



Integrated Transport Assessment Report

JOB NUMBER: 23-1883

**WAIKATO THOROUGHBRED RACING
GREENFIELDS HUB**

PROJECT

WAIKATO THOROUGHBRED RACING

CLIENT

DRAFT REFERRAL – REV 2

17 April 2026



Integrated Transport Assessment Report

Waikato Thoroughbred Racing Hub

636 Pencarrow Road, Tamahere



Prepared for: Waikato Thoroughbred Racing
Project status: Draft Referral

Date: 17-04-2026
Project no: 23-1883

Revision: 2

Prepared by:



Parzan Cooper
TRAFFIC ENGINEER
BCD Group Ltd

Reviewed and approved for release by:



Callum Davison
HAMILTON OFFICE MANAGER
BCD Group Ltd

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1 EXECUTIVE SUMMARY

This Integrated Transport Assessment (ITA) has been prepared to assess the traffic and transport effects associated with the proposed Waikato Thoroughbred Racing Greenfields Hub at 636 Pencarrow Road, Tamahere, in support of a referral application under the Fast-track Approvals Act 2024. The assessment considers existing and future transport conditions, traffic generation from racing events, training activities and the proposed residential subdivision, access and parking arrangements, road safety, event and construction traffic management, and operational performance of the surrounding road network.

The proposal consolidates multiple existing racecourse and training facilities into a single integrated hub, generating regular daily traffic from training and residential activity, and periodic peaks associated with racing events of varying scale. Traffic generation estimates are based on surveys at comparable region-wide facilities and conservative assumptions appropriate to the rural context.

In response to Council and NZTA feedback as well as an independent peer review, intersection modelling has been undertaken using SIDRA Intersection to assess the performance of key local and strategic intersections for existing conditions and future scenarios (2035 and 2045), with and without the development, and with allowance for the future Southern Links project. The modelling demonstrates that most intersections surrounding the site operate at acceptable levels of service under baseline and development scenarios, including during the PM peak with the largest non-feature event and residential traffic. Development traffic generally results in modest and localised increases in delay, without giving rise to network-wide capacity failures. Strategic intersections at the Tamahere Interchange remain operationally robust, and the introduction of Southern Links in the longer term provides additional network resilience. Some priority-controlled intersections, notably Airport Road / Pencarrow Road and the Cambridge Road intersections, experience poor levels of service on minor approaches. These constraints are shown to exist under baseline conditions and are driven by high arterial traffic volumes rather than the proposed development. While development traffic increases delays on these minor approaches, it does not materially change the nature of the constraint or create new critical issues.

The proposed access strategy provides a clear and robust hierarchy of entry points, comprising a primary public access from Hooker Road, a secondary access from Pencarrow Road, and a dedicated trainer and staff access from Duncan Road. This arrangement enables effective separation of event traffic, daily operational movements, trainers, and residential access, reducing conflict and improving network efficiency. Access locations benefit from extensive road frontage and are capable of being designed to meet WDP-OIP and RITS requirements, including appropriate sight distance, spacing, and turning treatments. Where warranted, channelised turn facilities (notably at the Hooker Road access) can be delivered through detailed design. All accesses will incorporate measures to safely manage interfaces with the Te Awa River Ride, ensuring safe and legible operation for motorists, pedestrians, and cyclists.

Parking demand for day-to-day operations and the majority of race events can be accommodated on-site, supported by managed overflow areas for larger events. Event Management Plans (EMP) and Event Traffic Management Plans (ETMP) will be implemented to manage traffic flows, parking allocation, marshal deployment, rideshare and bus operations, and access control during events. This operational approach ensures that event related traffic effects remain temporary, controlled, and proportionate to event scale. Travel demand measures, including ridesharing, charter buses and targeted communications, will be considered for infrequent feature events.

Construction traffic will be managed through a Construction Traffic Management Plan (CTMP) prepared in accordance with the NZGTTM. The CTMP will define construction access routes, manage heavy vehicle movements and timing, and ensure safe operation of the surrounding road network and the Te Awa River Ride interface. With staged construction and appropriate traffic management measures in place, construction-related traffic effects will be temporary, localised, and reduced to an acceptable level.

The assessment confirms that potential adverse traffic effects are localised and manageable. With appropriate access design, parking provision, and operational controls through EMPs, ETMPs and CTMPs, any adverse effects can be reduced to an appropriate and acceptable level for a rural connector environment. Any longer-term upgrades required at already-constrained strategic intersections are appropriately addressed through wider network planning by road controlling authorities rather than as mitigation for the development.

The proposal is generally consistent with relevant national, regional and district transport policies, supports strategic corridor protection, and aligns with the objectives of the Fast-track Approvals Act. In transport terms, the consolidation of activities reduces inter-site travel demands and supports climate change mitigation outcomes.

Overall, the ITA concludes that the surrounding transport network can accommodate the proposed development, and that any adverse traffic effects are either not significant, pre-existing in nature, or can be appropriately mitigated. On this basis, traffic and transport effects do not preclude the proposal from proceeding through the Fast-track approval process, subject to the implementation of the identified access, design and management measures.

2 INTRODUCTION

Waikato Thoroughbred Racing (WTR) has engaged BCD Group to assess the traffic and transportation aspects of the proposed development plan for an equine and racing industry hub at 636 Pencarrow Road in Tamahere. A fast-track resource consent referral application is being sought to progress the development of the site, which is largely a greenfield site. The latest site masterplan is attached in Appendix A.

The subject site is within the jurisdiction of Waikato District Council (WDC). The land is currently categorised as *GRUZ – General Rural Zone* under the Waikato District Plan – Operative in Part (WDP-OIP) and *Rural (Waikato)* under the Operative District Plan – Waikato and Franklin Section (ODP).

The concept masterplan layout envisages development of the land for an equine and racing industry hub, with frontages to local roads on the east, west and south sides, and Waikato Expressway (SH1) on the north side. Access provisions are proposed off the surrounding local roads, including main access off Hooker Road, and secondary accesses off Pencarrow Road and Duncan Road for use by trainers and site personnel.

This Integrated Transport Assessment (ITA) has been progressed with due regard to the transport provisions of the WDP-OIP/ODP and other relevant industry standards.

2.1 Project Description

The purpose of the Project is to create a unique, world class greenfield racing hub designed for horse training, racing and other equine related activities, while bringing the expertise and strength of the local racing fraternity together in a centralised location.

This enables the local racing industry to be more streamlined, competitive, sustainable and future focused while bringing potential international investment and creating a 'destination' for horse racing in New Zealand, also increasing tourism opportunities for the wider region.

A key driver behind the proposed greenfield equine hub and racecourses is enabling the consolidation of four separate racecourse facilities (Te Rapa, Waipa and Cambridge thoroughbred courses, and the Cambridge harness track).

These facilities duplicate assets and resources and, given their current condition require significant levels of upgrades and investment to provide fit-for-purpose facilities that meet the higher standards of the modern-day racecourse experience. The retirement of these areas also frees up significant tracts of land within existing urban areas for future development, increasing housing supply.

To support the development's financial viability and enhance the site's long-term vibrancy as a racing, entertainment, commercial and community precinct, the proposal includes a range of complementary activities on the remaining land. These include equine support services, rural residential housing, a retirement living community, a village centre and a bloodstock sales precinct.

2.2 Scope

This following report aims to address all relevant traffic and transportation matters pertaining to the concept masterplan, with an emphasis to guide the planning application and consenting for site works. This includes:

- Review of the existing site and surrounding road network, including function, traffic volumes and safety
- Description of the proposed development, including access, on-site facilities and event information
- Predicted traffic generation, traffic distribution and effects on the surrounding road network including traffic modelling
- Proposed access strategy and vehicle entranceways
- On-site car parking and loading
- Event traffic management
- Construction traffic effects
- Other considerations, including signage and lighting
- Conclusions and recommendations.

These and other relevant matters are addressed in the following detail of this report, which follows the approach and guidelines of NZTA Research Report 422: Integrated Transport Assessment Guidelines, November 2010. Given the scale and high trip generation characteristics of the development, the ITA has been prepared as a "broad assessment" to provide a robust and comprehensive assessment of traffic and transportation effects.

2.3 Relevant Information

In developing this ITA report, the following sources of information have been used:

- Traffic count and road geometry information from Mobile Roads (mobileroad.org)
- Road network information from NZTA MegaMaps 2024 Edition
- Crash data from NZTA Crash Analysis System (CAS)
- Site observations and traffic counts undertaken between 26 November to 13 December 2025 at the following locations:
 - Subject site and nearby roads/intersections
 - Existing Cambridge site
 - Existing Te Rapa site

2.4 Consultation

Meetings were held with NZTA and WDC on the 15th and 18th of December 2025. Following up meetings were also held with NZTA, WDC and Waipa District Council in January and February 2026.

3 TRANSPORT ENVIRONMENT

3.1 Site Locale

The subject site is zoned *Rural* and sits within the jurisdiction of Waikato DC. It is irregular in shape and covers a total developable land area of approximately 164 hectares.

The site is bounded by rural road corridors along its western, southern and eastern frontages to Pencarrow Road, Hooker Road and Duncan Road, respectively. On the north side, it adjoins Waikato Expressway – State Highway 1 (SH1) which is a limited access road with designation NZTA-1 and NZTA-10.

There is also a Waikato Regional Airport Ltd (WRAL-1) designation envelope associated with Hamilton Airport across the western half of the site.

Figure 1 shows the location of the site in relation to surrounding area.

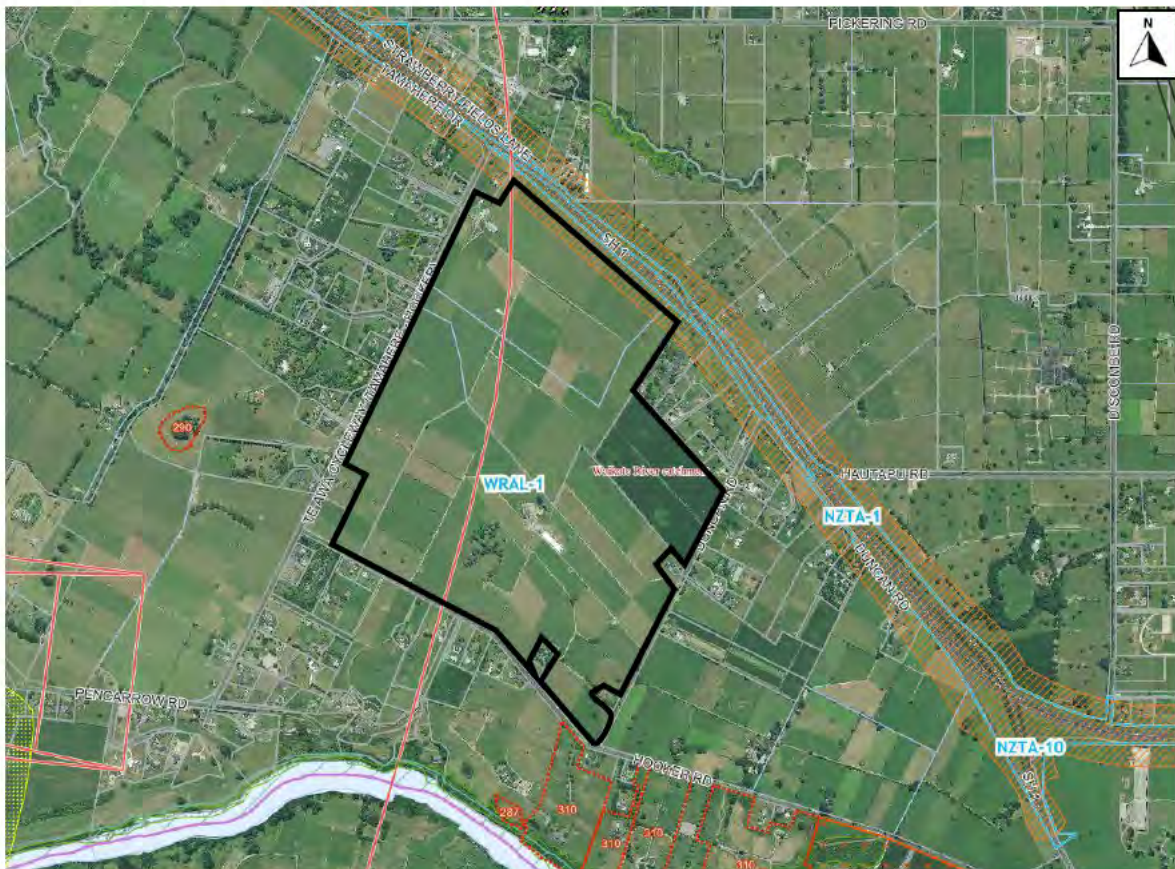


Figure 1: Site aerial (Source: Waikato District Council Intramaps)

In relation to key nearby urban centres and transport hubs, the site is located approximately:

- 10.5km southeast of Hamilton City's urban limit (about 10min drive via SH1C and Tamahere Drive)
- 5.6km southeast of Tamahere Village (about 5min drive via Tamahere Road)
- 9.2km east of Hamilton Airport (about 10min drive via Airport Road and Pencarrow Road)
- 8.5km northwest of the Cambridge township (about 10min drive via Cambridge Road and Hooker Road).

Figure 2 shows the location of the site in the wider regional context.

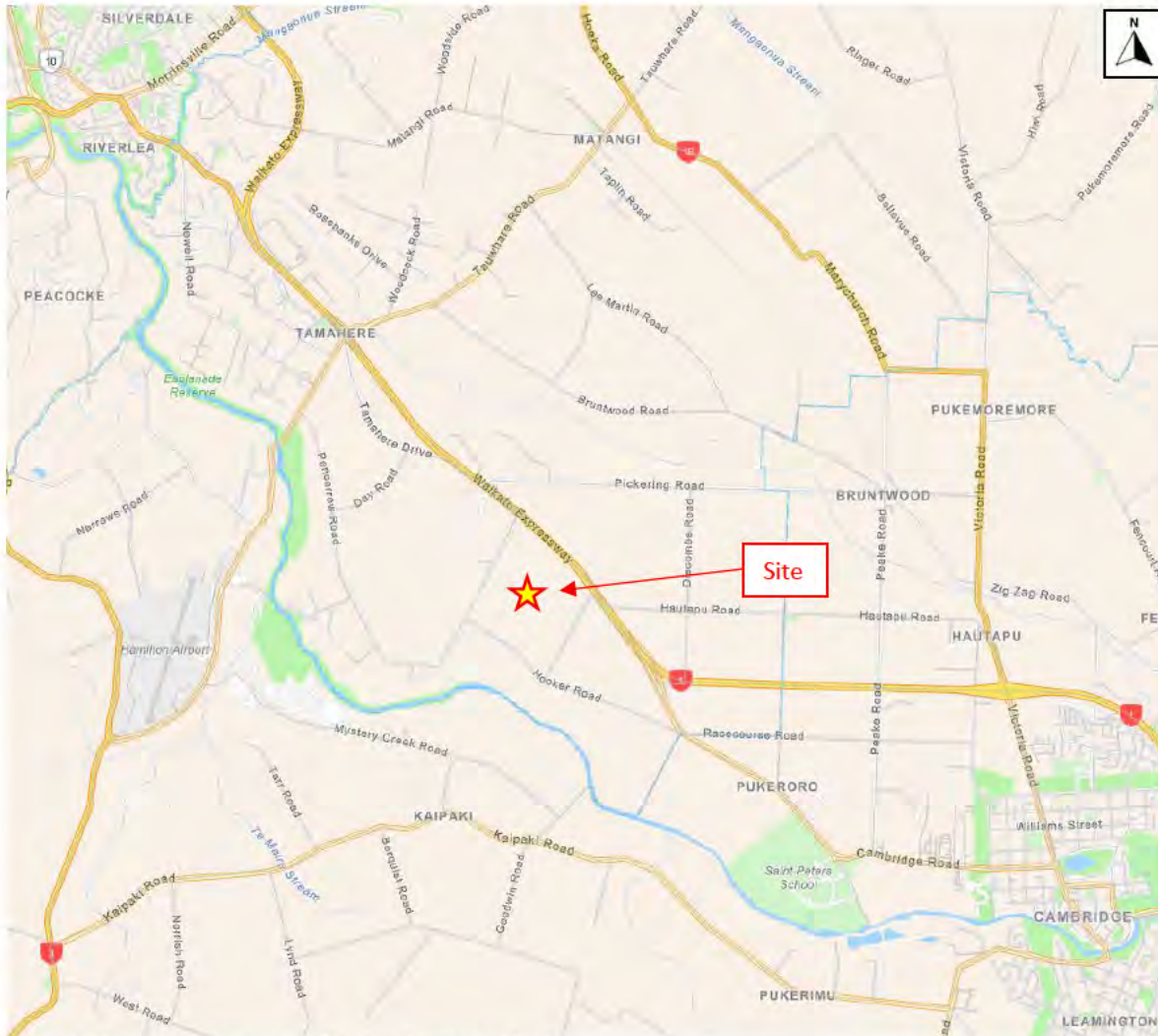


Figure 2: Site locality (Source: NZ Navigation Vector Map)

3.2 Road Network

Key characteristics of the surrounding roads and intersections of interest are summarised in the following subsections.

3.2.1 Pencarrow Road

Pencarrow Road fronts the western boundary of the site. The site frontage extends approximately 1.1km north-south along the road, between Tamahere Drive and Hooker Road. The road provides connection from Tamahere Drive on its northern extent to Hooker Road on its southern extent and to Airport Road on its western extent, extending a total length of 6.5km. The Te Awa cycleway runs adjacent the site frontage on the eastern side of the road.

Key characteristics include:

- Local road (rural connector) classification
- 20m wide legal road corridor
- 6.7m wide sealed carriageway with two 3.3m wide lanes
- 3.0m wide shared path (Te Awa River Ride) running along site frontage
- Longitudinal crests and sags
- Straight alignment in north-south direction
- 100km/h speed limit with a mean operating speed of 69km/h



Figure 3: Pencarrow Road – viewed north from the intersection of Hooker Road (Source: Google Street View March 2025)



Figure 4: Pencarrow Road – viewed south from the north end of the site (Source: Google Street View March 2025)

3.2.2 Hooker Road

Hooker Road fronts the southern boundary of the site. The site frontage extends approximately 1.2km east-west along the road, between Pencarrow Road and Duncan Road. The road links between Pencarrow Road at its west end and Cambridge Road at its east end, extending a total length of 3.2km. The Te Awa cycleway runs adjacent the site frontage on the northern side of the road.

Key characteristics include:

- Local road (rural connector) classification
- 20m wide legal road corridor
- 6.0m wide sealed carriageway with two 3.0m wide lanes
- 3.0m wide shared path (Te Awa River Ride) running along site frontage
- Relatively flat and level longitudinal profile
- Couple of bends on the east side towards Duncan Road
- 100km/h speed limit with a mean operating speed of 70km/h
- Forms STOP controlled T-junction with Pencarrow Road at west end



Figure 5: Hooker Road – viewed west of site towards Pencarrow Road (Source: Google Street View March 2025)



Figure 6: Hooker Road – viewed west from the intersection of Duncan Road (Source: Google Street View March 2025)

3.2.3 Duncan Road

Duncan Road fronts the eastern boundary of the site. The site frontage extends approximately 600m north-south along its southern extent. The road extends 1.8km in total length and functions primarily as an access route for rural properties.

Key characteristics include:

- Local road (rural road) classification
- 20m wide legal road corridor
- 6.8m wide (two-way) sealed carriageway
- Undulating longitudinal profile
- Generally straight alignment
- 100km/h speed limit with a mean operating speed of 60km/h
- Forms a STOP controlled T-junction with Hooker Road at south end no-exit at its north end
- Cycleway crossing at Hooker Road junction



Figure 7: Duncan Road - viewed south of the site towards Hooker Road (Source: Google Street View March 2025)



Figure 8: Duncan Road - viewed north of the site (Source: Google Street View March 2025)

3.3 Traffic Data

3.3.1 Road Volumes

The most recent Average Daily Traffic (ADT) counts for the roads surrounding the site are provided below in Table 1. These have been sourced from the MobileRoads database (est. 04/11/2025).

Table 1: ADT Counts

Road	Section	ADT (veh/day)	%Heavy
Pencarrow Road	Tamahere Drive – Summerfield Lane	558	5%
	Summerfield Lane – Hooker Road	453	
	Hooker Road – Te Awa Road	768	
	Te Awa Road – Day Road	985	
	Day Road – Airport Road	1,625	
Hooker Road	Pencarrow – Duncan Road	857	9.2%
	Duncan Road – Cambridge Road	707	
Duncan Road	Hooker Road – End	172	9.2%
Tamahere Drive	Pencarrow Road – Pickering Road	692	5%
	Pickering Road – Day Road	1,795	6.5%
	Day Road – Tamahere Interchange	2,898	8%

As indicated above, existing traffic volumes on Pencarrow Road and Hooker Road range between 453 – 1,625 vpd vehicles per day (vpd), whilst traffic flows on Duncan Road are very low at an estimated 172 vpd. Such volumes are not large and reflect the local road functions of these routes under the WDC roading hierarchy.

3.3.2 Intersection Volumes

Peak hour traffic count surveys have been carried out to obtain turning volumes at the following key intersections surrounding the site and in the wider vicinity linking to the strategic network:

- Pencarrow Road / Hooker Road
- Hooker Road / Duncan Road
- Tamahere Drive / Pickering Road
- Tamahere Drive / SH1 Interchange
- Airport Road / Pencarrow Road
- Hooker Road / Cambridge Road / Racecourse Road

Figure 9 shows the proximity of these intersections in relation to the site.

Traffic count surveys were conducted in the week of 24th – 28th November 2025 and 16th – 17th February 2026, between during the PM peak hours from 4pm – 6pm. Am peak counts have been omitted on the basis that major WTR activities (events and race days) would operate from late morning to evening (10am – 5pm) and would not coincide with the earlier AM commuter peak. There would also be associated training facilities and daytime (9am – 5pm) commercial activities operating at the site.

Counts were taken for all movements across 15-minute intervals. The data has been tabulated and provided in Appendix B. Figures 10 to 15 below illustrate the traffic survey results in vehicles per hour (vph) for each of the key intersections during the PM peak.

This data has been used as a basis for carrying out preliminary (high level) intersection analysis in Section 5.2 of this report.

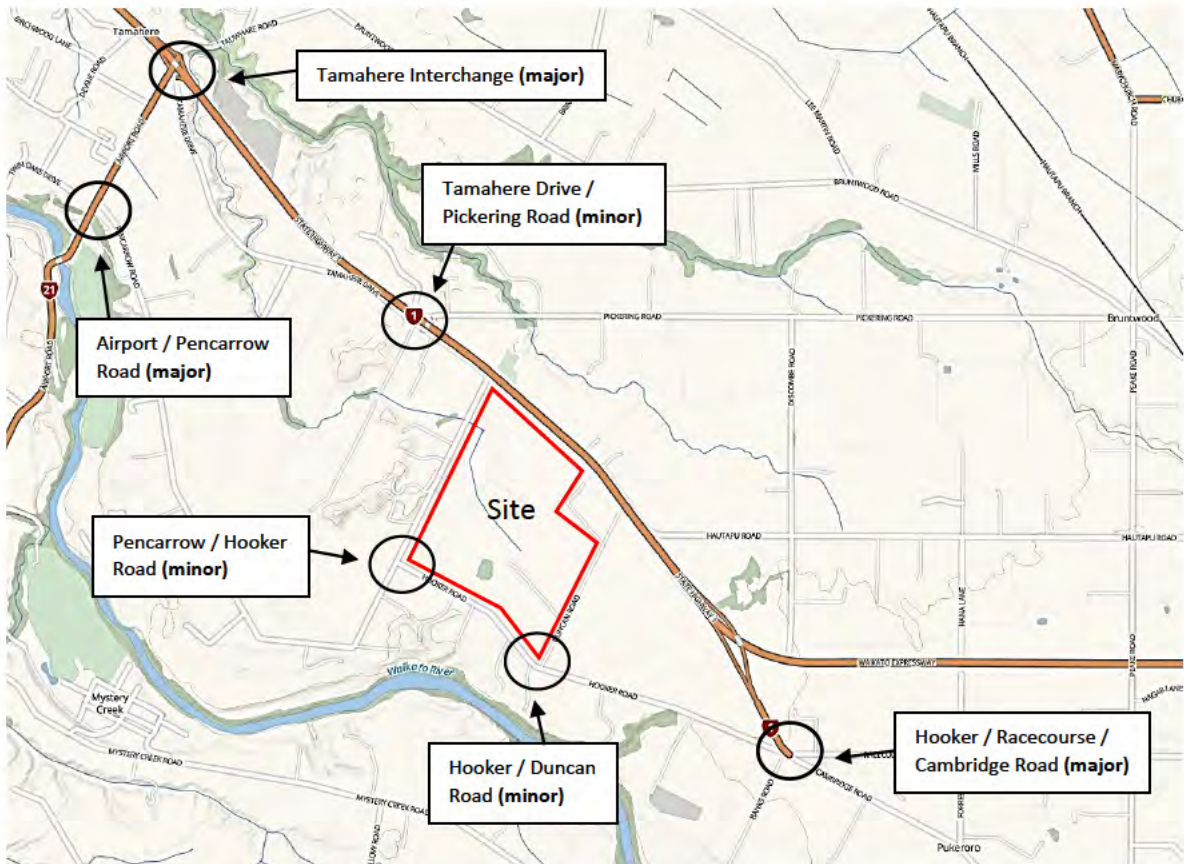


Figure 9: Key intersections surrounding site



Figure 10: Pencarrow Road / Hooker Road intersection – PM peak volumes (vph)

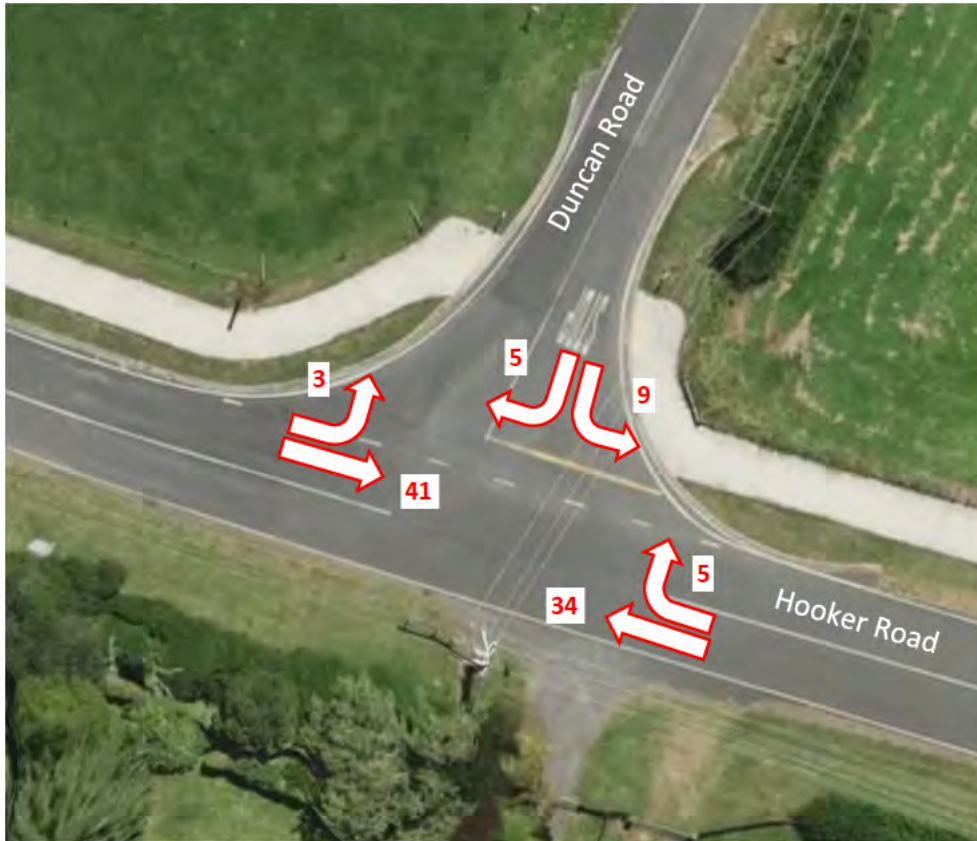


Figure 11: Hooker Road / Duncan Road intersection – PM peak volumes (vph)

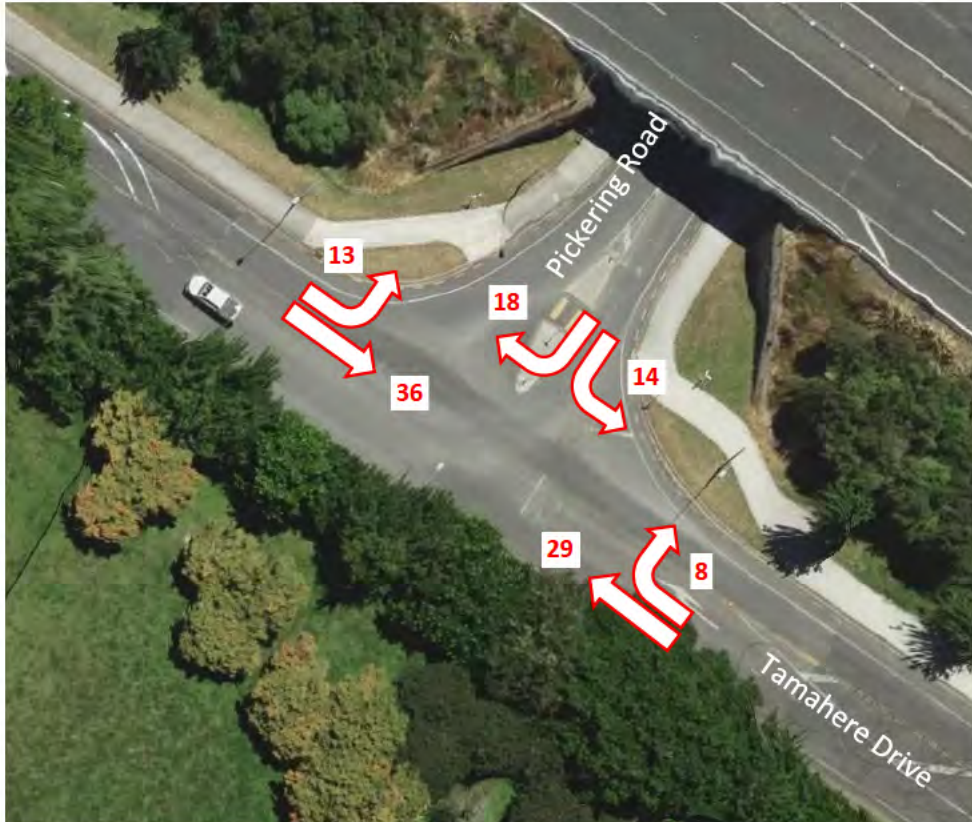


Figure 12: Tamahere Drive / Pickering Road – PM peak volumes (vph)

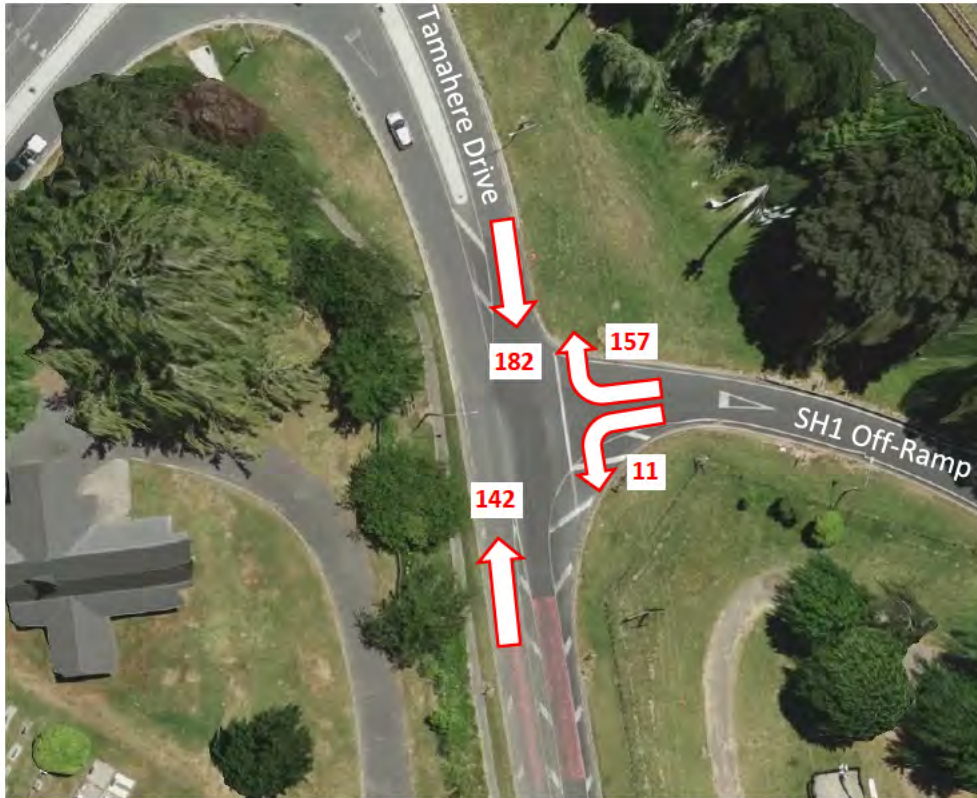


Figure 13: Tamahere Drive / SH1 Off-Ramp – PM peak volumes (vph)

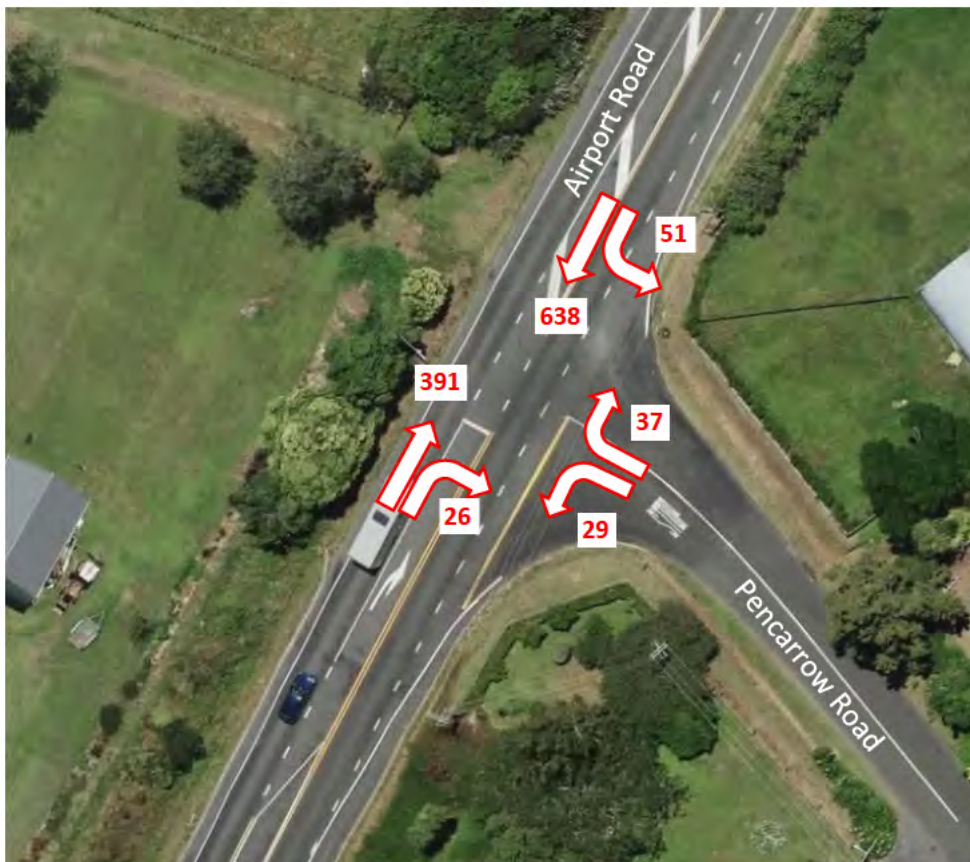


Figure 14: Airport Road / Pencarrow Road – PM peak volumes (vph)

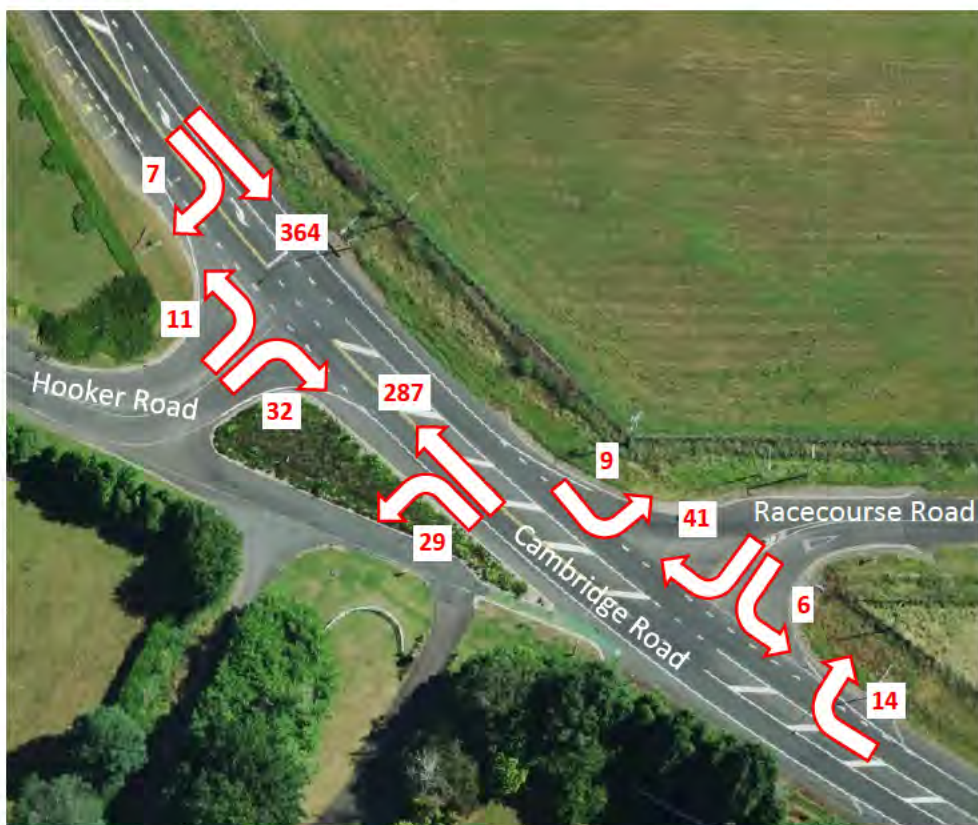


Figure 15: Hooker Road / Racecourse Road / Cambridge Road – PM peak volumes (vph)

3.4 Road Standards

3.4.1 Regional Infrastructure Technical Specification – October 2025 (RITS V2)

RITS V2 (D3.1) requirements for rural road environments are provided in Figure 2. These standards are based on the One Network Road Classification (ONRC).

Table 2: RITS V2 D3.1 – Rural Road Widths

ONRC - Access (low volume) to Arterial Roads - Rural Roads								
Road Classification (ONRC Rating)	Suggested Classification / Adjacent Land Use	Daily Traffic (AADT)	Speed Environment	Minimum Required Total seal width (m)	Lane Width (m)	Sealed Shoulder (m)	Unsealed Shoulder (m)	Minimum Corridor width (m)
RURAL								
Access Low Volume No Exit <50 AADT	Access Low Volume No Exit Rural / Semi-Rural Residential	<50 AADT	50 kph	3.5	1 x 3.5		1.5	15.0
Access Low Volume <50 AADT	Access Low Volume - Rural / Semi-Rural	>50 AADT	50 kph	5.0	2 x 2.5			20.0
Access 50 AADT - 200 AADT	Access	>50 AADT	50 kph	6.0	2 x 2.5	0.5		20.0
Secondary Collector 200 AADT - 1000 AADT	Secondary Collector	>200 AADT	80 kph	7.5	2 x 3.25	0.5	0.5	20.0
Primary Collector 1000 AADT - 3000 AADT	Primary Collector	>1000 AADT	100 kph	8.5	2 x 3.5	0.75	1.5	20.0
Arterial 3000 AADT - 10000 AADT	Arterial	>3000 AADT	100 kph	10.0	Specific Design	Specific Design		Specific Design
NOTE: INDICATIVE AADT for guidance to ONRC classification	Rural Roads typically service more than one adjoining activity	NOTE: 1 dwelling equals 10 AADT						

Pencarrow and Hooker Road both function as secondary collector routes under the ONRC with an estimated AADT count of between 200 – 1,000 vpd. Both roads require a minimum total seal width of 7.5m inclusive of 2 x 3.25m wide lanes with 0.5m wide sealed shoulders on each side. The speed environment is required at 80km/h.

Duncan Road functions as an access route with an estimated AADT count of less than 200 vpd. The road requires a minimum seal width of 6.0m comprising of 2 x 2.5m wide lanes and 0.5m wide sealed shoulders on each side. The speed environment is required at 50km/h.

3.4.2 Waikato District Plan – Operative in Part (WDP-OIP)

WDP-OIP (TRPT – Table 13) requirements for roads in the GRUZ – General Rural Zone and RLZ – Rural Lifestyle Zone are provided in Table 3. Pencarrow Road, Hooker Road and Duncan Road are all classified as local roads under the district road hierarchy. In a rural environment, local roads are required to be formed with a minimum trafficable and seal width of 6.0m.

Table 3: WDP-OIP Table 13 – Access and Road Standards (GRUZ – General Rural Zone and RLZ – Rural Lifestyle Zone)

Road Type	General				Seal Width				Berms		General	
	Number of Allotments or Activities	Design Speed (km/h)	Design Vehicle (RTS 18 Vehicle)	*Minimum Road/ROW Reserve Width (m)	Minimum Trafficable Carriageway (m)	Minimum Median Provision (m)	Parking Provision	Minimum Total Seal Width (m) <small>Does not include concrete kerb width</small>	Minimum Services (m)	Minimum Footpath / Shared path (m)	Kerb and Channel / Water-table	Turning areas for no exit roads (RTS 18 Vehicle)
GRUZ - General rural zone and RLZ - Rural lifestyle zone												
Access leg to an allotment	1	N/A	8m Rigid	6	N/A							
Private access, including RCWs and access allotments	2 to 4	N/A		6	3	N/A	N/A	3**	Subject to specific design that has been certified	N/A	Optional	Subject to specific design that has been certified
Access allotments	5 to 8	N/A		10	5			5**				Yes
Local	>8	Subject to specific design	Subject to specific design that has been certified	20	6	No		6		Subject to specific design that has been certified	RLZ - Rural lifestyle zone - ribs along seal edge.	8m Rigid
Collector <1000 adt	>100		19m Semi	20	7	Subject to specific design that has been certified		8.5		Subject to specific design that has been certified	All others to specific design that has been certified.	
Collector >1000 adt or Arterial	N/A	110		20	7			10				N/A

3.4.3 Existing Road Network

Table 4 summarises the adequacy of the existing road network against the requirements of the district and regional standards.

In terms of width and formation, Pencarrow Road and Hooker Road meet requirements for a local road under the WDP-OIP but not as a secondary collector under RITS, while Duncan Road meets rural local/access road requirements under both standards.

The present speed environment is 100km/h on all roads, higher than the RITS guidelines of 80km/h for a secondary collector and 50km/h for an access road.

Table 4: Road standard summary

Road	RITS V2	WDP-OIP
Pencarrow Road	Substandard: does not meet secondary collector standard	Compliant: Meets local road standard
Hooker Road	Substandard: does not meet secondary collector standard	Compliant: Meets local road standard
Duncan Road	Compliant: meets access road standard	Compliant: Meets local road standard

3.5 Active Mode Network

3.5.1 Te Awa River Ride

Pencarrow Road and Hooker Road form part of the Te Awa River Ride (Te Awa Cycleway) with a 3.0m wide off-road shared path running along the western and southern frontages to the site. The facility extends a total of 65km between Ngāruawāhia, Hamilton, Tamahere and Cambridge and provides a dedicated route for foot and bike travel through the region. While the surrounding area is rural in nature with limited path user infrastructure, this facility enables a good level of urban-rural walking and cycling connectivity to the site.



Figure 16: Te Awa River Ride Map – Tamahere Village to Hooker Road

Walking and cycling travel distances and times for key locations along the route are provided in Figure 17, and roughly noted below in relation to the site:

- 5km to Tamahere Village (about 20min bike, 1hr walk)
- 11km to Cambridge (about 45min bike, 2hr 10min walk)
- 15km to Hamilton City (about 1hr bike, 3hr walk)

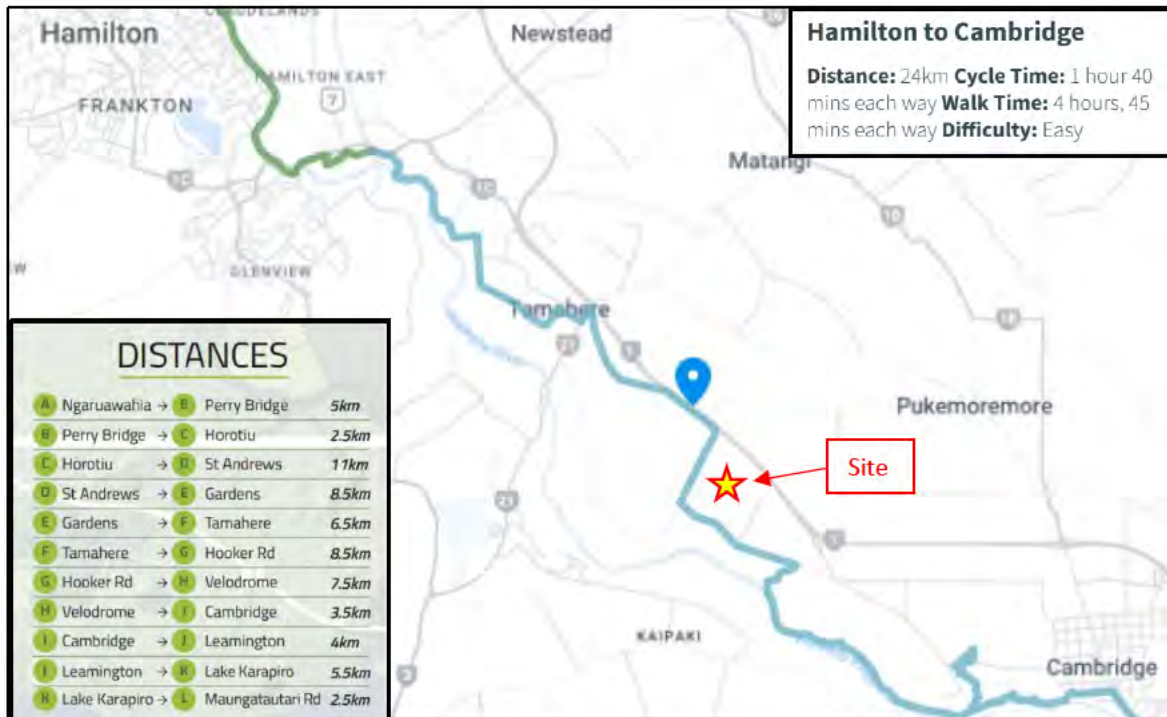


Figure 17: Te Awa River Ride Map – Hamilton to Cambridge

3.5.2 Public Transport

There is limited access to public transport services with the location being rural. There is an existing route 20 bus service that runs between Hamilton and Cambridge with the nearest bus stops being located approximately 2km southeast of the site on Cambridge Road.



Figure 18: Bus Service on Cambridge Road

Bus stops are also located about 3-4km northwest of the site at Tamahere Village servicing the following regional routes to/from Hamilton:

- '20' Cambridge
- '24' Te Awamutu
- '28' Tamahere/Mātangi
- '32' Tokoroa Connector

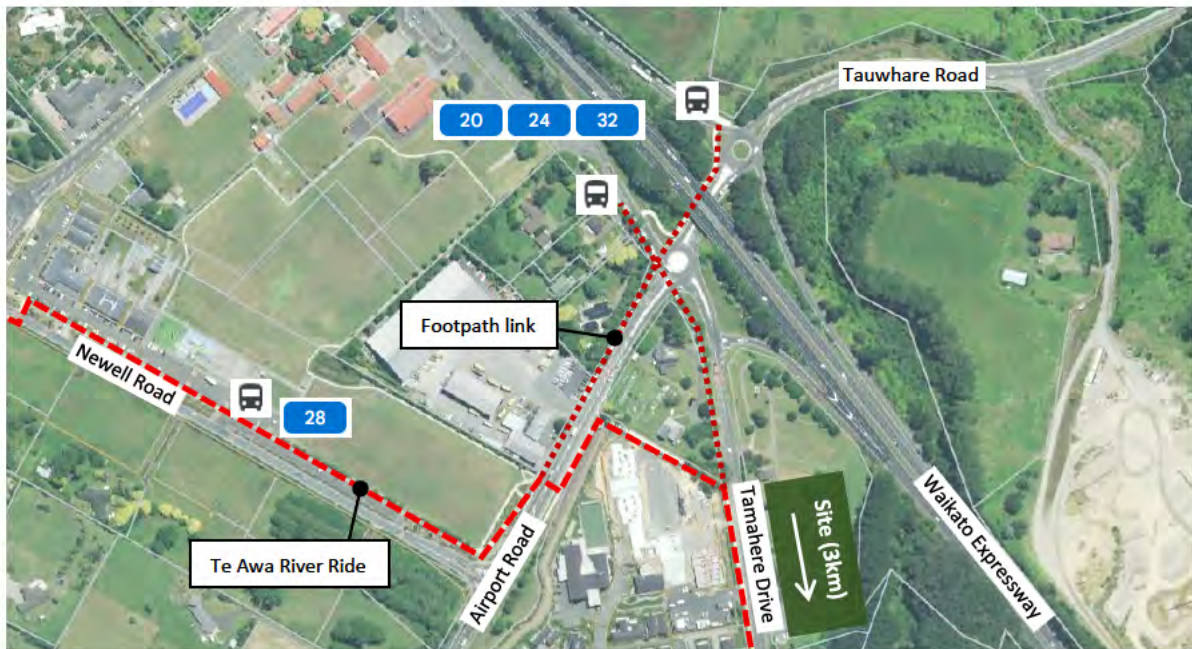


Figure 19: Bus Services at Tamahere

3.6 Road Safety

3.6.1 Crash Record

A search of the Crash Analysis System (CAS) has been undertaken to review crashes in the area over the last five-year period 2021-2026 (to-date). The extent included the surrounding local roads as well as several major intersections in the wider locality including the intersections of Hooker Road / Cambridge Road / Racecourse Road, Airport Road / Pencarrow Road and the Tamahere Interchange. Figure 20 illustrates the area-wide crash plot, with detailed crash data provided in Appendix C.

