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Movement Network Study, Riddells Creek Township

Project Number 220073
Revision Report 19/01/2024

Client Macedon Ranges Shire Council

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Executive Summary

Macedon Ranges Shire Council engaged Trafficworks to conduct a Movement and Network Study for Riddells Creek and provide guidance on the provision and upgrade of transport infrastructure within the township. This will assist with managing the impacts of township growth on infrastructure and traffic management. The study was conducted in three stages: Stage 1, Stage 2A and Stage 2B.

Stage 1 was conducted by Council and involved consultation with the community to understand concerns related to transport infrastructure. Stages 2A and 2B were conducted by Trafficworks.

Stage 2A involved the development of the ultimate movement network for the township, including mapping the aspirational walking and cycling networks. This aspirational network was underpinned by the methodology outlined in Victoria's Movement and Place framework. Gaps between the existing transport infrastructure and the aspirational network were listed, and projects to address these gaps were identified. These projects include pedestrian projects, cycling projects, intersection upgrades, speed limit reductions, and amenity and streetscape improvements. The projects were mapped, then ranked in order of priority using a multi-criteria analysis (MCA) scoring process.

In Stage 2B, the projects identified in Stage 2A were presented to the Riddells Creek community for feedback. This feedback was used to refine the MCA scoring. The Riddells Creek community also identified an additional 15 projects that would improve active transport within the township, and these projects were scored in the MCA process.

Traffic and parking surveys were conducted to understand current conditions and used to analyse the impact of future population growth within the township. Parking demand is currently low, and the township will be able to accommodate the increase in parking demand from population growth. Traffic modelling was undertaken at intersections within the township with traffic volumes forecasted in 2043. Based on the models, upgrades are recommended at the following intersections:

- Riddell Road and Kilmore Road
- Station Street and Kilmore Road
- Bolithos Road and Kilmore Road

From the MCA scoring, the top 30 projects were identified for development by Council. 4 of these top 30 projects were proposed by the Riddells Creek Community. The top 30 projects included:

- 11 shared path projects
- 4 sharrows projects
- 3 speed reduction projects
- 3 wombat crossing projects
- 2 pedestrian operated signals (POS) crossing projects
- 2 refuge crossing projects
- 2 pedestrian crossing projects
- 2 footpath projects
- 1 regional trail project.

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Table of Contents

1 Introduction

Trafficworks has been engaged by Macedon Ranges Shire Council to undertake a Movement Network Study for the Riddells Creek Township. This study provides guidance on the provision and upgrade of transport infrastructure in Riddells Creek, to address the impacts that township growth will have on infrastructure and traffic management.

Stage 1 of the study has been completed by Council, which involved consultation with the community to understand current concerns relating to infrastructure and transport.

In Stage 2A, a strategic transport infrastructure plan was developed. This involved identifying the ultimate transport network for the township, and the identification of projects to address gaps in the township's transport network.

The transport infrastructure plan is underpinned by the methodology outlined in Victoria's Movement and Place framework. It informs a broad framework to guide future infrastructure development in Riddells Creek over the next 30 years. The plan accounts for current and future development within the township (e.g. Amess Road development), as well as any State infrastructure projects in the area.

This stage of the study (Stage 2B) focuses on prioritising the identified projects. A multi-criteria analysis (MCA) process was used to rank projects. The criteria included feedback from the Riddells Creek community, who identified additional pedestrian projects suitable for the township. As part of stage 2B, detailed traffic and parking studies were conducted and analysed to inform recommendations to Council.

An implementation plan will be developed based on the established set of criteria to assist Council in the program of capital works.

2 Project background

2.1 Context

Riddells Creek is a township of approximately 3,000 residents, located in the Macedon Ranges Shire Council.

Surrounding towns include:

- Gisborne located approximately 8 km to the south-west
- Sunbury located 15 km to the south
- Romsey located 14 km to the north-east.

See Figure 1 below for the study area.

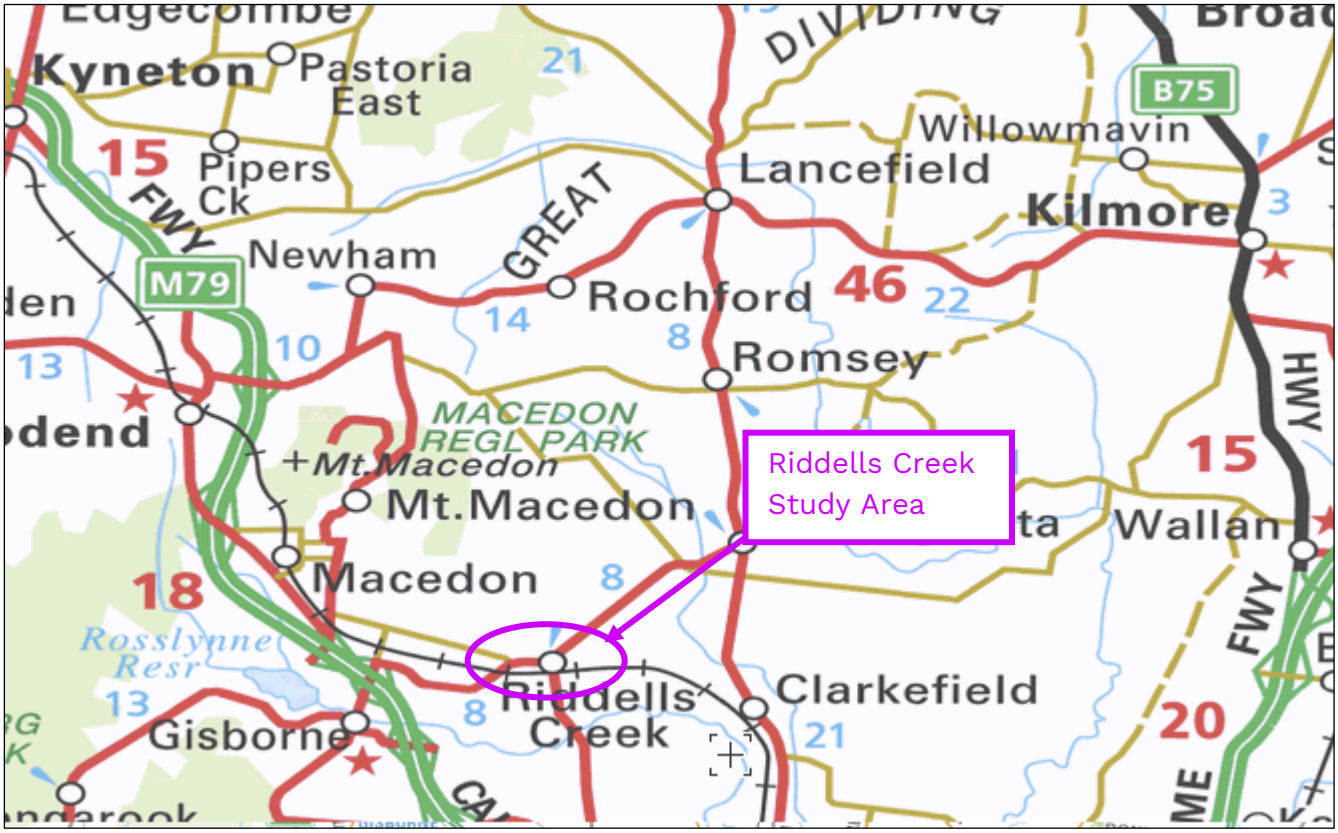


Figure 1: Riddells Creek study area

2.1.1 Existing land use

The majority of the township is low density housing zoned as a Neighbourhood Residential Zone (NRZ). Within the town centre, there is a mixture of commercial, community and recreation use.

Land surrounding the township is zoned as a mixture of Rural Living Zone (RLZ), Low Density Residential Zone (LDRZ), and Farming Zone (FZ) (refer Figure 2).

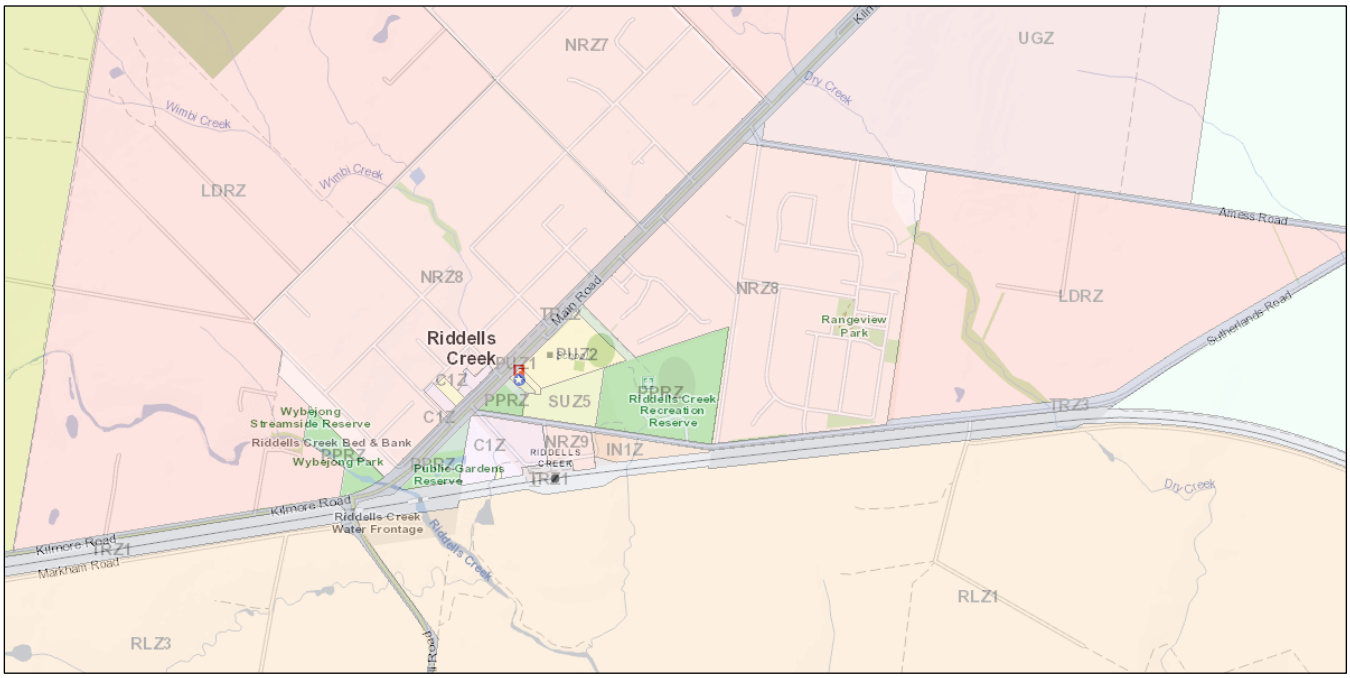


Figure 2: Land Use in Riddells Creek

Amess Road precinct

The Amess Road precinct is located to the north-east of the town centre and is currently within an Urban Growth Zone (UGZ). This precinct is identified by Macedon Ranges Shire Council as a proposed new urban extension area to Riddells Creek.

Riddells South precinct

The Riddells South Precinct is located south of the town centre and is currently within a Rural Living Zone (RLZ1). This precinct has been identified by Council as a potential urban extension to Riddells Creek.

2.1.2 Existing road network

Two declared arterial roads run through Riddells Creek, as follows:

- Gisborne-Kilmore Road runs in a southwest to north east direction between Gisborne and Melbourne Lancefield Road. In the vicinity of the Riddells Creek township, Gisborne-Kilmore Road is an undivided road in a Transport Zone 2 (TRZ2). It has an approximate sealed carriageway width of 7 m, accommodating one lane in each direction (refer Figure 3)

Figure 3: Gisborne-Kilmore Road

- Riddell Road runs in a south to north direction between Sunbury and the Gisborne-Kilmore Road. In the vicinity of the Riddells Creek township, Riddells Road is an undivided road in a Transport Zone 2 (TRZ2). It has an approximate sealed carriageway width of 7 m, accommodating one lane in each direction (refer Figure 4).

Figure 4: Sunbury-Riddells Creek Road

Other roads within the township that fall within the Transport Zone include:

- Amess Road, within a Transport Zone 3 (TRZ3). Within the vicinity of the Riddells Creek township, Amess Road has a speed limit of 60 km/h. It is an undivided road with an approximate sealed carriageway width of 6 m, accommodating one lane in each direction.
- Sutherlands Road, within a Transport Zone 3 (TRZ3). Within the vicinity of the Riddells Creek township, Sutherlands Road has a speed limit of 60 km/h. It is an undivided road with an approximate sealed carriageway width of 6 m, accommodating one lane in each direction.

Figure 5 shows the hierarchy of roads within the Township, including TRZ2 roads managed by the Department of Transport and Planning, and TRZ3 roads managed by Council.

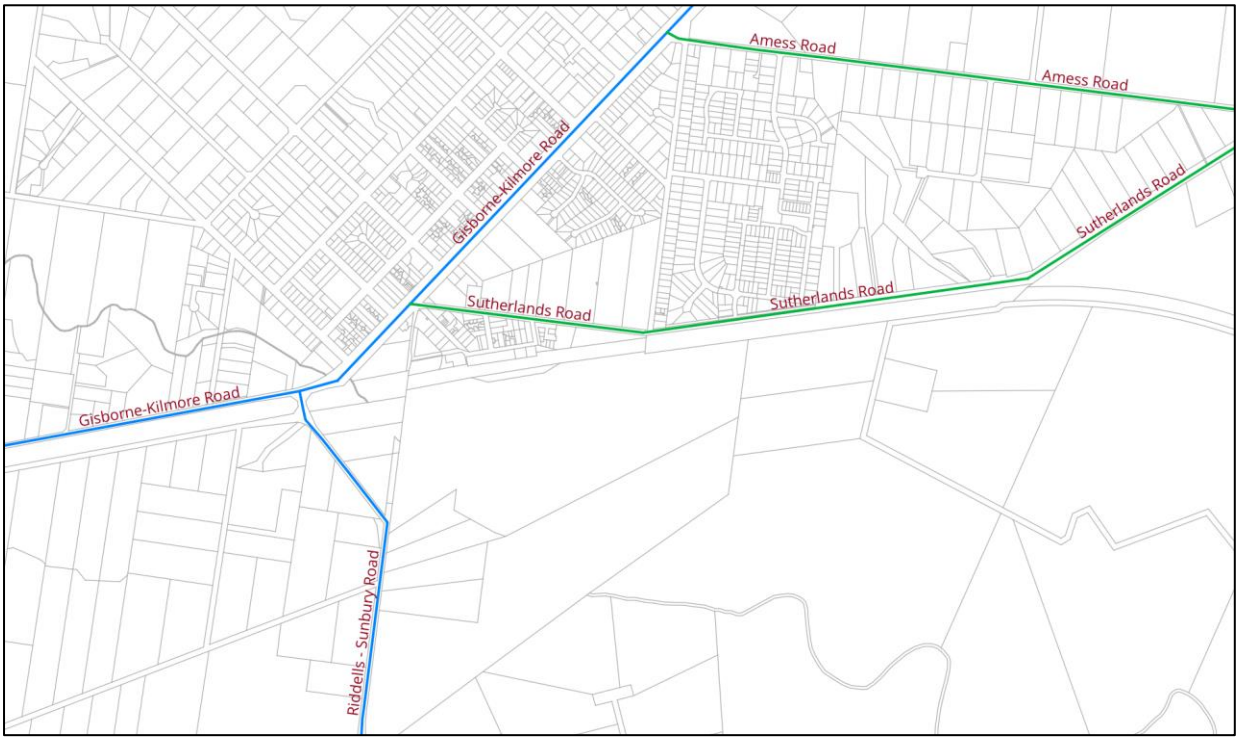


Figure 5: Declared roads in Riddells Creek - TRZ2 roads in blue and TRZ3 roads in green

2.1.3 Riddells Creek neighbourhood character

Neighbourhood character profiles were developed for the Residential Neighbourhood Character Precincts as part of the Riddells Creek Structure Plan 2013. The profiles are split into six different precincts, as follows:

- Garden setting
- Modern residential
- Town centre residential
- Rural bushland A
- Rural bushland B
- Rural bushland C.

These character profiles inform the lot size and frontage, as well as front setbacks and the characteristics of the road reserve, including drainage types (kerb and channel or swale drains), footpaths, verge widths.

Table 1 below shows the preferred future character relating to the road reserve for each character profile.

Table 1: Character profile - preferred features

Character profile	Preferred features – Road network
Garden setting	• Retain wide verges and swale drains
Modern residential	• concrete kerb and channel • footpaths and bicycle paths • Permeable network of streets • softer streetscape to encourage active transport
Town centre	• minimise crossovers onto the street • multi-dwelling development • wider footpaths • minimal planting of street trees
Rural bushland A, B, C	• Swale drain edging• Swale drain edging • informal planting of indigenous trees along roadside • wide verges

The character profiles within Riddells Creek are shown in Figure 6.

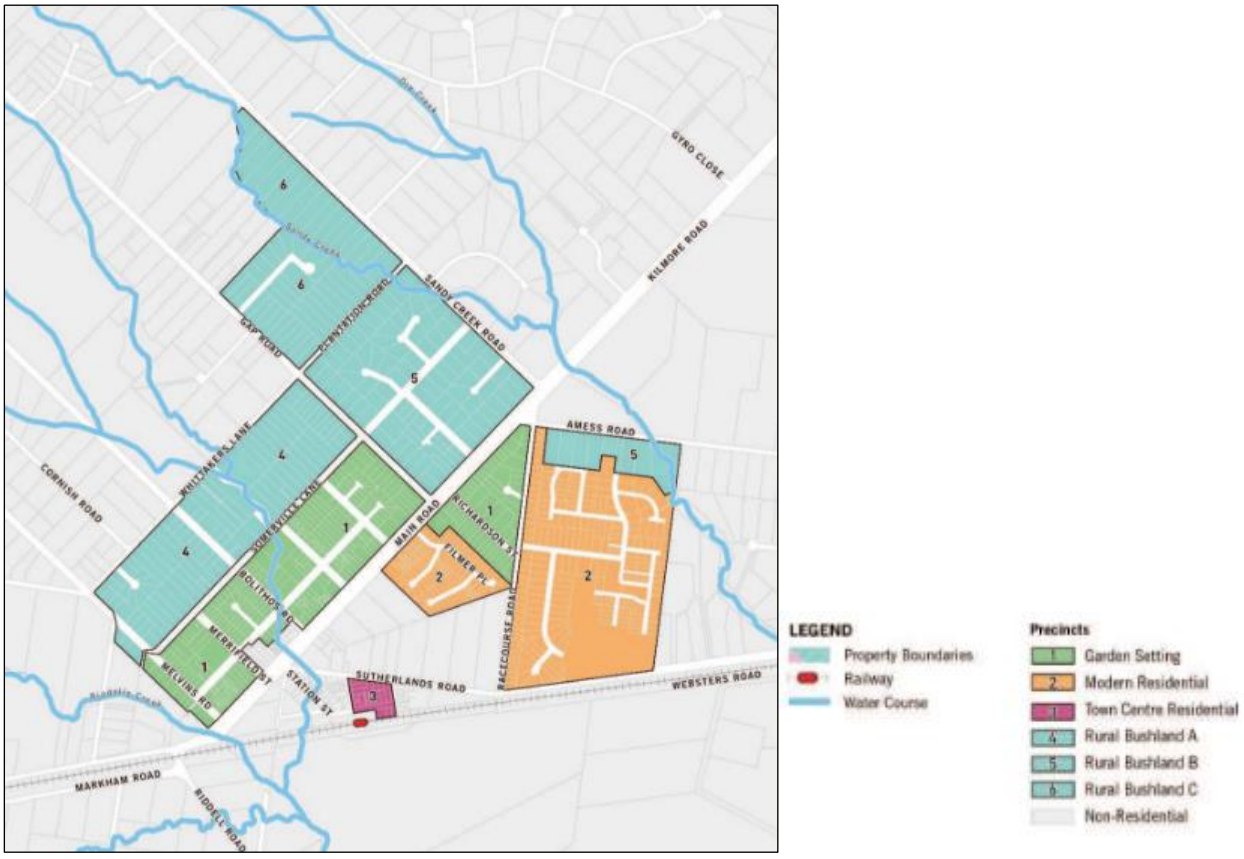


Figure 6: Riddells Creek Neighbourhood Character Precincts

2.2 Objectives

The objective of the Movement Network Study is to create a strategic transport plan to address existing concerns from the local community and propose infrastructure to accommodate long term population growth in Riddells Creek. The four objectives to achieve this were:

- Create an ultimate movement network plan, that outlines the vision for the transport network in Riddells Creek.
- Identify gaps between this plan and the existing infrastructure in Riddells Creek.
- Identify projects that will plug the gaps and upgrade existing transport infrastructure to meet the specifications of the ultimate movement network.
- Develop a method to prioritise these projects for Council.

2.2.1 Alignment with Macedon Ranges Council plan

The Macedon Ranges Council Plan has outlined 4 strategic objectives to shape the future of the community.

The following Table 2 outlines how the Movement Network Study (MNS) will deliver on each of these strategic objectives.

Table 2: Strategic Alignment to Council Plan

Strategic Objective	How the Movement Network Plan will deliver on the objectives
Connecting communities We will maintain our built environment – including roads, paths, buildings, open space and other assets – in a fiscally, environmentally and socially sustainable way. This includes effective land-use planning, which has a direct impact on the liveability of our shire.	The MNS will develop an ultimate transport network which will improve connectivity to key destinations, encourage the uptake of active transport and guide future land use planning to improve the liveability of the Riddells Creek township.
Healthy environment, healthy people The community prioritises the protection of the natural environment and recreational facilities. There is also strong community support for initiatives to minimise our shire's impact on the earth and its resources. Resilient communities and robust economies rely entirely on a healthy environment.	The MNS will deliver on this objective in the following ways: • Encourage a mode shift to active transport, and reduce reliance on private vehicles, and reducing carbon emissions • Encouraging better lifestyle choices to improve health through travelling by active transport • Improving amenity of the town centre to attract social interactions and events

Strategic Objective	How the Movement Network Plan will deliver on the objectives
Business and Tourism Business and tourism is about prioritising and promoting the people, resources, services and our regional identity, to ensure economic growth. Economic development is crucial for the continued growth of the economy of the Macedon Ranges Shire.	The MNS will deliver on interventions to encourage people that are currently travelling through the township to stop and support the local businesses.
Deliver Strong and Reliable Government We will demonstrate the qualities of good governance, including a clear vision and culture, transparency, respect, consistency, accountability and responsiveness.	The MNS will develop an implementation plan to ensure the strategic allocation of resources and the equitable prioritisation of infrastructure improvement works over the next 10 years. The MNS also identifies advocacy projects and opportunities for improvements funded by the State Government.

2.3 Study methodology

The project was conducted in four stages:

- network aspiration
- gap analysis
- identify projects
- prioritise projects

Refer to Figure 7 for the study methodology.

These stages correspond to the first three modules of the Movement and Place Framework Methodology (refer Figure 8).

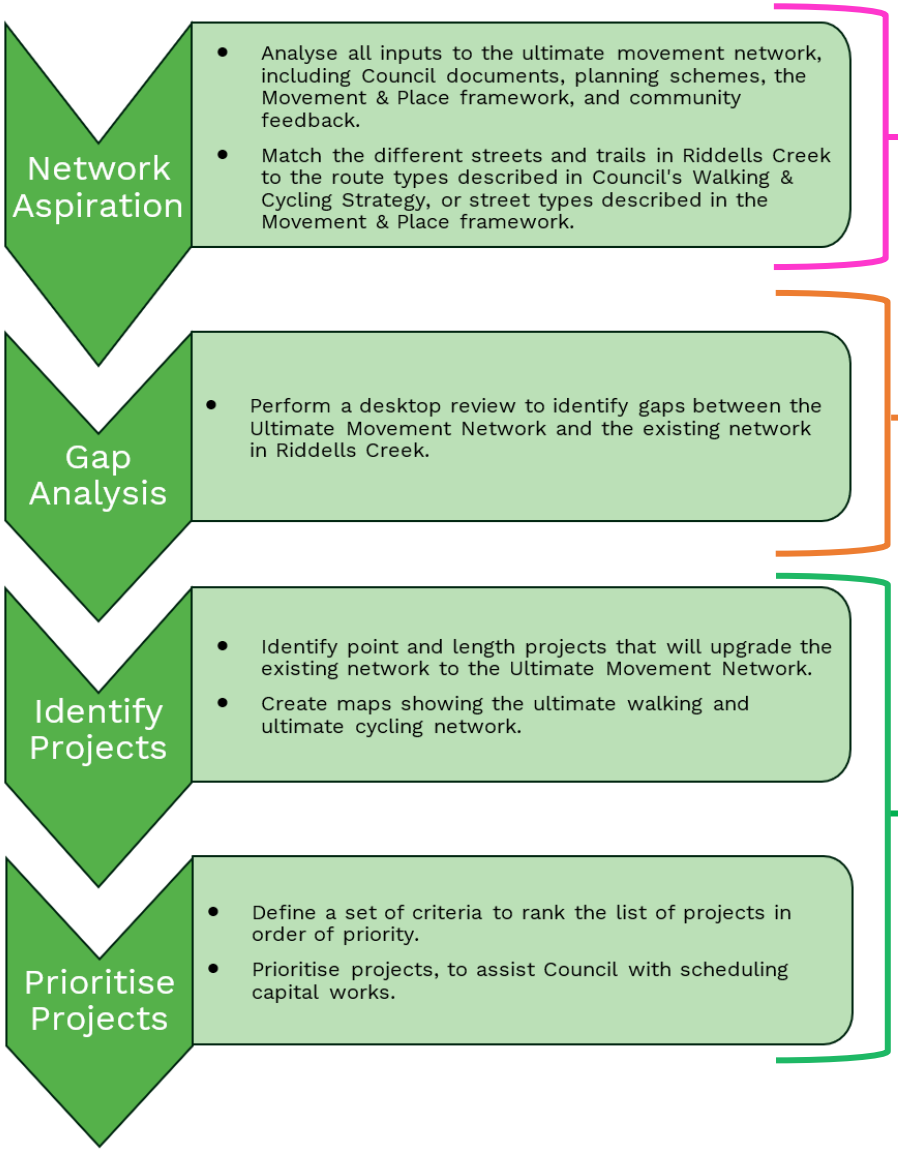


Figure 7: Project methodology

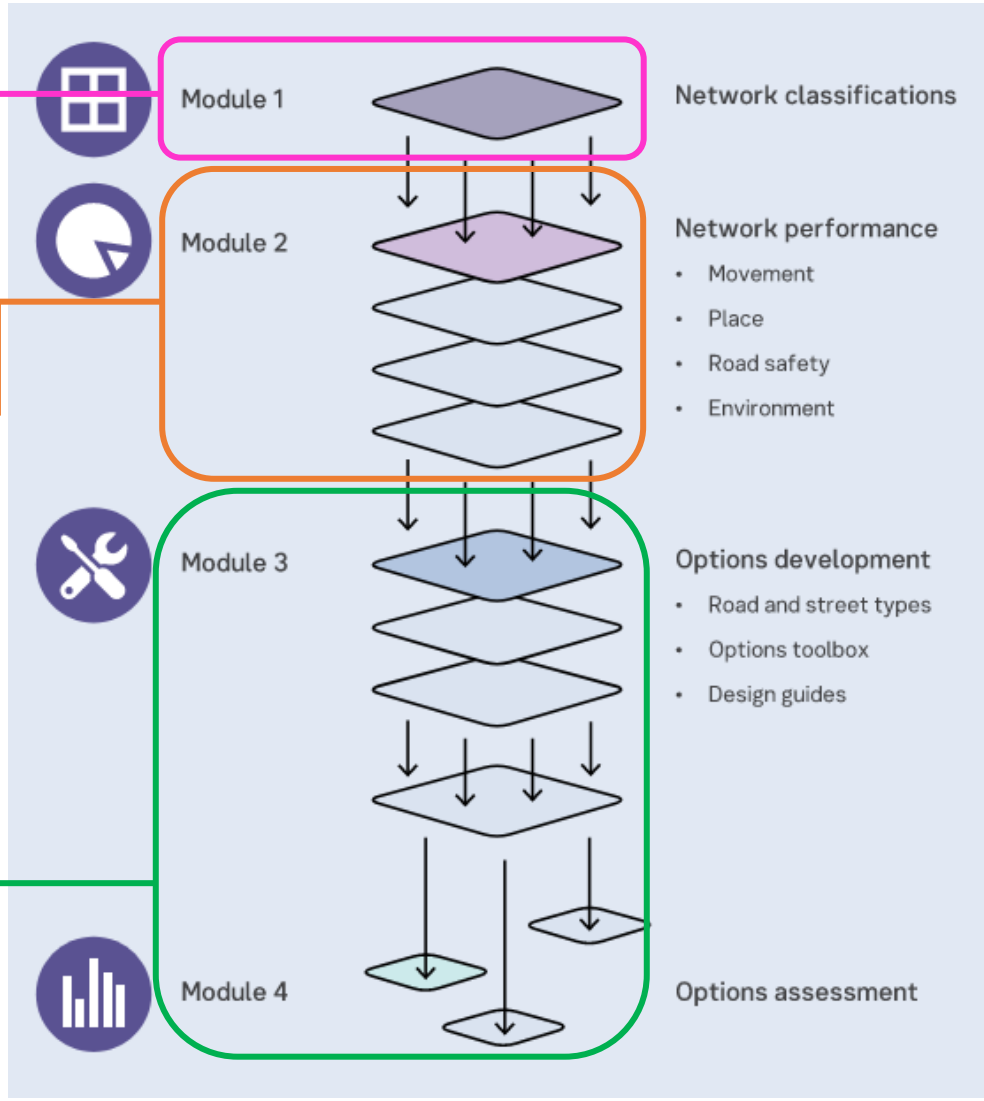


Figure 8: Movement and place framework methodology

3 Ultimate Movement Network

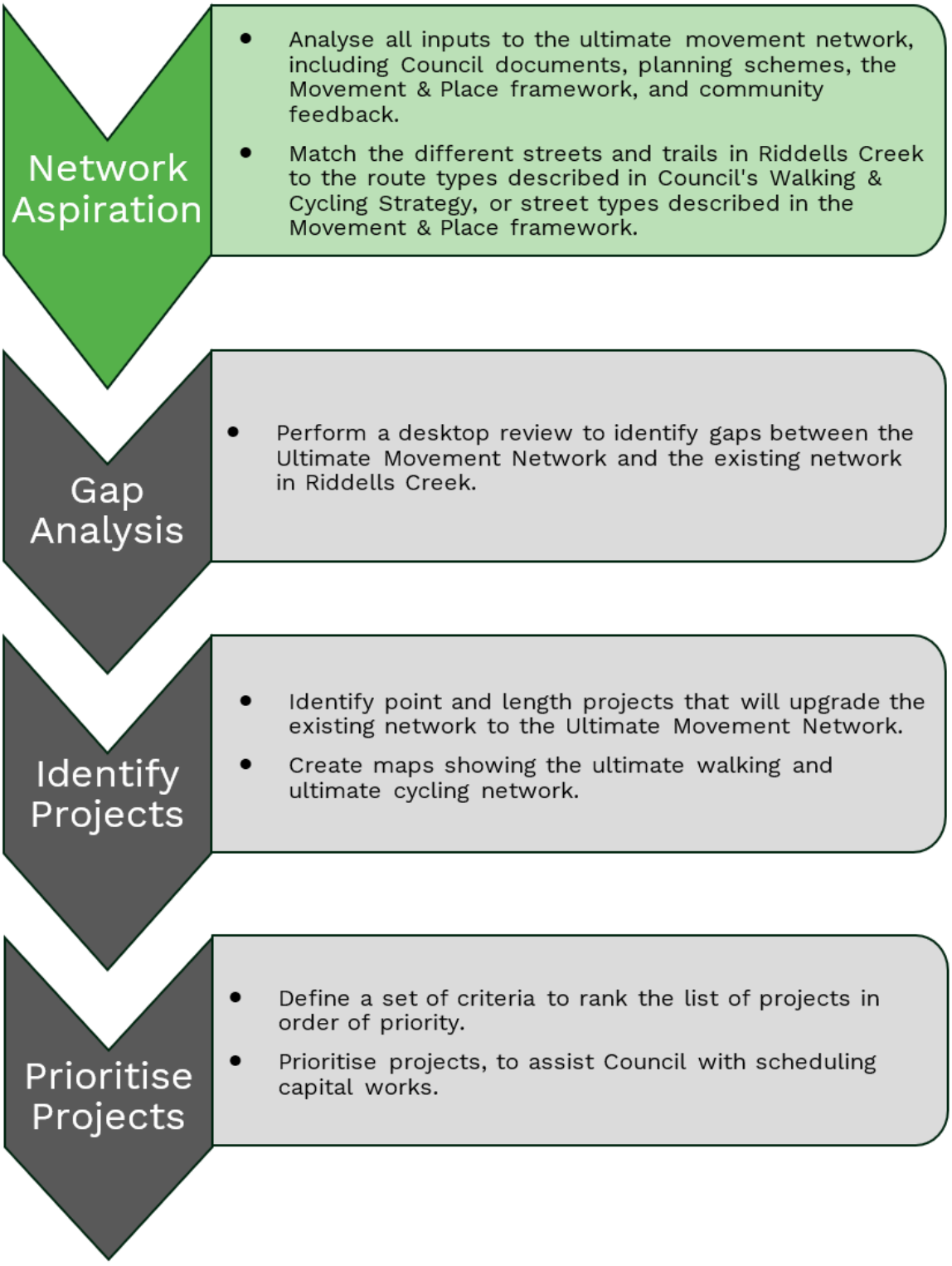


Figure 9: Project methodology

3.1 Study Inputs

To ensure the Ultimate Movement Network is responsive to local policy and strategy as well as State guidelines, the Riddells Creek Ultimate Movement Network has been informed by the following:

- Riddells Creek Structure Plan 2013
- Amess Road Precinct Structure Plan
- Riddells Creek Town Centre Opportunities Summary Paper
- Macedon Ranges Shire Council Walking and Cycling Strategy 2014
- Macedon Ranges Shire 'Participate' Positive Aging Strategy 2020
- Macedon Ranges Shire Disability Action Plan 2021-2025
- Macedon Ranges Shared Trails
- Macedon Ranges Shire-wide Footpath Plan
- Movement and Place in Victoria
- Riddells Creek Movement and Network Study Community Consultation Report.

A brief description of these documents, and details of how they informed the development of the Riddells Creek ultimate movement network, are outlined in Table 3.

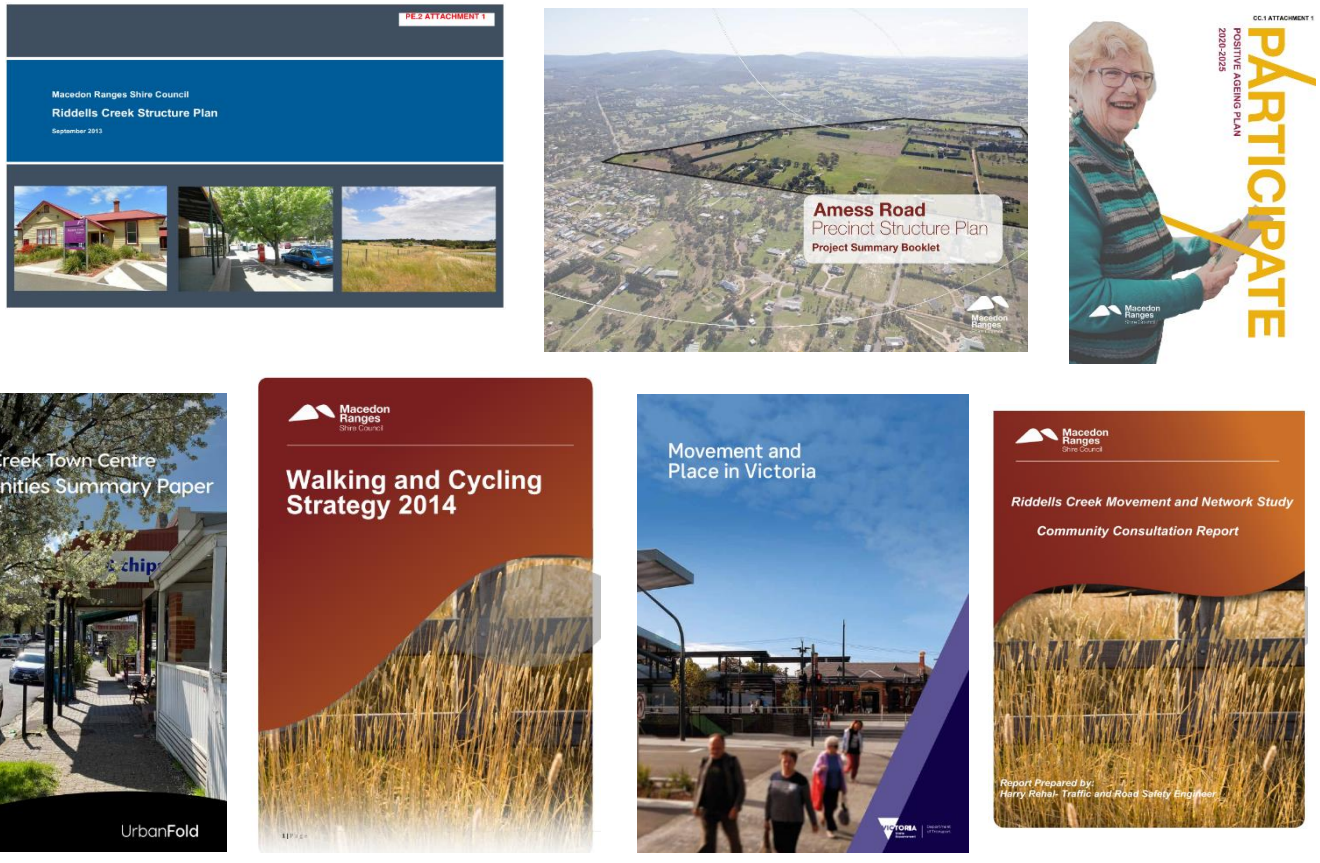


Figure 10: Inputs to the Riddells Creek Ultimate Movement Network

Table 3: Inputs to the Riddells Creek Ultimate Movement Network

Input Document	Description	Input to the Ultimate Movement Network
Riddells Creek Structure Plan 2013	Provides the long-term vision for the future development of Riddells Creek until 2036, including: • Character and role of the town centre • Residential development and housing choice • Employment, commercial and industrial development • Open space, natural systems and heritage features • Utilities and infrastructure • Environmental sustainability The Structure Plan includes maps designating areas of the township as an open space corridor, priority residential development area, and area with residential infill potential (refer Figure 37 and Figure 38 in **Appendix 1 - Input Maps**).	• Areas characterised as higher density or with infill potential were prioritised when determining priority walking & cycling routes. • Access to commercial land, the train station, and primary school were prioritised in the Ultimate Movement Network. • The notional future pedestrian/cycling routes were included in the Ultimate Network Plan. • Open space corridors were identified as future potential recreational walking/cycling routes.
Amess Road Precinct Structure Plan	Land use and infrastructure plan for the development of the Amess Road area in the north-east of the Riddells Creek township, including: • Preferred location for residential land, open spaces, and community hub • Guidelines for transport, parking, and urban design	• Walking and cycling routes in the Amess Road PSP area were included in the Ultimate Movement Network. • Population growth in the Amess Road PSP area, and the resulting increased demand on the road network, was considered when classifying roads and identifying projects.
Riddells Creek Town Centre Opportunities Summary Paper	This document, prepared as part of the development of the Amess Road Precinct Structure Plan, identifies opportunities to improve the town centre as the community grows and changes over the coming years. This document identifies where resources could be invested in the town centre, particularly infrastructure	• The Walking and Cycling opportunities, township arrival and streetscape opportunities presented in this paper are considered and included in the Ultimate Movement Network Plan.

Input Document	Description	Input to the Ultimate Movement Network
	or streetscape upgrades that can be implemented by Council. Refer to: • Figure 19 in Appendix 1 for Township arrival and streetscape opportunities identified • Figure 20 in Appendix 1 for Walking and Cycling opportunities identified • Figure 21 in Appendix 1 for additional Town Centre Development opportunities	
Macedon Ranges Walking and Cycling Strategy 2014	Provides Council with a strategic plan to increase participation in, and improve the supportive infrastructure for, walking and cycling in the shire. Includes descriptions of different walking and cycling route types, and maps showing pedestrian and cycling networks (refer to Figure 40 and Figure 41 in **Appendix 1 - Input Maps).**	• Council's primary pedestrian and cycling network in Riddells Creek was included in the Ultimate Movement Network. • Council definitions of different walking/cycling routes were used to match street types to walking/cycling route types. • Council standards for walking and cycling path infrastructure were used to identify projects (for example, upgrading footpaths that do not meet Council's minimum standards).

Input Document	Description	Input to the Ultimate Movement Network
Macedon Ranges Shire 'Participate' Positive Aging Strategy 2020	Provides an action plan for Council to support older residents in the Shire, which was heavily informed by a survey of older Shire residents. Transport was the second most commented on concern in the survey (after health).	• Feedback from older residents informed the development of the Ultimate Movement Network and the identification and prioritisation of projects. Common suggestions included: ○ Improving/extending footpaths, to increase accessibility and opportunities for exercise. ○ Reducing speed limits, including introducing 40 km/h speed limits within towns, to improve safety. ○ Expanding the GisBus service so that it services all towns, to improve accessibility.
Macedon Ranges Shire Disability Action Plan 2021-2025	Guides Council decision making on disability inclusion, accessible and inclusive Council services, programs, events, and partnership approaches.	• Actions from the Action Plan that relate to the Ultimate Movement Network include: ○ Continue to improve continuous accessible paths of travel to key destinations, through the funding of the Footpath Construction Program ○ Maintain open spaces and parks that can be used by all members of the community.
Macedon Ranges Shared Trail Stage 3	A plan for a shared trail along Markham Road	• The shared trail along Markham Road has been included as part of the regional cycling trail network
Macedon Ranges Shire-wide Footpath Plan	Contains plans showing the location and priority of foot-paths in towns in the Shire, including in Riddells Creek (refer Appendix 1)	• Council's footpath plan for Riddells Creek informed the creation of the Ultimate Walking Network.
Movement and Place in Victoria	Describes the Movement and Place framework used for street design in Victoria. This includes a four-module framework used for planning transport networks, and	• The methodology for creating the Ultimate Movement Network was based on the four-part Movement and Place framework.

Input Document	Description	Input to the Ultimate Movement Network
	classifications of different types of streets based on their significance as a destination ('place' function) and their importance as a transport corridor ('movement' function).	• Movement and Place classifications for Riddells Creek informed the classification of streets within the township. • Streets were classified into street types described in the Urban Road and Street Design Guide. These classifications were used to identify appropriate treatments and identify projects for Council.
Riddells Creek Movement and Network Study Community Consultation Report	Describes the result of a face-to-face workshop and online survey of Riddells Creek residents. The 4 key themes were: • Maintenance and improvement of sealed and unsealed roads • Improvements along the main road strategic corridor, including to car parking and pedestrian connectivity. • Intersection analysis to inform future capital works programs. • Pedestrian connectivity, including formal crossing improvements	• Residents' comments helped to identify and prioritise programs in the Ultimate Movement Network. Common suggestions included: ○ Maintaining the rural character of the Township, and preventing overdevelopment ○ A 40 km/h speed zone on Main Road ○ More footpaths and pedestrian crossings ○ More parking, including disabled parking, in the town centre. ○ Improved safety around schools, including a pedestrian crossing treatment on Main Road. ○ Improved intersections, including adding turning lanes and restricted turning movements to the busier intersections.

3.2 Movement and place classifications

The Department of Transport and Planning (DTP) has determined the movement and place classifications for streets throughout Victoria, including in Riddells Creek. Classifications for general traffic, walking, freight, and place in Riddells Creek are shown in Figure 11: General traffic classifications in Riddells Creek to Figure 14.

There are currently no cycling classifications mapped within Riddells Creek. For off-road trails which have not been assigned a movement and place classification, a classification has been assigned as part of this study.

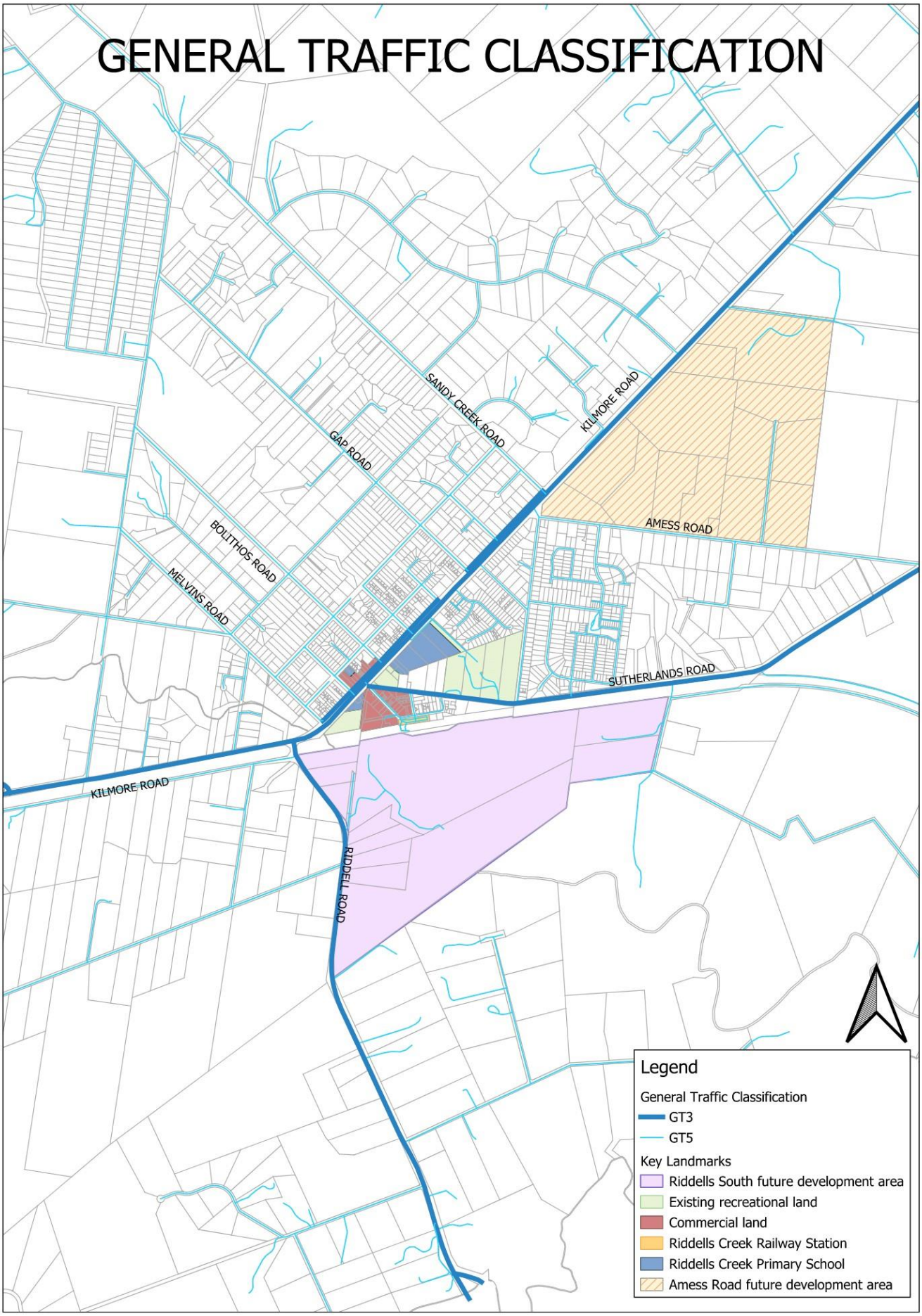


Figure 11: General traffic classifications in Riddells Creek

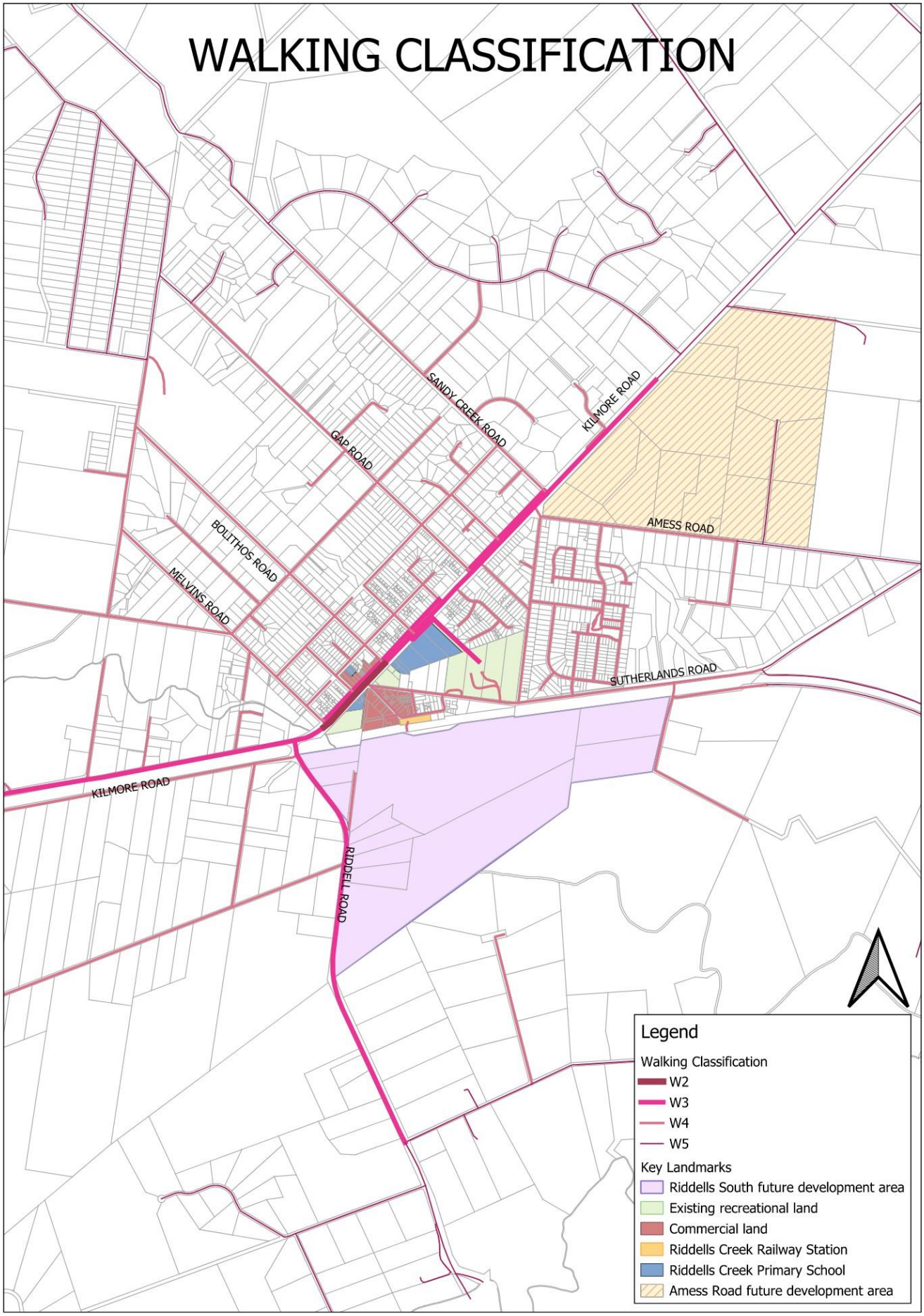


Figure 12: Walking classifications in Riddells Creek

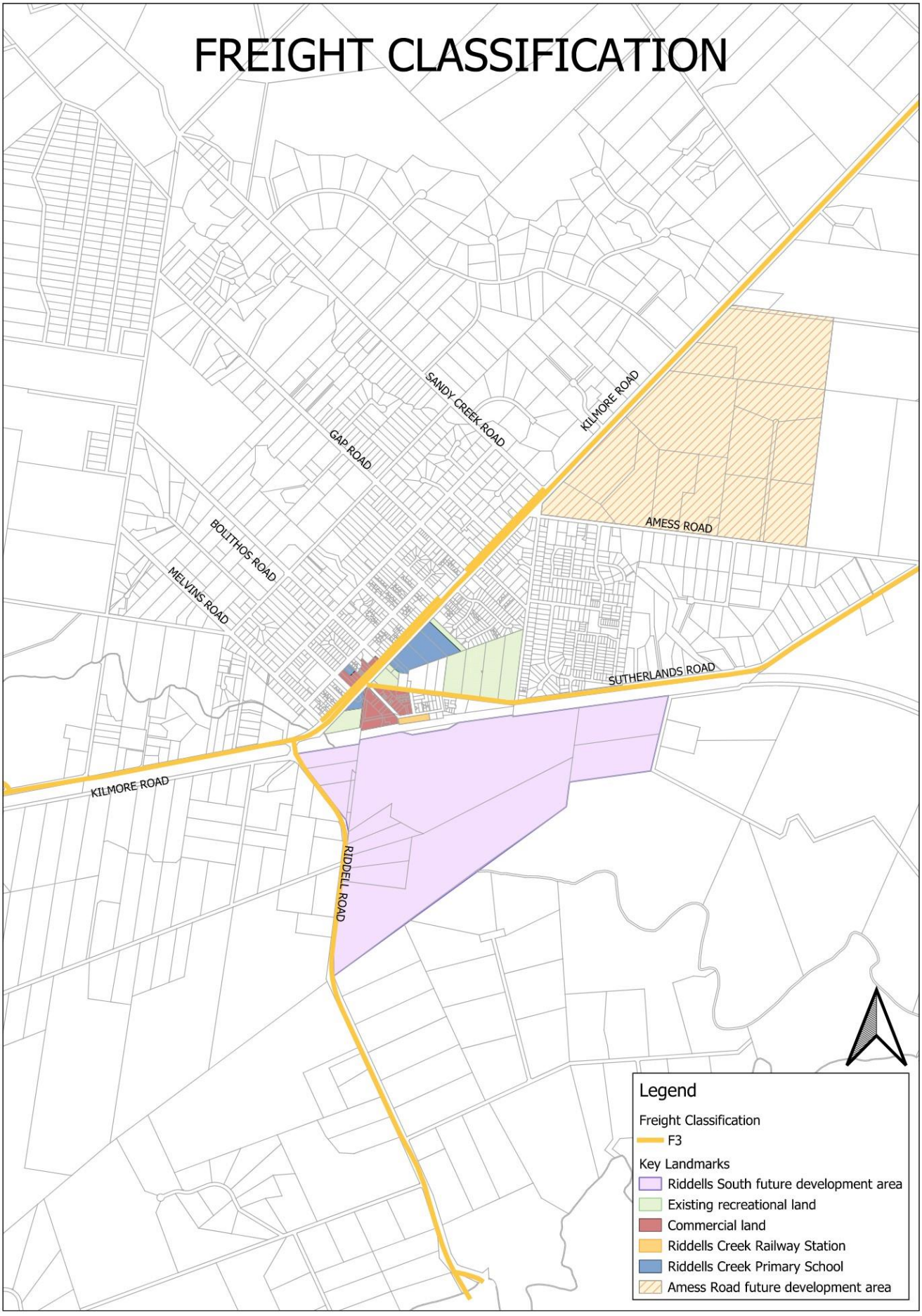


Figure 13: Freight classifications in Riddells Creek

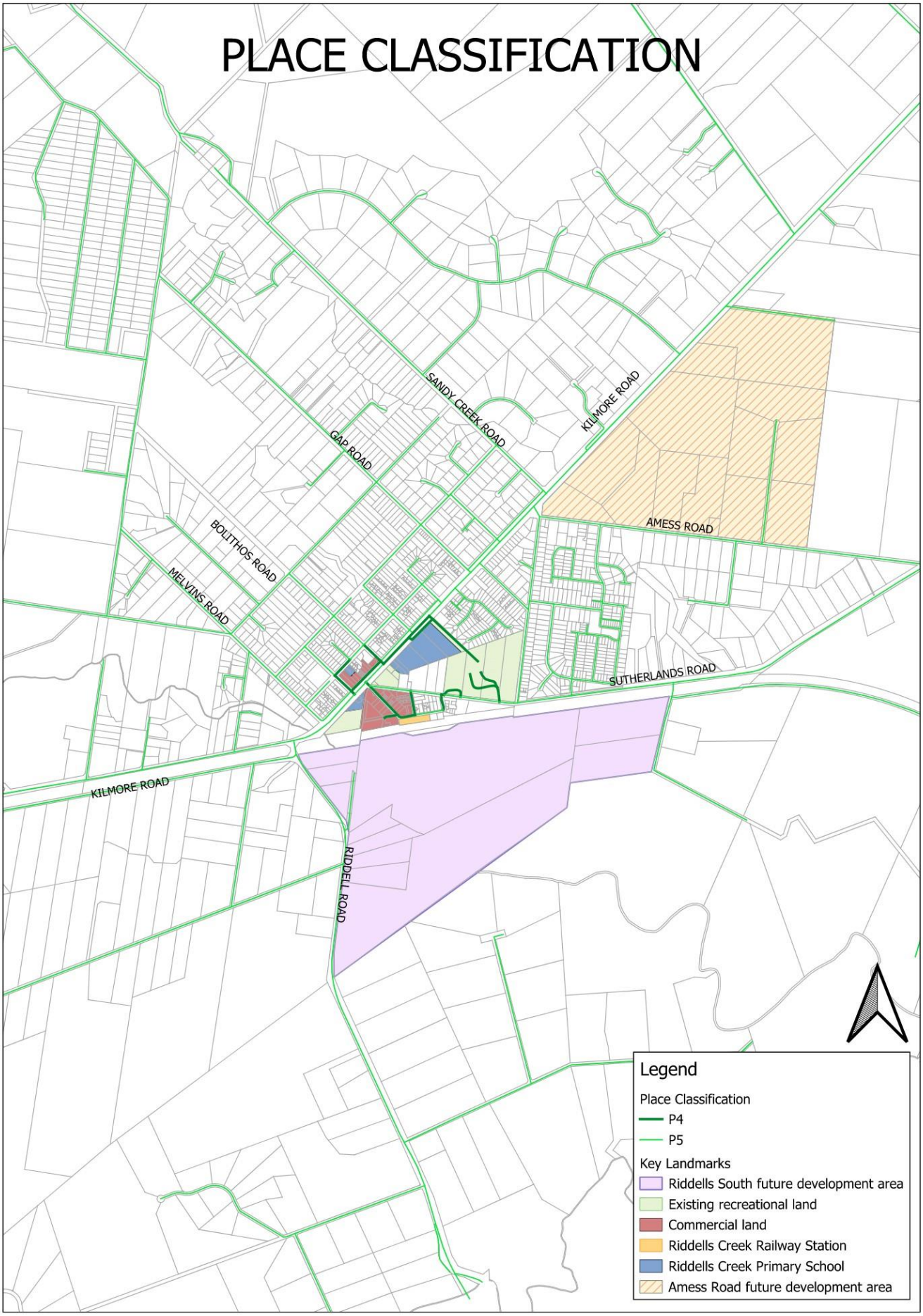


Figure 14: Place classifications in Riddells Creek

3.3 Street types

The vision for the Riddells Creek Ultimate Network Plan reflects the strategic role of a street in the wider street network. This study recognises the role streets play as destinations in their own right, providing a corridor for people to move through as well as a place for the community to enjoy for leisure and recreational purposes. This led to the development of a street and path hierarchy, and the categorisation of the streets within Riddells Creek into street types.

