Appendix 16 – Integrated Transportation Assessment

Boffa Miskell

Harlow Lifestyle Village Fast Track Application

Integrated Transportation Assessment
Prepared for Te Awamutu Developments Limited



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This document may be cited as:
Boffa Miskell Limited 2026. *Harlow Lifestyle Village Fast Track Application: Integrated Transportation Assessment*. Report prepared by Boffa Miskell Limited for Te Awamutu Developments Limited.

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Revision /version:	Issue date:	Prepared by:	Description:	Reviewed by:
Draft V1	20/8/26	Tatai Dewes: Associate Principal Transport Planner Anna Young: Transport Planner Mark Apeldoorn: Partner: Transport Planner	Provisional Draft for client review and comment	Mark Apeldoorn: Partner: Transport Planner
Final	29/10/26	Tatai Dewes: Associate Principal Transport Planner Anna Young: Transport Planner Mark Apeldoorn: Partner: Transport Planner	Final for lodgement	Mark Apeldoorn: Partner: Transport Planner

Approved for issue: Mark Apeldoorn: Partner: Transport Planner

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File name & Project number: BM251067 Harlow Retirement Village ITA_261028.docx

Template revision: 20250522 0000

Cover photograph: Source: Pacific Environments Architects

Executive Summary

This Integrated Transportation Assessment (ITA) has been prepared in support of the Fast-track application for the proposed Harlow Lifestyle Village at 2025 Ōhaupō Road (SH3), Te Awamutu, on behalf of Te Awamutu Developments Limited (TADL). The proposal comprises a comprehensively planned retirement village including approximately 414 independent living units, a 100-bed Care Home, a Community Hub, associated road and transport infrastructure, and supporting open space, wetland and ecological enhancement areas. The development is proposed on approximately 25.78 hectares and will be delivered in stages.

The assessment has considered the existing and future transport environment, relevant national, regional and local transport policy frameworks, the proposed internal transport network, traffic generation characteristics, transport modelling outcomes, intersection performance, active transport accessibility, parking provision and construction traffic effects.

The site occupies a strategic location immediately adjoining Ōhaupō Road SH3, providing direct access to Te Awamutu, Hamilton and the wider Waikato transport network. While the site is not identified within the District's planned residential growth cells, the national, regional and district growth frameworks expressly provide for consideration of unanticipated or out-of-sequence development. The assessment demonstrates that the proposal can be effectively integrated with existing and planned transport infrastructure and can achieve the transport outcomes sought through the applicable policy framework.

The key findings of the assessment can be summarised as follows:

- A new single-lane roundabout will provide the primary site access from SH3 from the commencement of the development, consistent with NZTA's stated preference, and support safe and efficient traffic operations.
- Optioneering of priority-controlled, signalised and roundabout intersection forms, undertaken in engagement with NZTA, confirmed the roundabout as the safest and most efficient long-term access arrangement. The roundabout will introduce a lower-speed, safe system intersection environment that reduces the likelihood and severity of potential conflicts and provides a wider road safety benefit for existing users of SH3.
- The internal transport network provides a clear road hierarchy, comprehensive pedestrian facilities, active mode connections and public transport opportunities.
- Provision has been made within the site for potential future connections to adjoining land to the north, west and south, including a future active mode link to Innes Place, ensuring that future connectivity and integration with the surrounding transport network is not foreclosed.
- Full development is forecast to generate approximately 162 AM peak hour trips and 176 PM peak hour trips which can be readily accommodated by the surrounding network.
- Strategic WRTM modelling and detailed SIDRA analyses demonstrate no material deterioration in wider network performance attributable to the proposal.
- The proposed SH3 roundabout is expected to operate efficiently, with a worst movement LOS B, through all development stages and to the 2045 assessment horizon with substantial reserve capacity.
- Sensitivity testing confirms the assessment outcomes remain robust under alternative trip distribution scenarios.
- The proposed roundabout will have a marginal effect on SH3 travel times, with geometric delay increasing by approximately 0.5 to 0.6 seconds and a less than minor increase in travel time along the assessed sections of the state highway corridor.

- Parking provision, comprising a minimum of 414 residential spaces, 120 apartment spaces, 55 Care Home spaces, 29 Community Hub spaces and 49 on-street spaces, is sufficient to support the anticipated operational requirements of the retirement village, Care Home and Community Hub.
- Walking, cycling and public transport accessibility have been integrated into the development through a 2.5m wide internal shared path, shared path connections to the Te Awamutu urban area and two bus stops on SH3 at the proposed roundabout.
- Early and ongoing engagement has been undertaken with NZTA, Waikato Regional Council and Waipa District Council, with feedback incorporated into the design of the roundabout, shared path and bus stop proposals. Engagement with NZTA is continuing in relation to detailed design matters.
- Construction traffic effects can be managed through staging controls, temporary traffic management measures and implementation of a Construction Traffic Management Plan.

Overall, the ITA concludes that the Harlow Lifestyle Village can be developed and operated in a manner that is safe, efficient and consistent with the objectives of the wider transport network. The transport effects associated with the proposal are assessed as no more than minor and can be appropriately managed through the proposed design and transport conditions. Accordingly, the findings and recommendations of this ITA should be considered together with, and subject to, the recommended transport conditions included as **Appendix 29 – Draft WDC Conditions** in the Substantive Application Report.

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Abbreviations

Abbreviated Term	Full Context
ADT	Average Daily Traffic Volume
CAS	Crash Analysis System
CTMP	Construction Traffic Management Plan
GPS	Government Policy Statement on Transport
HCM	Highway Capacity Manual
HCV	Heavy Commercial Vehicle
ha	Hectares
ITA	Integrated Transportation Assessment
LOS	Level of Service
NPS UD	National Policy Statement on Urban Development
NZGTTM	New Zealand Guide to Temporary Traffic Management
NZTA	New Zealand Transport Agency
PDA	Private Developer Agreement
PWA	Private Works Agreement
RCA	Road Controlling Authority
RITS	Regional Infrastructure Technical Specifications
RLTP	Regional Land Transport Plan
RMS	Roads and Maritime Services
RPTP	Regional Passenger Transport Plan
SIDRA	Signalised Intersection Design Research Aid
SH	State Highway
TCDM	Traffic Control Devices Manual
TSP	Transport System Plan
TTHM	Tauranga Transport Hybrid Model
TTMP	Temporary Traffic Management Plan
TTSM	Tauranga Strategic Transportation Model
UFTI	Urban Form + Transport Initiative
vpd	vehicles per day
vph	vehicles per hour
WRC	Waikato Regional Council
WDC	Waipa District Council
WRTM	Waikato Regional Transport model

1.0 Introduction

1.1 Statement of Experience

My full name is Mark John Apeldoorn. I am a Transport Planner and Partner at Boffa Miskell having held that position for about 3 years. I am the principal transportation advising expert to this development proposal and a principal author of this assessment. I have been supported in the preparation of this assessment by others whom are specified in the above Quality Assurance sheet.

I hold a Bachelor's degree with honours in Civil Engineering, a postgraduate Certificate of Proficiency in Transportation Planning and a postgraduate Diploma in Business Management, all from the University of Auckland. I am a Chartered Professional Engineer (CPEng) New Zealand, a Fellow of Engineers New Zealand (FENZ), an International Professional Engineer (IntPE), and a member of the Resource Management Law Association (RMLA) and New Zealand Planning Institute (NZPI).

I have over thirty years of experience as a practising traffic and transportation engineer. I have worked as a local authority engineer and as a traffic engineering consultant. As a consultant, I have been engaged by local authorities, and private concerns to advise on traffic and roading development issues covering safety, management and planning matters of many kinds.

I have also advised extensively on traffic and transportation matters involving significant plan changes, designations, and resource consents, with many of these based in the Waipa, Waikato and Bay of Plenty areas.

I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023, I agree to comply with it, and this assessment has been prepared in accordance with the requirements of the Code. I confirm that the issues described and addressed in this assessment are within my area of expertise, except where I state that I have relied on the evidence of other persons. I have not omitted to consider material facts known to me that might alter or detract from the opinions I have expressed.

1.2 Fast Track Development Introduction

The Harlow Lifestyle Village Development (the development) is being undertaken by Te Awamutu Developments (the Applicant) as a comprehensively planned residential retirement community at 2025 Ōhaupō Road State Highway 3 (SH3), Te Awamutu. The development area comprises approximately 25.78 hectares (ha) of existing rural land located on the northern edge of the Te Awamutu urban area. The development is intended to provide a retirement village accommodating approximately 414 independent living units, together with a Care Home and Community Hub, integrated with supporting internal roads, open space, landscaping and ecological wetland areas.

Traffic and transportation considerations are central to this project. The site is strategically located adjacent to Ōhaupō Road SH3, providing direct connectivity to Te Awamutu, Hamilton, and the wider Waikato transport network. The location enables efficient access for residents, visitors, service providers and staff while maintaining proximity to key services and facilities within the Te Awamutu urban area. The internal transport network has been planned to provide safe and efficient circulation within the retirement village and to support future integration opportunities with the surrounding transport network where appropriate.

The purpose of this report is to bring together the transportation planning, traffic assessment and supporting information that underpins the Harlow Lifestyle Village Development. The assessment has a particular focus on:

- Understanding the existing transport environment and travel patterns surrounding the site;
- Assessing the transportation demands generated by the proposed development and the relationship of these demands to development staging;
- Evaluating the effects of the development on the surrounding road network, including Ōhaupō Road SH3;
- Identifying appropriate access arrangements, intersection treatments and active mode facilities to support safe and efficient transport outcomes; and
- Demonstrating how the transport framework will enable the retirement village to integrate effectively with the surrounding transport network and community.

This report is structured to describe the following elements:

- Current transportation environment;
- Future transportation environment;
- Strategic policy context;
- Harlow Lifestyle Village plan and proposal;
- Transport corridors and form of infrastructure;
- Transport demands and transportation modelling;
- Access, parking, loading and servicing and waste collection;
- Walking, cycling and public transport;
- Alignment with District Plan provisions and transportation standards;
- Construction traffic management matters; and
- Recommendations and conclusions.

Based on the assessments undertaken to date, the following transport outcomes are anticipated for the Harlow Lifestyle Village Development:

- A transport system that integrates appropriately with the existing SH3 corridor and the surrounding local road network;
- Safe and efficient access arrangements for residents, visitors, staff and service vehicles;
- Transportation effects that can be appropriately managed through access design, intersection treatments and network integration measures;
- Walking and cycling connections that support accessibility to surrounding residential areas and nearby destinations;
- Transport infrastructure that aligns with the operational requirements of the retirement village; and

- A transportation environment that contributes to the safe, efficient and sustainable functioning of the surrounding network while supporting the needs of an ageing population.

Overall, the transport elements of the Harlow Lifestyle Village Development are assessed as being appropriately planned to deliver a safe, integrated and efficient transport environment that supports the operation of the proposed retirement village while maintaining the function and performance of the surrounding transport network.

2.0 Current Transport Environment

2.1 Site Location

The site location is shown in a sub-regional context on Figure 1 below. It is located on the western side of State Highway 3 (Ohaupo Road). It is approximately 2.5km (by road) north of the central Te Awamutu township.

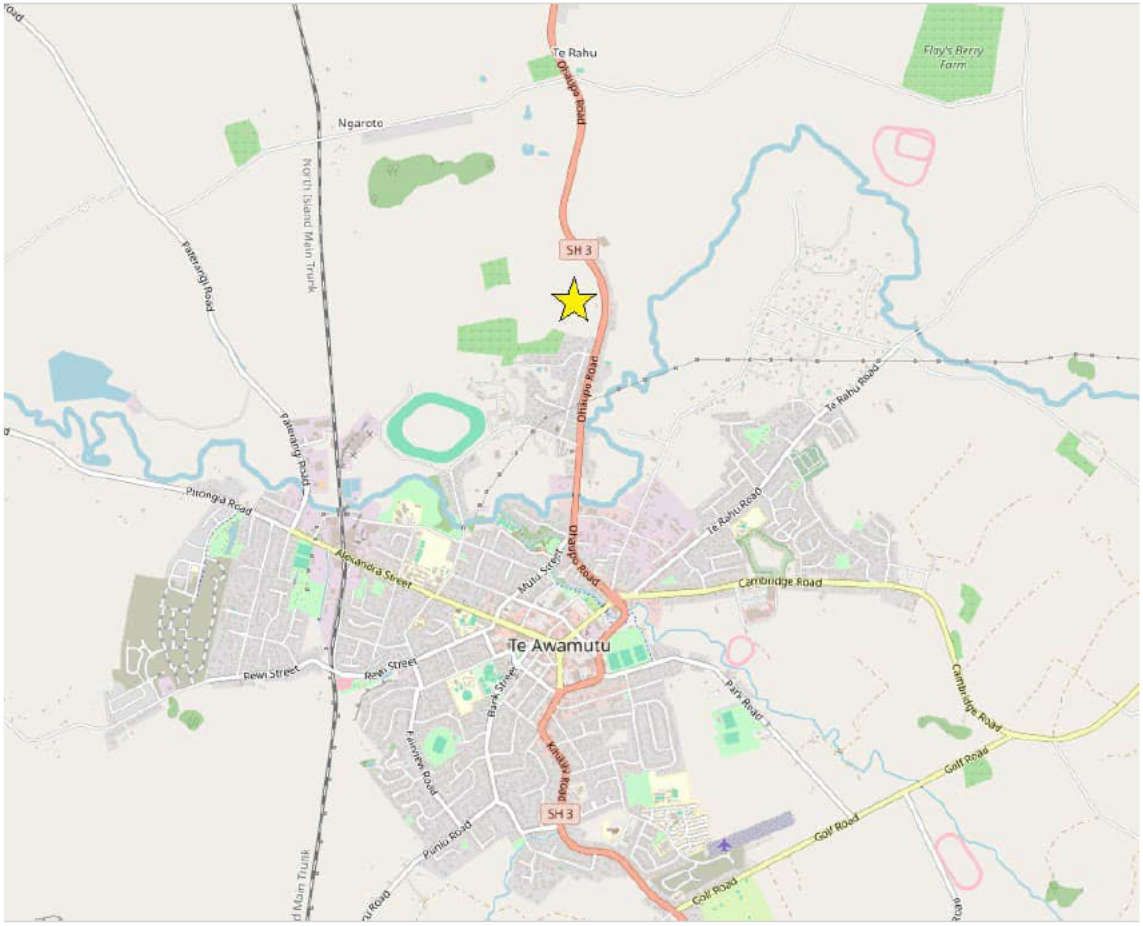


Figure 1 Site Location (Base Map Source: Open Street Map)

The extent of the development and an overview of the land use mix is shown on the following Figure 2. The particulars of the development proposal are described and further detailed in the following sections.



Figure 2 Project Overview (Source: Pacific Environments Architects)

The properties and the surrounding land use zoning context are shown on the following Figure 3 below. The development area is substantially undeveloped at present and is currently used for rural purposes, with the exception of one residential dwelling. The southern boundary adjoins the Medium Density Residential zone, with industrial zones located further to the southeast and southwest of the site.



Figure 3 Land use zoning context (Source: Waipa District Council ePlan)

2.2 Growth Area Context

2.2.1 Planned Te Awamutu Growth Cells

The Waipa District Plan Appendix S1 – Future Growth Cells identifies currently planned future Growth Cells for Te Awamutu in both the pre and post 2035 periods. The Te Awamutu Growth Cell map from Appendix S1 is shown in the following figure, together with the site's location adjoining the town's northern edge.

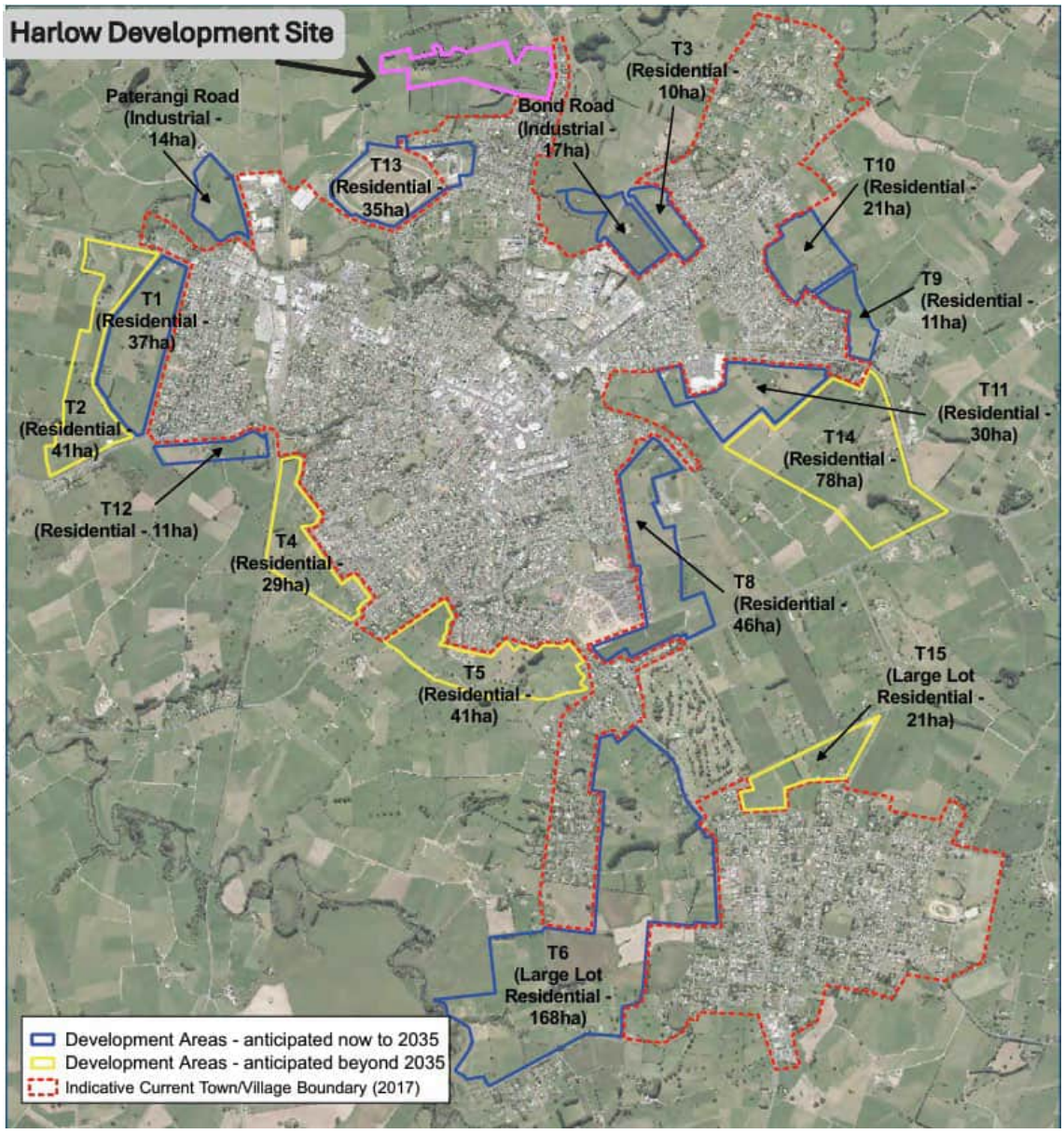


Figure 4 Waipa District Plan Appendix S1 – Future Growth Cells (Source WDC)

Further detail on the growth area is provided in Section 3.2. The site adjoins the northern extent of the developed Te Awamutu urban area. It is positioned north of the future T13 Residential Growth Area and west of the urban development edge on the eastern side of SH3.

2.3 Road Network Hierarchy and Layout

Ōhaupō Road SH3 forms the primary transport corridor adjacent to the site and is managed by NZTA. The section of SH3 adjacent to the development is classified as a Regionally Strategic State Highway and a Limited Access Road by NZTA, and runs generally north-south towards Te Awamutu in the south and Hamilton in the north.

Ōhaupō Road SH3 is classified as a Major Arterial Road in the Waipa District Plan road hierarchy (Appendix T5) and is also a Significant Road Corridor as identified in the Waikato Regional Policy Statement.

Figure 5 shows the roading network in the vicinity of the site as classified by WDC.

Greenhill Drive and Taylor Avenue, located to the south of the site, are classified as local roads. Racecourse Road, also to the south, is classified as a Collector Road and forms a priority t-intersection with Ōhaupō Road SH3.

Te Rahu Road and Ngaroto Road form a priority crossroad intersection on Ōhaupō Road SH3 approximately 3.3km to the north of the site. Te Rahu Road is classified as a Local Road, and Ngaroto Road is classified as a Collector Road.

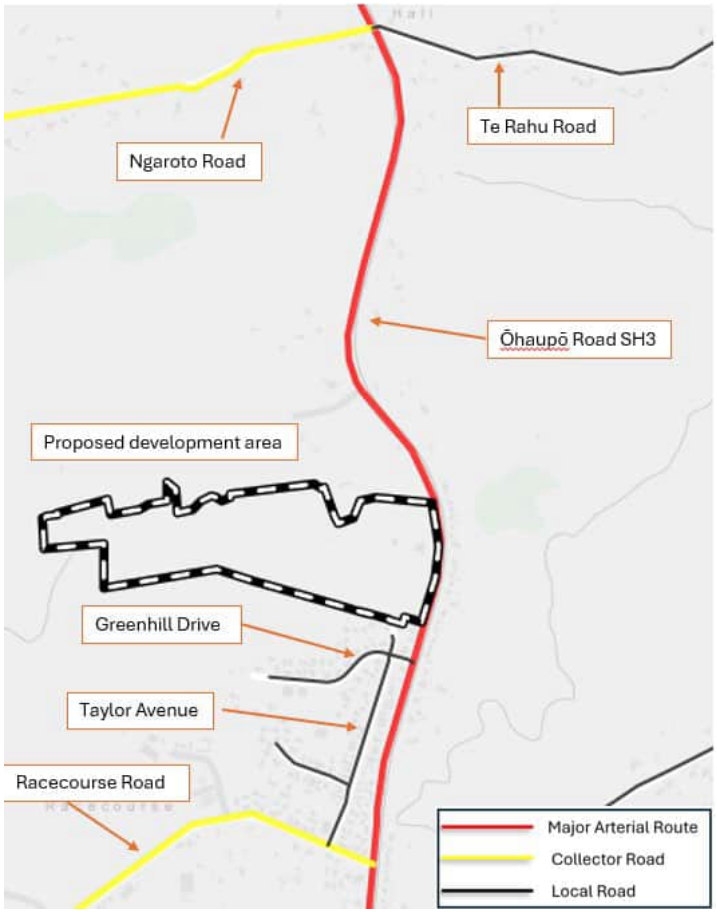


Figure 5 Road Hierarchy as classified by WDC (Source WDC)

By way of a comparison, the NZTA One Network Road Hierarchy classifies the road network as indicated on the following Figure:



Figure 6: NZTA One Network Road Hierarchy

The corresponding classifications are summarised as follows:

- SH3 – Regional route;
- Ngaroto Road, Te Rahu Road, the section of Greenhill Drive west of SH3 to Taylor Drive and Racecourse Road – Secondary Collector; and
- The remaining local road network as Access or low volume routes.

The posted speed limit of Ōhaupō Road SH 3 is 70km/h adjacent to the site, changing to 100km/h at about the northern boundary of the site.

Greenhill Drive, Racecourse Road and Taylor Avenue, to the south of the site, have a posted speed limit of 50km/h, while Ngaroto Road has a posted speed limit of 80 km/h.

Along the site frontage, Ohaupo Road SH3 slopes upwards towards the site from the south, with a curved horizontal alignment. It has a sealed carriageway approximately 13.5m wide, featuring a two-lane road with a central painted median. The painted median extends approximately 3.3km north of the site and past Te Rahu Road intersection, and approximately 800m south of the site to Racecourse Road.

These intersections and network features are shown in Table 2-1 below.

Table 2-1: Existing Network Layout

SH3 adjacent to the site	Greenhill Drive / SH3 and Greenhill Drive Taylor Avenue Intersections
	
Taylor Avenue / Racecourse Road and SH3 / Racecourse Road Intersections	**Ngaroto Road / SH3 / Te Rahu Road Intersection**
	

2.4 Road Safety

The New Zealand Transport Agency (NZTA) Crash Analysis System (CAS) was used to review the road safety history along the frontage of the site. The ten-year period 2015-2025 was reviewed as well as any available data from 2026 to date. The search included Ohaupo Road SH 3, between Ngaroto Road to the north of the site, and Racecourse Road in the south.

A total of 43 crashes were reported. The location, nature and severity of these crashes is summarised in Table 2-2 below.

Table 2-2: CAS Summary

Location	Crashes by Severity				Total
	Fatal	Serious	Minor	Non-Injury	
Racecourse Road / Ohaupo Road SH3 Intersection	-	1	4	-	5
Ohaupo Road SH3 (between Racecourse Road and Greenhill Drive)	-	-	2	-	2
Greenhill Drive / Ohaupo Road SH3 Intersection	-	-	3	-	3
Ohaupo Road SH3 (between Greenhill Drive and Ngaroto Road)	1	2	5	14	22
Ngaroto Road / Ohaupo Road SH3 / Te Rahu Road Intersection	-	1	2	8	11
TOTAL	1	4	16	22	43

The figure below shows the location and severity of the collisions adjacent to the proposed development site.



Figure 7- Map showing location of collisions adjacent to the proposed site (Source: CAS NZTA)

These locally proximate crashes feature:

- One serious crash and three non-injury crashes.

- The serious crash was a result of a driver veering across the flush median centreline into the path of an oncoming vehicle;
- The three minor crashes were a result of driver fatigue and a vehicle following too closely as another pulled out of a driveway.

Overall, and based on an assessment of the reported crash factors, they are dispersed along Ohaupo Road SH3 and reflect a mix of intersection-related conflicts and midblock loss-of-control events. The pattern is consistent with both a rural and suburban road environment and subject to a range of driver behaviours and external factors, rather than any one underlying safety issue. Notwithstanding this, the types and factors associated with the crashes indicate a particular area of focus for assessment of the potential transport effects attributable to the subdivision and land development proposal, which is discussed further in Section 5.6.1.

2.5 Traffic Volumes

Average daily traffic volumes on roads around the site have been sourced from the Mobile Road website and are summarised in the following Table:

Table 2-3: Average daily traffic volumes from MobileRoads

Road	Section	ADT (vpd)	% HCV
Ohaupo Road SH 3	Between Racecourse Road and Ngaroto Road	15,169	7.2%
Ngaroto Road	Between SH 3 and Paterangi Road	922	11.0%
Greenhill Drive	Between SH3 and Taylor Ave	683	8.5%
Taylor Avenue	North of Greenhill Drive	63	4.79%
	South of Greenhill Drive	402	7.33%
Racecourse Road	Between SH3 and Taylor Ave	1708	8%

The volumes presented above provide a snapshot of existing conditions based on the most recent available counts. These traffic volumes are generally consistent with the function and classification of the surrounding road network[1]. Ohaupo Road SH 3 is operating at or just above the upper end of the Arterial road range (5,000-15,000 vpd) identified in the Waikato Regional Infrastructure Technical Specifications (RITS). Ngaroto Road and Racecourse Road are both within or near the range identified in the RITS for Primary Collector roads (1,000-3,000 vpd). The remaining roads are local roads carrying relatively low traffic volumes typical of residential access roads (200- 1,000 vpd).

Overall, the volumes indicate that the surrounding road hierarchy is operating broadly in accordance with its intended function.

A week-long traffic count survey was also commissioned by Team Transport Consultants. This was located near the northern boundary of the site and at the location where the current 70/100

[1] Based on the Waikato RITS D3.1 (Urban Road Widths). Access roads (local roads) are typically expected to carry up to 1,000 vpd, collector roads 1,000-5,000 vpd, and arterial roads >5,000 vpd.

speed limit change is established. The results are included at **Appendix 2**. The count data has enabled specific identification of the 5-Day ADT AM and PM peak hour traffic volumes past the site as follows:

- AM peak period northbound / southbound: 813 / 560 vphr; and
- PM peak period northbound / southbound: 702 / 828 vphr.

The week-long traffic count profile indicates the following characteristics:

- The busiest days were Wednesday and Friday;
- Weekend traffic volumes were approximately 75% of peak weekday flows;
- Distinct AM and PM peak periods are evident, with the PM peak marginally higher than the AM peak;
- Midday traffic flows are approximately 65% of peak-period flows.

The volume / speed plots indicate the following:

- The mean and 85th percentile speeds are marginally lower through the peak hour periods and throughout the middle part of the day. The mean speed was recorded as within the range 68 to 72km/h and the 85th percentile speed in the range 75 to 80km/hr;
- In the period prior to the AM peak at around 5:00am the mean speed was recorded as 71 to 76km/hr and the 85th percentile as 82 to 86km/hr; and
- The corresponding post PM peak period recorded slightly lower speeds with the mean about 72 to 74 km/hr and the 85th percentile about 79k to 82m/hr.

These recordings are typical of speed recordings which indicate the 85thpercentile speed is often in the order of 10 - 12km/h above the mean speed and where the mean speed is represented as generally consistent with the posted speed limit. At this site, the mean speed is generally about 2 to 4km/h higher than the posted speed limit. The recorded southbound speed was approximately 5 km/h higher than the northbound speed. This reflects southbound drivers transitioning from the 100 km/h speed zone to the 70 km/h speed zone.

An assessment of the expected future traffic conditions has been assessed using the strategic transport modelling described later in Section 0 of this report. This modelling incorporates infrastructure changes, background network growth and traffic associated with planned development in the wider eastern Waikato area, as well as what is proposed as part of the development.

3.0 Future Transport Environment

3.1 Overview

This section of the report describes planned changes to the transport network and land use environment around the site. It is structured to summarise planned:

- growth within Te Awamutu and Kihikihi;
- changes to the road network;
- walking and cycling improvements; and
- changes to public transport.

3.2 Te Awamutu and Kihikihi Growth

Council anticipates continued growth within Te Awamutu and Kihikihi, with the combined population expected to reach approximately 17,000 people by 2051. Council has identified approximately 201 ha of residential and large-lot residential land to accommodate this growth.

The identified growth areas are distributed around the existing Te Awamutu and Kihikihi urban areas, as illustrated earlier on Figure 4. These include a combination of residential, large-lot residential and industrial growth cells, with development anticipated across different time horizons. The site is located immediately north of the existing Te Awamutu urban area but is not within one of the growth areas identified in Council's planned growth framework.

Development is already occurring within a number of these areas. Council identifies the T3 and Bond Road Industrial growth areas as underway, while the first development within T8 has been completed. Infrastructure planning and delivery is also underway to support other identified growth areas, including water infrastructure serving T1 and T2 and planning for a new roundabout associated with the T11 and T14 growth areas at Cambridge Road.

Appendix S1 of the Waipa District Plan anticipates the existing Te Awamutu growth areas accommodating 6,024 dwellings, however an independent assessment carried out by BBO has identified a lower residential yield of approximately 4,719 dwellings, a shortfall of 1,188 dwellings or about 20%. This reduction reflects constraints such as, flooding, topography, stormwater, infrastructure sequencing, structure plan requirements or practical land availability.

The planned growth of Te Awamutu and Kihikihi will result in progressive changes to travel demand and the transport network serving the urban area. The transport infrastructure and services planned to support this future urban environment are described in the following sections.

3.3 Future Road Network

The future road network within Te Awamutu is expected to continue to develop in response to planned urban growth, including intersection, road and connectivity improvements required to

enable individual growth cells as development occurs. A broader programme of strategic transport planning is also underway to address existing and future network issues.

The WDC 2025-34 Long Term Plan (LTP) identifies the radial form of the existing Te Awamutu road network as an ongoing issue, with heavy vehicle movements directed through residential streets and the town centre. The LTP also identifies increasing traffic volumes on SH3 and SH39 as contributing to community separation and environmental effects within Te Awamutu and other settlements. Council intends to continue working with NZTA to plan for improvements to address these effects.

Council has previously provided for a western arterial road around Te Awamutu. The LTP records that the case for this route has been reviewed and Council has decided to uplift part of the existing designation, on the basis that the full route would be unaffordable and would not provide sufficient benefits. Instead, alternative strategic transport improvements have been identified for Te Awamutu and are intended to be pursued through future LTPs. The LTP notes that parts of the former western route may still be delivered in association with future urban growth.

Consistent with this direction, the Waikato Regional Land Transport Plan 2024-2054 (RLTP) includes a Detailed Business Case for the Te Awamutu Strategic Network within the Metro Spatial Plan - Waikato Expressway Local Effects Waipa programme. The activity is identified as contributing primarily to growth and economic development. The RLTP programme represents activities for which funding is sought from the National Land Transport Fund and inclusion within the RLTP does not in itself indicate that subsequent physical works are committed.

The same RLTP programme identifies implementation activities associated with the local effects of the Waikato Expressway on SH3 at Ohaupo, together with smaller implementation programmes relating to SH3 at Kihikihi and SH39 at Pirongia/Ngahinapouri. These activities form part of the wider programme of transport responses within Waipa and are not expected to materially change the form or operation of SH3 near the site.

At a wider network level, the 2024-27 National Land Transport Programme (NLTP) identifies Hamilton Southern Links as a Road of National Significance intended to support growth in southern Hamilton and improve transport connections within the wider Waikato network. The September 2025 NZTA regional update records that an investment case is being developed to determine the form, consenting, funding and construction pathway for the project.

Overall, the current planning framework indicates that the future Te Awamutu road network will be characterised by progressive growth-related local improvements and further development of a strategic network response, rather than delivery of the previously contemplated western arterial route. No major committed state highway projects are identified on SH3 immediately adjoining the site within the current 2024-27 NLTP programme.

3.4 Future Walking and Cycling Network

WDC's Transport Strategy 2022-2052 identifies completion of the urban mobility network as a key transport project for Te Awamutu. The Strategy seeks to provide a well-connected and safe active mode network and identifies continued investment in walking, wheeling and cycling infrastructure as part of providing a greater range of transport choices.

The urban mobility programme identifies a 37 km network of planned walking and cycling routes across Cambridge, Te Awamutu and Kihikihi, intended to connect key destinations including schools, shops and community facilities. The programme is intended to be implemented

progressively and is subject to future LTP reviews. The planned Te Awamutu and Kihikihi Urban Mobility Network is shown below as Figure 8.

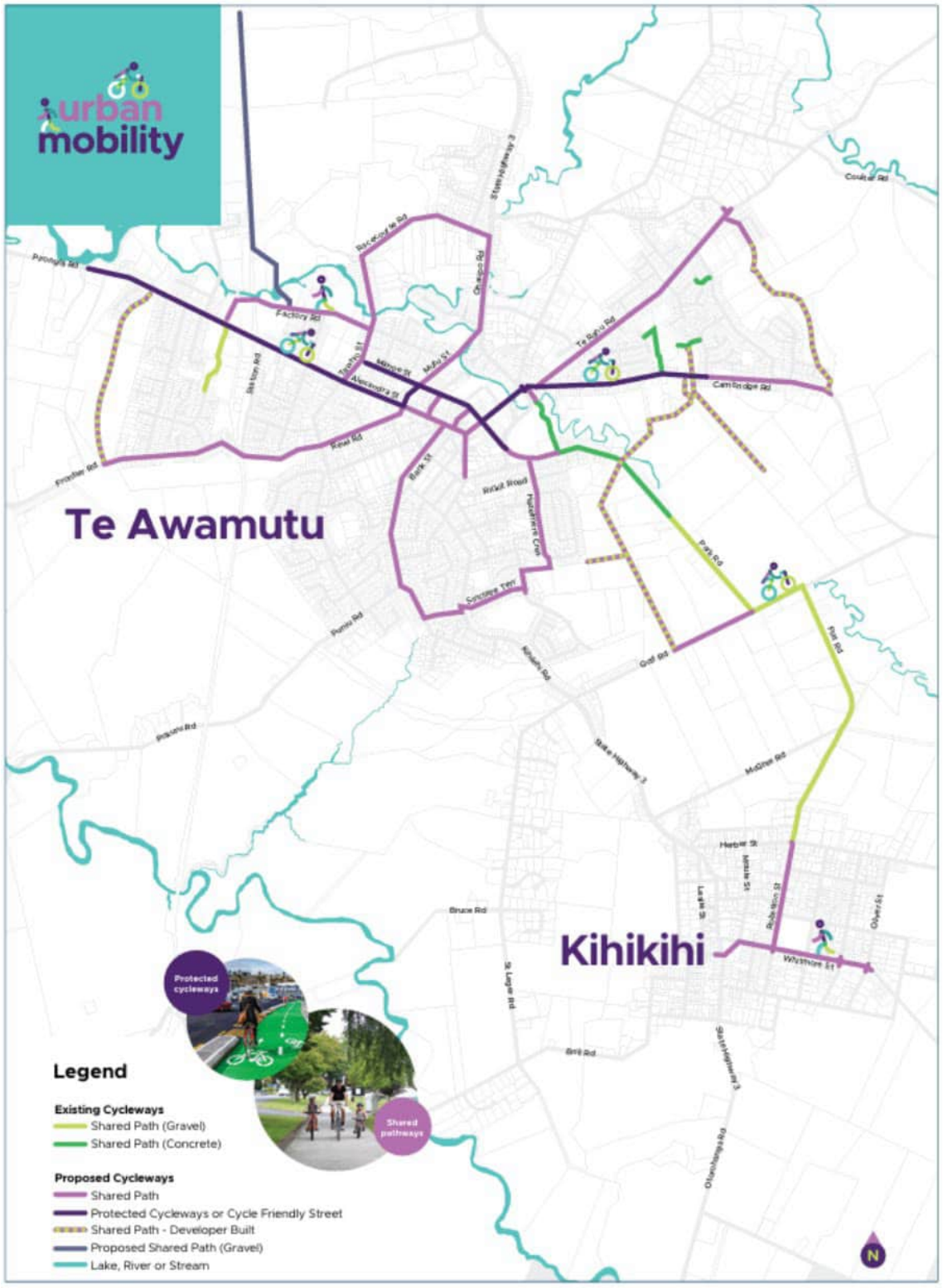


Figure 8 Te Awamutu and Kihikihi Urban Mobility Network (Map 10 – WDC Transport Strategy 2022-2052)

Of particular relevance to the site, the network identifies a proposed shared path extending north from central Te Awamutu and running north along Ohaupo Road (SH3) and west along Racecourse Road, passing the southern end of Taylor Street. The wider planned network provides connections through Te Awamutu to key destinations and to existing and proposed walking and cycling facilities elsewhere in the town.

The Transport Strategy also identifies a role for new development in progressively delivering the urban mobility network, with some proposed shared paths specifically identified as developer-built. More broadly, the Transport Strategy seeks provision for walking and cycling within new growth areas and developments and identifies the need to work with NZTA to address pedestrian and cyclist safety and accessibility on state highways.

The LTP provides for the continued integration of new residential and industrial growth areas with walking and cycling connections. However, it does not provide for a material increase in transportation levels of service over the 2025-34 period, with continued development of urban mobility networks, including paths and cycle paths, identified as a longer-term initiative beyond the current LTP period. A number of previously identified cycling projects around Te Awamutu are also not funded within the current LTP and may be reconsidered through future LTP processes.

3.5 Future Public Transport Network

The Waikato Regional Public Transport Plan 2022-2032 (RPTP) identifies Route 24 between Hamilton, Ohaupo and Te Awamutu as part of the future Waipa public transport network, classified as a Metro Coverage service.

The longer-term strategic direction is towards improved public transport connections between Te Awamutu and Hamilton. The WDC Transport Strategy identifies an aspiration for a rapid and frequent multi-modal network connecting Te Awamutu with Hamilton and other key destinations. Council also identifies a need to work with Waikato Regional Council and Future Proof partners to grow public transport demand through faster and more frequent services and supporting infrastructure.

The RPTP similarly provides for the progressive development of the regional public transport network. However, its future network represents the intended direction for public transport rather than a committed programme of service changes, with implementation dependent on subsequent planning and funding processes.

Of particular relevance to the site, the strategic direction anticipates that new growth and development will support improved public transport accessibility. The WDC Transport Strategy seeks provision within new growth areas and developments for bus transport, together with walking and cycling, as viable alternatives to private vehicle travel.

Accordingly, while no committed extension or significant service upgrade is currently identified in the immediate vicinity of the site, the future transport framework anticipates improved public transport provision between Te Awamutu and Hamilton and provision within new development to support future public transport accessibility.

4.0 Strategic Policy Context

4.1 Overview

The proposal sits within a comprehensive national, regional, sub-regional and local policy framework addressing the relationship between urban growth, land use and transport. This section reviews the transport-related provisions of the principal policy and strategy documents relevant to the proposal.

At a national level, these are the:

- National Policy Statement on Urban Development 2020 (NPS-UD);
- Government Policy Statement on Land Transport 2024 (GPS 2024); and
- New Zealand's Second Emissions Reduction Plan 2026–30 (ERP2).

At a regional and sub-regional level, the relevant framework includes the:

- Waikato Regional Policy Statement (RPS);
- Future Proof Strategy;
- Hamilton-Waikato Metropolitan Spatial Plan (MSP);
- Waikato Regional Land Transport Plan (RLTP); and
- Waikato Regional Public Transport Plan (RPTP).

The local framework is provided by:

- Ahu Ake Waipa Community Spatial Plan;
- Waipa 2050 Growth Strategy;
- Waipa Transport Strategy 2022–2052;
- WDC 2025–34 Long Term Plan (LTP); and
- the transportation provisions of the Waipa District Plan.

A number of consistent transport-related themes emerge from these documents. These are summarised below, followed by brief snapshots of the individual documents and commentary on their particular relevance to the proposal.

4.2 Key Themes

The policy and strategic framework generally seeks to direct urban development to planned growth areas and to coordinate the timing and location of development with transport and other infrastructure. The individual policy summary descriptions are included at **Appendix 1**. The key and summary themes from these are described in the following paragraphs.

The subject site is outside the growth areas currently identified for Te Awamutu and the proposal therefore represents development that was not anticipated through the established settlement pattern.

However, both the national and regional frameworks expressly provide for consideration of significant unanticipated or out-of-sequence development where it can contribute to a well-functioning urban environment and be appropriately integrated with existing and planned infrastructure.

Within this context, the transport-related themes most relevant to the proposal are:

- Integration of land use and transport infrastructure.
    - Development should be coordinated with existing and planned transport infrastructure, including its timing, funding and delivery.
    - Development outside planned growth areas places particular importance on demonstrating that its transport requirements can be appropriately accommodated without undermining infrastructure investment intended to support planned growth.
- Safe and efficient operation of the transport network.
    - The function, capacity and safety of existing and planned transport corridors should be maintained.
    - This is particularly relevant to the site's access to SH3 and its location on the strategic Hamilton-Te Awamutu corridor.
- Accessibility and transport choice.
    - Development should provide good accessibility and enable practical alternatives to private vehicle travel through connected walking, cycling and public transport networks.
    - This is reinforced locally through the planned Te Awamutu urban mobility network and the longer-term direction for improved public transport between Te Awamutu and Hamilton.
- Connectivity and integration with the existing urban area.
    - New development should be well connected with the existing urban transport network rather than operate as an isolated development.
    - This includes connections to surrounding land and existing and planned transport networks and provision for their future development.
- Accessibility for an ageing population.
    - The regional and local framework recognises the changing mobility needs associated with an ageing population, including the importance of accessible pedestrian environments, public and community transport and provision for people with restricted mobility.
    - These considerations are particularly relevant to the proposed development and its future residents.
- Efficient and coordinated infrastructure provision.
    - The framework seeks effective use of existing infrastructure and well-considered investment in new infrastructure.
    - The committed future transport environment does not include major transport investment immediately adjoining the site, meaning that the proposal's transport

effects and infrastructure requirements need to be assessed without reliance on uncommitted future network improvements.

These themes provide the strategic context for the assessment of the proposal presented in the subsequent sections of this ITA.

5.0 Development Proposal

5.1 Overview

The Harlow Lifestyle Village is proposed over an area of approximately 25.78 ha, and is intended to accommodate approximately 414 independent retirement units, a 100 bed Care Home and a Community Hub over a staged development timeframe. The proposal also includes open space and ecological wetland areas. A concept masterplan showing the proposed layout of lots and internal road corridors are shown as follows:



Figure 9 Concept Masterplan (Source: Pacific Environments Architects)

Development will occur within a connected multi-modal transport network that integrates with the surrounding transport system and provides access to the strategic road network via a new proposed access to Ohaupo Road SH3.

The internal roading network has been designed with the ability to vest the roads (outlined in green in the figure below) with council in the future. The remainder of internal road network outlined in blue are intended to be private roads.

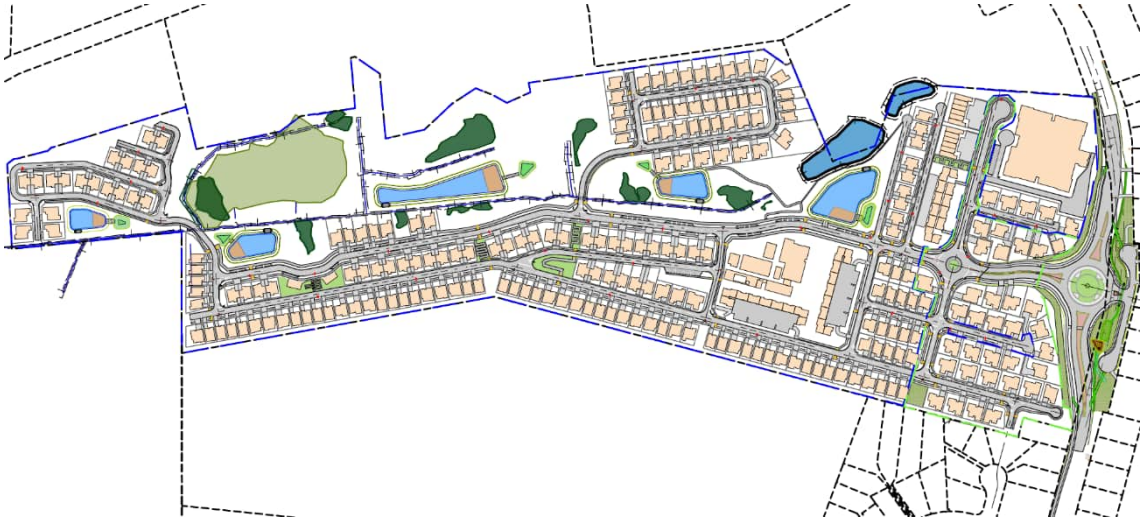


Figure 10 - Roading Plan (Source: Maven Consultants)

The transport framework for the development has been designed around a clear road hierarchy. A collector road running in an east-west direction distributes traffic through the development area from Ohaupo Road SH3, while local residential streets provide property access. All of the internal roading network is designed to operate as low-speed neighbourhood environments.

The proposed street network also incorporates facilities for walking and cycling and is designed to provide connectivity between areas of the development and to the surrounding neighbourhoods. In particular, the new proposed shared path provides the primary connection for active modes between the development and the Te Awamutu urban area to the south.

Further detail on the structure of the internal transport network, typical street cross-sections and key transport infrastructure elements is provided in the following sections of this report, with supporting drawings included in Pacific Environments' drawing package.

5.2 Staging

A preliminary staging plan for the development is included in the concept masterplan shown as Figure 9 above.

The staging of transport infrastructure has been aligned with the proposed development programme to ensure that transport facilities are provided in step with development demand.:

- Stage 1 (Stages 1A-1D) are proposed to establish the principal site access from Ohaupo Road SH 3, which forms the first section of the main internal road spine of the development, 134 residential lots and the 100-bed Care Home.
- Stage 2 (Stages 2A-2C) intend to extend the transport network through the central areas of the site, enabling further residential development of 200 residential units and the Community Hub.
- Stage 3 is shown to provide transport infrastructure to serve the northern residential area of 44 residential units, while Stage 4 will complete the western residential area, including 36 residential units and the final sections of the internal road network.

The incremental development of staging will partially form some of the internal roading sections with these to be extended in subsequent stages. The development proposal intends the formation of temporary turning areas at the extent of each stage to support local movement and servicing outcomes for the staged development.

As a result of the staging, each stage is designed to have appropriate access, connectivity and servicing available upon occupation, while maintaining safe and efficient operation of the transport network throughout the village's staged construction.

5.3 Road Network Structure, Hierarchy, Connectivity and Integration

5.3.1 Internal Road Network Structure and Hierarchy

The internal road network (shown in Figure 10) has been structured around a primary and central east-west corridor (Road 1). This establishes a natural hierarchy for access, movement, circulation and distribution via the roundabout on SH3. A first point of internal distribution is shown via a roundabout at the intersection of Road 1 and Road 3. This provides for movement to/from the north and south, access to the 100-bed Care Home and the Community Centre, both to the north. The Road 1 section between the SH3 roundabout and Road 3 is proposed to be vested as a public road and has been provisioned to be constructed to Collector Road standards. The proposed vested section of Roads 2 and 3 are proposed as public local road environments, supporting a distributed hierarchy of movement transitioning from SH3 through and into the site. The proposed roading cross section details are described in the following sections.

The southern (Road 3) section provides access for residential unit accommodation and is the provisioned route to link with Innes Place where that is established in future. The Road 1 section between the state highway and the Road 3 roundabout together with Roads 2 and Road 3 are indicated as vested roading which will enable public accessibility and future integration outcomes to the north and south and establish local road network connectivity for the remaining development areas to the west.

A second east- west (Road 2 west) is proposed as a private road and supports the Road 1 function and establishes further residential unit and private way access and distribution.

Traffic calming features and street design elements are incorporated to support reduced operating speeds and to create a neighbourhood-focused street environment. These are described later in Section 7.10.

The overall network structure has been designed to accommodate higher (albeit relatively low) traffic volumes on the entrance and principal east-west spine road, while the narrower local streets primarily provide access to adjacent dwellings and support low-speed internal circulation within the village.

5.3.2 Connectivity and Integration

Provision has been made for a potential future connection to Innes Place (and Taylor Avenue) and the local road network to the south, and to adjoining land to the north. The development layout also safeguards opportunities for future potential access and connection to the west, north and south. These potential connections enable integration with surrounding development if and when those areas are developed. A plan showing the extent to which future connectivity and integration has been provided for is shown on the following Figure. A larger scale plan has been included at **Appendix 11 – Connectivity and Integration Plan** of this report.

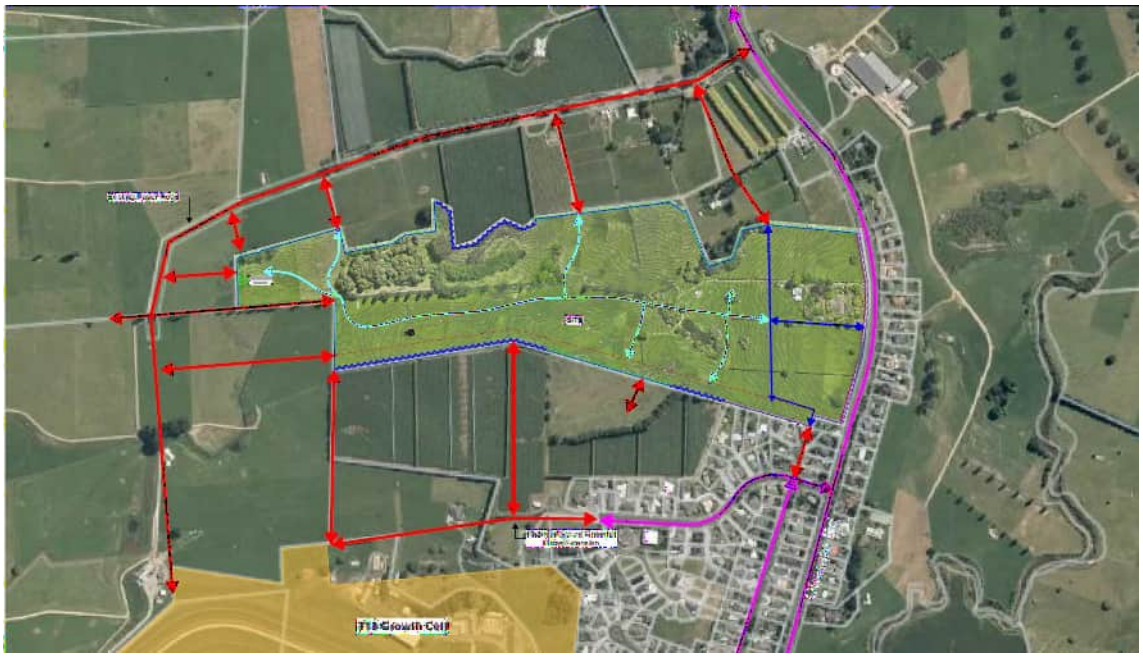


Figure 11: Planned Provision for Future Connectivity and Integration

The Figure shows the following strategic future network integration provisions included within the proposed development site:

- Multiple connection opportunities to the north linking with the current paper road corridor;
- Multiple westerly connection provisions with the potential to connect to a future extension of the northern paper road, particularly where that is progressed south to link with the current T13 Growth Cell;
- Connection provisions between the site and both the T13 Growth Cell at multiple locations; and
- A future connectivity provision between the site and Innes Place.

The Applicant has actively investigated the connectivity options and has advised it does not own or control and is not able to reasonably or practically secure the adjoining land parcels at the present time. It has determined that connections to the local road network are not required to safely, conveniently, or efficiently enable the proposal, which has been accepted through the Fast Track application gateway. Accordingly, access via the proposed safe system roundabout on SH3 has been assessed as the best and safest arrangement for the site.

Specific assessment has been made in relation to the potential for connectivity and integration with Innes Place. These have determined that:

- The constraining boundary width of the property at 56 Innes Place is about 11.5m at the road interface;
- Incorporation of the property at 48 Innes Place would establish a width of about 19m;
- The boundary width of Innes Place approaching its intersection with Greenhill Drive measures about 15.0m, as shown on the following image:

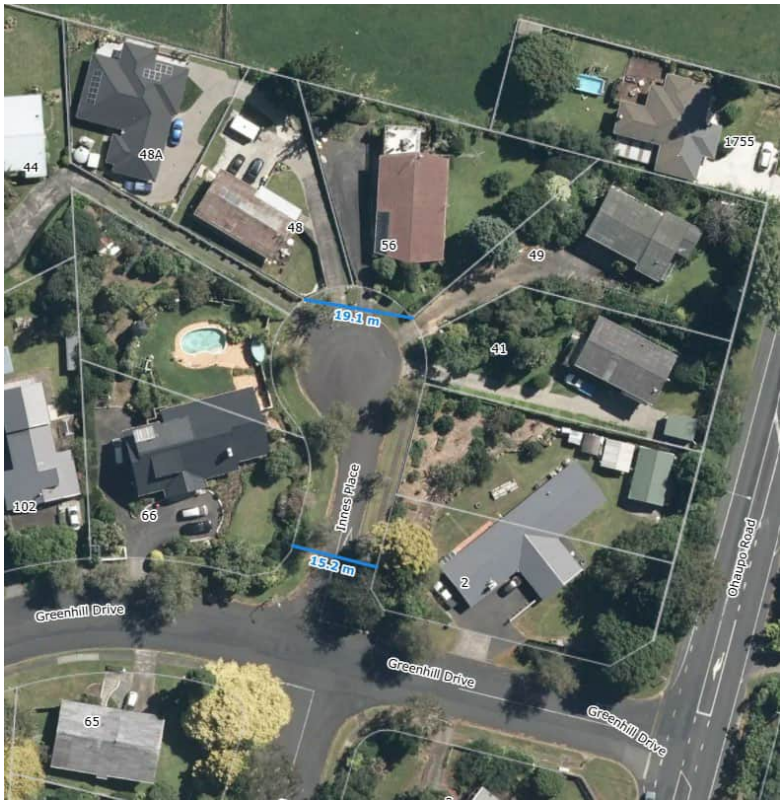


Figure 12: Innes Place Road Corridor Dimensions (Source: Grip Maps)

- The Waipa District Plan Appendix T4 – Criteria for Public and Private Roads specifies a Road Reserve Width of 21.0m for a Residential Local Road;
- The implication of these dimensions is that a full vehicular access to Greenhill Drive is not able to be established in accordance with the District Plan and would necessitate the acquisition of all of the 10 properties to enable a complying boundary adjustment to align with the District Plan. The requirement is assessed as impractical and unreasonable;
- Notwithstanding this, the potential for a non-vehicular connection to support, walking, cycling, scooter and public transport access continues to have merit having regard for the alignment of Innes Place with Taylors Ave. For these reasons the Applicant has determined to future-proof the potential for an alternative transport mode link within its site.

Alternative connectivity between the site and the western end of Greenhill Drive has also been investigated. Again, an unowned land parcel would need to be crossed. The shortest possible distance to enable a connection would involve a distance of about 330m of roading as shown on the following image:



Figure 13: Indicative Connectivity Distance between the Subject Site and Greenhill Drive (Source: Grip Maps)

To enable access and an extension of the Greenhill Drive road boundary width, the acquisition of 3 parcels would be required as shown on the following image:



Figure 14: Land Parcels between the Subject Site (to the north) and Greenhill Drive (Source: Grip Maps)

Further connectivity investigations have been progressed in terms of linkages to the north and west, with a paper road corridor. Again, unowned property separates the site from the paper road, as is shown on the following image:



Figure 15: Land Parcels between the Subject Site (to the south) and the Paper Road (to the north) (Source: Grip Maps)

The shortest boundary crossing is about 90m to 110m in length. Subject to the point of access to the unformed paper road corridor, up to about a 1.2km length of road would also need to be established and would continue to rely on access via an intersection with the state highway.

On the basis of these further investigations the Applicant has determined that making an appropriate provision within the subject site, which is able to be controlled, and to enable future connectivity and integration, not foreclosing the potential, is the safest and best transport outcome for the proposal.

