



Preferred Land Use Concept

Final Land Use Concept & Implementation Plan

March 18, 2021



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1 INTRODUCTION

1.1 Purpose

The purpose of this report is threefold. First, this report presents the Preferred Land Use Concept that has been developed as part of the Tri-Municipal Region's Regional Plan, which is a land use concept that reflects the preferred 40-year growth pattern of the Tri-Municipal Region. Second, this report provides a qualitative and quantitative analysis of the Preferred Land Use Concept from a policy alignment, land use, accessibility, and financial viability / performance perspective. Finally, this report includes an Implementation Plan that provides high-level strategic direction that could be implemented by the Tri-Municipal Region partners to facilitate the realization of various components of the Preferred Land Use Concept.

1.2 Report Structure

This report has been structured into six sections, which are as follows:

Developing the Preferred Land Use Concept

This section outlines the iterative process that took place to develop the Preferred Land Use Concept, its intended purpose, how it will be incorporated within the Tri-Municipal Region's Regional Plan, and how it reflects the growth of the Tri-Municipal Region over the course of the next forty years.

Preferred Land Use Concept

This section provides a description of the Preferred Land Use Concept from a holistic standpoint, along with details regarding how residential, industrial, and commercial development have been distributed throughout the Tri-Municipal Region.

Evaluation Framework

This section provides an overview of the evaluation framework that has been created to analyze and assess the qualitative and quantitative results of the Preferred Land Use Concept. This overview includes the categories in which the Preferred Land Use Concept has been analyzed, the evaluation metrics for each of those categories, and how each of those metrics have been defined.

Preferred Land Use Concept Evaluation

This section provides an analysis of the Preferred Land Use Concept utilizing the evaluation framework, from both qualitative and quantitative perspectives.

Implementation Plan

This section is comprised of the Implementation Plan component of this project, which provides high-level strategic direction that could be implemented by the Tri-Municipal Region partners to facilitate the realization of various components of the Preferred Land Use Concept.

Financial Viability Analysis

The complete Financial Viability Analysis prepared for this phase of the project has been included in Appendix A of this report. It includes a high-level overview and detailed summation of the financial viability and performance of the Preferred Land Use Concept.

1.3 Report Limitations

The level of analysis that is included within this report is reflective of analysis of various qualitative and quantitative metrics. This level of preliminary analysis is meant to illustrate the various components and outcomes of the Preferred Land Use Concept but does not address the finer grained details of the various land use components.

The level of information that has been prepared for this report is in alignment with the level of detail that is typically included within a regional plan and has been agreed upon by the Tri-Municipal Administration Committee. As is the case, the land use designations illustrated on the Preferred Land Use Concept illustrate the dominant land uses for a given area, and do not reflect more granular details such as proposed housing type, individual parcels, and lotting. With regards to the timing of development, this is not illustrated on the Preferred Land Use Concept but has been included in Appendix B for information purposes only. Furthermore, it is important to note that the majority of lands identified for development over the course of the Tri-Municipal Regional Plan have already been planned through adopted statutory plans, including various Area Structure Plan (ASPs) and Municipal Development Plans (MDPs). Due to this fact, these previously approved plans have placed limitations on the development concept that has been developed as a result of this project as any deviations to previously approved plans would require amendments to them. This notion is difficult to achieve as development rights have been conferred to landowners through these approved plans, and it would require consent from the landowners to propose amendments to the respective statutory plans.

2 DEVELOPING THE PREFERRED LAND USE CONCEPT

2.1 What is the Preferred Land Use Concept?

The Preferred Land Use Concept has been prepared as part of the Tri-Municipal Region's Regional Plan with the purpose of reflecting the preferred 40-year growth pattern of the Tri-Municipal Region and its respective municipalities. The Preferred Land Use Concept illustrates this preferred growth pattern from a residential and employment perspective, with the employment designation encompassing both industrial and large format commercial development.

