA's have/will be prepared for the Structure Plan and the retirement village resource consent.

11.2 Objectives and Policies

The following table presents a summary of how the proposed Structure Plan supports the relevant Objectives and Policies from Section 16.3 of the District Plan.

Table 11-2: Objective and Policy Assessment

Objective/Policy	Assessment
Objective - Ensuring sustainable, integrated, safe, efficient and affordable multi-modal land transport system.	
16.3.1 - All new development, subdivision and transport infrastructure shall be designed and developed to contribute to a sustainable, safe integrated, efficient (including energy efficient network design) and affordable multi-modal land transport system.	Supports The roading network within the Structure Plan provides good connectivity to the existing transportation network. In particular it considers connection to existing and planned walking and cycling networks and provides good levels of permeability for these modes. The structure plan transportation networks integrate with the connections already planned between the T1 and T2 Growth Cells, maximising integration and efficiency of access between the two areas.
Policy – Design elements	

Objective/Policy	Assessment
16.3.1.1 – Development, subdivision and transport infrastructure shall be designed and located to:	
(a) Minimise energy consumption in construction, maintenance and operation of the network;	**Supports** The Structure Plan connects to the existing roading network at five points and has three connections into the T1 cell. This provides a range of direct connections for different origins and destinations.
(b) Accommodate and encourage alternative modes of transport;	**Supports** The layout of the Structure Plan includes shared paths, local roads, and reserves through which people will be able to walk and cycle. All roads are proposed to have a local road design basis, which encourages walking and cycling.
(c) Give effective road hierarchy; and	**Supports** The Structure Plan road network appropriately connects with the existing hierarchy and provides a clear hierarchy within the northern and southern areas.
(d) Contribute to: (i) Integrated transport and land use planning and a safe road system approach; (ii) Reducing deaths and serious injuries on roads; (iii) An effective and efficient road network; and (iv) Efficient movement of freight.	**Supports** The Structure Plan provides connections to the commercial hub within T1 which supports the residential land use, reducing the need for people to travel further afield to access everyday goods and services. The local road nature of the network reflects the residential environment, supporting low vehicle speeds and promoting a safe road system approach. The Structure Plan connects to the existing roading network at three points and has three connections to T1, therefore maximising the operational potential of the network.
Policy – Ensuring future connections	
16.3.1.2 - Development, subdivision and transport infrastructure shall be designed and located to: (a) Link to existing transportation networks, including roads, walking, cycling and passenger transport; and	**Supports** The layout of the Structure Plan connects to existing and planned vehicular, cycle and pedestrian networks.
(b) Accommodate future transport network connections and walking, cycling and passenger transport options to Deferred Zones and future growth areas.	**Supports** The Structure Plan accommodates walking and cycle facilities and connects these with the T1 cell and both frontage roads.
Policy – The timing and availability of planned funding for transport infrastructure	
16.3.1.3 – The provision of transport infrastructure for any development or subdivision shall be managed in such a way that it takes into account the timing and availability of planned funding for transport infrastructure.	**Supports** Currently there are no public transport infrastructure planned for the Structure Plan however the local roads could accommodate future use by buses connecting through T1.
Objective – Integrated land use and transport: ensuring a pattern of land uses and a land transport system which is safe, effective and compatible	
16.3.2 – land use and transport system successfully interface with each other through attention to design, safety and amenity	**Supports** The Structure Plan encourages walking and cycling by providing shared paths through the northern area, a path around the perimeter of the southern area, as well as a local road network that supports walking and cycling.

