TRANSPORTATION MASTER PLAN

CITY OF CAMROSE

NOVEMBER 2019

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TRANSPORTATION MASTER PLAN

City of Camrose

Project no: 161-02027-00
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November 8, 2019

Jeremy Enarson, P.Eng.
Director of Engineering
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City of Camrose
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Camrose, AB T4V 0S8

Dear Jeremy,

Subject: Transportation Master Plan – Final

WSP is pleased to submit this updated final version of the City of Camrose Transportation Master Plan. This plan defines a long range transportation network that will facilitate the movement of people and goods, and provide recommendations relating to a number of specific transportation and traffic issues and determine areas of capital investments to develop a roadway network that meets existing and future needs. This revised document incorporates additional detail on goods movement and the potential bridge connection for 53 Street.

We are most appreciative for this opportunity to work with the City in developing an updated overarching transportation plan that is in line with the City's Strategic Plan and one that will set policy direction for all mobility infrastructure and programs throughout the City.

Yours sincerely,

Mariya Otten-Andrew, P.Eng., PTOE
Transportation Planning Manager, Alberta

Encl.

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CITY OF CAMROSE

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Reference to mention:

WSP 2017. *Transportation Master Plan*. Report produced for City of Camrose. 93 p. and tables, figures and appendices.

EXECUTIVE SUMMARY

The City of Camrose (City) is growing and changing and as a result has updated its Transportation Master Plan (TMP) that was last done in 2007. The TMP reflects the changes to the population, land uses, developments, and the economy. These changes influence the demand placed on the transportation system. Being aware of these changes and the resulting effects on the transportation system is part of good and comprehensive municipal planning.

Furthermore, this update to the TMP is one of the strategic initiatives listed under the Environment, Land, & Infrastructure Pillar of the City of Camrose 2014 – 2018 Strategic Plan. This TMP fulfills this strategic initiative and sets the policy direction for all mobility infrastructure and programs in the City. All other City transportation plans and policies should be consistent with this TMP.

This is the second issue of the TMP, and supersedes the July 2017 document. This study has been expanded to incorporate a more detailed assessment of the opportunities and trade-offs associated with constructing the 53 Street bridge connection, and goods movement has been considered in more detail.

The objective of this study was to define a long range transportation network in order to effectively facilitate the movement of people and goods and to reserve appropriate rights-of-way in the City of Camrose. In addition, the Transportation Master Plan provides recommendations relating to a number of specific transportation and traffic issues and determines areas of capital investments to develop a roadway network that meets the existing and future needs.

To assess the future transportation network performance, a transportation demand model was used in this study. In order to develop a transportation demand model for the City, the future changes to population, employment, land use, and road network were taken into account.

Future population and employment growth estimates that were used as inputs to the model were produced using a range of publicly available data and estimates from the City, the Government of Alberta and Statistics Canada. The model was produced using Emme transportation modelling software and was designed to estimate traffic on the City's road network.

This Transportation Master Plan identifies several policies and strategic actions to help the City to continue to develop an effective transportation road network. These policies and the strategic actions are separated based on different modes of transportation as presented below:

Walking and Cycling:

- Develop an active transportation plan that seeks to take account of the present day situation and the potential to provide efficient and low cost access alternatives to major destinations through effective and safe active transportation corridors and linkages.
- Develop a cycling minimum grid, while promoting the existing trails and facilities.
- Identify future funding sources for active transportation linkages such as the Federal Gas Tax and the revenues from the provincial carbon levy coming soon in Alberta.
- Engage in community involvement in active transportation planning considerations, particularly in terms of public engagement concerning identification of potential linkages and associated issues.
- Consider a "street lab" temporary cycling facility on a key street to develop interest and support for active transportation.

Transit:

- Update the transit feasibility study for 25,000 population using the outcomes of the current transit service pilot project.
- Work with Planning and Development Services to ensure potential key transit routes are targeted for redevelopment and intensification opportunities using existing infrastructure effectively.
- Investigate funding sources and opportunities including Alberta GreenTRIP – Green Transit Incentives Program under Alberta Transportation.
- Develop a service plan for introduction of transit.

Moving goods:

- As some of the strategic network improvements are implemented, such as the north arterial on the north side of 54 Avenue and extension of Camrose Drive to the west, the goods movement network should be reviewed to ensure the best possible routes are designated considering the costs and benefits of the different corridor options.

Driving:

- Invest in the following projects at the different horizon years, while contextualizing the driving mode of transportation within the Council approved policy of the Municipal Development Plan – reprioritizing the modes of transportation and placing increasing emphasis on walking, cycling, and public transit.
  - 2021 recommended investments:
    - Consider extension of **53 Street** over Mirror Lake to connect to 48 Avenue
    - **Grand Drive northbound (48 Avenue to 48A Avenue)**: restrict parking during peak hours and modify pavement markings to accommodate two driving lanes for a short distance.
  - 2026 recommended investments:
    - **53 Street (48A Avenue to 51 Avenue)**: restrict parking during peak hours, modify pavement markings to accommodate two driving lanes, and consider signal at 53 Street / 50 Avenue.
    - **Marler Drive westbound (43 Avenue to Parkview Drive)**: Modify pavement markings to accommodate two driving lanes.
  - 2036 recommended investments:
    - **48 Avenue**: continue westbound direction with two driving lanes west of RR 204. Widen to two lanes eastbound from RR 204 to 73 Street.
    - **47 Street northbound (52 Avenue to 53 Avenue)**: restrict parking during peak hours and modify pavement markings to accommodate two driving lanes.
- **Construction of 53 Street bridge connection to 48 Avenue should be considered further. As detailed in this study, there are significant opportunities but also trade-offs associated with constructing this.**
- Plan and invest in new corridors, as development occurs, extending Camrose Drive to the west and providing a new east-west arterial corridor north of 54 Avenue.
- Consider the functional classification of the street, as reclassified in this TMP under the new street network structure, prior to any planning and design investment, ensuring the purpose of the street is considered and integrated.

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1 INTRODUCTION

The City of Camrose (City) has commissioned an update to the Transportation Master Plan (TMP) that was originally completed in 2007. The TMP reflects changes to the population, land uses, developments, and the economy. These changes influence the demand placed on the transportation system. Being aware of these changes and the resulting effects on the transportation system is part of good and comprehensive municipal planning.

Furthermore, this update to the TMP is one of the strategic initiatives listed under the Environment, Land, & Infrastructure Pillar of the City of Camrose 2014 – 2018 Strategic Plan. This TMP fulfills this strategic initiative.

This TMP sets the policy direction for all mobility infrastructure and programs in the City. All other City transportation plans and policies should be consistent with this TMP.

Figure 1-1 City of Camrose

Source: Google Earth

2 PURPOSE OF A TRANSPORTATION MASTER PLAN

2.1 PURPOSE

The purpose of the TMP is to guide the development of an integrated transportation system that serves the whole city. The TMP should have clear policies, strategies, and projects. A TMP and the policies and projects therein should be well informed by good data, comprehensive and critical research, and quality analysis. A TMP should also be consistent with the Municipal Development Plan and be grounded in stakeholder and public feedback.

The Province of Alberta has passed the City Transportation Act which has a part on establishing city transportation systems. The Act states that a city must prepare a comprehensive and integrated TMP that serves the needs of the entire city. This legislation forms the backbone of transportation master planning in Alberta.

2.2 STUDY OBJECTIVES

- Study how traffic volumes may grow and change over time and develop an appropriate transportation system of streets and infrastructure
- Integrate with other City plans, strategies, and planning documents
- Differentiate short and long term improvements
- Provide policy direction on traffic calming including how to identify the issue, potential solutions, and a brief case study
- Recommend street classifications in accordance with industry practice
- Coordinate with the regional transportation network and the future potential north arterial connection
- Provide a goods movement network that will facilitate industrial and economic development

3 GUIDING PRINCIPLES

3.1 PURPOSE OF GUIDING PRINCIPLES

Guiding principles are an important part of any master plan as they set the direction for the planning work and the resulting strategies, projects, and investment framework. The TMP guiding principles build on work previously completed by the City articulated primarily in the 2011 Municipal Development Plan and the 2014 – 2018 Strategic Plan.

3.2 OBJECTIVE STATEMENT

The City's 2011 Municipal Development Plan has a clear objective statement for transportation as provided below.

"The City will seek to build a balanced transportation network in order to minimize environmental and neighbourhood impacts of roads and improve mobility. The future transportation system should address the requirements for automobiles, bicycling, walking, parking, public transit, goods movement or trucking routes and other components of the transportation system. A complete, functional and interconnected vehicular and pedestrian / cycle trail network is an important aspect of the future transportation network to provide a variety of sustainable transportation options in a safe, effective, affordable, and efficient manner." Municipal Development Plan 2011, page 22.

3.3 GUIDING PRINCIPLES

The below guiding principles will influence all planning work in this TMP, including network planning, operational analysis, and policy and projects recommendations.

- Camrose will have an **integrated transportation network** that serves all people of all ages and all abilities. **All modes of transportation** are included in the long term integrated transportation network including walking, cycling, riding public transit, driving, and moving goods.
- **Complete streets** provide significant value to communities and will be one of the foundations for road and street classifications and how different modes of transportation are prioritized on different roads and streets.
- Camrose will develop communities with **multiple street connections** for pedestrians, cyclists, buses, vehicles, and trucks that contribute to a dispersal of traffic. Multiple street connections reduce the need for very large intersections, make walking and cycling more viable, and minimize trip durations.
- The Transportation Master Plan helps Camrose plan for a future of integrated land use and transportation planning and provides a **framework to allocate limited capital, operational, maintenance, and asset management investments**.

4 STAKEHOLDER AND PUBLIC ENGAGEMENT

The project team collected feedback from the general public, and the main stakeholders at the City. This section summarizes key issues that have been heard to date.

Safety, connectivity, user friendliness, efficient traffic flow, and sustainability have been identified as the most important values for the future Camrose transportation system. Key transportation issues identified were the future of a ring road, access to major destinations (including parking and safety), the internal north-south routes, railroad at-grade crossings, and pedestrian-vehicle conflicts (including speed limits at school zones). Other issues identified were roadway capacity, dangerous goods accommodation, active and recreational transportation and connectivity, gaps in the roadway system, lack of maintenance, access to industrial areas, and traffic calming and shortcutting.

The public was consulted at the first Open House on Thursday, May 26, 2016, which was held at the City of Camrose Council Chambers. Some people expressed the desire for the inclusion of smart/green growth principles, public spaces, complete streets concepts, and an environmentally friendly transportation system. Two main identified issues were active transportation and public transportation.

Regarding active transportation, accessibility and connectivity were key areas. There is the need to provide sidewalks along main corridors and to key destinations (i.e. hospital, schools, university, industrial area, etc.), ensuring connectivity and accessibility, improving safety of pedestrians, having the ability to accommodate scooters, and being properly maintained. Similarly, there is the need to extend the bike-pedestrian trail network, connecting missing links in the network, providing access to key destinations, providing adequate bicycle parking facilities at destination points, and providing safe crossings and safer facilities (i.e. providing separated bike lanes along key main corridors).

Regarding public transportation, meeting both local and regional trip needs was expressed. Public transit for all users was identified as an issue for the transportation of senior citizens, people with accessibility needs, students, and low income families. Lack of regional public transit was also identified as an issue (whether the trips are for work, medical or other reasons).

Residents of the West Grandview neighbourhood identified traffic calming as a main issue in their neighbourhood with a divided opinion in favour and against the permanent placement of barricades in the area.

Other issues identified included accommodation of dangerous goods routes outside the city, large-vehicle and oversized truck accommodation in the industrial areas, completion of the by-pass / ring road, grade separation of railroad crossings, traffic signals coordination on key corridors, construction of the 53 Street bridge over Mirror Lake (providing an internal north-south link), and parking reduction and introduction of paid parking in the downtown area.

The second Open House was held on Thursday, March 30, 2017, at the City of Camrose Council Chambers. The project team collected feedback from the general public and the main stakeholders at the City. Overall, the feedback towards the open house was positive, as well as the community opportunity to provide feedback, comments, and raise concerns about transportation issues.

The majority of the feedback provided at the second Open House by the public were similar to the comments and concerns mentioned at the first Open House. Key feedback provided by the public included construction of the 53 Street bridge, improvement of multi-modal transportation, investment in public transit and provision of bus stops in residential areas, provision of pathways in the vicinity of Augustana Campus, completing missing sidewalk connections, and applying traffic calming measures on 50 Avenue and 49 Avenue. Also, comments were received regarding the adequacy of the regional road network and the existing large reliance on 48 Avenue to move regional traffic in the east-west direction.

5 WHERE ARE WE NOW?

5.1 POLICY AND BACKGROUND DOCUMENTS

The following policy and background documents were reviewed in preparing this Transportation Master Plan:

5.1.1 MUNICIPAL DEVELOPMENT PLAN

The Municipal Development Plan's stated purpose is to "provide goals, objectives and high level policies to guide and coordinate future urban growth decisions". It was last updated in 2011 to reflect the 1,147 ha annexation that took effect in 2010.

The Municipal Development Plan is divided into eight parts with transportation-relevant policies that can be summarised into one of the following three categories:

- City wide policies in Part 2 – Vision
- Transportation specific policies in Part 4 – Infrastructure
- Other transportation-related policies

City wide policy considerations relevant to transportation include:

- 'A mix of housing types to meet the needs of a diverse population' that 'creates the potential for a greater range of mobility choices'
- 'A sufficient supply of industrial lands to attract business' [with provision for effective transportation and logistics]
- 'Support [for] the growth of Camrose as an important regional centre'
- 'A multi-modal system of public roadways, regional trails and future public transit system' as well as an aspiration for 'new development [to] provide a high level of pedestrian and vehicle connectivity to existing transportation systems'

Transportation-specific policies listed under Part 4 of the Municipal Development Plan include:

- A future transportation system [consisting of highways and major roads] shall generally be provided'
- An aspiration to use the TMP 'in principle to guide future improvements to the transportation system'
- A City commitment to explore 'long term options and opportunities for public transit'
- The intention to 'integrate pedestrian walkway and bicycle trail systems into street and utility corridors'
- An aspiration for new development to 'provide a high degree of road and pedestrian connectivity to allow for shorter travel distances between destinations and greater dispersal of traffic'
- An aspiration 'where appropriate […] for new development to incorporate elements of a continuous city-wide multi-use trail system as an alternate transportation system'

- An intention ‘for urban development standards [to] incorporate features such as curb-cuts at intersections to accommodate low mobility residents’
- A City commitment to ‘explore and support the design of streets as quality public spaces servicing a variety of transportation modes and activities’ (also commonly known as Complete Streets)

5.1.2 TRANSPORTATION MASTER PLAN 2007

The 2007 Transportation Master Plan sought to assess the City’s transportation needs for the 5 and 20 year horizons. It responded to the major land developments at the time including the commercial retail development on the western end of Camrose’s urban area, the approved annexation of land in 2010, and the general need to update the plan.

The objectives of the 2007 TMP were wide-ranging and specifically included the following:

- Define a long range transportation network to provide for the effective movement of people and goods, to reserve appropriate rights of way for future transportation needs and to manage land development and related access in a manner that preserves the integrity of the transportation system
- Develop an integrated bicycle and pedestrian circulation system
- Review strategies for providing public transportation and disabled transportation services
- Identify pavement overlay, roadway reconstruction and rehabilitation needs for the arterial, collector and local roadway system
- Develop recommendations relating to a number of specific transportation and traffic issues
- Develop a Five-Year and Twenty Year Transportation Capital Program

The 2007 plan’s final recommendations were based on an examination of existing transportation conditions as well as development of a traditional 4-step traffic model that forecasted traffic growth for 5 and 20 year horizons. The model inputs were based on spatial estimates of population and employment data as well as existing traffic volumes. The outputs to this model were then used as the technical justification for some of the 5 and 20 year recommended roadway improvements.

5.1.3 INTERMUNICIPAL DEVELOPMENT PLAN

The Intermunicipal Development Plan is intended to govern current and future land uses in the areas surrounding the City’s border with the County of Camrose. Its purpose is to allow both the City and the County of Camrose to engage in regional infrastructure planning to ensure infrastructure such as roads, water, wastewater and storm water management services and facilities are planned in a manner that support future outwards urban growth of the City.

The main policies created in the Intermunicipal Development Plan include:

1. Designation of a Cooperation Zone, defined as ‘those lands in which the City is predicted to grow’ that will be subject to ‘a Capital Cost Study’, ‘shall require an approved Area Structure Plan, Traffic Impact Assessment Report and Storm Management Plan’ and that ‘must be to an Urban Standard of development to ensure a natural transition to the City of Camrose’

2. Creation of a Highway Commercial Corridor along Highways 13 and 26 ‘for commercial, light industrial, institutional and other public uses to a design standard consistent with its role as a major gateway to the City that must be ‘self-supporting financially, requiring no subsidy from the taxpayers for the capital cost of roads or other municipal services’ with the goal to

'establish a network of major arterial roads that will be required to support and facilitate the types of locations of land uses and development set out in this Plan Area'. Here the Intermunicipal Development Plan policy intention is for both municipalities to 'coordinate the planning and possible cost sharing of major roads and transportation links within the plan area'

3. For the sake of planning open space systems, 'the municipalities shall establish a continuous intermunicipal park system which among other things would provide for the development of a continuous trail network integrated with the trail network of the City'.

5.1.4 39 STREET DESIGN REVIEW 2007

39 Street is a major roadway on the east side of the City. The study presented recommendations based on a design review of 39 Street from the south City limits to 54 Avenue and future arterial intersections. The study set the basis for detailed design of 39 Street. Some key issues included slotted left turn lanes to accommodate large trucks, major access reconfiguration (from 44 Avenue to 48 Avenue), and a roadway section upgrade from rural to urban south of Camrose Drive.

5.1.5 DOWNTOWN ACTION PLAN

The City of Camrose Downtown Area Redevelopment Plan (April 2019) provides the framework for land use and development policies for the downtown area as it evolves as a complete community to "provide a mix of uses, housing options, public spaces, and amenities which together create a vibrant environment to live, conduct business, interact with other people, or entertain". The plan identifies future action items including pedestrian corridors, cycling network, public transit accommodation, livable streets, parking standards, and future land uses.

5.1.6 48 AVENUE STUDIES

The project team has reviewed various studies for 48 Avenue (Highway 13) including Highway 13 from Highway 21 to Camrose Functional Planning Study (2007), 48 Avenue Widening Study 56 Street to 66 Street (2003), Highway 13 East Traffic Analysis and Functional Plan (2002), Highway 13/Highway 26 Functional Planning Study (2000), 48 Avenue Widening Project Detailed Design Road Safety Audit (RSA) (2000), 48 Avenue Safety Inspections (2001), 48 Avenue Functional Planning Study (1991), and Highway 13/48 Avenue Functional Planning Study (1979). The City's main east-west corridor is 48 Avenue, carrying the highest traffic volumes in the City. Over the years, many studies have identified and addressed several issues at Highway 13 such as vehicular capacity, access management, traffic signal timing, pedestrian connectivity, and road safety. As the growth of the City continues and new developments are opened, the studies continue to identify capacity, access management and road safety issues along with recommendations. Completion of a ring road/City by-pass is identified as a complementary project that is anticipated to reduce congestion and traffic volumes along 48 Avenue. Other recommendations include realignment of Highway 26 and investigation of further improvements for the intersection of Highway 13 and Highway 26.

5.1.7 NEW DEVELOPMENTS

The City provided available documents related to future or on-going development plans. The Augustana Neighbourhood Area Redevelopment Plan (2012) provides a long term vision for in-fill development of this 33.7 acre neighbourhood. The plan provided recommendations for the future road network, completion of pedestrian facilities and its connectivity to adjacent lands (i.e. the park trail system) and internally, development densification, traffic calming needs, parking needs, and commercial enhancement.

The Parkview Drive (South of Camrose Drive) Planning Workshop report (2012) presents the workshop results and preferred option for the potential transportation system for the development of the area southwest of Camrose Drive.

5.1.8 TRANSIT STUDIES

A transit feasibility study was completed in 2006. The report assessed prevailing transit technology and five (5) transit service options for Camrose. Ridership levels and transit performance in other small Canadian communities were also discussed. Two routes were recommended for a two-year pilot program using small buses with capacity for 18 to 24 passengers as well as service promotional and marketing strategies. Moreover, the study recommended that new Area Structure Plans, concept plans and development applications should provide support for direct and effective pathway connections to potential transit routes and bus stops when transit becomes feasible. Other related transit documents investigated the service potential, target population, and one proposed a service route as pilot (Community Transportation Advisory Committee (CTAC) Report of January, 2013).

At present the City has an assisted transit Taxi Token service that is operated in partnership with a local credit union. At least 25 social agencies currently participate in this program. Tokens provide a $4 subsidy to all users that is applied to eligible persons using taxis in Camrose. Many but not all of the taxi operators in Camrose currently accept the tokens. The City is continually looking for ways to further improve the existing service.

5.1.9 GREEN SPACE MASTER PLAN

The intention of the Green Space Master Plan (2014) is to 'develop and express the City's policy on green space allocation, development, management and protection within the boundaries of the City of Camrose'. A 'Green Space Gap Analysis' sought to identify where residents lacked sufficient pedestrian connectivity to the existing trail *n*etwork. On this basis, a series of new interlinking trails was recommended. Of particular relevance was the identified need for better connections between sidewalks and trails. In a similar vein, the Intermunicipal Development Plan notes that both the City and County of Camrose shall establish a continuous intermunicipal park system in newly developed areas and along Camrose Creek so as to provide a continuous trail network integrated with the trail network of the City.

5.1.10 48 AVENUE AND SERVICE ROADS REVIEW

According to the "*48 Avenue & Service Roads Review – Technical Memo #4: Developing the Plan*" report dated September 29, 2016, prepared by McElhanney Consulting Services Ltd., two alternatives were identified for the west (between 56 Street and 66 Street) and east (between 36 Street and 39 Street) service roads to recommend a series of staged improvements for each service road to address road conditions, access, traffic operations and safety of all road users. The alternatives include:

- One-way conversion of two-way service roads and improvement of existing one-way service roads; and
- Service road removal.

As per the technical memo, if 48 Avenue corridor widening will not be implemented in the next 20 to 30 years, one-way conversion provides greater overall benefit to corridor users and adjacent properties than complete service road removal. While the one-way conversion will maintain the existing four-lane cross-section of 48 Avenue, it may be modified in the future to accommodate corridor widening to six lanes by removing the service roads.

The long-term recommendations for the west service roads (between 56 Street and 66 Street) suggest that the entire west study area function with one-way service roads. In addition, travel lanes on 48 Avenue will be widened to meet desired standards, back-to-back left-turn bays will be introduced on 48 Avenue at Comp Road and Grand Park Crescent, channelization islands at 58 Street and 56 Street will be modified, and sidewalks will be widened where feasible.

The recommendations for the east service roads (between 36 Street and 39 Street) suggest to convert the Highway 26 / Service Road intersection to function as a right-in/right-out access as an interim measure to be implemented immediately. Otherwise, the service road between 39 Street and Highway 26 (north of 48 Avenue) should remain as-is and traffic operations/safety at service road intersections monitored. If concerns arise during monitoring, it is recommended that this service road be converted to a one-way (westbound) facility incorporating entry and exit ramps from 48 Avenue. Adjacent back alleys may be upgraded to provide an alternative two-way connection, if deemed necessary to mitigate business impacts from one-way conversion.

The service road between 39 Street and 36 Street (south of 48 Avenue) should also be maintained as-is for the time being and traffic operations at the service road entry/exit ramp intersection adjacent to 39 Street monitored. If issues arise with safety and/or operations at this intersection, this service road should be converted into a one-way facility from 39 Street to 38 Street.

5.1.11 CAMROSE RING ROAD FUNCTIONAL PLANNING STUDY

A 1975 Functional Planning Study conducted for the City recommended a four-lane divided urban arterial at-grade major facility with limited access to be constructed when the City population reached 15,000 residents. The concept for such a roadway would be to connect Highway 13 with the ring road south leg in order to divert through traffic from the city center. Major arterial intersections with the ring road were recommended as at-grade fully-channelized intersections with signal control when warranted.

The initial ring road construction was envisaged as being a two-lane paved facility with an urban cross-section. The priority for construction included the east leg (39 Street to industrial areas), west leg (south of 48 Avenue), and the south leg so as to provide an alternative access route via 39 Street and 51 Avenue to downtown.

5.2 CITY LAND USE POLICY AND TRANSPORTATION STRUCTURE

The City has an existing land use concept shown on Map 2 of the Municipal Development Plan. This concept features an existing urbanised area incorporating land uses surrounding the downtown in all directions. The urban area is fairly contiguous except for two major physical barriers that separate certain areas of the city and that have shaped its continued urban development over time:

1. Mirror Lake and Camrose Creek that runs from the northwest through the centre of the City and down into the southwest.

2. The Canadian National (CN) and Canadian Pacific (CP) railway lines, running northeast to southwest and west to southeast, respectively.

The two railway lines intersect north of 51 Avenue and 41 Street and act as major constraints to local roadway and trail connections for all other modes across the urbanised area. In practical terms both existing physical features act as major physical barriers to unimpeded travel across what is otherwise a relatively flat urban area.

5.2.1 LAND USE POLICY

The following land uses form the MDP land use concept and are considered significant for long term transportation planning purposes, and are shown in Figure 5-1 Existing Land Use.

1. **Residential** being the predominant land use, concentrated west of the CN Rail Line but also predicted to expand as part of greenfield urbanised development over time in the southwest, west and northwest of the existing urban area.

2. The **two commercial/light industrial** areas: one on the west side along 48 Avenue (Highway 13), particularly the mall and the commercial area east of 41 Street and south of 48 Avenue.

3. The **downtown** bounded by 53 Street (Highway 833) on the west, 46 Street in the east, 51 Avenue in the north and 48 Avenue (Highway 13) in the south. This precinct functions as a central place of commerce and is the origin and destination for many trips within the City.

4. The **major industrial area** occupied by the businesses in the northeast of the city and with largely unimpeded access to the railway lines.

5. The **institutional land uses**, including the University of Alberta Augustana Campus, the City's sports facilities, Camrose Hospital and senior residences.

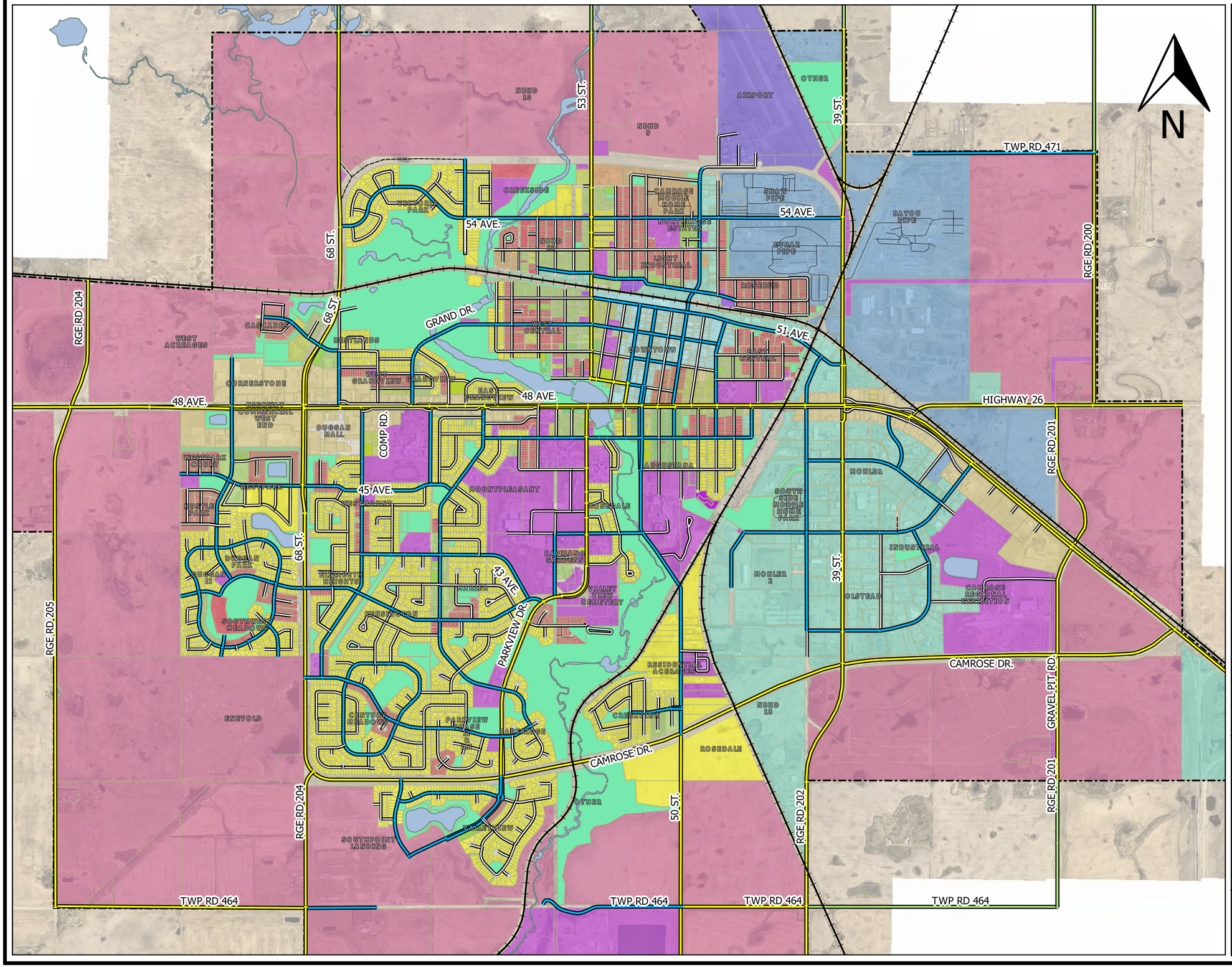
6. The **recreational land uses**, including the golf course, mostly concentrated around the Camrose Creek Valley that also serve as a spine to the existing trail network.