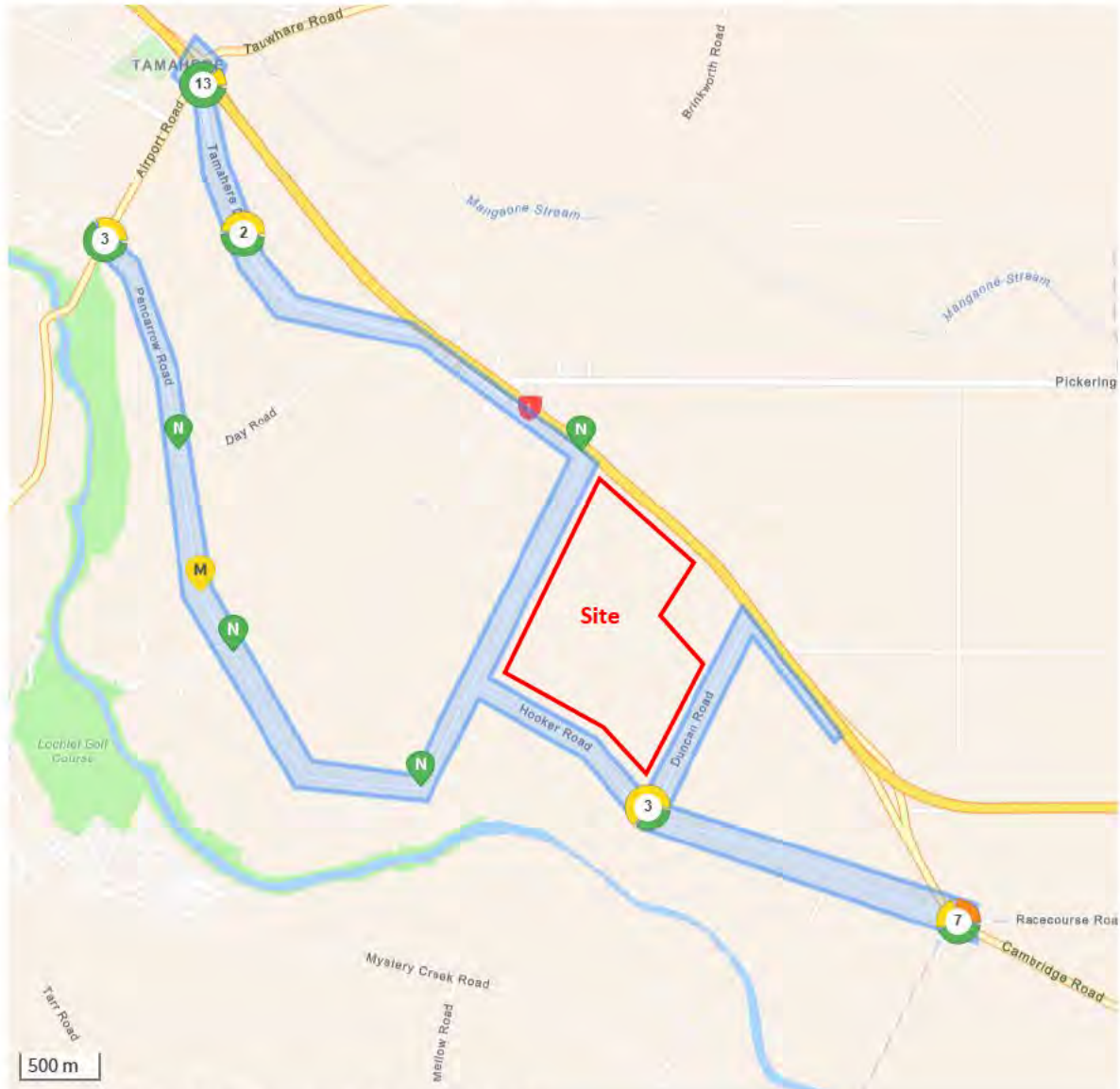


Figure 20: CAS Crash Plot (Tamahere to Cambridge Road)

A total of 33 crashes occurred within the study area over the five-year window, including 2 serious injury crashes, 9 minor injury crashes, and 22 non-injury crashes. The majority occurred in proximity to intersections, reflecting the rural arterial and rural residential interface character of the network. The dominant crash types included crossing/turning movements (~36% of all crashes), followed by lost control and head-on, as well as rear-end crashes at the high-volume interchange roundabout and merge locations. The most common recorded factors included failing to give way/stop, poor handling/judgement/observation, high speed, and alcohol, particularly in night-time or wet loss-of-control incidents. The patterns suggest decision-making at intersections as the key contributing factor.

A summary of the crashes at key intersections linking to the wider strategic network is provided in Table 5 below. Across all intersections, priority-controlled movements and turning across opposing traffic were the prevailing patterns.

Table 5: Major Intersection Summary 2021 – 2026 (to-date)

Intersection (Within 100m)	Total	Serious	Minor	Non-Injury	Dominant Crash Pattern
Tamahere Interchange	10	0	2	8	Crossing/turning & rear-end
Pencarrow / Airport Road	3	0	1	2	Right turn conflict (STOP-controlled T-junction)
Hooker / Cambridge / Racecourse Road	7	2	2	3	Crossing/turning at priority control

There were 4 crashes reported on the local road network immediately surrounding the site, including 2 minor and 2 non-injury crashes. All of these related to loss-of-control, with most occurring in proximity to the Hooker Road / Duncan Road intersection and one at the bend connecting Pencarrow Road to Tamahere Drive. No crashes were reported at the Hooker Road / Pencarrow Road intersection.

Only 2 serious-injury crashes occurred in the study area, one in 2025 and one recently in 2026. Both occurred at the intersection of Cambridge Road / Hooker Road and involved right-turn-out (T-bone) collisions between a motorist existing Hooker Road and a vehicle travelling westbound on Cambridge Road. The 2025 crash involved a cyclist exiting Hooker Road who failed to identify an oncoming vehicle and moved into the path of an SUV travelling at 80 km/h, resulting in severe injury to the cyclist. The 2026 crash is still under investigation but involved a vehicle exiting Hooker Road and colliding with an oncoming vehicle at high speed. While details of the crash are not available at the time of writing this report, the main cause appears to be driver related.

3.6.2 Risk Index

Road safety metrics have been sourced from NZTA's MegaMaps 2024 Edition. The two types of risk metrics are summarised as follows:

- Collective risk is a measure of the total estimated death and serious injury (DSi) casualty equivalents for a site. It is effectively a measure of the number of deaths and serious injuries that can be expected at a site over the next analysis period (typically five years). At a corridor level, Collective Risk is the total estimated DSi casualty equivalents derived from the intersection and midblock components divided by the length of the corridor. It is expressed as estimated DSi / km.
- Personal risk is a measure of the risk of an individual dying or being seriously injured at a site. It is calculated by dividing Collective Risk by a measure of traffic volume exposure.

The risk ratings indicate if there are any underlying safety issues along a corridor. The collective and personal risk rating for the surrounding roads is shown in Figures 21 and 22.

As seen in both metrics, the network surrounding the site has relatively low risk ratings, except for Hooker Road which has a medium high personal risk rating. However, given the low rate and severity of crashes, there does not appear to be any underlying safety issues on this road or its adjoining intersections, in proximity to the site.



Figure 21: Collective Risk Index



Figure 22: Personal Risk Index

3.6.3 Summary

Overall, the existing transport network appears to generally operate acceptably, and the crash history and crash risk scores do not indicate any underlying safety issues in the site's vicinity. The crash patterns observed at the major intersections are considered typical of high volume and/or high-speed rural locations.

4 FUTURE NETWORK CONSIDERATIONS

4.1 Southern Links

The Southern links project includes future road network changes to the northwest of the site, involving new road corridors linking the Waikato Expressway (SH1) at Tamahere and western Hamilton. This includes a new interchange on SH1 Waikato Expressway between the Pickering Road Overbridge and Tamahere Interchange, with the road heading west forming a flyover across Tamahere Road, about 2km northwest of the site.

Based on early discussions with NZTA, it is understood that the project is yet to receive funding (uncommitted) and would be staged in 4 parts with the eastern connection between SH21 and SH1 forming part of Stage 2.

Details of the project in relation to the site are shown in the figures below.

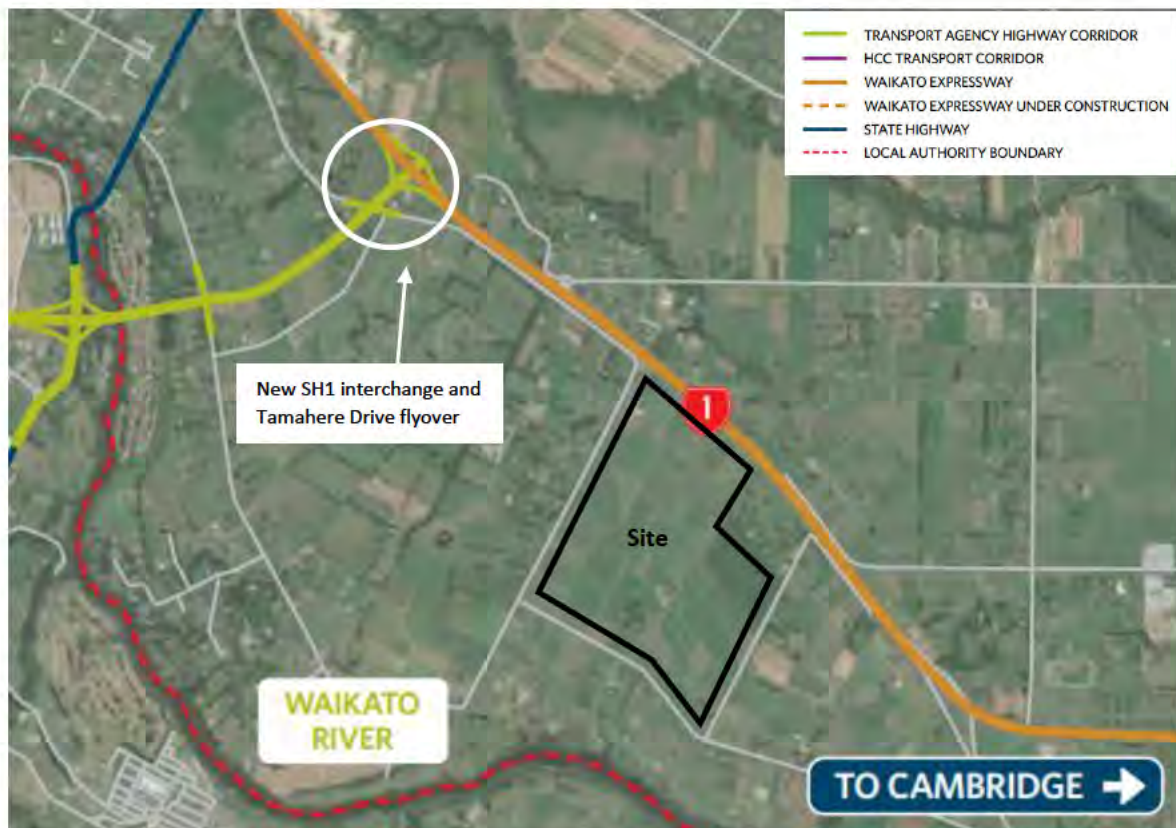


Figure 23: Southern Links Map – SH1 to SH21 section

NZTA have also indicated that the connection to Tamahere Drive is currently being progressed as a flyover with on/off ramps to Tamahere Drive, as opposed to the previous designation map which shows a roundabout layout (Figure 24).

Details around route changes could be factored into the wider network assessment once available. However, given the limited details and uncertainties around the Southern Links connection, potential future network changes have been omitted from this assessment at this stage.

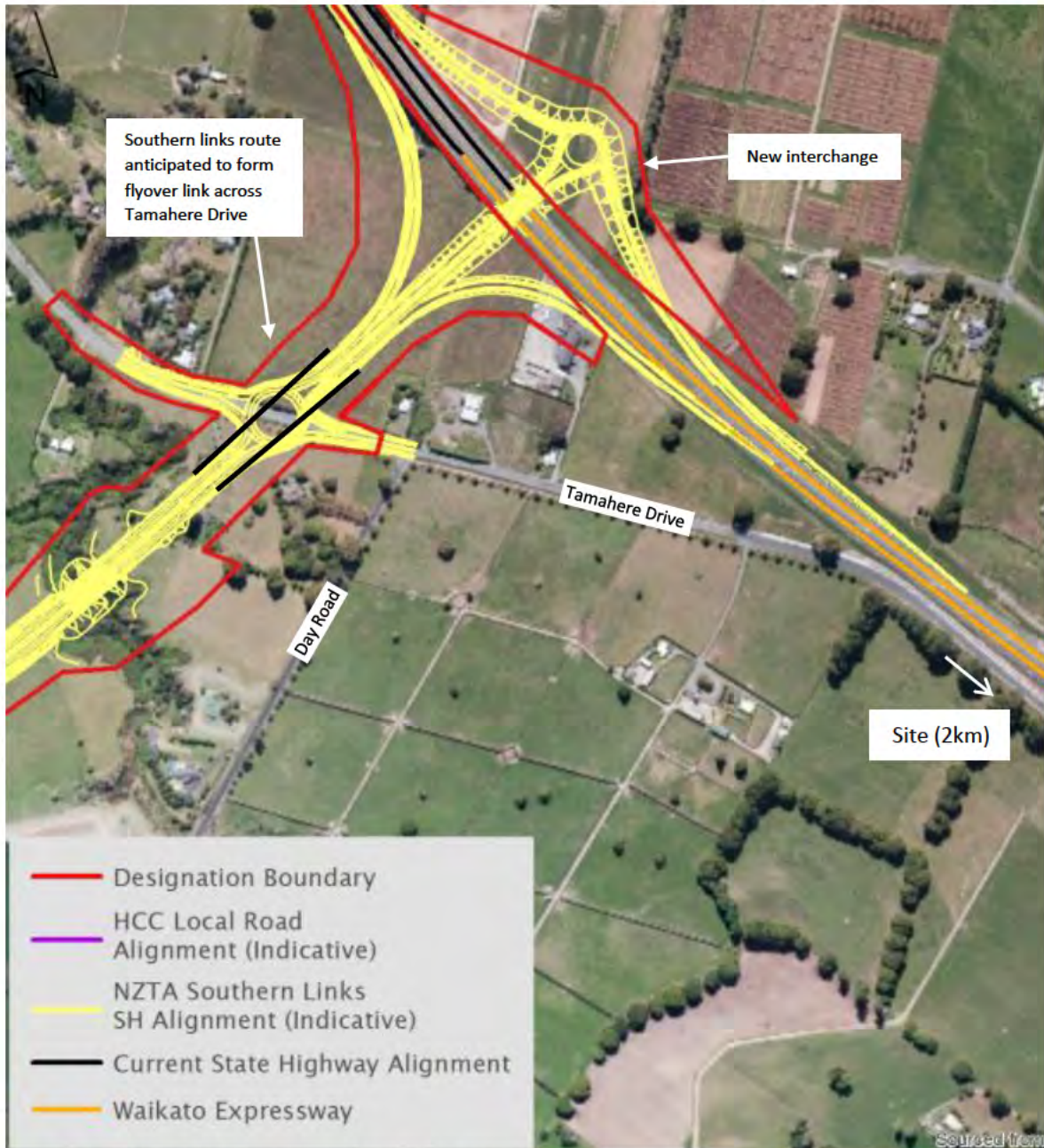


Figure 24: Southern Links Designation – New interchange at SH1 and Tamahere Road connection

5 PROPOSED DEVELOPMENT

5.1 Proposed Masterplan

5.1.1 Site Facilities

This masterplan concept layouts, shown in Figure 25 to 27, illustrate the proposed development of the site to an equine and racing industry hub with associated facilities as follows:

- Racing and training facility
- Equestrian use
- Harness Racing
- Race day industry functions and events (currently only able to host up to 15 race meets annually)
- Commercial developments
- Community sports precinct (based on indoor and outdoor racing facilities as compared with specific all-purpose events centre)
- Trainers' allotments – barns, yards, accommodation (16 students plus unit for “house parents”)
- Industry Training business – barns, yards, accommodation (16 students plus unit for “house parents”)
- Bloodstock shows and sales business – barns, yards, sales pavilion, administration office
- Vet – equine and general services business
- Comprehensive subdivision development – 67 residential lots consisting of 31 lifestyle blocks and 36 senior living or lifestyle blocks



Figure 25: Proposed Masterplan Concept – General Layout



Figure 26: Proposed Masterplan Concept – General Land Uses

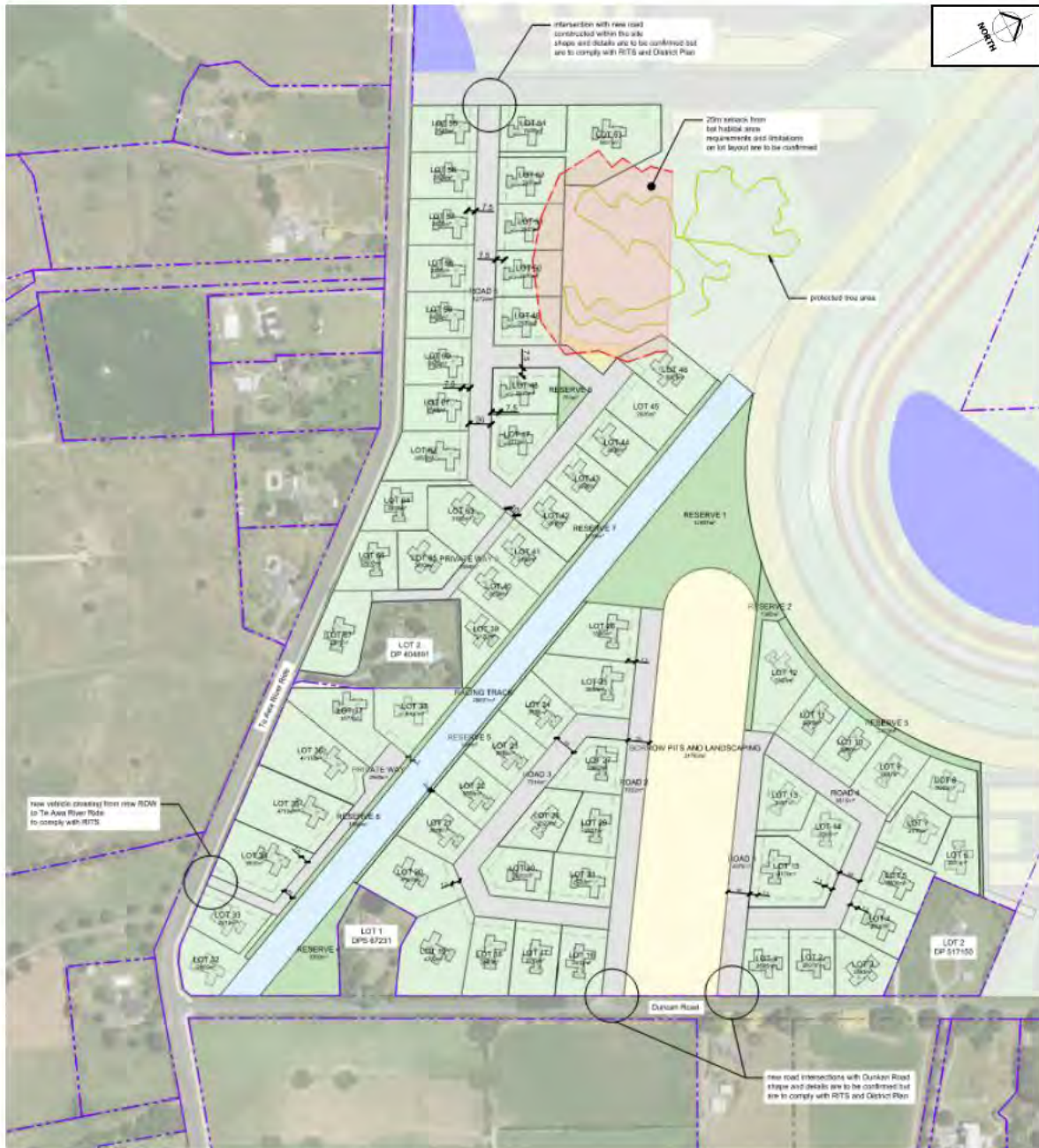


Figure 27: Draft Subdivision Scheme Plan (20/02/2026)

5.1.2 Access

Access is proposed via each of the local road frontages on the south, west and east sides, with internal and external connectivity as follows:

Hooker Road (Southern Frontage):

- **Main access road** to the village Centre and on-site facilities on the south side, including providing access to the western part of the residential subdivision. This will be the public entrance to the site and form a new intersection onto Hooker Road.
- **Private accessway** providing direct access to part of the subdivision development. This is proposed to be formed as a 10m wide (legal) Right of Way (ROW) serving up to 7 residential blocks with a new vehicle crossing onto Hooker Road.

Pencarrow Road (Western Frontage):

- Secondary access road to back-of-track facilities and service areas on the north and west sides. This will function as an alternative entrance (intended for light vehicle use only) and could potentially form a new intersection at the northern end Pencarrow Road.

Duncan Road (Eastern Frontage):

- Trainers entrance road to back-of-track facilities and trainer allotments on the north and east sides. This is intended as a separate entrance for site and racing personal (trainers, workers and staff) and could potentially form a new intersection onto Duncan Road.
- Subdivision access roads providing direct access to the subdivision development on the east side. These are proposed to be formed as two new individual access roads, each serving up to 15 or 16 residential blocks and forming a new intersection onto Duncan Road.

The main, secondary and trainer entrances will be interlinked allowing access to all on-site facilities associated with the racing hub as well as some 29 lifestyle blocks. The other portion of the subdivision (38 lots) will be provided with separate road access provision off Hooker Road and Duncan Road.

At this stage of master planning, the proposed layout is only indicative of internal and external access links. Details around new access roads, privateways, intersections, vehicle crossings and potential road upgrades are subject to future detailed planning and design, in accordance with RITS add/or WDC requirements.

5.1.3 Parking

The masterplan layout (Figure 26) indicates a total site-wide parking capacity of 2,030 vehicles spread across three designated parking areas on the western portion of the site:

- 480 spaces on the south side of the harness track
- 350 spaces on the north side of the harness track
- 1200 spaces on the northwest side of the main track

At this stage of master planning, the proposed layout is only indicative of the on-site carpark locations and capacity. Details around the formation of carparking areas are subject to future detailed planning and design, in accordance with RITS and/or WDC requirements.

5.2 Events & Training

WTR has provided information on past year (2024 – 2025 season) events and attendee numbers for the Te Rapa and Cambridge Racecourse sites, as well as person numbers and information on Harness Racing and training activities. This is attached in Appendix D.

The proposed greenfield site would provide facilities to a similar or larger scale compared to these existing sites, which operate between 10 to 20 events and race days annually. WTR has indicated that the yearly calendar for the greenfield site would combine the events and race days from these two sites, plus add 12 x “trails days”. Each trial day is indicated to have no more than 150 attendees (including staff and spectators). In total, the development is expected to hold up to 83 events and race days on a yearly basis.

In terms of timings, the greenfield site is expected to operate during similar times of the day as the Te Rapa and Cambridge sites. All racing would be during daytime hours. Gates typically open early, but racing tends to start late morning/noon and run to about 5pm. Generally, all site activities would be expected to finish prior to late evening/early night hours.

Training would involve a relatively low number of persons (trainers, jockeys and stable hands) on site and run in the early morning hours between 5am to 11am on weekdays, 5am to 10am on Saturday and 7am to 8am on Sunday. The number of horses and personnel is expected to be similar of slightly greater than the current training activities at the Cambridge facility off Racecourse Road.

5.2.1 Traffic Surveys

Traffic surveys have been carried out at the Cambridge and Te Rapa sites for one training run (Appendix E) and one large event (Appendix F).

Morning Training

Manual traffic surveys (hand counts) were carried out at the Cambridge facility on Tuesday 2 December 2025, during morning training hours between 4am to 11am. The count captured a total of 382 vehicle movements or 191 vehicles generated by the training activity. Based on the training activity holding up to 300 personnel (trainers, jockeys and stable hands), this comes to an average user/vehicle ratio of 1.6 persons per vehicle.

Given the Cambridge facility operates in a similar rural environment about 5-6km east of the development site and the training activity is similar or slightly lesser in numbers than the proposal, a conservative user/vehicle ratio of 1.5 persons per vehicle is considered likely and has been adopted for training activities at the new site.

Raceday

Tube count surveys were also carried out at the Te Rapa Racecourse on Saturday 13 December 2025 to capture traffic movements associated with the largest event in the racing calendar – SkyCity Hamilton Waikato Cup. Raw count data is appended. The total movements (in and out) captured across the race day (24-hour period) came to 3,241 vehicle movements on Sir Tristram Avenue and 2,524 vehicle movements at Ken Brown Drive. The count on Ken Brown Drive also captured vehicle movements to the commercial/industrial activities to the east of the main access. Assuming roughly 10% of the counted movements were associated with activities other than the racing, the total event traffic movements was estimated at 5,200 vehicle movements. Assuming two trips per vehicle (one inbound and one outbound movement), this equates to about 2,600 vehicles generated by the event. Based on this event catering to a total of 6,000 people, this comes to an average user/vehicle ratio of 2.3 event persons per vehicle.

Given the Te Rapa facility operates in an urban environment with good access to alternate transport modes (public transport, walking and cycling), the calculated car share ratio is considered to be at the higher end for such events. Considering the new site's more isolated and rural location with limited access to active travel modes (Te Awa River Ride connection – walking, cycling, micro-mobility path though long distances to bus stops and urban centres), a reduced user/vehicle ratio of 1.7 persons per vehicle is considered likely and has been adopted for events at the new site.

6 TRAFFIC GENERATION

Trip generation for the site activities, including the existing uses and the proposed racecourse development is set out below. This has been determined from a combination of industry standards, traffic surveys at existing sites, as well as information provided by WTR for racing events.

6.1 Existing Land Uses

The site currently holds 5 lots comprising of several dwellings or farm workers dwellings, rural sheds and dairy farming buildings. Vehicle movements associated with these activities are split between multiple accessways off the surrounding road frontages to Pencarrow Road, Hooker Road and Duncan Road.

A summary of the existing traffic volumes generated at the site is provided in Table 6. This is roughly estimated based on aerial imagery and indicative trip rates set out in the district plans (*Waipa District Plan's equivalent vehicle trip generation measure based on activity has been used as a reference for dairy farming activities*):

- *Waikato District Plan Operative in Part – Part2: District wide matters – TRPT – Table 11 – Vehicle movements rates*
- *Waipa District Plan – Volume 2 – Appendix T6 – Integrated Transport Assessment Vehicles per Day Conversion Table*

Table 6: Existing Traffic Generation

Activity	Size	Daily Vehicle Trip Rate	Daily Vehicle Movements
Dairy Farm & sheds	~3,000m ² (GFA)	100 / 1,500m ²	200
Residential	5 dwellings	10 / unit	50
Total Movements (est.)			250 vpd

Based on peak hour movements typically ranging between 10–20% for these activities, the current peak hour trip generation of the site would be estimated to be in the order of 35 vph combined across the site. These movements being split between accesses on the three surrounding frontages.

6.2 Proposed Racing Hub

6.2.1 Racing Days

Whilst visitor numbers to racecourse venues can fluctuate depending on weather conditions and nature of event, information provided by WTR and traffic surveys in relation to events held at the Te Rapa Racecourse (as discussed in Section 4.2) provide an indication of typical activities and numbers. The total number of people and the nature of events expected at the proposed site are summarised as follows (vehicle numbers based on a 1.7 persons/vehicle ratio from Te Rapa site traffic counts):

- Mid-week/weekday races (~66 per year)
 - Horse Racing: 500 to 750 attendees / 300 to 450 vehicles (Wed-Thu – 26/year)
 - Harness Racing: ~350 attendees / 200 vehicles (Thu-Fri – 40/year)
- Mostly weekends/public holidays, some on weekdays (~14 per year)
 - Horse Racing: 1,000 to 2,000 attendees / 600 to 1,200 vehicles (Sat-Sun – 6/year)
 - Harness Racing: ~650 attendees / 400 vehicles (Thu-Fri – 8/year)
- Feature race days on weekend/public holidays only (~3 per year)
 - Horse Racing: 2,500 to 6,000 attendees / 1,500 to 3,500 vehicles (Sat or Sun – 1/year)
 - Harness Racing: ~3,000 attendees / 1,800 vehicles (Fri – 2/year)

Based on an average attendee numbers for the various scheduled race meets, which are expected to occur around 95 times a year, vehicle numbers would be in the order of 200 / 375 vehicles for small harness / horse events, 400 / 900 vehicles for medium harness / horse events, and 1,800 / 2,500 vehicles for large harness / horse events.

The total vehicle numbers include a mixture of staff, competitor and spectators, with the two former groups generally arriving earlier in the day to prepare / setup and then leaving later in the day. During busier events, site personnel or parking marshals are expected to manage vehicle movements at the carparks to ensure traffic flows appropriately to/from the external access points. Spectators for horse racing events are generally expected to arrive between 10am and noon, and between 3 – 5pm for harness races, after staff and competitors, with these arrivals staggered over a period of a 1-2 hours. Horse races would typically finish around 5-6pm, while harness races would finish later into the night at 8:30pm – 9:30pm. Whilst visitor departures are generally less staggered than arrivals, the trend at existing sites appears to indicate that people linger rather than all leaving all at once.

Based on the attendance figures above, the weekday and weekend forecast traffic patterns anticipated to occur on these race days are set out in Tables 7 and 8.

Table 7: Forecast Traffic Generation – Weekday Events

Weekday Events	Inbound Midday Peak (veh/hr) *		Outbound PM Peak (veh/hr) **	
	Horse	Harness	Horse	Harness
Small (40/year harness)	-	100	-	140
Small-Medium (26/year horse, 8/year harness)	188	200	263	280
Medium-Large (2/year harness)	-	900	-	1,260

* Assuming 50% of visitors arrive in the peak hour

** Assuming 70% of visitors depart within the peak hour

Table 8: Forecast Traffic Generation – Weekend Events

Weekend Events	Inbound Midday Peak (veh/hr) *	Outbound PM Peak (veh/hr) **
Medium (6/year horse)	450	630
Large (1/year horse)	1,250	1,750

Noting the visitor arrivals typically occur between 10am – 12pm for a horse race meet and 3pm – 5pm for harness racing, these will not coincide with weekday AM network peak or residential peak at the site. Harness racing will extend well into the night with the races set to finish 8:30pm – 9:30pm, outside the network PM peak. With the last horse races generally completing by 5-6pm, spectator departures are anticipated to overlap with the peak PM commuter peak (4-6pm). Though, given the site's rural locality, this is not likely to be to any significant extent compared urban sites such as Te Rapa. Also, spectator departures would not generally overlap with the PM peak period for residents returning home, noting that these outbound movements would be the reverse of most resident movements (majority inbound).

6.2.2 Training Days

Traffic movements associated with the morning training activity have been calculated based on information provided by WTR and traffic surveys carried out at the Cambridge Racecourse (as discussed in Section 4.2). The total number of people and the nature of training activity is summarised below (vehicle numbers based on a 1.5 persons/vehicle ratio from Cambridge site traffic counts).

- **Horse race training: expected to occur most days in the morning**
 - Most stabled on-site / 30-40 horse floats
 - 300 training personnel (trainers, jockeys, stable hands) / 200 vehicles
 - 4 trucks to support horses (feed trucks, waste trucks)
- **Harness race training: expected to occur most days in the morning**
 - Most stabled on-site / 5 horse floats
 - 90 training personnel (trainers, jockeys, stable hands) / 60 vehicles

Training would typically occur in the morning hours between 5am to 11am on weekdays, 5am to 10am on Saturdays and 7am to 8am on Sundays. Vehicle arrival and departures would be spread out through the morning, with the first vehicles arriving 30 minutes prior to the start and departing 30 minutes after the training session. Based on the spread of traffic movements noted in the Cambridge facility training day counts, some arrivals and departures are anticipated to coincide with the AM network peak (7-9am).

Based on the above, the forecast traffic patterns anticipated to occur on the morning of the training days are set out in Table 9.

Table 9: Forecast Traffic Generation – Morning Training

Training	Inbound Early AM Peak * (veh/hr)	Outbound Mid-Late AM Peak ** (veh/hr)
Horse race training	98	122
Harness race training	26	33
Combined	124	155

Based on Cambridge training count arrivals/departures:

* 40% of personnel arrive in the peak hour

** 50% of personnel depart within the peak hour

On days when both training activities occur, the peak hour traffic movements could be up to 124 vph during the morning period. However, counts at the Cambridge facility indicate most arrivals occur in the very early morning (before 7:30am) and around half the departures occur in the mid-late morning (after 8:30am). The combined training movements during the AM network peak (7-9am) would be estimated at 108 vph (inbound or outbound) based on 35% of personnel arriving or departing the site during this peak.

6.2.3 Residential

Trip generation arising from the proposed residential subdivision blocks has been calculated in Table 10 based on the vehicle trip rates derived from the following sources:

- *Waikato District Plan Operative in Part – Part 2: District wide matters – TRPT – Table 11 – Vehicle movements rates (WDP-OIP)*
- *NZTA Research Report 453 – Trips and Parking Related to Land Use (RR453)*
- *NSW Guide to Transport Impact Assessment (GTIA)*

Table 10: Forecast Traffic Generation – Residential Subdivision

Activity	Size	Peak Hour		Daily	
		Trip Rate	Trips (vph)	Trip Rate	Trips (vpd)
Dwelling houses (rural)	67 lots	1.1 / dwelling	74	8.5 / dwelling	570

The residential movements in the morning peak are anticipated to coincide with the training movements, which are expected to utilise the trainer entrance off Duncan Road. Considering the split of the proposed subdivision lots and associated access points across the southern and eastern frontages, the subdivision would add some 31 vph in the morning peak on Duncan Road. Adding this with the training movements (108 vph) equates to a total traffic volume increase of 139 vph in the morning peak on Duncan Road.

6.2.4 Combined Movements – Race Days

Tables 11 and 12 summarise the combined race day traffic movements arising from the weekday and weekend events and residential uses at the site.

Table 11: Forecast Traffic Generation – Combined Weekday Movements

Activity	AM Peak (Veh/hr)	PM Peak (Veh/hr)	Daily (Veh/day) *
Small Event (40/year) + Residential	74	214	970
Small-Medium Event (34/year) + Residential	74	354	1,370
Medium-Large Event (2/year) + Residential	74	1,334	4,170

* Based on 2 movements per vehicle (inbound and outbound)

Table 12: Forecast Traffic Generation – Combined Weekend Movements

Activity	AM Peak (Veh/hr) **	PM Peak (Veh/hr) *	Daily (Veh/day) *
Medium Event (6/year) + Residential	54	684	2,370
Large Event (1/year) + Residential	54	1,804	5,570

** Based on GTIA weekend peak trip rate of 0.8/dwelling for low density residential

The majority of events combined with the residential traffic would be expected to generate traffic movements in the range of:

- Daily = 970 – 2,370 vpd
- PM Peak Hour = 214 – 684 vph

Larger feature events generate significantly higher traffic flows of 1,300 – 1,800 vph and 4,000 – 5,500 vpd would be very infrequent (up to 5 days per year) and held on weekends or public holidays. The Traffic associated with these events will be handled through the provision and implementation of event-specific traffic management planning which maintains safety and operability of the surrounding road network to an acceptable level.

6.3 Horse Traffic

Horses will be transported to and from the site via horse trailers/floats. Horse riding is not expected to occur off-site as the existing facilities on Racecourse Road will be removed as part of the racecourse hub development and merger to the new site.

6.4 Trip Distribution

The development trip distribution has been assumed based on the surrounding urban population areas, namely Hamilton, Cambridge, Tamahere, and Te Awamutu (in order of likely origin-destination trips). Trips have also been considered from Hamilton Airport (via SH21) as air travel may be used as a mode of transport for visitors outside the region. On this basis, the following site traffic distribution percentages have been adopted for event related travel:

- 50% to/from the north via Pencarrow Road (North) / Tamahere Drive, including:
 - = 40% via Tamahere Interchange (25% via SH1 north, 8% via SH1 south, 5% via Tauwhare Road, and 2% via Airport Road west)
 - = 10% via Pickering Road
- 30% to/from the east via Hooker Road / Cambridge Road intersection, including:
 - = 20% via Cambridge Road east
 - = 8% via Racecourse Road
 - = 2% via Cambridge Road west (SH1 north)
- 20% to/from the west via Pencarrow Road (South) / SH21, including
 - = 15% via Airport Road south (Hamilton Airport)
 - = 5% to/from Airport Road north

Notes:

- The predicted volume increases focus on the weekday and weekend event scenarios as the key baseline considering they will be the highest traffic generating activities. Training will occur outside of race days and account for much lower (modest) increases/effects.
- The forecasted volume increases account for event and residential traffic movements in terms of daily and more critical PM peak increases.
- Localised event-traffic distribution ratios at the site entrances have been adopted based on anticipated traffic split of 60% off Hooker Road, 30% off Pencarrow Road, and 10% off Duncan Road.
- The forecasted volumes account for a proportional decrease of 250 vpd and 35 vph associated with the existing rural site uses, with an assumed split reduction (based on existing access provisions) on the surrounding roads as follows:
 - Pencarrow Road / Tamahere Drive –150 vpd / 21 vph (80% north / 20% south of Hooker Road)
 - Hooker Road –100 vpd / 14 vph (50% east / 50% west of Duncan Road)
 - Duncan Road –50 vpd / 7 vph (No exit – all traffic flows via Hooker Road)

6.4.1 Trip Assignment

Tables 13 to 17 show the forecasted traffic volume increase on the surrounding road network under each event scenario. These are calculated using the adopted trip distribution ratios, assumptions, and total traffic flow (T) generated by each event scenario, as follows:

- Hooker Rd (west of Duncan Rd) = $0.76 \times T$ (main entrance + residential share)
- Hooker Rd (east of Duncan Rd) = $0.30 \times T$ (east trip distribution share)
- Duncan Rd = $0.10 \times T$ (trainer entrance + residential share)
- Pencarrow Rd (south of Hooker Rd) = $0.20 \times T$ (west trip distribution share)
- Pencarrow Rd (north of Hooker Rd) = $0.50 \times T$ (north trip distribution share)
- Tamahere Drive = $0.50 \times T$ (north trip distribution share)

Table 13: Forecast daily volume increase – weekday combined – small event + residential (T = 970 vpd)

Road Section	Increase (vpd)
Hooker Road (west of Duncan Road)	+687
Hooker Road (east of Duncan Rd)	+241
Duncan Road	+97
Pencarrow Road (south of Hooker Road)	+164
Pencarrow Road (north of Hooker Road)	+425
Tamahere Drive	+425

Table 14: Forecast daily volume increase – weekday combined – small-medium event + residential (T = 1,370 vpd)

Road Section	Increase (vpd)
Hooker Road (west of Duncan Road)	+991
Hooker Road (east of Duncan Rd)	+361
Duncan Road	+137
Pencarrow Road (south of Hooker Road)	+244
Pencarrow Road (north of Hooker Road)	+625
Tamahere Drive	+625

Table 15: Forecast daily volume increase – weekday combined – medium-large event + residential (T = 4,170 vpd)

Road Section	Increase (vpd)
Hooker Road (west of Duncan Road)	+3,119
Hooker Road (east of Duncan Rd)	+1,201
Duncan Road	+417
Pencarrow Road (south of Hooker Road)	+804
Pencarrow Road (north of Hooker Road)	+2,025
Tamahere Drive	+2,025

Table 16: Forecast daily volume increase – weekday combined – medium event + residential (T = 2,370 vpd)

Road Section	Increase (vpd)
Hooker Road (west of Duncan Road)	+1,751
Hooker Road (east of Duncan Rd)	+661
Duncan Road	+237
Pencarrow Road (south of Hooker Road)	+444
Pencarrow Road (north of Hooker Road)	+1,125
Tamahere Drive	+1,125

Table 17: Forecast daily volume increase – weekday combined – large event + residential (T = 5,570 vpd)

Road Section	Increase (vpd)
Hooker Road (west of Duncan Road)	+4,183
Hooker Road (east of Duncan Rd)	+1,621
Duncan Road	+557
Pencarrow Road (south of Hooker Road)	+1,084
Pencarrow Road (north of Hooker Road)	+2,725
Tamahere Drive	+2,725

Figures 28 to 32 illustrate the proportions of daily generated traffic flow and the total increased road volumes forecasted on the surrounding routes under each event scenario.

Volumes are presented as in colour correlation to the order of calculated traffic increases and road capacity. This is based on NZS 4404 Table 3.2 typical maximum volumes for rural roads as per the One Network Framework (ONF) classification.

Typical maximum road capacity:

- Tamahere Drive → Suburban Connector ~8,000 vpd
- Hooker Road and Pencarrow Road → Rural Connectors ~2,500 vpd
- Duncan Road → Rural local road ~1,000 vpd

Forecast capacity utilisation index:

- Green → Minor → below half capacity (<50%)
- Orange → Moderate → towards higher capacity (50% - 75%)
- Red → Significant → at or near capacity (75% - 100%)
- Purple → Extreme → exceeding capacity (>100%)

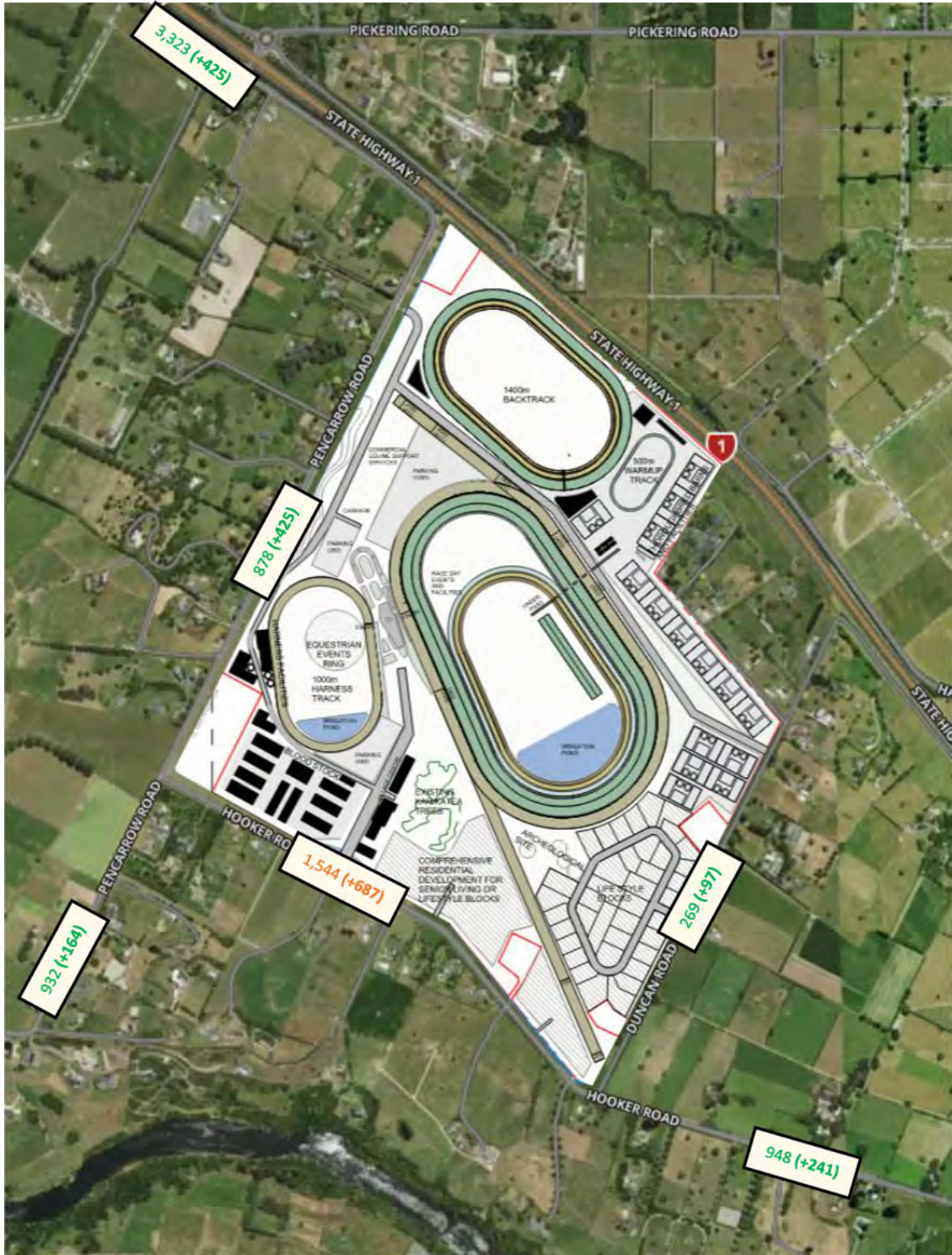


Figure 28: Forecast daily volumes on road network (**increase**) – weekday combined – small event + residential (40/year)

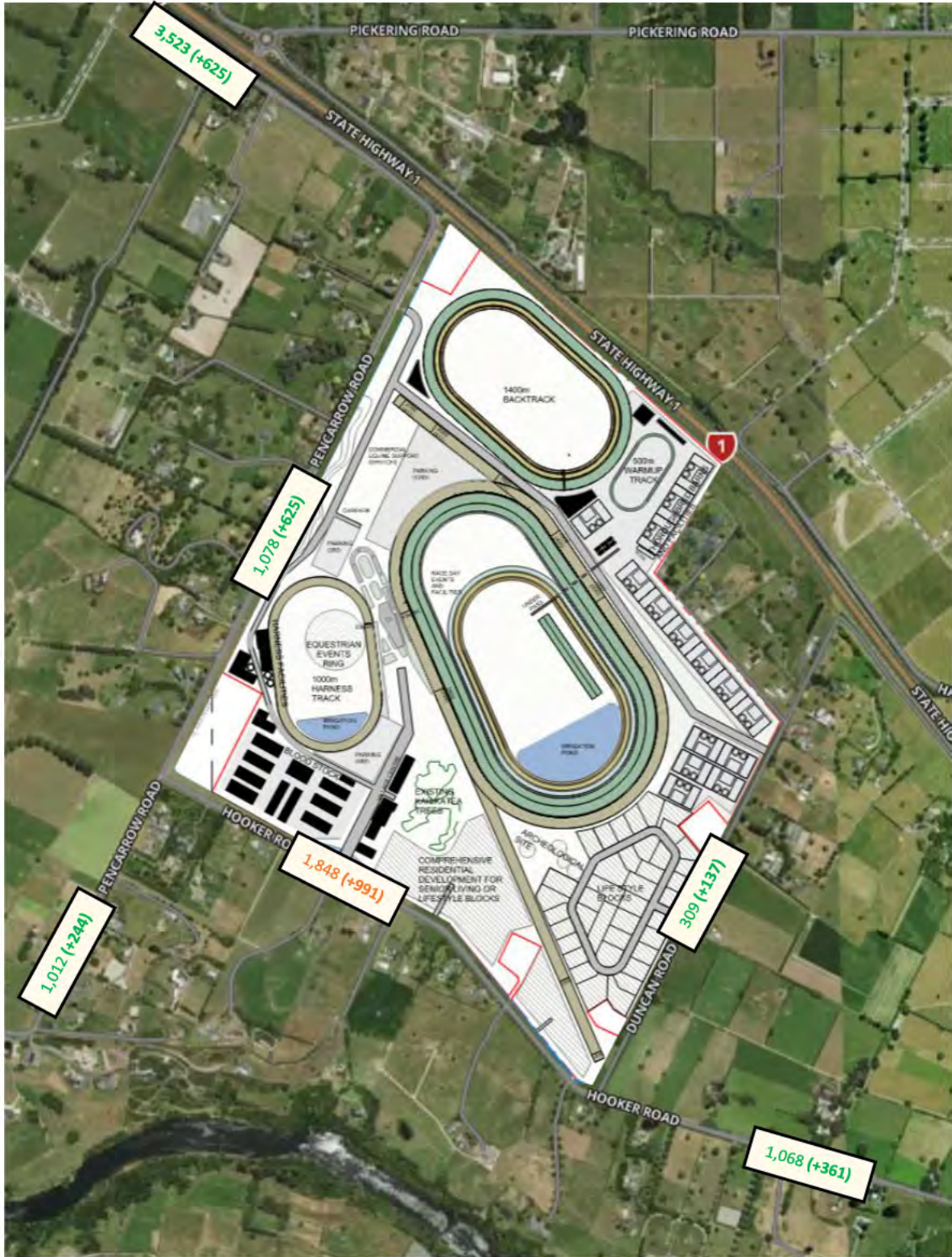


Figure 29: Forecast daily volumes on road network (**increase**) – weekday combined – small-medium event + residential (34/year)

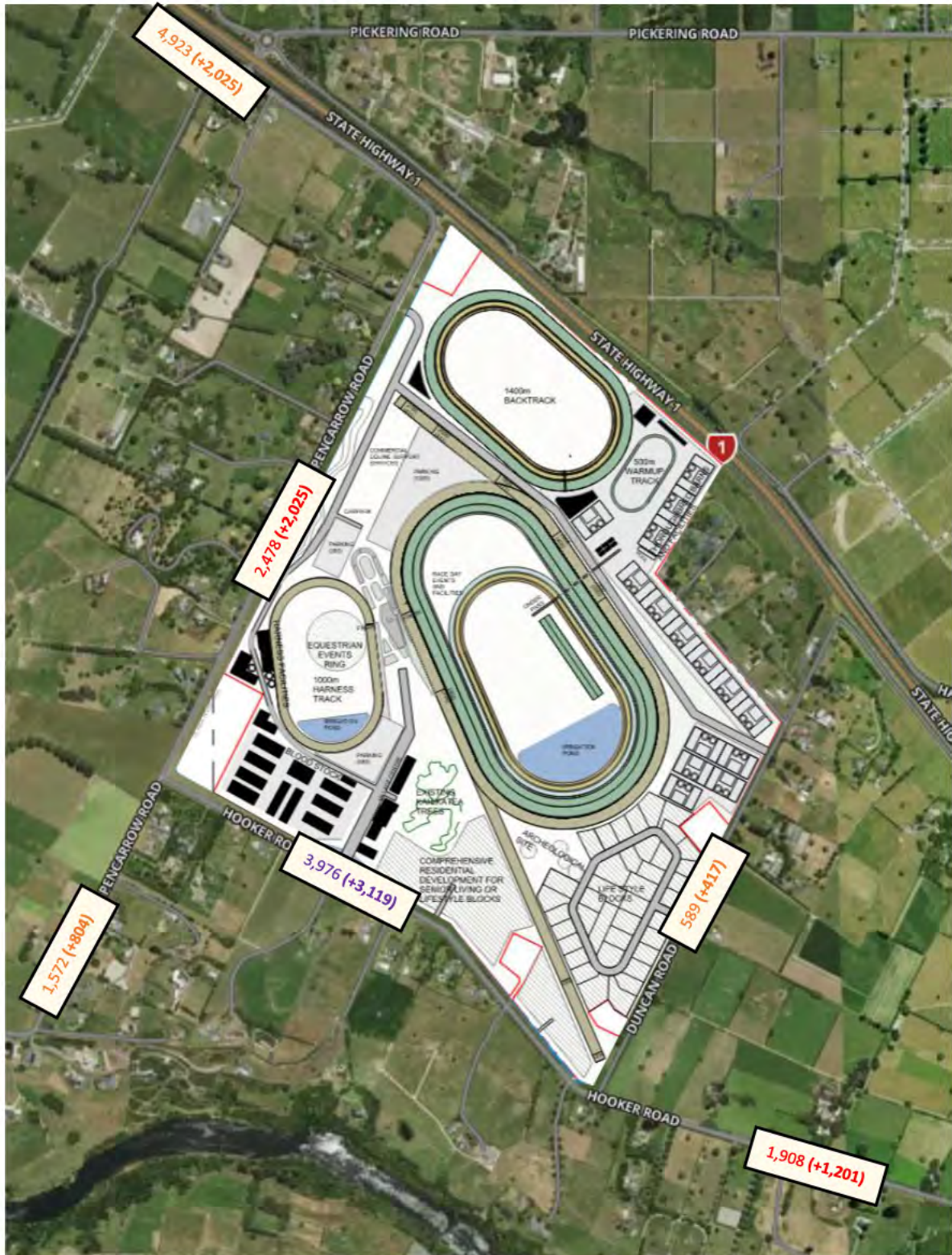


Figure 30: Forecast daily volumes on road network (**increase**) – weekday combined – medium-large event + residential (2/year)

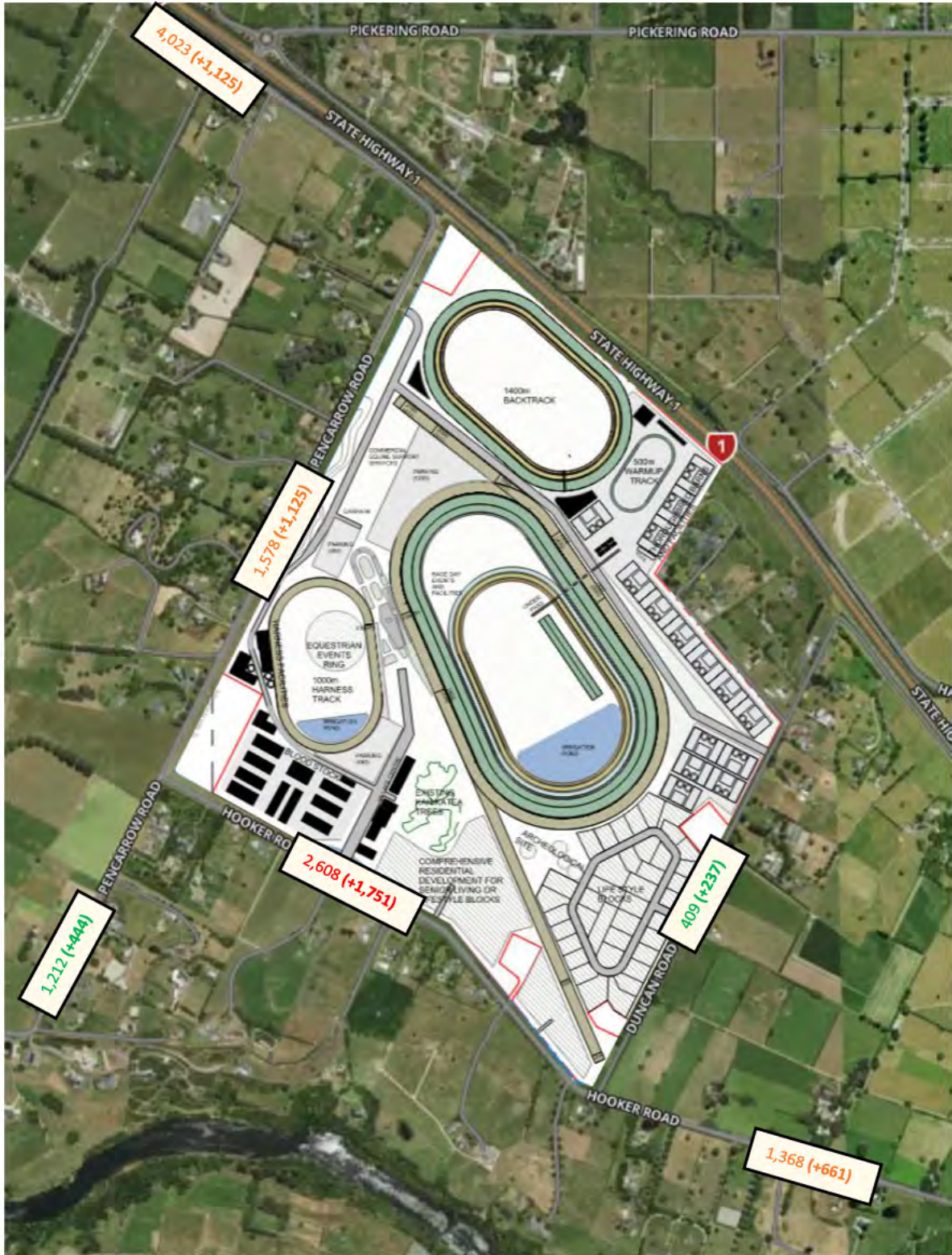


Figure 31: Forecast daily volumes on road network (**increase**) – weekend combined – medium event + residential (6/year)

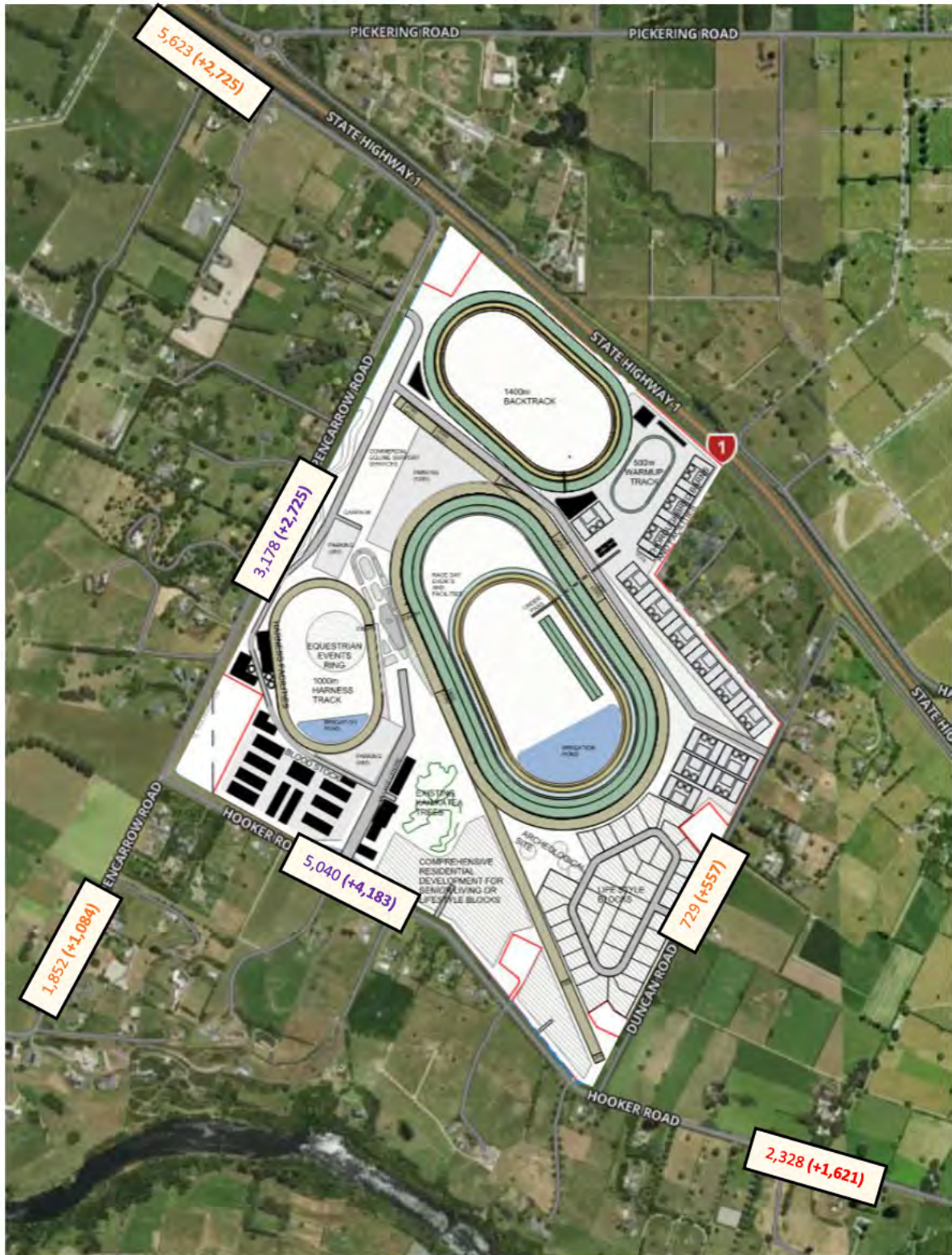


Figure 32: Forecast daily volumes on road network (**increase**) – weekend combined – large event + residential (1/year)

Mitigation for large feature event volumes (3 times a year) is proposed via Event Traffic Management Planning (ETMP) as per Section 10.

