Appendix F – Integrated Transportation Assessment prepared by Stantec

Integrated Transportation Assessment

Ultimate Extension of the Tamahere Country Club on 56, 70, 82 and 93 Tamahere Drive

PREPARED FOR SANDERSON GROUP LTD | JUNE 2023

We design with community in mind

Stantec

Revision Schedule

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
0	16/05/23	Draft for client review	AW	MA	MA	MA
1	29/05/23	Final	AW	MA	MA	MA
2	21/06/23	Final V2	AM	MA	MA	MA

Cover image:

Tamahere Country Club, Tamahere. Photo by Stantec

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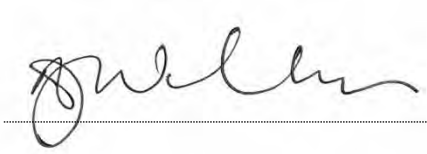
Anna Wilkins		21/06/2023
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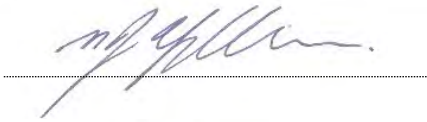
Mark Apeldoorn		21/06/2023
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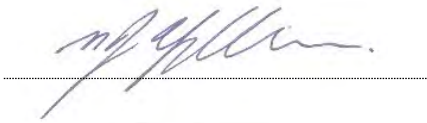
Mark Apeldoorn		21/06/2023
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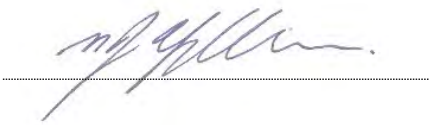
Mark Apeldoorn		21/06/2023

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Abbreviations

CAS	Crash Analysis System
HCC	Hamilton City Council
ODP	Operative District Plan
PDP	Proposed District Plan
TCC	Tamahere Country Club
vph	vehicles per hour
vpd	vehicles per day
WDC	Waikato District Council
WEX	Waikato Expressway
WRTM	Waikato Regional Transportation Model

1.0 INTRODUCTION

Stantec has been appointed by Sanderson Group Limited to examine and describe the traffic and transportation effects of the ultimate extension of the Tamahere Country Club (TCC) onto four adjoining properties.

This Integrated Transportation Impact Assessment (ITA) report describes and assesses:

- The existing and planned transportation environment surrounding the site;
- The established and consented access arrangements at the TCC;
- Trip generation and distribution associated with the proposed extension;
- Proposed access arrangements and interfaces with Tamahere Drive and the Te Awa River Ride;
- The effects of the proposed extension on the surrounding transport network including the capacity of the western roundabout at the Tamahere interchange; and
- Recommended mitigation measures and conditions.

This assessment focuses on the external effects of the proposal and its interface with Tamahere Drive. Internal design matters are being privately managed and are therefore not within the scope of this report. General comments are however provided regarding the approach to parking supply and the relevant rule frameworks.

By way of summary, the following conditions are recommended:

- Seven new bicycle parking spaces; and
- A construction traffic management plan (CTMP).

With these conditions applied, the proposed extension can be appropriately accommodated by the existing and planned transportation networks in the area.

2.0 EXISTING TRANSPORT ENVIRONMENT

2.1 SITE LOCATION

The TCC is situated in Tamahere approximately midway between Hamilton and Cambridge. The site has access to Tamahere Drive, which runs along its eastern boundary. Figure 1 shows the site location in relation to the wider area.

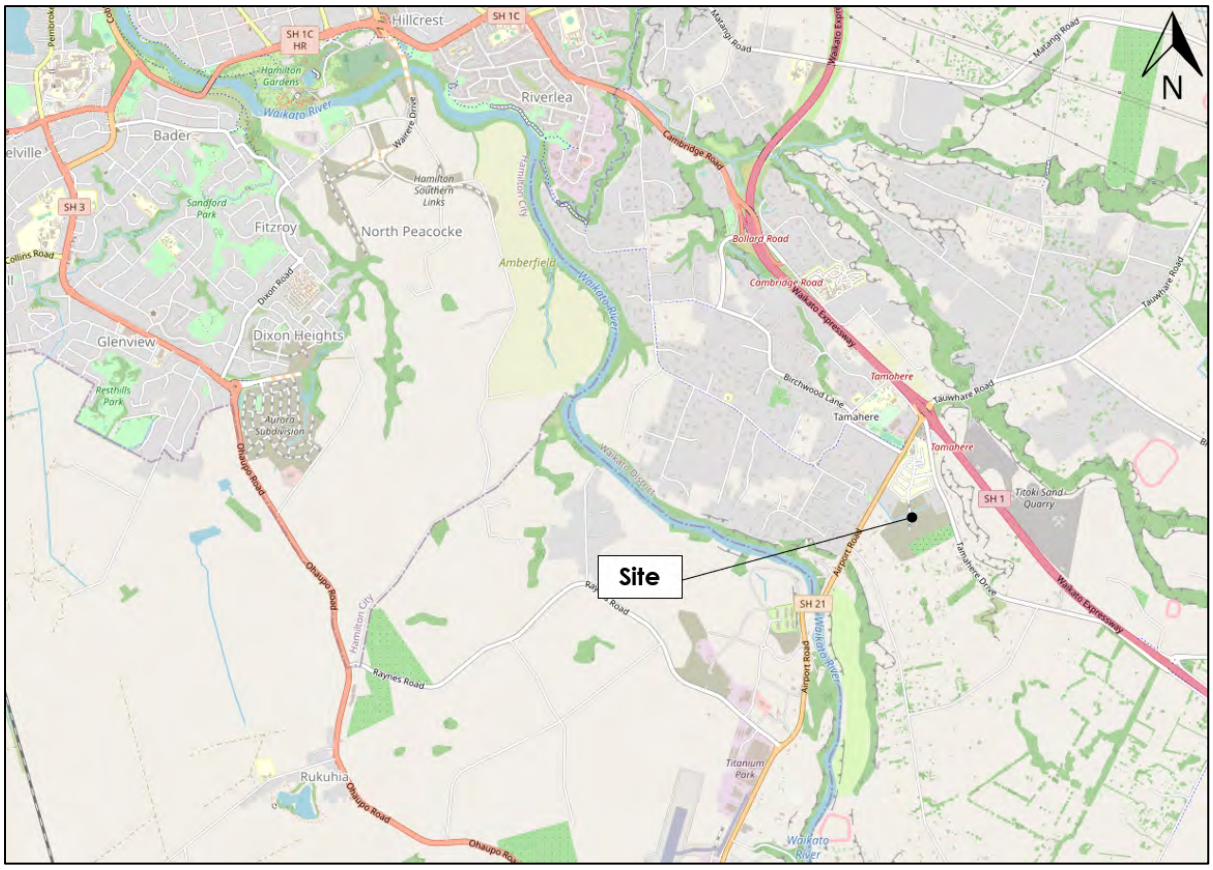


Figure 1: Site Location

Source: Open Street Map, 2023

The key intersection (interchange) of Tamahere Drive with State Highway 1 (SH1) and State Highway 21 (SH21) is located to the north of the site. The local Tamahere Village Centre, Tamahere Park, Tamahere Community Centre and the Tamahere Model School are situated to the northwest of the site, across SH21, and are accessed via Devine Road and Wiremu Tamihana Drive.

The local area is shown on Figure 2 below. This Figure also shows the consented development and the four properties (56, 70, 82 and 92 Tamahere Drive) that are subject to this current Application.

