TRANSPORTATION MASTER PLAN 2016

COUNTY OF GRANDE PRAIRIE NO.1

FEBRUARY 2017

WSP

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Final Draft

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EXECUTIVE SUMMARY

The County of Grande Prairie No. 1 (County) is a growing and changing municipality and as a result has updated its Transportation Master Plan (TMP) that was last done in 2010. During the past several years, a number of significant changes have occurred in the County of Grande Prairie including continued growth in the Clairmont urban area, growth in industry, and the announcement of the construction of the next section of Highway 43X as part of a ring road through the recently annexed northwestern part of the City of Grande Prairie.

The change in population, land uses, developments, and economies influences the demands placed on the transportation system and justifies regular updates to Transportation Master Plans. An update to the County's 2010 TMP is the opportunity to reflect the changes in a new master plan document.

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 County. 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 considered necessary for this study. In order to develop a transportation demand model for the County, 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 publically available data and estimates from the County, the Government of Alberta and Statistics Canada. The model was produced using Emme transportation modelling software. The model was designed to estimate traffic on the County's road network for all major roads surrounding the City of Grande Prairie.

This Transportation Master Plan identifies several strategic actions to help the County to continue to develop an effective transportation road network. These strategic actions include:

- Redefining the roadway classifications to better meet the evolving needs of the County and
- Identifying the County roadways that will need investment to serve the projected transportation demand.

The investment recommendations in this TMP are based on both the demand model work and the network planning for the entire County area. This TMP makes several capital recommendations, and further study is required to fully define the transportation corridors and infrastructure elements of investment.

- Demand model based capital investments – roadways and facilities with estimated long term higher traffic volumes
  - Township Road 714 (east of City limits to RR 53) – review the corridor and upgrade all geometric design and traffic control devices to a Primary Roadway.
  - Township Road 712 (RR 63 to RR 65 and RR 54 to RR 55) – review the corridor and upgrade all geometric design and traffic control devices to a Primary Roadway.

- Township Road 710 (RR 63 to RR 64) – review the corridor and upgrade all geometric design and traffic control devices to a Primary Roadway, and Secondary Roadway as shown on the roadway network map.
- Range Road 63 (north of City limits to TWP 722) – review and upgrade corridor to a Primary Roadway four lane capacity condition before the year 2036.

→ Network connectivity based capital investments – roadways and facilities providing regional and community connectivity

- Prioritize this group of roadways for capital investment, in consideration of the existing capital plan, based on a multi-criteria approach including such criteria as existing pavement and structural condition, design consistency with TMP roadway functional classification, traffic volumes, collision history, community advantages and impacts etc.

→ Begin a collision data collection program working with the police for collisions on County owned roadways. Collect as much information as possible on the reason for the collision to help inform the planning and design of potential solutions as warranted.

→ Review the Minimum Design Standards in consideration of the functional roadway classifications and roadway network established in this TMP. Ensure the Minimum Design Standards follow the policy direction of the TMP, and the Minimum Design Standards provide the necessary information to allow the detailed design of roadways, intersections, and associated facilities. The Minimum Design Standards should maintain consistency of design principles with the new 2017 Transportation Association of Canada guidelines and Alberta Transportation guidelines.

→ Review the off-site levies bylaw in consideration of the functional roadway classification and roadway network established in this TMP adding clarity to the bylaw and strengthening this source of municipal revenue.

→ Require, under the direction of the development authority, subdivision and development permit applicants to submit a supporting transportation impact assessment (TIA) with the application. TIAs should cover private vehicles and the movement of larger vehicles for the delivery of goods. Follow the Alberta Transportation Traffic Impact Assessment Guideline on the Alberta Transportation website. Under the direction of the development authority, require applicants to invest in infrastructure upgrades, consistent with the TIA, as part of the subdivision and development approval process.

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1 INTRODUCTION

The County of Grande Prairie No. 1 (County) is a growing and changing area and as a result is updating its Transportation Master Plan (TMP) that was last done in 2010. Regular updates to TMPs are important and recommended as population, land uses, developments, and economies change with time and these changes influence the demands placed on the transportation system. Keeping aware of these changes and the resulting effects on the transportation system are necessary steps to take in a comprehensive and critical municipal planning process.

A number of significant changes have occurred in the past ten years in the County: the Clairmont urban area has continued to urbanize, existing industries have grown, and jurisdiction over a number of lands and roads has changed. Most recently, the Province of Alberta announced its intention to construct the next section of Highway 43X as part of a ring road through the recently annexed northwestern part of the City of Grande Prairie from Highway 43 to west of Range Road 63. Once built, this will have the effect of redistributing existing traffic as well as introducing new traffic on the County's existing transportation system in the areas surrounding the highway. An update to the TMP is a timely opportunity to reflect these changes in a new master plan document.

Figure 1-1 Rural Roadways of the County of Grande Prairie

Source: Google Earth

2 PURPOSE OF A TRANSPORTATION MASTER PLAN

2.1 PURPOSE

The purpose of a TMP is to guide the development of an integrated transportation system that serves the whole County. Since the previous TMP completed in 2010 provided comprehensive analysis of the Clairmont area, this TMP will focus on the areas outside the Clairmont area. The TMP should have clear information, 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 should seek to include stakeholder and public feedback.

The Province of Alberta has passed the City Transportation Act (Act). Though it uses the word “city”, much of the content and intent of the legislation is applicable to counties and rural areas. The Act states that a city must prepare a comprehensive TMP that serves the needs of the entire city. This legislation forms the backbone of local 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 roads and infrastructure
- Integrate with other County plans, strategies, and planning documents
- Differentiate short and long term improvements
- Coordinate with the regional transportation network
- Provide a goods movement network that will facilitate economic development

3 GUIDING PRINCIPLES

3.1 PURPOSE OF GUIDING PRINCIPLES

Guiding principles are an important part of a 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 County of Grande Prairie articulated primarily in the Municipal Development Plan, and on other works in the literature.

3.2 OBJECTIVE STATEMENT

The County of Grande Prairie will develop and maintain a transportation network that serves the needs of the County in the most efficient, effective, and safe way.

3.3 GUIDING PRINCIPLES

- The County will have an **integrated transportation network** that serves all people. All modes of transportation are included in the long term integrated transportation network. Due to the largely rural nature of the County, most areas and roads prioritize driving and the movement of people in motor vehicles.
- Road safety principles will be an important element in all transportation planning and design. The County will consider Alberta Transportation's Traffic Safety Plan 2015 that uses a **Safer System Approach to roads**. The Safer System Approach says that loss of life, or permanent disability, should not happen in the road system.
- The transportation network **moves people and goods in the most efficient and cost effective manner** while minimizing associated negative impacts. These impacts may include environmental emissions, land acquisition for new road facilities, or community impacts during road upgrade projects.
- The Transportation Master Plan helps the County plan for a future of integrated land use and transportation planning and provides a **framework to allocate capital, operational, maintenance, and asset management investments**.