5.4 Multi-Modal Transport Network

The proposed transport network has been developed to support a range of travel modes including walking and cycling. The proposed multi-modal network is shown as Figure 16 below. A higher definition version of the plan can be found in **Appendix 22a - Landscape Architecture Plans** of the Substantive Application Report.

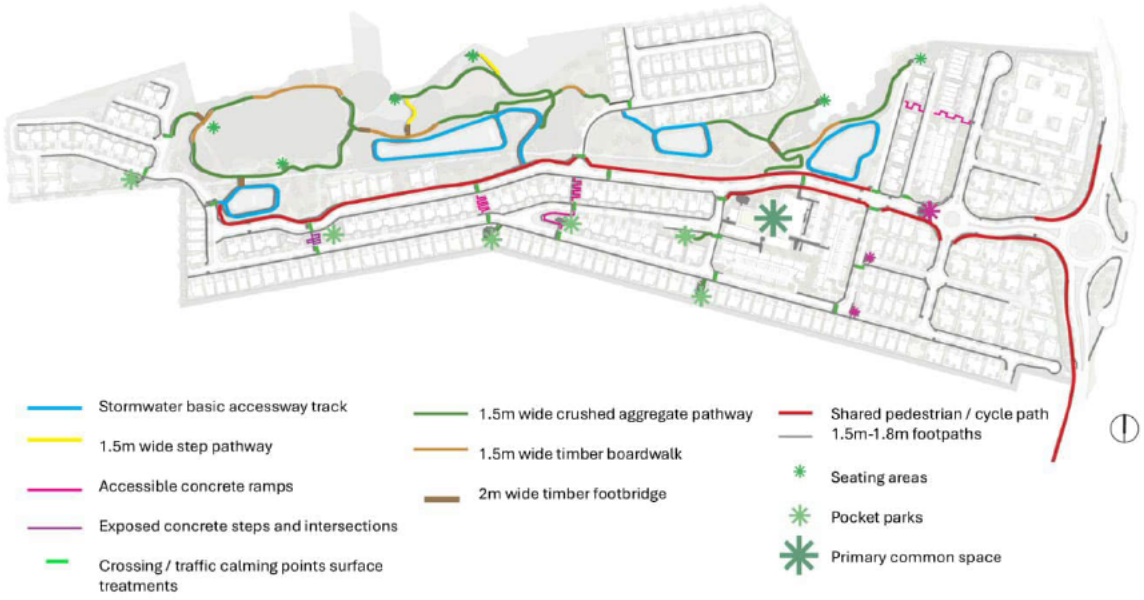


Figure 16 Multi-Modal Transport Network (Source: Earl Design)

The main east-west corridor has been designed as a multi-modal street that accommodates general traffic and active transport, featuring a 2.5 m wide shared pathway that is proposed to connect residential areas in the west of the site through to the proposed roundabout on Ohaupo Road SH 3. The layout of the pathway network has also been designed to achieve alignment with the Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling.

All remaining local access roads throughout the development are proposed to have a footpath on at least one side of the road.

5.5 Proposed Road Cross-Sections

The proposed road typologies include:

- A residential collector road running east-west through the site;
- Minor residential local roads; and
- Shared access lanes.

These roads within the development variously include provision for facilities such as shared paths, on-street parking where appropriate, streetscape planting and landscaping, and sufficient berm width to accommodate underground services and other infrastructure. Landscaping and utility service needs are addressed by other experts in other parts of the Application. The proposed cross-sections are shown indicatively as Figure 17 to Figure 22 below. These together with larger scale and more comprehensively detailed perspective images are incorporated in **Appendix 17 – Civil Engineering Plans** of the Substantive Application Report.

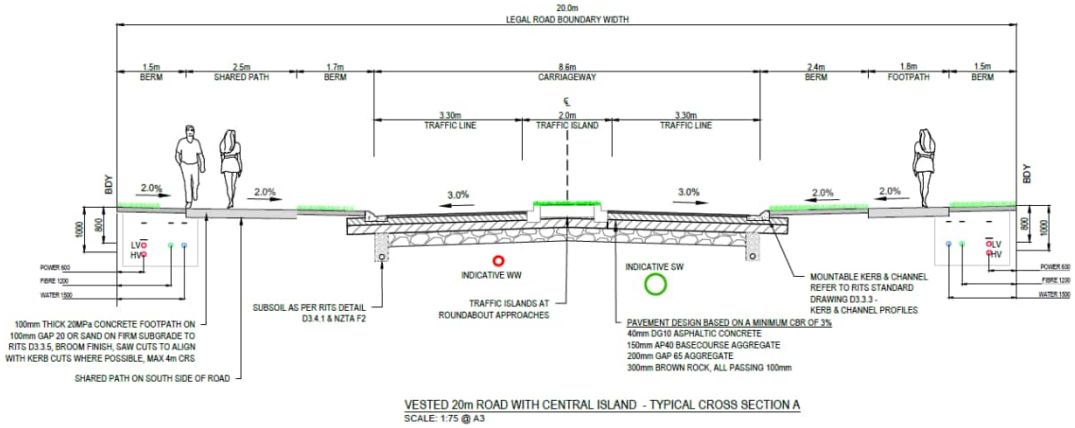


Figure 17 - Vested Collector Road 1 (between Ohaupo Road SH3 and internal roundabout) typical cross-section: (Source: Maven Consultants)

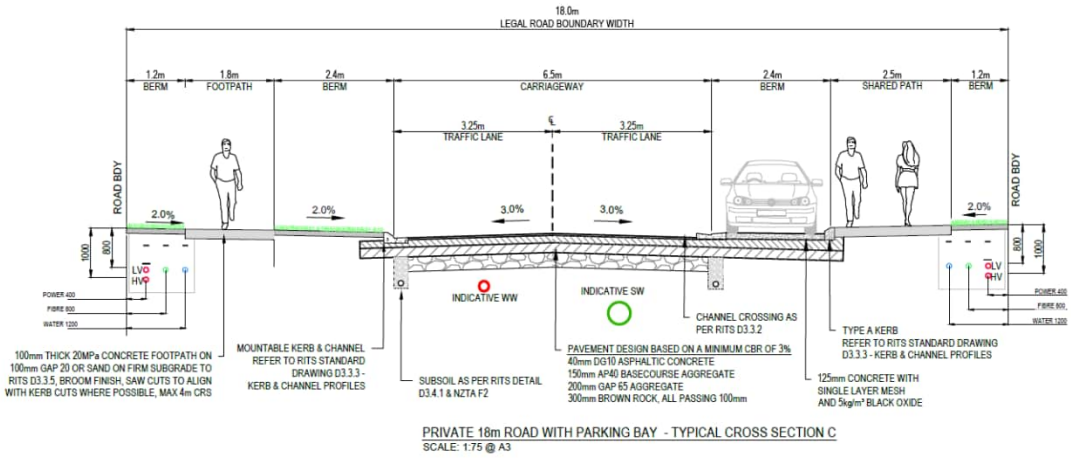


Figure 18 - Private Collector Road 1 (west of internal roundabout) typical cross-section: (Source: Maven Consultants)

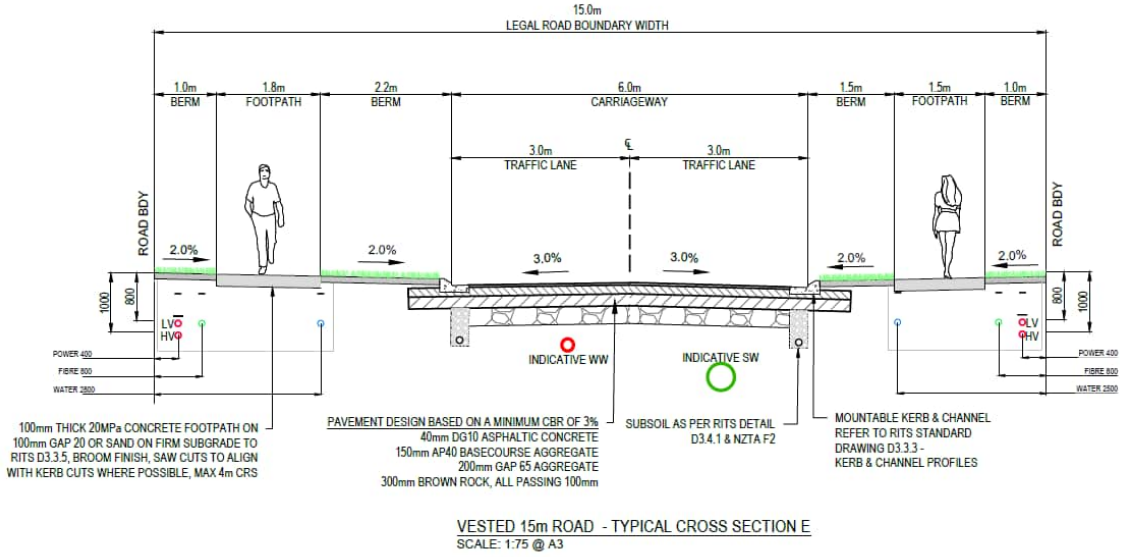


Figure 19 Vested Local Road 2 and 3 typical cross-section: (Source: Maven Consultants)

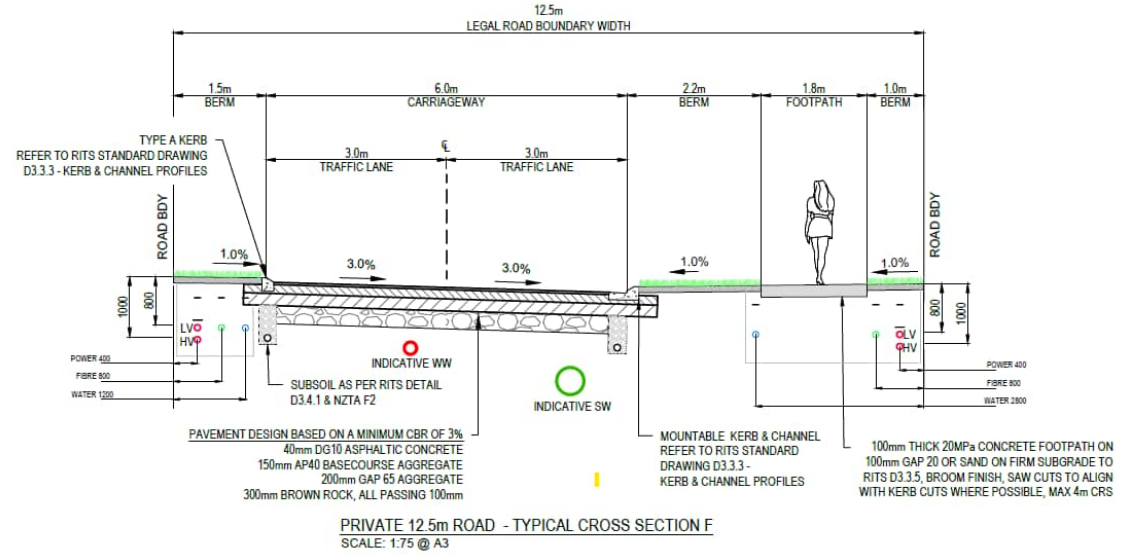


Figure 20 - Private Local Road 2, 5 and 7 and part of 13 typical cross-section: (Source: Maven Consultants)

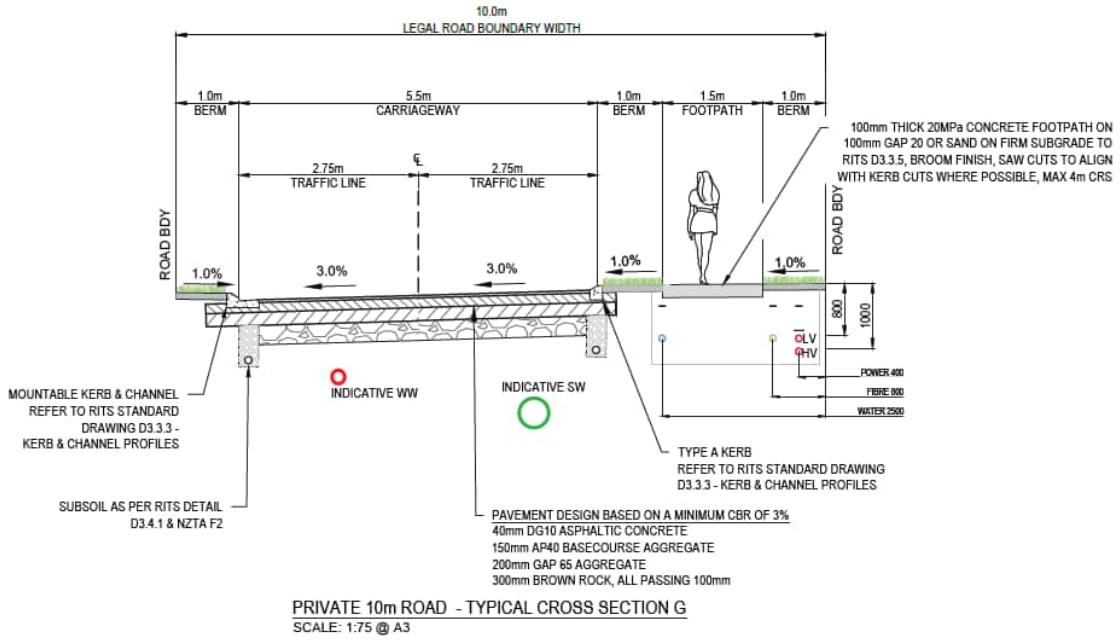


Figure 21 Private Local Roads 4, 6, 9-11, 13-16 typical cross-section: (Source: Maven Consultants)

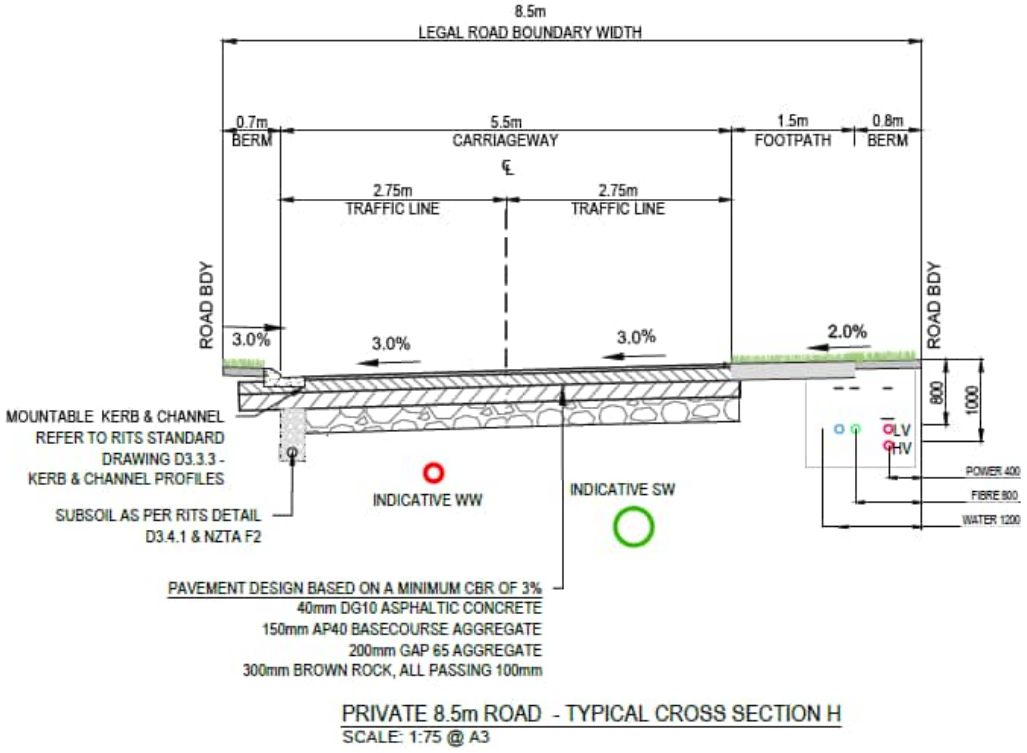


Figure 22 Private ROW 08 typical cross-section: (Source: Maven Consultants)

As can be seen, a range of cross sections are proposed and respond to the hierarchical function and use demands. The more significant cross-sectional width are proposed in response to the public access areas and proposed vested parts of the road network. The

proposed vested parts of the road network have been designed to reflect the local and potential through movement function. Based on engagement and assessment of the public transport network it has been assessed that these roads will not be required to support public transport servicing in future, with this being consolidated in a higher frequency service within the state highway corridor. An assessment and further description of the proposed cross section is set out at section 7.10.

5.6 Intersections

Conceptual designs for a range of intersections within the development site are documented within the civil design package prepared by Maven Consultants (**Appendix 17 – Civil Engineering Plans** of the Substantive Application Report). This package includes the design of the proposed roundabout on Ohaupo Road SH3, as well as the internal roundabout within the site.

5.6.1 Ohaupo Road SH 3 Roundabout

In collaboration with NZTA, the intersection layout for the Ohaupo Road SH3 roundabout has been informed by the transport modelling undertaken for the development, including the strategic WRTM, and supplementary SIDRA assessments. This modelling has identified key movement patterns, turning demands, and network sensitivities, which have in turn informed the selection of intersection form, lane configurations, and control type. Several design options have been explored for the intersection of the development access road and Ōhaupō Road SH3.These options are discussed further in Section 7.4.

The proposed layout of the roundabout is shown below as Figure 23. The roundabout design incorporates two bus stops, located on Ohaupo Road SH 3, north and south of the entrance road to the development. These stops will provide public transport connections to/from Te Awamutu and to/from Hamilton and Cambridge. The roundabout also includes footpaths and pedestrian crossing points, to ensure pedestrians can access all properties and bus stops adjacent to the roundabout.

The plans and diagrams in **Appendix 17 – Civil Engineering Plans** of the Substantive Application Report demonstrate that the proposed design, including its horizontal and vertical alignment, achieves the relevant sight distance and visibility requirements in accordance with Austroads guidance.



Figure 23 Concept design of proposed roundabout on Ohaupo Road SH 3 (Source: Maven Consultants)

While the recorded crashes discussed in Section 2.4 indicate a range of driver behaviours and external factors, rather than any one underlying safety issue, they do demonstrate the potential consequences of driver error within the existing road environment. The proposed roundabout will introduce a lower-speed, channelised intersection environment that will better define vehicle paths and reduce the likelihood and severity of potential conflicts. The proposal will therefore safely accommodate development-generated traffic while also providing a providing a wider road safety benefit for existing users of SH3.

5.6.2 Internal Roundabout and Intersections

Within the development area, intersections have been designed to align with the proposed road hierarchy and intended street functions, supporting appropriate operating speeds and safe interaction between vehicles, pedestrians and cyclists. The selection of intersection types (including the internal roundabout and priority-controlled intersections) reflects the expected traffic volumes and movement patterns at each location.

The detailed design of all intersections will be confirmed at detailed design stages, in consultation with the relevant road controlling authorities. This will include confirmation of geometry, lane arrangements, traffic control, and any associated safety or operational features, consistent with the applicable design standards and the conditions framework outlined in Section 14.0. Proposed conditions require designs to be in accordance with the RITS and/or relevant (Austroads) roading design standards and further safety audit procedures are recommended in accordance with the RITS requirements.

5.7 Car Parking

Car parking is proposed to be provided through a combination of on-site parking within individual residential lots, on-street parking within the road network, and dedicated car parking spaces for the residential apartments, Care Home (55 spaces) and Community Hub (29 spaces). This approach is consistent with the intended urban form of the development and

supports the creation of a walkable neighbourhood environment while ensuring that typical parking demand can be accommodated without adverse effects on the transport network.

For residential development, parking supply is primarily provided within individual lots. The National Policy Statement – Urban Design (**NPS-UD**) directed the removal of parking minimums from District Plans and as a consequence there are no minimum parking requirements for the proposed land uses in the WDC District Plan.

Notwithstanding this, the Applicant recognises the market demand for on-site parking, the environmental benefits associated with balancing parking supply, and the need to avoid adverse effects associated with parking overspill. The table below provides a summary of the number of parking bays for each activity type within the development.

Table 5-1 - Parking spaces for each activity type within the development

Activity Type	Parking spaces available
On-street parking bays	49
Residential parking (within garages and driveways)	414 (minimum)
Off-street parking for apartment blocks	120
Community Hub	29
Care Home	55

The proposed development incorporates approximately 49 on-street parking spaces within the internal road network. Together with the parking provided within residential lots (1 space per dwelling stacked in front of the garage door for the unit – 414 off-street parking spaces in total), the dedicated apartment parking areas, the Care Home, and the Community Hub, this on-street parking supply is expected to readily accommodate visitor parking demand beyond that established within the sites, while supporting the walkable neighbourhood character of the development.

Further analysis is provided within section 9.0. The road cross-sections (described above at Section 5.5) incorporate dedicated recessed on-street parking spaces where appropriate, consistent with the intended road hierarchy and land use context.

5.8 Access Gates and Security Control

The development will feature vehicle and pedestrian access gates on the western side of the internal roundabout at the beginning of Private Collector Road 01, marking the transition from the vested road network to the private roads within the development. The vehicle access gates are intended to be maintained in an open position generally between 6:00 am and 6:00 pm, or during daylight hours from dawn to dusk, as appropriate. Outside these hours, vehicle entry will be controlled through an intercom and keypad system, with radio frequency identification (RFID) capability and/or other remote access for residents. The intercom will include a call function that enables visitors to contact the resident they are visiting or a managed point of call service (or other similar arrangement to provide for absent resident responses or after-hours access), who can then remotely open the gate. Vehicle egress while the gates are closed will be automatically managed through an in-ground traffic detection loop, while a manual release switch located near the gate will provide an alternative means of opening it, including during an emergency.

The pedestrian access gate will operate in conjunction with the vehicle gates and will remain unlocked during the same opening hours. When the gate is locked, pedestrian entry will be managed through a similar intercom and keypad system, enabling residents to enter directly and visitors to contact the relevant resident for access. Pedestrian egress will be available via a gate-release button located on the internal side of the gate.

There will also be vehicle and pedestrian gates at the western end of Private Local Road 05 and Private Local Road 02, as shown in the Figure below. These gates will open and close automatically at the same time as the main gates and will not feature or be controlled through an intercom and keypad system for vehicles. This ensures all vehicle access outside of the gate opening hours is via the main gate.

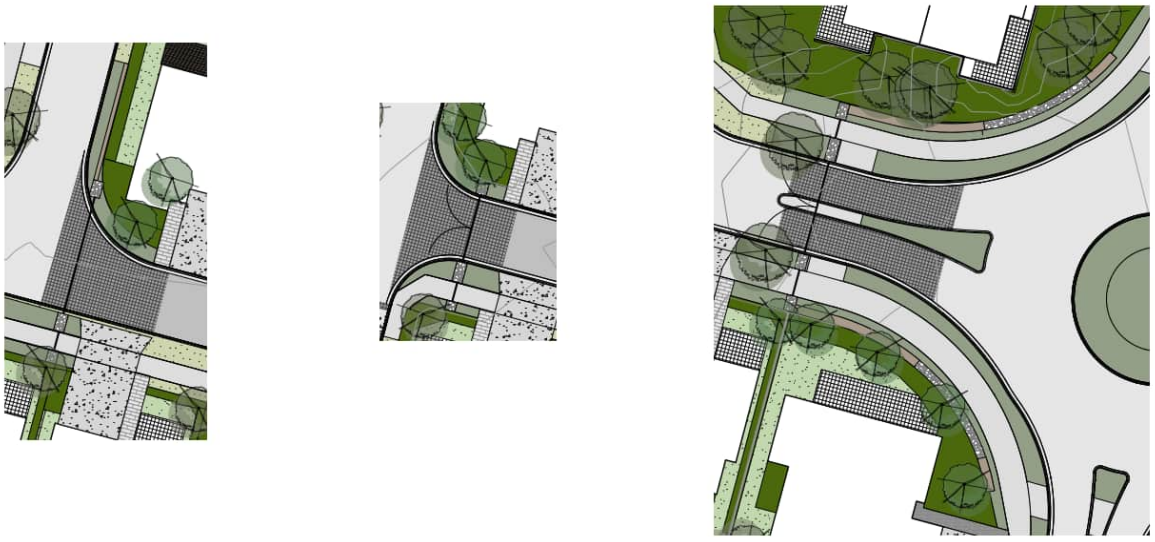


Figure 24 - Concept designs of the three gates at Private Local Road 02, 05 and Private Collector Road 01, respectively (Source: Earl Design)

6.0 Transport Engagement

Engagement has been led, coordinated and undertaken by BBO in terms of the overall project proposal. The comprehensive commentary and undertakings in relation to engagement is documented in the Assessment of Environmental Effects (AEE) prepared by the Planning advisor.

The transport planning engagement has been a contributor to overall engagement across all of the disciplines. A summary of this engagement participated in by Boffa Miskell and for which there is a written record of communication, is set out in the following Table:

Date	Organisation	Purpose	Subject
20 February 2026	NZTA	A memorandum is to summarise some of the key traffic and transport observations and analysis as a framework for discussion and engagement with the New Zealand Transport Agency (NZTA)	This initial information memorandum incorporated the following: An introduction to the development proposal; • A description of existing transport environment and District Plan transport policy context; • A description of the Fast Track development proposal; • Trip generation research assumptions and demand forecasts; • Intersection option and performance assessment, evaluation, optimisation and mitigation; and • Conclusions.
27 March 2026	NZTA	Receipt of a request for further information received from NZTA in response to the 20 February 2026 correspondence	
21 May 2026	NZTA	A memorandum to respond to the comments dated 27 March 2026 made by NZTA following initial	The memorandum incorporated a detailed review and response to NZTA feedback, including information on the following:

Date	Organisation	Purpose	Subject
		engagement dated 20 February 2026	• Connectivity to Local Roading Network; • Intersection options for Ohaupo Road SH 3; • Trip Generation; • Roundabout Safety / Capacity / Design; • Active Mode Connectivity; • Bus Stop Provision; and • Recommended conditions
18 June 2026	NZTA	An online meeting with NZTA to engage in relation to the information supplied in the 21 May 2026 response	
1 July 2026	NZTA	A written response from NZTA in reply to the 21 May 2026 memorandum	
11 September 2026	NZTA	A memorandum is to respond to the comments made by NZTA during an online meeting on the 18/06/26 and in a written response on 01/07/26.	The memorandum incorporated a detailed review and response to NZTA feedback, including information on the following: • Connectivity to Local Roading Network; • Intersection options for Ohaupo Road SH 3; • Trip Generation; • Roundabout Safety / Capacity / Design; • Active Mode Connectivity; • Bus Stop Provision; and • Recommended conditions.

Date	Organisation	Purpose	Subject
29 September 2026	NZTA	An email request for further information in response to the 11 September 2026 memorandum	
7 October 2026	Waikato Regional Council (WRC)	An online inquiry in relation to the Applicant's proposed provisions for public transport and bus stops at the roundabout	
8 October 2026	WRC	An emailed form of response from WRC to the public transport and bus stop inquiry dated 7 October 2027	No identification of any matters in relation to the bus services and a referral to engage with Waipa District Council in relation to the bus stop proposal
8 October 2026	Waipa District Council (WDC)	A phone conversation from WDC in relation to the proposed bus stops	The elements of the bus stops, associated access and infrastructure were discussed and described to inform a Council response, which is summarised below dated 16 October 2026.
9 October 2026	WDC	A memorandum to WDC to introduce the bus stop proposal at the roundabout north of Greenhill Drive	The contents of the memorandum addressed the following: • The Fast Track Development Proposal; • Current bus stop environment • Bus stop proposal • Request for Council to consider the proposal and provide feedback • Incorporation of plans for the proposal
16 October 2026	WDC	A response from WDC confirming support for the bus stop proposal and providing some further recommendations in relation to	The WDC response is noted as follows: ***We are in support of your bus stop proposal.*** • *The overall layout is good with the recessed bus stops on the roundabout departure legs.*

Date	Organisation	Purpose	Subject

		staged implementation of associated infrastructure	• *The footpath connectivity is good, but we would support a simplification/reduction of scope and reduction of the number of crossing points to create a safer and better experience for bus stop users:*
			  ○ *Consider just one crossing of SH3 – on the southern side – where there is inherently slower traffic and better horizontal deflection to ensure Safe System Approach speeds of 30km/hr at the crossing point*
			  ○ *Considering altering the footpath arrangements for Road 2 – no crossing point on the roundabout access leg and suggest a footpath on the property side of this road.*
			  ○ *Noting that these are all matters for the design and safe system audit process.*
			Bus 24 Hail & Ride existing stop by Greenhill Drive
			• *We would recommend and work with the Waikato Regional Council to remove this informal stop from the bus 24 service upon completion of your development.*
			Bus stop infrastructure detail
			• *Reference table 4 of the NZTA Public Transport Design Guidance: Bus Stop document.*
			• *We would want a pair of Intermediate stop types with the following clarification:*
			  ○ *Shelters with lighting is optional – but we request that there be sufficient berm width available for possible future installation*

Date	Organisation	Purpose	Subject
			○ *Crossing facility close to bus stop is essential*
Response in development at the time of writing this assessment.	NZTA	The purpose of this memorandum is to respond to the comments made by Waka Kotahi NZ Transport Agency (NZTA) in its email correspondence dated 29 September 2026	The further information request (29/09/2026) has been structured in relation to a narrowed and more detailed range of subject described under the following headings: • Connectivity and access; • Roundabout design, operation and visibility; • Active modes, public transport and pedestrian provision; • Safe System Audits, lighting and approvals; • Recommended conditions of consent; and • Next steps

Table 6-1: Summary of Transport Engagement

Purposeful, early and committed engagement has been undertaken with the NZTA. There has been comprehensive feedback to the applicant from the Agency and the applicant has comprehensively embraced the communication, incorporating specific and detailed elements into the design process for the state highway works proposed. The Applicant maintains that it is committed to continuing engagement with NZTA post lodgement and throughout the subsequent implementation phases, subject to consent being granted.

Each of the subsequent engagements with NZTA has progressively focussed on more and more detailed design matters and this is reflected in the Appendix 24 – Record of Engagement and Consultation in the Substantive Application Report. At the time of undertaking this assessment engagement is continuing. A further information request was received from NZTA on 29 September 2026. The request noted that "substantial progress had been made" but sought further information in relation to detailed design matters. Engagement with NZTA will continue once the application is lodged, and in our view based on the further information requested it is unlikely that the outstanding issues are unable to be resolved between the Applicant and NZTA in due course. That further information relates to the following matters, for which some of the response information has been incorporated into this assessment report:

- Connectivity and access: the context and information related to this is incorporated at section 5.3.2 of this assessment. The site and proposal demonstrate a comprehensive provision for and ability to be integrated with adjacent land parcels and current Te Awamutu Growth Areas.
- Roundabout design, operation and visibility at the roundabout: The matters relate particularly to detailed design aspects for the roundabout and will be responded to min detail. By way of a summary, the matters on inquiry are not matters that affect the ability to achieve an appropriately safe and efficient roundabout within the road and land area indicated and proposed to be set aside. Further supporting the responses, transport conditions have been prepared and are proposed at Appendix 29 – Draft WDC Conditions of the Substantive Application Report.
- Active modes, public transport and pedestrian provision: These inquiries relate to the proposed shared path to be established linking the roundabout to Greenhill Drive. There is ample space and width within the current berm to accommodate the proposed shared path and further, conditions are proposed at Appendix 29 – Draft WDC Conditions of the Substantive Application Report to ensure the safety of the proposal through the detailed engineering design phase.
- Safe System Audits, lighting and approvals: Provision is proposed within the conditions at Appendix 29 – Draft WDC Conditions of the Substantive Application Report to require these well-established practices assuring a safe roundabout design is delivered for all users.

By way of an overall summary, the developed concept design for the proposed roundabout within the state highway environment has incorporated the requirements that have been engaged with NZTA and further the recommended conditions have been developed to ensure the ultimate design outcome is appropriately safe, efficient and convenient for all road users. The proposal demonstrates that the roundabout, associated path and public transport elements is the safest and best traffic outcome.

7.0 Transport Planning Effects Assessment

The overall transport modelling assessment methodology, including engagement on and refinement of the modelling findings, is described and summarised in the following sections.

7.1 Transport Modelling Scope

Early engagement with WDC confirmed the transport assessment methodology should be based on transport modelling progressed within the Waikato Regional Transport Model (WRTM) regional transport model. The purpose of undertaking the assessment in this way is to enable the potential future transport effects due to the proposal to be assessed taking into account the anticipated future land transport and regional land use and associated traffic growth environments. This includes the ability to evaluate the potential transport effects at the point of access of the proposed development with the road network, as well as the potential development effects on the wider transport environment.

The WRTM is administered on behalf of the region's Councils by CoLab, the shared services provider for the region. Stantec is the modelling consultant contracted to CoLab to undertake the modelling task and provide the results for interpretation and evaluation by the Applicant.

A modelling scope and brief was agreed with CoLab/Stantec and is included at **Appendix 3**. By way of a summary the modelling was scoped as follows:

- Three new zones were created within the model to represent three areas of staged development within the proposed site;
- Model scenarios were determined to include:
    - 2025, 2035 and 2045 AM and PM peak period Do Minimum modelling (without the proposed development)
    - 2025 and 2035 AM and PM peak period Stage 1 of the proposed development; and
    - 2035 and 2045 AM and PM peak period Stage 2 of the proposed development.
- Loaded model network information was supplied for further evaluation by the Applicant. The outputs from the modelling included intersection and link level of service (LOS) performance characteristics.

The transport modelling assessments have been undertaken on the basis of the following land use assumptions which were established early on in the development planning process:

Table 7-1 - Summary table of the land uses proposed within each stage – adopted in the WRTM Modelling

Development stage	Activity	Quantum	Unit
Stage 1	Retirement Units	102	units
	Retirement Care home	100	beds
Stage 2	Retirement Units	336	units
	Community Hub	1000	GLFA

Consequent site-specific design development has resulted in an altered proposed staged delivery of retirement units and a reduced total development proposal as follows:

Table 7-2 - Summary table of the land uses proposed within each stage – for the Application

Development stage	Activity	Quantum	Unit
Stage 1	Retirement Units	134	units
	Retirement Care home	100	beds
Stage 2	Retirement Units	280	units
	Community Hub	1646	GLFA

The refined proposal the subject of the application has brought forward 32 units into the stage 1 delivery and has resulted in an overall reduction of 24 units (7%) in the total number of units. The care home beds have remained constant throughout the proposal. These changes are considered and described further in the assessments that follow.

The results from the WRTM modelling, including more specific link and intersection evaluations, are described in the following sections.

7.2 Trip Generation

The potential trip generation expected due to the development proposal has been assessed to both inform the traffic demands and to ensure the WRTM modelling appropriately represented the total transport demands on the future transport network. The CoLab/Stantec model brief describes how the retirement living traffic demands are represented in the transport model. The model is incapable of representing retirement living and care bed facilities specifically. A representative household land use approach has therefore been adopted, with the land use inputs to the model specified to achieve the identified trip generation demand expectation, separately determined, for the retirement activity proposed. A consequence of this approach is that the trip distribution outcomes within the WRTM may not represent fully the distributed pattern of movement that might reasonably be expected due to the proposed activity. A subsequent sensitivity modelling approach has been assessed, and is described in the following sections, to examine the sensitivity of the modelling analyses to alternative trip distribution outcomes.

The trip generation due to the proposed activity was specifically assessed to inform the WRTM modelling. The assessment methodology is set out in the memorandum attached as **Appendix 3**. Trip-generation demand has been determined on the following methodology:

- The trip rate demand potential was researched from a range of relevant references sources;
- These were compared and contrasted with New Zealand specific retirement village traffic survey data. The lower data-point reference sources have been discounted as outliers and excluded from the determination of potential trip generation for the proposal;

- The profile of peak trip rate demands generated by the activity, i.e.: the site peak trip demands, were contrasted with the peak demands that are expected to coincide with the peak hour of the road network, based on the New Zealand traffic surveys.

On the basis of these assessments the recommended trip rates were identified, representing the 85th percentile peak trip demands corresponding with the road network peak period. The identified trip rates determined are shown in the following Table.

Table 7-3: Average trip rates taken from all rates listed in Table 5.1 and the modelled trip rates used

Activity	Peak period	Trip rate	Modelled Trip Rate Assumption
Retirement Units	AM	0.17	0.23 per unit
	PM	0.23	0.23 per unit
Retirement Care Home	AM	0.18	0.23 per bed
	PM	0.24	0.23 per bed

The corresponding peak period trip demands for the staged development proposal have therefore been defined as shown in the following Table:

Table 7-4: Forecast Development Vehicle Trips

Vehicle Trips	AM Peak (vph)	PM Peak (vph)	Daily
Stage 1	46	46	483
Stage 2	116	129	1207
Total - Full Development	162	176	1690

The Table shows that the total potential for site trip generation is expected to increase as the staged development progresses. At full development, the proposal is expected to generate:

- AM peak hour of the road network: 162 vph (two-way total); and
- PM peak hour of the road network: 176 vphr (two-way total).

These traffic generation demands were specified for representation in the WRTM modelling by CoLab/Stantec.

7.3 WRTM Model Results

The Waikato Regional Transport Model (WRTM) model results were provided to describe the intersection and link level of service; and select link plots showing the modelled origin and destination of trips associated with the proposal.

7.3.1 Area of Influence of Proposed Development

An area of influence has been defined to identify the extent of the surrounding transport network over which the proposed development may reasonably be expected to generate material traffic effects.

Establishing this area enables the assessment to focus on those parts of the network where development-related traffic has the potential to materially affect operation. It also assists in distinguishing the effects of the development from changes in traffic conditions that arise from background growth or other unrelated developments on the wider network.

The defined area therefore provides a proportionate basis for determining where detailed assessment is required and where any transport effects can appropriately be attributed to the development.

In this case, the area of influence was identified by comparing WRTM volume and LOS performance outputs for:

- The do-minimum 2045 2-hour model network without the development; against
- The 2045 2-hour model network with the development.

Comparison of these scenarios for each assessment year enables locations where the development is predicted to influence traffic conditions to be identified, and the proportional contribution of development-generated traffic to those locations to be quantified.

Two screening criteria were developed and applied to identify links and intersections where the development has the potential to result in material transport effects.

The first criterion is a change in traffic demand of 10% or more, assessed using peak hour (AM or PM) for links and total peak hour intersection volumes (AM or PM) for intersections.

The second criterion is an operating performance change to LOS E or worse, assessed at either the link or intersection level in the AM or PM peak period, consistent with WRTM performance measures.

The potential area of influence impact assessments are described in the following sections.

7.3.2 Link Level of Service

The link level of service plots are included at **Appendix 5**. The key observations evident from the link LOS are summarised in the following table:

Table 7-5: Link Volume and Level of Service Change Assessment – AM and PM Peak, Northbound and Southbound Summaries

2045 AM Peak Area of Influence Assessment - Links							
Road Network Link Section - Northbound	**Do Min Link Volume (2hr)**	**Development Link Volume (2hr)**	**Development Link Volume Change %**	**Do Min LOS**	**Development LOS**	**Development LOS Change Effect**	**Area of Influence Impact**
SH3 - North of Te Rahu Road Intersection	1449	1551	7.0%	B	C	C	Nil
SH3 - North of Site Access Road	1333	1442	8.2%	B	B	-	Nil
SH3 -Site to Racecourse Road Intersection	1281	1282	0.1%	B	B	-	Nil
SH3 - Racecourse Road to Mutu St Intersection	1203	1204	0.1%	B	B	-	Nil
SH3 - Mutu Street to Arawata Street Intersection	1185	1186	0.1%	B	B	-	Nil

2045 AM Peak Area of Influence Assessment - Links							
Road Network Link Section - Southbound	**Do Min Link Volume (2hr)**	**Development Link Volume (2hr)**	**Development Link Volume Change %**	**Do Min LOS**	**Development LOS**	**Development LOS Change Effect**	**Area of Influence Impact**
SH3 - North of Te Rahu Road Intersection	1587	1688	6.4%	C	C	-	Nil
SH3 - North of Site Access Road	1449	1653	14.1%	B	C	C	Nil
SH3 -Site to Racecourse Road Intersection	1542	1504	-2.5%	C	C	-	Nil
SH3 - Racecourse Road to Mutu St Intersection	1384	1385	0.1%	B	B	-	Nil
SH3 - Mutu Street to Arawata Street Intersection	1152	1155	0.3%	B	B	-	Nil

2045 PM Peak Area of Influence Assessment - Links							
Road Network Link Section - Northbound	**Do Min Link Volume (2hr)**	**Development Link Volume (2hr)**	**Development Link Volume Change %**	**Do Min LOS**	**Development LOS**	**Development LOS Change Effect**	**Area of Influence Impact**
SH3 - North of Te Rahu Road Intersection	2530	2506	-0.9%	E	E	-	Nil
SH3 - North of Site Access Road	2336	2297	-1.7%	D	D	-	Nil
SH3 -Site to Racecourse Road Intersection	2444	2316	-5.2%	E	D	-	Nil
SH3 - Racecourse Road to Mutu St Intersection	2313	2103	-9.1%	E	D	-	Nil
SH3 - Mutu Street to Arawata Street Intersection	1940	1764	-9.1%	D	C	-	Nil

2045 PM Peak Area of Influence Assessment - Links							
Road Network Link Section - Southbound	**Do Min Link Volume (2hr)**	**Development Link Volume (2hr)**	**Development Link Volume Change %**	**Do Min LOS**	**Development LOS**	**Development LOS Change Effect**	**Area of Influence Impact**
SH3 - North of Te Rahu Road Intersection	1862	1929	3.6%	C	C	-	Nil
SH3 - North of Site Access Road	1702	1781	4.6%	C	C	-	Nil
SH3 -Site to Racecourse Road Intersection	1737	1804	3.9%	C	C	-	Nil
SH3 - Racecourse Road to Mutu St Intersection	1622	1598	-1.5%	C	C	-	Nil
SH3 - Mutu Street to Arawata Street Intersection	1306	1284	-1.7%	D	B	-	Nil

The Tables show the following link-volume and LOS changes:

- There are no AM peak period northbound traffic volume effects of more than a 10% volume change. In the AM, the southbound traffic volume immediately north of the proposed site access road indicates a potential 14.1% volume change. This occurs within the context of a link LOS C operating environment and therefore does not indicate an effect that warrants mitigation;
- A minor change from LOS B to LOS C in each of the AM peak periods, indicates there remains ample capacity within the mid-block sections of the road network;
- There are no PM peak period volume changes of more than 10% evident across the network;

- Some of the northbound links are described as operating at LOS D or E in the PM peak period. Introduction of the development proposal does not contribute to a change in the operational LOS, and when considered together with the contributing traffic volume levels at less than 10%, there are no identified areas warranting mitigation as a result of the development proposal;
- Some link sections indicate a minor negative change in traffic volume. The degree of change impact is indicative of some transport model redistribution outcomes. Assessment of the local and surrounding model network indicates this may be principally driven by individual turning movement levels of service at some intersections, however the net change in traffic volume on alternative travel routes or links does not indicate any change effect of more than a negligible degree and there are no consequent effects warranting mitigation;

Overall, it is evident from the transport modelling that the proposed development will not result in a change in the road network performance to more than a minor extent. No link related capacity mitigation is warranted.

7.3.3 Intersection Level of Service

The intersection level of service plots are included at **Appendix 5**. The key observations evident from the intersection LOS are summarised in the following Table:

Table 7-6: Intersection Volume and Level of Service Change Assessment

2045 AM Peak Area of Influence Assessment - Intersections							
Road Network Link Section	**Do Min Intersection Volume (2hr)**	**Development Intersection Volume (2hr)**	**Development Intersection Volume Change %**	**Do Min LOS**	**Development LOS**	**Development LOS Change Effect**	**Area of Influence Impact**
SH3 - Te Rahu Road Intersection	3093	3312	7.1%	E	D	-	Nil
SH3 - Racecourse Road Intersection	2784	2786	0.1%	B	B	-	Nil
SH3 - Mutu St Intersection	3073	3075	0.1%	C	C	-	Nil
SH3 - Arawata Street Intersection	3867	3873	0.2%	B	B	-	Nil
2045 PM Peak Area of Influence Assessment - Intersections							
Road Network Link Section	**Do Min Intersection Volume (2hr)**	**Development Intersection Volume (2hr)**	**Development Intersection Volume Change %**	**Do Min LOS**	**Development LOS**	**Development LOS Change Effect**	**Area of Influence Impact**
SH3 - Te Rahu Road Intersection	4438	4507	1.6%	F	F	-	Nil
SH3 - Racecourse Road Intersection	4081	3825	-6.3%	B	B	-	Nil
SH3 - Mutu St Intersection	4225	4015	-5.0%	D	C	-	Nil
SH3 - Arawata Street Intersection	5508	5405	-1.9%	B	B	-	Nil

The Tables show the following link volume and LOS change effects:

- There are no intersection volume changes of more than 10% evident across the network;
- None of the intersection LOS results indicate a change or deterioration in performance due to the proposal;
- As has been described in relation to the link sections of the models, there are some evident improvement change outcomes produced by the model. Again, an assessment of the reason for this is that it appears to be due to particular and individual turning movement levels of service at some intersection. These have been further assessed and are described in the following sections that consider the specific intersection operational performance changes in more detail.

Overall, it is evident from the transport modelling that the proposed development will not result in a change in the road network intersection performance to more than a minor extent. No intersection related capacity mitigation is warranted on the basis of these WRTM model assessments.

7.3.4 Select Link Plots

The WRTM select-link plots are included at **Appendix 6**. These plots show the modelled distribution of arrivals and departures as being attributable to the proposed activities. These have been prepared for the AM and PM peak periods for each of the 2025, 2035 and 2045 staged development cases. The following key observations can be made:

- 2025 to 2035 Stage 1 AM peak departures from the site are expected to distribute traffic demands in the order of two-thirds to the south towards Te Awamutu and one third to the north;
- The AM peak arrivals are also expected to be distributed in the same northern and southerly travel distributions;
- The PM peak departures are more evenly distributed north and south from the site;
- PM peak arrivals, however, are shown to involve about two-thirds of travel originating from the south;
- The introduction of the second stage 336 retirement units (i.e.: full development of the site), results in an increased trip arrival/departure distribution to/from the north. This indicates the transport movements associated with the independent retirement units are more strongly linked with travel to/from the north, whereas the employment/staffing movements associated with the Care Home are more strongly linked with the local Te Awamutu community environment.

The overall transport network distributive effects associated with the full development are indicative of the potential for predominant transport movement to/from the north. The transport modelling brief however indicated the specific distributive outcomes due to retirement living may not be able to be fully represented in the model, this being simulated in effect by a more generalised living environment activity. The assessments that follow have therefore been developed to include a sensitivity assessment to examine and test the potential impacts arising from an alternative trip distribution case, to ensure the assessment is robust in terms of the potential effects outcomes associated with transport.

7.4 Development Site Intersection Optioneering

Early development and access planning examined a range of access options for the site. These included priority-controlled (Give Way), roundabout and signalised intersection options. These various intersection forms, their relative performance, shape and form and potential for staging were engaged with the NZ Transport Agency and are documented in information responses dated 19 February 2026, 21 May 2026 and subsequent engagement.

The key summary outcomes identified are as follows:

- The signalised options have proven impractical, with the potential to result in lengthy queuing, queuing on the northbound uphill gradient of SH3, and potentially complex to effectively and safely integrate residential access driveways on the eastern side of SH3;
- The priority-controlled arrangements maintain an uninterrupted traffic flow along the highway corridor and have some capacity to accommodate an early stage of development activity generated by the site. Traffic delay effects are internalised to the site generated traffic demands with any effect on the state highway traffic movement minimised. Development staging could potentially be established, defining a specific trigger at which a roundabout will need to be established to safely and efficiently provide for all movements;
- The roundabout controlled intersection results in efficient traffic flow outcomes long-term for all movements, it is significantly more efficient for state highway traffic compared to the traffic signal case and will provide a safe long-term intersection arrangement.

7.4.1 Intersection Performance Optioneering Evaluations

Results from the staged development assessments comparing staged establishment of a T-intersection for Stages 1A-D and introduction of a roundabout to support the remaining development are summarised in the following Table:

Table 7-7: SH3 / Development Site Intersection Optioneering Assessment – Intersection Modelling Performance

Performance Summary	Approach Level of Service			RT-Out Movement Performance			
2026 Count Adjusted Demands	Ohaupo Road South	Ohaupo Road North	Development Access	No. Vehicles	Delay	LOS	95% Queue (m)
Stage 1A AM	A	B	C	3	33	D	1
Stage 1A PM	A	B	C	2	38	E	1
Stage 1A-B AM	A	B	C	10	34	D	1
Stage 1A-B PM	A	B	D	6	40	E	1
Stage 1A-C AM	A	B	C	13	35	D	1
Stage 1A-C PM	A	B	D	10	41	E	1
Stage 1A-D AM	A	B	D	18	36	E	1
Stage 1A-D PM	A	B	D	14	43	E	1
Stage 1A-D AM RAB	A	A	B	18	12	B	1
Stage 1A-D PM RAB	A	A	A	14	11	B	1
Stage Full Development AM RAB	A	A	B	48	13	B	1
Stage Full Development PM RAB	A	A	A	15	12	B	1
2035 Count Adjusted Demands	Ohaupo Road South	Ohaupo Road North	Development Access	No. Vehicles	Delay	LOS	95% Queue (m)
Stage 1A AM	A	C	D	3	43	E	1
Stage 1A PM	A	C	E	2	69	F	1
Stage 1A-B AM	A	C	D	10	44	E	1
Stage 1A-B PM	A	C	E	6	73	F	1
Stage 1A-C AM	A	C	D	13	45	E	1
Stage 1A-C PM	A	C	F	10	80	F	1
Stage 1A-D AM	A	C	D	18	49	E	1
Stage 1A-D PM	A	C	F	14	88	F	1
Stage 1A-D AM RAB	A	A	B	18	13	B	1
Stage 1A-D PM RAB	A	A	B	14	14	B	1
Stage Full Development AM RAB	A	A	B	48	13	B	1
Stage Full Development PM RAB	A	A	B	15	14	B	1
2045 Count Adjusted Demands	Ohaupo Road South	Ohaupo Road North	Development Access	No. Vehicles	Delay	LOS	95% Queue (m)
Stage 1A-D AM RAB	A	A	B	18	15	B	1
Stage 1A-D PM RAB	A	A	B	14	16	B	1
Stage Full Development AM RAB	A	A	B	48	16	B	1
Stage Full Development PM RAB	A	A	B	15	16	B	1

The following key performance outcomes are evident from the Table:

2026 Demands

- In 2026, the T-intersection and approach levels of service are in the range of LOS A-D for the proposed Stages 1A -D;
- The right turn movement from the site is indicated as LOS E in the PM peak only. The average delay is 43 seconds per vehicle (marginally over the LOS D – E threshold), only 14 vehicle movements are impacted and the 95% back of queue is just one (1) vehicle;

2035 Demands

- In 2035, for Stages 1A-D, the right turn from the site just passes from LOS D to E in the AM and deteriorates to LOS F in the PM peak.
- The PM peak delay increases to 88 seconds per vehicle, which is not inconsistent with delay typically encountered at peak times at major or signalised intersections on the network. Notably, only the site traffic movement is impacted involving just 14 vehicle movements, the 95% back of queue is just one vehicle;
- Overall, it is apparent that Stages 1A-B are at or about a threshold beyond which a roundabout would be required, whether or not further development occurs on the site.

2045 Demands

- Traffic demands beyond 2035, including full development of the site by 2045, warrant implementation of a single-lane roundabout;
- A single lane roundabout is assessed as operating at LOS A – B on all approaches.

On the basis of these assessments it is evident that:

- The capacity of a T-intersection could support development up to Stages 1A-D only and to 2035 forecast growth levels only;
- State highway traffic movements, both northbound and southbound, are unaffected in terms of movement capacity for the period 2026 to 2035 minimising the potential traffic impacts for those movements in the case of a T-intersection;
- Beyond 2035, whether or not further development is progressed, a roundabout would be warranted; and
- A single lane roundabout will have adequate capacity to support full development of the proposal to 2045 with an operating LOS B at that time and ample residual capacity to support future growth.

7.4.2 Intersection Safety Optioneering Evaluation

A review of the NZTA CAS database indicates that four crashes were recorded adjacent to the site between 2015 and 2026. Of these, three were classified as non-injury crashes and one as a serious crash. The serious crash involved a northbound vehicle crossing the centreline into the path of an opposing southbound vehicle, while the three non-injury crashes were attributed to driver fatigue and a vehicle following too closely as another pulled out of a driveway.

To further inform the forecast road safety risk environment, the relative safety performance of the T-intersection and the roundabout has been assessed in accordance with the NZ Transport Agency *Crash Estimation Compendium* guidance. The results of the assessment are summarised in the following Table:

Table 7-8: Comparative Safety Evaluation and Comparison of a T-Intersection and a Roundabout at the Site Intersection

Harlow Alternative Intersection Crash Risk Analyses

Intersections - Product of Flow Models (Section 6.0 of Waka Kotahi's Crash Estimation Compendium)

Injury crashes (priority and traffic signals) = b0 x Qmajor^{b1} x Qminor^{b2} x Sum of CMFs

Injury crashes (roundabouts) = b0 x Qapproach^{b1} x Sum of CMFs

Crash Prediction Analysis for the Proposed Intersection Options

		ADT Inputs		Priority T-Intersection					
Scenario	**Total Units**	**Qmajor 1**	**Qminor 1**	**b0**	**b1**	**b2**	**A_T (Injury Crashes / year)**	**Adjusted A_T (Injury Crashes / year)**	**Adjusted A_T (Years per injury crash)**
T- Intersection Urban 50-70km/h									
2026 Flow Demands									
Stage 1A	39	14,945	101	0.0000489	0.76	0.2	0.183	0.183	5.5
Stage 1A-B	139	14,945	435	0.0000489	0.76	0.2	0.245	0.245	4.1
Stage 1A-C	212	14,945	986	0.0000489	0.76	0.2	0.289	0.289	3.5
Stage 1A-D	236	14,945	1,600	0.0000489	0.76	0.2	**0.318**	**0.318**	**3.1**
Full Development	536	14,945	2,154	0.0000489	0.76	0.2	**0.338**	**0.338**	**3.0**
2035 Flow Demands									
Stage 1A	39	16,755	101	0.0000489	0.76	0.2	0.200	0.200	5.0
Stage 1A-B	139	16,755	435	0.0000489	0.76	0.2	0.268	0.268	3.7
Stage 1A-C	212	16,755	986	0.0000489	0.76	0.2	0.315	0.315	3.2
Stage 1A-D	236	16,755	1,600	0.0000489	0.76	0.2	**0.347**	**0.347**	**2.9**
Full Development	536	16,755	2,154	0.0000489	0.76	0.2	**0.368**	**0.368**	**2.7**
2045 Flow Demands									
Stage 1A	39	19,129	101	0.0000489	0.76	0.2	0.221	0.221	4.5
Stage 1A-B	139	19,129	435	0.0000489	0.76	0.2	0.296	0.296	3.4
Stage 1A-C	212	19,129	986	0.0000489	0.76	0.2	0.348	0.348	2.9
Stage 1A-D	236	19,129	1,600	0.0000489	0.76	0.2	**0.384**	**0.384**	**2.6**
Full Development	536	19,129	2,154	0.0000489	0.76	0.2	**0.407**	**0.407**	**2.5**
Roundabout Intersection Urban 50-70km/h - Stges 1A-D									
2026 Flow Demands									
Stage 1A-D -Nth	236	14,945		0.000481	0.58		0.127	0.127	7.9
Stage 1A-D - Sth	236	14,945		0.000481	0.58		0.127	0.127	7.9
Stage 1A-D - West - Site	236	1,600		0.000481	0.58		0.035	0.035	28.8
Stage 1A-D - East	236	50		0.000481	0.58		0.005	0.005	215.0
Stage 1A-D Total All Approaches	236						**0.293**	**0.293**	**3.4**
2035 Flow Demands									
Stage 1A	236	16,755		0.000481	0.58		0.136	0.136	7.4
Stage 1A-B	236	16,755		0.000481	0.58		0.136	0.136	7.4
Stage 1A-C	236	1,600		0.000481	0.58		0.035	0.035	28.8
Stage 1A-D	236	50		0.000481	0.58		0.005	0.005	215.0
Full Development	236						**0.310**	**0.310**	**3.2**
2045 Flow Demands									
Stage 1A	236	19,129		0.000481	0.58		0.146	0.146	6.8
Stage 1A-B	236	19,129		0.000481	0.58		0.146	0.146	6.8
Stage 1A-C	236	1,600		0.000481	0.58		0.035	0.035	28.8
Stage 1A-D	236	50		0.000481	0.58		0.005	0.005	215.0
Full Development	236						**0.332**	**0.332**	**3.0**
Roundabout Intersection Urban 50-70km/h - Full Development									
2026 Flow Demands									
Stage 1A-D -Nth	236	14,945		0.000481	0.58		0.127	0.127	7.9
Stage 1A-D - Sth	236	14,945		0.000481	0.58		0.127	0.127	7.9
Stage 1A-D - West - Site	236	2,154		0.000481	0.58		0.041	0.041	24.2
Stage 1A-D - East	236	50		0.000481	0.58		0.005	0.005	215.0
Stage 1A-D Total All Approaches	236						**0.300**	**0.300**	**3.3**
2035 Flow Demands									
Stage 1A	236	16,755		0.000481	0.58		0.136	0.136	7.4
Stage 1A-B	236	16,755		0.000481	0.58		0.136	0.136	7.4
Stage 1A-C	236	2,154		0.000481	0.58		0.041	0.041	24.2
Stage 1A-D	236	50		0.000481	0.58		0.005	0.005	215.0
Full Development	236						**0.317**	**0.317**	**3.2**
2045 Flow Demands									
Stage 1A	236	19,129		0.000481	0.58		0.146	0.146	6.8
Stage 1A-B	236	19,129		0.000481	0.58		0.146	0.146	6.8
Stage 1A-C	236	2,154		0.000481	0.58		0.041	0.041	24.2
Stage 1A-D	236	50		0.000481	0.58		0.005	0.005	215.0
Full Development	236						**0.339**	**0.339**	**3.0**

The key findings can be summarised as follows:

- At 2026 a T-intersection is generally equivalent to or safer than a roundabout with an assessed exposure of 1 crash every 3.1 to 5.5 years depending on development staging from Stages 1A through to 1D. The roundabout is expected to produce about 1 crash per 3.4 years on average.
- At 2035 a T-intersection is generally equivalent to or safer than a roundabout with an assessed exposure of 1 crash every 3.2 to 5.0 years depending on development staging from Stages 1A through to 1C. The roundabout is expected to produce about 1 crash per 3.2 years on average.
- Full development of the site at 2035 yields 1 crash every 2.7 years on average and is materially less safe than a roundabout at these traffic flow levels.
- At 2045 a T-intersection is equivalent to or safer than a roundabout with an assessed exposure of 1 crash every 3.4 to 4.5 years for development staging from Stages 1A through to 1B. The roundabout is expected to produce about 1 crash per 3.2 years on average.