7 ROAD NETWORK ANALYSIS

7.1 Intersection Capacity and Performance

Intersection capacity and operational performance have been assessed using SIDRA Intersection (Version 11) to assess the effects of the traffic associated with the proposed racing hub on the intersections identified in Section 2.3.2.

Level of Service (LOS), degree of saturation (v/c), average delay, and queue lengths have been used to assess intersection and movement performance. LOS is a standard measure for intersection performance and is based on the average delay experienced by drivers in each lane, by arm. In general, LOS levels A to C are considered acceptable, LOS D to E are considered permissible where reasonable improvements cannot be made. LOS F is generally considered to be an unsatisfactory level of service.

7.1.1 Assessment Periods and Modelling Scenarios

All modelling has been undertaken for the weekday PM peak period (4:00–6:00 pm), which overlaps most racing events and represents the critical operating condition for the surrounding road network.

SIDRA modelling has been completed for the current and following forecast scenarios, consistent with the Waikato Regional Transport Model (WRTM):

- 2025 Baseline (existing)
- 2035 Baseline (no Southern Links)
- 2035 Baseline + Development (no Southern Links)
- 2045 Baseline (with Southern Links)
- 2045 Baseline + Development (with Southern Links)

Hourly peak traffic volumes extracted from the WRTM were used directly in the SIDRA models, without additional growth factors or re-assignment. These are tabulated and provided in Appendix G.

7.1.2 Traffic Volumes

Turning movement volumes for each intersection were derived from the WRTM PM peak hour outputs supplied for this assessment. Traffic volumes represent the highest hour within the PM peak period. All volumes were input directly into SIDRA on a per-movement basis. The WRTM network represents the entire studied area as a series of discrete nodes, and SIDRA intersections were therefore modelled to match the same nodal structure and topology.

Total site volumes are based on the PM peak of the largest non-feature event combined with residential traffic (684 veh/hr) and assumed arrival/departure ratio of 80% outbound movements and 20% inbound movements during the PM peak. Increases in turn volumes and lane flows as a result of the development traffic have been calculated based on the trip distribution and assignment adopted in Section 5.4.

7.2 Modelling Assessment

The capacity assessment results are summarised in the following sub-sections in terms of LOS with full SIDRA outputs provided in Appendix H.

7.2.1 Tauwhare Road / Airport Road / SH1 SBD Ramps (Intersection 1A)

This intersection forms a roundabout as part of the Tamahere Interchange and accommodates high strategic flows between Airport Road, Tauwhare Road and SH1 southbound ramps.

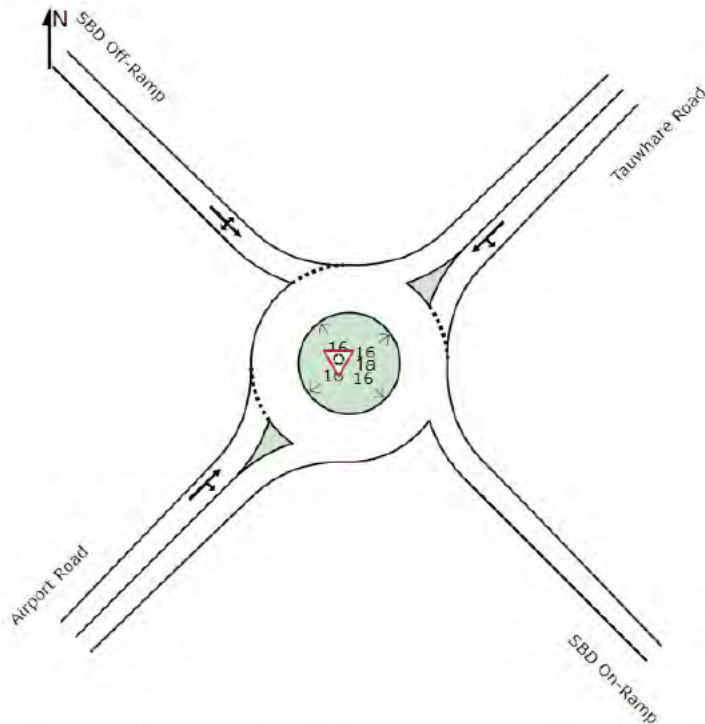


Figure 33: Existing layout – Intersection 1a

Table 18: PM Peak volumes – Intersection 1a

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Tauwhare Road (NE)	Left	6	6	6	7	7
Tauwhare Road (NE)	Through	360	392	399	428	435
Airport Road (SW)	Through	277	304	331	326	353
Airport Road (SW)	Right	120	140	184	52	96
SH1 SBD Off-Ramp (NW)	Left	216	212	212	192	192
SH1 NBD Off-Ramp (NW)	Through	5	4	4	4	4
SH1 NBD Off-Ramp (NW)	Right	372	397	431	262	296

2035 PM Peak

Under the 2035 Baseline (No Southern Links) scenario, the intersection operates at an overall LOS B, with moderate delays observed on the southbound off-ramp movements. All circulating and entry movements remain well within capacity, with queues contained within lane storage.

With the addition of the largest non-feature event and residential traffic, the intersection continues to operate at LOS B, with a modest increase in average delay and degree of saturation. The southbound off-ramp right-turn movement experiences the highest increase in delay; however, LOS remains acceptable and no extensive queuing is predicted.

2045 PM Peak

By 2045, with Southern Links operational, the redistribution of regional traffic results in improved performance at this intersection. The 2045 Baseline scenario operates at LOS A–B, with reduced delays and lower v/c ratios compared to 2035.

In the 2045 Baseline + Development scenario, the intersection continues to perform satisfactorily at LOS B, with development traffic well accommodated within the available capacity. No critical operational issues are identified.

7.2.2 Tamahere Drive / Airport Road / SH1 NBD On-Ramp (Intersection 1B)

This intersection also forms a roundabout at the Tamahere Interchange and provides access between Tamahere Drive, Airport Road and the northbound SH1 on-ramp and accommodates significant through movements on Airport Road.

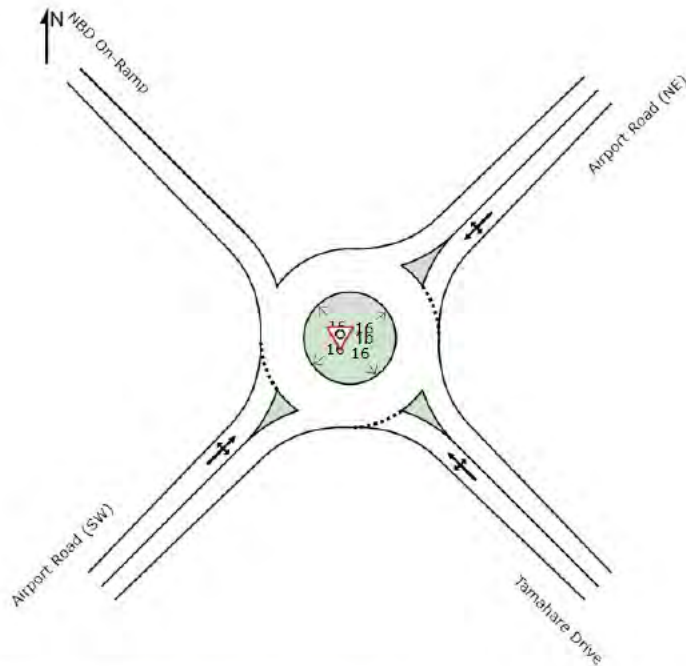


Figure 34: Existing layout – Intersection 1b

Table 19: PM peak volumes – Intersection 1b

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Airport Road (NE)	Left	54	52	93	2	43
Airport Road (NE)	Through	398	449	449	394	394
Airport Road (NE)	Right	280	288	288	294	294
Tamahere Drive (SE)	Left	115	169	180	2	13
Tamahere Drive (SE)	Through	158	166	303	84	221
Tamahere Drive (SE)	Right	13	12	65	13	66
Airport Road (SW)	Left	330	365	365	317	317
Airport Road (SW)	Through	384	432	432	365	365
Airport Road (SW)	Right	17	6	9	4	7

2035 PM Peak

Under 2035 Baseline conditions, the intersection operates at an overall LOS B, although the Airport Road south-west approach experiences higher delays and queues approaching LOS C–D conditions due to high through volumes.

With event and residential traffic added, the Airport Road south-west approach deteriorates to LOS D, with increased average delays and extended queues. The overall intersection remains operational; however, this approach becomes the critical constraint in the network under the 2035 event scenario.

2045 PM Peak

In the 2045 Baseline scenario, the inclusion of Southern Links significantly improves performance, with the intersection operating at LOS B overall and improved conditions on Airport Road.

Under the 2045 Baseline + Development scenario, moderate increases in delay are observed on Airport Road; however, LOS generally remains C or better, demonstrating that Southern Links provides meaningful relief for future event traffic.

7.2.3 Tamahere Drive / SH1 NBD Off-Ramp (Intersection 1c)

This intersection forms as a priority-controlled (GIVE-WAY) T-intersection which accommodates ramp traffic exiting SH1 northbound and joining Tamahere Drive.

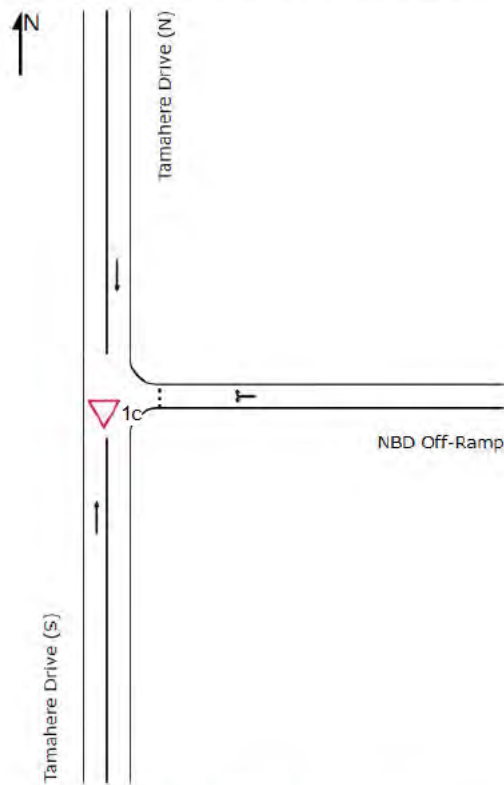


Figure 35: Existing layout – Intersection 1c

Table 20: PM peak volumes – Intersection 1c

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Tamahere Drive (N)	Through	70	58	113	5	60
SH1 NBD Off-Ramp (E)	Left	11	20	31	10	21
SH1 NBD Off-Ramp (E)	Right	180	238	238	94	94
Tamahere Drive (S)	Through	105	109	328	6	225

2035 PM Peak

The 2035 Baseline scenario shows excellent operational performance, with all movements operating at LOS A and minimal queuing.

With the addition of event and residential traffic, delays increase slightly on the off-ramp right-turn movement, which operates at LOS B. All other movements remain at LOS A, and no queuing issues are identified.

2045 PM Peak

Under both 2045 Baseline and 2045 Baseline + Development conditions, the intersection continues to perform at LOS A, with negligible delays and queues. Southern Links significantly reduces ramp demand in the future year, resulting in robust performance even under event conditions.

7.2.4 Airport Road / Pencarrow Road (Intersection 2)

This intersection forms as a priority-controlled (STOP) T-intersection which is a key western access route to the site and already experiences constrained performance on the Pencarrow Road minor approaches.

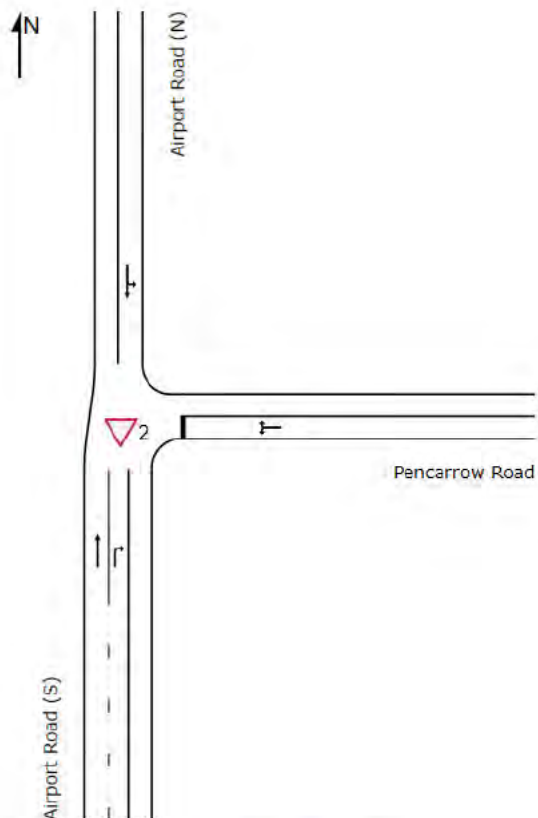


Figure 36: Existing layout – Intersection 2

Table 21: PM peak volumes – Intersection 2

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Airport Road (N)	Left	75	79	86	67	74
Airport Road (N)	Through	491	599	599	410	410
Pencarrow Road (E)	Left	27	35	117	44	126
Pencarrow Road (E)	Right	56	56	83	56	83
Airport Road (S)	Through	682	763	763	649	649
Airport Road (S)	Right	45	89	110	65	86

2035 PM Peak

Under 2035 Baseline conditions, the Pencarrow Road approach operates at LOS F, with very high delays and queue lengths due to limited gap availability on Airport Road. This reflects existing operational constraints rather than development effects.

With the addition of event and residential traffic, delays on Pencarrow Road increase further, extending queue lengths. Airport Road movements continue to operate well at LOS A–B.

2045 PM Peak

The 2045 Baseline scenario shows some improvement in minor-road performance due to traffic redistribution from Southern Links; however, Pencarrow Road still operates at LOS E–F.

Under 2045 Baseline + Development conditions, Pencarrow Road delays increase again, though the overall network impact remains contained. These results indicate that the intersection is already operating at or near capacity without the development and would benefit from future intersection treatment independent of the proposal.

7.2.5 Tamahere Drive / Pickering Road (Intersection 3)

This intersection forms a priority-controlled (GIVE-WAY) T-intersection which connects Tamahere Drive to Pickering Road north of the site (other side of SH1).

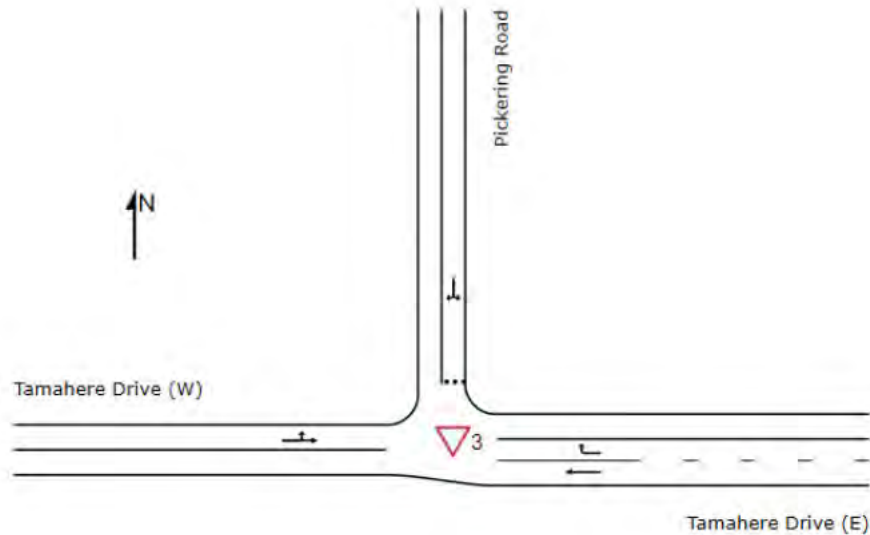


Figure 37: Existing layout – Intersection 3

Table 22: PM peak volumes – Intersection 3

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Pickering Road (N)	Left	5	6	20	5	19
Pickering Road (N)	Right	65	63	63	49	49
Tamahere Drive (E)	Through	29	38	257	3	222
Tamahere Drive (E)	Right	3	4	59	4	59
Tamahere Drive (W)	Left	42	36	36	9	9
Tamahere Drive (W)	Through	36	43	84	4	45

2035 PM Peak

Under 2035 Baseline conditions, the intersection operates at LOS A for all movements with negligible delays.

With event and residential traffic, increased volumes on Pickering Road result in higher right-turn demand; however, the intersection continues to operate at LOS A, with minimal queuing.

2045 PM Peak

The 2045 Baseline and 2045 Baseline + Development scenarios both operate at LOS A throughout. Intersection performance remains robust, indicating that this location is insensitive to development traffic due to low competing flows.

7.2.6 Pencarrow Road / Hooker Road (Intersection 4)

This intersection forms a priority-controlled (STOP) T-intersection and provides direct site access via Pencarrow Road and is in near proximity to the main access off Hooker Road, making it highly sensitive to development traffic.

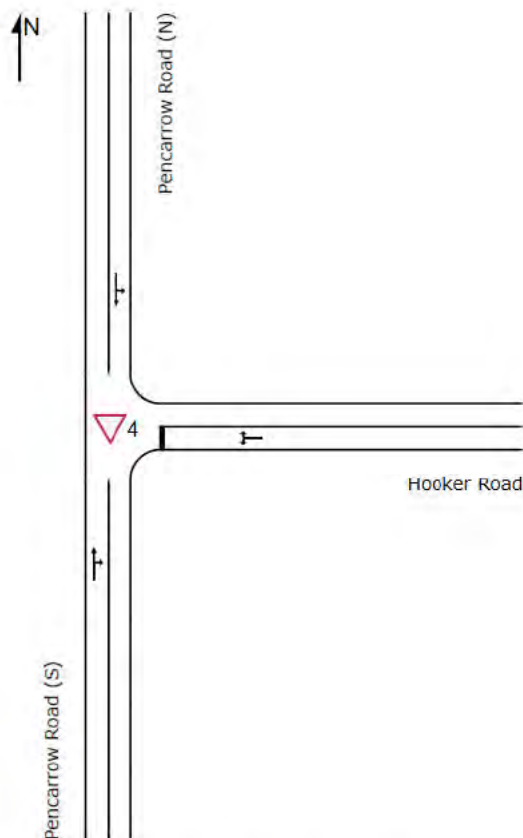


Figure 38: Existing layout – Intersection 4

Table 23: PM peak volumes – Intersection 4

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Pencarrow Road (N)	Left	26	32	150	28	146
Pencarrow Road (N)	Through	12	15	56	13	54
Hooker Road (E)	Left	18	18	114	16	112
Hooker Road (E)	Right	37	46	285	43	282
Pencarrow Road (S)	Through	15	24	32	11	19
Pencarrow Road (S)	Right	12	33	52	9	28

2035 PM Peak

Under 2035 Baseline conditions, the intersection operates at LOS A across all approaches.

With the addition of event and residential traffic, delays increase on the Hooker Road approach, resulting in LOS B conditions for the worst movements. Nevertheless, queues remain short and within acceptable limits.

2045 PM Peak

In 2045, both baseline and event scenarios operate at LOS A–B, with moderate increases in demand handled effectively. No capacity issues are identified, confirming that this intersection can accommodate non-feature event traffic without mitigation.

7.2.7 Hooker Road / Duncan Road (Intersection 5)

This intersection forms a priority-controlled (STOP) T-intersection between Hooker Road and Duncan Road (no exit). It serves the residential and trainer accesses proposed at the eastern end of the site.

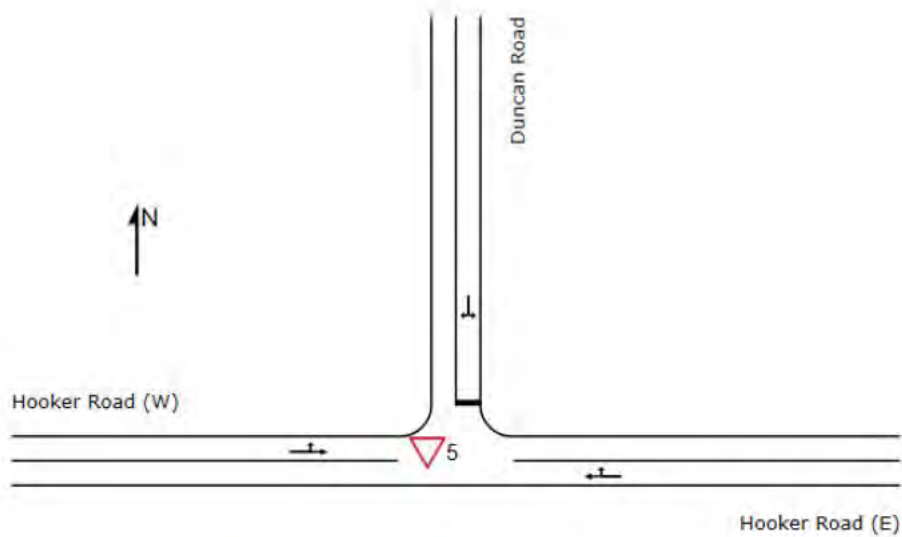


Figure 39: Existing layout – Intersection 5

Table 24: PM peak volumes – Intersection 5

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Duncan Road (N)	Left	9	10	26	6	22
Duncan Road (N)	Right	5	6	44	12	50
Hooker Road (E)	Through	55	64	105	58	99
Hooker Road (E)	Right	5	5	9	3	7
Hooker Road (W)	Left	3	5	15	9	19
Hooker Road (W)	Through	38	65	215	37	187

2035 PM Peak

The 2035 Baseline scenario operates at LOS A across all movements.

Under event conditions, some increase in delay is observed on the Duncan Road approach, which operates at LOS B. Overall performance remains acceptable with short queues.

2045 PM Peak

Both 2045 Baseline and 2045 Baseline + Development scenarios operate at LOS A–B, with no operational concerns identified.

7.2.8 Cambridge Road / Hooker Road and Racecourse Road (Intersections 6A and 6B)

These two intersections form staggered priority-controlled (GIVE-WAY) T-intersections in close proximity to each other to the east of the site. They accommodate major east-west traffic flows on Cambridge Road.

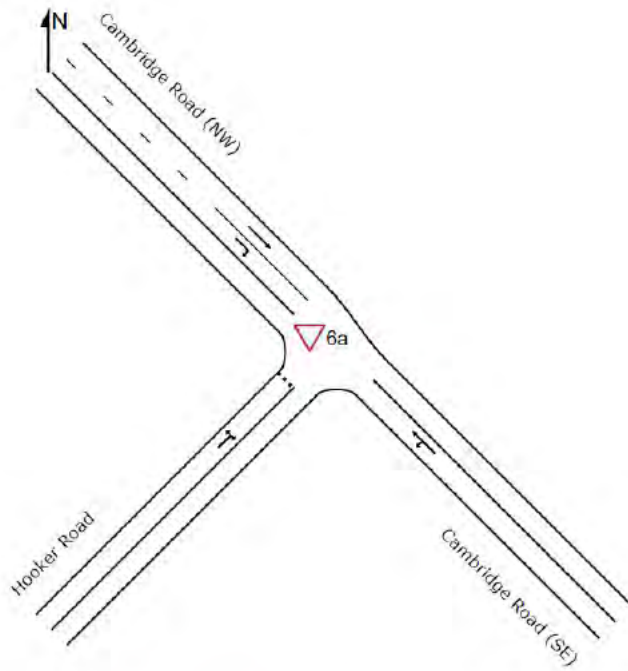


Figure 40: Existing layout – Intersection 6a

Table 25: PM peak volumes – Intersection 6a

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Cambridge Road (SE)	Left	40	46	73	41	68
Cambridge Road (SE)	Through	743	888	888	1028	1028
Hooker Road (SW)	Left	11	18	29	10	21
Hooker Road (SW)	Right	24	42	152	22	132
Cambridge Road (NW)	Through	503	562	562	679	679
Cambridge Road (NW)	Right	7	13	16	9	12

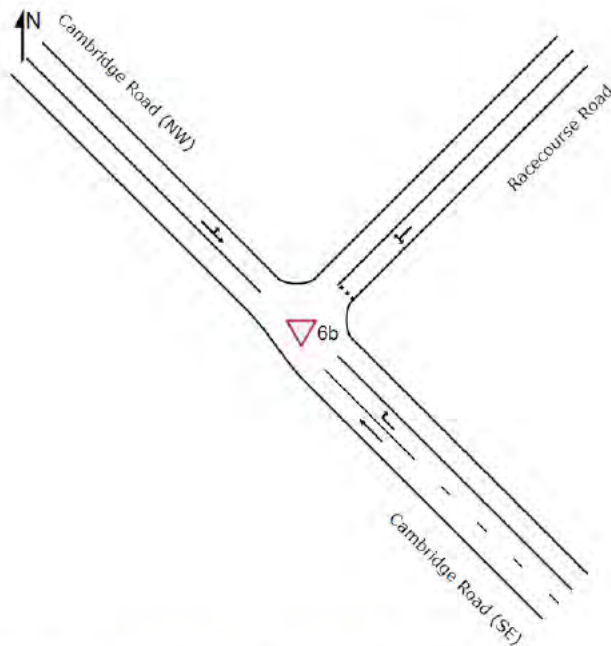


Figure 41: Existing layout – Intersection 6b

Table 26: PM peak volumes – Intersection 6b

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Racecourse Road (NE)	Left	6	8	8	9	9
Racecourse Road (NE)	Right	76	94	105	126	137
Cambridge Road (SE)	Through	743	888	915	1028	1055
Cambridge Road (SE)	Right	14	20	20	22	22
Cambridge Road (NW)	Left	102	162	206	267	311
Cambridge Road (NW)	Through	503	562	672	679	789

2035 PM Peak

For 2035 Baseline conditions, Cambridge Road through movements operate at LOS A, while the Hooker Road and Racecourse Road minor approaches operate at LOS F due to limited gap availability.

With the addition of development traffic, delays on minor approaches increase substantially, with very long queues predicted. These results indicate that Cambridge Road functions as a dominant arterial, and the minor approaches are already constrained prior to development.

2045 PM Peak

Under 2045 Baseline conditions, Southern Links slightly improves minor-road performance; however, LOS F conditions remain on the Hooker Road and Racecourse Road approaches.

In the 2045 Development scenario, delays and queues increase further on minor approaches, though arterial through movements remain unaffected. These results reflect pre-existing constraints and highlight that intersection upgrades would be required irrespective of the development to improve minor road access.

7.3 Modelling Summary

The SIDRA modelling demonstrates that:

- Most intersections surrounding the site continue to operate at acceptable levels of service under both 2035 and 2045 development scenarios accounting for the largest non-feature event as well as residential traffic.
- Southern Links provides clear network benefits in 2045, mitigating development related traffic effects at key interchange locations.
- Intersections that experience LOS E–F (notably Airport Road / Pencarrow Road and the Cambridge Road priority intersections) are already constrained under baseline conditions.
- Development traffic generally results in modest and localised increases in delay, without causing network wide operational failure.

Overall, the modelling indicates that the surrounding road network can accommodate the forecast development traffic under the assessed scenarios, subject to longer-term network improvements being led by road controlling authorities at known constraint locations.

8 SITE ACCESS

8.1 Existing Arrangements

The existing vehicle movements at the site are split between accesses on each frontage, as follows:

Pencarrow Road

- Formed access towards the north end, approximately 230m south of the bend to Tamahere Drive.
- Informal access mid-frontage, approximately 160m north of Summerfield Lane.
- Informal access towards the south end, approximately 400m south of Summerfield Lane.

Hooker Road

- Dirt road access towards the west end, approximal 430m from the intersection with Pencarrow Road.

Duncan Road

- Gravel road access mid-frontage, approximately 370m from the intersection with Hooker Road.
- Dirt road access towards the north end, approximal 60m from the intersection with Pencarrow Road.

8.2 Proposed Access Strategy

8.2.1 Racecourse Access

The proposed locations of the vehicles access as indicated with the WTR masterplan layout are:

- **Main Access:** Located on the southern side onto Hooker Road, approximately 500m east of the Pencarrow Road intersection. Subject to detailed design and Council input, this would likely be formed a road intersection with the site access leg forming a minor approach arm onto Hooker Road.



Figure 42: Proposed Hooker Road Access

- Secondary Access:** Located on the western side onto Pencarrow Road towards the north end of the site frontage. The location would be approximately 250m from the bend to the north and 450m from the intersection with Summerfield Lane. This is envisaged to be formed as an intersection with new access road subject to detailed design and Council input.

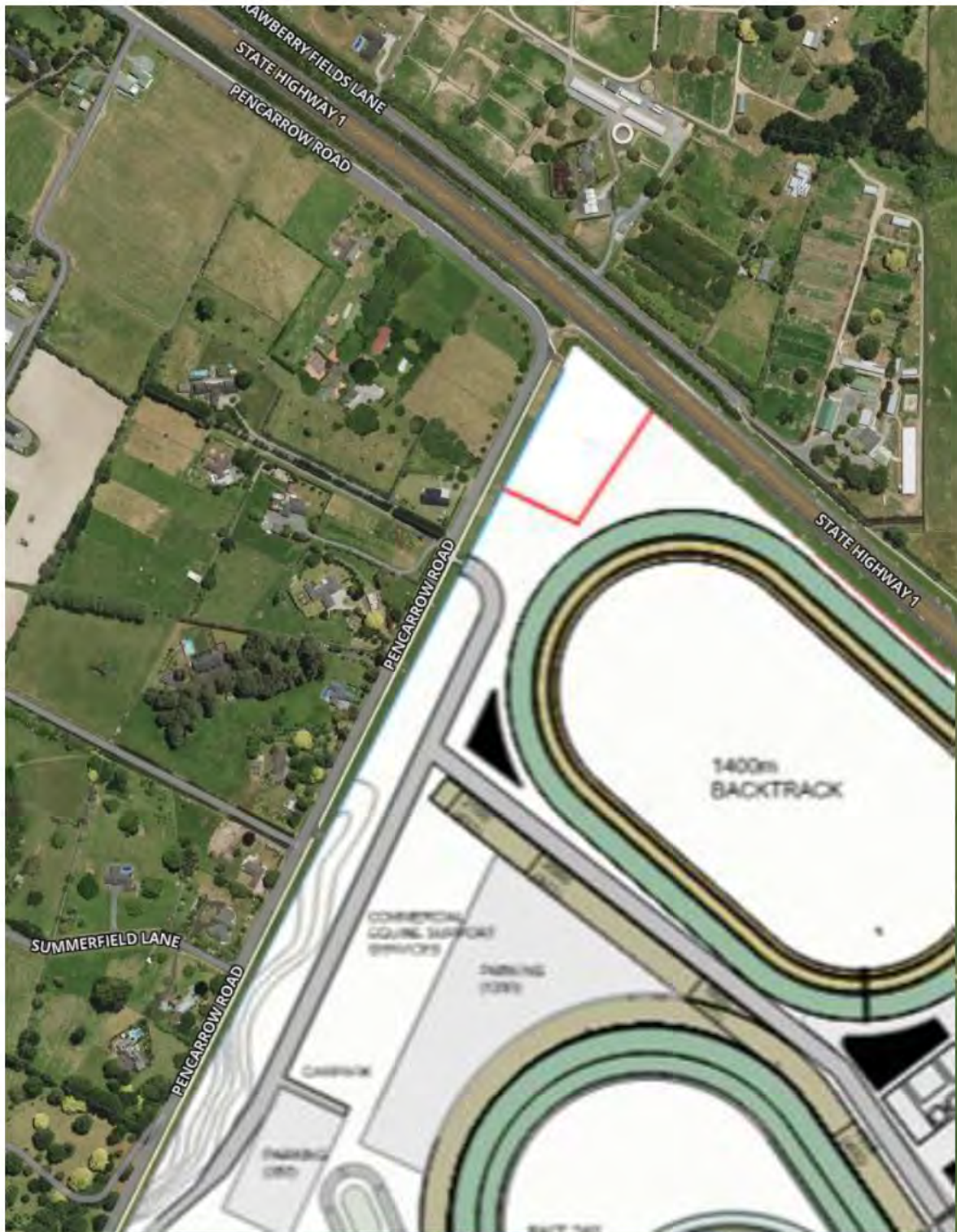


Figure 43: Proposed Pencarrow Road Access

- **Trainer Access:** Located on the eastern side onto Duncan Road, approximately 930m north of the Hooker Road intersection. This is envisaged to be formed as new access road subject to detailed design and Council input.



Figure 44: Proposed Duncan Road Access

8.2.2 Subdivision Accesses

Access to the subdivision development will be from the southern and eastern frontages of Hooker Road and Duncan Road. The western part of the subdivision will be accessed via an access road off Hooker Road and the main site entrance. Some southern lots will be accessed via a separate ROW off Hooker Road. The eastern lots will be accessed off new access roads forming off Duncan Road.

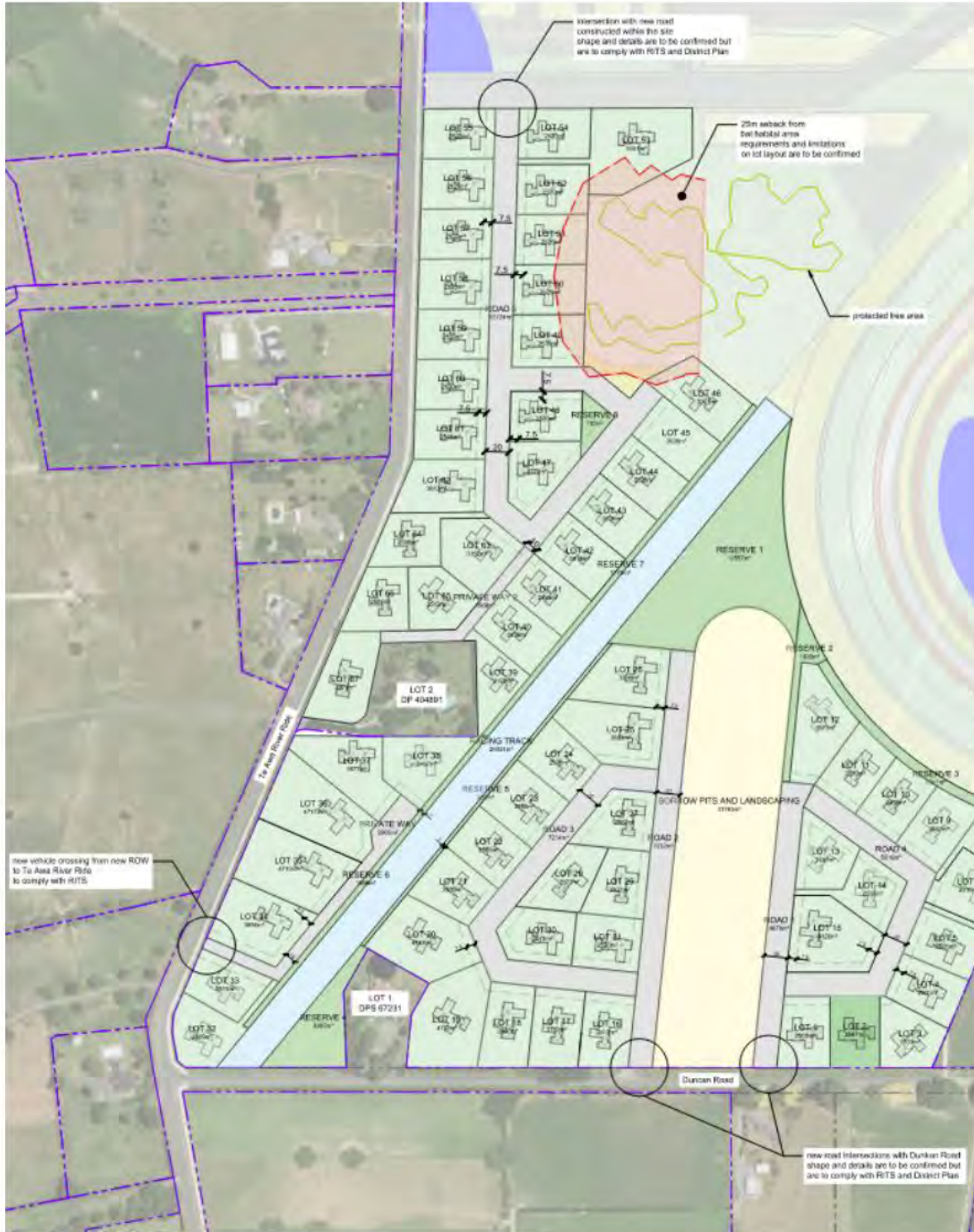


Figure 45: Proposed Duncan Road Access

8.2.3 Proposed Access Overview

All site accesses are anticipated to support two-way traffic movements into and from the site. The intended arrangement includes the main access to primarily accommodate all general site user and visitor movements, whilst the secondary accesses will support alternative entry movements for trainers and some site personnel. The site accesses and entranceways are expected to include a fully formed and sealed carriageway, while some internal areas associated with the movement of horses may be informal (unsealed). Detailed design to confirm.

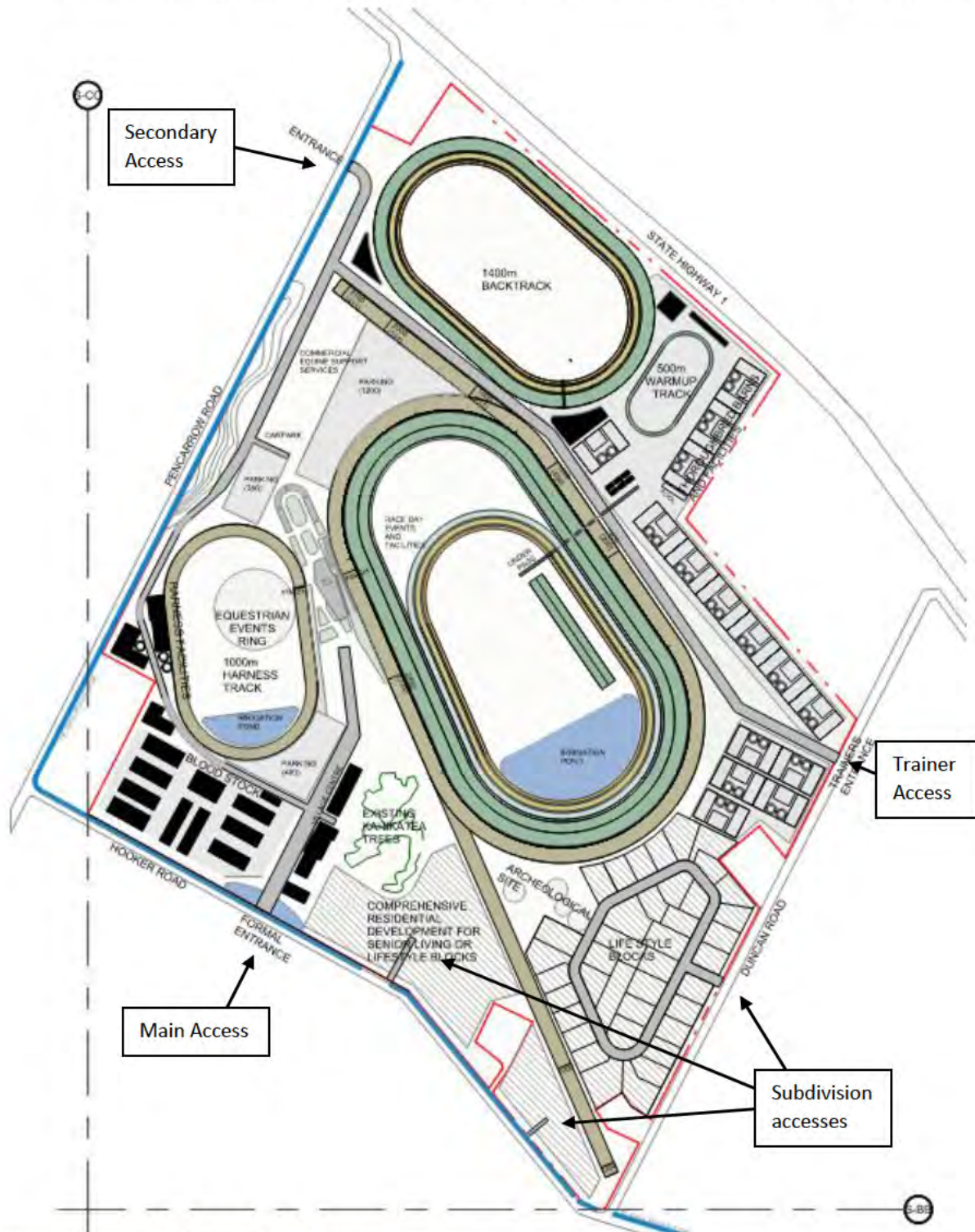


Figure 46: Overview of proposed access arrangements

8.3 Key Design Criteria

In considering vehicle access to a site, it is important that:

- Adequate sight distance and intersection spacing is provided; and
- The access is designed to ensure safe and efficient movement on the road network.

8.3.1 Sight Distance and Spacing

Frontage alignments are generally straight and flat on the southern and eastern extents of the site, with limited sightline constraints. Visibility along Pencarrow Road is limited by crests and sags, affecting the two secondary access(es).

For assessing the suitability of proposed access locations, the appropriate criteria are laid out in the WDP-OIP - Waikato District Plan / TRPT - Transportation / Tables 1 and 2 – Sight and separation distances

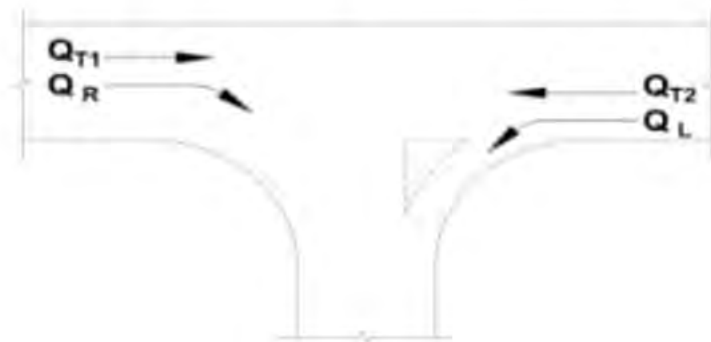
Table 27: Intersection Spacing and Sight Distance Assessment Criteria

Design Consideration	Speed Limit (km/h)	Minimum Req.	Main Access (Hooker Road)	Secondary Accesses (Pencarrow Road)	Trainer Access (Duncan Road)
Intersection and Access Separation Distances	100	WDC -500m (K) -200m (N)	TBC – appears achievable	TBC – appears achievable	TBC – appears achievable
Access Sight Distances	100	250m	TBC – appears achievable	TBC – appears achievable	TBC – appears achievable

8.3.2 Turning Bay Requirements

Austrroads Guide to Traffic Management: Part 6 provides guidance on the warrant process for turning bays at intersections. The warrants are also dependent on traffic volumes and posted speed limits. At present the posted speed limit is 100km/hr.

The indicative volumes Q_L and Q_R for turn treatment requirements are the forecast access demands, and the Major Road traffic volume parameters (Q_M) is extracted from the survey data. Based on these parameters, the turning facility requirements from Austrroads are used to assess the need for turning bays at each of the accesses.