The Preferred Land Use Concept has been developed for a defined study area within the Tri-Municipal Region encompasses an area totaling approximately 60,732 hectares. The study area is defined by the following boundaries (see Figure 1 for the study boundaries):

North: Parkland County / Sturgeon County Boundary

East: City of Edmonton / Enoch Cree Nation Boundary

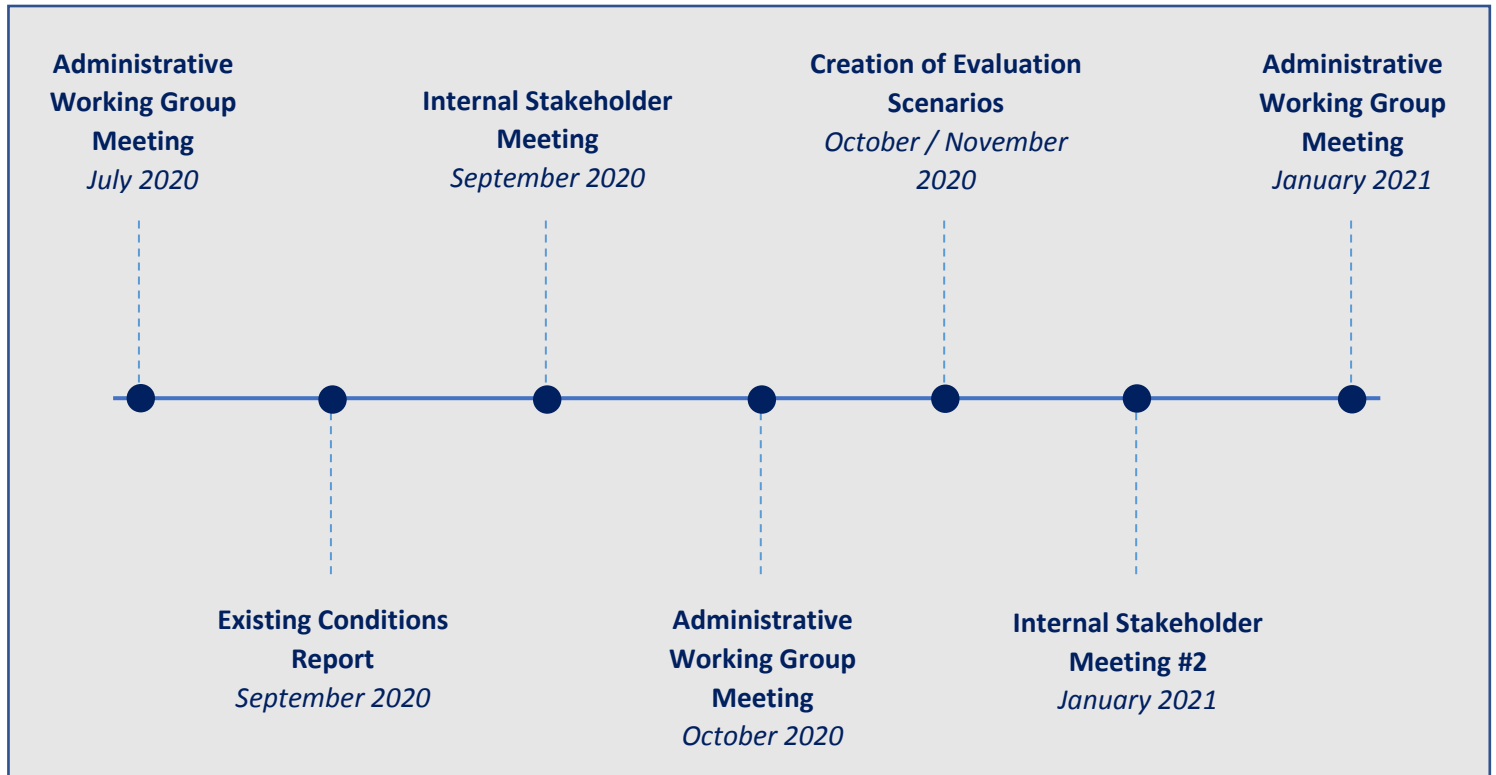
South: Highway 627

West: Highway 43 / Highway 770

2.2 How Was the Preferred Land Use Concept Created?

The development of the Preferred Land Use Concept has been iterative in nature and has incorporated the input and direction from internal stakeholders from each of the respective municipalities that make up the Tri-Municipal Region.