On this basis, the recorded crash history does not indicate a concentration or pattern of crashes that would suggest the site frontage is inherently unsafe or that there is an existing crash issue directly attributable to either the road environment overall or to any local property access at the proposed access location.

The forecast crash analysis indicates a T-intersection has the potential to perform better or generally equivalent to a roundabout at lower traffic demand levels, generally associated with those generated by Stages 1A – D of the development. For demand levels beyond 2035 and to accommodate full development of the proposal, a roundabout is assessed as necessary.

7.4.3 Optioneering Evaluation Assessment Summary and Recommendation

Further engagement with the NZ Transport Agency identified further considerations, including its stated desire to minimise the potential for successive temporary traffic management resulting from staged construction of a T-intersection and subsequent formation of a roundabout. The potential staging conditioning of development to enable early establishment of a T-intersection, the ability to require future upgrading to a roundabout resulting from regional growth demand effects irrespective of whether or not the remaining stages of the development progressed were also identified as potential risk outcomes.

In terms of the comparative transport safety assessments, a roundabout is assessed as a safe system intersection that will have the effect of lowering the local environment operating speed of vehicles, thereby lessening the potential for and impact of crash events. It also has the potential to more safely consolidate and integrate access for individual sites on the eastern side of SH3 and deliver a safety betterment outcome in terms of access for those existing properties.

On the basis of these considerations, and the NZ Transport Agency's stated preference for a roundabout intersection form, the Applicant has adopted and proposes to establish a single lane circulating roundabout to support the development from its commencement.

7.5 Detailed Intersection Performance Assessment

The WRTM model interfaces with the Sidra intersection software in terms of its intersection and overall trip distribution methods. The indicative intersection levels of service described above are therefore based on these underlying applications. However, the following assessments have been prepared to enable a more particular assessment of the potential transport effects due to the proposal on specific movements within key and local intersections. Early engagement with WDC identified that it would be desirable to include assessments for the following intersections to confirm the potential transport effects of the proposal:

- The proposed site access roading intersection;
- SH3 / Racecourse Road Give Way controlled intersection;
- SH3 / Mutu Street Give Way controlled intersection; and
- SH3 / Arawata Street / Cambridge Road roundabout controlled intersection.

The specific performance of movements at these intersections has been assessed and is described in the following assessments.

7.5.1 Traffic Demands for SH3 Road Corridor Intersection Performance Assessment

The WRTM transport modelling is based on earlier traffic flow data and includes information from the 2023 NZ Census. This information has been evaluated to establish the 2025 base year model for regional assessment of land use and growth proposals.

To further inform the relevance and applicability of the modelling within the current transport environment, the Applicant commissioned an independent week-long traffic and speed count on SH3. The count was undertaken for the 7-day period 6 March to 12 March 2026, which was specifically selected to be detached from school and/or public holiday period influences. The count site is located about 150m north of the proposed site roading intersection and is therefore specifically representative of the local traffic environment reasonably expected at the subject site intersection in the current environment.

A copy of the week-long traffic count results is included at **Appendix 2**. The count data has enabled specific identification of the 5-Day ADT AM and PM peak hour traffic volumes past the site as follows:

- AM peak period northbound / southbound: 813 / 560 vphr; and
- PM peak period northbound / southbound: 702 / 828 vphr.

These surveyed traffic counts were found to be different to the WRTM modelled demands on this stretch of the road network. The AM peak northbound and PM peak southbound counts are higher than the model indicates. The AM peak southbound and PM peak northbound counts were lower. The nature of these differences were determined to be of a level that warranted a validation change to the modelled flows for the purposes of evaluation of the specific

intersection performance expectations. The modelled flows have therefore been adjusted to represent 2026 base year, and the WRTM modelled future growth demands (2025 to 2035 and the 2035 to 2045 growth demands) have been retained and applied to the new count-based peak hour traffic volumes.

This traffic volume demand validation exercise was undertaken for the following modelled scenarios and is included at **Appendix 7** as a point of reference:

- 2026, 2035 and 2045 AM and PM peak Do Min;
- 2035 AM and PM peak Stage 1A-D;
- 2035 AM and PM peak Full Development;
- 2045 AM and PM peak full development; and
- 2045 AM and PM peak full development – sensitivity test.

These validated traffic demands have been adopted as the basis for the intersection evaluations described in the following sections.

7.5.2 SH3 Road Corridor Validated Intersection Modelling

On the basis of the preceding validated traffic demands, detailed intersection (Sidra) modelling has been undertaken for the proposed site roading intersection and the three key SH3 intersections to the south. The results of the modelling assessments, including specific reference to the worst performing movement at the intersection are summarised in the following Table. The modelled intersection forms and turning movement results for the full development at 2045 are included at **Appendix 8**:

Table 7-9:Validated Intersection Modelling Results

Model Case	2026 Do Min Network	2035 Do Min Network	2045 Do Min Network	2035 Harlow Stage 1A-D Demands	2035 Harlow Full Development	2045 Harlow Full Development	Comment
Intersection	**AM Peak Period Worst Movement Level of Service (LOS)**						
Harlow Lifestyle Village Intersection	N/A	N/A	N/A	B	B	B	
SH3 / Racecourse Road Intersection - Right turn to the south	C	C	D	C	C	D	Racecourse Road right turn to the south currently constrained in Do Min & not added to by the proposal, very low demand
SH3 / Racecourse Road Intersection - All other movements	B	B	C	B	B	C	
SH3 / Mutu Street Intersection - Right turn to the south	C	D	E	D	D	E	Mutu St right turn to the south currently constrained in Do Min & not added to by the proposal
SH3 / Mutu Street Intersection - All other movements	B	B	C	B	B	C	
SH3 / Arawata Street /Cambridge Road Intersection	A	B	B	B	B	B	
Intersection	**PM Peak Period Worst Movement Level of Service (LOS)**						
Harlow Lifestyle Village Intersection	N/A	N/A	N/A	B	B	B	
SH3 / Racecourse Road Intersection - Right turn to the south	C	C	E	C	C	D	Racecourse Road right turn to the south currently constrained in Do Min & not added to by the proposal, very low demand
SH3 / Racecourse Road Intersection - All other movements	B	B	C	B	B	C	
SH3 / Mutu Street Intersection - Right turn to the south	C	D	E	D	C	D	Mutu St right turn to the south currently constrained in Do Min & not added to by the proposal
SH3 / Mutu Street Intersection - All other movements	B	C	C	C	B	C	
SH3 / Arawata Street /Cambridge Road Intersection	B	B	C	B	B	C	

The following key observations are made from the Tabled results:

- The proposed intersection point of access for the site is proposed to comprise a single lane roundabout. The modelling results demonstrate this is expected to operate with a worst movement LOS B through all development stages and including full development at 2045. The intersection therefore demonstrates ample capacity and continued efficiency for the north – south through movements on the state highway corridor as well as the site access.
- At SH3 / Racecourse Road intersection, the worst performing movement is the right turn from Racecourse Road to SH3 southbound at LOS D – AM and LOS D - E PM peak. There is a slight differential in the Do Min and proposal LOS for the PM peak that occurs as a result of the WRTM distribution modelling. The turning volume on this movement is very low and WRTM modelling did not identify any demand for it to occur. The development proposal does not add to the traffic demands on this movement as its origin and destination movements are not associated with travel to or from the site. The site generated demands do further contribute to opposing traffic flows for this movement. The consequent effect however is established in the Do Minimum environment without the development proposal and is a consequence of wider district and regional growth planning. Accordingly, no mitigation is necessary or due to the proposal at this intersection.
- A similar performance and operational outcome is evident at the SH3 / Mutu Street intersection. Again, the Mutu Street right turn to SH3 southbound is the most constrained movement operating at LOS E in both the Do Min and in the development proposal case. Site generated traffic demands do not add traffic volume to this movement. All other movements at the intersection, including those where site generated traffic demands are distributed to and from are assessed to operate at an efficient LOS B or C, or better. No mitigation is warranted or due to the development proposal.
- The SH3 / Arawata Street / Cambridge Road intersection is controlled by a dual circulating lane roundabout. All entries and exits to the intersection are established with 2-lanes. Consequently, the worst performing movement is expected to operate at a LOS C with the development at 2045.

On the basis of these assessments, it can be seen that the site generated traffic demands will not adversely impact the operation of other adjacent intersections. The proposed development will be readily accommodated by way of establishment of a single lane roundabout at its intersection with SH3. The traffic demands on SH3 will be readily accommodated with an operational LOS B or better.

7.5.3 SH3 Road Corridor Sensitivity Assessment

The earlier assessments and descriptions have described two factors to be considered in terms of a sensitivity analysis. These are the total number of units adopted in the modelled assumptions and the traffic distributive pattern adopted in the model resulting from its representation of a retirement living activity.

In relation to the number of unit assumption, the modelled results have been based on an assumed 438 independent units plus 100 care beds. The plans presented with the application indicate a developed site design that supports approximately only 414 independent units and 100 care beds. The modelled demands have therefore been based on a 7% greater unit

development demand than is represented by the proposal and therefore is taken to reasonably represent an appropriate level of confidence in relation to the total potential demand generated effects.

The trip distributive pattern generated by the WRTM has indicated an emphasis on distribution to/from the north in relation to the independent units. While for typical residential housing, this may present as a practical outcome, particularly in relation to journey to work and associated employment/job opportunities, it may not wholly or best represent a retirement trip distribution outcome.

An alternative trip distribution case has been developed to examine the potential for the network to accommodate a greater weighting of trips being distributed to/from the Te Awamutu Town Centre area. The north-south directional peak period traffic volumes at the site frontage indicate a more balanced distribution of movement may be applicable, with a slight weighting northbound in the AM and southbound in the PM peak. The distributive sensitivity approach however has been prepared to even more strongly distribute site generated traffic demands to/from the south in both the AM and PM peak periods to enable a comprehensive assessment of the potential sensitivity of intersections to the south of the site. The redistributed traffic demands are included on sheet 3 at **Appendix 7**.

The 2045 modelled assessment represents a 91% AM peak and an 87% PM peak distribution from the site towards the south, the Te Awamutu Town Centre area. The assessment has been undertaken to include the subject site access roundabout and the three intersections described in the preceding sections. Turning movement distributions to/from the SH3 road corridor have been applied in the same proportions as determined by the WRTM. There is no consequent wider network redistribution effect incorporated in this assessment, as is evident in the Do Minimum modelling for the corridor. The consequence of this is an over-representation of the sensitivity trip assessment at these intersections. The modelled results are summarised in the following Table and the intersection turning movement results are included at **Appendix 9**:

Table 7-10:Validated Intersection Sensitivity Modelling Results

Model Case	2045 Do Min Network	2045 Harlow Full Development	Average Delay (sec/veh) (Do Min / Proposal)	95% Back of Queue (veh) (Do Min / Proposal)	Comment
Intersection	**AM Peak Period Worst Movement**				
Harlow Lifestyle Village Intersection	N/A	B			
SH3 / Racecourse Road Intersection - Right turn to the south	D	E	29 / 37	1 / 1	Racecourse Road right turn to the south currently constrained in Do Min & not added to by the proposal, very low demand
SH3 / Racecourse Road Intersection - All other movements	C	C			
SH3 / Mutu Street Intersection - Right turn to the south	E	F	40 / 59	3 / 4	Mutu St right turn to the south currently constrained in Do Min & not added to by the proposal
SH3 / Mutu Street Intersection - All other movements	C	C			
SH3 / Arawata Street /Cambridge Road Intersection	B	B			
Intersection	**PM Peak Period Worst Movement**				
Harlow Lifestyle Village Intersection	N/A	B			
SH3 / Racecourse Road Intersection - Right turn to the south	E	D	26 / 31	1 / 1	Racecourse Road right turn to the south currently constrained in Do Min & not added to by the proposal, very low demand
SH3 / Racecourse Road Intersection - All other movements	C	C			
SH3 / Mutu Street Intersection - Right turn to the south	E	E	29 / 36	1 / 1	Mutu St right turn to the south currently constrained in Do Min & not added to by the proposal
SH3 / Mutu Street Intersection - All other movements	C	C			
SH3 / Arawata Street /Cambridge Road Intersection	C	D			

The key observations from the performance assessments described in the Table are as follows:

- There are no consequent change effects at the single lane roundabout at the site intersection. A LOS B 2045 operating environment is expected at this location;
- At the SH3 / Racecourse Road intersection, the sensitivity assessment appears to indicate a potential shift to LOS E in the AM peak period only for the southbound right turn from Racecourse Road. All other movements at the intersection are expected to operate at LOS C or better. The average delay for the right turn from Racecourse Road shifts slightly due to the increased opposing traffic volumes, however the 95% back of queue is maintained at just 1 vehicle. The consequent change effects are less than minor and no development activity generated mitigation response is assessed as warranted;
- At the SH3 / Mutu Street intersection, the additional opposing traffic volume movements north and south of SH3 indicate a shift to LOS F in the AM peak period only for the southbound right turn from Mutu Street. The average delay is indicated to increase to 59 sec/veh however the consequent 95th percentile queuing effect is an increase of 1 vehicle to 4 vehicles in total. All other movements at the intersection are expected to operate at LOS C or better. Assessment of the transport network and origin/destination for these travel movements indicates a ready availability of alternative travel paths and a high likelihood that consequent network redistribution would occur as wider regional growth demands increasingly impact right turning at the intersection. Accordingly, the sensitivity assessment does not indicate any particular or adverse impact due to the development generated traffic demands;
- At the Arawata Street roundabout, the sensitivity distribution indicates a shift in the worst performing movement, the southbound through and right turn, to LOS D in the PM peak period only. LOS D operation indicates a highly demanded traffic movement but remains within accepted and reasonable long-term operational performance

expectations. The intersection as a whole is indicated in the modelling results, as operating at LOS B. It is therefore concluded that the expected operational performance of the intersection with the development proposal demands added, is not expected to be materially different from that required to support the 2045 Do Minimum demand traffic flows. Accordingly, the sensitivity assessment does not indicate a need for development generated mitigation at this intersection.

7.5.4 Summary of Intersection Performance

The intersection modelling and sensitivity assessment can be summarised as follows:

- Proposed site access: The proposed single-lane roundabout is expected to operate efficiently through all development stages, with the worst-performing movement operating at LOS B at full development in 2045. The roundabout will therefore provide sufficient capacity for the development while maintaining efficient operation of SH3.
- SH3 / Racecourse Road: The right turn from Racecourse Road onto SH3 southbound is the worst-performing movement, operating at LOS E in the sensitivity assessment. However, this is a low-volume movement, the constraint is primarily attributable to background growth, and queuing remains limited to approximately one vehicle. As shown in the table below the Racecourse Road West Approach operates at LOS C in the 2045 Do Min scenario and the 2045 Full Development scenario, during both the AM and PM peaks. No development-related mitigation is therefore considered necessary.
- SH3 / Mutu Street: The right turn from Mutu Street onto SH3 southbound is expected to operate at LOS E under both the Do Min and Full Development scenarios in 2045, potentially reducing to LOS F in the AM peak under the sensitivity assessment. However, site-generated traffic does not use this movement, the associated increase in queuing is limited, and alternative travel routes are available. The SH3 South Approach arm of the intersection operates at LOS C in the 2045 Do Min scenario, and LOS D in the 2045 Full Development scenario. No development-related mitigation is considered necessary.
- SH3 / Arawata Street / Cambridge Road: The roundabout is expected to continue operating efficiently, with the worst-performing movement operating at LOS C under the principal modelling. Under the sensitivity assessment, the southbound through and right-turn movement reduces to LOS D in the PM peak, while the intersection overall continues to operate at LOS B.
- Sensitivity assessment: The sensitivity assessment applies a conservative distribution of site-generated traffic towards Te Awamutu and does not account for likely redistribution across the wider network. Despite these conservative assumptions, the modelling does not identify any material deterioration in overall intersection performance or any requirement for development-related mitigation.

The table below summarises the overall intersection LOS, calculated as the average of the LOS across all approaches. An overall intersection LOS is not available for the priority-controlled SH3 / Racecourse Road and SH3 / Mutu Street intersections, as the through movements on SH3 are unopposed and experience no delay. For these intersections, the LOS of the minor-road approach is provided instead.

The results show that the overall intersection LOS, where available, remains unchanged between the 2045 Do Minimum and 2045 Full Development scenarios. The only change in approach LOS occurs on the SH3 south approach at the SH3 / Mutu Street intersection, which changes from LOS C to LOS D during the AM peak. LOS D indicates a highly demanded traffic movement but remains within accepted and reasonable long-term operational performance expectations. The LOS results demonstrate that the forecast traffic volumes can be accommodated while maintaining acceptable operating conditions across the assessed intersections, with no material deterioration in overall intersection performance.

Table 7-11 - Summary of overall intersection and approach LOS results from SIDRA modelling analysis

Intersection	2045 Do Min Network	2045 Full Development	Approach	2045 Do Min Network	2045 Full Development
AM Peak Period Intersection Level of Service (LOS)			AM Peak Period Aproach Level of Service (LOS)		
Harlow Lifestyle Village Intersection	A	A	NA		
SH3 / Racecourse Road	NA	NA	Racecourse Road West Approach	C	C
SH3 / Mutu Street Intersection	NA	NA	SH3 South Approach	C	D
SH3 / Aratawa Street / Cambridge Road Intersection	A	A	NA		
PM Peak Period Intersection Level of Service (LOS)			PM Peak Period Aproach Level of Service (LOS)		
Harlow Lifestyle Village Intersection	A	A	NA		
SH3 / Racecourse Road	NA	NA	Racecourse Road West Approach	C	C
SH3 / Mutu Street Intersection	NA	NA	Mutu Street West Approach	C	C
SH3 / Aratawa Street / Cambridge Road Intersection	B	B	NA		

Overall, the assessments above, along with Area of Influence and Intersection Level of Service assessments provided in Section 7.3.3, demonstrate that the proposed development can be readily accommodated by the surrounding existing and proposed intersections on the network.

7.6 Travel Time and Operational Performance Assessment

An assessment has been undertaken to identify the potential effects of the proposed roundabout on travel times and network performance along the state highway. The assessment compares the time taken to travel through the location under the existing (2026) road arrangement, without the roundabout, against the predicted travel time with the proposed roundabout in place in 2035 and 2045 full development scenarios, over the AM (7:00-8:00) and PM (16:00-17:00) peak periods. The assessed change due to geometric delay associated with negotiating the roundabout and giving way to circulating traffic, as well as the resulting change in travel time over several sections of the wider highway corridor are summarised below.

The assessment uses geometric delay, caused by slowing and accelerating through the intersection geometry, and stop delay, which is the average time spent slowing, queueing or giving way at the roundabout. The average delay represents the total delay due to both geometric delay and the stop delay changes.

Under the existing arrangement, geometric delay for the assessed roadway section is 1.9 seconds northbound and 1.8 seconds southbound. This delay changes to 2.4 seconds in both directions with the proposed roundabout, an increase of 0.5–0.6 seconds. The average total delay (geometric + stop delay) and geometric delay figures are summarised in the following table.

Table 7-12 - Stop delay and geometric delay for the existing and full development scenarios

Scenario	Peak	Direction	Average delay	Geometric delay
Existing	AM and PM	Northbound	N/A	1.9 s
Existing	AM and PM	Southbound	N/A	1.8 s
2035 development	AM	Northbound	2.8 s	2.4 s
2035 development	AM	Southbound	3.1 s	
2035 development	PM	Northbound	3.2 s	
2035 development	PM	Southbound	2.9 s	
2045 development	AM	Northbound	3.3 s	
2045 development	AM	Southbound	2.8 s	
2045 development	PM	Northbound	3.2 s	
2045 development	PM	Southbound	2.9 s	

The effect of this localised delay has also been assessed in relation to travel through several sections of the state highway corridor. Average travel times for each one-hour AM/PM assessment period and each route were derived from TomTom data collected over a representative week in September 2026. The Table below describes the existing average travel times for each section, along with the assessed travel time as a result of the adding the net average delay (stop delay plus geometric delay).The 2035 and 2045 scenarios represent a scenario where the proposed roundabout and the full development has been implemented.

Table 7-13 - Average travel times for each route

Route	Peak Period	Existing (s)	2035 (s)	2045 (s)
Te Rahu Road to Greenhill Drive	AM	86.0	87.3	87.0
	PM	87.3	88.4	88.4
Te Rahu Road to Racecourse Road	AM	118.1	119.4	119.1
	PM	120.1	121.2	121.2
Te Rahu Road to Mutu Street	AM	160.0	161.3	161.0
	PM	162.7	163.8	163.8
Te Rahu Road to Arawata/Cambridge Road	AM	205.4	206.7	206.4
	PM	204.8	205.9	205.9
Greenhill Drive to Te Rahu Road	AM	84.4	85.3	85.7
	PM	85.6	86.9	86.9
Racecourse Road to Te Rahu Road	AM	116.8	117.7	118.1
	PM	118.3	119.6	119.6
Mutu Street to Te Rahu Road	AM	159.5	160.4	160.8
	PM	161.9	163.2	163.2
Arawata/Cambridge Roade to Te Rahu Road	AM	197.1	198.0	198.4
	PM	197.2	198.5	198.5

The table below shows the change in travel time in the 2035 and 2045 scenarios (implemented roundabout and full development), relative to the existing arrangement, expressed in both seconds and as a percentage increase of the existing travel time.

Table 7-14 - Increase in travel time (s / %) compared to existing travel time.

Assessment route	2035 AM	2035 PM	2045 AM	2045 PM
Te Rahu Road to Greenhill Drive	+1.3 s / +1.5%	+1.1 s / +1.3%	+1.0 s / +1.2%	+1.1 s / +1.3%
Te Rahu Road to Racecourse Road	+1.3 s / +1.1%	+1.1 s / +0.9%	+1.0 s / +0.8%	+1.1 s / +0.9%
Te Rahu Road to Mutu Street	+1.3 s / +0.8%	+1.1 s / +0.7%	+1.0 s / +0.6%	+1.1 s / +0.7%
Te Rahu Road to Arawata/Cambridge Road	+1.3 s / +0.6%	+1.1 s / +0.5%	+1.0 s / +0.5%	+1.1 s / +0.5%
Greenhill Drive to Te Rahu Road	+0.9 s / +1.1%	+1.3 s / +1.5%	+1.3 s / +1.5%	+1.3 s / +1.5%
Racecourse Road to Te Rahu Road	+0.9 s / +0.8%	+1.3 s / +1.1%	+1.3 s / +1.1%	+1.3 s / +1.1%
Mutu Street to Te Rahu Road	+0.9 s / +0.6%	+1.3 s / +0.8%	+1.3 s / +0.8%	+1.3 s / +0.8%
Arawata/Cambridge Road to Te Rahu Road	+0.9 s / +0.5%	+1.3 s / +0.7%	+1.3 s / +0.7%	+1.3 s / +0.7%

The assessment indicates that the proposed roundabout will introduce a negligible and localised travel time change effect. Geometric delay is shown to contribute a net 0.5 seconds northbound and 0.6 seconds southbound compared with the existing arrangement. The average delay at the roundabout would range from 0.9 to 1.3 seconds per vehicle, reflecting the additional time associated with vehicles slowing, queueing or giving way to circulating traffic, and travelling around the roundabout.

The route-based assessment identifies that the localised change effect at the intersection diminishes in the context of increasing travel distance. The overall effect is assessed as negligible in terms of travel time change. This is consistent with the LOS A operational performance assessed for the roundabout at 2045.

7.7 Road 1 / Road 2 / Road 3 Internal Roundabout Intersection Assessment

Intersection modelling using the Sidra intersection software has been undertaken to quantify the internal roundabout intersection performance at AM and PM peak periods. This has been progressed to ensure adequate capacity is established to avoid the potential for vehicle movement interaction effects with the operation of the SH3 roundabout. It has also been progressed to assess and confirm the location and operation associated with the site access security gate located to the west of this intersection on Road 1.

The following modelling results have been prepared for the full development scenario.

LANE SUMMARY

Site: [1 (29)] Harlow Lifestyle Village Internal - AM Peak (Internal Roundabout)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Road 3 Sth Appr															
Lane 1[d]	15	10.0	15	10.0	1080	0.014	100	7.3	LOS A	0.1	0.5	Full	500	0.0	0.0
Approach	15	10.0	15	10.0		0.014		7.3	LOS A	0.1	0.5				
East: Road 1 East Appr															
Lane 1[d]	147	10.0	147	10.0	1435	0.103	100	4.2	LOS A	0.5	4.0	Full	500	0.0	0.0
Approach	147	10.0	147	10.0		0.103		4.2	LOS A	0.5	4.0				
North: Road 2 Nth Appr															
Lane 1[d]	44	10.0	44	10.0	1114	0.040	100	4.8	LOS A	0.2	1.4	Full	500	0.0	0.0
Approach	44	10.0	44	10.0		0.040		4.8	LOS A	0.2	1.4				
West: Road 1 West Appr															
Lane 1[d]	99	10.0	99	10.0	1255	0.079	100	3.7	LOS A	0.4	2.9	Full	500	0.0	0.0
Approach	99	10.0	99	10.0		0.079		3.7	LOS A	0.4	2.9				
All Vehicles	305	10.0	305	10.0		0.103		4.3	LOS A	0.5	4.0				

Figure 25: 2045 Full Development AM Peak Road1 / Road 2 / Road 3 Roundabout Performance

LANE SUMMARY

Site: [1 (30)] Harlow Lifestyle Village Internal - PM Peak (Internal Roundabout)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Road 3 Sth Appr															
Lane 1[d]	9	10.0	9	10.0	1089	0.009	100	7.0	LOS A	0.0	0.3	Full	500	0.0	0.0
Approach	9	10.0	9	10.0		0.009		7.0	LOS A	0.0	0.3				
East: Road 1 East Appr															
Lane 1[d]	149	10.0	149	10.0	1540	0.097	100	4.3	LOS A	0.5	3.8	Full	500	0.0	0.0
Approach	149	10.0	149	10.0		0.097		4.3	LOS A	0.5	3.8				
North: Road 2 Nth Appr															
Lane 1[d]	21	10.0	21	10.0	1072	0.020	100	4.4	LOS A	0.1	0.7	Full	500	0.0	0.0
Approach	21	10.0	21	10.0		0.020		4.4	LOS A	0.1	0.7				
West: Road 1 West Appr															
Lane 1[d]	142	10.0	142	10.0	1279	0.111	100	3.7	LOS A	0.5	4.1	Full	500	0.0	0.0
Approach	142	10.0	142	10.0		0.111		3.7	LOS A	0.5	4.1				
All Vehicles	322	10.0	322	10.0		0.111		4.1	LOS A	0.5	4.1				

Figure 26: 2045 Full Development PM Peak Road1 / Road 2 / Road 3 Roundabout Performance

The following key performance outcomes are evident:

- A single lane roundabout will readily accommodate the ultimate and full development flows, operating at LOS A;

- The 95th percentile back of queue on the east approach from SH3 is a maximum of 1 vehicle in either peak period and well clear of the potential for interaction with the SH3 roundabout, which is located about 90m east of the limit line;
- The 95th percentile back of queue on the west approach from the security gate is 1 vehicle and also well clear and separated from the security gate, which is located about 20m west of the roundabout. The security gates are planned to remain open continuously through the day with a low flow night-time closure only.

The preceding assessments for the proposed roundabout on SH3 indicate the maximum 95th percentile peak hour back of queue from the SH3 roundabout west towards this site is expected to be about 1 to 2 vehicles or about 10m in length. On this basis, it is also evident the SH3 roundabout operation at 2045 full development flows, will remain well clear of the Road1 / Road 2 / Road 3 roundabout intersection.

7.8 Safe Intersection Sight Distance Provisions

Maven Consultants has progressed the developed engineering roading design and the off-site mitigation transport infrastructure. These drawings are included in **Appendix 17 – Civil Engineering Plans** of the Substantive Application Report.

Safe sight distances have been assessed in accordance with Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections design guidance. The drawing package includes an overall sight distance compliance assessment check sheet confirming the ability for the proposed designs to achieve compliance.

The assessment drawings have been assessed on the basis of a standardised assumption of a 67m sight distance, equating to an approach speed of 40km/h in accordance with Austroads Guide to Road Design Part 4A: *Unsignalised and Signalised Intersections*, Table 3.2: *Safe intersection sight distance (SISD) and corresponding minimum crest vertical curve size for sealed roads (S < L).* The drawing set identifies the potential for non-compliance in relation to these standard design criteria and don't have regard for any other localised environmental consideration such as the presence of a nearby corner reducing the actual and practical approach speed. An assessment of the identified and standardised methodology non-compliances is itemised as follows:

- Sheet C354-1 of the drawing set indicates 62m visibility to the east is available from the northern Road 3 limit line at the internal roundabout where 67 is required. The line of sight is shown obstructed by the position of a retaining wall. Further investigation with the designer and discussion with the Applicant has confirmed it is possible to reposition the retaining wall to enable a complying 67m sight distance and that this should be a requirement to be addressed at detailed design stage;

- Sheet C354-3 shows a 36m sight distance to the east on Road 2 from the Road 9 limit line. At this location, the retaining wall to the proposed property is the cause of the restriction. The design engineer has advised that multiple properties may be impacted if sight distance to accommodate a 40km/h approach speed is maintained. The Applicant has advised that while the operational speed environment for the site is yet to be determined, a 40km/h operational speed would be considered relatively high for the village. Based on the Austroads guidance, it is evident that reducing the internal private road approach speed through the introduction of traffic management measures to 25km/h aligns with a 38m safe intersection sight distance and produce a complying and safe operating environment;

- Sheet C354-3 shows a 32m sight distance to the south of Road 11 on Road 11. An adjacent intersection about 40m south controls the entry speed of vehicles on the approach from the south to about 10 – 15km/h, which is equivalent to less than 22m safe intersection sight distance. Design solutions to address the maintenance of either safe intersection sight distance of an equivalent safe approach speed environment through traffic calming measures are both available options at this location;
- Sheet C354-5 indicates three potential sight distance limitations on Roads 14 and 15. These are however all related to a 90-degree low radius curve limiting the sight lines. The navigation speed on the curve is assessed to be less 10 to 15km/h and require a safe intersection sight distance of just 22m. This is well within the minimum 28m available. Therefore, no further design mitigation is necessary at this location in order to achieve a safe operating environment; and
- Sheet C354-5 indicates a constrained safe intersection sight distance on Road 15 to the west along Road 13. Again, either a boundary and retaining wall amendment of traffic calming intervention are available to readily resolve this matter.

On the basis of these assessments it is evident that the potential for constrained safe intersection sight distance is indicated on the plans. In all cases, there are readily available remedies that are able to be determined by the Applicant and designer, whether involving minor adjustment to the property, retaining infrastructure or operating speed environment through traffic calming measures.

On the basis of these assessments and to ensure a safe sight distance outcome for the development a specific condition of consent is recommended to be incorporated within **Appendix 29 – Draft WDC Conditions** of the Substantive Application Report as follows:

Safe sight distances at intersections, accessways and vehicle crossings shall be established in accordance with Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections unless otherwise approved by the relevant Road Controlling Authority.

7.9 Access Gates and Security Control Assessment

The Applicant has described the proposed gate operation remaining open generally aligned with daylight hours to provide for site securing during the night-time hours. This means that access to and from the site will be unimpeded for movements that occur through the day and including through both the AM and PM peak hour periods on the road network.

The peak period for assessment of the potential for queuing at the gate is therefore, the PM peak period immediately adjoining the assessed and indicative 6:00pm daylight change time. An assessment on this basis enables evaluation of the potential for queuing and the extent to which queuing is safely contained and separated from the adjacent roundabout for inbound traffic to the Village.

The vehicular arrival demand at 6pm can be determined by factoring the PM peak inbound arrival flow (99 vph – WRTM model distribution inbound through movement at the roundabout) by the ratio between the 6 - 7pm (0.125 trips per dwelling unit based on Appendix 4 – Figure 4) and PM peak hour trip rate (0.23 trips per dwelling unit). The assessed PM inbound trip rate is therefore assessed to be 54 vehicles per hour.

Research into gate service times indicates the time from activating the gate to being able to drive through is generally as shown in the following Table:

Gate Type	Typical Opening Time
Residential swing gate (single leaf)	8-15 seconds
Residential swing gate (double leaf)	10-20 seconds
Commercial/security swing gate	15-30 seconds
Sliding gate	8-15 seconds

Table 7-15: Vehicular Gate Service Time Research

The development proposal intends the application of Residential Swing Gates. On this basis, an assessment of a typical 20 second and sensitivity 30 second operational performance has been undertaken and is summarised in the following Table. This has been undertaken in accordance with the Austroads Guide to Traffic Management: Part 2 – Traffic Theory Concepts for steady state queues with random arrivals. The following assessments of queue length have also factored in the spacing between queued vehicles and a provision for 10% single unit commercial vehicles.

Operational Period	Arrival Demand (veh/hr)	Gate Service Time (sec)	Gate Service Rate (veh/hr)	Utilisation Factor	Probability of the Queue being Empty	Mean Queue Length (veh)	Mean Queue Length (m)	95th % Queue Length (veh)	95th % Queue Length (m)
PM Off-Peak (Circa 6:00 - 7:00pm)	54	20	180	30%	70%	0.13	0.8	1	6.5
7:00 - 8:00pm	39	20	180	22%	78%	0.06	0.4	1	6.5
8:00 - 9:00pm	26	20	180	14%	86%	0.02	0.1	<1	6.5
9:00 - 10:00pm	22	20	180	12%	88%	0.02	0.1	<2	6.5
10:00 - 11:00pm	11	20	180	6%	94%	0.00	0.0	<3	6.5
11:00 - 12:00pm	4	20	180	2%	98%	0.00	0.0	<4	6.5
AM Off-Peak (Circa 5:00 - 6:00am)	4	20	180	2%	98%	0.00	0.0	<5	6.5
PM Off-Peak (Circa 6:00 - 7:00pm)	54	30	120	45%	55%	0.37	2.4	3	19.5
7:00 - 8:00pm	39	30	120	32%	68%	0.16	1.0	2	13.0
8:00 - 9:00pm	26	30	120	22%	78%	0.06	0.4	1	6.5
9:00 - 10:00pm	22	30	120	18%	82%	0.04	0.3	1	6.5
10:00 - 11:00pm	11	30	120	9%	91%	0.01	0.1	<1	6.5
11:00 - 12:00pm	4	30	120	4%	96%	0.00	0.0	<1	6.5
AM Off-Peak (Circa 5:00 - 6:00am)	4	30	120	4%	96%	0.00	0.0	<1	6.5

Table 7-16: Access Control Gate Queuing Assessment Summary

The results of the assessment indicate the following:

- Under typical (20 second) service operating times, the 6:00 – 7:00pm 95th percentile queue is expected to be 1 vehicle or about 6.5m;
- The typical operation indicates the probability of there being no vehicles queued is 70%;
- The operational demand diminish through the later hours of the evening, through to and including the AM peak prior to gate opening;
- The sensitivity test for a 30 second operation increases the 95th percentile peak queue expectation to 3 vehicles immediately after the PM peak on the road network. The corresponding queue length is assessed as 19.5m at this time.

The proposed design and location of the gates as shown on the plans included as **Appendix 6 – Site Layout and Architectural Plans** of the Substantive Application Report.

demonstrates a minimum queue length of 18m is to be provided, clear of the circulating area of the roundabout. This does not however accommodate the 95th percentile peak queue or address the 5% of occasions where demand can be expected to exceed this. Accordingly, it is

recommended that an earliest closing time for the gate be specified as the subsequent 7:00 – 8:00pm period, where the inbound demands are lesser and the margin and confidence limits are greater. On this basis, the operational parameters across the 7:00 – 8:00pm period are assessed as follows:

- Typical 95th percentile queue length: 1 vehicle or 6.5m;
- Sensitivity 95th percentile queue length: 2 vehicles or 13m.

Further, the roundabout performance assessment identifies the peak period queue length for eastbound vehicles entering the roundabout as 2.9m AM and 4.1m PM 95th percentile peak period queuing. In practice, queuing for 1 full vehicle length (6m) will be required and is readily provided.

On the basis of these assessments, it is recommended the gates are established in the open position between the hours of 6:00am and 7:00pm daily. This arrangement will establish suitable separation from the peak traffic demand periods, ensure safe and appropriate separation of queued vehicles from the adjacent roundabout wit margin to accommodate an additional queued vehicle beyond the 95th percentile level.

7.10 Traffic Calming and Speed Management

Traffic calming and speed management measures have been incorporated into the internal road network to support safe operating speeds and to create a street environment that safely accommodates vehicles, pedestrians and cyclists.

This is achieved through a combination of network design, intersection control and traffic calming devices. These measures are distributed throughout the development to reinforce appropriate speed environments consistent with the function of each street type.

Key traffic management measures include:

- A roundabout on Ohaupo Road SH 3 at the entrance to the development site;
- A roundabout within the development;
- At grade traffic calming textured material changes along residential streets and near key destinations;
- Development of the detailed engineering design arrangements prior to construction is also proposed to consider further local area traffic calming and speed management interventions to support safe intersection and safe road crossing operations, to align with and support the determined operational speed limit environment;
- The applicant also intends to establish an appropriate operating speed limit within the private road part of the site through the detailed engineering design phase.

The currently planned distribution of these measures across the development is illustrated on Figure 27. A higher definition version of the plan can be found in **Appendix 22a - Landscape Architecture Plans** of the Substantive Application Report.

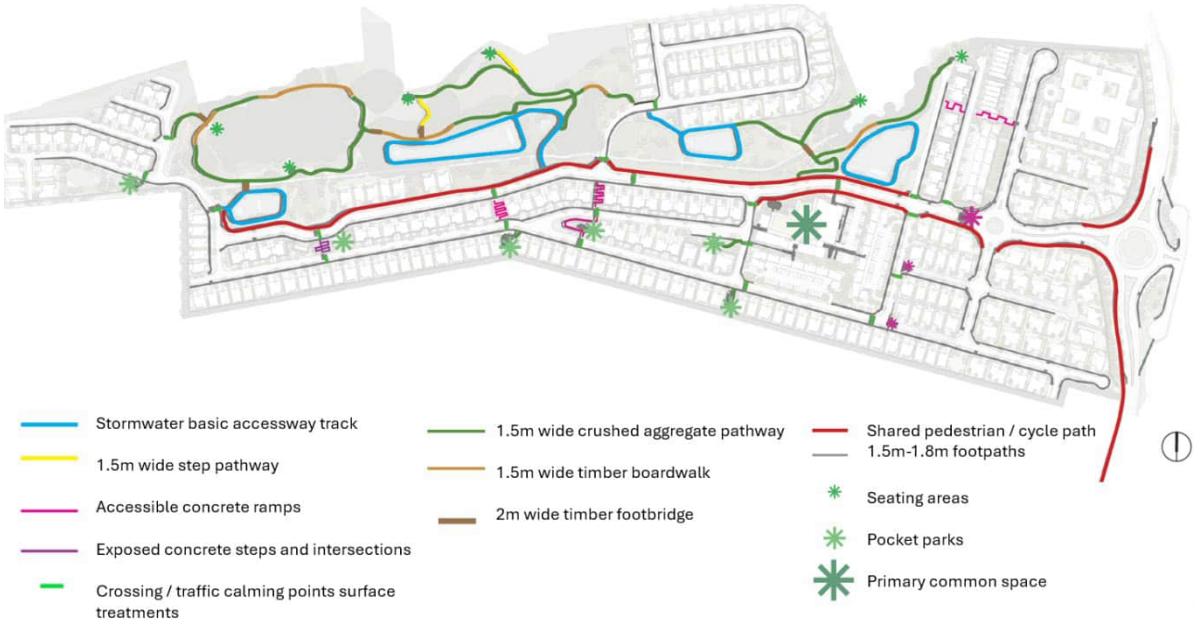


Figure 27 Traffic Calming and Speed Management Measures (Source: Pacific Environments Architects)

Together these measures act to regulate vehicle speeds, improve pedestrian crossing and intersection safety throughout the private network. The outcome will be a transport environment that both minimises the potential for crash events and further minimises the potential for injury in the event of a crash. To ensure this outcome a condition to the consent is recommended and has been incorporated into the **Appendix 29 – Draft WDC Conditions** of the Substantive Application Report as follows:

The consent holder shall confirm the private roading speed limit to be established, on the detailed engineering design plans prior to construction.

And,

The consent holder shall confirm that the location and form of traffic calming and/or speed management devices to be placed within the private road network to ensure safe intersection sight distance compliance with the operating speed.

8.0 Proposed Roading Cross Sections

A range of proposed vested and internal public roads have been proposed and are described at section 5.5 of this report and included at Appendix 17 – Civil Engineering Plans of the Substantive Application Report. The District Plan Appendix T4 - Criteria for Public and Private Roads is based on a zoned land use approach which is not directly applicable in this greenfield case. Notwithstanding this, some correlation can be made between the proposed land use and the indicative zoning requirements described in the District Plan. The context for the proposed cross sections and the relationship with the District Plan Appendix T4 is described and assessed as follows.

8.1 Collector Road (Road 1 proposed vested road), Cross Sections A and B

The Road 1 Collector Road proposed to be vested is shown with a 20m leal road boundary, 3.30m traffic lanes, a central median island (or central painted median in part) and no kerbside parking. The function of the roadway section proposed is to provide an efficient link between the state highway and the site so as to avoid the potential for queuing or parking obstructions impacting its operation and any interactions with the roundabout on SH3. The proposed lane widths are marginally below the District Plan 3.5m width requirements and reflect that frequent public transport servicing is not required and that the link does not support and extended through network connection and the traffic volume demands are relatively low due to the retirement land use. Restricting parking along its length achieves this and essentially reduces the corridor with by 5.0m (2.5m parking bay depth each side). This accounts for the 5.0m corridor width differential with the District Plan cross section.

There are two residential with access onto this roadway section. The dwelling units are well set back from the roadway and a visitor parking space for each dwelling is able to be accommodated within the driveway space clear of the road corridor. With peak traffic flows on the southern side of the carriageway comprising about 80 vehicles per hour, occupying only about 10% of the carriageway capacity on the assumption that capacity is disrupted by kerbside parking, it is evident there will be ample capacity to accommodate the driveway movements without adverse effects on the adjoining road network.

The proposed cross section intends a 2.5m shared path on the southern side and 1.8m footpath on the northern side which is in excess of the District Plan 1.5m footpath both sides. Back berm widths of 1.5m are proposed each side which are less than the District Plan 2.1m. This recognises that Road 1 is not a through Collector road corridor and therefore is not planned to accommodate trunk infrastructure. The provisioning and accommodation of servicing is shown as being accommodated within the berm provisions. Indicative wastewater and stormwater is shown located within the carriageway areas. The future integration and connectivity provisioning also separately provides for future trunk and urban infrastructure integration where that is needed to support other adjoining land development areas.

8.2 Local Road (Road 1 private road), Cross Sections C and D

This section of the road network is generally west of the Road 3 roundabout. It services internal purposes and is a private road. The District Plan only provides for private rights of way serving up to 6 residential lots. Road 1 has been designed as the principal internal distributing road corridor and has therefore been proposed as a 18m corridor with 2 lanes each 3.25m in width. The District Plan provisions for cul-de-sacs greater than 150m in length by comparison require only 3.0m carriageway widths. A 2.5m shared path is located on the north and a 1.8m footpath on the southern side. The 2.4m front berm amply accommodates landscaping, recessed parking and lighting if required. The 1.2m back berm amply accommodates the necessary underground services as are indicated on the plans.

8.3 Local Road (Road 2 and 3 proposed vested road), Cross Section E

These sections of road are proposed as 15.0m wide road corridors with 2 lanes each 3.0m in width. These lane provisions accord with the District Plan Local Road cul-de-sacs greater than 150m provisions. The function of the proposed roads has been planned primarily for conveyance and therefore no on-street parking is proposed. The adjacent local side roads are readily accessible and closely located to support parking safely separated from these corridors. The proposed footpath provisions ate 1.8m and 1.5m which is consistent with and slightly greater on one side when compared with the District Plan. The servicing provisions are shown wholly accommodated within the 1.0m back berm areas.

8.4 Private Roads, Cross Sections F, G and H

Three types of private roads are proposed to service the local access functions of the site. These comprise 12.5, 10.0 and 8.5m corridors. Their application is correlated with reducing dwelling unit access and associated traffic demands as development extends to the west. All of these sections provide pedestrian paths separated from the carriageway area. The cross sections show the associated provisioning for underground services. Cross section H at 8.5m in width supports a 5.5m carriageway and provides for intermittent service access only. No dwelling unit movements are proposed with access to it.

By way of an overall summary, it is evident the cross sections have been specifically design in relation to the hierarchical function and traffic demand expected to be associated with their use. The functional elements of the cross section proposed to be vested demonstrate an ability to support the public function expected of them and provide an appropriately safe and efficient local roading environment to support the retirement land use and potential future adjacent connectivity where that eventuates. On these bases, the cross sections are assessed as being appropriate to service their intended functions.

9.0 Parking and Loading/Servicing Assessment

As stated in Section 5.7, car parking is proposed to be provided through a combination of on-site parking within individual residential lots, with dedicated parking areas provided for the apartment blocks, Care Home and the Community Hub.

In relation to the assessment of the provision of parking for residents and visitors to the individual retirement units, this has drawn from the New South Wales Government Guide to Transport Impact Assessment (NSW GTIA). The NSW GTIA evidential design guidance[2] recommends:

- 2 spaces per 3 units for residents of independent living units; and
- 1 space per 5 units for visitors.

Each of the 297 individual residential lots is proposed to provide for a minimum of one parking space within the garage, and a minimum of one space on the driveway for visitors.

For the approximately 297 independent living units proposed, the NSW GTIA recommends 198 spaces for residents and 60 spaces for visitors, a total 258 parking spaces. The proposed provision of a minimum of 1 space per lot for residents in a garage and a minimum 1 space per lot on the driveway for visitors (594 spaces in total) well exceeds the minimum recommendations set out in the NSW GTIA.

The residential apartment blocks A-E have dedicated off-street parking areas. The proposed provision of parking for each apartment block is summarised in the table below.

Apartment Block	Number of Units	Number of Parking Spaces
A	26	32
B	31	36
C	30	36
D	15	8
E	15	8

Table 9-1 Number of units and associated car parks for the apartment blocks

The proposed provision for apartment blocks A-C set out in the table above exceeds the recommendations set out in the NSW GTIA for resident and visitor parking. Blocks C and E are proposed as serviced apartments, and as such would likely have a reduced parking demand when compared to the independent living units. Additional parking availability for Blocks C and E is available in the Care Home car park area, which is discussed below.

In addition to the on-site parking provision described above, there are approximately 38 on-street parking spaces proposed as inset parking bays along Private Collector Road 01, to the west of the internal roundabout. There are also visitor parking spaces proposed along Private Local Road 10 (11 spaces). These spaces supplement the parking provision provided for within the residential lots and car parking areas.

The Care Home is proposed to provide a maximum of 100 beds, with approximately 32 staff members during the peak shifts. For care homes (Hostels) the NSW GTIA recommends:

- One space per ten beds for visitors;
- One space per two on-duty employees; and

[2] NSW Guide to Transport Impact Assessments, Section 8.5.2 Residential

- One space per ambulance.

The WDC District Plan[3] requires one loading space and one ambulance space for the Care Home. The WDC District Plan does not include a provision for accessible parking spaces, and WDC instead refers to the Building Act 2004 and NZS 4121:2001 Design for access and mobility buildings and associated facilities (NZS4121) to ensure they are sufficiently provided. NZS4121 requires:

- Not less than 2 spaces for 21-50 parking spaces
- Not less than 1 space for every additional 50 parking spaces.

Taking the requirements and recommendations into account, the Care Home development can be supported by the provision of a minimum:

- 10 parking spaces for visitors;
- 16 parking spaces for staff;
- 26 in total car parking spaces
- 1 space for loading;
- 1 ambulance space; and
- 3 accessible parking spaces.

The proposal includes a total of 55 car parking spaces within the Care Home parking area. Three of these car parking spaces will be designated as accessible parking spaces, with one space reserved for ambulances and one loading space. This provision exceeds the minimum requirements recommended by the NSW GTIA, the Waipa DC and the NZS 4121.

There are 12 parking spaces located adjacent to Local Road 03 within the Care Home car parking area, in close proximity to the serviced apartments in Block E and D. These spaces can provide additional visitor parking for the serviced apartments if required.

The Community Hub is proposed to provide 31 on-site parking spaces, comprising 27 standard spaces, two accessible spaces, one loading space and one ambulance space. Given that the Community Hub is intended primarily to serve residents of the Lifestyle Village, it is anticipated that most trips will be made on foot, or via cycle or mobility scooters. Consequently, demand for private vehicle parking is expected to be relatively low. On this basis, the proposed parking provision is considered sufficient to accommodate staff, visitors and external service providers, while supporting the internal, walkable nature of the development.

[3] Waipa District Council District Plan: Appendix T1 - Minimum Loading and Unloading Requirements for Retirement Village Accommodation and associated care facilities

10.0 Waste Collection and Management

Waste collection along the vested road network will be undertaken as part of the public collection service. Waste collection throughout the remainder of the development, including the private-road areas, will be privately managed by an appointed waste collection provider. Figure 10 provides a plan showing the vested road network within the development. This arrangement will ensure that all residential and communal areas are appropriately serviced without requiring the public collection service to enter the private-road network. Collection will be undertaken using a rigid refuse vehicle of up to 8 m in length. Units located along narrower lanes that cannot accommodate refuse vehicle access will place their bins at designated collection points on the adjoining private road, enabling safe and efficient collection.

The detailed waste collection arrangements, including collection points, bin storage areas and vehicle access requirements, will be confirmed as part of the final design. Vehicle tracking shown in **Appendix 17 – Civil Engineering Plans** of the Substantive Application Report demonstrates that both an 8 m and a 11.5 m rigid truck can safely enter, manoeuvre within and exit the relevant parts of the development. An 8 m rigid truck represents a typical waste collection vehicle, while an 11.5 m rigid truck represents an emergency vehicle such as a fire appliance.

11.0 Walking, Cycling and Public Transport

As described in Section 5.4, the internal transport network has been designed to support a range of travel modes, including walking and cycling.

11.1 Walking and Cycling

The internal cycling and walking routes are designed to connect with a proposed shared path running along Ohaupo Road SH 3, via Greenhill Drive and Taylor Avenue, through to a new proposed pedestrian crossing on Racecourse Road. The proposed path would link with the existing pedestrian footpaths on Racecourse Road and Ohaupo Road SH 3, as well as the future proposed shared path planned for Ohaupo Road SH 3 and Racecourse Road discussed in Section 3.4.

Figure 28 below shows the proposed shared path and general crossing point of Racecourse Road. This allows the proposed shared path to link up with existing and proposed pedestrian and cycle facilities on Racecourse Road and Ohaupo Road SH 3, connecting further south towards Te Awamutu. Developed concept design has been advanced by Maven Consultants and is included at **Appendix 17 – Civil Engineering Plans** with the Substantive Application report.

This shared path connection has been designed in conjunction with NZTA and WDC and would provide a new 2.2m wide shared path along Ohaupo Road SH 3, between the development entrance road and Greenhill Drive. The path then replaces and improves the existing footpath on Taylor Avenue, by increasing the width from 1.2m to 2.2m. This not only provides anew connection for future residents of the development but provides an improved shared path connection for residents in the Taylor Avenue area to connect into Te Awamutu, while also providing a new pedestrian route to the proposed bus stop facilities at the proposed roundabout on Ohaupo Road SH 3.



Figure 28 Proposed shared path linking the development site with Racecourse Road (Source: Maven Consultants)

11.2 Public Transport

Public transport is currently established on SH3 connecting the site with Te Awamutu and Hamilton, as has been described earlier. There is an existing bus stop location sign-posted on the western (northbound service) side of SH3 and to the north of Greenhill Drive. Waipa District Council has advised that the service operates as a "hail and ride" service, meaning that passengers are able to signal the bus to stop at any location. The bus driver is able to determine if it is safe to do so. Council has advised that the southbound service operates this way. It often stops in the southbound direction, in the traffic lane and periodically blocks southbound traffic movements, including at peak times.

The northbound service is located on an uphill gradient and the bus stops partially in the lane as well and following vehicles utilise the central median and right turning lane established for Greenhill Dr, to overtake.

There are no footpaths established on road verges, road carriageway crossing occurs in a relatively high-speed environment and there are no bus shelters established. The northbound service stop is supported at present with a seat.

The proposals intends the provision of two new bus stops, located on Ohaupo Road SH 3 adjacent to the entrance to the development and each within a recessed bay to be located on the downstream, departure side of the roundabout controlled intersection. The stops will:

- Better provide for safe access to stop locations through establishment of a shared path on the western side of SH3 connecting Greenhill Drive and Taylors Ave to the bus stops;

- It establishes staged crossing places at the roundabout, enabling passengers to cross each lane at a time and to pause within a protected central median space;
- Crossings are located to occur within a lower speed environment, close to the limit-line of the roundabout, lessening the potential for injury in the event of an incident;
- Bus shelters are to be established supporting a sheltered and well-defined waiting area for passengers;
- The recessed bus bays provide safe separation for passenger movements to/from the service. They also provide for improved continuity of following traffic movements;
- The proposed bus stop locations, shown on the following Figure, are also safely separated from the painted median right turning environment on SH3 at Greenhill Drive.

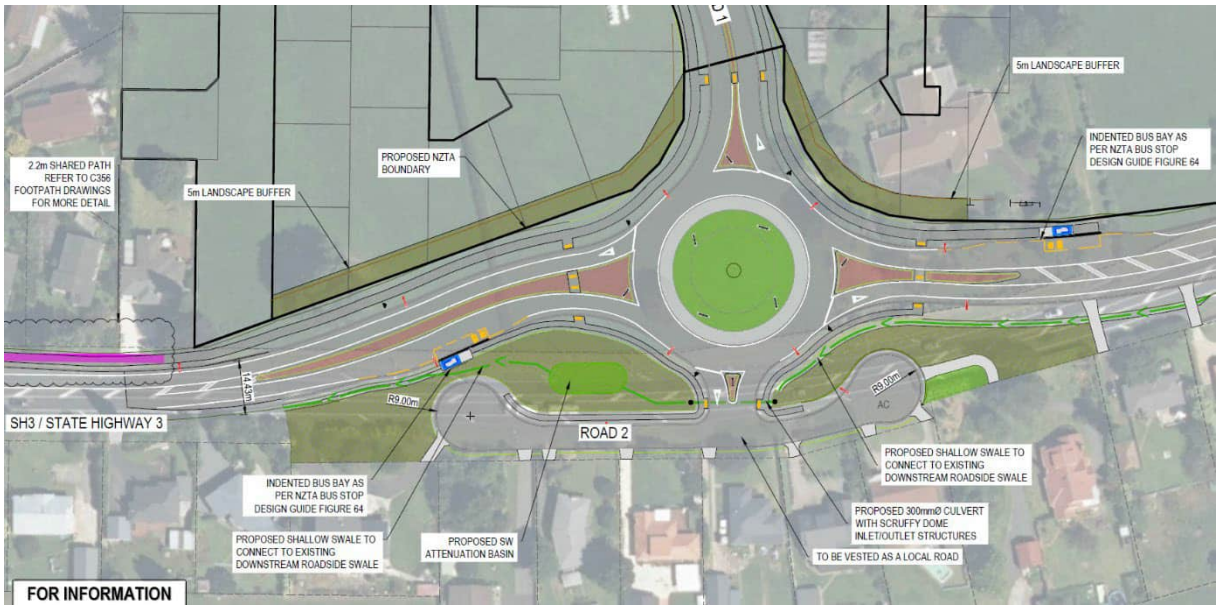


Figure 29 - Proposed roundabout design showing bus stops pedestrian and crossing points (Source: Maven Consultants)

The Applicant has engaged with Waikato Regional Council in relation to the proposed changes. The advice from Waikato Regional Council (WRC) dated 8 October 2026 is as follows:

"Bus stops in Te Awamutu fall under Waipa District Council, you would want to contact them for assistance."

The advice confirms there are no changes to the service operation that warrant consideration by WRC.