4 STAKEHOLDER FEEDBACK

4.1 STAKEHOLDER WORKSHOP

The stakeholder workshop was a half day meeting held with County representatives on May 19, 2016, at the County offices in Clairmont. The meeting sought to:

- Gather information on existing conditions, gain County insights into common origins and destinations of traffic within the County, and discuss key transportation issues with County staff;
- Understand which projects identified in the previous TMP have been completed or will be completed soon; and
- Seek feedback from County staff on key transportation modelling inputs, particularly population and employment estimates used for Area Structure Plan analysis.

In addition to the above, discussions were held concerning major land use changes since the previous TMP. The stakeholder workshop also confirmed that there was a need to use population and employment assumptions, due to limited data, in order to complete the modelling exercise.

4.2 FEEDBACK

The feedback gathered from the stakeholder workshop included:

- Anticipated changes to responsibilities for certain roads in the County;
- Confirmation of major land use changes and long term development assumptions used; and
- Likely industrial developments over time and desired road network upgrades to support those industries.

This feedback has been incorporated into the existing conditions analysis.

5 WHERE ARE WE NOW?

5.1 POLICY

The below background documents were reviewed in the preparation of this TMP.

5.1.1 COUNTY STRATEGIC PRIORITIES / STRATEGIC PLAN 2014 – 17

The County maintains a strategic planning process to assist with prioritizing County resources. The Strategic Plan "is intended to provide any interested persons or organizations a brief overview of the County's vision, values and strategic themes" over the period 2014-17. The five main themes include "Thinking Regionally; Providing Quality Municipal Services and Infrastructure; Encouraging Community Development Across the Region; Managing Economic Development Across the County; and Promoting Environmental Stewardship".

The plan also contains thirteen strategic topics including "Road Network Planning". Within the Strategic Priorities Chart (April 2016), the TMP is listed as a strategic priority for the County's Public Works Department in 2016.

5.1.2 MUNICIPAL DEVELOPMENT PLAN

The Municipal Development Plan's (County Bylaw 2360) stated purpose is to "provide policy and guidance to the staff, the public on how to evaluate any [land use, subdivision or development] proposal". The plan was adopted in 1998 and last updated in 2011. The plan has a 20 and 50 year timeframe and sets out a public involvement process for development decisions.

The statutory requirements of a Municipal Development Plan are set by the Municipal Government Act and include the specific requirement to address "the provision of the required transportation systems either generally or specifically within the municipality and in relation to adjacent". As far as transportation is concerned, the Municipal Development Plan seeks to fulfill this requirement by:

- Developing the following policies for Clairmont urban area, including:
  - A future land use concept;
  - A recommended future urban and rural road network;
  - A recommendation that "a preliminary road hierarchy be investigated as part of the TMP";
  - Prohibiting urban and rural land use development on "lands needed for future interchanges and overpasses";
  - Emphasizing the need for a TMP "to provide the County and Province of Alberta with direction with regard to planning access / egress points to and from these highways"; and
  - Recommending a new roads hierarchy be adopted as part of the TMP.
- Developing County-wide transportation policies that, among other things:
  - Identify a County (rural) Road Network (Map 5) with Road Classifications (Policy 10.1);
  - Institute an approval process for subdivision and development as it relates to road-based transportation (Policy 10.10);

- Require road development that is consistent with Servicing Standards adopted by the County (Policies 10.8 and 10.9); and
- Require a developer "to contribute a transportation levy to assist with the upgrading of roads in the County caused by the increase in traffic due to subdivision or development" (Policy 10.4).

5.1.3 TRANSPORTATION MASTER PLAN 2010

The 2010 Transportation Master Plan sought to assess the County's transportation needs for 10 and 30 year time horizons. It responded to the major land use changes at the time including "substantial residential, commercial, and industrial growth in the County's Area Structure Plans, specifically Clairmont area and the current development of the County".

The primary objective of the 2010 TMP was "development of a traffic demand-forecasting model, which will be used to estimate vehicle travel demands and related infrastructure requirements for future planning horizons".

A secondary requirement was the "provision of conceptual cost estimates of the proposed improvements in the TMP to meet the growth projection plan".

Other recommendations included revisions to the County's Transportation Levy By-Law 2702, which was subsequently adopted in 2013 and a functional plan for the Bauman Road extension from the intersection of Highway 43 / Range Road 55 to the intersection of Highway 43 / Range Road 63.

The TMP included the following guiding principles:

1. "A well designed and accurate traffic forecasting model" and
2. "Context Sensitive Design for the functional design of recommended highway improvements".

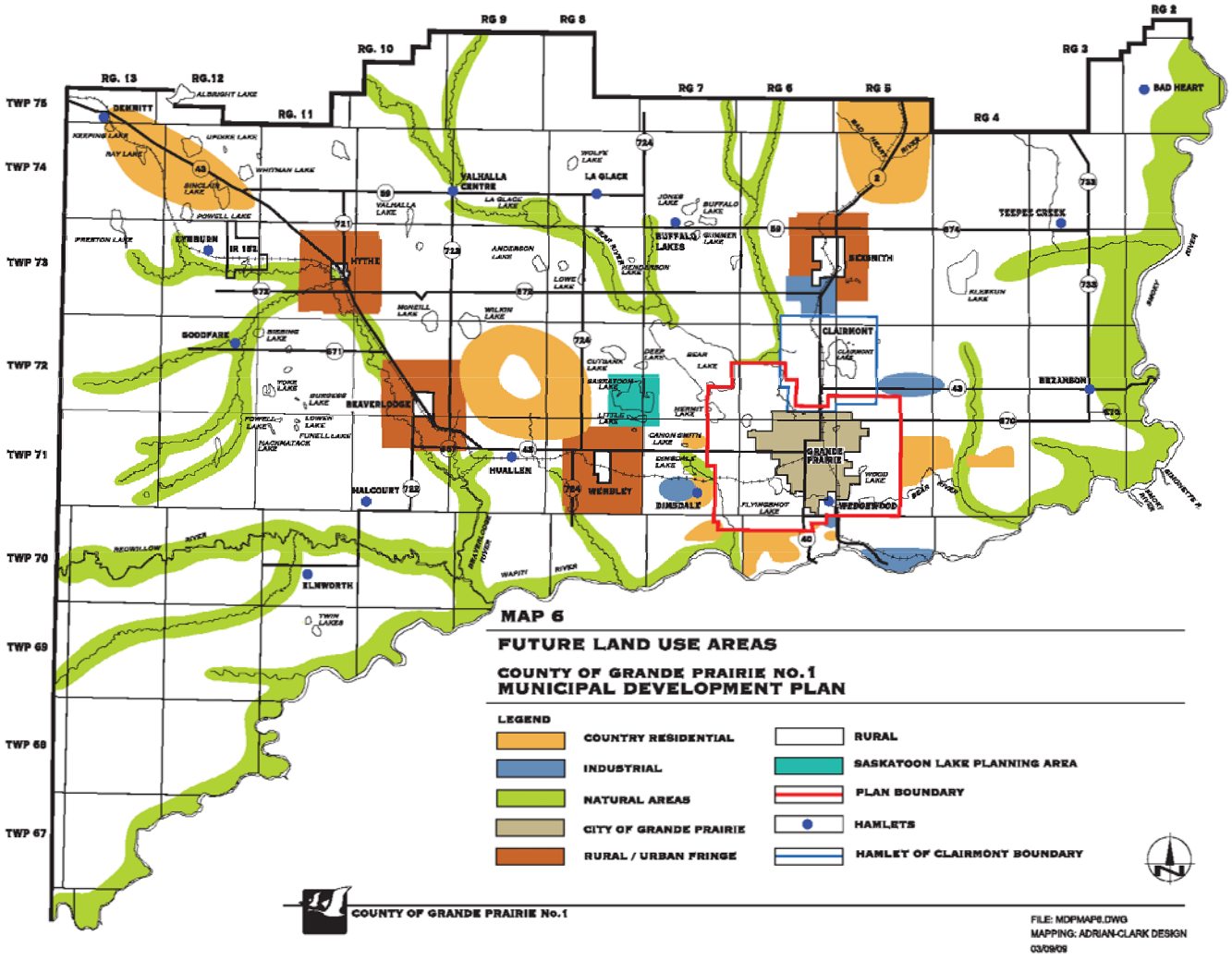
The 2010 plan's final recommendations were based on an examination of existing network conditions as well as development of a traditional 4-step traffic model that forecasted traffic growth for 10 and 30 year horizons. The model inputs were based on known spatial estimates of population and employment data as well as existing traffic volumes. The outputs to this model were then used as the technical justification for the bulk of the recommended capital improvements.