7. Other **distinct/specialised land uses** such as the Camrose Airport, which are mainly subject to seasonal and special event transportation needs.

An extensive active (non-motorised) transportation network that acts as a natural spine for many recreational and non-recreational trips to various parts of the City is located in the Camrose Creek Valley and adjacent to both sides of Mirror Lake.

The Municipal Development Plan discusses the importance of the consideration of all modes of transportation including, walking, cycling, public transit, driving, and moving goods. It lays the groundwork for a system that is characterized by integration of land use structure and mobility corridors. Urban redevelopment is anticipated around the downtown area and in parts of the built area. The existing Area Redevelopment Plans / Area Structure Plans seek to guide and influence redevelopment over time to achieve this objective.

Through existing Area Structure Plans, the precincts adjacent to the downtown demonstrate both a slightly higher existing density of population and potential for redevelopment over time. The rationale for providing good facilities for walking, cycling, and using transit in this area is strong, relative to the developing residential greenfield area on the west side. Nevertheless, the provision for all modes of transportation, in consideration of the adjacent land uses, will be key to the success of the City.



Legend

Existing Roadway Classifications

- Arterial
- Collector
- County
- Local
- Landfill
- Other
- Private

Other Major Transportation Infrastructure

- railroad

Land Use Zoning

- AIR
- C1
- C2
- C3
- DC
- I
- M1
- M2
- MH
- PR
- R1
- R2
- R3
- R4
- SCD
- SRD
- UR

Other

- Waterways
- City Boundary

City of Camrose Transportation Master Plan

Existing Land Use Zoning

Figure 5-1

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161128-ExistingLandUseZoning

T:2016_11-Template_11x17_TMPReport

5.3 TRANSPORTATION NETWORK CHARACTERISTICS

The City's existing transportation network is made up of sidewalks, trails, streets and roads, and highways. The existing transportation system has been designed to serve a range of travelers using different modes of transportation (motorised and non-motorised) for a range of trip purposes (travel to / from work, goods movement, shopping, etc.).

5.3.1 WALKING AND CYCLING

The City has a network of sidewalks on many streets especially in the downtown area. The sidewalks facilitate both walking and other active transportation trips.

The City also has an existing trails network that is made up of both paved and unpaved trails. Trails are currently mostly located in recreational areas and are not always continuous. The trails network facilitates trips made by all active transportation modes. By nature of the trail locations and design, they primarily serve recreational trips though some non-recreational trips also. Figure 5-2 shows the trails network.

5.3.2 RIDING PUBLIC TRANSIT

There is no permanent scheduled and fixed route public transit service in the City, though several studies have been completed on the feasibility of a transit service. The City currently subsidizes some accessible transit through a demand responsive type service (taxi token) and is considering a number of other public transportation options. In 2016, a scheduled and fixed route public transit service pilot was implemented within the City which operates two days per week (Tuesdays and Fridays).

5.3.3 DRIVING

The City has a network of arterial and collector streets covering much of the City. The main east-west connection is 48 Avenue (Highway 13). Several highways run through the City (Highway 13, 13A, 26, and 833) and serve the needs of regional traffic but these roadways are also used frequently for local travel.

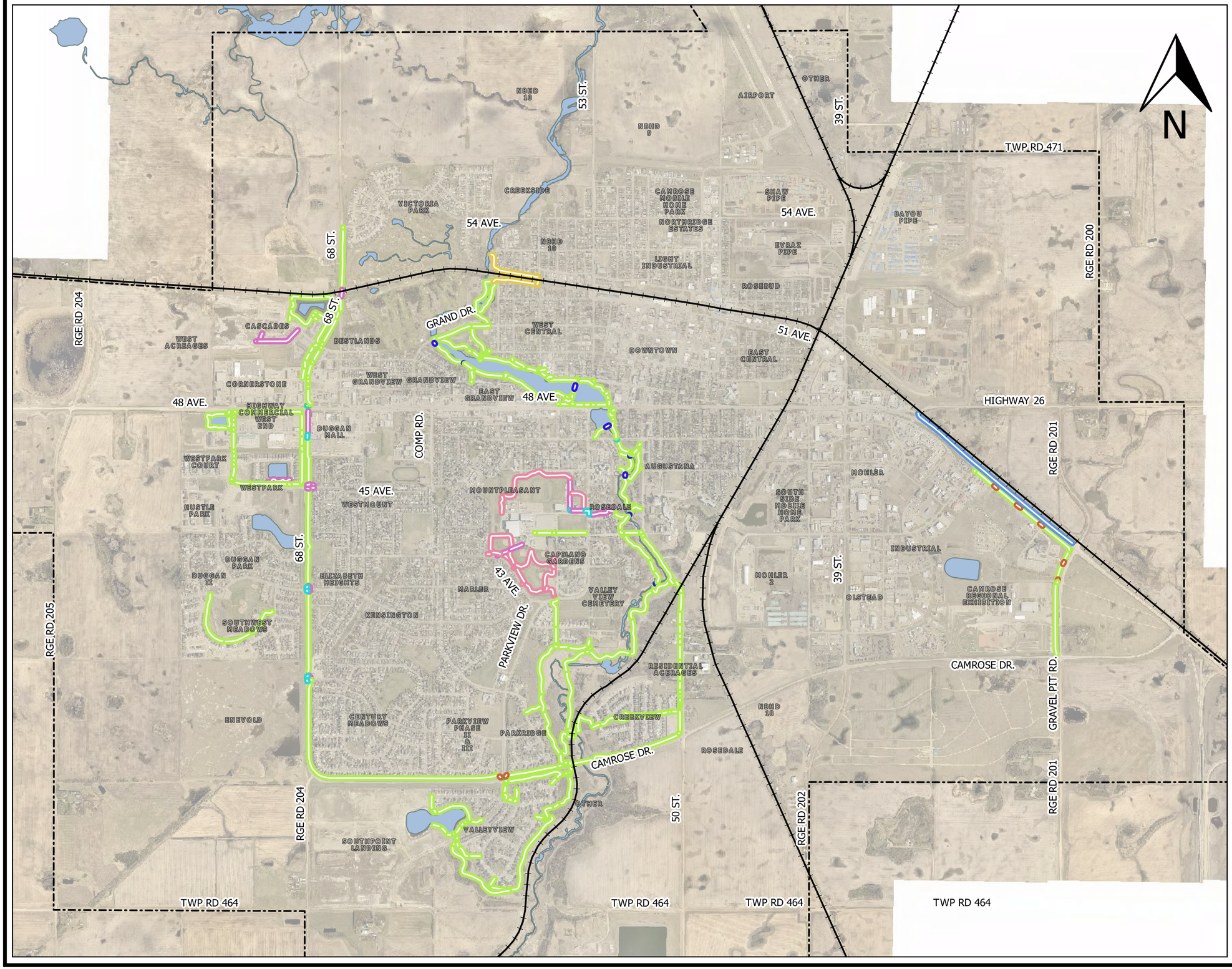
Figure 5-3 Transportation System Map was obtained from the City of Camrose Transportation System Bylaw. This map classifies the road network in to two major categories: Arterial streets and Collector streets.

Figure 5-4 Existing Street and Roadway Network shows the City's road and street network. This map illustrates existing road classifications based on the information provided to this study by the City of Camrose GIS Department.

5.3.4 MOVING GOODS

The City also has a network of goods movement routes including dangerous goods movement routes. The dangerous goods movement route primarily involves Camrose Drive (Highway 13A) on the south side of the City, with 68 Street and 39 Street. This allows the City to keep the movement of dangerous goods largely on the south side of the City, minimizing the risks of moving such goods through an urban area.

Figure 5-5 Existing Goods Movement Network presents the goods movement network in the City.



Legend

Trails by Surface

- Asphault
- Bike lane (concrete)
- Concrete
- Proposed
- Road Crossing Asphault
- Road Crossing Concrete
- Road Island Asphault
- Road Island Concrete
- Shale Trail
- Wood

Other Major Transportation Infrastructure

- railroad

Other

- Waterways
- City Boundary

City of Camrose Transportation Master Plan

Existing Active Transportation Network by Surface Type

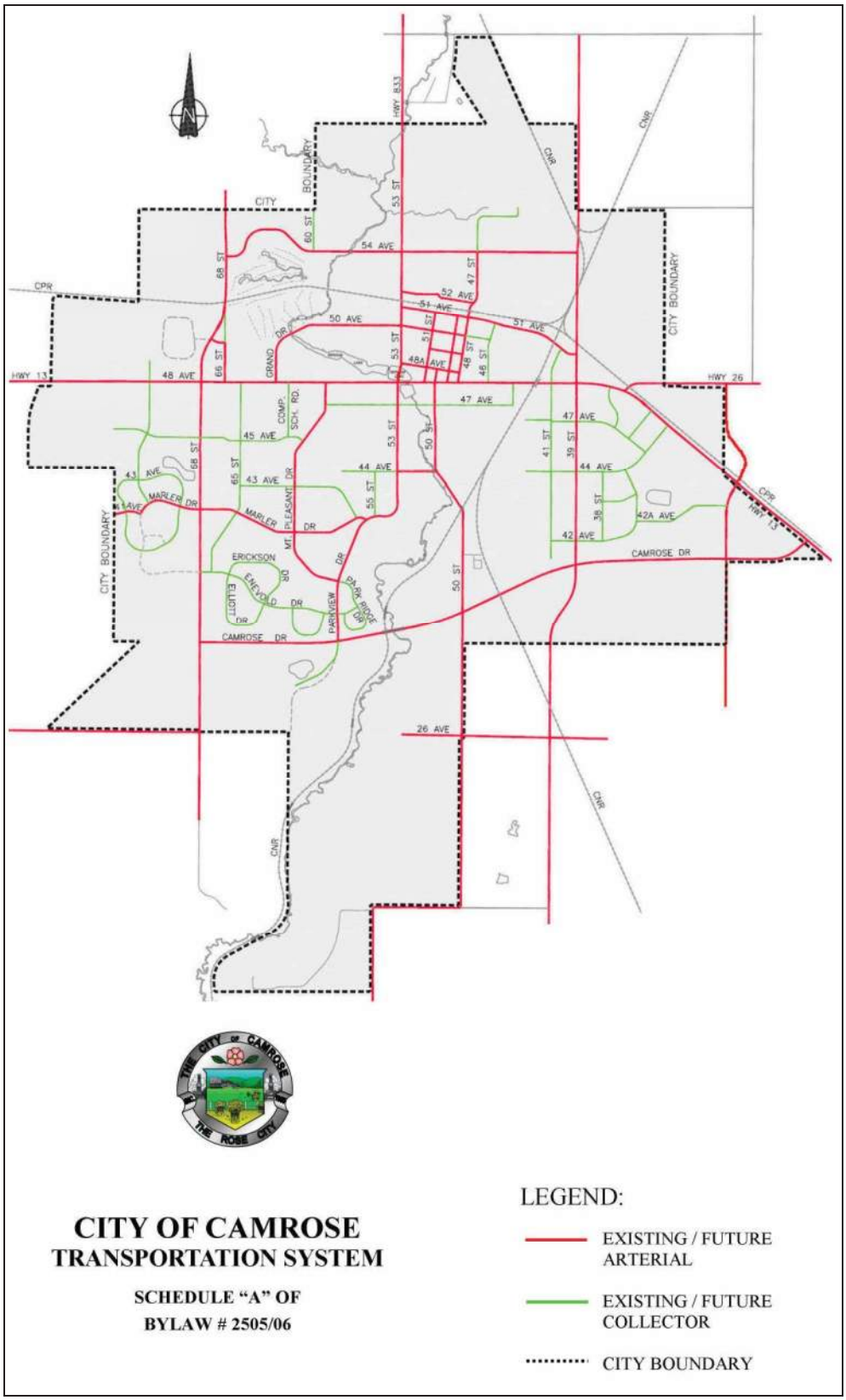
Figure 5-2

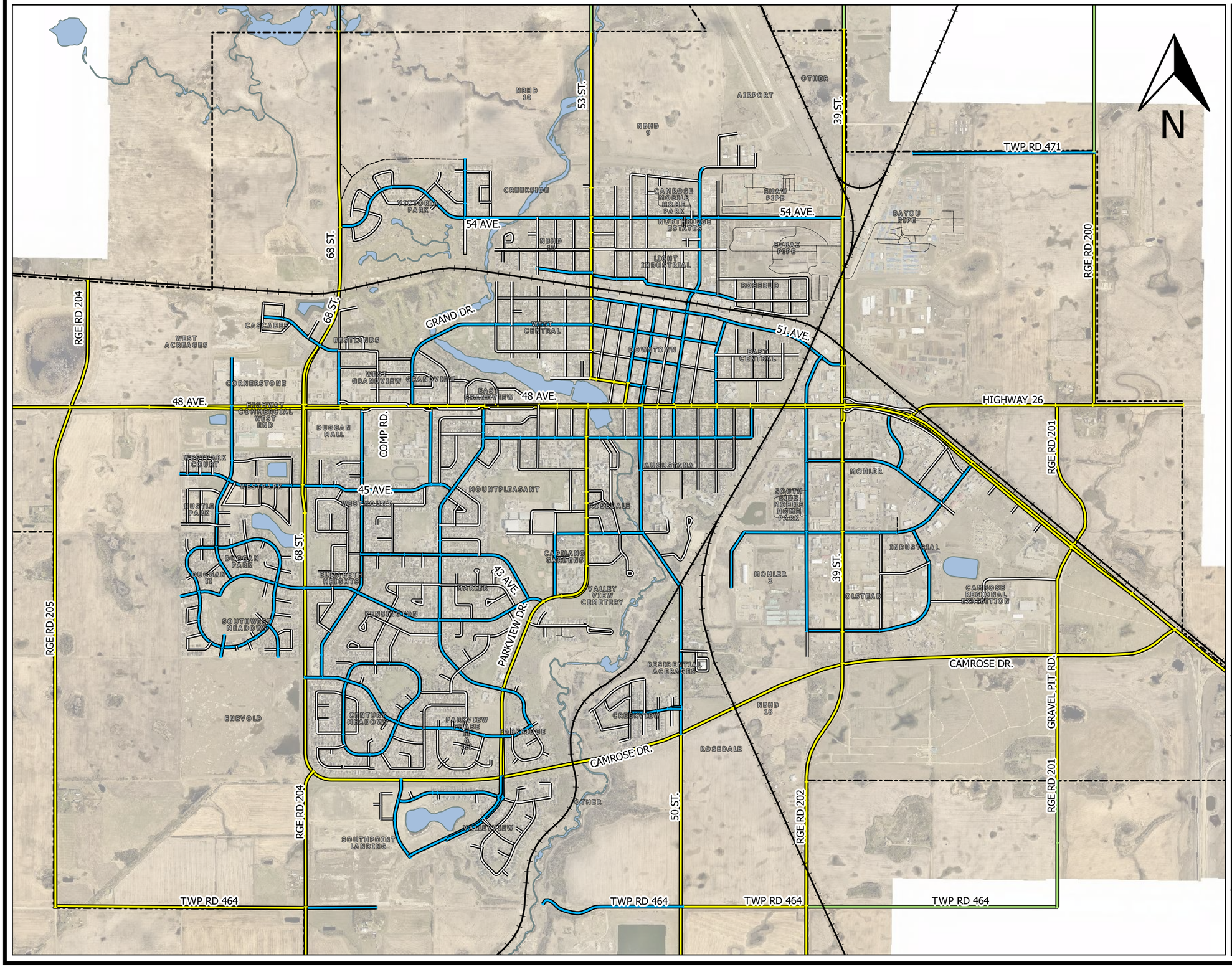
Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161130-ExistingActiveTransportationNetworkbySurfaceType T:2016_11-Template_11x17_TMPReport

Figure 5-3 CITY OF CAMROSE TRANSPORTATION SYSTEM





Legend

Existing Roadway Classifications

- Arterial
- Collector
- County
- Local
- Landfill
- Other
- Private

Other Major Transportation Infrastructure

- railroad

Other

- Waterways
- City Boundary

City of Camrose Transportation Master Plan

Existing Transportation Network Road Classifications

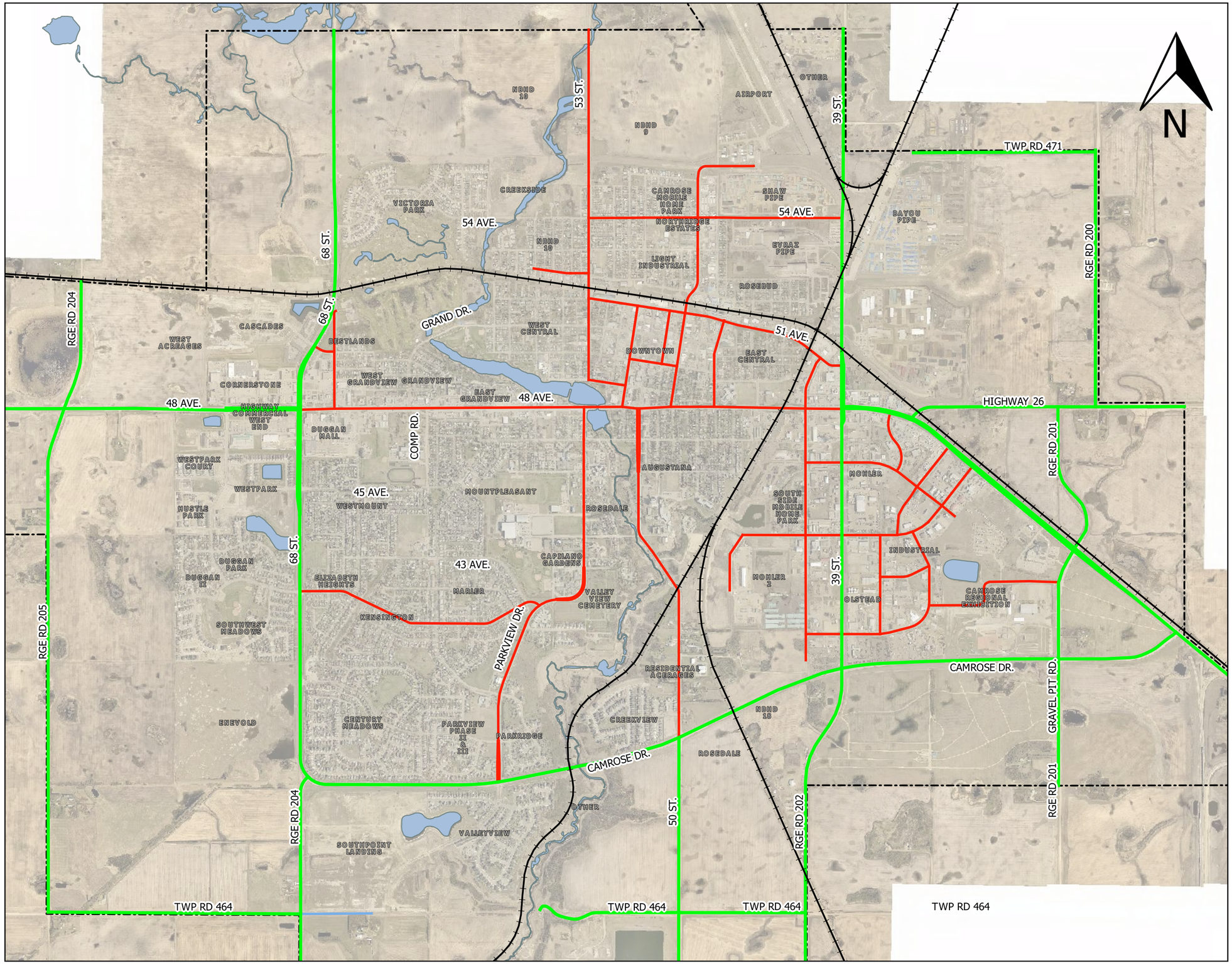
Figure 5-4

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161130-ExistingTransportationClassification

T:2016_11-Template_11x17_TMPReport



Legend

Truck Routes

- Designated Truck Route
- Designated Truck Route (Gravel)

Dangerous Goods Routes

- Designated Routes

Other Major Transportation Infrastructure

- Railroad

Other

- Waterways
- City Boundary

City of Camrose Transportation Master Plan

Existing Truck Routes and Dangerous Goods Network

Figure 5-5

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20170323-ExistingTruckandDangerousGoodsRoutes T:2016_11-Template_11x17_TMPReport

5.4 EXISTING NETWORK CONDITIONS

5.4.1 TRAFFIC VOLUMES

Usually street networks in typical urban areas carry the highest traffic volumes during the afternoon peak period on weekdays. Therefore, afternoon peak hour traffic volumes were used to review and to assess the existing operating conditions in Camrose. Figure 5-6 Existing Volumes illustrates the existing pm peak hour traffic volumes on major streets. As indicated on the figure, 48 Avenue carries the highest traffic volumes especially in the sections between 53 Street and 50 Street and between 73 Street and 68 Street. This roadway runs east-west and is the busiest arterial in Camrose. Other busy streets within the City are 68 Street, 53 Street, and 50 Street.

5.4.2 TRAFFIC OPERATIONS

The ratio of demand or 'flow' to capacity is referred to as 'v/c' (volume/capacity). This is a key measure for operation of a road network. A v/c of 1.0 indicates that the network is operating at full capacity. High v/c is associated with more travel delay and congestion. Low v/c indicates reserve capacity, with minimal delays and congestion. When reviewing operation of a network, v/c values under around 0.7 can be considered to be very stable and represent good network operations. Values above 0.9 reflect conditions that are at or near capacity, more frequent congestion is evident at this point. Values in the 0.7 to 0.9 range still provide sound traffic operation although drivers may experience small delays along the route, particularly above a v/c of 0.8.

Figure 5-7 Existing Operations illustrates traffic operations measured through volume to capacity (v/c) ratios on major roadways within the City of Camrose. The majority of roads operate with v/c ratios less than 0.40 which is indicative of very good operating conditions and high levels of service on these roadways. As it can be seen on Figure 5-7 Existing Operations, there are also some links that are currently experiencing some levels of congestion such as 48 Avenue, some sections of 68 Street and 53 Street, and the links close to the downtown area.

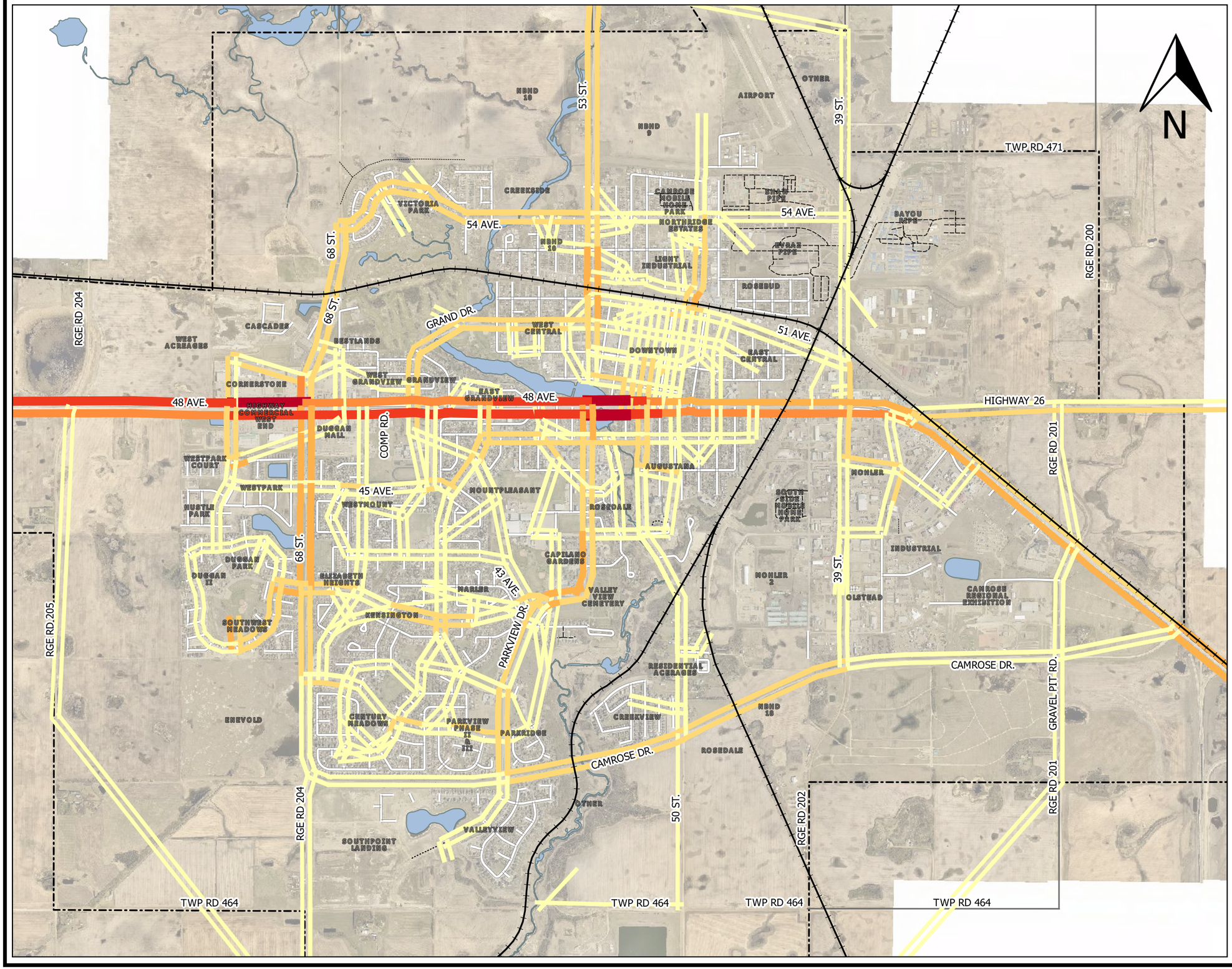
It should be noted that red links shown on Traffic Operations figures are indicative of roadways with v/c ratios higher than 0.60. This does not necessarily raise concern about the operating conditions of specific links. The v/c ratio of each link has to be checked before making any recommendations.

5.4.3 SAFETY ANALYSIS

A safety analysis has been completed of three sites in the City, based on City provided collision data. This analysis has been prepared separately to the main TMP document.

5.4.4 SHORTCUTTING AND TRAFFIC CALMING ANALYSIS

A shortcutting and traffic calming high level analysis has also been prepared for the West Grandview neighbourhood. This analysis has been prepared separately to the main TMP document.