Objective/Policy	Assessment
Policy – Integrated land use and transport	
16.3.2.1 – Development, subdivision and transport infrastructure shall be located, designed and managed to:	-
(a) Minimise conflict on and across arterial routes and provide appropriate access;	**Supports** The Structure Plan is not on an arterial route but an appropriate access is provided its local and collector frontages.
(b) Include access that is safe and appropriate for all road users, including those with restricted mobility	**Supports** Access to the Structure Plan connects to existing networks and provides safe and appropriate access for all road users through existing and planned walking and cycling networks.
(c) Minimise the need for travel and transport where practicable; and	**Supports** Structure Plan supports access to the commercial hub in the adjacent T1 cell, which minimises the need to travel for everyday goods and services. The proximity of the whole site to the rest of Te Awamutu township also promotes this. Other aspects of self-sufficiency with the retirement village will be addressed in the resource consent for that development.
(d) Facilitate travel demand management opportunities where practicable.	**Supports** Walking and cycling are promoted within the Structure Plan and the location of the site provides good opportunities to access a wide range of goods and services within Te Awamutu reducing the need to travel elsewhere.
Policy – Enhance pedestrian safety	
16.3.2.2 – To improve pedestrian safety in proximity to schools and other community facilities, and commercial areas including pedestrian frontage areas; the standard of pedestrian networks shall be enhanced to accommodate and encourage greater use.	**Supports** The Structure Plan layout recognises the need to facilitate pedestrians in the residential development and the retirement community. The Structure Plan supports pedestrian safety throughout the development with low speed cross-sections and other measures that will be detailed in the resource consent.
Policy – Safe roads	
16.3.2.3 – development and subdivision design and construction shall contribute to a safe road environment by:	
(a) Providing safe and appropriate locations for vehicle entrances, driveways, pedestrian and cycle routes; and	**Supports** Multimodal accesses to the Structure Plan connect to the existing networks in locations that are considered to be appropriate. The low speed environment within the Structure Plan promotes safe vehicle access and a safe cycle and pedestrian environment.

Objective/Policy	Assessment
(b) Designing and locating transport network, lighting, street furniture and landscaping to minimise conflict, maintain visibility, and provide for maintenance activities.	**Supports** The roads within the Structure Plan can accommodate amenities that can promote safety within the development.
Policy – Managing effects on character and amenity	
16.3.2.4 – Development, subdivision and transport infrastructure shall be located, designed and managed to:	
(a) Avoid, remedy, or mitigate adverse effects of transport on character and amenity;	**Supports** Appropriately suitable transport infrastructure design amenity has been described
(b) Facilitate opportunities to enhance character and amenity; and	**Supports** The roads promote the residential character within the T2 Growth Cell through low speed environment and network of cycle and pedestrian facilities.
(c) Ensure that the outcomes sought in the Waipa 2050 Growth Strategy, Town Concept Plan 2010 Plans, and the character Precinct statements in Section 6 – Commercial Zone of this Plan are achieved.	**Supports** T2 growth cell contributes to the growth of Te Awamutu and is part of the future town boundary under the Town Concept Plan 2010. It is likely that the development will retain the uncongested nature of Te Awamutu.
Objective – Maintaining transport network efficiency	
16.3.3 – To maintain the ability of the network to distribute people and goods safely, efficiently and effectively.	**Supports** The Structure Plan connects to the existing roading network at three points and takes advantage of the connections previously planned for the T1 cell. Therefore, it maximises the operational potential of the network.
Policy – Effects of development or subdivision on the transport network	-
16.3.3.1 – Avoid, remedy or mitigate the adverse effects of development or subdivision on the operation and maintenance of the transport network, including from:	-
(a) Traffic generation, load type, or vehicle characteristics;	**Supports** The Structure Plan road network will be appropriately designed to accommodate the predominantly light vehicle traffic associated with residential use. This traffic is also not expected to cause adverse effects on the existing road network. Other vehicles such as ambulances will be specifically considered in the resource consent for the retirement village.
(b) The collection and disposal of stormwater; and	N/A
(c) Reverse sensitivity effects where development or subdivision adjoins existing and planned roads.	**Supports** The Structure Plan network has been planned to appropriately connect to existing and planned roads. An integrated land use and transport approach has