The traffic model was built by dividing up the County into 74 internal traffic zones, 4 traffic zones within the City of Grand Prairie and 4 external zones for trips generated outside of the study area. The 74 internal traffic zones included residential, agricultural and industrial land uses both in urban and rural areas. The rural lands were predominately of agricultural use, and the residential lands located in the rural areas mostly included rural estates.

5.2 LAND USE

The future land use areas from the Municipal Development Plan are shown in Figure 5-1 Land Use on the next page. This figure serves to generally show the existing land use pattern in the County, and the policy direction for future land uses.

Figure 5-1 Land Use



Source: Municipal Development Plan

5.3 EXISTING ROADWAY SYSTEM

5.3.1 TRANSPORTATION SYSTEM KEY CHARACTERISTICS

The transportation system in the County consists primarily of a network of roads and railways. The levels of existing transportation infrastructure levels vary significantly across the County. At a whole of County level, one of its most dominant transportation features is the highly symmetrical quarter section grid system of roads running east-west every 1 mile (1.61 km) and north-south every 2 miles (3.22 km) that can be found in many parts of rural Alberta. This forms part of a settlement pattern that was established in the earlier part of the twentieth century. Range roads run north-south while township roads run east-west.

The Clairmont Urban Area is an example of a community where urban development has sought to maintain existing range roads and township roads, but has also introduced a localized road network of collectors and arterials to connect and supplement the existing grid system within an area that is being increasingly urbanized.

5.3.2 ROADWAY NETWORK

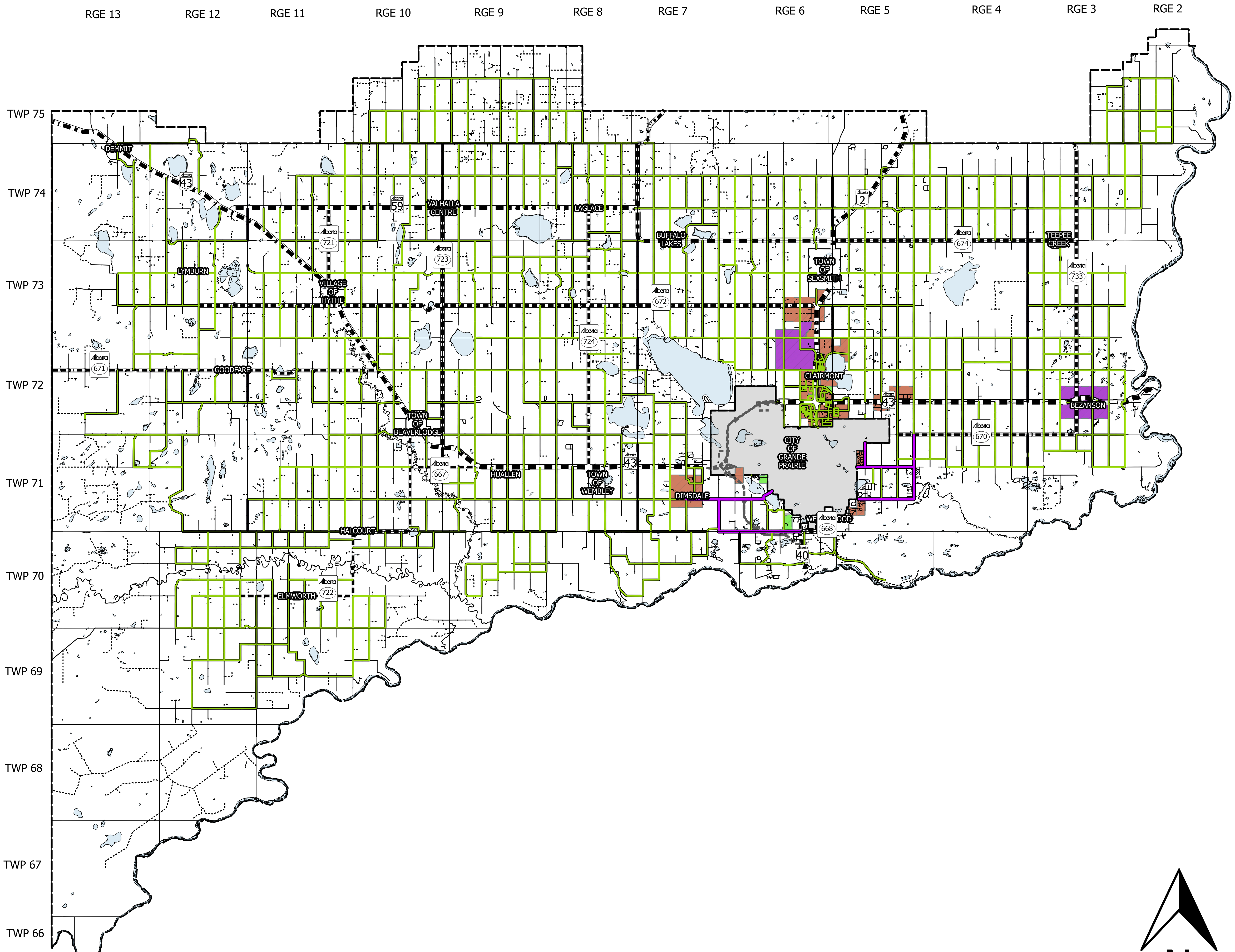
The varying levels and types of transportation infrastructure in the County's existing road network gives rise to a degree of complexity in long range network planning considerations.