The Urban Roads and Streets Design Guidelines (Draft Issue June 2020) was utilised to provide guidance on determining street types. These guidelines identify 4 broad groups called 'Street Families'. Within each Street Family are a number of street types. The street type is primarily determined by the Movement and Place classifications of the street, with a particular consideration of its modal priorities.

By defining streets into certain types, a clear vision and direction can be formed for all stakeholders to collectively work towards and understand. Modal priorities can provide a second layer of detail in defining the desired outcomes.

Four different street types and 2 path types were identified in Riddells Creek:

- neighbourhood residential streets
- residential connectors
- high activity streets
- boulevards
- off-road recreational trails
- off-road trails – preferred routes between towns.

The 4 street types can be mapped into the Movement and Place matrix. Their location within the matrix assists to demonstrate the role that the street plays within the wider network of the Riddells Creek township. See Figure 15.

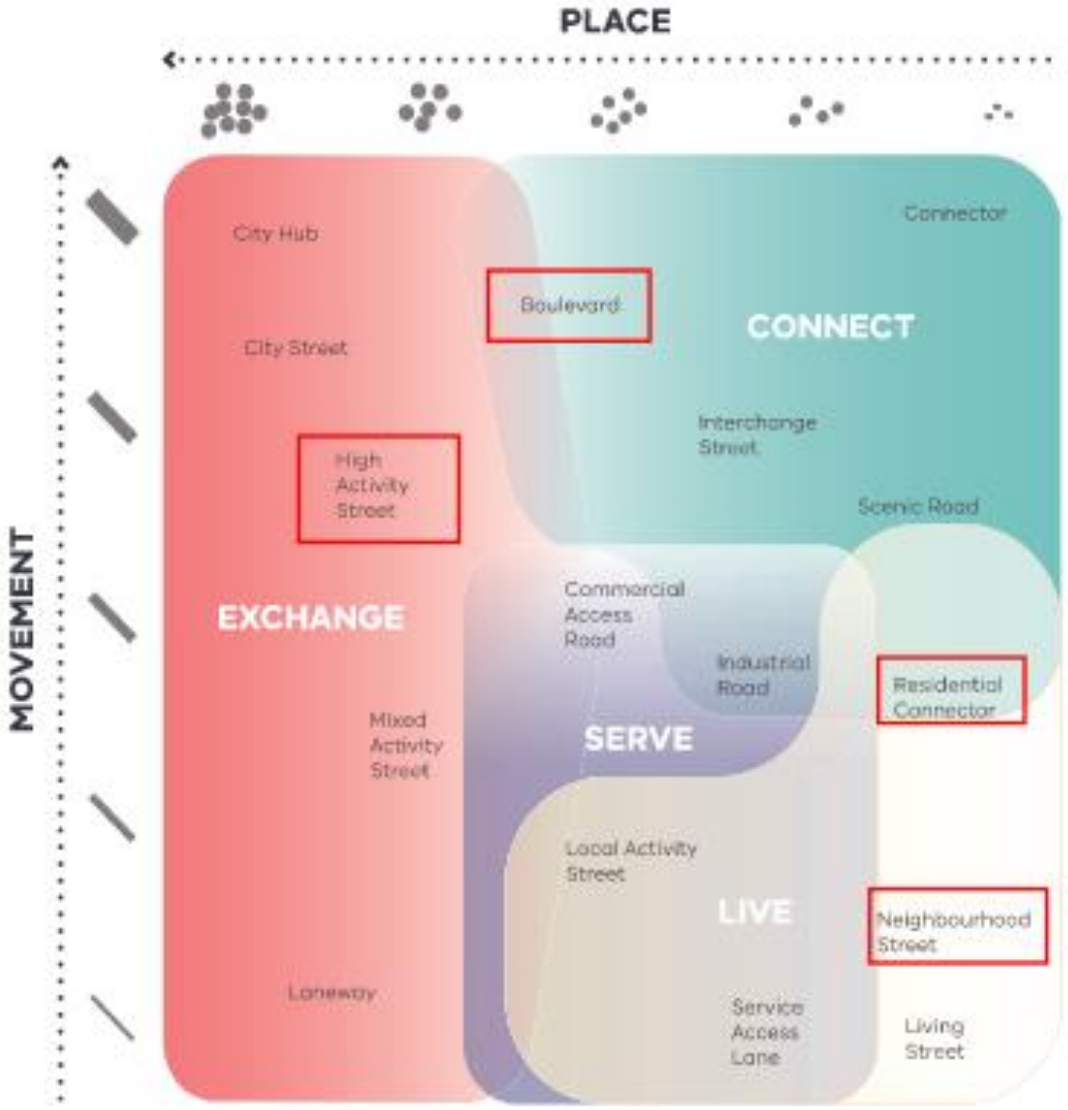
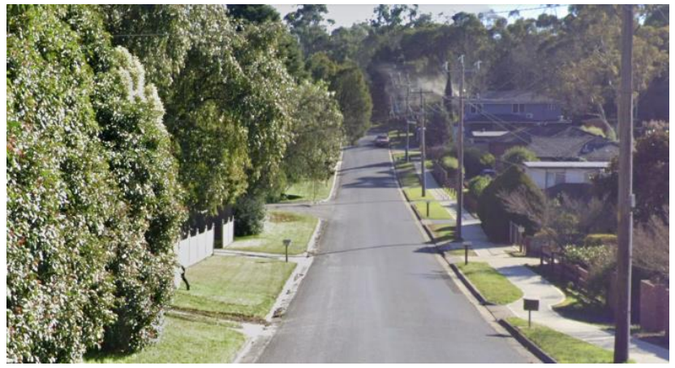


Figure 15: Street types mapped onto Movement and Place matrix

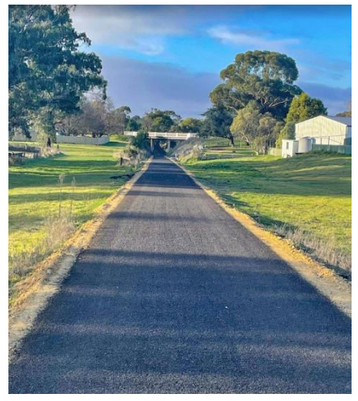
Table 4 provides a description for each of these street and path types, their target speeds, some examples of each type within the Riddells Creek township and photos showing some examples.

Table 4 shows the location of the different street types in Riddells Creek.

Table 4: Street Types in Riddells Creek

Street Type	Description	Movement and Place Classification	Target Speeds	Street Examples	Example photos
Neighbourhood Residential Street	These are local living streets where people inhabit. They support residential life with a low intensity of on street activity. Neighbourhood streets operate at a slower pace and support local movements. In the Riddells Creek context, these will be characterised by wide verges, softer streetscape and a footpath on one side of the street. Bicycle facilities will be provided via sharrows in the pavement to encourage lane sharing.	**M5** W4 GT5 No freight classification **P5** – Place of local significance	50 km/h	– Merrifield Street – Eucalypt Court – Sexton Street	
Residential Connector	Residential connectors are access corridors that move high volumes of people. These residential streets are both places where people live and thoroughfares where people move through. Within Riddells Creek, these are characterised with wider streets, shared path on one side of the street and wide verges.	**M5** W4 GT5 No freight classification **P5** – Place of local significance	60 km/h	– Merrifield Street – Bolithos Road	
High Activity Street	High activity streets are multi-modal destinations for people to visit, work and live. They play a central role for the community, supporting a concentration of commercial, civic and community land use. They are high amenity places that facilitate social interaction and high on-street activity. Each of the key street located within the Riddells Creek town centre can be categorised into this street type. These streets should reinforce the village feel in the Town Centre and enhance the main street as a people focused local destination, with the following characteristics: • wider footpaths • increasing street tree canopy • activating the street at night with feature lighting • more people meeting places with landscaped areas • a slow speed environment, reinforced with traffic calming.	**M3** W3 GT3 F3 **P4** – Place of neighbourhood significance	30 km/h or lower	– Station Street – Stephen Street	

Street Type	Description	Movement and Place Classification	Target Speeds	Street Examples	Example photos
Boulevard	Boulevards are grand, ceremonial movement corridors with a high movement function, forming the backbone of the Riddells Creek township. Boulevards are major gateways that contribute to the township's identity, and provide a sense of arrival, encouraging visitors to travel slower through the township and to stop and visit. Kilmore Road can be categorised into a Boulevard and provides visitors with a first impression of Riddells Creek. Characteristics of a Boulevard include: • increasing tree canopy Along the service roads • introducing a boulevard of trees in the centre carriageway between Station Street and the Primary School • provide place specific markers and gateway entry statements • create a slower speed environment between Station Street and the primary school • additional pedestrian crossing points along Kilmore Road north of the town centre • improved pedestrian and cycling facilities.	**M3** W2 GT3 F3 **P4** – Place of neighbourhood significance	50 km/h	— Kilmore Road between Melvins Road and Bolithos Road	
Off-Road Trail – Recreational	The recreational off-road trails are scenic paths which support communities to access creek corridors, open spaces, parks as well as local and regional destinations. These paths are used for recreational walking and cycling and provides an attraction for tourists. These will be used by a range of users, including walkers, mountain bikers, joggers, and people of all ages and abilities, and are important to encourage physical activity and improved health.	**M5** **P4**[1] – Place of neighbourhood significance	20 km/h	— Proposed trail along Sandy Creek	

Street Type	Description	Movement and Place Classification	Target Speeds	Street Examples	Example photos
Off-Road Trail – Preferred Route Between Towns	This provides a network of key off-road paths to create important walking and cycling connections between the regional towns in the municipality. The Macedon Ranges Walking and Cycling Strategy identifies 4 inter-town projects: • Kyneton – Gisborne Trail • Woodend – Hanging Rock Trail • Romsey – Hanging Rock Trail • Riddells Creek – New Gisborne Trail.	**M3**[1] **P5**[1] – Place of local significance	30 km/h	— Riddells Creek to New Gisborne Rail Trail	

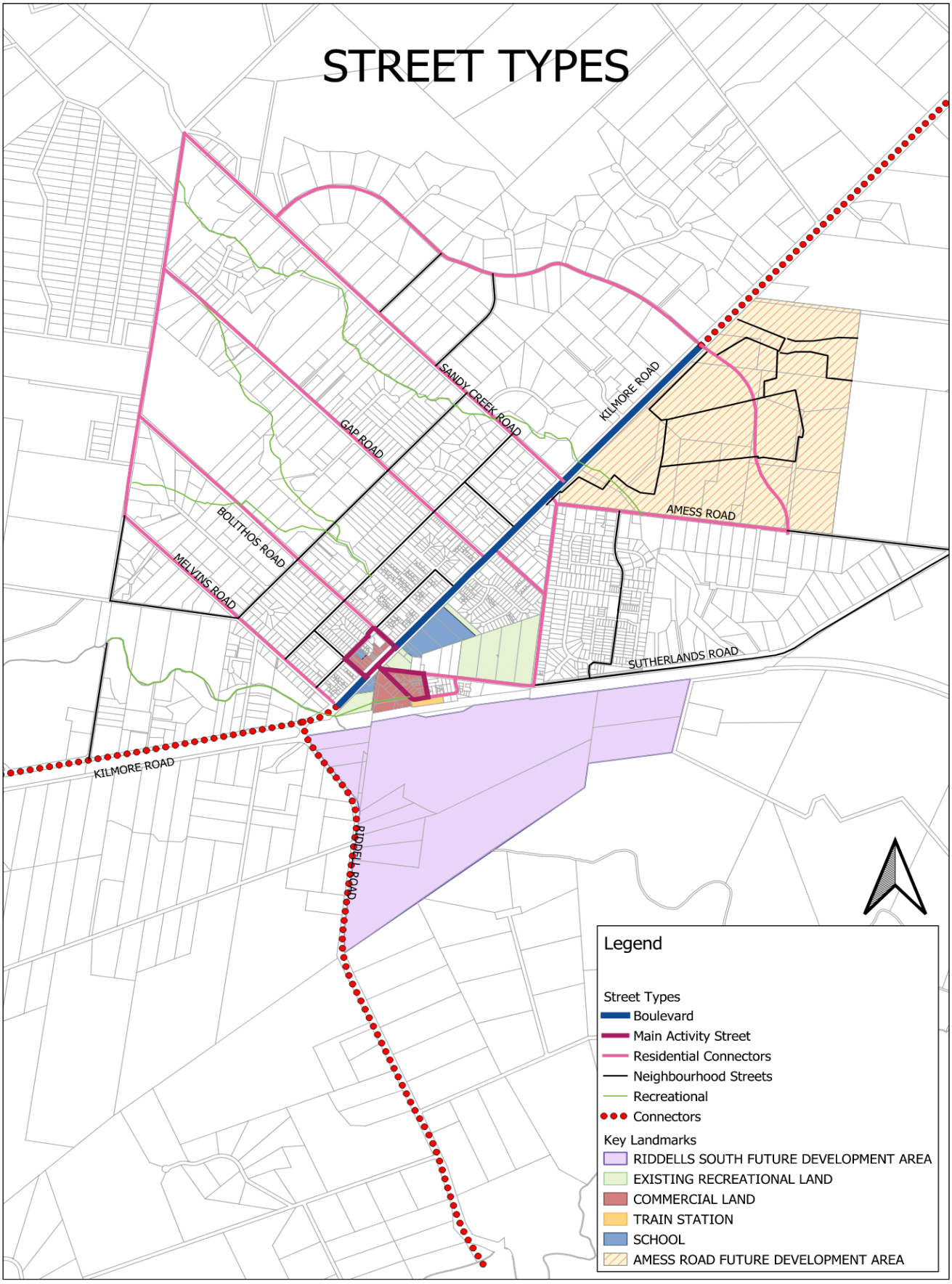


Figure 16: Street types in Riddells Creek

3.4 Aspirational movement network

The aspirational movement network is the overall vision for walking, cycling, and public transport in Riddells Creek. This has been developed by establishing a hierarchy of streets and paths based on the street type and the Movement and Place framework. Table 5: Walking Route Types and Table 6: Cycling Route Types describe these route types for walking and cycling respectively, and Figure 17 and Figure 18 show their locations within Riddells Creek.

3.4.1 Walking

The following hierarchy of walking routes have been developed to accommodate for the different reasons for walking within the township:

- primary walking routes
- secondary walking routes
- local walking routes
- recreational routes

A description of each of these routes, including appropriate treatments, are found in Table 5. Figure 17 shows a map of these walking routes in Riddells Creek.

Table 5: Walking Route Types

	Description	Street Types	Treatments	Photo
Primary Walking Route **(W2/W3)**	Regionally significant walking links near key activity generators with existing and/or potential demand. This includes the Riddells Creek town centre, educational institutions, railway stations, and employment precincts.	— Boulevard — High activity street	— Wider sealed footpaths on both sides of the road — Wombat crossings — Pedestrian operated signals (POS)	
Secondary Walking Route **(W4)**	Municipal walking links that support pedestrian movements to and around activity generators such as activity centres and schools.	— Residential Connector	— Sealed footpaths on one side of the road — Wombat crossings	

	Description	Street Types	Treatments	Photo
Local Walking Route **(W4 / W5)**	Neighbourhood walking links along residential streets.	— Neighbourhood Residential Street	— Sealed footpaths on one side of the road — Informal crossings with kerb ramps — Wombat crossings	
Recreational Route	Primarily used for leisure. May be windier and have a lower target speed than other routes, with a greater focus on scenery and recreational use. These routes don't need to be sealed and peak usage will typically occur on weekends.	— Off-Road Trail - Recreational	— Sealed or unsealed shared paths	

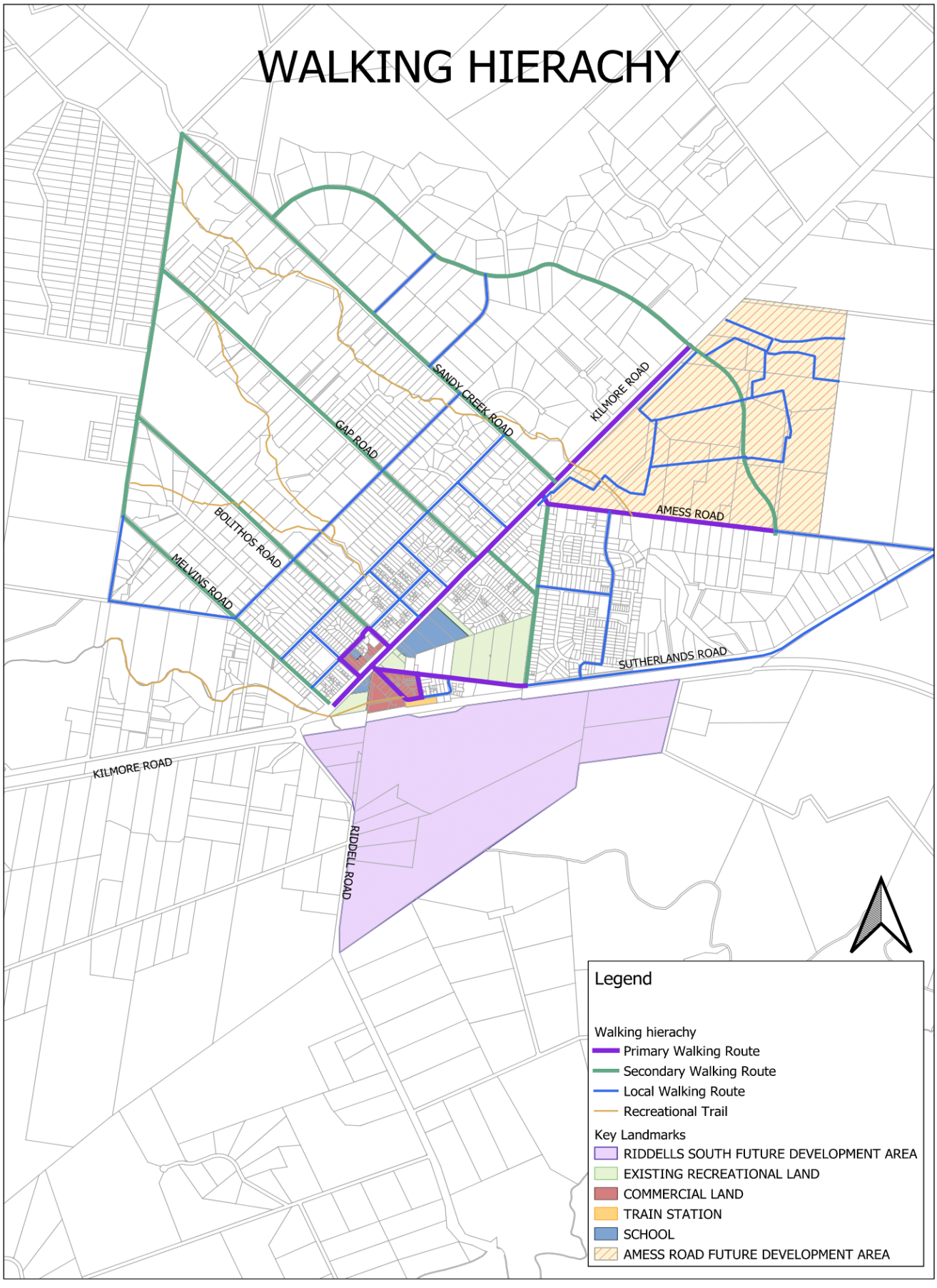


Figure 17: Walking routes in Riddells Creek

3.4.2 Cycling

Five types of cycling routes have been developed to accommodate for the different types of cyclists within the township:

- primary cycling routes
- secondary cycling routes
- local cycling routes
- preferred cycling routes between towns
- recreational cycling trails.

A description of each of these routes, including appropriate treatments for the routes, are found in Table 6. Figure 18 shows a map of these walking routes in Riddells Creek.

Table 6: Cycling Route Types

	Description	Street Types	Treatments	Photo
Primary Cycling Route (C1 / C2)	Regionally significant cycling links near key activity generators with existing and/or potential demand. This includes strip shopping, educational institutions, railway stations, and employment precincts.	Boulevard High activity street	Sealed shared paths	
Secondary Cycling Route (C3)	Municipal cycling link which supports pedestrian movements to and around activity generators such as activity centres and schools.	Residential Connector	Sealed shared paths	
Local Cycling Route (C4)	Captures low-density residential areas to connect to primary and secondary cycling routes. Typically designed for lower target speeds than a secondary cycling route.	Neighbourhood Residential Street	Sharrows	

	Description	Street Types	Treatments	Photo
Preferred Cycling Route Between Towns **(CR)**	Recreational cycling route for cycling enthusiasts or those seeking a long-distance training route, catering for a higher speed than recreational cycling trails.	Connector	Sealed shared paths	
Recreational Cycling Trail **(CR)**	A cycling route that is used for leisure and prioritises scenery over a direct travel route.	Off-Road Trail - Recreational	Sealed or unsealed shared paths	

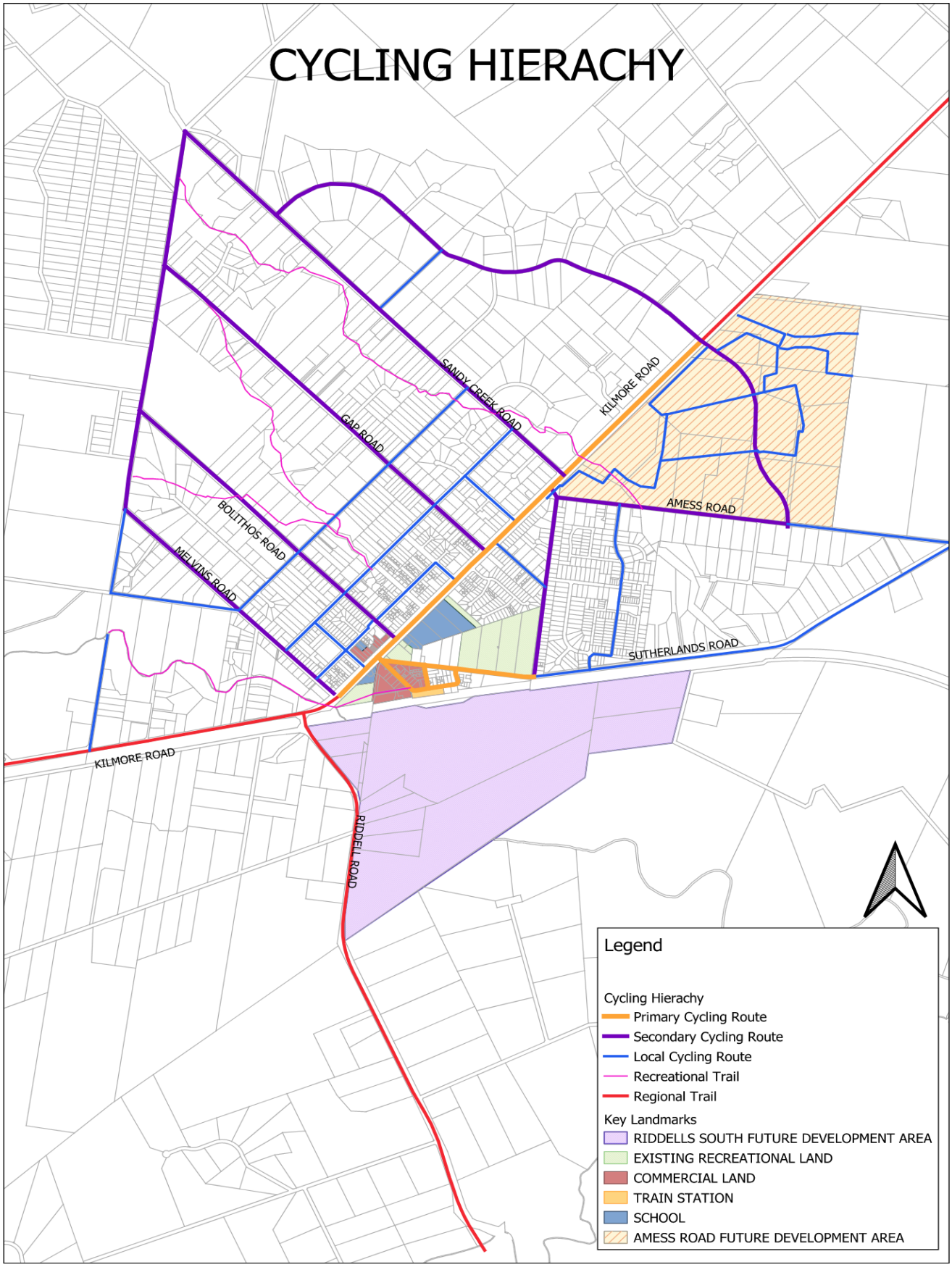


Figure 18: Cycling routes in Riddells Creek

3.4.3 Public Transport

Currently, public transport to and from Riddells Creek is provided via train, with services operated by V/Line. A V/Line bus service also connects Riddells Creek to Lancefield.

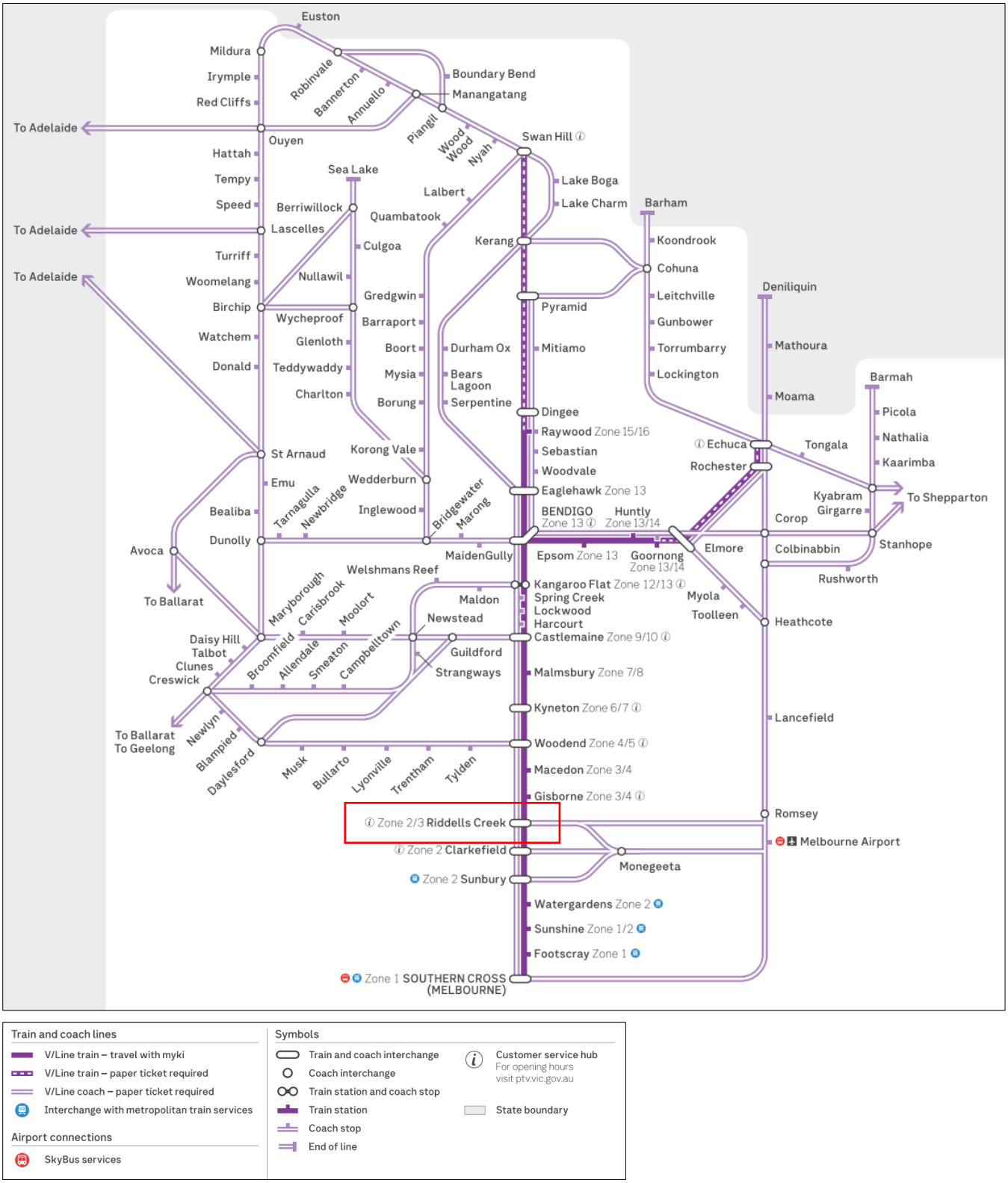


Figure 19: Northern Victoria Public Transport Map

In addition, school bus services operate to and from Riddells Creek Primary School, Holy Cross Primary School, and Gisborne Secondary College.

There are currently no local public bus services operating within the Riddells Creek township.

Since the introduction of the regional V/Line daily fare cap at the current Metropolitan fare, V/Line patronage data has shown an increase in passengers taking advantage of cheaper fares. More than 1.5 million people used public transport across regional Victoria in the first month of the new fares, including 210,000 passengers on the Bendigo Line. Patronage data shows an uplift in passengers on weekend and special services.

It is recommended that Council work with Department of Transport and Planning to:

- establish a bus route to Gisborne.
- establish local bus services to the train station and town centre.
- understand the trend of train ridership for the first few months at the Riddells Creek rail station and any impact to the usage of car parking spaces there.

4 Identification of projects

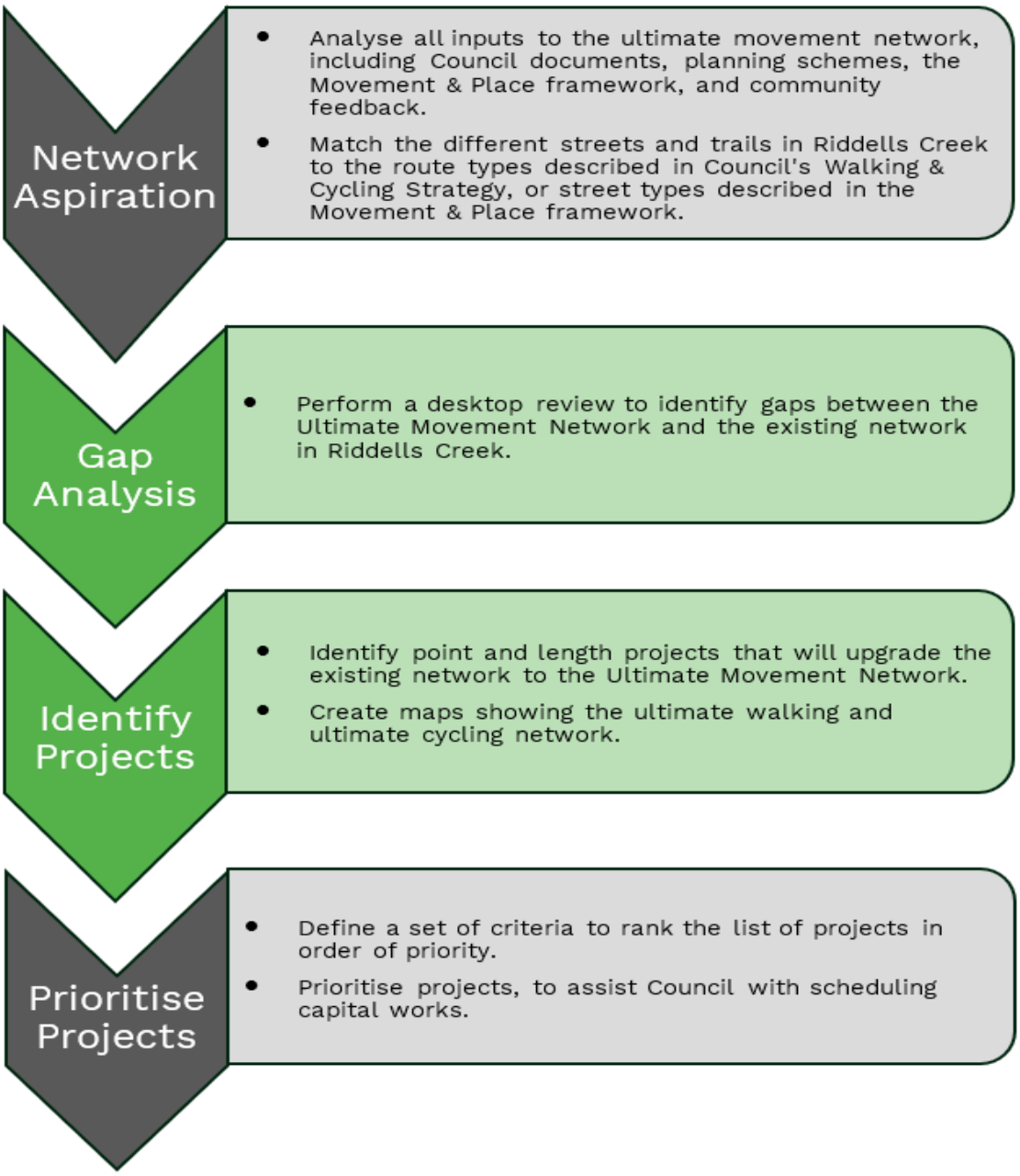


Figure 20: Project Methodology - Module 2

4.1 Gap analysis

A desktop study of the road network was undertaken to assess the existing network against the aspirations. Through the process of comparing the aspirations defined within the cycling and walking hierarchies to existing infrastructure in Riddells Creek, gaps in the network were identified.

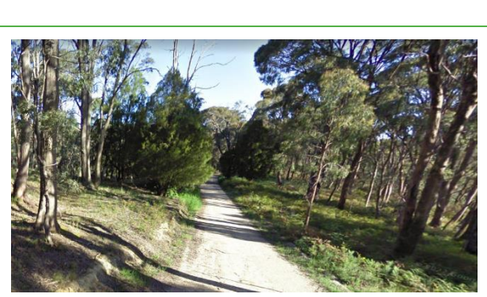
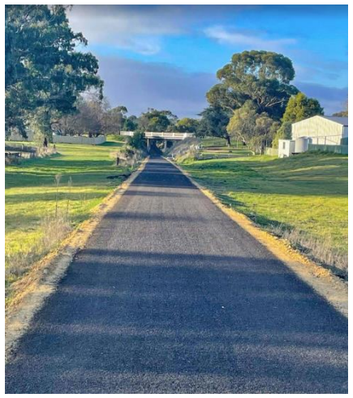
The gap analysis then informed a series of infrastructure upgrade projects, ranging in scale, challenges, and benefits, outlined in the following section.

4.2 Project types

To assist in the delivery of the aspirational movement network plan for the Riddells Creek township, a range of project types have been identified. These are categorised into the following:

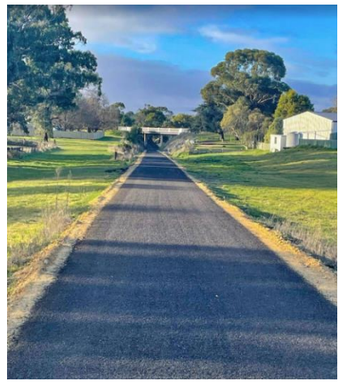
- pedestrian facility upgrades
- cycling facility upgrades
- intersection upgrades
- speed limit reductions and streetscape projects.

4.2.1 Pedestrian projects

Project	Description	Design Parameters	Example Photo
Footpath	A sealed path for pedestrians to walk along.	— Minimum 1.5 m width — For commercial areas, as wide as possible — Pram ramps to connect to the road	
Shared Path	A sealed path that is shared between pedestrians and cyclists. Shared paths are wider, and cater for higher speeds, than a footpath.	— Minimum 2.5 m width — Desirable 3 m width — Design speed 20 km/h	
Recreational Shared Path	A sealed or unsealed path used by pedestrians and cyclists for leisure. They often prioritise scenery over a direct route. Peak usage on these paths typically occur on weekends.	— Minimum 2.5 m width — Desirable 3 - 4 m width	
Regional Trail	A trail used by pedestrians and cyclists to travel between regional towns or points of interest.	— Minimum 2.5 m width — Desirable 3 m width	

Project	Description	Design Parameters	Example Photo
Wombat Crossing	A raised pedestrian crossing that provides priority to pedestrians crossing the road and encourages motorists to slow down when approaching the crossing. Appropriate in the following locations: — where there is a need to reduce vehicle speeds at pedestrian crossings — on two-lane streets — at mid-block locations, especially near schools — on streets with low speed (less than 60 km/h) and traffic environments — where there is adequate street lighting to maximise visibility.	— Profile of hump to consider types of vehicles — Desirable width of 3.6 m — Minimum width of 3 m	
Refuge Crossing	A section of pavement in the middle of a road where pedestrians can stop before finishing crossing the road.	— Desirable width of 3 m — Minimum width of 2 m	
Pedestrian Operated Signals (POS) Crossing	A street crossing with traffic lights that activate a red light for motorists when a pedestrian pushes a button.	— Minimum 2.5 m width, or 3 m for shared path crossing — Appropriate for roads with high volumes of traffic and locations with high volumes of pedestrians	
New footbridge	A bridge that provides pedestrians and cyclists with safe access over a road or railway line.	— Minimum 3 m width — Desirable 5 m width — Ramps to be provided	

4.2.2 Cycling Projects

Project	Description	Design Parameters	Example Photo
Sharrows	Markings that indicate a road is a shared environment for bicycles and cars and alert all road users to the presence of bicycles on the road.	— Wayfinding signage — Sharrow Line marking — Traffic calming	
Shared path (within road reserve)	A sealed path that is shared between pedestrians and cyclists. Shared paths are wider, and cater for higher speeds, than a footpath.	— Minimum 2.5 m width — Desirable 3 - 4 m width — Design speed 20 km/h	
Recreational Shared Path	A sealed or unsealed path used by pedestrians and cyclists for leisure. They often prioritise scenery over a direct route. Peaks on these paths typically occur on weekends.	— Minimum 2.5 m width — Desirable 3 m width — Design speed 10 - 15 km/h	
Regional Trail	A trail used by pedestrians and cyclists to travel between regional towns or points of interest.	— Minimum 2.5 m width — Desirable 3 m width	

Additionally, specific projects have been identified at various locations. These are listed below.

4.2.3 Intersection upgrades

The following intersection upgrades has been identified within the Riddells Creek township. These are subject to further traffic analysis:

- new roundabout at Riddell Road / Main Road
- new roundabout at Kilmore Road / Sandy Creek Road
- convert Kilmore Road / Station Street to a signalised intersection.
- investigate the feasibility of reversing the priority intersection at Sutherlands Road / Station Street, with full consultation of the nearby businesses and residents.
- investigate the feasibility of improving the traffic flow between the intersection of Kilmore Road/Bolithos Road and the intersection of Kilmore Road/Sutton Road with the turning movement interactions of the multiple accesses to the Police Station/Fire Brigade and Riddells Creek Primary School.
- intersection upgrade at Raws Lane, including turn lanes.
- new roundabout at Kilmore Road / Gyro Close intersection with future access into Amess Road development.

4.2.4 Speed limit reductions

The following potential speed limit reductions have been identified within the township, for further investigation (speed limit reductions will require the approval of the Department of Transport and Planning (DTP)):

- reduce the speed limit on Main Road between Walter J Smith Reserve at the southern entry to the township, to Sexton Street from 50 km/h to 40 km/h.
- reduce the speed limit on Main Road between Sexton Street to the northern extent of the Amess Road development to 60 km/h.
- reduce the speed limit on Main Road between Williams Lane and Riddell Road at the southern entry to the township from 80 km/h to 60 km/h.
- investigate the feasibility of a 30 km/h speed limit within the town centre.
- investigate the feasibility of an area 40 km/h speed limits within the residential areas of the township.

4.2.5 Amenity and streetscape improvements

- Implement amenity improvements and streetscaping to enhance the township character and provide a safer environment for pedestrians along Station Street. This could include the following options:
  - one-way traffic flow along Station Street between railway station and Sutherlands Road
  - kerb outstands, sharrow linemarking and speed humps to slow traffic speeds.

- implementation of a 10 km/h shared zone, supported by landscaping, raising the road to footpath level and removal of kerbs, and other interventions to enforce the slow environment.

4.3 Project maps

Maps showing the proposed projects are shown in Figure 21 to Figure 24.