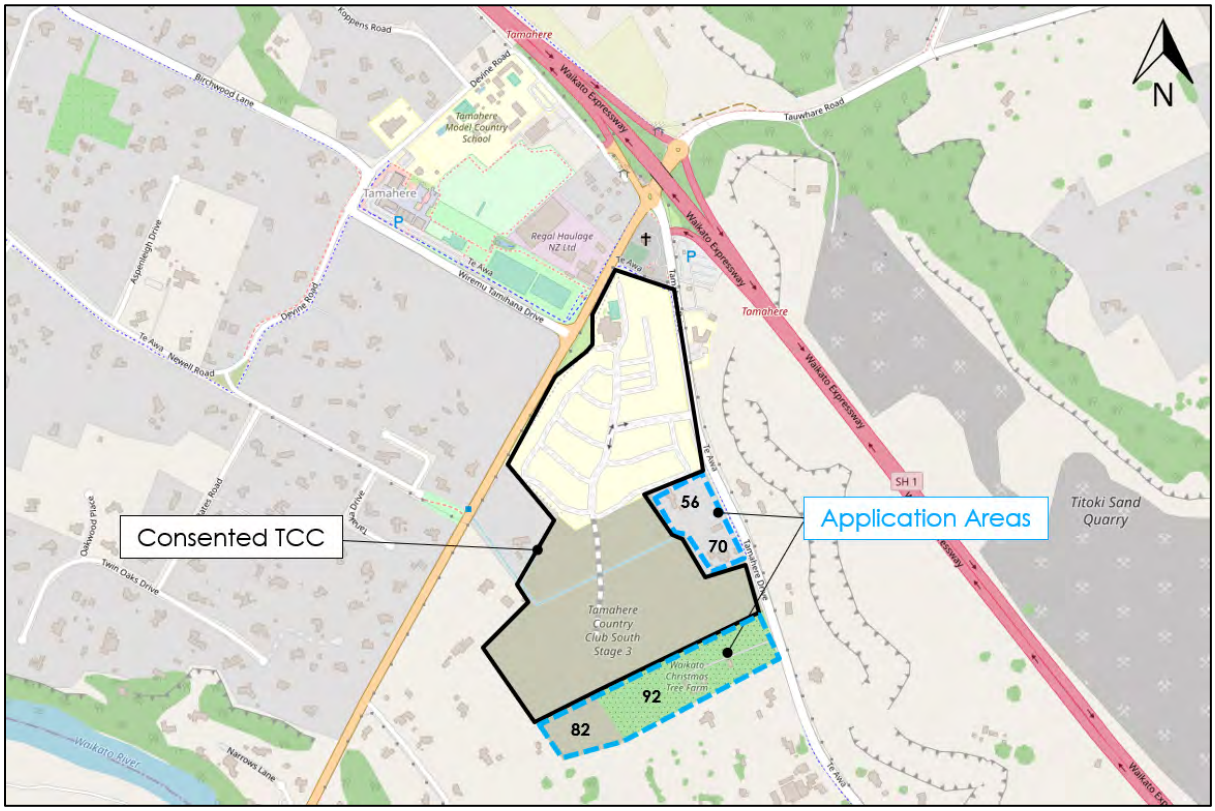


Figure 2: Site location and local surroundings

Source: Open Street Map, 2023

2.2 LAND USE ZONING

The four subject properties are within the 'Rural Zone' of the WDC Operative District Plan (ODP) and the 'General Rural Zone' of the Proposed District Plan (PDP), Decisions Version. The ODP and PDP zones around the site are shown as Figure 3 and Figure 4, respectively.

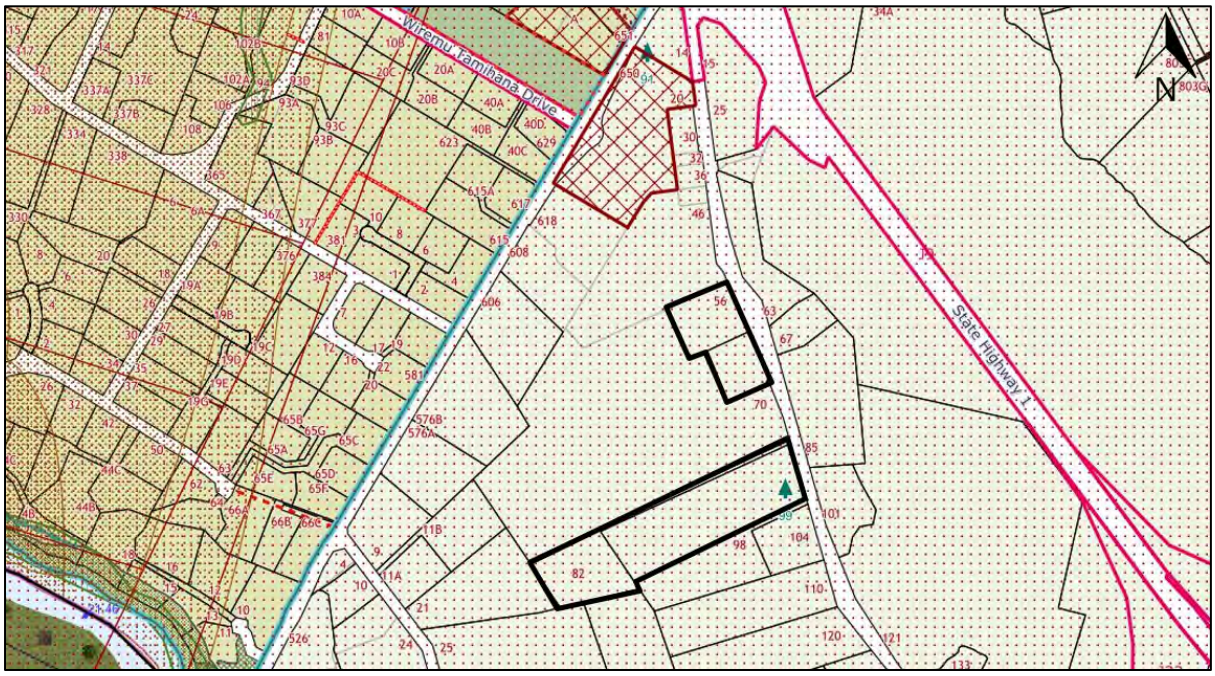


Figure 3: Operative District Plan (ODP) Zoning

Source: WDC IntraMaps

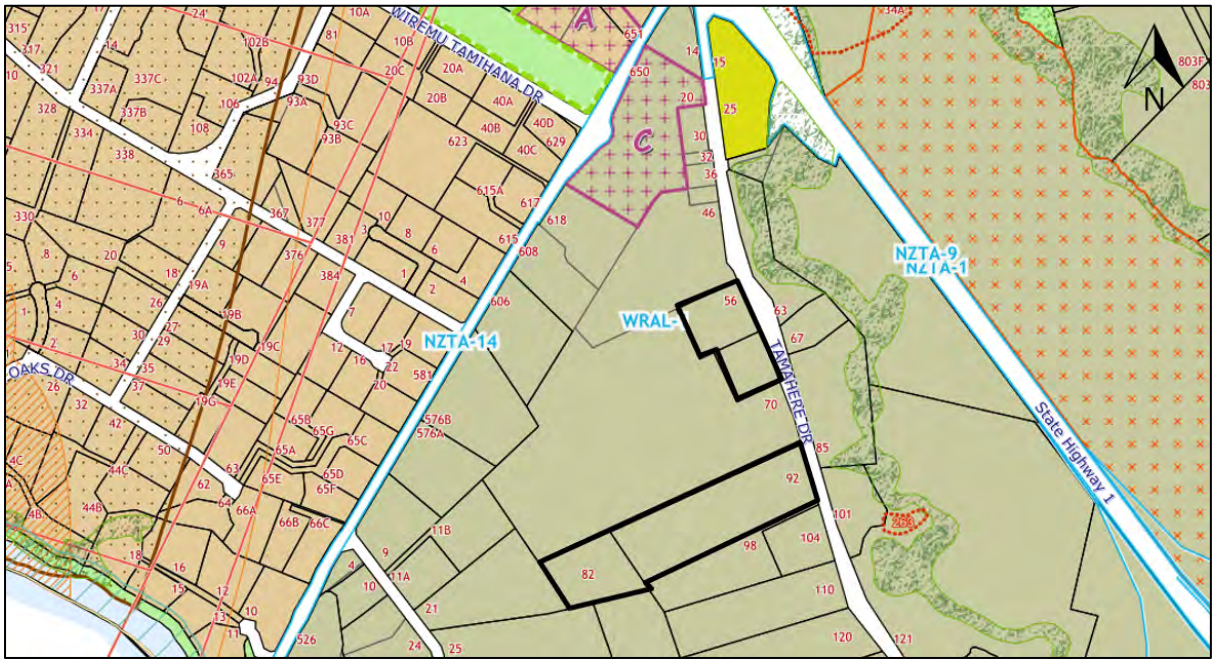


Figure 4: Proposed District Plan (PDP) (Decisions Version) Zoning

Source: WDC IntraMaps

The land to the other side of SH21 is zoned 'Country Living' in the ODP and 'Rural Lifestyle Zone' in the PDP.

2.3 ROADING HIERARCHY

SH1 - Waikato Expressway (WEX) - is classified as a National Route within the WDC road hierarchy. It is the primary north-south transport corridor between Hamilton and Cambridge.

SH21 is classified as a Regional Arterial Road. It provides access between SH1 and the Hamilton Airport located to the south.

Tamahere Drive, Wiremu Tamihana Drive and Devine Road are all classified as local roads. Their primary function is to provide for property access.

These roadway classifications remain the same in the PDP road hierarchy.

2.4 LOCAL ROADING PHYSICAL ENVIRONMENT

2.4.1 Tamahere Drive

Tamahere Drive runs along the eastern site boundary and provides access to a number of properties along its length, including St Stephens Church to the immediate north of the site. It also forms a link towards Cambridge and the Hautapu and Bruntwood communities.