The following is an overview and timeline of the process that was undertaken to develop the Preferred Land Use Concept:



Administrative Working Group Meeting #1 – July 2020

Representatives from Stantec met with the Administrative Working Group for the Tri-Municipal Regional Plan and were presented with an overview of the challenges and opportunities for each of the respective municipalities as well as the region as whole.

Existing Conditions Report – September 2020

An Existing Conditions Report was prepared utilizing key aspects of the previous Administrative Working Group Meeting to help frame the report. The Existing Conditions Report reviewed several documents, policies, and strategies from each municipality in order to understand the current context (on the ground and in policy), key issues, opportunities, and misalignments for each of the partnering municipalities. The report sought to achieve two objectives:

1. Provide an overview of the relevant context required in order to prepare a Preferred Land Use Concept for the Tri-Municipal Region; and,
2. Serve as background information for the internal stakeholder workshop to be held with key administrative personnel from Spruce Grove, Stony Plain, and Parkland County.

Internal Stakeholder Workshop – September 2020

An Internal Stakeholder Workshop was held on September 22nd with approximately 30 subject matter experts from the three respective municipalities, including the three CAO's from the three respective municipalities. Participants were provided a presentation by the respective municipal planning managers about the future opportunities and challenges each municipality faces, as well as some insight into anticipated projects that will take place in the near future.

After hearing from the three municipal planning managers, participants were guided through a facilitated discussion. At a high level, the participants described the Tri-Municipal Region as an area whose success depends on each of the municipalities engaging in complementary land use planning through a collaborative process. It was also discussed that consideration needs to be given to the important transportation corridors in the area and how they interact with both industry and residential development. Agriculture was also identified as an important industry, with an emphasis on how it can be supported through land use planning while economic drivers in the region move away from coal and potentially other fossil fuels. Participants identified the importance of considering recreational opportunities, post-secondary institutions, and changing demographics in the land use planning exercise.

In summary, the following themes were generated as a result of this Internal Stakeholder Workshop that were to be utilized in the eventual development of the evaluation scenarios:

- Complete Communities
- Economic Diversification
- Access to Recreation & Natural Areas
- Focused Growth with an Urban / Rural Mix

Administrative Working Group Meeting #2 – October 2020

Upon the conclusion of the Internal Stakeholder Workshop, representatives from Stantec met with the Tri-Municipal Administrative Working Group. The purpose of this meeting was to disseminate the results of the internal workshop that was held on September 22nd, and to obtain direction on the evaluation land use scenarios that are to be modelled and evaluated as part of the preparation of the Preferred Land Use Concept for the Tri-Municipal Regional Plan.

As a result of this meeting, three evaluation scenarios, in addition to a Base Case (business as usual) scenario, were defined and agreed upon. The three evaluation scenarios are as follows:

- 1. Equitable distribution of land uses between the three municipalities**
- 2. Best location of land uses regardless of municipal boundaries / ownership of infrastructure**
- 3. Highway 628 focused development**

Creation of Evaluation Scenarios – October / November 2020

The three evaluation scenarios were then created based on the guiding direction from the Administrative Working Group Meeting that took place in October 2020. These evaluation scenarios are high-level land use concepts that were created to enable meaningful discussion and generate ideas and learnings that were to be used to better understand the future growth of the Tri-Municipal Region over the course of the next 40 years. The discussion and learnings from the three evaluation scenarios helped inform the creation of a final Preferred Land Use Concept presented in this report.

In relation to this, it is important to note that the evaluation scenarios that were created for this project were not intended or meant to be “options” for the participants of the internal workshop or the respective municipalities of the Tri-Municipal Region to choose from. Rather, they were intended to provide insights from a policy alignment, land use, accessibility, and financial performance perspective, that were then utilized to generate discussion, ideas, questions, and insights into the future growth of the Tri-Municipal Region. The evaluation scenarios that were created can be described at a high-level as follows:

Equitable Distribution

The Equitable Distribution scenario allocates residential, commercial, and industrial in the best suited locations within each municipality, with the amount of residential, commercial, and industrial development for each municipality being proportionally driven by population growth for each respective municipality. Near, medium, and long-term residential development within the Equitable Distribution land use scenario is depicted in a contiguous manner growing outwards from existing residential development towards the respective municipal boundaries. Near, medium, and long-term commercial development is focused on the Highway 16A transportation corridor and grows outwards towards Stony Plain’s western boundary and Spruce Grove’s eastern boundary. Industrial development within the Tri-Municipal Region is predominantly focused within the Acheson area, but with near, medium, and long term industrial growth also occurring in Spruce Grove and Stony Plain.