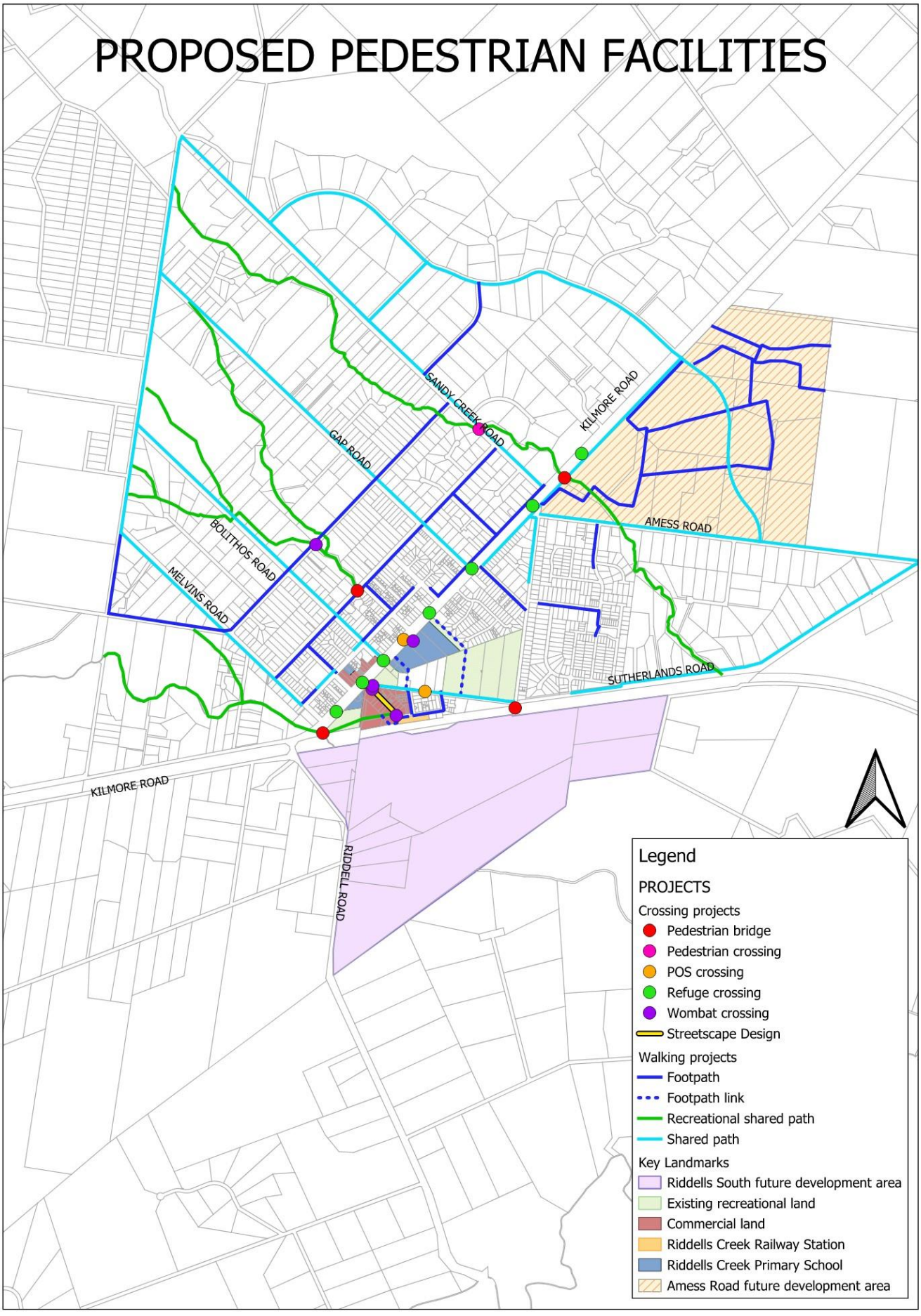


Figure 21: Proposed pedestrian facilities

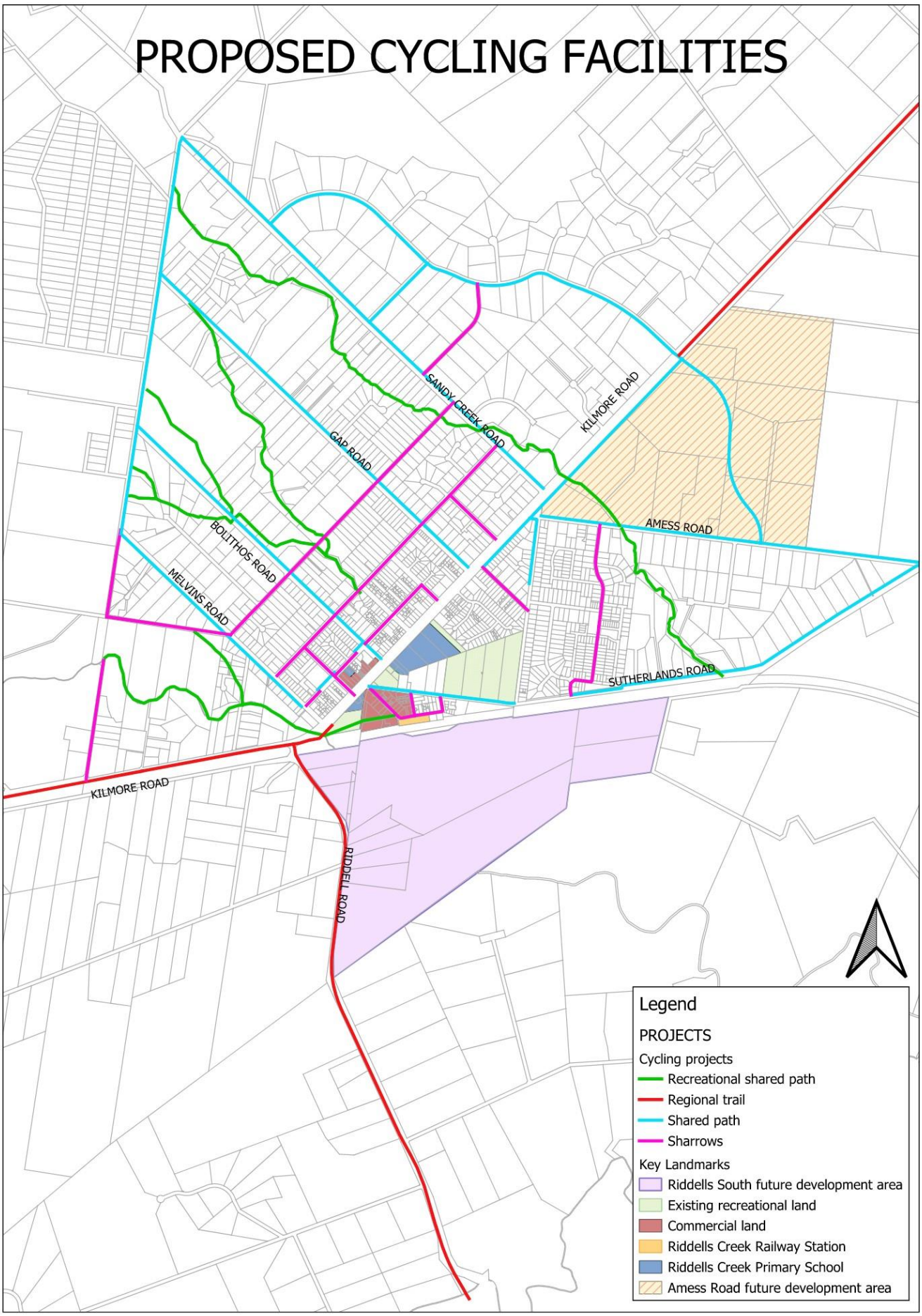


Figure 22: Proposed cycling facilities

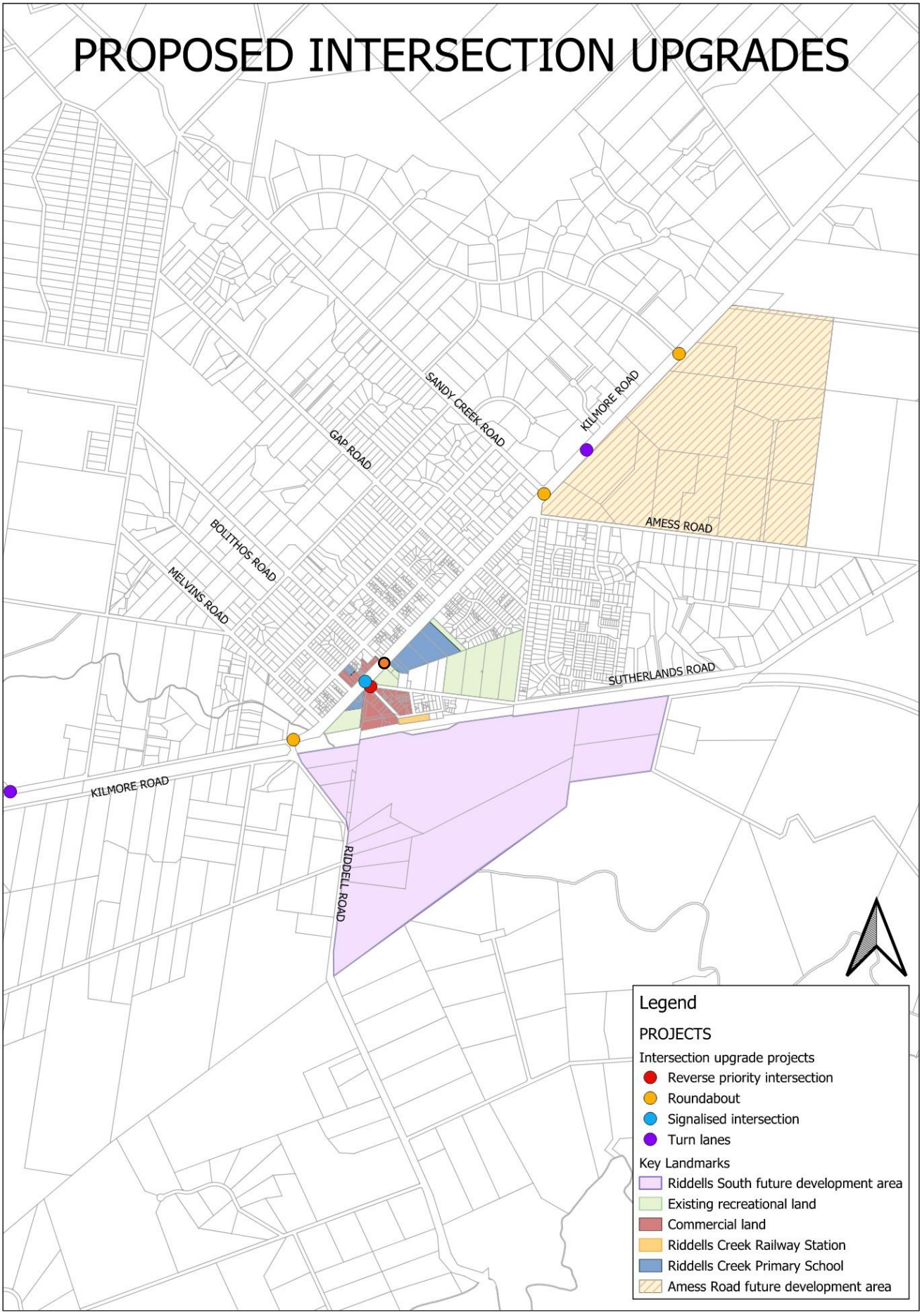


Figure 23: Proposed intersection upgrades

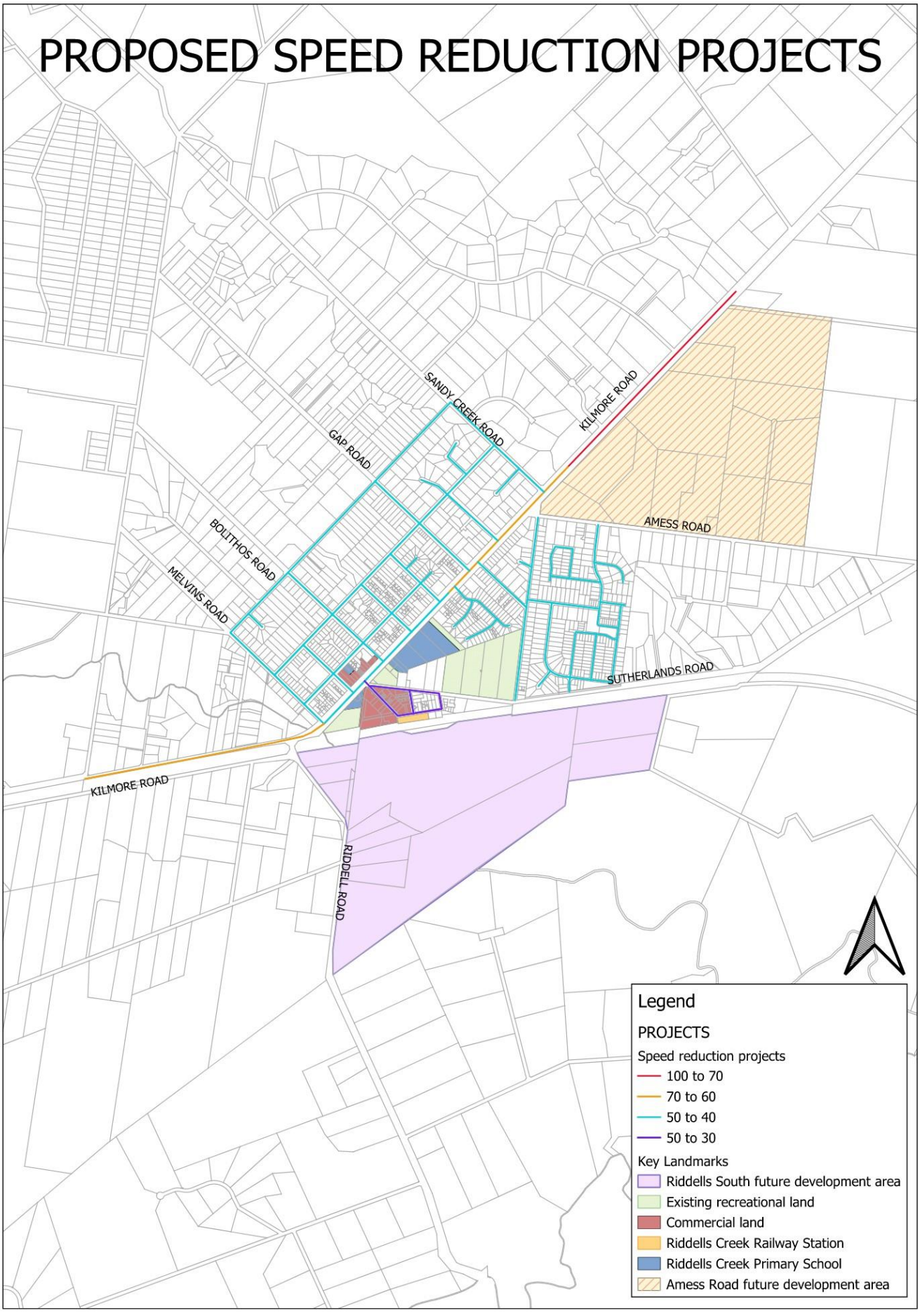


Figure 24: Proposed speed reduction projects

5 Traffic Impact

A large residential subdivision is proposed on Amess Road in Riddells Creek. Ratio Consultants and Stantec (previously known as GTA), have estimated the traffic generation and distribution of the development and undertaken traffic modelling at the following intersections:

- Kilmore Road, Gyro Close, proposed access road
- Kilmore Road, Sandy Creek Road
- Kilmore Road and Amess Road.

Additional traffic analysis was undertaken to:

- assess intersection traffic operation in 2043 and identify necessary upgrades
- assess the traffic impacts of community requested intersection upgrades at Kilmore Road intersections with Riddell Road, Station Street and Sandy Creek Road.

5.1 Traffic volume

5.1.1 Existing volume

Traffic surveys were completed at the following times:

- 7 am – 9:30 am and 2:30 pm – 6 pm on Thursday 13 August 2023
- 10 am – 4 pm on Saturday 2 September 2023.

The weekday peak hours were at 8:15 am to 9:15 am and 4 pm to 5 pm.

The following intersections in Riddells Creek were surveyed:

1. Hamilton Road and Kilmore Road
2. Kilmore Road and Riddell Road
3. Kilmore Road and Merrifield Street
4. Kilmore Road and Station Street
5. Kilmore Road and Bolithos Road
6. Kilmore Road and Sutton Street
7. Sutherlands Road and Racecourse Road
8. Kilmore Road and Gap Road
9. Kilmore Road and Richardson Street
10. Richardson Street and Racecourse Road
11. Kilmore Road and Amess Road
12. Amess Road and Racecourse Road
13. Kilmore Road and Sandy Creek Road
14. Kilmore Road and Raws Lane
15. Kilmore Road and Gyro Close
16. Station Street and Sutherlands Road.

For a diagram of the existing peak hour traffic volumes, refer to **Appendix 5** - Traffic volume diagrams.

5.1.2 Forecasted traffic volume (base case)

This assessment has estimated future traffic volume in 2043 which will be used as a base case scenario. The estimated additional traffic includes:

- general growth from various developments
- Amess Road development.

General growth

The proposed Rangeview Drive residential subdivision may be constructed, however, information regarding the development has not been provided. Additional through traffic from development in neighbouring townships and rural Victoria is anticipated.

The assumed growth was applied to the 2023 surveyed traffic volume along Kilmore Road and Riddell Road.

Table 7: Assumed growth on Kilmore Road/Main Road and Riddell Road

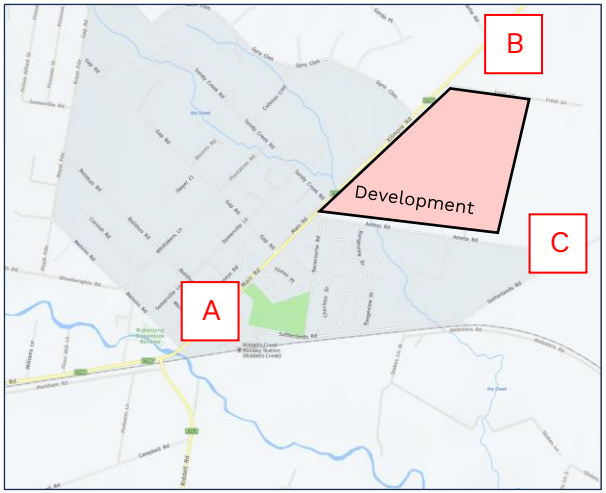
Compound annual growth rate	Number of years	Total growth
1%	20	22.02%

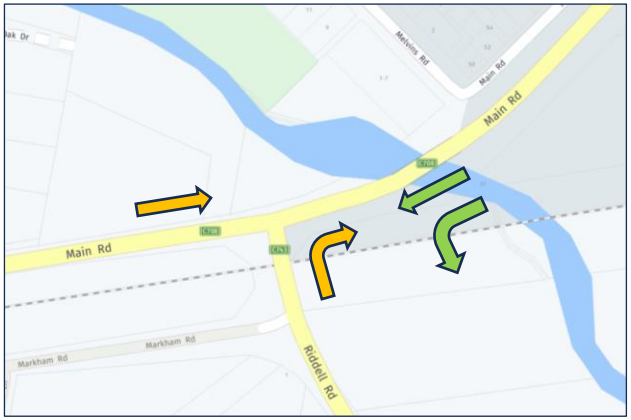
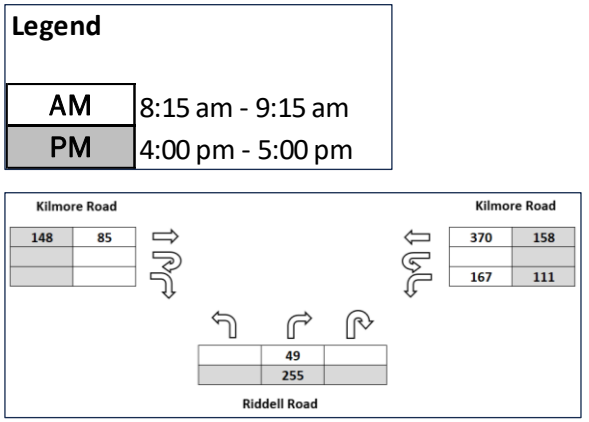
Amess Road development traffic generation and distribution

The traffic generation and distribution assumptions adopted are similar to that assumed by Ratio Consultants and Stantec.

For diagrams of the additional development peak hour traffic volume and the post-development peak hour traffic volume, refer to **Appendix 5** - Traffic volume diagrams.

Table 8: comparison of traffic generation and distribution assumptions

	Ratio Consultants	Stantec	Trafficworks
Traffic generation			
Traffic generation rate	0.8 peak hour vehicle trips per dwelling	0.84 peak hour vehicle trips per dwelling	0.84 peak hour vehicle trips per dwelling
Traffic distribution			
Proportion entering and leaving the development	• AM ingress – 20% • AM egress – 80% • PM ingress – 60% • PM egress – 40%	• As per Ratio Consultants' assumptions	• As per Ratio Consultants' and Stantec's assumptions
Broader traffic distribution 	• Trips to/from A – 75% • Trips to/from B – 10% • Trips to/from C – 15%	• Trips to/from A – 62% • Trips to/from B – 5% • Trips to/from C – 33%	• As per Stantec's assumptions

	Ratio Consultants	Stantec	Trafficworks
Proportion of traffic that travels to/from the southwest along Kilmore Road and to/from the south along Riddell Road 	Not investigated as part of their study.	Not investigated as part of their study.	As per the surveyed proportion of through and turning traffic volume in the AM and PM peaks. The assumed additional traffic is shown below. 

5.2 Traffic analysis

5.2.1 Intersections modelled

The following intersections were modelled in 2043:

- Riddell Road and Kilmore Road
- Station Street and Kilmore Road
- Bolithos Road and Kilmore Road
- Gap Road and Kilmore Road
- Kilmore Road, Amess Road, and Sandy Creek Road.

The community have nominated projects at Kilmore Road intersections with Riddell Road, Station Street, and Sandy Creek Road. There is a moderate right turning traffic volume into and out of Bolithos Road and Gap Road, therefore, these intersections were modelled.

At the Kilmore Road intersections with Amess Road and Sandy Creek Road, 2 proposed intersection layouts were investigated as part of the Amess Road Development. The layouts are described below:

- Option 1 - realignment of the western end of Amess Road to connect to Kilmore Road opposite Sandy Creek Road, and construction of a 4-leg roundabout
- Option 2 - upgrade the Kilmore Road and Amess Road intersection with left and right turn lane treatments on Kilmore Road and provide an additional approach lane on Amess Road. The Kilmore Road and Sandy Creek Road intersection will be retained as per existing conditions. See Figure 25 below for a concept plan showing the proposed layout.

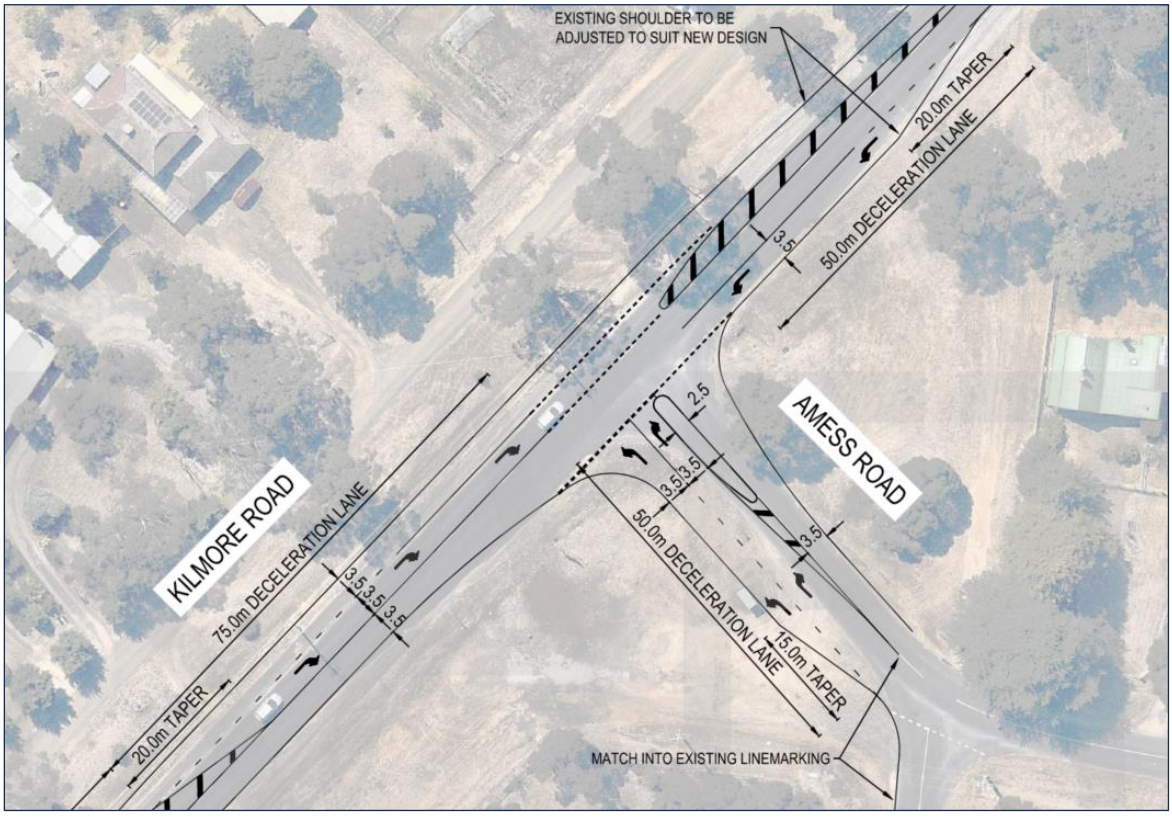


Figure 25: Proposed left and right lane treatments (option 2)

5.2.2 SIDRA model layouts

Kilmore Road / Riddell Road

At the intersection of Riddell Road and Kilmore Road, a single lane roundabout was initially tested, which operated above capacity with excessive queues and delays. Therefore, the roundabout option was modelled with 2 approach lanes on Kilmore Road. The modelled layout is shown in Figure 26.

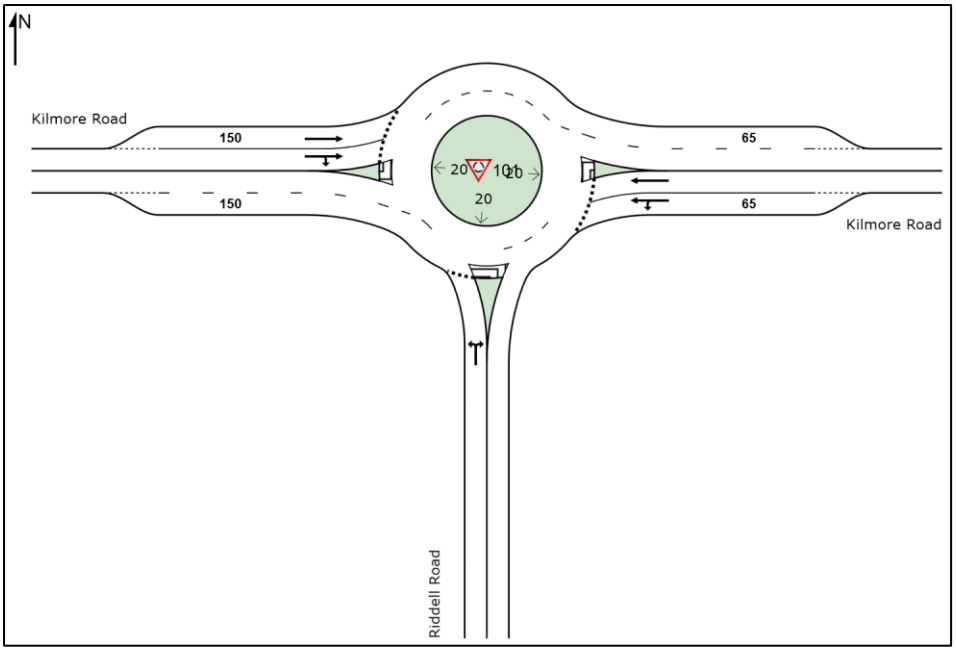


Figure 26: Model of proposed roundabout at the intersection of Riddell Road & Kilmore Road

Kilmore Road / Bolithos Road

Kilmore Road and Bolithos Road was modelled as a single-lane roundabout, shown in Figure 27.

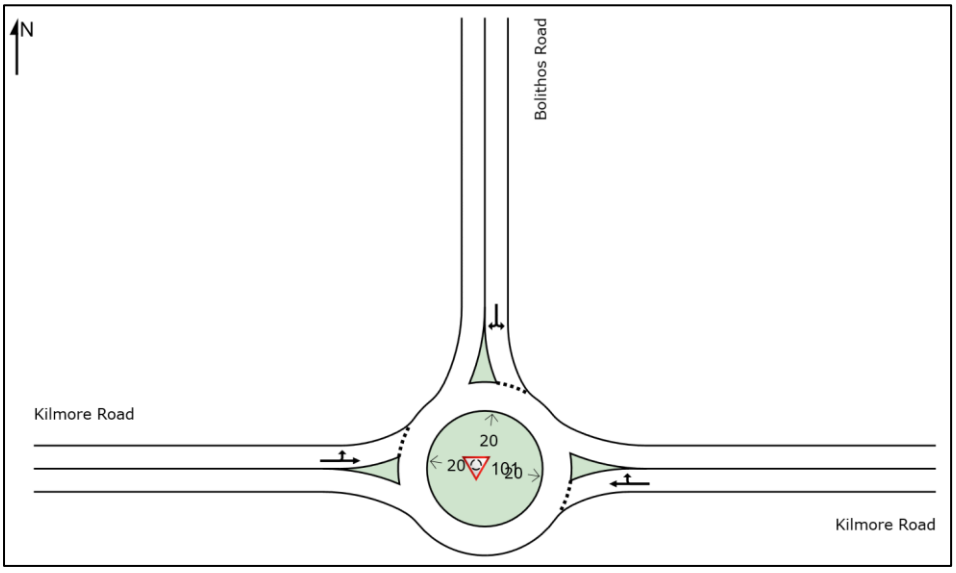


Figure 27: Example of modelled proposed roundabout layouts at Kilmore Rd / Bolithos Rd

Kilmore Road / Station Street

A single lane roundabout option was initially tested at this intersection, and it was found the intersection will operate near capacity. Providing additional traffic lanes at the roundabout may not be feasible due to limited space. An alternative signalised intersection option was modelled with fully controlled right turn movements. The modelled layout is shown in Figure 28.

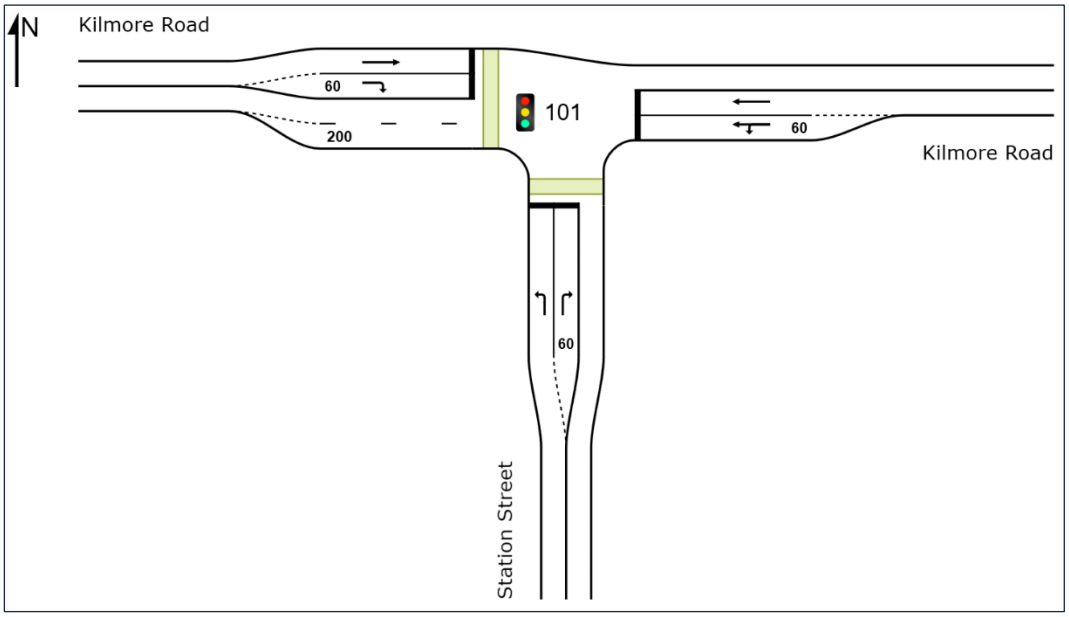


Figure 28: Model of traffic signal layout at Station Street and Kilmore Road

Kilmore Road / Amess Road / Sandy Creek Road

Two proposed options have been tested at this intersection:

- Option 1 - realignment of the western end of Amess Road to connect to Kilmore Road opposite Sandy Creek Road, and construction of a 4-leg roundabout
- Option 2 - upgrade the Kilmore Road and Amess Road intersection with left and right turn lane treatments on Kilmore Road and provide an additional approach lane on Amess Road. The Kilmore Road and Sandy Creek Road intersection will be retained as per existing conditions. See Figure 25 below for a concept plan showing the proposed layout

Figure 29 shows the option 1 modelled layout and Figure 30 shows the option 2 modelled layout.

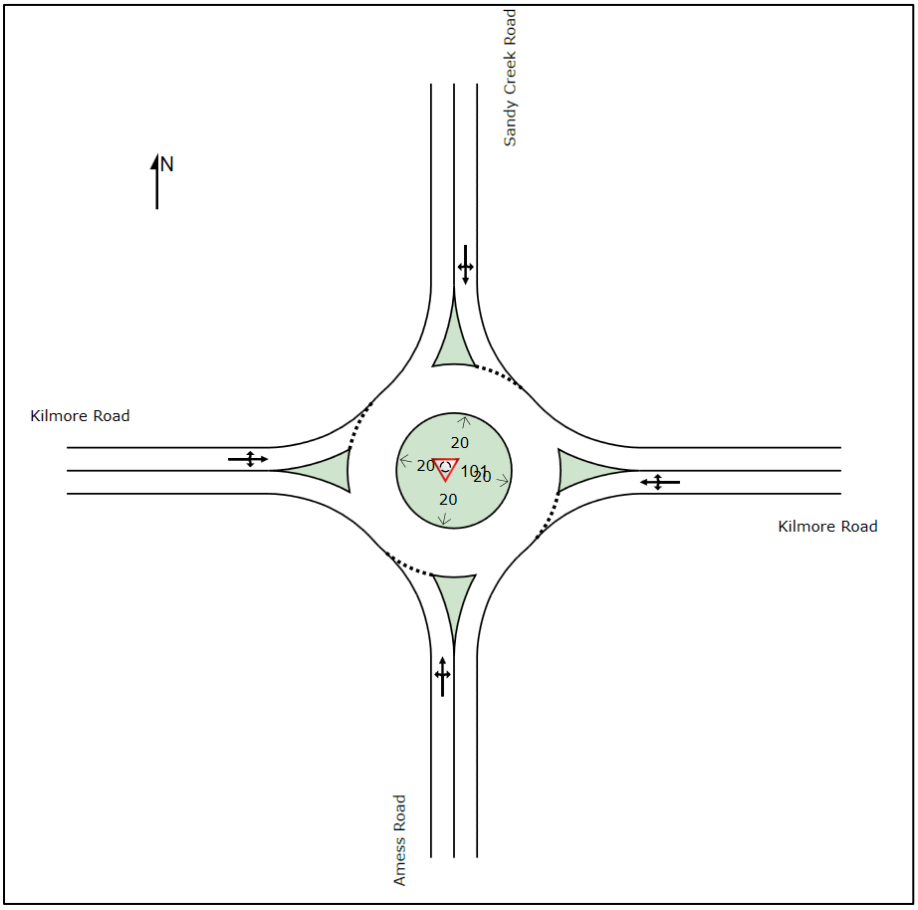


Figure 29: Model of roundabout at the intersection of Kilmore Road, Sandy Creek Road, and Amess Road (option 1)

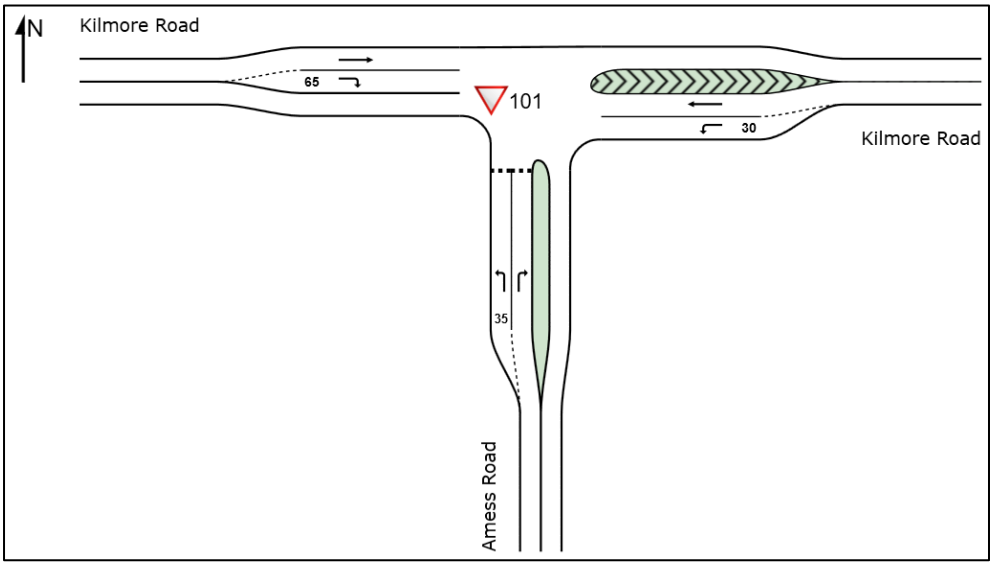


Figure 30: Modelled layout of Ratio Consultant's proposal at the intersection of Kilmore Road and Amess Road (option 2)

5.2.3 Summary of traffic modelling results

SIDRA software was used to model anticipated intersection operating conditions. The base case and proposed option results are summarised in **Appendix 6** – SIDRA site reports.

Table 9: Summary of intersection operating conditions in 2043

Intersection	Base case	Proposed roundabout option	Proposed signals option
Riddell Road and Kilmore Road	well over capacity in both peaks significant congestion on Riddell Road	at capacity in the PM peak	near capacity in the AM peak
Station Street and Kilmore Road	overcapacity in the PM peak	near capacity in the AM peak	below capacity in both peaks
Bolithos Road and Kilmore Road	overcapacity in the AM peak at capacity in the PM peak	below capacity in both peaks	not required nor nominated as a project
Gap Road and Kilmore Road	well below capacity	not required nor nominated as a project	not required nor nominated as a project
Sandy Creek Road, Amess Road, and Kilmore Road	Not applicable (does not exist)	well below capacity	Not modelled in this study

Table 10: Summary of intersection operating conditions in 2043 – proposed left and right turn lanes at Kilmore Road / Amess Road (option 2)

Intersection	Proposed left and right turn lanes (option 2)
Amess Road and Kilmore Road	well below capacity
Sandy Creek Road and Kilmore Road	well below capacity

Table 11 and Table 12 summarise the SIDRA model results. Definitions of traffic engineering terms used in the tables are below:

- Degree of saturation – the ratio of the vehicle demand to the maximum number of vehicles that can travel through the intersection
- 95 percentile queue – the 95 percentile largest vehicle queue length which occurs. 5 percent of anticipated queue lengths will be larger than the 95 percentile queue
- Average delay – the average additional travel time for motorists in comparison to free flow conditions (i.e. travelling at the speed limit with no congestion or reason to decelerate).

The key findings are:

- Upgrades are recommended at the following intersections, as they are anticipated to operate above capacity after the Amess Road development is fully constructed in 2043:
    - Riddell Road and Kilmore Road
    - Station Street and Kilmore Road
    - Bolithos Road and Kilmore Road
- All other Kilmore Road intersections within Riddells Creek are anticipated to operate below capacity in 2043
- both option 1 and 2 at Amess Road, Kilmore Road, and Sandy Creek Road will operate well below capacity in 2043
- If intersections are upgraded to roundabouts or signalised intersections, traffic queues and delay on Kilmore Road will increase. These queues and delays are not expected during off-peak periods.

For SIDRA site reports, refer to **Appendix 6** – SIDRA site reports.

Table 11: Summary of SIDRA results – base case and proposed roundabouts in 2043

	Movements	Base case (existing plus Amess Road development traffic)						Proposed (roundabout)					
		DOS		95% queue (m)		Average delay (sec)		DOS		95% queue (m)		Average delay (sec)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Riddell Road & Kilmore Road	Riddell Road (south app.)	4.151	6.183	988.2	2573.4	2874.3	4684.9	0.409	0.708	21.4	60.2	18.6	17.9
	Kilmore Road (east app.)	0.487	0.267	0.0	0.0	2.1	2.7	0.442	0.291	26.9	16.8	5.6	5.4
	Kilmore Road (west app.)	0.213	0.355	3.3	1.8	1.7	0.7	0.242	0.588	12.1	45.1	6.9	12.1
Station Street & Kilmore Road	Station Street (south app.)	0.637	1.027	19.1	37.0	38.6	67.2	0.643	0.282	47.3	13.8	38.7	8.8
	Kilmore Road (east app.)	0.674	0.420	0.0	0.0	0.7	0.6	0.912	0.637	142.1	44.8	5.1	4.3
	Kilmore Road (west app.)	0.835	0.788	125.6	91.2	38.8	7.9	0.367	0.776	23.5	97.9	3.8	4.1
Bolithos Road & Kilmore Road	Kilmore Road (east app.)	0.661	0.445	6.4	11.7	0.5	2.5	0.843	0.528	120.0	38.0	6.5	5.9
	Bolithos Road (north app.)	1.052	0.958	70.0	40.8	179.6	118.4	0.113	0.184	4.3	8.5	9.6	15.8
	Kilmore Road (west app.)	0.254	0.558	0.0	0.0	0.3	0.5	0.312	0.655	16.9	55.3	5.4	5.4

	Movements	Base case (existing plus Amess Road development traffic)						Proposed (roundabout)					
		Degree of saturation		95% queue (m)		Average delay (sec)		Degree of saturation		95% queue (m)		Average delay (sec)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Gap Road & Kilmore Road	Kilmore Road (east app.)	0.574	0.574	2.2	2.2	0.2	0.2						
	Gap Road (north app.)	0.411	0.411	9.6	9.6	30.3	30.3						
	Kilmore Road (west app.)	0.195	0.195	0.0	0.0	0.4	0.4						
Sandy Creek Road, Amess Road & Kilmore Road	Ammess Road (south app.)							0.461	0.253	26.1	11.7	10.3	7.6
	Kilmore Road (east app.)							0.501	0.448	28.4	22.8	6.3	7.3
	Sandy Creek Road (north app.)							0.060	0.058	2.2	2.6	10.6	14.6
	Kilmore Road (west app.)							0.273	0.604	14.7	49.5	6.3	6.8

Table 12: Summary of SIDRA results – base case and proposed traffic signals in 2043

	Movements	Base case (2043)						Proposed traffic signals (2043)					
		Degree of Saturation		95% queue (m)		Average delay (sec)		Degree of Saturation		95% queue (m)		Average delay (sec)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Station Street & Kilmore Road	Station Street (south app.)	0.637	1.027	19.1	37.0	38.6	67.2	0.343	0.318	42.7	41.6	44.3	41.6
	Kilmore Road (east app.)	0.674	0.420	0.0	0.0	0.7	0.6	0.713	0.700	127.3	190.7	13.5	15.2
	Kilmore Road (west app.)	0.835	0.788	125.6	91.2	38.8	7.9	0.674	0.760	48.3	154.0	13.5	11.9

Table 13: Summary of SIDRA results at Kilmore Road / Amess Road / Sandy Creek Road – base case and option 2

	Movements	Option 2 with 2043 traffic (post construction)					
		Degree of Saturation		95% queue (m)		Average delay (sec)	
		AM	PM	AM	PM	AM	PM
Amess Road & Kilmore Road	Amess Road (south app.)	0.588	0.303	25.1	7.1	15.1	14.3
	Kilmore Road (east app.)	0.358	0.255	0.0	0.0	0.2	0.2
	Kilmore Road (west app.)	0.177	0.351	3.9	11.0	2.3	2.8
Sandy Creek Road & Kilmore Road	Kilmore Road (east app.)	0.336	0.254	0.2	0.8	0.0	0.2
	Sandy Creek Road (north app.)	0.137	0.098	3.1	2.2	12.6	14.4
	Kilmore Road (west app.)	0.183	0.364	0.0	0.0	0.3	0.4

6 Parking Assessment

6.1 Parking occupancy

Car parking occupancy surveys were conducted on the following days:

- Thursday 31 August 2023, 9 am – 6 pm
- Saturday 2 September 2023, 9 am – 6 pm.

Overall, the surveys revealed a low level of car parking demand, with maximum parking occupancy occurring between 1 pm and 2 pm on the Thursday (refer to

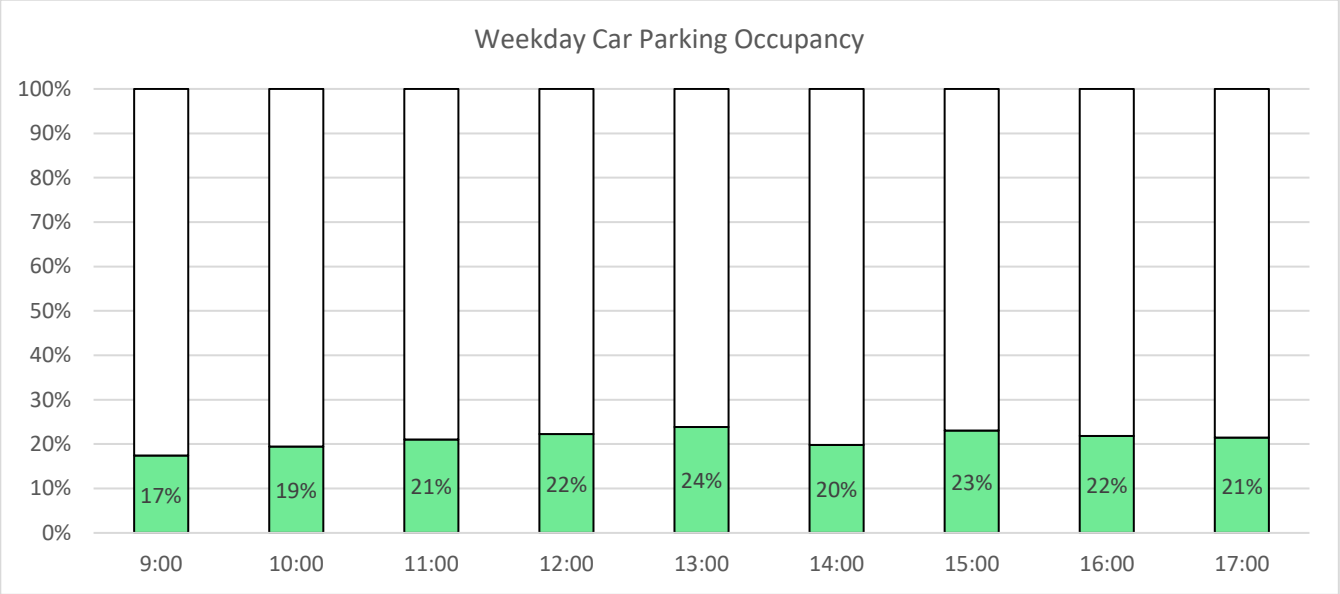


Figure 31 and Figure 32).

Figure 31: Car parking occupancy, Thursday 31 August 2023

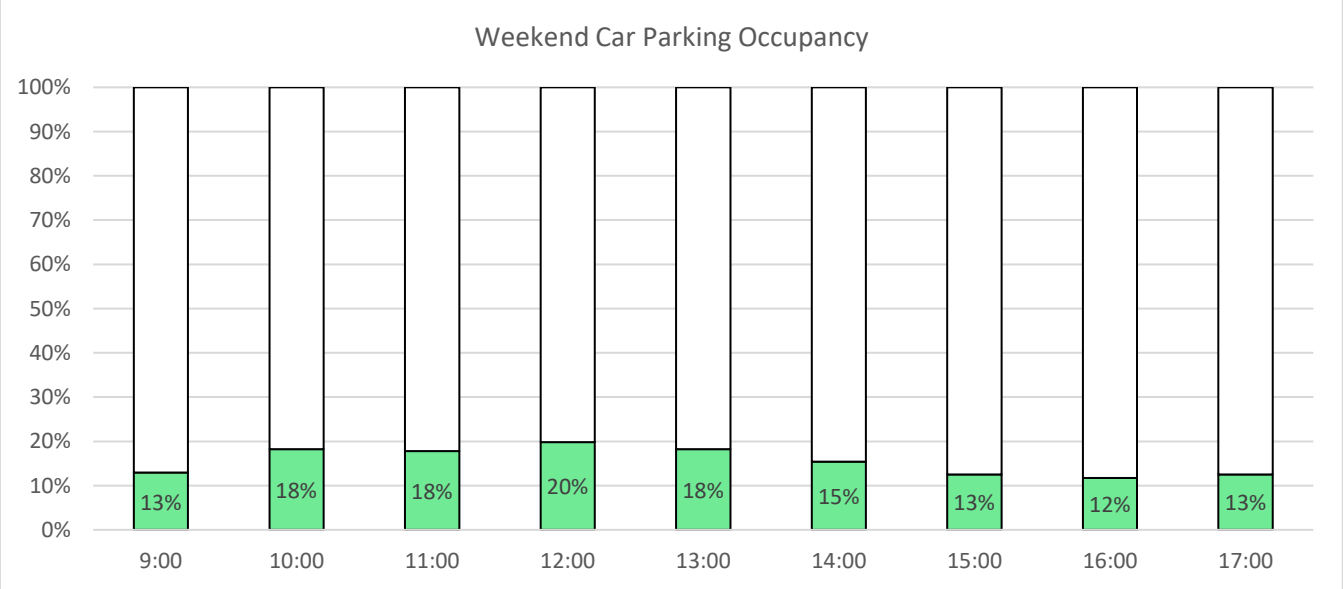


Figure 32: Car parking occupancy, Saturday 2 September 2023

Car parking demand was concentrated along Station Street, near the main shopping strip (refer to Figure 33 and Figure 34). There was no on-street parking along Sutherlands Road during either the Thursday or Saturday peak periods. Based on the results of the surveys, there is ample parking to accommodate an increase in traffic volumes and parking demand within Riddells Creek.

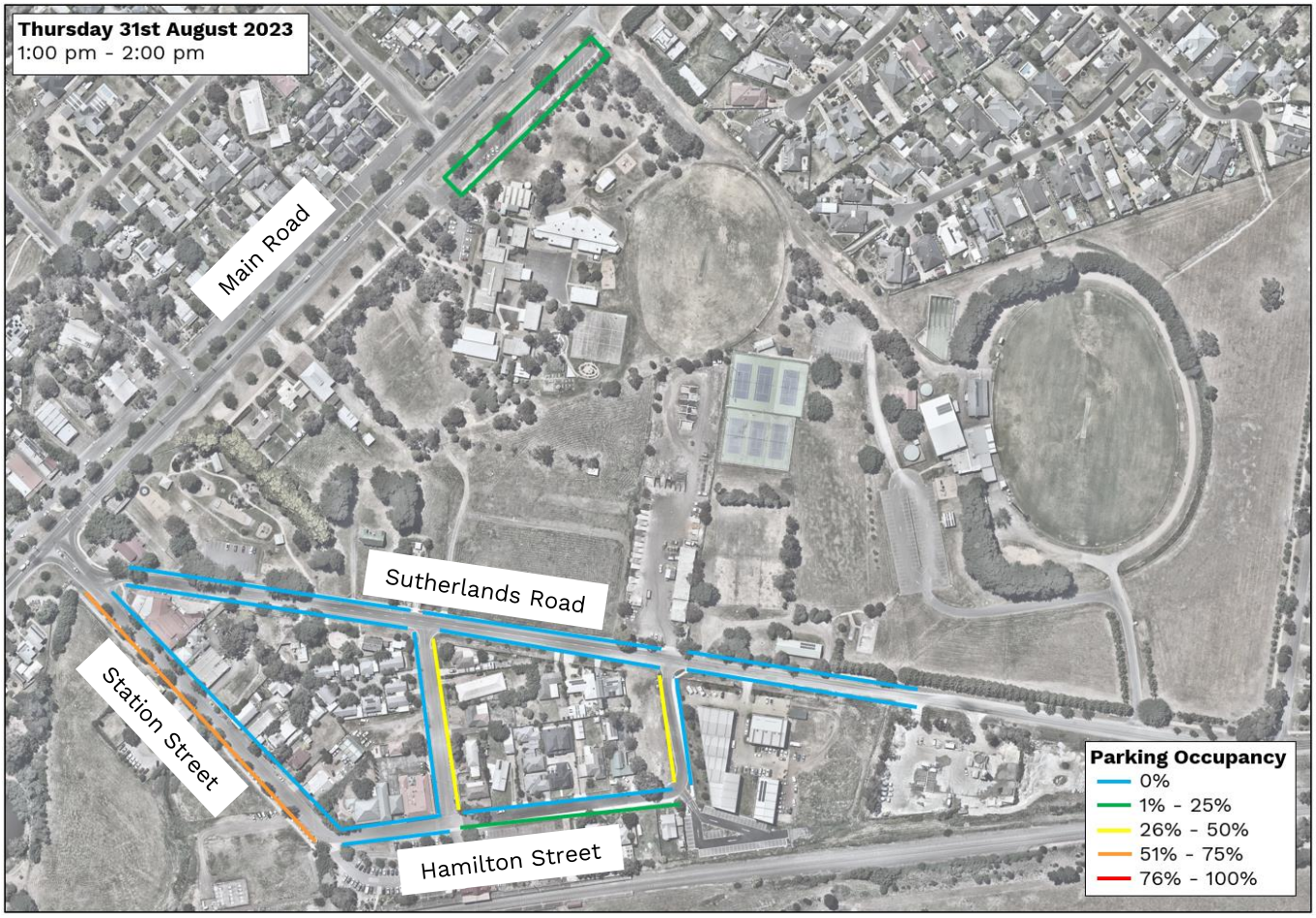


Figure 33: Peak car parking occupancy, Thursday 31 August 2023

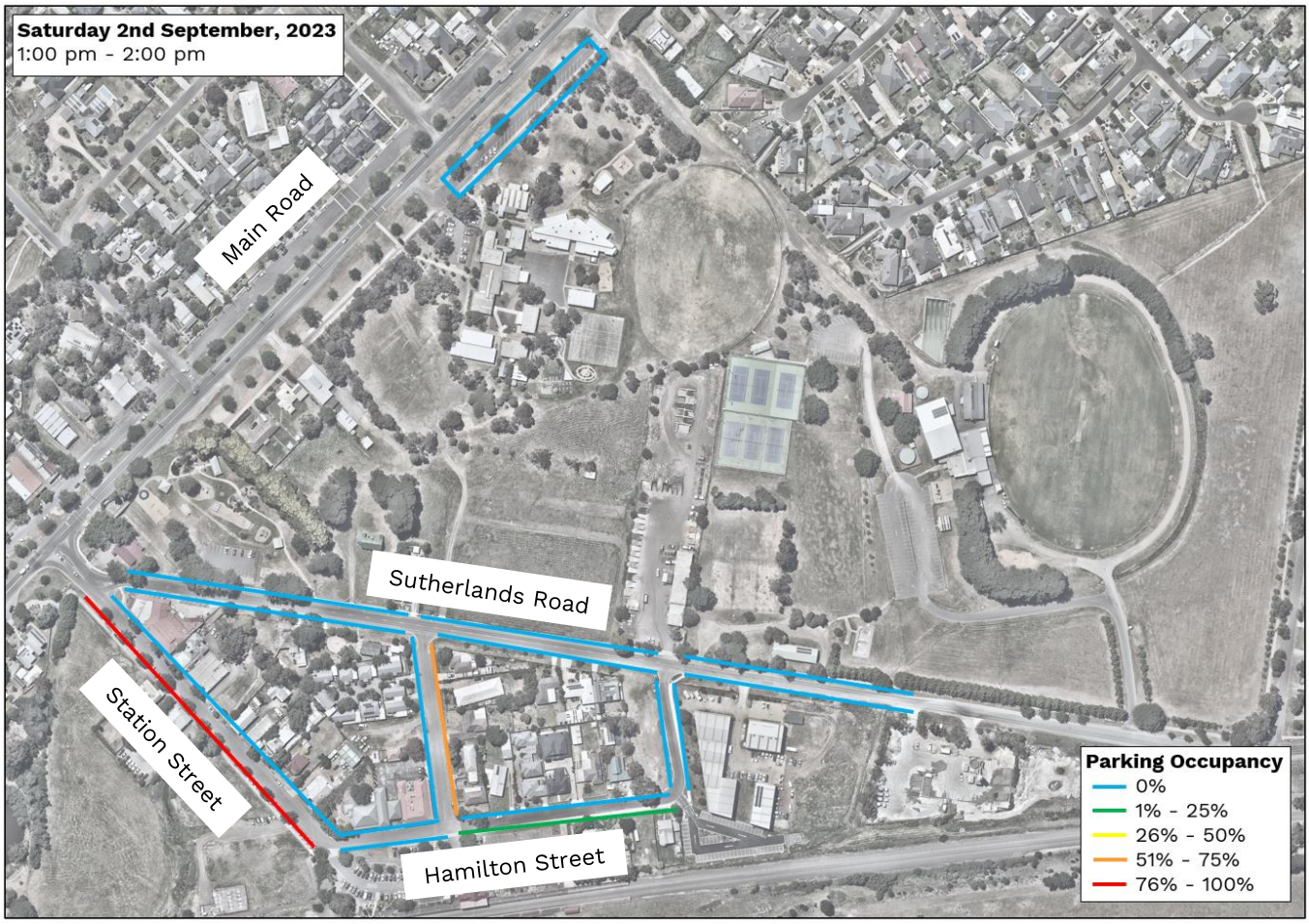


Figure 34: Peak car parking occupancy, Sunday 2 September 2023

6.2 Accessible parking

Of the 247 car parking spaces surveyed, only 4, or 1.6% were accessible parking spaces. Within the town centre, on Station Street and Hamilton Street, 1 out of the 61 car parking spaces is an accessible parking space. 2 out of 29 spaces outside Riddells Creek Primary School are accessible parking spaces, which is approximately 6% of total parking spaces.