Turn type	Splitter island	Q_m (veh/h)
Right	No	$= Q_{T1} + Q_{T2} + Q_L$
Right	Yes	$= Q_{T1} + Q_{T2}$
Left	No/yes	$= Q_{T2}$

Figure 47: Calculation of the major road traffic volume parameter (Q_m)

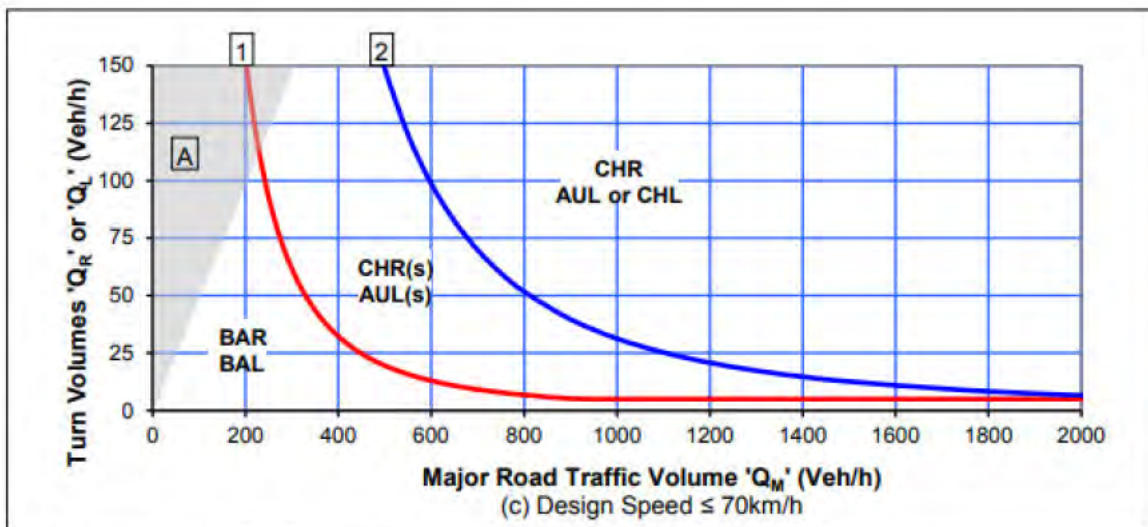
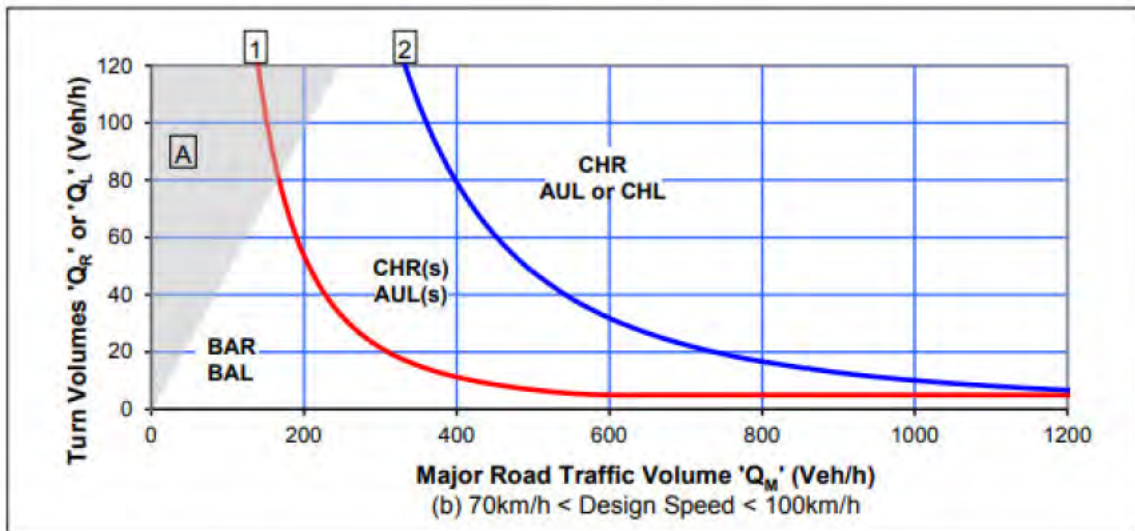
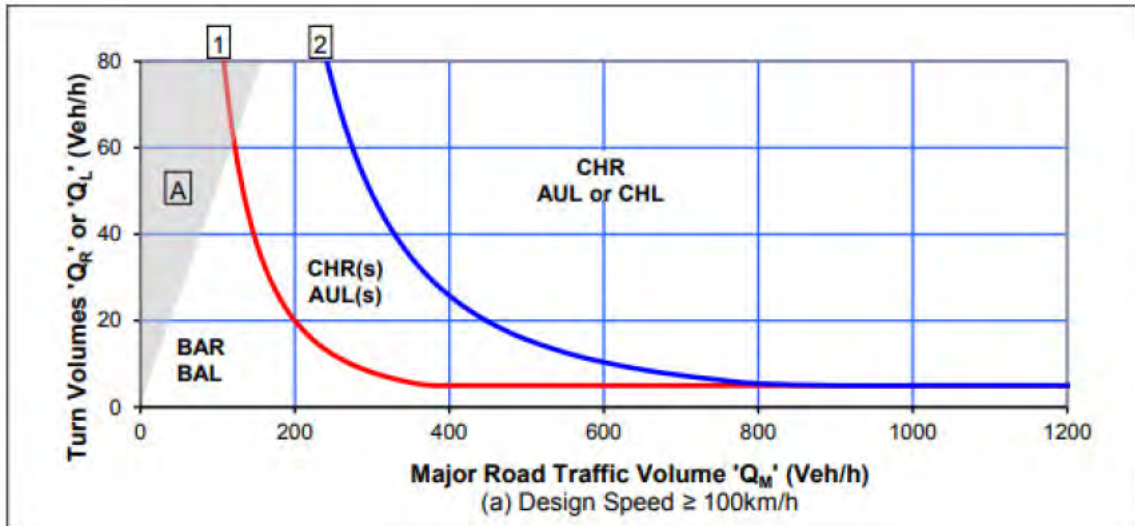


Figure 48: Warrants for Turn Treatments on the major road at unsignalised intersections

These criteria appear to indicate that channelised turn treatments would be required at the main access off Hooker Road to support high access demands during the peak hour. Other entrances do not appear to warrant these treatments for turning traffic. Though, this will be confirmed through the substantive assessment phase.

While not all entrances will be required to support left or right turn access demands, they will need to be designed to comply with the WDC and RITS requirements for such entrances. This may include widening of the existing road seal to enable light vehicles to pass turning traffic accessing the site, and the provision of a suitable bell-mouth radius to accommodate the swept path of the largest vehicles expected to access the site. These details will be confirmed subject to detailed design.

8.4 Internal Arrangements

The proposed internal road network is indicatively shown within the site masterplan. Details will be confirmed in future design stages. All internal roads and accesses are envisaged to allow a minimum trafficable width of 6m (two-way).

8.4.1 Internal Access

Although cross sections and designs for the internal road/access network have not been produced at this stage of masterplanning, it is expected that the internal network will be designed and constructed to conform with its intended function and adhere with the relevant requirements of WDC access and roading standards and appropriate Regional Infrastructure Technical Specifications (RITS) standards for road transport. This includes (but is not limited to) vehicle crossing spacings, sight distance, access and parking requirements. The proposed road layout arrangements will be designed to enable all traffic entering and exiting the site to do so in a forward motion. The detailed design will provide access design details and confirm their exact locations.

8.4.2 Signage and Wayfinding

Signage at the site should be implemented and maintained to ensure that all internal site directions, traffic control measures and visitor instructions are clear and legible to site users. Implementing a clear and concise signage strategy will improve site accessibility, reduce indecision for drivers unfamiliar with the site as well as support safe and efficient circulation within the facility. In addition to signage, the provision of suitable lighting within the site will enable the safe operations outside of daylight operations.

Additional wayfinding or warning signage should be provided for pedestrians and motorists on any key desire lines or conflict areas within the site.

Information that may be provided on internal site signs could include:

- Opening hours of the site (if there is to be access control);
- Traffic control (signing and road markings);
- Directions to parking areas;
- Restricted or limited access areas.

8.5 External Access and Upgrades

8.5.1 Vehicle Crossing / Intersections

The proposed site entrance will need to consider suitable arrangement to cater for the existing Te Awa River Ride (shared path) fronting the Pencarrow Road and Hooker Road frontages. Measures can include path user markings, coloured surfacing, signage, as well as provision of suitable pedestrian-motorist visibility splay, especially where crossings require user priority. Subsequent design to confirm details.

8.5.2 Hooker Road Upgrade

Hooker Road is proposed to be upgraded to include a wider carriageway and provide a path footpath or shared path connection across the site's eastern frontage and linking to the existing Te Awa River Ride on Hooker Road. Subsequent design to confirm details.

8.5.3 Road Lighting

Road lighting will need to be considered for night events. Subsequent design to confirm details.

9 SITE PARKING

9.1 Proposed Parking

On-site parking arrangements including formal and informal parking areas are yet to be confirmed and detailed.

An Event Management Plan (EMP) will need be prepared to the satisfaction of the relevant authority prior to an event. The EMP should have consideration to parking management strategies and include areas that will be relied upon for overflow parking, and outline strategies to be implemented to facilitate access and traffic on the surrounding roads and intersections.

EMPs shall be tailored and implemented based on the event type and expected attendance, which will influence the event's parking demands and management of accessways and nearby intersections. This is further discussed in Section 7 below.

All events outside of regular operations, are likely to require local traffic management to be employed, which will need to be submitted and approved by the relevant authority prior to the commencement of the event.

9.2 Parking Demand & Management

Based on the information provided by WTR on past year events at the Te Rapa and Cambridge racecourse sites, the racing track is anticipated to hold up to 45 event days throughout the year. The vast majority these typically attract 500 – 750 attendees for weekday races and 1,500 – 2,000 attendees for weekend races. There is likely to be only one or two feature events in a year that could generate larger crowds of 3,000 or more attendees.

The development for day-to-day operations and normal weekday and weekend events is anticipated to meet its car parking requirements within the proposed racetrack site. Also, under normal operating conditions, the racetrack facilities may potentially be used for education programmes, functions, minor exhibition events and/or private hire, which are expected to be sufficiently catered to within the formal parking area.

In the context of event days, car parking rates will be largely dependent on the attractiveness of getting to and from the site via private car use, ride share (two or more occupants per car), and the effectiveness of the EMP. For events requiring use of the informal parking, the EMP shall be prepared to identify car parking areas and access management strategies. The areas identified for overflow car parking should be adequate to meet the projected car parking demands of the event.

For event days, this dynamic approach to car parking is required due to the significance of certain high-profile events, the level of car parking demand and traffic that is typically generated, the different mix of vehicles and users the event attracts, and the need for a coordinated approach to facilitate safe and efficient traffic flow. The coordination and management of parking for these events will need to consider a number of matters as discussed in the following section.

For feature race days where attendee numbers are likely to be in excess of 2,000 attendees, it is recommended that significant campaigning is invested into alternate transport arrangements (chartered and tour buses, event concessions on event buses, event management etc.), multi-occupancy vehicle trips, rideshare, drop-off and pick-up transportation (taxis) etc.

9.3 Lighting

With the area being rural, road/access and internal carpark lighting for night operation will need to be considered, particularly during winter months, to provide a safe and convenient environment for low light conditions. Consideration should also be given to ensure that any overspill lighting does not negatively impact the surrounding properties or land.

Lighting arrangements will be considered as part of detailed design. It is anticipated that at least security lighting will be provided at the internal premises and formal parking area.

It is noted that hedging and landscaping will be provided as separation at the end of the site which fronts the SH1 corridor, to act as shield for any spill lighting from headlights.

10 EVENT MANAGEMENT CONSIDERATIONS

10.1 Event Management Planning

For racecourse events, an event planning process shall be undertaken by the Event Manager/Team. It is expected that event planning should commence a suitable time in advance i.e. months prior to proposed event dates, and may include consultation with Waikato DC, Waipa DC, NZTA and other stakeholders.

The Event Management Plan (EMP) should determine whether the traffic impacts associated with a given event is likely to be contained on the surrounding road network, or if the impact is likely to extend to the wider regional network including SH1 (Waikato expressway), SH21 (Airport Road) and Cambridge Road. In either case, the EMP is expected to be reviewed by both district councils and NZTA for approval.

As part of the EMP, an Event Traffic Management Plan (ETMP) would be typically prepared and provided to the relevant authority for certification prior to operating any events at the site. The ETMP will set out details of the events, associated forecast event traffic volumes, and related management thereof. As a component of the broader EMP, the ETMP will need to be submitted in accordance with Council's/NZTA's requirements for such ETMPs, prior to holding any events at the site.

The EMP should have due consideration to the following with respect to proposed events:

- The size of the events, and suitability of the management strategy;
- Parking management, and adequacy of the area available to accommodate projected car parking demands for the event;
- Access arrangements, definition including routes, signage and separation of access for different vehicles and users;
- Local area traffic management (LATM) along routes to and from the site, and within the site, to direct traffic to direct traffic to site access points;
- Traffic management procedures and personnel, particularly at access points and intersections (internally and externally);
- Timing of the events and the management of impacts on the surrounding road network, particularly during peak times;
- Bus and other transportation scheduling;
- Public awareness campaign; and
- Contingency plans in case of emergencies.

The provision of an appropriate ETMP will ensure that any event traffic effects are carefully considered and mitigated appropriately, in relation to the local and wider road network. This will be developed as part of the detailed design and works relating to the use and operation of the site. It is recommended that the provision of a suitable EMP be made a condition of consent.

10.2 Roles and Responsibilities

10.2.1 Site Contact – WTR Representative

Typical events could be managed by a designated Event Co-ordinator / Team.

10.2.2 Traffic Controllers and Marshalls

Event specific traffic management plans should be prepared and implemented by suitably qualified Traffic Management Contractors and Traffic Controllers to ensure appropriate Traffic Management measures are provisioned during events.

Parking marshals should also be utilised during an event, especially for larger events and feature race days which would attract large audiences, to assist with the management of drop-off and pick-up areas and provide direction to and from site parking facilities.

10.3 Vehicle & Parking Management

10.3.1 Vehicles

Vehicle and pedestrian routes and paths will need to be demarcated as much as practical during event mode to avoid conflicts. Consideration should be given to prioritising and restricting movements within the site based on trip type and purpose, drop-off and pick-up trips, persons with special access needs, event buses, emergency and other authorised vehicles.

Incentives should be considered to encourage patrons to travel to and from the site via non-private car means such as event specific buses or sharing car trips. During larger (feature) events where car parking is expected to reach capacity, this should be made known to the general public, and alternative transport options should be presented to attendees for consideration.

10.3.2 Site Carparking

Land will be secured for overflow parking as identified by an approved EMP specifically tailored to an event, as appropriate. Overflow parking is indicated to be catered to at the southwest side, as well as a smaller portion to the south side of the track, as per the draft masterplan.

The amount of land that is to be made available for car parking during events, should take into consideration the event type, patronage and initiatives that would be employed to transport spectators to and from the site.

Not excluding other parking areas, the masterplan currently allows for at least 2,030 parking spaces spread across three areas. This would account for most events based on the anticipated attendee and vehicle numbers. It is anticipated that there would also be overflow parking areas (informal parking) provided for major events where the demand would exceed the formal supply.

Areas used for overflow parking should ideally be located conveniently near to spectator seating and entrance gates and where required, provided with transportation between parking areas and pedestrian entrances. The indicative layout shows several internal road enabling connectivity between the formal and informal parking areas to the main access.

10.3.3 Parking Restrictions

Parking restrictions should be considered in areas that need to be protected from event parking, or in areas restricted to event personnel. It is noted that any restrictions proposed should consider the words 'authorised vehicles excepted' to allow parking by vehicles required to manage an event.

These restrictions will ensure that the parking spaces/areas are not used by spectators and the general public, and to ensure efficient and convenient circulation and access is provided on event days.

10.3.4 Site Signage

Appropriate event signage and way-signage should be provided at all major internal and external intersections. Signs should be used to inform and direct motorists to site access points, and car parking areas. Permanent way-signage should be implemented for regular day-to-day operations and on-site services.

Marshals should be considered to facilitate traffic flow, provide clear direction for different patron types and mitigate delays to multi-patron transport modes (i.e. buses).

Directional signage and/or marshals should also be posted at access gates to direct patrons seeking car parking to appropriate entrances for car parking. The preceding will assist with reducing double-backing and vehicle turnaround during event mode.

It is the Event Manager/Team and the appointed Traffic Management Contractors' responsibility to install, maintain, adjust and implement additional signage where required, and remove the signage proposed on the day of (or soon after the end of) the event.

11 CONSTRUCTION TRAFFIC

It is standard practice to prepare and submit a detailed Construction and Earthworks Management Plan (CEMP) addressing the phasing and construction for large scale developments. This is to be approved by the relevant authorities (Waikato DC, Waipa DC, NZTA) and is typically included as a condition of consent where construction works are likely to be significant.

Given the extensive scale of the site, construction works would likely to be undertaken in stages, noting design details and construction scheduling will be better confirmed after consent is granted, and a contractor has been appointed.

As part of the CEMP, a Construction Traffic Management Plan (CTMP) would be typically prepared and provided to the relevant authority for certification prior to works commencing on the site. The CTMP will set out details of the work phases, associated forecast construction traffic volumes for each phase, and related management thereof. As a component of the broader CEMP, the CTMP will need to be submitted in accordance with Council's requirements for such CTMPs and the New Zealand Guide to Temporary Traffic Management (NZGTTM), prior to the commencement of any site works.

It is anticipated that vehicle access to the site during construction would likely be handled via the existing vehicle access points off Pencarrow Road, Hooker Road and/or Duncan Road, depending on the work location within the site. Such arrangements will need to be certified by the relevant authority, in advance of commencing any site works.

These and other specific details would be documented in the CTMP submitted to Council for approval prior to site works commencing. A typical CTMP will include matters such as:

- timing of specific work phases;
- key activities during each work phase;
- anticipated traffic levels and access arrangements for each work phase;
- provision for maintaining safe traffic and personnel movements within the site;
- wheel washing requirements for site vehicles;
- routes to be used by construction traffic and the adoption of any measures on these routes, including route restrictions for large articulated trucks or over-sized vehicles, and appropriate works signage clearly communicating any necessary diversions;
- access for construction vehicles to/from the site and measures adopted at these access points to ensure a safe traffic environment
- contact telephone number for key site staff.

The provision of an appropriate CTMP will ensure that effects of the construction traffic are carefully considered and mitigated appropriately.

12 TRANSPORT STRATEGIES AND POLICIES

12.1 National and Regional Transport Initiatives

12.1.1 Government Policy Statement on Land Transport 2024-34

The Government Policy Statement (GPS2024) outlines this Government's priorities for expenditure from the National Land Transport Fund over the next 10 years. It also provides guidance to decision-makers about where the Government will focus resources, consistent with the purpose of the Land Transport Management Act, which is:

"To contribute to an effective, efficient, and safe land transport system in the public interest."

The four key strategic priorities of the GPS2024 are defined as Safety, Better Travel Options, Improving Freight Connections and Climate Change. These are defined further as follows:

- *Safety: Developing a transport system where no-one is killed or seriously injured.*
- *Better Travel Options: Providing people with better transport options to access social and economic opportunities.*
- *Improving Freight Connections: Improving freight connections for economic development.*
- *Climate Change: Developing a low carbon transport system that supports emissions reductions, while improving safety and inclusive access.*

12.1.2 Waikato Regional Land Transport Plan 2024 – 2054

The Waikato Regional Land Transport Plan 2024 – 2054 (WRLTP) sets out the strategic direction for land transport in the Waikato region over the next thirty years. The Plan is built around the region's three key transport problems, namely:

- *Protecting the function of our strategic corridors in the context of growth pressures in and around Hamilton, the North Waikato and in the upper North Island.*
- *Tackling our complex road safety problem and the disproportionate number of death and serious injuries in the region.*
- *Providing better, more equitable transport options to access social, health, economic and cultural opportunities.*

The Plan sets out seven priorities for land transport in the Waikato region. The priorities relevant in this instance are as follows.

- *Strategic Corridors: Improving network resilience, route reliability and safety on key strategic corridors.*
- *Managing Growth: Providing multi-modal transport solutions to support housing and growth in high growth areas.*
- *Road Safety: Implementing priorities in Road to Zero for the Waikato 2020 road safety strategy.*
- *Access and Mobility: Growing public transport and active mode share in urban and high growth areas.*
- *Maintaining what we have: Maximising efficiencies and optimisation across the transport system.*

12.1.3 New Zealand's Road Safety Objects as part of GPS2024

This strategy sets out the vision for New Zealand where no one is killed or seriously injured in road crashes. The following seven principles are included in the strategy to guide how we design the network and make road safety decisions:

- *Promote good choices but plan for mistakes*
- *Design for human vulnerability*
- *Strengthen all parts of the road transport system*
- *Shared responsibility for improving road safety*
- *Our actions are grounded in evidence and evaluated*
- *Road safety actions support health, wellbeing, and liveable places*
- *Make safety a critical decision-making priority*

12.2 Policy Alignment

The report finds that the site development would be consistent with the GPS and directions set out in the other national or regional strategies and policies because:

- The proposed development is not considered to be in conflict with the GPS2024 and supports its focus on access and regional economic development. The 'Safety' priority set out in the GPS signals a focus on improving the safety of roads across the network to reduce deaths and serious injuries. The greenfield site development will result in additional vehicle movements onto the rural road network. Accesses to the site are expected to be formed to a suitable standard to ensure safe and efficient access to the site
- The existing Te Rapa Racecourse is identified as one of several 'generation and destination nodes' in the region, which is expected to also be reflective of the new site. The racecourse is an important social and cultural hub which makes a tangible contribution to the economic wellbeing of the racing industry. The proposed development of a greenfield site to accommodate a future racecourse facility is considered well aligned with the WRLTP insofar as the development outcomes will contribute towards the economic, social, environmental and cultural wellbeing of the region.
- The proposed access strategy is considered to be consistent with the Road to Zero Road Strategy as entranceways to the site are expected to be formed to a suitable standard to ensure safe access.

13 FAST TRACK LEGISLATION

13.1 Climate Change Mitigation

The Fast-track Approvals Act 2024 enables a streamlined approvals process for infrastructure and development projects that deliver significant regional or national benefits. Under section 22(2)(a)(vii) *Criteria for assessing a referral application*, it may allow a project to be fast-tracked where the project:

“Will support climate change mitigation, including the reduction or removal of greenhouse gas emissions.”

In transport terms, this clause provides a clear statutory basis for approving projects that demonstrably support climate change outcomes through transport demand management and emissions reduction measures. The primary transport-related emissions associated with the development would arise from:

- Daily staff, trainer, resident and service vehicle travel
- Horse transport movements
- Event-related spectator and workforce travel
- Construction traffic during development phases

The assessment below outlines how these emissions would be reduced or mitigated.

13.2 Statutory Assessment (High Level)

13.2.1 Site Consolidation

The proposal replaces multiple existing racecourse and training facilities currently operating across the Waikato region with a single integrated hub. This consolidation enables on-site stabling, training, accommodation, events, and industry services, significantly reducing the need for inter-site travel by trainers, staff, officials, service vehicles, and horse transport. In transport terms, this represents a reduction in recurring travel demand that would otherwise continue under a dispersed facility model.

Existing Baseline (Dispersed Operations)

Under the existing arrangement, racing and training activities are split between multiple sites across Te Rapa, Cambridge and Waipa, with associated traffic movements by:

- Trainers, jockeys, and stable staff travelling between sites
- Horse floats and support vehicles transporting horses between facilities
- Service vehicles (feed, veterinary, maintenance, waste) servicing multiple locations
- Event staff and officials attending different venues on different days

These dispersed operations generate repeated inter-site vehicle trips across the region, contributing to greater vehicle kilometres travelled and associated emissions.

Proposed Scenario (Integrated Hub)

The proposed development would reduce travel demand through the removal and consolidation of multiple existing racing and training facilities into a single integrated hub enabling:

- Permanent on-site stabling and training for a large proportion of horses
- On-site accommodation for trainers, students, and staff
- Centralised servicing and logistics
- A single destination for race days and events

As a result:

- Inter-venue trips are largely eliminated
- Horse float movements are reduced to external arrivals only, rather than cross-regional circulation
- Staff and service trips are consolidated and shortened

- Event traffic is concentrated at one site with managed access and parking

13.2.2 Transport Efficiency

The proposed development further mitigates emissions by improving transport efficiency through:

- Direct access to the regional road network
- Purpose-designed access arrangements
- EVP/ETMP to minimise congestion and impacts to the road network during large events
- Scheduling of high demand activities outside of peak network periods

13.2.3 Low Emission Travel Choices

The development can support a transition to lower-emissions transport by:

- Providing safe access to active mode infrastructure including Te Awa River Ride for cycling and walking, and bus stops on Cambridge Road and Tamahere Village (pedestrian priority treatments at access crossings, bus stop connections, wayfinding signage, secure cycle parking and end-of-trip facilities)
- Enabling event-based travel demand measures such as charter buses and ride-sharing (dedicated drop-off/pick-up zones to support ride-share and taxi use, discount incentives for car-pooling vehicles)
- Allowing for the provision of electric vehicle parking design and charging infrastructure
- Future-proofing internal layouts for low-emissions fleet and shuttle vehicles

These measures would provide ongoing opportunities for emissions reduction over the life of the project.

13.2.4 Construction Traffic

Construction-related traffic emissions will be managed through a detailed CEMP/CTMP, which will:

- Stage works to minimise unnecessary vehicle movements
- Consolidate deliveries where practicable
- Manage access to avoid congestion and queuing
- Reduce inefficient heavy vehicle operations

13.3 Legislation Alignment Summary

Accordingly, it is considered that the proposal meets the intent of section 22(2)(a)(vii) by supporting climate change mitigation through the consolidation of activities, reduction in vehicle kilometres travelled, improved transport efficiency, facilitation of lower-emissions travel choices, and minimising construction traffic impacts.

14 PEER REVIEW SUMMARY

An independent peer review (attached Appendix I) of this ITA was undertaken by Don McKenzie Consulting Ltd to assess whether the transport reporting prepared for the Waikato Thoroughbred Racing Hub at Tamahere is appropriate for the Fast-track Approvals Act referral stage. The peer review confirms that the ITA provides a generally appropriate strategic-level assessment for the purposes of referral and adequately describes the proposal, the surrounding transport environment, and the nature of the anticipated transport effects at this preliminary stage.

The reviewer considers that the traffic generation assumptions adopted for the core components of the proposal including racing events, training activities, and the 67-lot residential component, are broadly reasonable and consistent with good transport engineering practice, being informed by operational data from comparable racing facilities. The ITA is assessed as sufficient to identify the scale and characteristics of traffic activity associated with the proposal and to flag the key transport matters that require more detailed consideration at the substantive application stage.

The peer review identified that the original ITA did not include an assessment of intersection operational performance and noted that conclusions regarding the ability of the surrounding network to accommodate development traffic were therefore premature at the referral stage. While the reviewer acknowledged that detailed intersection modelling is not strictly required for the referral phase, this feedback was taken into account and has since been addressed. Accordingly, operational intersection modelling has now been undertaken, including assessment of intersections in the immediate vicinity of the site as well as key intersections along strategic routes in the wider network. This additional analysis provides a quantified assessment of network performance and confirms the operational implications of development traffic, thereby strengthening the conclusions regarding network capacity and performance.

It is also noted that while the concept masterplan identifies a range of potential ancillary activities (such as commercial uses, community facilities, and additional equestrian activities), these have not yet been quantified in traffic terms. The reviewer recommends that, should these activities form part of the development envelope for the substantive application, with their potential traffic effects quantified and assessed in further detail.

The peer review confirms that the site benefits from extensive road frontage and multiple potential access points, providing flexibility to accommodate access, internal circulation, and parking arrangements. The reviewer agrees that the site can physically accommodate the transport demands associated with both routine operations and race-day events, subject to detailed design and further traffic analysis at the next stage of assessment.

Overall, the peer review concludes that the ITA is fit for purpose at the Fast-track referral stage, provided it is clearly presented as a strategic transport commentary rather than a full operational ITA. The peer reviewer supports progression of the project beyond the referral stage and notes that any detailed assessment of intersection performance, refinement of development scenarios, and identification of mitigation measures would ordinarily be undertaken as part of the substantive application. In response to this feedback, and to further inform decision-making, intersection modelling has now been completed.

15 CONCLUSIONS

15.1 Transport Environment (Existing Conditions)

The subject site fronts Pencarrow Road (west), Hooker Road (south), and Duncan Road (east), with State Highway 1 (Waikato Expressway) forming the northern boundary. The Te Awa River Ride, a 3.0m wide shared walking and cycling path, runs along the Pencarrow Road and Hooker Road frontages, providing active mode connectivity in an otherwise rural context. Existing traffic volumes on the surrounding local and rural connector roads are generally low to moderate and reflective of their current land use function.

A review of Crash Analysis System data identifies 33 reported crashes within the wider study area over the last five years, including two serious-injury crashes at the Hooker Road / Cambridge Road / Racecourse Road intersections. These crashes are predominantly crossing and turning movements typical of high-speed, high-volume rural priority intersections. The roads immediately surrounding the site record fewer crashes and generally lower severity incidents.

Pencarrow Road and Hooker Road meet Waikato District Plan (WDP-OIP) requirements for rural local roads but are substandard against RITS standards when assessed as secondary collectors. The posted 100 km/h speed environment is higher than RITS guidance for roads of this function, a matter relevant to future access design rather than a constraint to the proposal.

15.2 Proposed Activities and Trip Generation

The proposal provides for a consolidated racing and training hub with supporting equine services and a 67-lot rural living residential subdivision. The anticipated calendar includes up to approximately 95 race days per year, covering weekday, weekend, and feature events, as well as routine morning training operations.

Training activity represents a regular, non-event traffic component occurring primarily in the early morning period and is expected to generate approximately 30–40 horse floats, 50 trainer vehicles, around 200 staff vehicles, and a small number of service trucks per day. These movements are spread over several hours and would be largely accommodated via the Duncan Road trainer access.

Race day traffic generation varies by event scale. Typical events are expected to attract 500–2,000 attendees, with infrequent feature events benchmarking up to 6,000 attendees. A conservative 1.7 persons per vehicle ratio has been adopted, reflecting the site's rural location and limited public transport accessibility.

The residential subdivision contributes modest background traffic, estimated at up to 74 vehicles per hour in the peak and approximately 570 vehicles per day, some of which coincides with training-related movements.

15.3 Road Network Assessment

Following the peer review feedback, SIDRA Intersection modelling has been undertaken to assess operational performance of local site intersections and key strategic network intersections under existing and future scenarios (2035 and 2045), both with and without development traffic, and including Southern Links in the 2045 period.

The modelling confirms that the surrounding network can accommodate the proposed development without unacceptable operational effects. Most intersections continue to operate at acceptable levels of service, with development traffic resulting in modest and localised increases in delay only.

Strategic intersections at the Tamahere Interchange remain operationally robust across all scenarios, and the inclusion of Southern Links in 2045 provides a clear network benefit, reducing congestion and improving resilience during peak and event conditions. Intersections experiencing poor levels of service on the minor road approaches, most notably Airport Road / Pencarrow Road and the Cambridge Road priority intersections, are shown to be already constrained under baseline conditions, with development traffic not materially altering performance or introducing new critical issues.

Overall, the modelling confirms that the proposal does not introduce network-wide capacity failures, and that any longer-term improvements required at known constrained intersections are appropriately addressed through wider network planning, rather than being required as mitigation for the development.

15.4 Site Access and Road Upgrades

The access strategy provides for a hierarchy of access points, including:

- A main public access from Hooker Road,
- A secondary access from Pencarrow Road, and
- A trainer and staff access from Duncan Road.

Based on traffic volumes, speeds, and Austroads warrants, a channelised right-turn bay at the Hooker Road access is anticipated, with final layout, storage lengths, and any associated widening confirmed at detailed design stage. All site accesses will be designed in accordance with WDP-OIP and RITS, and will include appropriate treatments to ensure a safe interface with the Te Awa River Ride.

Localised upgrades to Hooker Road and Duncan Road, including carriageway widening and extension of walking and cycling facilities, are anticipated to support safe access and improved connectivity, particularly in relation to the residential component.

15.5 Parking and Travel Demand Measures

Indicative layouts demonstrate that the site can accommodate formal on-site parking for the majority of events, supplemented by managed overflow parking areas for larger race days. Event activity will be governed by Event Management Plans (EMP) and Event Traffic Management Plans (ETMP), addressing parking allocation, marshals, shuttle and bus operations, rideshare areas, and access control.

For infrequent feature events, proactive travel demand measures including wider area event traffic management, charter buses, rideshare prioritisation, and targeted parking management, will be required to maintain network performance.

Lighting will be appropriately incorporated where operations extend beyond daylight hours.

15.6 Active and public transport

The Te Awa River Ride provides high-quality walking and cycling access to the site, though practical walking catchments are limited by distance. Existing bus services operate along Cambridge Road and through Tamahere Village, with the Cambridge Road stop environment currently substandard. Future upgrades to this stop environment would improve multimodal accessibility and support reductions in private vehicle use.

15.7 Horse Movements

All off-site horses are expected to arrive and depart the site by float, with no regular off-site riding movements anticipated. Any interaction with the Te Awa trail or local roads will be managed through segregated routing and marshal controls implemented via the EMP/ETMP to protect both animal welfare and path user safety.

15.8 Construction traffic

Construction activities will be managed through a Construction Traffic Management Plan (CTMP) prepared in accordance with the NZGTTM. The CTMP will define haul routes, daily heavy vehicle limits, cycleway interface management, and site access arrangements via surrounding rural connector frontages (Pencarrow Road, Hooker Road and Duncan Road). The CTMP will be certified and implemented prior to works commencing.

15.9 Policy and Legislative alignment

The proposal is generally considered to align with relevant national, regional, and district transport policies, supporting strategic corridor protection and growth management objectives, subject to appropriate access design and event management controls.

The development also supports the intent of section 22(2)(a)(vii) of the Fast-track Approvals Act 2024, particularly through consolidation of activities, reduced inter-site travel, and improved transport efficiency, contributing to climate change mitigation benefits.

15.10 Overall Conclusion

Training operations generate concentrated but manageable early morning traffic, primarily accommodated via Duncan Road and Hooker Road. Regular event days are generally manageable with operational traffic management, marshals, and on-site parking. Infrequent feature events require advance planning through ETMPs and targeted measures rather than permanent network upgrades.

Subject to the appropriate access, design, and traffic management measures, it is concluded that the transport effects of the proposed Waikato Thoroughbred Racing Hub can be appropriately managed and reduced to an acceptable level for a rural connector environment, and do not present a barrier to approval.

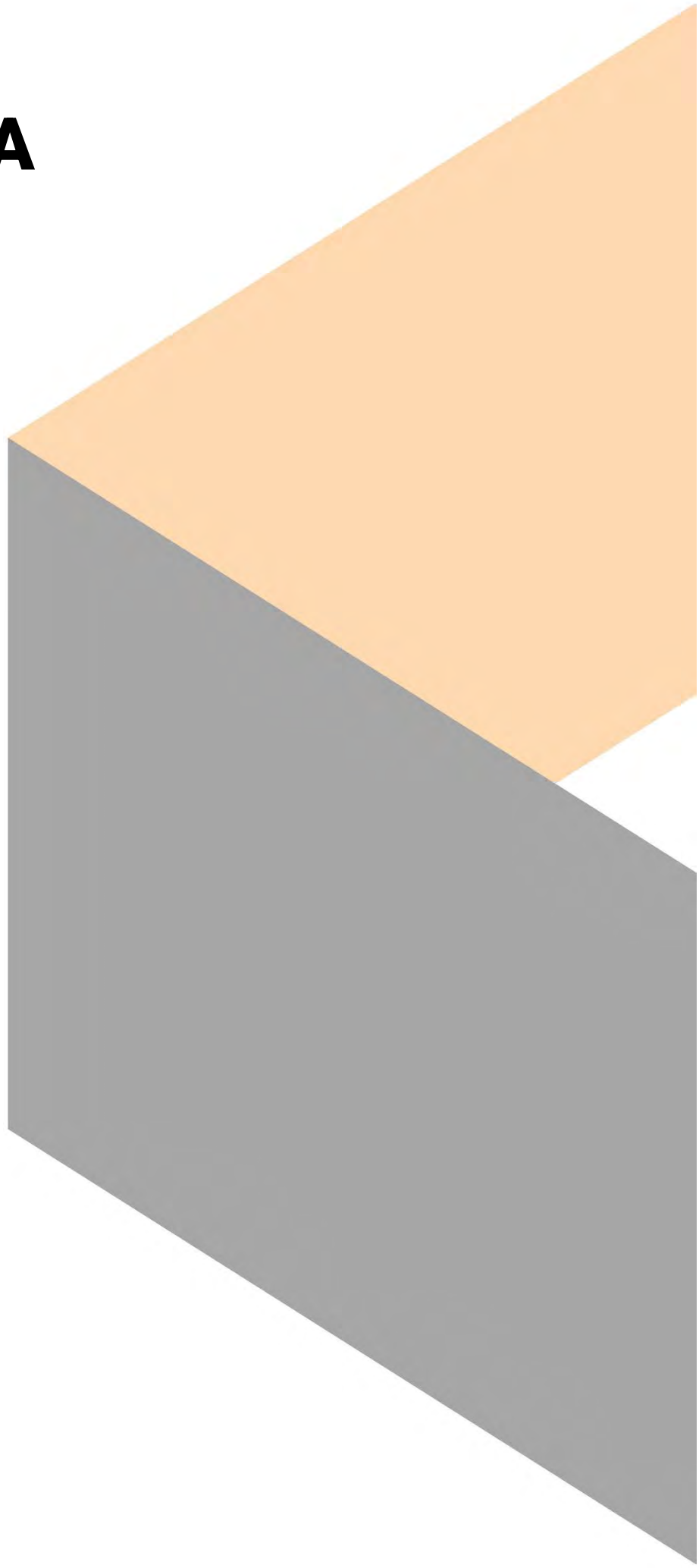
16 REPORT LIMITATIONS

This report has been prepared for our client for their purposes. It is not to be relied upon or used out of context by any other person without reference to BCD. The reliance by other parties on the information or opinions contained in this report shall, without prior review and agreement in writing, be at such parties' sole risk.

This traffic assessment has been undertaken based on concept level masterplanning of the development. The purpose of the assessment is to identify and give an overview of the traffic aspects relating to the site to assist with fast-track consenting and planning. Completion of a more detailed assessment will be subject to detailed plans, further information and feedback from relevant authorities forming part of the substantive application.

Appendix A

Site Plans



1.3 INDICATIVE PROPOSED SITE LAYOUT PLAN



Te Awa P
Northern
Main Tra
Parking
Equine S
Event an
Parking
Screen P
Harness
Irrigation
Blood St
Parking
Main Cer
Wetlands
Commer
Existing

Track (Training)
Equine Uses
On Up Track
Access Tunnel
the Precinct
ation Pond
Borrow Sites
style Blocks
Duncan Rd
Senior Living

1.4 INDICATIVE COMMERCIAL ZONES



1	Commercial Equire Services	Area - 26,500m ² GFA - 18,000m ² . Max 2 floors
2	Bloodstock	Areas - 63,200m ² GFA - 20,000m ² . Max 2 floors
3	Village Centre	Area - 15,000m ² GFA - 15,000m ² . Max 4 floors
4	Training Areas	Area - 150,000m ² GFA - 100,000m ² . Max 2 floors
5	Rural Residential Development	Area - 153,600m ² 40-50 2,500m ² Lots GFA per lot 800m ² . Max 2 storey buildings
6	Comprehensive Residential Development for Senior Living	Area - 68,000m ² 70 Villas @ average 100m ² GFA - 7,000m ² . Single storey 200 apartments @ average 50m ² GFA - 10,000m ² . Max 4 floors Community Centre GFA - 500m ² . Max 2 floors

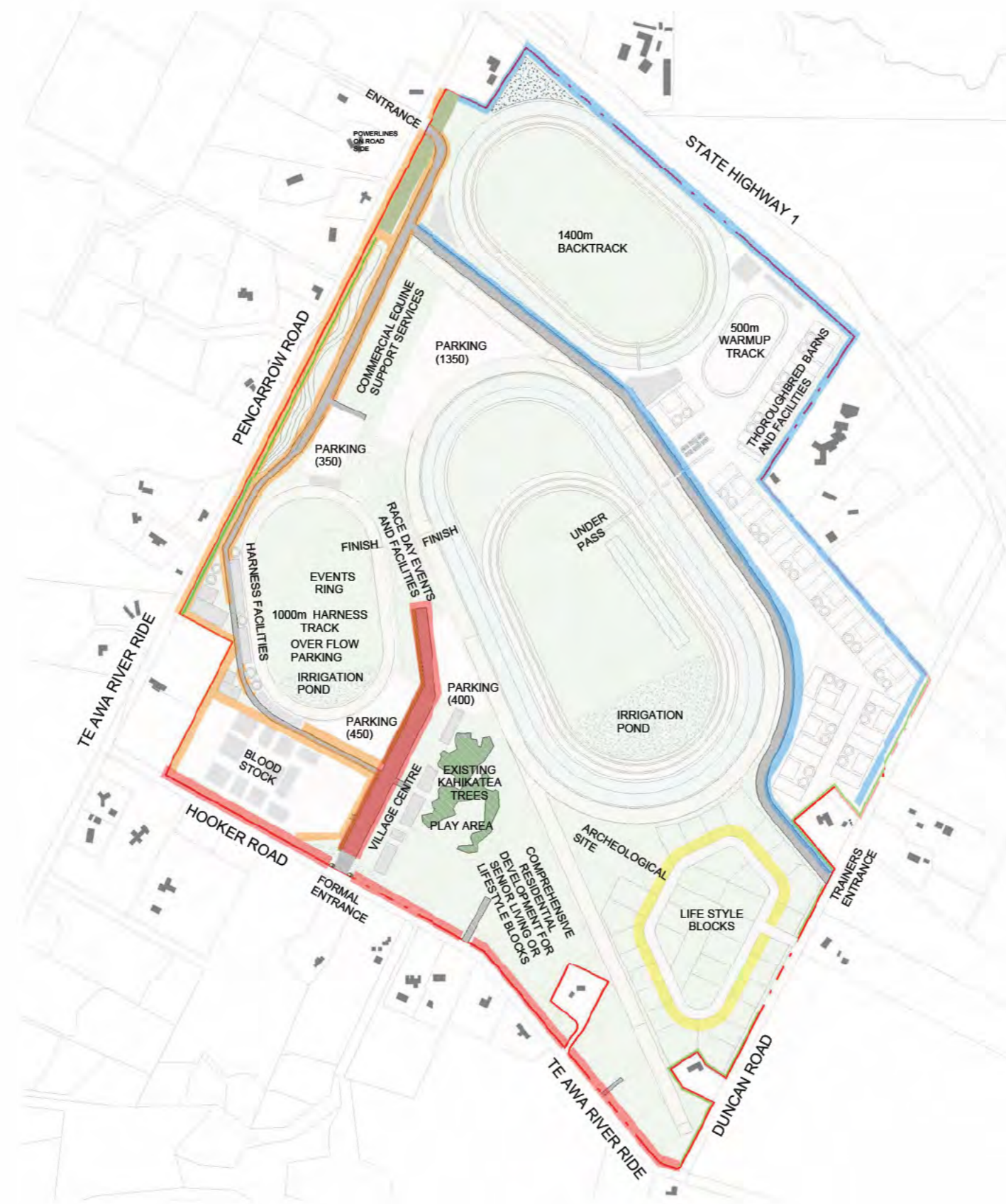
All figures are approximate. Indicative only.



1.5 PROPOSED SITE PLAN RENDER



2.1 LANDSCAPE SITE PLAN



Landscape Site Plan
SCALE @ A3 - 1 : 10000

- PROPOSED SPECIMEN TREES**
- Populus 'Crows Nest'* - upright poplar - 5m Spacings
 - Liriodendron tulipifera* - tulip tree - 10m Spacings
 - Platanus x acerifolia* - London plane tree - 10m Spacings
 - Prumnopitys taxifolia* - matai - 15m Spacings
- VEGETATION**
- Hedge - *Griselinia 'Ardmore Green'*
 - Existing Vegetation
 - Proposed Native Shrub Planting

NOTE: Refer to Architectural Documentation for Racetrack and Facilities Locations.
Refer to Civil's Documentation for Swale Design.

2.4 LANDSCAPE CIRCULATION AND SWALE CONCEPT PLANS

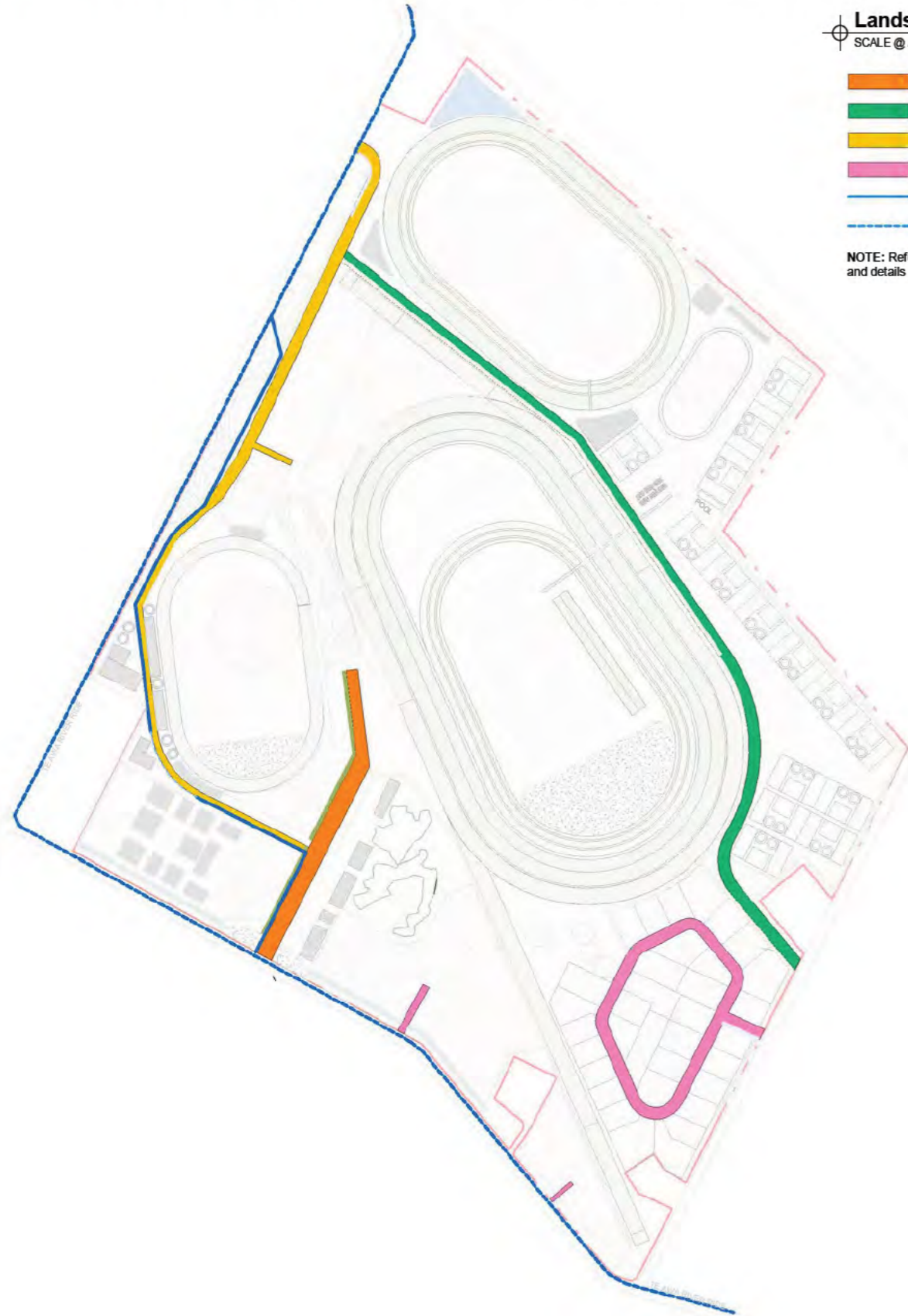


Landscape Circulation Plan

SCALE @ A3-1 : 10000

- Main Entry Boulevard (Refer to Sheet 2.5 & 2.6)
- Private Access Rd (No Footpath)
- Private Access Rd (With Footpath)
- Council Urban Rd
- Proposed Shared Path
- Existing Shared Path

NOTE: Refer to Civil's Documentation for all Road Typologies and details

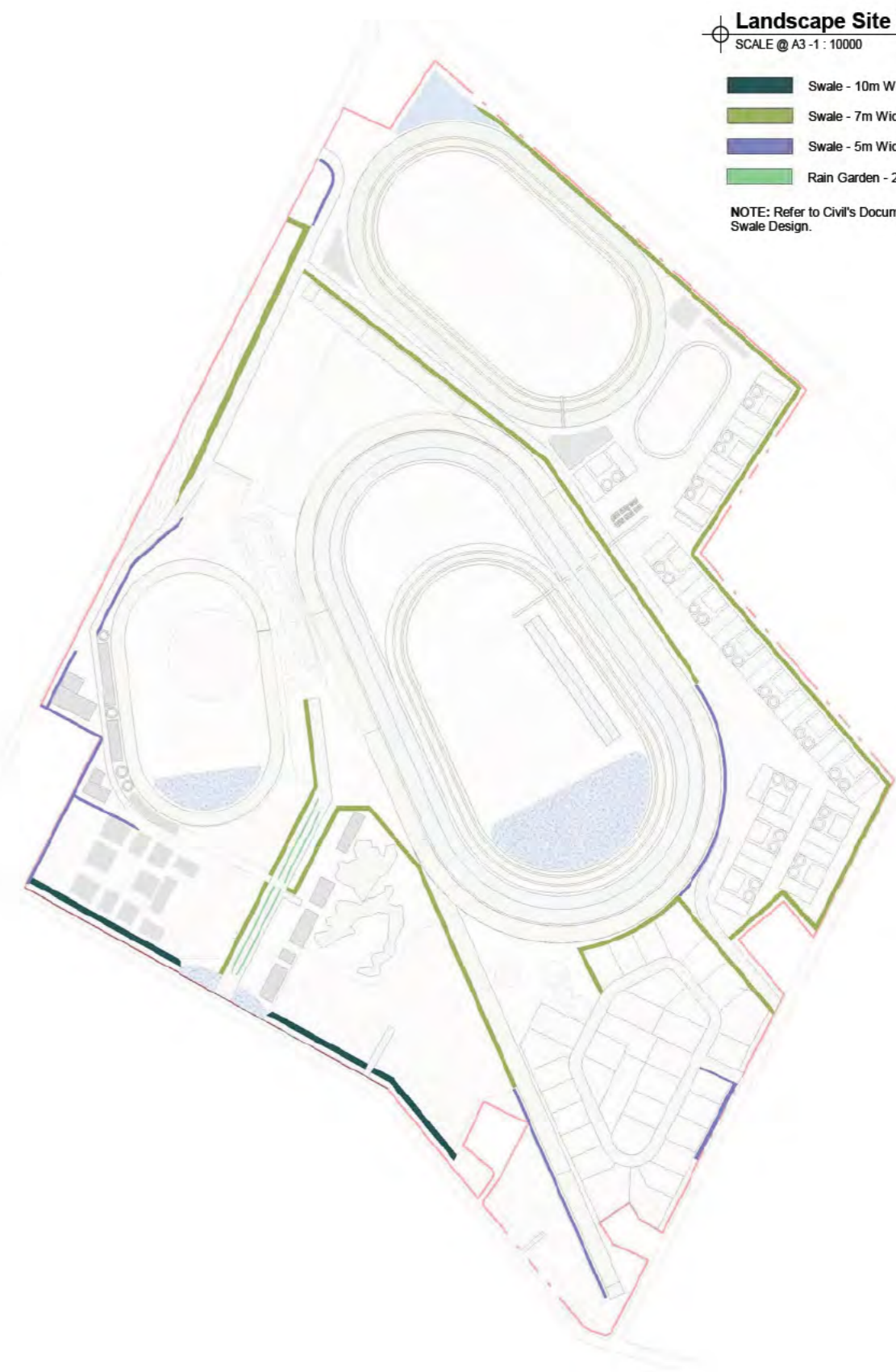


Landscape Site Swales Plan

SCALE @ A3-1 : 10000

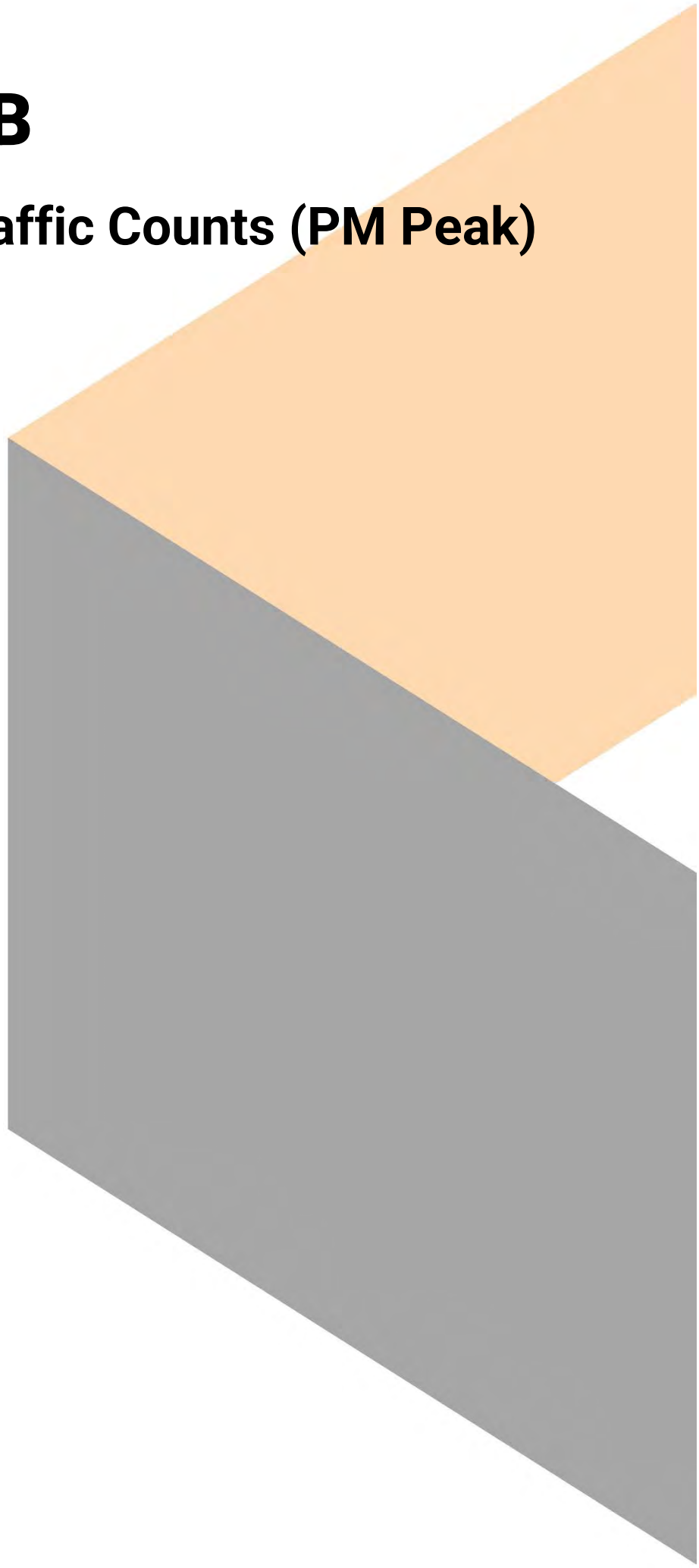
- Swale - 10m Wide
- Swale - 7m Wide
- Swale - 5m Wide
- Rain Garden - 2.5m Wide

NOTE: Refer to Civil's Documentation for Swale Design.