The bus stop facilities and their locations have been engaged with Waipa District Council on 8 October 2026. Council has advised there are a range of evidential safety, accessibility and performance issues with the current service stopping operation in the vicinity of Greenhill Dr. These have the potential to be resolved of significantly improved with introduction of the proposed safer crossing and stopping locations integrated with the bus stops as shown. On 16 October Council provided a written response to the proposal and this is been included at section 6.0 Transport Engagement and Table 6-1: Summary of Transport Engagement. It is evident there may be minor detailed design and implementation staging differences in relation to the positions advised by NZTA and Waipa District Council. These are not matters of design with

the potential to impact the delivery of the proposal, but rather jurisdictional matters related to accountability for infrastructure, its timing, staging and maintenance, which are readily able to be resolved through the detailed design process prior to construction. Overall, a common position has been communicated about the design form, need and location of the proposed public transport infrastructure.

12.0 District Plan Assessment

A detailed assessment of the development against the relevant transport-related provisions of the WDC District Plan is provided in **Appendix 10**.

The assessment addresses the applicable rules within Section 16 (Transportation) of the District Plan. These provisions primarily relate to access design, internal road layout, parking and manoeuvring requirements, and the integration of the proposed network with the wider transport system. The remaining provisions within the District Plan are assessed within the planning report.

The proposal generally complies, or is expected to comply, with the relevant transport provisions within the WDC District Plan. In particular, the proposal provides a connected street network and incorporates a network of footpaths and shared paths that connect with proposed and existing walking and cycling facilities in the surrounding area. The proposal also provides for on-street parking, pedestrian accessibility and active mode connectivity in a manner consistent with the objectives of the WDC District Plan.

The assessment identifies transport-related non-compliance associated with the separation distances between some vehicle crossings and nearby intersections and the road hierarchy connections.

While strict compliance with the specified separation distances is not achieved in all locations, the non-compliance occurs within low-speed residential environments that are expected to carry relatively low traffic volumes. The proposed road network incorporates traffic calming measures and is intended to function primarily as a local access environment, reducing the potential for adverse safety or operational effects.

Similarly, strict compliance with road hierarchy connections is not achieved as the proposed collector road within the development provides the connection to the Major Arterial (State Highway) and is therefore not connecting to a road at the same level in the hierarchy, or directly above or below its place in the hierarchy. Access to the development is provided via a Collector Road connecting to the State Highway. The collector road performs its intended traffic distribution function by collecting vehicle movements from the internal local road network and directing them to the State Highway. The local roads primarily provide access to adjacent properties and do not perform a strategic movement function. The collector road is not proposed as a through road, and vehicle movements are limited to those with a destination within the development. This reinforces the intended hierarchy by ensuring the collector road serves a neighbourhood distribution function rather than a wider network movement function.

On this basis, it is assessed that the reduced separation distances and the road hierarchy will not adversely affect the safe or efficient operation of the transport network and that the non-compliance is acceptable from a transport perspective.

Overall, the proposal is assessed as being consistent with the intent of the relevant transport rules of the WDC District Plan.

13.0 Construction Traffic Effects

13.1 Overview

The development of proposal will involve earthworks and civil infrastructure construction at scale, undertaken across a staged implementation programme. The Applicant has advised that construction is currently anticipated to commence from approximately 2027, with works progressing incrementally as land is developed and serviced. The coordination and management of stormwater within the site is expected to be an early factor in terms of the initial earthworks required to support the initial development staging. Additionally, some works, including the SH3 roundabout and pathway connection to Racecourse Road are required within the road corridor environments as mitigation to enable development staging.

The construction traffic effects have the potential to incrementally interact with the surrounding road network both in order to support initial construction access and also periodically following this to establish the roundabout and support subsequent staged development of the site. These effects will be temporary in nature but, if unmanaged, could give rise to adverse safety and efficiency effects on the surrounding local road network and State Highway 3.

The purpose of this section is to identify the potential construction traffic effects at a strategic level and to outline the framework through which those effects will be appropriately managed. Detailed construction methodology, earthworks fill source locations, haul routes, access locations and traffic management measures will be confirmed through a contractor-prepared Construction Traffic Management Plan (**CTMP**) and associated Temporary Traffic Management Plans (**TTMPs**), which will be subject to relevant authority authorisation prior to the commencement of works.

13.2 Construction Activities and Earthworks Context

Bulk earthworks and construction activity associated with the development will involve a combination of site preparation, platform formation, stormwater and utility infrastructure, road construction and servicing works to be followed by construction activities associated with the proposed buildings and structures on the site.

Initial transport demands will be associated with site establishment, contracted staffing vehicle movements, the installation of contractor buildings and facilities and the formation of a yard to support operational and parking requirements. The introduction and connection of key utilities such as power, water and waste collection services are also expected, however some of these, such as waste collection may be temporarily established as managed and/or standalone facilities.

Preliminary earthworks assessments indicate that the development is planned to predominantly achieve a generalised cut to fill balance of earthworks across the site. To achieve this, material is expected to be moved and managed within the overall extent of the site, minimising the need for off-site bulk earthworks related vehicle movements.

The formation of roading will necessitate the importation of road sub-base, basecourse and road surface finishing materials. There has been no specific determination in relation to the source of quarry materials. This is expected to be determined by the appointed contractor.

An area-based assessment however has identified that sand quarries are relatively plentiful within the region. The most accessible of these are located generally to the north, northwest or northeastern areas of the site and within about a 20-minute period of travel of the site, as indicated on the following Figure:

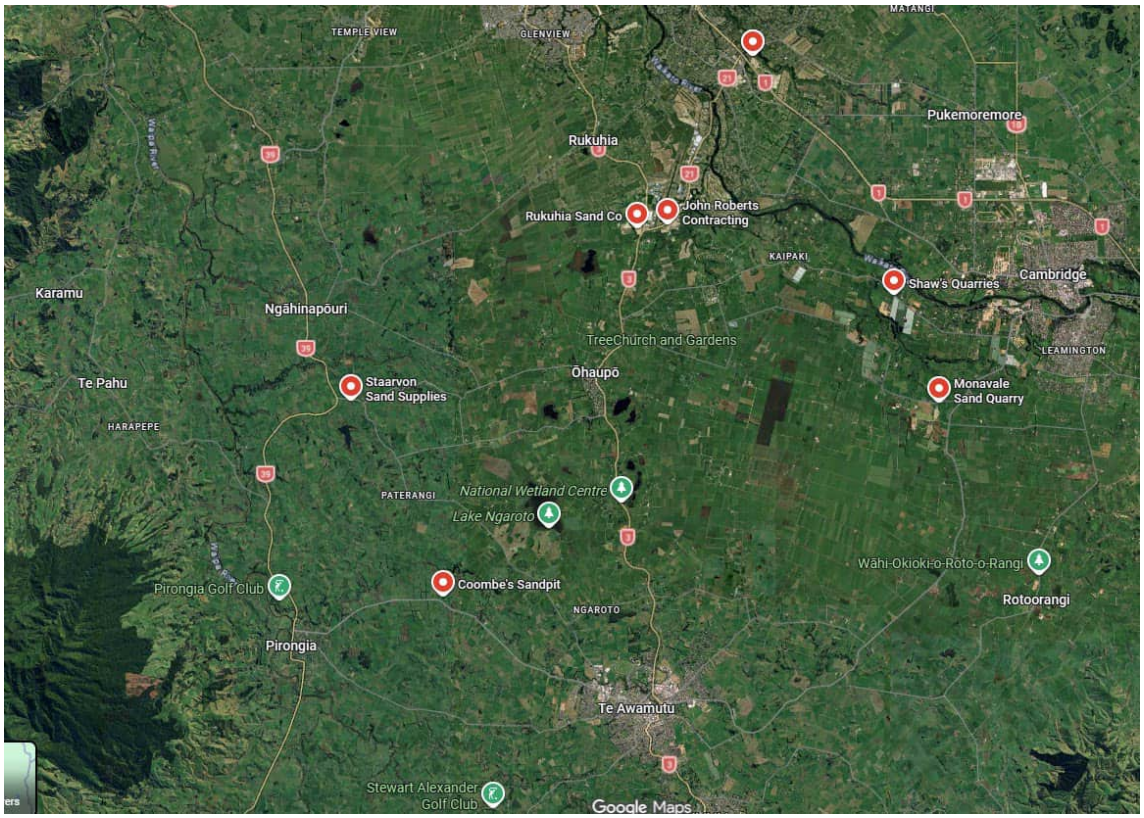


Figure 30: Indicative Sand Quarry Locations in Proximity to the Site

The travel routes associated with these sites indicate the supply of material arriving and departing from/to the north via SH3 and potentially Ngaroto Road. The potential travel routes associated with sand supply, if required, are recommended to consider the potential for route selection to minimise the extent that they travel on the Waipa District Council local road network, the avoidance or minimisation of travel through established communities and the need for safe turning management to/from the state highway road corridor including at the site access.

The source of road construction metals is generally located in areas with a more hilly/mountainous terrain. Sources for these are indicatively available within about a 30 to 40-minute drive of the site. These sites are located either on the northern side of Mt Pirongia, about 10 minutes south of Kihikihi on SH3 or to the east at Pukeatua. Travel associated with these supply sites is therefore likely to be associated with movements to/from the west via Ngaroto Road or south via SH3.

Overall, it is assessed the likely routes for importing materials are predominantly associated with SH3. Access and connectivity between the quarry sites and SH3 and the travel routes to and from the site are recommended to be given specific consideration and description within a Construction Traffic Management Plan (CTMP) to be prepared by the Contractor and submitted to Waipa District Council for authorisation prior to commencement of material importation to the site. Turning to/from a potential construction site access on SH3 is recommended to be implemented under a site specific and approved temporary traffic management plan. The relevant approving authority in this regard is the NZ Transport Agency.

13.3 Indicative Construction Staging

The provisionally planned construction staging approach to the development is indicated on the drawings prepared by Pacific Environments Architects (Sheet No. A0105). This indicative staging is shown on the following Figure:



Figure 31: Indicative Development Staging (Source: Pacific Environments Architects)

The staging plan indicates up to 9 development stages. Construction is intended to commence closest to SH3 and progress generally eastward across the site.

Initial and temporary construction staging access to/from SH3 is proposed for the purposes of enabling establishment and the bulk earthworks associated with facilitating the establishment of the initial development stages on the site. It is evident the proposed roundabout intersection control is important to the safe operation of the site for residents/staff as well as for the longer-term transport movements associated with general construction. It is therefore recommended that a temporary construction access be enabled to support initial site establishment and the initial construction phases. To ensure the safe accommodation of residents/staff and subsequent site development stages, it is recommended the roundabout on SH3 is established prior to the occupancy of the first dwelling or other activity on the site.

13.4 Indicative Construction Programme

The development is proposed to be constructed progressively across four stages, together with the NZTA Corridor works. Stage 1 and the corridor works would be undertaken concurrently, followed by Stage 2, which includes critical culvert crossings and associated earthworks

required before Stages 3 and 4 can commence. Stages 3 and 4 may then be undertaken separately or concurrently, depending on the final construction programme.

The Construction Management Plan (CMP) identifies a combined duration of approximately 18 to 24 months for Stage 1 and the NZTA Corridor works, 12 to 18 months for Stage 2, and approximately 12 months each for Stages 3 and 4. If undertaken sequentially, these periods sum to approximately 54 to 66 months, or 4.5 to 5.5 years. Allowing for seasonal earthworks restrictions, weather and the detailed staging of the works, the CMP anticipates that the earthworks will be completed over approximately five to six earthworks seasons.

Further information is contained within the CMP provided by Maven Consultants as part of the engineering set of documents.

13.5 Indicative Construction Traffic Generation Demand & Effects Assessment

The tables below provides the estimated total volume of earthworks for the development and the estimated range of heavy vehicle trips required for the works.

Table 13-1 - Indicative earthworks volumes (Source: Maven Consultants)

Bulk Subgrade Earthworks (topsoil stripping inclusive)	
Total area of ground disturbance	201,522 m² (20.15ha)
Total volume of CUT	271,320 m³
Total volume of FILL	115,153 m³
Total Volume of FILL with Compaction Factor (1.25)	143,942 m³
Maximum CUT and FILL depth	7.0m FILL / 6.5m CUT
Total Volume (Excess Cut)	127,378 m³
Bulk Topsoil Volumes	
Topsoil stripping (200 mm)	48,253 m³
Topsoil Respread (150mm)	38,336 m³
Total Excess Topsoil	9,917 m³
Assumed Cut to Waste Volumes	
Assumed Cut to Waste Unsuitable	45,146 m³
Assumed Cut to Waste Clean fill Material	82,232 m³
Other	
Assumed Imported Granular Pavement	26,846 m³

To demonstrate the potential magnitude of construction traffic effects where external haulage is required, an indicative scenario has been assessed assuming either large truck and trailer (assumed 16m per load) or standard truck and trailer (assumed 14m per load) vehicles are used. This assessment provides a range of heavy vehicle trips provided in the following table.

Table 13-2 - Estimated heavy vehicle trips by stage of earthworks (Source: Maven Consultants)

Stage/work area	Approximate loaded-trip range	Approximate total movement range	Anticipated length of works
NZTA Corridor	1,030–1,180	2,070–2,370	18-24 months
Stage 1	5,250–6,000	10,500–12,000	
Stage 2	1,730–1,980	3,460–3,960	12-18 months
Stage 3	1,290–1,470	2,580–2,950	12 months
Stage 4	1,010–1,150	2,010–2,300	12 months
Overall total	10,300–11,800	20,600–23,600	5-6 years

On this basis, the illustrative scenario equates to:

- Approximately 10,300-11,800 heavy vehicle loads (one-way loaded movement), or
- Approximately 20,600-23,600 two-way heavy vehicle movements over the six year period.

When distributed across an assumed 6 active earthworks months and an assumed 6 working days per week, this would equate on average to:

- Approximately 54 two-way heavy vehicle movements per working day, or
- Approximately 5.4 two-way heavy vehicle movements per hour over a 10-hour construction day.

The frequency of movements at the proposed site access on SH3 is therefore estimated to involve approximately 5.4 two-way heavy vehicle movements per hour or approximately one movement every 11 minutes, or one movement in each direction (arriving or departing) every 22 minutes on average.

The current and future road network capacity, in particular the proposed roundabout operating at LOS A, is readily and safely able to accommodate the addition of traffic demands at these levels.

This scenario is included for illustrative purposes only to conservatively demonstrate the scale of potential effects and the methodology used to assess them. The actual volume of material hauled in relation to any one stage of development, the duration of haulage, access arrangements and operating hours would be determined by the appointed contractor and confirmed through the CTMP.

13.6 Construction Traffic Management Framework

All construction traffic effects are recommended to be managed through the preparation and implementation of a CTMP, to be submitted for approval by the relevant road controlling authorities prior to the commencement of works.

The CTMP is to be prepared by the construction contractor and would be subject to engagement with, and certification by the relevant Road Controlling Authority (**RCA**) for works affecting roads under their respective jurisdictions.

The CTMP will be required to:

- Identify construction access locations and access layouts;
- Confirm haul routes, including any restrictions on routes, times or vehicle types;
- Manage the timing and frequency of heavy vehicle movements;
- Provide for appropriate temporary traffic management measures in accordance with the New Zealand Guide to Temporary Traffic Management (**NZGTTM**);
- Address the safety of all road users, including pedestrians and cyclists where relevant;
- Ensure continued safe access for adjacent landowners, waste collection and emergency services; and
- Include communication, stakeholder liaison and complaints management procedures.

Where construction activities interact directly with the public road network, site-specific TMPs will be prepared and implemented in accordance with the approved CTMP and submitted to the relevant RCA for certification prior to works commencing.

The following framework for a CTMP is recommended for inclusion in the conditions to ensure appropriate and ongoing consideration of the potential for effects within a changing future road network environment, to ensure appropriate engagement with the relevant authorities and to achieve mitigation of effects to a minor or less than minor degree:

The **CTMP** shall:

a. Identify construction access locations and access layouts;
b. Identify the location of a site office, amenities and on-site parking areas;
c. Confirm haul routes, including any restrictions on routes, times or vehicle types;
d. Manage the timing and frequency of heavy vehicle movements;
e. Provide for appropriate temporary traffic management measures in accordance with the NZGTTM;
f. Include provisions for the avoidance of detritus tracking on public roads and measures to respond and address this in the event it occurs;
g. Address the safety of all road users, including pedestrians and cyclists where relevant;
h. Ensure continued access for adjacent landowners, businesses and emergency services;
i. Include communication, stakeholder liaison and complaints management procedures;
j. Include provisions for transport of over-size vehicles and associated permits; and
k. Where construction activities interact directly with the public road network, require site-specific TTMPs to be prepared and implemented as appropriate, in accordance with the approved CTMP and submitted to the relevant RCA for certification prior to works commencing.

14.0 Proposed Transport Conditions Framework

The developed and proposed transport conditions have been integrated with the comprehensive conditions set included within **Appendix 29 – Draft WDC Conditions** of the Substantive Application Report.

15.0 Summary & Conclusion

This Integrated Transportation Assessment has been prepared to evaluate the transportation implications of the proposed Harlow Lifestyle Village, comprising approximately 414 independent living units, a 100-bed Care Home, Community Hub and associated infrastructure on a 25.78 ha site adjacent to Ōhaupō Road SH3, Te Awamutu. The assessment has considered the existing and future transport environment, strategic planning framework, transport network design, traffic generation, intersection performance, active mode connectivity, parking provision and construction traffic effects.

By way of a summary, the conclusions from the assessment demonstrates that the proposed development can be integrated safely and efficiently with the existing and future transport network. Key findings are summarised below:

- The site is strategically located adjacent to SH3 and in close proximity to Te Awamutu, enabling good accessibility for residents, staff, visitors and service providers.
- The surrounding transport network currently operates generally in accordance with its intended function, with no existing safety or operational issues that would preclude the proposed development.
- The proposal incorporates a comprehensive internal transport network with a clear road hierarchy, low-speed street environment, traffic calming measures, pedestrian facilities and shared path connections.
- At full development, the proposal is forecast to generate approximately 162 vehicle trips in the AM peak hour and 176 vehicle trips in the PM peak hour, which is comparatively low relative to the capacity of the surrounding strategic road network.
- Strategic WRTM modelling indicates that the proposal will not result in any material deterioration in link or intersection performance across the wider transport network, and no network capacity mitigation is required beyond the proposed site access arrangements.
- Detailed intersection assessments confirm that the proposed single-lane roundabout at the SH3 site access will operate efficiently, with substantial reserve capacity through all development stages and at full development to 2045.
- Sensitivity testing confirms that alternative trip distribution assumptions do not materially alter the assessment outcomes or create transportation effects warranting additional mitigation.
- The proposal provides walking, cycling and public transport accessibility through a new shared path connection to Te Awamutu, improved pedestrian facilities and provision for bus stops on SH3.
- Parking provision for the retirement village, Care Home and Community Hub is assessed as sufficient to accommodate anticipated demand and the operational requirements of the development.

- Construction traffic effects can be appropriately managed through staged infrastructure delivery, implementation of a Construction Traffic Management Plan and adherence to the recommended transport conditions framework.

Overall, it is concluded that the Harlow Lifestyle Village can be developed and operated in a manner that maintains the safe and efficient functioning of the surrounding transport network while providing a high-quality and accessible transport environment for residents and visitors. Subject to implementation of the proposed transport infrastructure, staging requirements and recommended conditions, the actual and potential transportation effects of the proposal are assessed as no more than minor.

Appendix 1: Strategic Policy Summary and Assessment

Policy / Strategy Reference	Assessment
Government Policy Statement – Land Transport 2024- 34	
The strategic priorities established in the GPS 24 are as follows: • Economic Growth and Productivity • Increased Maintenance and Resilience • Safety • Value for Money	These broad ranging priorities are applied through the regional and district strategies and in the way strategic and funding investment is applied to the region. The development proposal provides housing for elderly and aged care. Access to the site is proposed via a safe system roundabout controlled intersection that reduces ribbon-style individual property access points to the state highway network and introduces and consolidated safe point of access for existing residents and the development site. Public transport facilities are immediately located and to be further established as part of the intersection design. Further, access to these are enhanced through the safer and staged pedestrian crossing facilities. The site and existing residential properties on both sides of the state highway are to be better connected and integrated with the Te Awamutu Urban area through the shared path that is to link south to and provide safe crossing across Racecourse Road.
Government Emissions Reduction Plan 2 (ERP2 2026-30)	
Action and Policy	
Aiming for a network of 10,000 public EV charging points by 2030 and facilitating private investment in EV charging infrastructure.	Electricity lines companies, motorist service stations and other private investment undertakings are leading the delivery of these facilities. Two EV Charging locations are currently established in Te Awamutu at Scout Lane and on Mahoe Street. The development proposal intends every independent dwelling unit to be established with solar EV charging within the dwelling garage space. The community areas are currently being considered and planned, and some EV charging is also planned to be integrated with the apartment units.
Reviewing regulatory barriers to decarbonising heavy vehicles (eg, EVs and hydrogen).	Regulatory review is the realm of Government

Policy / Strategy Reference	Assessment
Promoting innovation through the Low Emissions Heavy Vehicle Fund.	Government is signalling a promotion fund
Continuing to support the aviation sector to decarbonise, and working with other countries on low- and zero-carbon shipping on key trade routes by 2035.	N/A
Supporting public transport in our main cities.	This policy signals continuing support for public transport. The policy explanations in ERP2 cite the following Government and Regional Authority actions in relation to public transport emissions: ***Supporting the transition to zero-emissions buses*** *Most public transport authorities have begun using zero-emissions buses in their public transport fleets, because of the economic, health and emissions benefits.* *From 1 July 2025, authorities are required to procure only zero-emissions buses.* *To support this transition, the Government has reconfirmed $44.721 million through Budget 2024 over four years. Co-funding will be available to authorities to:* *• speed up the deployment of the buses* *• encourage innovative approaches for the rollout of buses and infrastructure.*
Waikato Regional Policy Statement	
The Waikato Regional Policy Statement (RPS) provides the statutory regional framework for managing urban growth and integrating land use with infrastructure. Its urban form and development provisions seek planned and coordinated development of the built environment in line with the following policies: • UFD-P1 - Planned and co-ordinated subdivision, use and development • UFD-P2 - Co-ordinating growth and infrastructure • UFD-P11 - Adopting Future Proof land use pattern	The proposal is consistent with the transport-related direction of the RPS. The proposal responds positively to the direction of Policy UFD-P1 by representing a planned and coordinated form of development. The assessment within this report demonstrates that the transport effects of the development can be appropriately accommodated while having regard to the existing and planned transport network and without creating adverse cumulative effects on network operation.

Policy / Strategy Reference	Assessment
Policy UFD-P1 requires subdivision, use and development of the built environment, including transport infrastructure, to occur in a planned and coordinated manner. The policy seeks to ensure that development recognises and addresses potential cumulative effects, is based on sufficient information to enable assessment of long-term effects, and has regard to both the existing and planned built environment. In the transport context, the policy establishes the overarching expectation that development be informed by an understanding of its wider network implications and integrated with surrounding land use and infrastructure planning. Of particular relevance to transport, Policy UFD-P2 requires the nature, timing and sequencing of development to be coordinated with the funding, implementation and operation of transport and other infrastructure. This includes maintaining or enhancing the operational effectiveness, viability and safety of existing and planned infrastructure, protecting existing investment, and ensuring that appropriate infrastructure is available to service development. The policy also seeks to maintain the efficient functioning of transport corridors and retain their ability to be upgraded. Within the Future Proof area, Policy UFD-P11 directs new urban development to the identified Urban and Village Enablement Areas. It also expressly recognizes the possibility of alternative urban land release patterns, including development outside those areas, subject to justification against the Future Proof land use pattern, the operative Future Development Strategy and the applicable responsive planning criteria. The site is located outside the currently identified Te Awamutu Urban Enablement Area and therefore does not form part of the RPS's planned settlement pattern. From a transport perspective, the relevant RPS considerations are consequently whether the proposal can be appropriately integrated with existing and planned transport infrastructure, whether the safe and efficient function of that	The proposal is also consistent with the intent of Policy UFD-P2. While the development will introduce additional travel demand, the retirement village and care home are expected to generate materially lower peak-hour traffic volumes than a conventional residential development of a comparable size. The assessments within this report demonstrates that the proposed roundabout intersection is expected to operate at an acceptable level of service and will maintain the efficient and safe operation of the surrounding road network. In addition, pedestrian and cycling connections and public transport facilities, are proposed to support the integration of the development to the local area, while maintaining the function, efficiency and safety of the wider transport network. In relation to Policy UFD-P11, while the site is located outside the identified Te Awamutu Urban Enablement Area, the proposal provides a form of specialised residential accommodation that contributes to housing choice in the area. Importantly, the proposal can be integrated with existing and planned transport infrastructure without compromising the safe or efficient operation of the transport network. The demonstrated ability of the network to accommodate the development, together with the coordinated provision of supporting infrastructure and the lower traffic generation characteristics of a retirement village and care home, indicate that the proposal can be appropriately considered under the policy framework that provides for alternative urban land release patterns outside the identified enablement areas.

Policy / Strategy Reference	Assessment
network can be maintained, and whether the transport infrastructure required to support the development can be provided in a coordinated manner.	
EIT-M1 – Plan provisions	
Regional and district plans shall include provisions that give effect to EIT P1, and in particular, that management of the built environment: 1. avoids, as far as practicable, adverse effects on the function of significant transport corridors as defined in Maps 25 and 26, and otherwise remedies or mitigates any adverse effects that cannot be practicably be avoided; 2. avoids, as far as practicable, the adverse effects of ribbon development along the defined significant transport corridors, and otherwise remedies or mitigates any adverse effects that cannot practicably be avoided; 3. avoids as far as practicable, the need for additional access points onto the defined significant transport corridors, and otherwise remedies or mitigates the adverse effects of any additional access points that cannot practicably be avoided; 4. avoids as far as is practicable, the exacerbation of community severance caused by defined significant transport corridors, and otherwise remedies or mitigates the adverse effects of any exacerbated community severance that cannot practicably be avoided; 5. provides for renewable energy by having particular regard to:	Key and targeted alignment responses are described as follows: 1. Adverse effects on the strategic network are avoided or otherwise mitigated through reduced and safely integrated resident vehicle crossings, establishment of a safe system roundabout controlled intersection, design of the roundabout operating at an efficient LOS A – B at 2045, integrating public transport, walking and cycling infrastructure. 2. The potential for ribbon development is minimised and mitigated through the consolidation of current vehicle crossings on the state highway corridor into the roundabout, providing for future growth area and existing local road corridor multi-modal movement integration. 3. The need for access on the strategic road corridor has as far as practicable, been minimised. The structure of the internal development road network includes provision for public roading and has the potential to set up a reduction in another current and adjacent intersection on the state highway. Drive. Development access has been consolidated to a single safe system intersection. 4. The development proposal creates new and safer connectivity and integration for existing dwellings with access to the state highway by consolidating access at the safe system roundabout. It further introduces a pedestrian and cycle access for both the site and existing un-serviced residences via a proposed shared pathway linking to Racecourse Road. Future growth area local road and multi-modal integration is

Policy / Strategy Reference	Assessment
a. the increasing requirement for electricity generation from renewable sources such as geothermal, fresh water, wind, solar, biomass and marine, and the need to maintain generation from existing renewable electricity generation activities; b. the need for electricity generation to locate where energy sources exist, and transmission infrastructure to connect these generation sites to the national grid or local distribution network; c. the logistical or technical practicalities associated with developing, upgrading, operating or maintaining renewable electricity generation, or electricity transmission activities; d. any residual environmental effects of renewable electricity generation activities which cannot be avoided, remedied or mitigated can be offset or compensated to benefit the affected community or the region; and e. the benefits of renewable electricity generation activities including maintaining or increasing security of electricity supply. 6. provides for infrastructure in a manner that: a. recognises that infrastructure development can adversely affect people and communities; b. enables the ongoing operation, maintenance, upgrading and development of municipal water supply infrastructure so as to provide for the justified and reasonably foreseeable needs of current and future generations; and c. does not result in land uses that adversely affect the effective and efficient operation of existing and planned regionally significant infrastructure.	purposefully provided for within the design to the south, west and north of the site. 5. Solar EV generation is integrated with all of the independent dwellings and some of the apartment units. It is also currently being considered and is not prevented from future establishment across the development community or common space areas. Integrated access to the future public transport electrified frequent service fleet on the state highway further supports these outcomes. 6. Integrating the planned infrastructure and establishing currently unsupplied connectivity with the Te Awamutu urban environment for multi-modal transport modes, as well as ensuring substantial surplus capacity for traffic growth beyond 2045 positively contributes towards aligning with these methods. 7. Provision for renewable electricity generation to support active mode and vehicle-based movement is integrated within the development proposal as has been described above.

Policy / Strategy Reference	Assessment
7. considers how existing and planned renewable electricity generation activities and existing and planned urban development will be managed in relation to one another.	
EIT-M3 – Collaboration	
Waikato Regional Council will seek to collaborate with territorial authorities, KiwiRail and the NZ Transport Agency to ensure development protects the function of significant transport corridors as defined in Maps 25 and 26.	The applicant has collaborated extensively with the NZ Transport Agency in relation to the proposed point of access, multi-modal and public transport movement, optioneering and evaluation of alternative access controls and is recommending a safe system roundabout intersection control that has been identified as the preferred form of control by the Agency.
EIT-M5 – Measures to avoid adverse effects	
Local authorities should ensure that appropriate measures are implemented to avoid adverse effects of development of the built environment on the safe, efficient and effective operation of regionally significant infrastructure. With respect to electricity transmission corridors, development of the built environment should also take into account National Policy Statements, National Environmental Standards and Transmission Corridor Guidelines as relevant to the circumstances.	The applicant has engaged extensively with Waipa District Council in relation to the transport infrastructure and included feedback and subsequent refinement, particularly in relation to the walking and cycling infrastructure, in the overall design and integration of the proposal with the built Te Awamutu urban environment.
UFD-O1 – Built environment	
Development of the built environment (including transport and other infrastructure) and associated land use occurs in an integrated, sustainable and planned manner which enables positive environmental, social, cultural and economic outcomes, including by: 3. integrating land use and infrastructure planning, including by ensuring that development of the built environment does not compromise the safe, efficient and effective operation of infrastructure corridors; 5. recognising and protecting the value and long-term benefits of regionally significant infrastructure; 12. strategically planning for growth and development to create responsive and well-functioning urban environments, that:	3. The development proposal intends a safe system roundabout intersection control that further benefits established residences on the state highway corridor, public transport and multi-modal infrastructure is to be established, safe crossing of the highway is enabled and purposeful development design provides for public road and future growth area integration to the south, west and north of the proposal. 5. The safe system roundabout has been designed with efficient operational parameters and significant surplus capacity for future generations beyond 2045. 12. The proposal integrates solar power generation, EV charging, housing choice and aged care alternatives to the current Te

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a. support reductions in greenhouse gas emissions and are resilient to the current and future effects of climate change; b. improve housing choice, quality, and affordability; c. enable a variety of homes that enable Māori to express their cultural traditions and norms; d. ensure sufficient development capacity, supported by integrated infrastructure provision, for identified housing and business needs in the short, medium and long term; e. improves connectivity within urban areas, particularly by active transport and public transport; f. take into account the values and aspirations of hapū and iwi for urban development.	Awamutu offering. It introduces new active mode integration and connectivity for both the development and established residences on the state highway that are currently un-serviced. Int introduces a safe crossing facility on Racecourse Road that more safely and effectively integrates the established Taylors Ave / Greenhill Drive local community with the Te Awamutu urban environment.
UFD-P1 – Planned and co-ordinated subdivision, use and development	
Subdivision, use and development of the built environment, including transport, occurs in a planned and co-ordinated manner which: 1. has regard to the principles in APP11; 2. recognises and addresses potential cumulative effects of subdivision, use and development; 3. is based on sufficient information to allow assessment of the potential long-term effects of subdivision, use and development; and 4. has regard to the existing built environment.	The development proposal has had particular regard for the planned and established urban environment. The design solutions purposefully provide for immediate and further integration potential for walking, cycling, public transport and vehicular travel as has been described above,
UFD-P2 – Co-ordinating growth and infrastructure	
Management of the built environment ensures:	The proposed provision of new transport infrastructure is proposed in a way that supports the future generating capacity of planned growth cell and future long-term district and regional growth beyond the 2045 year horizon. The design and infrastructure response has been extensively engaged with NZTA and has been selected to avoid secondary staged

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1. the nature, timing and sequencing of new development is co-ordinated with the development, funding, implementation and operation of transport and other infrastructure, in order to: a. optimise the efficient and affordable provision of both the development and the infrastructure; b. maintain or enhance the operational effectiveness, viability and safety of existing and planned infrastructure; c. protect investment in existing infrastructure; and d. ensure new development does not occur until provision for appropriate infrastructure necessary to service the development is in place; 2. the spatial pattern of land use development, as it is likely to develop over at least a 30-year period, is understood sufficiently to inform reviews of the Regional Land Transport Plan. As a minimum, this will require the development and maintenance of growth strategies where strong population growth is anticipated or as required for tier 3 local authorities as set out in UFD-P18 and its associated methods; 3. the efficient and effective functioning of infrastructure, including transport corridors, is maintained, and the ability to maintain and upgrade that infrastructure is retained; and 4. a co-ordinated and integrated approach across regional and district boundaries and between agencies; and 5. that where new infrastructure is provided by the private sector, it does not compromise the function of existing, or the planned provision of, infrastructure provided by central, regional and local government agencies.	construction disruption effects and provide capacity beyond a 20-year horizon. In these ways is does not compromise, but rather supports existing and/or planned future transport infrastructure
UFD-P4 – Energy demand management	
Development should minimise transport, energy demand and waste production, encourage beneficial re-use of waste materials, and promote the efficient use of energy.	Retirement living is a materially lower trip generating activity when compared with typical residential household living. The site is located on a frequent service public transport corridor identified in the Metro-Spatial plan and enhanced public transport stopping facilities and active

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	mode accessibility is designed to be integrated with the roundabout. This multi-modal approach minimises future reliance on vehicular transport. The integrated solar EV charging approach further supports this policy outcome.
APP11 - Development Principles	
Promote compact urban form, design and location to: i. minimise energy and carbon use; ii. minimise the need for private motor vehicle use; iii. maximise opportunities to support and take advantage of public transport in particular by encouraging employment activities in locations that are or can in the future be served efficiently by public transport; iv. encourage walking, cycling and multi-modal transport connections; and v. maximise opportunities for people to live, work and play within their local area	The development proposal is a materially denser development living proposal compared with the current Te Awamutu living environments. It has been designed to support active mode internal movement and active mode integration with the external community and urban areas through the path structures proposed. Community facilities within the development proposal lessen the need for longer trip making externally. The development supplied mini-bus service to external services and shopping further supports an integrated movement outcome that minimises the need for and reliance on private motor vehicle trip making.
Future Proof Strategy	
The Future Proof Strategy provides the overarching sub-regional growth management framework for Hamilton City and the Waikato and Waipa districts. It seeks a compact and concentrated settlement pattern, with approximately 90% of Waipa's growth anticipated within the identified urban areas of Cambridge, Te Awamutu and Kihikihi. Future Proof seeks to focus development within defined urban enablement areas and generally favours existing urban and village areas over the creation of new ones. At the same time, it recognises that future growth cannot be predicted with certainty and provides a responsive planning framework through which previously unidentified or emerging development opportunities can be considered. Transport is integral to that growth management approach. Growth areas are expected to be connected to rapid and frequent public transport and supported by effective road and active-mode	Future Proof recognises that out-of-sequence or unanticipated development opportunities may warrant consideration where they can be appropriately integrated with existing and planned infrastructure. The proposal supports this direction by providing a land use with comparatively low transport demands, whilst incorporating active transport and public transport connections from the outset. New walking and cycling links to Te Awamutu and proposed bus stops adjacent to the site will improve accessibility and reduce reliance on private vehicles. The proposed roundabout intersection has been assessed to operate at an appropriate level of service, ensuring the strategic and local transport networks continue to function efficiently. The proposal can therefore be integrated with the transport network while maintaining appropriate levels of service and supporting wider strategic transport outcomes.

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connections, with land use, infrastructure and funding integrated through processes such as structure planning. Future Proof recognises that out-of-sequence or unanticipated development may provide opportunities that warrant consideration and provides a framework for responding to such proposals. Development should be appropriately integrated with existing or planned infrastructure so that the strategic transport network continues to operate effectively and appropriate network levels of service can be maintained or achieved. The key transport related principles are as follows:	
2.4 Ensure the sub-region's towns and villages retain their individual and distinct identities with thriving town centres that support people to live, work, play, invest and visit	The proposal supports this principle by improving connectivity between the site and Te Awamutu town centre. The proposed pedestrian and cycle connection, together with access to public transport services, will improve access to retail, healthcare and community facilities for future residents, while also improving access to employment opportunities within the development for Te Awamutu residents. These connections support the ongoing function of the town centre and help reduce reliance on private vehicle travel.
2.5 Promote increased densities in new residential development and more intensive redevelopment of existing urban areas.	The development proposals concentrate a substantial resident population within a compact footprint with interconnected pedestrian and cycle routes. This supports a wider range of travel options placing residents within convenient reach of public transport, pedestrian and cycle connections, and local destinations. It also improves the effectiveness of active and public transport facilities, encouraging greater use of these modes and reducing reliance on private vehicles.
2.6 Shape and guide development towards existing urban settlements and nodes, and ensure that rural-residential development occurs in a sustainable way to avoid unnecessary sprawl.	The proposal would concentrate development adjacent to Te Awamutu and would be integrated with the existing transport network. It proposes direct walking, cycling and public transport connections to local services and amenities, reducing reliance on longer vehicle trips.
2.9 Improve access to housing, employment, education, health care services, other services and amenities	The proposed pedestrian and cycle connections and bus stop infrastructure would provide residents with access to healthcare, retail and community facilities in Te Awamutu and Hamilton. These connections would also enable people living in Te Awamutu to access

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	employment opportunities at the retirement village and care home, improving transport choice for residents, staff and visitors.
2.10 Enable well-functioning and quality urban environments based around transit-oriented development, active travel infrastructure and connected centres.	The proposal incorporates infrastructure that supports both active transport and public transport use. New pedestrian and cycle facilities. Including the new shared path between the development site and Racecourse Road, will provide direct connections to Te Awamutu, while the proposed bus stops adjacent to the site will facilitate access to existing and future public transport services along the Hamilton-Te Awamutu corridor.
4.2 Encourage development in established settlements to support the efficient use of existing infrastructure and resources, including public transport active travel modes	The proposal would utilise and enhance existing transport infrastructure through the proposed shared path between the site and Racecourse Road, and two new bus stops adjacent to the site. These improvements would strengthen connections to the wider walking, cycling and public transport networks and provide greater transport choice for residents, staff and visitors.
4.3 Protect existing and future infrastructure and transport corridors, as shown on Map 5 or as set out in any partner-endorsed One Network Framework Plans, from development that could constrain or compromise the efficiency of infrastructure and transport corridor operation.	Adverse effects on the strategic network are avoided or otherwise mitigated through reduced and safely integrated resident vehicle crossings, providing one connection to the state highway via the establishment of a safe system roundabout controlled intersection, design of the roundabout operating at an efficient LOS A – B at 2045, and integrating public transport, walking and cycling infrastructure.
6.3 Ensure that integrated transport and land use planning addresses the urgent need to reduce emissions, build climate resilience and contribute to local and national emission reduction targets.	Along with the walking, cycling, public transport provisions proposed, solar-powered EV charging is proposed within the garage of each independent dwelling, with additional EV charging planned for the apartment units and being considered for community areas. Together, these measures would reduce reliance on conventionally fuelled vehicles and support lower transport-related emissions.
Hamilton-Waikato Metropolitan Spatial Plan (MSP)	
The MSP provides a long-term spatial framework for the metropolitan area extending from Taupiri in the north to Cambridge and Te Awamutu in the south. It anticipates significant growth in Te Awamutu and seeks to integrate that growth with transport, infrastructure, employment and services.	The proposal is generally consistent with the MSP's transport outcomes. While not located within an identified growth area, it is situated within the broader Hamilton-Te Awamutu corridor and incorporates features that support the long-term transition towards a more multimodal transport system. Proposed pedestrian and cycle links provide opportunities for active travel to Te Awamutu, while planned bus stops adjacent to the development support future public transport

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A key feature of the MSP is the development of a rapid and frequent multimodal transport network. Te Awamutu is identified as part of the future public transport network, although the MSP is explicit that its public transport schematic is conceptual and requires further investigation. The MSP also identifies the state highway network connecting Te Awamutu with the wider metropolitan area as part of the strategic movement network and seeks to connect major growth centres by public transport and active modes while protecting efficient freight and inter-regional corridors. While the proposal is not itself an identified MSP growth area, its location on the northern side of Te Awamutu places it in the broader Hamilton-Te Awamutu transport corridor addressed by the MSP. The relevant transport context is therefore the long-term transition toward stronger public transport connections between Te Awamutu and Hamilton, alongside protection of the strategic road network and provision of safe and connected active-mode infrastructure.	connectivity. The relatively low traffic generation associated with a retirement village and care facility, together with the proposed roundabout intersection that has been assessed to operate at an acceptable level of service, means the proposal is unlikely to compromise the operation or efficiency of the strategic transport network.
The stated Spatial Plan Directives are as follows: • Rapid and frequent public transport networks offer a viable and attractive alternative to private vehicles, expanding the reach of high quality public transport. • Plan and protect efficient freight network operations and inter-regional corridors. • Connect transport and resident hubs, linking major growth centres by public transport and active modes. • Plan and design neighbourhoods to make public transport use, walking and cycling easy and attractive.	• The two proposed bus stops adjacent to the site would improve access to public transport services between Te Awamutu and Hamilton, providing residents, staff and visitors with a more viable alternative to private vehicle travel and extending the reach of the public transport network. • The efficiency of the strategic transport corridor (SH3) is maintained through a Safe System roundabout-controlled intersection forecast to operate at LOS A to B in 2045. • The proposed bus stops would connect the retirement village and care home with Te Awamutu and Hamilton, while the shared path between the site and Racecourse Road would link the development to the wider walking and cycling network. • The proposal integrates public transport and active travel into the development through the two adjacent bus stops, a shared path connection to Racecourse Road and internal pedestrian and cycle facilities. These measures would provide safe and

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	convenient alternatives to private vehicle travel for residents, staff and visitors.
Waikato RLTP 2024 - 2054	
The RLTP is the principal regional document guiding integrated land transport planning and investment. Its growth and economic development objective seeks an integrated transport system that supports compact urban form and planned future growth. Relevant policies within the RLTP include policies P11, P27, P28, P32, P33, P34, P35, P38 and P39 which reference: • ageing population needs • accessibility • transport-disadvantaged users • public transport provision • walking and cycling connections • health and wellbeing outcomes • reducing dependence on private vehicles The RLTP supports implementation of the MSP through an integrated, frequent public transport network connecting urban growth centres, greater provision for active modes and management of demand on the road network. It also seeks to protect and develop regionally significant multimodal corridors and manage growth so that the function, capacity and efficiency of the strategic transport network are maintained. For the southern metropolitan area, the RLTP identifies Hamilton Southern Links as a significant investment intended to support planned growth and a future multimodal transport network. It also includes a Waipa Urban Mobility activity to develop a programme of walking and cycling improvements for Waipa's urban towns. Accessibility is also a significant component of the RLTP. It seeks an integrated transport system that responds to differing community	The proposed development strongly aligns with the objectives of the RLTP, particularly those relating to accessibility, transport choice, active transport, public transport provision, network efficiency and responding to the needs of an ageing population. Compared with conventional residential development, the retirement village and care home is expected to generate lower peak period vehicle trip demands, reflecting the travel characteristics typically associated with retirement living and care facilities. The development has been specifically designed to provide residents with a range of transport options through the provision of new pedestrian and cycle connections to Te Awamutu and new bus stop infrastructure that will connect residents to both Te Awamutu and Hamilton. These measures are consistent with Policies P27, P28, P32 and P33, which seek to improve accessibility, provide equitable transport options, support public transport use, and enhance safe and connected walking and cycling networks. Providing convenient access to alternative transport modes is particularly important for retirement village residents, as they are likely to have reduced reliance on private vehicles. The proposal directly supports Policies P35, P38 and P39 by providing fit-for-purpose transport options through active and public transport connections. The pedestrian and cycle links will provides safe access between the site and Te Awamutu for residents and staff, while the proposed bus stops will improve access to healthcare, shopping and community facilities both locally and in Hamilton, thereby improving transport choice and reducing reliance on private vehicle travel. These initiatives will promote mobility, independence, wellbeing and social connectedness for residents. The development also aligns strongly with Policy P11, which seeks to build community resilience by adapting the transport system to respond

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access and mobility needs, including accessible public transport, safe and interconnected walking and cycling networks, community transport and expansion of Total Mobility. It is specifically relevant that the RLTP identifies the region's growing elderly population as increasing the need for public and community transport to provide access to essential services and healthcare. For the proposed development, the RLTP therefore establishes two primary considerations. One is to maintain safe and efficient operation of the strategic road network as growth occurs. The other is to increase the availability and attractiveness of alternatives to private vehicle travel.	to changing demographics and future community needs. The transport infrastructure incorporated into the proposal has been designed to support the accessibility and mobility requirements of future residents by providing transport choices that extend beyond private vehicle use, ensuring residents can continue to access key destinations safely and efficiently. Through its integration of walking, cycling and public transport facilities, the development is consistent with Policies P1, P16 and P34, which promote low-emission travel options and travel behaviour change. Furthermore, retirement villages and care homes typically generate substantially fewer commuter peak-hour vehicle trips than conventional residential developments. The proposed intersection is expected to accommodate forecast traffic demands while maintaining acceptable levels of service and efficient operation of the surrounding transport network. Consequently, the development will support network efficiency while providing a broader range of travel options for residents and visitors. Overall, the proposed development is consistent with the RLTP by supporting accessibility, transport choice, active transport, public transport use and community wellbeing. The provision of new pedestrian and cycle connections and bus stop infrastructure will provide residents with safe and convenient access to a range of transport options, helping to create a more connected and accessible community. Furthermore, the combination of an efficiently operating intersection and enhanced walking, cycling and public transport opportunities supports both the RLTP's accessibility and transport choice objectives and the efficient operation of the wider transport network.
The specific and relevant Transport Policy assessment matters are as follows:	

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P11 Build community resilience by adapting the regional land transport system to support and facilitate future community needs by responding to changing demographics, transport options and energy transition.	The proposal meets the transport needs of future residents by providing travel choices beyond private vehicle use. The proposed shared path to Racecourse Road and two new bus stops would improve access to Te Awamutu and Hamilton, while solar-powered EV charging throughout the development supports the transition to lower-emission travel.
P27 Improve accessibility and travel options to enhance individual and community wellbeing across the region.	The proposed shared path and bus stops would improve accessibility and travel choice for residents, staff and visitors. These connections would provide residents with access to healthcare, retail and community facilities in Te Awamutu and Hamilton, while enabling people living in Te Awamutu to access employment opportunities at the retirement village and care home.
P28 Provide an efficient, accessible, inclusive and equitable public transport system across the region by: • implementing the policies and actions in the Regional Public Transport Plan • supporting tailored transport solutions for different communities • providing for the transport disadvantaged.	The two proposed bus stops adjacent to the site would provide convenient access to services between Te Awamutu and Hamilton. This would support an accessible and inclusive public transport system and provide an important travel option for residents who do not drive or have limited access to a private vehicle.
P32 Provide for urban form that supports the uptake of walking, cycling, and public transport.	The proposal would concentrate development around network of internal walking and cycling paths. It also integrates with and enhances walking, cycling and public transport facilities adjacent to the site. The shared path connection to Racecourse Road and two adjacent bus stops would place residents within convenient reach of active and public transport networks, supporting greater uptake of these modes.
P33 Increase and enhance safe, accessible and inter-connected walking, cycling and micro-mobility networks in urban and rural towns.	The proposed shared path between the site and Racecourse Road would provide a safe and accessible walking and cycling connection to Te Awamutu and the wider active transport network. Internal pedestrian and cycle facilities would connect residents, staff and visitors with the shared path and proposed bus stops, creating an interconnected network within and beyond the site.
P34 Promote travel demand initiatives and technology that supports travel behaviour change, mode shift and compact urban form.	The proposal would support travel behaviour change by making walking, cycling and public transport practical alternatives to private vehicle travel. The concentration of residents and staff within a single location would also consolidate travel demand and improve the effectiveness of the proposed active and public transport facilities.

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P35 Develop fit-for-purpose transport options to support rural communities.	The proposed shared path and bus stops would provide fit-for-purpose transport options at the northern edge of Te Awamutu, where travel choices are currently more limited. These facilities would connect the development with local services and the Hamilton–Te Awamutu public transport corridor, reducing reliance on private vehicles.
P38 Expand Total Mobility throughout the region to provide for the transport disadvantaged and accessible health needs of communities.	While the proposal would not itself expand the Total Mobility scheme, its transport infrastructure would complement accessible transport services.
P39 Recognise the positive impact on health, wellbeing and connectedness of active transport modes, and improved accessibility and transport options, including for the transport disadvantaged.	The shared path and internal pedestrian and cycle facilities would provide opportunities for active travel and improve connections with Te Awamutu. Together with the proposed bus stops, these facilities would improve access to healthcare, retail and community destinations
Waikato RPTP	
The RPTP sets the direction for development of the region's public transport system. Within the Hamilton-Waikato metropolitan area it seeks to progressively develop a ridership-oriented network and establish frequent public transport links between Hamilton and the larger metropolitan towns, including Te Awamutu. It also anticipates frequent services within those towns where supported by integrated land-use planning. Relevant policies within the RPTP include policies P60, P61, P62, P67 and P68, which relate to: • coordinated planning and delivery of public transport infrastructure and services in new development areas • provision of accessible, safe and high-quality public transport infrastructure • investment in public transport facilities that are attractive, accessible and operationally efficient • integration of land use and transport planning • urban form that supports the viability and effectiveness of public transport • proximity, connectivity and land use patterns that support public transport accessibility	The proposed retirement village and care home is generally consistent with the direction and outcomes sought by the RPTP. The development will be located on an existing public transport corridor served by the Route 24 Hamilton–Ōhaupō–Te Awamutu service and incorporates infrastructure that will improve access to public transport through the provision of new bus stops and pedestrian connections. In doing so, the proposal supports the RPTP's objective of improving accessibility and enhancing the effectiveness of the public transport network by making services more convenient and accessible to future residents. The proposal aligns particularly well with Policies P60, P61 and P62, which seek coordinated delivery of public transport infrastructure in new development areas and encourage investment in public transport facilities that are accessible, safe and operationally efficient. The proposed bus stop infrastructure, together with the pedestrian and cycle connections linking the site with Te Awamutu, will contribute to a high-quality end-to-end journey by improving access to public transport services and enabling residents to safely reach nearby destinations without relying solely on private vehicles. The proposal is also consistent with Policies P67 and P68, which recognise the importance of integrating land use and transport planning

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• ensuring new development contributes to well-functioning urban areas and sustainable transport outcomes • provision of high-quality end-to-end journeys, including access to bus stops, footpaths and crossings • reducing barriers to public transport use through appropriate supporting infrastructure • improving access to services, opportunities and community destinations through public transport. The existing Route 24 between Hamilton, Ohaupo and Te Awamutu forms part of the Waipa public transport unit and is presently classified as a metro coverage link. The RPTP therefore establishes both an existing public transport connection along the Hamilton–Te Awamutu corridor and an aspiration to increase the quality and frequency of that connection over time The RPTP also recognises the interrelationship between urban form and viable public transport provision. New and expanded urban areas are expected to respond to factors including proximity, linearity, connectivity and land-use intensity. The RPTP makes clear that the location and form of development can materially affect whether effective and efficient public transport can be provided. The RPTP also recognises the changing mobility requirements associated with an ageing population. It anticipates lower levels of independent mobility as the population ages and seeks a combination of scheduled services, demand-responsive services, community transport and other targeted solutions for people with greater transport needs. Accordingly, the RPTP is particularly relevant to the proposal both because of the site's relationship to the existing and planned Hamilton–Te Awamutu public transport corridor and because the development will	and ensuring that urban development supports the viability of public transport services. The site is located adjacent to an existing public transport route connecting Te Awamutu and Hamilton and is designed to provide direct and connected access to that service. The development therefore responds positively to the RPTP's emphasis on proximity and connectivity as key factors influencing the effectiveness and efficiency of public transport provision. In addition, the proposal supports the RPTP's broader aspiration to strengthen public transport connections within the Hamilton-Waikato metropolitan area, including between Hamilton and Te Awamutu. By providing accessible walking, cycling and public transport infrastructure, the proposal promotes transport choice and creates opportunities for greater public transport use over time. The development therefore contributes positively to the long-term outcomes sought by the RPTP, including improved accessibility, enhanced connectivity and a transport network that supports sustainable growth and community wellbeing.

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accommodate an older population for whom access to a range of transport options is likely to become increasingly important over time.	
The specific and relevant Transport Policy assessment matters are as follows:	Key and targeted alignment responses are described as follows:
Policy 67 Development of new urban areas, redevelopment and/or the expansion of existing urban areas should be undertaken in a way that is consistent with the urban form and transport design factors such as proximity, linearity, connectivity and land use intensity, as outlined in Appendix B.	The development proposal is located on a planned high-frequency public transport route between Te Awamutu and Hamilton as defined by the Metro-Spatial plan. Active mode accessibility to the service together with integrated public transport stops within the roundabout design further support this policy. The particular factors alignment is further described below.
Policy 68 The council will not provide public transport services sufficient to enable well-functioning urban areas where the nature and location of the proposed urban development is inconsistent with the urban form and transport design factors outlined in Appendix B.	The development proposal does not require further or inconsistent servicing. It has been design to fully integrate with the planned high-frequency servicing and is further supported by the integration of bus stops and shelters and cross-highway active mode accessibility at the proposed roundabout.
Appendix B Factors	

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Proximity Is development area within or in very close proximity to the existing built urban area?	The site is immediately adjacent to the current extent of the urban environment, planned to enable active and multi-modal integration with future growth areas, future-proofed for integration with longer-term development potential to the south, west and north of the site.
Linearity Is the new development area situated "on the way" to other existing key destinations via a direct route alignment?; Or Can the area be serviced by way of a short linear extension to an existing or planned public transport line?; Or Does the new development area justify the creation of a new frequent line that connects to multiple other key locations in a way that aligns well with the assessment criteria outlined in this table?	The proposal is located on a planned high-frequency public transport corridor, connecting Te Awamutu to Hamilton. It further supports the viability of this route. Other active mode integration pathways and crossings are proposed and provided for to integrate with future and planned growth cells.
Connectivity Will the development area have a highly connected and safe walking and micro-mobility network? Will the street layout and design enable the efficient movement of public transport vehicles? Will on street public transport infrastructure enable the safe and efficient boarding and alighting of people of all abilities during all weather conditions?	A full network of internal pathways supports pedestrian movement and connectivity. Cycling is able to be safely accommodated on the internal road network. Public transport is not required within the development, but the site is directly integrated with the planned high-frequency public transport corridor and stop design ensures optimal integration with and access to the service.
Density Does the development area include density that warrants/requires frequent service provision?	The retirement living development achieves an efficient density outcome, the care home is closely located to the high-frequency public transport corridor.
Ahu Ake – Waipa Community Spatial Plan (Ahu Ake)	

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Ahu Ake provides Council's current long-term spatial framework for the district. It establishes a 30-plus year direction for how Waipa's communities, places and infrastructure should develop and is intended to guide subsequent Council strategies, plans, investment and decision-making. From a transport perspective, Ahu Ake reinforces the importance of coordinating growth with infrastructure and creating communities in which people can readily access the services, facilities and opportunities they need. Its spatial approach supports connected communities, greater transport choice and infrastructure investment that responds to the long-term needs of a growing and changing population For the proposal, Ahu Ake is relevant principally as the contemporary strategic context within which the proposal is being considered. While it does not alter the established Te Awamutu growth pattern, it reinforces the importance of considering how new development connects with the existing urban area and contributes to accessible, well-serviced and connected communities.	The proposal is consistent with the direction of Ahu Ake – Waipa Community Spatial Plan to create connected, accessible and well-serviced communities supported by coordinated infrastructure. The development incorporates new walking and cycling connections to Te Awamutu, improving access to local services, facilities and community destinations while supporting active transport as a viable travel choice. Proposed bus stop infrastructure will also improve access to existing and future public transport services along the Te Awamutu-Hamilton corridor, enhancing connectivity and transport choice for residents, staff and visitors. The proposal therefore aligns with Ahu Ake's focus on improving walking and cycling networks, strengthening public transport connections, and delivering safe multi-modal transport networks that reduce reliance on private vehicles and provide better access to key destinations.
The stated Strategic Opportunities are:	
• Improve community resilience and wellbeing by maintaining high-quality community infrastructure, including lifeline utilities and adapting to climate change.	The proposal will enhance transport resilience and wellbeing by providing walking, cycling and public transport options, together with solar-powered EV charging throughout the development.
• Prioritise local walking and cycling options when relevant and possible and strengthens existing and future regional connections with a comprehensive, safer, multi-modal transport system.	The proposed shared path between the site and Racecourse Road will improve walking and cycling access to Te Awamutu, while two new bus stops adjacent to the site will connect residents, staff and visitors with public transport services to Te Awamutu and Hamilton. These improvements would contribute to a safer and more connected multi-modal transport network.
• Safeguard the freight function of key transport corridors and integrate major transport infrastructure (i.e., airports, inland ports, freight hubs) with the development of our towns and villages in a symbiotic way.	The proposal will safeguard the freight and strategic transport function of the adjoining corridor through the provision of a Safe System roundabout-controlled intersection. The roundabout is forecast to operate at LOS A to B in 2045, demonstrating that the efficiency of the

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	corridor and the movement of general traffic and freight would not be compromised.
• Optimise social and economic benefits in towns and villages by taking a place-based approach to community planning to balance traffic levels and pedestrian amenities.	The proposal takes a place-based approach by balancing the movement function of the adjoining state highway corridor with the accessibility and safety needs of the retirement village and care home. The proposed Safe System roundabout, shared path and bus stops would maintain efficient traffic movement while providing safe and convenient access for pedestrians, cyclists and public transport users.
Waipa 2050 Growth Strategy (Waipa 2050)	
Waipa 2050 establishes the district's planned approach to accommodating long-term population and economic growth. For Te Awamutu and Kihikihi, growth is principally directed to identified residential, large-lot residential and industrial growth cells around the existing urban area As described in Section 3.2, the site is located immediately north of Te Awamutu but outside these identified growth areas. The proposal therefore represents development that was not anticipated through the spatial growth pattern established by Waipa 2050. From a transport perspective, the significance of this is not simply the location of the site outside a growth cell, but whether development in that location can be appropriately integrated with the existing and planned transport network. This includes the ability to provide the necessary transport infrastructure and connections without relying on or prejudicing infrastructure planned to support growth elsewhere.	Although the site is located outside identified growth areas, the proposal can be integrated with the existing transport network without undermining planned transport investment or infrastructure provision elsewhere. The lower traffic generation associated with a retirement village and care home reduces the potential transport effects typically associated with greenfield residential development. Furthermore, the transport assessment demonstrates that the proposed intersection will continue to operate at an acceptable level of service, indicating that the surrounding network can accommodate development traffic while remaining efficient. The proposed walking, cycling and public transport connections further support integration with the existing urban area and transport network.
Waipa Transport Strategy 2022-2052	
The Waipa Transport Strategy establishes Council's long-term direction for the district's transport system. It seeks an integrated, safe and sustainable transport system that supports planned growth while providing people with greater choice in how they travel. A key theme of the Strategy is the integration of land use and transport planning. For new development, it seeks provision of walking, cycling and public transport as viable alternatives to private vehicle travel and	The proposal responds positively to the direction and outcomes of the Waipa Transport Strategy by integrating land use and transport planning and providing a range of transport choices for residents, staff and visitors. The Strategy seeks to ensure that new growth areas and developments are supported by transport options, including walking, cycling and public transport as viable alternatives to private vehicle travel, while also contributing to broader mode shift objectives.