Legend

Peak Hour Volume Per Direction Per Hour

- 1 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1000
- >1000

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose
Transportation Master Plan

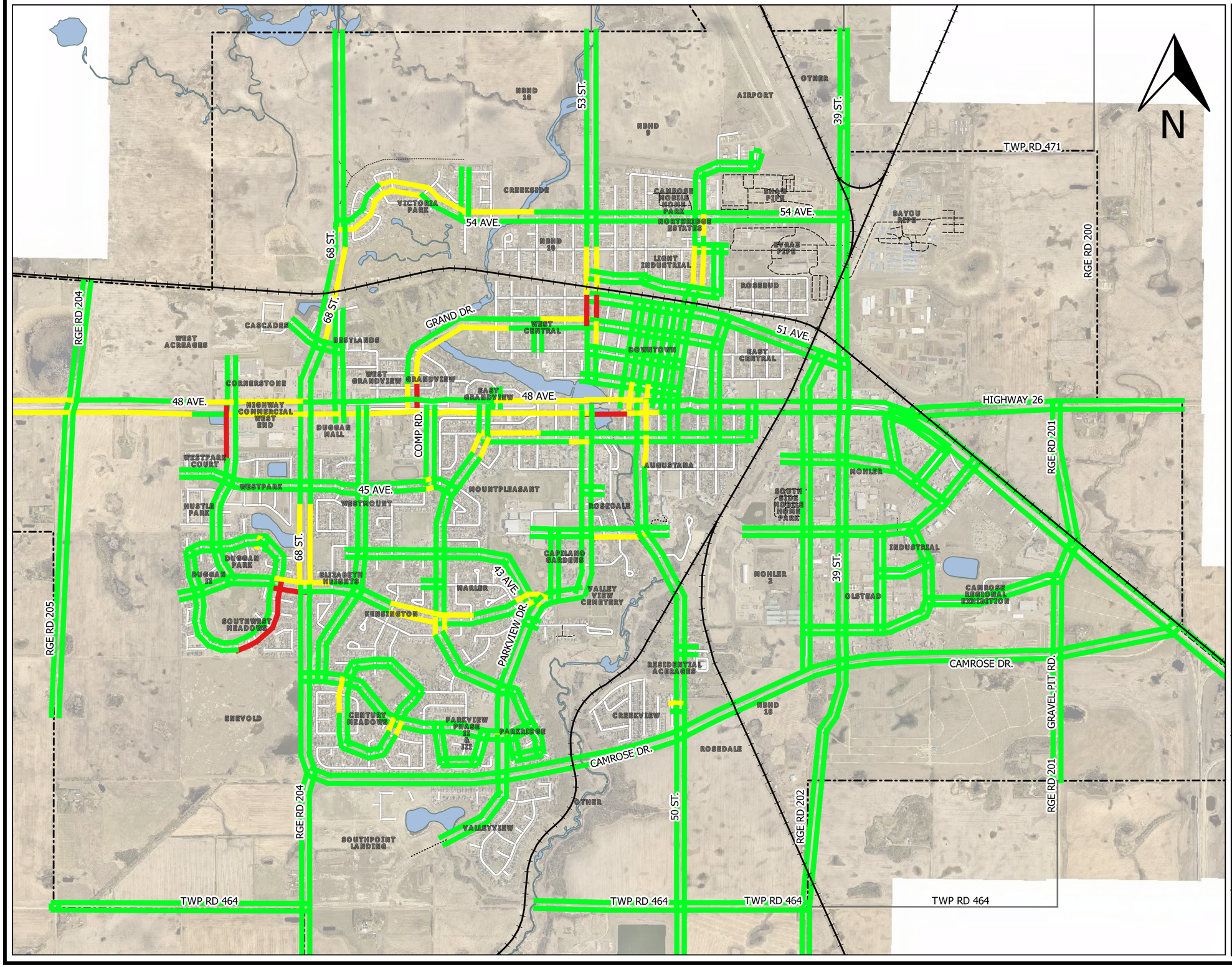
Existing Peak Hour Modelled Traffic Volumes

Figure 5-6

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-CamroseExistingVolumesS300 T:2016_11-Template_11x17_TMPReport



Legend

VCR

- 0.00 - 0.40
- 0.40 - 0.60
- 0.60 - 1.00

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

Existing Peak Hour Modelled Traffic Volume to Capacity (v/c) Ratio

Figure 5-7

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-CamroseExistingVCRS300 T:2016_11-Template_11x17_TMPReport

6 WHERE DO WE WANT TO GO?

6.1 GROWTH

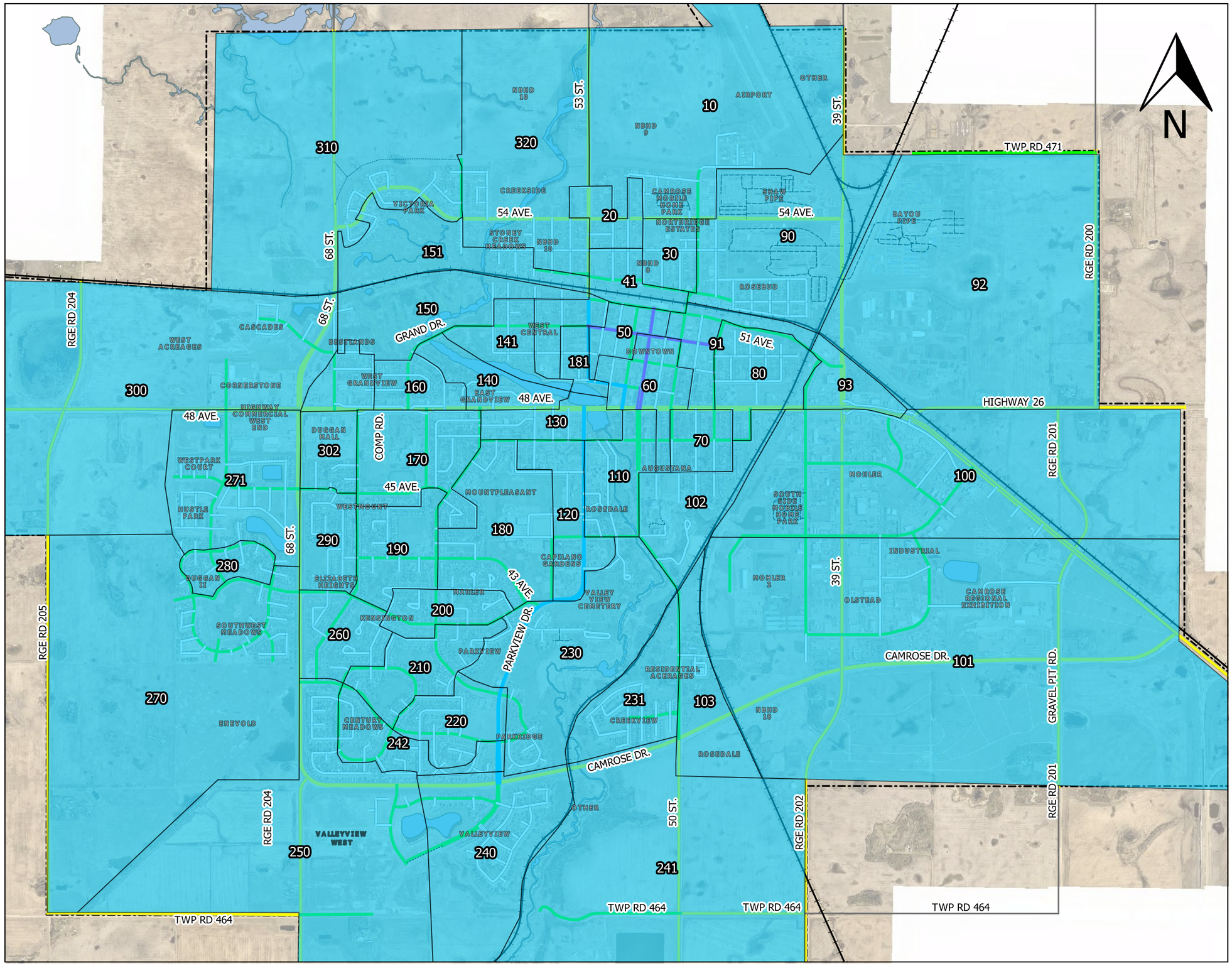
A key input to the development of a transportation model for Camrose was a planning exercise that sought to take account of future changes to population, employment and land use that could be used to model future transportation network performance for vehicles over time. These estimates were produced using a range of publicly available data and estimates from the City, the Government of Alberta and Statistics Canada. This exercise consisted of three key steps:

1. Determine a 2016 population and employment benchmark;
2. Determine anticipated significant land use changes over time within the City boundaries in consultation with relevant City stakeholders, and
3. Estimate population and employment for each of the horizon years taking account of the above.

6.1.1 DETERMINING 2016 POPULATION AND EMPLOYMENT BENCHMARK

As none of the existing population and employment estimates were readily available in a format that allowed them to be easily used for modelling purposes over time, it was necessary to develop benchmark population and employment estimates by drawing from a number of key sources: the City's own commissioned population growth estimates (Brown and Associates 2013), the Federal Census (Statistics Canada 2011) as well as the 2015 Alberta Population Projections *(*Alberta Treasury Board and Finance 2015).

In the case of the Alberta Population Projections and the City's own population estimates, three scenarios exist (low, medium and high growth). It was determined that the medium growth scenario represented the most appropriate scenario for TMP long range planning purposes. From this, population and employment estimates were produced for a total of 47 traffic analysis zones (TAZs). These traffic analysis zones are shown in Figure 6-1 Traffic Analysis Zones.



Legend

TAZ

Existing Rail

railroad

City of Camrose Transportation Master Plan

Traffic Analysis Zones (TAZs)

Figure 6-1

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-CamroseTrafficAnalysisZones

T:2016_11-Template_11x17_TMPReport

6.1.2 ASCERTAINING ANTICIPATED SIGNIFICANT LAND USE CHANGES OVER TIME WITHIN THE CITY BOUNDARIES

Informal discussions with the City's planning team determined a number of zones that were likely to undergo significant changes to land use over time. These included industrial developments such as Zone 92 (East Gateway ASP), existing Area Redevelopment Plans such as Zone 120 (Augustana) and likely greenfield developments such as Valleyview West, Southport Landing, Southwest Meadows and West Acreages (Zones 241, 250, 270, 300 and 310).

6.1.3 ESTIMATING POPULATION AND EMPLOYMENT FOR EACH OF THE HORIZON YEARS

The final step in the process following the above methodology was to develop spatial estimates of population and employment for each of the 47 traffic analysis zones (TAZs) based on three modelling horizons: 2021, 2026 and 2036. Rather than maintaining a general employment to population ratio for each of the horizon years, which could likely have the effect of overestimating travel behaviour, a number of likely changes to these TAZs over time were also accommodated. These variations were kept broadly consistent with the City's own overall population estimates.

6.1.4 5 YEAR POPULATION AND EMPLOYMENT – 2021

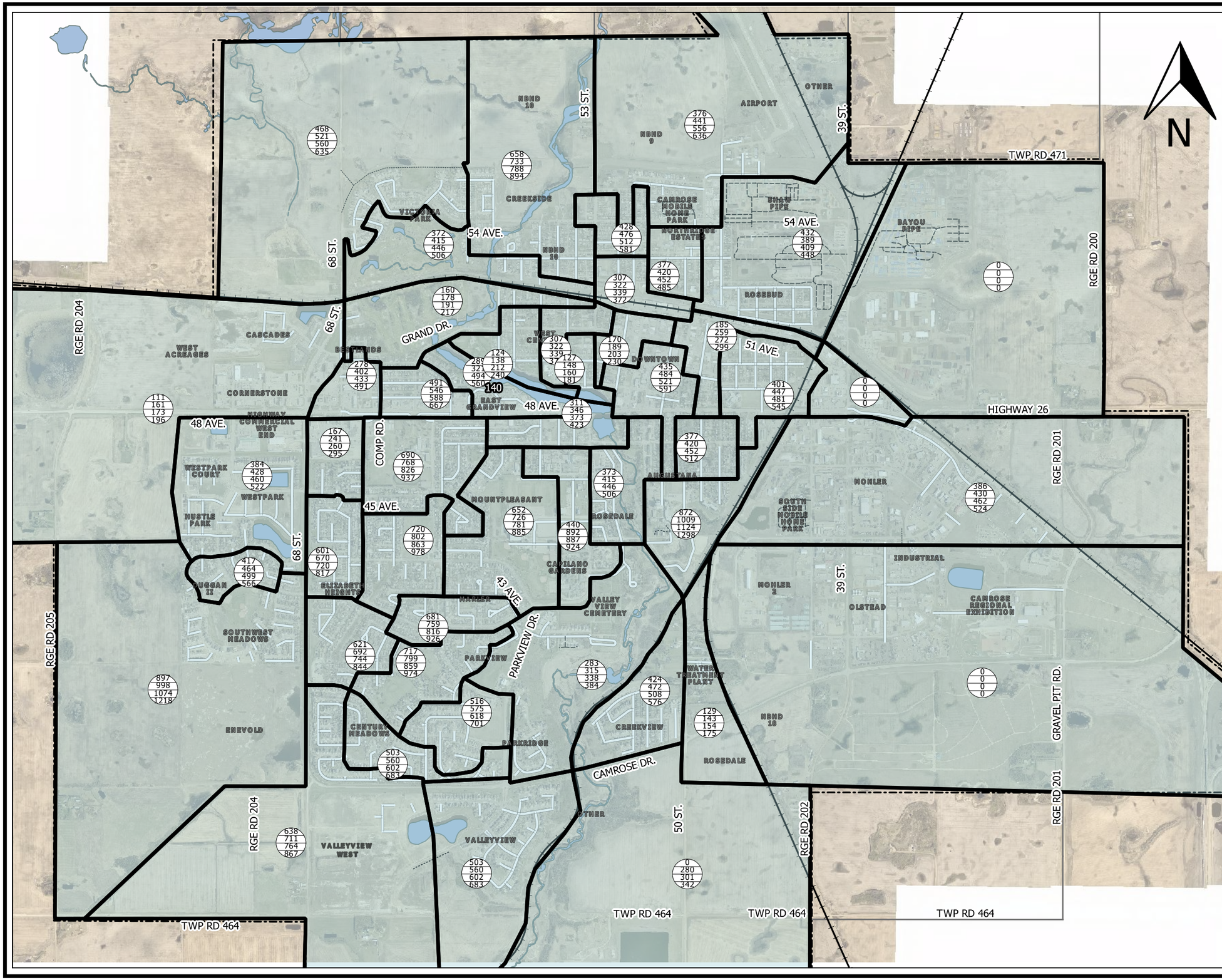
At the whole of City level, the 2021 average employment to population ratio of 0.57 jobs/persons was maintained, based on the population and employment data recorded as part of the 2011 Census. In particular, this horizon year sought to include some consideration of likely employment impacts associated with East Gateway ASP (currently being finalised by the City). The final population estimate used was 21,784 persons and 12,321 jobs. Figure 6-2 Forecasted Population and Figure 6-3 Forecasted Employment show the future situations for all horizon years.

6.1.5 10 YEAR POPULATION AND EMPLOYMENT – 2026

For the 2026 horizon year, special accommodation of Mohler Industrial area, retail development at Valleyview West, continued growth in employment in the downtown area, East Gateway and Augustana Campus was undertaken. Based on informal discussions with the City's planning team, this horizon year also sought to take account of continued greenfield residential development around areas such as the Creekview neighbourhood. The final population estimate used was 23,659 persons and 13,283 jobs based on an employment to population ratio of 0.56. Figure 6-2 Forecasted Population and Figure 6-3 Forecasted Employment show the future situations for all horizon years.

6.1.6 20 YEAR POPULATION AND EMPLOYMENT – 2036

This horizon year also included full build-out of the East Gateway development, continued consolidation of the Augustana campus, continued employment growth in Mohler industrial area as well as some population growth associated with continued urban development of the West Acreages, Valleyview West and Enevold areas. The final population growth estimates used for this horizon year again seek to remain consistent with the City's own population estimates. The overall resulting average employment to population ratio of 0.55 jobs/persons was adopted based on 26,704 persons and 14,810 jobs. Figure 6-2 Forecasted Population and Figure 6-3 Forecasted Employment show the future situations for all horizon years.



Legend

- Traffic Analysis Zones
- Existing Estimated Population (2016)
- 2021 Projected Population
- 2026 Projected Population
- 2036 Projected Population

City of Camrose Transportation Master Plan

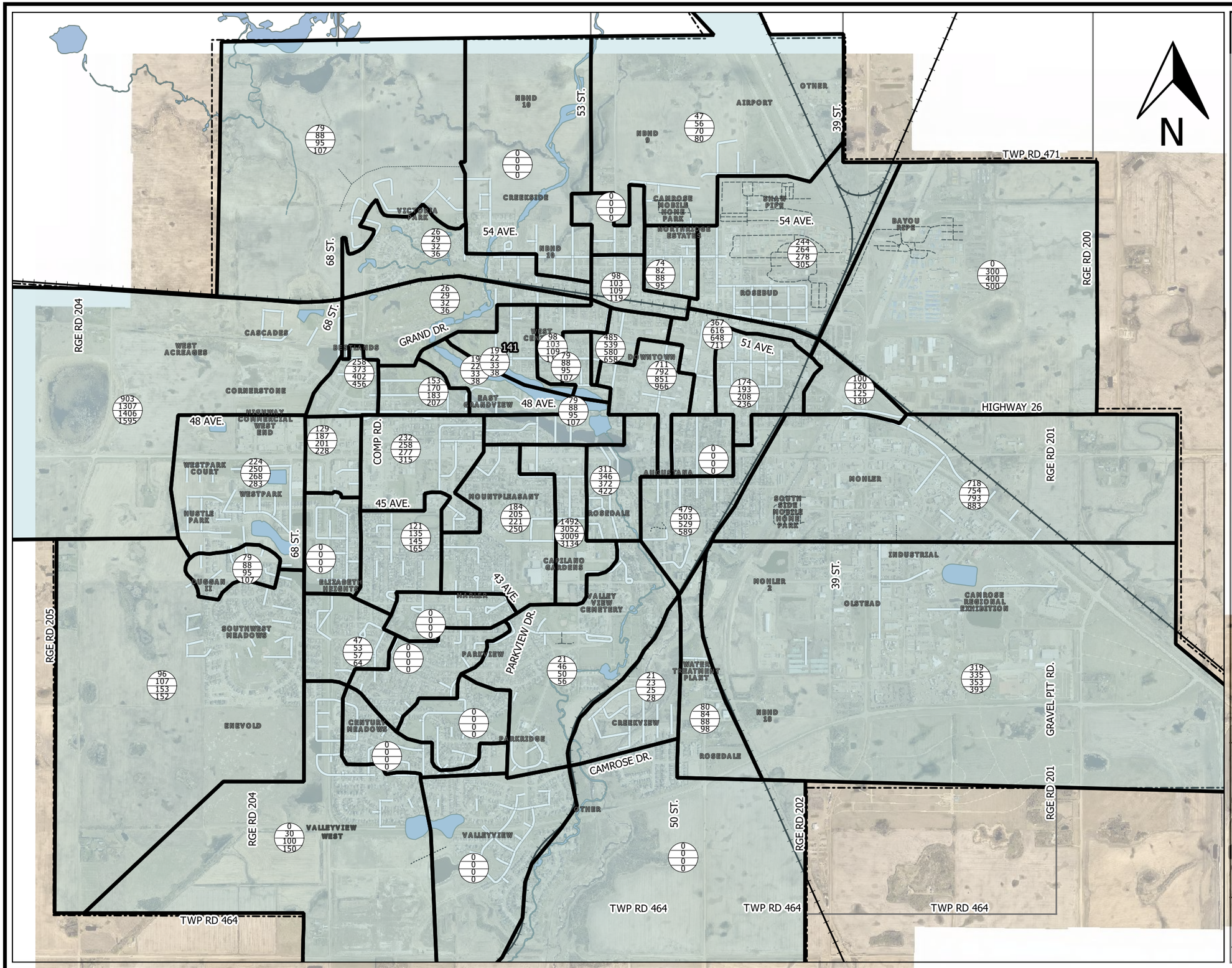
Existing (2016) and Projected (2021, 2026, 2036) Population

Figure 6-2

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161130-ExistingAndModelledPopulation T:2016_11-Template_11x17_TMPReport



Legend

- Traffic Analysis Zones
- Existing Estimated Employment (2016)
- 2021 Projected Employment
- 2026 Projected Employment
- 2036 Projected Employment

City of Camrose Transportation Master Plan

Existing (2016) and Projected (2021, 2026, 2036) Employment

Figure 6-3

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161130-ExistingAndModelledEmployment

T:2016_11-Template_11x17_TMPReport

6.2 FUTURE TRANSPORTATION DEMAND

6.2.1 MODEL

A transportation demand modelling exercise was undertaken to project volumes for the 2021, 2026 and 2036 horizon years. By using such a model, the future projections take into account land use changes, such as population and employment, as well as road network changes, such as new roads, or extended roads. The model was built using EMME software and using WSP's in-house RAPID technique described further below.

6.2.2 TRANSPORTATION NETWORK

The road network for the study area was coded into the model using GIS data as the starting point. The GIS data included all roads in Camrose. The network for the model examined highways, arterials and significant collector roads. The network is made up of nodes, representing intersections and other points on the network such as road bends, and links connecting them. Links have characteristics such as number of lanes and speeds that represent the actual street system. There are also centroids which represent a traffic analysis zone (TAZ) or area of the City from which traffic enters and exits the network and these are connected to the network via centroid connectors. There is currently no transit network of significance in Camrose, so there is no transit component to the model.

6.2.3 LAND USE

In order to estimate current traffic volumes with the model as well as future volumes, the City was divided into traffic analysis zones. The basis of these zones was initially Statistics Canada's Dissemination Areas (DAs). Some of the DAs were split into multiple zones in order to have homogeneous land use, due to size or due to geographic features in the zone such as a railway. A total of 47 zones internal to the city along with 4 external zones were established. Land use used in the model consisted of population and employment. Future population and employment by zone were projected with details provided in the above section. The number of trips to and from each zone is calculated based on the land use – population and employment.

6.2.4 TRAFFIC COUNTS AND EXTERNALS

Existing traffic volumes are key to calibrating the model. The model was built for the afternoon peak hour. As such, traffic volumes in the 4:00 to 6:00 pm time period were used to determine peak hour volumes on the various links in the City of Camrose. Data from Alberta Transportation were used to determine the volumes on the approaches to the City along the main highways. These data were used in the calibration of the EMME model.

6.2.5 RAPID MODEL

WSP has developed a RAPID (Robust tool for Assessment, Prioritization, Implementation and Decision making) modeling methodology. This methodology was established for small to medium sized cities and is intended to be relatively transferable, cost effective and efficient relative to building a new modeling procedure from scratch for every city. Camrose was a suitable city to model using this procedure.

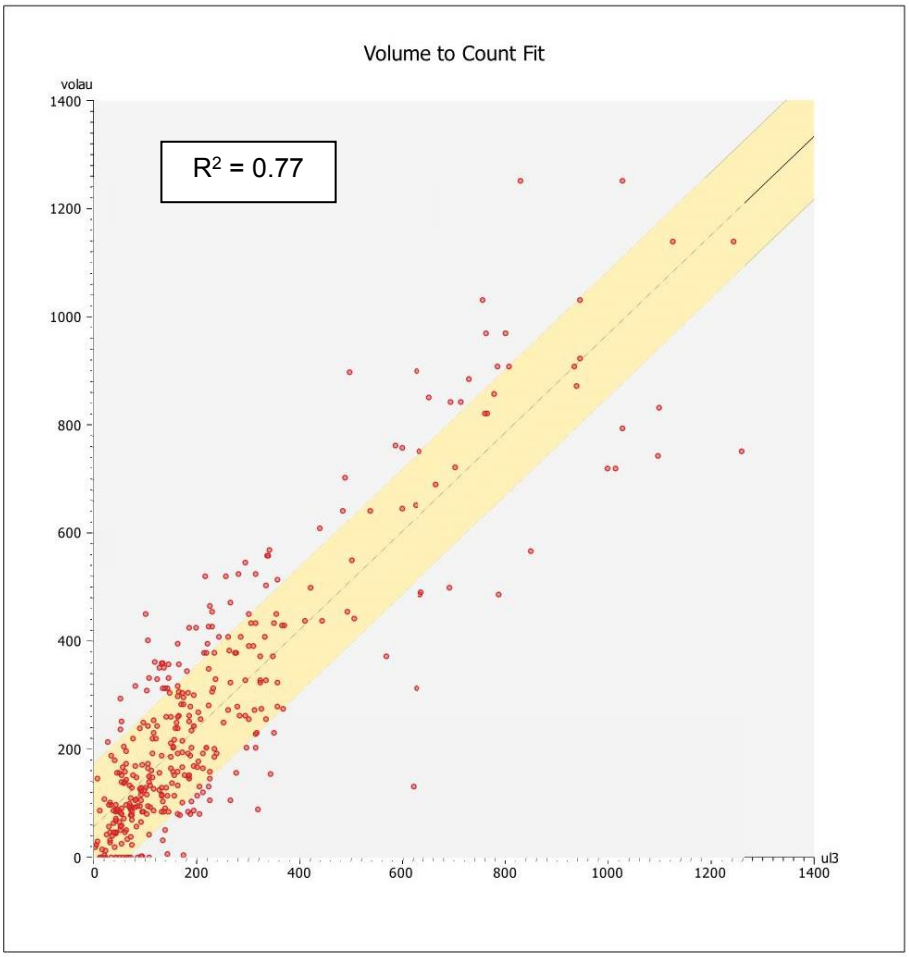
6.2.6 CALIBRATION

Model calibration is the process of demonstrating that the model output reasonably replicates the observed travel behaviour. The following validation practices were used to achieve an acceptable model which displays similar volumes to the observed volumes given at various locations in Camrose.

6.2.6.1 CALIBRATION THROUGH CO-EFFICIENT OF DETERMINATION

A popular calibration technique that was used to determine how well the modelled volumes replicate the observed volumes was using the co-efficient of determination (R^2 value). The R^2 value is a statistical measure of the model "goodness of fit", with R^2 equal to 1 indicating a perfect correlation between the modelled and observed volumes. For the Camrose model, an R^2 value of 0.77 was obtained, which signifies a reasonable correlation between the observed volumes and modelled volumes. Figure 6-4 Model Calibration Results illustrates the observed volume of traffic on each road in Camrose where traffic count data were available compared to the modelled volume.

Figure 6-4 Model Calibration Results



Source: WSP Transportation Planning

6.2.6.2 VEHICLE KILOMETERS TRAVELED (VKT) AND VEHICLE HOURS TRAVELED (VHT)

The VKT and VHT measure the amount of travel kilometers and length of travel time in the study area. Both of these measures are generally estimated for daily trip patterns. Hence, the values calculated for the peak hour Camrose model were expanded to reflect daily patterns. Table 6-1 VKT and VHT by Classification shows the VKT and VHT by facility type. The table suggests that approximately 56% and 50% of the daily VKT and VHT takes place on the highway road network.

This implies that the highways are largely uncongested, since a greater proportion of the travelled distances are made via highways in less overall time.

Table 6-1 VKT and VHT by Classification

FACILITY TYPE	VKT		VHT	
	Value	**% Total**	**Value**	**% Total**
Highway	18,836	56%	324	50%
Arterial	6,050	18%	124	19%
Collectors	8,017	24%	184	29%
Local	560	2%	13	2%
Total	**33,463**	**100%**	**646**	**100%**

Source: WSP Transportation Planning

Based on the relative closeness of VKT and VHT proportions for each facility type, users generally use the path of least resistance when travelling through the network, which is consistent with observations of the Camrose road network.

6.2.6.3 NETWORK LOADED SPEEDS

While conducting the model validation exercise, the link travel times should be reviewed to ensure that the validation adjustments do not result in unrealistic network speeds. Table 6-2 Resulting Speeds by Classification below shows the average speeds across the loaded network by road functional class from the Camrose model. The model speeds appear to be well within acceptable limits. The average speed on the loaded network is approximately 49 km/h. This further reinforces the relative lack of congestion in the overall network, and also illustrates the excellent level of service that the current network experiences.