Objective/Policy	Assessment
	been applied and no reverse sensitivity issues are expected.
Policy – Location of network facilities	
16.3.3.2 – When significant alterations to existing utilities occur in the road reserve, or new network utilities locate in the road reserve, the network utilities must avoid, remedy, or mitigate impacts on:	-
(a) The operation, renewal and development of the transportation network; and	**Support expected** The roading corridors within the Structure Plan have the potential to accommodate amenities and utilities with minimum disruption on the transportation network.
(b) Existing and planned landscaping, tree planting, footpath, lighting, bus bays, intended carparks, and any other amenity enhancements.	As above.
Objective – Provision of vehicle entrance, parking, loading and manoeuvring areas	
16.3.4 – The provision of adequate and well located vehicle entrances and parking, loading and manoeuvring areas that contribute to both the efficient functioning of the site and the adjacent transport network.	**Supports** The Structure Plan connects to the existing roading network at three points and provides connections to the T1 cell, therefore maximising the operational potential of the network. A network of local roads allows vehicle access, manoeuvring and parking to be achieved efficiently within the northern and southern areas.
Policy – Location of vehicle entrances	
16.3.4.1 – To maintain the safe and efficient functioning of adjoining roads and railways, vehicle entrances to all activities shall be located and formed to achieve safe sight lines and entry and egress from the site. In some locations, adjoining rail lines, State Highways, and the District's Commercial Zones; vehicle entrances will be limited and will require assessment due to the complexity of the roading environment, or the importance of provision of pedestrians.	**Supports** Safe sight lines from the Structure Plan area to the existing road network are achievable. A low speed environment within the Structure Plan allows safe sight line where visibility between vehicle, cycle and pedestrian can be maintained.
Policies - Ensuring adequate parking, loading and manoeuvring areas on site	
16.3.4.2 - To maintain the efficient functioning of adjoining roads, all activities shall provide sufficient area on site to accommodate the parking, loading and manoeuvring area requirements of the activity.	**Supports** Residential lots have not be designed as yet but are expected to be able to accommodate their own parking and loading needs. The parking and loading needs of the retirement community will be addressed in detail in the resource consent application. All parking, loading and manoeuvring needs are expected to be accommodated on site, with no reliance on adjoining roads.
16.3.4.3 - Activities that operate at different times and have adjoining sites may be able to share the use of the same parking spaces.	**Supports** This will be considered in the resource consent application for the retirement village.
16.3.4.4 - Certain activities may be able to demonstrate through the provision of a travel plan, that staff or occupants of the activity can access the activity through alternative means of	This will be addressed in the resource consent process, as applicable.

Objective/Policy	Assessment
travel, thus reducing the requirements for carparks.	
Policy - Cash in lieu of parking in the Commercial Zones	
16.3.4.5 - When a development is unable to meet the car parking requirements of the Plan, due to insufficient site area, or being located where it is undesirable to interrupt a road frontage with vehicle entrances; mitigation of the non-provision of car parking could be achieved through a cash contribution in lieu.	**Support expected** Parking is likely to be provided in the Structure Plan area, however this alternative mechanism is available should it be needed in future.
Policy - Encouraging the adaptive re-use of heritage items	
16.3.4.6 - To achieve the adaptive re-use of heritage items, as listed in Appendix N1, a reduction in the requirement for vehicle entrances, and on-site parking, loading and manoeuvring areas can be considered where these cannot practicably be incorporated on-site due to the location of the heritage item on the site and the size of the site.	**Supports** The T2 Growth Cell does not affect any heritage items listed in Appendix N1.
Objective - Minimising adverse effects of the transport network	
16.3.5 - The transport network can have effects on the adjacent environment that must be mitigated through design.	**Supports** The Structure Plan network has been designed to minimise changes to the natural landscape and protect amenity values, such as public access to the rural interface on the western side of the Structure Plan.
Policy – Natural environment	
16.3.5.1 - Transport infrastructure, including its layout within a development and subdivision, shall be designed and located to avoid, remedy or mitigate adverse effects on the adjacent environment, having regard to stormwater collection, treatment and disposal, earthworks, noise and the landscape areas identified within this Plan and on the Planning Maps.	**Supports** The road layout generally follows the natural topography of the site. The reserve areas have been designed to provide stormwater retention and will also have a transportation and amenity function through the inclusion of walking and cycling networks. Stormwater design has been separately assessed by others.
Policy - Noise and vibration	
16.3.5.2 - Noise sensitive activities, adjacent to strategic roads, including State Highways, collector roads in the Rural Zone and Large Lot Residential Zones, and railway lines; will require acoustic attenuation to ensure the continuation of the ability to achieve acoustic privacy.	**Supports** The uncongested nature of the adjacent roads means noise is unlikely to affect the Structure Plan area.