Best Location

The Best Location scenario allocates residential, commercial, and industrial in the best suited locations regardless of municipal jurisdiction and distribution equity. For the purposes of the Best Location land use scenario, best location was defined with the following parameters: proximity to major transportation corridors (i.e. Highway 16 and Highway 16A), being contiguous in nature so as to utilize land efficiently, tie into pre-existing servicing infrastructure, and leverage well-established development clusters.

Highway 628

Highway 628 is a future west / east transportation corridor that is identified as a Regional Expressway in the Edmonton Metropolitan Region Growth Plan; Highway 628 will connect the communities that make up the Tri-Municipal Region with each other and with Edmonton.

This land use scenario is centred around the premise of catalyzing commercial, industrial, and residential growth along the Highway 628 Corridor by leveraging the future investment in expanding and upgrading the corridor. To achieve this, the vast majority of commercial, industrial, and residential growth that is to occur over the next 40 years is directed south to reach the Highway 628 Corridor as fast as possible.

Internal Stakeholder Workshop #2 – January 2021

The evaluation scenarios were then presented to approximately 30 internal representatives from the municipalities of the Tri-Municipal Region at an internal stakeholder meeting, with the following purpose:

- Provide the opportunity to disseminate the information and findings of the Scenario Evaluation Findings Report that was provided to the meeting attendees on December 22, 2020.
- Utilize land use scenarios as learning opportunities to discuss the impacts that various development patterns and constraints have on the growth of the Tri-Municipal Region over a 40-year planning horizon.
- Capture feedback from participants regarding the information and findings being presented, the participants' own analysis of the findings, and direction as to which aspects should or should not be incorporated into the final land use concept for the Tri-Municipal Region.

Administrative Working Group Meeting #3 – January 2021

The information that was received from the internal stakeholder meeting was the further refined with the Tri-Municipal Administrative Working Group, and clarification and direction was sought on the following key topics:

- Direction as to how to incorporate infill development within the Preferred Land Use Concept.
- Direction regarding the treatment of the Highway 628 Corridor and how it will be reflected in the Preferred Land Use Concept.

- Direction regarding future growth of the Fifth Meridian Area Structure Plan area and how it will be reflected in the Preferred Land Use Concept.
- Direction on how growth should be allocated from either a ‘best location’ or ‘equitable distribution’ perspective.