The cross-section of Tamahere Drive in front of the site provides one traffic lane in each direction (3.5-3.7m wide) and shoulders approximately 1.3 m-2.3 m wide on either side, The Te Awa River Ride runs past the site along the TCC side of Tamahere Drive and is 3 m wide. Tamahere Drive has a 60 km/h posted speed limit along the site frontage. An example of the existing form of Tamahere Drive are shown as Figure 5.

Figure 5: Tamahere Drive, looking south in front of 56 Tamahere Drive

The TCC has three consented accesses to Tamahere Drive, one near the care facility at the northern end of the site, one near the centre of the site which provides the main resident and visitor entry, and another access further south. These accesses are shown below as Figure 6, Figure 7, and Figure 8.

Figure 6: Tamahere Drive, Northern Access (Care Facility)

Figure 7: Tamahere Drive, Central Access

Figure 8: Tamahere Drive, Southern Access (Under Construction)

2.4.2 Tamahere Interchange

The Tamahere interchange has roundabouts sitting beneath the SH1 mainline. The southbound (SB) on and off ramps meet Airport Road and Tauwhare Road at the eastern roundabout.

Tamahere Drive, Airport Road and the northbound (NB) on ramp meet at the western roundabout. The NB off ramp meets Tamahere Drive at a Give Way controlled intersection approximately 50 m south of the roundabout.

At the time of writing this report, Waka Kotahi was in the process of making changes to this area, including creating additional approach lanes on some legs of the western roundabout. These works are described in further detail at Section 3.2.

Devine Road has an intersection with the NB on ramp, this Give Way controlled intersection enables the left turn movement from the ramp into Devine Road, and the left turn out of Devine Road northbound towards SH1.The interchange area is shown as Figure 9. A recent photo, with the additional lanes marked, is shown as Figure 10.

Figure 9: Tamahere Interchange Layout

Source: HCC GIS Maps (Aerial Flown January 2021)

Figure 10: Tamahere Interchange Western Roundabout (May 2023)

2.4.3 SH21 Airport Road

SH21 Airport Road provides a route from SH1 in the east to Hamilton Airport and SH3 in the west. Near the site, it provides one traffic lane in each direction, with sealed shoulders and a total width of approximately 12 m. It has yellow no-overtaking lines between the interchange and Wiremu Tamihana Drive.

The SH21 Airport Road/Wiremu Tamihana Drive intersection is controlled by Give Way signs, with SH21 Airport Road having priority. This intersection has right and left turning lanes formed on SH21 Airport Road, and on Wiremu Tamihana Drive. Airport Road is shown as Figure 11.

Figure 11: SH21 Airport Road, looking east towards Tamahere Interchange

2.4.4 Walking/Cycling Facilities

As noted earlier, the Te Awa River Ride path runs along the TCC site's frontage to Tamahere Drive and around the northern boundary of the site (i.e., on the site located between the care facility and the St Stephens Church). It crosses SH21 Airport Road in an underpass and continues north along Wiremu Tamihana Drive, connecting to Tamahere Park, the Village Centre and other areas of Tamahere.

There is a footpath on the northern side of SH21 Airport Road. This runs through the Tamahere interchange and provides access to Devine Road, the bus stops on the northbound on and off ramp, and the shared path on the WEX. There also is a footpath on the northern side of Tauwhare Road, terminating at Woodcock Road.

An overview of the walking and cycling network in the vicinity of the site is shown as Figure 12.

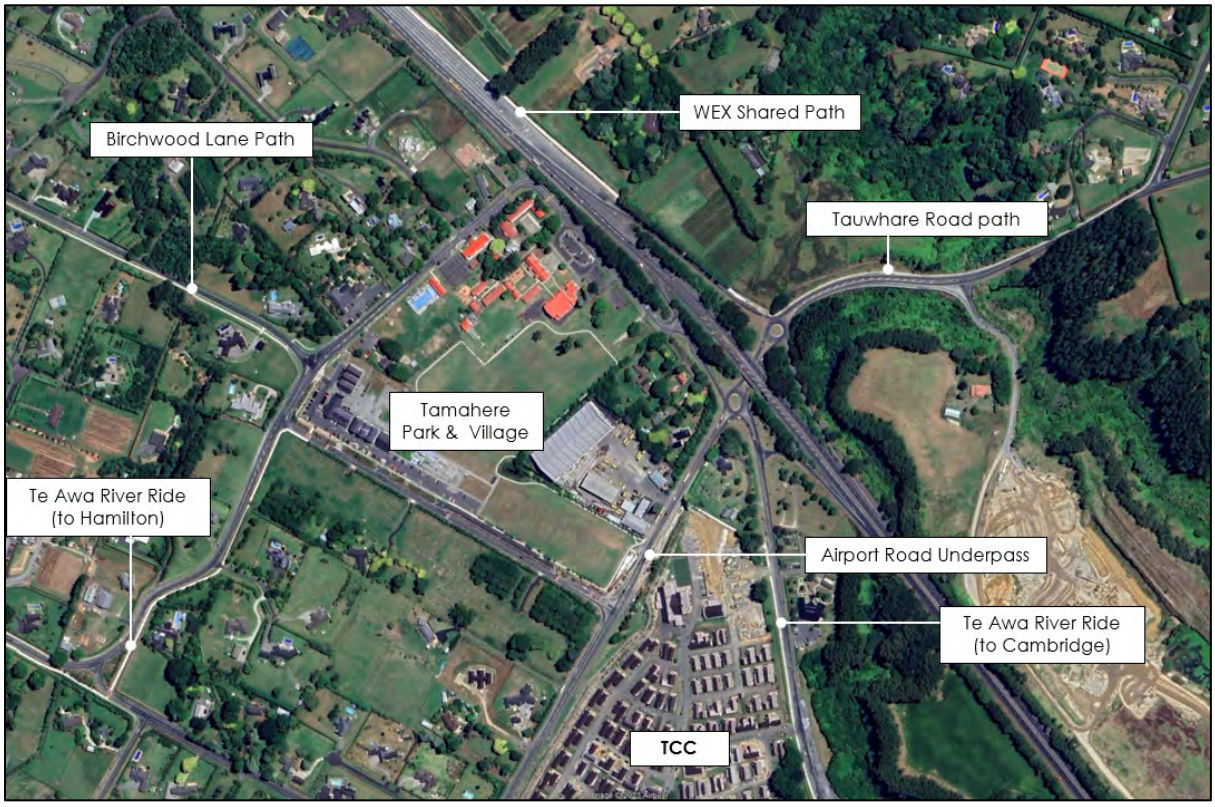


Figure 12: Walking and Cycling Network Overview

2.4.5 Public Transport

The nearest bus stops to the site are on the northbound on ramp and southbound off ramp of the Tamahere interchange. These are approximately 280 m and 379 m respectively, from the TCC's northern boundary.

The number 20 (Hamilton to Cambridge) bus service calls at these stops. It runs eight times daily each way on weekdays and four times daily each way on weekends and public holidays. It connects the central business districts of Cambridge and Hamilton, calling at various schools, shopping centres and bus interchange opportunities along the route.

The number 24 (Hamilton to Te Awamutu (School Assist)) bus service also calls at these stops. It operates once daily each way, before and after school on school-term weekdays only. The 32 service (Tokoroa to Hamilton) also calls once per day.

3.0 FUTURE TRANSPORT ENVIRONMENT

3.1 SOUTHERN LINKS

Southern Links is a network of state highway and urban arterials that links SH1 at Kahikatea Drive (in the west of Hamilton), to the Waikato Expressway (WEX) at Tamahere and SH3 at Hamilton Airport. It supports expected growth in Peacocke, Tamahere and around Hamilton Airport. Designations for the project were secured in 2016. There is no committed timeframe for the project's construction.

The planned network around Tamahere is shown as Figure 13.