As a general rule, 2% of total parking provision should be accessible parking spaces. To meet this requirement within the town centre, it is recommended that 1 parking space on Station Street is converted to an accessible parking space.

7 Implementation plan

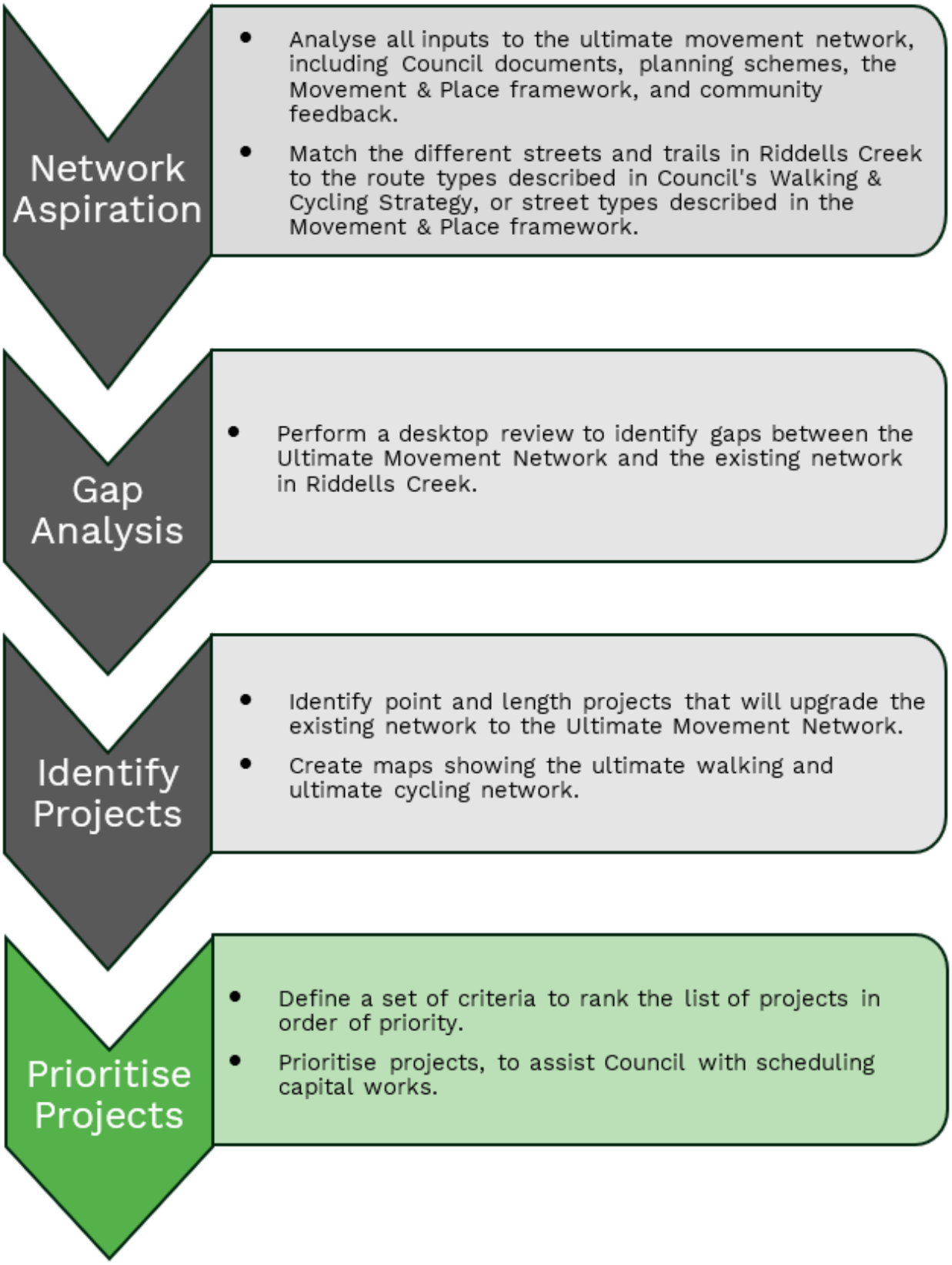


Figure 35: Project Methodology - Module 3

7.1 Criteria development

Criteria was developed to prioritise projects to be delivered in the short, medium, and long term.

These assessment criteria include:

1. Feasibility:
    a. prioritise routes within Council land where Council has more control
    b. prioritise routes with less environmental and cultural heritage impacts, and that do not require the removal of trees.
    c. prioritise projects that do not require major construction or infrastructure upgrades.
2. Connectivity:
    a. prioritise routes that connect to key destinations within the Riddells Creek Town Centre.
3. Safety:
    a. prioritise projects that provide the greatest increase in safety for all road users.
4. Alignment with Movement and Place aspirations:
    a. prioritise projects that address Movement and Place performance gaps.
5. Alignment with local strategy and policy:
    a. prioritise projects that support Council's objectives for walking and cycling
    b. prioritise projects that provide additional community benefits, for example to tourism, local businesses or providing a route to school
    c. prioritise projects that have already been developed to reduce total project time and cost.
6. Stakeholder and community sentiments:
    a. prioritise projects that the Riddells Creek community supports
    b. prioritise projects that require minimal external stakeholder approvals e.g. projects on local roads that do not require DTP approval.

7.2 Multi-criteria analysis

Using the above criteria, a multi-criteria analysis (MCA) was completed to score each of the projects. An MCA is a decision tool that assists in comparing both quantitative and qualitative aspects of projects, by assigning weights and scores to various criteria.

For each assessment criteria, key performance indicators (KPIs) were developed. Each KPI is assigned a score between one and 5, based on a scoring guide. A complete weighting and scoring guide is provided in **Appendix 3** – Multi-criteria analysis.

7.3 Community feedback

Community feedback was an important component of the MCA process. Council officers involved in this Study were contacted by a resident group called Riddells Creek Community Planning Group in June 2023. This was a follow-up from a meeting the group had with the Council Strategic Planning team on 30 November 2022 that Council would come back to this group in 2023 to give an indication of what were high, medium, and low priorities. Cr Annette Death also indicated at the November 2022 meeting that this would occur in June 2023.

The resident group read the August 2022 Council Repot which described the draft recommendations for Riddells Creek community. They were aware from looking at the website's project timeline that further community consultation will occur on the analysis, as part of this process. Part of the work that the group has been undertaking (as was promised as part of their commitment to working better with Council) is around developing a vision and key priorities for infrastructure for the town and a community driven process that can help to inform Council planning as well.

Two officers met the Riddells Creek Community Planning Group in two Thursday evening sessions, once on 6 July 2023 and another on 9 November 2023.

In the first evening session on 6 July 2023, officers met 15 members of the Riddells Creek Community Planning Group where the key discussions were summarised as follows:

- Officers presented the draft recommendations from the Study's Stage 2A which has produced an aspirational plan with over 90-plus recommendations for further investigation and prioritisation.
- Officers explained that a multi-criteria analysis will be developed during Stage 2B (2023-2024) supported by a traffic and parking analysis which will be conducted around August and September 2023, with a broader community consultation planned in February to March 2024.
- The resident group also presents their work via What Riddell Wants (Infrastructure) priorities relating to transport, pedestrian and bike movement while agreeing that the various recommendations to date are largely in line with community feedback.
- Both parties agreed to another meeting for further discussion on the establishment of priorities.
- The resident group will collate feedback and provide input to Council officers in October 2023

In the second evening session on 9 November 2023, officers met 4 members of the Riddells Creek Community Planning Group where:

- The resident group shared their report (included as Appendix 4 in this report) describing their thought process, why they focus on walkability, listing their top 10 and 30 projects from their perspective and what criteria should be used to assess projects.

- Officers will incorporate these top 30 projects as an initial input to the multi-criteria analysis process which has included stakeholder and community sentiments as one of the six assessment criteria.

Projects identified in Stage 2A of the Movement and Network Study were presented to the Riddells Creek community for their feedback, which was used to score the 'Stakeholder and community sentiments' criteria in the MCA. Additionally, the Riddells Creek Community Planning Group identified 15 additional projects that they would like to see developed in the township. These projects are outlined in Table 14 and were scored in the MCA process.

Table 14: Additional projects identified by the Riddells Creek Community Planning Group

Project Number	Project Category	Project Description
98	Walking	Pedestrian bridge across Riddells Creek near the Walter J. Smith Reserve
99	Walking	Shared path along the north side of Sutherlands Road between Racecourse Road and Lions Park
100	Walking	Pedestrian bridge across Dry Creek near Kilmore Road
101	Walking	Pedestrian Operate Signals across Main Road immediately to the south west of the Main Road Service Road at the entrance to Riddells Creek Primary School
102	Walking	Pedestrian bridge across the Riddells Creek Main Drain between Somerville Lane and Sutton Street
103	Speed Reduction	Speed reduction to 60 km/h on Main Road between Williams Lane and Riddell Road at the southern entry to the township
104	Walking	Pedestrian crossing across Sandy Creek Road near Sandy Creek
105	Walking	Refuge crossing across Main Road, near the Walter J. Smith Reserve
106	Walking	Refuge crossing across Main Road, immediately north east of Bolithos Road
107	Walking	Refuge crossing across Main Road, near the Riddells Creek War Memorial
108	Walking	Refuge crossing across Main Road, near the Dromkeen Gallery driveway
109	Walking	Recreational shared path along Riddells Creek from Williams Lane to Kilmore Road
110	Walking	Pedestrian crossing on Main Road immediately south west of Station Street
111	Walking	Recreational shared path along Dry Creek from Amess Road to Sutherlands Road
112	Walking	Shared path and wombat crossing at the Riddells Creek Primary School car park

7.4 Top 30 projects

After completing the MCA scoring process, all 112 projects have been ranked from highest to lowest priority. The top 30 projects are considered as the highest priority for development by Council and are listed in Table 15. These projects are mapped in Figure 34.

In the forthcoming community consultation scheduled for February to March 2024, officers will be listing these top 30 recommended projects and engaging the residents of Riddells Creek for their further feedback and insight. This is a crucial final step in the Council's commitment to inclusive decision making and ensuring that the community's perspectives shape the future of these recommendations.

A speed limit reduction along Kilmore Road between Filmer Place and Melvin Road scored within the top 30 projects. When reviewing this speed zoning, Council should consider reviewing the entire length of Kilmore Road through the township, to provide consistency.

Table 15: Top 30 projects identified by the MCA

Project Number	Rank	Project Type	Location/Road Name	Road Name Start	Road Name End	Community Rank	Indicative Cost
99	1	SHARED PATH	SUTHERLANDS ROAD	RACECOURSE ROAD	LIONS PARK	2	$ 600,000
85	2	WOMBAT CROSSING	SUTHERLANDS ROAD	STATION STREET		22	$ 150,000
84	3	WOMBAT CROSSING	STATION STREET	SUTHERLANDS ROAD		22	$ 150,000
75	4	SPEED LIMIT REDUCTION 50 KM/H TO 30 KM/H	STEPHEN STREET	SUTHERLANDS ROAD	HAMILTON STREET	9	$ 10,000
74	5	SPEED LIMIT REDUCTION 50 KM/H TO 30 KM/H	MAIN ACTIVITY AREA	STATION STREET / HAMILTON STREET / FITZGERALD STREET		9	$10,000
33	6	SHARED PATH	BOLITHOS ROAD	ROYAL PARADE	KILMORE ROAD	20	$ 1,395,000
88	7	P.O.S. CROSSING	SUTHERLANDS ROAD	NO. 5			$ 900,000
43	8	SHARED PATH	AMESS ROAD	WOHL COURT	SUTHERLANDS ROAD	13	$ 675,000
35	9	SHARED PATH	AMESS ROAD	KILMORE ROAD	WOHL COURT	12	$ 930,000
44	10	SHARED PATH	SUTHERLANDS ROAD	YELLOWGUM AVENUE	AMESS ROAD	14	$ 1,837,500
37	11	SHARED PATH	MELVINS ROAD	ROYAL PARADE	MAHONEYS ROAD	21	$ 1,020,000
34	12	SHARED PATH	RACECOURSE ROAD	AMESS ROAD	SOUTHBOURNE ROAD	29	$ 795,000
32	13	SHARED PATH	GAP ROAD	ROYAL PARADE	SOMERVILLE LANE	5	$ 1,500,000
71	14	SPEED LIMIT REDUCTION 50 KM/H to 40 KM/H	KILMORE ROAD	FILMER PLACE	MELVIN ROAD	9	$10,000
36	15	SHARED PATH	GAP ROAD	SOMERVILLE LANE	KILMORE ROAD	5	$ 255,000

Project Number	Rank	Project Type	Location/Road Name	Road Name Start	Road Name End	Community Rank	Indicative Cost
90	16	REFUGE CROSSING	KILMORE ROAD	GAP ROAD		17	$ 75,000
112	17	SHARED PATH & WOMBAT CROSSING	RIDDELLS CREEK PRIMARY SCHOOL CAR PARK	RIDDELLS CREEK PRIMARY SCHOOL CAR PARK		30	$ 262,500
89	18	REFUGE CROSSING	KILMORE ROAD	AMESS ROAD		17	$ 75,000
104	19	PEDESTRIAN CROSSING	SANDY CREEK ROAD	SANDY CREEK ROAD		10	$ 15,000
30	20	SHARED PATH	SANDY CREEK ROAD	BUSH COURT	KILMORE ROAD		$ 2,100,000
67	21	SHARROWS	STEPHENS STREET	SUTHERLANDS ROAD	HAMILTON ROAD		$ 10,800
58	22	SHARROWS	HAMILTON STREET / FITZGERALD STREET	STEPHEN STREET	SUTHERLANDS ROAD		$ 21,600
24	23	REGIONAL TRAIL	KILMORE ROAD	FLOUR MILL LANE	RIDDELLS CREEK	11	$ 825,000
38	24	SHARED PATH	MAHONEYS ROAD	NO. 7	MERRIFIELD STREET	28	$ 13,500
11	25	FOOTPATH	SEXTON STREET	NO. 13	KILMORE ROAD	18	$ 37,500
46	26	SHARROWS	STATION STREET	KILMORE ROAD	STEPHEN STREET		$ 27,000
110	27	PEDESTRIAN CROSSING	KILMORE ROAD	KILMORE ROAD		17	$ 15,000
101	28	P.O.S. CROSSING	MAIN ROAD	MAIN ROAD		6	$ 900,000
54	29	SHARROWS	MERRIFIELD STREET	SOMERVILLE LANE	KILMORE ROAD		$ 34,200
19	30	FOOTPATH	SUTTON STREET	SOMERVILLE LANE	MAHONEYS ROAD		$ 90,000
Total cost							**$14,709,600**

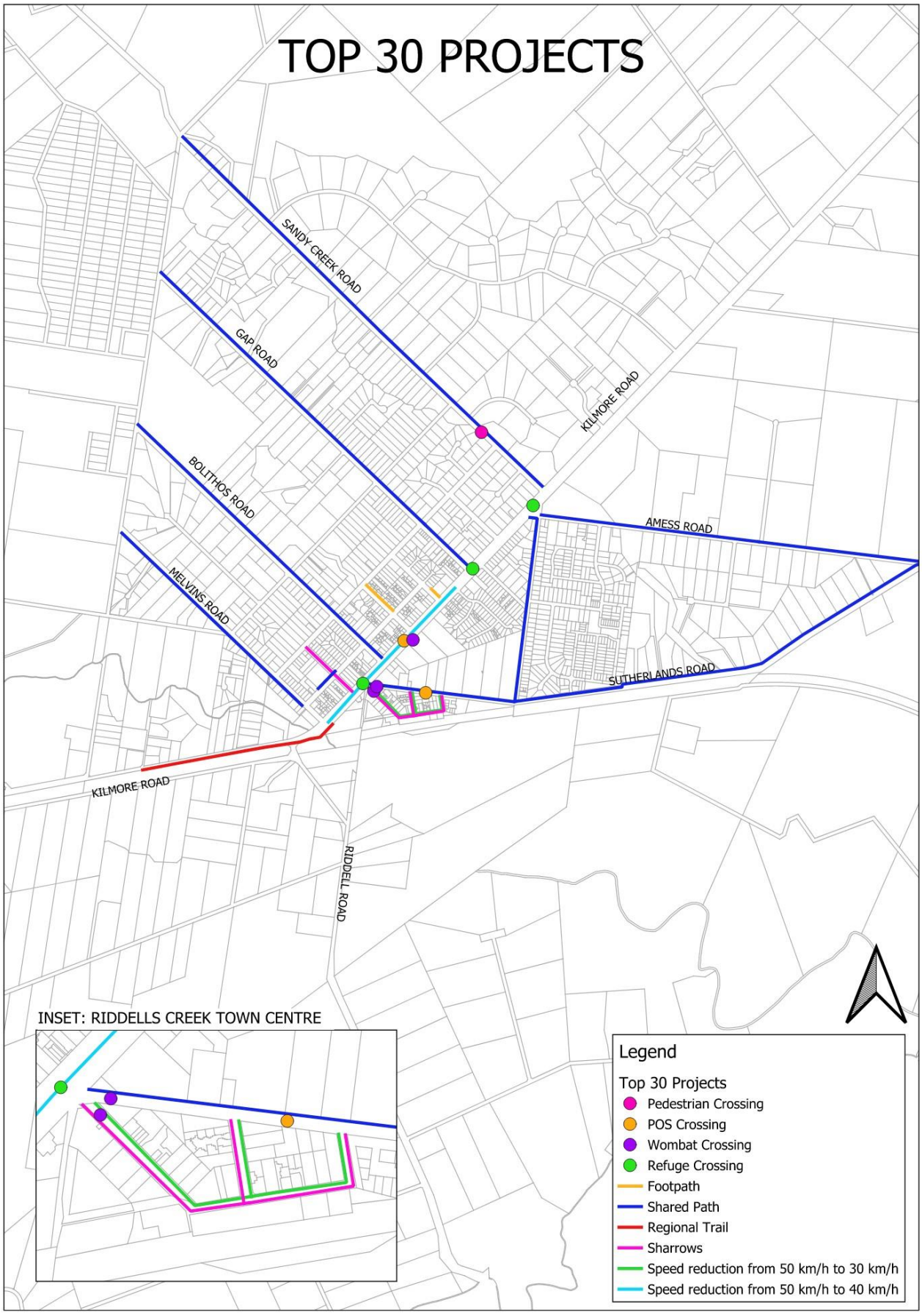


Figure 36: Top 30 projects identified in the multi-criteria analysis

7.5 Advocacy Projects

Several of the proposed projects are located on an arterial road, and will be an advocacy to the Department of Transport and Planning (DTP). These projects include:

- Pedestrian crossing projects on Kilmore Road
- Intersection upgrades along Kilmore Road
- Speed limit reduction projects.

6 of these advocacy projects were ranked amongst the top 30 projects in the MCA, including:

- 3 refuge crossings along Kilmore Road
- 3 speed limit reduction projects in the township.

A complete list of advocacy projects is presented in Table 16.

Table 16: Projects requiring Council advocacy to the Department of Transport and Planning

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking
69	ROAD	100 to 70	KILMORE ROAD	FROST LANE	190m NORTH OF SANDRY CREEK ROAD	48
70	ROAD	70 to 60	KILMORE ROAD	190m NORTH OF SANDRY CREEK ROAD	FILMER PLACE	40
71	ROAD	50 to 40	KILMORE ROAD	FILMER PLACE	MELVIN ROAD	14
72	ROAD	50 to 40	NORTH WEST OF KILMORE ROAD	MELVINS ROAD / WHITTAKERS LANE / SANDY CREEK ROAD	KILMORE ROAD	50
73	ROAD	50 to 40	SOUTH EAST OF KILMORE ROAD	KILMORE ROAD	SUTHERLANDS ROAD / AMESS ROAD	38
74	ROAD	50 to 30	MAIN ACTIVITY AREA	STATION STREET/ HAMILTON STREET / FITZGERALD STREET		5
75	ROAD	50 to 30	STEPHEN STREET	SUTHERLANDS ROAD	HAMILTON STREET	4
77	ROAD	ROUNDABOUT	MAIN ROAD	RIDDELL ROAD		93
78	ROAD	ROUNDABOUT	KILMORE ROAD	GYRO COURT		87

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking
79	ROAD	ROUNDABOUT	KILMORE ROAD	SANDY CREEK ROAD		85
81	ROAD	TURN LANES	KILMORE ROAD	RAWS LANE		102
82	ROAD	TURN LANES	KILMORE ROAD	HAMILTON ROAD		111
83	ROAD	SIGNALISED INTERSECTION	KILMORE ROAD	STATION STREET		54
89	WALKING	REFUGE CROSSING	KILMORE ROAD	AMESS ROAD		18
90	WALKING	REFUGE CROSSING	KILMORE ROAD	GAP ROAD		16
101	WALKING	P.O.S CROSSING	MAIN ROAD NEAR RIDDELLS CREEK PRIMARY SCHOOL	MAIN ROAD		28
103	SPEED REDUCTION	80 to 60	KILMORE ROAD	KILMORE ROAD	MAIN ROAD	63
105	WALKING	REFUGE CROSSING	MAIN ROAD NEAR WALTER J SMITH RESERVE	MAIN ROAD		36

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking
106	WALKING	REFUGE CROSSING	MAIN ROAD NEAR BOLITHOS ROAD	MAIN ROAD		35
107	WALKING	REFUGE CROSSING	MAIN ROAD NEAR RIDDELLS CREEK WAR MEMORIAL	MAIN ROAD		34
108	WALKING	REFUGE CROSSING	MAIN ROAD NEAR DROMKEEN GALLERY	MAIN ROAD		33
110	WALKING	REFUGE CROSSING	KILMORE ROAD NEAR STATION STREET	KILMORE ROAD		27

Appendix 1 - Input Maps

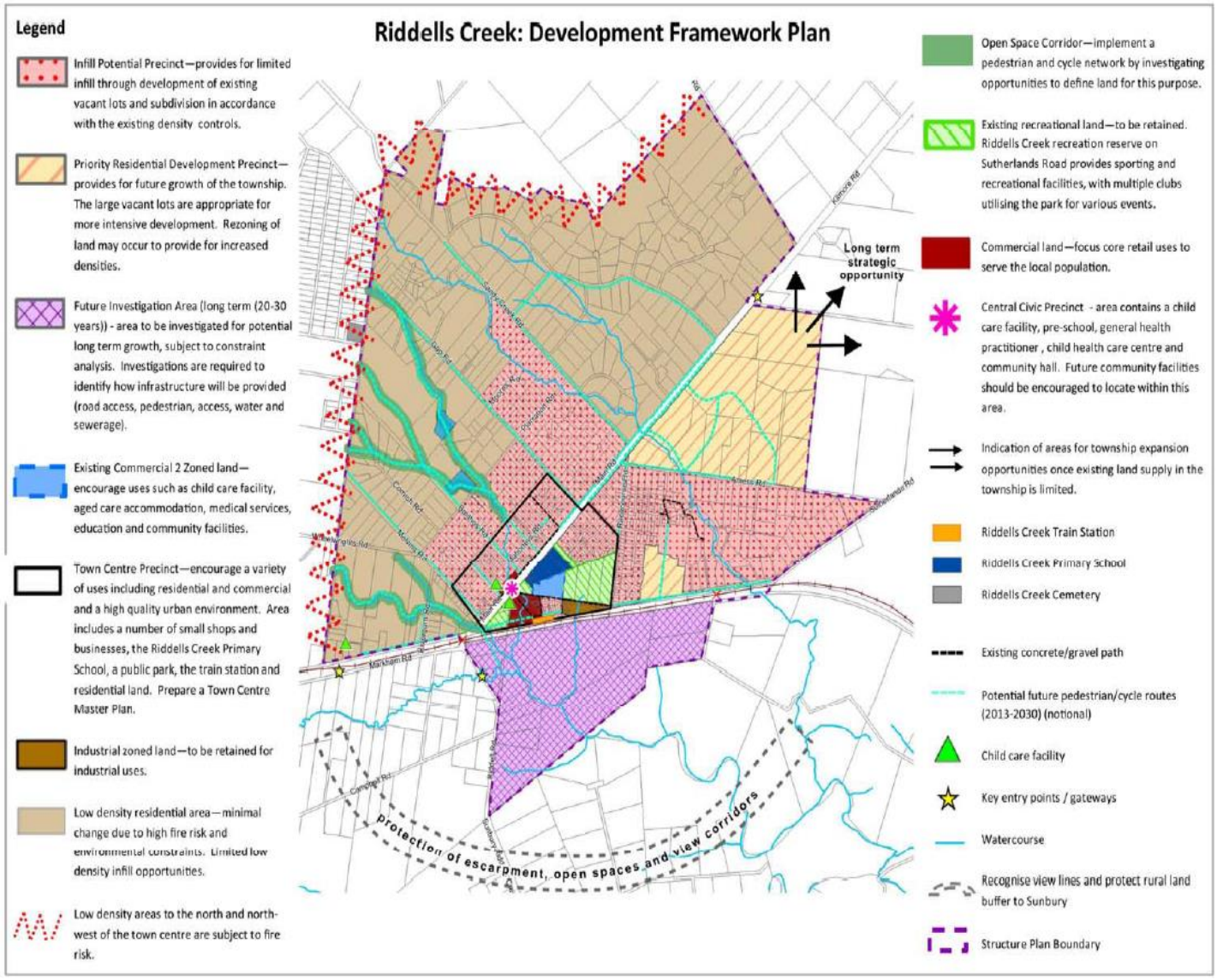


Figure 37: Riddells Creek Development Framework Plan

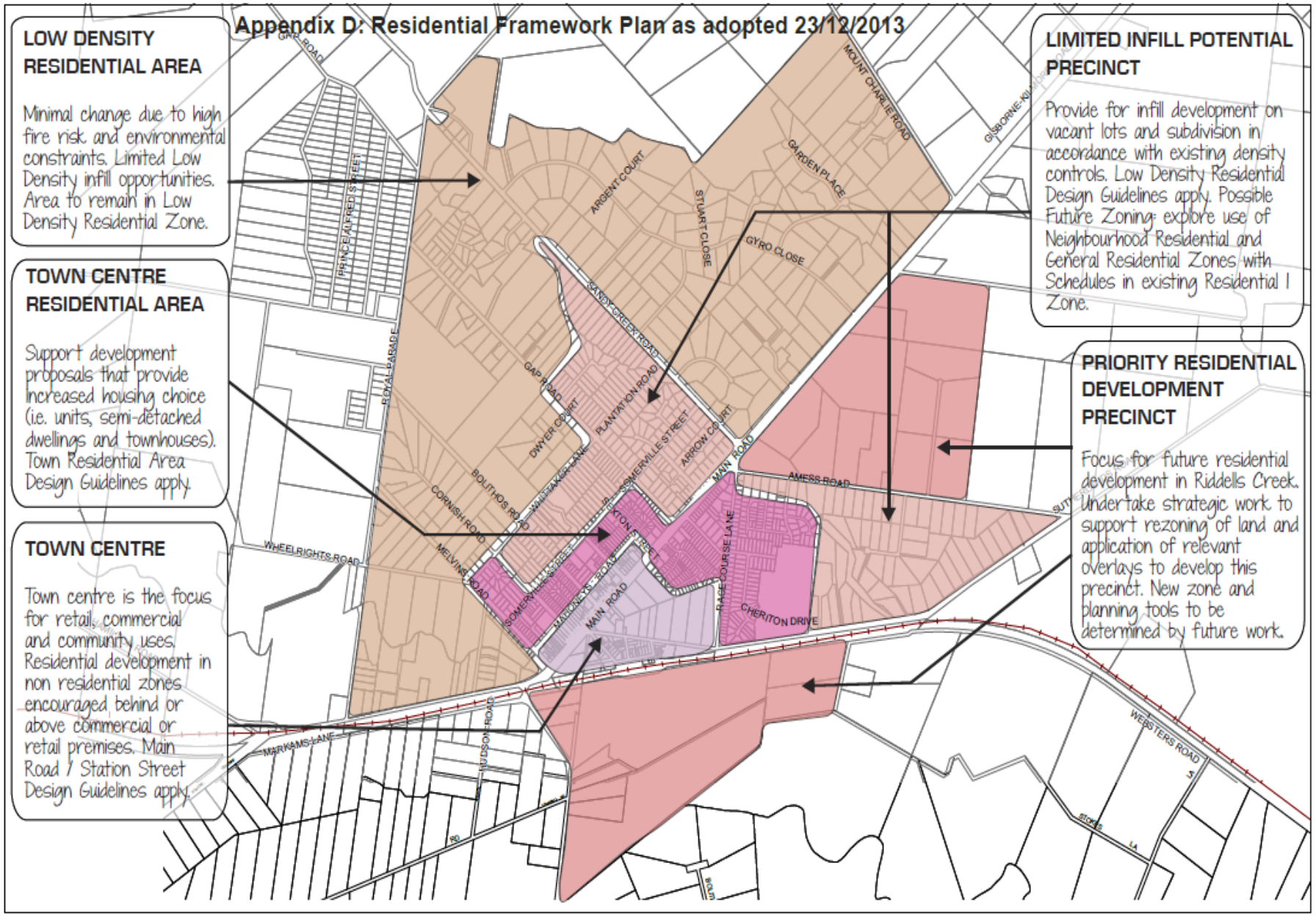


Figure 38: Riddells Creek Residential Framework Plan

Figure 5 Township Arrival & Streetscape Improvement Opportunities

- 1A 1B Kilmore Road Arrival Experience
- 2 Riddells Creek
- 3A 3B Heritage Rail Bridge
- 4 WJ Smith Reserve
- 5 Proposed Signalised Intersection
- 6 Riddles Creek Primary School
- 7 Drainage Corridor
- 8 Lions Park
- 9 Riddells Creek Train Station
- 10 Riddells Creek Hotel
- 11 Stephen Street On Street Dining

Figure 28: Riddells Creek Town Centre Opportunities Summary Paper - Township Arrive and Streetscape Opportunities

Figure 6 Proposed Walking and Cycling Links

Existing Footpath

Proposed Footpath/Shared Path

Potential Links in the case of Future Development

1. New section of footpath linking the Train Station (platform) to Station Street
2. New section of shared path through the WJ Smith Reserve
3. Improved shared path treatment along northern side of Sutherland Road
4. Improved shared path treatment along the eastern side of Kilmore Road
5. Improved shared path treatment along the eastern side of Racecourse Road
6. Potential local access link between the Primary School and Recreation Reserve
7. Potential for mid block link (in the case of any future development)
8. Potential extension to Hamilton Street (in the case of any future development)

Figure 29: Riddells Creek Town Centre Opportunities Summary Paper – Proposed Walking and Cycling Links

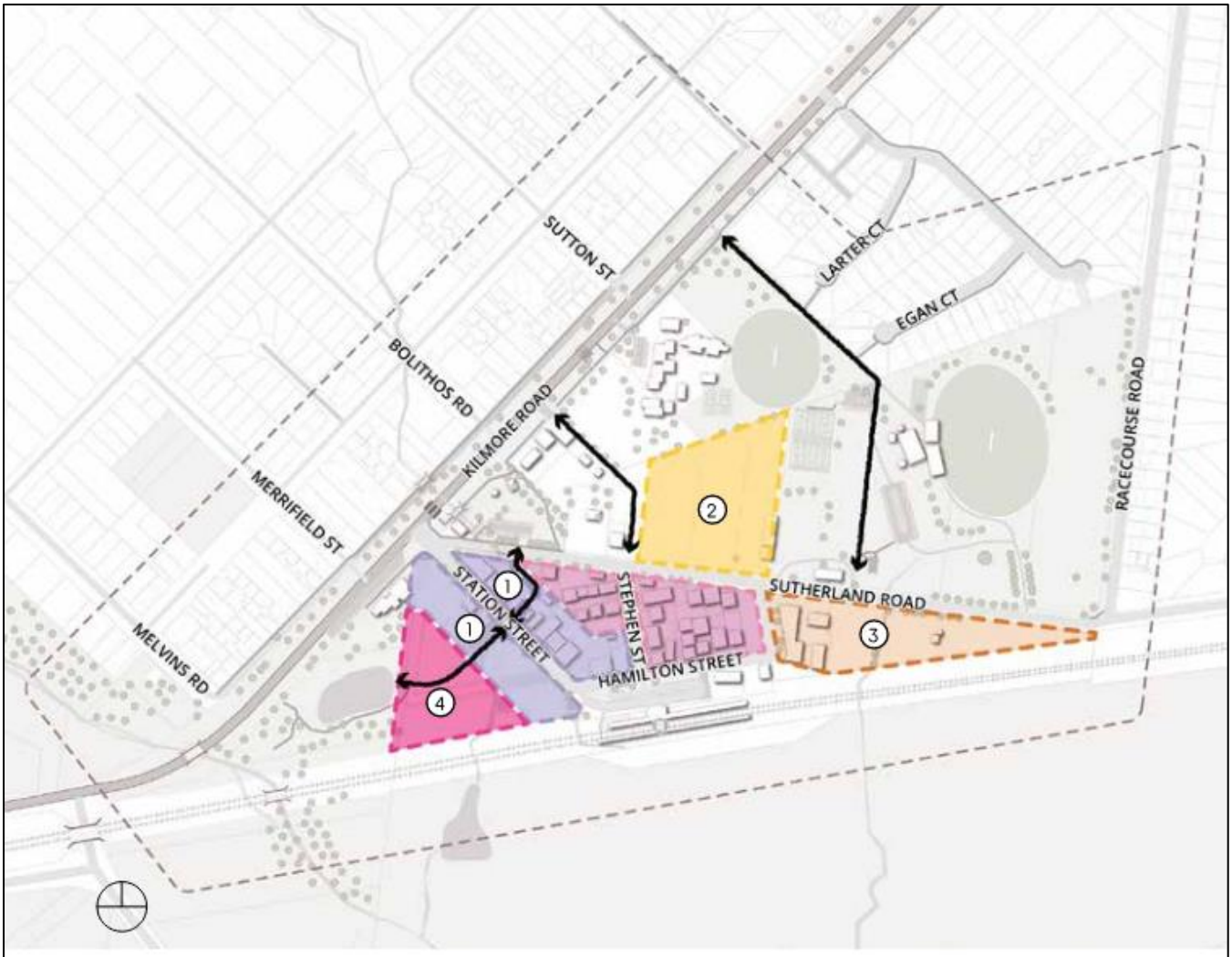


Figure 9 Town Centre Development Opportunities

- Potential Residential Area
- Commercial Area
- Residential Area
- Industrial Area
- Future Expansion Area/Special Use Zone
- ↔ Potential Future Links

1. Station Street fine grain retail precinct
2. SUZ land - potential site for future retail (subject to detailed investigations)
3. Industrial precinct
4. Potential for boutique small lot/medium density housing

Figure 39: Riddells Creek Town Centre Development Opportunities

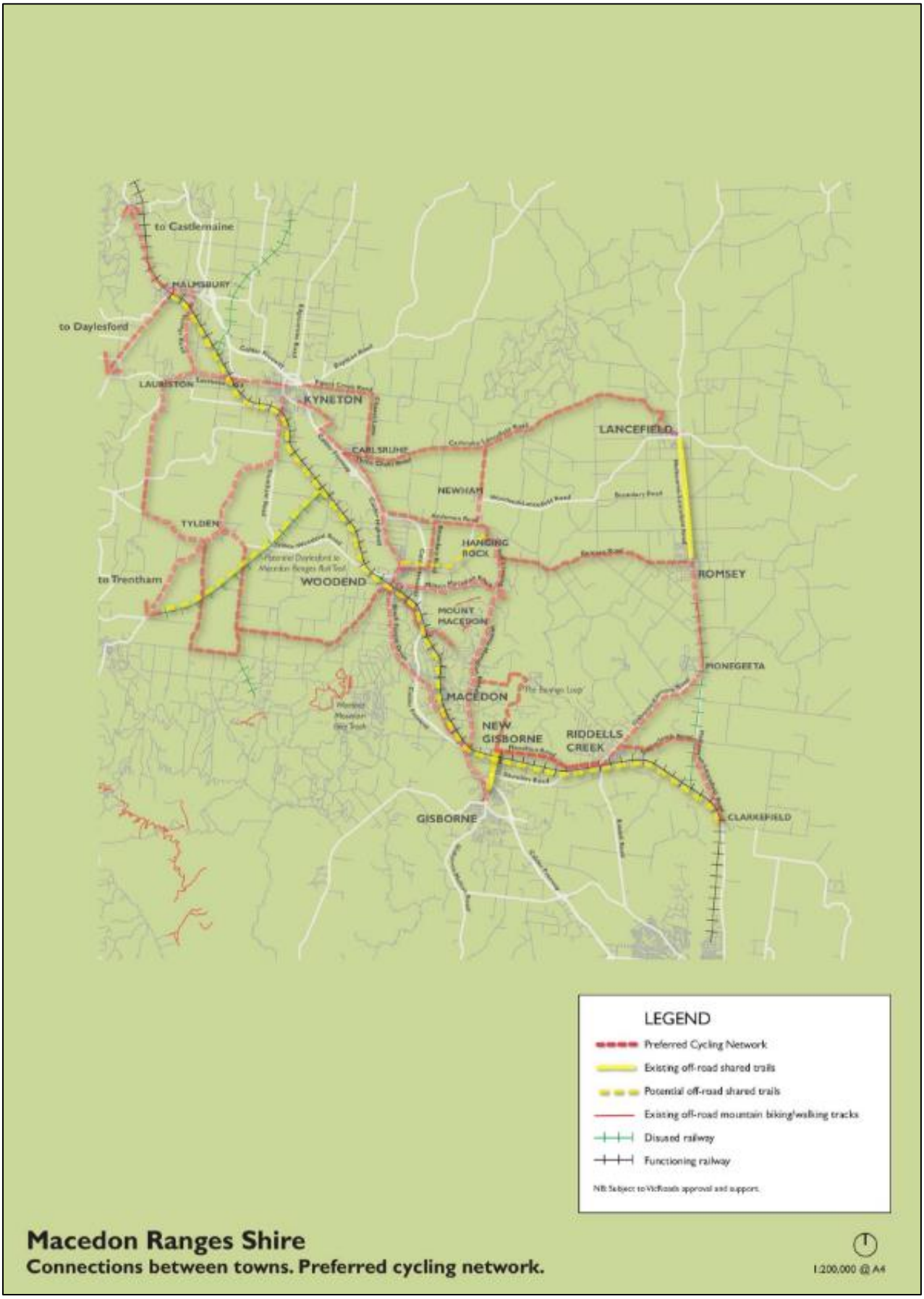


Figure 40: Riddells Creek Primary Pedestrian and Cycling Network Plan

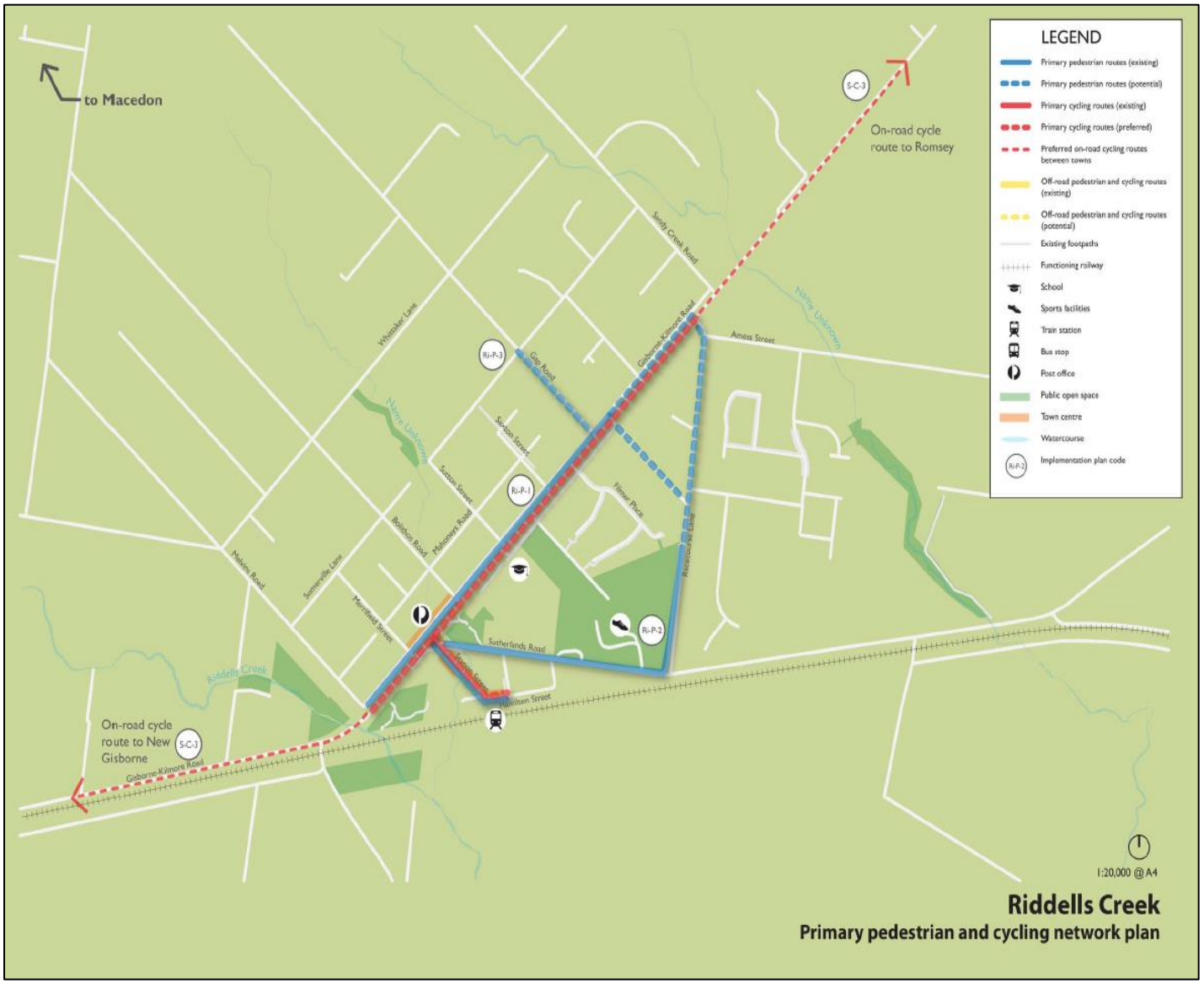


Figure 41: Riddells Creek Primary Pedestrian and Cycling Network Plan

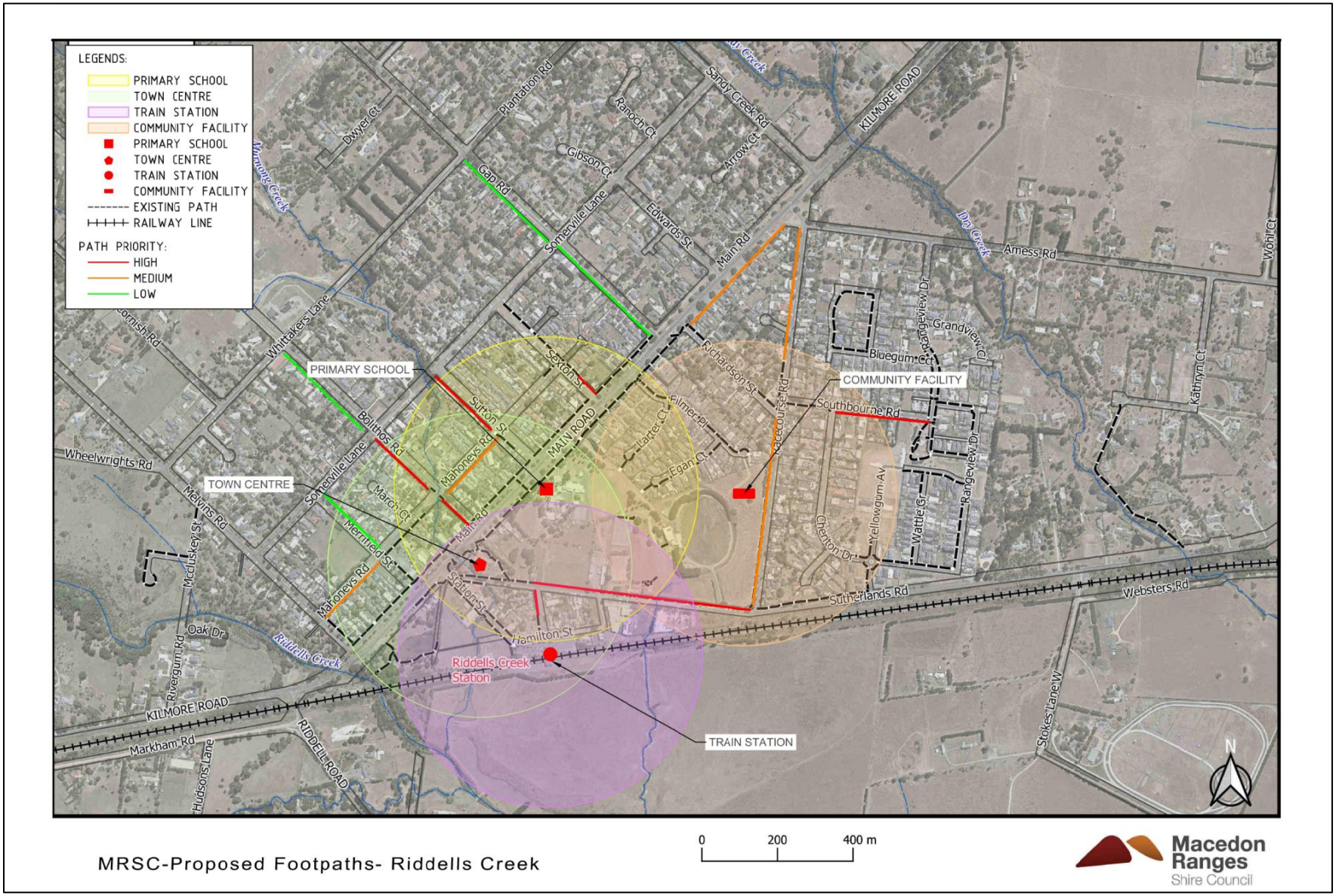


Figure 42: Macedon Ranges Shire Proposed Footpaths

Appendix 2 – Project list

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
1	WALKING	FOOTPATH	SOMERVILLE LANE	MELVINS ROAD	SANDY CREEK ROAD	32	15
2	WALKING	FOOTPATH	MERRIFIELD STREET	SOMERVILLE LANE	MAHONEYS ROAD	41	23
3	WALKING	FOOTPATH	ROYAL PARADE	MELVINS ROAD	WHEELWRIGHTS ROAD	90	
4	WALKING	FOOTPATH	SOUTHBOURNE ROAD	RACECOURSE ROAD	PARKVIEW TERRACE	31	3
5	WALKING	FOOTPATH	HAMILTON STREET / FITZGERAL STREET	STEPHEN STREET	SUTHERLANDS ROAD	61	
6	WALKING	FOOTPATH	STEPHENS STREET	SUTHERLANDS ROAD	HAMILTON ROAD	42	
7	WALKING	FOOTPATH	MAHONEYS ROAD	MELVINS ROAD	NO.7	84	
8	WALKING	FOOTPATH	RICHARDSON STREET	KILMORE ROAD	RACECOURSE ROAD	95	
9	WALKING	FOOTPATH	MAIN ROAD SERVICE ROAD	SEXTON STREET	SANDY CREEK ROAD	60	8
10	WALKING	FOOTPATH	RANGEVIEW DRIVE	AMESS ROAD	GRANDVIEW CLOSE	94	
11	WALKING	FOOTPATH	SEXTON STREET	NO. 13	KILMORE ROAD	25	18
12	WALKING	FOOTPATH	WHITTAKERS LANE	MELVINS ROAD	SANDY CREEK ROAD	91	
13	WALKING	FOOTPATH	PARKVIEW DRIVE	PARKVIEW TERRACE PARK	PARKVIEW TERRACE PARK	83	
14	WALKING	FOOTPATH	PARKVIEW TERRACE PARK	PARKVIEW TERRACE PARK	PARKVIEW TERRACE PARK	89	
15	WALKING	FOOTPATH	EDWARDS STREET	SOMERVILLE LANE	KILMORE ROAD	65	

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
16	WALKING	FOOTPATH	STATION STREET	NO. 11	BUS STOP	67	
17	WALKING	FOOTPATH	MAHONEYS ROAD	BOLITHOS ROAD	SEXTON STREET	59	24
18	WALKING	FOOTPATH	CUTEVAN CRESCENT	SANDY CREEK ROAD	GYRO CLOSE	82	
19	WALKING	FOOTPATH	SUTTON STREET	SOMERVILLE LANE	MAHONEYS ROAD	30	25
20	WALKING	FOOTPATH	WHEELWRIGHTS ROAD	ROYAL PARADE	MELVINS ROAD	81	
21	WALKING	FOOTPATH LINK	UNNAMED	STATION STREET	RIDDELLS CREEK STATION	86	
22	WALKING	FOOTPATH LINK	UNNAMED	FIRE BRIGADE	SUTHERLANDS ROAD	92	
23	WALKING	FOOTPATH LINK	UNNAMED	KILMORE ROAD	SUTHERLANDS ROAD	49	
24	CYCLING	REGIONAL TRAIL	KILMORE ROAD	FLOUR MILL LANE	RIDDELLS CREEK	23	11
25	CYCLING	REGIONAL TRAIL	KILMORE ROAD	MULLALYS ROAD	GYRO CLOSE	97	
26	CYCLING	REGIONAL TRAIL	KILMORE ROAD	HAMILTON ROAD	FLOUR MILL LANE	99	
27	CYCLING	REGIONAL TRAIL	RIDDELL ROAD	KILMORE ROAD	NO. 1265	104	
28	WALKING	SHARED PATH	KILMORE ROAD	AMESS ROAD	RICHARDSON STREET	39	8
29	WALKING	SHARED PATH	UNNAMED ROAD	SANDY CREEK ROAD	GYRO CLOSE	46	16
30	WALKING	SHARED PATH	SANDY CREEK ROAD	BUSH COURT	KILMORE ROAD	20	27
31	WALKING	SHARED PATH	KILMORE ROAD	GYRO CLOSE	AMESS ROAD	103	

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
32	WALKING	SHARED PATH	GAP ROAD	ROYAL PARADE	SOMERVILLE LANE	13	5
33	WALKING	SHARED PATH	BOLITHOS ROAD	ROYAL PARADE	KILMORE ROAD	6	20
34	WALKING	SHARED PATH	RACECOURSE ROAD	AMESS ROAD	SOUTHBOURNE ROAD	12	29
35	WALKING	SHARED PATH	AMESS ROAD	KILMORE ROAD	WOHL COURT	9	12
36	WALKING	SHARED PATH	GAP ROAD	SOMERVILLE LANE	KILMORE ROAD	15	5
37	WALKING	SHARED PATH	MELVINS ROAD	ROYAL PARADE	MAHONEYS ROAD	11	21
38	WALKING	SHARED PATH	MAHONEYS ROAD	NO. 7	MERRIFIELD STREET	24	28
39	WALKING	SHARED PATH	MAHONEYS ROAD	NO. 33	BOLITHOS ROAD	80	
40	WALKING	SHARED PATH	GYRO CLOSE	UNNAMED ROAD	KILMORE ROAD	45	
41	WALKING	SHARED PATH	GYRO CLOSE	SANDY CREEK ROAD	UNNAMED ROAD	44	
42	WALKING	SHARED PATH	GAP ROAD	SANDY CREEK ROAD	ROYAL PARADE	43	
43	WALKING	SHARED PATH	AMESS ROAD	WOHL COURT	SUTHERLANDS ROAD	8	13
44	WALKING	SHARED PATH	SUTHERLANDS ROAD	YELLOWGUM AVENUE	AMESS ROAD	10	14
45	WALKING	SHARED PATH	ROYAL PARADE	GAP ROAD	MELVINS ROAD	58	
46	CYCLING	SHARROWS	STATION STREET	KILMORE ROAD	STEPHEN STREET	26	
47	CYCLING	SHARROWS	PARKVIEW DRIVE	RANGEVIEW DRIVE	NO. 9	64	