Table 6-2 Resulting Speeds by Classification

FACILITY TYPE	SPEED (KM/H)		
	Minimum	**Maximum**	**Average**
Highway	43	97	57
Arterial	42	60	49
Collectors	32	70	47
Local	38	50	47

Source: WSP Transportation Planning

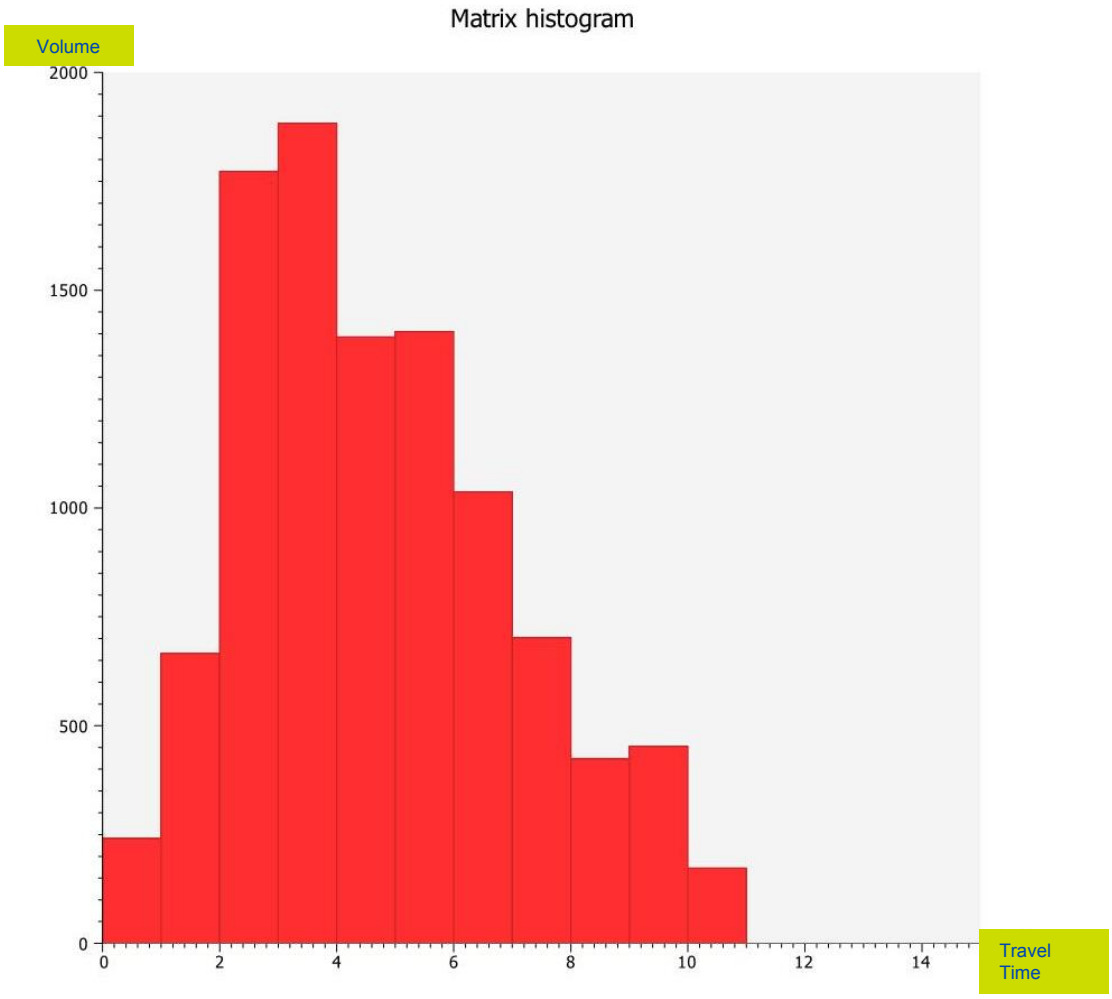
6.2.6.4 TRIP DISTRIBUTION

Trip distribution is the process that converts zonal trip productions and attractions to a matrix of origin and destination (O-D) flows between all zones (internal zones and external stations). This is essentially a two-dimensional array of cells where rows and columns represent each of the n zones (47 TAZs for Camrose) in the study area. The cells of each row contain the trips originating in that zone, which become destinations in the corresponding columns. The main diagonal corresponds to intra-zonal trips.

It has been observed that in the case of motorized trips, there are a few short motorized trips, followed by a larger number of medium-length trips as distance (cost) increases, and then the number of trips

decrease again with very few long trips. Figure 6-5 Trip Length Frequency Distribution shows the trip length frequency distribution for the base year Camrose model. The histogram follows expected travel patterns in urban areas as explained earlier. The average trip length was determined to be approximately 5 min. This is appropriate given that the time to traverse the network is approximately 12 min.

Figure 6-5 Trip Length Frequency Distribution



Source: WSP Transportation Planning

6.2.7 FUTURE VOLUMES AND OPERATIONS – BASE NETWORK

The calibrated model along with projected future land use and external traffic growth were used to project future traffic volumes on the existing road network. Using these volumes, locations of interest were established by looking at the volume to capacity ratio of the various links.

Table 6-3 Summary of Deteriorated Roadway Links in 2021, Table 6-4 Summary of Deteriorated Roadway Links in 2026, and Table 6-5 Summary of Deteriorated Roadway Links in 2036 show the roadway links with volume to capacity ratios exceeding 0.70 for the 2021, 2026, and 2036 horizon years. According to the v/c ratios resulting from the demand model, some level of congestion is expected on the listed links where improvements may be considered to maintain good operating conditions.

Furthermore, the traffic volumes and operating conditions for all horizons with the base existing transportation network are shown on Figure 6-6 2021 Traffic Volumes to Figure 6-11 2036 Traffic Operations.

It should be noted that red links on Traffic Operations figures are indicative of roadways with v/c ratios higher than 0.60. This does not necessarily raise concern about the operating conditions of specific links. The v/c ratio of each link has to be checked before making any recommendations.

Table 6-3 Summary of Deteriorated Roadway Links in 2021

ROADWAY	SECTION	DIRECTION	V/C RATIO
Mt Pleasant Dr	Montclare Ave to 47 Ave	SB	0.70
48 Avenue	53 St to 51 St	EB	0.74
Grand Dr	48 Ave to 48A Ave	NB	0.73

Source: WSP Transportation Planning

Table 6-4 Summary of Deteriorated Roadway Links in 2026

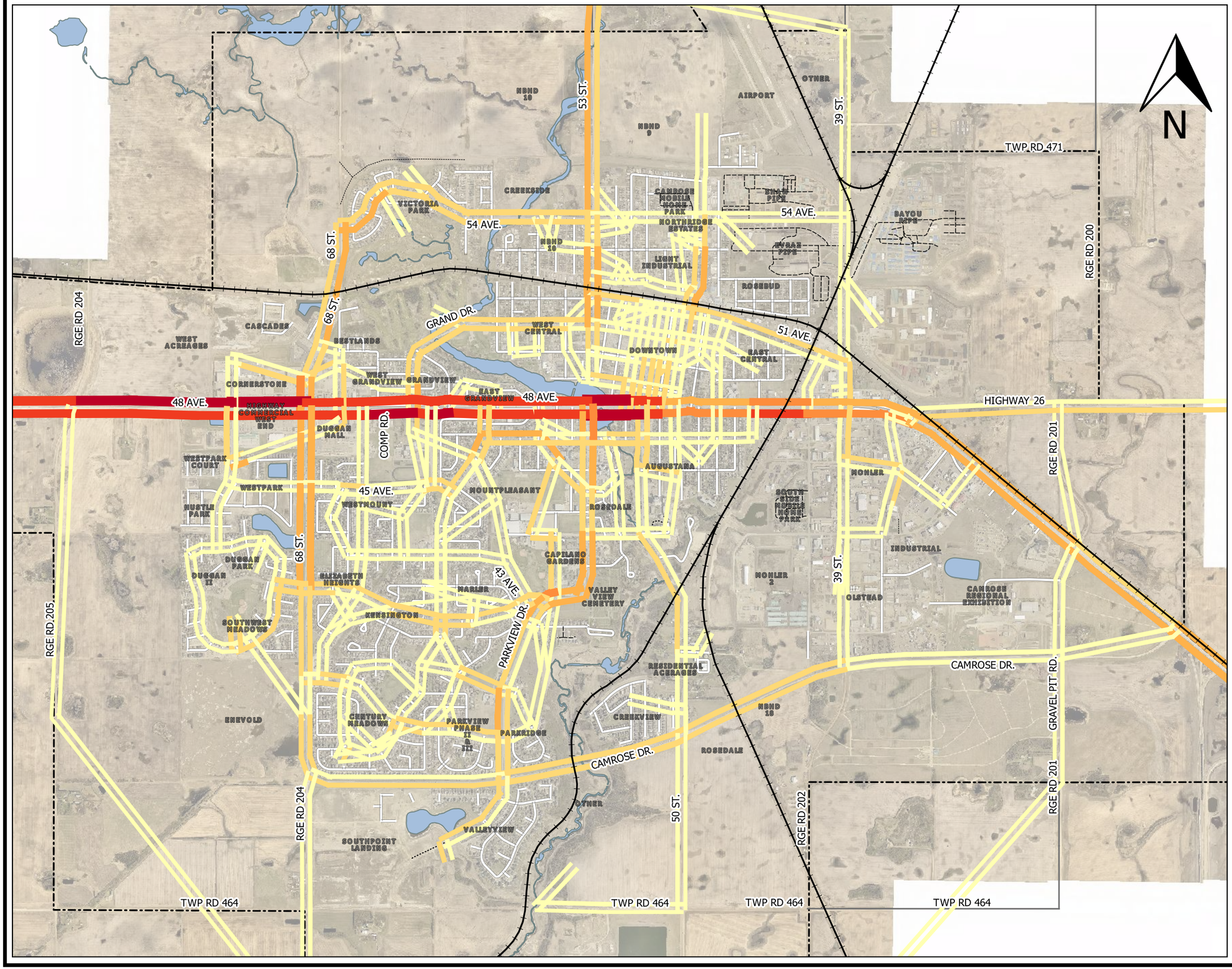
ROADWAY	SECTION	DIRECTION	V/C RATIO
53 Street	50 Ave to 51 Ave	NB	0.73
48 Avenue	53 St to 51 St	EB	0.82
47 Street	53 Ave to 52 Ave	NB	0.72
Marler Dr	Parkview Dr to 43 Ave	WB	0.74

Source: WSP Transportation Planning

Table 6-5 Summary of Deteriorated Roadway Links in 2036

ROADWAY	SECTION	DIRECTION	V/C RATIO
48 Avenue	West of RR 204	WB	0.81
48 Avenue	East of RR 204	EB	0.72
Grand Dr	48 Ave to 58 St	NB	0.71
Mt Pleasant Dr	Montclare Ave to 47 Ave	NB	0.73
Mt Pleasant Dr	Montclare Ave to 47 Ave	SB	0.80
47 Avenue	Mt Pleasant Dr to 56 St	WB	0.72
48 Avenue	53 St to 51 St	EB	0.87
48 Avenue	53 St to 51 St	WB	0.77
53 Street	49 Ave to 50 Ave	NB	0.82
53 Street	50 Ave to 51 Ave	NB	0.82
53 Street	50 Ave to 51 Ave	SB	0.76
53 Street	51 Ave to 52 Ave	NB	0.70
51 Street	48 Ave to 48A Ave	NB	0.75
47 Street	53 Ave to 52 Ave	NB	0.73
Marler Dr	Parkview Dr to 43 Ave	WB	0.75

Source: WSP Transportation Planning



Legend

Peak Hour Volume Per Direction Per Hour

- 1 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1000
- >1000

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

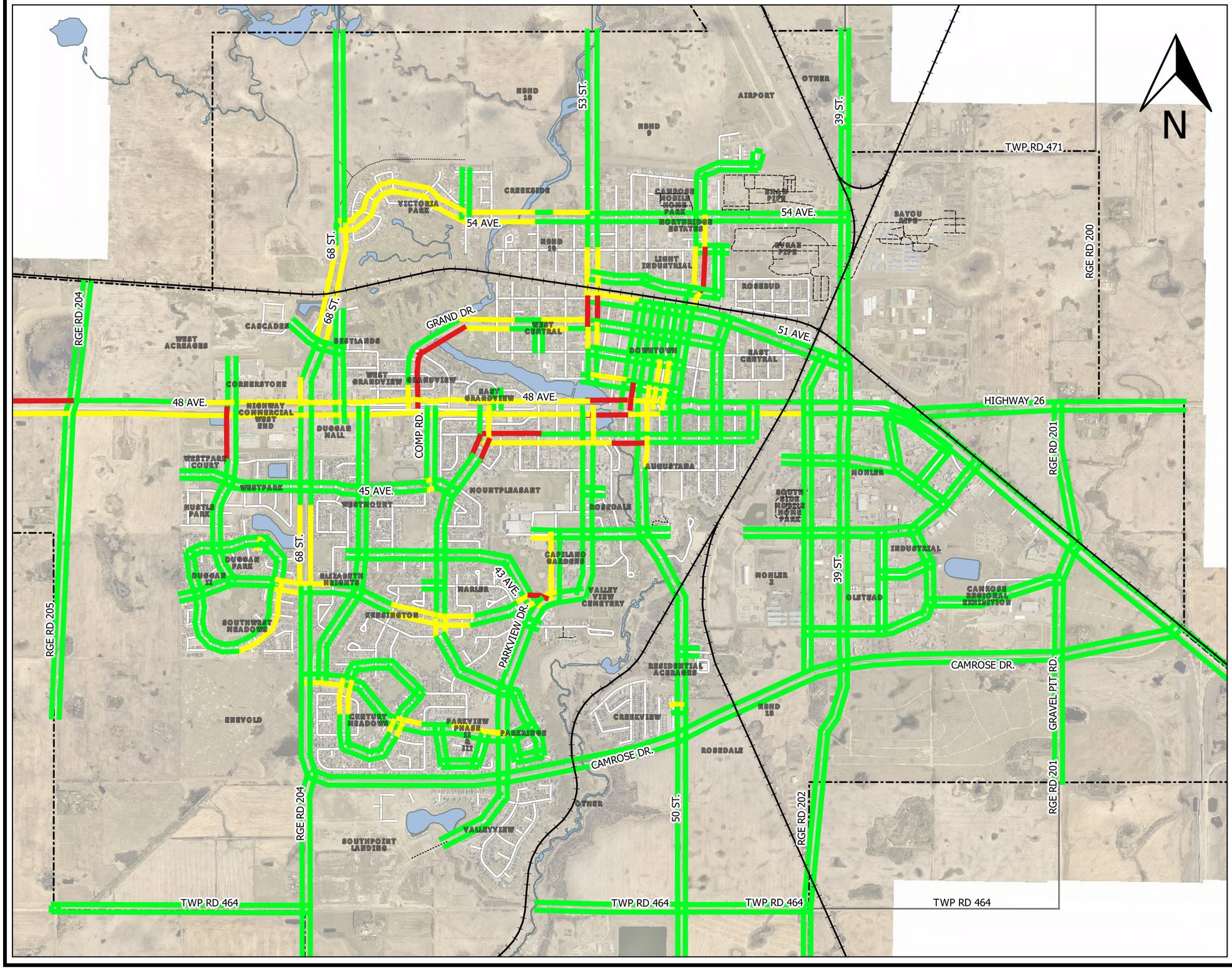
2021 Peak Hour Modelled Traffic Volumes

Figure 6-6

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2021VolumesS301 T:2016_11-Template_11x17_TMPReport



Legend

VCR

- 0.00 - 0.40
- 0.40 - 0.60
- 0.60 - 1.00

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

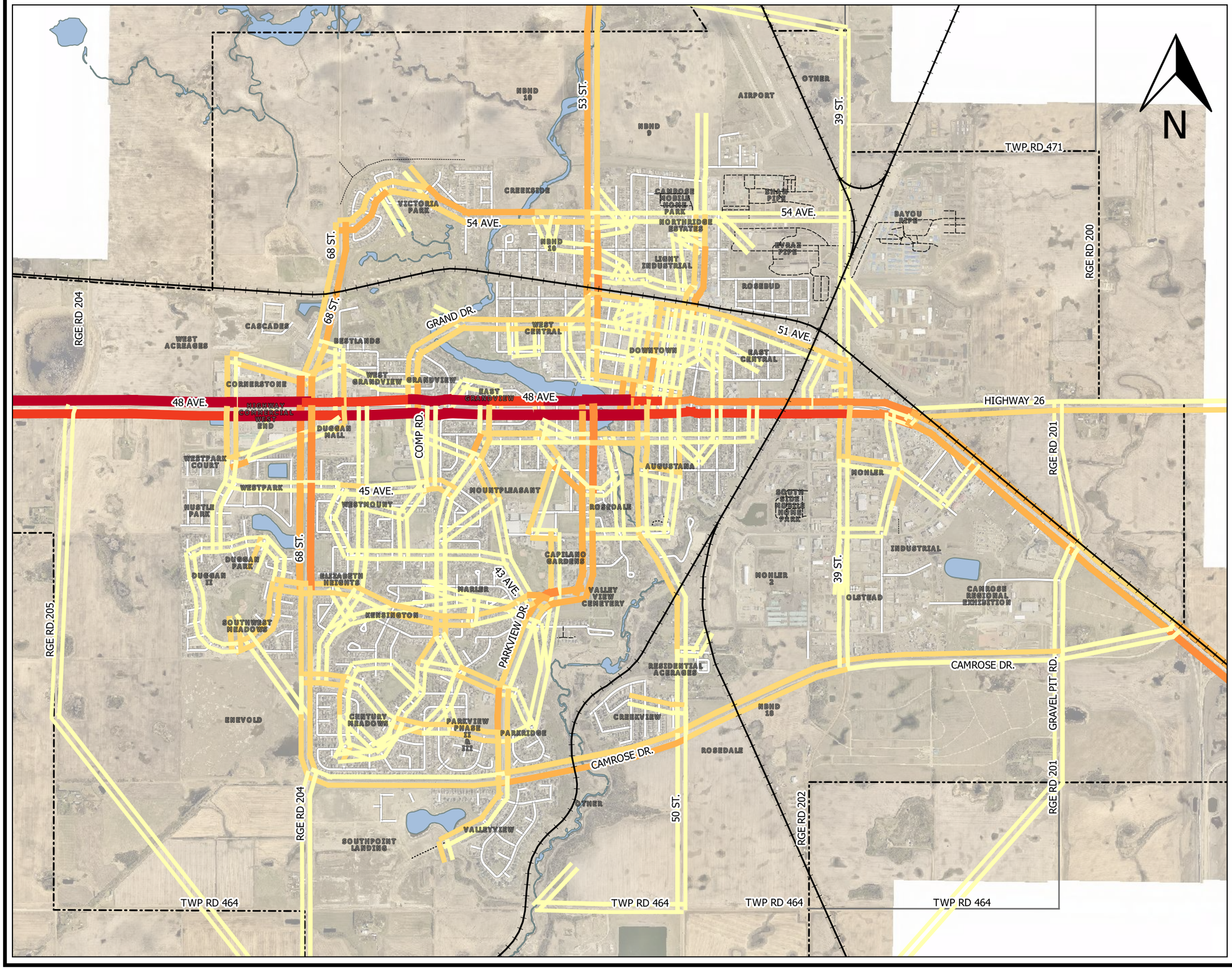
2021 Peak Hour Modelled Traffic Volume to Capacity (v/c) Ratio

Figure 6-7

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2021VCRS301 T:2016_11-Template_11x17_TMPReport



Legend

Peak Hour Volume Per Direction Per Hour

- 1 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1000
- >1000

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose
Transportation Master Plan

2026 Peak Hour Modelled Traffic Volumes

Figure 6-8

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2026VolumesNoImprovementsS304 T:2016_11-Template_11x17_TMPReport

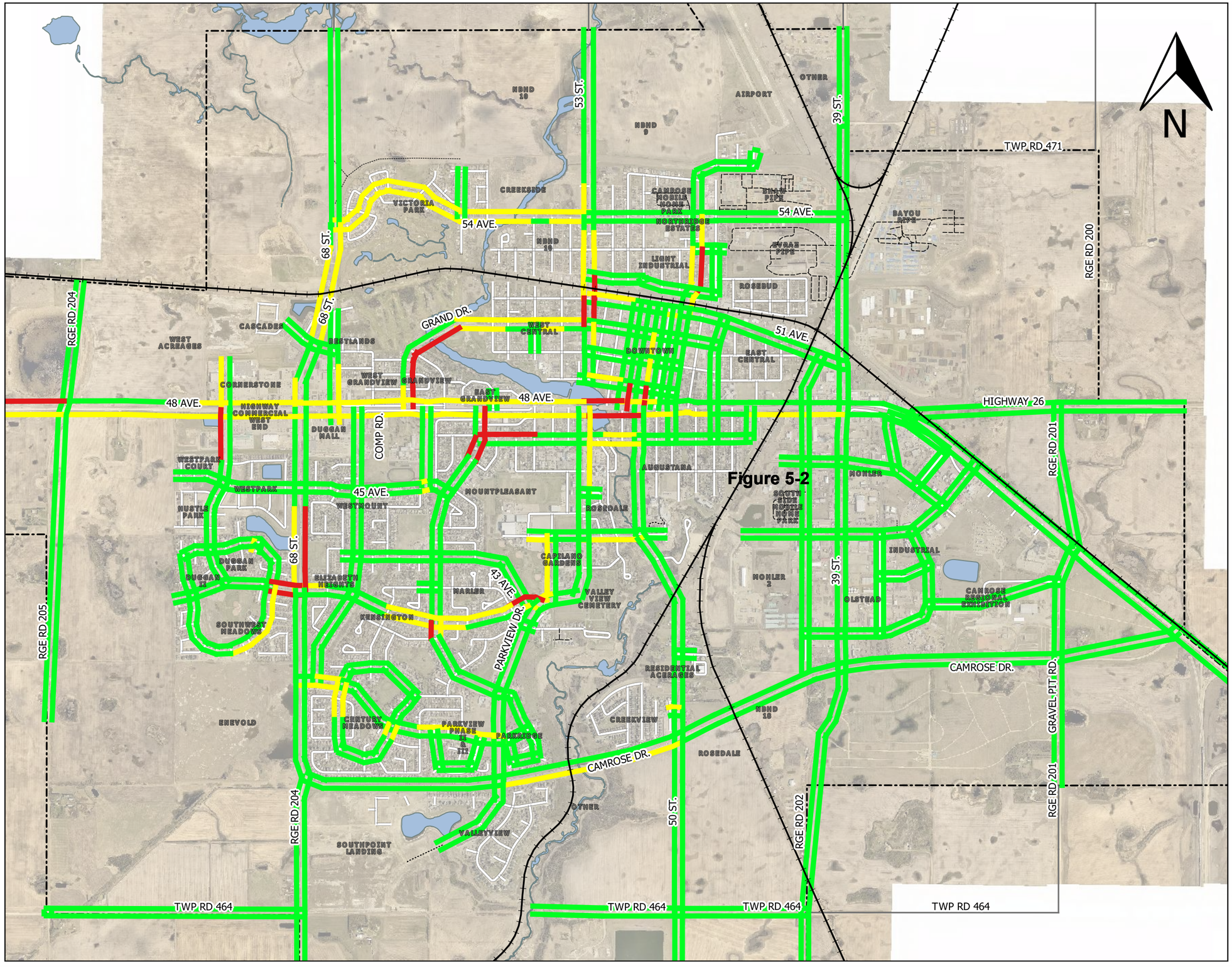


Figure 5-2

Legend

VCR

- 0.00 - 0.40
- 0.40 - 0.60
- 0.60 - 1.00

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

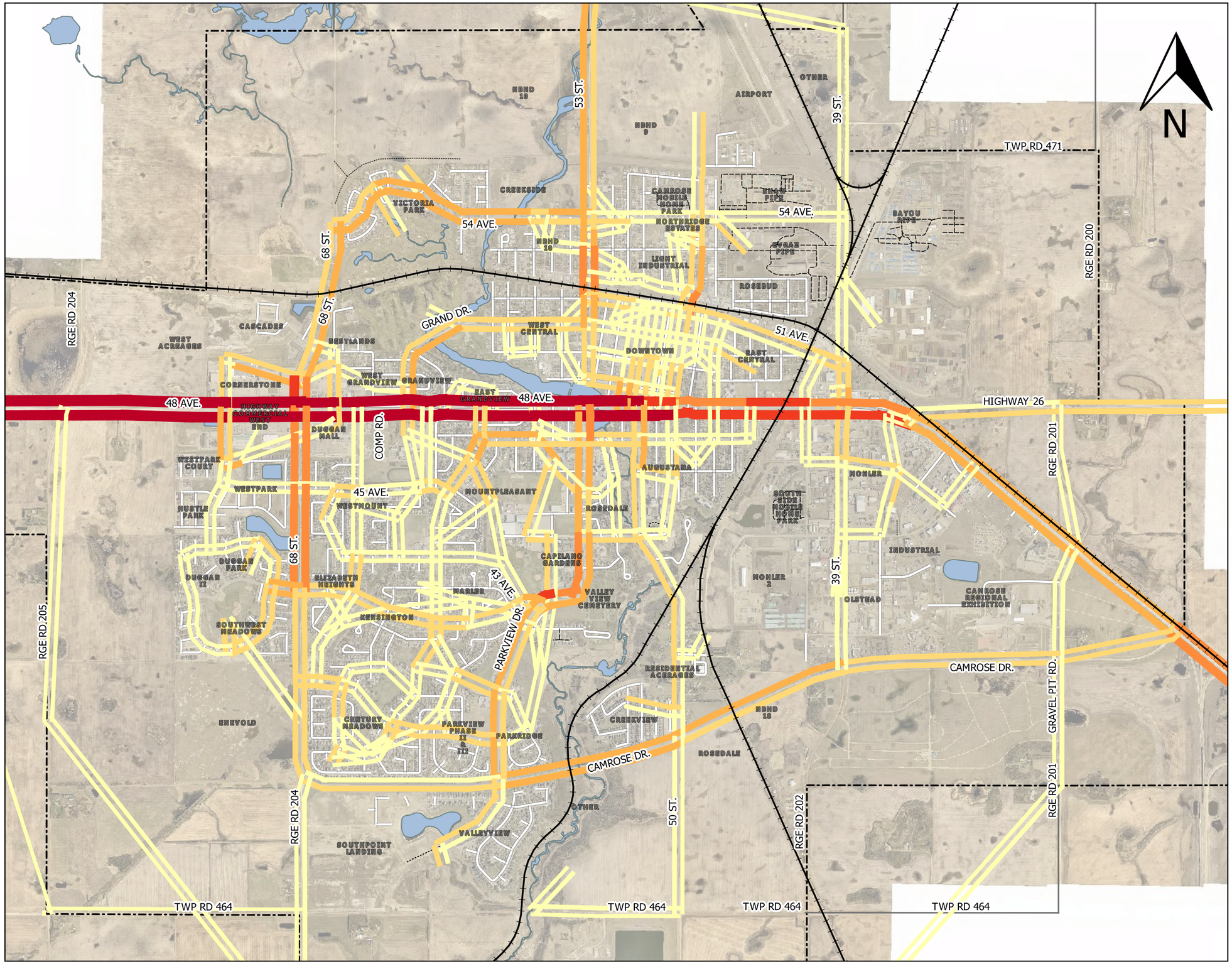
2026 Peak Hour Modelled Traffic Volume to Capacity (v/c) Ratio

Figure 6-9

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2026NoImprovementsVCRS304 T:2016_11-Template_11x17_TMPReport



Legend

Peak Hour Volume Per Direction Per Hour

- 1 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1000
- >1000

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

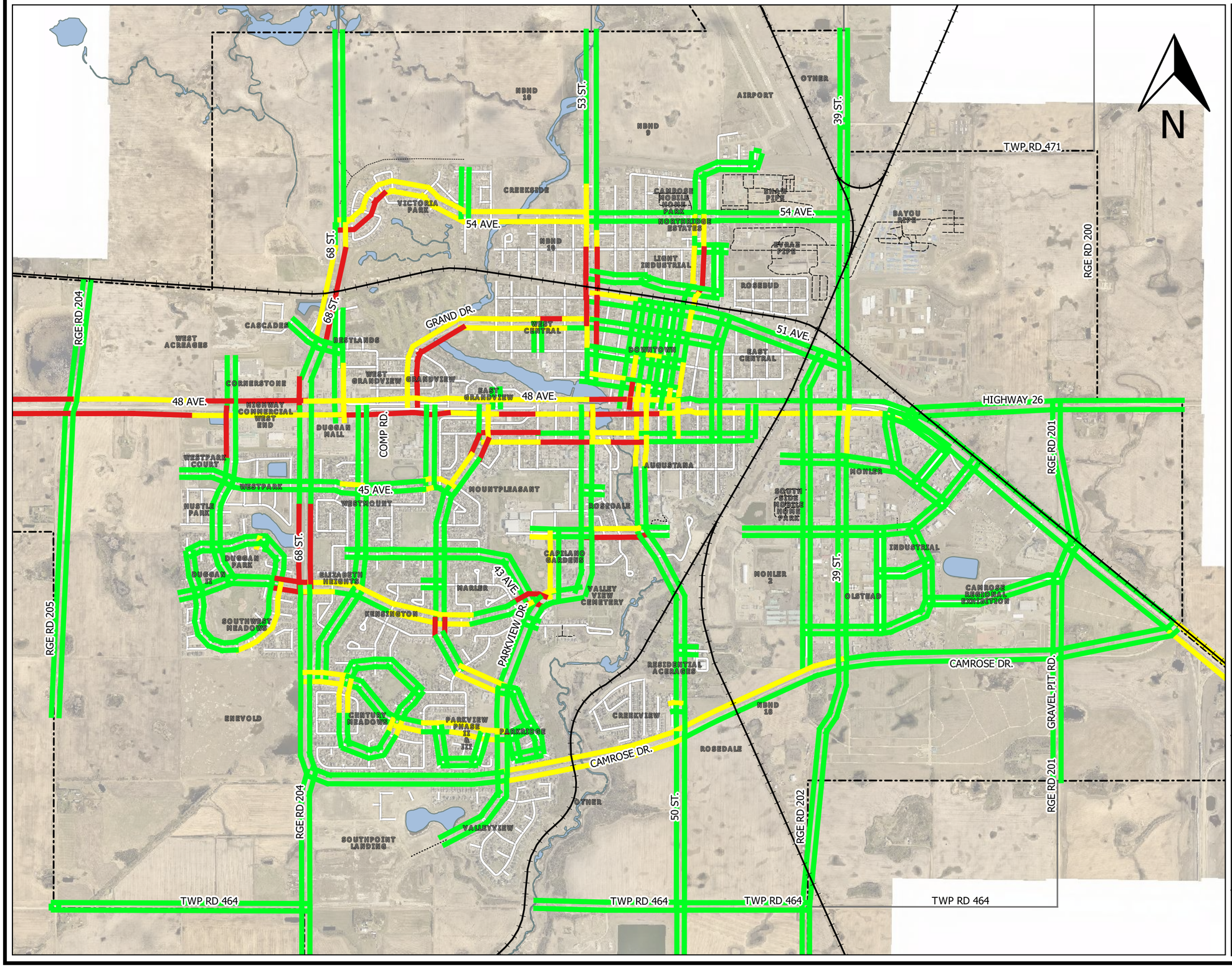
2036 Peak Hour Modelled Traffic Volumes

Figure 6-10

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2036VolumesNoImprovementsS305 T:2016_11-Template_11x17_TMPReport



Legend

VCR

- 0.00 - 0.40
- 0.40 - 0.60
- 0.60 - 1.00

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

2036 Peak Hour Modelled Traffic Volume to Capacity (v/c) Ratio

Figure 6-11

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2036NoImprovementsVCRS305 T:2016_11-Template_11x17_TMPReport

6.2.8 FUTURE VOLUMES AND OPERATIONS – IMPROVED NETWORK

Based on the base model runs, street and road improvements were proposed to address anticipated areas of congestion in 2026 and 2036. These were then examined to determine how they changed traffic volumes on the network and how they solved congestion points.