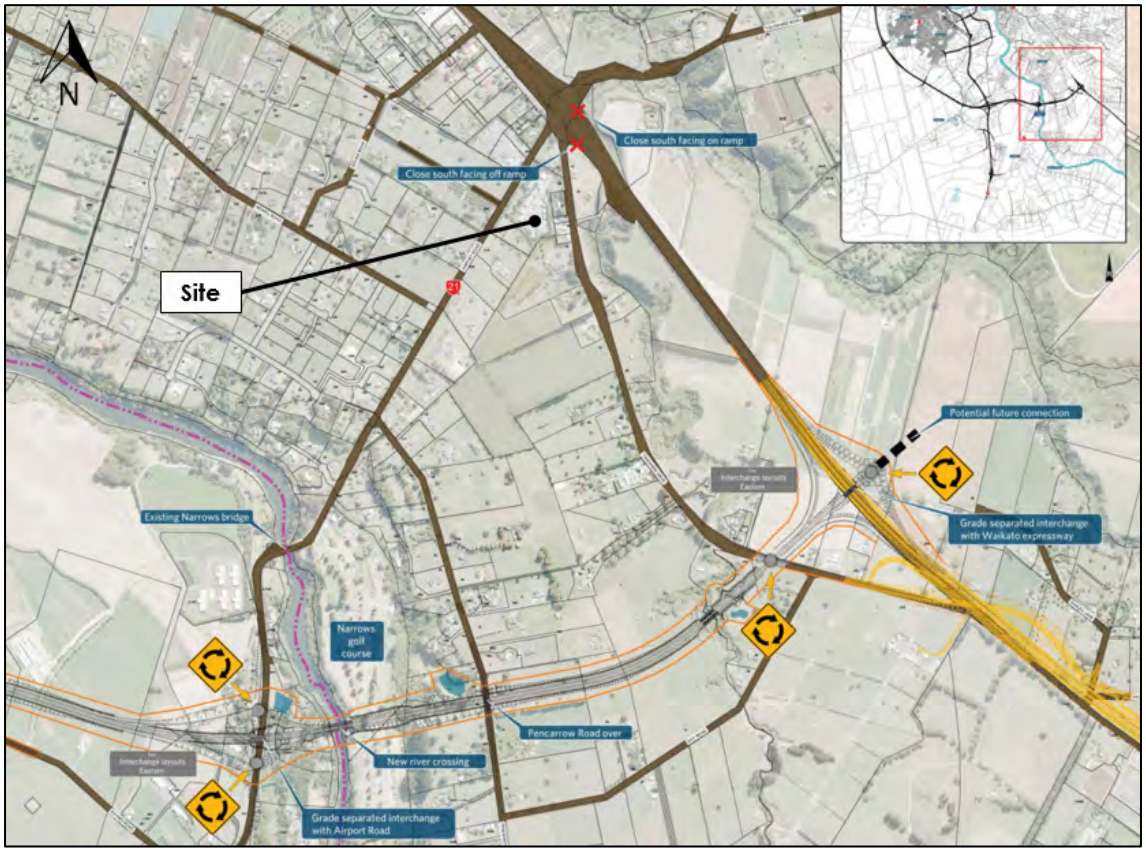


Figure 13: Southern Links Network

Source: Waka Kotahi

Figure 13 illustrates that the existing south facing ramps at the Tamahere interchange are to be closed. Their function will be replaced by a new interchange further south, which will connect west to another interchange near Hamilton Airport. Changes in traffic volumes expected because of these changes are presented in Section 4.2.

3.2 TAMAHERE INTERCHANGE IMPROVEMENTS

At the time of writing this report, Waka Kotahi was in the process of delivering safety improvements at the Tamahere Interchange. As shown on Figure 14 below, these works include additional lanes at the western roundabout, new walking and cycling paths, new raised pedestrian/cycle crossings and a new signalised crossing on the NB on ramp. Figure 14 demonstrates the safety improvements Waka Kotahi is currently constructing.

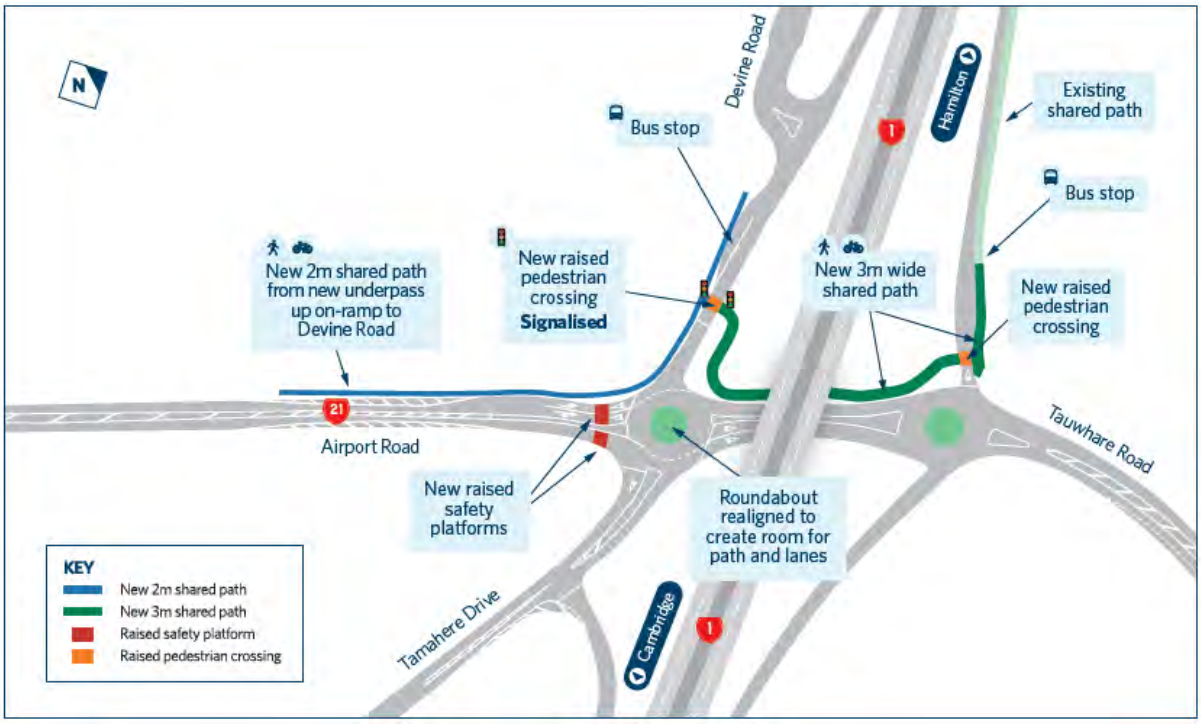


Figure 14: Tamahere Interchange Improvements

Source: Waka Kotahi

4.0 TRANSPORT NETWORK VOLUMES

4.1 EXISTING VOLUMES

Current traffic volumes for roads around the site have been sourced from the Mobile Road database and Waka Kotahi. These are summarised in Table 1.

Table 1 Existing Daily Traffic Volumes

Road	Location	Daily Volume, vpd (HGV%)	Date (Type)
SH1	355m past Cherry Lane	27,699 (10.1%)	2020 (count)
SH21	225m south of SH1 roundabout	9,318 (9.7%)	2020 (count)
Tamahere Drive	South of SH21	1,543 (5%)	2023 (estimate)
Wiremu Tamihana Drive	North of SH21	1,421 (6%)	2023 (estimate)

4.2 FUTURE VOLUMES

In the assessment prepared[1] for the first stage of the TCC, forecast traffic demands were sourced from the Waikato Regional Transport Model (WRTM). The source network was described as B3 – baseline forecasts. The land use scenarios sourced are described as BB, baseline forecasts for years 2021, 2031 and 2041.

The future forecast traffic demands are subject to planned future strategic transport network changes that will alter the distribution of traffic demands on the roads adjacent to the site. Two key future staged changes have been described. These are:

- Waikato Expressway – "Cherry Lane" Connections; and
- Southern Links Connections.

These and other strategic city-wide network changes are captured within the relevant WRTM transport model reference bases described above.

Table 2 WRTM Forecasts

Road	Existing (2018-2020)	WRTM 2021 (vpd)	WRTM 2031 (vpd)	WRTM 2041 (vpd)
Tamahere Drive	1,543	1,676	116	137
Airport Road (Site Frontage)	9,318	11,510	7,696	8,482
Airport Road (Under SH1 Bridge)	-	9,895	7,783	8,527
Wiremu Tamihana Drive	1,421	1,150	1,350	1,504
SH1 On-ramp Northbound	-	6,435	4,278	4,693
SH1 Off-ramp Northbound	-	1,025	488	519

[1] Section 4.2, Sanderson Group Limited, Tamahere Retirement Village, Integrated Transportation Assessment, June 2018 (TDG)

The key and broad observations from this data can be summarised as follows:

- At sites with recent count data available, there is good alignment with the WRTM 2021 forecasts.
- At all sites except Wiremu Tamihana Drive, forecast traffic demands are expected to reduce materially from the forecast 2021 levels.
- Reductions are evident from the 2021 period through to the 2041 period.
- Tamahere Drive traffic demands all but fall away in the 2021 to 2031 period with the exception of traffic demands generated locally. They then increase back a little, but still only to a forecast one-tenth (137 vpd) of their current daily demand level. It might be that this is a local model variation factor, however it is clear there are not expected to be substantial demands on this section of road in future (post 2031) with substantive and strategic connections forming essentially a triangle of bypass options around the site. Tamahere Drive will ultimately serve as an access connector for traffic of a local origin or destination.
- Airport Road (SH21) across the site frontage indicates demands will fall to about a two-thirds the 2021 demand (11,500 down to 7,700 vpd) at 2031. They are then expected to increase marginally to about 8,500 vpd by 2041.
- Wiremu Tamihana Drive is expected to see an increase in current demand as a result of its connection north to Birchwood Lane and the Waikato Expressway Southern Interchange. These demand changes however see daily traffic demands increase from their current 1,100 vpd to a forecast 1,500 vpd (two-way total) at 2041.
- Some 2041 demand is shown for the northbound off-ramp, however current planning intends that this ramp is to be retired indicating traffic will depart the expressway further south at the new interchange. Depending on ultimate destination, some, a proportion of this low demand flow, may be expected to travel along Tamahere Drive past the site.
- Airport Road demands are initially forecast to increase however long-term demands are expected to be at a similar level to that which currently exists.
- Overall, it can be seen that the strategic transport network initiatives planned for the next 25 years in and around southern Hamilton are expected to have a material effect on reducing local traffic demands on the primary access frontage of Tamahere Drive.