11.3 Waipa Integrated Transport Strategy

Table 11-3 presents an assessment of the Structure Plan against the objectives of the Waipa Integrated Transport Strategy (WITS).

Table 11-3: WITS Objective Assessment

Objective	Assessment
1. Integrated Land Use Planning To integrate transport and land use planning in a sustainable and co-ordinated manner.	**Supports** Consideration has been given to integrating current and future vehicular, cycle and pedestrian infrastructure to the development,

Objective	Assessment
	particularly in relation to T1 and connections to existing networks.
2. Road Safety To adopt a safe road system approach and reduce deaths and serious injuries on Waipa's roads.	**Supports** The connections to the existing roading network have been designed to provide a safe and suitable environment. On site, the residential nature of area and the retirement village contributes to creating a safe, slow speed environment.
3. Network Management To ensure an effective and efficient road network in Waipa District.	**Supports** Pirongia Road and Frontier Road are able to accommodate the increase in traffic volumes without adverse effects on traffic conditions on each road, ensuring the efficiency of Pirongia Road and Frontier Road are maintained.
4. Freight Transport To support and improve the efficient movement of freight to, through and within Waipa district.	**N/A** The primary use of the development roads is to provide access to residential lots and retirement housing within the Structure Plan.
5. Influencing Travel Choices To provide and promote travel choices (where appropriate) to manage travel demand in the district.	**Supports** The proposed structure plan network has been designed to support active transport choices.
6. Passenger Transport To improve passenger transport so that it becomes a viable option for travel between main centres in the district and the region.	**Supports** There are currently no bus services operating in this area, however the Structure Plan can accommodate buses in the future if there are changes to the public transport network.
7. Walking and Cycling To encourage cycling and walking in the Waipa District as safe and convenient modes of transport.	**Supports** The Structure Plan includes walking facilities and cycling facilities and connects to existing networks, to provide an attractive option for residents and the broader community.

Overall, it can be seen there is a sound alignment of the proposed Structure Plan with the relevant traffic and transport objectives, policies and rules.

12. Conclusions and Recommendations

The proposed Structure Plan facilitates a combination of residential and retirement community development. At full development the Structure Plan is expected to accommodate in the order of 310 to 360 standard residential dwellings and a retirement village with 98 villas and supporting care facilities.

The combined total traffic generation is estimated as up to 2,950 to 3,350 vehicle movements, distributed across Frontier Road, Pirongia Road and supporting local residential roads.

A multi-modal transport network has been designed to support the Structure Plan with a low-speed, permeable network of roads and shared user paths.

Future connection points have been modelled in SIDRA and show to have more than adequate capacity to operate as single-lane priority-controlled intersections. Raised table treatments are recommended to support priority of new shared user paths on Pirongia Road and Frontier Road.

Cross-road intersections within the Structure Plan area are recommended to be safely managed by way of small urban roundabouts.

The following external infrastructure upgrades are recommended to support the Structure Plan:

- Upgrading of Frontier Road and Pirongia Road to an urban cross-section along the Structure Plan frontage;

- Including of formed recessed parking on the northern side of the Frontier Road upgrade;
- Extension of the 50km/h (Frontier Road) and establishment of a 60km/h (Pirongia Road) speed zone west of the Structure Plan site boundary areas, supported by installation of a speed change gateway treatment with kerb build-outs, supporting landscaping and signage; and
- Formation of a 3.0m wide shared path on the site side of both Frontier Road and Pirongia Road.

End of report.

Hamilton
468 Tristram Street, Whitiora
Hamilton 3200
PO Box 13-052, Armagh
Christchurch 8141
Tel +64 7 839 0241
Fax +64 7 839 4234

Please visit **www.stantec.com** to learn more about how Stantec design with community in mind.

Stantec