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
48	CYCLING	SHARROWS	WHITTAKERS LANE	MELVINS ROAD	GAP ROAD	79	
49	CYCLING	SHARROWS	SOMERVILLE LANE	MELVINS ROAD	NO. 33	78	
50	CYCLING	SHARROWS	RANGEVIEW DRIVE	AMESS ROAD	PARKVIEW TERRACE	77	
51	CYCLING	SHARROWS	RICHARDSON STREET	KILMORE ROAD	RACECOURSE ROAD	88	
52	CYCLING	SHARROWS	CUTEVAN CRESCENT	SANDY CREEK ROAD	GYRO CLOSE	76	
53	CYCLING	SHARROWS	MAHONEYS ROAD	MELVINS ROAD	NO. 7	100	
54	CYCLING	SHARROWS	MERIFIED STREET	SOMERVILLE LANE	KILMORE ROAD	29	
55	CYCLING	SHARROWS	EDWARDS STREET	SOMERVILLE LANE	KILMORE ROAD	57	
56	CYCLING	SHARROWS	WILLIAMS LANE	NO.52	KILMORE ROAD	75	
57	CYCLING	SHARROWS	WHEELWRIGHTS ROAD	ROYAL PARADE	MELVINS ROAD	74	
58	CYCLING	SHARROWS	HAMILTON STREET / FITZGERALD STREET	STEPHEN STREET	SUTHERLANDS ROAD	22	
59	CYCLING	SHARROWS	PARKVIEW TERRACE PARK	PARKVIEW TERRACE PARK	PARKVIEW TERRACE PARK	51	
60	CYCLING	SHARROWS	WATTLE GROVE / CHERITON DRIVE / YELLOWGUM AVENUE	YELLOW GUM AVENUE	SUTHERLANDS ROAD	73	
61	CYCLING	SHARROWS	MAHONEYS ROAD	BOLITHOS ROAD	SEXTON STREET	56	

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
62	CYCLING	SHARROWS	MAHONEYS ROAD	MERRIFIELD STREET	NO. 33	55	
63	CYCLING	SHARROWS	SOMERVILLE LANE	SUTTON STREET	SANDY CREEK ROAD	72	
64	CYCLING	SHARROWS	SOMERVILLE LANE	SOMERVILLE LANE	SUTTON STREET	71	
65	CYCLING	SHARROWS	WHITTAKERS LANE	PLANTATION ROAD	SANDY CREEK ROAD	70	
66	CYCLING	SHARROWS	ROYAL PARADE	MELVINS ROAD	WHEELWRIGHTS ROAD	69	
67	CYCLING	SHARROWS	STEPHENS STREET	SUTHERLANDS ROAD	HAMILTON ROAD	21	
68	CYCLING	SHARROWS	SEXTON ROAD	MAHONEYS ROAD	KILMORE ROAD	68	
69	ROAD	100 to 70	KILMORE ROAD	FROST LANE	190m NORTH OF SANDRY CREEK ROAD	48	
70	ROAD	70 to 60	KILMORE ROAD	190m NORTH OF SANDRY CREEK ROAD	FILMER PLACE	40	
71	ROAD	50 to 40	KILMORE ROAD	FILMER PLACE	MELVIN ROAD	14	9
72	ROAD	50 to 40	NORTH WEST OF KILMORE ROAD	MELVINS ROAD / WHITTAKERS LANE / SANDY CREEK ROAD	KILMORE ROAD	50	
73	ROAD	50 to 40	SOUTH EAST OF KILMORE ROAD	KILMORE ROAD	SUTHERLANDS ROAD / AMESS ROAD	38	

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
74	ROAD	50 to 30	MAIN ACTIVITY AREA	STATION STREET/ HAMILTON STREET / FITZGERALD STREET		5	9
75	ROAD	50 to 30	STEPHEN STREET	SUTHERLANDS ROAD	HAMILTON STREET	4	9
76	ROAD	50 to 40	NORTH WEST OF KILMORE ROAD	MELVINS ROAD / WHITTAKERS LANE / SANDY CREEK ROAD	KILMORE ROAD	37	
77	ROAD	ROUNDABOUT	MAIN ROAD	RIDDELL ROAD		93	
78	ROAD	ROUNDABOUT	KILMORE ROAD	GYRO COURT		87	
79	ROAD	ROUNDABOUT	KILMORE ROAD	SANDY CREEK ROAD		85	
80	ROAD	REVERSE PRIORITY INTERSECTION	SUTHERLANDS ROAD	STATION STREET		66	
81	ROAD	TURN LANES	KILMORE ROAD	RAWS LANE		102	
82	ROAD	TURN LANES	KILMORE ROAD	HAMILTON ROAD		111	
83	ROAD	SIGNALISED INTERSECTION	KILMORE ROAD	STATION STREET		54	
84	WALKING	WOMBAT CROSSING	STATION STREET	SUTHERLANDS ROAD		3	22

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
85	WALKING	WOMBAT CROSSING	SUTHERLANDS ROAD	STATION STREET		2	22
86	WALKING	WOMBAT CROSSING	WHITTAKERS LAND	NO. 63		53	
87	WALKING	BRIDGE CROSSING	SUTHERLANDS ROAD	RACECOURSE ROAD		112	
88	WALKING	P.O.S CROSSING	SUTHERLANDS ROAD	NO. 5		7	
89	WALKING	REFUGE CROSSING	KILMORE ROAD	AMESS ROAD		18	17
90	WALKING	REFUGE CROSSING	KILMORE ROAD	GAP ROAD		16	17
91	WALKING	RECREATIONAL SHARED PATH	SANDY CREEK	GAP ROAD	AMESS ROAD	105	
92	WALKING	RECREATIONAL SHARED PATH	RIDDELL CREEK MAIN DRAIN	GAP ROAD	SOMERVILLE LANE	110	
93	WALKING	RECREATIONAL SHARED PATH	RIDDELL CREEK MAIN DRAIN	GAP ROAD	SOMERVILLE LANE	109	
94	WALKING	RECREATIONAL SHARED PATH	TREETOPS MAIN DRAIN	GAP ROAD	WHITTAKERS LANE	108	
95	WALKING	RECREATIONAL SHARED PATH	BETWEEN MELVINS ROAD AND BOLITHOS ROAD	ROYAL PARADE	BOLITHOS ROAD	107	

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
96	WALKING	RECREATIONAL SHARED PATH	RIDDELLS CREEK	WILLIAMS LANE	STATION STREET	101	
97	WALKING	RECREATIONAL SHARED PATH	RIDDELL CREEK MAIN DRIVE	WHEELWRIGHTS ROAD	RIDDELLS CREEK	106	
98	WALKING	PEDESTRIAN BRIDGE	RIDDELLS CREEK NEAR WALTER J SMITH RESERVE	RIDDELLS CREEK		96	1
99	WALKING	SHARED PATH	SUTHERLANDS ROAD	RACECOURSE ROAD	STATION STREET	1	2
100	WALKING	PEDESTRIAN BRIDGE	DRY CREEK NEAR KILMORE ROAD	DRY CREEK		52	4
101	WALKING	P.O.S CROSSING	MAIN ROAD NEAR RIDDELLS CREEK PRIMARY SCHOOL	MAIN ROAD		28	6
102	WALKING	PEDESTRIAN BRIDGE	RIDDELLS CREEK MAIN DRAIN	SOMERVILLE LANE	SUTTON STREET	62	7
103	SPEED REDUCTION	80 to 60	KILMORE ROAD	KILMORE ROAD	MAIN ROAD	63	
104	WALKING	PEDESTRIAN CROSSING	SANDY CREEK ROAD NEAR SANDY CREEK	SANDY CREEK ROAD		19	10
105	WALKING	REFUGE CROSSING	MAIN ROAD NEAR WALTER J SMITH RESERVE	MAIN ROAD		36	17

Number	Project Category	Project Type	Location/Road Name	Road Name Start	Road Name End	MCA Ranking	Community Rank
106	WALKING	REFUGE CROSSING	MAIN ROAD NEAR BOLITHOS ROAD	MAIN ROAD		35	17
107	WALKING	REFUGE CROSSING	MAIN ROAD NEAR RIDDELLS CREEK WAR MEMORIAL	MAIN ROAD		34	17
108	WALKING	REFUGE CROSSING	MAIN ROAD NEAR DROMKEEN GALLERY	MAIN ROAD		33	17
109	WALKING	RECREATIONAL SHARED PATH	RIDDELLS CREEK	SMITH'S NURSERY	CARRE RIDDELL BRIDGE	98	19
110	WALKING	PEDESTRIAN CROSSING	KILMORE ROAD NEAR STATION STREET	KILMORE ROAD		27	
111	WALKING	RECREATIONAL SHARED PATH	DRY CREEK	AMESS ROAD	SUTHERLANDS ROAD	47	26
112	WALKING	SHARED PATH & WOMBAT CROSSING	RIDDELLS CREEK PRIMARY SCHOOL CAR PARK	RIDDELLS CREEK PRIMARY SCHOOL CAR PARK		17	30

Appendix 3 – Multi-criteria analysis

Key Assessment Criteria	Criteria Weighting	Key Performance Indicators (KPIs)	KPI Individual Weighting	KPI Weighting Guide	Raw Scoring Guide						Source Data	Location
					0	1	2	3	4	5		
Feasibility	25%	Arterial roads / rail corridors / non-Council land	10%	Council will have less influence for change on non-Council land.	n/a	Requires approval from external authorities	n/a	n/a	n/a	Within Council land	QGIS - overlays for arterial roads (DTP), VicTrack, and Greater Western Water	
		Environmental and cultural impacts	5%	Will the project have an impact on flora & fauna, cultural heritage, or require the removal of trees?	n/a	Major	n/a	Moderate	n/a	Minor		
		Significant infrastructure	10%	Is major infrastructure required? Removal of existing or new infrastructure.	n/a	Major	n/a	Moderate	n/a	Minor	Major for footbridge, signalised pedestrian crossing, shared paths along creeks requiring significant earthworks) Shared path - moderate	
Connectivity	15%	Proximity to essential services	15%	does the project near key destinations such as schools, child care centres, etc? Is the project within the town centre?	n/a	No	n/a	Provides connectivity	n/a	Close proximity	QGIS - destination layers	
Safety	20%	Road safety	20%	Does the project improve safety for all road users	Greatly reduces safety	Reduces road safety	Neutral	slightly improves safety	Improves road safety (Safe System aligned treatments)	Significantly improves safety (Safe System aligned treatments)	desktop assessment. This will be a comparison between the existing and the proposed safety conditions, and will consider: • traffic volumes • speed • presence of vulnerable road users • heavy vehicles • other road characteristics	
Movement and Place	10%	Alignment with Movement and Place aspirations	10%	Does the project align with M&P aspirations? Will the project address a M&P performance gap?	Strongly goes against M&P objectives.	n/a	n/a	Neutral	Aligns with M&P objectives. Addresses a gap.	Strongly aligns with M&P objectives. Addresses a large gap.		
Alignment with local strategy and policy	10%	Aligns with relevant Council strategy	5%	How well does the project align with Council strategy?	Strongly goes against strategic objectives	Goes against strategic objectives	Does not support strategic objectives	Neutral	Generally aligns with strategic objectives	Aligns strongly with strategic objectives	QGIS - walking and cycling layers is it within the Amess Road development	
		Social and economic benefits	2%	Does delivering active transport improvements provide added community benefits? is this a tourism, local businesses, school routes, shopping routes or training route. Does it provide activation and renewal opportunities	N/A	Low	N/A	Medium	N/A	High	High if it is in an activity centre, major recreational routes or tourism routes, or place with a strong sense of place / identity	
		Project developed separately	3%	Has the project already been developed separately? This will reduce total project time and cost.	n/a	No	n/a	n/a	n/a	Yes	Information provided by Council	
Stakeholder & community sentiment	20%	Community sentiments	15%	Is the community supportive of the project	Strongly against	Low support		Supportive		Strongly supportive	Based on community feedback dated 31/10/23	
		Stakeholder support	5%	Is the project likely to obtain stakeholder support? Will there be a challenge with obtaining stakeholder approval? (e.g. POS on an arterial road, signalised intersection, etc)	n/a	Difficult to obtain approvals	n/a	some stakeholder consultation required	n/a	Little to no approvals required		

Appendix 4 – Community Feedback

DRAFT v6.1 FOR REVIEW AND DISCUSSION

PRIORITIES FOR IMPROVING WALKABILITY IN RIDDELLS CREEK

The community input into the *Riddells Creek Network Movement Study* (Draft Report Recommendations).

Contents

1. Introduction

Focus on Riddells Creek welcome

The Riddells Creek community welcomes the focus on Riddell via the *Riddells Creek Movement Network Study* (the Study). The Draft Recommendation Report has provided an excellent jumping off point from which the What Riddell Wants community group has based its further work.

The Infrastructure Strand of 'What Riddell Wants'[1] wants to build on the momentum of Macedon Ranges Shire Council's (MRSC or Council) Study so that we see some actual allocation of funds and the commencement of physical works, rather than more reports and strategies. We want intentions turned into actions. We want to encourage the Council to love Riddells Creek a bit more, and start taking action to enhance its village feel.

2. Why focus on walkability and the current situation in Riddells Creek

Riddells Creek suffers from some key drawbacks in respect of movement.

Vehicular traffic dominates

Movement in Riddells Creek is dominated by vehicular traffic on the main roads, much of which is busy through traffic, as well as the impacts of vehicles coming and going from residences. This has a major negative impact on non-vehicular movements, e.g. those on foot (including those using mobility aids), cyclists (of any type) and horse riders.

Non-vehicular traffic is locked in

Of the several main road 'gateways' into our town, all present dangerous squeeze spots where would-be pedestrians are forced into dangerous proximity to fast moving vehicular traffic (often heavy vehicles). None of these gateways are currently safe for pedestrians, cyclists or horse riders. So at present, rather than gateways, these locations are effectively barriers. See Appendix A to this document for an expansion on these gateways as barriers.

Discontinuous non-vehicular routes

To the extent that paths do exist, they are often discontinuous, sometimes ending abruptly mid-street. As a result, people are discouraged from walking or cycling.

Missed health and social benefits

Due to the aforementioned residents of Riddells Creek are missing out on the health benefits of walking and the sense of well-being and opportunity for increased social connections that comes with being outside and interacting in public space with other residents.

Use of the term walkability

Note that throughout our work and community engagements we have used the term "Walkability" as a simple headline tag, to focus the attention of community responders on what we want to achieve in considering the Study. However, 'Walkability" is not intended to be limited to pedestrians, but rather to encompass all forms of non-vehicular people movements in Riddells Creek. That is it applies to all types of pedestrians –functional and recreational – all types of cyclists and, in some places, horse riders.

[1] For detail on 'What Riddell Wants' refer to Appendix G; in short it is a citizen led process to identify what Riddells Creek needs and take action to achieve this.

3. Our process & inputs

The Council Engineers have reached out to key community groups and asked that they provide feedback on priority projects based on these groups specific local knowledge. 'What Riddell Wants'[2] Infrastructure Strand has gone beyond this and sought input from the Riddells Creek community.

'What Riddell Wants'[2] Infrastructure Strand undertook the following to arrive at four Priority Route/Areas for improving walkability for the town as a whole. We have:

- Reviewed and analysed the *Riddells Creek Movement Network Study* (the Study) in detail

- Conducted a resident survey asking where they walk *or would like to walk*, and ideas for improvements
  - 74 online responses, 7 verbal responses (n. 81) = 256 comments on how to improve walkability[3]
  - 50% of respondents had not heard of the *Riddells Creek Network Movement Study*

- Collated the data from the resident survey to,
  - identify the Priority Route/Areas, and therein,
  - the projects required to deliver over time these Priority Route/Areas as coherent wholes

- Undertaken detailed discussion and analysis of all of the aforementioned within the What Riddell Wants Infrastructure Strand and with the Riddells Creek Planning Group[4].

In this document, wherever possible, we refer to the item number of the 97 Projects listed in Appendix 2 of the Study.

[2] For detail on 'What Riddell Wants' refer to Appendix G.
[3] This data is available upon request.
[4] Riddells Creek Planning Group is a group formed to focus on the appropriate development of Riddells Creek via the Amess Rd and Riddells South development.

4. Adopting a holistic view that will result in a coherent whole

Movement Study's Approach

The Study determines network classifications/maps for a number of modes of movement, for example walking, cycling and vehicles. This part of the Study is considered a holistic approach.

The Study then conducts a gap analysis which results in a list of 97 projects. That list, while nearly complete, does have a few omissions and inaccuracies which we rectify in our feedback and priority recommendations below.

At this point in time the 97 projects do not appear to be ordered or prioritised in a way that will result in delivery of a coherent whole.

Further, while the use of multi-criteria analysis is understandable in the context of the need to prioritise, in itself it will not lead to projects which are funded leading to a coherent whole.

What Riddell Wants Proposed Approach

A holistic focus on routes

We propose that the above can be addressed by examining and understand what *routes*:

- the community values the most; and therein
- which projects (from the Study or the resident survey) enable these.

In essence individual projects can then be considered as components of a particular route. Thus, in the first two instances, we have considered what *routes* we believe should be the priorities (Section 6). Then within these routes we have also identified the key enabling projects/components (included in Section 6, details in Appendices C – F).

A key reason for considering *routes* is that Riddells Creek currently has little non-vehicular people movement infrastructure (pavements etc.). But what there is, is mostly discontinuous and does not present coherent, continuous *routes* that promote connectivity.

Consideration of *routes*, has enabled us to employ both a top-down strategic view as well as a bottom up consideration of individual projects.

Cost vs Impact on Connectivity

Routes will contain elements that are both higher cost as well as those that are low cost, yet both types can combine to make a whole route more functional and attractive. For example, shared foot bridges across creeks to permit safe passage around dangerous squeeze spots will be more costly, but high value in improving walkability. They are essential to several of the most popular routes becoming safe and welcoming for the whole town, pedestrians and cyclists.

Changing vehicular speed restrictions and adding pedestrian crossings or refuges will be much lower cost, but are still important elements that, together, make a route work. This should be remembered in any project ranking in which some critical enabling elements, which might be more expensive projects, are ranked higher, but the other lower cost elements fall lower in the ranking. All contribute to the total route such that the sum is greater than the total of the parts.

Alignment with major council initiatives

We have also considered the need to connect these priority routes with important longer-term Council projects. Mainly, at the western entry to the town, this is the connection to the Woodend to Riddells Creek Shared Trail. At the eastern end of town, we have also borne in mind the longer-term potential for ultimately creating a long-distance cycling/walking route from Riddells Creek to Romsey via the Kilmore Rd which would further promote cycling and bicycle tourism as a recreational drawcard to Riddells Creek and the broader region.

Balancing 'in town' vs 'out of town'

We have been mindful of the need to balance the needs of residents living closer-in to the town centre, with the desire to also create longer routes through the town which connect to the natural features of the area or locally significant tourist or retail destinations.

Thus, one of the routes we have also identified is an area closer-in to town, that should receive priority attention as this will serve pedestrian needs in the higher density living areas, where there are a higher proportion of residents needing to use mobility aids as well as parents with prams accessing shops, the school and so forth.

This creates a desirable overlap of some projects contributing both to the two longer priority routes and the 'in town' higher density living area, such that the two approaches to prioritisation are complementary.

5. How can Council use the Walkability Priorities?

The identified Walkability Priorities can be used to improve Riddells Creek by being:

- incorporated into the Multi-criteria Analysis (with a significant weighting),
  - i.e. Does the project contribute to the communities Walkability Priorities as determined by the work of What Riddell Wants Infrastructure Strand?; weighting 20%
- being adopted as clear direction to the Council in its capital works/budgeting across all Departments/projects, and its advocacy with State Government

When implementing these priorities, the Council should:

- **Balance the needs of people living close to town, with those living further out from town**. Not everything can be done at once, but all residents deserve a safe and enjoyable way to walk around their town.

- **Provide paths that suit what the user needs**. Mobility scooters and mothers with prams walking to the shops and town centre need concrete paths, but people who walk/run/cycle/dog-walk on longer routes may prefer a firm, well-drained gravel path. Many respondents to the resident survey said that that firm, wide gravel paths were more desirable beyond the town centre.

- **Design paths that fit the character of each neighbourhood and preserve the environmental values of the town**. Meandering paths moving around trees, instead of cutting them down, are as valuable as straight paths.

- **Plan for routes, not sections**. Discontinuous sections need to be linked up to make coherent routes. Addressing the dangerous squeeze spots at the several main road ‘gateways’ into the town should be an early consideration as they would be strategic ‘enablers’ for longer routes.

6. The Walkability Priorities of Riddells Creek

6.1 Make Main Road a safe and welcoming place for pedestrians

Riddells Creek will have a public way along Main Rd/Kilmore Rd, running from Gyro Close, across Sandy/Dry Creek, linking in Dromkeen, through town, across Riddells Creek itself, and beyond towards Gisborne.

As a busy vehicular route, the Main Rd currently dominates the centre of Riddells Creek to the detriment of all other (potential) users. This whole stretch should be safe and enjoyable for all modes of pedestrian and cycling travel to move along the route and to cross it. What will achieve this?[5]

- Provide continuous wide pathways along each side of Main Road from Gyro Close to Melvins Rd
- Deal with the dangerous squeeze points where Main Road crosses Riddells Creek and Sandy/Dry Creek (a shared bridge for pedestrians and cyclists across Riddells Creek, near the Carre Riddell road bridge, was the mostly highly ranked project by residents).
- Plan for the connection of the Woodend to Riddells Creek Shared Trail Project into the centre of Riddells Creek; deliver connection by 2025 at latest in line with Shared Trail Project timelines
- Address the Main/Station/Sutherland junction, including creating pedestrian crossing points to make it safer for both pedestrians and vehicles.
- Calm the traffic by reducing entry speeds to the town and moving speed reductions farther out.
- Make it safe to cross Main Road at several key points. Crossing points should be regular and convenient for pedestrians to use.

6.2 Improve the north-south pedestrian thoroughfares of the town.

The resident survey shows Gap Road to Richardson to Southbourne, and Sutherlands Road to Racecourse Rd are important north-south routes residents use daily. They walk with prams, dogs and/or children on bicycles and scooters. They need to become thoroughfares that are welcoming, ease to use and safe. What will achieve this?[6]

6.2.1 Gap Road to Richardson to Southbourne

- Gap Rd recreational shared path Royal Parade to Whittakers Lane
- Gap Rd shared path, Whittakers Lane to Main Rd
- Main Rd crossing refuge at Gap Rd/Richardson St
- Upgrade existing footpath to shared path on Richardson Street
- Shared path on Southbourne Rd

[5] For detailed project listings against each priority refer to Appendix C.
[6] For detailed project listings against each priority refer to Appendix D.

6.2.2 Sutherlands Road to Racecourse Rd

- Shared path along Sutherlands Rd, from the Lions Park to Racecourse Rd
  (equal 2nd mostly highly ranked project by residents, not identified in Study's list of 97 projects)
- Safe crossing point at Fitzgerald St or Stephen St
  (if delivered in between these two streets as per Project No. 88 a footpath must also be provided on the south side of Southbourne Rd linking Fitzgerald St and Stephen St)

6.3 Footpaths and safe connections for people living close to or moving around the town centre.

People walk into town and back from the higher density residential areas east of Whitakers Lane and west of Rangeview estate. They need continuous, high-quality footpaths: at present they have neither. What will achieve this?[7]

- To the NW of Main Rd, create/complete paved footpaths in the grid bounded by Main Rd, Melvins Rd, Gap Rd and Somerville Lane, including a shared pedestrian/cycle bridge over Murnong Creek on Somerville Lane.
- To the SE of Main Rd, create/complete paved footpaths in the area bounded by Main Rd, Sutherlands Rd, Rangeview Drive and Amess Rd. This includes a paved shared path on Racecourse Rd besides the Recreational Reserve which is not identified in the Project list of the *Riddells Creek Network Movement Study*. Or, at a minimum, completing the short unmade section on Racecourse Rd, between the existing concrete paved path near the junction with Richardson St, with the existing gravel path alongside the Recreational Reserve, which would be a very low cost 'quick fix'.

6.4 Enabling the recreational trails of the town.

Riddells Creek is a town for people who enjoy long walks, running and cycling. Shared trails will connect and open up the town to the green world around Riddell. Where should these shared trails be?[8]

- Along Dry Creek, from Amess Road to Sutherlands Road, including a bridge at Kathryn Court
- A complete path up to Royal Parade (Barrm Birrm Nature Reserve)
  - Gap Rd recreational shared path Royal Parade to Whittakers Lane
  - Gap Rd shared path, Whittakers Lane to Main Rd
- The circuit along Gyro Close, Sandy Creek Rd and cross connecting to Gap Rd at Plantation Rd
- The public reserves along Riddells Creek and Murnong Creek.

[7] For detailed project listings against each priority refer to Appendix E.
[8] For detailed project listings against each priority refer to Appendix F.

7. What are the Top 10 Projects?

The following are the Top 10 Projects What Riddell Wants Infrastructure Strand are calling for. The top 30 is provided in Appendix B.

PRIORITY NO.	Project Description	Study Proj. No.	Enables Priority Route/Area			
			1	2	3	4
1	A pedestrian bridge across Riddells Creek	Resident Idea	**Y**			**Y**
2	A shared path on Sutherlands Road from Racecourse Rd to the Lions Park.	Resident Idea		**Y**	**Y**	
3	A shared path on Southbourne Rd, between Racecourse Rd and Parkview Tce.	4		**Y**	**Y**	
4	A pedestrian bridge on Main Road across Dry Creek/Sandy Creek	Resident Idea	**Y**			**Y**
5	A shared trail on Gap Rd from Main Rd to Royal Parade (compact gravel north of Whittakers Lane)	32, 36		**Y**		**Y**
6	Pedestrian operated signals for crossing of Main Road at the School.	Resident Idea	**Y**		**Y**	
7	A bridge across Murnong Creek (ex Riddells Creek Main Drain) on Sommerville Lane.	Resident Idea			**Y**	
8	A footpath on the north side of Main Road from Sexton St to Sandy Creek Road & Shared path on the south side of Main Rd from Richardson St to Dry Creek	9 / 28	**Y**			**Y**
9	Safer speeds on Main Road on both approaches to the town[9] and better recommended speed signage where there are no footpaths, i.e. 20km/h past pedestrians, cyclists and horses	69 – 76[8] / Resident Idea	**Y**	**Y**	**Y**	
10	Safe crossing over Sandy Creek on Sandy Creek Rd (at approx. No.47)	Resident Idea				**Y**

Table Key for Route/Area Priority Numbering

1 Making Main Rd Safe
2 Improving North-South Pedestrian Throughfares
3 Town Centre & Surrounds Connectivity
4 Enabling the recreational trails of the town

[9] What Riddell Wants Infrastructure Strand is advocating for speed reductions different to that of the Study. See Appendix B where this priority is elaborated on.

8. What criteria should be used?

Comments on draft multi-criteria analysis (220073_Riddells Creek MCA DRAFT_230914) to be provided at meeting

9. Corrections to the Trafficworks Movement Network Study report

There are errors in the maps. These should be corrected before errors become embedded and accepted as a factual basis going forward (especially by those less familiar with the town).

The General Traffic Classification (p 17) is inaccurate. The area north-west of Gap Road has locked gates on the public roads and is to become a conservation reserve. This area should remain part of the Walking Classification (p 18), and become part of the Pedestrian Facilities map (p 45) as part of the walking network. The Place Classification also needs amending to fit this situation.

The Walking Classification (p 18) is inaccurate, and inconsistent with the Pedestrian Facilities map (p 45). Main Road from Gyro Close in the north to Rivergum Road in the south, and Sutherlands Road from Rangeview Estate to Main Road should each be rated as W2, because they are primary pedestrian routes. In addition, Gyro Close needs to be a higher classification than W5.

The Walking Hierarchy (p 30) is incomplete:

- Main Road walking route should be understood as one continuous route from Gyro close to beyond the Carre-Riddell bridge to Williams Lane;
- Sutherlands Road to Yellowgum, and Gap Road, are Primary Routes.
- Dry Creek, which has a streamside reserve and potential as a recreational trail south of Amess Road to Sutherlands and should be identified as such.
- Recreational trails identified along Sandy Creek and Murnong Creek are mainly on private land and will be difficult to turn into public routes. By contrast, Murnong Creek from Somerville across Whitakers Lane to Bolitho (as Wimbi Creek) is public reserve and could carry a recreational trail.
- Southbourne Road/Richardson Roads is a significant walking route that people use to move out to Main Road.

The Street Hierarchy (p 26) is inaccurate. Sutherlands Road is a Main Activity Street at least to Rangeview Estate.

'Riddells Creek Town Centre Opportunities Summary' (p 55) describes a few important improvements that do not appear in the project list at Appendix 2 of the report. Pedestrian access out of and into town across the Creek is a major opportunity for the town centre but does not get mentioned.

A missing project is the section of Racecourse Road from Richardson St to Sutherlands Rd. There is a gravel path bordering the Recreational Reserve on the west side of Racecourse road in this section, but it lacks a connection to short sections of concrete paved path near Richardson. The aforementioned Riddells Creek Town Centre Opportunities Summary (p55) mentions an "Improved shared path treatment along the eastern side of Racecourse Rod", however neither appear in the projects list. Project 34 at Racecourse Rd only goes from Amess Rd to Southbourne Rd.

Projects 72 and 76 (Speed restriction changes) appear to be duplicates.

Projects 40 & 41 (shared path on Gyro Close) both use an "Unnamed Rd" as start and end points. It is not clear where this location is, but in effect, this shared path is along the full length of Gyro Close and the projects can be considered as one. If the 'Unnamed Rd' is the unnamed ***path*** that is an existing cut-through on the easement between street numbers 149 and 173 on Gyro Close and

numbers 130 and 138, then the two projects serve to distinguish two sections of shared path along Gyro Close and in that case, the section from Kilmore Rd should have the greater priority of the two.

Project 42 (shared path on Gap Rd), has an incorrect road name as its start point and seems redundant. This start point cannot be Sandy Creek Rd as that road runs parallel to Gap Rd for its entire length. In any case the full length of Gap Rd is addressed by shared path projects 32 and 36 so project 42 could be redundant.

The criteria for assessment. There are no weightings for criteria (p 50), and no separate categories for pedestrians and cyclists. There should be a specific criterion for pedestrian use. 'Stakeholder and community sentiment' should include other matters raised in the comments that relate to general amenity in the town. 'Prioritise projects within Amess Creek development' in the criteria 'Alignment with local strategy and policy', is problematic as a criteria, given the lack of a PSP for the area and residents opposition to the development at its proposed density.

Comment about Sommerville as shared path and Mahoney's as footpath?

Comments about Riddells Creek bypass via Riddell South development, Sutherlands Rd, Amess Rd and Amess Rd Development

Refer also to comments on resident survey data matched to Study Proj. Listing?

Appendix A. Further Information on Town Entrances as Gateways or Barriers?

There are four or five 'gateways' to the centre of Riddells Creek township:

1. To the South, the main road to/from Sunbury as it passes under the bluestone rail bridge and at the T junction with the Main Road/Kilmore Road.
2. To the West, the main road to/from Gisborne (the Main Road/Kilmore Road) at the Carre Riddell road bridge over the Riddell Creek itself.
3. To the North-East, the main road to/from Monegeetta (the Main Road/Kilmore Road) where it is bridged over Dry Creek/Sandy Creek and at the foot of the blind crest over the hill to the NE.
4. To the East, on Sutherlands Road where it crosses Dry Creek.
5. To the North on Sandy Creek Rd (at approx. No.47 Sandy Creek Rd).

All of these gateways were raised as dangerous squeeze spots in the resident survey conducted.

Each of these gateways is a dangerous squeeze point for pedestrians, cyclists or horse riders. For example, to pass these locations a pedestrian has to be quick of foot, very alert, wait for gaps in the traffic and pass quickly along the very narrow or often non-existent verge.

If a pedestrian was caught in these squeeze spots when two large/heavy vehicles were passing in opposite directions at the same time, there is a great danger to the pedestrians simply because there is insufficient width. This is especially possible at the first three listed above, due to the heavier traffic at those locations. The risks are magnified greatly for those not fleet of foot, or unaware, or needing mobility aids, pushing a pram, or walking dogs etc.

The 'gateways' are satisfactory for vehicles (although they could clearly be improved), but **they are *barriers* for non-vehicle users**, and in particular for people living outside the higher density part of the town. They discourage people venturing into town on foot or by bicycle, and discourage those living inside from venturing further out by foot or bike etc. for walking recreation, dog walking, cycling, or to visit Dromkeen, Riddells Creek Nursery of the childcare centre etc. Dealing with squeeze points will do a lot to improve walkability in Riddells Creek.

Squeeze points need to rectified *before* improvement of the rest of routes into and out of Riddell. For example, improving the shared path along the existing wide and grassy verges on roads will add little value if a person on that route encounters a squeeze spot like that at the Sandy Creek/Dry Creek bridge on the Kilmore Road. Three of the four squeeze spots are created by road bridges over creeks, that can be rectified by the construction of separate pedestrian/shared footbridges. The exception is the bluestone rail bridge which poses a particularly challenging problem, especially if the Woodend to Riddells Creek Shared Path project is completed to the South of the railway line, alongside Markham Rd (which is one of its two alternate routes currently shown on the project's plans).

Appendix B: Top 30 Projects

The following are the Top 30 Projects What Riddell Wants Infrastructure Strand are calling for.

Table Key for Route/Area Priority Numbering

1 Making Main Rd Safe
2 Improving North-South Pedestrian Throughfares
3 Town Centre & Surrounds Connectivity
4 Enabling the recreational trails of the town

PRIORITY NO.	Project Description	Study Proj. No.	Enables Priority Route/Area			
			1	2	3	4
1	A pedestrian bridge across Riddells Creek	Resident Idea	**Y**			**Y**
2	A shared path on Sutherlands Road from Racecourse Rd to the Lions Park.	Resident Idea		**Y**	**Y**	
3	A shared path on Southbourne Rd, between Racecourse Rd and Parkview Tce.	4		**Y**	**Y**	
4	A pedestrian bridge on Main Road across Dry Creek/Sandy Creek	Resident Idea	**Y**			**Y**
5	A shared trail on Gap Rd from Main Rd to Royal Parade (compact gravel north of Whittakers Lane)	32, 36		**Y**		**Y**
6	Pedestrian operated signals for crossing of Main Road at the School (refer to Priority No. 17 for remainder of Kilmore Rd/Main Rd crossings)	Resident Idea	**Y**		**Y**	
7	A bridge across Murnong Creek (ex Riddells Creek Main Drain) on Sommerville Lane.	Resident Idea			**Y**	
8	A footpath on the north side of Main Road from Sexton St to Sandy Creek Road & Shared path on the south side of Main Rd from Richardson St to Dry Creek	9 / 28	**Y**			**Y**
9	*Safer speeds on Main Road* on both approaches to the town: - Frost Lane to Filmer Place: 60km/h - Filmer Place to Riddell Rd: Support 40km/hr however encourage Council to consult community on this - Riddell Rd to Rivergum Rd: 60km/h - Rivergum Rd to Williams Lane: 80km/hr. & *Better recommended speed signage* where there are no footpaths, i.e. 20km/h past pedestrians, cyclists and horses	69 – 76 / Resident Idea	**Y**	**Y**	**Y**	

PRIORITY NO.	Project Description	Study Proj. No.	Enables Priority Route/Area			
			1	2	3	4
10	Safe crossing over Sandy Creek on Sandy Creek Rd (at 15pprox.. No.47)	Resident Idea				**Y**
11	Regional trail (or at least shared path) from Riddells Creek to Riddells Creek Nursery (Study states Flour Mill Lane)	24	**Y**			**Y**
12	Shared path along Amess Rd, Kilmore/Main Rd to Wohl Court (including a pedestrian bridge to address the squeeze point where Amess Rd crosses Dry Creek)	35				**Y**
13	Shared path along Amess Rd, Wohl Court to Sutherlands Rd (consider firm packed gravel path)	43				**Y**
14	Shared path along Sutherlands Rd, Yellowgum Ave to Amess Rd	44		**Y**		**Y**
15	Shared path along Sommerville Lane, from Melvins Rd to Sandy Creek Road	1			**Y**	
16	Shared path along Main Rd/Kilmore Rd from Sandy Creek to Rd to Gyro Close	29	**Y**			**Y**
17	At least refuge crossings for Kilmore Rd/Main Rd at: a. 56 Main St to Walter J Smith Reserve b. Immediately east of Bolithos Rd c. 126 Main Rd / Immediately East of Memorial Drive d. Gap Rd/Richardson St e. Amess Rd / Sandy Creek Rd f. East of Sandy Creek/Dry Creek (around the Dromkeen driveway) Refer also to Priorities No.6 and 22b	a. Resident Idea b. Resident Idea c. Resident Idea d. 90 e. 89 f. Resident Idea	**Y**	**Y**	**Y**	**Y**
18	Footpath along Sexton St, from Main Rd/Kilmore Rd to No.13 Sexton St	11			**Y**	
19	Recreational trail along the Riddells Creek (initially focused on the north side), Carre Riddell Bridge to Smith's Nursery	Resident idea				**Y**
20	Shared path along Bolithos Rd, Mahoneys Rd to Royal Parade (compact gravel north of Whittakers Lane)	33		**Y**	**Y**	
21	Shared path along Melvins Rd, Mahoneys Rd to Royal Parade (compact gravel north of Whittakers Lane)	37		**Y**	**Y**	

PRIORITY NO.	Project Description	Study Proj. No.	Enables Priority Route/Area			
			1	2	3	4
22	Main Rd/Kilmore Rd, Station St and Sutherlands Rd intersection, including: a. Signals or roundabout b. Pedestrian crossing west of intersection c. Wombat crossing on Station St d. Wombat crossing on Sutherlands Rd	a. 83 b. Resident idea c. 85 d. 84	**Y**	**Y**	**Y**	
23	Footpath along Merrifield St, Mahoneys Rd to Sommerville Lane	2		**Y**	**Y**	
24	Footpath along Mahoneys Rd, Bolithos Rd to Sexton St	17			**Y**	
25	Footpath along Sutton St, Mahoneys Rd to Sommerville Lane	19			**Y**	
26	Recreational trail along Dry Creek, Grandview Close to Sutherlands Rd, including a pedestrian bridge at Kathryn Court	Resident Idea				**Y**
27	Shared path along Sandy Creek Rd, Main Rd/Kilmore Rd to Bus Court	30		**Y**		**Y**
28	Footpath along Mahoneys Rd, No.7 Mahoneys Rd to Merrifield St	38			**Y**	
29	Shared path on Racecourse Rd, Amess Rd to Southbourne Rd	34			**Y**	
30	Widen the footpath from the School staff car park entrance to Memorial Drive to make it a shared path and even with the gutter & Install wombat crossings where the paths cross the School staff car park entrance and Memorial Drive.	Resident Idea	**Y**			

The following projects from the Study either do not appear in the Top 30 or are not mentioned at all in the resident survey. However, based on their potential to positively impact walkability What Riddell Wants Infrastructure Strand supports them and have noted them below.

Study Proj. No.	Project Description	Enables Priority Route/Area			
		1	2	3	4
69 – 76	Speed reductions; for the specifics of Main Rd/Kilmore Rd see Priority 9 in the Top 30 table above	**Y**	**Y**	**Y**	

Study Proj. No.	Project Description	Enables Priority Route/Area			
		1	2	3	4
Various	Support all other projects that increase walkability via provision of paths				
77 – 79	Roundabouts at: – Main Rd/Kilmore Road and Riddell Rd – Main Rd/Kilmore Road and Gyro – Main Rd/Kilmore Road and Sandy Creek Rd (and integrating Amess Road)	**Y**			
Resident Idea	Riddells Creek bypass from Riddell Rd, south of the Riddell South development area, Sutherlands Rd, Amess Rd and south east of Amess Rd development, connecting to Kilmore Rd	**Y**			
88	P.O.S crossing Sutherlands Rd		**Y**		

Appendix C. Detailed Project Listings For Making Main Rd Safe

(Table to be finalised for Final Version)

Item (Study Proj. Number / WRW Survey Idea)	Priority Based on WRW Infrastructure Strand Top 30 Table & WRW Infrastructure Strand Comments
Pedestrian & Cycling Bridge over Riddells Creek, north side of Kilmore Rd (WRW Survey Idea)	- **No.1** (20% of survey respondents mentioned this bridge)
Regional Trail, Riddells Creek – Williams Lane (No. 24 / WRW Survey Idea)	- **Equal 4th** - Ensure Gisborne – Riddell Cycling Trail follows the Kilmore Rd from Hamilton Rd onwards - If Gisborne – Riddell Cycling Trail sits south of Kilmore Rd/North of rail line ensure refuge crossings are provided at the Riddells Creek Nursery and Flour Mill Lane (Childcare) - Provide footpath down Flourmill Lane to childcare centre - Work with Riddells Creek Nursery to provide appropriate pedestrian entrance separated from vehicle entrance
Pedestrian & Cycling Bridge over Sandy Creek/Dry Creek (eastern end of town) (WRW Survey Idea)	- **Equal 4th** - If provided on the north side of Kilmore Rd ensure an appropriate crossing point/refuge is provided for safe access to Dromkeen
Shared Path, Sandy Creek Rd to Gyro Close (No. 29 / WRW Survey Idea)	- **Equal 5th**
Refuge Crossing / P.O.S Points Over Main Rd/Kilmore Rd	- The Amess Rd/Sandy Creek Rd crossing was Equal 5th - **Combined the 6 crossing points over Kilmore Rd were supported by 20 comments** From west to east along Kilmore Rd: - *56 Main Rd / Walter J Smith Reserve Main Entrance* (WRW Survey Idea) - Immediately east of Bolithos Rd (WRW Survey Idea) - *Primary School Crossing, upgrade to refuge and pedestrian operated signal* (WRW Survey Idea) - *126 Main Rd* (WRW Survey Idea) - *Gap Rd / Richardson St* (No.90) - *Amess Rd / Sandy Creek Rd* (No.89) - *East of Sandy Creek/Dry Creek* (WRW Survey Idea)

Item (Study Proj. Number / WRW Survey Idea)	Priority Based on WRW Infrastructure Strand Top 30 Table & WRW Infrastructure Strand Comments
Shared path from Riddells Creek to Montessori Preschool (or shared path from Riddells Creek to Station Street via rear of Montessori Preschool and Neighbourhood House) (WRW Survey Idea)	- Could be easily delivered as part of the Gisborne-Riddells Creek Path
Wombat crossings Station St and Sutherlands Rd junction (No. 84 & 85 / WRW Survey Idea)	- Strongly supported by community; refer to recent letters written in support of Council funding submission
Upgrade footpath to shared path outside primary school (WRW Survey Idea)	- Footpath that currently exists is not sufficient to handle primary school drop off and pick up pedestrian volumes or Farmer's Market Day pedestrian volumes - Widen existing footpath to at least 3m and make curb/guttering even height with new footpath
Zebra/wombat crossing at primary school car park entrance	-
Zebra/wombat crossing at Memorial Drive car park entrance	-
Shared path Richardson St to Sandy Creek Rd	-
Footpath, Main Rd Service Rd (north side), Sexton St to Sandy Creek Rd (No.9)	-
Speed reductions on Main Rd/Kilmore Rd	- Frost Lane to Filmer Place: 60km/h - Filmer Place to Riddell Rd: Support 40km/hr however encourage Council to consult community on this - Riddell Rd to Rivergum Rd: 60km/h - Rivergum Rd to Williams Lane: 80km/hr. - WRW Infrastructure Strand recognizes speed reduction/traffic calming will increase pedestrian safety

Item (Study Proj. Number / WRW Survey Idea)	Priority Based on WRW Infrastructure Strand Top 30 Table & WRW Infrastructure Strand Comments
	- Given the strong view likely from the community in respect of the appropriate speed limits for Kilmore Rd between Filmer Place and Riddell Rd it is considered appropriate Council consult the community on any reduction in this area, e.g. 40km/hr. permanently

Appendix D. Detailed Project Listings For Improving North-South Throughfare

(Table to be finalised for Final Version)

Item (Study Proj. Number / WRW Survey Idea)	Priority Based on WRW Infrastructure Strand Top 30 Table & WRW Infrastructure Strand Comments
	-
	-

Appendix E. Detailed Project Listings For Town Centre & Surrounds Connectivity

(Table to be finalised for Final Version)

Item (Study Proj. Number / WRW Survey Idea)	Priority Based on WRW Infrastructure Strand Top 30 Table & WRW Infrastructure Strand Comments
	-
	-

Appendix F. Detailed Project Listings For Enabling The Recreational Trails Of The Town

(Table to be finalised for Final Version)

Item (Study Proj. Number / WRW Survey Idea)	Priority Based on WRW Infrastructure Strand Top 30 Table & WRW Infrastructure Strand Comments
	-
	-

Appendix G. What Riddell Wants One Page Overview

Refer to following page.

Insert in final version.

Appendix 5 - Traffic volume diagrams

Legend

AM	8:15 am - 9:15 am
PM	4:00 pm - 5:00 pm

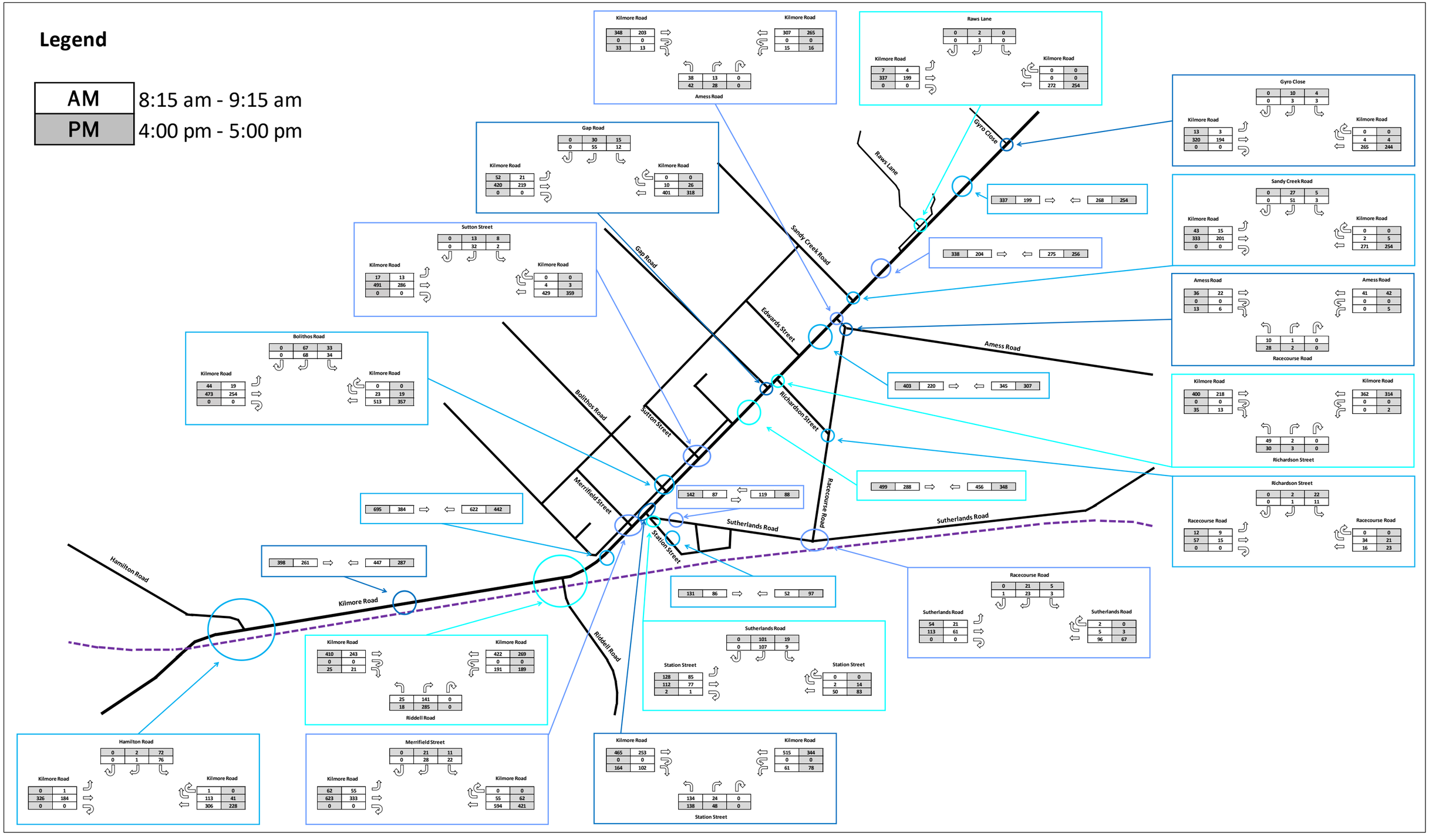


Figure 43: Existing traffic volume - Thursday 13 August 2023

Legend

AM	8:15 am - 9:15 am
PM	4:00 pm - 5:00 pm

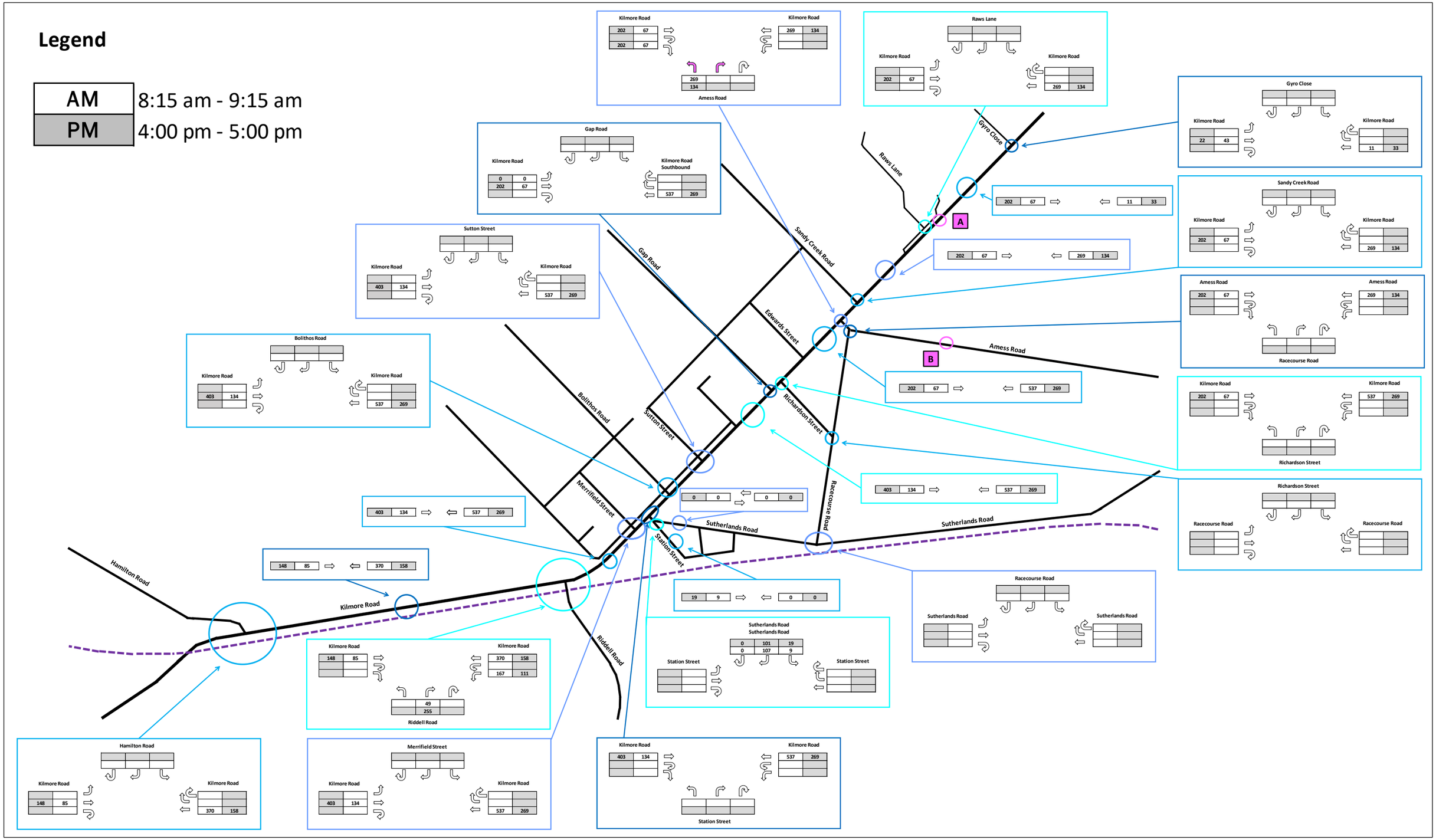


Figure 44: Amess Road development traffic distribution

Legend

AM	8:15 am - 9:15 am
PM	4:00 pm - 5:00 pm

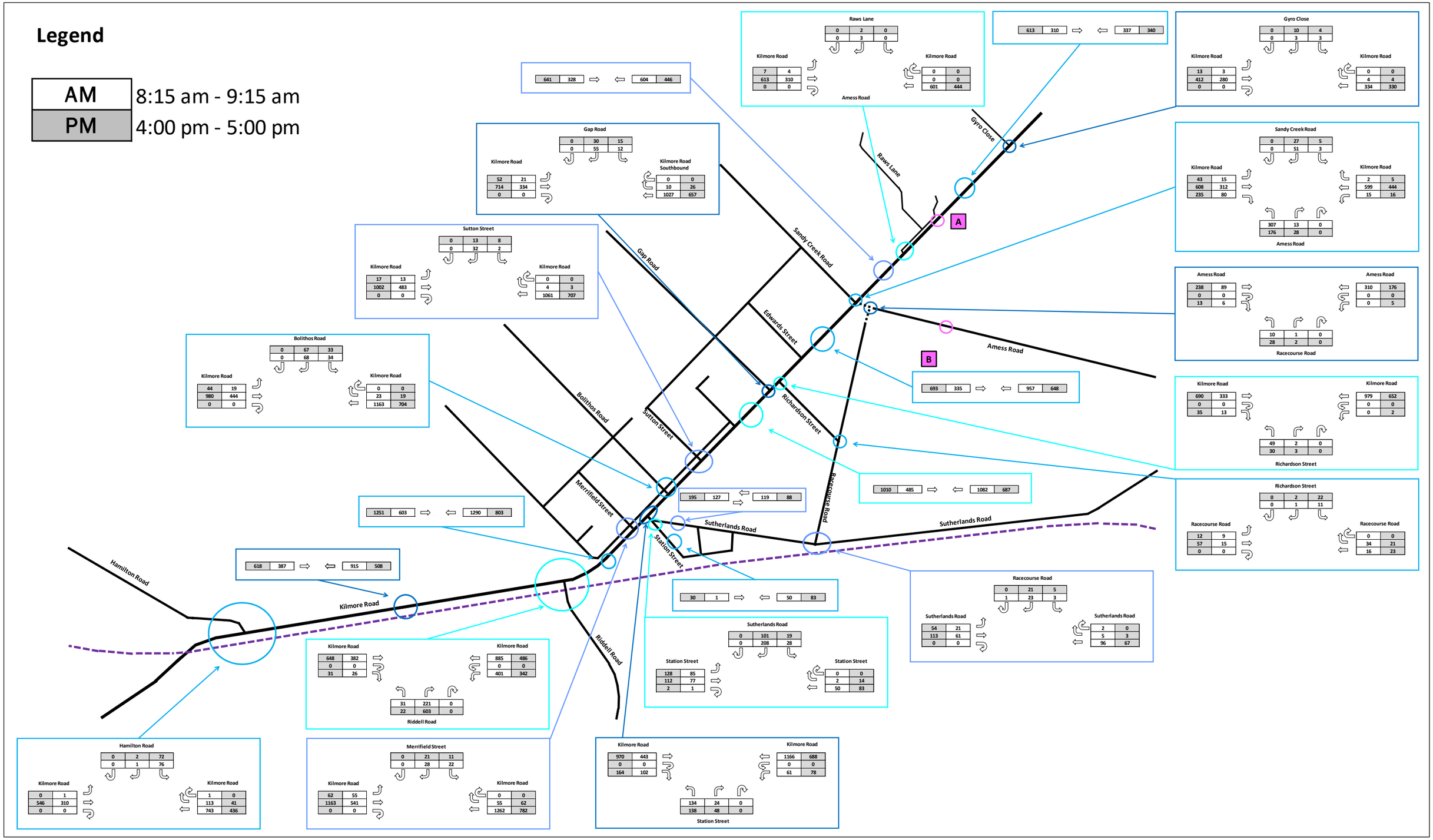


Figure 45: Anticipated 2043 traffic volumes

Appendix 6 – SIDRA site reports

USER REPORT FOR SITE

All Movement Classes

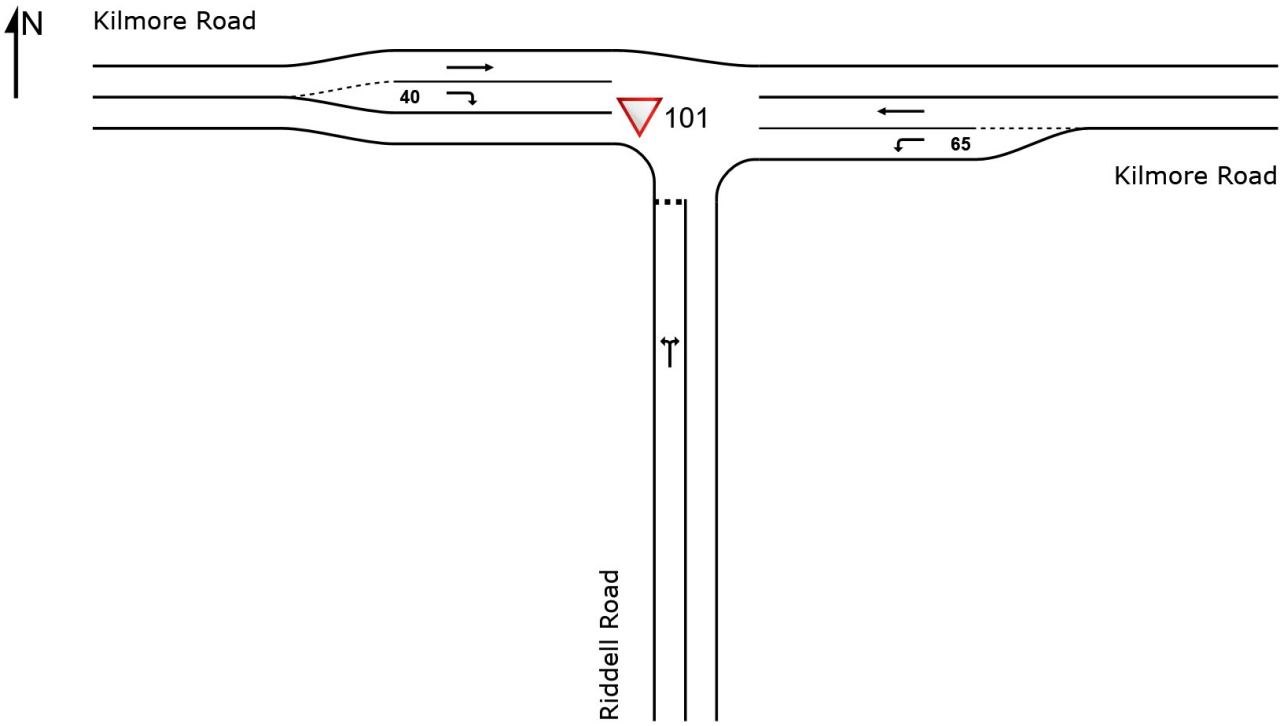
Project: 220073_Kilmore Road intersections_15.12.2023 **Template: Report format 2**