Appendix B

Intersection Traffic Counts (PM Peak)



Pencarrow Road / Hooker Road

Approach	Movement	4:00 - 4:15	4:15 - 4:30	4:30 - 4:45	4:45 - 5:00	5:00 - 5:15	5:15 - 5:30	5:30 - 5:45	5:45 - 6:00	Hourly Avg (vph)
Hooker Road	Left	0	2	5	3	2	1	0	1	7
	Right	8	7	9	12	6	7	4	5	29
Pencarrow Road North	Through	3	4	6	2	4	2	1	2	12
	Left	8	7	11	16	9	5	8	6	35
Pencarrow Road South	Through	3	5	7	2	5	3	2	2	15
	Right	2	0	5	3	3	0	3	2	9

Longest queue observed:

- Hooker Road – 3 vehicles (4:55pm)
- Pencarrow Road Right Turn – 1 vehicle

Hooker Road / Duncan Road

Approach	Movement	4:00 - 4:15	4:15 - 4:30	4:30 - 4:45	4:45 - 5:00	5:00 - 5:15	5:15 - 5:30	5:30 - 5:45	5:45 - 6:00	Hourly Avg (vph)
Duncan Road	Left	0	2	1	2	2	0	3	1	6
	Right	1	0	0	4	1	3	1	0	5
Hooker Road West	Through	7	11	9	15	17	8	6	9	41
	Left	0	2	0	2	1	0	0	1	3
Hooker Road East	Through	9	8	12	11	7	9	5	7	34
	Right	2	0	2	1	4	0	0	1	5

Longest queue observed:

- Duncan Road – 1 vehicle
- Hooker Road Right Turn – None

Tamahere Drive / Pickering Road

Approach	Movement	4:00 - 4:15	4:15 - 4:30	4:30 - 4:45	4:45 - 5:00	5:00 - 5:15	5:15 - 5:30	5:30 - 5:45	5:45 - 6:00	Hourly Avg (vph)
Pickering Road	Left	4	2	4	7	5	1	3	1	14
	Right	3	5	3	9	6	3	5	2	18
Tamahere Drive West	Through	7	6	12	16	9	11	5	6	36
	Left	2	4	2	5	7	1	3	2	13
Tamahere Drive East	Through	4	5	7	13	8	9	8	4	29
	Right	1	0	4	3	3	1	2	2	8

Longest queue observed:

- Pickering Road – 2 vehicles (4:57pm)
- Tamahere Drive Right Turn – 1 vehicle

Tamahere Drive / Expressway Off-ramp

Approach	Movement	4:00 - 4:15	4:15 - 4:30	4:30 - 4:45	4:45 - 5:00	5:00 - 5:15	5:15 - 5:30	5:30 - 5:45	5:45 - 6:00	Hourly Avg (vph)
SH1 Off-Ramp (One-Way)	Left	1	2	4	5	3	2	2	3	11
	Right	37	29	39	51	53	43	32	30	157
Tamahere Drive North	Through	41	52	48	45	62	47	31	37	182
Tamahere Drive South	Through	34	41	40	38	45	34	27	25	142

Longest queue observed:

- Tamahere Drive northbound / Roundabout approach – 9 vehicles (5:13pm)
- Off-ramp – 7 vehicles (4:51pm)

Airport Road / Pencarrow Road

Approach	Movement	4:00 - 4:15	4:15 - 4:30	4:30 - 4:45	4:45 - 5:00	5:00 - 5:15	5:15 - 5:30	5:30 - 5:45	5:45 - 6:00	Hourly Avg (vph)
Pencarrow Road	Left	4	7	5	5	11	9	9	8	29
	Right	7	6	8	13	10	12	8	9	37
Airport Road North	Through	122	129	147	166	189	192	174	156	638
	Left	11	7	12	17	17	19	9	9	51
Airport Road South	Through	84	91	119	127	109	86	89	77	391
	Right	6	5	5	8	10	6	7	4	26

Longest queue observed:

- Pencarrow Road – 4 vehicles (5:15pm)
- Airport Road Right Turn – 2 vehicles (5:03pm)

Hooker Road / Cambridge Road / Racecourse Road

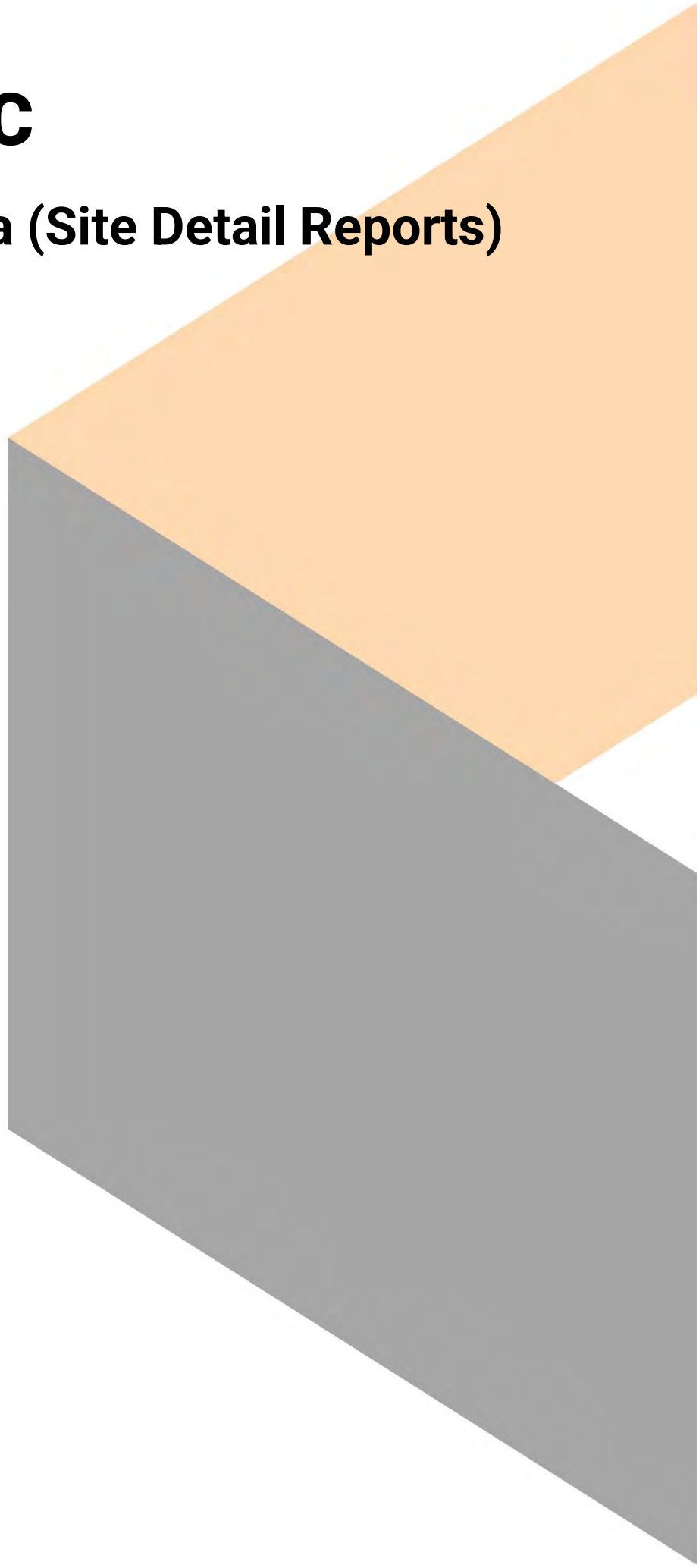
Approach	Movement	4:00 - 4:15	4:15 - 4:30	4:30 - 4:45	4:45 - 5:00	5:00 - 5:15	5:15 - 5:30	5:30 - 5:45	5:45 - 6:00	Hourly Avg (vph)
Hooker Road	Left	1	0	3	6	4	2	4	2	11
	Right	8	10	9	13	7	8	4	5	32
Cambridge Road West	Left	1	3	1	5	2	1	2	3	9
	Through	84	91	89	105	114	98	76	71	364
	Right	0	1	2	5	2	3	0	1	7
Cambridge Road East	Left	5	8	6	10	12	6	7	4	29
	Through	67	79	91	83	77	59	66	52	287
	Right	3	3	5	2	4	5	3	2	14
Racecourse Road	Left	2	1	0	3	1	2	2	1	6
	Right	9	7	12	10	13	14	9	8	41

Longest queue observed:

- Hooker Road – 5 vehicles (4:49pm)
- Racecourse Road – 4 vehicles (5:16pm)
- Cambridge Road West right turn – 2 vehicles (5:11pm)
- Cambridge Road East right turn – 2 vehicles (5:19pm)

Appendix C

CAS Crash Data (Site Detail Reports)



Crash road	Side road	Feature	Distance from side road/feature	Direction	Reference station	Route position	Easting	Northing	Longitude	Latitude	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather	Junction	Control	Casualty count fatal	Casualty count serious	Casualty count minor
AIRPORT ROAD	PENCARROW ROAD			I			1806870	5809594	175.350888	-37.837642	2024292756	12/07/2024	Fri	16:35	Car/Wagon1 SDB on AIRPORT ROAD hit Car/Wagon2 turning right onto AXROAD from the left	CAR/WAGON1, alcohol test below limit CAR/WAGON2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control	Dry	Overcast	Fine	T Junction	Stop	0	0	0
AIRPORT ROAD	PENCARROW ROAD			I			1806877	5809608	175.350958	-37.837514	2023261211	17/06/2023	Sat	11:45	SUV2 turning right hit by oncoming Car/Wagon1 SDB on AIRPORT ROAD	CAR/WAGON1, alcohol test below limit SUV2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way turning to non-turning traffic	Wet	Overcast	Light rain	T Junction	Stop	0	0	2
AIRPORT ROAD	PENCARROW ROAD			I			1806878	5809608	175.350965	-37.837518	2023264866	10/08/2023	Thu	17:24	Car/Wagon1 SDB on AIRPORT ROAD hit Ute2 turning right onto AXROAD from the left	UTE2, did not stop at stop sign, failed to give way at priority traffic control, ENV: slippery road due to rain	Wet	Overcast	Light rain	T Junction	Stop	0	0	0
PENCARROW ROAD	DAY ROAD			I			1807290	5808310	175.356016	-37.849118	2026367889	25/02/2026	Wed	08:30	Car/Wagon1 SDB on PENCARROW ROAD lost control turning left, went off road to right, Car/Wagon1 hit fence	CAR/WAGON1, alcohol test above limit or test refused, other misjudged speed, distance or position	Dry	Bright sun	Fine	T Junction	Give way	0	0	0
PENCARROW ROAD	TE AWA ROAD		314.00m	N			1807408	5807448	175.357610	-37.856848	2022216755	23/03/2022	Wed	15:43	Car/Wagon1 NDB on PENCARROW ROAD lost control turning right, went off road to left, Car/Wagon1 hit power pole, fence	CAR/WAGON1, alcohol test above limit or test refused, lost control when turning, new driver/under instruction, speed entering corner/curve	Dry	Overcast	Fine	Nil (Default)	Nil	0	0	1
AIRPORT ROAD	TAMAHERE DRIVE			I			1807470	5810594	175.357408	-37.828508	2022216976	25/03/2022	Fri	18:20	Car/Wagon1 SDB on AIRPORT ROAD hit rear end of Car/Wagon2 stop/slow for cross traffic	CAR/WAGON1, alcohol suspected, following too closely CAR/WAGON2, alcohol test below limit	Dry	Bright sun	Fine	Roundabout	Give way	0	0	0
AIRPORT ROAD		AIRPORT ROAD	12.00m	S			1807473	5810597	175.357444	-37.828476	2025337466	12/06/2025	Thu	10:00	Truck1 NDB on AIRPORT ROAD hit obstruction, truck1 hit bridge	TRUCK1, alcohol test below limit, other vehicle controls, overdimension vehicle or load	Wet	Overcast	Light rain	Nil (Default)	Nil	0	0	0
TAMAHERE DRIVE	AIRPORT ROAD			I			1807461	5810555	175.357313	-37.828853	2021203344	24/02/2021	Wed	08:45	SUV1 SDB on AIRPORT ROAD hit Car/Wagon2 turning right onto AXROAD from the left	CAR/WAGON2, failed to give way at priority traffic control	Dry	Bright sun	Fine	Crossroads	Give way	0	0	0
TAMAHERE DRIVE	AIRPORT ROAD			I			1807472	5810551	175.357447	-37.828892	2025351950	15/10/2025	Wed	22:55	Car/Wagon1 NDB on TAMAHERE DRIVE hit SUV2 crossing at right angle from right, SUV2 hit retaining wall	CAR/WAGON1, failed to give way at priority traffic control, speed entering corner/curve SUV2, swerved to avoid vehicle	Dry	Dark	Fine	Roundabout	Give way	0	0	0
TAMAHERE DRIVE	TAMAHERE DRIVE OFF RAMP		49.00m	N			1807474	5810549	175.357473	-37.828909	2023265792	01/03/2023	Wed	07:15	Truck1 NDB on TAMAHERE DRIVE lost control turning left, went off road to left, Truck1 hit retaining wall	TRUCK1, alcohol test below limit, service brake failed, too far left	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
TAMAHERE DRIVE	TAMAHERE DRIVE OFF RAMP			I			1807489	5810501	175.357650	-37.829342	2024286374	02/05/2024	Thu	11:28	Car/Wagon1 NDB on TAMAHERE DRIVE hit Truck2 merging from the left	TRUCK2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control CAR/WAGON1, alcohol test below limit	Wet	Overcast	Light rain	T Junction	Give way	0	0	1
TAMAHERE DRIVE	TAMAHERE DRIVE OFF RAMP			I			1807488	5810507	175.357634	-37.829283	2024278858	26/01/2024	Fri	11:30	Car/Wagon1 SDB on TAMAHERE DRIVE lost control turning right, went off road to left	CAR/WAGON1, alcohol test below limit, sudden illness, too far left CAR/WAGON2, alcohol test below limit	Dry	Bright sun	Fine	T Junction	Give way	0	0	2
TAMAHERE DRIVE OFF RAMP	TAMAHERE DRIVE		36.00m	E			1807519	5810501	175.357997	-37.829329	2025359953	07/12/2025	Sun	00:48	Car/Wagon1 WDB on TAMAHERE DRIVE OFF RAMP lost control turning left, went off road to right, Car/Wagon1 hit armo (w-section steel), retaining wall	CAR/WAGON1, alcohol test above limit or test refused, swung wide on bend	Dry	Dark	Fine	Nil (Default)	Nil	0	0	0
TAMAHERE DRIVE OFF RAMP	TAMAHERE DRIVE			I			1807495	5810503	175.357722	-37.829316	2024299454	09/03/2024	Sat	21:00	Car/Wagon1 WDB on TAMAHERE DRIVE OFF RAMP hit rear end of Car/Wagon2 stop/slow for cross traffic	CAR/WAGON1, speed on straight	Dry	Dark	Fine	T Junction	Give way	0	0	0
CAMBRIDGE ROAD		AIRPORT ROAD	85.00m	S			1807540	5810553	175.358215	-37.828857	2023252691	01/04/2023	Sat	22:02	Car/Wagon1 SDB on CAMBRIDGE ROAD hit rear end of Car/Wagon2 stopped/moving slowly, Car/Wagon1 hit guard rail, Car/Wagon2 hit guard rail	CAR/WAGON2, alcohol test below limit CAR/WAGON1, alcohol test below limit, intentional collision, mental illness (depression, psychosis), speed on straight	Wet	Dark	Fine	Nil (Default)	Nil	0	0	0
AIRPORT ROAD OFF RAMP	TAUWHARE ROAD			I			1807505	5810679	175.357783	-37.827733	2023260355	22/06/2023	Thu	17:28	Car/Wagon1 EDB on AIRPORT ROAD OFF RAMP hit rear end of Car/Wagon2 stop/slow for cross traffic	CAR/WAGON1, alcohol test below limit, emotionally upset/road rage CAR/WAGON2, emotionally upset/road rage	Wet	Dark	Light rain	Roundabout	Give way	0	0	0
TAUWHARE ROAD	AIRPORT ROAD OFF RAMP			I			1807531	5810680	175.358072	-37.827717	2023254645	26/04/2023	Wed	02:01	Car/Wagon1 SDB on TAUWHARE ROAD lost control turning left, went off road to right, Car/Wagon1 hit traffic sign	CAR/WAGON1, alcohol test below limit, emergency vehicle attending emergency, lost control under braking, speed entering corner/curve	Dry	Dark	Fine	Roundabout	Give way	0	0	0
TAMAHERE DRIVE	RATA AVENUE		26.00m	S			1807540	5810118	175.358337	-37.832778	2023262490	08/07/2023	Sat	19:58	Car/Wagon1 NDB on TAMAHERE DRIVE lost control, went off road to right, Car/Wagon1 hit other	CAR/WAGON1, alcohol test below limit, attention diverted by cell phone, too far left, ENV: fog or mist	Wet	Dark	Mist or Fog	Nil (Default)	Nil	0	0	0
PENCARROW ROAD	TE AWA ROAD		65.00m	S			1807591	5807083	175.359794	-37.860098	2022232479	16/08/2022	Tue	14:00	Ute1 SDB on PENCARROW ROAD lost control, went off road to right, Ute1 hit power pole, letterbox, fence,	UTE1, other fatigue, too far right	Dry	Overcast	Fine	Nil (Default)	Nil	0	0	0

TEAWA RIVER RIDE	KOHUAI AVENUE		I	1807652	5809801	175.359706	-37.835604	2025360523	18/12/2025	Thu	10:45	Cycle1 NDB on TEAWA RIVER RIDE hit Ute2 merging from the left	UTE2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way to traffic crossing from right	Dry	Overcast	Fine	T Junction	Nil	0	0	1
TAMAHERE DRIVE	DAY ROAD	641.00m	W	1807790	5809433	175.361374	-37.838890	2023267084	21/08/2023	Mon	08:30	Ute1 NDB on TAMAHERE DRIVE lost control; went off road to right, Ute1 hit fence	UTE1, alcohol test below limit, inappropriate speed for road conditions, new driver/under instruction, other lost control, ENV: slippery road due to rain	Wet	Overcast	Light rain	Nil (Default)	Nil	0	0	0
PENCARROW ROAD	ARMISTEAD LANE	367.00m	E	1808711	5806232	175.372757	-37.867503	2025340488	23/09/2025	Tue	09:20	Other1 WDB on PENCARROW ROAD lost control turning right; went off road to left, Other1 hit fence	OTHER1, miscellaneous vehicle, other inappropriate speed	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
TAMAHERE DRIVE	PICKERING ROAD	558.00m	S	1809739	5808245	175.383855	-37.849136	2022237270	23/09/2022	Fri	00:25	Car/Wagon1 SDB on TAMAHERE DRIVE lost control turning right; went off road to left, Car/Wagon1 hit armco (w-section steel)	CAR/WAGON1, alcohol test above limit or test refused, lost control when turning	Wet	Dark	Heavy rain	Nil (Default)	Nil	0	0	0
HOOKER ROAD	DUNCAN ROAD	268.00m	W	1809925	5806223	175.386550	-37.867301	2022241161	21/11/2022	Mon	07:05	Truck1 WDB on HOOKER ROAD lost control; went off road to left	TRUCK1, alcohol test below limit, while returning to seal from unsealed shoulder	Dry	Overcast	Fine	Nil (Default)	Nil	0	0	1
HOOKER ROAD	DUNCAN ROAD	132.00m	E	1810236	5805994	175.390151	-37.869300	2021187870	13/05/2021	Thu	13:19	Car/Wagon1 EDB on HOOKER ROAD lost control while overtaking, Car/Wagon1 hit fence	CAR/WAGON1, alcohol test below limit, other lost control, worn tread on tyre	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	1
HOOKER ROAD	DUNCAN ROAD		I	1810124	5806030	175.388867	-37.868997	2025334031	23/05/2025	Fri	21:00	Car/Wagon1 WDB on HOOKER ROAD missed inters or end of road, Car/Wagon1 hit fence	CAR/WAGON1, alcohol test above limit or test refused, cutting corner at intersection, other misjudged speed, distance or position	Wet	Dark	Mist or Fog	T Junction	Give way	0	0	0
CAMBRIDGE ROAD	HOOKER ROAD		I	1811910	5805389	175.409339	-37.874356	2025338923	26/06/2025	Thu	15:30	SUV1 NDB on CAMBRIDGE ROAD hit turning, Cyclist2 (Age 66)	CYCLE2, failed to give way at priority traffic control SUV1, alcohol test below limit	Dry	Overcast	Fine	T Junction	Give way	0	1	1
HOOKER ROAD	BANKS ROAD		I	1811916	5805351	175.409421	-37.874696	2026365151	05/02/2026	Thu	14:13	Car/Wagon1 WDB on HOOKER ROAD hit Car/Wagon2 turning right onto AXROAD from the left	CAR/WAGON1, alcohol test below limit CAR/WAGON2, alcohol test below limit, failed to give way to traffic crossing from right	Dry	Bright sun	Fine	T Junction	Nil	0	1	4
CAMBRIDGE ROAD	HOOKER ROAD		I	1811959	5805337	175.409921	-37.874817	2025329934	16/04/2025	Wed	10:29	Car/Wagon1 NDB on CAMBRIDGE ROAD hit SUV2 turning right onto AXROAD from the left	CAR/WAGON1, alcohol test below limit SUV2, alcohol test below limit, failed to give way at priority traffic control, other misjudged speed, distance or position	Dry	Overcast	Fine	Crossroads	Give way	0	0	2
CAMBRIDGE ROAD	HOOKER ROAD		I	1811958	5805339	175.409899	-37.874791	2023267567	07/09/2023	Thu	17:16	Ute1 NDB on CAMBRIDGE ROAD hit Car/Wagon2 turning right onto AXROAD from the left	CAR/WAGON2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control, other inexperience UTE1, alcohol test below limit	Dry	Twilight	Fine	Crossroads	Give way	0	0	0
CAMBRIDGE ROAD	RACECOURSE ROAD		I	1811944	5805351	175.409738	-37.874603	2021177296	12/01/2021	Tue	07:30	Van1 SDB on CAMBRIDGE ROAD hit Ute2 turning right onto AXROAD from the left	UTE2, alcohol test below limit, failed to give way at priority traffic control	Dry	Bright sun	Fine	Crossroads	Give way	0	0	0
RACECOURSE ROAD	CAMBRIDGE ROAD		I	1811978	5805347	175.410124	-37.874715	2024296504	05/09/2024	Thu	20:30	Car/Wagon1 WDB on RACECOURSE ROAD overtaking Car/Wagon2, Car/Wagon1 hit traffic sign, substantial vegetation (causing vehicle damage or stopping the vehicle)	CAR/WAGON2, alcohol test below limit CAR/WAGON1, alcohol test above limit or test refused, speed approaching a traffic control	Dry	Dark	Fine	T Junction	Give way	0	0	1
CAMBRIDGE ROAD	RACECOURSE ROAD	116.00m	S	1812043	5805283	175.410889	-37.875276	2024305850	05/09/2024	Thu	20:30	Car/Wagon1 NDB on CAMBRIDGE ROAD hit obstruction, Car/Wagon1 hit fence	ENV: other obstructions or objects	Dry	Dark	Fine	Nil (Default)	Nil	0	0	0

Tamahere-Pencarrow-Hooker-Cambridge

Saved sites

[Pencarrow Hooker & Duncan](#)

Crash year

2021 – 2026

Site details report

Fatal crashes: 0 | Injury crashes: 11 | Non-injury crashes: 22 | Total crashes: 33

Overall crash statistics

Crash severity

Crash severity	Number	%	Social cost \$(m)
Fatal	0	0.00	0.00
Serious	2	6.06	0.00
Minor-injury	9	27.27	2.17
Non-injury	22	66.67	0.75
TOTAL	33	100.00	2.92

Crash numbers

Year	Fatal	Serious	Minor	Non-injury
2021	0	0	1	2
2022	0	0	2	3
2023	0	0	1	8
2024	0	0	3	3
2025	0	1	2	5
2026	0	1	0	1
TOTAL	0	2	9	22
Percent	0.00	6.06	27.27	66.67

Overall casualty statistics

Injury severity

Injury severity	Number	% all casualties
Fatal	0	0.00
Serious Injured	2	10.53
Minor Injured	17	89.47
TOTAL	19	100.00

Casualty numbers

Year	Fatal	Serious Injured	Minor Injured
2021	0	0	1
2022	0	0	2
2023	0	0	2
2024	0	0	4
2025	0	1	4
2026	0	1	4
TOTAL	0	2	17
Percent	0.00	10.53	89.47

Note: Last 5 years of crashes shown (unless query includes specific date range).

Crash type and cause statistics

Crash type

Crash type	Crash numbers	% All crashes
Overtaking crashes	2	6.06
Straight road lost control/head on	4	12.12
Bend - lost control/Head on	9	27.27
Rear end/obstruction	6	18.18
Crossing/turning	12	36.36
Pedestrian crashes	0	0.00
Miscellaneous crashes	0	0.00
TOTAL	33	100.00

Casualty types

Casualty types	Fatalities	Serious injuries	Minor injuries
Cyclists	0	0	2
Drivers	0	0	11
Motorcycle pillion	0	0	0
Motorcycle riders	0	0	0
Other	0	0	0
Passengers	0	2	4
Pedestrians	0	0	0
Total	0	2	17

Note:Motorcycle stats include Mopeds.

Note:for Cyclist casualty numbers, query Road User Type - Cyclist, not Vehicle Type - Cycle

Driver and vehicle statistics

Drivers at fault or part fault in injury crashes - by age

Age	Male	Female	Unknown	Total	Percentage (%)
0-4	0	0	0	0	0.00
5-9	0	0	0	0	0.00
10-14	0	0	0	0	0.00
15-19	1	0	0	1	9.09
20-24	0	0	0	0	0.00
25-29	0	1	0	1	9.09
30-34	0	0	0	0	0.00
35-39	0	0	0	0	0.00
40-44	1	2	0	3	27.27
45-49	1	1	0	2	18.18
50-54	0	0	0	0	0.00
55-59	1	0	0	1	9.09
60-64	1	0	0	1	9.09
65-69	2	0	0	2	18.18
70-74	0	0	0	0	0.00
75-79	0	0	0	0	0.00
80-84	0	0	0	0	0.00
85-89	0	0	0	0	0.00
90-94	0	0	0	0	0.00
95-99	0	0	0	0	0.00
100+	0	0	0	0	0.00
	0	0	0	0	0.00
TOTAL	7	4	0	11	100.00
Percent	63.64	36.36	0.00	100.00	-

Note: Driver information is not calculated for non-injury crashes.

Crash factors

Crash factors	Crash numbers	% All crashes
#N/A	21	63.64
Alcohol	7	21.21
Disabled, old age or illness	2	6.06
Failed to give way or stop	12	36.36
Fatigue	1	3.03
Incorrect lanes or position	4	12.12
Miscellaneous factors	2	6.06
Overtaking	0	0.00
Pedestrian factors	0	0.00
Poor handling	7	21.21
Poor judgement	6	18.18
Poor observation	7	21.21
Position on Road	3	9.09
Road factors	3	9.09
Travel Speed	8	24.24
Unknown	0	0.00
Vehicle factors	5	15.15
Weather	1	3.03
TOTAL	89	269.70

Crashes with:

Factor groups	Crash numbers	% All crashes
All road user factors	26	78.79
Driver only factors	31	93.94
Pedestrian factors	0	0.00
Vehicle factors	5	15.15
Road factors	3	9.09
Environment factors	1	3.03
No identifiable factors	0	0.00
Retired codes - no future use	0	0.00
TOTAL	66	200.00

Note: Factors are counted once against a crash - i.e. two fatigued drivers count as one fatigue crash factor.

Note: Driver/vehicle factors are not available for non-injury crashes for Northland, Auckland, Waikato and Bay of Plenty before 2007. This will influence numbers and percentages.

Note: % represents the % of crashes in which the cause factor appears.

Drivers at fault or part fault in injury crashes - by licence

Licence	Male	Female	Unknown	Total	Percentage (%)
Full	5	3	0	8	72.73
Learner	0	0	0	0	0.00
Restricted	1	0	0	1	9.09
Overseas	0	0	0	0	0.00
Wrong class	0	0	0	0	0.00
Never Licensed	0	0	0	0	0.00
Unknown	1	1	0	2	18.18
Forbidden	0	0	0	0	0.00
TOTAL	7	4	0	11	100.00
Percent	63.64	36.36	0.00	100.00	-

Note: Driver information is not calculated for non-injury crashes.

Vehicles involved in injury crashes (vehicle count)

Vehicle type	No. of vehicles	% of vehicles in injury crashes
Car/Wagon	11	57.89
SUV	3	15.79
Van	0	0.00
Ute	1	5.26
Truck	2	10.53
Truck HPMV	0	0.00
Bus	0	0.00
Motorcycle	0	0.00
Moped	0	0.00
Train	0	0.00
Cycle	2	10.53
Other	0	0.00
Unknown	0	0.00
50 Max	0	0.00
Left scene	0	0.00
Uncoupled towed vehicle	0	0.00
TOTAL	19	100.00

Number of parties in crash

Party type	All crashes	% All crashes
Single party	14	42.42
Multiple party, including pedestrian	1	3.03
Multiple party, excluding pedestrian	18	54.55
TOTAL	33	100.00

Vulnerable road users

Crash types	Number	Percentage (%)
Cyclist crashes	2	6.06
Pedestrian crashes	1	3.03
Motorcycle crashes	0	0.00
All other crashes	30	90.91
TOTAL	33	100.00

Note: Some crashes involve more than one vulnerable road user type.

Note: Motorcycle stats include Mopeds.

/: Road environment statistics

Road type

Road type	State highway	Local road	Unknown	N/A	Total	Percentage (%)
Urban	1	2	0	0	3	9.09
Open	12	17	1	0	30	90.91
Unknown	0	0	0	0	0	0.00
TOTAL	13	19	1	0	33	100.00
Percent	39.39	57.58	3.03	0.00	100.00	-

Natural light conditions

Conditions	Injury	Non-injury	Total	%
Light/overcast	10	11	21	63.64
Dark/twilight	1	11	12	36.36
Unknown	0	0	0	0.00
TOTAL	11	22	33	100.00

Conditions

Conditions	Injury	Non-injury	Total	%
Dry	9	14	23	69.70
Ice or Snow	0	0	0	0.00
Wet	2	8	10	30.30
Null	0	0	0	0.00
TOTAL	11	22	33	100.00

Vehicles involved in injury crashes (crash count)

Vehicle type	Injury crashes	% of injury crashes
Car/Wagon	8	72.73
SUV	3	27.27
Van	0	0.00
Ute	1	9.09
Truck	2	18.18
Truck HPMV	0	0.00
Bus	0	0.00
Motorcycle	0	0.00
Moped	0	0.00
Train	0	0.00
Cycle	2	18.18
Other	0	0.00
Unknown	0	0.00
50 Max	0	0.00
Left scene	0	0.00
Uncoupled towed vehicle	0	0.00
TOTAL	16	145.45

Intersection/midblock

Intersection/mid-block	Total	%
Intersection	23	69.70
Midblock	10	30.30
TOTAL	33	100.00

Objects struck

Objects struck	Injury crashes	%	Non-injury crashes	%
Crashes w/obj struck	3	9.09	14	42.42

Object struck	Injury crashes	%	Non-injury crashes	%
Animals	0	0.00	0	0.00
Bridges/Tunnels	0	0.00	1	3.03
Cliffs	0	0.00	3	9.09
Debris	0	0.00	0	0.00
Embankments	0	0.00	0	0.00
Fences	2	6.06	6	18.18
Guide /Guard rails	0	0.00	3	9.09
Houses	0	0.00	0	0.00
Traffic Islands	0	0.00	0	0.00
Street Furniture	0	0.00	0	0.00
Kerbing	0	0.00	0	0.00
Landslips	0	0.00	0	0.00
Parked vehicle	0	0.00	0	0.00
Trains	0	0.00	0	0.00
Sight Rails	0	0.00	0	0.00
Poles	1	3.03	1	3.03
Stationary Vehicle	0	0.00	0	0.00
Roadwork	0	0.00	0	0.00
Traffic Sign	1	3.03	1	3.03
Trees	1	3.03	0	0.00
Drainage Structures	0	0.00	0	0.00
Ditches	0	0.00	0	0.00
Other	0	0.00	1	3.03
Thrown or dropped objects	0	0.00	0	0.00
Water	0	0.00	0	0.00
TOTAL	5	-	16	-

Note: % represents the % of crashes in which the object is struck.

Vehicle usage in injury crashes

Vehicle usage	Fatal Crash	Serious Crash	Minor Crash	Total	Percentage (%)
Private	0	4	11	15	78.95
Attenuator Truck	0	0	0	0	0.00
Agricultural	0	0	0	0	0.00
Ambulance	0	0	0	0	0.00
Campervan	0	0	0	0	0.00
Concrete mixer	0	0	1	1	5.26
Fire	0	0	0	0	0.00
Logging truck	0	0	0	0	0.00
Mobile crane	0	0	0	0	0.00
Police	0	0	0	0	0.00
Rental	0	0	0	0	0.00
Road Working	0	0	0	0	0.00
Scheduled service Bus	0	0	0	0	0.00
School bus	0	0	0	0	0.00
Tanker	0	0	0	0	0.00
Taxi	0	0	0	0	0.00
Tour Bus	0	0	0	0	0.00
Trade person	0	0	0	0	0.00
Work travel	0	0	0	0	0.00
Work vehicle	0	0	3	3	15.79
Other	0	0	0	0	0.00
Null	0	0	0	0	0.00
TOTAL	0	4	15	19	100.00
Percent	0.00	21.05	78.95	100.00	-

🕒 Time period statistics

Month by injury/ non-injury crashes

Month	Injury crashes	%	Non-injury crashes	%	Total	%
Jan	1	9.09	1	4.55	2	6.06
Feb	1	9.09	2	9.09	3	9.09
Mar	1	9.09	3	13.64	4	12.12
Apr	1	9.09	2	9.09	3	9.09
May	2	18.18	1	4.55	3	9.09
Jun	2	18.18	2	9.09	4	12.12
Jul	0	0.00	2	9.09	2	6.06
Aug	0	0.00	3	13.64	3	9.09
Sep	1	9.09	4	18.18	5	15.15
Oct	0	0.00	1	4.55	1	3.03
Nov	1	9.09	0	0.00	1	3.03
Dec	1	9.09	1	4.55	2	6.06
TOTAL	11	100.00	22	100.00	33	100.00

Day/period

Day/Period	All crashes	% All crashes
Weekday	26	78.79
Weekend	7	21.21
TOTAL	33	100.00

Day/period by hour

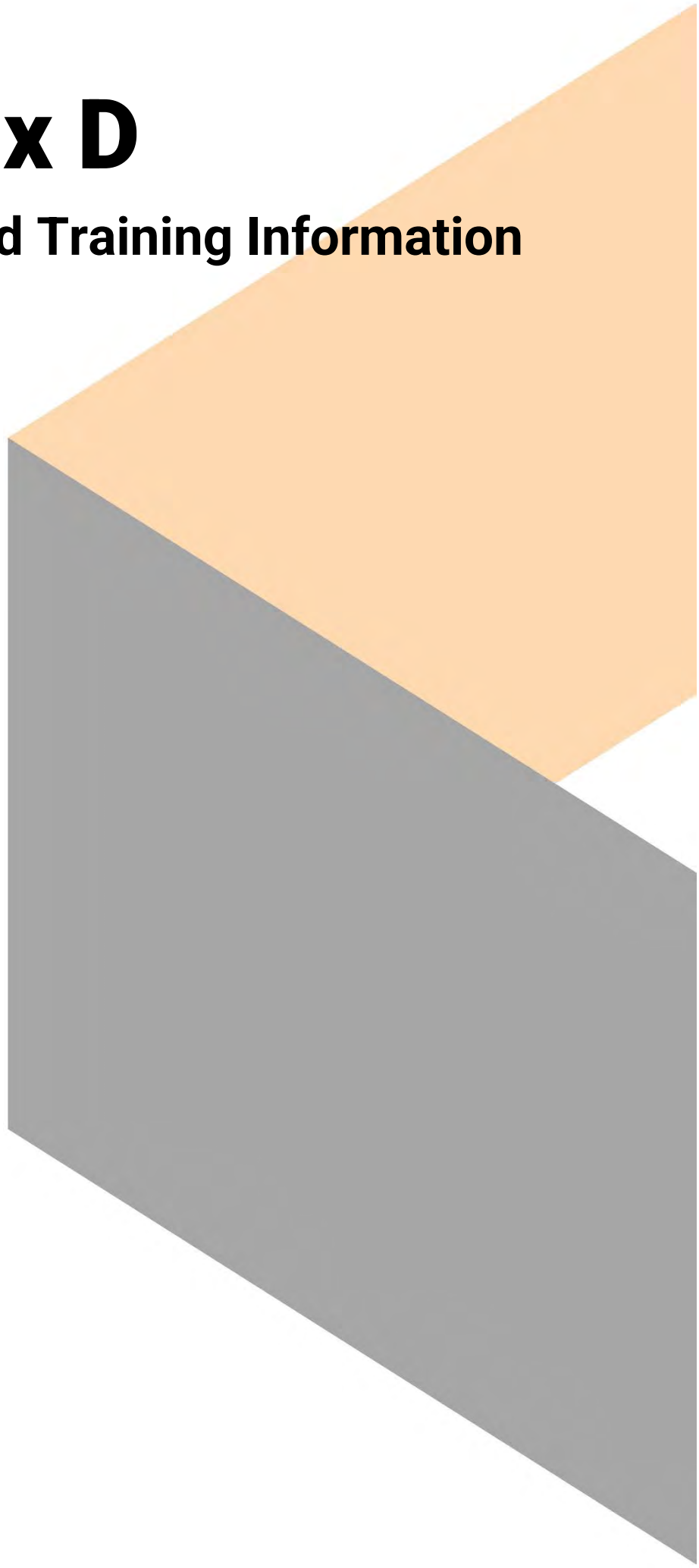
Day/Period	00:00	03:00	06:00	09:00	12:00	15:00	18:00	21:00	Total
	02:59	05:59	08:59	11:59	14:59	17:59	20:59	23:59	
Weekday	2	0	6	6	3	6	2	1	26
Weekend	1	0	0	1	0	0	2	3	7
TOTAL	3	0	6	7	3	6	4	4	33

Day/period by hour DOW

Day/Period	00:00	03:00	06:00	09:00	12:00	15:00	18:00	21:00	Total
	02:59	05:59	08:59	11:59	14:59	17:59	20:59	23:59	
Mon	0	0	2	0	0	0	0	0	2
Tue	0	0	1	1	1	0	0	0	3
Wed	1	0	3	1	0	1	0	1	7
Thu	0	0	0	3	2	4	2	0	11
Fri	1	0	0	1	0	1	1	1	5
Sat	0	0	0	1	0	0	1	2	4
Sun	1	0	0	0	0	0	0	0	1
TOTAL	3	0	6	7	3	6	4	4	33

Appendix D

WTR Events and Training Information



WAIKATO THOROUGHBRED RACING @ CAMBRIDGE SYNTHETIC

2024- 2025

Race #	Date	Description	
	2024/2025 Season		
1	Thursday 8 August	New Season Raceday	500
2	Wednesday 14 August	Richard Bright Memorial Raceday	500
3	Wednesday 28 August	August Polytrack Raceday	500
4	Wednesday 18 September	Cambridge NZRDA Raceday	750
5	Wednesday 2 October	October Raceday	750
6	Wednesday 21 May	May Polytrack Raceday	750
7	Wednesday 4 June	June Polytrack Raceday	500
8	Wednesday 18 June	Local Studs Raceday	500
9	Thursday 10 July	Trainers Raceday	500
10	Wednesday 23 July	Martin Collins NZ Raceday	500

10 TOTAL

WAIKATO THOROUGHBRED RACING @ TE RAPA

2024- 2025

Race #	Date	Description	
	2024/2025 Season		
1	Saturday 10 August	August Raceday	750
2	Saturday 24 August	Waikato Stud Foxbridge Plate Raceday	1500
3	Sunday 15 September	Kidney Kids Raceday (Great Northerns)	1500
4	Friday 27 September	St Johns Foundation Raceday	1000
5	Monday 28th October	Sarten Memorial Day	2000
6	Saturday 9 November	Legacy Lodge Sprint Day	1500
7	Saturday 14 December	SkyCity Hamilton Waikato Cup	6000
8	Saturday 21 December	Christmas at Te Rapa	2000
9	Thursday 16 January	Twilight Races	750
10	Friday 31 January		750
11	Saturday 8 February	Legends Day	3000
12	Sunday 13 April	Marist Rugby Raceday	1250
13	Saturday 26 April	Travis Stakes Day	1750
14	Saturday 3 May	Waikato Equine 2YO Stakes Day	1500
15	Saturday 24 May	Dunstan Day Out Raceday	1500
16	Saturday 31 May		1250
17	Saturday 14 June	Signature Homes Jumps Day	2000
18	Saturday 5 July	Members Raceday	1500
1	Saturday 26 July	Taumarunui RC @ WTR	2500

19 TOTAL

WAIKATO GREENFIELDS HARNESS RACING - PEOPLE ON SITE

13/02/2026

1. RACEDAYS

	Large	Medium	Small
Number of meetings	2	8	40
Spectators	3,000	500	250
Trainers	40	40	40
Drivers	30	30	30
Stable Hands	40	35	30
Raceday - Office	8	7	6
Raceday Food and Beverage	15	13	10
Raceday Grounds Staff	20	18	16
Security	4	3	2
Raceday Total	3,157	646	384

TIMING

- | | | |
|-------------------------------|---------|--------------------------|
| (a) First person arrives | 3.00pm | |
| (b) First Race Start – | 5.30pm | (however depends on TAB) |
| (c) Last Race Finish – summer | 9.30pm | |
| (d) Last Race Finish – winter | 8.30pm | |
| (e) Last person leaves | 10.30pm | |

2. TRAINING (Monday to Saturday)

	No.
TRAINING - PEOPLE	
Trainers	20
Drivers and Stable Hands	30
Stable Hands	40
Training - People Total	90
TRAINING - HORSES	
Horses stabled on site	200
Horses floated in each day	5
Training - Horses Total	205

TIMING

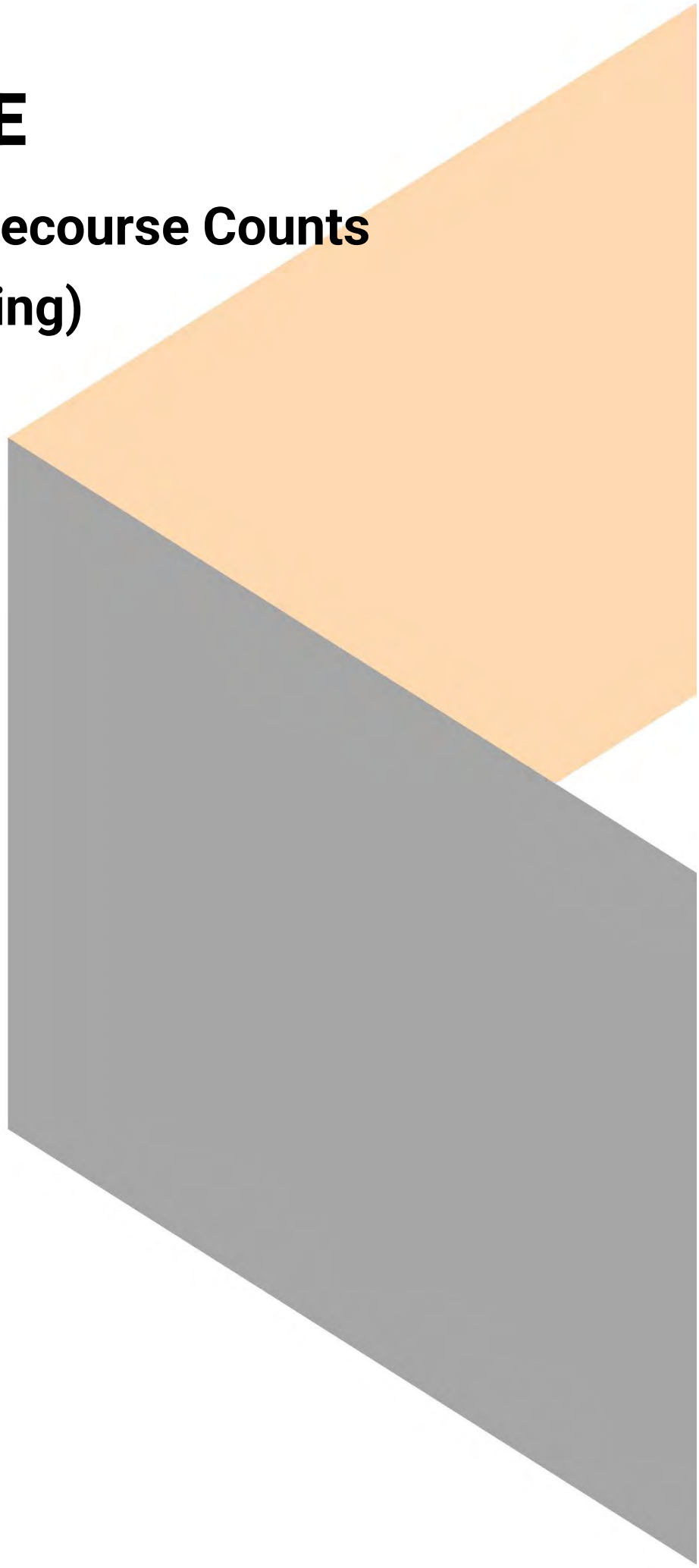
- | | | |
|---------------------------------------|------------------|-----------|
| (a) First person arrives - summer | 5.00am | |
| (b) Start | 5.00am | |
| (c) Finish | 10.30am | |
| (e) Last person leaves | 11.00am | |
| (e) Other - night feeding and walking | 3.00pm to 5.00pm | 20 people |
| (f) First person arrives - winter | 6.00am | |

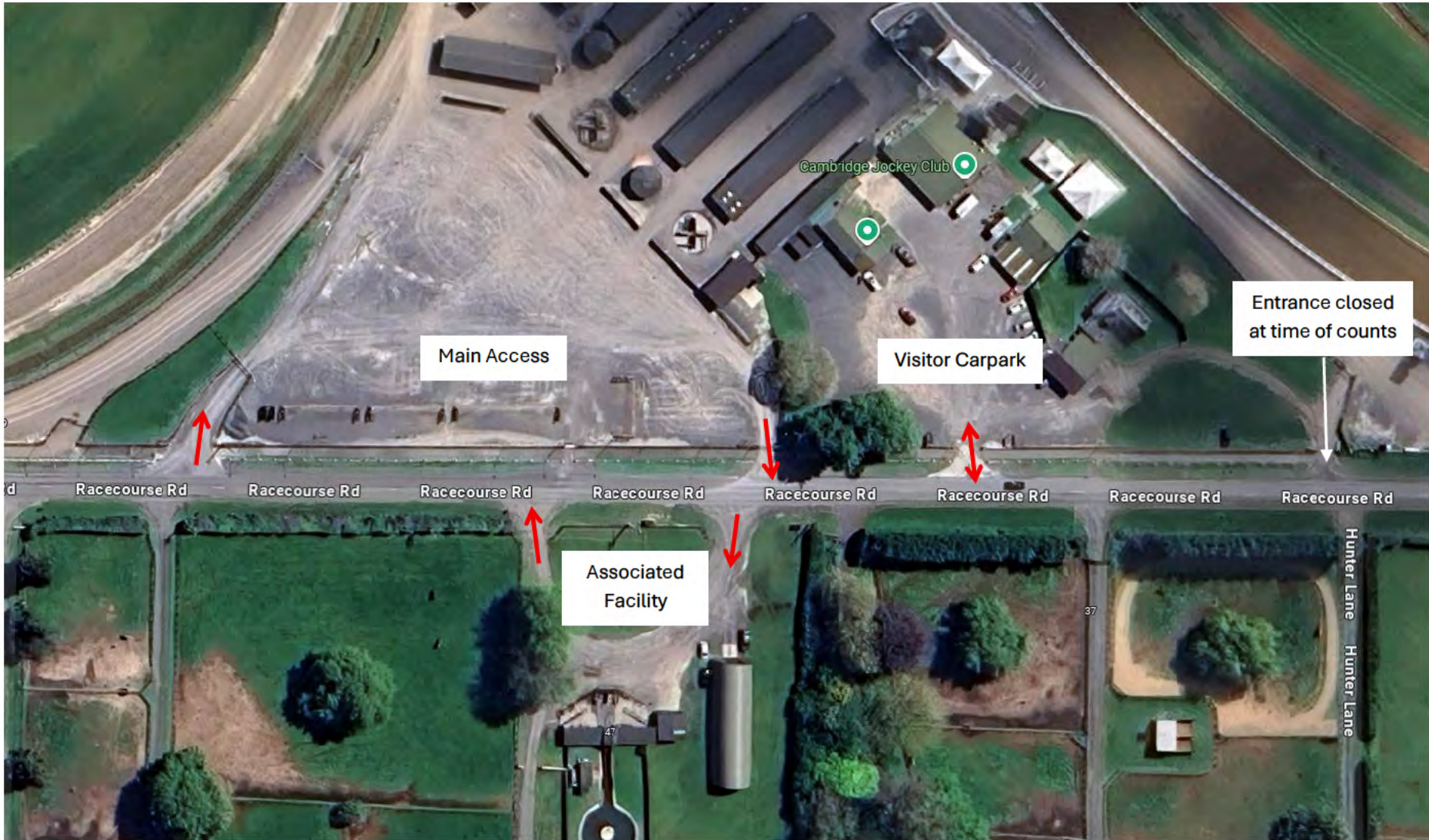
Training

- 1,400 total horses in training (on average there are currently 1,200 / 100 / 20 at Cambridge / Waipa / Te Rapa sites)
- 200 horses likely to train at the facility that aren't stabled on site per month (off-site horses) – 150 training on site each day
- 1200 horses stabled on site, out of which 300 would train on quiet days and 800 on busy days
- 30-40 horse floats coming to the site for training per day
- 4 trucks per day for to support of on-site horses (feed trucks, waste trucks, etc)
- 300 trainers, jockeys and stable hands per day. In terms of vehicle movements, there are a lot of variables with accommodation on site and how many people come in each car. Some trainers will bring their truck with three staff in the truck.
- Training times:
 - Monday to Friday – 4:30am to 10:30am
 - Saturday – 4:30am to 9:30am
 - Sunday – 7am to 8am

Appendix E

Cambridge Racecourse Counts (Morning Training)





AM Training – Tuesday 02/12/2025 – Main Access

Time	Arrivals	Departures	Combined Movements
04:15	8	-	8
04:45	15	2	17
05:15	22	2	24
05:45	17	1	18
06:15	15	6	21
06:45	8	11	19
07:15	16	4	20
07:45	7	9	16
08:15	6	21	27
08:45	3	16	19
09:15	2	19	21
09:45	6	12	18
10:15	-	11	11
10:45	1	5	6
11:15	-	2	2
Training Day Movements	126	121	247 movements (124 vehicles)