Current investments and improvements to 48 Avenue including the 48 Avenue bridge replacement across Mirror Lake were not considered in detail in this TMP since these projects are ongoing and further analyses are not required. The 48 Avenue bridge replacement project involves replacing existing structure in short term with new structure that meets long term capacity requirements. This project also looks at related components to improve roadway capacity between 53 Street and 50 Street.

The three key improvements in 2026 and 2036 were:

- The extension of 53 Street south across the lake connecting with 48 Avenue
- The extension of Camrose Drive on the west side of the City
- The introduction of an east-west arterial street on the north side north of 54 Avenue

These network improvements are further discussed in the Driving mode of transportation section later in this TMP. These improvements continue recommendations previously made for the City's network.

Furthermore, the traffic volumes and operating conditions for the 2026 and 2036 horizons with the improved transportation network are shown on Figure 6-12 2026 Traffic Volumes Improved Network to Figure 6-15 2036 Traffic Operations Improved Network.

It should be noted that red links on Traffic Operations figures are indicative of roadways with v/c ratios higher than 0.60. This does not necessarily raise concern about the operating conditions of specific links. The v/c ratio of each link has to be checked before making any recommendations.

Table 6-6 Summary of Deteriorated Roadway Links in 2026 Improved Network

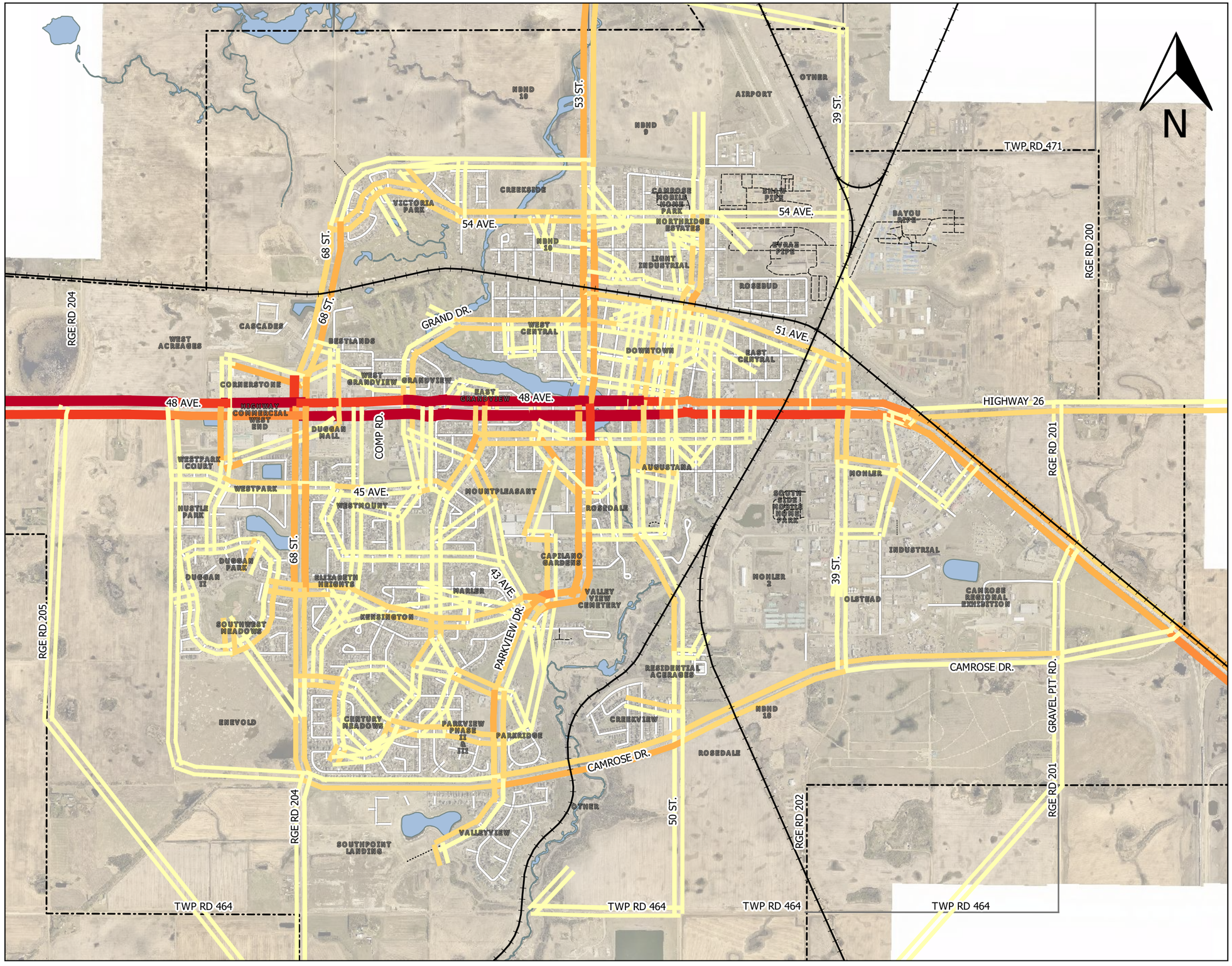
ROADWAY	SECTION	DIRECTION	V/C RATIO
Mt Pleasant Dr	Montclare Ave to 47 Ave	SB	0.71
53 Street	48A Ave to 49 Ave	NB	0.70
53 Street	49 Ave to 50 Ave	NB	0.75
53 Street	50 Ave to 51 Ave	NB	0.77
53 Street	50 Ave to 51 Ave	SB	0.74
Marler Dr	43 Ave to Parkview Dr	WB	0.72

Source: WSP Transportation Planning

Table 6-7 Summary of Deteriorated Roadway Links in 2036 Improved Network

ROADWAY	SECTION	DIRECTION	V/C RATIO
48 Avenue	West of RR 204	WB	0.81
48 Avenue	RR 204 to 73 St	EB	0.72
Grand Dr	48 Ave to 48A Ave	NB	0.72
Mt Pleasant Dr	Montclare Ave to 47 Ave	NB	0.83
Mt Pleasant Dr	Montclare Ave to 47 Ave	SB	0.82
53 Street	48A Ave to 49 Ave	NB	0.71
53 Street	49 Ave to 50 Ave	NB	0.82
53 Street	50 Ave to 51 Ave	NB	0.85
53 Street	50 Ave to 51 Ave	SB	0.72
53 Street	51 Ave to 52 Ave	NB	0.74
47 Street	52 Ave to 53 Ave	NB	0.70

Source: WSP Transportation Planning



Legend

Peak Hour Volume Per Direction Per Hour

- 1 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1000
- >1000

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

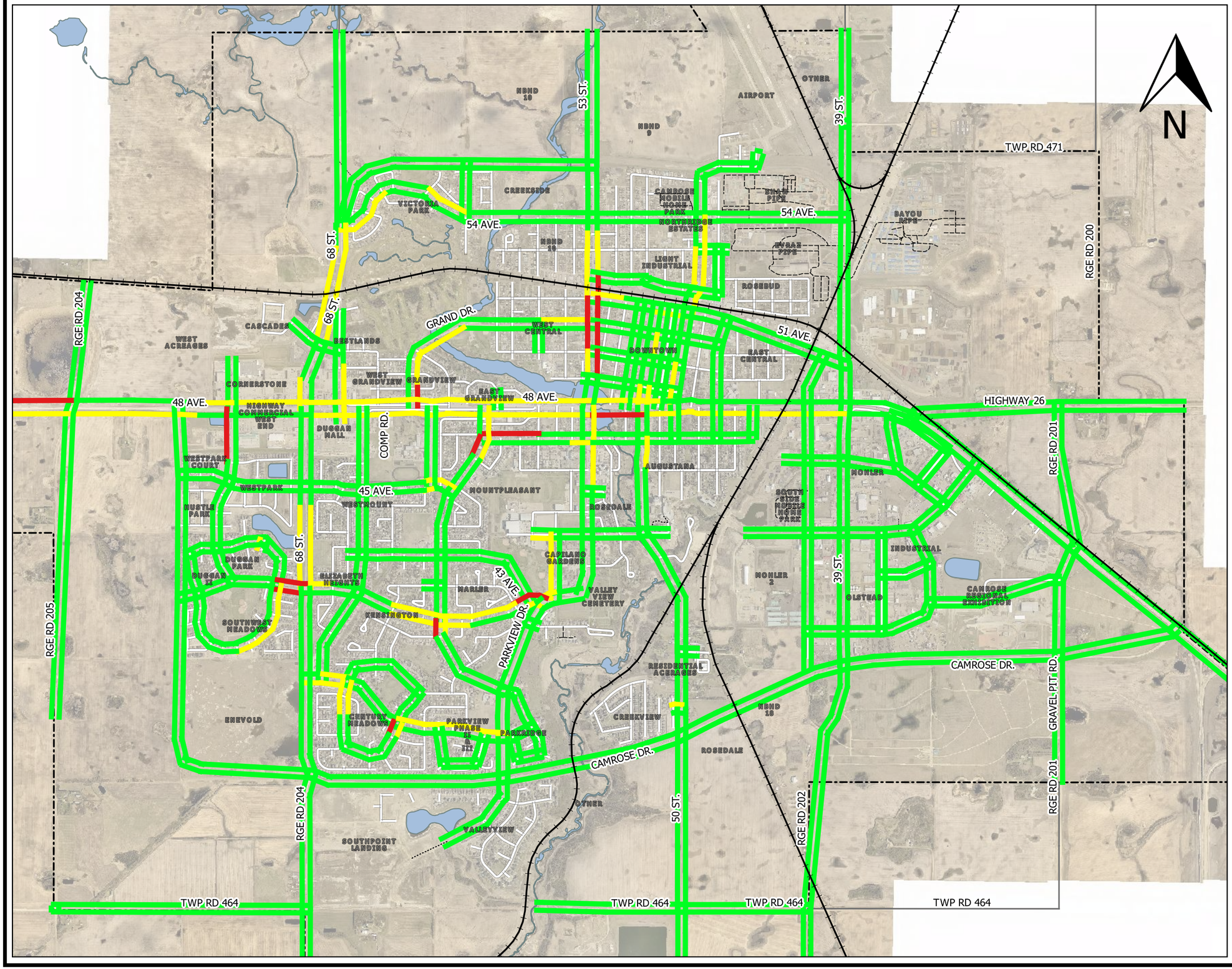
2026 Peak Hour Modelled Traffic Volumes With Strategic Improvements

Figure 6-12

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2026VolumesWithImprovementsS302 T:2016_11-Template_11x17_TMPReport



Legend

VCR

- 0.00 - 0.40
- 0.40 - 0.60
- 0.60 - 1.00

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose
Transportation Master Plan

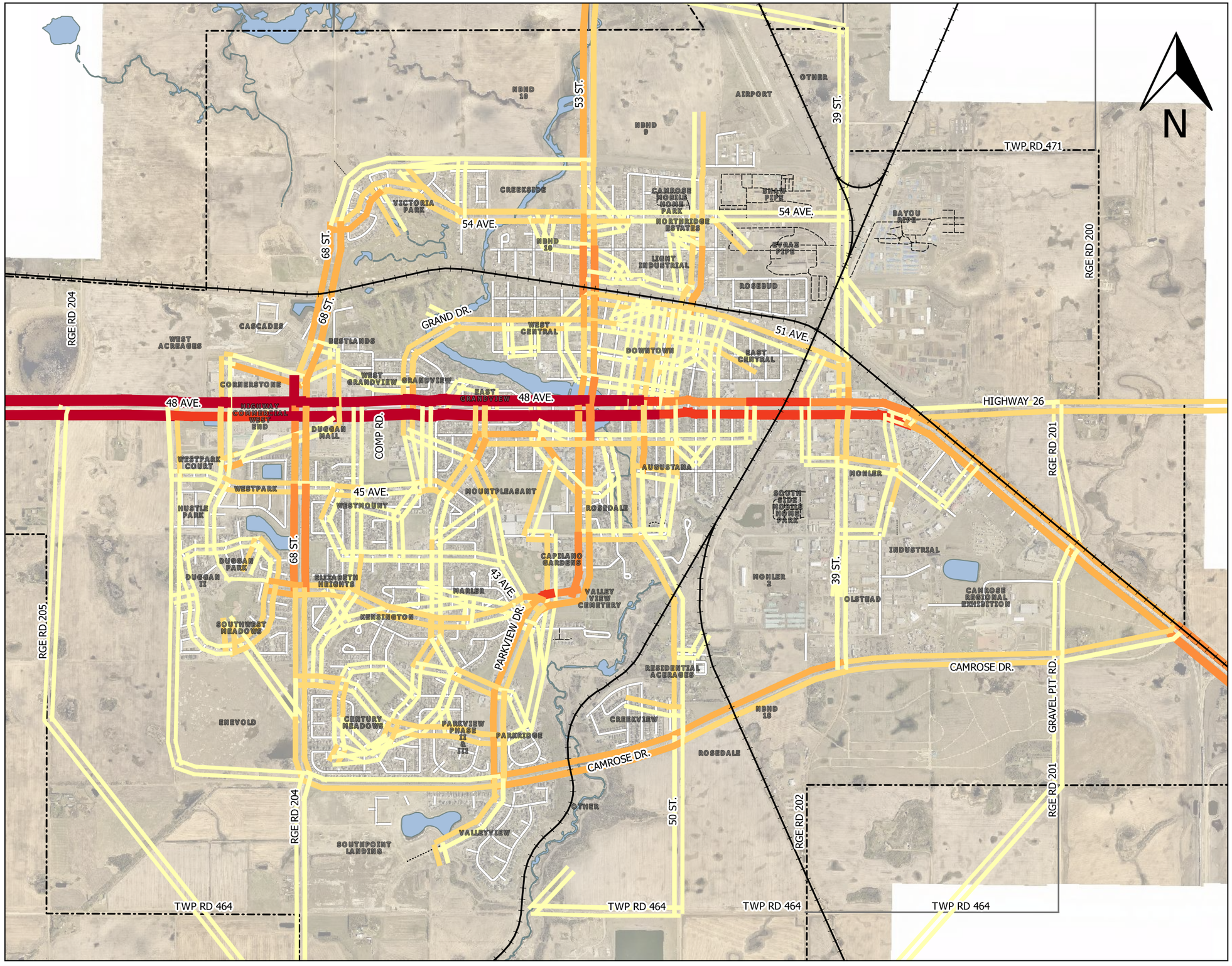
2026 Peak Hour Modelled Traffic Volume to Capacity (v/c) Ratio With Strategic Improvements

Figure 6-13

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2026WithImprovementsVCRS302 T:2016_11-Template_11x17_TMPReport



Legend

Peak Hour Volume Per Direction Per Hour

- 1 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1000
- >1000

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

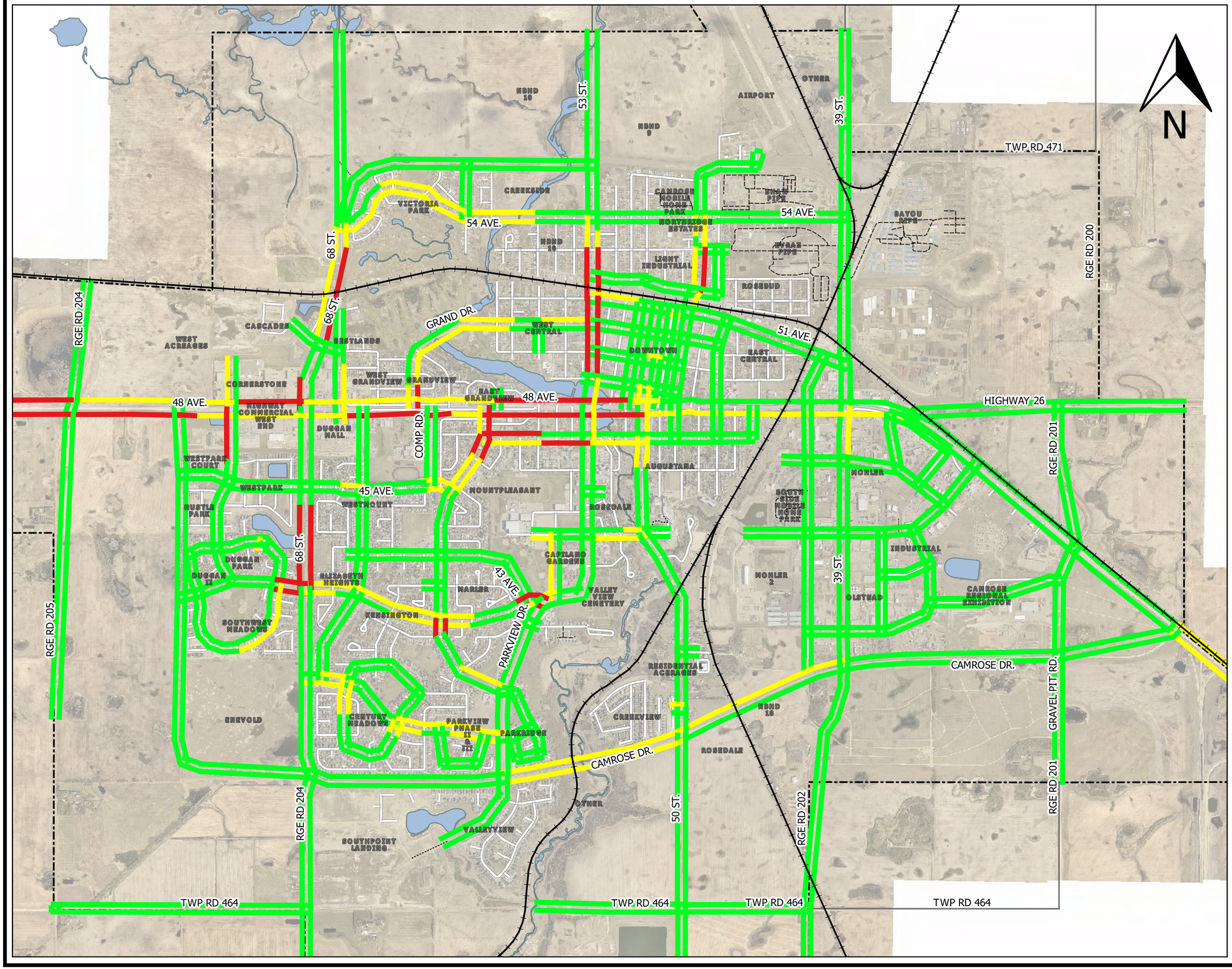
2036 Peak Hour Modelled Traffic Volumes With Strategic Improvements

Figure 6-14

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2036VolumesWithImprovementsS303 T:2016_11-Template_11x17_TMPReport



Legend

VCR

- 0.00 - 0.40
- 0.40 - 0.60
- 0.60 - 1.00

Note:
Roadway alignments are simpilified for modeling purposes.

City of Camrose Transportation Master Plan

2036 Peak Hour Modelled Traffic Volume to Capacity (v/c) Ratio With Strategic Improvements

Figure 6-15

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-Camrose2036WithImprovementsVCRS303 T:2016_11-Template_11x17_TMPReport

7 HOW WILL WE GET THERE?

7.1 APPROACH

This part of the TMP discusses key strategies to move the City's transportation system into the future; pursuing the TMP guiding principles and accomplishing the stated TMP objectives. The strategies herein begin with establishing a new street network structure and classification system, and move through each mode of transportation including walking and cycling, riding transit, driving, and moving goods.

7.2 STREET CLASSIFICATIONS AND COMPLETE STREETS

To establish a future transportation network, the identification of a street structure or hierarchy of classifications is necessary. This allows the discussion of the purpose of each street with regard to the different modes of transportation, and permits a network to be established.

The TMP provides the direction for all other City of Camrose transportation planning and design guidelines, and as such all other documents must be consistent with the TMP direction e.g. geometric design standards.

The 2011 Municipal Development Plan aspires to a future transportation system that "should address the requirements for automobiles, bicycling, walking, parking, public transit, goods movement or trucking routes and other components of the transportation system". The TMP should therefore recommend an approach to transportation network planning that considers the existing Council approved policy aspirations of the City as well as the needs of all residents and visitors both now and into the future.

In recent years, the complete streets approach has been developing across North America. The Institute of Transportation Engineers (ITE) defines complete streets as an approach to transportation network planning that is designed to "accommodate users of all ages and abilities travelling by all modes". This is based on the idea that "because urban streets are used for a wide range of functions beyond movement of people and goods, performance measures beyond safety and mobility must be considered".

In this context it is therefore considered appropriate that the general street hierarchy is maintained in Camrose, however it is recommended that the existing 3 tier classification (arterial, collector, local), referred to here as street groups, be modified with new classifications that formally recognize a wider range of existing streets in Camrose and where several types of users already exist or can be better accommodated over time. This expanded approach can be considered a practical response to the transportation policies as set out in the existing Council approved Municipal Development Plan. It also has the additional benefit of going beyond conventional functional classifications and allowing for greater consideration of local transportation needs and context as the transportation system evolves over time.

The following section explains the rationale for each of the groups of streets and their respective classifications.

7.2.1 GROUP 1: ARTERIAL STREETS

Arterial streets have design characteristics that help to facilitate the movement of larger volumes of traffic at higher speeds. They generally place an emphasis on vehicular modes and goods movement that are travelling longer distances, and attempt to separate this traffic from local streets. Arterial streets are generally characterized by generous lane widths accommodated within expansive rights of way. In order for this to function effectively, they confine access and egress to the roadway at designated points.

7.2.1.1 MAJOR ARTERIAL STREETS

As its name suggests, Major Arterial Streets are intended to provide a roadway in a transportation network that moves a higher volume of vehicle traffic. In doing so, they are designed with limited access points and clear physical separation from other land uses so that traffic flow is relatively unimpeded and street capacity can be maintained.

7.2.1.2 MULTIMODAL ARTERIAL STREETS

Multimodal Arterial Streets place a strong emphasis on both the mobility and access function for a wider range of users in a transportation network. They are generally located with existing urban areas within generous rights of way and often act as a primary connection between major destinations within and outside of the existing urban area.

As these streets often act as a primary connection between major destinations within and outside of the existing urban area, they generally possess high capacity that accommodate a wide range of vehicles including heavier vehicles that facilitate goods movement.

The purpose of these streets is to provide for all modes of transportation including walking, cycling, transit, vehicles, and some level of local goods movement. It is desirable that roadway design must be given additional consideration at key points along the roadway, particularly at intersections but also along the roadway and at accesses to key destinations.

7.2.2 GROUP 2: LIVABLE STREETS

Livable Streets belong to the second group of streets that attempt to facilitate a wider range of users and attempt to provide high levels of connectivity to individual communities within the City. They place a higher level of emphasis on urban design that can attract people to an area as well as ensure a higher level of safety for all users.

7.2.2.1 URBAN BOULEVARDS

Urban Boulevards aim to create a street environment that is both a safe transportation facility and a destination for and between local community services and commercial activities. These streets also provide access to a range of land uses such as recreational facilities and parks. Setbacks are generally lower and street-front activity is encouraged.

Urban Boulevards act as major collectors in multimodal corridors with either existing relatively intense urban form or future policy encouraging redevelopment.

7.2.2.2 NEIGHBOURHOOD COLLECTORS

Neighbourhood Collectors are well suited to connecting medium density and other residential uses to mixed use retail / community destinations and other parts of the street network. They are designed to provide a high level of connectivity within the group of Livable Streets. They generally have a less onerous design standard than Urban Boulevards but still include elements such as secondary bike routes – or possibly primary bike routes.

7.2.3 GROUP 3: LOCAL STREETS

Local streets are the final group of streets that consist of two lane streets that are designed to provide direct access to adjacent residential, and industrial land uses. Local Streets exist to serve the adjacent land uses providing access. Sidewalks are considered desirable on both sides of the street.

7.2.3.1 RESIDENTIAL / COMMERCIAL LOCAL

These streets are designed to allow for access to low and medium density residential / commercial developments. Low design speeds help to improve the safety of these streets. Residential / Commercial Local streets will generally connect directly to a street in the Livable Streets Group, or the Arterial Streets Group. On-street parking should be encouraged in concert with the local land use by-law, and transit service needs.

7.2.3.2 INDUSTRIAL LOCAL

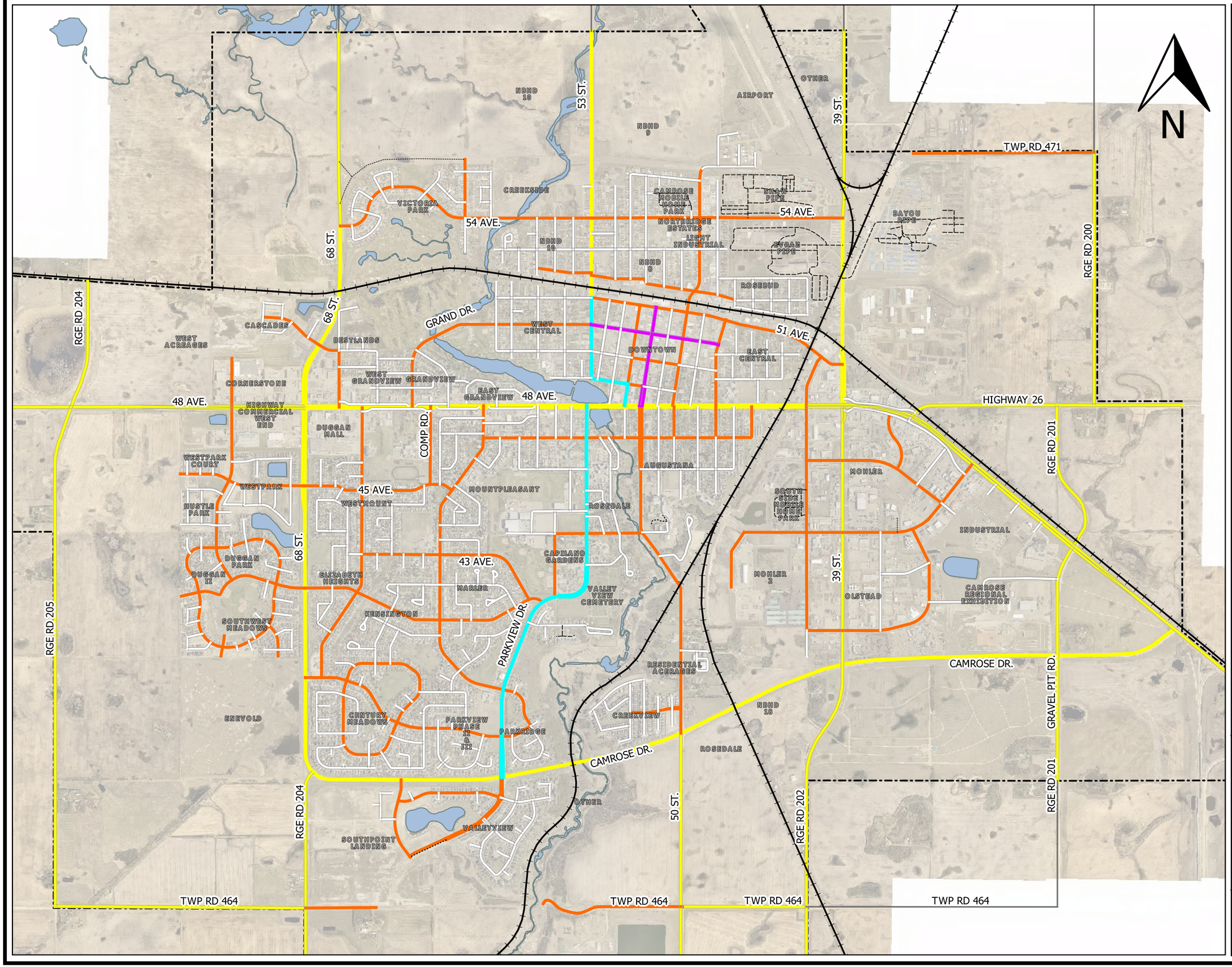
These two way streets provide direct access to industrial properties. They generally connect with Arterial Streets so as to facilitate goods movement. On-street parking should be considered in concert with the local land use by-law, as well as transit service needs.