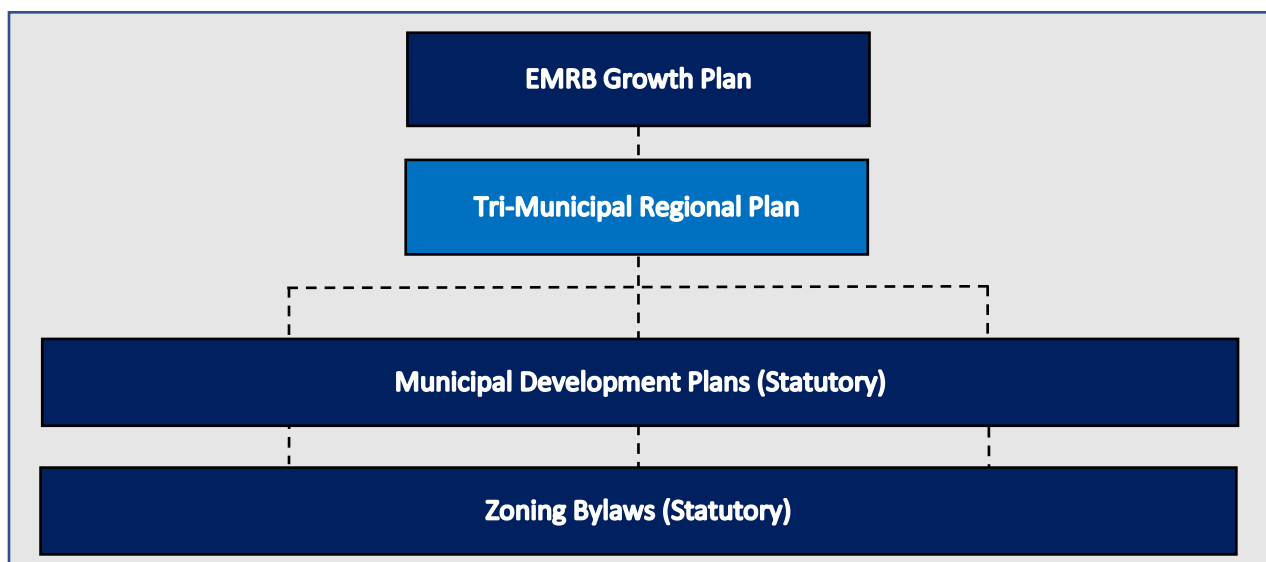
3 PREFERRED LAND USE CONCEPT

3.1 Overview

The Preferred Land Use Concept has been prepared as a component of the Tri-Municipal Region’s Regional Plan. The Preferred Land Use Concept reflects the aspirations, input, and feedback of the three municipalities related to the anticipated growth of the Tri-Municipal Region over the course of the next 40 years. The population and land use absorption forecasts are available in Appendix C.

The Preferred Land Use Concept provides a high-level overview of the various land uses that comprise the Tri-Municipal Region. While a multitude of land use designations exist within the Tri-Municipal Region and vary from municipality to municipality, the land uses reflected in the Preferred Land Use Concept have been simplified in order to reflect the plan’s standing within the broader planning governance structure that guides development within the Tri-Municipal Region as depicted in the figure below. Please note that the figure below is not intended to suggest that the Preferred Land Use Concept and associated Tri-Municipal Regional Plan is to become a statutory plan that serves as an additional layer of governance between the EMRB Growth Plan and the respective MDPs for each municipality. Rather, the figure below is intended to illustrate the level of detail that the Preferred Land Use Concept has been reflected at.

In this regard, the land uses reflected in the Preferred Land Use Concept, and the level of detail in which they are shown, fall between the Edmonton Metropolitan Region Board (EMRB) Growth Plan and the Municipal Development Plans (MDPs) of the three municipalities that make up the Tri-Municipal Region.



3.2 Approach to Growth

Through engagement with internal stakeholders over the course of this project, a direction and approach to the Tri-Municipal Region has been confirmed. This approach is to generally follow the development pattern of the “Best Location” land use scenario as described in Section 2.2 of this report.

By reflecting a Best Location development pattern, it is anticipated that the Tri-Municipal Region will grow by utilizing land in a manner that achieves the best result from a market perspective regardless of municipal jurisdiction, which reflects the spirit and purpose of the Tri-Municipal Regional Planning project – shared investment for shared benefit.

As previously mentioned in this report, the majority of lands identified for development over the course of the Tri-Municipal Regional Plan have already been planned through adopted statutory plans, including various Area Structure Plan (ASPs) and Municipal Development Plans (MDPs). Due to this fact, these previously approved plans have placed limitations on the development concept that has been developed as a result of this project as any deviations to previously approved plans would require amendments to them. This notion is difficult to achieve as development rights have been conferred to landowners through these approved plans, and it would require consent from the landowners to propose amendments to the respective statutory plans.

3.3 Land Use Designations

The Preferred Land Use Concept has delineated land use designations, which are as follows:

3.3.1 Established Neighbourhood Areas

The Established Neighbourhood Areas as outlined within the Preferred Land Use Concept are predominantly comprised of the residential development that currently exists within the town of Stony Plain and the city of Spruce Grove. The residential component of this land use designation does not delineate between various housing typologies, so it includes all residential development from single-detached dwelling units to multi-family developments.