5.0 ROAD SAFETY

The Waka Kotahi Crash Analysis System (CAS) was used to assess the road safety history of the area. The search area included the SH21/Tamahere Drive roundabout, the Tamahere Drive/Northbound Off Ramp intersection, and approximately 1.2 km of Tamahere Drive from the roundabout toward the south. The search covered the full five-year period 2018 to 2022, and any available data from 2023.

Six crashes were reported. Five involved no injury, one involved a serious injury to a pedestrian. The 21-year-old pedestrian was injured in a hit and run incident during March 2020. The CAS records contain no details regarding causative factors.

One crash was reported near the Tamahere Drive/Northbound Off Ramp intersection. This involved a driver failing to notice stationary vehicles in front (associated with the roundabout). The crash did not result in injury.

Four crashes were reported at the SH21/Tamahere Drive roundabout. Two involved failures to give way, one involved loss of control/inattention and another was caused by a driver reacting to a vehicle following too closely.

6.0 DEVELOPMENT PROPOSAL

6.1 LAND USE

The existing TCC is consented to have 202 independent villas and 80 supported care beds. The consented layout is shown as Figure 15.

Figure 15: TCC Consented Layout[2]

Source: Sanderson Group, 2021

[2] It should be noted that this image does not include the three additional villas that were added in the south-west corner of the site as part of the latest variation to the previous extension (LUC0597/21.03)

The proposed extension will create an additional 69 independent villas (67 in the southern and extensions and two in the existing footprint) with associated facilities including a health space and outdoor gym, art and craft centre, parking area (33 spaces), green spaces, walking paths and internal access roads. All facilities and amenities are for use by residents only. The extension will be integrated with the existing village, as shown on Figure 16 and Figure 17. Figure 18 and Figure 19 show enlargements of the new areas, which are outlined in red.

Figure 16: Proposed Ultimate Extension to TCC

Source: Sanderson Group

Figure 17: Proposed Ultimate Extension to TCC (Expansion Areas Highlighted)

Source: Sanderson Group

Figure 18: Proposed Ultimate Extension to TCC (Enlargement 1)

Source: Sanderson Group

Figure 19: Proposed Ultimate Extension to TCC (Enlargement 2)

Source: Sanderson Group

6.2 ACCESS

Access to the new areas will be provided via the existing internal transport network and external access points. No new vehicle access points are proposed to Tamahere Drive.

7.0 TRIP GENERATION AND DISTRIBUTION

7.1 TRIP GENERATION

Retirement Village trip generation expectations are generally well understood, published and consistently represented in practice in New Zealand and Australia. Australian industry-based trip rates for retirement villages can be sourced from the Roads and Maritime Services (RMS) of New South Wales' "Guide to Traffic Generating Developments" and related Technical Directions. Rates from these sources indicate trip generating demands in the order:

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

The Waka Kotahi Research Report 453 "Trips and Parking Related to Land Use" (RR453) contains more recently developed NZ trip generation rates for a range of activities including retirement accommodation. This trip generation rates has been adopted as the basis for calculating the expected level of trip generation for the consented and proposed development. It indicates that retirement units are expected to generate 2.4 to 2.6 vpd per unit and 0.3 to 0.4 vph per unit at the 85th percentile level. The generation rates are slightly different depending on the extent to which a unit is an independent living unit or an assisted living unit. These variations are integrated into the following assessment.

Table 3 Trip Generation Assessment (Daily)

Unit Type	Units			Daily Trips (vpd)		
	Consented	Proposed	Total	Consented	Proposed	Total
Independent Units	202	69	271	525	179	704
Assisted Care Beds	80	0	80	192	0	192
Combined	282	69	351	717	179	896

Table 4 Trip Generation Assessment (Peak Hour)

Unit Type	Units			Peak Hour Trips (vph)		
	Consented	Proposed	Total	Consented	Proposed	Total
Independent Units	202	69	271	61	21	82
Assisted Care Bed	80	0	80	32	0	32
Combined	282	69	351	93	21	114

The tables illustrate that the proposed extension is expected to add some 179 vpd and 21 vph to the surrounding transport network.

7.2 TRIP DISTRIBUTION

The original ITA prepared for the TCC sourced trip distribution patterns from the WRTM. The expected patterns were:

- 70% to/from SH1 (North)
- 16% to/from SH21 Airport Road West (Tamahere local or towards Hamilton Airport)
- 8% to/from SH1 South (Cambridge via WEX); and
- 6% to/from Tamahere Drive (South).

New trips are expected to be spread across the existing central and southern access points. All trips generated by the units towards the south of the site are assumed to use the southern access point. Trips generated by the new units in the central area (on 56 and 70 Tamahere Drive) are likely to be shared across the central and southern accesses.

These and other sensitivity distributions have been tested in the assessment of effects that follows later in this report.

8.0 TRANSPORT EFFECTS AND MITIGATION

8.1 ACCESS VOLUME CHANGES

The proposed expansion areas are expected to increase daily and peak hour traffic volumes by 179 vpd and 21 vph, respectively. The spatial arrangement is such that most of these trips are expected to be added to the southern access, with some also using the main (central) access.

Table 5 Access Volumes and Changes

Access	Daily			Peak Hour		
	Existing	Proposed	Change	Existing	Proposed	Change
Care Access (Northern)	192	192	0	31	31	0
Main Access (Central)	361	430	69	42	50	8
Southern Access	164	275	111	19	32	13
All	717	897	179	93	113	21

Table 5 shows that the main access is expected to see an increase of 69 vpd including 8 vph during the peak hours of the day. The greatest increase is seen on the southern access, which carries an additional 111 vpd including 13 vph at peak times.

Post-development, the main access and the southern access are expected to carry daily totals of 430 vpd and 275 vpd, respectively. The Regional Infrastructure Technical Specification (RITS) refers to RTS6[3] in terms of design for rural vehicle crossings. Driveways carrying more than 200 vpd are defined as 'high volume' and are recommended to have localised shoulder widening of the general form shown as Figure 20 below.

[3] Roads and Traffic Standard 6 Guide to visibility at driveways

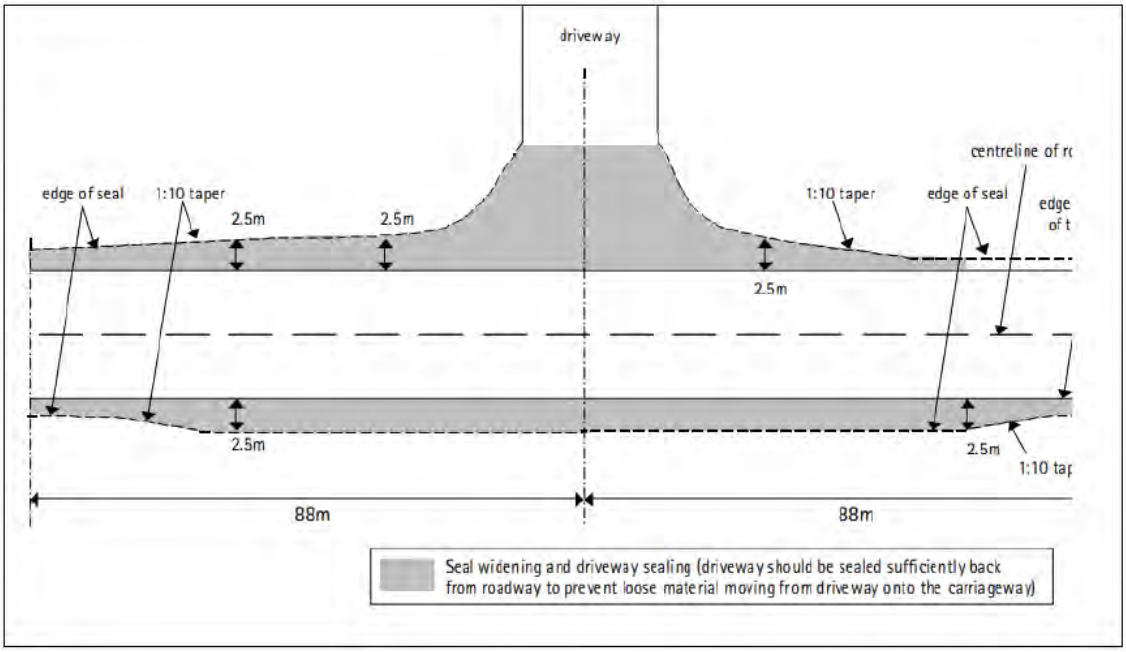


Figure 20: High Volume Rural Driveway Treatment, RTS6

Source: RTS6, Figure 4

This form of access treatment was recommended as part of the previously assessed TCC southern extension and is a condition of an existing consent. No changes to this access design are required to support the further extension areas.