Site: 101 [Base AM Riddell Road & Kilmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Riddell Road														
1	L2	31	2	33	6.5	4.151	2862.5	LOS F	137.9	988.2	1.00	3.55	13.47	1.2
3	R2	221	5	233	2.3	4.151	2875.9	LOS F	137.9	988.2	1.00	3.55	13.47	1.2
Approach		252	7	265	2.8	4.151	2874.3	LOS F	137.9	988.2	1.00	3.55	13.47	1.2
East: Kilmore Road														
4	L2	401	9	422	2.2	0.231	6.4	LOS A	0.0	0.0	0.00	0.61	0.00	59.0
5	T1	885	27	932	3.1	0.487	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
Approach		1286	36	1354	2.8	0.487	2.1	NA	0.0	0.0	0.00	0.19	0.00	65.9
West: Kilmore Road														
11	T1	382	13	402	3.4	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
12	R2	26	1	27	3.8	0.148	25.4	LOS D	0.5	3.3	0.89	0.96	0.89	44.5
Approach		408	14	429	3.4	0.213	1.7	NA	0.5	3.3	0.06	0.06	0.06	67.4
All Vehicles		1946	57	2048	2.9	4.151	374.0	NA	137.9	988.2	0.14	0.60	1.76	8.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Riddell Road													
Lane 1	265	2.8	64	4.151	100	2874.3	LOS F	137.9	988.2	Full	500	0.0	31.6
Approach	265	2.8		4.151		2874.3	LOS F	137.9	988.2				
East: Kilmore Road													
Lane 1	422	2.2	1828	0.231	100	6.4	LOS A	0.0	0.0	Short	65	0.0	NA
Lane 2	932	3.1	1912	0.487	100	0.2	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1354	2.8		0.487		2.1	NA	0.0	0.0				
West: Kilmore Road													
Lane 1	402	3.4	1892	0.213	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	27	3.8	185	0.148	100	25.4	LOS D	0.5	3.3	Short	40	0.0	NA
Approach	429	3.4		0.213		1.7	NA	0.5	3.3				
Intersection	2048	2.9		4.151		374.0	NA	137.9	988.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Riddell Road															
Lane 1		4.151	1.000	363.0	397.6	988.2	NA	NA	1514.5	2747.4	0.80	1.98	31.6	NA	NA
Approach		4.151			397.6	988.2	NA	NA	1514.5	2747.4	0.80	1.98			
East: Kilmore Road															
Lane 1	Y	0.231	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	NA	0.0	2
Lane 2	Y	0.487	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.487			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
West: Kilmore Road															
Lane 1	Y	0.213	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Lane 2		0.148	1.000	0.0	1.3	3.3	NA	NA	1.1	1.9	0.03	0.08	NA	0.0	1
Approach		0.213			1.3	3.3	NA	NA	1.1	1.9	0.00	0.00			
Intersection		4.151			397.6	988.2	NA	NA	1514.5	2747.4	0.80	1.98			

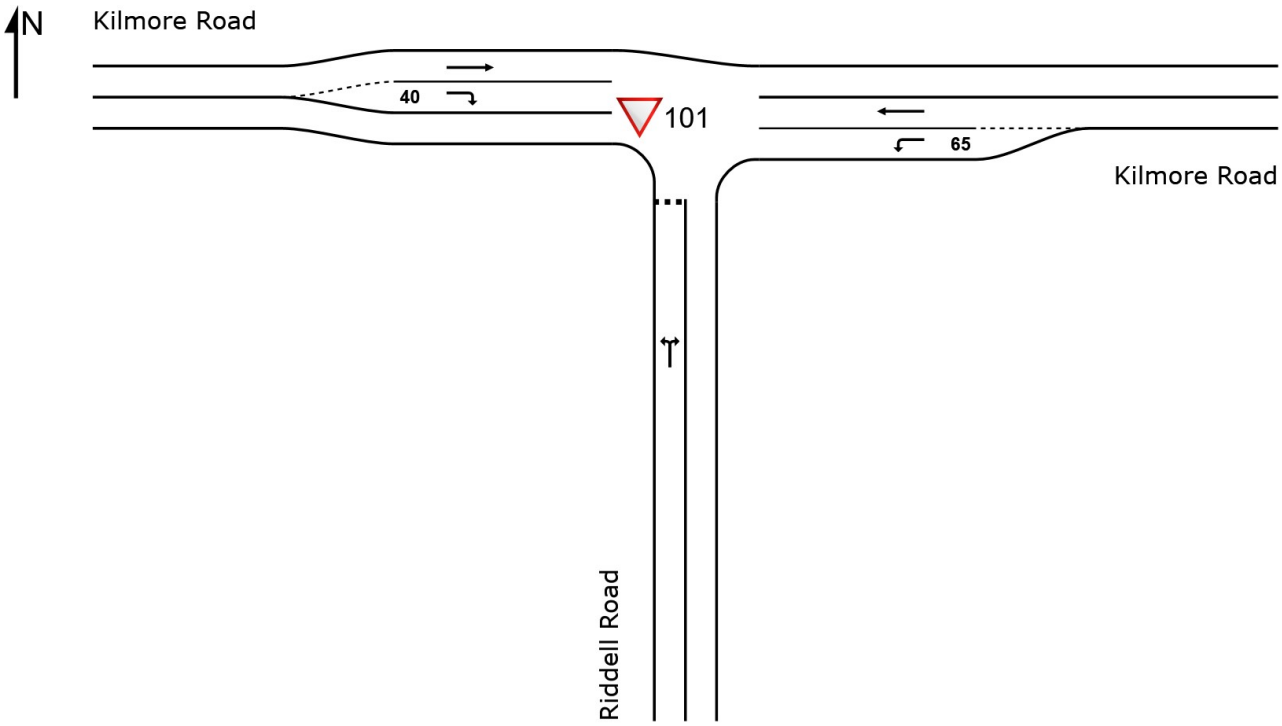
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Base PM Riddell Road & Kilmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Riddell Road														
1	L2	22	1	23	4.5	6.183	4679.3	LOS F	363.6	2573.4	1.00	5.36	21.52	0.8
3	R2	603	7	635	1.2	6.183	4685.1	LOS F	363.6	2573.4	1.00	5.36	21.52	0.8
Approach		625	8	658	1.3	6.183	4684.9	LOS F	363.6	2573.4	1.00	5.36	21.52	0.8
East: Kilmore Road														
4	L2	342	4	360	1.2	0.195	6.4	LOS A	0.0	0.0	0.00	0.61	0.00	59.3
5	T1	486	12	512	2.5	0.267	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		828	16	872	1.9	0.267	2.7	NA	0.0	0.0	0.00	0.25	0.00	65.1
West: Kilmore Road														
11	T1	648	11	682	1.7	0.355	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.7
12	R2	31	2	33	6.5	0.068	12.5	LOS B	0.2	1.8	0.67	0.88	0.67	52.3
Approach		679	13	715	1.9	0.355	0.7	NA	0.2	1.8	0.03	0.04	0.03	68.7
All Vehicles		2132	37	2244	1.7	6.183	1374.6	NA	363.6	2573.4	0.30	1.68	6.32	2.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Riddell Road													
Lane 1	658	1.3	106	6.183	100	4684.9	LOS F	363.6	2573.4	Full	500	0.0	100.0
Approach	658	1.3		6.183		4684.9	LOS F	363.6	2573.4				
East: Kilmore Road													
Lane 1	360	1.2	1842	0.195	100	6.4	LOS A	0.0	0.0	Short	65	0.0	NA
Lane 2	512	2.5	1919	0.267	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	872	1.9		0.267		2.7	NA	0.0	0.0				
West: Kilmore Road													
Lane 1	682	1.7	1919	0.355	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	33	6.5	483	0.068	100	12.5	LOS B	0.2	1.8	Short	40	0.0	NA
Approach	715	1.9		0.355		0.7	NA	0.2	1.8				
Intersection	2244	1.7		6.183		1374.6	NA	363.6	2573.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Riddell Road															
Lane 1		6.183	1.000	977.9	1035.4	2573.4	NA	NA	6050.7	10976.4	2.07	5.15	100.0	NA	NA
Approach		6.183			1035.4	2573.4	NA	NA	6050.7	10976.4	2.07	5.15			
East: Kilmore Road															
Lane 1	Y	0.195	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	NA	0.0	2
Lane 2	Y	0.267	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.267			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
West: Kilmore Road															
Lane 1	Y	0.355	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Lane 2		0.068	1.000	0.0	0.7	1.8	NA	NA	0.4	0.8	0.02	0.04	NA	0.0	1
Approach		0.355			0.7	1.8	NA	NA	0.4	0.8	0.00	0.00			
Intersection		6.183			1035.4	2573.4	NA	NA	6050.7	10976.4	2.07	5.15			

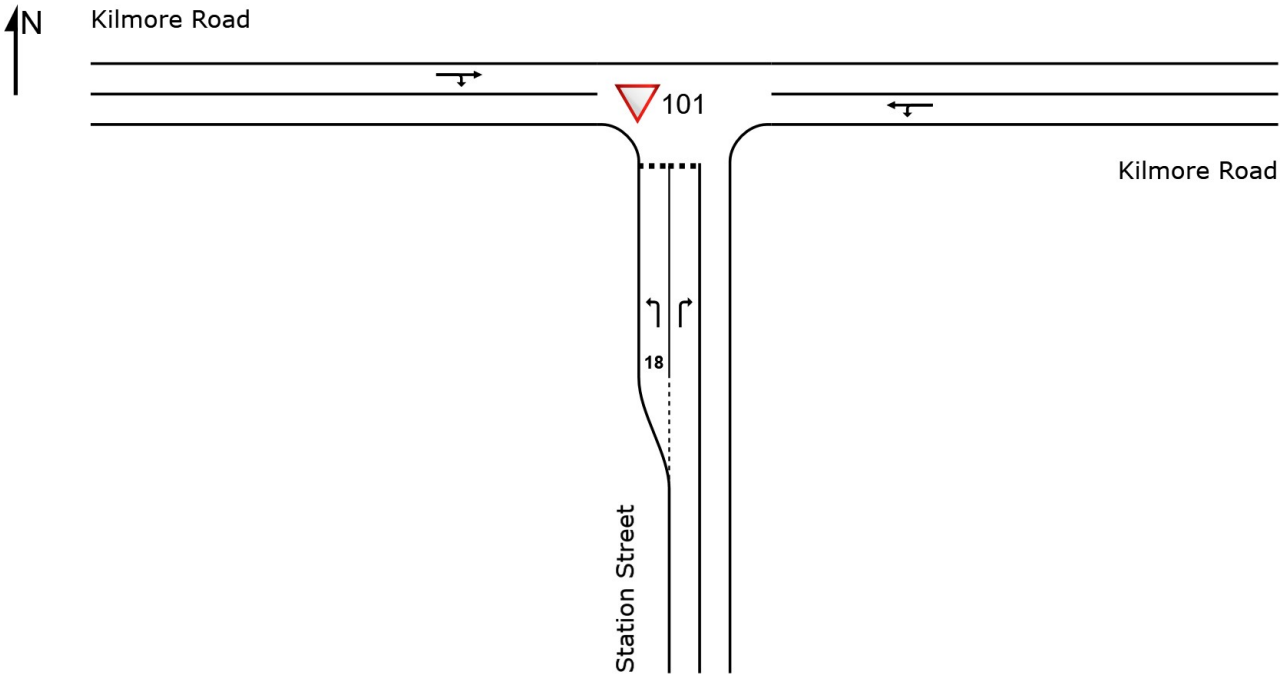
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Base AM Station Street & Killmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Station Street														
1	L2	134	7	141	5.2	0.637	31.4	LOS D	2.6	19.1	0.94	1.13	1.50	34.7
3	R2	24	0	25	0.0	0.439	78.9	LOS F	1.2	8.3	0.97	1.03	1.12	23.8
Approach		158	7	166	4.4	0.637	38.6	LOS E	2.6	19.1	0.95	1.12	1.44	32.5
East: Kilmore Road														
4	L2	61	2	64	3.3	0.674	5.0	LOS A	0.0	0.0	0.00	0.03	0.00	48.7
5	T1	1166	26	1227	2.2	0.674	0.5	LOS A	0.0	0.0	0.00	0.03	0.00	49.2
Approach		1227	28	1292	2.3	0.674	0.7	NA	0.0	0.0	0.00	0.03	0.00	49.2
West: Kilmore Road														
11	T1	443	10	466	2.3	0.835	36.2	LOS E	17.5	125.6	1.00	0.26	2.56	32.6
12	R2	102	7	107	6.9	0.835	50.3	LOS F	17.5	125.6	1.00	0.26	2.56	32.3
Approach		545	17	574	3.1	0.835	38.8	NA	17.5	125.6	1.00	0.26	2.56	32.6
All Vehicles		1930	52	2032	2.7	0.835	14.6	NA	17.5	125.6	0.36	0.18	0.84	41.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Station Street													
Lane 1	141	5.2	221	0.637	100	31.4	LOS D	2.6	19.1	Short	18	0.0	NA
Lane 2	25	0.0	58	0.439	100	78.9	LOS F	1.2	8.3	Full	500	0.0	0.0
Approach	166	4.4		0.637		38.6	LOS E	2.6	19.1				
East: Kilmore Road													
Lane 1	1292	2.3	1917	0.674	100	0.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1292	2.3		0.674		0.7	NA	0.0	0.0				
West: Kilmore Road													
Lane 1	574	3.1	687	0.835	100	38.8	LOS E	17.5	125.6	Full	500	0.0	0.0
Approach	574	3.1		0.835		38.8	NA	17.5	125.6				
Intersection	2032	2.7		0.835		14.6	NA	17.5	125.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Station Street															
Lane 1		0.637	1.000	2.7	7.7	19.1	NA	NA	7.7	13.9	0.43	1.06	NA	6.7	2
Lane 2		0.439	1.000	0.8	3.3	8.3	NA	NA	3.7	6.6	0.01	0.02	0.0	NA	NA
Approach		0.637			7.7	19.1	NA	NA	7.7	13.9	0.01	0.02			
East: Kilmore Road															
Lane 1	Y	0.674	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.674			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
West: Kilmore Road															
Lane 1		0.835	1.000	21.3	50.5	125.6	NA	NA	43.5	78.8	0.10	0.25	0.0	NA	NA
Approach		0.835			50.5	125.6	NA	NA	43.5	78.8	0.10	0.25			
Intersection		0.835			50.5	125.6	NA	NA	43.5	78.8	0.10	0.25			

Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Base PM Station Street & Killmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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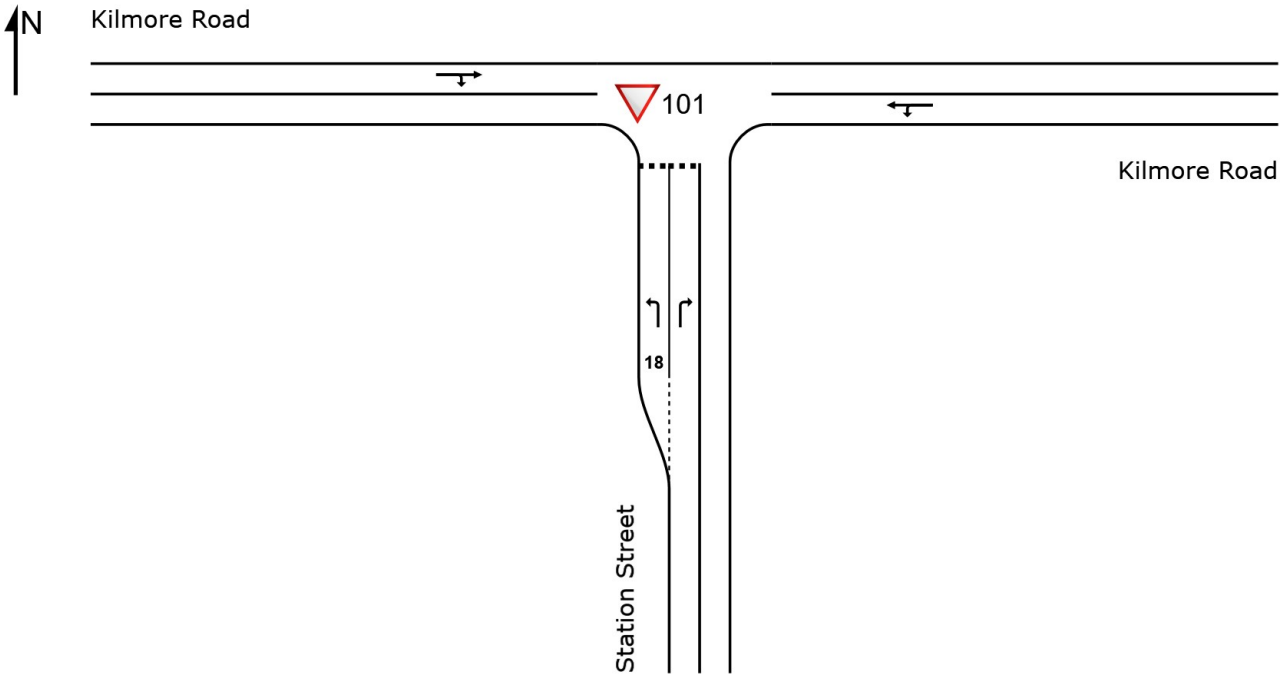


Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Station Street														
1	L2	138	3	145	2.2	0.204	8.7	LOS A	0.8	5.5	0.62	0.82	0.62	44.3
3	R2	48	0	51	0.0	1.027	235.5	LOS F	5.3	37.0	1.00	1.40	2.63	11.7
Approach		186	3	196	1.6	1.027	67.2	LOS F	5.3	37.0	0.71	0.97	1.14	25.8
East: Kilmore Road														
4	L2	78	0	82	0.0	0.420	4.7	LOS A	0.0	0.0	0.00	0.06	0.00	49.0
5	T1	688	13	724	1.9	0.420	0.2	LOS A	0.0	0.0	0.00	0.06	0.00	49.4
Approach		766	13	806	1.7	0.420	0.6	NA	0.0	0.0	0.00	0.06	0.00	49.4
West: Kilmore Road														
11	T1	970	12	1021	1.2	0.788	6.0	LOS A	12.9	91.2	1.00	0.18	1.73	45.1
12	R2	164	2	173	1.2	0.788	19.4	LOS C	12.9	91.2	1.00	0.18	1.73	44.5
Approach		1134	14	1194	1.2	0.788	7.9	NA	12.9	91.2	1.00	0.18	1.73	45.0
All Vehicles		2086	30	2196	1.4	1.027	10.5	NA	12.9	91.2	0.61	0.21	1.04	43.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Station Street													
Lane 1	145	2.2	712	0.204	100	8.7	LOS A	0.8	5.5	Short	18	0.0	NA
Lane 2	51	0.0	49	1.027	100	235.5	LOS F	5.3	37.0	Full	500	0.0	0.0
Approach	196	1.6		1.027		67.2	LOS F	5.3	37.0				
East: Kilmore Road													
Lane 1	806	1.7	1919	0.420	100	0.6	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	806	1.7		0.420		0.6	NA	0.0	0.0				
West: Kilmore Road													
Lane 1	1194	1.2	1515	0.788	100	7.9	LOS A	12.9	91.2	Full	500	0.0	0.0
Approach	1194	1.2		0.788		7.9	NA	12.9	91.2				
Intersection	2196	1.4		1.027		10.5	NA	12.9	91.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Station Street															
Lane 1		0.204	1.000	0.0	2.2	5.5	NA	NA	1.2	2.1	0.12	0.30	NA	0.0	2
Lane 2		1.027	1.000	11.5	14.9	37.0	NA	NA	22.7	41.2	0.03	0.07	0.0	NA	NA
Approach		1.027			14.9	37.0	NA	NA	22.7	41.2	0.03	0.07			
East: Kilmore Road															
Lane 1	Y	0.420	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.420			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
West: Kilmore Road															
Lane 1		0.788	1.000	6.3	36.7	91.2	NA	NA	17.0	30.8	0.07	0.18	0.0	NA	NA
Approach		0.788			36.7	91.2	NA	NA	17.0	30.8	0.07	0.18			
Intersection		1.027			36.7	91.2	NA	NA	22.7	41.2	0.07	0.18			

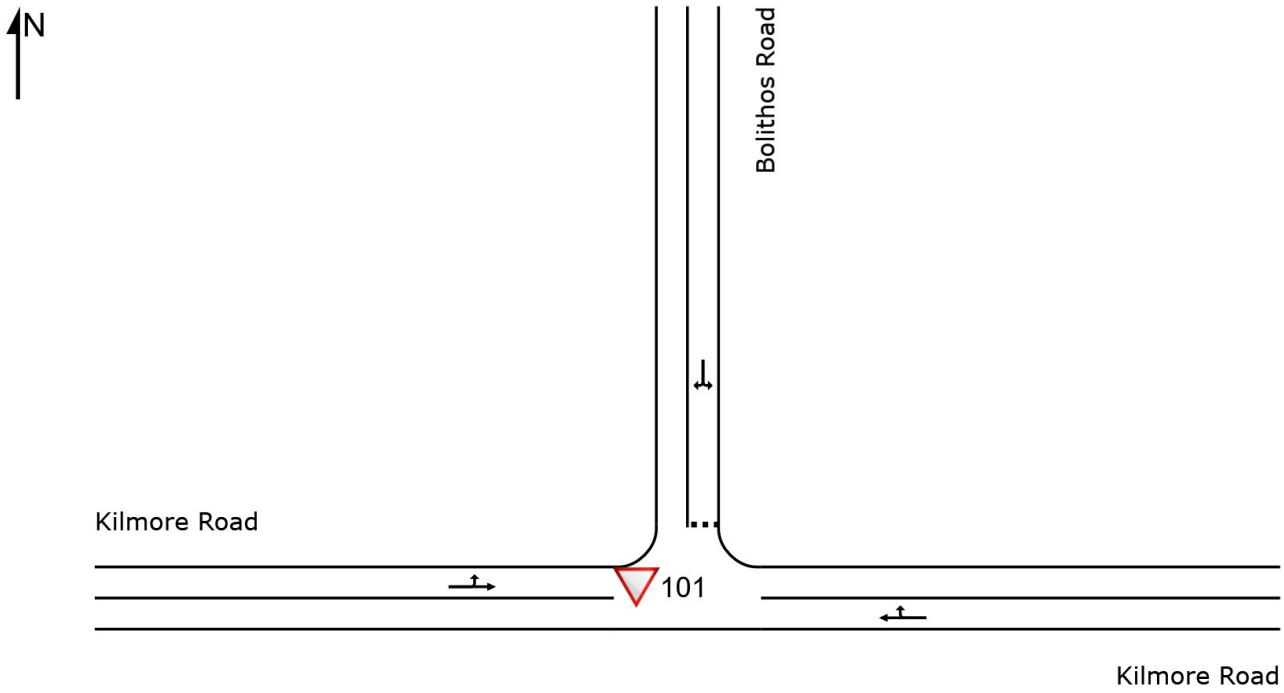
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Base AM Bolithos Road & Kilmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	1163	27	1224	2.3	0.661	0.3	LOS A	0.9	6.4	0.06	0.01	0.09	59.5
6	R2	23	1	24	4.3	0.661	11.7	LOS B	0.9	6.4	0.06	0.01	0.09	57.0
Approach		1186	28	1248	2.4	0.661	0.5	NA	0.9	6.4	0.06	0.01	0.09	59.5
North: Bolithos Road														
7	L2	34	1	36	2.9	1.052	146.8	LOS F	9.8	70.0	1.00	1.87	4.22	14.9
9	R2	68	2	72	2.9	1.052	196.1	LOS F	9.8	70.0	1.00	1.87	4.22	14.9
Approach		102	3	107	2.9	1.052	179.6	LOS F	9.8	70.0	1.00	1.87	4.22	14.9
West: Kilmore Road														
10	L2	19	1	20	5.3	0.254	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	57.8
11	T1	444	9	467	2.0	0.254	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach		463	10	487	2.2	0.254	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		1751	41	1843	2.3	1.052	10.9	NA	9.8	70.0	0.10	0.12	0.31	50.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1	1248	2.4	1889	0.661	100	0.5	LOS A	0.9	6.4	Full	500	0.0	0.0
Approach	1248	2.4		0.661		0.5	NA	0.9	6.4				
North: Bolithos Road													
Lane 1	107	2.9	102	1.052	100	179.6	LOS F	9.8	70.0	Full	500	0.0	0.0
Approach	107	2.9		1.052		179.6	LOS F	9.8	70.0				
West: Kilmore Road													
Lane 1	487	2.2	1919	0.254	100	0.3	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	487	2.2		0.254		0.3	NA	0.0	0.0				
Intersection	1843	2.3		1.052		10.9	NA	9.8	70.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.661	1.000	0.3	2.6	6.4	NA	NA	1.0	1.8	0.01	0.01	0.0	NA	NA
Approach		0.661			2.6	6.4	NA	NA	1.0	1.8	0.01	0.01			
North: Bolithos Road															
Lane 1		1.052	1.000	23.4	28.2	70.0	NA	NA	37.3	67.6	0.06	0.14	0.0	NA	NA
Approach		1.052			28.2	70.0	NA	NA	37.3	67.6	0.06	0.14			
West: Kilmore Road															
Lane 1	Y	0.254	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.254			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
Intersection		1.052			28.2	70.0	NA	NA	37.3	67.6	0.06	0.14			

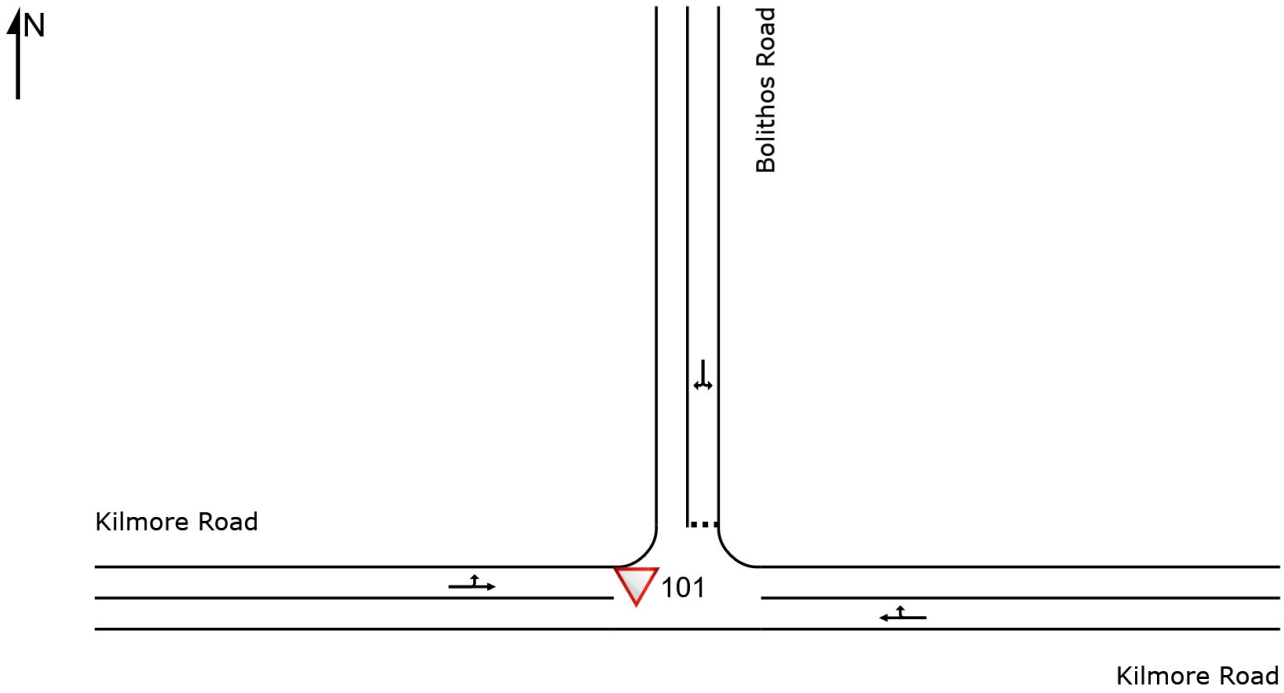
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Base PM Bolithos Road & Kilmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	704	13	741	1.8	0.445	1.9	LOS A	1.6	11.7	0.16	0.02	0.23	57.6
6	R2	19	2	20	10.5	0.445	24.4	LOS C	1.6	11.7	0.16	0.02	0.23	55.0
Approach		723	15	761	2.1	0.445	2.5	NA	1.6	11.7	0.16	0.02	0.23	57.5
North: Bolithos Road														
7	L2	33	1	35	3.0	0.958	94.3	LOS F	5.8	40.8	0.99	1.46	2.99	20.1
9	R2	67	0	71	0.0	0.958	130.2	LOS F	5.8	40.8	0.99	1.46	2.99	20.1
Approach		100	1	105	1.0	0.958	118.4	LOS F	5.8	40.8	0.99	1.46	2.99	20.1
West: Kilmore Road														
10	L2	44	1	46	2.3	0.558	5.8	LOS A	0.0	0.0	0.00	0.03	0.00	57.6
11	T1	980	11	1032	1.1	0.558	0.3	LOS A	0.0	0.0	0.00	0.03	0.00	59.3
Approach		1024	12	1078	1.2	0.558	0.5	NA	0.0	0.0	0.00	0.03	0.00	59.2
All Vehicles		1847	28	1944	1.5	0.958	7.7	NA	5.8	40.8	0.11	0.10	0.25	53.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1	761	2.1	1711	0.445	100	2.5	LOS A	1.6	11.7	Full	500	0.0	0.0
Approach	761	2.1		0.445		2.5	NA	1.6	11.7				
North: Bolithos Road													
Lane 1	105	1.0	110	0.958	100	118.4	LOS F	5.8	40.8	Full	500	0.0	0.0
Approach	105	1.0		0.958		118.4	LOS F	5.8	40.8				
West: Kilmore Road													
Lane 1	1078	1.2	1931	0.558	100	0.5	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1078	1.2		0.558		0.5	NA	0.0	0.0				
Intersection	1944	1.5		0.958		7.7	NA	5.8	40.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.445	1.000	0.7	4.7	11.7	NA	NA	3.6	6.5	0.01	0.02	0.0	NA	NA
Approach		0.445			4.7	11.7	NA	NA	3.6	6.5	0.01	0.02			
North: Bolithos Road															
Lane 1		0.958	1.000	12.9	16.4	40.8	NA	NA	23.3	42.3	0.03	0.08	0.0	NA	NA
Approach		0.958			16.4	40.8	NA	NA	23.3	42.3	0.03	0.08			
West: Kilmore Road															
Lane 1	Y	0.558	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.558			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
Intersection		0.958			16.4	40.8	NA	NA	23.3	42.3	0.03	0.08			

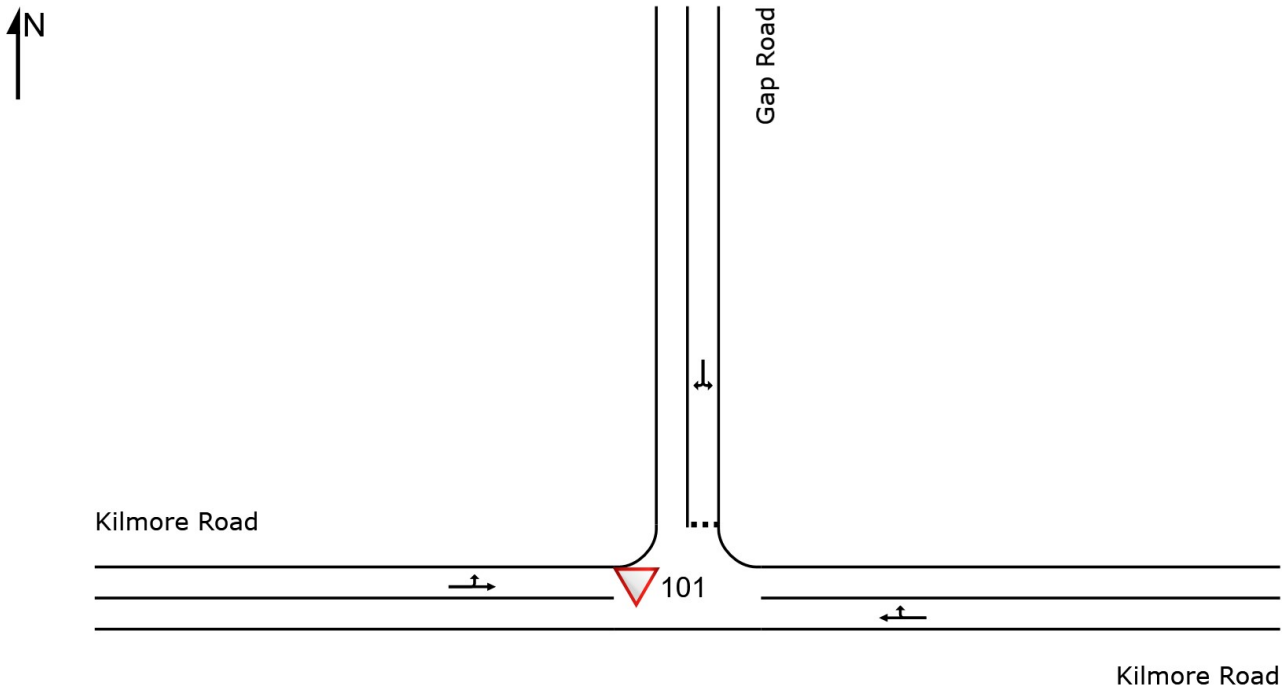
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Base AM Gap Road & Kilmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	1027	25	1081	2.4	0.574	0.1	LOS A	0.3	2.2	0.02	0.01	0.03	59.8
6	R2	10	2	11	20.0	0.574	9.7	LOS A	0.3	2.2	0.02	0.01	0.03	56.5
Approach		1037	27	1092	2.6	0.574	0.2	NA	0.3	2.2	0.02	0.01	0.03	59.8
North: Gap Road														
7	L2	12	1	13	8.3	0.411	11.8	LOS B	1.3	9.6	0.87	0.98	1.09	39.1
9	R2	55	2	58	3.6	0.411	34.4	LOS D	1.3	9.6	0.87	0.98	1.09	38.9
Approach		67	3	71	4.5	0.411	30.3	LOS D	1.3	9.6	0.87	0.98	1.09	38.9
West: Kilmore Road														
10	L2	19	2	20	10.5	0.195	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	57.5
11	T1	334	9	352	2.7	0.195	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach		353	11	372	3.1	0.195	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehicles		1457	41	1534	2.8	0.574	1.6	NA	1.3	9.6	0.06	0.06	0.07	58.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1	1092	2.6	1902	0.574	100	0.2	LOS A	0.3	2.2	Full	500	0.0	0.0
Approach	1092	2.6		0.574		0.2	NA	0.3	2.2				
North: Gap Road													
Lane 1	71	4.5	172	0.411	100	30.3	LOS D	1.3	9.6	Full	500	0.0	0.0
Approach	71	4.5		0.411		30.3	LOS D	1.3	9.6				
West: Kilmore Road													
Lane 1	372	3.1	1905	0.195	100	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	372	3.1		0.195		0.4	NA	0.0	0.0				
Intersection	1534	2.8		0.574		1.6	NA	1.3	9.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.574	1.000	0.1	0.9	2.2	NA	NA	0.3	0.5	0.00	0.00	0.0	NA	NA
Approach		0.574			0.9	2.2	NA	NA	0.3	0.5	0.00	0.00			
North: Gap Road															
Lane 1		0.411	1.000	0.9	3.9	9.6	NA	NA	3.5	6.4	0.01	0.02	0.0	NA	NA
Approach		0.411			3.9	9.6	NA	NA	3.5	6.4	0.01	0.02			
West: Kilmore Road															
Lane 1	Y	0.195	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.195			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
Intersection		0.574			3.9	9.6	NA	NA	3.5	6.4	0.01	0.02			

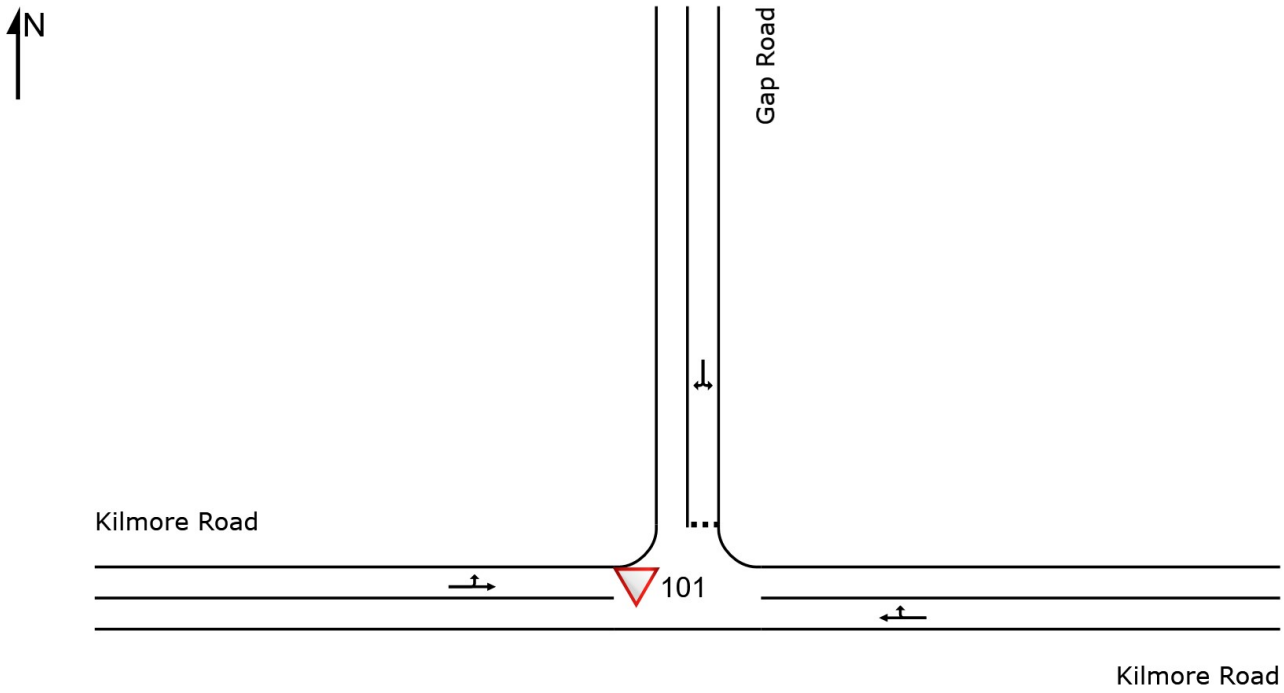
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Base PM Gap Road & Kilmore Road (Site Folder: Base case - growth)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	657	14	692	2.1	0.377	0.3	LOS A	0.4	2.7	0.05	0.01	0.07	59.5
6	R2	10	1	11	10.0	0.377	14.0	LOS B	0.4	2.7	0.05	0.01	0.07	56.7
Approach		667	15	702	2.2	0.377	0.5	NA	0.4	2.7	0.05	0.01	0.07	59.4
North: Gap Road														
7	L2	15	2	16	13.3	0.199	10.8	LOS B	0.6	4.5	0.83	0.94	0.88	43.9
9	R2	30	1	32	3.3	0.199	24.6	LOS C	0.6	4.5	0.83	0.94	0.88	43.8
Approach		45	3	47	6.7	0.199	20.0	LOS C	0.6	4.5	0.83	0.94	0.88	43.8
West: Kilmore Road														
10	L2	52	0	55	0.0	0.418	5.7	LOS A	0.0	0.0	0.00	0.04	0.00	57.8
11	T1	714	9	752	1.3	0.418	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach		766	9	806	1.2	0.418	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.2
All Vehicles		1478	27	1556	1.8	0.418	1.1	NA	0.6	4.5	0.05	0.05	0.06	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1	702	2.2	1861	0.377	100	0.5	LOS A	0.4	2.7	Full	500	0.0	0.0
Approach	702	2.2		0.377		0.5	NA	0.4	2.7				
North: Gap Road													
Lane 1	47	6.7	238	0.199	100	20.0	LOS C	0.6	4.5	Full	500	0.0	0.0
Approach	47	6.7		0.199		20.0	LOS C	0.6	4.5				
West: Kilmore Road													
Lane 1	806	1.2	1929	0.418	100	0.5	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	806	1.2		0.418		0.5	NA	0.0	0.0				
Intersection	1556	1.8		0.418		1.1	NA	0.6	4.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.377	1.000	0.1	1.1	2.7	NA	NA	0.6	1.2	0.00	0.01	0.0	NA	NA
Approach		0.377			1.1	2.7	NA	NA	0.6	1.2	0.00	0.01			
North: Gap Road															
Lane 1		0.199	1.000	0.1	1.8	4.5	NA	NA	1.4	2.6	0.00	0.01	0.0	NA	NA
Approach		0.199			1.8	4.5	NA	NA	1.4	2.6	0.00	0.01			
West: Kilmore Road															
Lane 1	Y	0.418	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.418			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
Intersection		0.418			1.8	4.5	NA	NA	1.4	2.6	0.00	0.01			

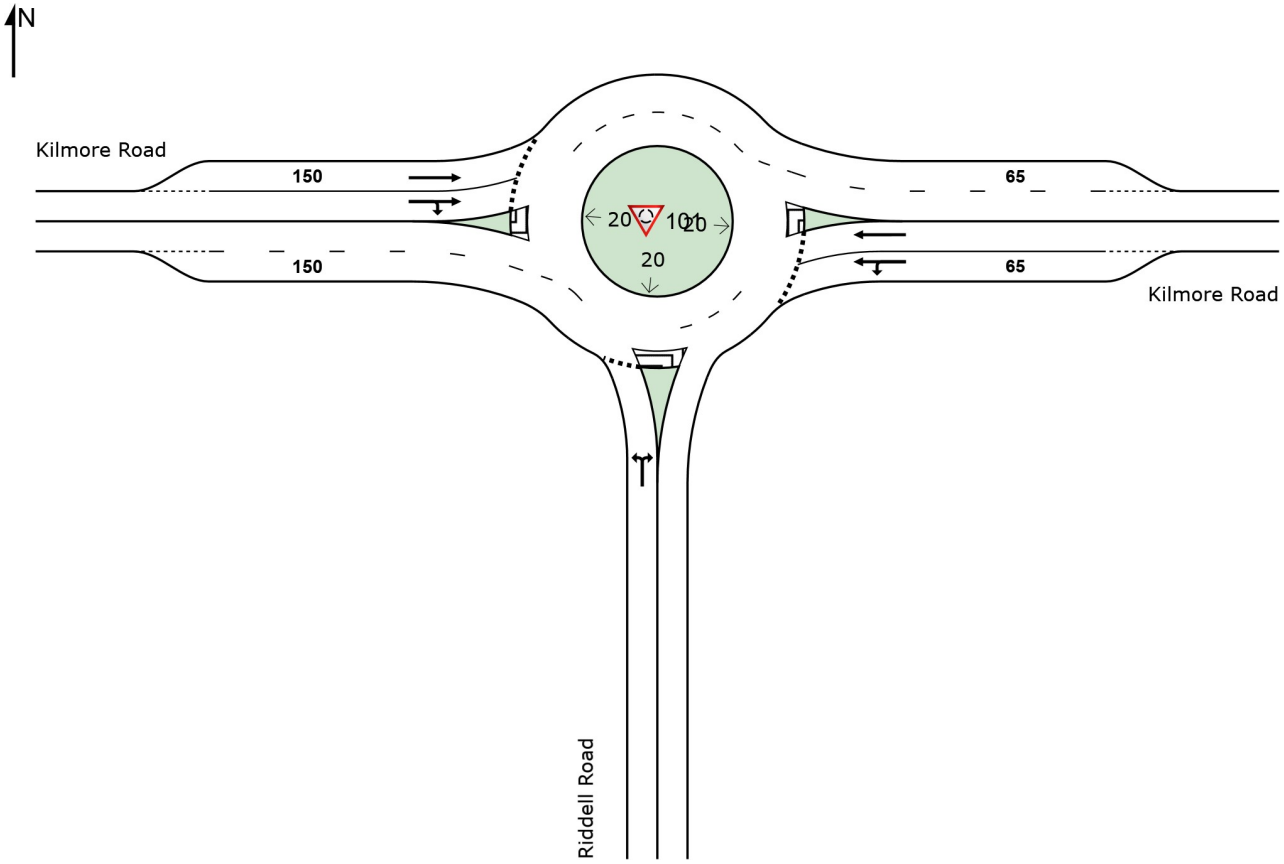
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Proposed AM Riddell Road & Kilmore Road - roundabout - 2 lane approaches (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Riddell Road														
1	L2	31	2	33	6.5	0.409	16.2	LOS B	3.0	21.4	0.87	0.97	0.96	49.8
3	R2	221	5	233	2.3	0.409	18.9	LOS B	3.0	21.4	0.87	0.97	0.96	51.4
Approach		252	7	265	2.8	0.409	18.6	LOS B	3.0	21.4	0.87	0.97	0.96	51.2
East: Kilmore Road														
4	L2	401	9	422	2.2	0.402	5.3	LOS A	3.2	22.8	0.18	0.49	0.18	60.2
5	T1	885	27	932	3.1	0.442	5.8	LOS A	3.7	26.9	0.18	0.45	0.18	61.6
Approach		1286	36	1354	2.8	0.442	5.6	LOS A	3.7	26.9	0.18	0.46	0.18	61.1
West: Kilmore Road														
11	T1	382	13	402	3.4	0.242	6.7	LOS A	1.7	12.1	0.48	0.56	0.48	59.5
12	R2	26	1	27	3.8	0.242	11.0	LOS B	1.7	12.1	0.49	0.56	0.49	58.9
Approach		408	14	429	3.4	0.242	6.9	LOS A	1.7	12.1	0.48	0.56	0.48	59.4
All Vehicles		1946	57	2048	2.9	0.442	7.6	LOS A	3.7	26.9	0.33	0.55	0.34	59.3