Policy / Strategy Reference	Assessment
identifies opportunities to reduce travel demand through the provision of local services, including medical and other day-to-day activities, within growth areas. It also promotes higher-density and mixed-use development patterns that support public transport, walking and cycling, and anticipates District Plan provisions requiring consideration of how new developments contribute to travel mode shift. Of particular relevance are the Strategy's actions to: • ensure new growth areas and developments provide transport options including walkways, cycleways and public transport; • support fast and frequent public transport services between Te Awamutu, Cambridge and Hamilton; • continue investment in urban mobility networks focused on walking, wheeling and cycling; • improve access and mobility for transport-disadvantaged and mobility-impaired users; • develop district-wide cycling and walking connections between key destinations; and • encourage active transport and public transport use through supporting infrastructure and integrated transport planning. The Transport Strategy also seeks to identify and protect important transport corridors, including those required for freight movement and future rapid and frequent multi-modal passenger connections to Hamilton. For Te Awamutu specifically, the strategic direction has evolved from reliance on a full western arterial route towards a broader package of network improvements, including safety enhancements, traffic management measures, urban mobility improvements, and consideration of alternative strategic transport connections. Te Awamutu is identified as a key focus area for transport investment. Priority initiatives include completing the Te Awamutu urban mobility network, improving opportunities for walking and cycling, growing public transport patronage, supporting fast and frequent passenger transport	The development incorporates new pedestrian and cycle connections to Te Awamutu and proposed bus stop infrastructure providing access to existing and future public transport services along the Hamilton-Te Awamutu corridor. These features are consistent with the Strategy's direction to invest in urban mobility networks, improve walking and cycling connections to key destinations, and support the growth of public transport patronage through improved service accessibility. The proposal also aligns with the Strategy's objective of providing a range of transport modes within new growth areas and developments. By locating the development adjacent to an existing transport corridor and providing direct connections to active and public transport infrastructure, the proposal supports transport choice and access to services, employment, healthcare and community facilities without sole reliance on private vehicle travel. The Strategy identifies improvements to access and mobility as a key outcome, particularly for transport-disadvantaged and mobility-impaired users. The proposed pedestrian infrastructure, public transport access and proximity to Te Awamutu support these outcomes by improving connectivity and accessibility for residents and visitors. This is particularly relevant given the nature of the development and the importance of providing a range of safe and convenient travel options. The proposal is also consistent with the Te Awamutu-specific transport priorities identified within the Strategy, including continued investment in the urban mobility network, improved walking and cycling opportunities, and enhanced public transport connections to Hamilton. Through the provision of active mode and public transport infrastructure, the development supports the long-term strategic direction for a more connected, accessible and multi-modal transport system within Te Awamutu and the wider district.

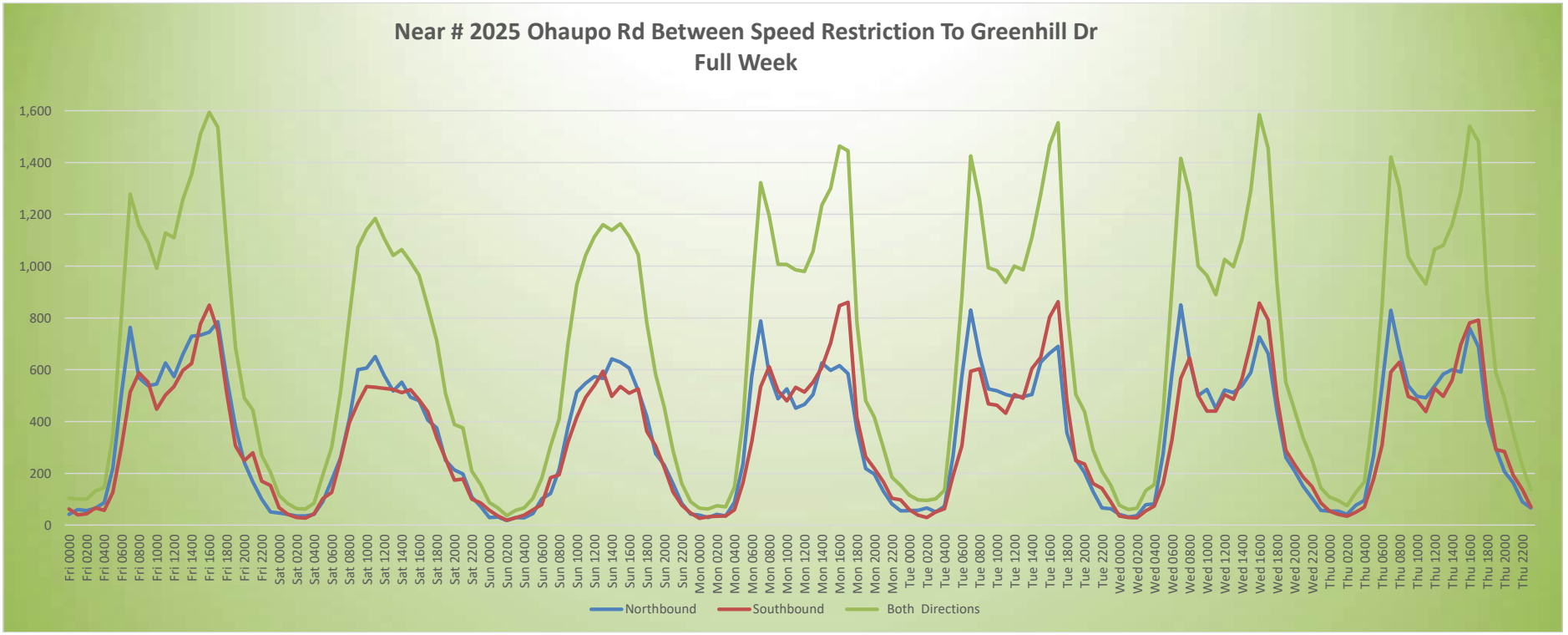
Policy / Strategy Reference	Assessment
services to Hamilton, and enhancing the transport network to improve accessibility, safety and transport choice. Overall, the Strategy provides the strategic framework for future transport planning in Te Awamutu and promotes a multi-modal transport system that supports growth, improves accessibility and mobility outcomes, strengthens public transport connections, and reduces reliance on private vehicle travel.	
Waipa LTP	
The LTP establishes Council's current programme of expenditure and infrastructure investment. The LTP has been prepared in a constrained financial environment, with Council placing particular emphasis on core services, affordability and financial prudence. As described in Section 3, the LTP provides for progressive transport improvements associated with planned growth but does not identify any major committed transport projects in the immediate vicinity of the site. It also anticipates that some longer-term transport initiatives, including further development of the urban mobility network, will be considered through future investment processes. The LTP is relevant to the proposal principally in establishing the committed future transport environment that forms the basis for assessing the proposal's potential transport effects and infrastructure requirements.	The proposal is generally consistent with the transport environment anticipated by the LTP. The development does not rely on major uncommitted transport infrastructure projects to operate safely and efficiently. Existing and planned transport infrastructure is capable of accommodating the relatively low traffic demands associated with a retirement village and care home, while maintaining the efficient function of the surrounding road network. The development's active and public transport components also align with the LTP's longer-term aspirations for improved urban mobility and accessibility.
Waipa District Plan Policies and Objectives	
Section 16 of the District Plan establishes the operative local statutory framework for transportation. Its provisions seek to integrate land use and transport planning so that development is compatible with the capacity and function of the transport network and transport infrastructure is provided in a coordinated and efficient manner.	The proposal is consistent with the transport objectives and policies of the District Plan. It provides safe and appropriate access, supports network efficiency and promotes accessibility by a range of transport modes. The inclusion of pedestrian and cycle connections, public transport infrastructure and a transport network designed to accommodate users with varying mobility needs is particularly

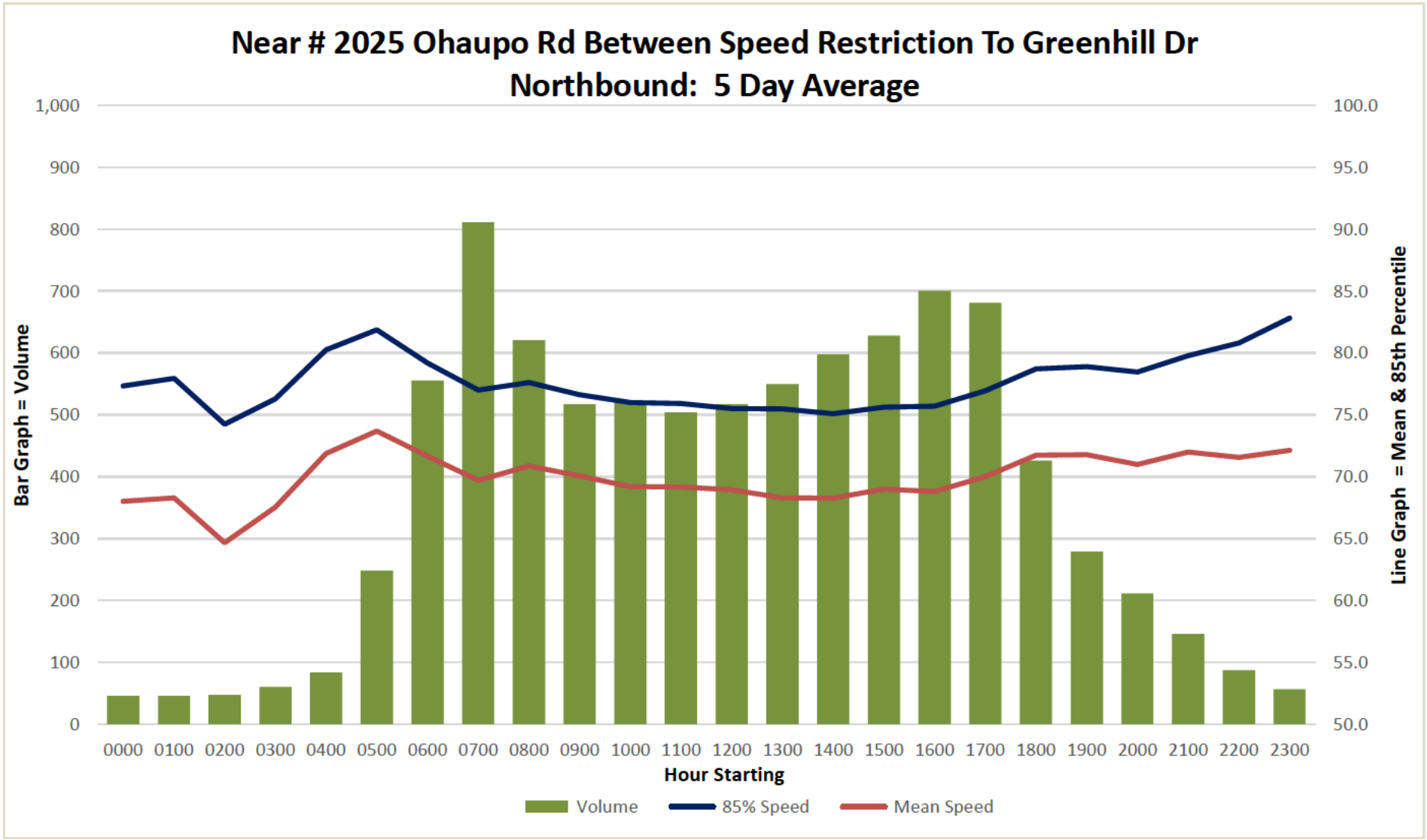
Policy / Strategy Reference	Assessment
The transportation provisions address accessibility by all modes, including for people with restricted mobility, integration of pedestrian, cycling and passenger transport networks with development, safe access and intersection design, minimisation of conflicts on arterial routes, maintenance of network efficiency and provision for future transport connections. Of particular relevance to the proposal the District Plan also recognises the need for pedestrian networks to cater for all user groups and identifies particular accessibility considerations in proximity to rest homes and community facilities. The District Plan therefore brings together many of the transport themes identified through the higher-order strategic framework in provisions directly relevant to the design and assessment of development. For the proposal, these include maintaining the safe and efficient function of SH3, providing safe and appropriate site access, enabling connectivity by walking, cycling and public transport, accommodating users with differing mobility needs, and ensuring that the internal transport network can operate safely and efficiently while providing for future connections.	consistent with the District Plan's emphasis on accessibility and connectivity. The proposed intersection is expected to operate at an acceptable level of service and maintain the efficient function of the surrounding road network. Given the lower peak-hour traffic generation expected from a retirement village and care home, the proposal is not anticipated to adversely affect the safe and efficient operation of the transport network. Further analysis of the rules from the District Plan is provided in **Appendix 11.**

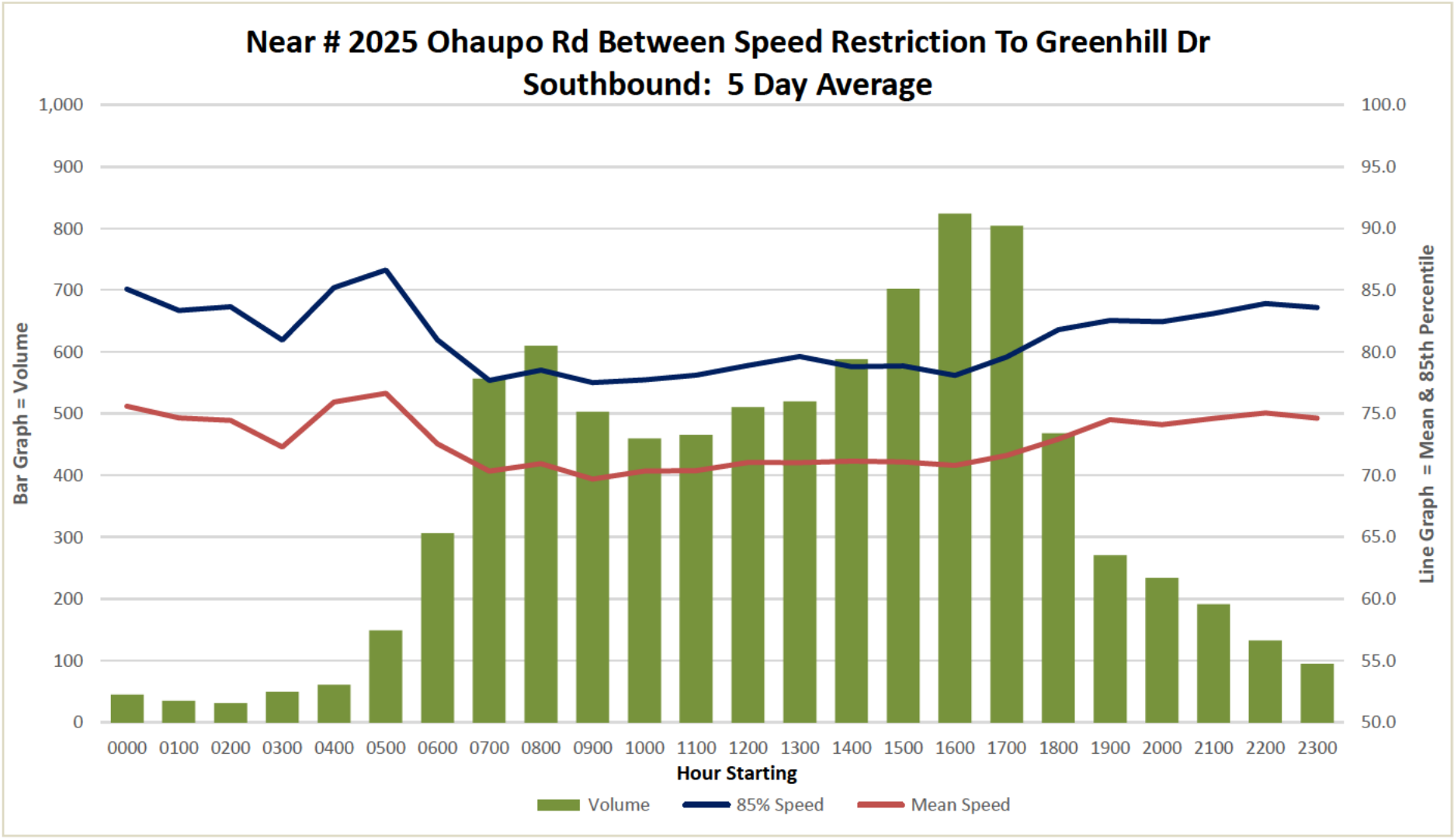
Appendix 2: Traffic Count Volume and Speed Survey Results

Full Hour Counts - NEAR # 2025 OHAUPO RD BETWEEN SPEED RESTRICTION TO GREENHILL DR

Hour Intervals		Fri 6-Mar-26			Sat 7-Mar-26			Sun 8-Mar-26			Mon 9-Mar-26			Tue 10-Mar-26			Wed 11-Mar-26			Thu 12-Mar-26			AVERAGES (Veh/Hour) 5 Day Average			7 Day Average		
From	To	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes	North bound	South bound	Both Lanes
0000	0100	42	62	104	47	68	115	29	58	87	39	26	65	56	61	117	42	35	77	54	54	108	47	48	94	44	52	96
0100	0200	60	40	100	42	41	83	31	35	66	29	33	62	58	39	97	31	29	60	54	42	96	46	37	83	44	37	81
0200	0300	56	44	100	35	29	64	18	19	37	41	34	75	67	29	96	37	28	65	41	34	75	48	34	82	42	31	73
0300	0400	65	67	132	35	27	62	30	28	58	36	35	71	51	51	102	79	55	134	77	50	127	62	52	113	53	45	98
0400	0500	87	58	145	41	44	85	28	39	67	88	59	147	72	63	135	82	74	156	96	70	166	85	65	150	71	58	129
0500	0600	219	127	346	91	103	194	45	59	104	237	163	400	268	191	459	276	161	437	267	176	443	253	164	417	200	140	340
0600	0700	512	307	819	174	127	301	102	79	181	577	323	900	576	306	882	585	329	914	537	308	845	557	315	872	438	254	692
0700	0800	764	514	1,278	260	253	513	123	183	306	789	534	1,323	831	595	1,426	850	567	1,417	830	591	1,421	813	560	1,373	635	462	1,098
0800	0900	568	588	1,156	409	396	805	215	194	409	583	612	1,195	655	603	1,258	637	645	1,282	675	630	1,305	624	616	1,239	535	524	1,059
0900	1000	539	552	1,091	601	471	1,072	378	321	699	488	519	1,007	526	468	994	500	500	1,000	539	497	1,036	518	507	1,026	510	475	986
1000	1100	545	447	992	607	535	1,142	513	416	929	526	480	1,006	519	463	982	524	440	964	497	483	980	522	463	985	533	466	999
1100	1200	626	502	1,128	651	533	1,184	548	493	1,041	452	533	985	505	432	937	450	440	890	492	439	931	505	469	974	532	482	1,014
1200	1300	574	535	1,109	579	528	1,107	574	540	1,114	466	514	980	496	504	1,000	522	504	1,026	537	528	1,065	519	517	1,036	535	522	1,057
1300	1400	659	598	1,257	518	524	1,042	566	594	1,160	505	552	1,057	496	490	986	512	486	998	583	497	1,080	551	525	1,076	548	534	1,083
1400	1500	730	624	1,354	552	512	1,064	642	497	1,139	626	609	1,235	505	605	1,110	538	565	1,103	600	559	1,159	600	592	1,192	599	567	1,166
1500	1600	734	777	1,511	494	523	1,017	629	535	1,164	597	704	1,301	630	648	1,278	589	702	1,291	592	697	1,289	628	706	1,334	609	655	1,264
1600	1700	745	849	1,594	481	484	965	606	509	1,115	616	848	1,464	663	803	1,466	727	857	1,584	759	781	1,540	702	828	1,530	657	733	1,390
1700	1800	786	750	1,536	405	437	842	519	526	1,045	585	860	1,445	690	863	1,553	662	793	1,455	689	791	1,480	682	811	1,494	619	717	1,337
1800	1900	570	512	1,082	375	338	713	419	362	781	369	416	785	356	478	834	440	495	935	412	490	902	429	478	908	420	442	862
1900	2000	380	306	686	251	256	507	276	306	582	218	263	481	255	249	504	262	290	552	295	292	587	282	280	562	277	280	557
2000	2100	242	249	491	214	174	388	233	224	457	198	220	418	203	236	439	209	234	443	207	284	491	212	245	456	215	232	447
2100	2200	166	279	445	198	178	376	160	128	288	132	168	300	130	160	290	150	186	336	163	193	356	148	197	345	157	185	342
2200	2300	100	170	270	109	100	209	84	77	161	82	104	186	66	142	208	105	149	254	90	138	228	89	141	229	91	126	217
2300	2400	51	153	204	72	86	158	43	47	90	55	98	153	64	90	154	58	86	144	67	71	138	59	100	159	59	90	149
Daily Totals																												
12hr	07-19	7,840	7,248	15,088	5,932	5,534	11,466	5,732	5,170	10,902	6,602	7,181	13,783	6,872	6,952	13,824	6,951	6,994	13,945	7,205	6,983	14,188	7,094	7,072	14,166	6,733	6,580	13,314
16Hr	06-22	9,140	8,389	17,529	6,769	6,269	13,038	6,503	5,907	12,410	7,727	8,155	15,882	8,036	7,903	15,939	8,157	8,033	16,190	8,407	8,060	16,467	8,293	8,108	16,401	7,820	7,531	15,351
18Hr	06-00	9,291	8,712	18,003	6,950	6,455	13,405	6,630	6,031	12,661	7,864	8,357	16,221	8,166	8,135	16,301	8,320	8,268	16,588	8,564	8,269	16,833	8,441	8,348	16,789	7,969	7,747	15,716
24Hr	00-00	9,820	9,110	18,930	7,241	6,767	14,008	6,811	6,269	13,080	8,334	8,707	17,041	8,738	8,569	17,307	8,867	8,650	17,517	9,153	8,695	17,848	8,982	8,746	17,729	8,423	8,110	16,533


Near # 2025 Ohaupo Rd Between Speed Restriction To Greenhill Dr
Full Week
1,600
1,400
1,200
1,000
800
600
400
200
0
Fri 0000
Fri 0200
Fri 0400
Fri 0600
Fri 0800
Fri 1000
Fri 1200
Fri 1400
Fri 1600
Fri 1800
Fri 2000
Fri 2200
Sat 0000
Sat 0200
Sat 0400
Sat 0600
Sat 0800
Sat 1000
Sat 1200
Sat 1400
Sat 1600
Sat 1800
Sat 2000
Sat 2200
Sun 0000
Sun 0200
Sun 0400
Sun 0600
Sun 0800
Sun 1000
Sun 1200
Sun 1400
Sun 1600
Sun 1800
Sun 2000
Sun 2200
Mon 0000
Mon 0200
Mon 0400
Mon 0600
Mon 0800
Mon 1000
Mon 1200
Mon 1400
Mon 1600
Mon 1800
Mon 2000
Mon 2200
Tue 0000
Tue 0200
Tue 0400
Tue 0600
Tue 0800
Tue 1000
Tue 1200
Tue 1400
Tue 1600
Tue 1800
Tue 2000
Tue 2200
Wed 0000
Wed 0200
Wed 0400
Wed 0600
Wed 0800
Wed 1000
Wed 1200
Wed 1400
Wed 1600
Wed 1800
Wed 2000
Wed 2200
Thu 0000
Thu 0200
Thu 0400
Thu 0600
Thu 0800
Thu 1000
Thu 1200
Thu 1400
Thu 1600
Thu 1800
Thu 2000
Thu 2200
Northbound
Southbound
Both Directions


Near # 2025 Ohaupo Rd Between Speed Restriction To Greenhill Dr
Northbound: 5 Day Average
Bar Graph = Volume
Line Graph = Mean & 85th Percentile
1,000
900
800
700
600
500
400
300
200
100
0
100.0
95.0
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300
Hour Starting
Volume
85% Speed
Mean Speed


Near # 2025 Ohaupo Rd Between Speed Restriction To Greenhill Dr
Southbound: 5 Day Average
Bar Graph = Volume
Line Graph = Mean & 85th Percentile
1,000
900
800
700
600
500
400
300
200
100
0
100.0
95.0
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300
Hour Starting
Volume
85% Speed
Mean Speed

Appendix 3: WRTM Model Scope and Brief

Stantec New Zealand
Level 3, 2 Hazeldean Road
Addington, Christchurch 8024
NEW ZEALAND
Mail to: PO Box 13052, Christchurch 8140

30 January 2026

Project/File: 310206262

Dear Saeid,

Reference: Harlow Lifestyle Village for Boffa Miskell

Please find below our Offer of Service to apply the WRTM for modelling the Do-Minimum scenario and the two staged options as part of the Integrated Transport Assessment for Harlow Lifestyle Village.

Scope of Services

Overview

The scope includes developing and running the Do-Minimum and two staged option scenarios for the years 2025, 2035, and 2045. The Do-Minimum scenario will be based on the WRTM base (V6) networks (E7, E8, E9) and the high-growth land-use projections (FH). The two staged option scenarios will then be added to this baseline. Further details of these scenarios are provided in the following sections.

WRTM Zoning

The proposed Harlow Lifestyle Village development is located on 2025 Ohaupo Road (State Highway 3), Te Awamutu 3800, with its boundaries illustrated in Figure 1. Within the WRTM zoning system, the site falls within Zone 660, as shown in Figure 2.

Three spare zones (682, 683, and 684) will be used to represent the proposed development in the modelling. This will further be detailed in the Development Networks Section.



Figure 1: Proposed development site boundaries

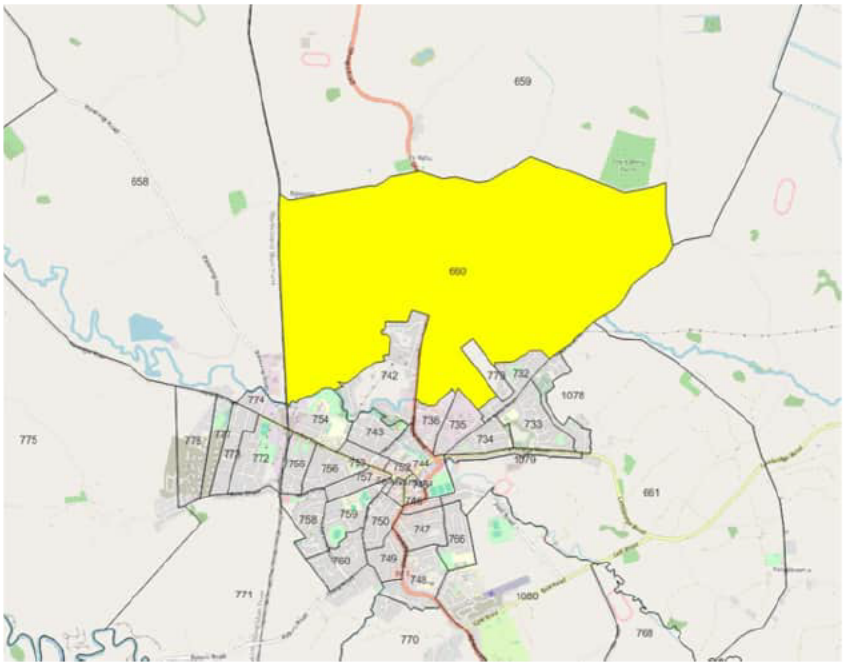


Figure 2: WRTM Zoning for Te Awamutu

Demographic Input

Zone 660 contains existing development, as reflected in the household and total job figures presented in Table 1. We will retain this existing land use in the model, consistent with the assumption that activity occurring outside the proposed site will remain in place. In contrast, the proposed site itself is largely undeveloped, allowing us to treat it as available for future growth.

Table 1 Households and Total Employment in Zone 660

	2025	2035	2045
Households	238	246	250
Total Employment	166	188	227

Boffa Miskell have provided Stantec with the number of retirement units and care-home beds associated with two stages of the proposed development, as shown in Figure 3 with Stage 1 of the development being shown in red boundaries and Stage 2 in blue. For modelling purposes, Stage 1 development will be represented by two separate spare zones (zones 682 and 683), and Stage 2 development by one spare zone 684. This is shown in the figure. Activities in each zone and development stage are summarized in Table 2.

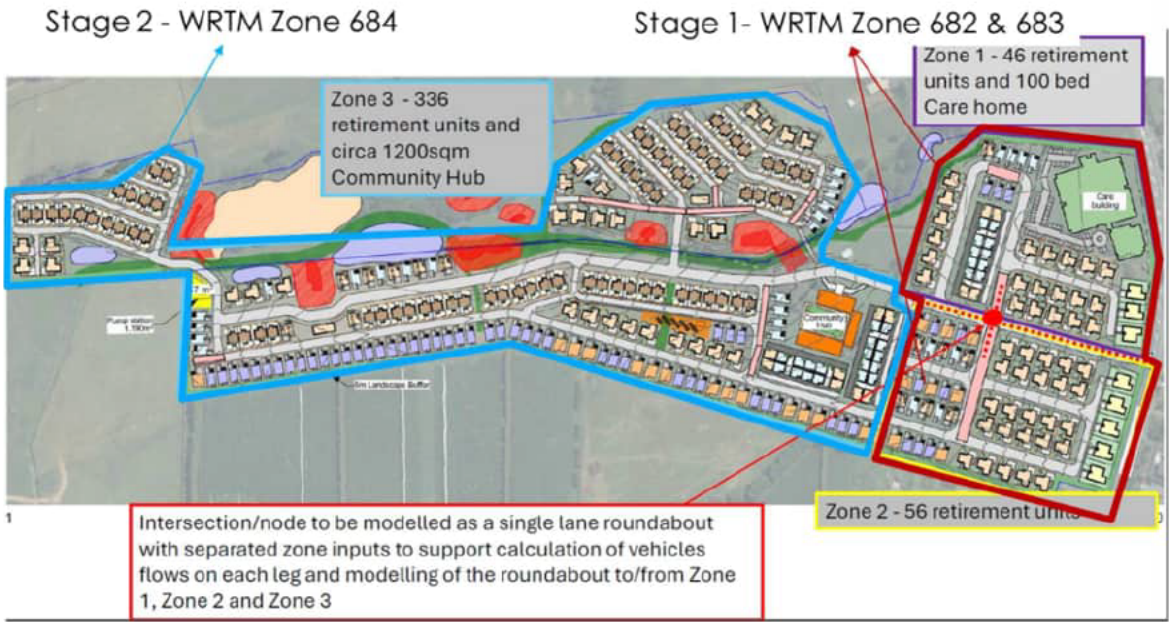


Figure 3: Development Stages and WRTM Zones

Table 2 Activities in Zone and Development Stage

WRTM Zone	Activities	Stage 1 (Partial Development)	Stage 2 (Full Development)
Zone 682	Retirement Units	46	46
	Bed Care Home	100	100
	Community Hub	0	0
Zone 683	Retirement Units	56	56
	Bed Care Home	0	0
	Community Hub	0	0
Zone 684	Retirement Units	0	336
	Bed Care Home	0	0
	Community Hub	0	1200 sqm

It is important to note that the WRTM cannot directly model retirement units or care-home beds. Instead, the model requires zonal land-use inputs, including the number of households, persons per household, cars per household, and employment by job category.

To enable appropriate model inputs, we will require additional information from Boffa Miskell, such as the number of trips generated into and out of each zone within the proposed development site.

Alternatively, we can identify a comparable zone within the WRTM and adopt the relevant land-use parameters from that proxy zone. However, this approach is less preferred because the trips entering and leaving the proxy zone may not accurately reflect the travel patterns expected for the proposed development. Under this approach, Boffa Miskell would still be required to convert the provided numbers of retirement units and care-home beds into an equivalent number of households for modelling purposes. Stantec would estimate the employment associated with the community hub based on parameters derived from a comparable zone.

Boffa Miskell will be asked to advise on the preferred approach prior to the commencement of the project. Our Offer of Service allows for either approach.

Development Networks

The WRTM networks E6 (2025), E7 (2035), and E8 (2045) will be used as the base networks for coding the development scenarios, as shown in Figure 3. As requested, the primary intersection (red circle in Figure 3) will be modelled as a single-lane roundabout. The intersection between the development access and Ohaupo Road will be modelled as a priority intersection for Stage 1 (Scenarios 1 to 4 in Table 3) and as a single lane roundabout for Stage 2 (Scenarios 5 to 8 in Table 3). All remaining intersections also modelled as priority intersections.

Unless otherwise specified, the development network will be coded using the following:

- Link type: 4 (signifying 40 kph road)
- Road Hierarchy: 7 (local street)
- ONRC code: 2 (access)
- Environment: 0 (urban undivided level)

Scenarios to Model

The following scenarios will be modelled using the three-stage model with a multi-class assignment to distinguish between light and heavy vehicles.

The Do-Minimum scenario will comprise the base (V6) model with no modifications applied. These scenarios will be assessed for the forecast years 2025, 2035, and 2045.

Additional eight scenarios, representing the proposed development stages, will be developed and modelled, as outlined in Table 3. Each scenario will include both AM and PM peak period results.

Table 3 Modelling Scenarios

Scenario	Forecast Year		
	2025	2035	2045
Do-Minimum	Base V6, AM and PM	Base V6, AM and PM	Base V6, AM and PM
Stage 1	AM (1) and PM (2)	AM (3) and PM (4)	NA
Stage 2	NA	AM (5) and PM (6)	AM (7) and PM (8)

Deliverables

The deliverables will be:

- Loaded networks in Tracks format for all scenarios (AM and PM peak)
- Level of Service (LOS) for links and intersection in PDF format. This Offer of Service includes one LOS plot for each with-development scenario (eight plots in total) and one LOS plot for each without-development scenario (six plots in total).
- LOS definition sheet.

- Select Link analysis in PDF format. One Select Link location (with two directions) is shown in the figure below. This results in a total of 16 Select Link plots (8 with-development scenarios × 2 directions).



Figure 4: Select Link Location

- Matrix Assumptions

All deliverables will be uploaded to Monday.COM and provided by a OneDrive or equivalent share.

Timeline

We anticipate that the work will be completed within three weeks of receiving CoLab approval confirming acceptance of this scope, together with the provision of either agreed trip rates or the conversion of the proposed numbers of retirement units and care-home beds into an equivalent number of households (as detailed in the Demographic Input section).

Exclusions

We have not allowed for the following elements:

- Providing the LOS and Select Link outputs in PDF format
- Daily flows can not be produced subsequently without running the interpeak model periods
- The 2025 scenario is a FORECAST and unchecked against observed data. We are aware that in many locations, the 2025 scenario is lower than observed 2023/24 flows. We advise caution in interpreting the 2025 results.

Fees

The fixed fee for undertaking this task is $ 14,135, excluding GST. Note this amount is Stantec's modelling fee. Co-lab have a 20% access fee ($2,827) which will be added to the total project cost. Total fixed fee for this work will be $16,962 excluding GST.

Reference: **Harlow LifeStyle Village for Boffa Miskell**

We look forward to assisting you with this project.

Regards,

Stantec New Zealand

[redacted]

Julie Ballantyne
Technical Director - Transportation/ Practice Leader - Transportation Modelling
Phone: [redacted]
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[redacted]

stantec.com/nz

Appendix 4: WRTM Trip Generation Memorandum

Boffa Miskell

Memorandum

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Attention:	Julie Ballantyne
Company:	Stantec
Date:	18 February 2026
From:	Mark Apeldoorn / Tatai Dewes - Boffa Miskell
Message Ref:	Harlow Lifestyle Village – WRTM Trip Rates
Project No:	BM251067

The purpose of this memorandum is to provide the trips required by Stantec for the Waikato Regional Transport Model (WRTM), including analysis used to obtain the rates. The proposed Fast Track development is being included in the regional model as part of the fast track application.

The following Table of Contents describes and references the provisional evaluations.

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2. Existing Transport Infrastructure 3
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3. Fast Track Subdivision Proposal 5
   - 3.1. Overview 5
4. Trip Generation 6
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   - 4.2. Personal Vehicle Trip Generation 7
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Figure 2: Site and Local Context (Base Map Source: WDC ePlan) 4

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Figure 4: 24-hour Retirement Village Trip Rate Profile 7

1. Introduction

Te Awamutu Developments (the Applicant) proposes to develop a residential subdivision at 2025 Ohaupo Road State Highway 3 (SH 3), Te Awamutu. The Minister for Infrastructure referred the project to the Fast-track (under the Fast-track Approvals Act 2024) on 27 October 2025. The development is proposed as a retirement village supporting circa 438 independent living units, as well as a Care Home and Community Hub. The roading internal to the development is planned to be retained as private roading, but to be developed so that some of it could enable future public roading integration where that was determined appropriate at the time.

The table below summarises the AM and PM peaks (vehicles per hour -vph) required by the WRTM model.

Vehicle Trips	AM Peak (vph)	PM Peak (vph)	Daily
Stage 1	46	46	483
Stage 2	116	129	1207
Total - Full Development	162	176	1690

Table 1- AM peak, PM peak and Daily flows for each stage of development

This report summarises the development proposal, provides a quantification of the proposed traffic generation of the development, and provides the trip rates required by the Waikato Regional Model (WRTM).

2. Existing Transport Infrastructure

The key elements that describe the current and planned future traffic and transport environment are summarised in the sections that follow.

2.1 Site Location

The site is located on the western side of Ohaupo Road SH 3 in the Waipa District Council (WDC) local government area. It is approximately 2.5km (by road) north of the central Te Awamutu township. The site location is shown on the following Figure.

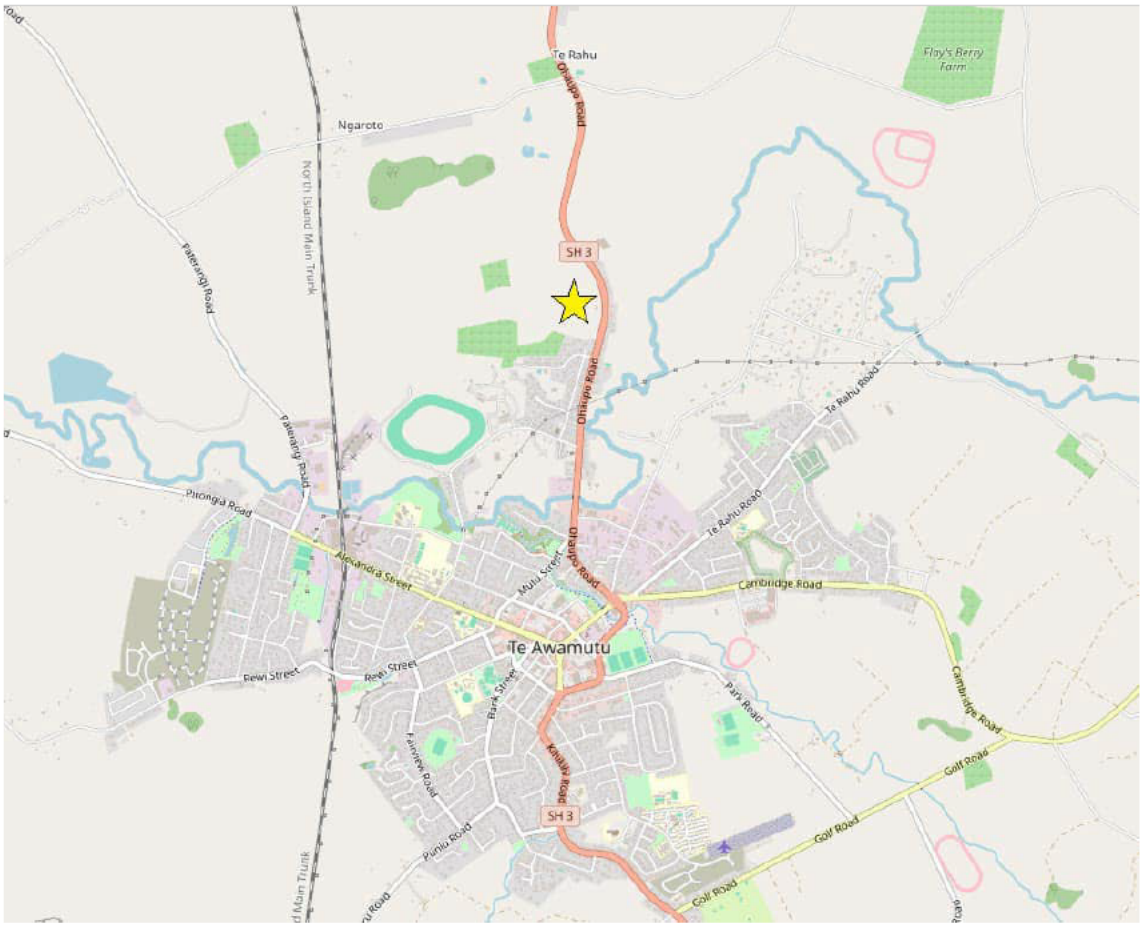


Figure 1: Site Location (Base Map Source: Open Street Map)

The development encompasses two sections at 2025 Ohaupo Road (PT LOT 1 DP 35654 and LOT 1 DPS 36696 BLK II PUNIU SD). These properties have an overall area of approximately 25.78 hectares (ha) and are currently used for rural purposes, with the exception of one residential dwelling. The properties and the surrounding land use context are shown on Figure 2 below.



Figure 2: Site and Local Context (Base Map Source: WDC ePlan)

The surrounding area is residential to the east and part of the south, and rural to the north and west.

A rural dwelling and various ancillary buildings are established at 2025 Ohaupo Road SH 3, which has direct access from the state highway.

3. Fast Track Subdivision Proposal

3.1. Overview

The Fast Track subdivision proposal intends 438 independent retirement units, a 100 bed Care Home and a Community Hub (café, wellness centre, gym, pool, resident restaurant). The proposed layout of lots and internal road corridors are shown on the following Figure.



Figure 3: Subdivision Overview (Source: Te Awamutu Developments)

Stage 1 of the development is to include the implementation of 102 independent retirement units and the 100 bed Care Home. Stage 2 includes a further 336 independent retirement units and the Community Hub. The internal roading is proposed as private in the first instance, with the potential for some of it to be integrated as public road in future, as determined at the time.

The table below provides a summary of the different stages of the development, and the quantum of different land uses within each stage.

Development stage	Activity	Quantum	Unit
Stage 1	Retirement Units	102	units
	Retirement Care home	100	beds
Stage 2	Retirement Units	336	units
	Community Hub	1000	GLFA

Table 2 - summary table of the land uses proposed within each stage

Specific design provision is intended to be made within the development proposal to provide for the longer-term and future integration of the site with the existing and future urban growth environments to the south. The applicant will identify and set aside potential future points of integration within the site and engage with Waipa District Council on the suitability and location of these to meet the future potential needs. It would be most efficient to integrate the application for amendment of the Limited Access Road corridor with the Fast Track application and subject to its approval. This could provide for a streamlined amendment confirmation process post the grant of a consent for both the Applicant and for the NZ Transport Agency.

4. Trip Generation

The potential for trip generation by different travel modes is described in the following sections.

4.1. Trip Generation Research and Investigation

Several sources have been assessed to determine the most appropriate AM/PM peak trip rates for the independent retirement units of the development.

Both the New South Wales (NSW) Government Guide to Transport Impact Assessments (TIA) (2024) report and the NZTA Research Report 453 (Trips and parking related to land use) were consulted, along with five surveyed sites of a similar nature. The surveyed sites featured within three different Integrated Transport Assessments that were approved as part of resource consent applications both within the Waipa District, and in other districts within New Zealand.

The table below summarises the different trip rates from each of the sources. The site names and ITAs have been anonymised for data confidentiality purposes.

<table>
<tr><th rowspan="2">Activity</th><th rowspan="2">NZTA report 453</th><th rowspan="2">Transport for NSW Government - Guide to TIAs (regional sites)</th><th rowspan="2">ITA1 (two survey sites)</th><th rowspan="2">ITA2</th><th colspan="2">ITA3</th></tr>
<tr><th>Site 1</th><th>Site 2</th></tr>
<tr><td>Retirement Units</td><td>Peak hour - 0.3/unit</td><td rowspan="2">Site peak hour - 0.44

PM peak hour - 0.23</td><td rowspan="2">Site peak hour - 0.34

AM peak hour- 0.16

PM peak hour- 0.25</td><td>Site peak hour- 0.25/unit

AM peak hour- 0.11/unit

PM peak hour- 0.26/unit</td><td rowspan="2">AM peak hour - 0.11

PM peak hour - 0.16</td><td rowspan="2">AM peak hour- 0.16

PM peak hour - 0.18</td></tr>
<tr><td>Retirement Care Home</td><td>Peak hour - 0.4/bed</td><td>Site peak hour- 0.37/unit

AM peak hour- 0.06/unit

PM peak hour- 0.24/unit</td></tr>
</table>

Table 3 - Summary of trip rates from reports and surveys

A consistent finding within the surveys, which is also stated within the NSW Government - Guide to TIAs, is that the site peak hour travel time for retirement unit villages and care homes generally does not coincide with the AM and PM network peak hour, although the NSW Government - Guide to TIAs does note that there is closer correlation between the PM network peak hour and the site PM peak.

Data contributing to the referred ITA reporting has included 24 hour survey of similar retirement developments. We have aggregated the survey data to determine a 24 hour arrival, departure and total 85th%ile trip rate profile. This is shown on the following Figure:

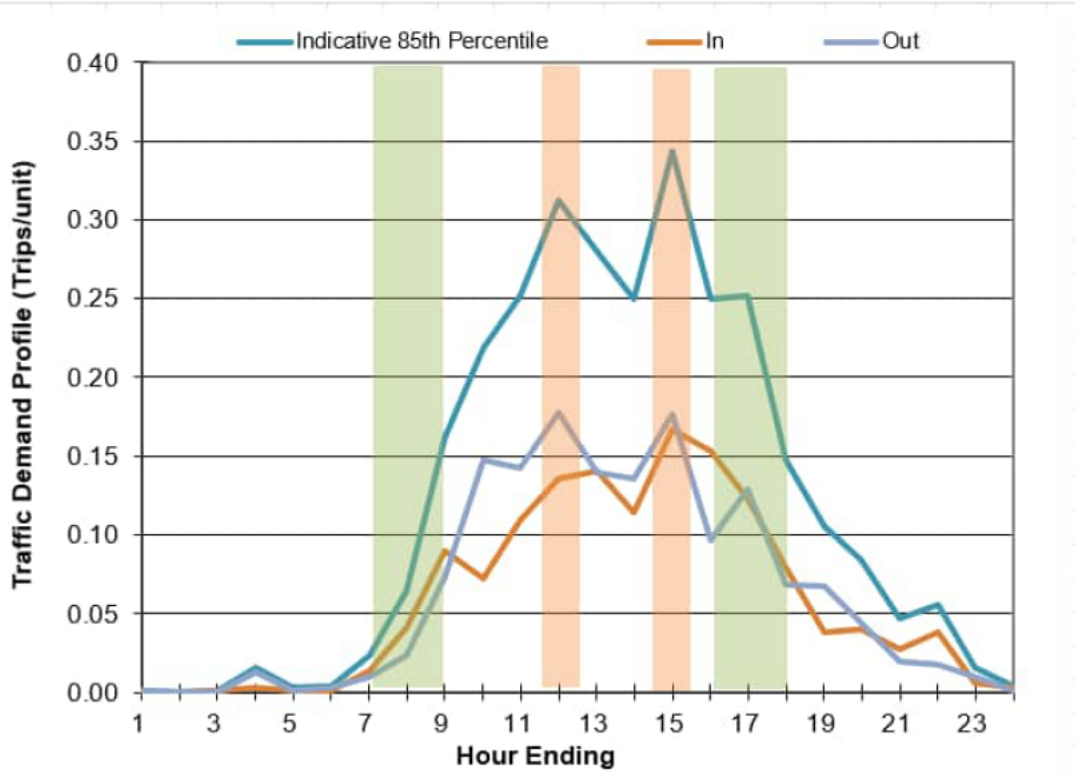


Figure 4: 24-hour Retirement Village Trip Rate Profile

The survey data demonstrates the following outcomes:

- The AM peak hour trip generation corresponding with the road network peak is defined as between 0.025 and 0.15 trips per unit;
- The AM site peak occurs between 11:30 and 12:30pm at about 0.31 trips per unit;
- The PM site peak occurs between 2:30pm and 3:30pm at about 0.34 trips per unit; and
- The PM peak hour coinciding with the road network peak period is defined as generating between 0.25 and 0.15 trips per unit.

Taking these road network peak period demands into account, together with an averaged approach taken from all of the trip rates above, the resulting recommended trip rates, representing the 85th percentile peak trip demands corresponding with the road network peak period are shown in the following Table.

Activity	Peak period	Trip rate	Modelled Trip Rate Assumption
Retirement Units	AM	0.17	0.23 per unit
	PM	0.23	0.23 per unit
Retirement Care Home	AM	0.18	0.23 per bed
	PM	0.24	0.23 per bed

Table 4: Average trip rates taken from all rates listed in Table 5.1 and the modelled trip rates used

4.2. Personal Vehicle Trip Generation

Daily and network peak hour trip generation has been assessed by using the assumed trip rates detailed in the Table above, and the methodologies discussed below. The trip demand forecasting analysis that follows describes the two different stages of the development described above.

The PM peak hour trip generation rate has been used to analyse how the proposed development affects both the AM and PM network peaks. The trip rates assumed are:

- Daily (vpd): 2.39/(dwelling/bed)
- Peak hour (vph): 0.23/(dwelling/bed)

On this basis Stage 1 of the development would be expected to generate some 483 vpd, including 46 vph during the AM and PM peaks.

In Stage 2 of the development, the same trip rates apply to the independent retirement units. For the Community Hub, the rates were adopted from the Transport for NSW Government Guide to Transport Impact Assessment (2024), using the AM and PM peaks (Wednesday/Thursday) from small suburban shopping centres. The following rates were used for the Community Hub:

- AM Peak - 0.192A, where A= Gross Leasable Floor Area (GLFA)
- PM Peak - 0.259A, where A= Gross Leasable Floor Area (GLFA)

The Community Hub services are predominantly for resident use, however it is acknowledged there may be occasional visitation uses. A total 80% of the trips associated with it have been assessed to be internally generated, providing for a 20% externally generated demand.

On these bases, it is assessed that Stage 2 of the development will generate 1,207 vpd, including 116 vph in the AM peak and 129 vph in the PM peak.

The full site development (Stage 1 + Stage 2) will generate 1,690 vpd, including 162 vph in the AM peak and 176 vph in the PM peak.

The table below provides a summary of the trips generated by the proposed development during the AM peak, PM peak and across the day.

Vehicle Trips	AM Peak (vph)	PM Peak (vph)	Daily
Stage 1	46	46	483
Stage 2	116	129	1207
Total - Full Development	162	176	1690

Table 5: Forecast Development Vehicle Trips

5. Conclusion

The Fast Track development proposal will introduce retirement living activity accessed via a new intersection within the state highway corridor. This memorandum provides the trip rates required for the WRTM.

Co-Lab has accepted the Fast Track proposal to be included in the Waikato Regional Transport Model (WRTM). Engagement has been carried out with WDC on the proposed methodology, and it has also been sent to the NZ Transport Agency WRTM representative. This modelling exercise will confirm the relevant traffic demands, trip distributions and further enable evaluation of any change effects at other intersections where relevant or necessary.