Established Neighbourhood Areas also include a broad range of community uses that are integrated with residential uses. These include, but are not limited to, small-scale commercial (i.e. convenience stores and restaurants), institutional uses (i.e. schools, religious assemblies, and civic buildings), and open spaces (i.e. sports fields, trails, golf courses).

3.3.2 New Neighbourhood Areas

The New Neighbourhood Areas as outlined within the Preferred Land Use Concept incorporate the same land uses as outlined within the Established Neighbourhood Areas but reflect areas throughout the town of Stony Plain and the city of Spruce Grove where future development has been planned / identified within existing Area Structure Plans but has not yet been developed.

The amount of land within the two urban municipalities that has been given this land use designation, in turn reflecting the urban development footprint of the two municipalities in 40 years' time, has been determined utilizing the anticipated land absorption rates that were developed as part of this project.

3.3.3 Core Areas

The Core Areas as outlined within the Preferred Land Use Concept reflect the areas outlined within the city of Spruce Grove's City Centre Area Redevelopment Plan and the 'Area of Transition' within the town of Stony Plain's MDP.

These areas encompass the downtown cores of Stony Plain and Spruce Grove, as well as the directly surrounding area. The Core Area is expected to be the hub of each urban area, and will be home to a mix of uses such as, but not limited to, relatively higher density housing, mixed-use development (vertical and horizontal), a mix of institutional uses, a broad range of commercial amenities, large format office space, and a variety of open spaces with an emphasis on a strong public realm.

It is anticipated that if infill development (residential and/or commercial) is to occur within the respective municipalities, it is most likely to occur within the Core Areas as defined by the Preferred Land Use Concept. The statutory municipal planning documents that guide the development of these areas reflect this outcome.

3.3.4 Established Employment Areas

The Established Employment Areas within the Preferred Land Use Concept reflect the areas where existing land uses that generate employment are predominant. Employment from the Preferred Land Use Concept's standpoint are areas that are predominantly comprised of major large-format commercial areas, logistic centres, office uses, and light, medium, and heavy industrial areas.

3.3.5 New Employment Areas

The New Employment Areas within the Preferred Land Use Concept include the same land uses as noted in the Established Employment Areas but has been designated in areas where it is anticipated that employment growth will occur throughout the Tri-Municipal Region.

Similar to the New Neighbourhood Areas, the amount of land within the study area that has been given this land use designation has been determined utilizing the anticipated land absorption rates that have been developed as part of this project.

3.3.6 Developed Country Residential Areas

Developed Country Residential Areas within the Preferred Land Use Concept are located solely within Parkland County and are reflective of areas that have already been designated as Country Residential development through existing statutory planning documents (such as various County ASPs and the County's MDP) and have been developed. In the Developed Country Residential Areas, building forms have included both single detached dwellings and semi-detached dwellings.

3.3.7 Undeveloped Country Residential Areas

Undeveloped Country Residential Areas within the Preferred Land Use Concept are located solely within Parkland County and are reflective of areas that have already been designated as Country Residential development through existing statutory planning documents (such as various County ASPs and the County's MDP) but have not been developed. In the Undeveloped Country Residential Areas, building forms can include both single detached dwellings and semi-detached dwellings.

3.3.8 Future Development Areas

The Future Development Areas within the Preferred Land Use Concept include lands that are neither designated for residential, commercial, or industrial development to occur within the next 40 years, nor lands that have already been planned through an Area Structure Plan planning process.

3.3.9 Highway 628 Area of Interest

The Highway 628 Area of Interest has been identified along the length of the Highway 628 corridor between Edmonton and Stony Plain. The Area of Interest designation has been applied to this corridor to reflect its strategic importance for the future growth of the Tri-Municipal Region and indicates that future study of this area is required.

3.3.10 Agriculture Areas

Areas that do not fall within the noted land use designations that are defined as Agriculture Areas are comprised of lands primarily used for agriculture production.

3.4 Preferred Land Use Concept

While the land use designations have been reflected in the manner noted above, Sections 3.5, 3.6, and 3.7 on Pages 13 – 16 of this report provide an overview of residential, industrial, and commercial development as it has been incorporated within the Preferred Land Use Concept.