AM Training – Tuesday 02/12/2025 – Visitor Carpark

Time	Arrivals	Departures	Combined Movements
04:15	1	-	1
04:45	-	1	1
05:15	2	-	2
05:45	2	-	2
06:15	7	3	10
06:45	4	1	5
07:15	10	5	15
07:45	7	3	10
08:15	5	2	7
08:45	6	3	9
09:15	2	11	13
09:45	7	8	15
10:15	1	10	11
10:45	-	4	4
11:15	-	2	2
Training Day Movements	54	53	107 movements (53 vehicles)

AM Training – Tuesday 02/12/2025 – Racecourse Facility Opposite Site

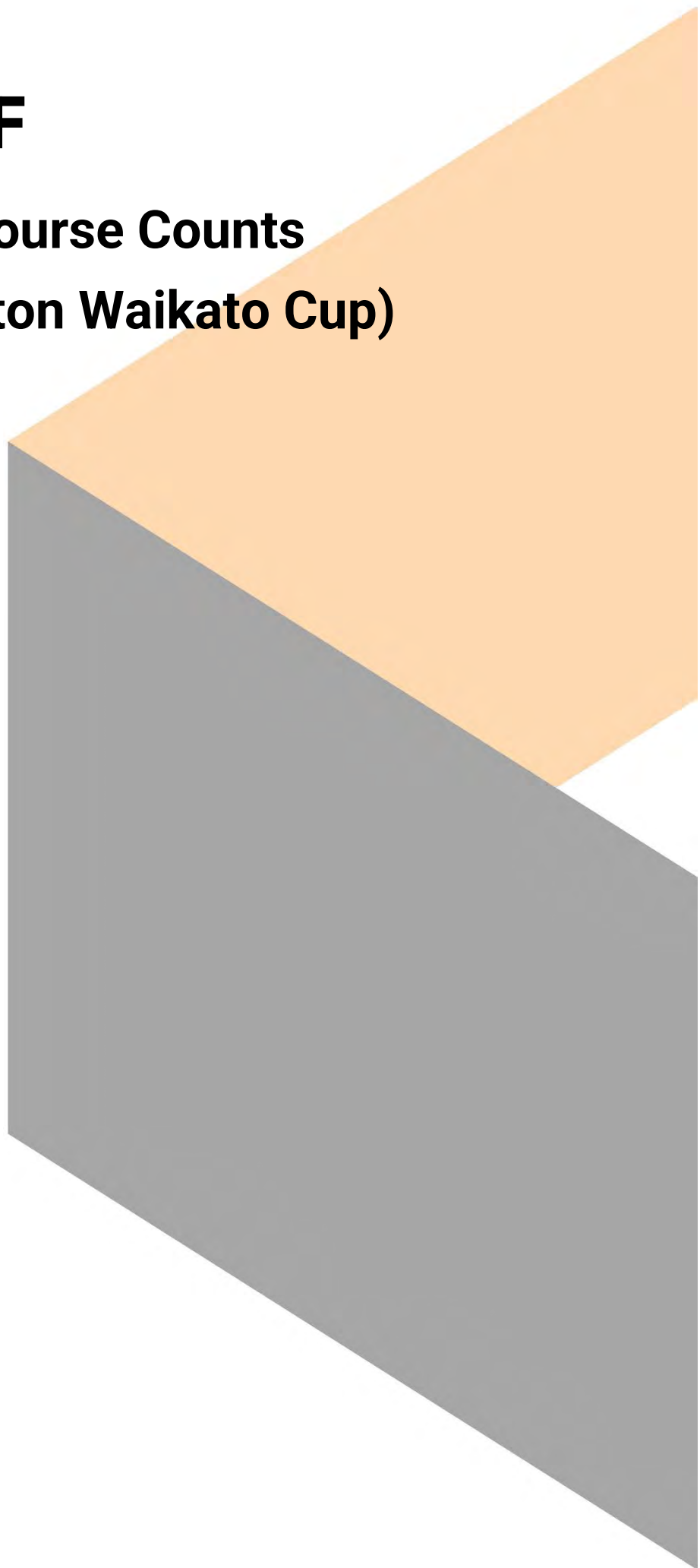
Time	Arrivals	Departures	Combined Movements
04:15	-	-	-
04:45	-	-	-
05:15	1	-	1
05:45	-	1	1
06:15	-	-	-
06:45	3	2	5
07:15	2	1	3
07:45	-	1	1
08:15	1	2	3
08:45	4	-	4
09:15	2	1	3
09:45	1	2	3
10:15	-	3	3
10:45	-	1	1
11:15	-	-	-
Training Day Movements	14	14	28 movements (14 vehicles)

AM Training – Tuesday 02/12/2025 – All Site Movements (Combined)

Time	Arrivals	Departures	Combined Movements
04:15	9	-	9
04:45	15	3	18
05:15	25	2	27
05:45	19	2	21
06:15	22	9	31
06:45	15	14	29
07:15	28	10	38
07:45	14	13	27
08:15	12	25	37
08:45	13	19	32
09:15	6	31	37
09:45	14	22	36
10:15	1	24	25
10:45	1	10	11
11:15	-	4	4
Total Training Day Movements	194	188	382 (191 vehicles)

Appendix F

Te Rapa Racecourse Counts (SkyCity Hamilton Waikato Cup)



MetroCount Traffic Executive 2025 BCD Te Rapa

CustomList-3531 -- English (ENZ)

Datasets:

Site: [S25023] Sir Tristram Ave
Direction: 6 - West bound A>B, East bound B>A., **Lane:** 0
Survey Duration: 6:00 Saturday, 13 December 2025 => 20:35 Monday, 15 December 2025
File: C:\Waikato_Roading_Services\TRAFFIC COUNTS\2025 Traffic Counts\S25023 Sir Tristram Ave
15Dec2025.EC0 (Plus)
Identifier: AB72TR89 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default
Data type: Axle sensors - Paired (Class, Speed, Count)

Profile:

Filter time: 6:00 Saturday, 13 December 2025 => 20:35 Monday, 15 December 2025
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 160 km/h.
Direction: North, East, South, West (bound)
Separation: All - (Headway)
Name: Factory default profile
Scheme: Vehicle classification (TNZ 1999)
Units: Metric (meter, kilometer, m/s, km/h, kg, tonne)

Column Legend:

0 [Time] 24-hour time (0000 - 2359)
1 [Total] Number in time step (AB)
2 [Total] Number in time step (BA)
3 [Total] Number in time step

*** Saturday, 13 December 2025**

Time	Total	Total	Total
	AB	BA	
0600	0	0	0
0610	0	0	0
0620	0	0	0
0630	1	0	1
0640	1	0	1
0650	4	0	4
0700	3	0	3
0710	1	0	1
0720	2	0	2
0730	0	0	0
0740	2	0	2
0750	0	0	0
0800	3	0	3
0810	0	1	1
0820	2	2	4
0830	4	0	4
0840	4	3	7
0850	15	2	17
0900	4	2	6
0910	4	1	5
0920	6	0	6
0930	7	0	7
0940	16	0	16
0950	16	2	18
1000	12	2	14
1010	11	8	19
1020	14	1	15
1030	20	7	27
1040	29	8	37
1050	19	7	26
1100	31	10	41
1110	39	15	54
1120	49	27	76
1130	59	27	86
1140	67	33	100
1150	78	32	110
1200	68	41	109
1210	51	33	84
1220	65	44	109
1230	50	29	79
1240	56	39	95
1250	49	33	82
1300	43	40	83
1310	47	42	89
1320	39	37	76
1330	44	42	86
1340	50	38	88
1350	29	40	69
1400	28	22	50
1410	24	25	49
1420	21	17	38
1430	18	18	36
1440	13	7	20
1450	4	5	9
1500	8	11	19
1510	6	15	21
1520	14	9	23
1530	9	6	15
1540	9	22	31
1550	13	24	37
1600	17	15	32
1610	25	36	61
1620	16	28	44
1630	24	30	54
1640	27	39	66
1650	20	57	77
1700	19	32	51
1710	30	33	63
1720	26	80	106
1730	25	73	98
1740	19	65	84
1750	20	61	81
1800	15	45	60
1810	11	34	45
1820	19	35	54
1830	18	31	49

1840	11	9	20
1850	11	14	25
1900	1	3	4
1910	1	13	14
1920	3	9	12
1930	1	3	4
1940	1	2	3
1950	1	3	4
2000	0	4	4
2010	1	4	5
2020	0	0	0
2030	1	6	7
2040	0	1	1
2050	0	0	0
2100	0	1	1
2110	1	1	2
2120	0	0	0
2130	0	0	0
2140	0	0	0
2150	0	0	0
2200	0	0	0
2210	0	0	0
2220	0	0	0
2230	0	0	0
2240	0	0	0
2250	0	0	0
2300	0	0	0
2310	0	0	0
2320	0	0	0
2330	0	0	0
2340	0	0	0
2350	0	0	0
07-19	1628	1546	3174
06-22	1645	1596	3241
06-00	1645	1596	3241
00-00	1645	1596	3241

*** Sunday, 14 December 2025**

Time	Total	Total	Total
	AB	BA	
0000	0	0	0
0010	0	0	0
0020	0	0	0
0030	0	0	0
0040	0	0	0
0050	0	0	0
0100	0	0	0
0110	0	0	0
0120	0	0	0
0130	0	0	0
0140	0	0	0
0150	0	0	0
0200	0	0	0
0210	1	0	1
0220	0	0	0
0230	0	0	0
0240	0	0	0
0250	0	0	0
0300	0	0	0
0310	0	1	1
0320	0	0	0
0330	0	0	0
0340	0	0	0
0350	0	0	0
0400	0	0	0
0410	0	0	0
0420	0	0	0
0430	0	0	0
0440	0	0	0
0450	0	0	0
0500	0	0	0
0510	0	0	0
0520	0	0	0
0530	0	0	0
0540	0	0	0
0550	1	1	2
0600	0	0	0
0610	0	0	0
0620	0	0	0
0630	1	1	2
0640	0	0	0

0650	1	0	1
0700	0	0	0
0710	1	0	1
0720	0	0	0
0730	1	0	1
0740	0	0	0
0750	1	2	3
0800	0	0	0
0810	0	0	0
0820	0	0	0
0830	0	0	0
0840	2	2	4
0850	1	4	5
0900	2	2	4
0910	0	0	0
0920	1	2	3
0930	2	0	2
0940	1	2	3
0950	2	3	5
1000	1	1	2
1010	2	3	5
1020	2	3	5
1030	2	1	3
1040	2	3	5
1050	2	0	2
1100	2	3	5
1110	0	1	1
1120	1	1	2
1130	2	3	5
1140	2	2	4
1150	0	3	3
1200	1	0	1
1210	0	2	2
1220	1	0	1
1230	1	0	1
1240	0	1	1
1250	0	1	1
1300	1	1	2
1310	0	0	0
1320	1	1	2
1330	0	0	0
1340	0	1	1
1350	0	0	0
1400	1	0	1
1410	0	0	0
1420	0	0	0
1430	0	1	1
1440	0	0	0
1450	0	0	0
1500	0	0	0
1510	0	0	0
1520	0	0	0
1530	0	0	0
1540	0	0	0
1550	0	0	0
1600	1	0	1
1610	1	1	2
1620	0	1	1
1630	0	0	0
1640	0	0	0
1650	0	0	0
1700	0	0	0
1710	0	0	0
1720	0	0	0
1730	1	0	1
1740	0	0	0
1750	1	3	4
1800	0	0	0
1810	0	0	0
1820	1	1	2
1830	0	0	0
1840	0	0	0
1850	1	1	2
1900	0	0	0
1910	1	0	1
1920	0	0	0
1930	0	0	0
1940	0	1	1
1950	0	0	0
2000	0	0	0
2010	0	0	0

2020	0	0	0
2030	0	0	0
2040	0	0	0
2050	0	0	0
2100	0	0	0
2110	0	0	0
2120	0	0	0
2130	0	0	0
2140	0	0	0
2150	0	0	0
2200	0	0	0
2210	0	0	0
2220	0	0	0
2230	0	0	0
2240	1	0	1
2250	0	0	0
2300	0	1	1
2310	0	0	0
2320	0	0	0
2330	0	0	0
2340	0	0	0
2350	1	0	1
07-19	44	56	100
06-22	47	58	105
06-00	49	59	108
00-00	51	61	112

*** Monday, 15 December 2025**

Time	Total AB	Total BA	Total
0000	0	0	0
0010	0	0	0
0020	0	0	0
0030	0	0	0
0040	0	0	0
0050	0	1	1
0100	0	0	0
0110	0	0	0
0120	0	0	0
0130	0	0	0
0140	0	0	0
0150	0	0	0
0200	0	0	0
0210	0	0	0
0220	0	1	1
0230	0	0	0
0240	0	0	0
0250	0	0	0
0300	0	0	0
0310	0	0	0
0320	0	0	0
0330	0	0	0
0340	0	0	0
0350	0	0	0
0400	0	0	0
0410	0	0	0
0420	0	0	0
0430	0	0	0
0440	0	0	0
0450	1	1	2
0500	0	0	0
0510	0	0	0
0520	1	0	1
0530	0	1	1
0540	0	0	0
0550	0	0	0
0600	0	0	0
0610	0	0	0
0620	0	0	0
0630	0	0	0
0640	0	0	0
0650	0	0	0
0700	0	0	0
0710	1	0	1
0720	0	1	1
0730	1	1	2
0740	0	0	0
0750	0	0	0
0800	1	2	3
0810	1	2	3
0820	1	2	3

0830	2	0	2
0840	2	3	5
0850	0	0	0
0900	1	0	1
0910	3	2	5
0920	3	2	5
0930	2	2	4
0940	0	0	0
0950	0	0	0
1000	0	0	0
1010	4	3	7
1020	0	0	0
1030	1	2	3
1040	0	0	0
1050	4	4	8
1100	0	0	0
1110	3	2	5
1120	3	3	6
1130	1	2	3
1140	1	0	1
1150	1	1	2
1200	2	1	3
1210	1	1	2
1220	3	0	3
1230	2	1	3
1240	2	3	5
1250	2	4	6
1300	0	2	2
1310	1	2	3
1320	0	0	0
1330	1	1	2
1340	1	2	3
1350	1	0	1
1400	1	2	3
1410	0	1	1
1420	0	1	1
1430	1	0	1
1440	0	0	0
1450	0	0	0
1500	0	0	0
1510	0	0	0
1520	1	0	1
1530	0	1	1
1540	0	0	0
1550	1	1	2
1600	2	1	3
1610	0	1	1
1620	0	0	0
1630	2	0	2
1640	0	2	2
1650	0	0	0
1700	0	0	0
1710	0	0	0
1720	0	0	0
1730	0	0	0
1740	1	1	2
1750	0	0	0
1800	1	0	1
1810	0	0	0
1820	1	2	3
1830	0	0	0
1840	0	0	0
1850	0	0	0
1900	0	0	0
1910	0	0	0
1920	2	1	3
1930	0	0	0
1940	2	2	4
07-19	63	64	127
06-22	67	67	134
06-00	67	67	134
00-00	69	71	140

MetroCount Traffic Executive 2025 BCD Te Rapa

CustomList-3532 -- English (ENZ)

Datasets:

Site: [S25024] Ken Brown Drive
Direction: 7 - North bound A>B, South bound B>A., Lane: 0
Survey Duration: 6:00 Saturday, 13 December 2025 => 20:37 Monday, 15 December 2025
File: C:\Waikato_Roading_Services\TRAFFIC COUNTS\2025 Traffic Counts\S25024 Ken Brown Drive
15Dec2025.EC0 (Plus)
Identifier: L1445579 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm: Factory default
Data type: Axle sensors - Paired (Class, Speed, Count)

Profile:

Filter time: 6:00 Saturday, 13 December 2025 => 20:37 Monday, 15 December 2025
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 0 - 160 km/h.
Direction: North, East, South, West (bound)
Separation: All - (Headway)
Name: Factory default profile
Scheme: Vehicle classification (TNZ 1999)
Units: Metric (meter, kilometer, m/s, km/h, kg, tonne)

Column Legend:

0 [Time] 24-hour time (0000 - 2359)
1 [Total] Number in time step (AB)
2 [Total] Number in time step (BA)
3 [Total] Number in time step

*** Saturday, 13 December 2025**

Time	Total	Total	Total
	AB	BA	
0600	0	0	0
0610	0	1	1
0620	0	0	0
0630	1	0	1
0640	0	0	0
0650	2	0	2
0700	6	4	10
0710	1	2	3
0720	3	0	3
0730	1	0	1
0740	3	1	4
0750	4	2	6
0800	5	2	7
0810	7	4	11
0820	5	4	9
0830	5	1	6
0840	9	7	16
0850	15	12	27
0900	13	6	19
0910	4	1	5
0920	8	6	14
0930	5	3	8
0940	10	7	17
0950	9	6	15
1000	8	6	14
1010	7	4	11
1020	22	5	27
1030	17	8	25
1040	25	8	33
1050	21	11	32
1100	20	7	27
1110	24	14	38
1120	30	14	44
1130	41	18	59
1140	35	22	57
1150	30	24	54
1200	41	29	70
1210	33	30	63
1220	45	36	81
1230	38	29	67
1240	38	43	81
1250	40	22	62
1300	34	35	69
1310	29	34	63
1320	26	23	49
1330	28	19	47
1340	28	34	62
1350	28	29	57
1400	16	10	26
1410	12	11	23
1420	10	9	19
1430	6	9	15
1440	10	11	21
1450	14	11	25
1500	10	17	27
1510	8	6	14
1520	7	6	13
1530	10	6	16
1540	15	30	45
1550	19	19	38
1600	17	21	38
1610	17	24	41
1620	26	33	59
1630	17	27	44
1640	14	28	42
1650	20	48	68
1700	20	39	59
1710	11	33	44
1720	12	42	54
1730	9	54	63
1740	12	39	51
1750	22	41	63
1800	7	24	31
1810	12	34	46
1820	15	34	49
1830	4	16	20

1840	4	12	16
1850	3	6	9
1900	4	6	10
1910	4	6	10
1920	1	6	7
1930	2	3	5
1940	1	4	5
1950	0	3	3
2000	2	1	3
2010	0	1	1
2020	1	3	4
2030	1	1	2
2040	0	0	0
2050	3	1	4
2100	3	2	5
2110	1	3	4
2120	0	0	0
2130	0	0	0
2140	0	2	2
2150	0	1	1
2200	0	0	0
2210	0	0	0
2220	0	0	0
2230	1	0	1
2240	0	1	1
2250	0	0	0
2300	0	0	0
2310	0	0	0
2320	0	0	0
2330	0	0	0
2340	0	0	0
2350	0	0	0
07-19	1180	1272	2452
06-22	1206	1316	2522
06-00	1207	1317	2524
00-00	1207	1317	2524

*** Sunday, 14 December 2025**

Time	Total	Total	Total
	AB	BA	
0000	0	0	0
0010	0	0	0
0020	0	0	0
0030	1	0	1
0040	0	0	0
0050	0	0	0
0100	0	1	1
0110	0	0	0
0120	0	0	0
0130	0	0	0
0140	0	0	0
0150	0	0	0
0200	0	0	0
0210	0	0	0
0220	0	0	0
0230	0	0	0
0240	0	0	0
0250	0	0	0
0300	0	0	0
0310	0	0	0
0320	0	0	0
0330	0	0	0
0340	0	0	0
0350	0	0	0
0400	0	0	0
0410	0	0	0
0420	0	0	0
0430	0	0	0
0440	0	0	0
0450	0	0	0
0500	0	0	0
0510	0	0	0
0520	0	0	0
0530	0	0	0
0540	1	0	1
0550	2	0	2
0600	1	2	3
0610	0	0	0
0620	1	0	1
0630	1	0	1
0640	1	0	1

0650	1	1	2
0700	0	0	0
0710	0	0	0
0720	0	0	0
0730	0	1	1
0740	1	1	2
0750	0	0	0
0800	3	2	5
0810	1	0	1
0820	0	0	0
0830	1	3	4
0840	2	0	2
0850	2	2	4
0900	2	2	4
0910	0	3	3
0920	7	4	11
0930	4	3	7
0940	1	4	5
0950	3	3	6
1000	3	3	6
1010	1	6	7
1020	2	3	5
1030	1	4	5
1040	0	0	0
1050	2	2	4
1100	0	1	1
1110	1	2	3
1120	6	1	7
1130	2	5	7
1140	2	1	3
1150	2	5	7
1200	1	1	2
1210	2	2	4
1220	2	4	6
1230	0	0	0
1240	0	0	0
1250	0	2	2
1300	1	2	3
1310	1	2	3
1320	2	1	3
1330	2	1	3
1340	1	2	3
1350	1	1	2
1400	2	3	5
1410	0	1	1
1420	3	0	3
1430	1	1	2
1440	0	1	1
1450	0	0	0
1500	0	0	0
1510	0	0	0
1520	0	1	1
1530	0	0	0
1540	1	0	1
1550	0	0	0
1600	2	1	3
1610	0	0	0
1620	0	0	0
1630	0	1	1
1640	0	0	0
1650	1	2	3
1700	1	1	2
1710	0	0	0
1720	0	0	0
1730	0	0	0
1740	0	0	0
1750	0	0	0
1800	0	0	0
1810	0	0	0
1820	1	1	2
1830	1	0	1
1840	0	1	1
1850	0	0	0
1900	0	0	0
1910	0	3	3
1920	0	0	0
1930	1	0	1
1940	0	0	0
1950	0	0	0
2000	0	0	0
2010	0	1	1

2020	0	0	0
2030	1	0	1
2040	1	1	2
2050	0	0	0
2100	0	0	0
2110	0	1	1
2120	0	0	0
2130	0	0	0
2140	0	0	0
2150	0	0	0
2200	0	0	0
2210	0	0	0
2220	0	0	0
2230	0	0	0
2240	0	0	0
2250	0	0	0
2300	0	0	0
2310	0	0	0
2320	0	0	0
2330	0	0	0
2340	0	0	0
2350	0	0	0
07-19	75	93	168
06-22	83	102	185
06-00	83	102	185
00-00	87	103	190

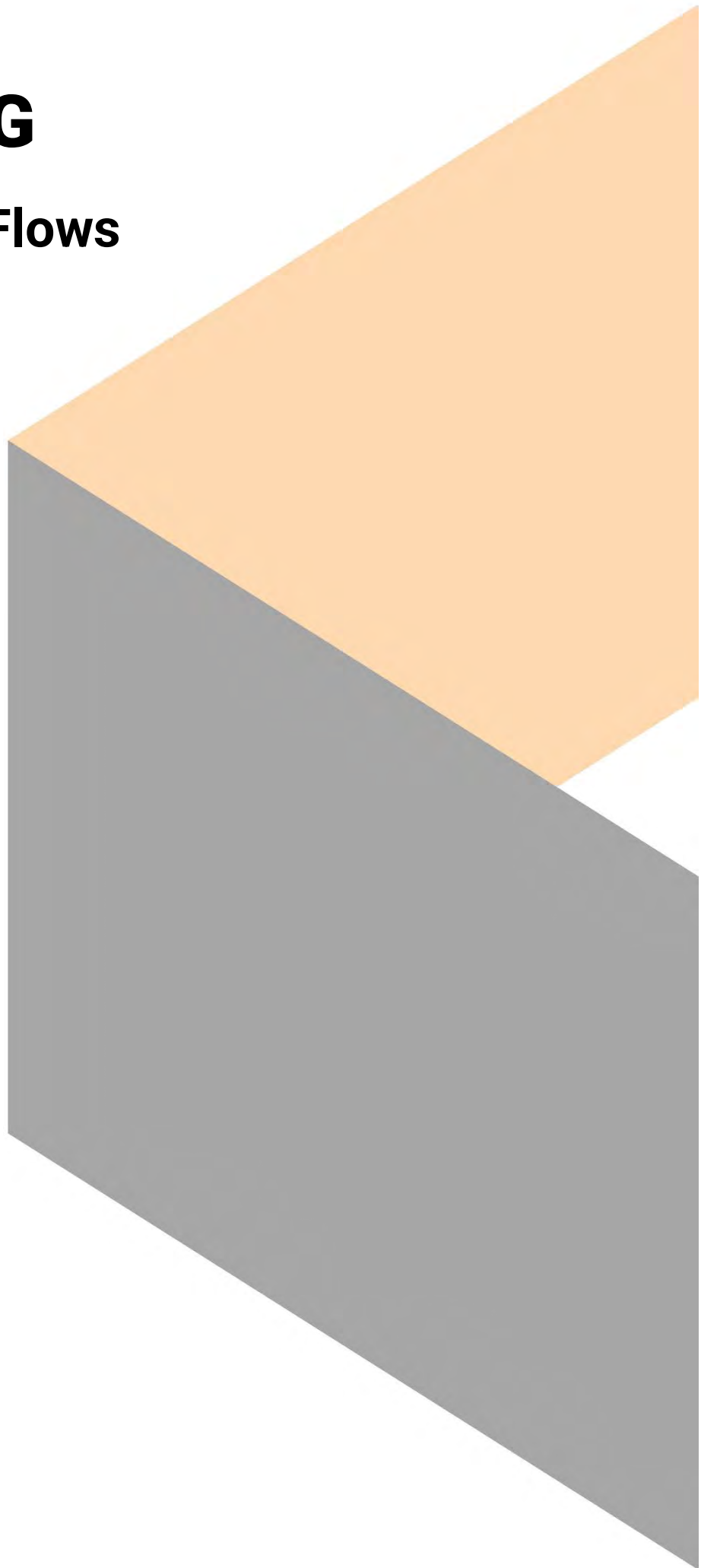
*** Monday, 15 December 2025**

Time	Total	Total	Total
	AB	BA	
0000	0	0	0
0010	1	0	1
0020	0	0	0
0030	0	0	0
0040	0	0	0
0050	0	0	0
0100	0	0	0
0110	0	0	0
0120	0	0	0
0130	0	0	0
0140	0	0	0
0150	0	0	0
0200	0	0	0
0210	0	0	0
0220	0	0	0
0230	0	0	0
0240	0	0	0
0250	0	0	0
0300	0	0	0
0310	0	0	0
0320	0	0	0
0330	0	0	0
0340	0	0	0
0350	0	0	0
0400	0	0	0
0410	0	0	0
0420	1	1	2
0430	0	0	0
0440	0	0	0
0450	1	1	2
0500	0	0	0
0510	0	0	0
0520	1	0	1
0530	1	0	1
0540	0	0	0
0550	1	0	1
0600	0	1	1
0610	2	0	2
0620	1	0	1
0630	1	0	1
0640	2	1	3
0650	1	0	1
0700	1	0	1
0710	1	0	1
0720	2	1	3
0730	5	2	7
0740	7	1	8
0750	5	2	7
0800	3	1	4
0810	2	2	4
0820	4	2	6

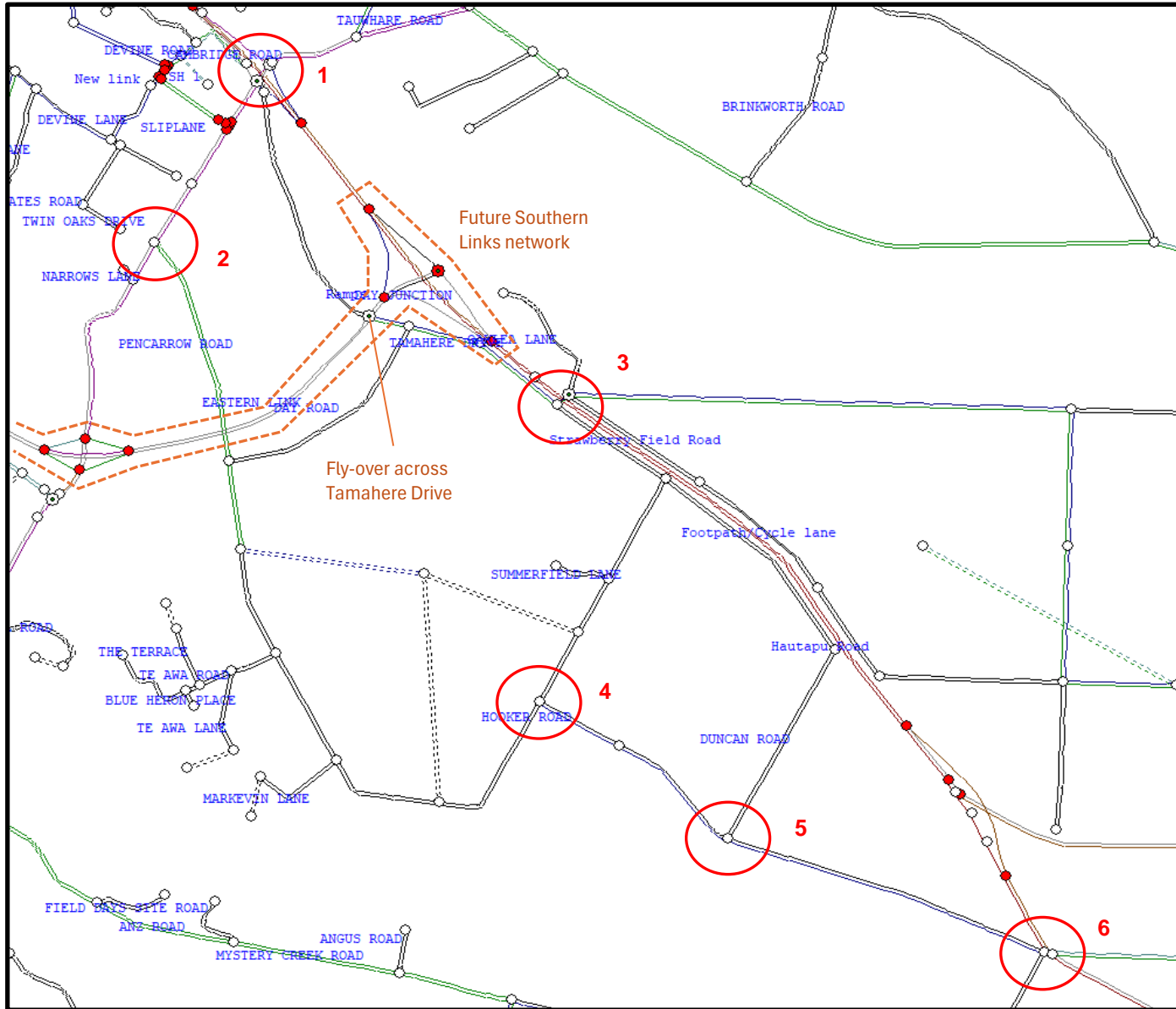
0830	2	2	4
0840	0	3	3
0850	5	2	7
0900	2	2	4
0910	4	3	7
0920	1	2	3
0930	4	1	5
0940	6	2	8
0950	1	1	2
1000	6	5	11
1010	1	5	6
1020	4	0	4
1030	2	2	4
1040	4	3	7
1050	3	3	6
1100	1	3	4
1110	1	0	1
1120	1	1	2
1130	3	1	4
1140	2	1	3
1150	7	1	8
1200	1	0	1
1210	4	0	4
1220	0	2	2
1230	0	0	0
1240	3	4	7
1250	3	10	13
1300	1	2	3
1310	4	4	8
1320	1	4	5
1330	2	3	5
1340	1	4	5
1350	4	2	6
1400	4	5	9
1410	2	2	4
1420	1	0	1
1430	0	1	1
1440	0	0	0
1450	3	0	3
1500	2	1	3
1510	2	7	9
1520	0	1	1
1530	1	1	2
1540	1	0	1
1550	2	3	5
1600	1	2	3
1610	5	4	9
1620	2	5	7
1630	3	3	6
1640	2	4	6
1650	1	6	7
1700	1	1	2
1710	7	3	10
1720	6	2	8
1730	0	2	2
1740	1	1	2
1750	0	0	0
1800	0	0	0
1810	0	0	0
1820	0	4	4
1830	0	3	3
1840	1	0	1
1850	2	1	3
1900	2	5	7
1910	0	3	3
1920	2	3	5
1930	0	3	3
1940	2	0	2
07-19	164	151	315
06-22	177	167	344
06-00	177	167	344
00-00	183	169	352

Appendix G

WRTM Traffic Flows

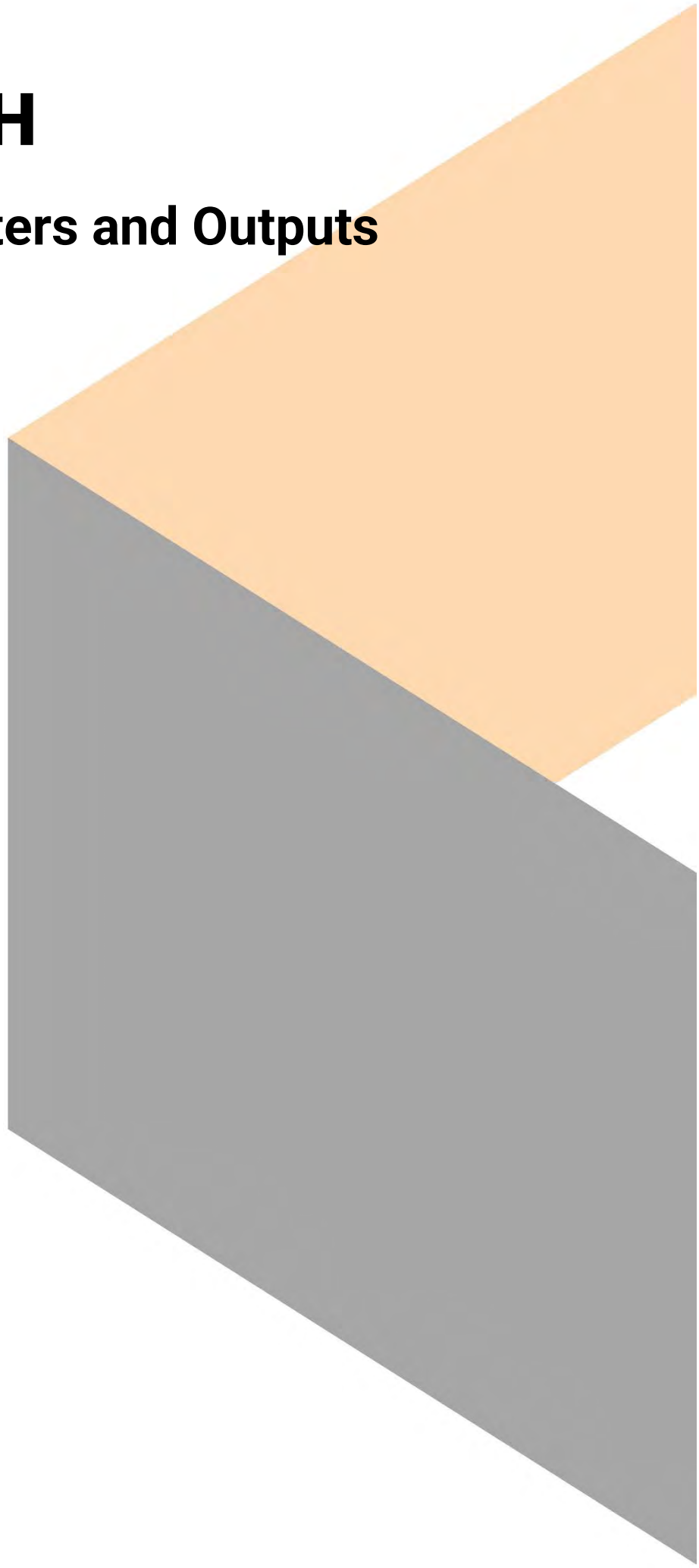


Site	Intersection	Approach	Movement	Weekday PM Peak - 2-Hourly Volumes (4-6pm)			Weekday PM Peak - Hourly Volumes (vph)		
				2025 - Without Southern Links	2035 - Without Southern Links	2045 - With Southern Links	2025 - Without Southern Links	2035 - Without Southern Links	2045 - With Southern Links
1	Tauwhare Road / Airport Road / SH1 SBD Off-Ramp & On-Ramp (Tamhere Interchange)	Tauwhare Road (NE)	L	11	11	14	6	6	7
			T	720	783	856	360	392	428
		Airport Road (SW)	T	553	607	652	277	304	326
			R	239	280	104	120	140	52
		SH1 SBD Off-Ramp (NW)	L	432	423	384	216	212	192
			T	9	7	7	5	4	4
	Tamahere Drive / Airport Road / SH1 NBD On-Ramp (Tamhere Interchange)	Airport Road (NE)	L	107	104	3	54	52	2
			T	796	897	787	398	449	394
			R	559	576	588	280	288	294
		Tamahere Drive (SE)	L	230	338	4	115	169	2
			T	315	332	168	158	166	84
			R	25	23	26	13	12	13
		Airport Road (SW)	L	660	730	634	330	365	317
			T	767	864	730	384	432	365
			R	33	11	7	17	6	4
Tamahere Drive / SH1 NBD Off-Ramp (Tamhere Interchange)	Tamahere Drive (N)	T	139	115	10	70	58	5	
	SH1 NBD Off-Ramp (E)	L	22	39	20	11	20	10	
		R	360	476	187	180	238	94	
Tamahere Drive (S)	T	209	217	11	105	109	6		
2	Airport Road / Pencarrow Road	Airport Road (N)	L	149	158	134	75	79	67
			T	981	1198	820	491	599	410
		Pencarrow Road (E)	L	53	70	88	27	35	44
			R	111	111	112	56	56	56
		Airport Road (S)	T	90	177	130	45	89	65
			R	1363	1526	1297	682	763	649
3	Tamahere Drive / Pickering Road	Pickering Drive (N)	L	10	11	10	5	6	5
			R	130	126	97	65	63	49
		Tamahere Drive (E)	T	58	76	6	29	38	3
			R	6	7	7	3	4	4
		Tamahere Drive (W)	L	83	72	17	42	36	9
			T	72	85	7	36	43	4
4	Pencarrow Road / Hooker Road	Pencarrow Road (N)	L	52	63	56	26	32	28
			T	24	30	25	12	15	13
		Hooker Road (E)	L	35	36	31	18	18	16
			R	74	91	85	37	46	43
		Pencarrow Road (S)	T	30	47	22	15	24	11
			R	23	66	18	12	33	9
5	Hooker Road / Duncan Road	Duncan Road (N)	L	18	19	12	9	10	6
			R	10	12	24	5	6	12
		Hooker Road (E)	T	109	127	116	55	64	58
			R	10	10	6	5	5	3
		Hooker Road (W)	L	6	9	17	3	5	9
			T	75	129	73	38	65	37
6	Hooker Road / Cambridge Road	Cambridge Road (SE)	L	80	91	81	40	46	41
			T	1486	1775	2056	743	888	1028
		Hooker Road (SW)	L	22	35	20	11	18	10
			R	48	83	43	24	42	22
		Cambridge Road (NW)	T	1006	1123	1357	503	562	679
			R	14	25	17	7	13	9
	Racecourse Road / Cambridge Road	Racecourse Road (NE)	L	12	16	18	6	8	9
			R	151	187	251	76	94	126
		Cambridge Road (SE)	T	1486	1775	2056	743	888	1028
			R	28	39	44	14	20	22
Cambridge Road (NW)	L	203	324	534	102	162	267		
	T	1006	1123	1357	503	562	679		



Appendix H

SIDRA Parameters and Outputs



Parameter	Value applied	Notes
Approach/exit distance (arterial)	300 m	SIDRA rural default – sufficient for queue storage
Approach/exit distance (collector/local)	200 m	Appropriate for rural intersections
Lane width – Cambridge Road / Airport Road / Tamahere Drive	3.5 m	Arterial/primary collector standard
Lane width – Hooker Road / Pencarrow Road / Duncan Road	3.3 m	Secondary collector/local road standard
Lane width – minor roads	3.0 m	Low-speed local
Dedicated right turn bay length	60 m	~ 6 to 8 vehicle storage
Shared lane length	150 m	Effective approach length
Heavy vehicles	10%	Rural Waikato default
Approach/exit speed (rural)	80-100 km/h	Rural road operating speeds
Approach/exit speed (Tamahere)	60-80 km/h	Tamahere Drive operating speeds

Largest Non-Feature Event + Residential – PM Peak (vph)

1a – Tauwhare Drive / Airport Road / SH1 SBD On-Ramp / Off-Ramp (Interchange Roundabout)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Tauwhare Road (NE)	Left	6	6	6	7	7
Tauwhare Road (NE)	Through	360	392	399	428	435
Airport Road (SW)	Through	277	304	331	326	353
Airport Road (SW)	Right	120	140	184	52	96
SH1 SBD Off-Ramp (NW)	Left	216	212	212	192	192
SH1 NBD Off-Ramp (NW)	Through	5	4	4	4	4
SH1 NBD Off-Ramp (NW)	Right	372	397	431	262	296

1b – Tamahere Drive / Airport Road / SH1 NBD On-Ramp (Interchange Roundabout)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Airport Road (NE)	Left	54	52	93	2	43
Airport Road (NE)	Through	398	449	449	394	394
Airport Road (NE)	Right	280	288	288	294	294
Tamahere Drive (SE)	Left	115	169	180	2	13
Tamahere Drive (SE)	Through	158	166	303	84	221
Tamahere Drive (SE)	Right	13	12	65	13	66
Airport Road (SW)	Left	330	365	365	317	317
Airport Road (SW)	Through	384	432	432	365	365
Airport Road (SW)	Right	17	6	9	4	7

1c – Tamahere Drive / SH1 NBD Off-Ramp (Priority T-Intersection - One-Way Minor Leg)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Tamahere Drive (N)	Through	70	58	113	5	60
SH1 NBD Off-Ramp (E)	Left	11	20	31	10	21
SH1 NBD Off-Ramp (E)	Right	180	238	238	94	94
Tamahere Drive (S)	Through	105	109	328	6	225

2 – Airport Road / Pencarrow Road (Priority T-Intersection)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Airport Road (N)	Left	75	79	86	67	74
Airport Road (N)	Through	491	599	599	410	410
Pencarrow Road (E)	Left	27	35	117	44	126
Pencarrow Road (E)	Right	56	56	83	56	83
Airport Road (S)	Through	682	763	763	649	649
Airport Road (S)	Right	45	89	110	65	86

3 – Tamahere Drive / Pickering Road (Priority T-Intersection)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Pickering Road (N)	Left	5	6	20	5	19
Pickering Road (N)	Right	65	63	63	49	49
Tamahere Drive (E)	Through	29	38	257	3	222
Tamahere Drive (E)	Right	3	4	59	4	59
Tamahere Drive (W)	Left	42	36	36	9	9
Tamahere Drive (W)	Through	36	43	84	4	45

4 – Pencarrow Road / Hooker Road (Priority T-Intersection)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Pencarrow Road (N)	Left	26	32	150	28	146
Pencarrow Road (N)	Through	12	15	56	13	54
Hooker Road (E)	Left	18	18	114	16	112
Hooker Road (E)	Right	37	46	285	43	282
Pencarrow Road (S)	Through	15	24	32	11	19
Pencarrow Road (S)	Right	12	33	52	9	28

5 – Hooker Road / Duncan Road (Priority T-Intersection)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Duncan Road (N)	Left	9	10	26	6	22
Duncan Road (N)	Right	5	6	44	12	50
Hooker Road (E)	Through	55	64	105	58	99
Hooker Road (E)	Right	5	5	9	3	7
Hooker Road (W)	Left	3	5	15	9	19
Hooker Road (W)	Through	38	65	215	37	187

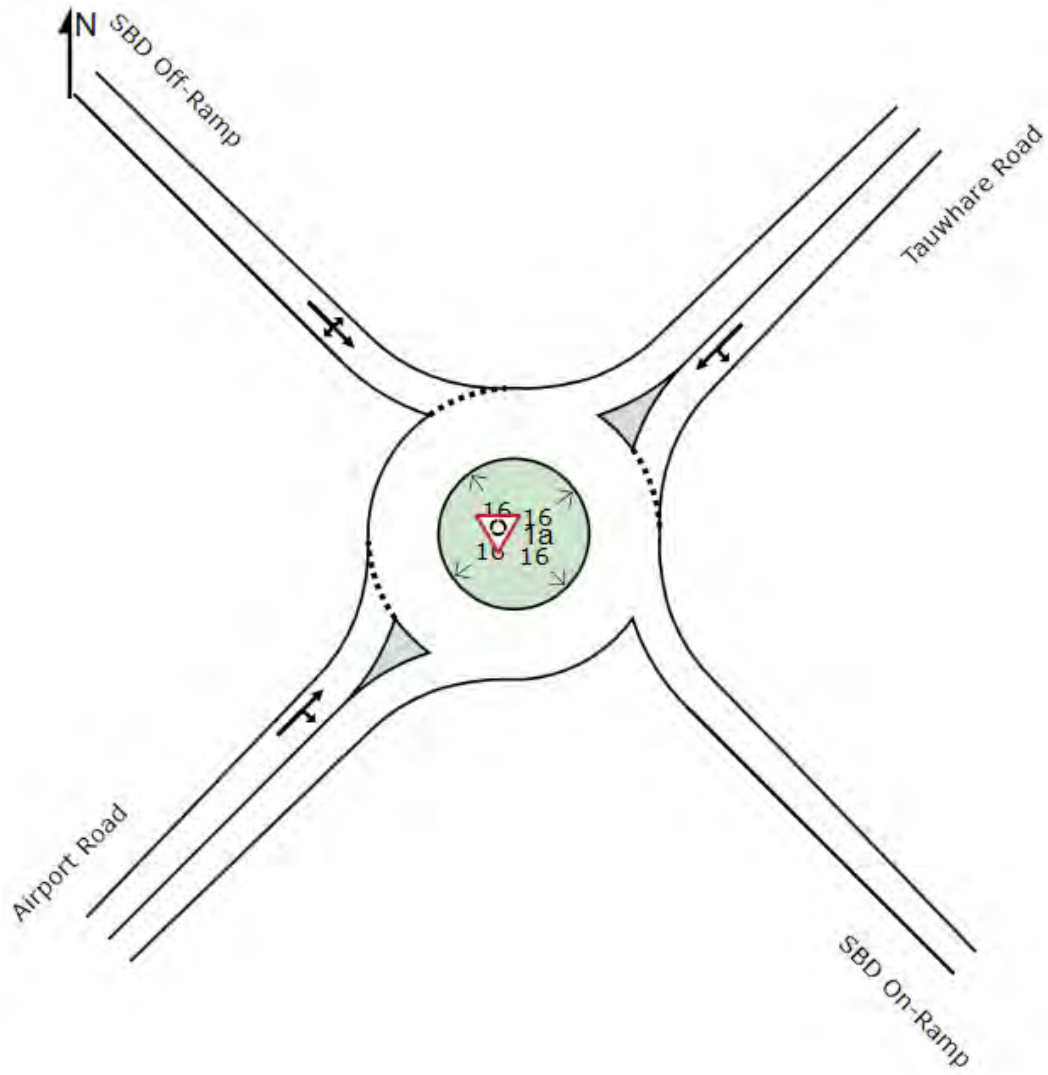
6a – Hooker Road / Cambridge Road (Priority T-Intersection - Staggered)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Cambridge Road (SE)	Left	40	46	73	41	68
Cambridge Road (SE)	Through	743	888	888	1028	1028
Hooker Road (SW)	Left	11	18	29	10	21
Hooker Road (SW)	Right	24	42	152	22	132
Cambridge Road (NW)	Through	503	562	562	679	679
Cambridge Road (NW)	Right	7	13	16	9	12

6b – Racecourse Road / Cambridge Road (Priority T-Intersection - Staggered)

Approach	Movement	2025 (B)	2035 (B)	2035 (B+D)	2045 (B)	2045 (B+D)
Racecourse Road (NE)	Left	6	8	8	9	9
Racecourse Road (NE)	Right	76	94	105	126	137
Cambridge Road (SE)	Through	743	888	915	1028	1055
Cambridge Road (SE)	Right	14	20	20	22	22
Cambridge Road (NW)	Left	102	162	206	267	311
Cambridge Road (NW)	Through	503	562	672	679	789

1a – Tauwhare Road / Airport Road / SBD On-Ramp/Off-Ramp



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
NorthEast: Tauwhare Road															
24	L2	All MCs	6	16.7	6	16.7	0.518	10.2	LOS B	4.2	32.2	0.83	0.76	0.94	44.8
25	T1	All MCs	379	10.0	379	10.0	0.518	10.1	LOS B	4.2	32.2	0.83	0.76	0.94	45.6
Approach			385	10.1	385	10.1	0.518	10.1	LOS B	4.2	32.2	0.83	0.76	0.94	45.6
NorthWest: SBD Off-Ramp															
27	L2	All MCs	227	10.2	227	10.2	0.690	13.2	LOS B	7.6	57.7	0.82	0.84	1.08	44.3
28	T1	All MCs	5	20.0	5	20.0	0.690	14.4	LOS B	7.6	57.7	0.82	0.84	1.08	44.5
29	R2	All MCs	392	9.9	392	9.9	0.690	17.8	LOS B	7.6	57.7	0.82	0.84	1.08	42.7
Approach			624	10.1	624	10.1	0.690	16.1	LOS B	7.6	57.7	0.82	0.84	1.08	43.3
SouthWest: Airport Road															
31	T1	All MCs	292	10.1	292	10.1	0.254	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	50.2
32	R2	All MCs	126	10.0	126	10.0	0.254	8.6	LOS A	0.0	0.0	0.00	0.53	0.00	47.5
Approach			418	10.1	418	10.1	0.254	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	49.4
All Vehicles			1427	10.1	1427	10.1	0.690	11.4	LOS B	7.6	57.7	0.58	0.73	0.73	45.5

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
NorthEast: Tauwhare Road															
24	L2	All MCs	6	16.7	6	16.7	0.597	12.3	LOS B	5.6	42.6	0.90	0.85	1.11	43.1
25	T1	All MCs	413	9.9	413	9.9	0.597	12.2	LOS B	5.6	42.6	0.90	0.85	1.11	43.8
Approach			419	10.1	419	10.1	0.597	12.2	LOS B	5.6	42.6	0.90	0.85	1.11	43.8
NorthWest: SBD Off-Ramp															
27	L2	All MCs	223	9.9	223	9.9	0.744	15.7	LOS B	9.4	71.5	0.89	0.91	1.29	42.2
28	T1	All MCs	4	25.0	4	25.0	0.744	17.3	LOS B	9.4	71.5	0.89	0.91	1.29	42.3
29	R2	All MCs	418	10.1	418	10.1	0.744	20.3	LOS C	9.4	71.5	0.89	0.91	1.29	40.7
Approach			645	10.1	645	10.1	0.744	18.7	LOS B	9.4	71.5	0.89	0.91	1.29	41.2
SouthWest: Airport Road															
31	T1	All MCs	320	9.9	320	9.9	0.284	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	50.2
32	R2	All MCs	147	10.0	147	10.0	0.284	8.6	LOS A	0.0	0.0	0.00	0.53	0.00	47.5
Approach			467	9.9	467	9.9	0.284	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	49.3
All Vehicles			1532	10.0	1532	10.0	0.744	13.0	LOS B	9.4	71.5	0.62	0.78	0.85	44.1

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
NorthEast: Tauwhare Road															
24	L2	All MCs	6	16.7	6	16.7	0.675	15.9	LOS B	7.2	55.0	0.97	0.96	1.35	40.3
25	T1	All MCs	420	10.0	420	10.0	0.675	15.7	LOS B	7.2	55.0	0.97	0.96	1.35	41.0
Approach			426	10.1	426	10.1	0.675	15.7	LOS B	7.2	55.0	0.97	0.96	1.35	41.0
NorthWest: SBD Off-Ramp															
27	L2	All MCs	223	9.9	223	9.9	0.836	22.2	LOS C	13.9	105.9	0.99	1.09	1.78	37.7
28	T1	All MCs	4	25.0	4	25.0	0.836	23.9	LOS C	13.9	105.9	0.99	1.09	1.78	37.7
29	R2	All MCs	454	10.0	454	10.0	0.836	26.7	LOS C	13.9	105.9	0.99	1.09	1.78	36.5
Approach			681	10.0	681	10.0	0.836	25.2	LOS C	13.9	105.9	0.99	1.09	1.78	36.9
SouthWest: Airport Road															
31	T1	All MCs	348	10.0	348	10.0	0.330	4.4	LOS A	0.0	0.0	0.00	0.54	0.00	50.0
32	R2	All MCs	194	9.8	194	9.8	0.330	8.6	LOS A	0.0	0.0	0.00	0.54	0.00	47.4
Approach			542	9.9	542	9.9	0.330	5.9	LOS A	0.0	0.0	0.00	0.54	0.00	49.0
All Vehicles			1649	10.0	1649	10.0	0.836	16.4	LOS B	13.9	105.9	0.66	0.87	1.08	41.3