These initial assessments indicate the following:

- Stage 1 of the development will generate 46 vph in the AM peak and 46 vph in the PM peak.
- Stage 2 of the development will generate 116 vph in the AM peak and 129 vph in the PM peak
- The full development (Stage 1 + Stage 2) will generate 162 vph in the AM peak and 176 vph in the PM peak

Appendix 5: WRTM Level of Service Plots

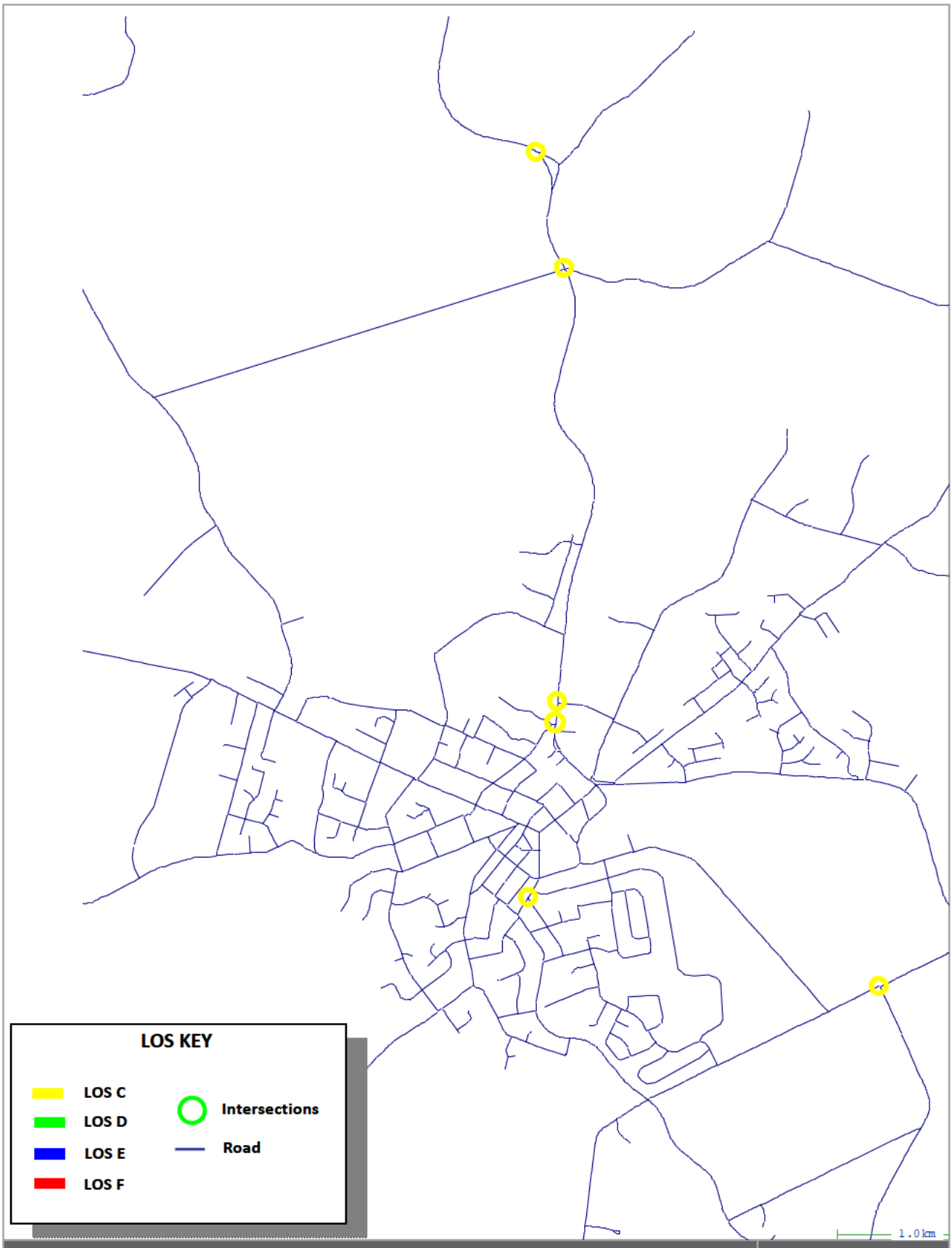


Figure 1-1: Base V6 – AM 2025 (without Development)

Stantec

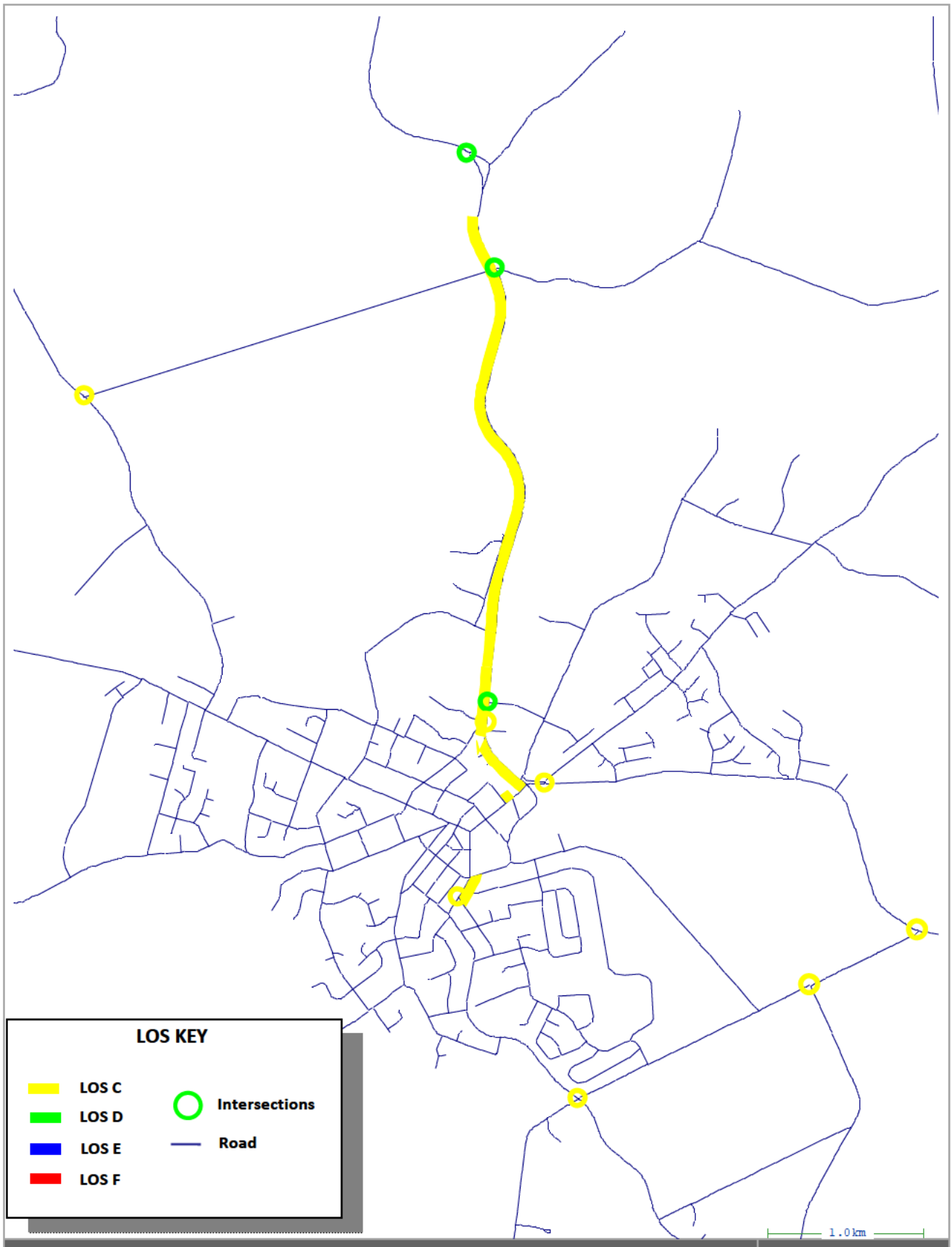


Figure 1-2: Base V6 – PM 2025 (without Development)

Stantec

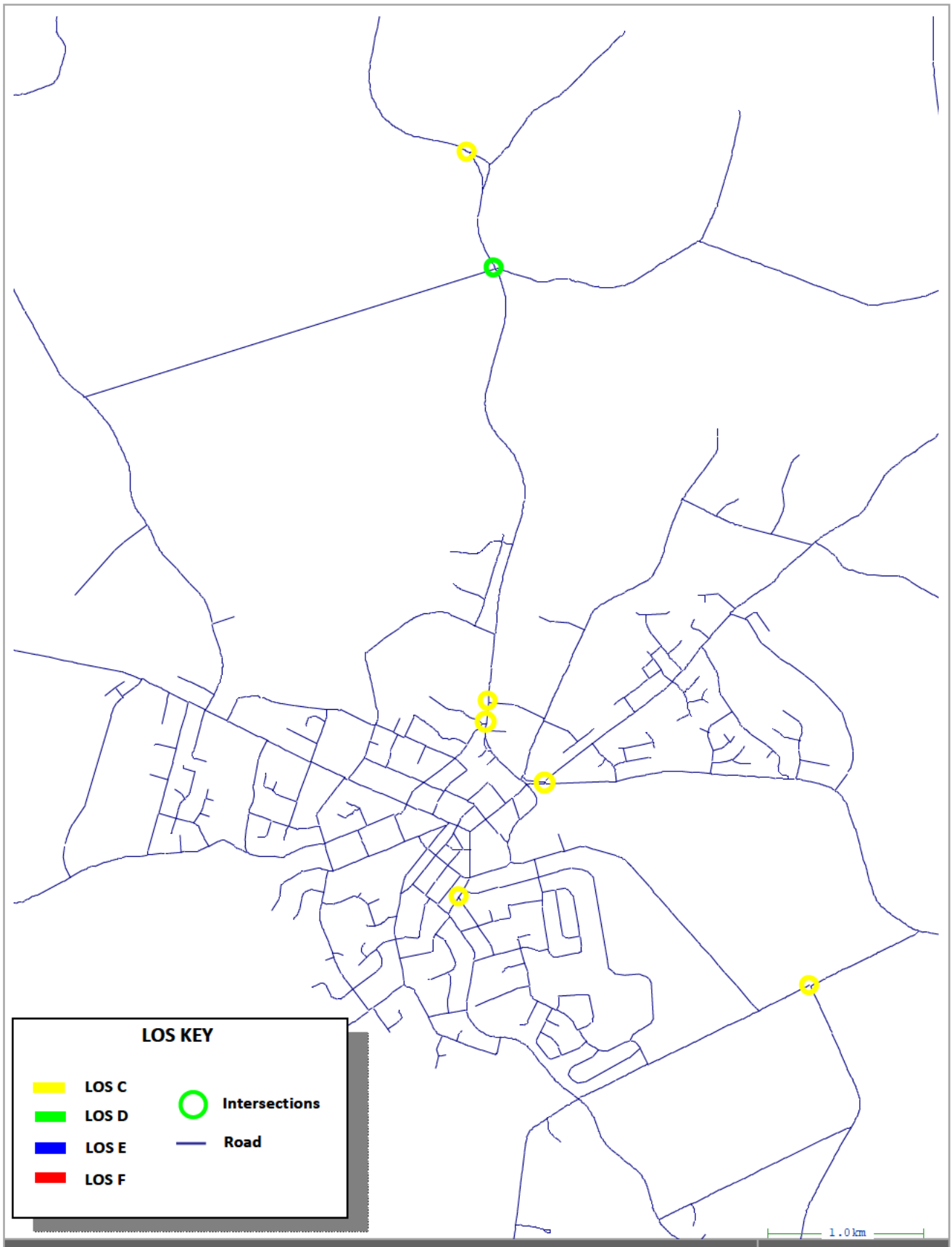


Figure 1-3: Base V6 – AM 2035 (without Development)

Stantec

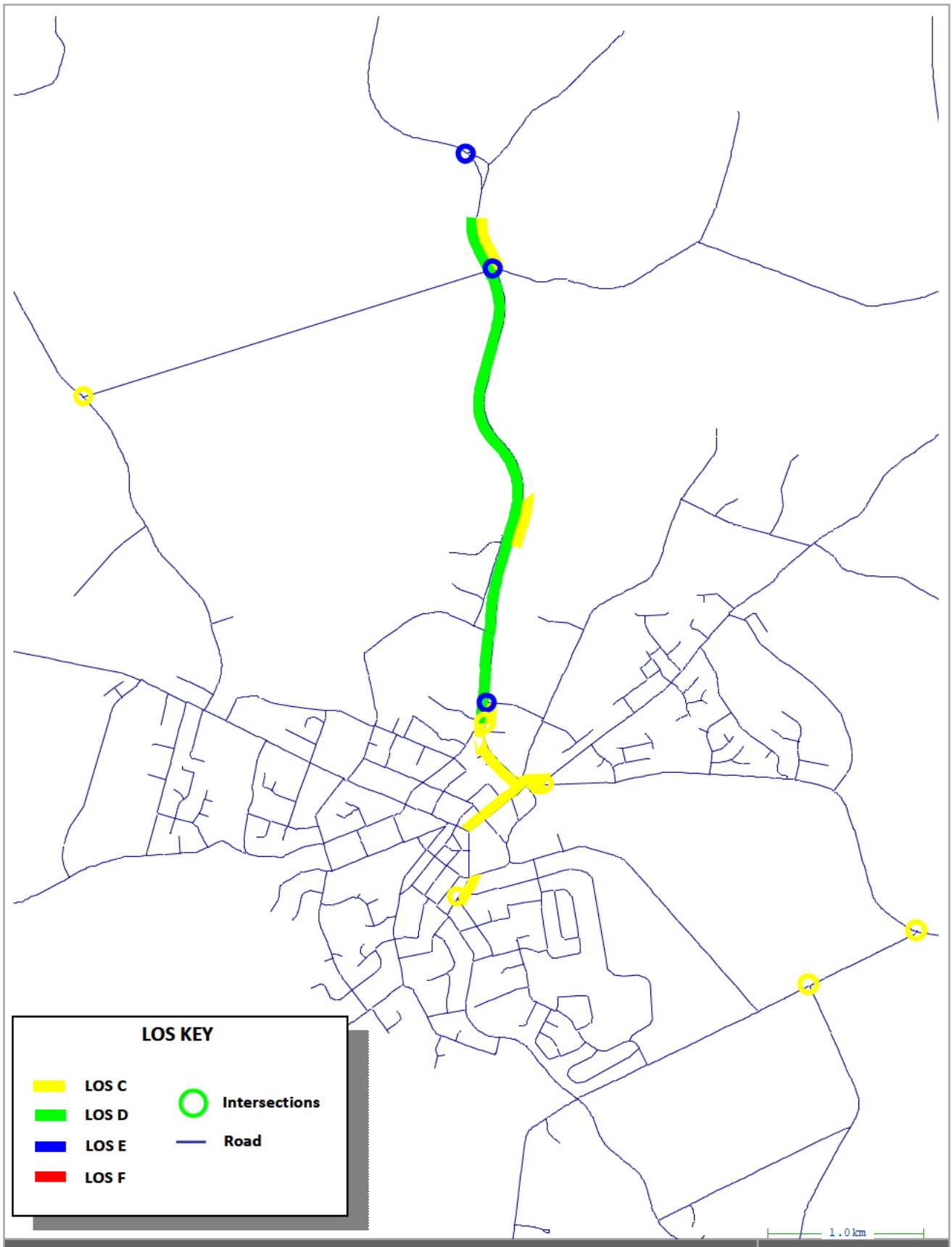


Figure 1-4: Base V6 – PM 2035 (without Development)

Stantec

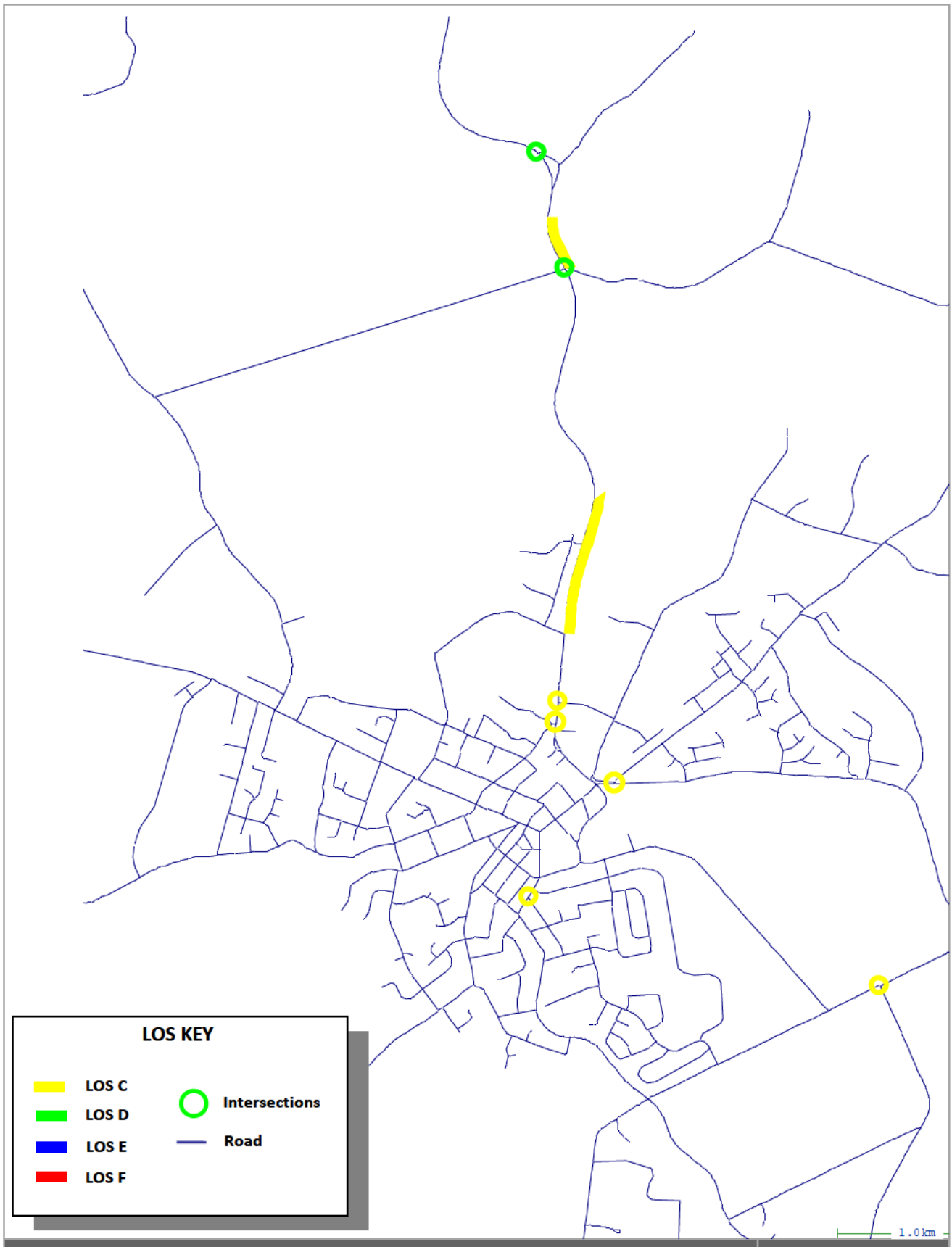


Figure 1-5: Base V6 – AM 2045 (without Development)

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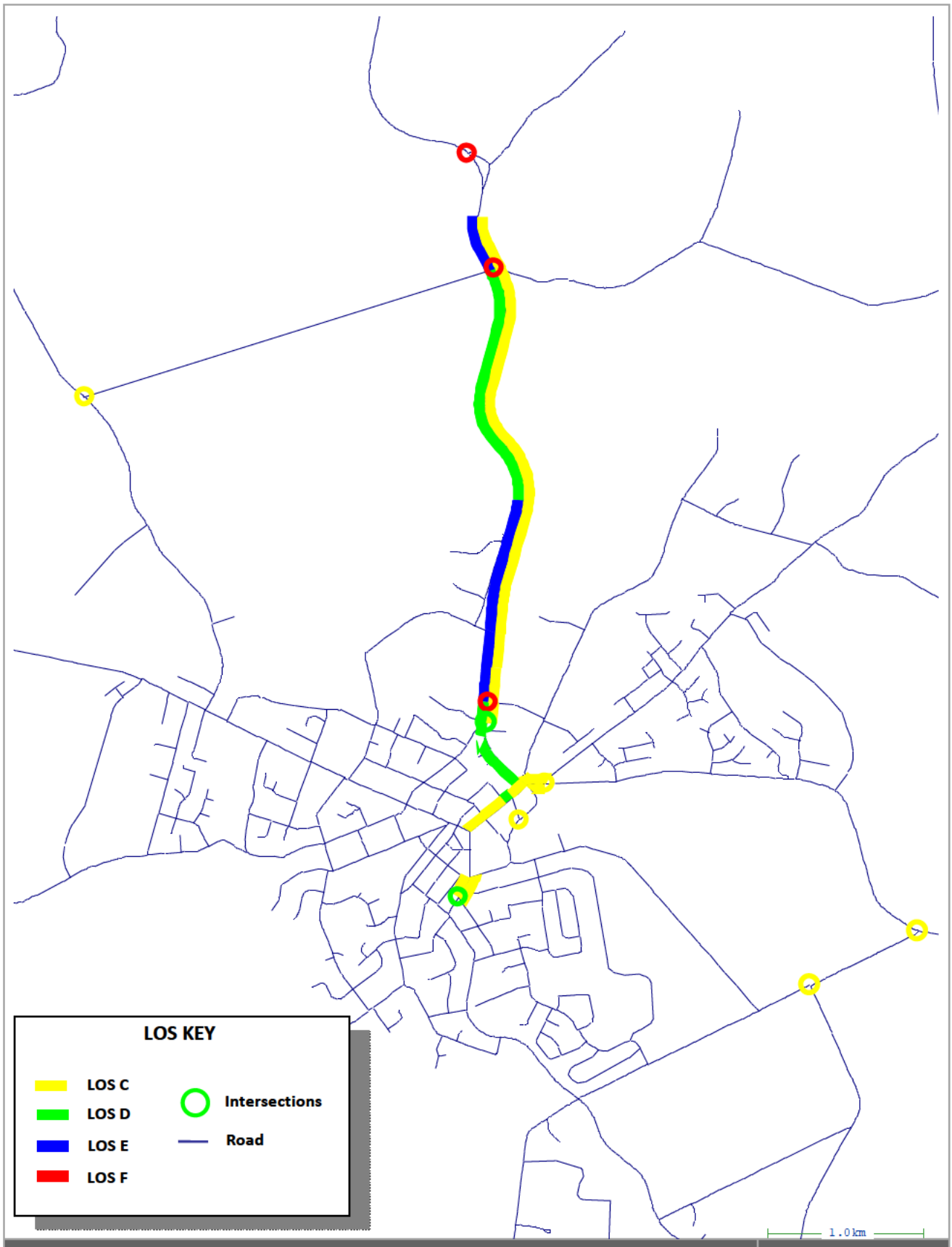


Figure 1-6: Base V6 – PM 2045 (without Development)

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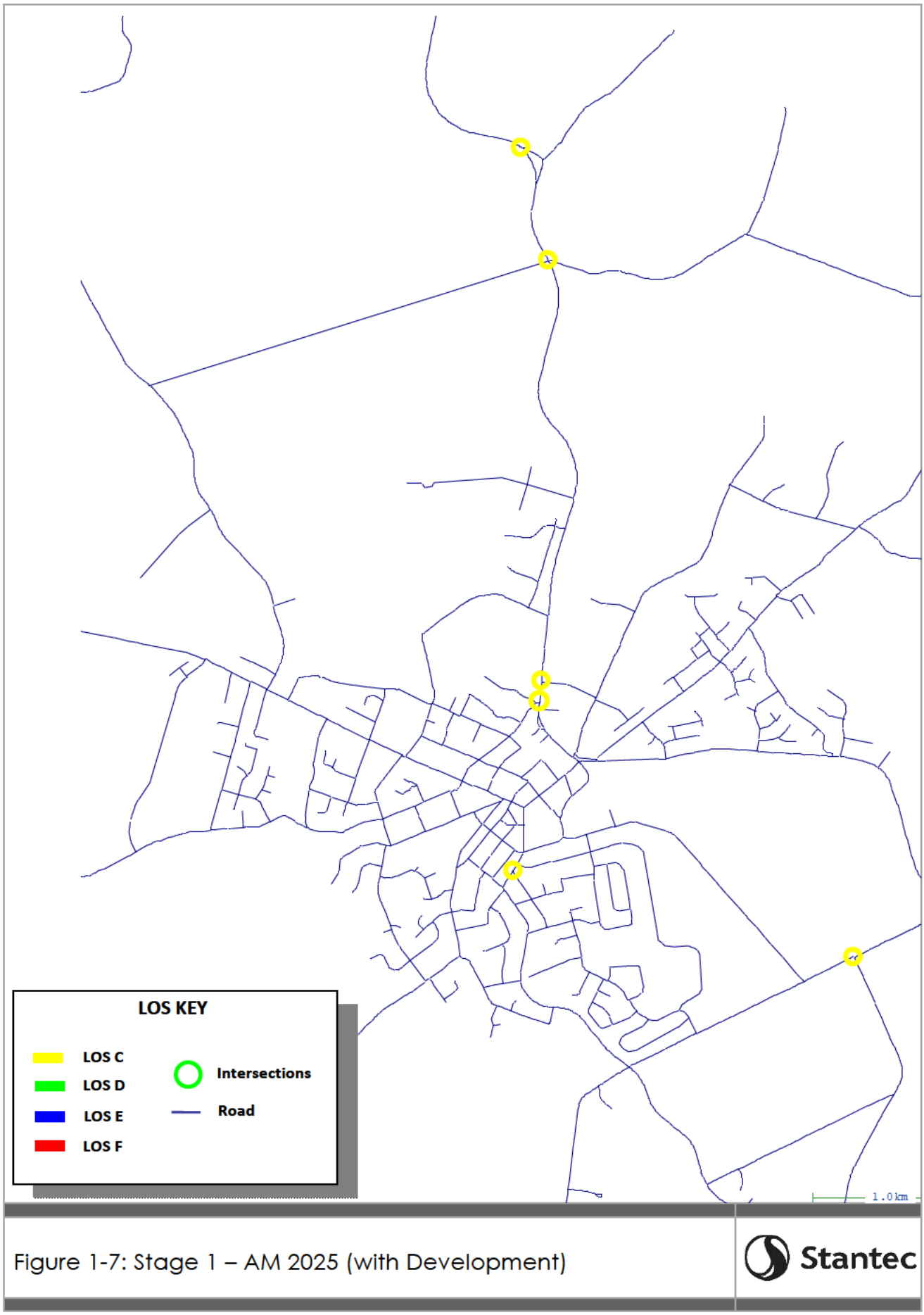


Figure 1-7: Stage 1 – AM 2025 (with Development)

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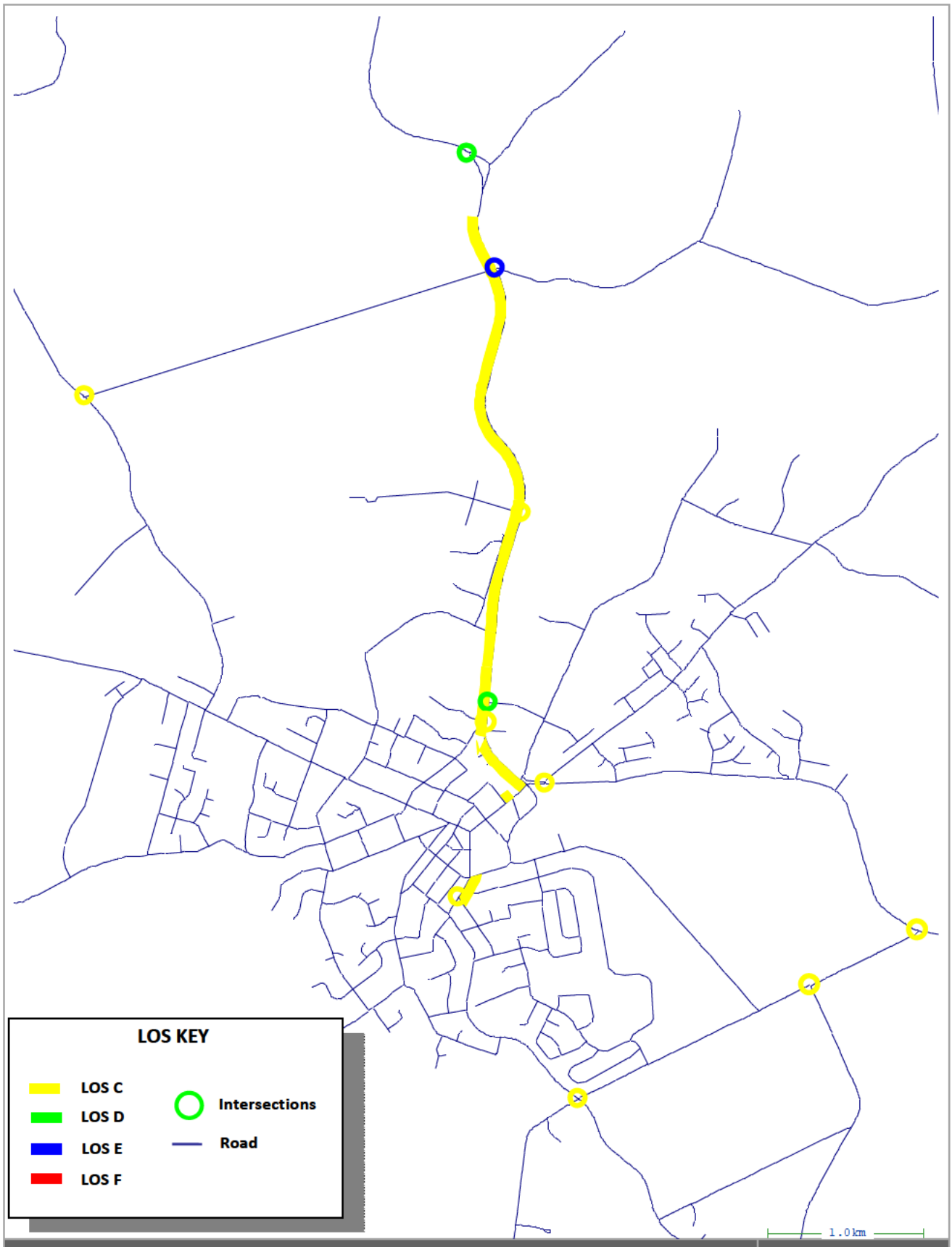


Figure 1-8: Stage 1 – PM 2025 (with Development)

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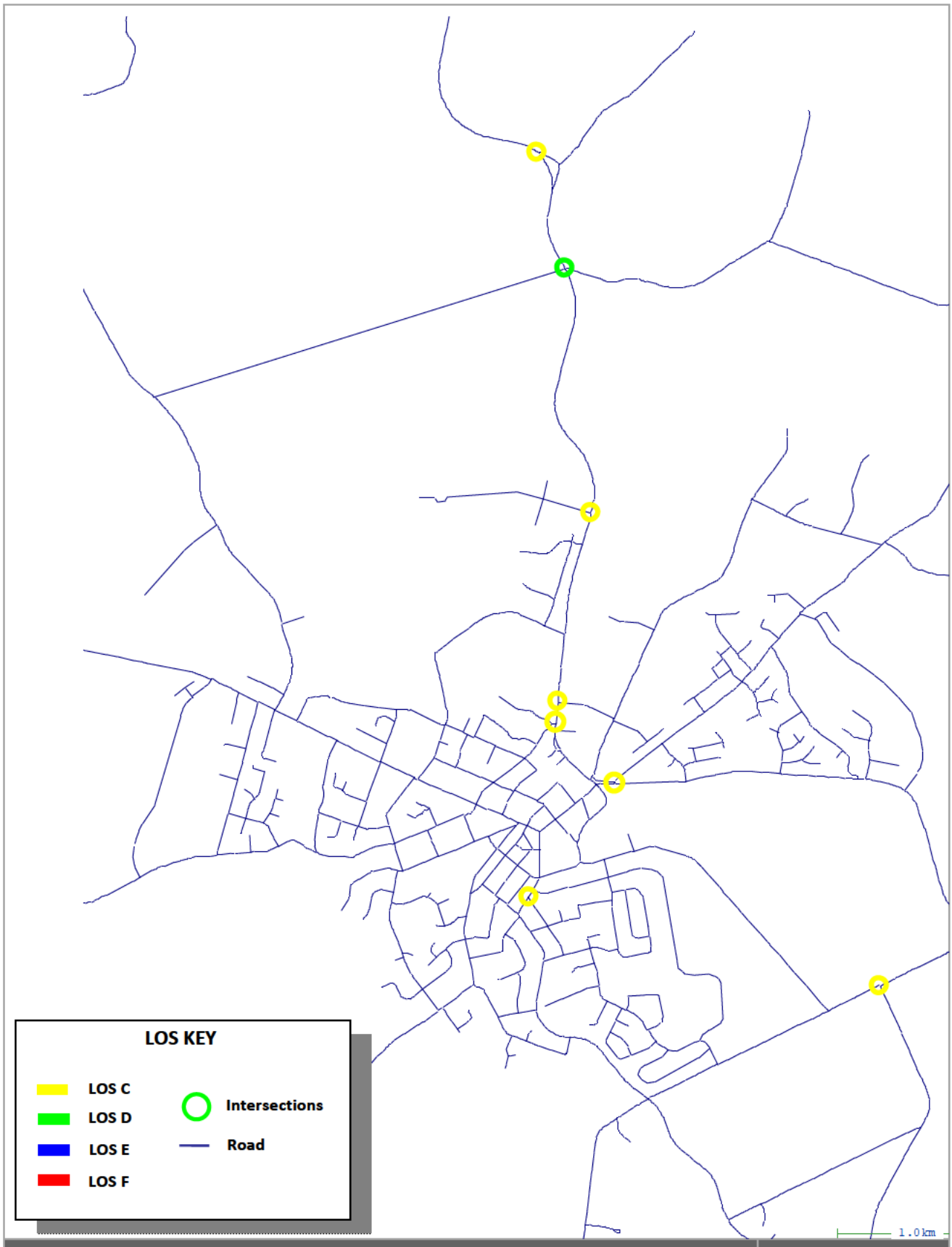


Figure 1-9: Stage 1 – AM 2035 (with Development)

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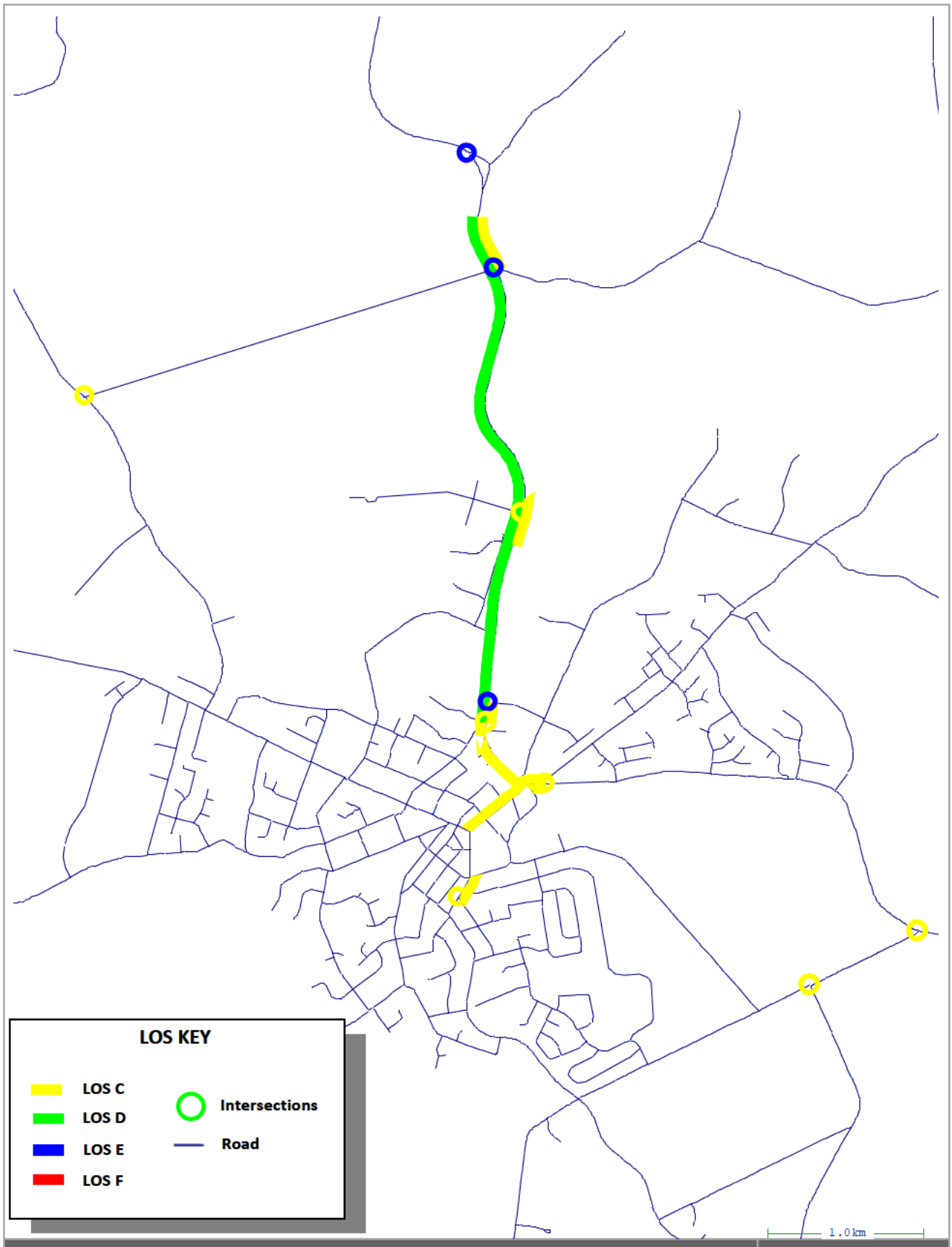


Figure 1-10: Stage 1 – AM 2035 (with Development)

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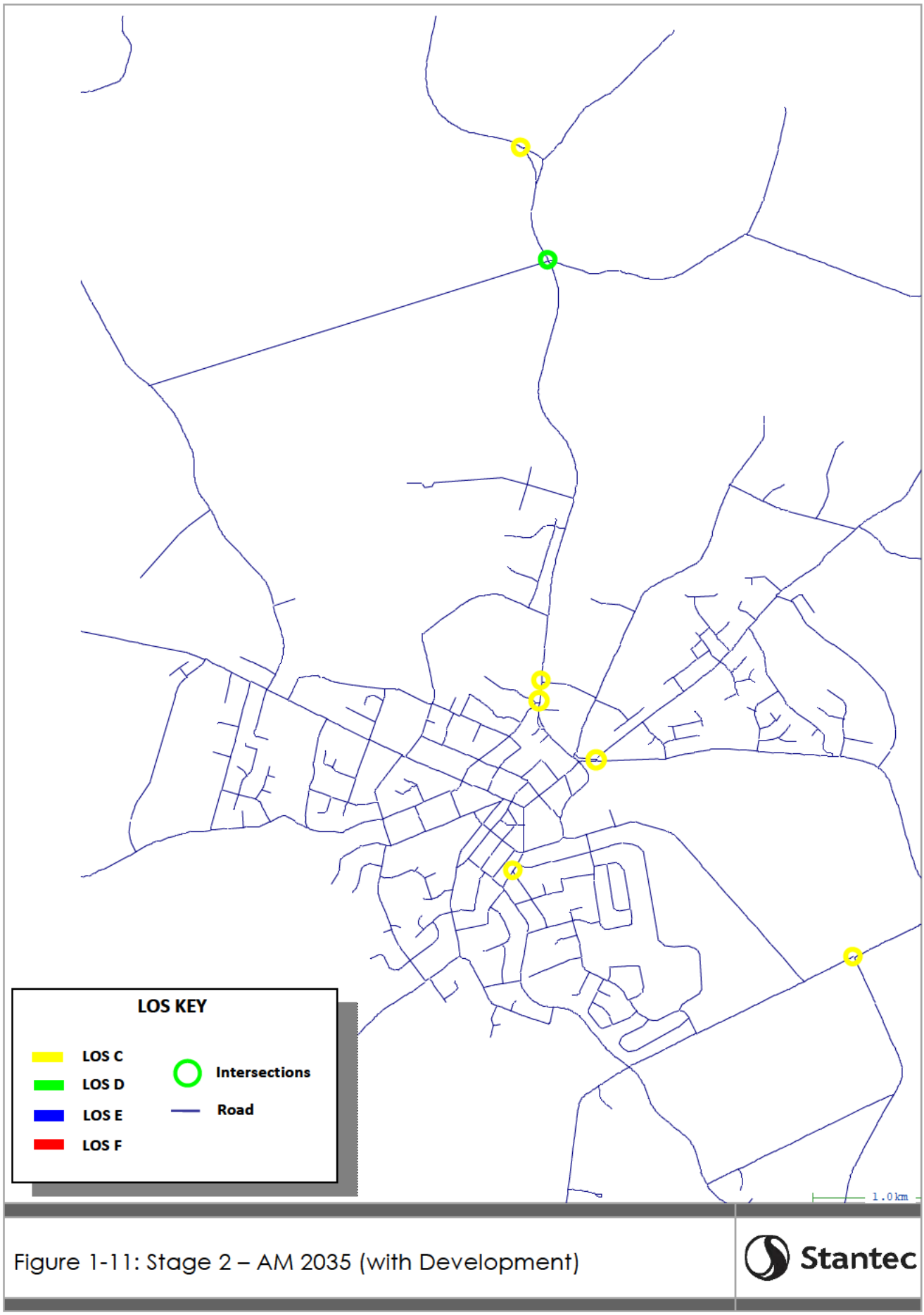


Figure 1-11: Stage 2 – AM 2035 (with Development)

Stantec

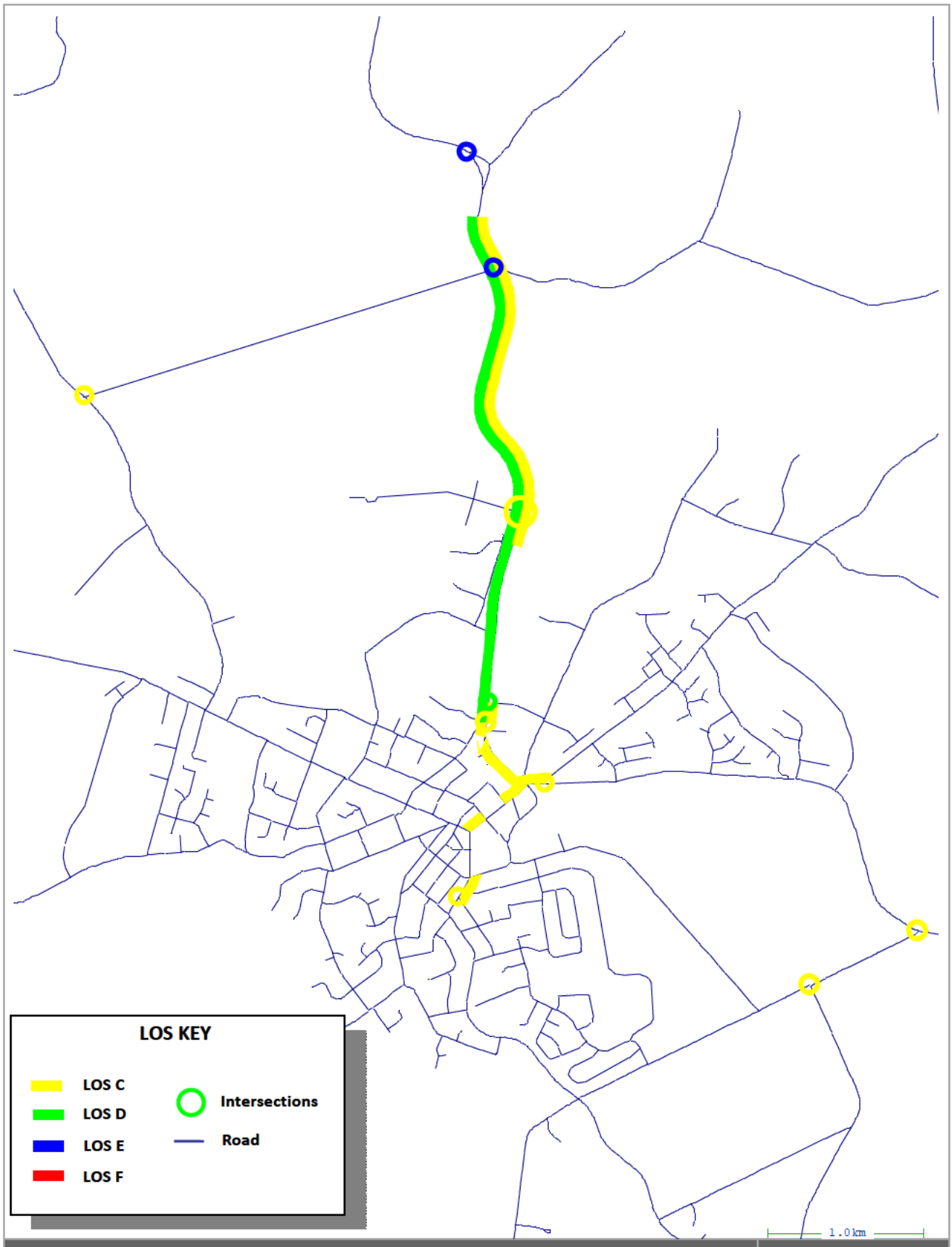


Figure 1-12: Stage 2 – PM 2035 (with Development)

Stantec

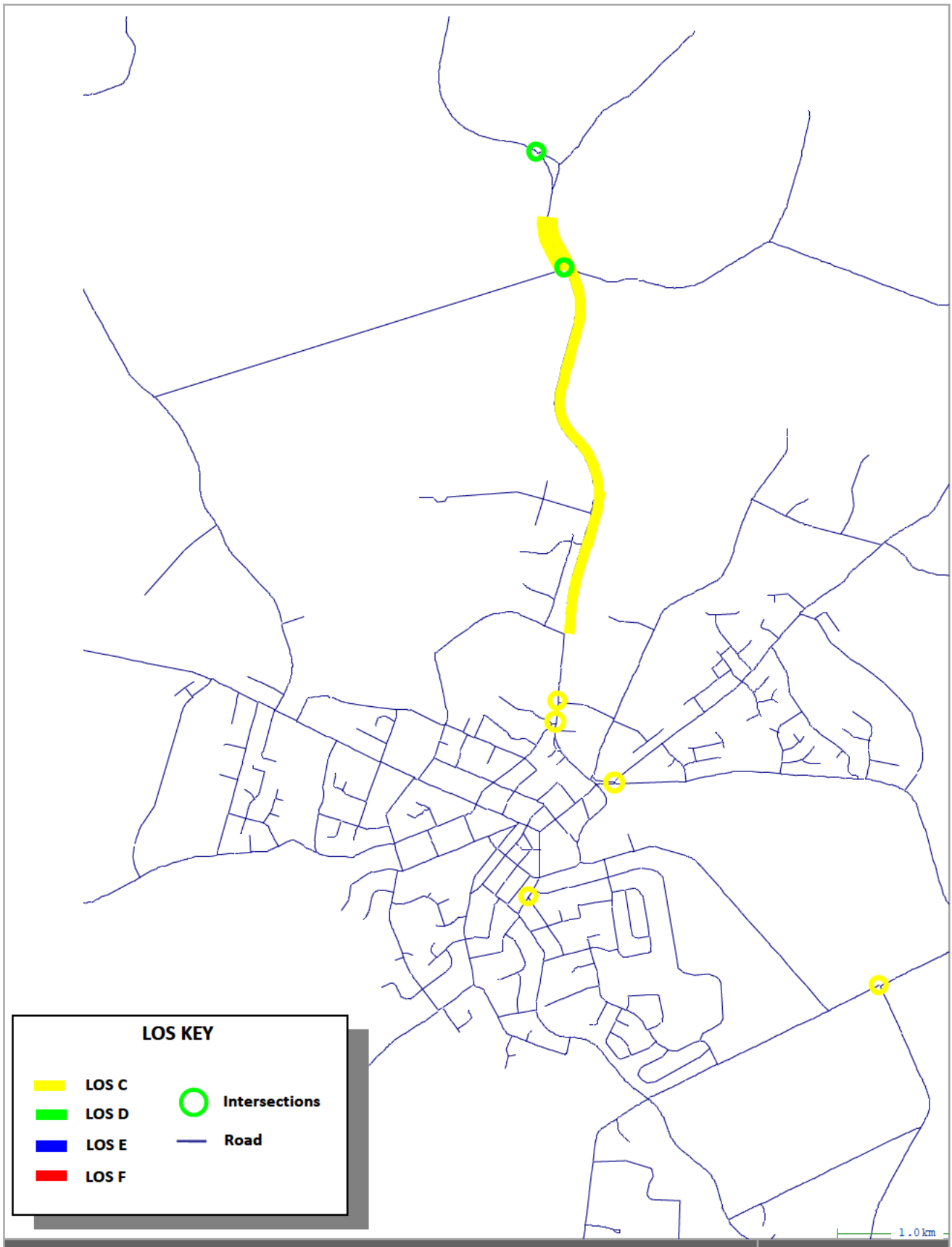


Figure 1-13: Stage 2 – AM 2045 (with Development)

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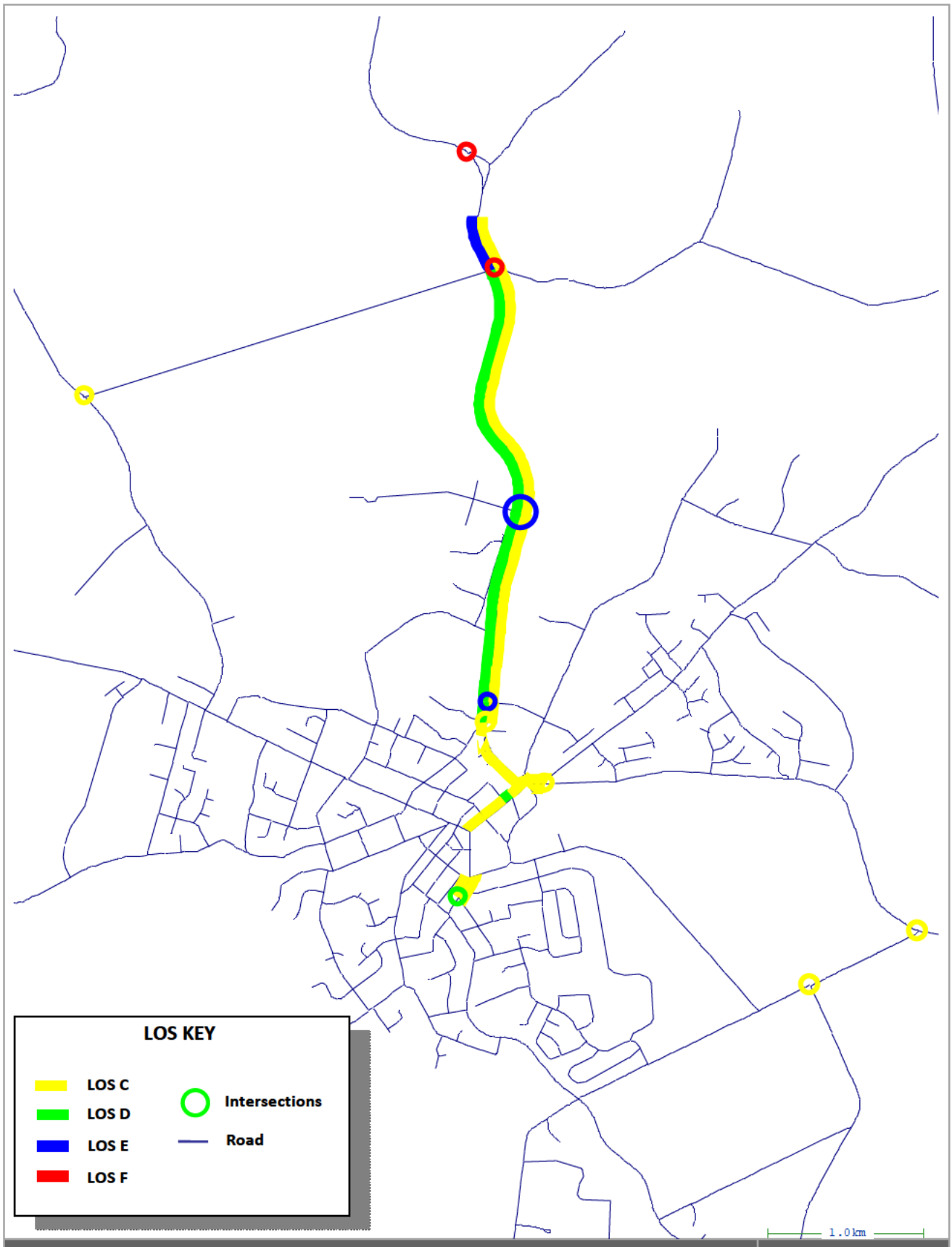


Figure 1-14: Stage 2 – AM 2045 (with Development)

Stantec

Appendix 6: WRTM Select Link Plots



Figure 1-1: Stage 1 – AM 2025 (Out of Site)

Stantec



Figure 1-2: Stage 1 – AM 2025 (Into Site)

Stantec



Figure 1-3: Stage 1 – PM 2025 (Out of Site)

Stantec



Figure 1-4: PM 2025 (Into Site)



Figure 1-5: Stage 1 – AM 2035 (Out of Site)

Stantec



Figure 1-6: Stage 1 - AM 2035 (Into Site)

Stantec



Figure 1-7: Stage 1 - PM 2035 (Out of Site)

Stantec



Figure 1-8: Stage 1 - PM 2025 (Into Site)

Stantec



Figure 1-9: Stage 2 – AM 2035 (Out of Site)

Stantec



Figure 1-10: Stage 2 – AM 2035 (Into Site)

Stantec

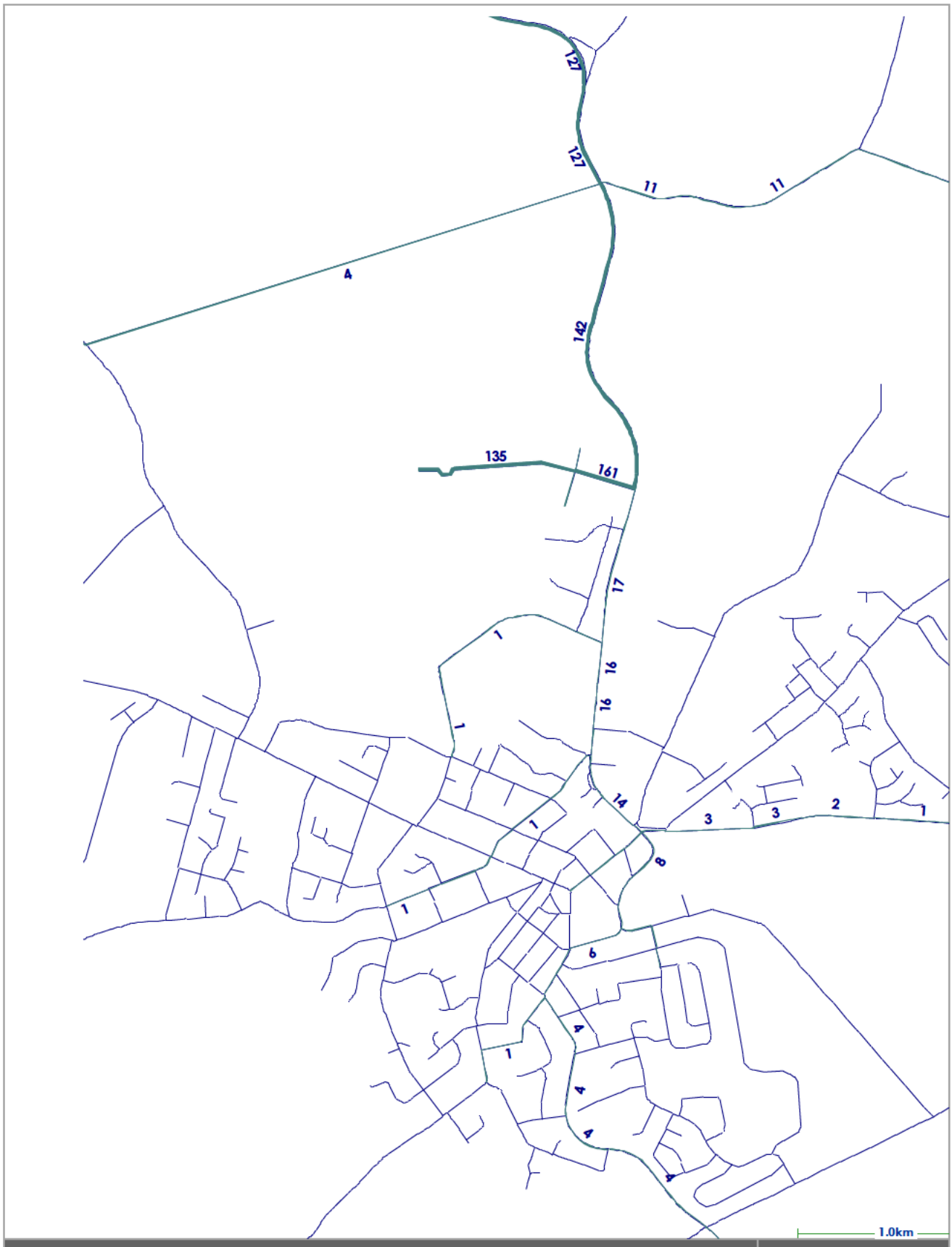


Figure 1-11: Stage 2 – PM 2035 (Out of Site)

Stantec



Figure 1-12: Stage 2 – PM 2035 (Into Site)

Stantec

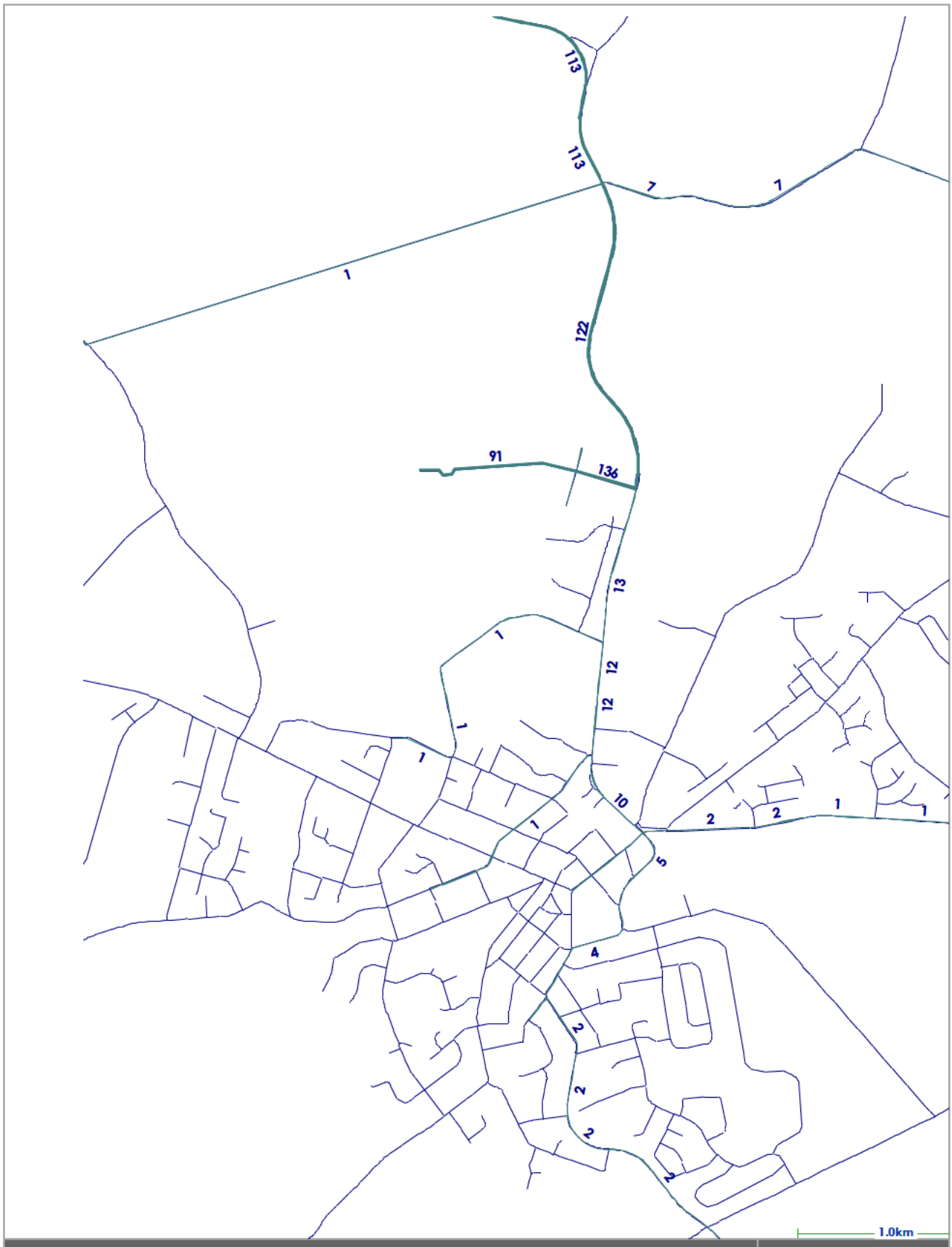


Figure 1-13: Stage 2 – AM 2045 (Out of Site)

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Figure 1-14: Stage 2 – AM 2045 (Into Site)