This situation has arisen due to a number of factors such as:

1. A substantial municipal road-based transportation network supported by a relatively low population base. This results in a need to ration existing County transportation resources carefully;
2. The presence and importance of many provincial highways owned and operated by Alberta Transportation that are intended to carry greater loads and volumes of traffic than County roads;
3. The City of Grande Prairie being a major urban centre and situated as an area entirely within the County's boundaries; and
4. The continued urban development of the expanding Clairmont urban area and the resulting urban road infrastructure needs in what is otherwise a rural-based County.

The County has 3,642 km of existing roadways that it owns and maintains. Figure 5-2 shows the existing roadway network.

Figure 5-2 Existing Roadway Network



Legend

Provincial Road Network
- Highway - Primary
- Highway - Secondary
- Highway 43X Extension

County Road Network
- Arterial
- Collector
- Local
- Other
- Unknown

Area_Structure_Plans
- Adopted
- Pending
- Proposed

Water bodies
- Lakes

County of Grande Prairie

Transportation Master Plan

showing

Existing Road Hierarchy

Scale 1:700,000

4 0 4 8 12 16 20 km

T: 2016ExistingRoadNetworkHierarchy C: Template11x17.qpt

5.3.2.1 EXISTING CLASSIFICATIONS

The County's existing road based transportation network consists of:

1. Primary Highways
2. Secondary Highways (Paved and Gravel)
3. Arterial Roads
4. Collectors

Primary highways managed by the Province include:

1. Highway 43, a four lane divided highway running east west through Clairmont operating mostly as a divided rural highway in the County and as an urban arterial road through the City of Grande Prairie. This highway forms part of the CANAMEX corridor, the transcontinental highway route between Mexico and Alaska.
2. Highway 2, a four lane divided highway running north of Clairmont towards and beyond Sexsmith as a divided highway and intersecting with Township Road 720, 723, 724 and 732.
3. Highway 40, a four lane divided highway running south from the border of the City of Grande Prairie towards the Wapiti River and intersecting with Township Road 710.
4. Highway 43X, a four lane divided highway currently running west of Clairmont to Township Road 722 and ultimately destined to be part of a ring road around the City of Grande Prairie.

A number of the intersections between provincial highways and County roads are considered particularly important for road safety, capacity and goods movement purposes.

The Government of Alberta has recently (early 2016) announced $54m in funding to extend Highway 43X to Range Road 71 and connect to Highway 43 west of Grande Prairie Regional Airport. This is expected to be constructed between 2017-18.

As the Grande Prairie region continues to urbanise, traffic levels are expected to rise and trigger the need for additional road infrastructure to increase road system capacity, particularly at a number of busy intersections and on arterial roads and highways.

The secondary highway network is made up of:

1. Highway 668, running east-west between Resources Road and Highway 40 immediately south of the City of Grande Prairie.
2. Highway 670 (Feedmill Road), a two way road running 3.5 km south from Bezanson and then east-west to the Albinati Industrial Area parallel to Highway 43.
3. Highway 671 (Goodfare Road), an east-west, two lane paved highway running north of Beaverlodge to the British Columbia border.
4. Highway 672 (Emerson Trail), an east-west, two lane paved highway running south of Lymburn to Highway 43 south of Sexsmith.
5. Highway 721, a north-south, two lane paved highway running 13 km north of the Village of Hythe.
6. Highway 722, a two lane highway south of Beaverlodge running towards Halcourt and Elmworth.
7. Highway 723, a two lane highway running from Valhalla in the north to Beaverlodge in the south.

8. Highway 724, a two lane highway running from La Glace in the north to Wembley in the south.
9. Highway 733, a two lane highway running from Wanham in the north to Highway 670 in the south.

5.3.3 GOODS MOVEMENT NETWORK

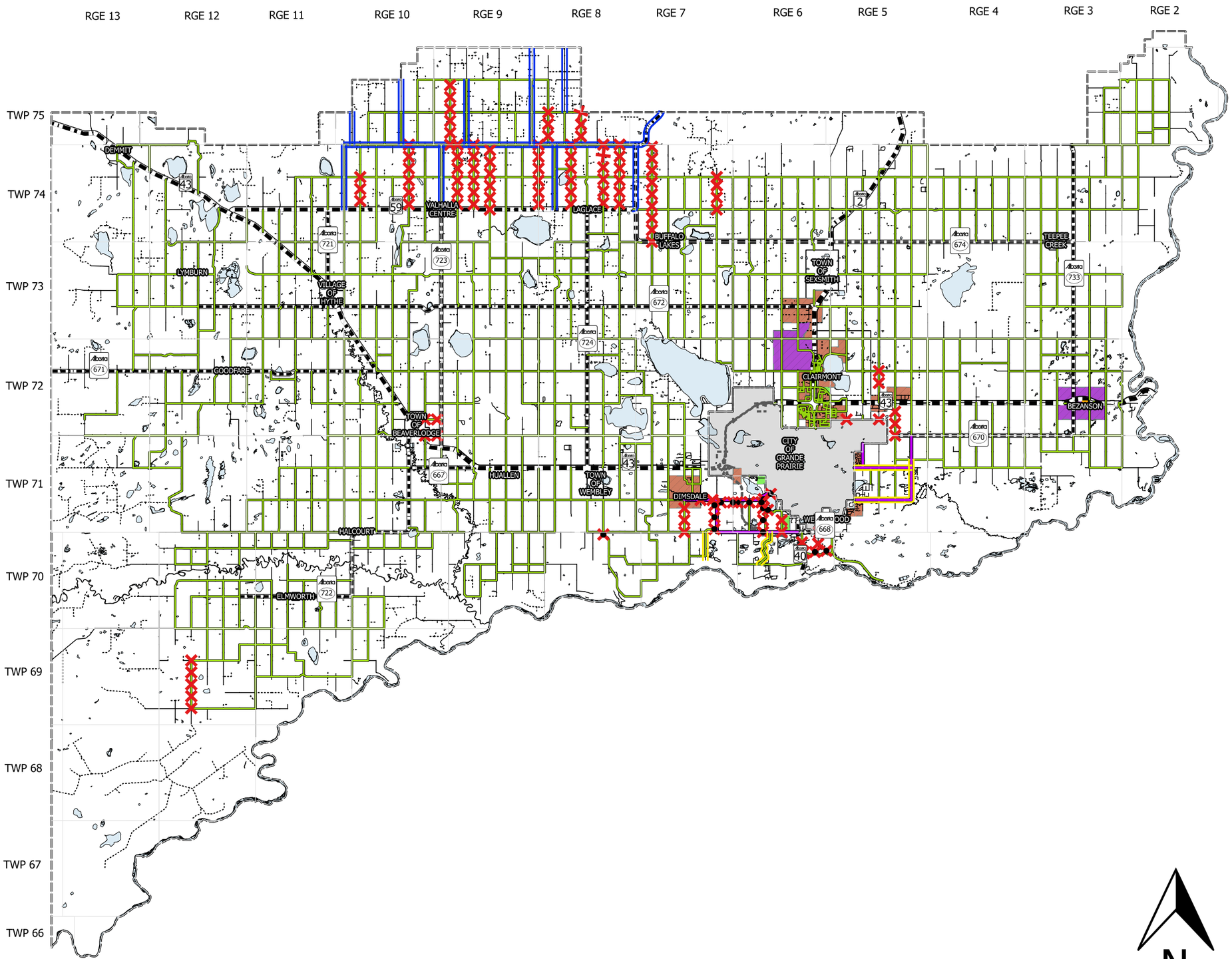
The County's transportation system includes a rail-based freight network and a road-based goods movement network. Provincial highways act as the backbone of the County's road-based freight network as these highways are typically built to higher design standards that allow for faster speeds and are generally better suited to truck and other heavy goods traffic.