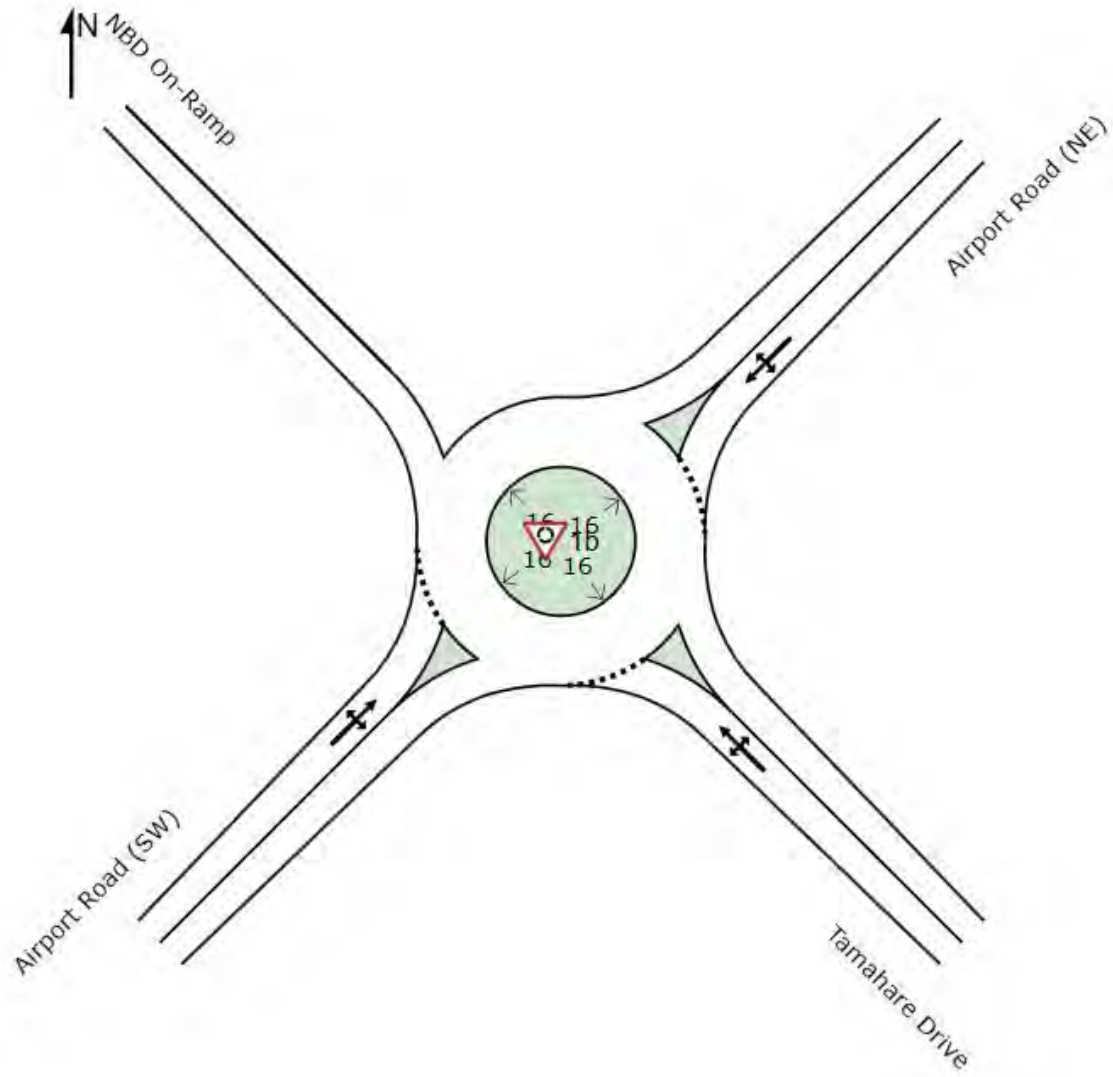
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
NorthEast: Tauwhare Road															
24	L2	All MCs	7	14.3	7	14.3	0.502	7.4	LOS A	3.8	28.8	0.71	0.63	0.72	46.5
25	T1	All MCs	451	10.0	451	10.0	0.502	7.4	LOS A	3.8	28.8	0.71	0.63	0.72	47.2
Approach			458	10.1	458	10.1	0.502	7.4	LOS A	3.8	28.8	0.71	0.63	0.72	47.2
NorthWest: SBD Off-Ramp															
27	L2	All MCs	202	9.9	202	9.9	0.529	10.2	LOS B	4.0	30.5	0.70	0.74	0.77	47.3
28	T1	All MCs	4	25.0	4	25.0	0.529	11.5	LOS B	4.0	30.5	0.70	0.74	0.77	47.4
29	R2	All MCs	276	9.9	276	9.9	0.529	14.8	LOS B	4.0	30.5	0.70	0.74	0.77	45.4
Approach			482	10.0	482	10.0	0.529	12.8	LOS B	4.0	30.5	0.70	0.74	0.77	46.2
SouthWest: Airport Road															
31	T1	All MCs	343	10.1	343	10.1	0.242	4.4	LOS A	0.0	0.0	0.00	0.48	0.00	50.9
32	R2	All MCs	55	9.6	55	9.6	0.242	8.6	LOS A	0.0	0.0	0.00	0.48	0.00	48.2
Approach			398	10.1	398	10.1	0.242	5.0	LOS A	0.0	0.0	0.00	0.48	0.00	50.5
All Vehicles			1338	10.1	1338	10.1	0.529	8.6	LOS A	4.0	30.5	0.49	0.62	0.52	47.8

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
NorthEast: Tauwhare Road															
24	L2	All MCs	7	14.3	7	14.3	0.558	9.3	LOS A	4.8	36.8	0.80	0.73	0.90	45.1
25	T1	All MCs	458	10.1	458	10.1	0.558	9.3	LOS A	4.8	36.8	0.80	0.73	0.90	45.8
Approach			465	10.2	465	10.2	0.558	9.3	LOS A	4.8	36.8	0.80	0.73	0.90	45.8
NorthWest: SBD Off-Ramp															
27	L2	All MCs	202	9.9	202	9.9	0.605	12.5	LOS B	5.5	41.7	0.78	0.82	0.98	45.1
28	T1	All MCs	4	25.0	4	25.0	0.605	13.9	LOS B	5.5	41.7	0.78	0.82	0.98	45.1
29	R2	All MCs	312	10.1	312	10.1	0.605	17.0	LOS B	5.5	41.7	0.78	0.82	0.98	43.4
Approach			518	10.2	518	10.2	0.605	15.2	LOS B	5.5	41.7	0.78	0.82	0.98	44.0
SouthWest: Airport Road															
31	T1	All MCs	372	9.9	372	9.9	0.287	4.4	LOS A	0.0	0.0	0.00	0.50	0.00	50.6
32	R2	All MCs	101	10.4	101	10.4	0.287	8.6	LOS A	0.0	0.0	0.00	0.50	0.00	47.8
Approach			473	10.0	473	10.0	0.287	5.3	LOS A	0.0	0.0	0.00	0.50	0.00	50.0
All Vehicles			1456	10.1	1456	10.1	0.605	10.1	LOS B	5.5	41.7	0.53	0.69	0.63	46.4

1b – Tamahere Drive / Airport Road / NBD On-Ramp



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
SouthEast: Tamahare Drive															
21	L2	All MCs	121	9.6	121	9.6	0.443	11.5	LOS B	3.2	24.1	0.82	0.79	0.92	43.5
22	T1	All MCs	166	10.1	166	10.1	0.443	11.7	LOS B	3.2	24.1	0.82	0.79	0.92	44.0
23	R2	All MCs	14	7.7	14	7.7	0.443	15.7	LOS B	3.2	24.1	0.82	0.79	0.92	42.2
Approach			301	9.8	301	9.8	0.443	11.8	LOS B	3.2	24.1	0.82	0.79	0.92	43.7
NorthEast: Airport Road (NE)															
24	L2	All MCs	57	9.3	57	9.3	0.503	4.3	LOS A	5.4	41.4	0.19	0.49	0.19	48.4
25	T1	All MCs	419	10.1	419	10.1	0.503	4.5	LOS A	5.4	41.4	0.19	0.49	0.19	48.9
26	R2	All MCs	295	10.0	295	10.0	0.503	8.7	LOS A	5.4	41.4	0.19	0.49	0.19	46.4
Approach			771	10.0	771	10.0	0.503	6.1	LOS A	5.4	41.4	0.19	0.49	0.19	47.9
SouthWest: Airport Road (SW)															
30	L2	All MCs	347	10.0	347	10.0	0.921	27.3	LOS C	22.2	168.8	1.00	1.42	2.20	33.3
31	T1	All MCs	404	9.9	404	9.9	0.921	27.6	LOS C	22.2	168.8	1.00	1.42	2.20	33.6
32	R2	All MCs	18	11.8	18	11.8	0.921	31.8	LOS C	22.2	168.8	1.00	1.42	2.20	32.2
Approach			769	10.0	769	10.0	0.921	27.6	LOS C	22.2	168.8	1.00	1.42	2.20	33.4
All Vehicles			1841	9.9	1841	9.9	0.921	16.0	LOS B	22.2	168.8	0.63	0.93	1.15	40.1

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
SouthEast: Tamahare Drive															
21	L2	All MCs	178	10.1	178	10.1	0.560	15.2	LOS B	4.9	37.3	0.88	0.91	1.19	40.6
22	T1	All MCs	175	10.2	175	10.2	0.560	15.4	LOS B	4.9	37.3	0.88	0.91	1.19	41.0
23	R2	All MCs	13	8.3	13	8.3	0.560	19.4	LOS B	4.9	37.3	0.88	0.91	1.19	39.4
Approach			365	10.1	365	10.1	0.560	15.5	LOS B	4.9	37.3	0.88	0.91	1.19	40.8
NorthEast: Airport Road (NE)															
24	L2	All MCs	55	9.6	55	9.6	0.517	4.2	LOS A	5.9	44.6	0.11	0.51	0.11	48.8
25	T1	All MCs	473	10.0	473	10.0	0.517	4.4	LOS A	5.9	44.6	0.11	0.51	0.11	49.4
26	R2	All MCs	303	10.1	303	10.1	0.517	8.6	LOS A	5.9	44.6	0.11	0.51	0.11	46.8
Approach			831	10.0	831	10.0	0.517	5.9	LOS A	5.9	44.6	0.11	0.51	0.11	48.4
SouthWest: Airport Road (SW)															
30	L2	All MCs	384	10.1	384	10.1	1.028	66.3	LOS E	47.2	359.1	1.00	2.41	4.23	21.1
31	T1	All MCs	455	10.0	455	10.0	1.028	66.6	LOS E	47.2	359.1	1.00	2.41	4.23	21.2
32	R2	All MCs	6	16.7	6	16.7	1.028	71.2	LOS F	47.2	359.1	1.00	2.41	4.23	20.5
Approach			845	10.1	845	10.1	1.028	66.5	LOS E	47.2	359.1	1.00	2.41	4.23	21.1
All Vehicles			2041	10.1	2041	10.1	1.028	32.7	LOS C	47.2	359.1	0.62	1.37	2.01	30.9

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
SouthEast: Tamahare Drive															
21	L2	All MCs	189	10.0	189	10.0	0.889	35.9	LOS D	17.8	134.8	1.00	1.52	2.54	29.5
22	T1	All MCs	319	9.9	319	9.9	0.889	36.1	LOS D	17.8	134.8	1.00	1.52	2.54	29.7
23	R2	All MCs	68	9.2	68	9.2	0.889	40.2	LOS D	17.8	134.8	1.00	1.52	2.54	28.8
Approach			577	9.9	577	9.9	0.889	36.5	LOS D	17.8	134.8	1.00	1.52	2.54	29.5
NorthEast: Airport Road (NE)															
24	L2	All MCs	98	9.7	98	9.7	0.545	4.2	LOS A	6.5	49.4	0.12	0.50	0.12	48.8
25	T1	All MCs	473	10.0	473	10.0	0.545	4.5	LOS A	6.5	49.4	0.12	0.50	0.12	49.4
26	R2	All MCs	303	10.1	303	10.1	0.545	8.6	LOS A	6.5	49.4	0.12	0.50	0.12	46.8
Approach			874	10.0	874	10.0	0.545	5.9	LOS A	6.5	49.4	0.12	0.50	0.12	48.4
SouthWest: Airport Road (SW)															
30	L2	All MCs	384	10.1	384	10.1	1.358	341.8	LOS F	152.8	1161.4	1.00	6.01	13.46	5.9
31	T1	All MCs	455	10.0	455	10.0	1.358	342.0	LOS F	152.8	1161.4	1.00	6.01	13.46	5.9
32	R2	All MCs	9	11.1	9	11.1	1.358	346.3	LOS F	152.8	1161.4	1.00	6.01	13.46	5.8
Approach			848	10.0	848	10.0	1.358	342.0	LOS F	152.8	1161.4	1.00	6.01	13.46	5.9
All Vehicles			2299	10.0	2299	10.0	1.358	137.6	LOS F	152.8	1161.4	0.67	2.79	5.65	12.7

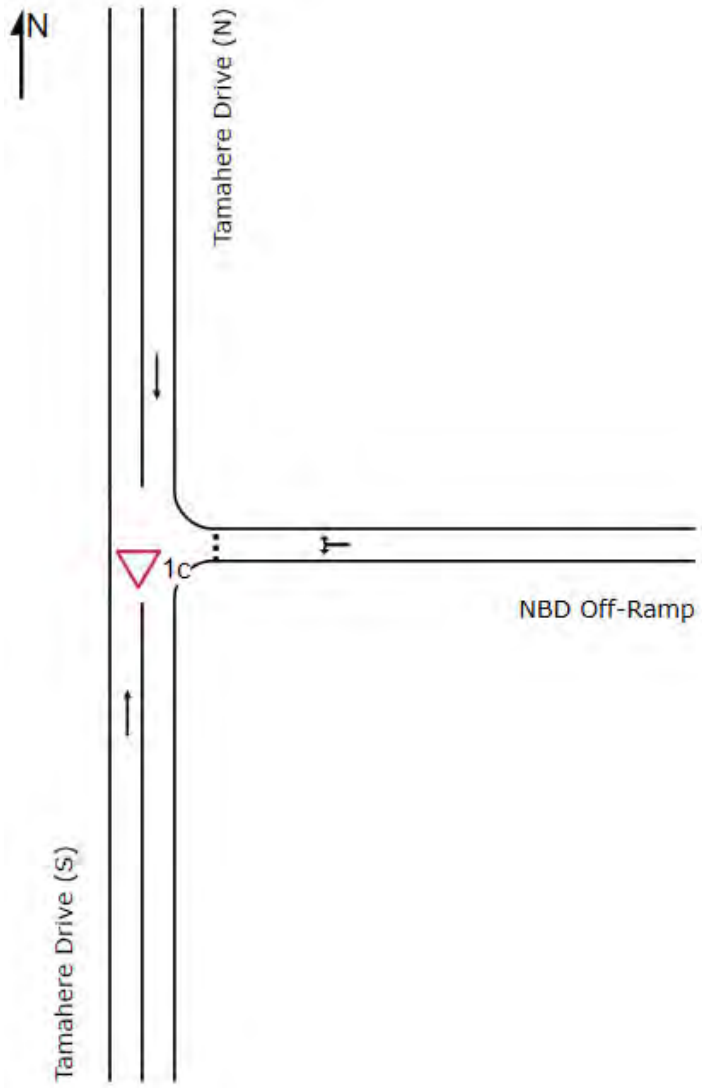
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
SouthEast: Tamahare Drive															
21	L2	All MCs	2	0.0	2	0.0	0.150	9.0	LOS A	0.8	6.3	0.70	0.70	0.70	45.4
22	T1	All MCs	88	9.5	88	9.5	0.150	9.8	LOS A	0.8	6.3	0.70	0.70	0.70	45.5
23	R2	All MCs	14	7.7	14	7.7	0.150	13.8	LOS B	0.8	6.3	0.70	0.70	0.70	43.6
Approach			104	9.1	104	9.1	0.150	10.3	LOS B	0.8	6.3	0.70	0.70	0.70	45.2
NorthEast: Airport Road (NE)															
24	L2	All MCs	2	0.0	2	0.0	0.448	4.1	LOS A	4.5	34.3	0.08	0.53	0.08	49.2
25	T1	All MCs	415	9.9	415	9.9	0.448	4.4	LOS A	4.5	34.3	0.08	0.53	0.08	49.3
26	R2	All MCs	309	9.9	309	9.9	0.448	8.6	LOS A	4.5	34.3	0.08	0.53	0.08	46.7
Approach			726	9.9	726	9.9	0.448	6.2	LOS A	4.5	34.3	0.08	0.53	0.08	48.2
SouthWest: Airport Road (SW)															
30	L2	All MCs	334	10.1	334	10.1	0.801	14.8	LOS B	12.1	92.1	0.95	0.96	1.40	40.9
31	T1	All MCs	384	10.1	384	10.1	0.801	15.0	LOS B	12.1	92.1	0.95	0.96	1.40	41.3
32	R2	All MCs	4	25.0	4	25.0	0.801	20.1	LOS C	12.1	92.1	0.95	0.96	1.40	37.6
Approach			722	10.2	722	10.2	0.801	15.0	LOS B	12.1	92.1	0.95	0.96	1.40	41.1
All Vehicles			1553	10.0	1553	10.0	0.801	10.6	LOS B	12.1	92.1	0.52	0.74	0.73	44.5

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
SouthEast: Tamahare Drive															
21	L2	All MCs	14	7.7	14	7.7	0.460	11.9	LOS B	3.4	25.5	0.82	0.81	0.95	42.7
22	T1	All MCs	233	10.0	233	10.0	0.460	12.2	LOS B	3.4	25.5	0.82	0.81	0.95	43.1
23	R2	All MCs	69	9.1	69	9.1	0.460	16.3	LOS B	3.4	25.5	0.82	0.81	0.95	41.2
Approach			316	9.7	316	9.7	0.460	13.1	LOS B	3.4	25.5	0.82	0.81	0.95	42.6
NorthEast: Airport Road (NE)															
24	L2	All MCs	45	9.3	45	9.3	0.481	4.2	LOS A	5.1	39.1	0.11	0.51	0.11	48.7
25	T1	All MCs	415	9.9	415	9.9	0.481	4.5	LOS A	5.1	39.1	0.11	0.51	0.11	49.3
26	R2	All MCs	309	9.9	309	9.9	0.481	8.6	LOS A	5.1	39.1	0.11	0.51	0.11	46.7
Approach			769	9.8	769	9.8	0.481	6.1	LOS A	5.1	39.1	0.11	0.51	0.11	48.2
SouthWest: Airport Road (SW)															
30	L2	All MCs	334	10.1	334	10.1	1.024	70.3	LOS F	41.5	315.5	1.00	2.38	4.35	20.3
31	T1	All MCs	384	10.1	384	10.1	1.024	70.5	LOS F	41.5	315.5	1.00	2.38	4.35	20.4
32	R2	All MCs	7	14.3	7	14.3	1.024	75.0	LOS F	41.5	315.5	1.00	2.38	4.35	19.8
Approach			725	10.2	725	10.2	1.024	70.5	LOS F	41.5	315.5	1.00	2.38	4.35	20.4
All Vehicles			1811	9.9	1811	9.9	1.024	33.1	LOS C	41.5	315.5	0.59	1.32	1.96	30.8

1c – Tamahere Drive / NBD Off-Ramp



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Arrival Flows				Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
South: Tamahere Drive (S)															
2	T1	All MCs	111	9.5	111	9.5	0.060	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			111	9.5	111	9.5	0.060	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: NBD Off-Ramp															
4	L2	All MCs	12	9.1	12	9.1	0.193	7.4	LOS A	0.7	5.4	0.29	0.65	0.29	48.4
6	R2	All MCs	189	10.0	189	10.0	0.193	7.9	LOS A	0.7	5.4	0.29	0.65	0.29	47.1
Approach			201	9.9	201	9.9	0.193	7.9	LOS A	0.7	5.4	0.29	0.65	0.29	47.2
North: Tamahere Drive (N)															
8	T1	All MCs	74	10.0	74	10.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			74	10.0	74	10.0	0.040	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			385	9.8	385	9.8	0.193	4.1	NA	0.7	5.4	0.15	0.34	0.15	53.1

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand/Arrival Flows				Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
South: Tamahere Drive (S)															
2	T1	All MCs	115	10.1	115	10.1	0.062	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			115	10.1	115	10.1	0.062	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: NBD Off-Ramp															
4	L2	All MCs	21	10.0	21	10.0	0.257	7.4	LOS A	1.0	7.7	0.29	0.65	0.29	48.2
6	R2	All MCs	251	10.1	251	10.1	0.257	7.9	LOS A	1.0	7.7	0.29	0.65	0.29	47.1
Approach			272	10.1	272	10.1	0.257	7.9	LOS A	1.0	7.7	0.29	0.65	0.29	47.1
North: Tamahere Drive (N)															
8	T1	All MCs	61	10.3	61	10.3	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			61	10.3	61	10.3	0.033	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			447	10.1	447	10.1	0.257	4.8	NA	1.0	7.7	0.18	0.39	0.18	52.0

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand/Arrival Flows				Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
South: Tamahere Drive (S)															
2	T1	All MCs	345	10.1	345	10.1	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			345	10.1	345	10.1	0.187	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: NBD Off-Ramp															
4	L2	All MCs	33	9.7	33	9.7	0.362	8.1	LOS A	1.7	13.1	0.51	0.77	0.61	45.4
6	R2	All MCs	251	10.1	251	10.1	0.362	10.7	LOS B	1.7	13.1	0.51	0.77	0.61	44.3
Approach			283	10.0	283	10.0	0.362	10.4	LOS B	1.7	13.1	0.51	0.77	0.61	44.4
North: Tamahere Drive (N)															
8	T1	All MCs	119	9.7	119	9.7	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			119	9.7	119	9.7	0.064	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			747	10.0	747	10.0	0.362	4.0	NA	1.7	13.1	0.19	0.29	0.23	53.6

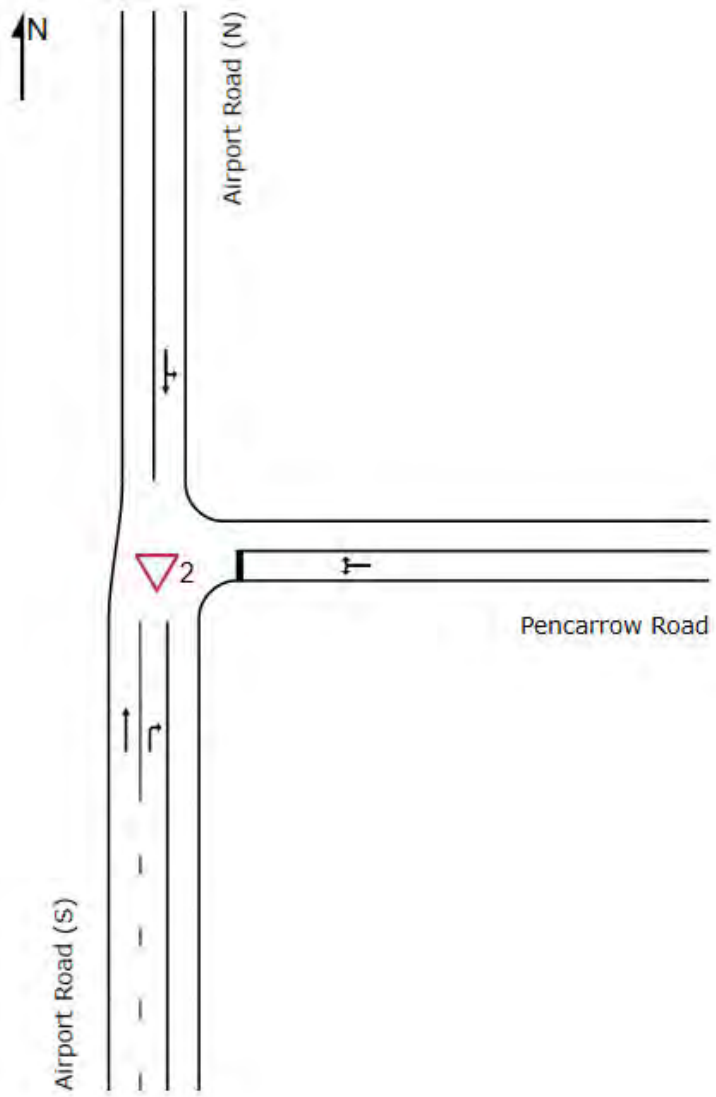
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand/Arrival Flows				Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Veh. veh]	[Dist]									
			veh/h	%	veh/h	%	v/c	sec						km/h	
South: Tamahere Drive (S)															
2	T1	All MCs	6	16.7	6	16.7	0.004	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			6	16.7	6	16.7	0.004	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: NBD Off-Ramp															
4	L2	All MCs	11	10.0	11	10.0	0.088	7.1	LOS A	0.3	2.3	0.05	0.64	0.05	49.2
6	R2	All MCs	99	9.6	99	9.6	0.088	7.0	LOS A	0.3	2.3	0.05	0.64	0.05	48.1
Approach			109	9.6	109	9.6	0.088	7.0	LOS A	0.3	2.3	0.05	0.64	0.05	48.2
North: Tamahere Drive (N)															
8	T1	All MCs	5	20.0	5	20.0	0.003	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			5	20.0	5	20.0	0.003	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			121	10.4	121	10.4	0.088	6.3	NA	0.3	2.3	0.05	0.58	0.05	49.3

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Arrival Flows				Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
South: Tamahere Drive (S)															
2	T1	All MCs	237	10.2	237	10.2	0.128	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			237	10.2	237	10.2	0.128	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: NBD Off-Ramp															
4	L2	All MCs	22	9.5	22	9.5	0.124	7.3	LOS A	0.4	3.3	0.30	0.65	0.30	47.9
6	R2	All MCs	99	9.6	99	9.6	0.124	8.5	LOS A	0.4	3.3	0.30	0.65	0.30	46.8
Approach			121	9.6	121	9.6	0.124	8.3	LOS A	0.4	3.3	0.30	0.65	0.30	47.0
North: Tamahere Drive (N)															
8	T1	All MCs	63	10.0	63	10.0	0.034	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			63	10.0	63	10.0	0.034	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			421	10.0	421	10.0	0.128	2.4	NA	0.4	3.3	0.09	0.19	0.09	56.0

2 – Airport Road / Pencarrow Road



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
South: Airport Road (S)															
2	T1	All MCs	718	10.0	718	10.0	0.388	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
3	R2	All MCs	47	11.1	47	11.1	0.059	10.1	LOS B	0.2	1.7	0.57	0.77	0.57	48.0
Approach			765	10.0	765	10.0	0.388	0.7	NA	0.2	1.7	0.04	0.05	0.04	94.4
East: Pencarrow Road															
4	L2	All MCs	28	11.1	28	11.1	0.864	54.0	LOS F	3.9	29.9	0.98	1.30	2.35	16.0
6	R2	All MCs	59	10.7	59	10.7	0.864	106.8	LOS F	3.9	29.9	0.98	1.30	2.35	16.0
Approach			87	10.8	87	10.8	0.864	89.6	LOS F	3.9	29.9	0.98	1.30	2.35	16.0
North: Airport Road (N)															
7	L2	All MCs	79	9.3	79	9.3	0.324	8.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.0
8	T1	All MCs	517	10.0	517	10.0	0.324	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	92.4
Approach			596	9.9	596	9.9	0.324	1.1	NA	0.0	0.0	0.00	0.09	0.00	84.0
All Vehicles			1448	10.0	1448	10.0	0.864	6.2	NA	3.9	29.9	0.08	0.14	0.16	72.3

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Airport Road (S)															
2	T1	All MCs	803	10.0	803	10.0	0.434	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
3	R2	All MCs	94	10.1	94	10.1	0.141	11.6	LOS B	0.5	4.1	0.63	0.87	0.63	46.4
Approach			897	10.0	897	10.0	0.434	1.2	NA	0.5	4.1	0.07	0.09	0.07	90.4
East: Pencarrow Road															
4	L2	All MCs	37	8.6	37	8.6	1.796	743.7	LOS F	28.8	219.0	1.00	2.72	9.14	2.2
6	R2	All MCs	59	10.7	59	10.7	1.796	837.0	LOS F	28.8	219.0	1.00	2.72	9.14	2.2
Approach			96	9.9	96	9.9	1.796	801.1	LOS F	28.8	219.0	1.00	2.72	9.14	2.2
North: Airport Road (N)															
7	L2	All MCs	83	10.1	83	10.1	0.388	8.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.1
8	T1	All MCs	631	10.0	631	10.0	0.388	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	93.2
Approach			714	10.0	714	10.0	0.388	1.0	NA	0.0	0.0	0.00	0.08	0.00	85.6
All Vehicles			1706	10.0	1706	10.0	1.796	46.0	NA	28.8	219.0	0.09	0.23	0.55	30.8

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Airport Road (S)															
2	T1	All MCs	803	10.0	803	10.0	0.434	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
3	R2	All MCs	116	10.0	116	10.0	0.177	11.8	LOS B	0.7	5.2	0.65	0.88	0.65	46.2
Approach			919	10.0	919	10.0	0.434	1.5	NA	0.7	5.2	0.08	0.11	0.08	88.6
East: Pencarrow Road															
4	L2	All MCs	123	10.3	123	10.3	2.846	1678.9	LOS F	87.4	663.9	1.00	4.41	16.14	1.1
6	R2	All MCs	87	9.6	87	9.6	2.846	1773.0	LOS F	87.4	663.9	1.00	4.41	16.14	1.1
Approach			211	10.0	211	10.0	2.846	1717.9	LOS F	87.4	663.9	1.00	4.41	16.14	1.1
North: Airport Road (N)															
7	L2	All MCs	91	10.5	91	10.5	0.393	8.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.0
8	T1	All MCs	631	10.0	631	10.0	0.393	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	92.7
Approach			721	10.1	721	10.1	0.393	1.0	NA	0.0	0.0	0.00	0.09	0.00	84.6
All Vehicles			1851	10.0	1851	10.0	2.846	196.6	NA	87.4	663.9	0.15	0.59	1.88	9.6

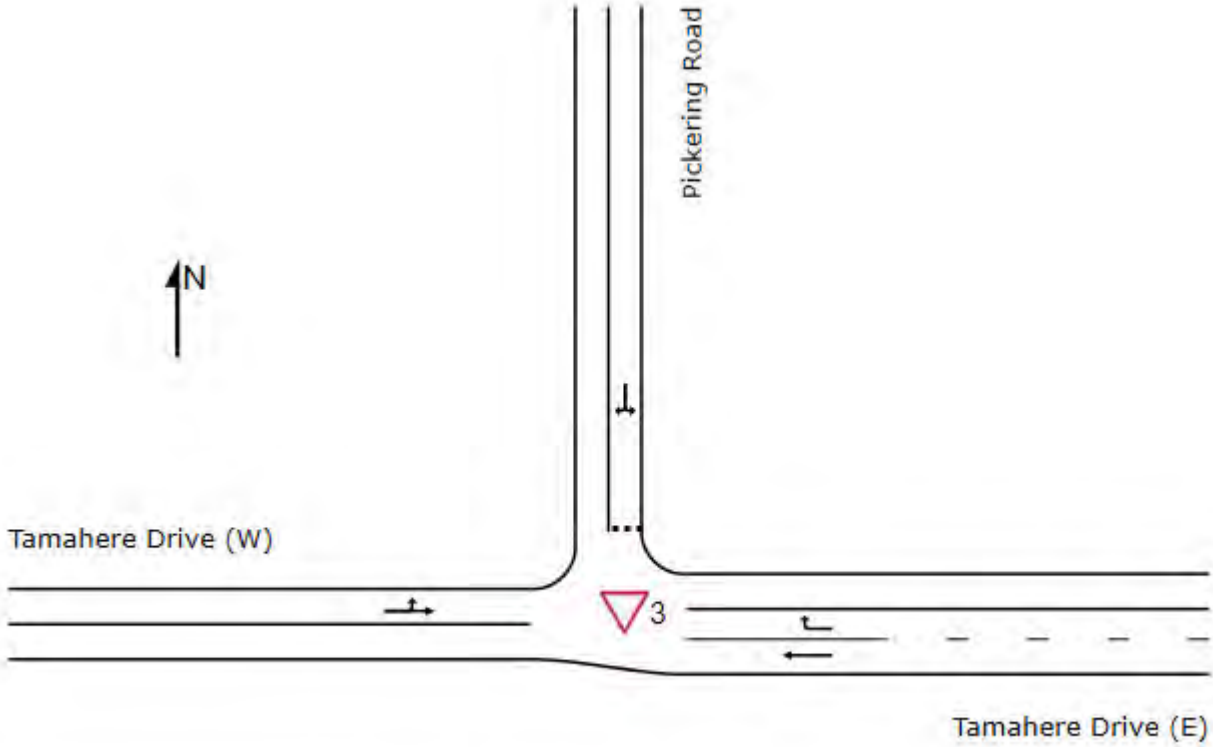
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
			[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Airport Road (S)															
2	T1	All MCs	683	7.7	683	7.7	0.364	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
3	R2	All MCs	68	9.2	68	9.2	0.072	9.3	LOS A	0.3	2.2	0.53	0.73	0.53	49.3
Approach			752	7.8	752	7.8	0.364	0.9	NA	0.3	2.2	0.05	0.07	0.05	92.5
East: Pencarrow Road															
4	L2	All MCs	46	9.1	46	9.1	0.657	23.4	LOS C	2.7	20.8	0.91	1.18	1.64	25.9
6	R2	All MCs	59	10.7	59	10.7	0.657	63.3	LOS F	2.7	20.8	0.91	1.18	1.64	25.7
Approach			105	10.0	105	10.0	0.657	45.7	LOS E	2.7	20.8	0.91	1.18	1.64	25.8
North: Airport Road (N)															
7	L2	All MCs	71	10.4	71	10.4	0.274	8.0	LOS A	0.0	0.0	0.00	0.10	0.00	48.8
8	T1	All MCs	432	10.0	432	10.0	0.274	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	92.1
Approach			502	10.1	502	10.1	0.274	1.1	NA	0.0	0.0	0.00	0.10	0.00	83.2
All Vehicles			1359	8.8	1359	8.8	0.657	4.4	NA	2.7	20.8	0.10	0.16	0.15	76.1

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Airport Road (S)															
2	T1	All MCs	683	7.7	683	7.7	0.364	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
3	R2	All MCs	91	9.3	91	9.3	0.096	9.4	LOS A	0.4	3.0	0.54	0.75	0.54	49.2
Approach			774	7.9	774	7.9	0.364	1.1	NA	0.4	3.0	0.06	0.09	0.06	90.5
East: Pencarrow Road															
4	L2	All MCs	133	10.3	133	10.3	1.078	118.9	LOS F	18.9	143.9	1.00	2.40	6.37	11.3
6	R2	All MCs	87	9.6	87	9.6	1.078	168.8	LOS F	18.9	143.9	1.00	2.40	6.37	11.2
Approach			220	10.0	220	10.0	1.078	138.7	LOS F	18.9	143.9	1.00	2.40	6.37	11.3
North: Airport Road (N)															
7	L2	All MCs	78	9.5	78	9.5	0.278	7.9	LOS A	0.0	0.0	0.00	0.10	0.00	48.7
8	T1	All MCs	432	10.0	432	10.0	0.278	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	91.4
Approach			509	9.9	509	9.9	0.278	1.2	NA	0.0	0.0	0.00	0.10	0.00	82.0
All Vehicles			1503	8.9	1503	8.9	1.078	21.3	NA	18.9	143.9	0.18	0.43	0.97	46.6

3 – Tamahere Drive / Pickering Road



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
East: Tamahere Drive (E)															
5	T1	All MCs	31	10.3	31	10.3	0.017	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
6	R2	All MCs	3	33.3	3	33.3	0.002	6.2	LOS A	0.0	0.1	0.20	0.54	0.20	41.8
Approach			34	12.5	34	12.5	0.017	0.6	NA	0.0	0.1	0.02	0.05	0.02	74.6
North: Pickering Road															
7	L2	All MCs	5	20.0	5	20.0	0.071	5.9	LOS A	0.3	2.1	0.21	0.57	0.21	46.1
9	R2	All MCs	68	9.2	68	9.2	0.071	6.1	LOS A	0.3	2.1	0.21	0.57	0.21	48.1
Approach			74	10.0	74	10.0	0.071	6.1	LOS A	0.3	2.1	0.21	0.57	0.21	47.9
West: Tamahere Drive (W)															
10	L2	All MCs	44	9.5	44	9.5	0.045	6.3	LOS A	0.0	0.0	0.00	0.33	0.00	52.8
11	T1	All MCs	38	8.3	38	8.3	0.045	0.0	LOS A	0.0	0.0	0.00	0.33	0.00	61.5
Approach			82	9.0	82	9.0	0.045	3.4	NA	0.0	0.0	0.00	0.33	0.00	56.9
All Vehicles			189	10.0	189	10.0	0.071	4.0	NA	0.3	2.1	0.09	0.37	0.09	55.7

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
East: Tamahere Drive (E)															
5	T1	All MCs	40	7.9	40	7.9	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
6	R2	All MCs	4	25.0	4	25.0	0.003	6.1	LOS A	0.0	0.1	0.19	0.54	0.19	42.9
Approach			44	9.5	44	9.5	0.021	0.6	NA	0.0	0.1	0.02	0.05	0.02	74.7
North: Pickering Road															
7	L2	All MCs	6	16.7	6	16.7	0.070	5.9	LOS A	0.3	2.1	0.23	0.57	0.23	46.7
9	R2	All MCs	66	9.5	66	9.5	0.070	6.2	LOS A	0.3	2.1	0.23	0.57	0.23	47.9
Approach			73	10.1	73	10.1	0.070	6.2	LOS A	0.3	2.1	0.23	0.57	0.23	47.8
West: Tamahere Drive (W)															
10	L2	All MCs	38	8.3	38	8.3	0.046	6.4	LOS A	0.0	0.0	0.00	0.28	0.00	54.5
11	T1	All MCs	45	9.3	45	9.3	0.046	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	63.6
Approach			83	8.9	83	8.9	0.046	2.9	NA	0.0	0.0	0.00	0.28	0.00	59.5
All Vehicles			200	9.5	200	9.5	0.070	3.6	NA	0.3	2.1	0.09	0.34	0.09	57.6

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h	[HV %	[Total veh/h	[HV %				[Veh. veh	[Dist] m				
East: Tamahere Drive (E)															
5	T1	All MCs	271	10.1	271	10.1	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	All MCs	62	10.2	62	10.2	0.041	6.0	LOS A	0.2	1.4	0.25	0.56	0.25	44.6
Approach			333	10.1	333	10.1	0.146	1.1	NA	0.2	1.4	0.05	0.10	0.05	70.9
North: Pickering Road															
7	L2	All MCs	21	10.0	21	10.0	0.120	6.0	LOS A	0.5	3.5	0.43	0.63	0.43	45.6
9	R2	All MCs	66	9.5	66	9.5	0.120	9.4	LOS A	0.5	3.5	0.43	0.63	0.43	45.4
Approach			87	9.6	87	9.6	0.120	8.5	LOS A	0.5	3.5	0.43	0.63	0.43	45.5
West: Tamahere Drive (W)															
10	L2	All MCs	38	8.3	38	8.3	0.069	6.7	LOS A	0.0	0.0	0.00	0.19	0.00	57.7
11	T1	All MCs	88	9.5	88	9.5	0.069	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	68.2
Approach			126	9.2	126	9.2	0.069	2.0	NA	0.0	0.0	0.00	0.19	0.00	65.1
All Vehicles			546	9.8	546	9.8	0.146	2.5	NA	0.5	3.5	0.10	0.21	0.10	64.4

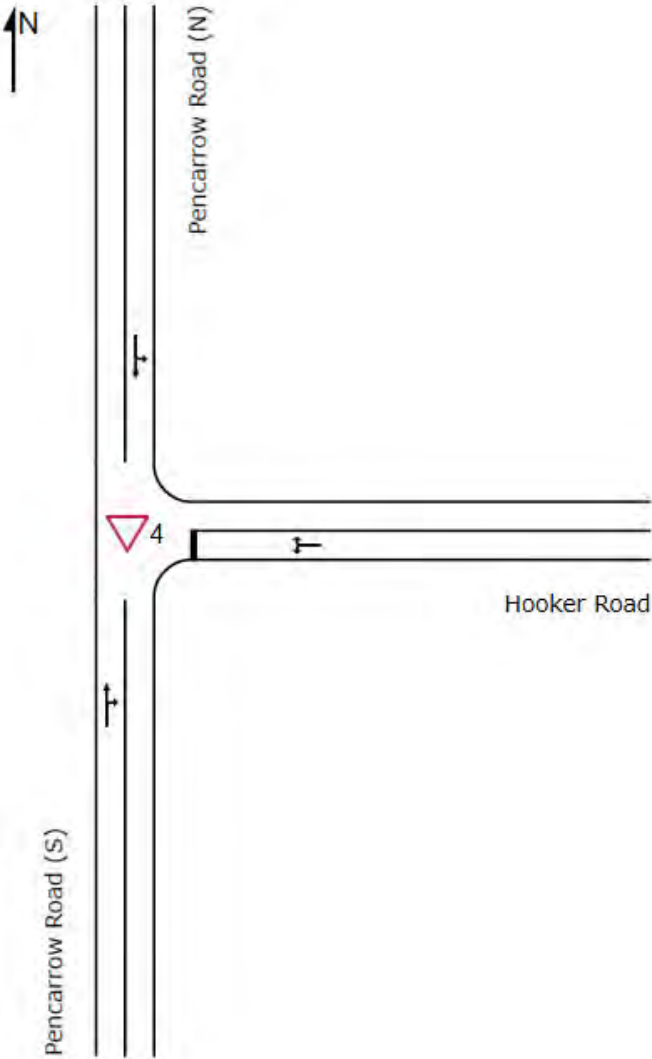
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
East: Tamahere Drive (E)															
5	T1	All MCs	3	33.3	3	33.3	0.002	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
6	R2	All MCs	4	25.0	4	25.0	0.003	5.8	LOS A	0.0	0.1	0.07	0.57	0.07	43.3
Approach			7	28.6	7	28.6	0.003	3.3	NA	0.0	0.1	0.04	0.33	0.04	55.3
North: Pickering Road															
7	L2	All MCs	5	20.0	5	20.0	0.050	5.8	LOS A	0.2	1.5	0.07	0.57	0.07	46.7
9	R2	All MCs	52	10.2	52	10.2	0.050	5.7	LOS A	0.2	1.5	0.07	0.57	0.07	48.5
Approach			57	11.1	57	11.1	0.050	5.7	LOS A	0.2	1.5	0.07	0.57	0.07	48.3
West: Tamahere Drive (W)															
10	L2	All MCs	9	11.1	9	11.1	0.008	6.1	LOS A	0.0	0.0	0.00	0.42	0.00	49.8
11	T1	All MCs	4	25.0	4	25.0	0.008	0.0	LOS A	0.0	0.0	0.00	0.42	0.00	57.6
Approach			14	15.4	14	15.4	0.008	4.2	NA	0.0	0.0	0.00	0.42	0.00	52.2
All Vehicles			78	13.5	78	13.5	0.050	5.2	NA	0.2	1.5	0.06	0.52	0.06	49.6

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
East: Tamahere Drive (E)															
5	T1	All MCs	234	9.9	234	9.9	0.126	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	All MCs	62	10.2	62	10.2	0.038	5.8	LOS A	0.2	1.3	0.15	0.56	0.15	45.0
Approach			296	10.0	296	10.0	0.126	1.2	NA	0.2	1.3	0.03	0.12	0.03	70.0
North: Pickering Road															
7	L2	All MCs	20	10.5	20	10.5	0.085	5.8	LOS A	0.3	2.5	0.31	0.57	0.31	46.6
9	R2	All MCs	52	10.2	52	10.2	0.085	8.3	LOS A	0.3	2.5	0.31	0.57	0.31	46.4
Approach			72	10.3	72	10.3	0.085	7.6	LOS A	0.3	2.5	0.31	0.57	0.31	46.4
West: Tamahere Drive (W)															
10	L2	All MCs	9	11.1	9	11.1	0.031	6.9	LOS A	0.0	0.0	0.00	0.11	0.00	60.5
11	T1	All MCs	47	11.1	47	11.1	0.031	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	73.0
Approach			57	11.1	57	11.1	0.031	1.2	NA	0.0	0.0	0.00	0.11	0.00	70.9
All Vehicles			424	10.2	424	10.2	0.126	2.3	NA	0.3	2.5	0.08	0.19	0.08	65.2

4 – Pencarrow Road / Hooker Road



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
South: Pencarrow Road (S)															
2	T1	All MCs	16	6.7	16	6.7	0.016	0.1	LOS A	0.1	0.5	0.10	0.29	0.10	67.8
3	R2	All MCs	13	8.3	13	8.3	0.016	6.9	LOS A	0.1	0.5	0.10	0.29	0.10	54.9
Approach			28	7.4	28	7.4	0.016	3.1	NA	0.1	0.5	0.10	0.29	0.10	61.4
East: Hooker Road															
4	L2	All MCs	19	11.1	19	11.1	0.051	9.4	LOS A	0.2	1.3	0.09	0.95	0.09	46.2
6	R2	All MCs	39	8.1	39	8.1	0.051	8.8	LOS A	0.2	1.3	0.09	0.95	0.09	46.3
Approach			58	9.1	58	9.1	0.051	9.0	LOS A	0.2	1.3	0.09	0.95	0.09	46.3
North: Pencarrow Road (N)															
7	L2	All MCs	27	7.7	27	7.7	0.022	7.1	LOS A	0.0	0.0	0.00	0.44	0.00	52.9
8	T1	All MCs	13	8.3	13	8.3	0.022	0.0	LOS A	0.0	0.0	0.00	0.44	0.00	63.7
Approach			40	7.9	40	7.9	0.022	4.8	NA	0.0	0.0	0.00	0.44	0.00	55.9
All Vehicles			126	8.3	126	8.3	0.051	6.4	NA	0.2	1.3	0.06	0.64	0.06	52.0

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Pencarrow Road (S)															
2	T1	All MCs	25	8.3	25	8.3	0.035	0.1	LOS A	0.2	1.2	0.13	0.37	0.13	64.8
3	R2	All MCs	35	9.1	35	9.1	0.035	6.9	LOS A	0.2	1.2	0.13	0.37	0.13	52.7
Approach			60	8.8	60	8.8	0.035	4.1	NA	0.2	1.2	0.13	0.37	0.13	57.2
East: Hooker Road															
4	L2	All MCs	19	11.1	19	11.1	0.062	9.5	LOS A	0.2	1.6	0.12	0.93	0.12	46.1
6	R2	All MCs	48	8.7	48	8.7	0.062	9.1	LOS A	0.2	1.6	0.12	0.93	0.12	46.1
Approach			67	9.4	67	9.4	0.062	9.2	LOS A	0.2	1.6	0.12	0.93	0.12	46.1
North: Pencarrow Road (N)															
7	L2	All MCs	34	9.4	34	9.4	0.028	7.1	LOS A	0.0	0.0	0.00	0.44	0.00	52.7
8	T1	All MCs	16	6.7	16	6.7	0.028	0.0	LOS A	0.0	0.0	0.00	0.44	0.00	63.9
Approach			49	8.5	49	8.5	0.028	4.8	NA	0.0	0.0	0.00	0.44	0.00	55.8
All Vehicles			177	8.9	177	8.9	0.062	6.2	NA	0.2	1.6	0.09	0.60	0.09	52.1

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
South: Pencarrow Road (S)															
2	T1	All MCs	34	9.4	34	9.4	0.059	0.7	LOS A	0.3	2.1	0.32	0.45	0.32	61.9
3	R2	All MCs	55	9.6	55	9.6	0.059	7.6	LOS A	0.3	2.1	0.32	0.45	0.32	50.7
Approach			88	9.5	88	9.5	0.059	5.0	NA	0.3	2.1	0.32	0.45	0.32	54.5
East: Hooker Road															
4	L2	All MCs	120	9.6	120	9.6	0.441	9.7	LOS A	2.3	17.1	0.36	0.86	0.36	45.2
6	R2	All MCs	300	10.2	300	10.2	0.441	10.7	LOS B	2.3	17.1	0.36	0.86	0.36	44.7
Approach			420	10.0	420	10.0	0.441	10.5	LOS B	2.3	17.1	0.36	0.86	0.36	44.9
North: Pencarrow Road (N)															
7	L2	All MCs	158	10.0	158	10.0	0.123	7.1	LOS A	0.0	0.0	0.00	0.47	0.00	51.9
8	T1	All MCs	59	10.7	59	10.7	0.123	0.0	LOS A	0.0	0.0	0.00	0.47	0.00	62.9
Approach			217	10.2	217	10.2	0.123	5.2	NA	0.0	0.0	0.00	0.47	0.00	54.5
All Vehicles			725	10.0	725	10.0	0.441	8.2	NA	2.3	17.1	0.25	0.69	0.25	48.5

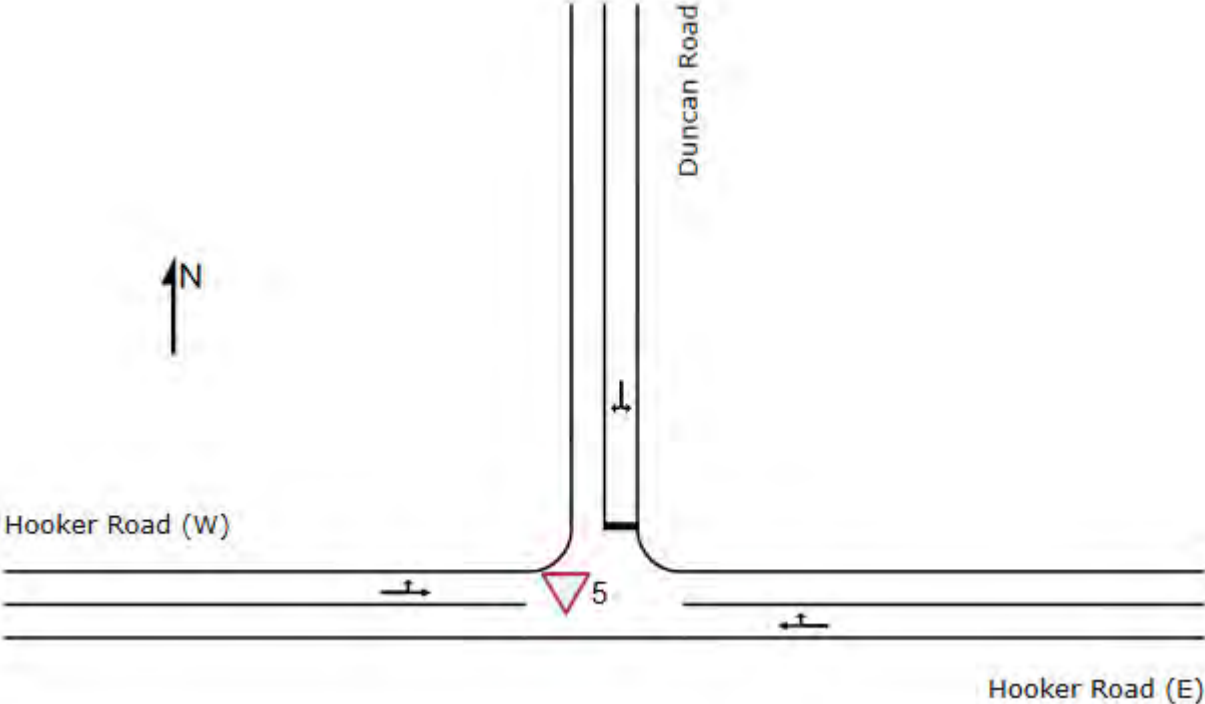
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Pencarrow Road (S)															
2	T1	All MCs	12	9.1	12	9.1	0.012	0.1	LOS A	0.0	0.4	0.11	0.29	0.11	67.6
3	R2	All MCs	9	11.1	9	11.1	0.012	6.9	LOS A	0.0	0.4	0.11	0.29	0.11	54.1
Approach			21	10.0	21	10.0	0.012	3.2	NA	0.0	0.4	0.11	0.29	0.11	60.8
East: Hooker Road															
4	L2	All MCs	17	12.5	17	12.5	0.056	9.5	LOS A	0.2	1.5	0.10	0.95	0.10	46.0
6	R2	All MCs	45	9.3	45	9.3	0.056	8.9	LOS A	0.2	1.5	0.10	0.95	0.10	46.1
Approach			62	10.2	62	10.2	0.056	9.1	LOS A	0.2	1.5	0.10	0.95	0.10	46.1
North: Pencarrow Road (N)															
7	L2	All MCs	29	10.7	29	10.7	0.024	7.1	LOS A	0.0	0.0	0.00	0.44	0.00	52.4
8	T1	All MCs	14	7.7	14	7.7	0.024	0.0	LOS A	0.0	0.0	0.00	0.44	0.00	63.9
Approach			43	9.8	43	9.8	0.024	4.9	NA	0.0	0.0	0.00	0.44	0.00	55.6
All Vehicles			126	10.0	126	10.0	0.056	6.6	NA	0.2	1.5	0.07	0.66	0.07	51.2