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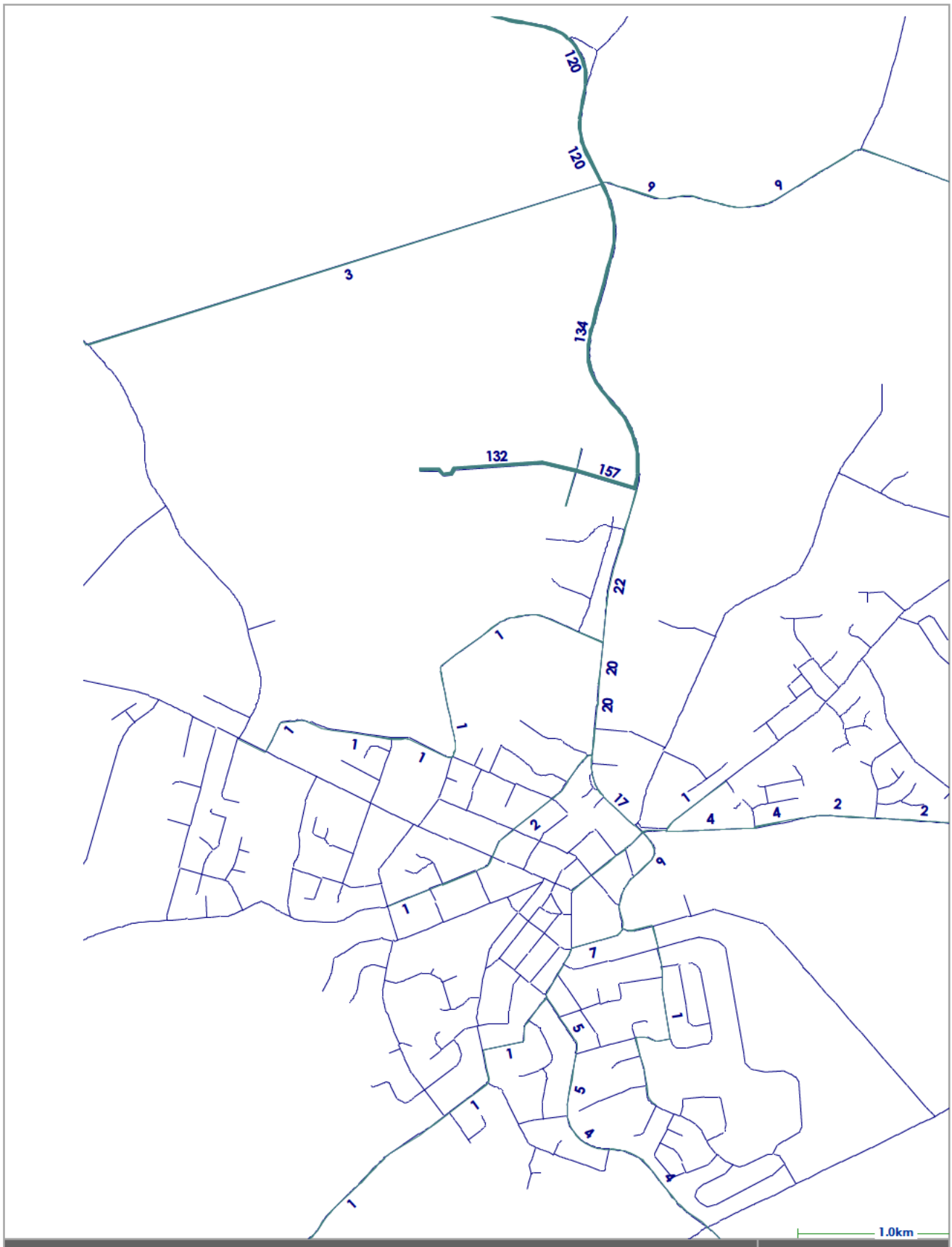


Figure 1-15: Stage 2 – PM 2045 (Out of Site)

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Figure 1-16: Stage 2 – PM 2045 (Into Site)

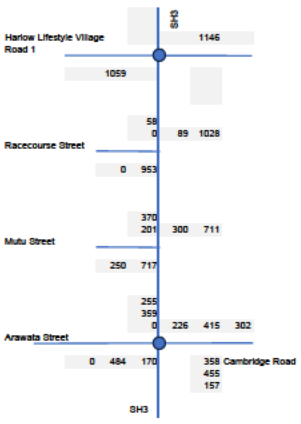
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Appendix 7: Trip Distribution Validation Analysis

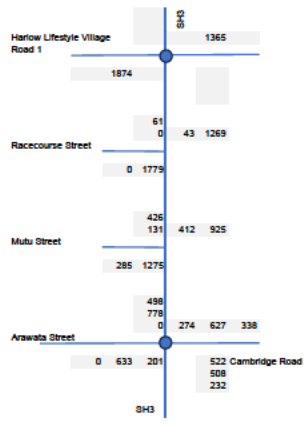
Master Flows Network Model for Assessment of Transport Effects at Intersections
This sheet documents the development demands, WRTM and factored traffic survey uplift to the WRTM transport demands.
The sheet also applies a network distributional assessment for traffic movments travelling to/from Te Awamutu
The through volume demands on SH3 have been adjusted up from the WRTM demands to reflect the 2026 traffic count results

WRTM Do Min Demand Flows - Without Development

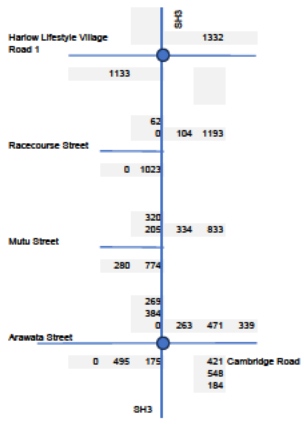
2026 AM Peak Do Min (2hr)



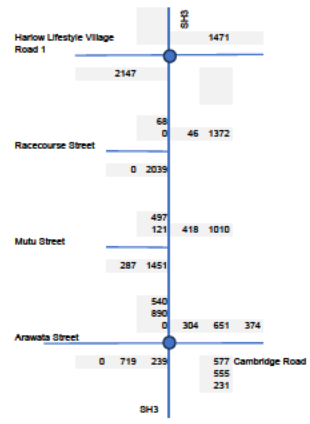
2026 PM Peak Do Min (2hr)



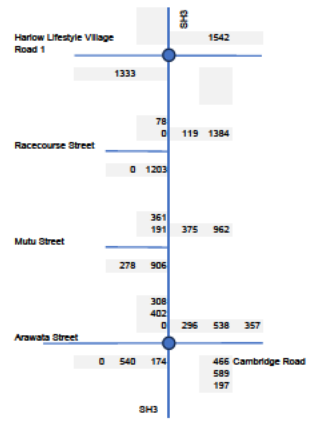
2036 AM Peak Do Min (2hr)



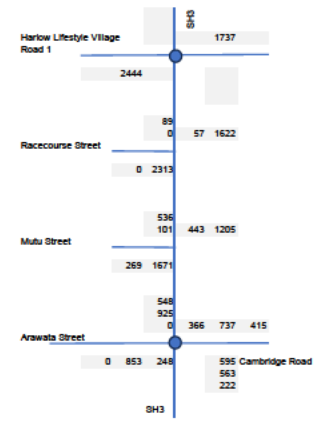
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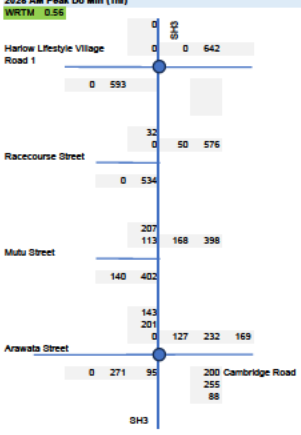
2046 AM Peak Do Min (2hr)



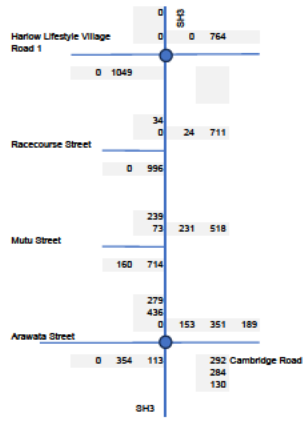
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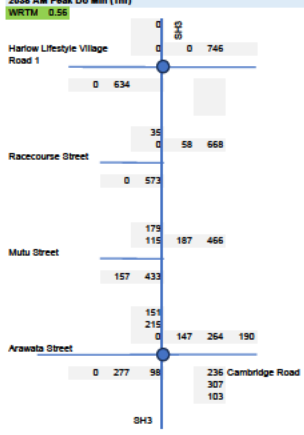
2026 AM Peak Do Min (1hr)
WRTM 0.56



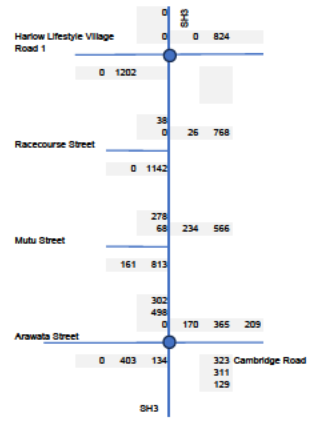
2026 PM Peak Do Min (1hr)



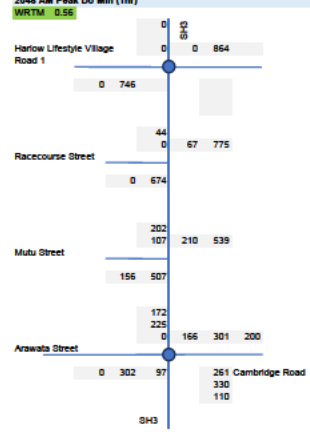
2036 AM Peak Do Min (1hr)
WRTM 0.56



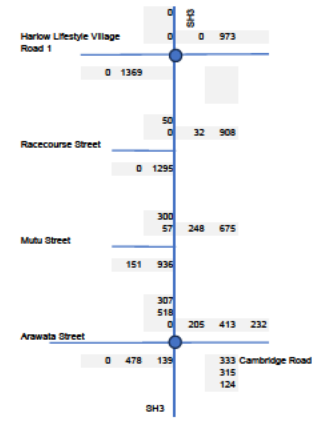
2036 PM Peak Do Min (1hr)



2046 AM Peak Do Min (1hr)
WRTM 0.56



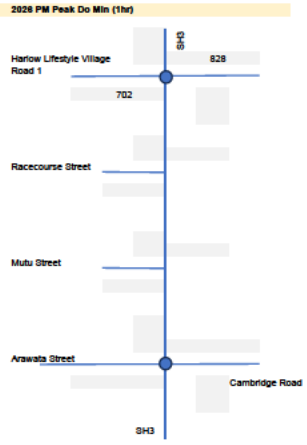
2046 PM Peak Do Min (1hr)



2026 AM Peak Do Min (1hr)
2026 Count Totals



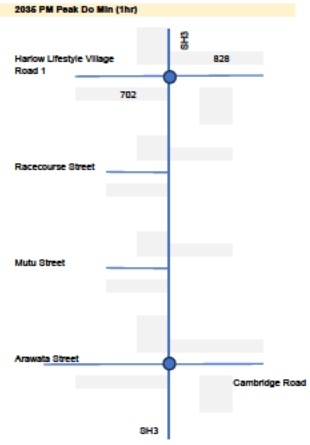
2026 PM Peak Do Min (1hr)



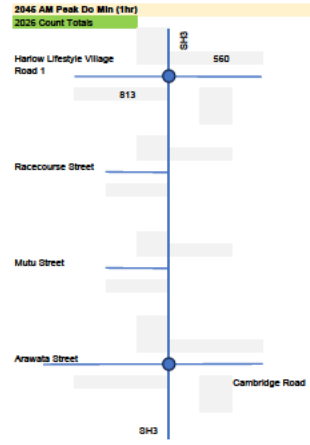
2036 AM Peak Do Min (1hr)
2026 Count Totals



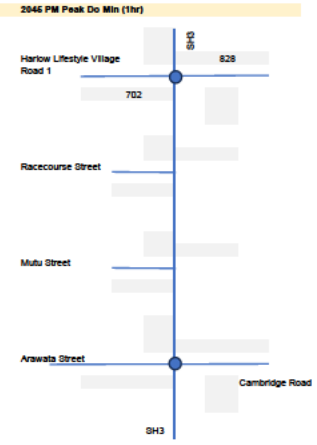
2036 PM Peak Do Min (1hr)



2046 AM Peak Do Min (1hr)
2026 Count Totals



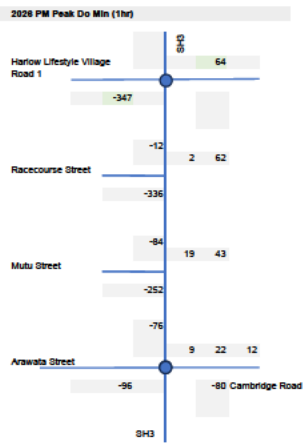
2046 PM Peak Do Min (1hr)



2026 AM Peak Do Min (1hr)
2026 Count Difference & Distribution



2026 PM Peak Do Min (1hr)



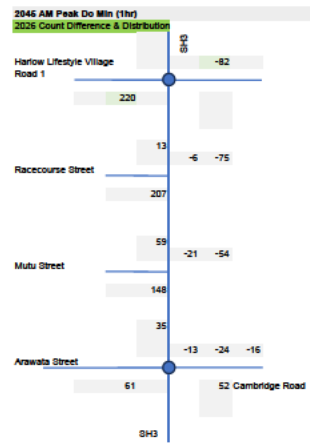
2036 AM Peak Do Min (1hr)
2026 Count Difference & Distribution



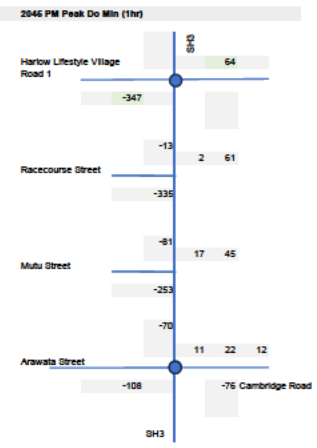
2036 PM Peak Do Min (1hr)



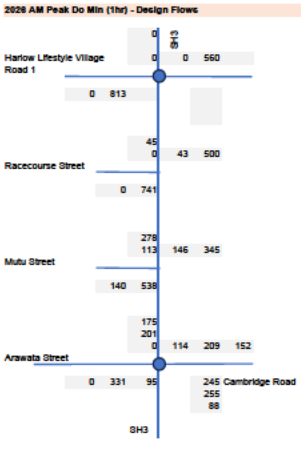
2046 AM Peak Do Min (1hr)
2026 Count Difference & Distribution



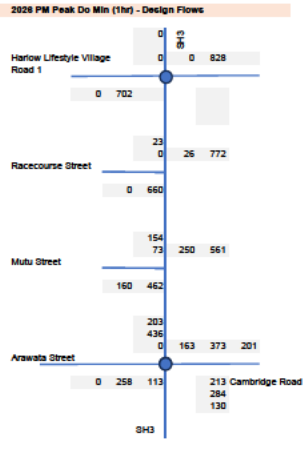
2046 PM Peak Do Min (1hr)



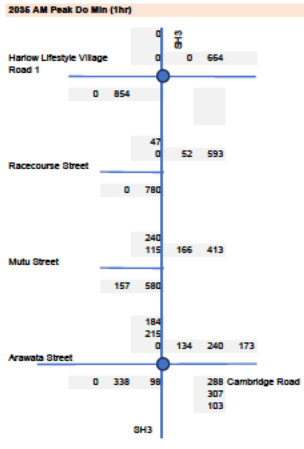
2026 AM Peak Do Min (1hr) - Design Flows



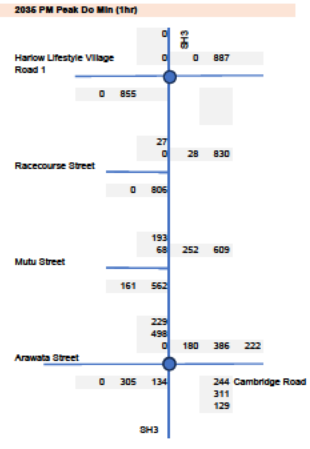
2026 PM Peak Do Min (1hr) - Design Flows



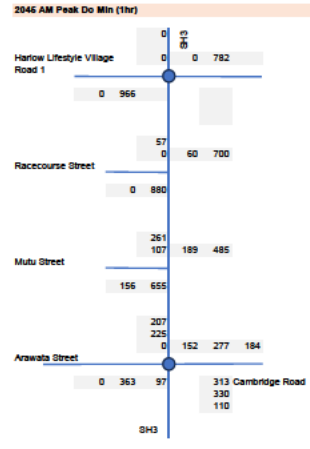
2036 AM Peak Do Min (1hr)



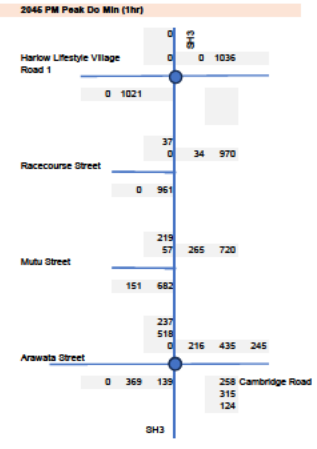
2036 PM Peak Do Min (1hr)



2046 AM Peak Do Min (1hr)

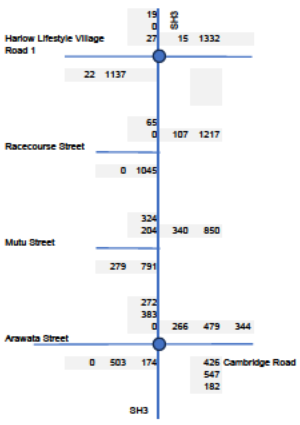


2046 PM Peak Do Min (1hr)

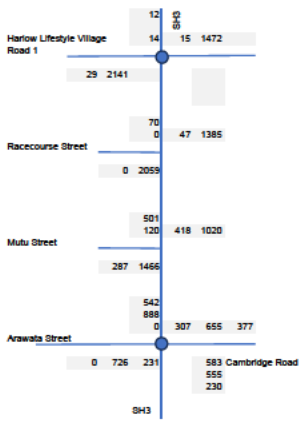


WRTM Do Min Demand Flows - With Development

2036 Stage 1A-D AM Peak Demands (2hr)

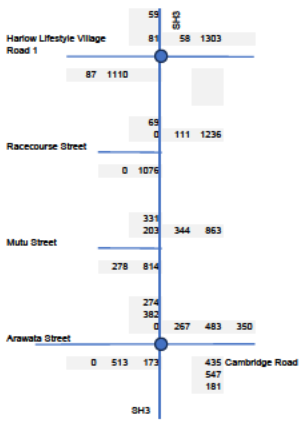


2036 Stage 1A-D PM Peak Demands (2hr)

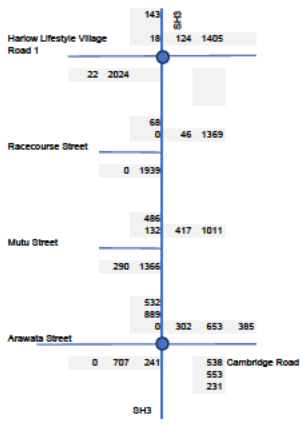


WRTM Do Min Demand Flows - With Development

2036 Full Development AM Peak Demands (2hr)

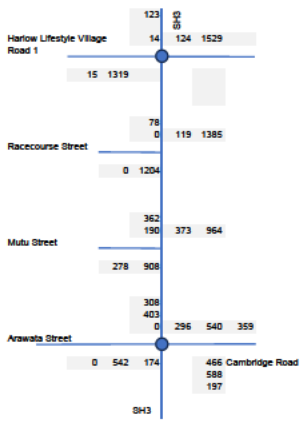


2036 Full Development AM Peak Demands (2hr)

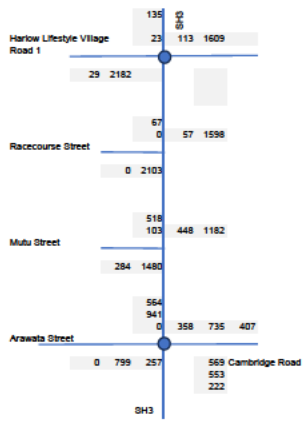


WRTM Do Min Demand Flows - With Development

2046 Full Development AM Peak Demands (2hr)

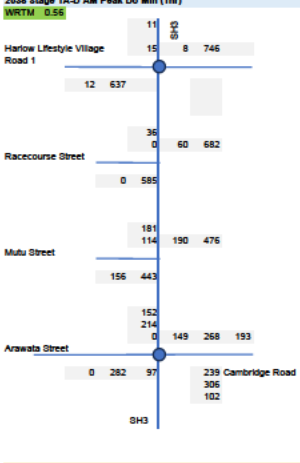


2046 Full Development AM Peak Demands (2hr)

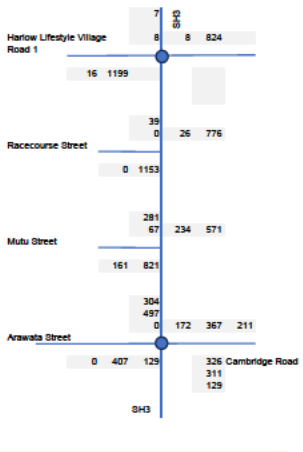


2036 Stage 1A-D AM Peak Do Min (1hr)

WRTM 0.56

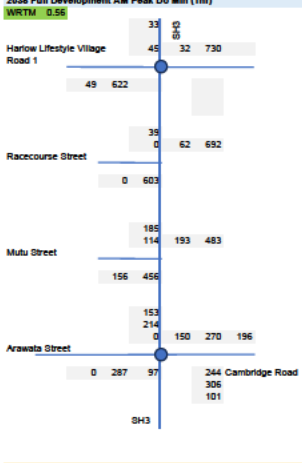


2036 Stage 1A-D PM Peak Do Min (1hr)

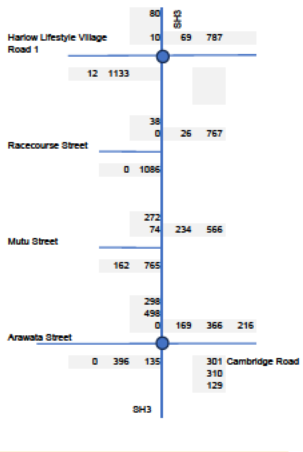


2036 Full Development AM Peak Do Min (1hr)

WRTM 0.56

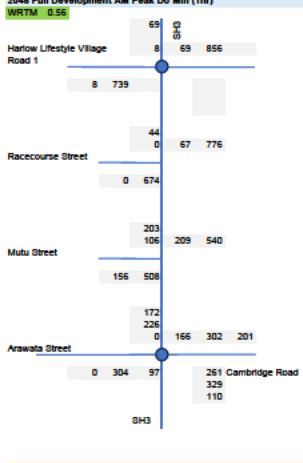


2036 Full Development PM Peak Do Min (1hr)

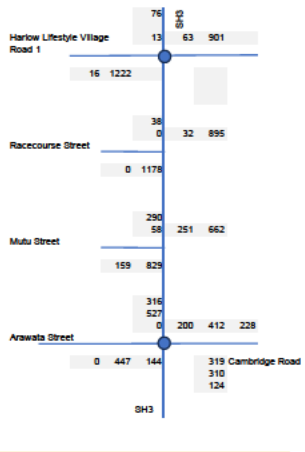


2046 Full Development AM Peak Do Min (1hr)

WRTM 0.56



2046 Full Development PM Peak Do Min (1hr)



2036 Stage 1A-D AM Peak Do Min (1hr)

2026 Count Totals



2036 Stage 1A-D PM Peak Do Min (1hr)

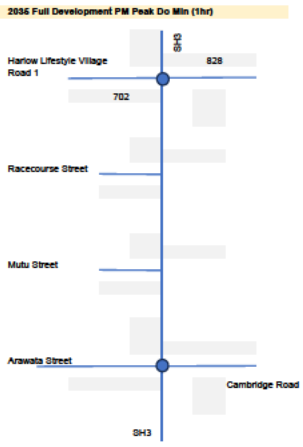


2036 Full Development AM Peak Do Min (1hr)

2026 Count Totals

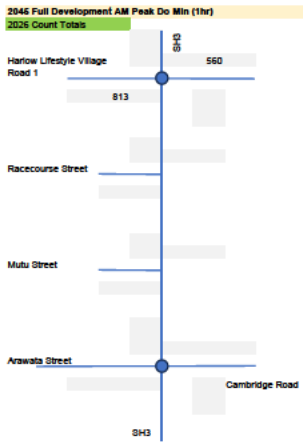


2036 Full Development PM Peak Do Min (1hr)

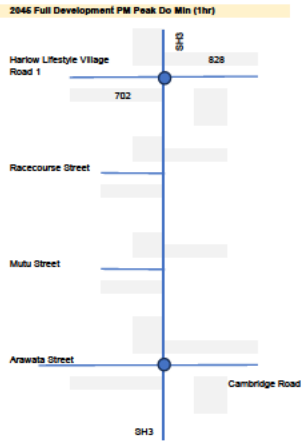


2046 Full Development AM Peak Do Min (1hr)

2026 Count Totals



2046 Full Development PM Peak Do Min (1hr)

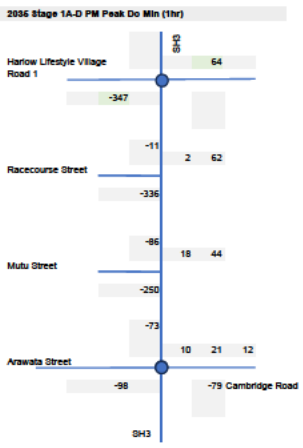


2036 Stage 1A-D AM Peak Do Min (1hr)

2026 Count Difference & Distribution

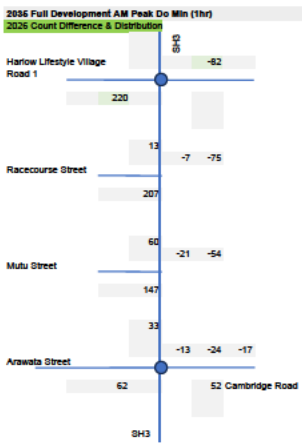


2036 Stage 1A-D PM Peak Do Min (1hr)



2036 Full Development AM Peak Do Min (1hr)

2026 Count Difference & Distribution



2036 Full Development PM Peak Do Min (1hr)



2046 Full Development AM Peak Do Min (1hr)

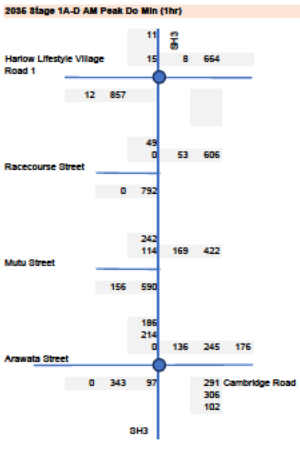
2026 Count Difference & Distribution



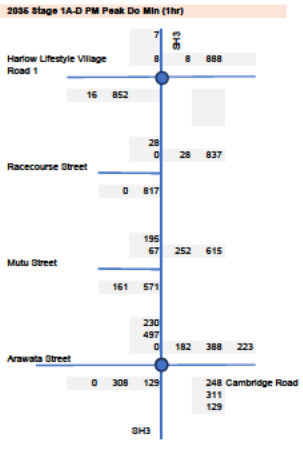
2046 Full Development PM Peak Do Min (1hr)



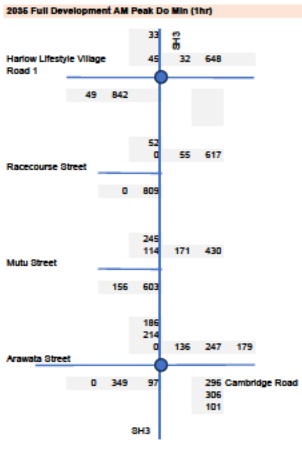
2036 Stage 1A-D AM Peak Do Min (1hr)



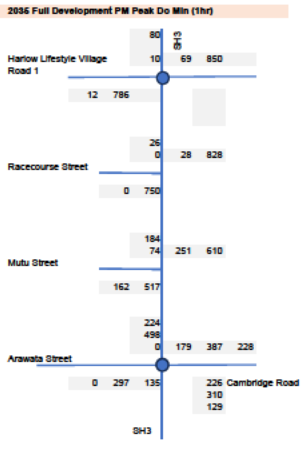
2036 Stage 1A-D PM Peak Do Min (1hr)



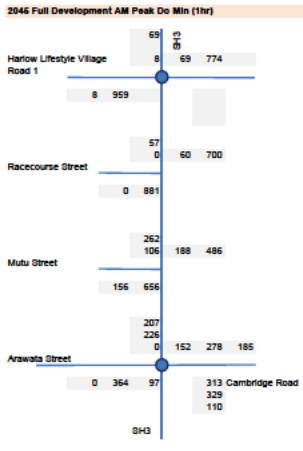
2036 Full Development AM Peak Do Min (1hr)



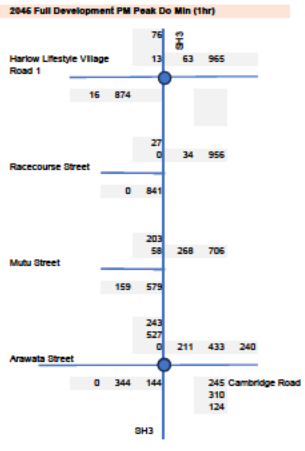
2036 Full Development PM Peak Do Min (1hr)



2046 Full Development AM Peak Do Min (1hr)



2046 Full Development PM Peak Do Min (1hr)



2045 Full Development AM Peak Do Min (1hr) - Sensitivity

Switch Site Distribution between North and South

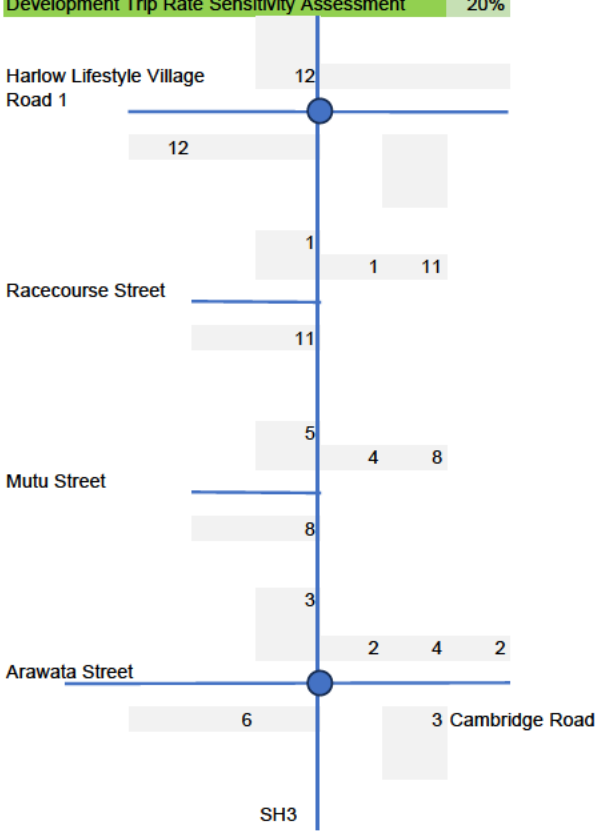


2045 Full Development PM Peak Do Min (1hr) - Sensitivity



2045 Full Development AM Peak Do Min (1hr) - Sensitivity

Development Trip Rate Sensitivity Assessment 20%

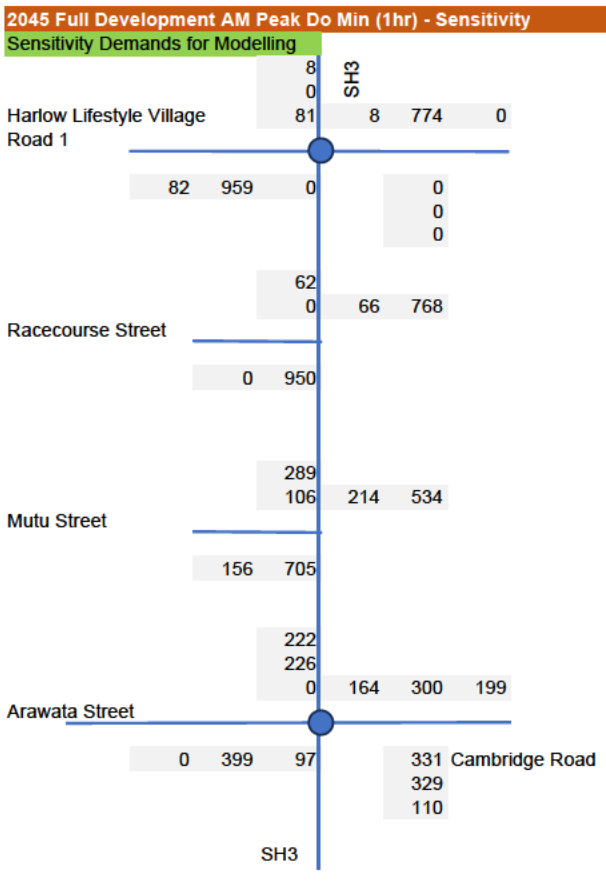


2045 Full Development PM Peak Do Min (1hr) - Sensitivity

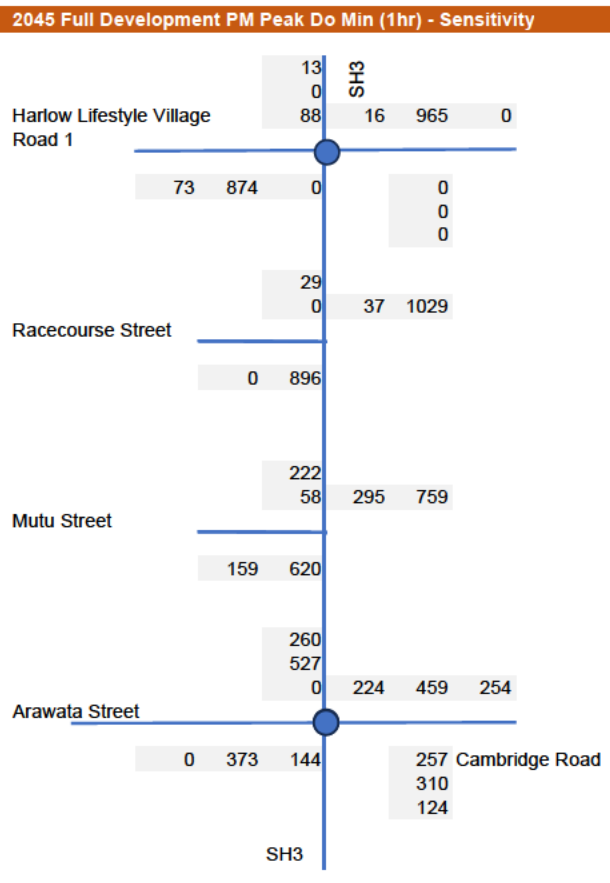


2045 Full Development AM Peak Do Min (1hr) - Sensitivity

Sensitivity Demands for Modelling



2045 Full Development PM Peak Do Min (1hr) - Sensitivity



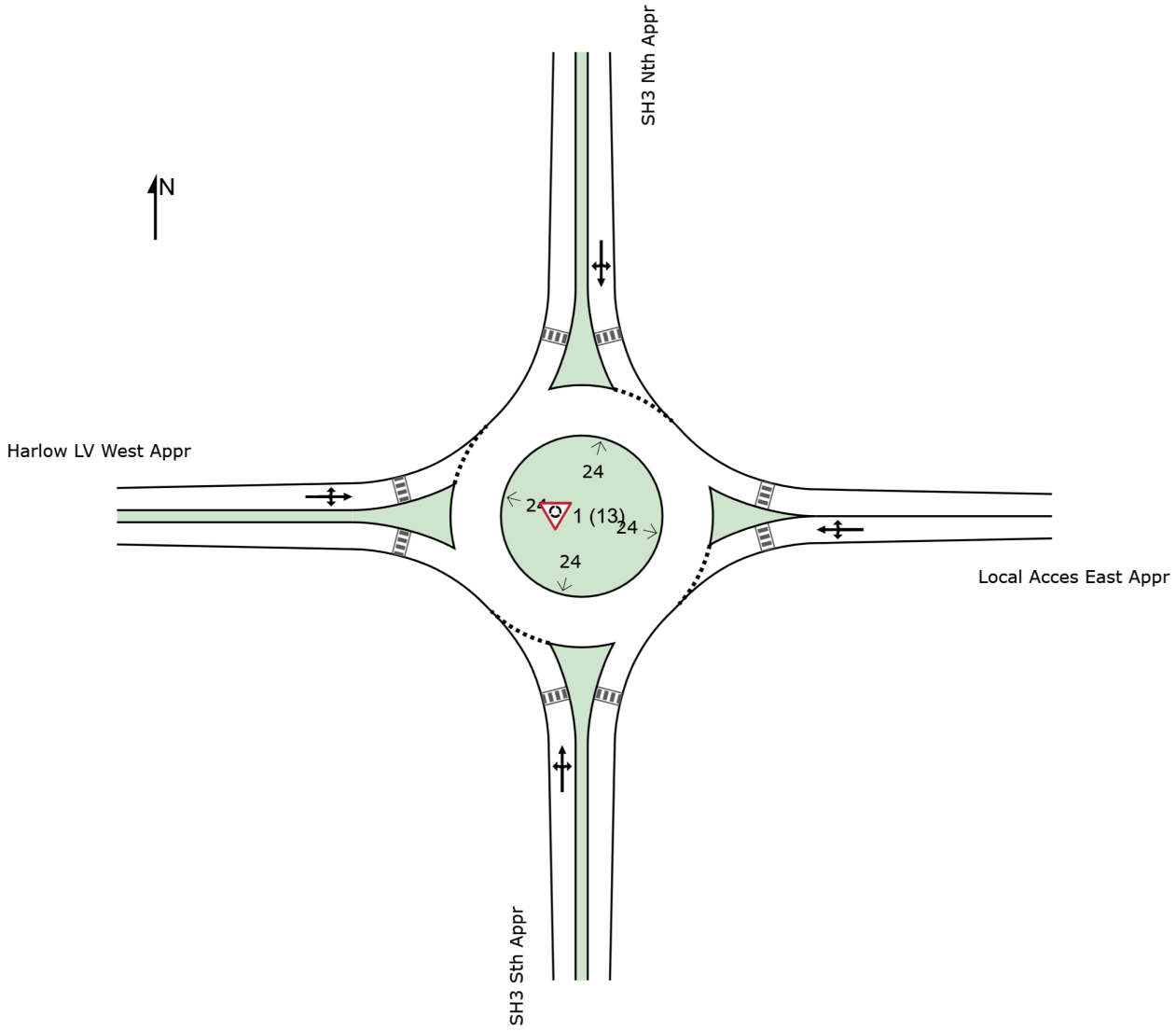
Appendix 8: 2045 Validated Sidra Modelling Results

SITE LAYOUT

Site: [1 (13)] Harlow Lifestyle Village Access - AM Peak (2045 Harlow Full Development Demands)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: BOFFA MISKELL | Licence: NETWORK / 1PC | Created: Wednesday, 19 August 2026 2:24:10 pm
Project: U:\2025\BM251067_MAp_Harlow_Retirement_Development_Ohaupo_Road_Te_Awamutu\Data\Sidra\ITA Report Modelling\ITA Intersection Modelling.sipx

MOVEMENT SUMMARY

Site: [1 (13)] Harlow Lifestyle Village Access - AM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	8	10.0	8	10.0	0.715	3.5	LOS A	8.5	64.9	0.46	0.36	0.46	46.2
2	T1	All MCs	1009	10.0	1009	10.0	0.715	3.3	LOS A	8.5	64.9	0.46	0.36	0.46	46.4
3	R2	All MCs	1	10.0	1	10.0	0.715	8.3	LOS A	8.5	64.9	0.46	0.36	0.46	45.8
Approach			1019	10.0	1019	10.0	0.715	3.3	LOS A	8.5	64.9	0.46	0.36	0.46	46.4
East: Local Acces East Appr															
4	L2	All MCs	1	10.0	1	10.0	0.007	12.8	LOS B	0.0	0.3	0.85	0.64	0.85	41.5
5	T1	All MCs	1	10.0	1	10.0	0.007	12.6	LOS B	0.0	0.3	0.85	0.64	0.85	41.7
6	R2	All MCs	1	10.0	1	10.0	0.007	17.6	LOS B	0.0	0.3	0.85	0.64	0.85	41.2
Approach			3	10.0	3	10.0	0.007	14.3	LOS B	0.0	0.3	0.85	0.64	0.85	41.5
North: SH3 Nth Appr															
7	L2	All MCs	1	10.0	1	10.0	0.671	2.7	LOS A	9.7	73.8	0.18	0.29	0.18	47.0
8	T1	All MCs	1016	10.0	1016	10.0	0.671	2.5	LOS A	9.7	73.8	0.18	0.29	0.18	47.3
9	R2	All MCs	66	10.0	66	10.0	0.671	7.5	LOS A	9.7	73.8	0.18	0.29	0.18	46.6
Approach			1083	10.0	1083	10.0	0.671	2.8	LOS A	9.7	73.8	0.18	0.29	0.18	47.2
West: Harlow LV West Appr															
10	L2	All MCs	73	10.0	73	10.0	0.176	12.1	LOS B	1.2	9.0	0.90	0.78	0.90	42.2
11	T1	All MCs	1	10.0	1	10.0	0.176	11.9	LOS B	1.2	9.0	0.90	0.78	0.90	42.5
12	R2	All MCs	8	10.0	8	10.0	0.176	16.9	LOS B	1.2	9.0	0.90	0.78	0.90	41.9
Approach			82	10.0	82	10.0	0.176	12.6	LOS B	1.2	9.0	0.90	0.78	0.90	42.2
All Vehicles			2187	10.0	2187	10.0	0.715	3.4	LOS A	9.7	73.8	0.34	0.34	0.34	46.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [1 (16)] Harlow Lifestyle Village Access - PM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	17	10.0	17	10.0	0.662	3.4	LOS A	7.1	54.1	0.42	0.35	0.42	46.3
2	T1	All MCs	920	10.0	920	10.0	0.662	3.2	LOS A	7.1	54.1	0.42	0.35	0.42	46.6
3	R2	All MCs	1	10.0	1	10.0	0.662	8.2	LOS A	7.1	54.1	0.42	0.35	0.42	45.9
Approach			938	10.0	938	10.0	0.662	3.2	LOS A	7.1	54.1	0.42	0.35	0.42	46.6
East: Local Acces East Appr															
4	L2	All MCs	1	10.0	1	10.0	0.007	12.9	LOS B	0.0	0.3	0.86	0.64	0.86	41.5
5	T1	All MCs	1	10.0	1	10.0	0.007	12.7	LOS B	0.0	0.3	0.86	0.64	0.86	41.7
6	R2	All MCs	1	10.0	1	10.0	0.007	17.7	LOS B	0.0	0.3	0.86	0.64	0.86	41.1
Approach			3	10.0	3	10.0	0.007	14.5	LOS B	0.0	0.3	0.86	0.64	0.86	41.4
North: SH3 Nth Appr															
7	L2	All MCs	1	10.0	1	10.0	0.682	2.8	LOS A	10.0	75.7	0.23	0.30	0.23	46.8
8	T1	All MCs	1016	10.0	1016	10.0	0.682	2.6	LOS A	10.0	75.7	0.23	0.30	0.23	47.1
9	R2	All MCs	66	10.0	66	10.0	0.682	7.6	LOS A	10.0	75.7	0.23	0.30	0.23	46.4
Approach			1083	10.0	1083	10.0	0.682	2.9	LOS A	10.0	75.7	0.23	0.30	0.23	47.1
West: Harlow LV West Appr															
10	L2	All MCs	80	10.0	80	10.0	0.176	10.4	LOS B	1.2	8.8	0.86	0.76	0.86	43.0
11	T1	All MCs	1	10.0	1	10.0	0.176	10.2	LOS B	1.2	8.8	0.86	0.76	0.86	43.2
12	R2	All MCs	14	10.0	14	10.0	0.176	15.2	LOS B	1.2	8.8	0.86	0.76	0.86	42.6
Approach			95	10.0	95	10.0	0.176	11.1	LOS B	1.2	8.8	0.86	0.76	0.86	42.9
All Vehicles			2119	10.0	2119	10.0	0.682	3.4	LOS A	10.0	75.7	0.34	0.34	0.34	46.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

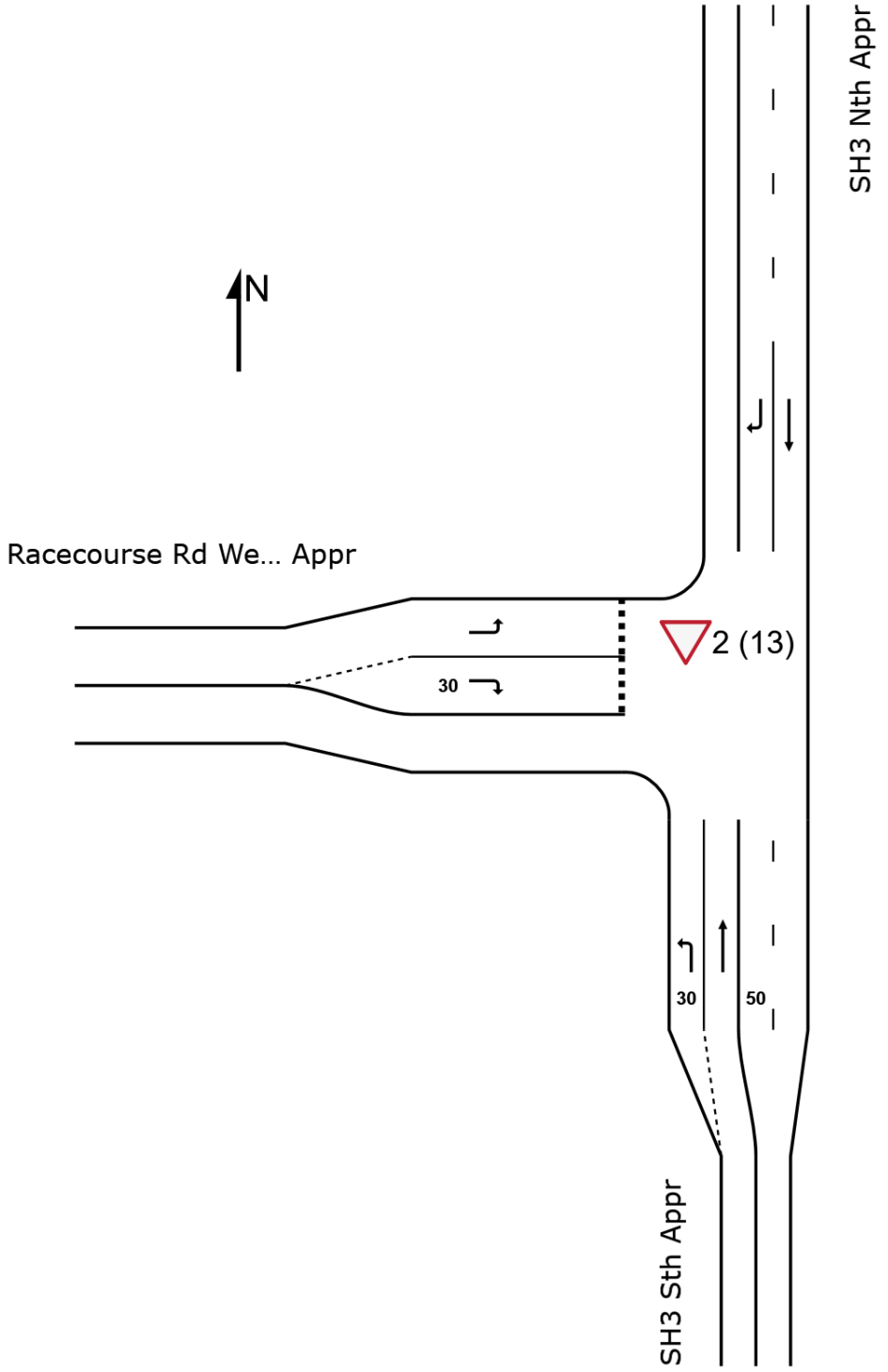
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SITE LAYOUT

Site: [2 (13)] SH3 Racecourse Road - AM Peak (2045 Harlow Full Development Demands)

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: BOFFA MISKELL | Licence: NETWORK / 1PC | Created: Wednesday, 19 August 2026 2:24:19 pm
Project: U:\2025\BM251067_MAp_Harlow_Retirement_Development_Ohaupo_Road_Te_Awamutu\Data\Sidra\ITA Report Modelling\ITA Intersection Modelling.sipx

MOVEMENT SUMMARY

Site: [2 (13)] SH3 Racecourse Road - AM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.001	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	927	10.0	927	10.0	0.506	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	49.6
Approach			928	10.0	928	10.0	0.506	0.3	NA	0.0	0.0	0.00	0.00	0.00	49.6
North: SH3 Nth Appr															
8	T1	All MCs	737	10.0	737	10.0	0.402	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
9	R2	All MCs	63	10.0	63	10.0	0.221	17.5	LOS C	0.7	5.4	0.81	0.93	0.89	39.6
Approach			800	10.0	800	10.0	0.402	1.5	NA	0.7	5.4	0.06	0.07	0.07	48.8
West: Racecourse Rd West Appr															
10	L2	All MCs	60	10.0	60	10.0	0.226	18.0	LOS C	0.7	5.2	0.81	0.94	0.89	39.3
12	R2	All MCs	1	10.0	1	10.0	0.008	29.1	LOS D	0.0	0.2	0.86	0.88	0.86	35.1
Approach			61	10.0	61	10.0	0.226	18.2	LOS C	0.7	5.2	0.81	0.93	0.89	39.2
All Vehicles			1789	10.0	1789	10.0	0.506	1.5	NA	0.7	5.4	0.06	0.07	0.06	48.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [2 (16)] SH3 Racecourse Road - PM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.001	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	885	10.0	885	10.0	0.483	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.7
Approach			886	10.0	886	10.0	0.483	0.2	NA	0.0	0.0	0.00	0.00	0.00	49.7
North: SH3 Nth Appr															
8	T1	All MCs	1006	10.0	1006	10.0	0.550	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	49.6
9	R2	All MCs	36	10.0	36	10.0	0.111	15.0	LOS B	0.3	2.6	0.77	0.89	0.77	40.7
Approach			1042	10.0	1042	10.0	0.550	0.8	NA	0.3	2.6	0.03	0.03	0.03	49.2
West: Racecourse Rd West Appr															
10	L2	All MCs	28	10.0	28	10.0	0.095	15.1	LOS C	0.3	2.1	0.76	0.89	0.76	40.5
12	R2	All MCs	1	10.0	1	10.0	0.007	25.8	LOS D	0.0	0.1	0.83	0.84	0.83	36.7
Approach			29	10.0	29	10.0	0.095	15.5	LOS C	0.3	2.1	0.77	0.89	0.77	40.3
All Vehicles			1958	10.0	1958	10.0	0.550	0.8	NA	0.3	2.6	0.03	0.03	0.03	49.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

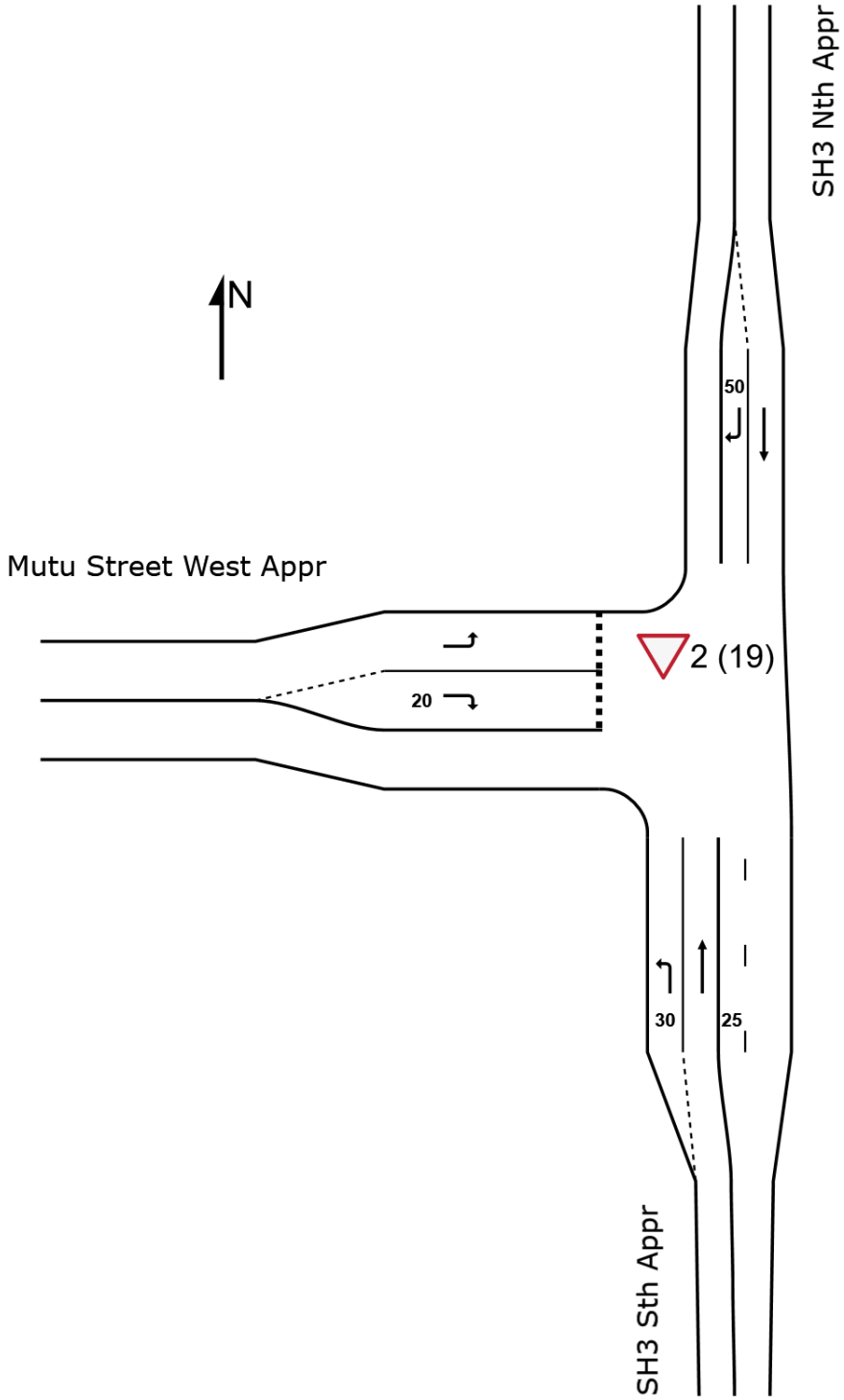
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SITE LAYOUT

Site: [2 (19)] SH3 Mutu Street - AM Peak (2045 Harlow Full Development Demands)

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: [2 (19)] SH3 Mutu Street - AM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	164	10.0	164	10.0	0.095	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	691	10.0	691	10.0	0.377	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			855	10.0	855	10.0	0.377	1.0	NA	0.0	0.0	0.00	0.10	0.00	49.0
North: SH3 Nth Appr															
8	T1	All MCs	512	10.0	512	10.0	0.279	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
9	R2	All MCs	198	10.0	198	10.0	0.494	17.0	LOS C	2.3	17.7	0.82	1.05	1.23	39.8
Approach			709	10.0	709	10.0	0.494	4.8	NA	2.3	17.7	0.23	0.29	0.34	46.6
West: Mutu Street West Appr															
10	L2	All MCs	276	10.0	276	10.0	0.580	15.2	LOS C	3.1	23.5	0.79	1.09	1.34	40.5
12	R2	All MCs	112	10.0	112	10.0	0.645	39.5	LOS E	2.8	21.0	0.93	1.16	1.57	32.0
Approach			387	10.0	387	10.0	0.645	22.2	LOS C	3.1	23.5	0.83	1.11	1.40	37.6
All Vehicles			1952	10.0	1952	10.0	0.645	6.6	NA	3.1	23.5	0.25	0.37	0.40	45.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [2 (22)] SH3 Mutu Street - PM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	167	10.0	167	10.0	0.097	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	609	10.0	609	10.0	0.333	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			777	10.0	777	10.0	0.333	1.1	NA	0.0	0.0	0.00	0.11	0.00	48.9
North: SH3 Nth Appr															
8	T1	All MCs	743	10.0	743	10.0	0.406	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
9	R2	All MCs	282	10.0	282	10.0	0.601	16.7	LOS C	3.5	26.8	0.82	1.13	1.44	39.9
Approach			1025	10.0	1025	10.0	0.601	4.8	NA	3.5	26.8	0.23	0.31	0.40	46.6
West: Mutu Street West Appr															
10	L2	All MCs	214	10.0	214	10.0	0.383	11.2	LOS B	1.7	13.0	0.66	0.92	0.88	42.4
12	R2	All MCs	61	10.0	61	10.0	0.341	29.2	LOS D	1.2	8.9	0.87	0.99	1.06	35.3
Approach			275	10.0	275	10.0	0.383	15.2	LOS C	1.7	13.0	0.71	0.94	0.92	40.6
All Vehicles			2077	10.0	2077	10.0	0.601	4.8	NA	3.5	26.8	0.20	0.32	0.32	46.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