The County's approach towards goods movement has been to allow 100% axle weight loading on all gravel roads except as posted, 24 hours a day. However the County continually monitors road conditions and implements road bans via regular updates to its *Vehicle Weight Order 1610* pursuant to Bylaw 3000 *Road Bans and Restricted Bridges Bylaw*. This works in concert with the County's Traffic Bylaw (Bylaw 3024), section 6.0 '*Special Classes of Vehicles*', which allows the County to enforce road bans on proclaimed roads.

The need for road bans in the County is largely dependent on prevailing seasonal weather conditions. Mild fall and spring conditions give rise to wet roads which make roads very soft and susceptible to rapid deterioration with excess loads. Most road bans are seasonal in nature, however some are in place permanently. The northwest corner of the County north of Highway 59 between Range Roads 70 and 110 present particular challenges. In this area the County has identified a network of preferred east-west and north-south truck routes stemming from Township Road 750.

The County's response to managing road deterioration caused by heavy vehicles has been to implement 50% and 75% weight bans as well as a proclaimed permit regime for trucks on certain roads and total bans for trucks on other roads as updated from time to time in the Vehicle Weight Order. An overview of these affected roads is given in Figure 5-3 Existing Goods Movement Network.

Figure 5-3 Existing Goods Movement Network



Legend

Provincial Road Network
- Highway - Primary
- Highway - Secondary
- Highway 43X Extension

County Road Network
- Arterial
- Collector
- Local
- Other
- Unknown

Area_Structure_Plans
- Adopted
- Pending
- Proposed

Water bodies
- Lakes

Truck Network and Restrictions
- 50% Road Ban
- 75% Road Ban
- Non-Truck Route
- Non-Truck Route - Permit Required
- Truck Route

County of Grande Prairie

Transportation Master Plan

showing

Existing Goods Network

Scale 1:700,000

4 0 4 8 12 16 20 km

T: 20161214-ExistingGoodsNetwork | C: Template11x17.qpt

5.3.4 RAILWAYS NETWORK

Alongside the existing road based network exists two freight train lines stretching north-south from the Wapiti River in the south to in the north as well as from the City of Grande Prairie largely following Highway 43 up to Hythe along the Alberta / British Columbia provincial border. These railway lines, currently operated by Canadian Pacific (CP) are only considered part of the scope of this TMP insofar as they affect road based traffic at at-grade crossing intersections.