Likewise, the main access is already designed and constructed to a high-volume driveway standard with sealed shoulders on both sides. No changes are recommended at this location either to support the additional volumes.

It is noted also that both these access points were designed and approved on the basis of an 80km/h speed environment which has now been reduced to 60km/h.

8.2 TE AWA RIVER RIDE PATH INTERFACE

The properties that are included in the proposed expansion have a combined total of five existing vehicle crossings to Tamahere Drive. These provide access to a mixture of rural residential and rural commercial activities, and each has a crossing over the Te Awa River Ride path. Two examples are shown as Figure 21.

Figure 21: Example Vehicle Crossings (looking south from 70 Tamahere Drive)

These five crossings can be closed as part of the proposed expansion, which takes access via the established TCC accesses and does not propose any new access points. This results in a net reduction of five potential conflict points between vehicles and path users.

The TCC accesses are constructed (or consented to be constructed in the case of the southern access) with safety features including pavement markings, warning signs and traffic calming. Examples of these are shown below.

Figure 22: Main Access Cycle Treatment, looking south along path

Figure 23: Main Access Cycle Treatment, looking out from TCC

These treatments are considered appropriate to accommodate the additional vehicle movements generated by the expansion. No changes are recommended to the built form of the main access or the consented form of the southern access.

8.3 ROUNDABOUT CAPACITY

The ITA[4] for the original development sourced forecast intersection turning movement volumes at the SH21/Tamahere Drive roundabout for the year 2021. These were converted to one-hour volumes and modelled in the intersection analysis package SIDRA. The roundabout layout reflects the latest changes made by Waka Kotahi and shown earlier on Figure 14.

The proposed expansion traffic volumes were added to these volumes. This includes the full TCC generation (consented and proposed) since it is reasonable to assume that neither was accounted for in the WRTM forecast at the time the original assessment was prepared in 2018.

The roundabout operated at level of service (LOS) A in the morning (AM) and evening (PM) scenario with and without the TCC (consented and proposed). SIDRA outputs are included as **Appendix A**.

As noted earlier in Section 7.2, the distribution expected by the WRTM favours movement to and from the north, using SH1. A sensitivity test was run changing this distribution to favour movement to and from the west instead. With these volumes the roundabout continued to operate at LOS A in both peak periods. Although growth is not expected in this area in the long-term, a sensitivity test was undertaking applying 50% growth to all movements

[4] Section 4.3, Sanderson Group Limited, Tamahere Retirement Village, Integrated Transportation Assessment, June 2018 (TDG)

through the roundabout. Under these volumes, the roundabout continued to operate at LOS A during the AM and PM peak hours. SIDRA outputs for these tests are also included as **Appendix A**.

Overall, this analysis demonstrates that the roundabout has adequate capacity to accommodate existing demands and those added by the TCC (consented and proposed).

9.0 PARKING

Notwithstanding that on-site design matters are outside the scope of this report, the following general comments are provided in relation to supply of on-site parking.

The proposed site layout shows that the individual units have garages and/or driveway parking available. There is also a parking area (with 33 spaces) provided around the health spa.

As a result of the changes mandated by the National Policy Statement on Urban Development 2020 (NPSUD), the PDP does not contain minimum requirements for on-site vehicle parking. The onus is placed on the Applicant to determine an appropriate parking supply. The proposed supply of least one garage (or driveway space) per unit and additional parking around the amenity areas is assessed as appropriately supporting the needs of residents, staff and visitors.

The PDP requires bicycle parking to be provided at a rate of one space for every 10 units or part thereof. The proposed extension includes 69 new units and would therefore require seven additional bike parking spaces. There is ample opportunity to provide these on the site.

10.0 CONSTRUCTION TRAFFIC MANAGEMENT

It is recommended that a Construction Traffic Management Plan (CTMP) be prepared, in conjunction with the appointed contractor and presented to WDC for approval prior to the commencement of construction. In this way, such specific and planned construction activities will be able to be evaluated, planned and provided for.

As per the previous stages of development, construction access is expected to be via Tamahere Drive. The access arrangements for construction are planned to be separate from those associated with the operational areas of the development, for obvious reasons.

By way of a further recommendation, the CTMP should consider and describe the following:

- Construction Works Proposal;
- Existing Transport Environment;
- Construction Staging and Programme;
- Access;
- Heavy Commercial Vehicle Demands and routes;
- Separation of Construction Works from the Operational Site;
- Confinement and Management of Materials;
- Mitigation/Minimisation of off-site Construction Movements;
- Contractor Offices and Amenities;
- Temporary Traffic Management Controls;
- Approval Processes; and
- Contractor Contacts.

This is recommended to be concluded as a condition of consent, for approval by WDC.

11.0 CONCLUSIONS & RECOMMENDATIONS

Sanderson Group Ltd proposes to extend the Tamahere Country Club onto the properties at 56, 70, 82 and 92 Tamahere Drive. The extension will enable 69 new independent villas and associated facilities including a health spa and arts/craft facility, for the use of residents.

The new units are expected to generate an additional 179 vehicle movements per day including up to 21 vehicle movements per hour at peak times. The existing cross-section of Tamahere Drive and the roundabout intersection with SH21 Airport Road have adequate capacity to accommodate these volumes.

The surrounding area is well served by pedestrian and cycle paths, including a new underpass across SH21 Airport Road. This will further enhance the active mode connectivity between the site and Tamahere Village, some 500 m north of the site.

The extension areas are to be accessed via the established internal network and the existing (and/or consented) external access points to Tamahere Drive. No changes are required to these to support the additional vehicle movements.

Five existing vehicle crossings to Tamahere Drive (and across the Te Awa River Ride path) can be closed as part of the proposal.

Conditions are recommended to require:

- Seven new bicycle parking spaces on-site; and
- A construction traffic management plan (CTMP).

Based on the assessments undertaken and reflecting the recommended conditions above, it is concluded that the proposal will not generate any specific or general transportation effects. In this regard, the proposed Tamahere Country Club ultimate extension can be supported from a traffic and transportation engineering point of view.