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Pencarrow Road (S)															
2	T1	All MCs	20	10.5	20	10.5	0.033	0.7	LOS A	0.1	1.1	0.31	0.43	0.31	62.4
3	R2	All MCs	29	10.7	29	10.7	0.033	7.6	LOS A	0.1	1.1	0.31	0.43	0.31	50.9
Approach			49	10.6	49	10.6	0.033	4.8	NA	0.1	1.1	0.31	0.43	0.31	55.0
East: Hooker Road															
4	L2	All MCs	118	9.8	118	9.8	0.419	9.7	LOS A	2.1	15.9	0.33	0.87	0.33	45.6
6	R2	All MCs	297	9.9	297	9.9	0.419	10.3	LOS B	2.1	15.9	0.33	0.87	0.33	45.2
Approach			415	9.9	415	9.9	0.419	10.1	LOS B	2.1	15.9	0.33	0.87	0.33	45.3
North: Pencarrow Road (N)															
7	L2	All MCs	154	10.3	154	10.3	0.120	7.1	LOS A	0.0	0.0	0.00	0.47	0.00	51.8
8	T1	All MCs	57	9.3	57	9.3	0.120	0.0	LOS A	0.0	0.0	0.00	0.47	0.00	62.9
Approach			211	10.0	211	10.0	0.120	5.2	NA	0.0	0.0	0.00	0.47	0.00	54.4
All Vehicles			675	10.0	675	10.0	0.419	8.2	NA	2.1	15.9	0.22	0.71	0.22	48.5

5 – Hooker Road / Duncan Road



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
East: Hooker Road (E)															
5	T1	All MCs	58	9.1	58	9.1	0.035	0.0	LOS A	0.0	0.3	0.03	0.06	0.03	77.4
6	R2	All MCs	5	20.0	5	20.0	0.035	7.0	LOS A	0.0	0.3	0.03	0.06	0.03	57.8
Approach			63	10.0	63	10.0	0.035	0.6	NA	0.0	0.3	0.03	0.06	0.03	75.3
North: Duncan Road															
7	L2	All MCs	9	11.1	9	11.1	0.013	9.6	LOS A	0.0	0.4	0.14	0.92	0.14	46.0
9	R2	All MCs	5	20.0	5	20.0	0.013	9.7	LOS A	0.0	0.4	0.14	0.92	0.14	44.2
Approach			15	14.3	15	14.3	0.013	9.6	LOS A	0.0	0.4	0.14	0.92	0.14	45.3
West: Hooker Road (W)															
10	L2	All MCs	3	33.3	3	33.3	0.024	7.5	LOS A	0.0	0.0	0.00	0.05	0.00	56.1
11	T1	All MCs	40	10.5	40	10.5	0.024	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	78.4
Approach			43	12.2	43	12.2	0.024	0.5	NA	0.0	0.0	0.00	0.05	0.00	76.1
All Vehicles			121	11.3	121	11.3	0.035	1.7	NA	0.0	0.4	0.03	0.16	0.03	69.9

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
East: Hooker Road (E)															
5	T1	All MCs	67	9.4	67	9.4	0.040	0.0	LOS A	0.0	0.3	0.03	0.05	0.03	77.6
6	R2	All MCs	5	20.0	5	20.0	0.040	7.1	LOS A	0.0	0.3	0.03	0.05	0.03	57.9
Approach			73	10.1	73	10.1	0.040	0.5	NA	0.0	0.3	0.03	0.05	0.03	75.7
North: Duncan Road															
7	L2	All MCs	11	10.0	11	10.0	0.015	9.6	LOS A	0.1	0.4	0.19	0.90	0.19	46.1
9	R2	All MCs	6	16.7	6	16.7	0.015	9.7	LOS A	0.1	0.4	0.19	0.90	0.19	44.6
Approach			17	12.5	17	12.5	0.015	9.7	LOS A	0.1	0.4	0.19	0.90	0.19	45.5
West: Hooker Road (W)															
10	L2	All MCs	5	20.0	5	20.0	0.040	7.3	LOS A	0.0	0.0	0.00	0.05	0.00	59.1
11	T1	All MCs	68	9.2	68	9.2	0.040	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	78.1
Approach			74	10.0	74	10.0	0.040	0.5	NA	0.0	0.0	0.00	0.05	0.00	76.4
All Vehicles			163	10.3	163	10.3	0.040	1.5	NA	0.1	0.4	0.03	0.14	0.03	71.1

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
East: Hooker Road (E)															
5	T1	All MCs	111	9.5	111	9.5	0.068	0.1	LOS A	0.1	0.6	0.07	0.09	0.07	76.5
6	R2	All MCs	9	11.1	9	11.1	0.068	7.8	LOS A	0.1	0.6	0.07	0.09	0.07	59.7
Approach			120	9.6	120	9.6	0.068	0.7	NA	0.1	0.6	0.07	0.09	0.07	74.8
North: Duncan Road															
7	L2	All MCs	27	7.7	27	7.7	0.088	10.3	LOS B	0.3	2.3	0.39	0.91	0.39	45.2
9	R2	All MCs	46	9.1	46	9.1	0.088	10.8	LOS B	0.3	2.3	0.39	0.91	0.39	44.7
Approach			74	8.6	74	8.6	0.088	10.7	LOS B	0.3	2.3	0.39	0.91	0.39	44.9
West: Hooker Road (W)															
10	L2	All MCs	16	6.7	16	6.7	0.133	7.1	LOS A	0.0	0.0	0.00	0.04	0.00	62.5
11	T1	All MCs	226	10.2	226	10.2	0.133	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	77.9
Approach			242	10.0	242	10.0	0.133	0.5	NA	0.0	0.0	0.00	0.04	0.00	76.7
All Vehicles			436	9.7	436	9.7	0.133	2.3	NA	0.3	2.3	0.09	0.20	0.09	68.0

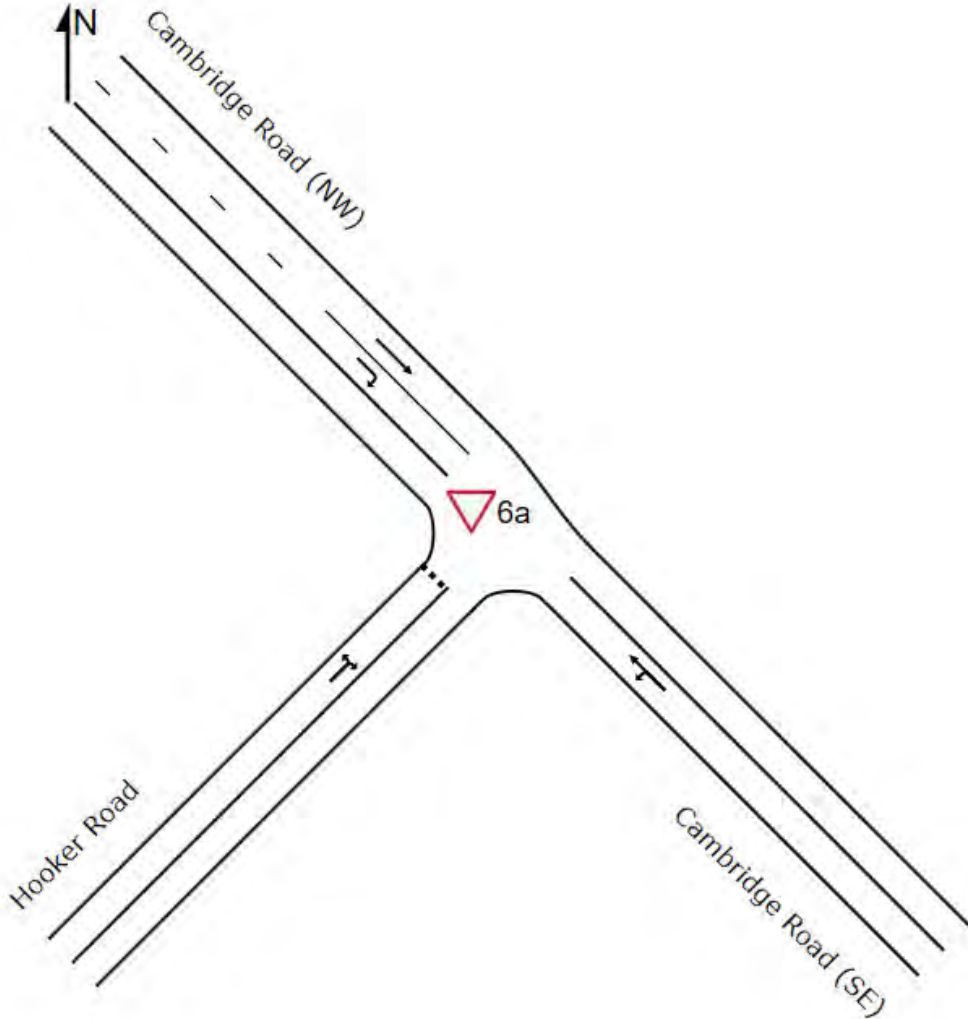
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
			[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
East: Hooker Road (E)															
5	T1	All MCs	61	10.3	61	10.3	0.036	0.0	LOS A	0.0	0.2	0.02	0.03	0.02	78.6
6	R2	All MCs	3	33.3	3	33.3	0.036	7.3	LOS A	0.0	0.2	0.02	0.03	0.02	55.1
Approach			64	11.5	64	11.5	0.036	0.4	NA	0.0	0.2	0.02	0.03	0.02	77.0
North: Duncan Road															
7	L2	All MCs	6	16.7	6	16.7	0.018	9.8	LOS A	0.1	0.5	0.16	0.91	0.16	45.3
9	R2	All MCs	13	8.3	13	8.3	0.018	9.1	LOS A	0.1	0.5	0.16	0.91	0.16	46.2
Approach			19	11.1	19	11.1	0.018	9.3	LOS A	0.1	0.5	0.16	0.91	0.16	45.9
West: Hooker Road (W)															
10	L2	All MCs	9	11.1	9	11.1	0.027	7.1	LOS A	0.0	0.0	0.00	0.13	0.00	59.2
11	T1	All MCs	39	10.8	39	10.8	0.027	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	74.5
Approach			48	10.9	48	10.9	0.027	1.4	NA	0.0	0.0	0.00	0.13	0.00	70.9
All Vehicles			132	11.2	132	11.2	0.036	2.0	NA	0.1	0.5	0.03	0.19	0.03	68.2

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
East: Hooker Road (E)															
5	T1	All MCs	104	10.1	104	10.1	0.063	0.1	LOS A	0.1	0.4	0.06	0.07	0.06	77.1
6	R2	All MCs	7	14.3	7	14.3	0.063	7.7	LOS A	0.1	0.4	0.06	0.07	0.06	59.2
Approach			112	10.4	112	10.4	0.063	0.6	NA	0.1	0.4	0.06	0.07	0.06	75.6
North: Duncan Road															
7	L2	All MCs	23	9.1	23	9.1	0.089	10.3	LOS B	0.3	2.4	0.37	0.91	0.37	45.2
9	R2	All MCs	53	10.0	53	10.0	0.089	10.6	LOS B	0.3	2.4	0.37	0.91	0.37	44.7
Approach			76	9.7	76	9.7	0.089	10.5	LOS B	0.3	2.4	0.37	0.91	0.37	44.9
West: Hooker Road (W)															
10	L2	All MCs	20	10.5	20	10.5	0.119	7.1	LOS A	0.0	0.0	0.00	0.06	0.00	61.1
11	T1	All MCs	197	10.2	197	10.2	0.119	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	77.3
Approach			217	10.2	217	10.2	0.119	0.7	NA	0.0	0.0	0.00	0.06	0.00	75.4
All Vehicles			404	10.2	404	10.2	0.119	2.5	NA	0.3	2.4	0.09	0.22	0.09	66.9

6a – Hooker Road / Cambridge Road



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
SouthEast: Cambridge Road (SE)															
21	L2	All MCs	42	10.0	42	10.0	0.447	8.1	LOS A	0.0	0.0	0.00	0.03	0.00	50.0
22	T1	All MCs	782	10.0	782	10.0	0.447	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	96.7
Approach			824	10.0	824	10.0	0.447	0.4	NA	0.0	0.0	0.00	0.03	0.00	92.9
NorthWest: Cambridge Road (NW)															
28	T1	All MCs	529	9.9	529	9.9	0.286	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
29	R2	All MCs	7	14.3	7	14.3	0.015	13.2	LOS B	0.1	0.4	0.69	0.80	0.69	44.1
Approach			537	10.0	537	10.0	0.286	0.2	NA	0.1	0.4	0.01	0.01	0.01	98.4
SouthWest: Hooker Road															
30	L2	All MCs	12	9.1	12	9.1	0.286	15.5	LOS C	0.8	6.1	0.90	0.99	1.03	28.1
32	R2	All MCs	25	8.3	25	8.3	0.286	48.3	LOS E	0.8	6.1	0.90	0.99	1.03	28.1
Approach			37	8.6	37	8.6	0.286	38.0	LOS E	0.8	6.1	0.90	0.99	1.03	28.1
All Vehicles			1398	9.9	1398	9.9	0.447	1.3	NA	0.8	6.1	0.03	0.05	0.03	90.2

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
SouthEast: Cambridge Road (SE)															
21	L2	All MCs	48	8.7	48	8.7	0.532	8.0	LOS A	0.0	0.0	0.00	0.03	0.00	50.2
22	T1	All MCs	935	9.9	935	9.9	0.532	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	96.6
Approach			983	9.9	983	9.9	0.532	0.4	NA	0.0	0.0	0.00	0.03	0.00	93.1
NorthWest: Cambridge Road (NW)															
28	T1	All MCs	592	10.7	592	10.7	0.321	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
29	R2	All MCs	14	7.7	14	7.7	0.037	15.8	LOS C	0.1	0.9	0.78	0.92	0.78	42.1
Approach			605	10.6	605	10.6	0.321	0.4	NA	0.1	0.9	0.02	0.02	0.02	97.3
SouthWest: Hooker Road															
30	L2	All MCs	19	11.1	19	11.1	1.062	156.7	LOS F	6.2	47.0	1.00	1.49	3.48	7.8
32	R2	All MCs	44	9.5	44	9.5	1.062	232.9	LOS F	6.2	47.0	1.00	1.49	3.48	7.7
Approach			63	10.0	63	10.0	1.062	210.0	LOS F	6.2	47.0	1.00	1.49	3.48	7.8
All Vehicles			1652	10.1	1652	10.1	1.062	8.4	NA	6.2	47.0	0.04	0.08	0.14	69.4

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
SouthEast: Cambridge Road (SE)															
21	L2	All MCs	77	9.6	77	9.6	0.549	8.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
22	T1	All MCs	935	9.9	935	9.9	0.549	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	95.1
Approach			1012	9.9	1012	9.9	0.549	0.7	NA	0.0	0.0	0.00	0.05	0.00	89.8
NorthWest: Cambridge Road (NW)															
28	T1	All MCs	592	10.7	592	10.7	0.321	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.8
29	R2	All MCs	17	6.2	17	6.2	0.047	16.3	LOS C	0.2	1.1	0.79	0.93	0.79	41.7
Approach			608	10.6	608	10.6	0.321	0.5	NA	0.2	1.1	0.02	0.03	0.02	96.7
SouthWest: Hooker Road															
30	L2	All MCs	31	10.3	31	10.3	4.038	2753.8	LOS F	91.3	693.7	1.00	3.32	13.21	0.6
32	R2	All MCs	160	9.9	160	9.9	4.038	2835.1	LOS F	91.3	693.7	1.00	3.32	13.21	0.6
Approach			191	9.9	191	9.9	4.038	2822.1	LOS F	91.3	693.7	1.00	3.32	13.21	0.6
All Vehicles			1811	10.1	1811	10.1	4.038	297.5	NA	91.3	693.7	0.11	0.39	1.40	6.7

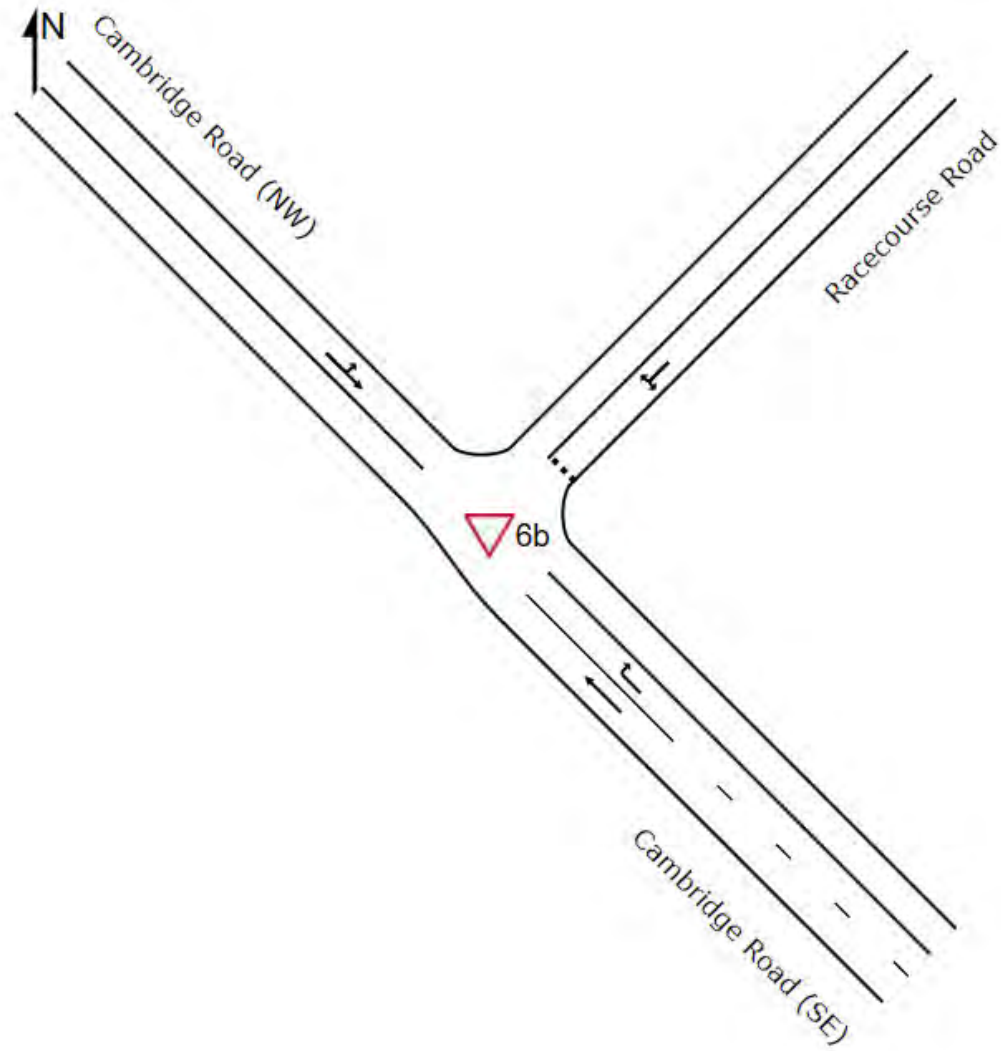
2045 Baseline (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
SouthEast: Cambridge Road (SE)															
21	L2	All MCs	43	9.8	43	9.8	0.610	8.1	LOS A	0.0	0.0	0.00	0.03	0.00	50.2
22	T1	All MCs	1082	10.0	1082	10.0	0.610	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	97.1
Approach			1125	10.0	1125	10.0	0.610	0.4	NA	0.0	0.0	0.00	0.03	0.00	94.3
NorthWest: Cambridge Road (NW)															
28	T1	All MCs	715	10.0	715	10.0	0.386	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
29	R2	All MCs	9	11.1	9	11.1	0.043	22.6	LOS C	0.1	0.9	0.86	0.95	0.86	36.2
Approach			724	10.0	724	10.0	0.386	0.3	NA	0.1	0.9	0.01	0.01	0.01	97.9
SouthWest: Hooker Road															
30	L2	All MCs	11	10.0	11	10.0	1.226	296.6	LOS F	6.3	47.4	1.00	1.39	3.09	4.7
32	R2	All MCs	23	9.1	23	9.1	1.226	397.9	LOS F	6.3	47.4	1.00	1.39	3.09	4.7
Approach			34	9.4	34	9.4	1.226	366.2	LOS F	6.3	47.4	1.00	1.39	3.09	4.7
All Vehicles			1883	10.0	1883	10.0	1.226	6.9	NA	6.3	47.4	0.02	0.05	0.06	73.9

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
SouthEast: Cambridge Road (SE)															
21	L2	All MCs	72	10.3	72	10.3	0.626	8.1	LOS A	0.0	0.0	0.00	0.04	0.00	49.8
22	T1	All MCs	1082	10.0	1082	10.0	0.626	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	95.7
Approach			1154	10.0	1154	10.0	0.626	0.6	NA	0.0	0.0	0.00	0.04	0.00	91.3
NorthWest: Cambridge Road (NW)															
28	T1	All MCs	715	10.0	715	10.0	0.386	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
29	R2	All MCs	13	8.3	13	8.3	0.059	23.2	LOS C	0.2	1.2	0.87	0.95	0.87	36.0
Approach			727	10.0	727	10.0	0.386	0.4	NA	0.2	1.2	0.02	0.02	0.02	97.2
SouthWest: Hooker Road															
30	L2	All MCs	22	9.5	22	9.5	7.649	6007.4	LOS F	89.1	676.1	1.00	2.17	7.52	0.3
32	R2	All MCs	139	9.8	139	9.8	7.649	6112.6	LOS F	89.1	676.1	1.00	2.17	7.52	0.3
Approach			161	9.8	161	9.8	7.649	6098.1	LOS F	89.1	676.1	1.00	2.17	7.52	0.3
All Vehicles			2042	10.0	2042	10.0	7.649	481.4	NA	89.1	676.1	0.08	0.20	0.60	4.3

6b – Racecourse Road / Cambridge Road



2025 Baseline

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
SouthEast: Cambridge Road (SE)															
22	T1	All MCs	782	10.0	782	10.0	0.423	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.7
23	R2	All MCs	15	7.1	15	7.1	0.019	10.1	LOS B	0.1	0.5	0.57	0.72	0.57	48.6
Approach			797	9.9	797	9.9	0.423	0.2	NA	0.1	0.5	0.01	0.01	0.01	98.1
NorthEast: Racecourse Road															
24	L2	All MCs	6	16.7	6	16.7	0.930	75.0	LOS F	4.7	35.7	0.99	1.33	2.68	12.9
26	R2	All MCs	80	9.2	80	9.2	0.930	117.6	LOS F	4.7	35.7	0.99	1.33	2.68	12.9
Approach			86	9.8	86	9.8	0.930	114.4	LOS F	4.7	35.7	0.99	1.33	2.68	12.9
NorthWest: Cambridge Road (NW)															
27	L2	All MCs	107	9.8	107	9.8	0.347	7.9	LOS A	0.0	0.0	0.00	0.11	0.00	48.4
28	T1	All MCs	529	9.9	529	9.9	0.347	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	90.6
Approach			637	9.9	637	9.9	0.347	1.4	NA	0.0	0.0	0.00	0.11	0.00	80.4
All Vehicles			1520	9.9	1520	9.9	0.930	7.2	NA	4.7	35.7	0.06	0.13	0.16	69.5

2035 Baseline (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
SouthEast: Cambridge Road (SE)															
22	T1	All MCs	935	9.9	935	9.9	0.505	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.6
23	R2	All MCs	21	10.0	21	10.0	0.035	11.9	LOS B	0.1	0.9	0.64	0.81	0.64	46.1
Approach			956	9.9	956	9.9	0.505	0.3	NA	0.1	0.9	0.01	0.02	0.01	97.5
NorthEast: Racecourse Road															
24	L2	All MCs	8	12.5	8	12.5	2.646	1500.9	LOS F	43.7	331.9	1.00	2.70	9.93	1.1
26	R2	All MCs	99	9.6	99	9.6	2.646	1588.8	LOS F	43.7	331.9	1.00	2.70	9.93	1.1
Approach			107	9.8	107	9.8	2.646	1581.9	LOS F	43.7	331.9	1.00	2.70	9.93	1.1
NorthWest: Cambridge Road (NW)															
27	L2	All MCs	171	9.9	171	9.9	0.418	7.9	LOS A	0.0	0.0	0.00	0.15	0.00	47.4
28	T1	All MCs	592	10.7	592	10.7	0.418	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	87.9
Approach			762	10.5	762	10.5	0.418	1.8	NA	0.0	0.0	0.00	0.15	0.00	75.4
All Vehicles			1825	10.1	1825	10.1	2.646	94.0	NA	43.7	331.9	0.07	0.23	0.59	18.1

2035 Baseline + Largest Non-Feature Event + Residential (No Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist] m				
SouthEast: Cambridge Road (SE)															
22	T1	All MCs	963	10.1	963	10.1	0.521	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.6
23	R2	All MCs	21	10.0	21	10.0	0.050	14.9	LOS B	0.2	1.3	0.75	0.91	0.75	42.8
Approach			984	10.1	984	10.1	0.521	0.4	NA	0.2	1.3	0.02	0.02	0.02	97.2
NorthEast: Racecourse Road															
24	L2	All MCs	8	12.5	8	12.5	4.963	3581.1	LOS F	60.9	461.6	1.00	2.43	8.80	0.5
26	R2	All MCs	111	9.5	111	9.5	4.963	3672.8	LOS F	60.9	461.6	1.00	2.43	8.80	0.5
Approach			119	9.7	119	9.7	4.963	3666.3	LOS F	60.9	461.6	1.00	2.43	8.80	0.5
NorthWest: Cambridge Road (NW)															
27	L2	All MCs	217	10.2	217	10.2	0.506	7.9	LOS A	0.0	0.0	0.00	0.16	0.00	47.2
28	T1	All MCs	707	10.0	707	10.0	0.506	0.1	LOS A	0.0	0.0	0.00	0.16	0.00	87.3
Approach			924	10.0	924	10.0	0.506	1.9	NA	0.0	0.0	0.00	0.16	0.00	74.4
All Vehicles			2027	10.0	2027	10.0	4.963	216.2	NA	60.9	461.6	0.07	0.22	0.52	8.9

2045 Baseline (With Southern Links)

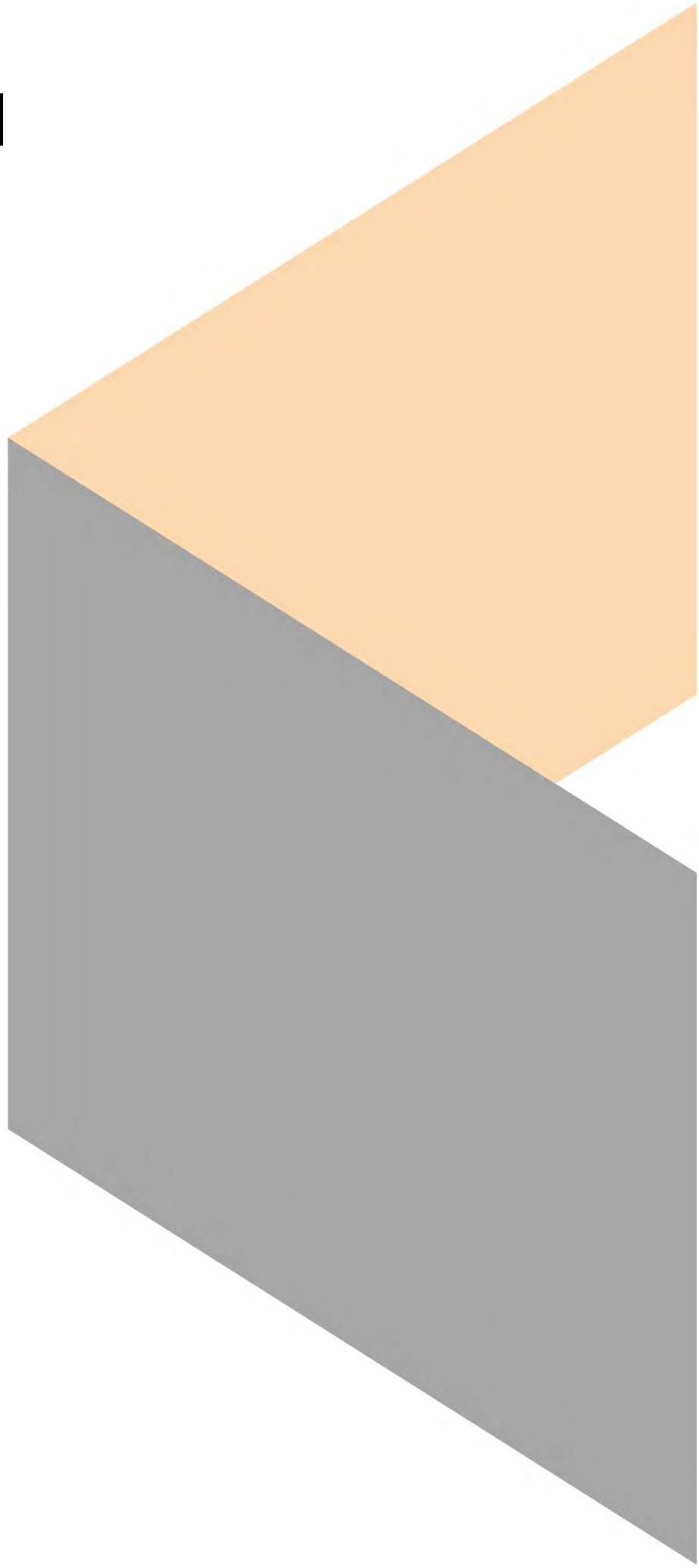
Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
SouthEast: Cambridge Road (SE)															
22	T1	All MCs	1082	10.0	1082	10.0	0.585	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	99.4
23	R2	All MCs	23	9.1	23	9.1	0.066	16.7	LOS C	0.2	1.6	0.79	0.93	0.79	41.1
Approach			1105	10.0	1105	10.0	0.585	0.4	NA	0.2	1.6	0.02	0.02	0.02	97.0
NorthEast: Racecourse Road															
24	L2	All MCs	9	11.1	9	11.1	8.375	6652.3	LOS F	80.0	610.0	1.00	1.89	5.94	0.3
26	R2	All MCs	133	10.3	133	10.3	8.375	6785.8	LOS F	80.0	610.0	1.00	1.89	5.94	0.3
Approach			142	10.4	142	10.4	8.375	6776.9	LOS F	80.0	610.0	1.00	1.89	5.94	0.3
NorthWest: Cambridge Road (NW)															
27	L2	All MCs	281	10.1	281	10.1	0.547	7.9	LOS A	0.0	0.0	0.00	0.19	0.00	46.4
28	T1	All MCs	715	10.0	715	10.0	0.547	0.1	LOS A	0.0	0.0	0.00	0.19	0.00	85.2
Approach			996	10.0	996	10.0	0.547	2.3	NA	0.0	0.0	0.00	0.19	0.00	70.6
All Vehicles			2243	10.0	2243	10.0	8.375	430.5	NA	80.0	610.0	0.07	0.21	0.38	4.7

2045 Baseline + Largest Non-Feature Event + Residential (With Southern Links)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
SouthEast: Cambridge Road (SE)															
22	T1	All MCs	1111	10.0	1111	10.0	0.600	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	99.4
23	R2	All MCs	23	9.1	23	9.1	0.112	24.2	LOS C	0.3	2.3	0.88	0.96	0.88	35.2
Approach			1134	10.0	1134	10.0	0.600	0.6	NA	0.3	2.3	0.02	0.02	0.02	96.4
NorthEast: Racecourse Road															
24	L2	All MCs	9	11.1	9	11.1	12.558	10420.0	LOS F	90.5	689.4	1.00	1.56	4.22	0.2
26	R2	All MCs	144	10.2	144	10.2	12.558	10620.5	LOS F	90.5	689.4	1.00	1.56	4.22	0.2
Approach			154	10.3	154	10.3	12.558	10608.1	LOS F	90.5	689.4	1.00	1.56	4.22	0.2
NorthWest: Cambridge Road (NW)															
27	L2	All MCs	327	10.0	327	10.0	0.636	7.9	LOS A	0.0	0.0	0.00	0.19	0.00	46.4
28	T1	All MCs	831	10.0	831	10.0	0.636	0.1	LOS A	0.0	0.0	0.00	0.19	0.00	85.0
Approach			1158	10.0	1158	10.0	0.636	2.3	NA	0.0	0.0	0.00	0.19	0.00	70.4
All Vehicles			2445	10.0	2445	10.0	12.558	668.1	NA	90.5	689.4	0.07	0.20	0.27	3.1

Appendix I

Peer Review



Memorandum

To: Callum Davidson (BCD)

From: Don McKenzie

Date: 13 March 2026

Re: **Waikato Thoroughbred Racing Hub, Tamahere – Transportation Peer Review**

1. Introduction

Don McKenzie Consulting (“**DMC**”) has been engaged by BCD Group Ltd to undertake an independent peer review of an Integrated Transport Assessment (“**ITA**”) prepared in support of the proposed Waikato Thoroughbred Racing (“**WTR**”) Hub development at Tamahere.

The ITA has been prepared to inform the referral stage of an application under the Fast-track Approvals Act 2024. At this stage of the process however, assessments are typically undertaken only at a strategic level to determine whether the proposal is suitable for referral to the substantive application stage and whether potential environmental effects can be appropriately managed through further assessment, detailed design and the imposition of conditions. As will be discussed in greater detail in subsequent parts of this peer review, it is recommended that rather than being an ITA, the reporting prepared for the purposes of the Fast Track referral application should be framed and presented more as a transportation commentary. The nature of the assessments undertaken and reported in what is currently framed as an ITA, does not include sufficient analysis of network performance and acceptability of outcome from a transportation point of view to align with the expectations of an ITA. It is suggested that the reporting be referenced as say, a transportation commentary or transport memorandum.

The purpose of this peer review is to assess whether the ITA as supplied to DMC appropriately describes the existing transport environment, outlines the anticipated transport characteristics of the proposal, and provides a reasonable assessment of the potential transport effects associated with the development at the referral stage. This review considers the methodology, assumptions and conclusions presented within the ITA and identifies matters that require further consideration as the project progresses especially within the Fast Track substantive application stage.

This peer review memo is structured so as to present key findings in Section 2, followed by more detail of the review provided in the subsequent sections.



2. Key Findings

The ITA provides an appropriate strategic-level assessment of the traffic activity associated with the proposed racing and residential activities for the referral stage

- It appropriately describes the proposal, surrounding transport environment and potential access opportunities;
- At the current referral stage, the level of detail is generally sufficient to understand the scale and nature of potential transport effects and to identify those transport and traffic matters that will require further quantification and assessment as part of the substantive application stage;

The traffic generation assumptions for the core elements of the proposal are broadly reasonable and consistent with good transport engineering practise, but only refer to the core activities planned within the development

- The estimates for race meetings, training activities and the 67-unit residential component are based on operational information from existing racing facilities and provide a reasonable indication of the potential scale of traffic associated with the core components of the development;
- The additional activities identified in the concept masterplan including commercial developments, community sports facilities and other ancillary uses have not been quantified. If these activities form part of the development envelope to be applied for within the Fast Track application, their potential traffic generation and effects will need to be quantified and assessed as part of the substantive application and associated ITA;

Intersection performance for any of the road network intersections potentially affected by the proposal have yet to be assessed

- The ITA as it currently exists presents traffic count data at key intersections but does not evaluate their operational performance under existing or future traffic conditions. While detailed modelling is not essential or necessarily expected at the current Fast Track referral stage, conclusions that the surrounding network will accommodate development traffic are not currently supported by operational analysis. One path of approach is that such conclusions are not provided at the referral application stage, and that the conclusions as to acceptable performance and/or mitigation required to reach such levels of acceptability, are left to the substantive application stage;

The site has flexibility to accommodate access, parking and internal circulation

- The proposed development site has extensive frontage to the surrounding road network and sufficient land area to accommodate site access, internal circulation and parking associated with both regular activities and race day events;
- Final access design and any associated road improvements including potential frontage road upgrading as may be determined through the substantive application stage, will depend on the subsequent detailed traffic analysis. The assessment undertaken to date is insufficient to be able to reach a conclusion as to what levels of external traffic mitigation may be required to support the core and potential development components;

A clearer distinction is required between regular operational traffic and event-related traffic



- The proposed Event Traffic Management Plans are appropriate for managing occasional race events that generate short-term traffic peaks, but are not considered appropriate to manage training events and the like, which would form part of routine daily operation and should therefore be assessed as regular activities and not managed solely with event-based management measures.

3. Proposal Overview

The concept masterplan proposes the establishment of an equine and racing industry hub on a greenfield site of approximately 150 hectares (ha) at Pencarrow Road, Tamahere. As described in Section 4.1.1 of the ITA, the proposed development includes a range of facilities associated with thoroughbred racing and training activities, together with supporting industry and ancillary activities. The ITA identifies the following core facilities and activities associated with the racing hub:

- Racing and training facility;
- Race day industry functions and events (currently able to host up to 15 race meetings annually);
- Trainers' allotments including barns, yards and accommodation;
- Industry training facilities including barns, yards and student accommodation (16 students plus a unit for house parents);
- Bloodstock shows and sales facilities including barns, yards, a sales pavilion and administration offices;
- Veterinary services providing equine and general services, and
- A comprehensive subdivision development comprising 67 residential lots, including 31 lifestyle blocks and 36 residential lots.

In addition to the above, the concept masterplan identifies several potential future activities, including:

- Equestrian uses;
- Harness racing facilities;
- Commercial developments, and
- A community sports precinct, potentially incorporating indoor and outdoor racing facilities or a multi-purpose events centre

Vehicle access to the site is proposed from the surrounding local road network. The ITA identifies a primary site access from Hooker Road, with additional secondary access points from Pencarrow Road and Duncan Road to accommodate different user groups including trainers and site personnel. Internal circulation roads and parking areas are proposed to support vehicle movements within the site and to provide access to the various facilities and activity areas associated with the racing hub.

4. Existing Transport Environment

The Waikato District road network is adequately described in the ITA in terms of the form, function and existing use of the surrounding local roads. The selection of intersections where turning counts have been undertaken appears appropriate in terms of understanding how traffic from the site will interact with the wider network, and the existing road standards are also adequately described. The ITA also provides an overview of the potential walking, cycling and public transport context in the surrounding area.



While several intersections connecting to the State Highway network have been counted and are referenced later in the report, the State Highway network itself is not explicitly described as part of the existing transport environment. This is notable given that State Highway 1 (SH1) and State Highway 21 (SH21) provide the primary strategic connections between the site and the wider regional transport network, including Hamilton and Cambridge. Such considerations have also been raised in the preliminary comments received from NZTA in relation to the State Highway network.

For a development of this nature, which will attract visitors, staff and industry participants from across the region, the State Highway network will play an important role in accommodating and distributing traffic (especially regional movements) associated with the proposal. While this level of detail is not essential at the referral stage, it will be important at the substantive application stage to clearly identify the relationship between the local road network and the surrounding State Highway network. In the peer reviewer's experience of other Fast Track applications such regional transport matters will be among the critical factors used when weighting local effects against the wider regional and economic benefits of the proposal

The review of existing road safety conditions provides an appropriate overview of the historic crash record and safety context for the roads surrounding the site. The use of Crash Analysis System crash data and risk indicators aligns with standard ITA practice and provides sufficient context to understand the existing safety performance of the local road network. This information provides a suitable baseline against which the potential safety effects of the proposal can be considered later in the report, including changes in traffic patterns associated with race events, training activities and associated site traffic on the surrounding rural road network.

5. Traffic Generation

Section 5.2 of the ITA considers traffic generation associated with the proposed development across the core components of proposed activity, including race day events, training operations and the proposed residential subdivision. The ITA describes the likely users of the facility, the types of vehicles expected to access the site, the frequency and scale of events, and the likely timing of activities during the day and week. These inputs are supported by reference information relating to the existing activity at the Te Rapa and Cambridge racing operations, together with operational information provided by the applicant.

The ITA adopts a spectator vehicle occupancy assumption of approximately 1.7 persons per vehicle for race day events. This represents a relatively conservative assumption for estimating vehicle movements associated with spectator attendance. For larger race events in rural settings, it is common for spectators to travel in groups, which can result in higher average vehicle occupancies and fewer vehicle movements. This assumption could be revisited in the next stage of traffic generation and modelling assessments.

Tables 7 and 8 of the ITA present traffic generation estimates and indicate that the proposed development will generate a range of traffic conditions, including concentrated peaks of varying scale associated with race day events, as well as more regular daily traffic associated with training activities and the residential component of the development.

At the Fast Track substantive application stage, the critical traffic scenarios will need to be clearly identified and quantified, having regard to the interaction between activity peaks associated with the various race meetings and training operations, together with existing peak on-road



conditions on the surrounding road network. It will also be necessary to determine which event scenarios occur with sufficient frequency to warrant permanent infrastructure responses (rather than simply relying on event traffic management responses), and which less frequent or atypical peak events may be more appropriately managed through operational or event management measures.

The concept masterplan also identifies a number of potential additional activities, including commercial developments, community sports facilities, bloodstock sales activities, veterinary services and further on-site accommodation. These activities are not explicitly quantified within the traffic generation assessment presented in Section 5.2 of the ITA. Should these activities be included in the defined proposal put forward for the Fast Track application, there will need to be a degree of specificity and certainty as to whether these activities are included in the proposal being put forward. At this stage these activities are referred to but not quantified.

Depending on their scale and operational characteristics, these activities have the potential to contribute to regular daily traffic generation and may influence infrastructure requirements required to mitigate any adverse transport effects identified within the surrounding road network. In some cases, certain uses may partially offset other traffic movements (for example, accommodation associated with training activities may reduce external travel demand by avoiding off-site movement to such accommodation). Meanwhile, other activities, such as community sport facilities, may occur at different times to the core racing activities and therefore may not generate additional peak demand on the network. The extent, nature and scale of such activities therefore have the potential to influence the overall transport demands associated with the proposal and will need to be quantified and assessed as part of the overall application within the substantive application and its detailed transport assessment. If these activities are intended to form part of the development envelope, their potential traffic effects should be quantified (even at this referral stage) to ensure the full range of anticipated activities is appropriately identified and reflected in the site traffic assessment.

Overall, for the core activities, the ITA provides a reasonable indication of the scale and nature of traffic likely to be generated by the proposed development at the referral stage.

6. Access Arrangements

The ITA identifies multiple potential access locations to serve the proposed development, including a primary access from Hooker Road and additional connections from Duncan Road and Pencarrow Road to accommodate different user groups associated with the racing hub. These access arrangements provide the opportunity to distribute traffic movements across multiple entry and egress points and allow separation of general visitor traffic from trainer and operational traffic, which is a common approach for facilities of this nature.

The report identifies the key design considerations relevant to the location and design of site access points in terms of the specific locations of these potential intersection connections. These include the applicable Waikato District Plan provisions, the Regional Infrastructure Technical Specifications (“**RITS**”), Austroads intersection warrants and various sight distance requirements. The ITA also acknowledges the presence of the Te Awa River Ride shared path and notes that any vehicle access interacting with this facility will need to consider the safety of cyclists and pedestrians.

From a strategic perspective, the surrounding road network provides reasonable connectivity between the site and the wider transport network including: Hooker Road, Duncan Road and



Pencarrow Road connecting to Cambridge Road and Tamahere Drive, which in turn provide access to SH1 and SH21, as well as wider connections toward Hamilton, Cambridge and Hamilton Airport.

The legal road corridors of Hooker Road, Duncan Road and Pencarrow Road are noted as being approximately 20m wide, which is typical for rural roads and generally provides sufficient width to accommodate intersection upgrades or turning treatments if required. The proposed development site also has substantial frontage to these roads, providing flexibility for the detailed design of access arrangements.

The ITA acknowledges the relatively narrow sealed carriageway widths of Hooker Road, Pencarrow Road and Duncan Road and notes the potential need for widening of Hooker Road in association with the development (Section 6.5.2). However, there is a risk to the project that subject to future network traffic assessment, there may be a need for additional road widening beyond the access intersections not limited to Hooker Road. This will ultimately depend on the scale and distribution of traffic generated by the development, the final access arrangements and the operational characteristics of both regular activities and race-day events. It is possible that mitigation of any external transport effects could include road widening of both frontage and wider network links once the detailed assessment of both regular and event activities is undertaken.

One specific issue is noted in relation to the subdivision access on Hooker Road (between Lot 32 and Lot 33). Based on the concept layout presented in the ITA, this access is located on the inside of a horizontal curve where available sight distance to the east may be constrained. While this does not represent a fundamental constraint to development of the land, the precise location and design of this access may need to be reviewed at the detailed design stage to ensure that appropriate sight distance can be achieved, potentially limiting the size and position of buildings, other structures and landscaping along the Hooker Road boundary to ensure appropriate and safe visibility is maintained – both for the traffic generated by the development as well as other road users.



Figure 1: Extract from ITA Figure 42



Consideration should also be given (through the substantive application) to the potential issue that development of the corner lot (Lot 32) may affect the sightline for drivers looking to their right when leaving Duncan Road.

Overall, the ITA demonstrates that the site has multiple opportunities to establish safe and functional access arrangements to the surrounding road network.

7. Network Assessment

Section 5.3 of the ITA considers the surrounding road network and presents traffic count information collected at key intersections in the vicinity of the site. The selection of intersections for detailed evaluation through the substantive application process appears appropriate given the physical and strategic context of the site and reflects the principal routes via which traffic associated with the development would access the wider primary and regional transport network. Turning movement counts have been collected at these locations in the evening (PM) peak and provide a baseline dataset describing existing traffic conditions on the surrounding network. This establishes the basis for future modelling of the intersections and allows comparison with forecast traffic flows anticipated to be obtained from the Waikato Regional Transport Model (“WRTM”) as the assessment progresses through the substantive application phase.

While the ITA focuses primarily on event-related traffic movements (and the intended event traffic management response to handling the generated traffic movements), the proposed training activities are also expected to occur predominantly during the morning period and therefore sit outside the considerations made within the current ITA. The potential interaction between training-related traffic and existing morning (AM) peak conditions on the surrounding road network therefore warrants further consideration through the substantive application phase of transport assessment and modelling.

Section 5.3 presents existing traffic volumes for the identified intersections and provides an overview commentary on current traffic patterns on the surrounding road network. While this information assists in understanding the broader traffic distribution within the surrounding network, the ITA does not quantify or assess the operational performance of the identified intersections under existing conditions. In practice, the capacity of rural road networks is often constrained by intersection performance rather than mid-block road capacity.

The summary conclusions presented in the ITA indicate that traffic effects associated with the development are expected to be managed and unlikely to significantly affect the role of the surrounding road network. While this may ultimately be the case, the report does not presently include sufficient quantified information to enable such a conclusion to be reached, as there is no reported assessment of intersection performance under either existing or forecast traffic conditions that substantiates this conclusion.

A preliminary assessment of intersection performance using the available turning count data could provide useful context regarding existing network conditions and highlight locations where traffic increases may warrant particular attention. Alternatively, if the format of the current ITA is instead altered to more of a “transport commentary or technical memo” identify those aspects of the proposal where further detailed assessment will be undertaken, then such conclusions as to acceptable performance outcome could be left to being developed within the substantive application.



Overall, the network assessment presented in Section 5.3 identifies the relevant parts of the surrounding road network and provides baseline traffic data to support further analysis that will be required to support the substantive application. It is recommended that the conclusions as to network performance acceptability are premature and that the future network operational modelling is required before such conclusions can be reached.

8. Parking and Internal Transport Network

The ITA identifies that the proposed development will provide approximately 2,030 on-site parking spaces distributed across several parking areas associated with the racing facilities. The scale of parking provision has been considered in relation to the anticipated range of race meeting attendance derived from the existing Te Rapa and Cambridge operations. Given the overall size of the site and the extent of land available within the masterplan area, there does not appear to be any fundamental spatial constraint to accommodating parking demand associated with the proposed activities.

Parking demand associated with day-to-day activities such as training operations, industry uses, and residential activity is expected to be substantially lower than peak race meeting demand and is likely to be dispersed across the site.

Parking provision and traffic generation are inherently linked. As the development scenarios and operational characteristics of the proposal are further refined, the relationship between event attendance, vehicle occupancy and parking demand can and should be considered in a more integrated manner. The detailed configuration of the internal transport network including internal roads, intersections, parking areas and pedestrian circulation can be expected to evolve alongside refinement of the overall site layout and operational scenarios. Given the scale of the site, there is sufficient flexibility to develop internal circulation arrangements that support both regular day-to-day activities and the larger traffic movements associated with race day events.

Overall, the ITA demonstrates that the site has sufficient scale to accommodate parking and internal circulation associated with both regular operations and larger race day events.

9. Construction Traffic Management Plan

The ITA acknowledges that the proposed development will generate temporary traffic effects during the construction phase, including construction workers, plant and heavy vehicle movements associated with site preparation and building works. Construction traffic would access the site via the surrounding local road network using the same access points proposed for the development.

Given the overall scale of the site and the nature of the surrounding road network, there does not appear to be any fundamental constraint to accommodating construction traffic movements subject to the usual nature of traffic management techniques.

The ITA identifies that the detailed management of construction traffic would be addressed through the preparation of one or more Construction Traffic Management Plans (“CTMP”). This is consistent with standard transport planning practice for developments of this scale and would typically address matters such as construction access routes, heavy vehicle movements, temporary traffic management and any required mitigation measures.



10. Event Traffic Management Plan

The ITA recognises that race day events will generate specific, concentrated traffic movements and recommends that these events would be managed through the preparation of an Event Traffic Management Plan (“**ETMP**”), supported where necessary by Temporary Traffic Management Plan(s) (“**TTMP**”). This approach is consistent with common practice for facilities that host periodic events generating short-term peaks in traffic demand. The ITA indicates that the proposed facility would host around 95 events per year. At this frequency, race meetings represent a semi-regular component of the site’s operational activity, albeit with considerable variation in attendance between routine race meetings and larger feature events.

It will therefore be important to distinguish between event scenarios that occur with sufficient regularity to form part of the normal operating environment of the site, and those larger or less frequent events that may be more appropriately managed through operational measures such as ETMPs and supporting TTMPs.

The ITA would benefit from a clearer distinction between event-related traffic and regular operational activity. For example, the report suggests that the effects of training-related traffic at the Hooker Road/Duncan Road intersection could be managed through ETMP and/or TTMP controls. Training activities are described elsewhere in the ITA as occurring on a daily basis during early morning hours and therefore form part of the routine traffic generation associated with the facility. Accordingly, it is not recommended that training events be subject to specific ETMP/TTMP controls and be considered alongside permanent (i.e. infrastructure) mitigation of external transport effects as required.

Clarifying the distinction between regular operational traffic and event-related traffic will assist in identifying which traffic scenarios should be assessed through the core network analysis and which may appropriately be managed through event-specific traffic management measures.

Don McKenzie Consulting Ltd.