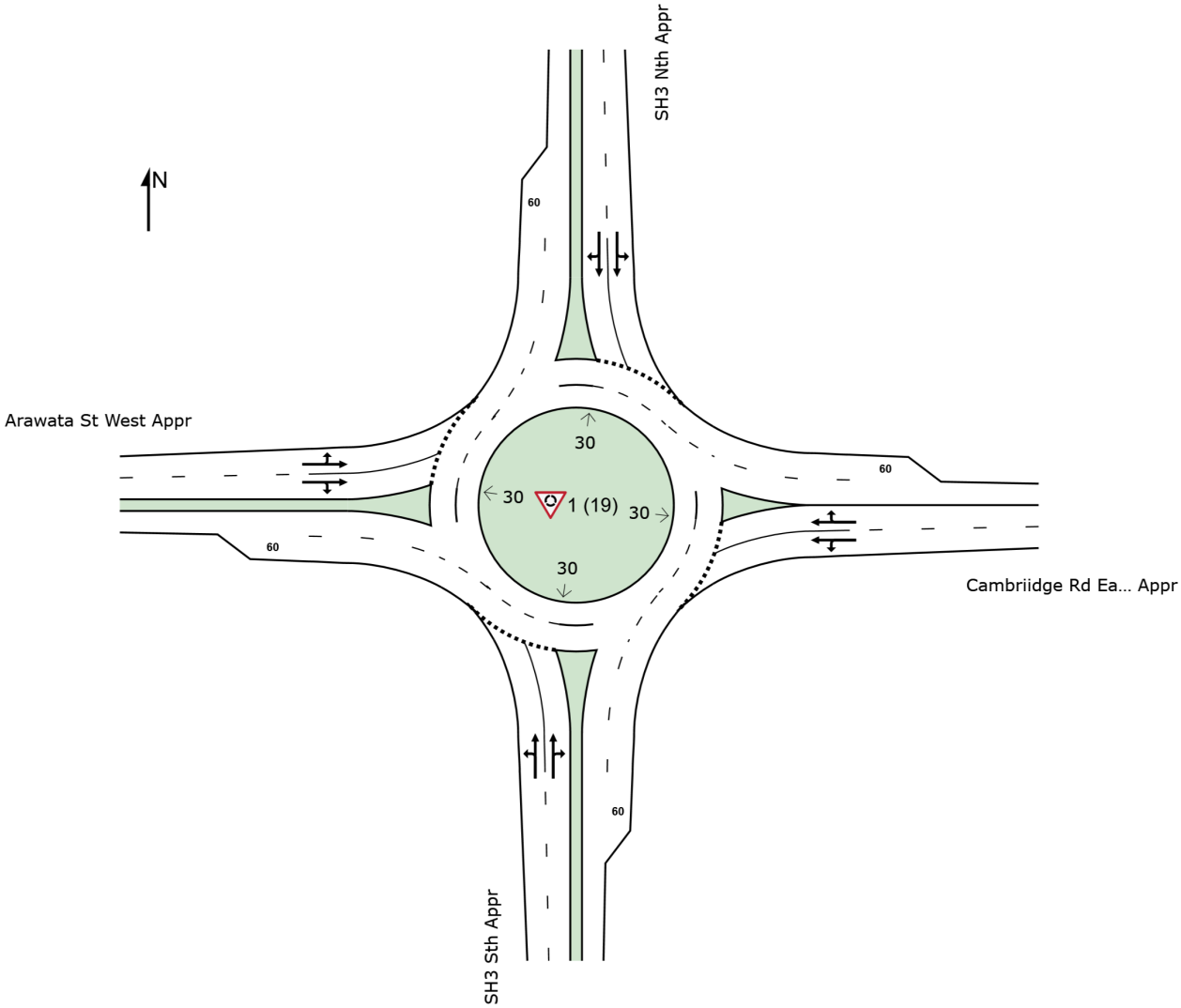
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SITE LAYOUT

Site: [1 (19)] SH3 - Arawata St - AM Peak (2045 Harlow Full Development Demands)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: [1 (19)] SH3 - Arawata St - AM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.230	7.9	LOS A	1.1	8.4	0.71	0.70	0.71	45.2
2	T1	All MCs	383	10.0	383	10.0	0.474	7.1	LOS A	3.3	24.7	0.77	0.77	0.85	44.8
3	R2	All MCs	102	10.0	102	10.0	0.474	12.4	LOS B	3.3	24.7	0.80	0.80	0.91	43.8
Approach			486	10.0	486	10.0	0.474	8.2	LOS A	3.3	24.7	0.78	0.77	0.86	44.6
East: Cambriidge Rd East Appr															
4	L2	All MCs	116	10.0	116	10.0	0.293	6.1	LOS A	1.5	11.7	0.63	0.60	0.63	45.8
5	T1	All MCs	346	10.0	346	10.0	0.604	5.9	LOS A	5.4	40.9	0.74	0.71	0.82	44.5
6	R2	All MCs	329	10.0	329	10.0	0.604	11.8	LOS B	5.4	40.9	0.77	0.75	0.89	43.5
Approach			792	10.0	792	10.0	0.604	8.4	LOS A	5.4	40.9	0.74	0.71	0.82	44.2
North: SH3 Nth Appr															
7	L2	All MCs	195	10.0	195	10.0	0.237	4.8	LOS A	1.2	9.0	0.52	0.54	0.52	46.4
8	T1	All MCs	293	10.0	293	10.0	0.418	3.8	LOS A	2.6	19.9	0.57	0.53	0.57	45.7
9	R2	All MCs	160	10.0	160	10.0	0.418	9.4	LOS A	2.6	19.9	0.57	0.53	0.57	45.0
Approach			647	10.0	647	10.0	0.418	5.5	LOS A	2.6	19.9	0.56	0.54	0.56	45.7
West: Arawata St West Appr															
10	L2	All MCs	218	10.0	218	10.0	0.314	6.9	LOS A	1.6	12.2	0.71	0.71	0.71	45.5
11	T1	All MCs	238	10.0	238	10.0	0.292	5.2	LOS A	1.6	11.9	0.70	0.62	0.70	45.9
12	R2	All MCs	1	10.0	1	10.0	0.292	10.8	LOS B	1.6	11.9	0.70	0.62	0.70	45.2
Approach			457	10.0	457	10.0	0.314	6.0	LOS A	1.6	12.2	0.70	0.67	0.70	45.7
All Vehicles			2382	10.0	2382	10.0	0.604	7.1	LOS A	5.4	40.9	0.69	0.67	0.74	45.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [1 (22)] SH3 - Arawata St - PM Peak (2045 Harlow Full Development Demands)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.257	8.3	LOS A	1.3	9.9	0.75	0.72	0.75	45.0
2	T1	All MCs	362	10.0	362	10.0	0.530	7.9	LOS A	4.1	31.1	0.82	0.81	0.93	44.2
3	R2	All MCs	152	10.0	152	10.0	0.530	13.6	LOS B	4.1	31.1	0.86	0.85	1.03	43.1
Approach			515	10.0	515	10.0	0.530	9.6	LOS A	4.1	31.1	0.83	0.82	0.96	43.9
East: Cambriidge Rd East Appr															
4	L2	All MCs	131	10.0	131	10.0	0.388	9.2	LOS A	2.5	18.8	0.85	0.79	0.90	44.2
5	T1	All MCs	326	10.0	326	10.0	0.799	14.7	LOS B	11.0	83.3	0.98	1.09	1.47	40.5
6	R2	All MCs	258	10.0	258	10.0	0.799	21.4	LOS C	11.0	83.3	1.00	1.14	1.57	39.4
Approach			715	10.0	715	10.0	0.799	16.1	LOS B	11.0	83.3	0.96	1.06	1.40	40.7
North: SH3 Nth Appr															
7	L2	All MCs	253	10.0	253	10.0	0.487	11.1	LOS B	3.4	25.7	0.84	0.84	1.00	43.3
8	T1	All MCs	456	10.0	456	10.0	0.951	34.4	LOS C	24.3	184.8	1.00	1.79	2.74	33.7
9	R2	All MCs	253	10.0	253	10.0	0.951	39.9	LOS D	24.3	184.8	1.00	1.79	2.74	33.4
Approach			961	10.0	961	10.0	0.951	29.7	LOS C	24.3	184.8	0.96	1.54	2.28	35.6
West: Arawata St West Appr															
10	L2	All MCs	256	10.0	256	10.0	0.417	7.9	LOS A	2.3	17.6	0.74	0.78	0.82	44.8
11	T1	All MCs	555	10.0	555	10.0	0.671	8.6	LOS A	5.9	45.0	0.86	0.90	1.15	44.0
12	R2	All MCs	1	10.0	1	10.0	0.671	14.1	LOS B	5.9	45.0	0.86	0.90	1.15	43.4
Approach			812	10.0	812	10.0	0.671	8.4	LOS A	5.9	45.0	0.82	0.86	1.05	44.2
All Vehicles			3002	10.0	3002	10.0	0.951	17.3	LOS B	24.3	184.8	0.90	1.12	1.51	40.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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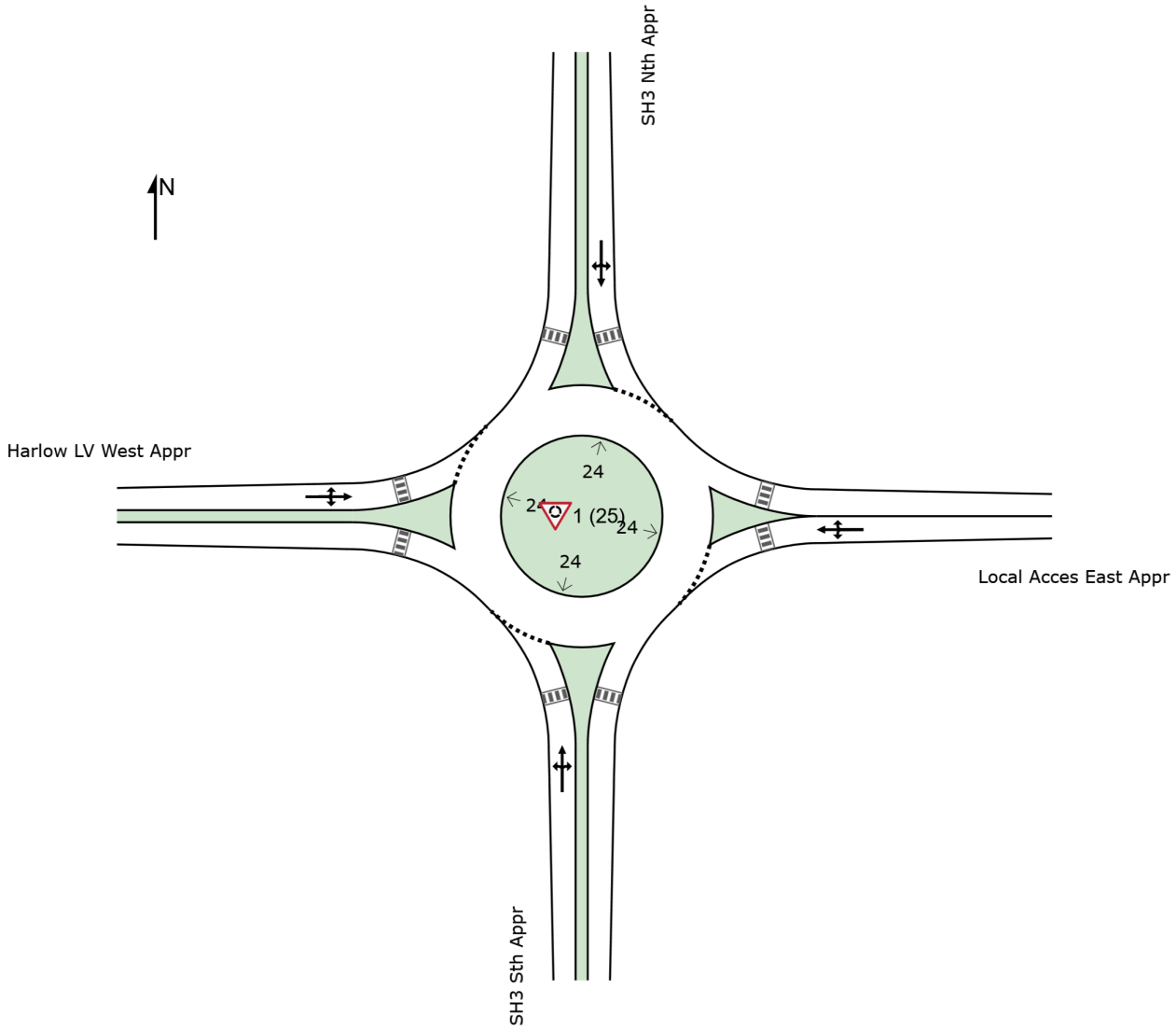
Appendix 9: 2045 Validated Sidra Modelling – Sensitivity Results

SITE LAYOUT

Site: [1 (25)] Harlow Lifestyle Village Access - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: [1 (25)] Harlow Lifestyle Village Access - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	86	10.0	86	10.0	0.678	2.7	LOS A	9.1	69.4	0.17	0.28	0.17	47.2
2	T1	All MCs	1009	10.0	1009	10.0	0.678	2.5	LOS A	9.1	69.4	0.17	0.28	0.17	47.5
3	R2	All MCs	1	10.0	1	10.0	0.678	7.5	LOS A	9.1	69.4	0.17	0.28	0.17	46.8
Approach			1097	10.0	1097	10.0	0.678	2.5	LOS A	9.1	69.4	0.17	0.28	0.17	47.5
East: Local Acces East Appr															
4	L2	All MCs	1	10.0	1	10.0	0.009	13.3	LOS B	0.1	0.4	0.93	0.67	0.93	41.3
5	T1	All MCs	1	10.0	1	10.0	0.009	13.1	LOS B	0.1	0.4	0.93	0.67	0.93	41.5
6	R2	All MCs	1	10.0	1	10.0	0.009	18.1	LOS B	0.1	0.4	0.93	0.67	0.93	41.0
Approach			3	10.0	3	10.0	0.009	14.8	LOS B	0.1	0.4	0.93	0.67	0.93	41.2
North: SH3 Nth Appr															
7	L2	All MCs	1	10.0	1	10.0	0.756	3.8	LOS A	11.2	85.0	0.66	0.42	0.66	45.5
8	T1	All MCs	1016	10.0	1016	10.0	0.756	3.6	LOS A	11.2	85.0	0.66	0.42	0.66	45.7
9	R2	All MCs	8	10.0	8	10.0	0.756	8.6	LOS A	11.2	85.0	0.66	0.42	0.66	45.1
Approach			1025	10.0	1025	10.0	0.756	3.6	LOS A	11.2	85.0	0.66	0.42	0.66	45.7
West: Harlow LV West Appr															
10	L2	All MCs	8	10.0	8	10.0	0.178	12.2	LOS B	1.1	8.6	0.85	0.79	0.85	40.7
11	T1	All MCs	1	10.0	1	10.0	0.178	12.0	LOS B	1.1	8.6	0.85	0.79	0.85	40.9
12	R2	All MCs	85	10.0	85	10.0	0.178	17.0	LOS B	1.1	8.6	0.85	0.79	0.85	40.4
Approach			95	10.0	95	10.0	0.178	16.5	LOS B	1.1	8.6	0.85	0.79	0.85	40.4
All Vehicles			2220	10.0	2220	10.0	0.756	3.7	LOS A	11.2	85.0	0.43	0.37	0.43	46.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [1 (26)] Harlow Lifestyle Village Access - PM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	77	10.0	77	10.0	0.635	2.8	LOS A	7.8	59.6	0.22	0.28	0.22	47.0
2	T1	All MCs	920	10.0	920	10.0	0.635	2.6	LOS A	7.8	59.6	0.22	0.28	0.22	47.3
3	R2	All MCs	1	10.0	1	10.0	0.635	7.6	LOS A	7.8	59.6	0.22	0.28	0.22	46.6
Approach			998	10.0	998	10.0	0.635	2.7	LOS A	7.8	59.6	0.22	0.28	0.22	47.3
East: Local Acces East Appr															
4	L2	All MCs	1	10.0	1	10.0	0.009	13.8	LOS B	0.1	0.5	0.95	0.68	0.95	41.1
5	T1	All MCs	1	10.0	1	10.0	0.009	13.6	LOS B	0.1	0.5	0.95	0.68	0.95	41.3
6	R2	All MCs	1	10.0	1	10.0	0.009	18.5	LOS B	0.1	0.5	0.95	0.68	0.95	40.8
Approach			3	10.0	3	10.0	0.009	15.3	LOS B	0.1	0.5	0.95	0.68	0.95	41.0
North: SH3 Nth Appr															
7	L2	All MCs	1	10.0	1	10.0	0.771	3.9	LOS A	11.5	87.7	0.70	0.44	0.70	45.3
8	T1	All MCs	1016	10.0	1016	10.0	0.771	3.7	LOS A	11.5	87.7	0.70	0.44	0.70	45.6
9	R2	All MCs	17	10.0	17	10.0	0.771	8.7	LOS A	11.5	87.7	0.70	0.44	0.70	44.9
Approach			1034	10.0	1034	10.0	0.771	3.8	LOS A	11.5	87.7	0.70	0.44	0.70	45.6
West: Harlow LV West Appr															
10	L2	All MCs	14	10.0	14	10.0	0.185	10.5	LOS B	1.2	8.8	0.83	0.78	0.83	41.5
11	T1	All MCs	1	10.0	1	10.0	0.185	10.3	LOS B	1.2	8.8	0.83	0.78	0.83	41.7
12	R2	All MCs	93	10.0	93	10.0	0.185	15.3	LOS B	1.2	8.8	0.83	0.78	0.83	41.2
Approach			107	10.0	107	10.0	0.185	14.6	LOS B	1.2	8.8	0.83	0.78	0.83	41.2
All Vehicles			2142	10.0	2142	10.0	0.771	3.8	LOS A	11.5	87.7	0.48	0.38	0.48	46.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

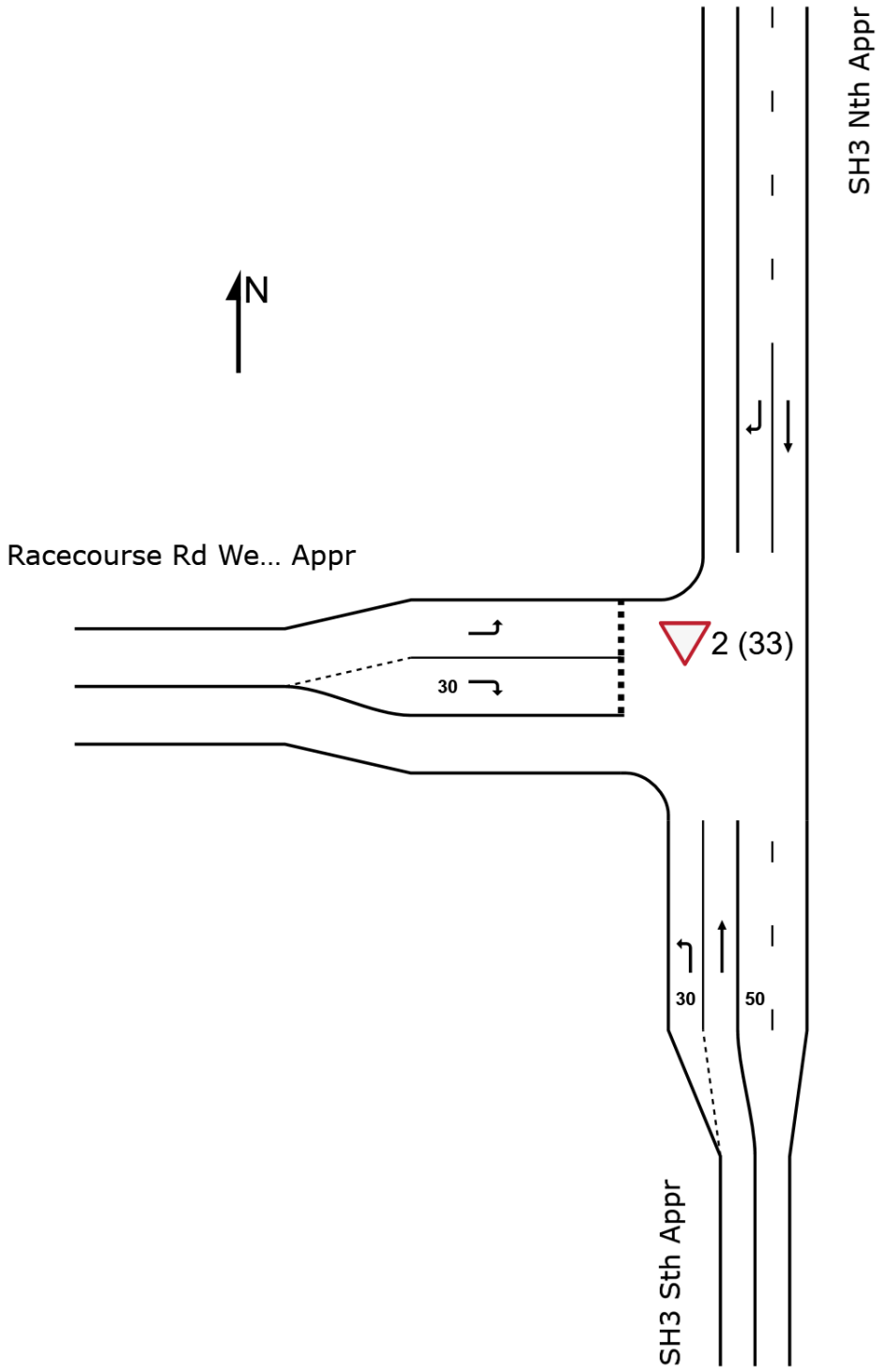
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SITE LAYOUT

Site: [2 (33)] SH3 Racecourse Road - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: [2 (33)] SH3 Racecourse Road - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.001	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	1000	10.0	1000	10.0	0.546	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	49.6
Approach			1001	10.0	1001	10.0	0.546	0.3	NA	0.0	0.0	0.00	0.00	0.00	49.6
North: SH3 Nth Appr															
8	T1	All MCs	808	10.0	808	10.0	0.442	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.7
9	R2	All MCs	69	10.0	69	10.0	0.303	22.2	LOS C	1.0	7.3	0.86	0.98	1.02	37.7
Approach			878	10.0	878	10.0	0.442	2.0	NA	1.0	7.3	0.07	0.08	0.08	48.5
West: Racecourse Rd West Appr															
10	L2	All MCs	65	10.0	65	10.0	0.307	22.8	LOS C	0.9	7.0	0.86	0.98	1.02	37.3
12	R2	All MCs	1	10.0	1	10.0	0.010	36.8	LOS E	0.0	0.2	0.89	0.94	0.89	32.7
Approach			66	10.0	66	10.0	0.307	23.1	LOS C	0.9	7.0	0.86	0.98	1.02	37.2
All Vehicles			1945	10.0	1945	10.0	0.546	1.8	NA	1.0	7.3	0.06	0.07	0.07	48.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [2 (34)] SH3 Racecourse Road - PM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.001	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	943	10.0	943	10.0	0.515	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	49.6
Approach			944	10.0	944	10.0	0.515	0.3	NA	0.0	0.0	0.00	0.00	0.00	49.6
North: SH3 Nth Appr															
8	T1	All MCs	1083	10.0	1083	10.0	0.592	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
9	R2	All MCs	39	10.0	39	10.0	0.143	17.2	LOS C	0.4	3.2	0.81	0.90	0.81	39.7
Approach			1122	10.0	1122	10.0	0.592	1.0	NA	0.4	3.2	0.03	0.03	0.03	49.1
West: Racecourse Rd West Appr															
10	L2	All MCs	31	10.0	31	10.0	0.120	17.4	LOS C	0.3	2.5	0.80	0.91	0.80	39.5
12	R2	All MCs	1	10.0	1	10.0	0.008	30.7	LOS D	0.0	0.2	0.86	0.89	0.86	35.1
Approach			32	10.0	32	10.0	0.120	17.9	LOS C	0.3	2.5	0.80	0.91	0.80	39.3
All Vehicles			2098	10.0	2098	10.0	0.592	0.9	NA	0.4	3.2	0.03	0.03	0.03	49.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

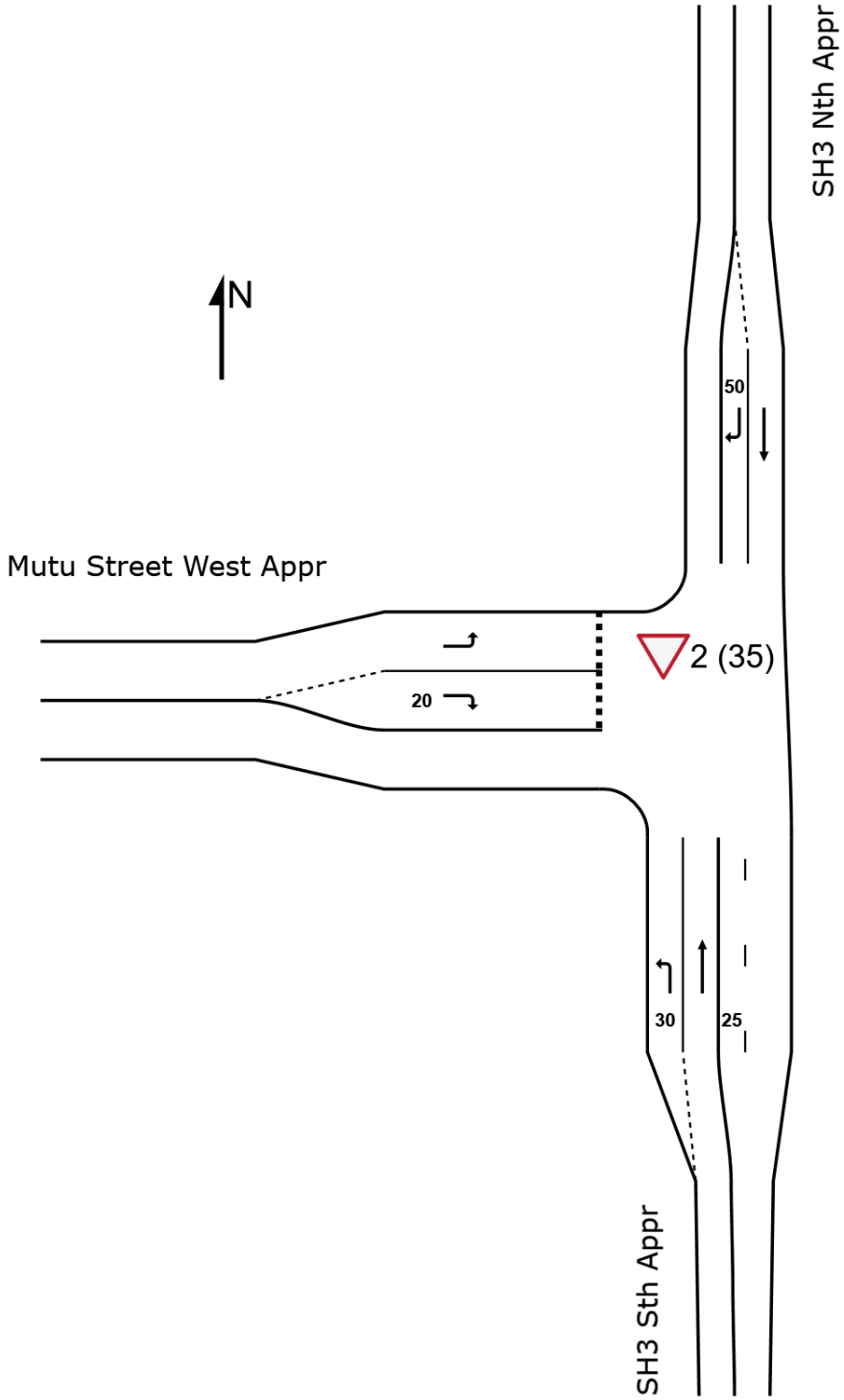
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SITE LAYOUT

Site: [2 (35)] SH3 Mutu Street - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: U:\2025\BM251067_MAp_Harlow_Retirement_Development_Ohaupo_Road_Te_Awamutu\Data\Sidra\ITA Report Modelling\ITA Intersection Modelling.sipx

MOVEMENT SUMMARY

Site: [2 (35)] SH3 Mutu Street - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	164	10.0	164	10.0	0.095	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	742	10.0	742	10.0	0.405	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			906	10.0	906	10.0	0.405	1.0	NA	0.0	0.0	0.00	0.10	0.00	49.0
North: SH3 Nth Appr															
8	T1	All MCs	562	10.0	562	10.0	0.307	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
9	R2	All MCs	225	10.0	225	10.0	0.630	21.3	LOS C	3.3	25.0	0.88	1.16	1.56	38.0
Approach			787	10.0	787	10.0	0.630	6.2	NA	3.3	25.0	0.25	0.33	0.45	45.8
West: Mutu Street West Appr															
10	L2	All MCs	304	10.0	304	10.0	0.714	19.5	LOS C	4.4	33.3	0.87	1.25	1.81	38.6
12	R2	All MCs	112	10.0	112	10.0	0.794	59.6	LOS F	3.8	28.7	0.96	1.31	2.05	27.2
Approach			416	10.0	416	10.0	0.794	30.3	LOS D	4.4	33.3	0.89	1.27	1.87	34.7
All Vehicles			2109	10.0	2109	10.0	0.794	8.7	NA	4.4	33.3	0.27	0.42	0.54	44.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [2 (36)] SH3 Mutu Street - PM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	167	10.0	167	10.0	0.097	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
2	T1	All MCs	653	10.0	653	10.0	0.356	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			820	10.0	820	10.0	0.356	1.1	NA	0.0	0.0	0.00	0.11	0.00	48.9
North: SH3 Nth Appr															
8	T1	All MCs	799	10.0	799	10.0	0.436	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.7
9	R2	All MCs	311	10.0	311	10.0	0.721	21.0	LOS C	4.9	37.0	0.88	1.29	1.89	38.1
Approach			1109	10.0	1109	10.0	0.721	6.1	NA	4.9	37.0	0.25	0.36	0.53	45.8
West: Mutu Street West Appr															
10	L2	All MCs	234	10.0	234	10.0	0.455	12.7	LOS B	2.1	16.3	0.72	0.98	1.04	41.6
12	R2	All MCs	61	10.0	61	10.0	0.409	35.9	LOS E	1.4	10.5	0.90	1.03	1.15	33.2
Approach			295	10.0	295	10.0	0.455	17.5	LOS C	2.1	16.3	0.76	0.99	1.06	39.5
All Vehicles			2224	10.0	2224	10.0	0.721	5.7	NA	4.9	37.0	0.22	0.35	0.40	45.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

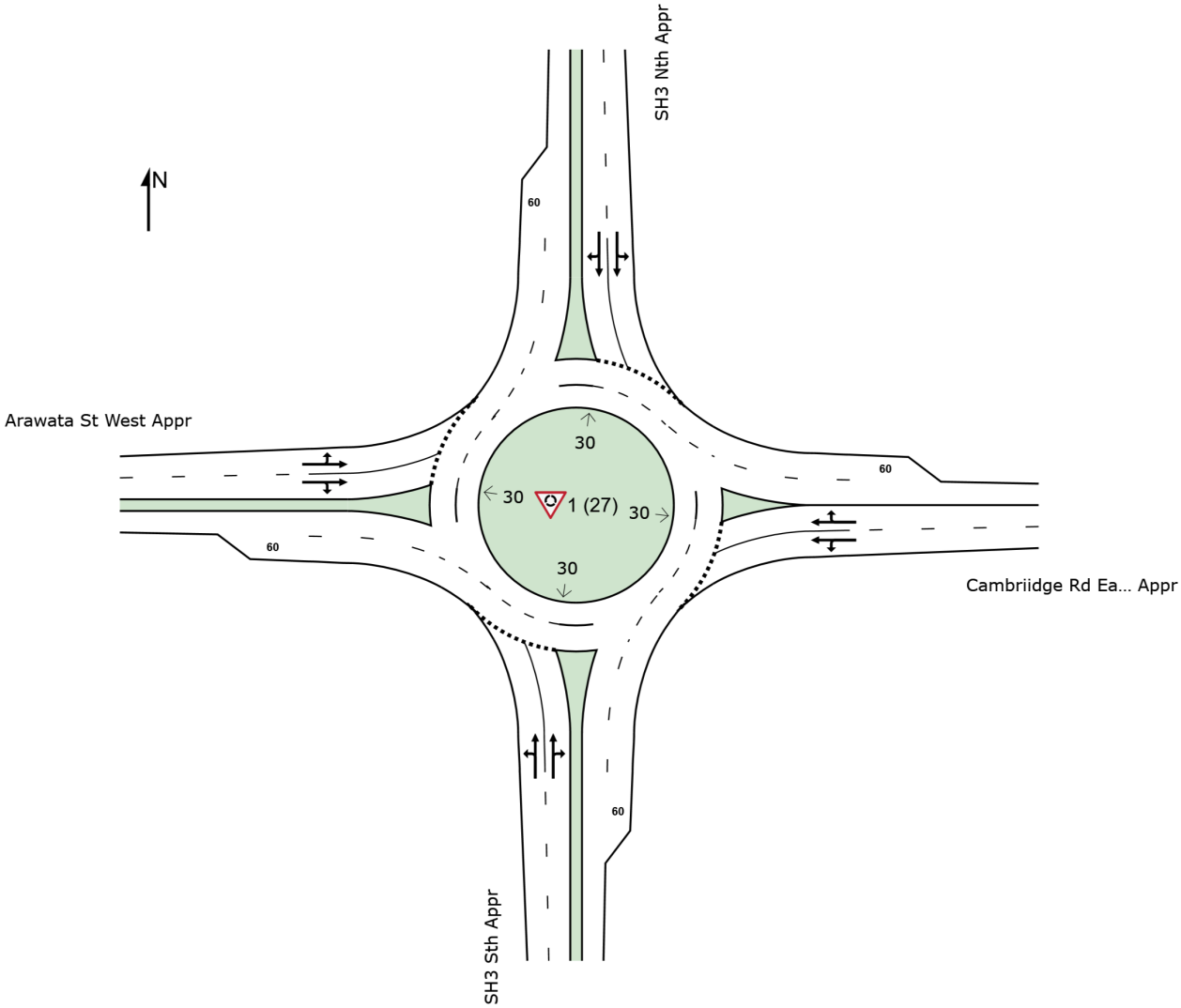
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SITE LAYOUT

Site: [1 (27)] SH3 - Arawata St - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: U:\2025\BM251067_MAp_Harlow_Retirement_Development_Ohaupo_Road_Te_Awamutu\Data\Sidra\ITA Report Modelling\ITA Intersection Modelling.sipx

MOVEMENT SUMMARY

Site: [1 (27)] SH3 - Arawata St - AM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.256	8.1	LOS A	1.3	9.5	0.74	0.72	0.74	45.1
2	T1	All MCs	420	10.0	420	10.0	0.528	7.9	LOS A	3.9	29.8	0.81	0.81	0.93	44.5
3	R2	All MCs	102	10.0	102	10.0	0.528	13.3	LOS B	3.9	29.8	0.84	0.85	1.01	43.5
Approach			523	10.0	523	10.0	0.528	8.9	LOS A	3.9	29.8	0.81	0.82	0.94	44.3
East: Cambriidge Rd East Appr															
4	L2	All MCs	116	10.0	116	10.0	0.311	6.4	LOS A	1.7	12.7	0.66	0.63	0.66	45.7
5	T1	All MCs	346	10.0	346	10.0	0.641	6.7	LOS A	6.2	47.2	0.78	0.76	0.90	44.1
6	R2	All MCs	348	10.0	348	10.0	0.641	12.7	LOS B	6.2	47.2	0.82	0.80	0.99	43.0
Approach			811	10.0	811	10.0	0.641	9.2	LOS A	6.2	47.2	0.78	0.76	0.90	43.8
North: SH3 Nth Appr															
7	L2	All MCs	209	10.0	209	10.0	0.256	4.9	LOS A	1.3	9.9	0.53	0.55	0.53	46.4
8	T1	All MCs	316	10.0	316	10.0	0.451	3.9	LOS A	2.9	22.2	0.59	0.54	0.59	45.6
9	R2	All MCs	173	10.0	173	10.0	0.451	9.4	LOS A	2.9	22.2	0.59	0.54	0.59	45.0
Approach			698	10.0	698	10.0	0.451	5.5	LOS A	2.9	22.2	0.57	0.54	0.57	45.7
West: Arawata St West Appr															
10	L2	All MCs	234	10.0	234	10.0	0.352	7.5	LOS A	1.9	14.4	0.74	0.75	0.76	45.2
11	T1	All MCs	238	10.0	238	10.0	0.306	5.5	LOS A	1.7	12.7	0.73	0.66	0.73	45.8
12	R2	All MCs	1	10.0	1	10.0	0.306	11.1	LOS B	1.7	12.7	0.73	0.66	0.73	45.1
Approach			473	10.0	473	10.0	0.352	6.5	LOS A	1.9	14.4	0.73	0.70	0.74	45.5
All Vehicles			2504	10.0	2504	10.0	0.641	7.6	LOS A	6.2	47.2	0.72	0.70	0.79	44.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [1 (28)] SH3 - Arawata St - PM Peak (2045 Harlow Full Development Demands - Sensitivity)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: SH3 Sth Appr															
1	L2	All MCs	1	10.0	1	10.0	0.272	8.3	LOS A	1.4	10.5	0.75	0.73	0.75	45.0
2	T1	All MCs	393	10.0	393	10.0	0.561	8.2	LOS A	4.5	34.2	0.83	0.82	0.96	44.1
3	R2	All MCs	152	10.0	152	10.0	0.561	14.0	LOS B	4.5	34.2	0.87	0.87	1.07	42.9
Approach			545	10.0	545	10.0	0.561	9.8	LOS A	4.5	34.2	0.84	0.84	0.99	43.8
East: Cambriidge Rd East Appr															
4	L2	All MCs	131	10.0	131	10.0	0.403	9.5	LOS A	2.6	19.8	0.86	0.81	0.92	44.0
5	T1	All MCs	326	10.0	326	10.0	0.829	16.6	LOS B	12.2	92.8	0.98	1.15	1.57	39.7
6	R2	All MCs	271	10.0	271	10.0	0.829	23.7	LOS C	12.2	92.8	1.00	1.22	1.68	38.5
Approach			727	10.0	727	10.0	0.829	18.0	LOS B	12.2	92.8	0.96	1.12	1.49	39.9
North: SH3 Nth Appr															
7	L2	All MCs	267	10.0	267	10.0	0.512	11.4	LOS B	3.7	28.0	0.86	0.86	1.03	43.2
8	T1	All MCs	483	10.0	483	10.0	0.970	40.1	LOS D	27.7	210.7	1.00	1.95	3.05	32.1
9	R2	All MCs	236	10.0	236	10.0	0.970	45.7	LOS D	27.7	210.7	1.00	1.95	3.05	31.8
Approach			986	10.0	986	10.0	0.970	33.7	LOS C	27.7	210.7	0.96	1.66	2.50	34.3
West: Arawata St West Appr															
10	L2	All MCs	274	10.0	274	10.0	0.454	8.6	LOS A	2.7	20.2	0.77	0.82	0.89	44.5
11	T1	All MCs	555	10.0	555	10.0	0.693	9.4	LOS A	6.3	48.2	0.88	0.95	1.22	43.7
12	R2	All MCs	1	10.0	1	10.0	0.693	14.9	LOS B	6.3	48.2	0.88	0.95	1.22	43.1
Approach			829	10.0	829	10.0	0.693	9.1	LOS A	6.3	48.2	0.84	0.90	1.11	43.9
All Vehicles			3088	10.0	3088	10.0	0.970	19.2	LOS B	27.7	210.7	0.91	1.18	1.62	39.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

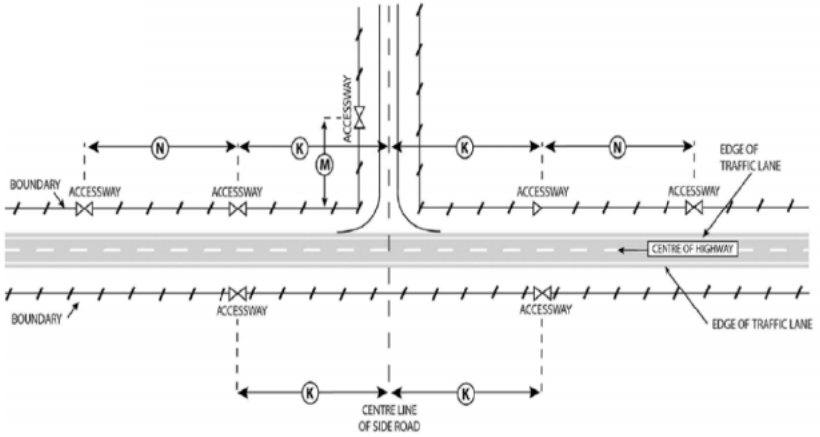
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Appendix 10: District Plan Transport Provisions Assessment

Appendix 10: District Plan Transport Provisions Assessment

Rule	Requirement	Compliance Assessment
Section 16 – Transportation		
16.4.1.1	d. Activities generating 100 vehicles or more per day onto any State Highway or major arterial road. See Rule 16.4.2.22	Rule 16.4.2.22 requires a Broad ITA to be produced. This has been provided as part of the application.
16.4.2.1	All structure plans, plan changes, developments, and subdivisions must be consistent with the road hierarchy, as contained in Appendix T5.	The proposed road network is consistent with the Appendix T5 Road Hierarchy. Access to the development is provided via a collector road connecting to the State Highway. The collector road performs its intended traffic distribution function by collecting vehicle movements from the internal local road network and directing them to the State Highway via the Collector Road. The local roads primarily provide access to adjacent properties and do not perform a strategic movement function, and have no direct access to the State Highway The collector road is not proposed as a through road, and vehicle movements are limited to those with a destination within the development. This reinforces the intended hierarchy by ensuring the collector road serves a neighbourhood distribution function rather than a wider network movement function.
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.	While the proposed Collector Road 1 connects directly with a Major Arterial (Ohaupo Road SH 3) rather than a Minor Arterial, the intent of the road hierarchy rule is maintained. The proposal does not diminish the effectiveness, safety, or operational efficiency of the

<table>
<tr><th>Rule</th><th>Requirement</th><th>Compliance Assessment</th></tr>
<tr><td></td><td></td><td>arterial network. No Minor Arterial connection is available or required to achieve the intended network outcome, and the proposed intersection has been designed to accommodate forecast traffic demands while preserving the strategic movement function of the State Highway. The Collector Road will continue to fulfil its intended role of distributing traffic from lower-order roads to the arterial roads. Accordingly, the proposal is consistent with the purpose of the road hierarchy provisions and represents an efficient and logical transport network connection.</td></tr>
<tr><td>16.4.2.3</td><td>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, as shown in the matrix below:
<table>
<tr><th></th><th>Major Arterial (State Highways)</th><th>Major Arterial (Excluding State Highways)</th><th>Minor Arterial</th><th>Collector Road</th><th>Local Road</th></tr>
<tr><td>Major Arterial (State Highways)</td><td>Road with lower speed or traffic volumes</td><td>Major Arterial</td><td>Minor Arterial</td><td>Collector Road</td><td>Local Road</td></tr>
<tr><td>Major Arterial (Excluding State Highways)</td><td>Major Arterial</td><td>Road with lower speed or traffic volumes</td><td>Minor Arterial</td><td>Collector Road</td><td>Local Road</td></tr>
<tr><td>Minor Arterial</td><td>Minor Arterial</td><td>Minor Arterial</td><td>Road with lower speed or traffic volumes</td><td>Collector Road</td><td>Local Road</td></tr>
<tr><td>Collector Road</td><td>Collector Road</td><td>Collector Road</td><td>Collector Road</td><td>Road with lower speed or traffic volumes</td><td>Local Road</td></tr>
</table></td><td>All property accesses are proposed to be off either the Collector Road or the Local Roads within the development. No vehicle access or egress will be available directly from the Major Arterial (State Highway).</td></tr>
</table>

Rule	Requirement						Compliance Assessment
	Local Road	Local Road	Local Road	Local Road	Local Road	Either - Road with lower speed or traffic volumes (preferred)	
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.						All properties within the development are provided with vehicle access conforming to the RITS guidance.
16.4.2.5	The minimum distance of a vehicle entrance (accessway) from an intersection or other entrance shall be as follows, where the values for K, M and N are included in the following table:  For roads with a posted speed limit of 40-50km/h: • Minimum distance K = 30m • Minimum Distance M = 20m • Minimum Distance N = For 60km/h- less than 4m or more than 11m						Although the proposed layout results in some instances where the minimum K and M separation distances are not achieved, strict compliance is not assessed as necessary in this context. The roads are within a 50 km/h environment, with traffic-calming measures proposed to manage vehicle speeds and reinforce the residential and local access function of the network. Given the expected low traffic volumes, reduced operating speeds, and the absence of through movement demand, the reduced access spacings are not anticipated to create unacceptable safety or operational effects. The design is therefore assessed as acceptable from a transport planning perspective.
16.4.2.6	New vehicle access ways shall be located a minimum of 30m from a railway level crossing.						

Rule	Requirement	Compliance Assessment
16.4.2.7	Any buildings, structure or land use shall be located to comply with the minimum rail level crossing sightline requirements within Appendix T2.	N/A – These rules relate to vehicle entrance and sight distances from railways crossings
16.4.2.8	Compact housing development must only have one access point to a strategic road.	N/A – Compact Housing excludes Retirement Village Accommodation and Associated Care Facilities. Notwithstanding this, the development does not propose any direct access to a strategic road, with a collector road providing access to the strategic road network.
16.4.2.9	No new vehicle access is permitted across any 'pedestrian frontage' as identified on the Planning Maps.	N/A - These rules relate to vehicle access to sites in the Commercial Zone. Notwithstanding this, no properties from within the development will have direct access onto the State Highway
16.4.2.10	No direct vehicle access onto the State Highway is permitted from properties fronting State Highway 3.	
16.4.2.11	Where a site has frontage to a road and a service lane, all vehicle access shall be from the service lane.	
16.4.2.12	Where a site has a frontage greater than 50m to a road which is not a State Highway or a major arterial road, two vehicle crossings will be allowed from that road, subject to the requirements of Rule 16.4.2.5 and except as provided for in Rule 16.4.2.12A.	N/A – This rule relates to vehicle access to sites in the Industrial Zone
16.4.2.12A	Apart from one point of roading access onto each of Swayne Road and Zig Zag Road in accordance with the Mangaone Precinct Structure Plan, there shall be no direct vehicular access to industrial lots within the Mangaone Precinct Structure Plan Area directly from Swayne Road or Zig Zag Road.	N/A - This rule relates to vehicle access to sites in the Mangaone Precinct Structure Plan Area

Rule	Requirement	Compliance Assessment
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 loading/unloading spaces for vehicles on the site as set out in Appendix T1. If parking is provided in the Medium Density Residential Zone: a. One of the car parks allocated to a single dwelling may be stacked (i.e. located in such a way that it cannot be accessed directly from the associated access or manoeuvring area) provided that the stacked car park does not: i. Encroach on or interfere with any shared access on the site; or ii. Encroach on any required building setback, side boundaries, or outdoor living area; or iii. Compromise the ability for any vehicle to manoeuvre within the site.	Loading requirements for Retirement Village Accommodation and associated care facilities in accordance with Appendix T1 are 1 space for a 90 percentile car and 1 space for ambulance. These are provided for in both the Care Home car park and the Community Hub car park.
16.4.2.14	Vehicle parking (if provided), loading/unloading, and manoeuvring areas shall: a. Not encroach on any setback, outdoor living area, or bicycle parking spaces; and loading/unloading areas and manoeuvring areas shall not encroach over vehicle parking spaces; and b. Be designed, formed, and constructed to 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, except where the provisions of Rules 16.4.2.15 and 16.4.2.16 apply.	All vehicle parking and loading areas have been designed to comply with the requirements in Rule 16.4.2.14.

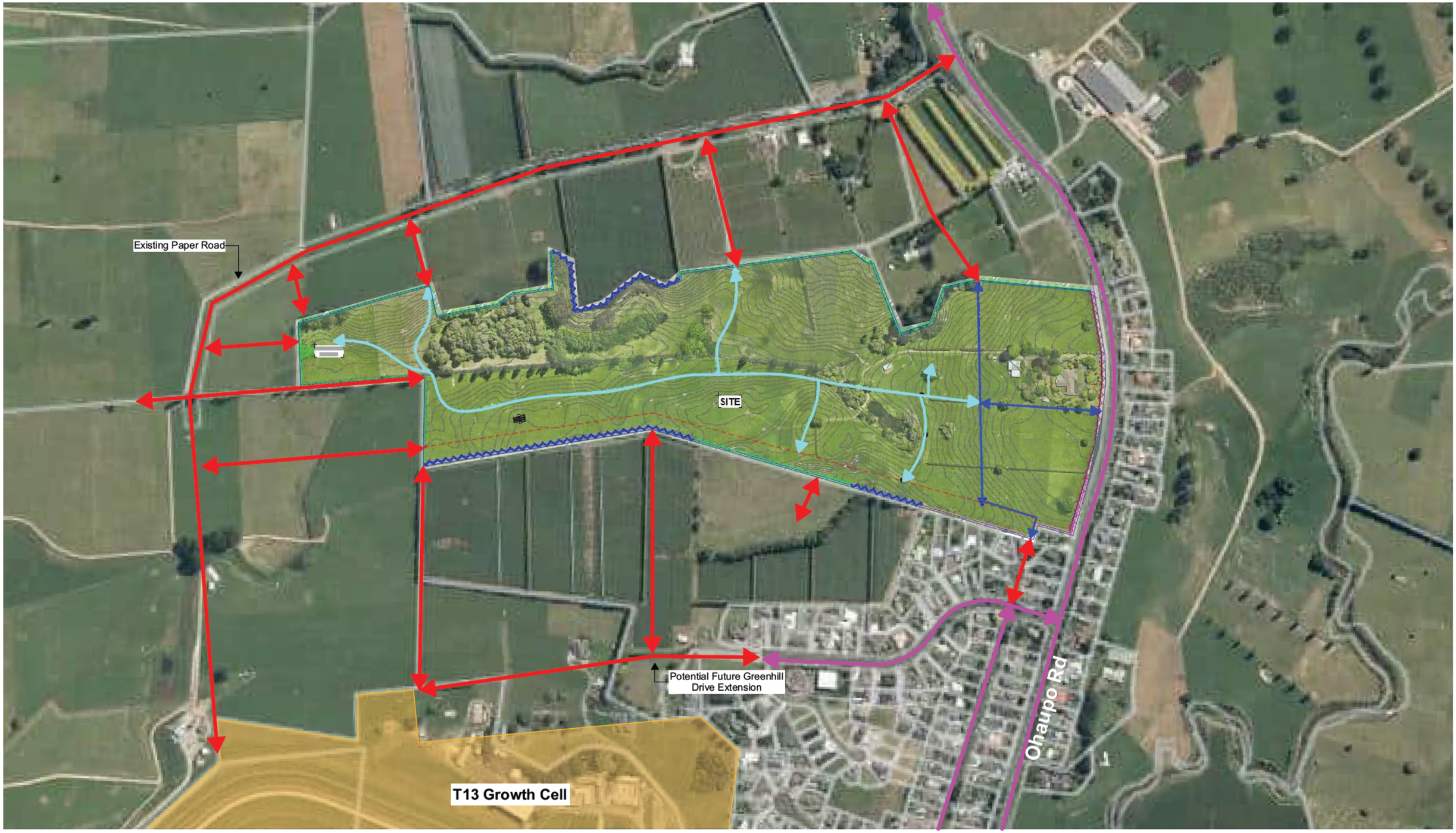
Rule	Requirement	Compliance Assessment
	For the avoidance of doubt, rear sites that are served by an access leg/driveway that is in sole ownership are considered to be part of the site. Provided that: i. In all zones the vehicle entrance may cross the road boundary setback; and ii. For front and corner sites in the Medium Density Residential Zone where Rules 16.4.2.15 and 16.4.2.16 do not apply, vehicle parking and manoeuvring areas associated with dwellings may encroach into the setbacks, provided that a 1m wide setback is retained at the road boundary, excluding the vehicle entrance; and iii. For rear sites in the Medium Density Residential Zone served by an access leg/driveway, vehicle parking and manoeuvring associated with dwellings may encroach into any setback (refer to diagram following Rule 16.4.2.16); and In the Medium Density Residential Zone, vehicle parking, loading/unloading and manoeuvring areas must be sealed and drained	
16.4.2.15	On front sites or corner sites in the Medium Density Residential Zone, on-site vehicle manoeuvring areas may be exempt from Rule 16.4.2.14.e. and shall not be required where: a. The site contains a single, principal dwelling; and b. The garage doors, or vehicle entrance to the carport faces the road where the vehicle will access; and c. The distance between the garage door, or vehicle entrance to the carport and the road boundary on the site is no more than 12m (refer to diagram following Rule 16.4.2.16); and d. The driveway does not encroach on any minimum outdoor living area as required under Rule 2.4.2.18, Rule 2A.4.2.13, or road boundary setback other than at the vehicle entrance. Provided that: i. The site is not accessed from a road with a posted speed limit exceeding 50km/hr; and	N/A - All vehicle parking, loading/unloading, and manoeuvring areas are provided on the site on which the building, activity or proposal is located.

Rule	Requirement	Compliance Assessment
	In rules b. and c. where there is no garage or carport the shortest dimension of the car parking space must face the road and must be no more than 12m from the road boundary.	
16.4.2.16	On sites in the Medium Density Residential Zone with access to a right of way, manoeuvring may occur in the right of way and sites may be exempt from Rule 16.4.2.14.e. where: a. The site contains a single, principal dwelling; and b. The garage doors, or vehicle entrance to the carport face the right of way where the vehicle will access; and c. The distance between the garage door, or vehicle entrance to the carport and the site boundary with the right of way is no more than 12m; and d. The driveway does not encroach on any minimum outdoor living area as required under Rule 2.4.2.18; and e. Rights over the right of way shall be apportioned so as to provide legal access to all sites for the purposes of vehicle manoeuvring; and f. The right of way shall be of sufficient dimension to provide for a vehicle manoeuvring area of a standard adequate to accommodate a 99.8 percentile car, 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. Advice Note: Guidance regarding the design of parking, loading and manoeuvring area requirements for activities is contained within the Regional Infrastructure Technical Specifications as updated from time to time.	N/A - All vehicle parking, loading/unloading, and manoeuvring areas are provided on the site on which the building, activity or proposal is located.
16.4.2.17	The design and layout of sites shall ensure that access to each required loading and unloading space, or parking space if provided is directly from the required access or manoeuvring area.	Access to loading and unloading spaces, and parking spaces for the Care Home and Community Hubs are provided is directly from the required access and manoeuvring areas.
16.4.2.18	Vehicle manoeuvring areas, loading and unloading spaces, and if provided, parking spaces, including those spaces located in a garage, shall be provided on a site, of a standard adequate to accommodate a 99.8 percentile car, or a 99 percentile truck, 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, except where Rule 16.4.2.16 applies.	

Rule	Requirement	Compliance Assessment
	For the avoidance of doubt rear sites that are served by an access leg/driveway that are in sole ownership are considered to be part of the site.	
16.4.2.19	All car parks (if provided) shall be marked or delineated on-site, except in the Residential Zone, Medium Density Residential Zone, and in the St Peters School Zone.	All car parks are proposed to be marked within the Care Home and Community Hub car parks
16.4.2.20	Other than in the St Peters School Zone, all car parks must: a. 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 b. Ensure lighting is designed to avoid shading areas or isolating areas of public use.	Assessed by others. Note: a Roading – Street Tree condition has been proposed within the **Appendix 29 – Draft WDC Conditions** of the Substantive Application Report.
16.4.2.21	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.	It is recommended that the Care Home and Community Hub provide cycle parking in accordance with this rule and that a condition requiring alignment with this Rule outcome is included.
16.4.2.22	A Broad Integrated Transport Assessment shall be prepared for activities as required by this rule, in accordance with the following trigger threshold: Any Permitted, Controlled or Restricted Discretionary Activity with a Trip Generation of Activity (vpd = vehicles per day) of more than 250 (vpd>250) onto a Major or Minor Arterial Road (Including State Highways). Assessment will be restricted to the following matters: • Location and scale of activity; and • Effects of vehicle generation on functioning of road, road hierarchy and other users; and • Vehicle access and manoeuvring; and • Consideration of Crime Prevention through Environmental Design; and • Provision for multi-modal transport options (Broad Integrated Transport Assessment only); and • Effects on connectivity (Broad Integrated Transport Assessment only); and • Vehicle queuing on-site; and • Effects on infrastructure provision; and	A Broad ITA has been provided as part of the application

Rule	Requirement	Compliance Assessment
	• Infrastructure deficiencies, risks or positive effects identified from consultation with the New Zealand Transport Agency where State Highways may be affected (Broad Integrated Transport Assessment only). These matters will be considered in accordance with the assessment criteria in Section 21.	

Appendix 11: Connectivity and Integration Plan



1 Connectivity and Integration Plan 1:5000

RevID	ChID	Change Name	Date

N

KEY

- Established Roading Network
- Indicative Internal Road Network
- Future Potential Intergration Links
- Proposed Vested Roads

Te Awamutu Developments

2025 Ohaupo Road, Te Awamutu 3800

Harlow Lifestyle Village Fast Track Application

Title
Transport Connectivity and Integration Plan

Date
15/10/2026

Scale
1:5000 @A3

Client
Te Awamutu Developments Limited

PACIFIC ENVIRONMENTS ARCHITECTS
P.O. Box 8807 Symonds St, Auckland, NZ
Ph (09)308-0070 Email:info@penzl.co.nz

ref no.
25020

sheet no.
APP-004

revision

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