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Riddell Road													
Lane 1[d]	265	2.8	648	0.409	100	18.6	LOS B	3.0	21.4	Full	500	0.0	0.0
Approach	265	2.8		0.409		18.6	LOS B	3.0	21.4				
East: Kilmore Road													
Lane 1	590	2.5	1468	0.402	91[6]	5.9	LOS A	3.2	22.8	Short	65	0.0	NA
Lane 2[d]	764	3.1	1728	0.442	100	5.4	LOS A	3.7	26.9	Full	500	0.0	0.0
Approach	1354	2.8		0.442		5.6	LOS A	3.7	26.9				
West: Kilmore Road													
Lane 1	110	3.4	971	0.114	47[6]	7.8	LOS A	0.7	4.8	Short	150	0.0	NA
Lane 2[d]	319	3.4	1320	0.242	100	6.7	LOS A	1.7	12.1	Full	500	0.0	0.0
Approach	429	3.4		0.242		6.9	LOS A	1.7	12.1				
Intersection	2048	2.9		0.442		7.6	LOS A	3.7	26.9				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Riddell Road															
Lane 1		0.409	1.000	0.6	8.6	21.4	NA	NA	4.8	8.6	0.02	0.04	0.0	NA	NA
Approach		0.409			8.6	21.4	NA	NA	4.8	8.6	0.02	0.04			
East: Kilmore Road															
Lane 1		0.402	1.000	0.0	9.2	22.8	NA	NA	0.2	0.4	0.14	0.35	NA	0.0	2
Lane 2		0.442	1.000	0.0	10.8	26.9	NA	NA	0.2	0.4	0.02	0.05	0.0	NA	NA
Approach		0.442			10.8	26.9	NA	NA	0.2	0.4	0.02	0.05			
West: Kilmore Road															
Lane 1		0.114	1.000	0.0	1.9	4.8	NA	NA	0.3	0.6	0.01	0.03	NA	0.0	2
Lane 2		0.242	1.000	0.0	4.9	12.1	NA	NA	0.6	1.1	0.01	0.02	0.0	NA	NA
Approach		0.242			4.9	12.1	NA	NA	0.6	1.1	0.01	0.02			
Intersection		0.442			10.8	26.9	NA	NA	4.8	8.6	0.02	0.05			

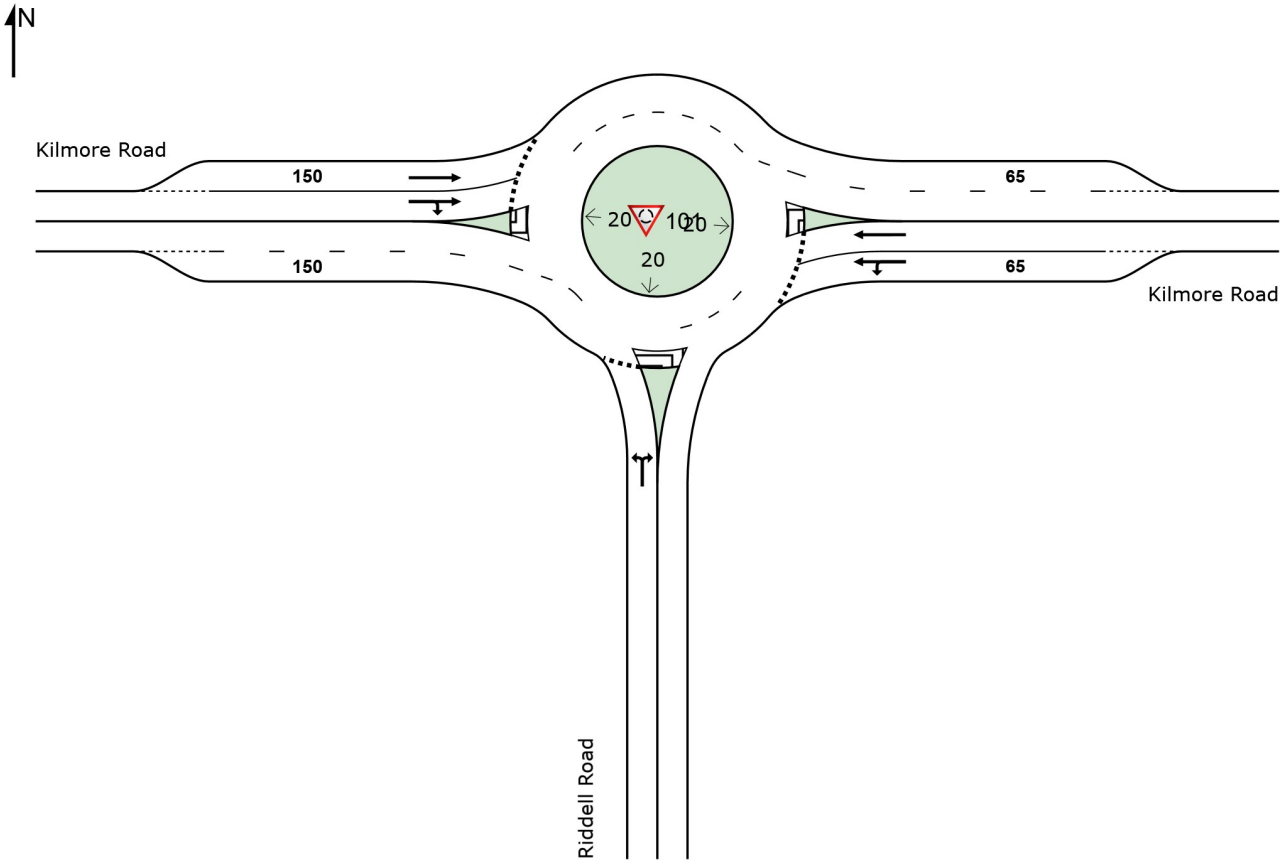
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Proposed PM Riddell Road & Kilmore Road - roundabout - 2 lane approaches (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Riddell Road														
1	L2	22	1	23	4.5	0.708	14.1	LOS B	8.5	60.2	0.88	1.01	1.20	50.5
3	R2	603	7	635	1.2	0.708	18.1	LOS B	8.5	60.2	0.88	1.01	1.20	52.0
Approach		625	8	658	1.3	0.708	17.9	LOS B	8.5	60.2	0.88	1.01	1.20	51.9
East: Kilmore Road														
4	L2	342	4	360	1.2	0.264	5.2	LOS A	2.0	14.1	0.20	0.50	0.20	60.5
5	T1	486	12	512	2.5	0.291	5.4	LOS A	2.3	16.8	0.19	0.44	0.19	61.6
Approach		828	16	872	1.9	0.291	5.4	LOS A	2.3	16.8	0.19	0.46	0.19	61.2
West: Kilmore Road														
11	T1	648	11	682	1.7	0.588	11.9	LOS B	6.3	45.1	0.91	0.90	1.02	57.5
12	R2	31	2	33	6.5	0.588	15.7	LOS B	6.3	45.1	0.95	0.93	1.10	55.8
Approach		679	13	715	1.9	0.588	12.1	LOS B	6.3	45.1	0.91	0.90	1.03	57.4
All Vehicles		2132	37	2244	1.7	0.708	11.2	LOS B	8.5	60.2	0.62	0.76	0.75	57.0

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Riddell Road													
Lane 1[d]	658	1.3	929	0.708	100	17.9	LOS B	8.5	60.2	Full	500	0.0	0.0
Approach	658	1.3		0.708		17.9	LOS B	8.5	60.2				
East: Kilmore Road													
Lane 1	381	1.2	1444	0.264	91[6]	5.3	LOS A	2.0	14.1	Short	65	0.0	NA
Lane 2[d]	490	2.5	1686	0.291	100	5.4	LOS A	2.3	16.8	Full	500	0.0	0.0
Approach	872	1.9		0.291		5.4	LOS A	2.3	16.8				
West: Kilmore Road													
Lane 1	177	1.7	641	0.276	47[6]	15.1	LOS B	1.9	13.2	Short	150	0.0	NA
Lane 2[d]	538	2.0	914	0.588	100	11.2	LOS B	6.3	45.1	Full	500	0.0	0.0
Approach	715	1.9		0.588		12.1	LOS B	6.3	45.1				
Intersection	2244	1.7		0.708		11.2	LOS B	8.5	60.2				

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

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Riddell Road															
Lane 1		0.708	1.000	5.0	24.2	60.2	NA	NA	10.5	19.1	0.05	0.12	0.0	NA	NA
Approach		0.708			24.2	60.2	NA	NA	10.5	19.1	0.05	0.12			
East: Kilmore Road															
Lane 1		0.264	1.000	0.0	5.7	14.1	NA	NA	0.1	0.2	0.09	0.22	NA	0.0	2
Lane 2		0.291	1.000	0.0	6.8	16.8	NA	NA	0.1	0.2	0.01	0.03	0.0	NA	NA
Approach		0.291			6.8	16.8	NA	NA	0.1	0.2	0.01	0.03			
West: Kilmore Road															
Lane 1		0.276	1.000	0.0	5.3	13.2	NA	NA	1.6	2.9	0.04	0.09	NA	0.0	2
Lane 2		0.588	1.000	2.1	18.1	45.1	NA	NA	6.0	10.8	0.04	0.09	0.0	NA	NA
Approach		0.588			18.1	45.1	NA	NA	6.0	10.8	0.04	0.09			
Intersection		0.708			24.2	60.2	NA	NA	10.5	19.1	0.05	0.12			

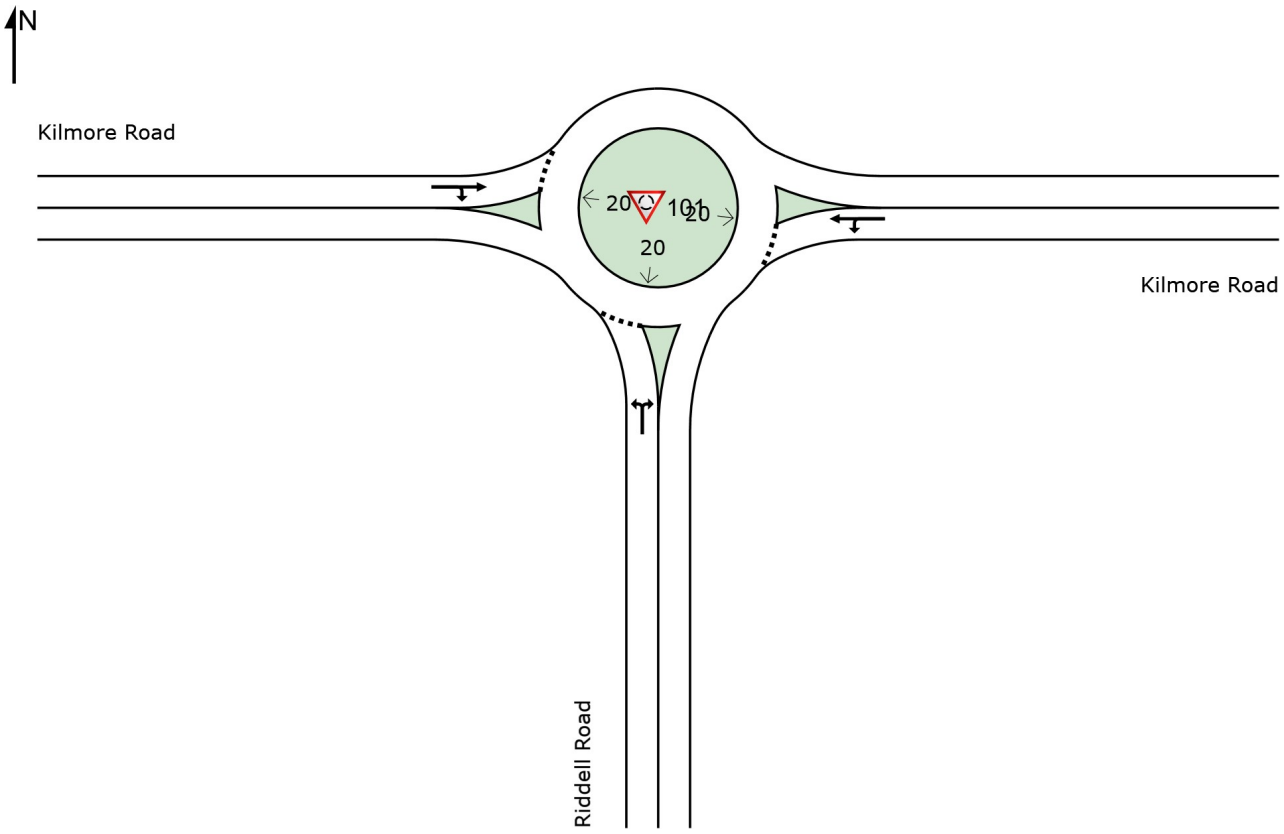
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Proposed AM Station Street & Kilmore Road - roundabout (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Riddell Road														
1	L2	134	7	141	5.2	0.643	38.1	LOS D	6.5	47.3	1.00	1.20	1.48	32.7
3	R2	24	0	25	0.0	0.643	42.1	LOS D	6.5	47.3	1.00	1.20	1.48	33.4
Approach		158	7	166	4.4	0.643	38.7	LOS D	6.5	47.3	1.00	1.20	1.48	32.8
East: Kilmore Road														
4	L2	61	2	64	3.3	0.912	5.2	LOS A	19.9	142.1	0.96	0.56	0.96	44.9
5	T1	1166	26	1227	2.2	0.912	5.1	LOS A	19.9	142.1	0.96	0.56	0.96	45.9
Approach		1227	28	1292	2.3	0.912	5.1	LOS A	19.9	142.1	0.96	0.56	0.96	45.8
West: Kilmore Road														
11	T1	443	10	466	2.3	0.367	2.9	LOS A	3.3	23.5	0.19	0.37	0.19	48.2
12	R2	102	7	107	6.9	0.367	7.5	LOS A	3.3	23.5	0.19	0.37	0.19	48.3
Approach		545	17	574	3.1	0.367	3.8	LOS A	3.3	23.5	0.19	0.37	0.19	48.2
All Vehicles		1930	52	2032	2.7	0.912	7.5	LOS A	19.9	142.1	0.75	0.56	0.78	45.0

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Riddell Road													
Lane 1[d]	166	4.4	259	0.643	100	38.7	LOS D	6.5	47.3	Full	500	0.0	0.0
Approach	166	4.4		0.643		38.7	LOS D	6.5	47.3				
East: Kilmore Road													
Lane 1[d]	1292	2.3	1417	0.912	100	5.1	LOS A	19.9	142.1	Full	500	0.0	0.0
Approach	1292	2.3		0.912		5.1	LOS A	19.9	142.1				
West: Kilmore Road													
Lane 1[d]	574	3.1	1561	0.367	100	3.8	LOS A	3.3	23.5	Full	500	0.0	0.0
Approach	574	3.1		0.367		3.8	LOS A	3.3	23.5				
Intersection	2032	2.7		0.912		7.5	LOS A	19.9	142.1				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)																
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Riddell Road															
Lane 1		0.643	1.000	4.8	19.0	47.3	NA	NA	11.8	21.4	0.04	0.09	0.0	NA	NA
Approach		0.643			19.0	47.3	NA	NA	11.8	21.4	0.04	0.09			
East: Kilmore Road															
Lane 1		0.912	1.000	0.0	57.2	142.1	NA	NA	6.0	10.8	0.11	0.28	0.0	NA	NA
Approach		0.912			57.2	142.1	NA	NA	6.0	10.8	0.11	0.28			
West: Kilmore Road															
Lane 1		0.367	1.000	0.0	9.4	23.5	NA	NA	0.2	0.3	0.02	0.05	0.0	NA	NA
Approach		0.367			9.4	23.5	NA	NA	0.2	0.3	0.02	0.05			
Intersection		0.912			57.2	142.1	NA	NA	11.8	21.4	0.11	0.28			

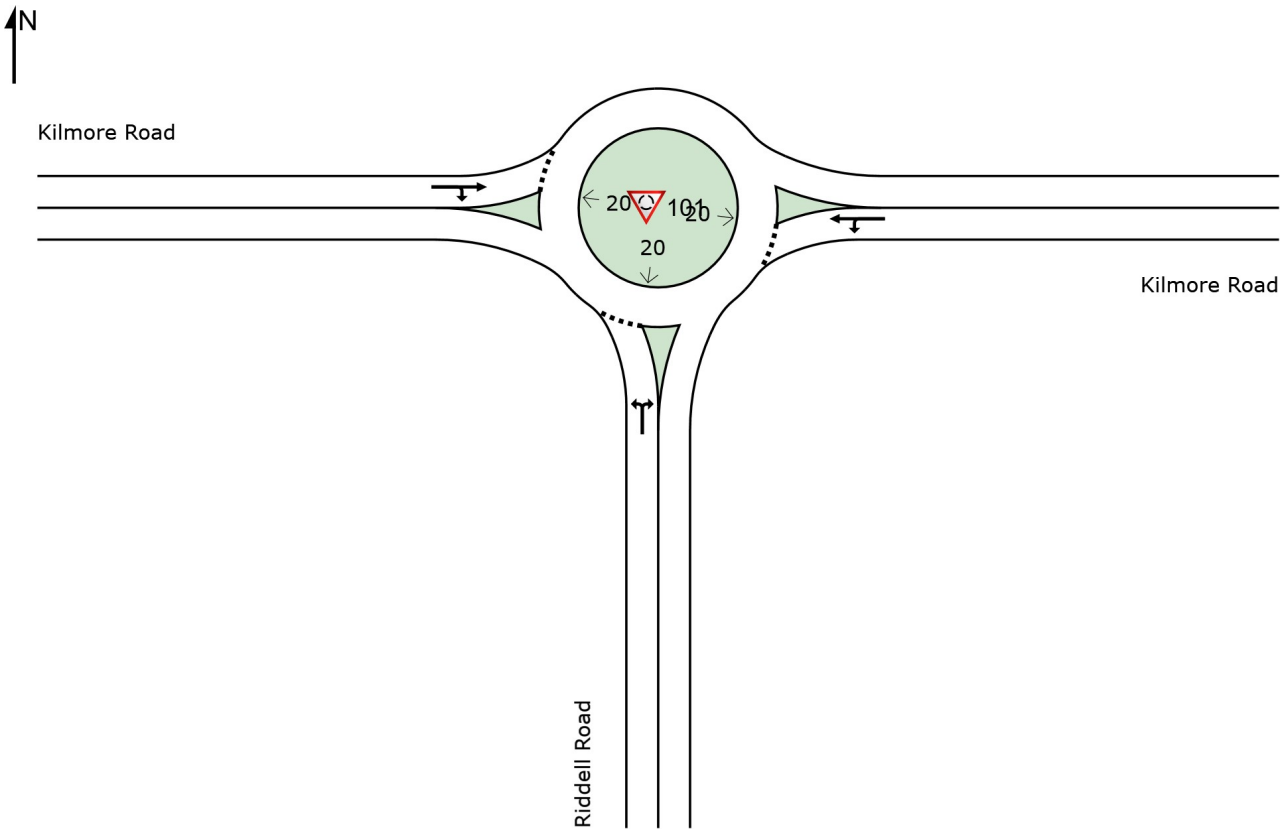
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Proposed PM Station Street & Kilmore Road - roundabout (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Riddell Road														
1	L2	138	3	145	2.2	0.282	7.7	LOS A	1.9	13.8	0.82	0.82	0.82	44.6
3	R2	48	0	51	0.0	0.282	12.1	LOS B	1.9	13.8	0.82	0.82	0.82	45.8
Approach		186	3	196	1.6	0.282	8.8	LOS A	1.9	13.8	0.82	0.82	0.82	44.9
East: Kilmore Road														
4	L2	78	0	82	0.0	0.637	4.3	LOS A	6.3	44.8	0.62	0.50	0.62	46.0
5	T1	688	13	724	1.9	0.637	4.3	LOS A	6.3	44.8	0.62	0.50	0.62	47.1
Approach		766	13	806	1.7	0.637	4.3	LOS A	6.3	44.8	0.62	0.50	0.62	47.0
West: Kilmore Road														
11	T1	970	12	1021	1.2	0.776	3.4	LOS A	13.8	97.9	0.52	0.39	0.52	47.2
12	R2	164	2	173	1.2	0.776	7.9	LOS A	13.8	97.9	0.52	0.39	0.52	47.3
Approach		1134	14	1194	1.2	0.776	4.1	LOS A	13.8	97.9	0.52	0.39	0.52	47.2
All Vehicles		2086	30	2196	1.4	0.776	4.6	LOS A	13.8	97.9	0.59	0.47	0.59	46.9

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

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Riddell Road													
Lane 1[d]	196	1.6	694	0.282	100	8.8	LOS A	1.9	13.8	Full	500	0.0	0.0
Approach	196	1.6		0.282		8.8	LOS A	1.9	13.8				
East: Kilmore Road													
Lane 1[d]	806	1.7	1266	0.637	100	4.3	LOS A	6.3	44.8	Full	500	0.0	0.0
Approach	806	1.7		0.637		4.3	LOS A	6.3	44.8				
West: Kilmore Road													
Lane 1[d]	1194	1.2	1539	0.776	100	4.1	LOS A	13.8	97.9	Full	500	0.0	0.0
Approach	1194	1.2		0.776		4.1	LOS A	13.8	97.9				
Intersection	2196	1.4		0.776		4.6	LOS A	13.8	97.9				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Riddell Road															
Lane 1		0.282	1.000	0.0	5.5	13.8	NA	NA	1.9	3.4	0.01	0.03	0.0	NA	NA
Approach		0.282			5.5	13.8	NA	NA	1.9	3.4	0.01	0.03			
East: Kilmore Road															
Lane 1		0.637	1.000	0.0	18.0	44.8	NA	NA	2.4	4.4	0.04	0.09	0.0	NA	NA
Approach		0.637			18.0	44.8	NA	NA	2.4	4.4	0.04	0.09			
West: Kilmore Road															
Lane 1		0.776	1.000	0.0	39.4	97.9	NA	NA	1.5	2.7	0.08	0.20	0.0	NA	NA
Approach		0.776			39.4	97.9	NA	NA	1.5	2.7	0.08	0.20			
Intersection		0.776			39.4	97.9	NA	NA	2.4	4.4	0.08	0.20			

Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

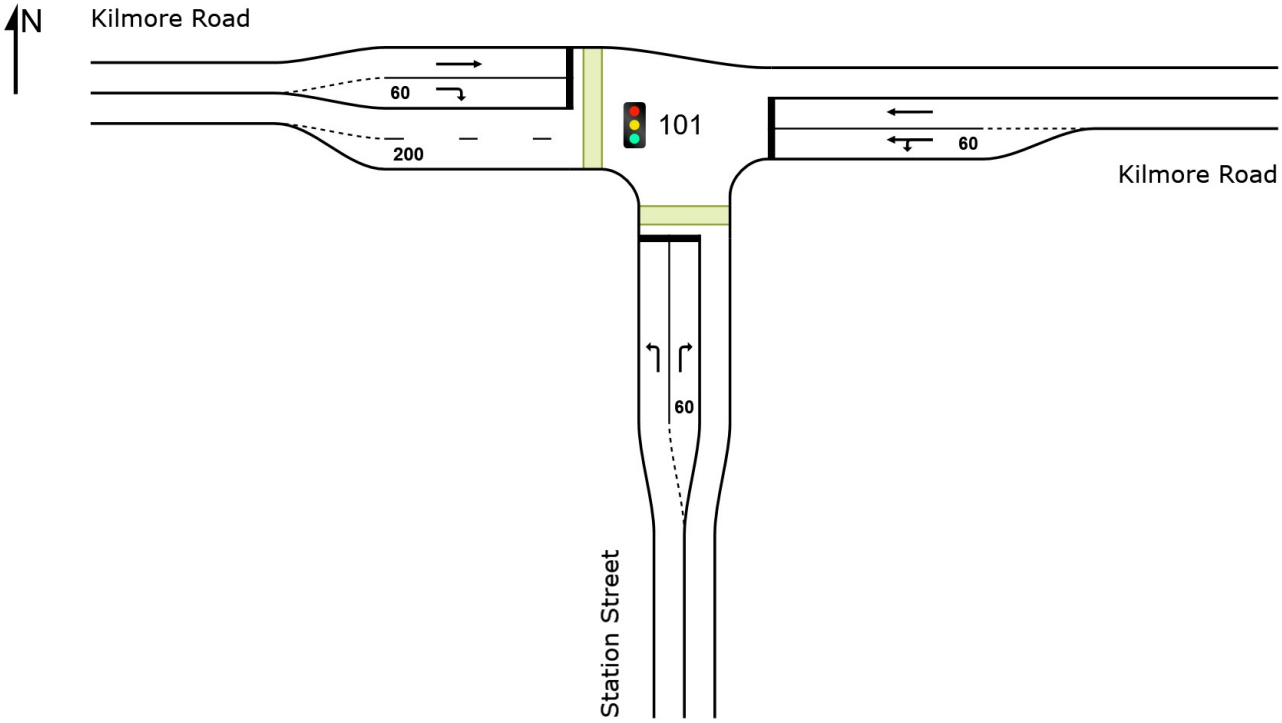
Site: 101 [Proposed AM Station Street & Kilmore Road - signals (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: FCRT
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Station Street														
1	L2	134	7	141	5.2	0.343	43.4	LOS D	5.8	42.7	0.88	0.78	0.88	32.2
3	R2	24	0	25	0.0	* 0.124	49.1	LOS D	1.1	8.0	0.93	0.71	0.93	29.6
Approach		158	7	166	4.4	0.343	44.3	LOS D	5.8	42.7	0.89	0.77	0.89	31.8
East: Kilmore Road														
4	L2	61	2	64	3.3	0.713	16.2	LOS B	17.8	127.3	0.62	0.58	0.62	42.5
5	T1	1166	26	1227	2.2	* 0.713	13.3	LOS B	17.8	127.2	0.62	0.57	0.62	43.0
Approach		1227	28	1292	2.3	0.713	13.5	LOS B	17.8	127.3	0.62	0.57	0.62	43.0
West: Kilmore Road														
11	T1	443	10	466	2.3	0.315	3.7	LOS A	6.8	48.3	0.33	0.29	0.33	47.6
12	R2	102	7	107	6.9	* 0.674	56.0	LOS E	5.5	40.6	1.00	0.84	1.11	28.1
Approach		545	17	574	3.1	0.674	13.5	LOS B	6.8	48.3	0.45	0.39	0.47	42.1
All Vehicles		1930	52	2032	2.7	0.713	16.0	LOS B	17.8	127.3	0.59	0.53	0.60	41.6

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

* Critical Movement (Signal Timing)

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Station Street													
Lane 1	141	5.2	412	0.343	100	43.4	LOS D	5.8	42.7	Full	500	0.0	0.0
Lane 2	25	0.0	204	0.124	100	49.1	LOS D	1.1	8.0	Short	60	0.0	NA
Approach	166	4.4		0.343		44.3	LOS D	5.8	42.7				
East: Kilmore Road													
Lane 1	645	2.3	905[1]	0.713	100	15.4	LOS B	17.8	127.3	Short	60	0.0	NA
Lane 2	647	2.2	907[1]	0.713	100	11.6	LOS B	17.8	127.2	Full	500	0.0	0.0
Approach	1292	2.3		0.713		13.5	LOS B	17.8	127.3				
West: Kilmore Road													
Lane 1	466	2.3	1480	0.315	100	3.7	LOS A	6.8	48.3	Full	500	0.0	0.0
Lane 2	107	6.9	159	0.674	100	56.0	LOS E	5.5	40.6	Short	60	0.0	NA
Approach	574	3.1		0.674		13.5	LOS B	6.8	48.3				
Intersection	2032	2.7		0.713		16.0	LOS B	17.8	127.3				

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Station Street															
Lane 1		0.343	1.000	0.0	26.1	42.7	24.1	39.3	10.1	21.0	0.05	0.09	0.0	NA	NA
Lane 2		0.124	1.000	0.0	4.9	8.0	4.8	7.9	2.2	4.6	0.08	0.13	NA	0.0	1
Approach		0.343			26.1	42.7	24.1	39.3	10.1	21.0	0.05	0.09			
East: Kilmore Road															
Lane 1		0.713	1.000	0.0	78.0	127.3	51.7	84.3	14.8	31.0	1.30	2.12	NA	75.0	2
Lane 2		0.713	1.000	0.0	77.9	127.2	51.7	84.4	14.8	30.9	0.16	0.25	0.0	NA	NA
Approach		0.713			78.0	127.3	51.7	84.4	14.8	31.0	0.16	0.25			
West: Kilmore Road															
Lane 1		0.315	1.000	0.0	29.6	48.3	22.4	36.6	3.4	7.1	0.06	0.10	0.0	NA	NA
Lane 2		0.674	1.000	0.3	24.9	40.6	23.3	38.0	11.4	23.7	0.41	0.68	NA	0.0	1
Approach		0.674			29.6	48.3	23.3	38.0	11.4	23.7	0.06	0.10			
Intersection		0.713			78.0	127.3	51.7	84.4	14.8	31.0	0.16	0.25			

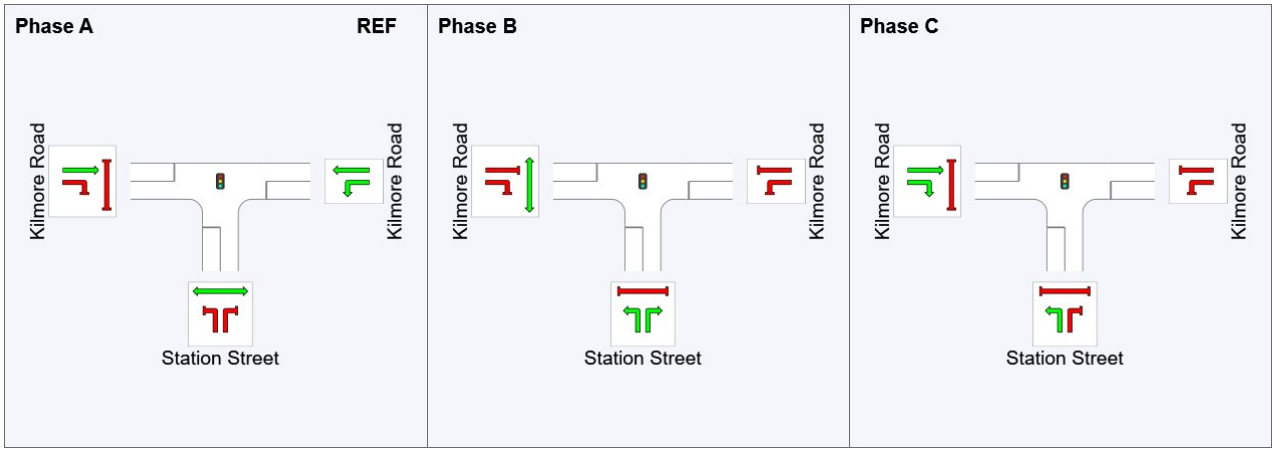
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Phase Timing Summary

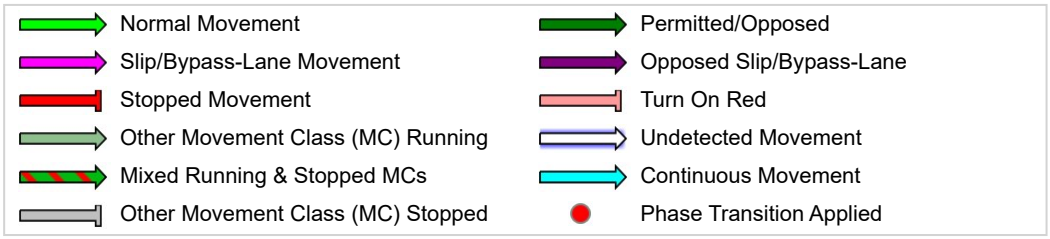
Phase	A	B	C
Phase Change Time (sec)	0	68	85
Green Time (sec)	62	11	9
Phase Time (sec)	68	17	15
Phase Split	68%	17%	15%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



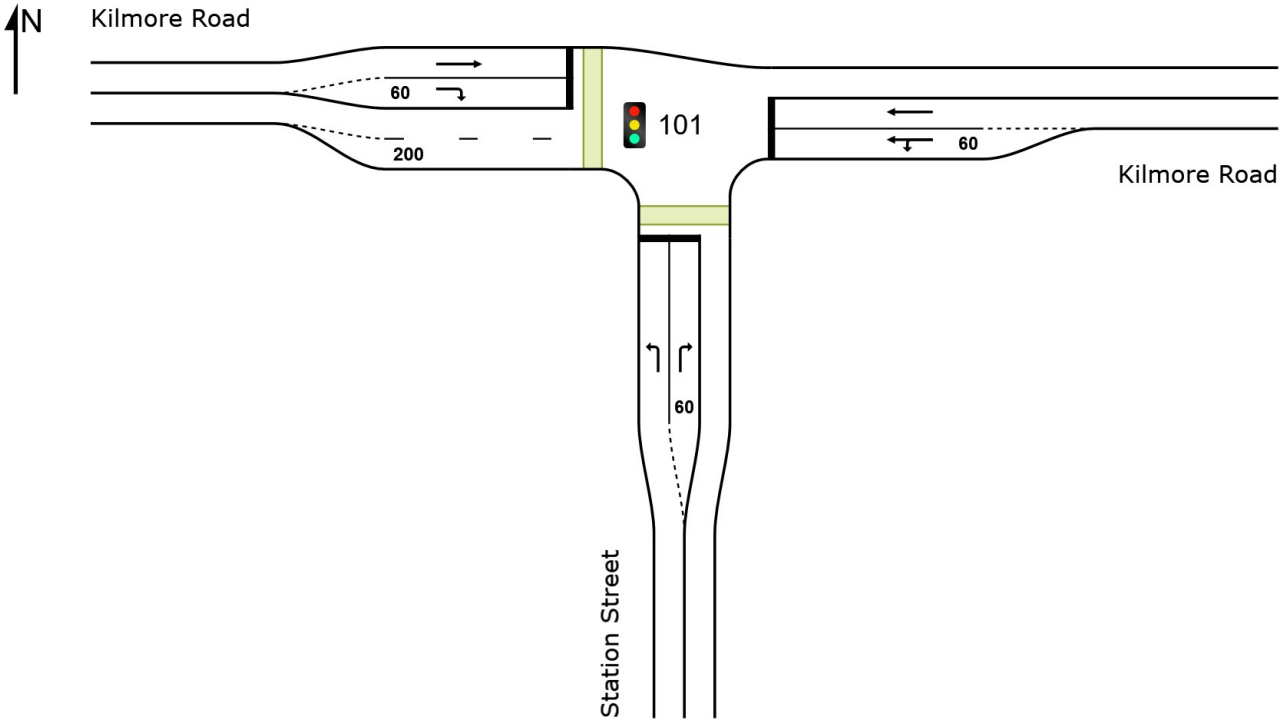
Site: 101 [Proposed PM Station Street & Kilmore Road - signals (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: FCRT
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Station Street														
1	L2	138	3	145	2.2	0.221	29.6	LOS C	4.9	35.0	0.73	0.74	0.73	35.7
3	R2	48	0	51	0.0	* 0.247	50.0	LOS D	2.3	16.4	0.95	0.74	0.95	29.4
Approach		186	3	196	1.6	0.247	34.8	LOS C	4.9	35.0	0.79	0.74	0.79	33.9
East: Kilmore Road														
4	L2	78	0	82	0.0	0.429	22.1	LOS C	12.5	88.9	0.69	0.64	0.69	39.6
5	T1	688	13	724	1.9	0.429	18.1	LOS B	12.6	89.9	0.69	0.62	0.69	40.1
Approach		766	13	806	1.7	0.429	18.5	LOS B	12.6	89.9	0.69	0.62	0.69	40.1
West: Kilmore Road														
11	T1	970	12	1021	1.2	* 0.779	5.9	LOS A	23.9	168.8	0.53	0.49	0.53	46.2
12	R2	164	2	173	1.2	0.426	41.3	LOS D	7.4	52.1	0.91	0.79	0.91	31.7
Approach		1134	14	1194	1.2	0.779	11.0	LOS B	23.9	168.8	0.59	0.54	0.59	43.4
All Vehicles		2086	30	2196	1.4	0.779	15.9	LOS B	23.9	168.8	0.64	0.59	0.64	41.1

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

* Critical Movement (Signal Timing)

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Station Street													
Lane 1	145	2.2	658	0.221	100	29.6	LOS C	4.9	35.0	Full	500	0.0	0.0
Lane 2	51	0.0	204	0.247	100	50.0	LOS D	2.3	16.4	Short	60	0.0	NA
Approach	196	1.6		0.247		34.8	LOS C	4.9	35.0				
East: Kilmore Road													
Lane 1	402	1.5	937	0.429	100	19.4	LOS B	12.5	88.9	Short	60	0.0	NA
Lane 2	405	1.9	944	0.429	100	17.6	LOS B	12.6	89.9	Full	500	0.0	0.0
Approach	806	1.7		0.429		18.5	LOS B	12.6	89.9				
West: Kilmore Road													
Lane 1	1021	1.2	1311[1]	0.779	100	5.9	LOS A	23.9	168.8	Full	500	0.0	0.0
Lane 2	173	1.2	405	0.426	100	41.3	LOS D	7.4	52.1	Short	60	0.0	NA
Approach	1194	1.2		0.779		11.0	LOS B	23.9	168.8				
Intersection	2196	1.4		0.779		15.9	LOS B	23.9	168.8				

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Station Street															
Lane 1		0.221	1.000	0.0	21.5	35.0	19.8	32.2	6.9	14.3	0.04	0.07	0.0	NA	NA
Lane 2		0.247	1.000	0.0	10.0	16.4	9.8	15.9	4.5	9.3	0.17	0.27	NA	0.0	1
Approach		0.247			21.5	35.0	19.8	32.2	6.9	14.3	0.04	0.07			
East: Kilmore Road															
Lane 1		0.429	1.000	0.0	54.5	88.9	43.0	70.3	13.9	29.0	0.91	1.48	NA	41.0	2
Lane 2		0.429	1.000	0.0	55.1	89.9	43.5	71.0	14.0	29.3	0.11	0.18	0.0	NA	NA
Approach		0.429			55.1	89.9	43.5	71.0	14.0	29.3	0.11	0.18			
West: Kilmore Road															
Lane 1		0.779	1.000	0.0	103.4	168.8	48.8	79.7	11.9	24.9	0.21	0.34	0.0	NA	NA
Lane 2		0.426	1.000	0.0	31.9	52.1	28.9	47.2	12.5	26.0	0.53	0.87	NA	0.0	1
Approach		0.779			103.4	168.8	48.8	79.7	12.5	26.0	0.21	0.34			
Intersection		0.779			103.4	168.8	48.8	79.7	14.0	29.3	0.21	0.34			

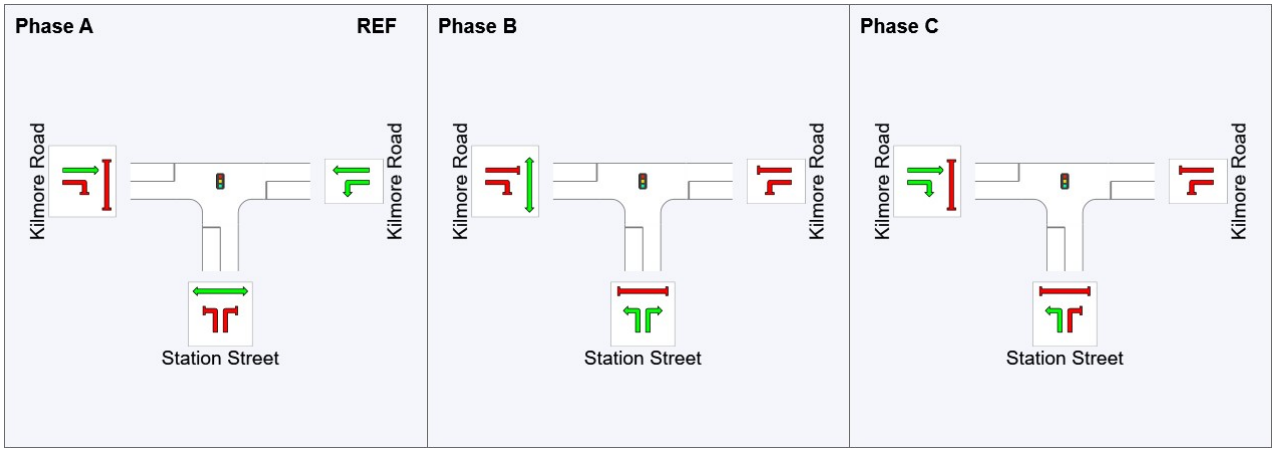
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Phase Timing Summary

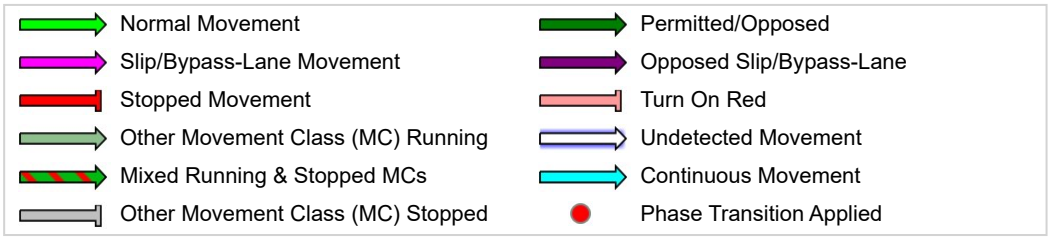
Phase	A	B	C
Phase Change Time (sec)	0	55	72
Green Time (sec)	49	11	22
Phase Time (sec)	55	17	28
Phase Split	55%	17%	28%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

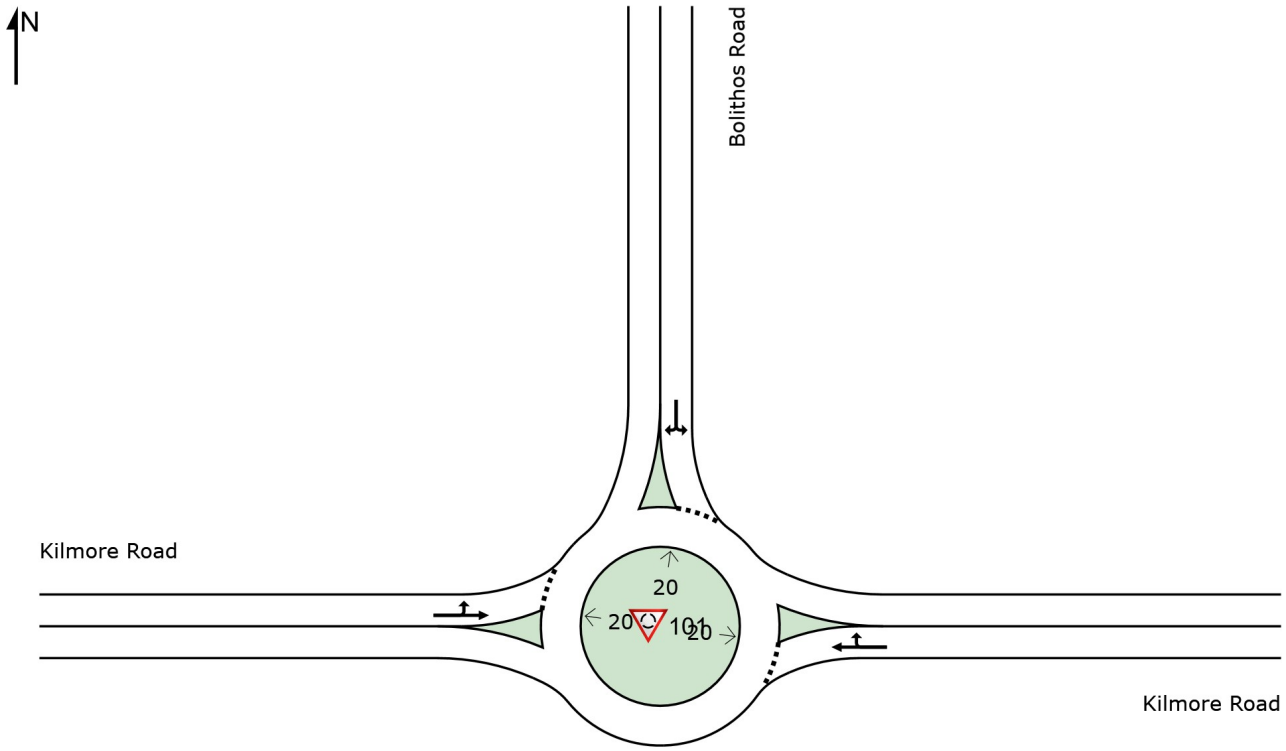


Site: 101 [Proposed AM Bolithos Road & Kilmore Road (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	1163	27	1224	2.3	0.843	6.4	LOS A	16.8	120.0	0.70	0.48	0.70	58.6
6	R2	23	1	24	4.3	0.843	11.2	LOS B	16.8	120.0	0.70	0.48	0.70	56.0
Approach		1186	28	1248	2.4	0.843	6.5	LOS A	16.8	120.0	0.70	0.48	0.70	58.6
North: Bolithos Road														
7	L2	34	1	36	2.9	0.113	6.4	LOS A	0.6	4.3	0.55	0.69	0.55	53.3
9	R2	68	2	72	2.9	0.113	11.2	LOS B	0.6	4.3	0.55	0.69	0.55	54.2
Approach		102	3	107	2.9	0.113	9.6	LOS A	0.6	4.3	0.55	0.69	0.55	53.9
West: Kilmore Road														
10	L2	19	1	20	5.3	0.312	5.0	LOS A	2.4	16.9	0.16	0.44	0.16	57.5
11	T1	444	9	467	2.0	0.312	5.4	LOS A	2.4	16.9	0.16	0.44	0.16	61.9
Approach		463	10	487	2.2	0.312	5.4	LOS A	2.4	16.9	0.16	0.44	0.16	61.8
All Vehicles		1751	41	1843	2.3	0.843	6.4	LOS A	16.8	120.0	0.55	0.48	0.55	59.1

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

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1[d]	1248	2.4	1481	0.843	100	6.5	LOS A	16.8	120.0	Full	500	0.0	0.0
Approach	1248	2.4		0.843		6.5	LOS A	16.8	120.0				
North: Bolithos Road													
Lane 1[d]	107	2.9	951	0.113	100	9.6	LOS A	0.6	4.3	Full	500	0.0	0.0
Approach	107	2.9		0.113		9.6	LOS A	0.6	4.3				
West: Kilmore Road													
Lane 1[d]	487	2.2	1564	0.312	100	5.4	LOS A	2.4	16.9	Full	500	0.0	0.0
Approach	487	2.2		0.312		5.4	LOS A	2.4	16.9				
Intersection	1843	2.3		0.843		6.4	LOS A	16.8	120.0				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.843	1.000	0.0	48.3	120.0	NA	NA	2.9	5.3	0.10	0.24	0.0	NA	NA
Approach		0.843			48.3	120.0	NA	NA	2.9	5.3	0.10	0.24			
North: Bolithos Road															
Lane 1		0.113	1.000	0.0	1.7	4.3	NA	NA	0.5	1.0	0.00	0.01	0.0	NA	NA
Approach		0.113			1.7	4.3	NA	NA	0.5	1.0	0.00	0.01			
West: Kilmore Road															
Lane 1		0.312	1.000	0.0	6.8	16.9	NA	NA	0.1	0.2	0.01	0.03	0.0	NA	NA
Approach		0.312			6.8	16.9	NA	NA	0.1	0.2	0.01	0.03			
Intersection		0.843			48.3	120.0	NA	NA	2.9	5.3	0.10	0.24			

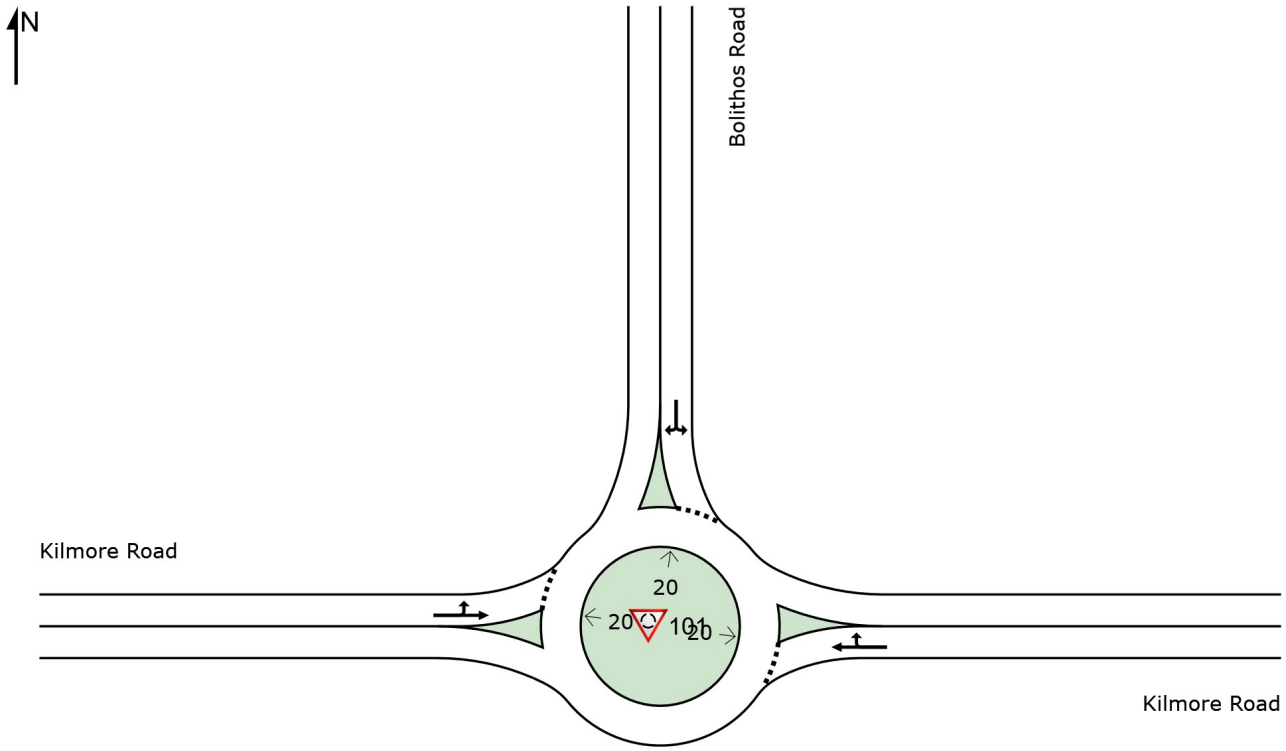
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Proposed PM Bolithos Road & Kilmore Road (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	704	13	741	1.8	0.528	5.8	LOS A	5.3	38.0	0.39	0.47	0.39	60.5
6	R2	19	2	20	10.5	0.528	10.6	LOS B	5.3	38.0	0.39	0.47	0.39	57.4
Approach		723	15	761	2.1	0.528	5.9	LOS A	5.3	38.0	0.39	0.47	0.39	60.4
North: Bolithos Road														
7	L2	33	1	35	3.0	0.184	12.7	LOS B	1.2	8.5	0.85	0.87	0.85	48.9
9	R2	67	0	71	0.0	0.184	17.3	LOS B	1.2	8.5	0.85	0.87	0.85	50.3
Approach		100	1	105	1.0	0.184	15.8	LOS B	1.2	8.5	0.85	0.87	0.85	49.8
West: Kilmore Road														
10	L2	44	1	46	2.3	0.655	5.0	LOS A	7.8	55.3	0.21	0.43	0.21	57.4
11	T1	980	11	1032	1.1	0.655	5.4	LOS A	7.8	55.3	0.21	0.43	0.21	61.9
Approach		1024	12	1078	1.2	0.655	5.4	LOS A	7.8	55.3	0.21	0.43	0.21	61.7
All Vehicles		1847	28	1944	1.5	0.655	6.2	LOS A	7.8	55.3	0.32	0.47	0.32	60.4

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

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1[d]	761	2.1	1441	0.528	100	5.9	LOS A	5.3	38.0	Full	500	0.0	0.0
Approach	761	2.1		0.528		5.9	LOS A	5.3	38.0				
North: Bolithos Road													
Lane 1[d]	105	1.0	573	0.184	100	15.8	LOS B	1.2	8.5	Full	500	0.0	0.0
Approach	105	1.0		0.184		15.8	LOS B	1.2	8.5				
West: Kilmore Road													
Lane 1[d]	1078	1.2	1645	0.655	100	5.4	LOS A	7.8	55.3	Full	500	0.0	0.0
Approach	1078	1.2		0.655		5.4	LOS A	7.8	55.3				
Intersection	1944	1.5		0.655		6.2	LOS A	7.8	55.3				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.528	1.000	0.0	15.3	38.0	NA	NA	0.8	1.4	0.03	0.08	0.0	NA	NA
Approach		0.528			15.3	38.0	NA	NA	0.8	1.4	0.03	0.08			
North: Bolithos Road															
Lane 1		0.184	1.000	0.0	3.4	8.5	NA	NA	1.8	3.2	0.01	0.02	0.0	NA	NA
Approach		0.184			3.4	8.5	NA	NA	1.8	3.2	0.01	0.02			
West: Kilmore Road															
Lane 1		0.655	1.000	0.0	22.3	55.3	NA	NA	0.4	0.7	0.04	0.11	0.0	NA	NA
Approach		0.655			22.3	55.3	NA	NA	0.4	0.7	0.04	0.11			
Intersection		0.655			22.3	55.3	NA	NA	1.8	3.2	0.04	0.11			