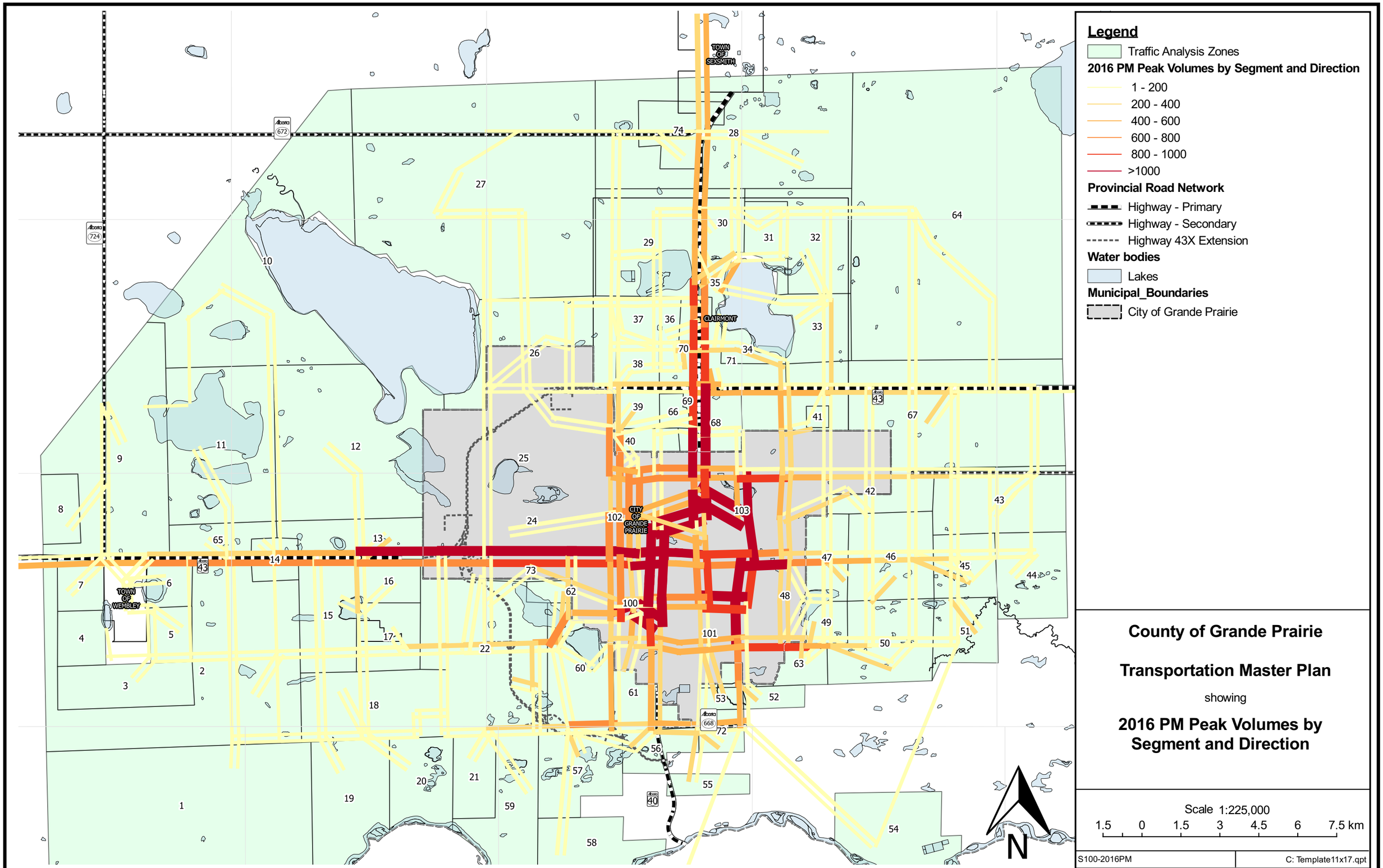
5.4 EXISTING TRAFFIC VOLUMES

Roadway networks in typical 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 the County of Grande Prairie. Figure 5-4 Existing Traffic Volumes illustrates the existing pm peak hour traffic volumes on major roadways. As indicated on the figure, Highway 2 and Highway 43 carry the highest traffic volumes especially in the sections in close proximity to the City of Grande Prairie. Highway 2 runs in the north-south direction and Highway 43 provides an east-west connection. Both of these highways pass through the City of Grande Prairie. Other busy roads within the County include Township Road 710, Township Road 712, Township Road 714, and Range Road 63. All these roadways which provide connections to / from the City of Grande Prairie have the highest traffic volumes in the County.

5.5 EXISTING TRAFFIC OPERATIONS

Figure 5-5 Existing Traffic Operations illustrates traffic operations measured through volume to capacity ratios (v/c) on major roadways within the County of Grande Prairie. As indicated on the figure the majority of roads operates with v/c ratios of less than 0.50 which is indicative of very good operating conditions and high levels of service on these roadways. As it can be seen on Figure 5-5 Existing Traffic Operations, there are some links that provide access to / from the City of Grande Prairie that are currently experiencing some levels of congestion such as Highway 2, Highway 43, Township Road 710, Township Road 712, Township Road 714, and Range Road 63.

Figure 5-4 Existing Traffic Volumes



County of Grande Prairie

Transportation Master Plan

showing

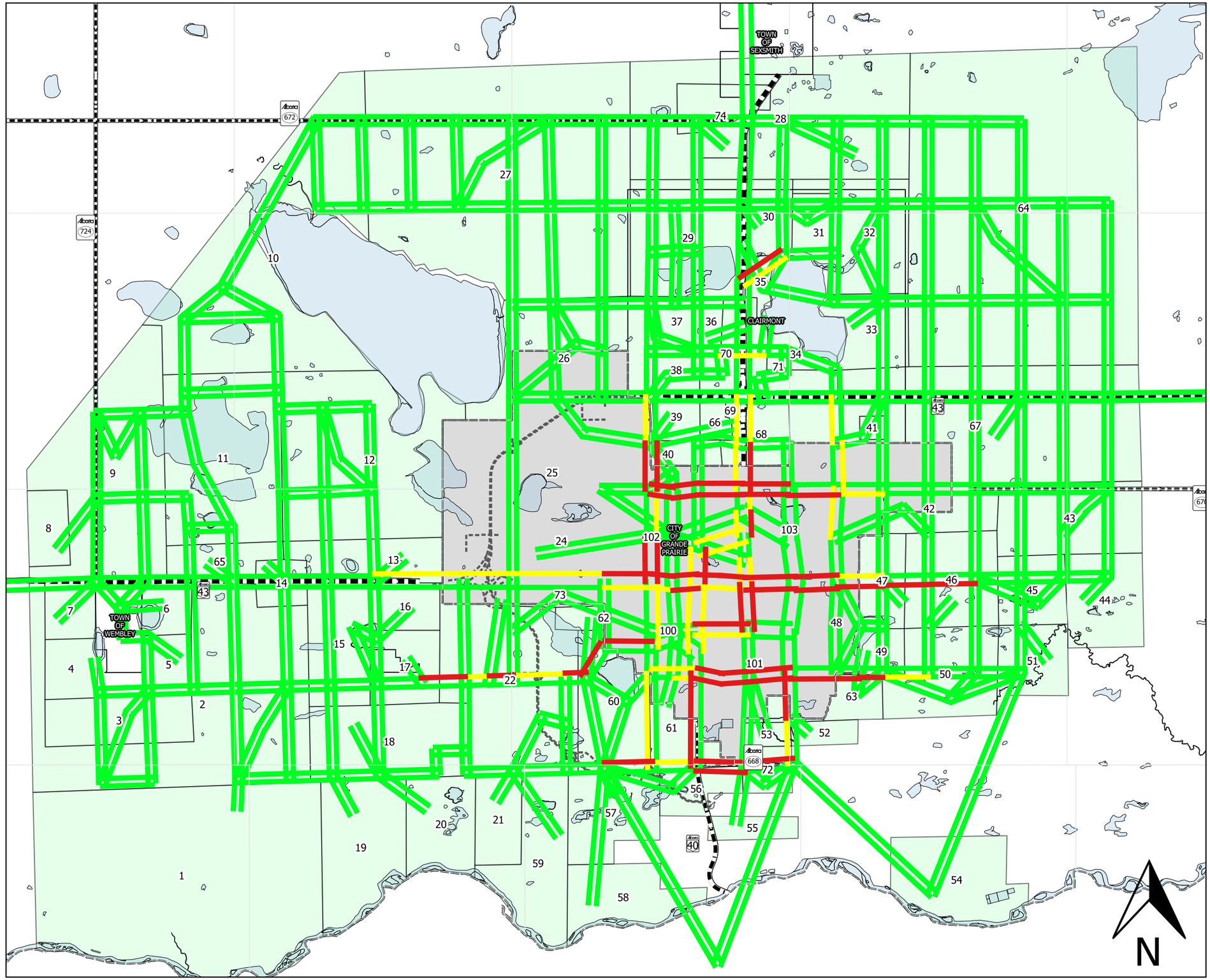
2016 PM Peak Volumes by Segment and Direction

Scale 1:225,000

1.5 0 1.5 3 4.5 6 7.5 km

S100-2016PM | C: Template11x17.qpt

Figure 5-5 Existing Traffic Operations



Legend

- Traffic Analysis Zones

VCR

- 0.00 - 0.40
- 0.40 - 0.60
- 0.60 - 1.50

Provincial Road Network

- Highway - Primary
- Highway - Secondary
- Highway 43X Extension

Municipal Boundaries

- City of Grande Prairie

Water bodies

- Lakes

County of Grande Prairie

Transportation Master Plan

showing

2016 PM Peak Estimated Volume to Capacity (v/c) Ratio

Scale 1:235,000

1.5 0 1.5 3 4.5 6 7.5 km

S100-2016PM_VCR_enlargedsscale | C: Template11x17.qpt

6 WHERE ARE WE GOING?

6.1 LAND USE PLANS

The following information related to future land use assumptions was used in the development of the demand model and resulting roadway network.