In summary, the TMP recommends the following roadway classifications to facilitate a higher level of integration of all modes of transportation, which are also applied in Figure 7-1 Street and Roadway Network:

STREET GROUP	CLASSIFICA-TION	TYPICAL USES AND INTEGRATION WITH LAND USE	ACTIVE TRANSPORTATION	TRANSIT	OTHER FEATURES	TRAFFIC VOLUME	EXAMPLE STREET
Arterial Streets	Major Arterial Street	• Through traffic and directing traffic away from residential areas • Heavy priority on motorised modes, including goods movement • Minimum intersection spacing of 300 m • Part of goods movement network	• Regional and recreational trails • Crossings at key locations	• Bus bays are desirable when design / posted speed > 60 km/h and at all transit timing stop locations	• Limited access • Appropriate spacing and separation of users where possible • Controlled intersections with signals • Accommodation for goods movement	High: >20,000 vehicles per day	48 Avenue
	Multimodal Arterial Street	• Some accommodation for through traffic at slower speeds • Signalised intersections • Some direct vehicular access to businesses • Active modes access and prime connectivity to other urban areas for a range of users	• Primary commuter cycling routes • Provision for access to businesses	• High priority for transit • Universal design access and shelters • Local and regional service	• Accommodation for goods movement • Lower speeds to increase safety and decrease street noise	High: Approx. 15,000 vehicles per day	53 Street
Livable Streets	Urban Boulevards	• Street environment that is both a facility and a destination for local community • Support social interaction (good pedestrian infrastructure and	• Primary commuter cycling routes • Good sidewalk infrastructure • Active street fronts • High quality streetscaping • Consideration of curb extensions	• High priority for transit • Universal design access and shelters • Primary route for local services	• Access to off-street parking • Residential access via back lanes • Shared driveways where access to commercial business exists	Medium Approx. 10,000 vehicles per day	50 Street

STREET GROUP	CLASSIFICA-TION	TYPICAL USES AND INTEGRATION WITH LAND USE	ACTIVE TRANSPORTATION	TRANSIT	OTHER FEATURES	TRAFFIC VOLUME	EXAMPLE STREET
		linkages to land uses) • Strong support for active modes • Closely linked to off-road trail network					
	Neighbour-hood Collector	• Designed to serve lower volumes of traffic and other modes as well as provide sufficient access to residential areas and other land uses. • Neighbourhood Collectors have a lower design standard than urban boulevards.	• Secondary bike route often through on-street bike lanes • High priority for active modes	• Universal design access of stops • May serve as segment for bus routes	• Connection between local streets and arterial network • Where on-street parking is allowed, curb extensions should be considered to replace the parking lane at the crosswalk areas	Medium Approx. 5,000 Vehicles per day	Marler Drive
Local Streets	Industrial Local Street	• Direct access to industrial and commercial properties • Accommodate heavy and oversized vehicles • Generally high percentage of heavy vehicles at low to medium speeds • Some accommodation for parking	• Generally not a high priority	• Universal design access of stops • Generally not applicable but may serve as segment of a bus route	• Accommodation for goods movement • Serve to collect and distribute goods traffic from industrial and commercial properties to arterial road network	Low <3,000 vehicles per day	41 Street

STREET GROUP	CLASSIFICA-TION	TYPICAL USES AND INTEGRATION WITH LAND USE	ACTIVE TRANSPORTATION	TRANSIT	OTHER FEATURES	TRAFFIC VOLUME	EXAMPLE STREET
	Residential / Commercial Local Street	• Access to residential properties • Low vehicle volumes at low speeds • Some accommodation of parking depending on housing typologies and land use regulations • Good permeability for active modes to other residential streets and access to active transportation network	• Active mode connections to trail network • Acts as a transition between land uses • Some access to local convenience and commercial businesses	• Universal design access	• Direct access to residential properties • Low speeds • Parking allowed but carefully considered as part of land use planning	Low <2,000 Vehicles per day	47 Avenue



Legend

Proposed Roadway Classifications

- Urban Arterial
- Neighbourhood Collector
- Multi-Modal Arterial
- Urban Boulevard
- Local Street
- Private

Other Major Transportation Infrastructure

- Railroad

Other

- Waterways
- City Boundary

City of Camrose Transportation Master Plan

Proposed Roadway Classifications

Figure 7-1

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20170309-CamroseProposedRoadwayClassifications

T:2016_11-Template_11x17_TMPReport

7.3 WALKING AND CYCLING

The existing City facilities for these modes of transportation are more oriented towards recreational travel, and not commuting to work or other trip purposes. Dedicated facilities for cycling and other active transportation modes are limited to the network along the river and a few other key roadways near the perimeter of the City.

Consistent with the Municipal Development Plan, TMP Guiding Principles, and above street hierarchy, it is recommended that the City reclassify the existing street network. This will begin to provide the required policy framework and transportation network direction to allow these modes of transportation to become more viable in Camrose. Clearly articulating the purpose of a street, the different priority of the modes of transportation depending on the classification, the speed environment and other key elements, help to bring stakeholders together and create agreement about where and how other modes of transportation – walking, cycling, and transit – can be integrated into the City's network.

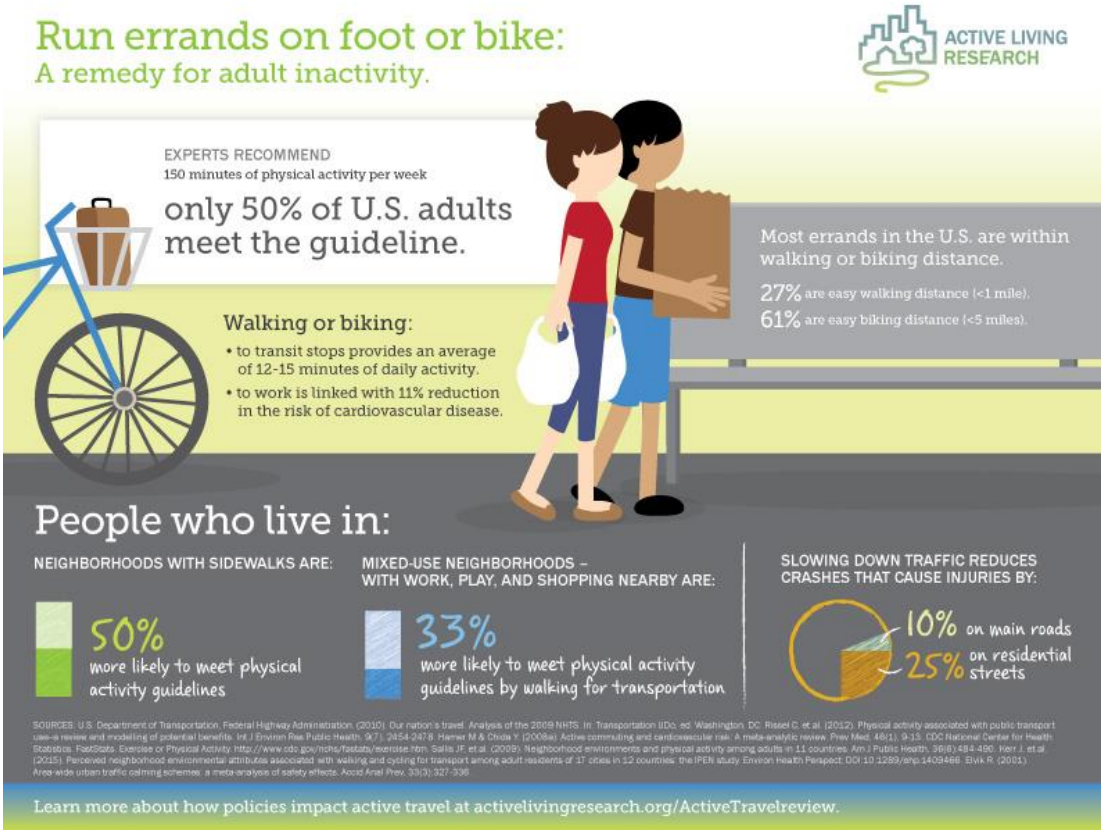
Source: WSP Transportation Planning

7.3.1 OBJECTIVE

As stated in the Municipal Development Plan, "the City should integrate pedestrian walkway and bicycle trail systems into street and utility corridors."

The provision of walking and cycling infrastructure allows many benefits – they are the least expensive form of mobility. The CAA (Canadian Automobile Association) estimates owning and operating a vehicle is $8,000 per year for a small vehicle. It also facilitates physical and mental health outcomes and less environmental emissions. Walking and cycling infrastructure generally costs less to build and maintain than vehicle infrastructure. Many cities, warm weather and cold, are investing in cycling infrastructure. For example, the City of Whitehorse in Canada's North has dedicated bike lanes and a similar population to that of Camrose.

- → The City will build, expand, and maintain the walking network including all facilities – sidewalks, trails, crosswalks, signalized and unsignalized midblock crossings, and others.
- → The City will develop and begin investing in a base cycling network oriented to many types of trips, and not just recreational trips.
- → The City will develop and invest in cycling network.
- → The City will emphasize use of existing trails for commuter cyclists where appropriate and will identify some lower-volume and lower-speed roads where shared bike lanes (sharrows) should be encouraged.



7.3.2 CURRENT STATE

Active transportation is a common transportation term in North America used to describe all forms of human-powered transportation, particularly walking and cycling. These are the modes of personal transportation regarded as having the least impact on the environment.

Active transportation in Camrose is currently supported through existing City-owned and managed infrastructure that provides a number of limited walking and cycling options in the City. A basic distinction can be drawn between two types of existing active transportation infrastructure:

1. Sidewalks
2. Trails

7.3.2.1 SIDEWALKS

Existing sidewalk infrastructure, both separate and monolithic in design, allow for a basic level of pedestrian mobility and access in and around residential areas, some industrial areas and within the downtown. Sidewalks are generally located within road rights of way. Their specific design considerations are outlined in Camrose's current Geometric Design Standards.

A unique feature in Camrose is the informal and formal connections to public parks and trails using traditional sidewalk design. These are mostly located in relatively narrow City owned corridors between private properties and laneways. These connections create a partial network that has the effect of creating a largely incidental active transportation network for both walking and cycling modes that often provides the most direct connection to major destinations. However, the limited design

considerations of this existing sidewalk infrastructure create both capacity and safety issues when the two modes are blended.

7.3.2.2 TRAILS

The existing trail network, based largely around Stoney Creek, but also extending into surrounding areas such as Mirror Lake and areas surrounding the golf course, is one of the most extensive in the province and is well known to most Camrosians. These existing trails cater for a range of users, both in terms of mode, trip purpose (recreational versus commuter), ages and ability as well as seasonal use.

A number of trails help to connect a number of significant destinations in Camrose. However, the current provision of wayfinding signage and information is limited. Equally, the recreational and tourism potential of these trails and their extensiveness should be considered a potential significant attraction for visitors to the City in all seasons of the year.

A distinction can be drawn between in-boulevard trails and off-road trails. The main in-boulevard trails include 68 Street in the west and along Camrose Drive and 50 Street between 34 Avenue and 44 Avenue. The off-road network trail network is extensive and includes Bullrush Park, Cascades Ponds, Jubilee Park, Kin Park, Mirror Lake Loop, South West Meadows, Stoney Creek Park, Valleyview and West Park Trails.

7.3.3 PREVIOUS CONSIDERATIONS

7.3.3.1 2010 TRANSPORTATION MASTER PLAN

The previous TMP made a number of five and twenty year trail recommendations. The TMP considered ‘a review of existing deficiencies and requirements to serve ongoing growth and new demands’. It did this by examining connections between major destinations in the City as well as pointing to the need to examine land use by-laws and development review processes as they relate to infrastructure provision. A number of basic off-road trail specifications were included.

The five year recommendations were essentially centred around a Downtown Walk Trail and a number of future paved trails. By referring to the future network as a ‘trails plan’, there was no distinction drawn between in-boulevard and off-road trails.

The twenty year recommendations sought to create a much more extensive trail network through an expansive offering of trails in non-urbanised areas outside of the current urban footprint of Camrose but within the City’s boundaries. The recommendations note that a major consideration was to ‘provide connections with [future] development’.

7.3.3.2 GREEN SPACE MASTER PLAN

The Green Space Master Plan was designed to examine the current and future provision of green space in Camrose as part of a future Green Space Master Plan Future Green Space Concept. This included not only the provision of green spaces but also prioritizing future access to those spaces through a future trail network.

The plan recommended an expansive set of future in-boulevard and off-road trail links both within and outside of the existing urban area. Individual trail design, costing or engineering feasibility was not explicitly considered.

7.3.3.3 WALKABLE CAMROSE

In 2012, Alberta Health Services (AHS) funded a detailed investigation into community walkability in a number of municipalities in the province. The Walkable Camrose Report looked at short, medium and long term goals to improving walking as a means of transportation in Camrose. It did so by identifying potential City policy improvements as well as issues in the existing pedestrian network. Its key findings were to enhance the role of walking in all City by changing urban design standards and other City policy, recruit community stakeholders, restrict vehicle movement, create more open engagement and map future recommendations against the eight principles of the International Charter for Walking.

7.3.4 ISSUES

Existing active transportation infrastructure provides some of the shortest and most direct connections to a number of important destinations in Camrose, however a review of existing infrastructure and plans reveals the following issues:

1. Existing consideration of active transportation opportunities in master planning has largely been confined to future provision of trails with limited consideration of the distinction between off-road trails (referred to as 'grass/walking trails' in the previous TMP) and in-boulevard treatments (referred to as 'paved trails' in the previous TMP) and accompanying right of way considerations.
2. Limited demand potential analysis (i.e. *How many potential trips could individual linkages or a network create*?).
3. Limited education for cyclists and vulnerable road users such as children who wish to cycle on or off road, particularly in winter months, potentially to school and home.
4. Limited accessibility analysis (i.e. *How could trip times between major destinations and communities be improved by enhanced active transportation opportunities?*).
5. Limited capital and maintenance costing of trails (the 2010 TMP recommended $100,000 per year for 5 year trails).
6. Limited wayfinding for users of the existing network (Note: existing safety signage is generally considered good).
7. Safety issues in terms of trail design and maintenance, lines of sight, intersection design and an absence of appropriate crossings in some areas such as 50 Avenue.
8. Limited design considerations of the above issues in existing design standards, either at a master planning or City design standard level.
9. Limited consideration of land use planning by-law considerations such as mandating bike parking on private property and requiring developers to provide in-kind or monetary contributions toward adequate connections to existing active transportation infrastructure as a condition of development.
10. Limited consideration of the potential for emerging technologies to change mobility patterns in Camrose: e-bikes, bike and transit, walk and transit, and bike sharing, particularly for City businesses.
11. A limited amount of engagement with the community in relation to cycling as a mode of transportation and its potential to be a viable alternative to the motor vehicle for the larger number of shorter-distance trips in Camrose.
12. Limited consideration of winter maintenance issues such as snow and ice clearing on trails and trail clearing priority and extending the City's existing Winter Road Maintenance Policy to priority active transportation links.

7.3.5 MINIMUM NETWORK RECOMMENDATION

The field investigations revealed that with relatively modest investments, a minimum active transportation network could be achieved with the potential to better link a number of existing key destinations in Camrose via a spoke style network radiating from the Downtown in all directions.

The network is based on the notion that identification of existing gaps with the greatest latent demand for walking and cycling would allow for the realisation of a base network that could be expanded over time. Given large segments of the network are already in place, it is also considered that the relatively modest investments required to realize the network would have the additional benefit of producing the greatest results in terms of return on investment. This is similar to the approach that has been implemented in other Alberta municipalities.

The proposed minimum network consists of the following potential projects:

1. University of Alberta Augustana Campus to City Hall (corner 46 Avenue and 48 Street to 50 Avenue and 52 Street) with potential extension across University lands to 50 Street
2. Underpass connection underneath 48 Avenue to connect Mirror Lake Walking Bridge Walk Trail to Jubilee Park
3. Northern neighbourhoods connection (corner 51 Avenue and 51 Street to 50 Street and 55 Avenue)
4. Downtown to Mirror Lake connection (Corner 48A Avenue and 53 Street to 49 Avenue and 50 Street)
5. East Grandview to Mount Pleasant Connector (Mirror Lake Trail along 56 Street to Rudy Swanson Recreation Park)
6. Rudy Swanson to Century Meadows Connector (Through Rudy Swanson Park and along green corridor (assumed old rail line) to Century Meadows Baptist Church)
7. University of Alberta Augustana Campus to Mohler and Olstead Industrial Areas
8. University of Augustana Campus to St Mary's Hospital
9. 47 Avenue East-West Connector between 50 Street and 56 Street
10. Grandview to Camrose Commons Shopping Centre (Grand Drive to 48 Avenue)

These recommendations have a number of engineering and property access challenges associated with them such as safe railway crossing design and access to private lands. With appropriate capital and budget planning, it is anticipated that the network could be realized in a 5-10 year time frame.

Lastly, it is recommended that these and other future links be subject to a technical feasibility and prioritization exercise.

Figure 7-2 Active Transportation Network shows the recommended active transportation network.

7.3.6 POLICY AND RECOMMENDED STRATEGIES

Based on the above analysis and gaps identified, it is recommended that the City:

- → Develop an active transportation plan that seeks to take account of the present day situation and the potential to provide efficient and low cost access alternatives to major destinations through effective and safe active transportation corridors and linkages.
- → Develop a **cycling minimum grid –** see Figure 7-2 Active Transportation Network**.**

- Identify future funding sources for active transportation linkages such as the Federal Gas Tax and the revenues from the provincial carbon levy coming soon in Alberta.
- Engage in community involvement in active transportation planning considerations, particularly in terms of public engagement concerning identification of potential linkages and associated issues.
- Consider a “street lab” temporary cycling facility on a key street to develop interest and support for active transportation.

N

Legend

Existing Trails

- 68 Street Trail - Berm
- Bullrush Park Trail
- Cascades Pond Trail
- Jubilee Park
- Kin Park Trail (Shale)
- Mirror Lake Small Loop Trail
- Mirror Lake Small Loop Trail
- Mirror Lake Walking Bridge Loop Trail
- Mirror Lake Walking Bridge Loop Trail
- South West Meadows Trail
- Stoney Creek Park Trail
- Stoney Creek Park Trail
- Stoney Creek Trail (44 Ave Version)
- Stoney Creek Trail (44 Ave Version)
- Valleyview Trail
- West Park Trail

Proposed Active Transportation Network

- Proposed Corridors

Other Major Transportation Infrastructure

- railroad

Other

- Waterways
- City Boundary

City of Camrose Transportation Master Plan

Proposed Active Transportation Network

Figure 7-2

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

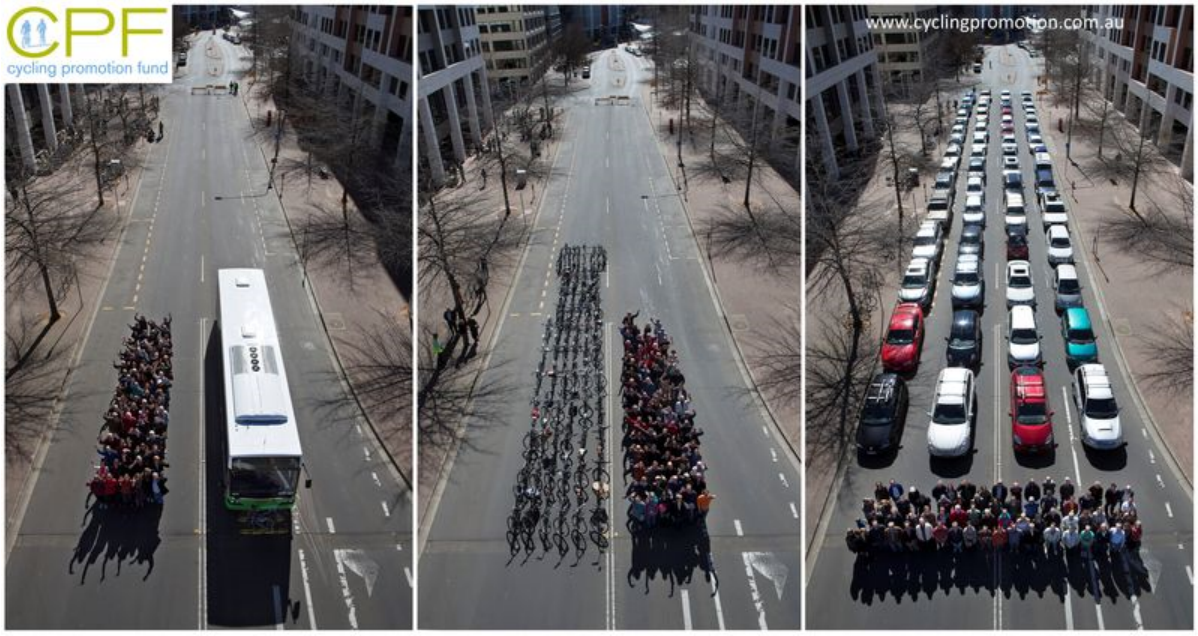
C: 20170309-CamroseProposedActiveTransportation2

T:2016_11-Template_11x17_TMPReport

7.4 TRANSIT

7.4.1 OBJECTIVE

As stated in the Municipal Development Plan, “the City is committed to exploring long-term options and opportunities for public transit. The City will anticipate the provision of a future public bus transit system when warranted on the basis of demand and economic feasibility.”



The City will identify options for the development of a public bus transit system including goals, service design alternatives, delivery concepts and associated costs, fare strategy, marketing strategy, etc.

7.4.2 BACKGROUND

The development of this Camrose TMP is the opportunity to consider again the need and viability of a public transportation system for the City. The various past and current municipal policy documents all contain statements promoting a better quality of life for citizens through the development of one form or another of a public transportation system.

First and foremost, the current Municipal Development Plan states in its Guiding Principles that ‘*Camrose will have an integrated transportation network that serves all people of all ages and all abilities. All modes of transportation are included in the long term integrated transportation network including walking, cycling,* ***riding public transit,*** *driving, and moving goods*.’ Transportation specific policies of the Municipal Development Plan also state that the City is committed to ‘*explore long term options and opportunities* ***for public transit*****’.** More recently, the 2014-2018 Strategic Plan, under the Social Wellness Pillar strategic initiative, recommends adopting a ‘*Long-Term Strategy to Address Public Transportation*.’

Furthermore, the latest 2007 TMP recommends ‘*Reviewing strategies for providing public transportation and disabled transportation services*’ and also recommends that the City commission a transit feasibility study as the population nears 20,000. Finally, both the 2007 TMP and the 2006

Transit Feasibility Study concluded that the **City should examine transit service options and work towards implementation**.

Through the public engagement process of this current TMP, citizens expressed their priorities regarding transit. Both the May 2016 Public Open House and initial stakeholder workshop, offered citizens the opportunity to make suggestions such as '*Providing local and regional transit service, in particular medical transportation to Edmonton*'. Most importantly, in view of the current pilot project, citizens also expressed that the taxi token system is not perceived as an alternative to public transit. This, of course, does not mean that this service is not needed, but it means the taxi token service will not replace a more traditional fixed route transit service. Specifically, citizens mentioned the need for:

- Public transportation improvements, such as public transit, including transportation to Edmonton;
- Public transportation improvements using buses;
- Improving local and regional public transportation, including public transportation for seniors and low income families; and
- Improving local and regional transportation in general (transit, multi-modal, affordable, and accessible transportation).

7.4.3 HOW FAR HAVE WE COME WITH RESPECT TO PUBLIC TRANSIT?

The City currently subsidizes some accessible transit through a demand responsive type service / taxi token and is considering a number of other public transportation options. In 2016, a scheduled and fixed route public transit service pilot was implemented within the City which operates two days per week (Tuesdays and Fridays). As shown below, through a short summary, the City has evolved from a long term public transportation vision in its previous transportation plans to a number of concrete initiatives paving the way to a fully multi-modal transportation network.

- *City of Camrose 1998 Transportation Master Plan (ISL Engineering)* - This TMP initiated the conversation on a public transit service for Camrose by advising not to envisage a fixed route public transportation system at that time. In particular, section 7.8 concludes *'It will not be economically feasible to initiate public transit service in Camrose for some time. Most Alberta cities have not initiated conventional public transit service until they had at least 25,000 population.'*
- *City of Camrose 2007 TMP (ISL Engineering)* - The Transportation Master Plan recommends that a transit system be considered at a population of 20,000 people and implemented in Camrose when it reaches a population of 25,000. In its review of strategies for providing public transportation and disabled transportation services, the 2006 TMP proposes a 5 year and 20 year transit service plan. The 2006 TMP concludes that *'Increased interest in public transit, as well as overall population growth in Camrose, now warrant research into what transit options might be available, potential timing for transit, and what costs might be expected.'*
- *City of Camrose 2006 Transit Feasibility Study (DA Watt)* - A transit feasibility study was completed in 2006. The report assessed prevailing transit technology and five (5) transit service options for Camrose. Ridership levels and transit performance in small Canadian communities were also discussed. Two routes were recommended for a two-year pilot program using small buses with capacity for 18 to 24 passengers as well as service promotional and marketing strategies. Moreover, the study recommended that new Area Structure Plans, concept plans and development applications should provide support for direct and effective pathway connections to potential transit routes and bus stops when transit becomes feasible.
- *Public Transit and Downtown Action Plan (Presentation from Ted Gillespie, City Engineer, December 4, 2007)* – Presented to the Rotary Club of Camrose, this presentation explores the possibility of a fixed route transit service for the City. Although premature for the time, it did set

the stage for recent concrete initiatives to provide one form or another of public transportation to citizens.

- *2010 Municipal Sustainability Plan* - It was noted through the public consultation process that a number of residents are interested in the City continuing to pursue a public transportation system. Public transit, however, is not a major issue for citizens of Camrose in this particular exercise. A Vision for Camrose in 2055 includes public transit within the Ecological Pillar.
- Community Transportation Advisory Committee (CTAC) Report to City of Camrose Council, 21 January 2013 and Administrative Report 4 March 2013 - This key report from CTAC describes the main social, economic and environmental benefits of a public transportation system and provides Council with a roadmap of five recommendations:
  - Adopting the findings of the report as opposed to simply receiving it for information purposes;
  - Initiating a two-year community transportation service pilot;
  - Include the pilot into the three-year budget;
  - Actively promote the service to residents; and
  - Thoroughly assess the service, which is currently ongoing.
- *Administrative Report to Council, July 4 2016 "Community Bus Pilot Project Update"*- After the first 15 weeks of operation of the fixed route Community Bus Pilot Project, the City announced *'that it was considering a number of actions to improve on the service and operating costs.'* Recommended actions include *'rebranding, online scheduling and improved data collection.'*
- *Initiative Report to Council, July 4 2016 'Taxi Token Project Update'* - The taxi token pilot program was started in the third quarter of 2015 and was initially set up and administered through the use of a contractor. At present, the City has an assisted transit taxi token service that is operated in partnership with Vision Credit Union. Approximately 25 social agencies currently participate in this program. Tokens provide a $4 subsidy to all eligible users of taxis in Camrose. One of the operating issues is that only two of the three taxi operators in Camrose accept the tokens and the City acknowledges on its website that further improvements to the existing service are required. The City is currently considering the implementation of a number of measures to improve monitoring of the allocation and use of the tokens, and to better inform City staff and participating agencies.

In summary, the time has come to identifying reasonable growth thresholds to support the expansion of various types of transit services within City limits and beyond to Edmonton. At this juncture, an initial fixed route transit service should be contemplated in the context of the evolution of existing public transportation services. As the population of Camrose increases closer to the recommended level for implementation of such a service, the transportation plan in preparation becomes the ideal tool to initiate the process of considering a small transit system.

The next phase in exploring opportunities would include developing a detailed plan for expansion of eligible customers, expansion of various service types, and eventual implementation of fixed route bus services based on future population growth scenarios.

Based on our experience, the service model that would be recommended would have to be able to grow over time: begin small, both to minimize start-up costs and to develop skills and competence, gradually improving the service as demand warrants. For instance, specific business options that would be taken into consideration include:

- Stand alone, municipally-operated transit service;

- Public / private partnership; or
- Connecting with an existing system (e.g., existing Edmonton service, existing service provider, courier service, school bus system).