Appendices

We design with community in mind

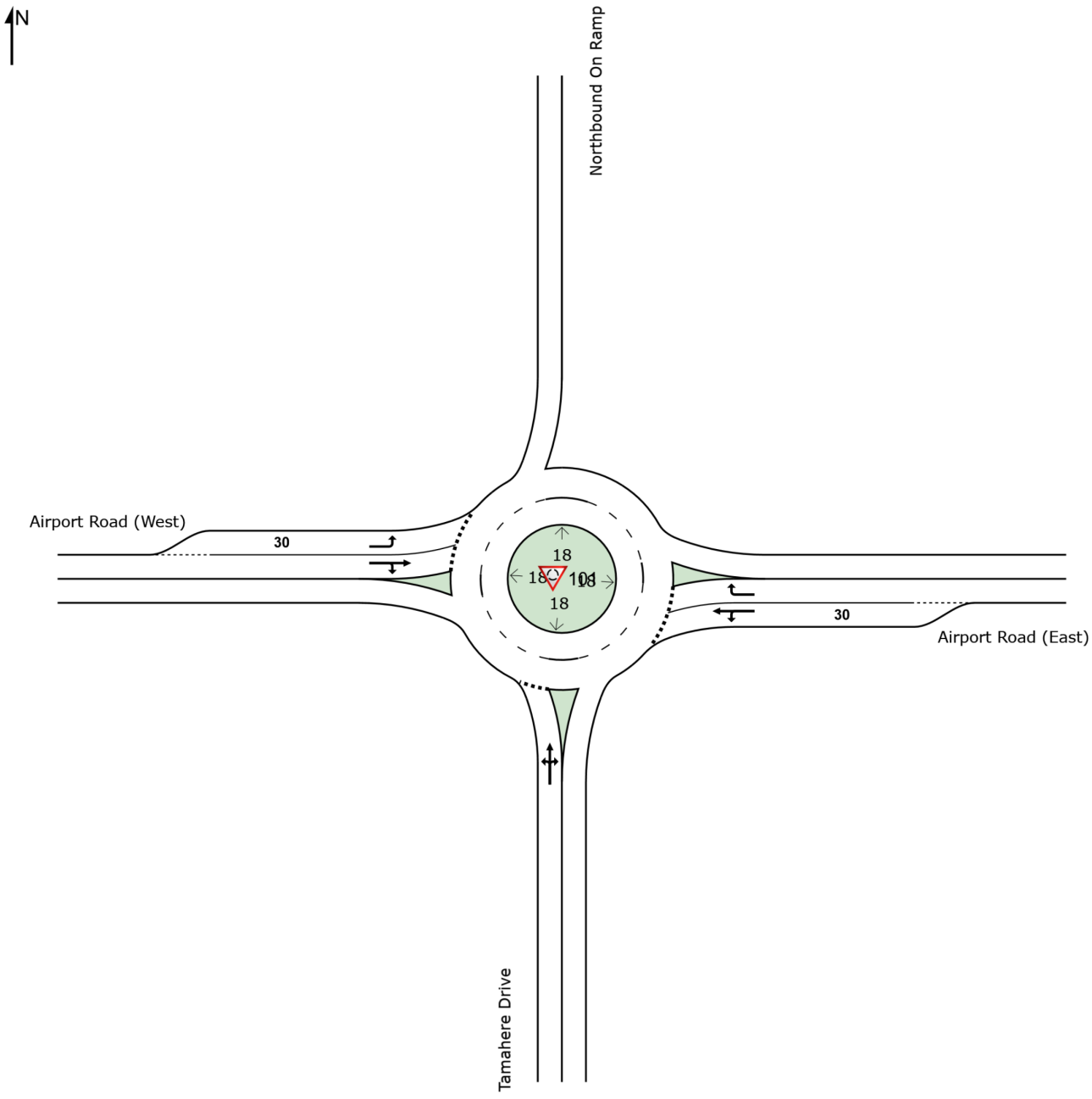
Appendix A SIDRA RESULTS

SITE LAYOUT

Site: 101 [SH21 Tamahere Drive AM 2021 (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

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



Organisation: STANTEC NEW ZEALAND | Licence: NETWORK / Enterprise | Created: Wednesday, June 21, 2023 4:38:02 PM
Project: \\Nz4118-ppfss01\shared_projects\310204819\4 Technical\SIDRA\SH21 Tamahere Drive RAB 2023.sip9