The County provided the following Area Structure Plans (ASPs):

- Dimsdale ASP
- West Mountview ASP
- Cowan ASP
- Tatonka ASP
- Balderston ASP
- Bacon ASP
- Crosslink ASP
- Lakeside ASP
- Clairmont Heights ASP
- Mercer Hill ASP
- Northwest Clairmont ASP
- Taylor Estates ASP
- Bezanson ASP
- Althon Cor.
- Balisky-Hodges
- Cariage Land
- Correction Line
- Crossroads North
- Crossroads South Ph1
- Crossroads South Ph2
- Emerson Trail
- West Clairmont
- Mc Kena
- West Kehr Althen
- Correction Line West

The Municipal Development Plan (Bylaw No. 2360) provides the following future land use areas:

1. Country Residential:
- → Along Hwy 43 in the vicinity of Demmitt
- → Along Hwy 2 in the County north boundary
- → Around the City of Grande Prairie on its east, west and south boundaries

2. Rural / Urban Fringe:
- → Around Hythe
- → Around Beaverlodge
- → Around Wembley
- → Around Sexsmith

3. Industrial:
- → Southwest of Dimsdale
- → Southwest of Sexsmith
- → East of Clairmont along Hwy 43
- → Southeast of the City of Grande Prairie along Township Road 704A / 703A

4. Special:
- → Saskatoon Lake planning area

6.2 FUTURE GROWTH

6.2.1 BACKGROUND

A key input to the development of a transportation model for the County was a long range 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.

The model was produced using Emme transportation modelling software. The model was designed to estimate traffic on the County's road network for all major roads surrounding the City of Grande Prairie for a radius of up to 46 km, based on the geography of the existing County model.

6.2.2 GROWTH

Future population and employment growth estimates that were used as inputs to the model were produced using a range of publically available data and estimates from the County, 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 County boundaries in consultation with relevant County stakeholders; and
3. Estimate population and employment for each of the horizon years (2021 and 2036) taking account of the above.

6.2.3 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 sources such as the Federal Census (Statistics Canada 2011) as well as the 2016-2041 Alberta Population Projections (Alberta Treasury Board and Finance 2016).

In the case of the Alberta Population Projections, three scenarios exist (low, medium and high growth). Publically available estimates are produced at a Census district statistical geography level, which typically consist of multiple municipalities. Census District 19 'Grande Prairie' encompasses the Counties of Grande Prairie, Saddle Hills, Birch Hills as well as the Municipal Districts of Spirit River, Fairview, Peace and Smoky River as well as the City of Grande Prairie.

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 78 Traffic Analysis Zones (TAZs) including 4 within the City of Grande Prairie – see Figure 6-1 Traffic Analysis Zones. Localized estimates for population and employment were produced by apportioning the recorded 2011 Census population and employment data for each census dissemination area to each of the 78 traffic analysis zones and applying a growth factor based on the medium growth scenario in the Alberta Population Projections to arrive at a 2016 population benchmark.

6.2.4 ASCERTAINING ANTICIPATED SIGNIFICANT LAND USE CHANGES OVER TIME WITHIN THE COUNTY BOUNDARIES

Informal discussions with County representatives determined a number of areas within the area subject to the transportation model that were likely to undergo significant changes to land use over time. These included significant residential developments in the next 5-20 years such as Clairmont Heights ASP (TAZs 30, 31 and 32), Tatonka and Dimsdale (TAZs 15, 16 and 17) as well as significant commercial and industrial developments such as Cowan, Balderston, Crosslink, Northwest Clairmont (TAZ 29) and Bacon ASPs. Where population growth estimates existed, a number of adjustments were made to the inputs to the modelling exercise.

6.2.5 ESTIMATING POPULATION AND EMPLOYMENT FOR EACH OF THE HORIZON YEARS

The final step in the process in following the above methodology was to develop spatial estimates of population and employment for each of the 78 Traffic Analysis Zones (TAZs) based on current day estimates (2016) as well as estimates for the two modelling horizons: 2021 (5 years), and 2036 (20 year horizon).

6.2.6 ESTIMATED CURRENT DAY (2016) POPULATION AND EMPLOYMENT

At the whole of County level, the population growth forecast adopted for the period 2011-16 was 9.6%. Population data used was adopted from the 2011 Census, whilst employment estimates were developed by apportioning whole of County employment to each of the TAZs. This resulted in an overall average employment to population ratio of 0.61 jobs/persons. The final population estimate used for the year 2016 was 74,405 persons and 45,256 jobs for the entire area covered by the model, including the City of Grande Prairie zones. Population and jobs within the area of the model covered by the County only was 14,090 persons and 12,792 jobs. See Figure 6-2 2016 Estimated Population and Employment