7.4.4 POLICY AND RECOMMENDED STRATEGIES

Based on the above analysis and gaps identified, it is recommended that the City:

- Update the transit feasibility study for 25,000 population using the outcomes of the current transit service pilot project.
- Work with the planning and development department to ensure potential key transit routes are targeted for redevelopment and intensification opportunities using existing infrastructure effectively
- Investigate funding sources and opportunities including Alberta GreenTRIP – Green Transit Incentives Program of Alberta Transportation.
- Develop a service plan for introduction of transit.

7.5 DRIVING

7.5.1 OBJECTIVE

The driving mode of transportation is the main mode of transportation in the City and it will continue to be so into the future. Driving is the backbone of the mobility network and is what allows most people access to jobs, services, amenities, and social connections. As such, it is key to provide quality City streets and roads that connect effectively with the local neighbourhoods and the external regional roadway and highway network. These streets and roads must balance appropriate capacity and a high level of safety and traffic control, with the capital and operational costs of providing these facilities.

The City will:

- Operate and maintain a quality street network covering all City neighbourhoods and connecting with the external rural roadways and provincial highways;
- Make road safety a priority with regard to the movement of people and goods within, and in / out of the City, and
- Maximize the mobility efficiency and effectiveness of the street network and the driving mode of transportation.

Three strategic network improvements have been proposed consistent with the objectives of the driving mode of transportation. These strategic improvements either reduce congestion or provide mobility service to developing communities – both residential and industrial – on the City's periphery. The network improvements include:

- the extension of 53 Street (including a new bridge) to 48 Avenue;
- introduction of two new arterial streets to facilitate community development on the north and west sides of the City:
  - east-west arterial street on the north side of the City beginning at 68 Street on the west side and extending east to at least 53 Street; and
  - network development in the southwest through a Camrose Drive extension.

7.5.2 53 STREET EXTENSION

The 53 Street extension to 48 Avenue provides several benefits to the City:

- Reduces congestion on 48 Avenue south of downtown as drivers can access 53 Street from 48 Avenue rather than traveling through other north-south streets to gain access to 53 Street;
- Improves this connection of an important regional route from the City boundary to the core areas of the 48 Avenue area;
- Allows the potential repurposing and redesign of the adjacent north-south streets at 48 Avenue – 50 Street and / or 48 Street – for increased active transportation facilities or transit, and
- Reduces congestion on 51 Street.

A comparison in network operations for the 'Without Bridge' and the 'With Bridge' scenarios has been carried out, using the transportation model described in Section 6.2. The following summary refers to the PM peak as PM has been identified as the critical peak for traffic operations.

- Without Bridge: This scenario is business-as-usual in the City without any investment in a bridge on the 53 Street alignment.
- With Bridge: This scenario involves the introduction of a four lane bridge on the 53 Street alignment connecting 53 Street across the lake.

The modelling is based on the existing configuration of 48 Avenue, that is, it does not incorporate the short sections of widening that are currently being implemented between 54 Street and 51 Street. This widening will provide a clear capacity improvement westbound, as the short section of widening creates a continuous additional westbound lane. The additional eastbound lane between 53 Street and 51 Street would improve capacity a small amount, reducing the v/c on this link marginally; however as this is a short lane, that is dropped before the 51 Street Signals, the improvement would not be significant. The biggest impact the short section of added eastbound lane would have is an improvement for the right turn movement from 53 Street (south) onto 48 Avenue, increasing capacity for this movement and essentially providing a longer distance for vehicles to merge into through traffic eastbound.

The colour coding adopted for examining road link capacity in the following figures is as follows:

COLOUR	V/C RATIO
	< 0.60
	0.60 – 0.69
	0.70 – 0.79
	0.80 – 0.89
	>0.90

As can be seen from Figure 7-3 to Figure 7-5, overall, the network operates very well in both scenarios. The bulk of the network has a v/c of less than 0.60 reflecting minimal delays and congestion. Furthermore no links reach v/c in excess of 0.9.

Construction of the bridge has the most notable impact on 48 Avenue east of 53 Street (reducing traffic demands); and on 53 Street north of 48 Avenue (increasing traffic demands).

7.5.2.1 2026 HORIZON

The modelling shows that generally, there is ample capacity within the network under both scenarios. Congestion will be experienced at some locations under both scenarios. The addition of the bridge results in traffic rerouting and congested sections of the network change accordingly.

WITHOUT BRIDGE

Without the bridge, some congestion can be expected on the 48 Avenue road link eastbound between 53 Street and 51 Street, with v/c of 0.82. The additional eastbound lane between 53 Street and 51 Street would improve capacity, reducing the v/c on this link, however as this is a short lane, that is dropped before the 51 Street Signals, the improvement would not be significant. 53 Street (north) northbound experiences v/c of 0.73 between 50 Avenue and 51 Avenue.

Some links are in the 0.6 – 0.69 range, which remains well within capacity. Some congestion could be expected at the 48 Avenue intersection with 51 Street due to the eastbound volumes; v/c remains under 0.9 however.

WITH BRIDGE

In the With Bridge scenario, the congestion on 48 Avenue eastbound is significantly reduced, with v/c dropping to under 0.7, this would be marginally lower with the short section of added lane currently being constructed. The addition of the bridge connection does however draw more traffic onto 53 Street (north) towards the City centre, and the northbound movement experiences v/c in the 0.7 – 0.79 range north of 48 Avenue. It is noted that this remains within the limits of acceptable operation.

Some congestion could be expected at the 53 Street intersection with 49 Avenue due to the volumes in both directions on 53 Street.

Figure 7-3 2026 Without Bridge

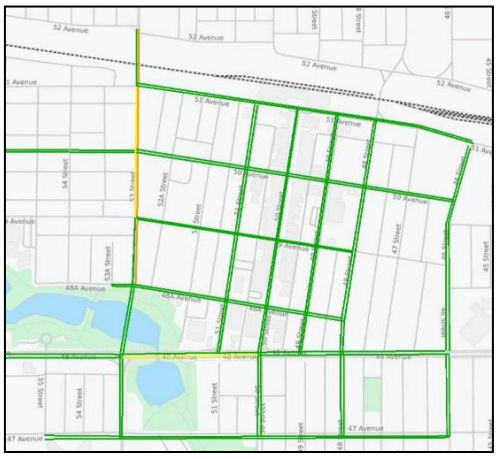


Figure 7-4 2026 With Bridge

7.5.2.2 2036 HORIZON

The modelling shows that, within the 20 year horizon some congestion can be expected on sections of the network under both scenarios. The key road links of 48 Avenue and 53 Street see v/c ratios above 0.7 in both scenarios. There is still no incidence of v/c above 0.9.

Figure 7-5 2036 Without bridge

Figure 7-6 2036 With bridge

WITHOUT BRIDGE

Without the bridge, some congestion can be expected on the 48 Avenue road link between 53 Street and 51 Street, with v/c of 0.87 eastbound and 0.77 westbound. The additional lanes being constructed through this section will improve operations: the short additional eastbound lane currently under construction will improve eastbound capacity marginally, the continuous westbound lane will significantly improve westbound operations. 53 Street experiences v/c of 0.82 northbound and 0.76 southbound between 50 Avenue and 51 Avenue, dropping to 0.70 and 0.68 respectively north of 51 Avenue. A section of 51 Street northbound, between 48 Avenue and 48 A Avenue reaches v/c of 0.75. Across the rest of the network, some links are in the 0.6 – 0.69 range, which remains well within capacity. Congestion could be expected at the 48 Avenue intersections with 51 Street and 53 Street due to the volumes in both directions on 48 Avenue. Congestion could be expected at the 53 Street intersections with 50 Avenue and 51 Avenue due to the volumes in both directions on 53 Street.

WITH BRIDGE

In the With Bridge scenario, the congestion on 48 Avenue is significantly reduced, with v/c dropping to under 0.7. As discussed already, the additional short eastbound lane and continuous westbound lane will improve capacity on 48 Avenue, further reducing the v/c. The addition of the bridge connection continues to draw more traffic onto 53 Street towards the City centre, and the northbound movement experiences v/c in the 0.7 – 0.89 range north of 48 Avenue, with the two blocks north of 49 Avenue experiencing v/c of 0.82; southbound, the link between 49 Avenue and 48 Avenue reaches v/c of 0.63.

Across the rest of the network, some links are in the 0.6 – 0.69 range, which remains well within capacity. Congestion could be expected at the 53 Street intersections with 49 Avenue, 50 Avenue and 51 Avenue due to the volumes in both directions on 53 Street.

7.5.2.3 OPPORTUNITIES AND TRADE-OFFS ASSESSMENT

WITHOUT BRIDGE

OPPORTUNITIES

Moderate 48 Avenue Congestion Contributing To Long Term Mode Shift And Higher Efficiency System A constructive effect of traffic congestion is often a discussion around how to solve the congestion which leads to several options. As cities grow and increased traffic occurs on roads, the costs to the individual traveler of walking, cycling, and taking transit emerge as much closer to the costs of driving a vehicle. This complex situation drives more discussion about alternatives to driving, and can lead to a more urban system with walking, cycling, transit, and driving all contributing to how people move around the city. Ultimately, these alternative modes of transportation are more spatially efficient and can be more financially efficient also.

Available Capital/Maintenance Funds For Other Projects The construction of a new bridge has capital and long term maintenance and rehabilitation costs, as discussed later in this document. Not building the bridge would save this money, and it could go to other projects.

TRADE-OFFS

Moderate Congestion On 48 Avenue Short Term The Without Bridge scenario maintains some congestion on 48 Avenue that would continue and possibly grow for some time. With investments increasing in transit however, this growth in congestion may slow.

WITH BRIDGE

OPPORTUNITIES

Less Traffic On 48 Avenue Near Downtown As discussed above, the With Bridge scenario removes some traffic and congestion off 48 Avenue east of 53 Street, however it adds this traffic to 53 Street and introduces some congestion there. The removal of the traffic from 48 Avenue opens up road capacity there for other needs. Despite the introduction of more traffic on 53 Street, less traffic on 48 Avenue is a benefit due to the significance of 48 Avenue in the City's network as a major east-west arterial road. 48 Avenue may carry regular or higher frequency transit buses in the future, and the reduction of congestion on 48 Avenue will help to increase the reliability of transit. The wide cross section of 48 Avenue including the service roads may even permit the development of some dedicated transit lanes or queue jumps at congested intersections to facilitate higher quality transit service. While the service roads provide access value – certain segments could be repurposed in the future to serve other corridor needs.

Wide Bike Lanes And Pedestrian Facilities On Bridge Cities are often wanting to implement bike lanes and facilities more than in the past, but finding the physical right-of-way to do it can be a significant challenge. In the With Bridge scenario, the City has an opportunity to introduce high quality bike lanes and wide sidewalks and potentially redesign part of 53 Street to build a larger, dedicated cycling network, implementing the reclassification of 53 Street from Arterial Street to Multimodal Arterial Street. 53 Street is near downtown and could serve as a safe crossing of 48 Avenue for active

transportation. Such investments could also help to reduce some of the increased traffic on 53 Street resulting from the construction of the bridge (efficient mode shift from vehicles to walking, cycling, and transit).

Further to an active transportation connection, the bridge architectural design itself could serve as gateway into the historic downtown area of Camrose and become an icon of the City. The Peace Bridge in Calgary is an example of architectural design of a public bridge that is now synonymous with Calgary.

Enhanced Clarity Of Road Network Connecting 53 Street 53 Street is currently discontinuous in Camrose at 48 Avenue. As it is a main road connecting the City, there is significant value in connecting it and permitting easier north-south travel. This is helpful especially for non-local travelers, emergency services vehicles and goods movement – keeping trucks out of the downtown area. 53 Street is a truck route and existing truck drivers need to choose alternate routes to connect across the 48 Avenue area.

TRADE-OFFS

Increased Traffic On 53 Street North As discussed above, the With Bridge scenario adds traffic to 53 Street and introduces some congestion there as the introduction of the bridge removes some traffic and congestion off 48 Avenue east of 53 Street. This is a trade-off of bridge introduction, but could be managed in a variety of ways e.g. improved traffic control on 53 Street and/or intersections/street redesign.

Financial Costs Further, the construction of a new bridge has capital and long term maintenance and rehabilitation costs. In a small city, this would likely mean some amount of a trade-off between other capital projects in allocating the limited funds.

7.5.2.4 SUMMARY OF 53 STREET BRIDGE CONSIDERATIONS

Construction of the bridge to provide a continuous road link on 53 Street would result in rerouting of traffic and congestion points changing on the network. It will alleviate some congestion whilst introducing congestion at other locations. It offers benefits in network connectivity and goods movement and could facilitate improved active transport connections. A summary of the opportunities and trade-offs of both scenarios, from a transportation perspective, is presented in Table 7-1 53 Street Bridge, Opportunities and Trade-offs.

Table 7-1 53 Street Bridge, Opportunities and Trade-offs

	OPPORTUNITIES	TRADE-OFFS
Without Bridge	Moderate congestion can help to encourage transit development and use and other modes as it is more efficient strategy to move people, City can start to frame this like many other small AB cities, consistent with MDP and TMP guiding principles	Moderate congestion in the short term
	Invest the capital/long term operational dollars elsewhere	
With Bridge	Less traffic on 48 Ave.	Cost – less capital/operational for other transportation projects
	Opportunity to introduce wide pedestrian and cycling facility on the bridge in central area of City	Congestion increases on 53 Street for 2026 and 2036 horizon years
	Opportunity to enhance the clarity of the road network allowing complete corridor of 53 St/Hwy 833, and to create a Multimodal Arterial Street (complete street)	

7.5.3 NEW NORTHERN (EAST-WEST) ARTERIAL

A new east-west arterial street has been proposed on the north side of the City beginning at 68 Street on the west side and extending east to at least 53 Street, potentially longer. This new street is rationalized from previous functional planning as providing a higher capacity vehicle corridor on the north side of the city – forming one part of a ring road system around the Camrose core, the other parts including 68 Street, 39 Street, and Camrose Drive. This new north arterial connection provides several benefits:

- → Provides a City centre bypass for traffic traveling through the City on the north side;
- → Allows for further subdivision and land development on the north side of the City;
- → Reduces congestion on 54 Avenue, and
- → Reduces congestion on 48 Avenue.

7.5.4 CAMROSE DRIVE EXTENSION

Following previous recommendations of community and road network development in southwest Camrose, this TMP continues to recommend a network development in the southwest through a Camrose Drive extension. This additional roadway is subject to further planning and design work to establish an alignment, and it is largely rationalized as appropriate from further neighbourhood development in the area – not as network capacity relieving congestion. As a result, further area structure planning will contribute to the future network in this part of the City.

- → This new connection begins to build the street and road network in the area and

→ Allows further subdivision and land development in southwest Camrose.

7.5.5 2021 RECOMMENDED INVESTMENTS

Table 7-2 2021 Recommended Investments builds on the identified operational issues at the 2021 horizon and proposes several solutions to the issues. Figure 7-7 shows the suggested improvements by 2021 horizon year.

Table 7-2 2021 Recommended Investments

ROADWAY	SECTION	DIRECTION	V/C RATIO	IMPROVEMENTS
48 Avenue	53 St to 51 St	EB	0.74	Consider extending 53 Street over the lake to connect with 48 Avenue
Grand Dr	48 Ave to 48A Ave	NB	0.73	Restrict parking during peak hours and modify pavement markings to accommodate two driving lanes for a short distance

Source: WSP Transportation Planning

48 Avenue – 53 Street to 51 Street: In order to improve the operating conditions along 48 Avenue, between 53 Street and 51 Street, consideration should be given to constructing the new bridge to extend 53 Street across Mirror Lake.

53 Street, being an important mobility connection and provincial highway, carries a higher volume of traffic. Due to the lack of connection currently with 48 Avenue, 53 Street traffic must travel via other streets to access 48 Avenue. This increases congestion on 48 Avenue for a distance around the Mirror Lake area. Introducing a connection on the 53 Street alignment from the existing terminus to 48 Avenue will reduce congestion on 48 Avenue.

Grand Drive – 48 Avenue to 48A Avenue: The population growth will result in a growth in traffic volumes along Grand Drive as well as some congestion in the section between 48 Avenue and 48A Avenue. The higher traffic on this section can be accommodated by restricting the on-street parking along Grand Drive and modifying the pavement markings to fit four lanes on the cross section. These improvements will increase the capacity on this section of the roadway to accommodate the estimated higher traffic volumes. It should be noted that by constructing the extension of 53 Street some traffic on Grand Drive will be redirected to 53 Street which results in lower traffic volumes on Grand Drive. This is another benefit of the introduction of the 53 Street extension to 48 Avenue.

Grand Drive:
- Regulate Parking
- Accommodate four driving lanes

53 Street:
- Extend 53 Street over the lake to connect to 48 Avenue

N

Legend

Roadway Classifications

- Major Arterial
- Neighbourhood Collector
- Multi Modal Arterial
- Urban Boulevard
- Local Street

City of Camrose Transportation Master Plan

2021 Road Network Improvements

Figure 7-7

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-CamroseRoadwayClassifications

T:2016_11-Template_11x17_TMPReport

7.5.6 2026 RECOMMENDED INVESTMENTS

Table 7-3 2026 Recommended Investments builds on the identified operational issues at the 2026 horizon and proposes several solutions to the issues. Figure 7-8 shows the suggested improvements by 2026 horizon year.

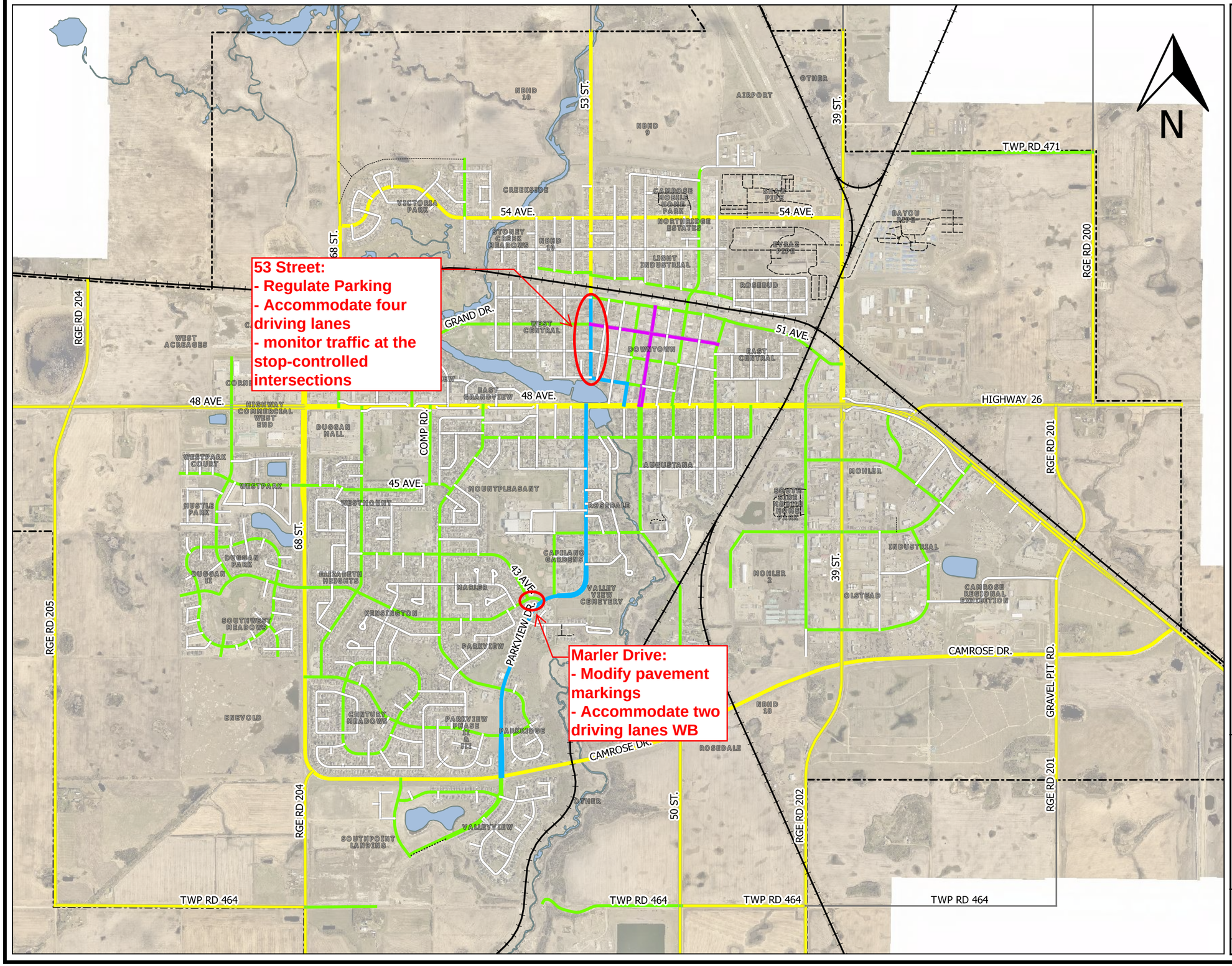
Table 7-3 2026 Recommended Investments

ROADWAY	SECTION	DIRECTION	V/C RATIO	IMPROVEMENTS
53 Street	48A Ave to 49 Ave	NB	0.70	Ban parking during peak hours, modify pavement markings to accommodate two driving lanes, and consider signal at 53 Street / 50 Avenue
53 Street	49 Ave to 50 Ave	NB	0.75	
53 Street	49 Ave to 50 Ave	SB	0.64	
53 Street	50 Ave to 51 Ave	NB	0.77	
53 Street	50 Ave to 51 Ave	SB	0.74	Ban parking during peak hours, modify pavement markings to accommodate two driving lanes
Marler Dr	43 Ave to Parkview Dr	WB	0.72	Modify pavement marking to accommodate two driving lanes

Source: WSP Transportation Planning

53 Street – 48A Avenue to 51 Avenue: The population growth over the years as well as construction of the extension of 53 Street will attract more traffic volumes to go through 53 Street by the 2026 horizon year. To accommodate this additional traffic on 53 Street, between 48A Avenue and 51 Avenue, it is recommended that on-street parking along this street be regulated during the peak hours to allow for using the additional travel lanes on both the northbound and southbound directions. This will increase the capacity along 53 Street and will accommodate the higher traffic volumes.
It is worth noting that along 53 Street, between 48A Avenue to 51 Avenue, there are four all-way stop controlled intersections. Traffic monitoring should be considered at these intersections to determine where and when traffic signals may reduce vehicle delays and improve the levels of service.

Marler Drive – 43 Avenue to Parkview Drive: There are two driving lanes in the eastbound direction of the west approach of Marler Drive with Parkview Drive and one lane in the westbound direction. The west approach is wide enough to accommodate two lanes in the westbound direction. In order to increase the capacity and to improve the operating conditions on this roadway, it is recommended that the pavement markings in the westbound direction be modified to allow for two driving lanes westbound.


53 Street:
- Regulate Parking
- Accommodate four driving lanes
- monitor traffic at the stop-controlled intersections
Marler Drive:
- Modify pavement markings
- Accommodate two driving lanes WB
N
53 ST.
39 ST.
68 ST.
RGE RD 204
RGE RD 205
RGE RD 200
RGE RD 201
RGE RD 202
TWP RD 471
54 AVE.
GRAND DR.
51 AVE.
48 AVE.
45 AVE.
43 AVE.
HIGHWAY 26
COMP RD.
PARKVIEW DR.
CAMROSE DR.
50 ST.
GRAVEL PIT RD.
TWP RD 464
NBHD 10
NBHD 9
AIRPORT
OTHER
CREEKSIDE
VICTORIA PARK
CAMROSE MOBILE HOME PARK
NORTHRIDGE ESTATES
BAYOU PIPE
STONEY CREEK MEADOWS
LIGHT INDUSTRIAL
ROSEBUD
WEST CENTRAL
DOWNTOWN
EAST CENTRAL
WEST ACREAGES
EAST GRANDVIEW
HIGHWAY COMMERCIAL WEST END
DUGGAN MALL
WESTPARK COURT
WESTPARK
WESTCOURT
HUSTLE PARK
DUGGAN PARK
DUGGAN II
MOUNTPLEASANT
ROSEDALE
AUGUSTANA
MOHLER
SOUTH SIDE MOBILE HOME PARK
INDUSTRIAL
MOHLER 2
OILSTEAD
CAMROSE REGIONAL EXHIBITION
CAPILANO GARDENS
ELIZABETH HEIGHTS
MARLER
VALLEY VIEW CEMETERY
KENSINGTON
SOUTHWEST MEADOWS
PARKVIEW
ENEVOLD
CENTURY MEADOWS
PARKVIEW PHASE II & III
PARKRIDGE
VALLEYVIEW
SOUTHPOINT LANDING
Legend
Roadway Classifications
Major Arterial
Neighbourhood Collector
Multi Modal Arterial
Urban Boulevard
Local Street
City of Camrose
Transportation Master Plan
2026 Road Network Improvements
Figure 7-8
Scale 1:40,000
0.25 0 0.25 0.5 0.75 1 km
C: 20161115-CamroseRoadwayClassifications
T:2016_11-Template_11x17_TMPReport

7.5.7 2036 RECOMMENDED INVESTMENTS

Table 7-4 2036 Recommended Investments builds on the identified operational issues at the 2036 horizon and proposes several solutions to the issues. Figure 7-9 shows the suggested improvements by 2036 horizon year.

Table 7-4 2036 Recommended Investments

ROADWAY	SECTION	DIRECTION	V/C RATIO	IMPROVEMENTS
48 Avenue	West of RR 204	WB	0.81	Continue westbound direction with two driving lanes west of RR 204
48 Avenue	RR 204 to 73 St	EB	0.72	Widen to 2 lanes eastbound from RR 204 to 73 St
Grand Dr	48 Ave to 48A Ave	NB	0.72	Restrict parking during peak hours, modify pavement markings to accommodate two driving lanes
53 Street	48A Ave to 49 Ave	NB	0.71	Restrict parking during peak hours, modify pavement markings to accommodate two driving lanes. Signals may be considered at all-way stop controlled intersections to reduce delays
53 Street	48A Ave to 49 Ave	SB	0.63	
53 Street	49 Ave to 50 Ave	NB	0.82	
53 Street	49 Ave to 50 Ave	SB	0.63	
53 Street	50 Ave to 51 Ave	NB	0.85	
53 Street	50 Ave to 51 Ave	SB	0.72	
53 Street	51 Ave to 52 Ave	NB	0.74	
47 Street	52 Ave to 53 Ave	NB	0.70	Restrict parking during peak hours, modify pavement markings to accommodate two driving lanes northbound

Source: WSP Transportation Planning

48 Avenue – West of RR 204: In the 2036 horizon year some level of congestion is expected in the westbound direction of 48 Avenue west of RR 204 and in the eastbound direction between RR 204 and 73 Street during the afternoon peak hour. To improve the level of service in the eastbound direction of this roadway it is recommended that this section be widened to a two lane capacity – same as the westbound direction – in the section between RR 204 and 73 Street. In addition, it is recommended to continue with the existing two lane capacity in the westbound direction to the east of RR 205.

Grand Drive – 48 Avenue to 48A Avenue: As explained previously, the higher traffic volumes on this section can be accommodated by restricting the on-street parking along Grand Drive, within this section, and modifying the pavement markings to fit four lanes on the cross section. This will increase the capacity on this section of Grand Drive to accommodate higher traffic volumes.

53 Street – 48A Avenue to 52 Avenue: In the 2036 horizon year it is expected that the congestion on 53 Street extends further to the north towards 52 Avenue. Therefore, it is recommended that the same improvements as discussed in the 2026 horizon year be implemented on 53 Street between 51 Avenue and 52 Avenue.

47 Street – 52 Avenue to 53 Avenue: 48 Street is a north-south street that passes through downtown and changes into 47 Street just north of the rail line. To address the congestion along 47 Street between 52 Avenue and 53 Avenue it is recommended that the on-street parking be restricted along this corridor during the peak hours and pavement markings be modified to accommodate four lanes on this section of the street.

53 Street:
- Regulate Parking
- Accommodate four driving lanes
- monitor traffic at the stop-controlled intersections

47 Street:
- Regulate Parking
- Accommodate four driving lanes

48 Avenue:
- Widen to two lanes WB

48 Avenue:
- Widen to two lanes EB

Grand Drive:
- Regulate Parking
- Accommodate four driving lanes

N

Legend

Roadway Classifications

- Major Arterial
- Neighbourhood Collector
- Multi Modal Arterial
- Urban Boulevard
- Local Street

City of Camrose Transportation Master Plan

2036 Road Network Improvements

Figure 7-9

Scale 1:40,000

0.25 0 0.25 0.5 0.75 1 km

C: 20161115-CamroseRoadwayClassifications

T:2016_11-Template_11x17_TMPReport

7.5.8 TRAFFIC SIGNAL REVIEW

48th Avenue is the main street in the City of Camrose that provides east-west connection for local and regional traffic. 48th Avenue is the busiest road in the City and carries the highest traffic volumes. Therefore, it is important to prioritize the traffic movement on this corridor and reduce the delay time caused by several traffic controls installed at major intersections along this corridor. One of the most effective solutions to reduce the delay time on major corridors is to consider coordination of the traffic signals along that corridor.