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive AM 2021 (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	51	5.0	54	5.0	0.184	6.5	LOS A	0.7	5.2	0.51	0.70	0.51	52.7
2	T1	79	5.0	83	5.0	0.184	6.8	LOS A	0.7	5.2	0.51	0.70	0.51	54.0
3	R2	13	5.0	14	5.0	0.184	11.2	LOS B	0.7	5.2	0.51	0.70	0.51	53.8
Approach		143	5.0	151	5.0	0.184	7.1	LOS A	0.7	5.2	0.51	0.70	0.51	53.5
East: Airport Road (East)														
4	L2	37	8.0	39	8.0	0.257	4.4	LOS A	1.4	10.6	0.07	0.41	0.07	54.5
5	T1	351	8.0	369	8.0	0.257	4.3	LOS A	1.4	10.6	0.07	0.41	0.07	56.1
6	R2	201	8.0	212	8.0	0.165	8.7	LOS A	0.8	5.9	0.07	0.63	0.07	52.5
Approach		589	8.0	620	8.0	0.257	5.8	LOS A	1.4	10.6	0.07	0.49	0.07	54.7
West: Airport Road (West)														
10	L2	216	8.0	227	8.0	0.218	5.8	LOS A	1.0	7.8	0.44	0.61	0.44	53.3
11	T1	210	8.0	221	8.0	0.213	5.7	LOS A	1.0	7.6	0.43	0.56	0.43	54.2
12	R2	10	8.0	11	8.0	0.213	10.1	LOS B	1.0	7.6	0.43	0.56	0.43	54.0
Approach		436	8.0	459	8.0	0.218	5.9	LOS A	1.0	7.8	0.43	0.59	0.43	53.8
All Vehicles		1168	7.6	1229	7.6	0.257	6.0	LOS A	1.4	10.6	0.26	0.55	0.26	54.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive AM 2021 plus TCC consented and proposed (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	61	5.0	64	5.0	0.260	6.7	LOS A	1.1	7.8	0.54	0.72	0.54	52.6
2	T1	122	5.0	128	5.0	0.260	6.9	LOS A	1.1	7.8	0.54	0.72	0.54	53.8
3	R2	18	5.0	19	5.0	0.260	11.3	LOS B	1.1	7.8	0.54	0.72	0.54	53.6
Approach		201	5.0	212	5.0	0.260	7.3	LOS A	1.1	7.8	0.54	0.72	0.54	53.4
East: Airport Road (East)														
4	L2	73	8.0	77	8.0	0.289	4.4	LOS A	1.7	12.6	0.11	0.42	0.11	54.4
5	T1	351	8.0	369	8.0	0.289	4.4	LOS A	1.7	12.6	0.11	0.42	0.11	55.9
6	R2	201	8.0	212	8.0	0.174	8.8	LOS A	0.9	6.4	0.11	0.62	0.11	52.4
Approach		625	8.0	658	8.0	0.289	5.8	LOS A	1.7	12.6	0.11	0.48	0.11	54.5
West: Airport Road (West)														
10	L2	216	8.0	227	8.0	0.230	6.2	LOS A	1.1	8.5	0.48	0.64	0.48	53.2
11	T1	210	8.0	221	8.0	0.230	6.0	LOS A	1.1	8.6	0.48	0.60	0.48	53.9
12	R2	18	8.0	19	8.0	0.230	10.4	LOS B	1.1	8.6	0.48	0.60	0.48	53.7
Approach		444	8.0	467	8.0	0.230	6.2	LOS A	1.1	8.6	0.48	0.62	0.48	53.5
All Vehicles		1270	7.5	1337	7.5	0.289	6.2	LOS A	1.7	12.6	0.30	0.57	0.30	54.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive AM 2021 plus TCC consented and proposed WB sensitivity (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	91	5.0	96	5.0	0.260	6.7	LOS A	1.1	7.9	0.54	0.73	0.54	52.6
2	T1	92	5.0	97	5.0	0.260	6.9	LOS A	1.1	7.9	0.54	0.73	0.54	53.9
3	R2	18	5.0	19	5.0	0.260	11.3	LOS B	1.1	7.9	0.54	0.73	0.54	53.7
Approach		201	5.0	212	5.0	0.260	7.2	LOS A	1.1	7.9	0.54	0.73	0.54	53.3
East: Airport Road (East)														
4	L2	53	8.0	56	8.0	0.291	4.5	LOS A	1.7	12.4	0.17	0.42	0.17	54.1
5	T1	351	8.0	369	8.0	0.291	4.5	LOS A	1.7	12.4	0.17	0.42	0.17	55.6
6	R2	201	8.0	212	8.0	0.181	8.9	LOS A	0.9	6.6	0.16	0.61	0.16	52.3
Approach		605	8.0	637	8.0	0.291	5.9	LOS A	1.7	12.4	0.16	0.48	0.16	54.3
West: Airport Road (West)														
10	L2	216	8.0	227	8.0	0.227	6.0	LOS A	1.1	8.2	0.46	0.62	0.46	53.2
11	T1	210	8.0	221	8.0	0.243	5.8	LOS A	1.2	9.1	0.46	0.60	0.46	53.8
12	R2	38	8.0	40	8.0	0.243	10.2	LOS B	1.2	9.1	0.46	0.60	0.46	53.6
Approach		464	8.0	488	8.0	0.243	6.3	LOS A	1.2	9.1	0.46	0.61	0.46	53.5
All Vehicles		1270	7.5	1337	7.5	0.291	6.3	LOS A	1.7	12.4	0.33	0.57	0.33	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive AM 2021 plus TCC consented and proposed 150pc test (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	61	5.0	96	5.0	0.452	9.1	LOS A	2.4	17.2	0.69	0.88	0.81	51.0
2	T1	122	5.0	193	5.0	0.452	9.4	LOS A	2.4	17.2	0.69	0.88	0.81	52.2
3	R2	18	5.0	28	5.0	0.452	13.8	LOS B	2.4	17.2	0.69	0.88	0.81	52.0
Approach		201	5.0	317	5.0	0.452	9.7	LOS A	2.4	17.2	0.69	0.88	0.81	51.8
East: Airport Road (East)														
4	L2	73	8.0	115	8.0	0.438	4.5	LOS A	3.3	24.6	0.17	0.42	0.17	54.1
5	T1	351	8.0	554	8.0	0.438	4.4	LOS A	3.3	24.6	0.17	0.42	0.17	55.6
6	R2	201	8.0	317	8.0	0.264	8.9	LOS A	1.5	11.3	0.16	0.61	0.16	52.3
Approach		625	8.0	987	8.0	0.438	5.9	LOS A	3.3	24.6	0.17	0.48	0.17	54.3
West: Airport Road (West)														
10	L2	216	8.0	341	8.0	0.403	7.8	LOS A	2.4	17.7	0.67	0.78	0.67	52.1
11	T1	210	8.0	332	8.0	0.394	7.4	LOS A	2.4	17.6	0.66	0.74	0.66	53.1
12	R2	18	8.0	28	8.0	0.394	11.8	LOS B	2.4	17.6	0.66	0.74	0.66	52.9
Approach		444	8.0	701	8.0	0.403	7.8	LOS A	2.4	17.7	0.66	0.76	0.66	52.6
All Vehicles		1270	7.5	2005	7.5	0.452	7.1	LOS A	3.3	24.6	0.42	0.64	0.44	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive PM 2021 (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	60	5.0	63	5.0	0.192	6.2	LOS A	0.8	5.7	0.48	0.67	0.48	52.8
2	T1	78	5.0	82	5.0	0.192	6.4	LOS A	0.8	5.7	0.48	0.67	0.48	54.1
3	R2	19	5.0	20	5.0	0.192	10.8	LOS B	0.8	5.7	0.48	0.67	0.48	53.9
Approach		157	5.0	165	5.0	0.192	6.9	LOS A	0.8	5.7	0.48	0.67	0.48	53.6
East: Airport Road (East)														
4	L2	60	8.0	63	8.0	0.263	4.4	LOS A	1.4	10.7	0.08	0.42	0.08	54.5
5	T1	333	8.0	351	8.0	0.263	4.3	LOS A	1.4	10.7	0.08	0.42	0.08	56.0
6	R2	114	8.0	120	8.0	0.114	8.8	LOS A	0.5	3.8	0.09	0.62	0.09	52.5
Approach		507	8.0	534	8.0	0.263	5.4	LOS A	1.4	10.7	0.08	0.46	0.08	55.0
West: Airport Road (West)														
10	L2	360	8.0	379	8.0	0.324	5.5	LOS A	1.7	12.9	0.41	0.58	0.41	53.4
11	T1	215	8.0	226	8.0	0.239	5.5	LOS A	1.1	8.6	0.40	0.54	0.40	54.4
12	R2	13	8.0	14	8.0	0.239	9.9	LOS A	1.1	8.6	0.40	0.54	0.40	54.1
Approach		588	8.0	619	8.0	0.324	5.6	LOS A	1.7	12.9	0.40	0.57	0.40	53.8
All Vehicles		1252	7.6	1318	7.6	0.324	5.7	LOS A	1.7	12.9	0.28	0.54	0.28	54.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive PM 2021 plus TCC consented and proposed (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	68	5.0	72	5.0	0.251	6.3	LOS A	1.1	7.8	0.51	0.68	0.51	52.7
2	T1	114	5.0	120	5.0	0.251	6.6	LOS A	1.1	7.8	0.51	0.68	0.51	54.0
3	R2	23	5.0	24	5.0	0.251	11.0	LOS B	1.1	7.8	0.51	0.68	0.51	53.8
Approach		205	5.0	216	5.0	0.251	7.0	LOS A	1.1	7.8	0.51	0.68	0.51	53.5
East: Airport Road (East)														
4	L2	104	8.0	109	8.0	0.302	4.5	LOS A	1.7	13.0	0.12	0.42	0.12	54.3
5	T1	333	8.0	351	8.0	0.302	4.4	LOS A	1.7	13.0	0.12	0.42	0.12	55.8
6	R2	114	8.0	120	8.0	0.125	8.9	LOS A	0.6	4.2	0.13	0.62	0.13	52.4
Approach		551	8.0	580	8.0	0.302	5.3	LOS A	1.7	13.0	0.12	0.46	0.12	54.8
West: Airport Road (West)														
10	L2	360	8.0	379	8.0	0.337	5.7	LOS A	1.9	13.8	0.45	0.61	0.45	53.2
11	T1	215	8.0	226	8.0	0.255	5.8	LOS A	1.3	9.5	0.44	0.58	0.44	54.1
12	R2	23	8.0	24	8.0	0.255	10.2	LOS B	1.3	9.5	0.44	0.58	0.44	53.8
Approach		598	8.0	629	8.0	0.337	5.9	LOS A	1.9	13.8	0.45	0.60	0.45	53.6
All Vehicles		1354	7.5	1425	7.5	0.337	5.8	LOS A	1.9	13.8	0.32	0.56	0.32	54.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive PM 2021 plus TCC consented and proposed WB sensitivity (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	98	5.0	103	5.0	0.252	6.3	LOS A	1.1	8.0	0.51	0.69	0.51	52.8
2	T1	84	5.0	88	5.0	0.252	6.6	LOS A	1.1	8.0	0.51	0.69	0.51	54.0
3	R2	23	5.0	24	5.0	0.252	11.0	LOS B	1.1	8.0	0.51	0.69	0.51	53.8
Approach		205	5.0	216	5.0	0.252	6.9	LOS A	1.1	8.0	0.51	0.69	0.51	53.4
East: Airport Road (East)														
4	L2	74	8.0	78	8.0	0.302	4.6	LOS A	1.7	12.7	0.20	0.43	0.20	54.0
5	T1	333	8.0	351	8.0	0.302	4.5	LOS A	1.7	12.7	0.20	0.43	0.20	55.5
6	R2	114	8.0	120	8.0	0.133	9.1	LOS A	0.6	4.4	0.20	0.62	0.20	52.1
Approach		521	8.0	548	8.0	0.302	5.6	LOS A	1.7	12.7	0.20	0.47	0.20	54.5
West: Airport Road (West)														
10	L2	360	8.0	379	8.0	0.327	5.5	LOS A	1.8	13.2	0.42	0.59	0.42	53.4
11	T1	215	8.0	226	8.0	0.271	5.6	LOS A	1.4	10.2	0.41	0.58	0.41	53.9
12	R2	53	8.0	56	8.0	0.271	10.0	LOS A	1.4	10.2	0.41	0.58	0.41	53.7
Approach		628	8.0	661	8.0	0.327	5.9	LOS A	1.8	13.2	0.42	0.58	0.42	53.6
All Vehicles		1354	7.5	1425	7.5	0.327	5.9	LOS A	1.8	13.2	0.35	0.56	0.35	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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 (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [SH21 Tamahere Drive PM 2021 plus TCC consented and proposed 150pc test (Site Folder: General)]

SH21 Airport Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tamahere Drive														
1	L2	68	5.0	107	5.0	0.433	8.4	LOS A	2.3	16.7	0.66	0.85	0.74	51.5
2	T1	114	5.0	180	5.0	0.433	8.6	LOS A	2.3	16.7	0.66	0.85	0.74	52.7
3	R2	23	5.0	36	5.0	0.433	13.0	LOS B	2.3	16.7	0.66	0.85	0.74	52.5
Approach		205	5.0	324	5.0	0.433	9.0	LOS A	2.3	16.7	0.66	0.85	0.74	52.3
East: Airport Road (East)														
4	L2	104	8.0	164	8.0	0.459	4.5	LOS A	3.5	26.0	0.20	0.42	0.20	53.9
5	T1	333	8.0	526	8.0	0.459	4.5	LOS A	3.5	26.0	0.20	0.42	0.20	55.5
6	R2	114	8.0	180	8.0	0.191	9.0	LOS A	1.0	7.2	0.18	0.61	0.18	52.2
Approach		551	8.0	870	8.0	0.459	5.4	LOS A	3.5	26.0	0.20	0.46	0.20	54.5
West: Airport Road (West)														
10	L2	360	8.0	568	8.0	0.561	7.6	LOS A	4.3	32.5	0.68	0.77	0.74	52.2
11	T1	215	8.0	339	8.0	0.431	7.0	LOS A	2.5	19.0	0.62	0.70	0.62	53.2
12	R2	23	8.0	36	8.0	0.431	11.4	LOS B	2.5	19.0	0.62	0.70	0.62	53.0
Approach		598	8.0	944	8.0	0.561	7.5	LOS A	4.3	32.5	0.66	0.75	0.69	52.6
All Vehicles		1354	7.5	2138	7.5	0.561	6.9	LOS A	4.3	32.5	0.47	0.65	0.50	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

CREATING COMMUNITIES

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of belonging. That's why at Stantec, we always **design with community in mind**.

We care about the communities we serve—because they're our communities too. We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

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