Figure 6-1 Traffic Analysis Zones

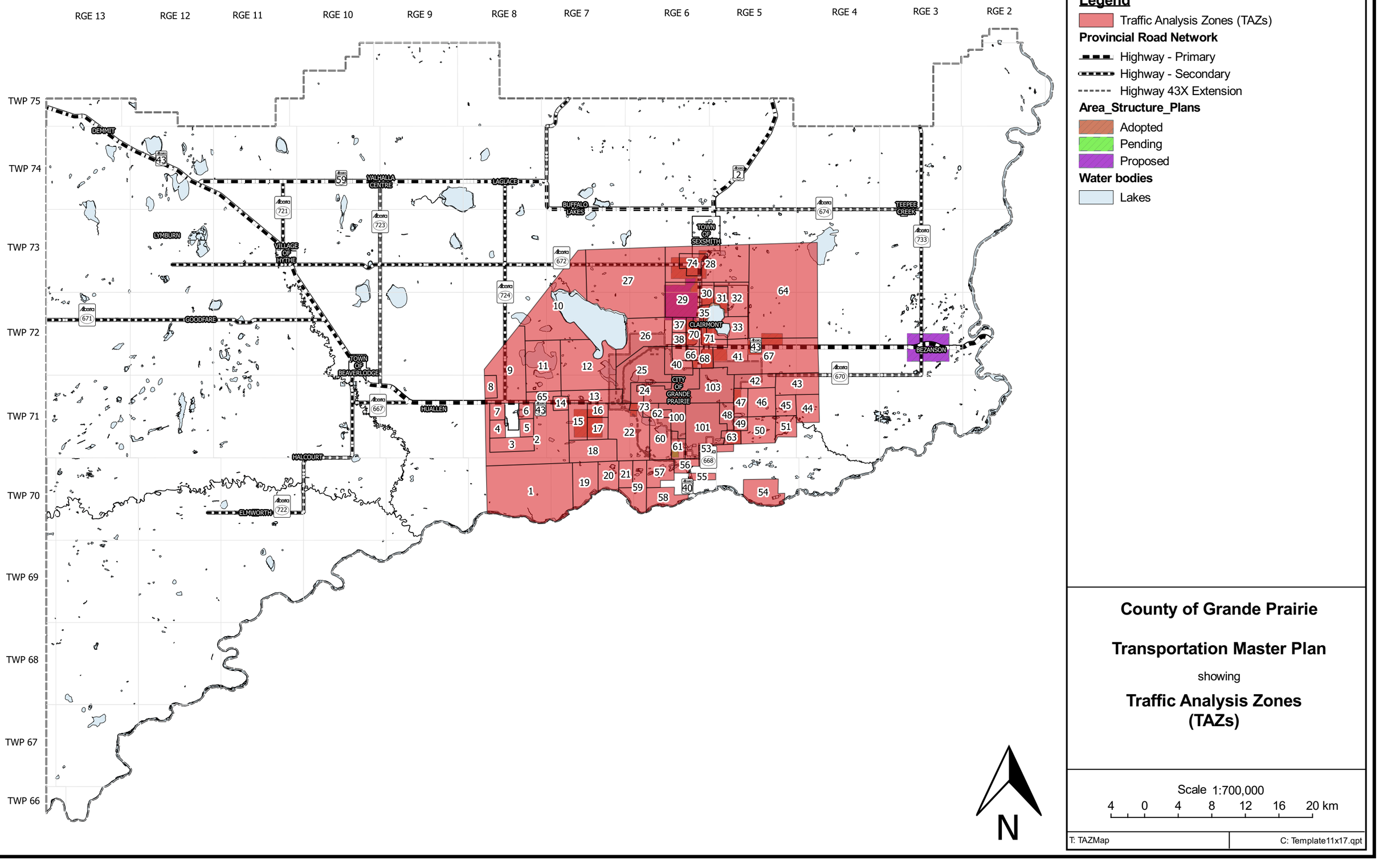
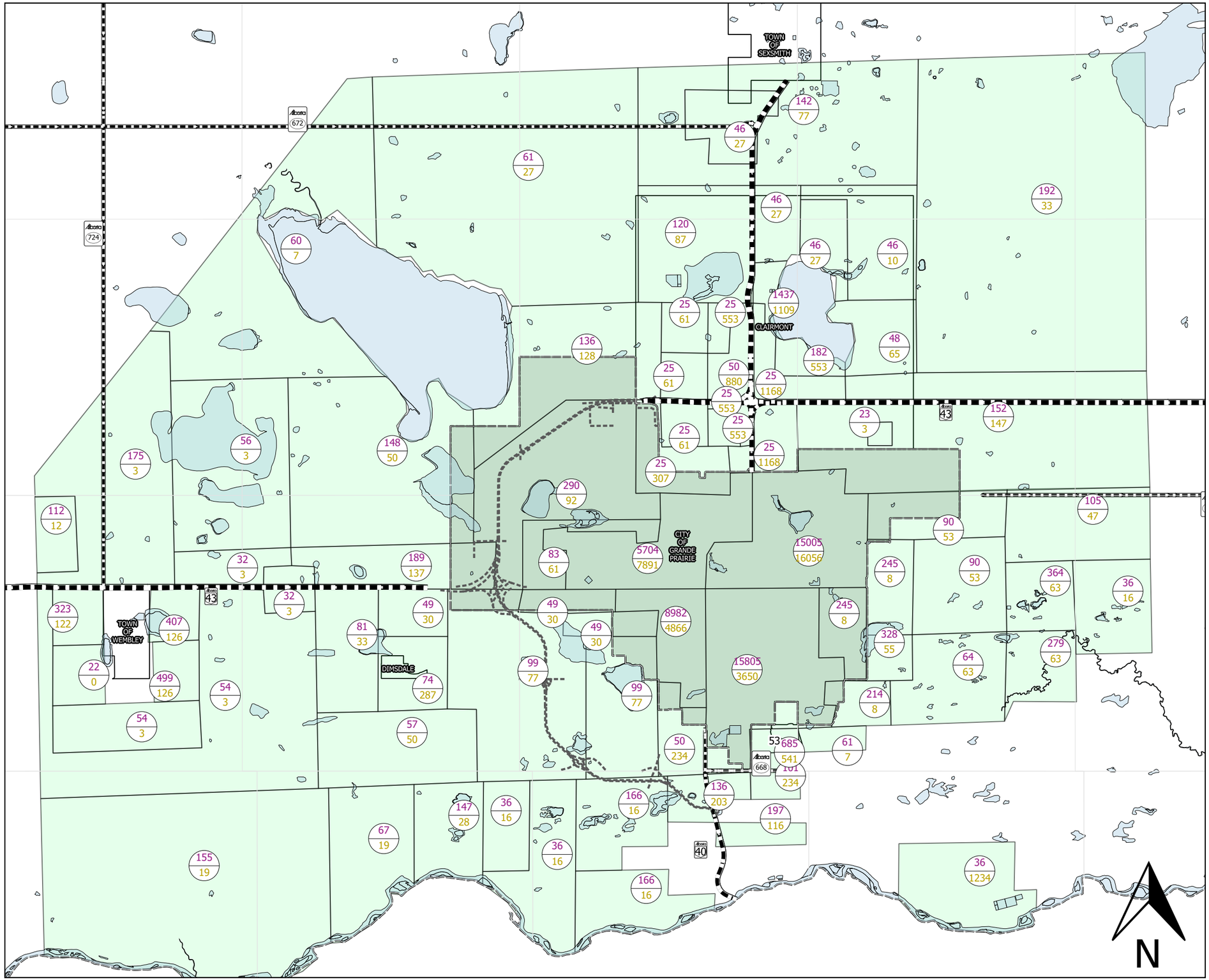


Figure 6-2 2016 Estimated Population and Employment



Legend

- Traffic Analysis Zones
- 2016_PopulationRnded
- 2016_EmploymentRnded

Provincial Road Network

- Highway - Primary
- Highway - Secondary
- Highway 43X Extension

Water bodies

- Lakes

Municipal_Boundaries

- City of Grande Prairie

County of Grande Prairie

Transportation Master Plan

showing

2016 Estimated Population and Employment by Traffic Analysis Zone (TAZ)

Scale 1:235,000

1.5 0 1.5 3 4.5 6 7.5 km

S100-2016pop&emp | C: Template11x17.qpt