Coordination is a tool to provide the ability to synchronize multiple intersections to enhance the operation of one or more directional movements in a system. In modern coordinated signal systems, it is possible for drivers to travel long distances without encountering a red light. The intent of coordinating traffic signals is to provide smooth flow of traffic along major corridors in order to reduce travel times, stops and delay. Signal coordination also reduces fuel consumption and improves air quality. Consequently, it is recommended to optimize and coordinate traffic signals along 48th Avenue.

In addition, traffic signals at the intersections within the City should be optimized to allocate sufficient time to each movement and minimize vehicle delays at the intersections. Two of the major signalized intersections in the City are as follow:

- 48th Avenue / 68th Street:

  48th Avenue at 68th Street is one of the busiest intersections in Camrose carrying in the order of 22,000 vehicles per day. All four approaches at this intersection have a left turn signal. It is recommended to review and optimize traffic signal phasing at this intersection and provide prohibited and protected phases for the left turn movements.

- 48th Avenue / 39th Street:

  48th Avenue at 39th Street is a four-way signalized intersection. Traffic volumes through this intersection are around 11,000 vehicles per day. The signals at this intersection have recently been upgraded, and there are now left turn signals on all approaches and left turn lane designation signs mounted on the signal masts on all approaches. It is recommended to review and optimize traffic signal phasing at this intersection and make sure that prohibited and protected phases are provided for the left turn movements.

7.5.9 REGIONAL ROAD CONNECTIONS

As rationalized and recommended in the previous functional planning, the 2007 TMP and this updated TMP, a new east-west arterial street has been proposed on the north side of the City, north of 54 Avenue. This new north arterial connection would provide a higher capacity corridor on the north side of the city – forming one part of a ring road system around the Camrose core.

There may be other corridor options that can serve as the east-west connection north of the City and can provide regional connection in the area. These corridor options may require further investigation.

7.5.10 POLICY AND RECOMMENDED STRATEGIES

- Invest in the above described projects at the different horizon years, while contextualizing the driving mode of transportation within the Council approved policy of the Municipal Development Plan – reprioritizing the modes of transportation and placing increasing emphasis on walking, cycling, and public transit.

→ Consider the functional classification of the street prior to any planning and design investment, ensuring the purpose of the street is considered and integrated.

7.6 MOVING GOODS

The City's existing goods movement network, including dangerous goods movement, was described in Section 5 of this report. As some of the strategic network improvements are implemented including the north arterial on the north side of 54 Avenue and extension of Camrose Drive to the west, the goods movement network should be reviewed to ensure the best possible routes are designated considering the costs and benefits of the different corridor options. A high level review of goods movement in Alberta has been undertaken herein, along with recommendations for defining goods movement corridors in the context of surrounding land uses, and appropriate stopping sight distance along goods movements corridors.

7.6.1 ALBERTA CONTEXT

7.6.1.1 ALBERTA TRANSPORTATION

Alberta Transportation does not have published information on goods movement strategy. The key documents found were the Dangerous Goods Transportation and Handling Act and Regulation of Alberta. The Act and Regulation cover many operational issues associated with moving dangerous goods, but do not cover much information relating to highway infrastructure planning and design. The Government of Canada also has the Transportation of Dangerous Goods Act and Regulations.

Alberta Transportation does have published information on High Load Corridors and Long Combination Vehicles. The High Load Corridors on Provincial Highways map for the Camrose area is shown in Figure 7-10. Near Camrose, Highway 21 is a designated High Load Corridor with a maximum height restriction of 9.0 m.

Various goods movement literature from cities around Alberta have been reviewed.

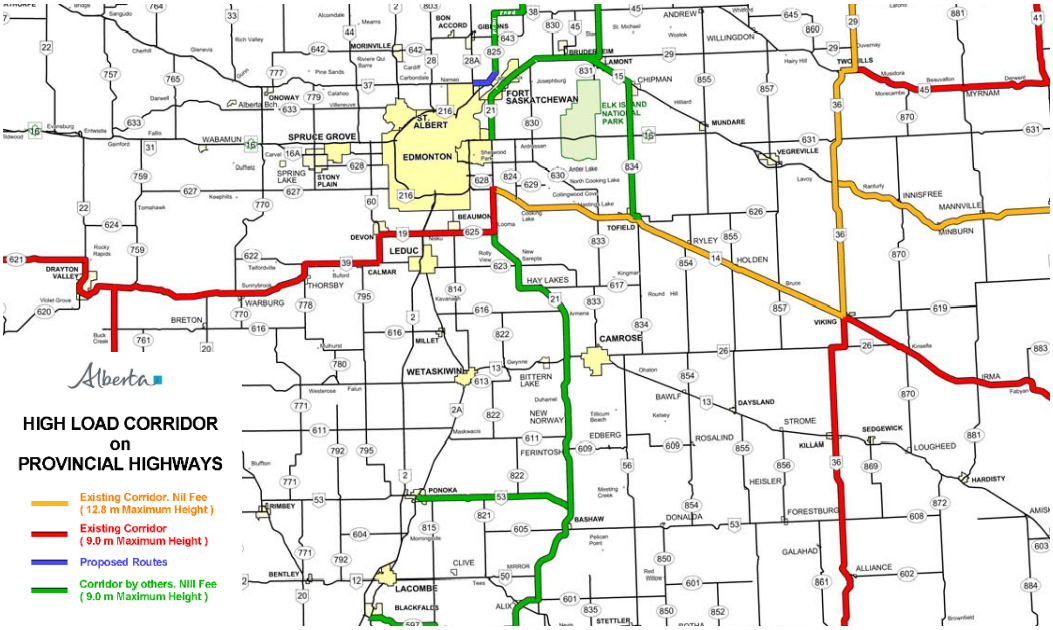


Figure 7-10 High Load Corridors on Provincial Highways in Camrose and Edmonton area

7.6.1.2 CALGARY

The City of Calgary is developing a Goods Movement Strategy – to be similar to the strategies for pedestrians, cycling, and transit. It is expected to be completed in 2018.

Calgary has bylaws to control truck routes and the movement of dangerous goods in the city including designated routes. Truck Routes are integrated throughout the entire city including through residential areas – and this includes some Dangerous Goods Routes (16 Avenue N).

A sample of the 2017 Calgary Truck Route Map is shown in Figure 7-11 to illustrate the Truck Routes in the communities. Green is a Truck Route and red is a Dangerous Goods Route.

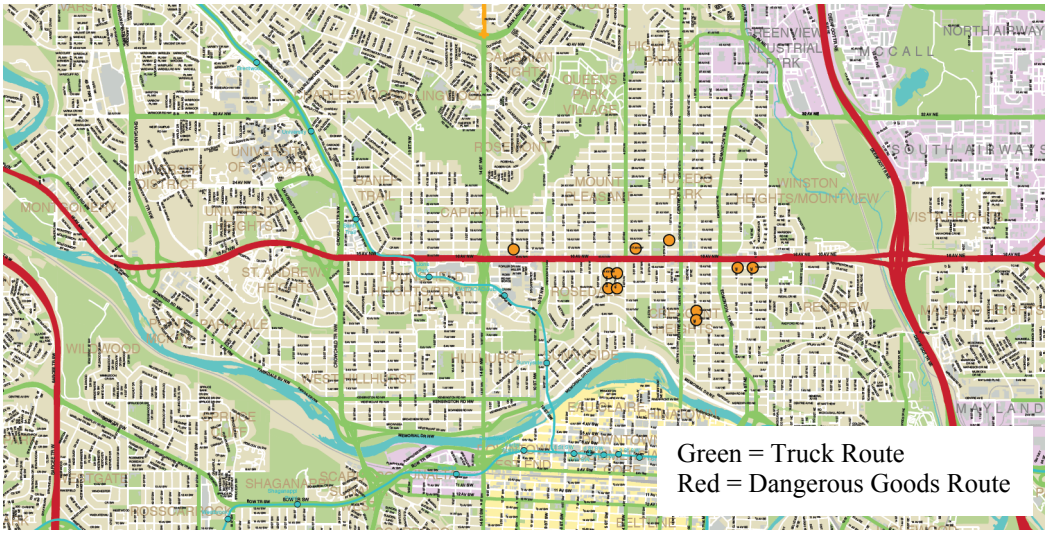


Figure 7-11 Sample of 2017 Calgary Truck Route Map showing north of downtown area

7.6.1.3 EDMONTON

The City of Edmonton developed a Goods Movement Strategy in 2014. Among several objectives, three relate to the purpose of this memo:

- → Mitigate community, environmental and safety impacts;
- → Increase transportation network efficiency; and
- → Improve network planning and forecasting.

Several actions are also listed under these objectives including:

"Increase safety and reduce conflict between goods movement vehicles, pedestrians and cyclists in industrial neighbourhoods by implementing *Ped Connections*, the strategy for sidewalk infrastructure, and the *Bicycle Transportation Plan."*

Other action items emphasize the importance of enforcement of the truck route bylaws including safety inspections, and regular monitoring of truck routes to identify developing issues.

Edmonton's Truck Route Map, like Calgary, has integrated Routes throughout the entire city including through residential areas – and this includes some Dangerous Goods Routes (97 Street).

A sample of the Edmonton Truck Route Map is shown in Figure 7-12 to illustrate the Truck Routes throughout the Edmonton community. Green is a 24 Hour Truck Route, red and yellow is a Dangerous Goods Truck Route and Truck Route, and red is a Restricted Truck Route.

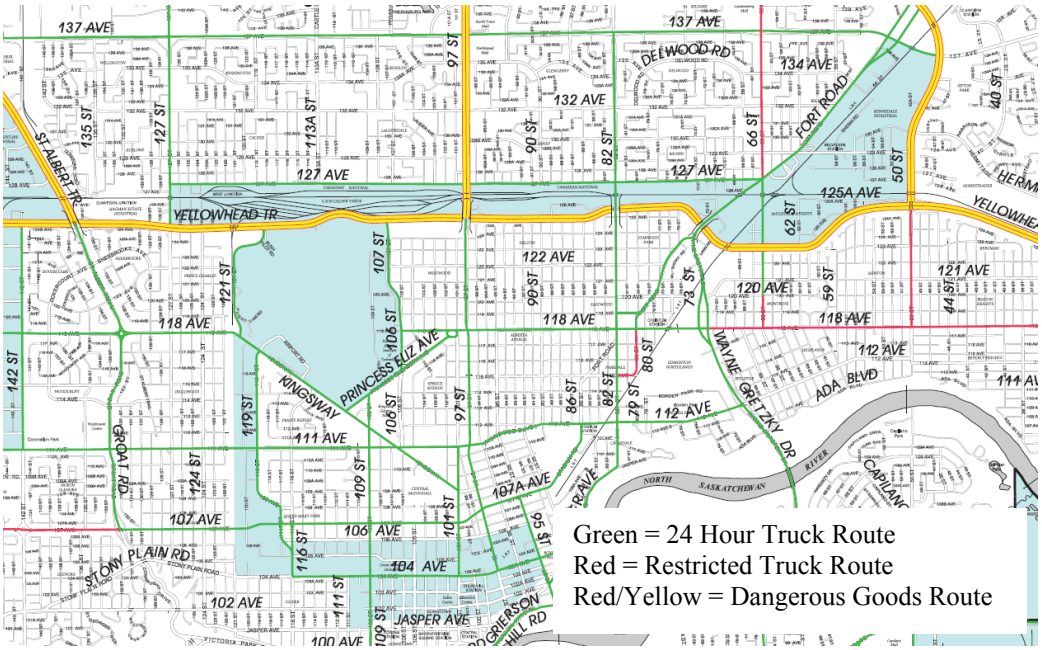


Figure 7-12 Sample of Edmonton Truck Route Map showing north of downtown area

7.6.2 CAMROSE EXISTING NETWORK AND LAND USE CONTEXT

The City has an existing Truck Route Map shown in Figure 5-5. The existing dangerous goods routes are shown in Figure 7-13. The land use context according to the Municipal Development Plan is shown in Figure 7-14. According to the Municipal Development Plan, the orange/brown General Urban area is intended to accommodate comprehensively planned and developed greenfield residential communities. Based on the designated truck and dangerous goods routes, the General Urban area shown in Figure 7-14 will have truck routes and dangerous goods routes passing through it.

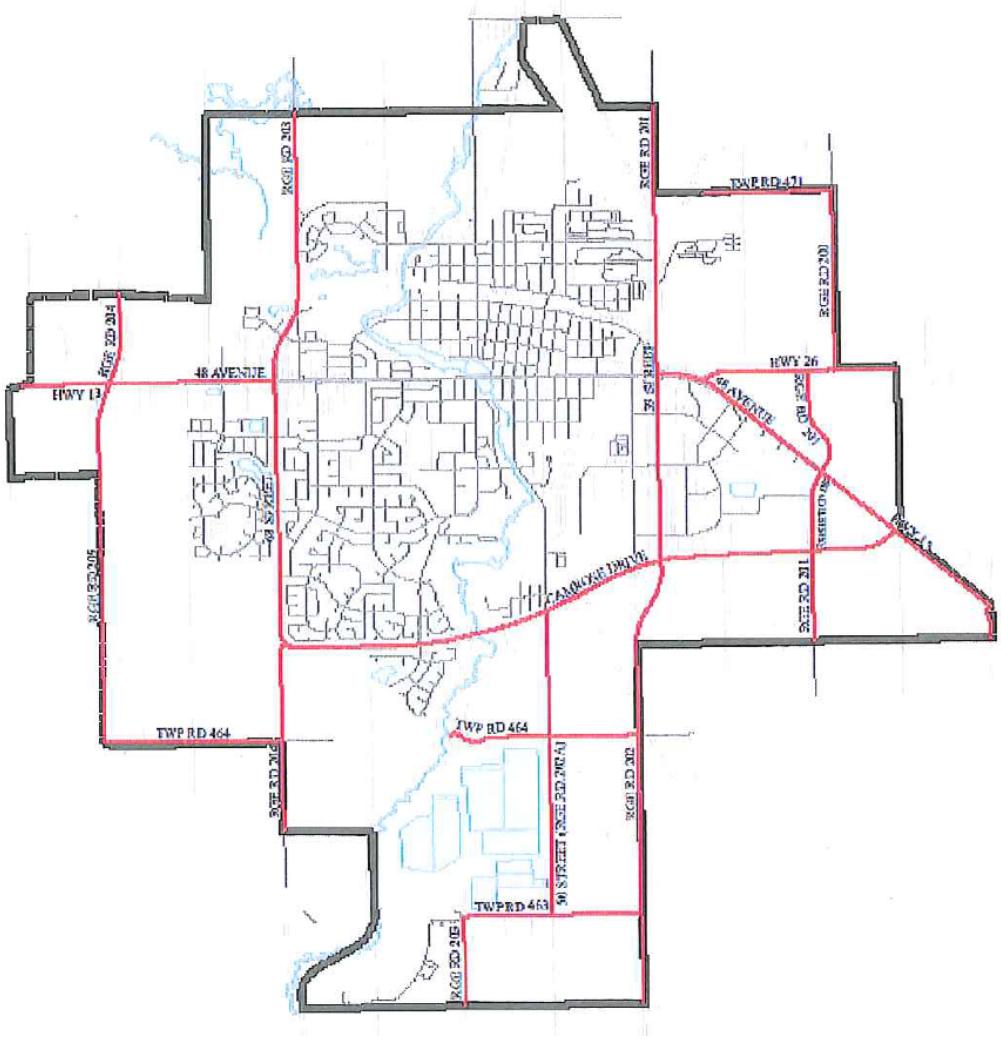


Figure 7-13 Dangerous Goods Routes

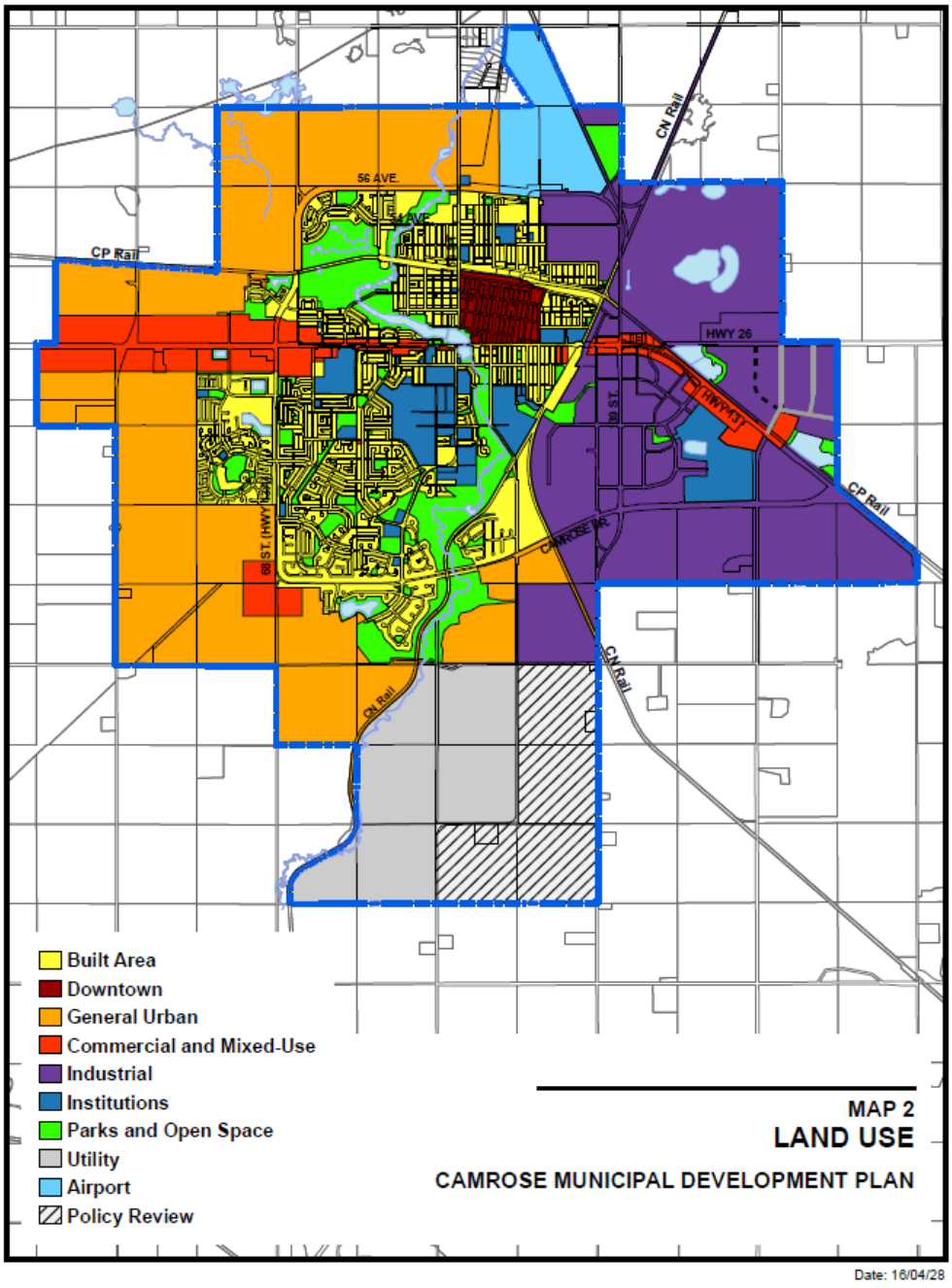


Figure 7-14 Land use from the Municipal Development Plan

7.6.3 IDENTIFIED ISSUES AND ANALYSIS

7.6.3.1 ISSUES

Several questions relating to goods movement through the City of Camrose have been identified, namely:

- What is the appropriate function and design of the proposed north arterial connection and how does it accommodate goods and people movement – both along and across?
- What is the right design of intersections to support both goods movement corridors and pedestrian crossings?
- How do all goods movement corridors (both truck routes and dangerous goods routes) accommodate these needs in the City, especially as residential development extends south and west of Camrose Drive, which is the key east-west dangerous goods route?
- How should the City reconcile the expanding urban residential area with the continued and growing need for goods movement?

7.6.3.2 ANALYSIS

USE OF ARTERIALS FOR GOODS MOVEMENT

Larger cities treat many arterial roads as goods movement corridors as the nature of arterial road design helps to accommodate and control the safety and efficiency of goods and people movement together. This is a practical approach because it is difficult and costly to separate all different road users everywhere in cities. It is noted that the most preferable arterial roads for goods movement are those that have alignments between communities and not directly through communities, minimizing conflicts between different road users.

16 Avenue N in Calgary is an example of a corridor serving many purposes: walking, cycling, bus routes including bus rapid transit (BRT), arterial road high traffic volumes, and designated dangerous goods movement. Further, the adjacent land uses also vary considerably and include apartments, retail and office uses, institutional (Southern Alberta Institute of Technology), and even an elementary school. This arterial is bordered by communities but does not bisect communities, which makes it suitable for a goods movement function.

STOPPING SIGHT DISTANCE

Roads used for goods movement and other road users including pedestrians and cyclists must have adequate geometric design and traffic control to keep all road users safe. One key consideration is sight distance, especially in advance of pedestrian crossings. Drivers must be able to see pedestrians and have time to come to a halt safely prior to reaching the crossing. There are many types of sight distance considered in road design. The absolute minimum sight distance to be achieved is Stopping Sight Distance which represents the distance a vehicle travels from when the driver sees the need to stop, reacts and the vehicle decelerates to stop. This represents hard braking, not gradual deceleration.

The Transportation Association of Canada (TAC) defines stopping sight distance as[1]:

Stopping sight distance = $0.278Vt + 0.039V^2/a$

V = design speed (km/h)

t = brake reaction time (normally 2.5 s)

a = deceleration rate (m/s^2)

Stopping sight distance in metres

Sight distance calculations use design speed, which is generally 10 km/h higher than the posted speed limit. For a typical, higher speed arterial road with a design speed of 90 km/h (such as Camrose Drive, east of 50 Street with a posted speed limit of 80 km/h), the minimum stopping sight distance for a typical car is 160 m; for a design speed of 70 km/h (such as Camrose Drive west of 50 Street, and 68 Street, with posted speed limits of 60 km/h), it is 105 m; and for a design speed of 60 km/h (reflective of most of the Town's roads that have 50 km/h speed limits) it is 85 m.

This is calculated on a level surface (no grade) and wet pavement. Trucks typically need slightly more stopping sight distance, but they also have a sight advantage over cars because a truck driver sits higher than a car driver. As a result, stopping sight distances are not calculated differently for trucks. All intersections and pedestrian crossing locations should be designed in accordance with current design standards and achieve the required sight distance for the speed environment.

Providing the minimum stopping sight distance at all points along a road is an important factor in safe road operation. Any crossing points (intersections or pedestrian crossings) must be located such that drivers on the road approaching these have clear sight lines for at least this minimum distance, allowing them to stop if necessary. Practically speaking, this means that intersections and crossings should generally not be located on or near curves as these typically reduce available sight distance in one or both directions; similarly, parking bans over a short distance may be required at some locations to ensure that clear sight lines are provided to these.

MOVING FROM DESIGNATED CORRIDOR TO DESTINATION

Bylaws and information pamphlets about goods movement for operators typically specify that the operator must use designated corridors, but they are permitted to use other streets when necessary to get to the ultimate destination. The City of Calgary specifies:

"When it becomes necessary to leave the designated truck route for the purpose of picking up or delivering material or merchandise, supplying a service or obtaining fuel, repairs, food or accommodation, a truck driver must take the nearest truck route to the destination and directly back to the truck route again. If a truck driver has another delivery in the immediate area, the driver may proceed directly to it before returning to the nearest truck route by the most direct, accessible connection. As professionals, truck drivers are expected to be aware of and plan their routes along current, approved truck routes."

[1] Geometric Design Guide for Canadian Roads, Chapter 2, Section 2.5.3

Section 209 (E) of The Camrose Traffic Bylaw specifies very similar expectations for goods movement operators. The Bylaw stipulates that the most direct route must be used from the Truck Route to the ultimate destination.

APPROACHES TO RESTRICTION

Trucks can be restricted in different ways on goods movement corridors to help balance the need to move goods and minimize community impacts:

- Time restrictions can be used near residential areas to minimize noise during the night;
- Size restrictions can be used if necessary; and
- Slow moving trucks can also be restricted if necessary on certain corridors to minimize traffic impacts.

Enforcement may be necessary to ensure restricted routes are used as intended.

LAND USE IMPLICATIONS

According to the Municipal Development Plan and the figures above showing existing goods movement and dangerous goods movement corridors, the developing residential areas on the west side of Camrose are planned to have more truck routes and dangerous goods routes. This emphasizes the need for proper higher speed and higher volume arterial road design including stopping sight distances in this area connecting communities and facilitating goods movement. The 2017 Geometric Design Guide for Canadian Roads by the Transportation Association of Canada (TAC) contains the necessary guidance to design these arterial roads.

7.6.4 GOOD MOVEMENT FINDINGS SUMMARY

Key findings from this analysis include the below points:

- Using arterial streets to move trucks is a typical practice in larger urban areas. Arterial streets have the ability to serve many functions;
- Ensuring appropriate stopping sight distance on arterial streets used for goods movement is important;
- Trucks should stay on designated routes as much as possible before leaving the route to access the ultimate destination;
- Time-of-day truck route restrictions can also be used to minimize community impacts, and this has an enforcement component; and
- As the City continues to develop the greenfield residential areas specified in the Municipal Development Plan, proper arterial street design including stopping sight distances will help to minimize the community impacts of goods movement on City streets.

7.7 TRAFFIC CALMING

7.7.1 DEFINITION

According to the Institute of Transportation Engineers (ITE), traffic calming is defined as 'the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users'.

Traffic calming has existed for several decades and has not only been demonstrated to significantly reduce negative impacts of motorised vehicles in local neighbourhoods, including lower vehicle speeds and volumes, as well as reduced rate of collision and fatalities in communities.

A successful approach to traffic calming requires a clear policy statement from the City as well as careful consideration of relevant goals and objectives and their relevance to the Camrose community.

The following table is an example of applicable goals and objectives as outlined by ITE.

GOALS	OBJECTIVES
• increasing the quality of life; • incorporating the preferences and requirements of the people using the area (e.g., working, playing, residing) along the street(s), or at intersection(s); • creating safe and attractive streets; • helping to reduce the negative effects of motor vehicles on the environment (e.g., pollution); and • promoting pedestrian, cycle and transit use.	• achieving slow speeds for motor vehicles; • reducing collision frequency and severity; • increasing the safety and the perception of safety for non-motorized users of the street(s); • reducing the need for police enforcement; • enhancing the street environment (e.g. streetscaping); • encouraging water infiltration into the ground; • increasing access for all modes of transportation; and • reducing cut-through motor vehicle traffic.

7.7.2 LOCAL ISSUES

In recent years a number of neighbourhoods in Camrose have reported that they have been experiencing excess traffic on their local residential streets. The causes of this excess traffic are varied and include deficiencies in the existing street network as well as planning for other non-motorised modes. The issues being experienced demonstrate that additional emphasis should be placed on long term local transportation network planning that examines the potential role of new and emerging technologies as well as practical and affordable alternatives to single occupancy vehicles, such as a transit service.

In the case of the West Grandview neighbourhood, Council directed administration in early 2014 to install temporary full-closure street barriers in a number of streets and laneways. City administration has since invested significant resources into monitoring the before and after-effects of this decision. A summary of specific issues experienced in West Grandview both before and after traffic calming solutions were implemented can be found in the separate report to the City, by WSP.

7.7.3 POLICY

A traffic calming policy is an opportunity for the City to state the approach the City intends to take to addressing traffic issues in local Camrose neighbourhoods.

Adoption of a policy would be a practical step to defining a common understanding of what traffic calming is, what role the City and community intends to play in identifying and addressing neighbourhood traffic concerns as well as responsibilities for overseeing and implementing the established traffic calming procedure.

7.7.4 PROCEDURE

A traffic calming procedure provides an open, transparent and engaging process for the City and community members to develop improvements to the local transportation network that improve road safety as well as meet the future mobility needs of Camrosians.

A procedure would provide clear guidance to City and community stakeholders alike on their role in identifying, examining and addressing traffic calming issues; the typical technical and community engagement process in developing solutions; and some guidance on typical timelines in finding traffic calming solutions. The procedure would also give practical effect to the traffic calming policy.

7.7.5 POLICY AND RECOMMENDED STRATEGY

The recent experiences in some communities in Camrose with excess traffic on local streets makes the adoption of a local City traffic calming policy, accompanied by procedures, a practical and sensible approach to traffic calming to address the current and future situation. The traffic calming policy should be a concise community statement that reflects the City's own commitment to its own goals and objectives, while the procedure would allow the City administration to determine the appropriateness of implementing traffic calming, and how to do so, in a particular neighbourhood.