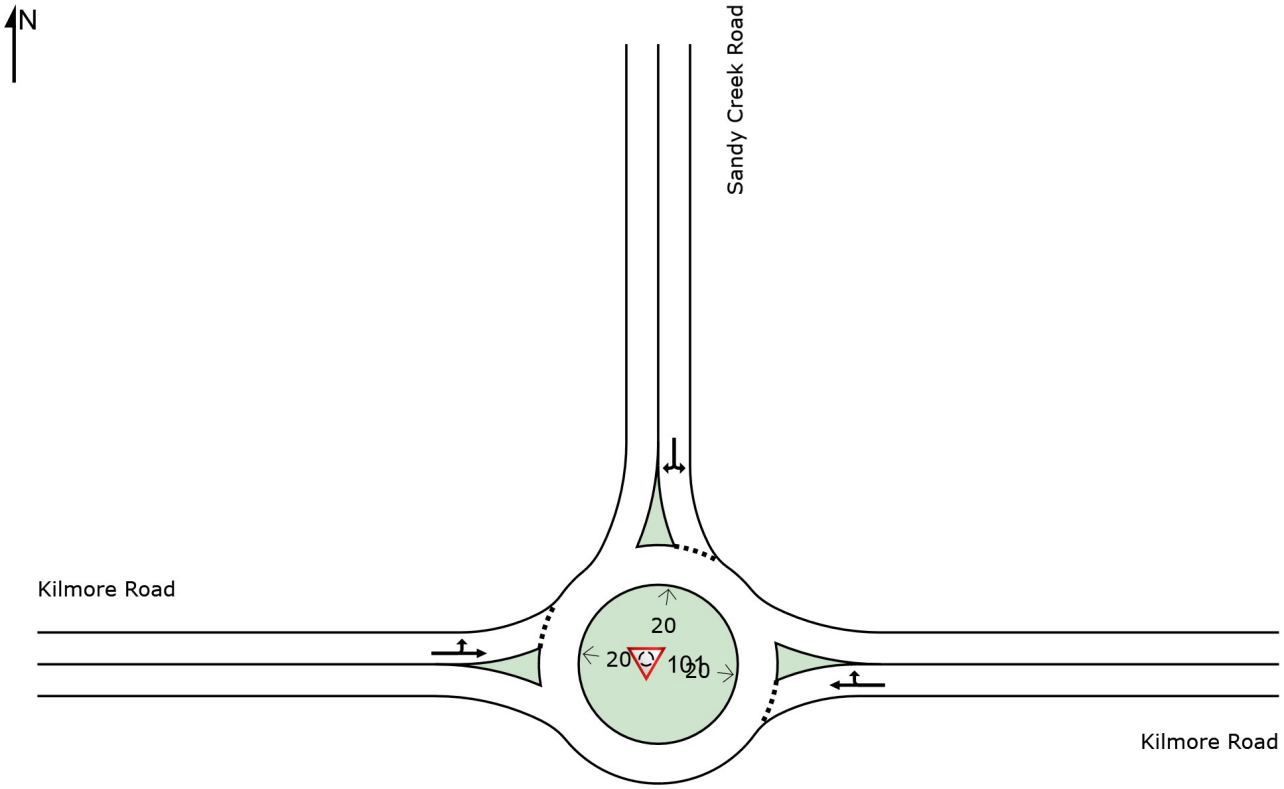
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Proposed AM Sandy Creek Road & Kilmore Road (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	599	22	631	3.7	0.431	5.6	LOS A	3.4	24.8	0.27	0.45	0.27	60.8
6	R2	2	0	2	0.0	0.431	10.2	LOS B	3.4	24.8	0.27	0.45	0.27	58.5
Approach		601	22	633	3.7	0.431	5.6	LOS A	3.4	24.8	0.27	0.45	0.27	60.8
North: Sandy Creek Road														
7	L2	3	0	3	0.0	0.054	5.4	LOS A	0.3	1.9	0.44	0.65	0.44	53.4
9	R2	51	3	54	5.9	0.054	10.4	LOS B	0.3	1.9	0.44	0.65	0.44	53.0
Approach		54	3	57	5.6	0.054	10.1	LOS B	0.3	1.9	0.44	0.65	0.44	53.0
West: Kilmore Road														
10	L2	15	0	16	0.0	0.202	4.8	LOS A	1.2	8.4	0.03	0.46	0.03	58.4
11	T1	312	10	328	3.2	0.202	5.3	LOS A	1.2	8.4	0.03	0.46	0.03	62.4
Approach		327	10	344	3.1	0.202	5.3	LOS A	1.2	8.4	0.03	0.46	0.03	62.2
All Vehicles		982	35	1034	3.6	0.431	5.7	LOS A	3.4	24.8	0.20	0.47	0.20	60.8

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

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1[d]	633	3.7	1468	0.431	100	5.6	LOS A	3.4	24.8	Full	500	0.0	0.0
Approach	633	3.7		0.431		5.6	LOS A	3.4	24.8				
North: Sandy Creek Road													
Lane 1[d]	57	5.6	1045	0.054	100	10.1	LOS B	0.3	1.9	Full	500	0.0	0.0
Approach	57	5.6		0.054		10.1	LOS B	0.3	1.9				
West: Kilmore Road													
Lane 1[d]	344	3.1	1706	0.202	100	5.3	LOS A	1.2	8.4	Full	500	0.0	0.0
Approach	344	3.1		0.202		5.3	LOS A	1.2	8.4				
Intersection	1034	3.6		0.431		5.7	LOS A	3.4	24.8				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.431	1.000	0.0	10.0	24.8	NA	NA	0.4	0.8	0.02	0.05	0.0	NA	NA
Approach		0.431			10.0	24.8	NA	NA	0.4	0.8	0.02	0.05			
North: Sandy Creek Road															
Lane 1		0.054	1.000	0.0	0.8	1.9	NA	NA	0.2	0.3	0.00	0.00	0.0	NA	NA
Approach		0.054			0.8	1.9	NA	NA	0.2	0.3	0.00	0.00			
West: Kilmore Road															
Lane 1		0.202	1.000	0.0	3.4	8.4	NA	NA	0.0	0.0	0.01	0.02	0.0	NA	NA
Approach		0.202			3.4	8.4	NA	NA	0.0	0.0	0.01	0.02			
Intersection		0.431			10.0	24.8	NA	NA	0.4	0.8	0.02	0.05			

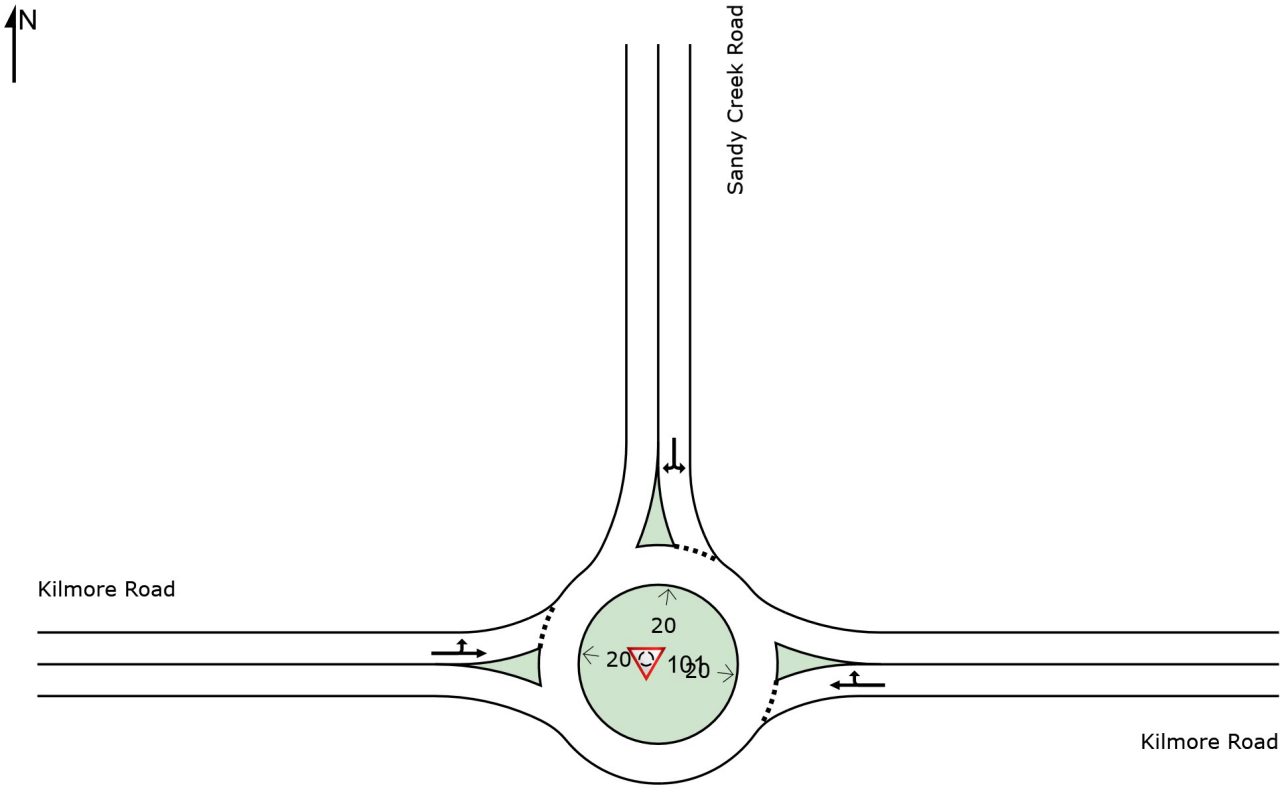
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [Proposed PM Sandy Creek Road & Kilmore Road (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	444	17	467	3.8	0.309	5.4	LOS A	2.3	16.4	0.17	0.44	0.17	61.4
6	R2	5	2	5	40.0	0.309	10.6	LOS B	2.3	16.4	0.17	0.44	0.17	57.2
Approach		449	19	473	4.2	0.309	5.5	LOS A	2.3	16.4	0.17	0.44	0.17	61.3
North: Sandy Creek Road														
7	L2	5	0	5	0.0	0.039	7.2	LOS A	0.2	1.4	0.61	0.69	0.61	52.7
9	R2	27	0	28	0.0	0.039	12.1	LOS B	0.2	1.4	0.61	0.69	0.61	53.6
Approach		32	0	34	0.0	0.039	11.3	LOS B	0.2	1.4	0.61	0.69	0.61	53.4
West: Kilmore Road														
10	L2	43	1	45	2.3	0.403	4.9	LOS A	2.9	20.7	0.06	0.45	0.06	58.2
11	T1	608	10	640	1.6	0.403	5.3	LOS A	2.9	20.7	0.06	0.45	0.06	62.6
Approach		651	11	685	1.7	0.403	5.3	LOS A	2.9	20.7	0.06	0.45	0.06	62.3
All Vehicles		1132	30	1192	2.7	0.403	5.5	LOS A	2.9	20.7	0.12	0.45	0.12	61.6

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1[d]	473	4.2	1530	0.309	100	5.5	LOS A	2.3	16.4	Full	500	0.0	0.0
Approach	473	4.2		0.309		5.5	LOS A	2.3	16.4				
North: Sandy Creek Road													
Lane 1[d]	34	0.0	864	0.039	100	11.3	LOS B	0.2	1.4	Full	500	0.0	0.0
Approach	34	0.0		0.039		11.3	LOS B	0.2	1.4				
West: Kilmore Road													
Lane 1[d]	685	1.7	1700	0.403	100	5.3	LOS A	2.9	20.7	Full	500	0.0	0.0
Approach	685	1.7		0.403		5.3	LOS A	2.9	20.7				
Intersection	1192	2.7		0.403		5.5	LOS A	2.9	20.7				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.309	1.000	0.0	6.6	16.4	NA	NA	0.1	0.2	0.01	0.03	0.0	NA	NA
Approach		0.309			6.6	16.4	NA	NA	0.1	0.2	0.01	0.03			
North: Sandy Creek Road															
Lane 1		0.039	1.000	0.0	0.6	1.4	NA	NA	0.2	0.4	0.00	0.00	0.0	NA	NA
Approach		0.039			0.6	1.4	NA	NA	0.2	0.4	0.00	0.00			
West: Kilmore Road															
Lane 1		0.403	1.000	0.0	8.3	20.7	NA	NA	0.0	0.1	0.02	0.04	0.0	NA	NA
Approach		0.403			8.3	20.7	NA	NA	0.0	0.1	0.02	0.04			
Intersection		0.403			8.3	20.7	NA	NA	0.2	0.4	0.02	0.04			

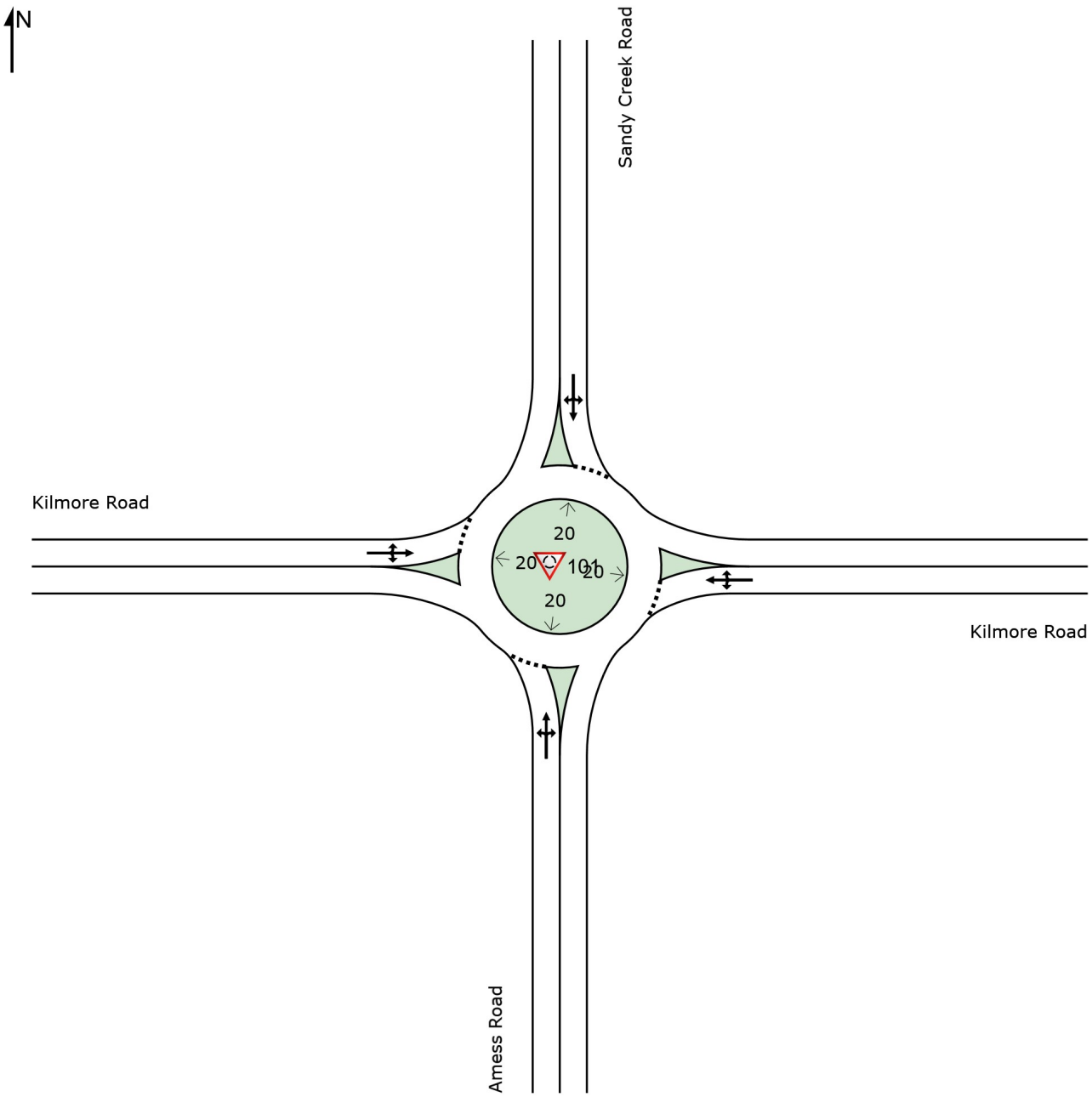
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [NEW AM Kilmore Road, Sandy Creek Road & Amess Road - PSP roundabout (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Amess Road														
1	L2	307	5.0	323	5.0	0.461	10.1	LOS B	3.6	26.1	0.84	0.91	0.93	52.2
2	T1	1	5.0	1	5.0	0.461	10.3	LOS B	3.6	26.1	0.84	0.91	0.93	51.8
3	R2	13	5.0	14	5.0	0.461	15.0	LOS B	3.6	26.1	0.84	0.91	0.93	53.1
Approach		321	5.0	338	5.0	0.461	10.3	LOS B	3.6	26.1	0.84	0.91	0.93	52.3
East: Kilmore Road														
4	L2	15	5.0	16	5.0	0.501	5.9	LOS A	3.9	28.4	0.45	0.52	0.45	56.1
5	T1	599	5.0	631	5.0	0.501	6.3	LOS A	3.9	28.4	0.45	0.52	0.45	60.5
6	R2	2	5.0	2	5.0	0.501	11.0	LOS B	3.9	28.4	0.45	0.52	0.45	57.4
Approach		616	5.0	648	5.0	0.501	6.3	LOS A	3.9	28.4	0.45	0.52	0.45	60.3
North: Sandy Creek Road														
7	L2	3	5.0	3	5.0	0.060	6.1	LOS A	0.3	2.2	0.51	0.67	0.51	52.1
8	T1	1	5.0	1	5.0	0.060	6.3	LOS A	0.3	2.2	0.51	0.67	0.51	51.8
9	R2	51	5.0	54	5.0	0.060	10.9	LOS B	0.3	2.2	0.51	0.67	0.51	53.0
Approach		55	5.0	58	5.0	0.060	10.6	LOS B	0.3	2.2	0.51	0.67	0.51	52.9
West: Kilmore Road														
10	L2	15	5.0	16	5.0	0.273	4.9	LOS A	2.0	14.7	0.12	0.50	0.12	57.0
11	T1	312	5.0	328	5.0	0.273	5.4	LOS A	2.0	14.7	0.12	0.50	0.12	60.5
12	R2	80	5.0	84	5.0	0.273	10.0	LOS B	2.0	14.7	0.12	0.50	0.12	58.3
Approach		407	5.0	428	5.0	0.273	6.3	LOS A	2.0	14.7	0.12	0.50	0.12	59.9
All Vehicles		1399	5.0	1473	5.0	0.501	7.4	LOS A	3.9	28.4	0.45	0.61	0.47	57.9

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

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Amess Road													
Lane 1[d]	338	5.0	732	0.461	100	10.3	LOS B	3.6	26.1	Full	500	0.0	0.0
Approach	338	5.0		0.461		10.3	LOS B	3.6	26.1				
East: Kilmore Road													
Lane 1[d]	648	5.0	1294	0.501	100	6.3	LOS A	3.9	28.4	Full	500	0.0	0.0
Approach	648	5.0		0.501		6.3	LOS A	3.9	28.4				
North: Sandy Creek Road													
Lane 1[d]	58	5.0	958	0.060	100	10.6	LOS B	0.3	2.2	Full	500	0.0	0.0
Approach	58	5.0		0.060		10.6	LOS B	0.3	2.2				
West: Kilmore Road													
Lane 1[d]	428	5.0	1571	0.273	100	6.3	LOS A	2.0	14.7	Full	500	0.0	0.0
Approach	428	5.0		0.273		6.3	LOS A	2.0	14.7				
Intersection	1473	5.0		0.501		7.4	LOS A	3.9	28.4				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Amess Road															
Lane 1		0.461	1.000	0.8	10.5	26.1	NA	NA	4.3	7.7	0.02	0.05	0.0	NA	NA
Approach		0.461			10.5	26.1	NA	NA	4.3	7.7	0.02	0.05			
East: Kilmore Road															
Lane 1		0.501	1.000	0.0	11.4	28.4	NA	NA	1.4	2.5	0.02	0.06	0.0	NA	NA
Approach		0.501			11.4	28.4	NA	NA	1.4	2.5	0.02	0.06			
North: Sandy Creek Road															
Lane 1		0.060	1.000	0.0	0.9	2.2	NA	NA	0.3	0.5	0.00	0.00	0.0	NA	NA
Approach		0.060			0.9	2.2	NA	NA	0.3	0.5	0.00	0.00			
West: Kilmore Road															
Lane 1		0.273	1.000	0.0	5.9	14.7	NA	NA	0.1	0.1	0.01	0.03	0.0	NA	NA
Approach		0.273			5.9	14.7	NA	NA	0.1	0.1	0.01	0.03			
Intersection		0.501			11.4	28.4	NA	NA	4.3	7.7	0.02	0.06			

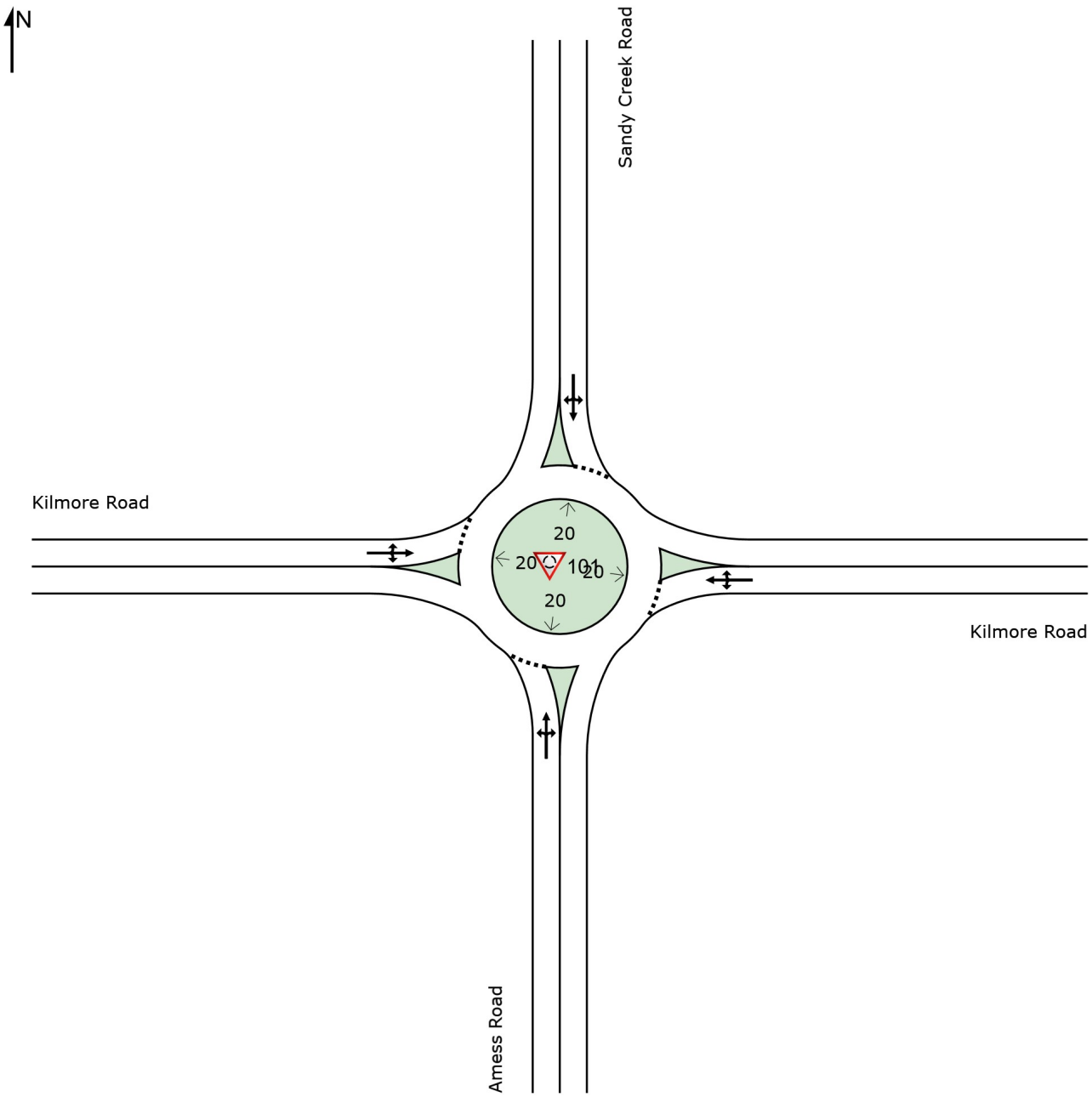
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [NEW PM Kilmore Road, Sandy Creek Road & Amess Road - PSP roundabout (Site Folder: Proposed - with Amess Road traffic)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Amess Road														
1	L2	176	5.0	185	5.0	0.253	7.0	LOS A	1.6	11.7	0.68	0.73	0.68	54.3
2	T1	1	5.0	1	5.0	0.253	7.2	LOS A	1.6	11.7	0.68	0.73	0.68	53.9
3	R2	28	5.0	29	5.0	0.253	11.9	LOS B	1.6	11.7	0.68	0.73	0.68	55.2
Approach		205	5.0	216	5.0	0.253	7.6	LOS A	1.6	11.7	0.68	0.73	0.68	54.4
East: Kilmore Road														
4	L2	16	5.0	17	5.0	0.448	6.8	LOS A	3.1	22.8	0.58	0.63	0.58	55.4
5	T1	444	5.0	467	5.0	0.448	7.2	LOS A	3.1	22.8	0.58	0.63	0.58	59.7
6	R2	5	5.0	5	5.0	0.448	12.0	LOS B	3.1	22.8	0.58	0.63	0.58	56.7
Approach		465	5.0	489	5.0	0.448	7.3	LOS A	3.1	22.8	0.58	0.63	0.58	59.5
North: Sandy Creek Road														
7	L2	5	5.0	5	5.0	0.058	10.6	LOS B	0.4	2.6	0.79	0.77	0.79	49.4
8	T1	1	5.0	1	5.0	0.058	10.8	LOS B	0.4	2.6	0.79	0.77	0.79	49.1
9	R2	27	5.0	28	5.0	0.058	15.4	LOS B	0.4	2.6	0.79	0.77	0.79	50.2
Approach		33	5.0	35	5.0	0.058	14.6	LOS B	0.4	2.6	0.79	0.77	0.79	50.0
West: Kilmore Road														
10	L2	43	5.0	45	5.0	0.604	5.2	LOS A	6.8	49.5	0.29	0.50	0.29	56.1
11	T1	608	5.0	640	5.0	0.604	5.6	LOS A	6.8	49.5	0.29	0.50	0.29	59.4
12	R2	235	5.0	247	5.0	0.604	10.3	LOS B	6.8	49.5	0.29	0.50	0.29	57.3
Approach		886	5.0	933	5.0	0.604	6.8	LOS A	6.8	49.5	0.29	0.50	0.29	58.7
All Vehicles		1589	5.0	1673	5.0	0.604	7.2	LOS A	6.8	49.5	0.43	0.57	0.43	58.1

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Amess Road													
Lane 1[d]	216	5.0	854	0.253	100	7.6	LOS A	1.6	11.7	Full	500	0.0	0.0
Approach	216	5.0		0.253		7.6	LOS A	1.6	11.7				
East: Kilmore Road													
Lane 1[d]	489	5.0	1094	0.448	100	7.3	LOS A	3.1	22.8	Full	500	0.0	0.0
Approach	489	5.0		0.448		7.3	LOS A	3.1	22.8				
North: Sandy Creek Road													
Lane 1[d]	35	5.0	600	0.058	100	14.6	LOS B	0.4	2.6	Full	500	0.0	0.0
Approach	35	5.0		0.058		14.6	LOS B	0.4	2.6				
West: Kilmore Road													
Lane 1[d]	933	5.0	1544	0.604	100	6.8	LOS A	6.8	49.5	Full	500	0.0	0.0
Approach	933	5.0		0.604		6.8	LOS A	6.8	49.5				
Intersection	1673	5.0		0.604		7.2	LOS A	6.8	49.5				

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

d Dominant lane on roundabout approach

Lane Queues (Distance)																
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Amess Road															
Lane 1		0.253	1.000	0.0	4.7	11.7	NA	NA	1.4	2.5	0.01	0.02	0.0	NA	NA
Approach		0.253			4.7	11.7	NA	NA	1.4	2.5	0.01	0.02			
East: Kilmore Road															
Lane 1		0.448	1.000	0.0	9.2	22.8	NA	NA	2.0	3.6	0.02	0.05	0.0	NA	NA
Approach		0.448			9.2	22.8	NA	NA	2.0	3.6	0.02	0.05			
North: Sandy Creek Road															
Lane 1		0.058	1.000	0.0	1.0	2.6	NA	NA	0.5	0.9	0.00	0.01	0.0	NA	NA
Approach		0.058			1.0	2.6	NA	NA	0.5	0.9	0.00	0.01			
West: Kilmore Road															
Lane 1		0.604	1.000	0.0	19.9	49.5	NA	NA	0.6	1.0	0.04	0.10	0.0	NA	NA
Approach		0.604			19.9	49.5	NA	NA	0.6	1.0	0.04	0.10			
Intersection		0.604			19.9	49.5	NA	NA	2.0	3.6	0.04	0.10			

Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

USER REPORT FOR SITE

All Movement Classes

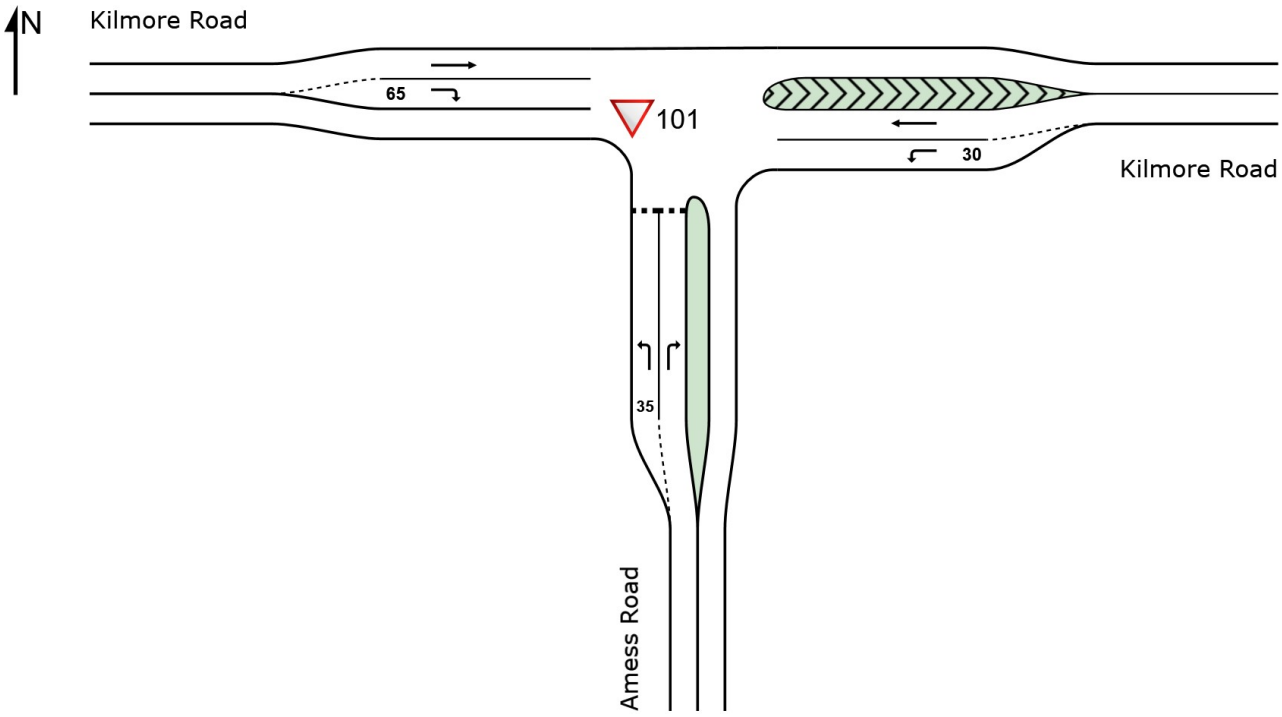
Project: 220073_Kilmore Road intersections_15.12.2023 **Template: Report format 2**

Site: 101 [NEW Amess Road / Kilmore Road AM (Site Folder: Ratio proposed intersection arrangement)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Amess Road														
1	L2	307	5.0	323	5.0	0.588	14.6	LOS B	3.4	25.1	0.77	1.07	1.31	48.5
3	R2	13	5.0	14	5.0	0.081	26.1	LOS D	0.3	1.9	0.85	0.94	0.85	33.5
Approach		320	5.0	337	5.0	0.588	15.1	LOS C	3.4	25.1	0.77	1.06	1.30	48.0
East: Kilmore Road														
4	L2	15	5.0	16	5.0	0.009	5.7	LOS A	0.0	0.0	0.00	0.60	0.00	53.3
5	T1	643	5.0	677	5.0	0.358	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.7
Approach		658	5.0	693	5.0	0.358	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.2
West: Kilmore Road														
11	T1	315	5.0	332	5.0	0.177	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
12	R2	80	5.0	84	5.0	0.145	11.3	LOS B	0.5	3.9	0.62	0.86	0.62	52.1
Approach		395	5.0	416	5.0	0.177	2.3	NA	0.5	3.9	0.13	0.17	0.13	63.5
All Vehicles		1373	5.0	1445	5.0	0.588	4.3	NA	3.4	25.1	0.22	0.30	0.34	59.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Amess Road													
Lane 1	323	5.0	549	0.588	100	14.6	LOS B	3.4	25.1	Short	35	0.0	NA
Lane 2	14	5.0	168	0.081	100	26.1	LOS D	0.3	1.9	Full	500	0.0	0.0
Approach	337	5.0		0.588		15.1	LOS C	3.4	25.1				
East: Kilmore Road													
Lane 1	16	5.0	1793	0.009	100	5.7	LOS A	0.0	0.0	Short	30	0.0	NA
Lane 2	677	5.0	1889	0.358	100	0.0	LOS A	0.0	0.0	Full	100	0.0	0.0
Approach	693	5.0		0.358		0.2	NA	0.0	0.0				
West: Kilmore Road													
Lane 1	332	5.0	1875	0.177	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	84	5.0	581	0.145	100	11.3	LOS B	0.5	3.9	Short	65	0.0	NA
Approach	416	5.0		0.177		2.3	NA	0.5	3.9				
Intersection	1445	5.0		0.588		4.3	NA	3.4	25.1				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Amess Road															
Lane 1		0.588	1.000	2.4	10.1	25.1	NA	NA	5.9	10.8	0.29	0.72	NA	0.0	2
Lane 2		0.081	1.000	0.0	0.7	1.9	NA	NA	0.6	1.0	0.00	0.00	0.0	NA	NA
Approach		0.588			10.1	25.1	NA	NA	5.9	10.8	0.00	0.00			
East: Kilmore Road															
Lane 1	Y	0.009	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	NA	0.0	2
Lane 2	Y	0.358	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.358			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
West: Kilmore Road															
Lane 1	Y	0.177	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Lane 2		0.145	1.000	0.0	1.6	3.9	NA	NA	0.9	1.5	0.02	0.06	NA	0.0	1
Approach		0.177			1.6	3.9	NA	NA	0.9	1.5	0.00	0.00			
Intersection		0.588			10.1	25.1	NA	NA	5.9	10.8	0.00	0.00			

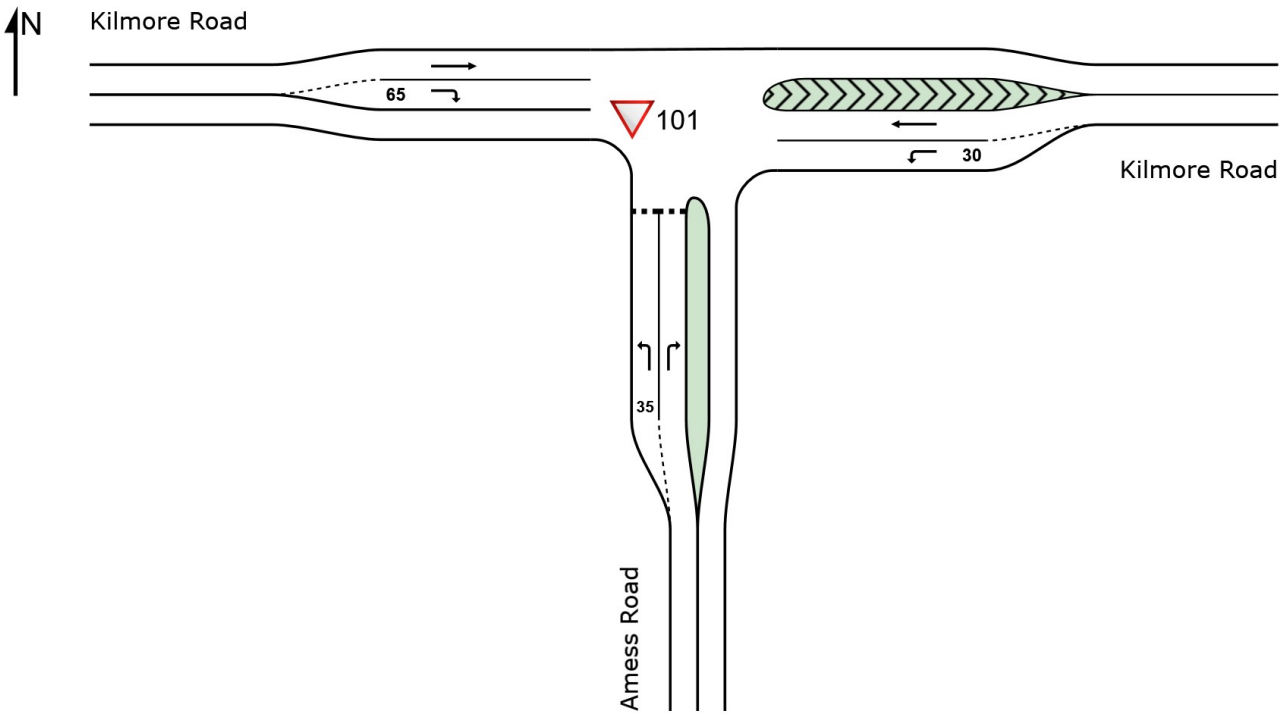
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [NEW Amess Road / Kilmore Road PM (Site Folder: Ratio proposed intersection arrangement)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Amess Road														
1	L2	176	5.0	185	5.0	0.247	8.8	LOS A	1.0	7.0	0.53	0.79	0.55	52.6
3	R2	28	5.0	29	5.0	0.303	49.0	LOS E	1.0	7.1	0.93	1.00	1.05	24.9
Approach		204	5.0	215	5.0	0.303	14.3	LOS B	1.0	7.1	0.59	0.82	0.62	47.9
East: Kilmore Road														
4	L2	16	5.0	17	5.0	0.009	5.7	LOS A	0.0	0.0	0.00	0.60	0.00	53.3
5	T1	458	5.0	482	5.0	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		474	5.0	499	5.0	0.255	0.2	NA	0.0	0.0	0.00	0.02	0.00	69.1
West: Kilmore Road														
11	T1	626	5.0	659	5.0	0.351	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.7
12	R2	235	5.0	247	5.0	0.314	10.0	LOS A	1.5	11.0	0.58	0.86	0.66	53.1
Approach		861	5.0	906	5.0	0.351	2.8	NA	1.5	11.0	0.16	0.23	0.18	62.3
All Vehicles		1539	5.0	1620	5.0	0.351	3.5	NA	1.5	11.0	0.17	0.25	0.18	60.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Amess Road													
Lane 1	185	5.0	749	0.247	100	8.8	LOS A	1.0	7.0	Short	35	0.0	NA
Lane 2	29	5.0	97	0.303	100	49.0	LOS E	1.0	7.1	Full	500	0.0	0.0
Approach	215	5.0		0.303		14.3	LOS B	1.0	7.1				
East: Kilmore Road													
Lane 1	17	5.0	1793	0.009	100	5.7	LOS A	0.0	0.0	Short	30	0.0	NA
Lane 2	482	5.0	1889	0.255	100	0.0	LOS A	0.0	0.0	Full	100	0.0	0.0
Approach	499	5.0		0.255		0.2	NA	0.0	0.0				
West: Kilmore Road													
Lane 1	659	5.0	1877	0.351	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	247	5.0	788	0.314	100	10.0	LOS A	1.5	11.0	Short	65	0.0	NA
Approach	906	5.0		0.351		2.8	NA	1.5	11.0				
Intersection	1620	5.0		0.351		3.5	NA	1.5	11.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Amess Road															
Lane 1		0.247	1.000	0.0	2.8	7.0	NA	NA	1.2	2.2	0.08	0.20	NA	0.0	2
Lane 2		0.303	1.000	0.5	2.8	7.1	NA	NA	2.6	4.7	0.01	0.01	0.0	NA	NA
Approach		0.303			2.8	7.1	NA	NA	2.6	4.7	0.01	0.01			
East: Kilmore Road															
Lane 1	Y	0.009	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	NA	0.0	2
Lane 2	Y	0.255	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.255			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
West: Kilmore Road															
Lane 1	Y	0.351	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Lane 2		0.314	1.000	0.3	4.4	11.0	NA	NA	1.9	3.4	0.07	0.17	NA	0.0	1
Approach		0.351			4.4	11.0	NA	NA	1.9	3.4	0.00	0.00			
Intersection		0.351			4.4	11.0	NA	NA	2.6	4.7	0.01	0.01			

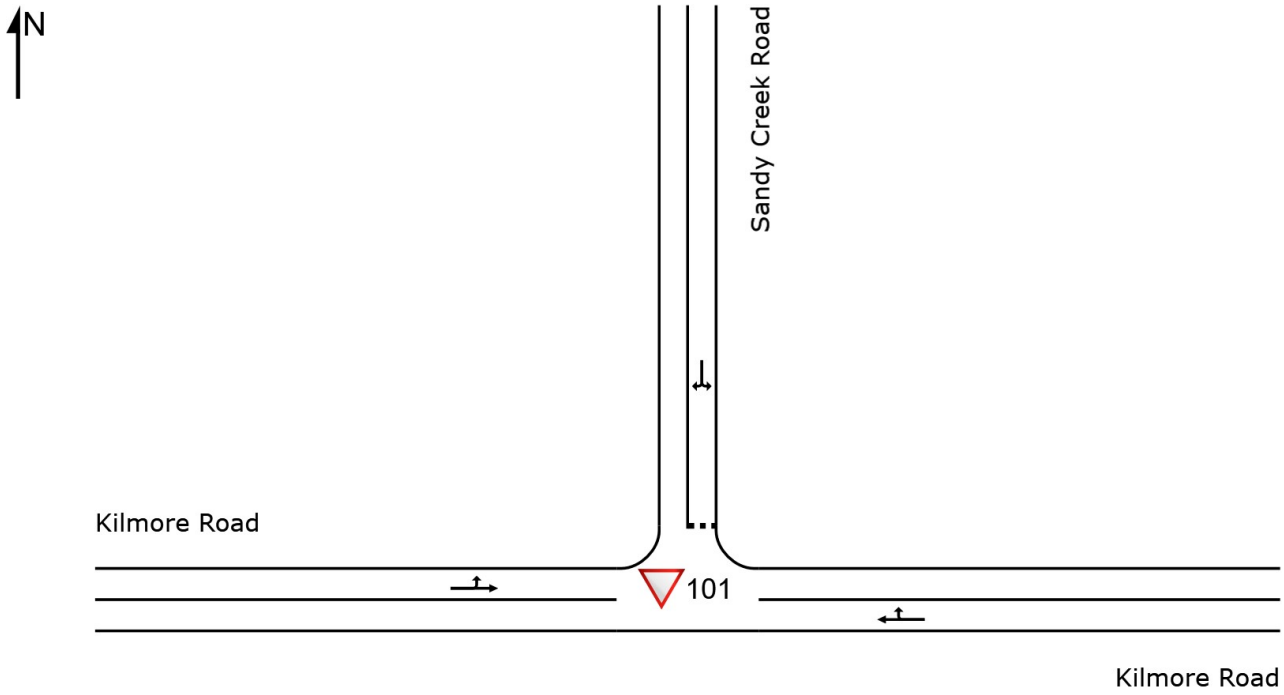
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [NEW Sandy Creek Road / Kilmore Road AM (Site Folder: Ratio proposed intersection arrangement)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	599	5.0	631	5.0	0.336	0.0	LOS A	0.0	0.2	0.00	0.00	0.00	69.9
6	R2	2	5.0	2	5.0	0.336	8.1	LOS A	0.0	0.2	0.00	0.00	0.00	61.6
Approach		601	5.0	633	5.0	0.336	0.0	NA	0.0	0.2	0.00	0.00	0.00	69.9
North: Sandy Creek Road														
7	L2	3	5.0	3	5.0	0.137	6.8	LOS A	0.4	3.1	0.69	0.87	0.69	49.8
9	R2	51	5.0	54	5.0	0.137	12.9	LOS B	0.4	3.1	0.69	0.87	0.69	30.9
Approach		54	5.0	57	5.0	0.137	12.6	LOS B	0.4	3.1	0.69	0.87	0.69	32.0
West: Kilmore Road														
10	L2	15	5.0	16	5.0	0.183	5.8	LOS A	0.0	0.0	0.00	0.03	0.00	61.3
11	T1	312	5.0	328	5.0	0.183	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	69.3
Approach		327	5.0	344	5.0	0.183	0.3	NA	0.0	0.0	0.00	0.03	0.00	68.9
All Vehicles		982	5.0	1034	5.0	0.336	0.8	NA	0.4	3.1	0.04	0.06	0.04	65.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1	633	5.0	1885	0.336	100	0.0	LOS A	0.0	0.2	Full	500	0.0	0.0
Approach	633	5.0		0.336		0.0	NA	0.0	0.2				
North: Sandy Creek Road													
Lane 1	57	5.0	414	0.137	100	12.6	LOS B	0.4	3.1	Full	500	0.0	0.0
Approach	57	5.0		0.137		12.6	LOS B	0.4	3.1				
West: Kilmore Road													
Lane 1	344	5.0	1884	0.183	100	0.3	LOS A	0.0	0.0	Full	100	0.0	0.0
Approach	344	5.0		0.183		0.3	NA	0.0	0.0				
Intersection	1034	5.0		0.336		0.8	NA	0.4	3.1				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.336	1.000	0.0	0.1	0.2	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.336			0.1	0.2	NA	NA	0.0	0.0	0.00	0.00			
North: Sandy Creek Road															
Lane 1		0.137	1.000	0.0	1.3	3.1	NA	NA	0.8	1.5	0.00	0.01	0.0	NA	NA
Approach		0.137			1.3	3.1	NA	NA	0.8	1.5	0.00	0.01			
West: Kilmore Road															
Lane 1	Y	0.183	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.183			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
Intersection		0.336			1.3	3.1	NA	NA	0.8	1.5	0.00	0.01			

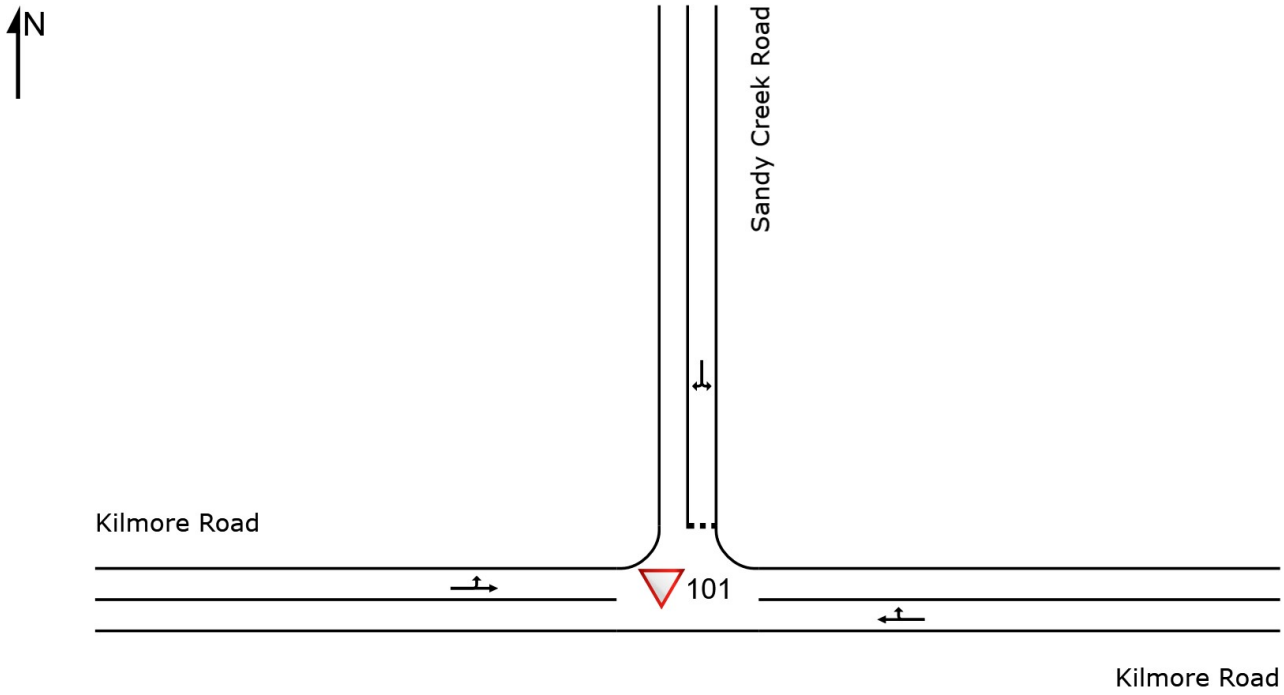
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

Site: 101 [NEW Sandy Creek Road / Kilmore Road PM (Site Folder: Ratio proposed intersection arrangement)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Site Layout

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



Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kilmore Road														
5	T1	444	5.0	467	5.0	0.254	0.1	LOS A	0.1	0.8	0.02	0.01	0.03	69.5
6	R2	5	5.0	5	5.0	0.254	11.1	LOS B	0.1	0.8	0.02	0.01	0.03	61.4
Approach		449	5.0	473	5.0	0.254	0.2	NA	0.1	0.8	0.02	0.01	0.03	69.3
North: Sandy Creek Road														
7	L2	5	5.0	5	5.0	0.098	8.7	LOS A	0.3	2.2	0.74	0.89	0.74	48.6
9	R2	27	5.0	28	5.0	0.098	15.4	LOS C	0.3	2.2	0.74	0.89	0.74	30.2
Approach		32	5.0	34	5.0	0.098	14.4	LOS B	0.3	2.2	0.74	0.89	0.74	33.1
West: Kilmore Road														
10	L2	43	5.0	45	5.0	0.364	5.8	LOS A	0.0	0.0	0.00	0.04	0.00	61.0
11	T1	608	5.0	640	5.0	0.364	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	68.9
Approach		651	5.0	685	5.0	0.364	0.4	NA	0.0	0.0	0.00	0.04	0.00	68.3
All Vehicles		1132	5.0	1192	5.0	0.364	0.7	NA	0.3	2.2	0.03	0.05	0.03	66.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kilmore Road													
Lane 1	473	5.0	1858	0.254	100	0.2	LOS A	0.1	0.8	Full	500	0.0	0.0
Approach	473	5.0		0.254		0.2	NA	0.1	0.8				
North: Sandy Creek Road													
Lane 1	34	5.0	343	0.098	100	14.4	LOS B	0.3	2.2	Full	500	0.0	0.0
Approach	34	5.0		0.098		14.4	LOS B	0.3	2.2				
West: Kilmore Road													
Lane 1	685	5.0	1882	0.364	100	0.4	LOS A	0.0	0.0	Full	100	0.0	0.0
Approach	685	5.0		0.364		0.4	NA	0.0	0.0				
Intersection	1192	5.0		0.364		0.7	NA	0.3	2.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Queues (Distance)															
Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (m)	Back of Queue (m)		Queue at Start of Green (m)		Cycle Average Queue (m)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
East: Kilmore Road															
Lane 1		0.254	1.000	0.0	0.3	0.8	NA	NA	0.2	0.3	0.00	0.00	0.0	NA	NA
Approach		0.254			0.3	0.8	NA	NA	0.2	0.3	0.00	0.00			
North: Sandy Creek Road															
Lane 1		0.098	1.000	0.0	0.9	2.2	NA	NA	0.6	1.1	0.00	0.00	0.0	NA	NA
Approach		0.098			0.9	2.2	NA	NA	0.6	1.1	0.00	0.00			
West: Kilmore Road															
Lane 1	Y	0.364	1.000	0.0	0.0	0.0	NA	NA	0.0	0.0	0.00	0.00	0.0	NA	NA
Approach		0.364			0.0	0.0	NA	NA	0.0	0.0	0.00	0.00			
Intersection		0.364			0.9	2.2	NA	NA	0.6	1.1	0.00	0.00			

Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).