The Preferred Land Use Concept that has been developed for the Tri-Municipal Regional Plan is as reflected on the following page:

Figure 1: Tri-Municipal Regional Plan Preferred Land Use Concept – Full Extent

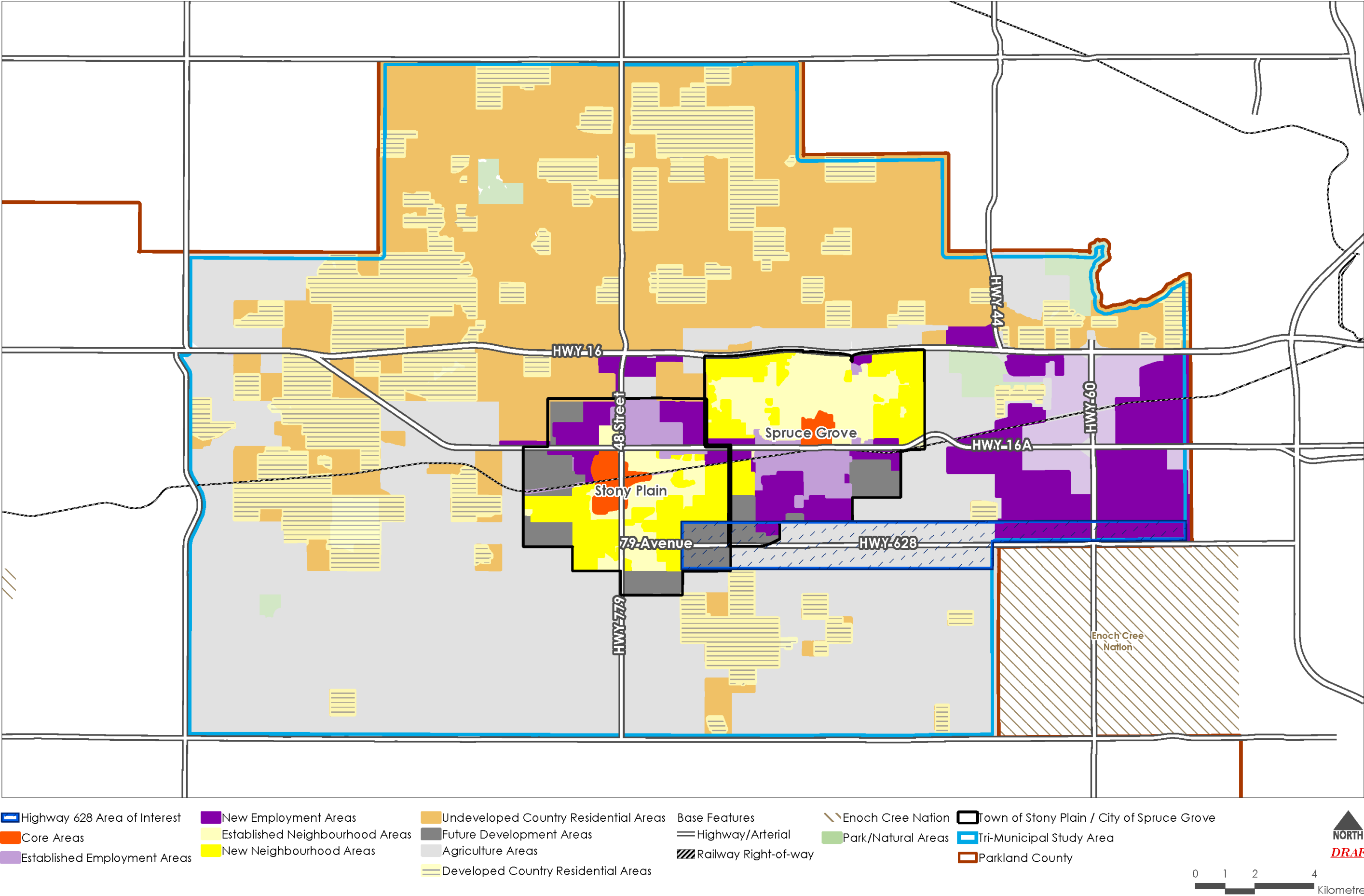
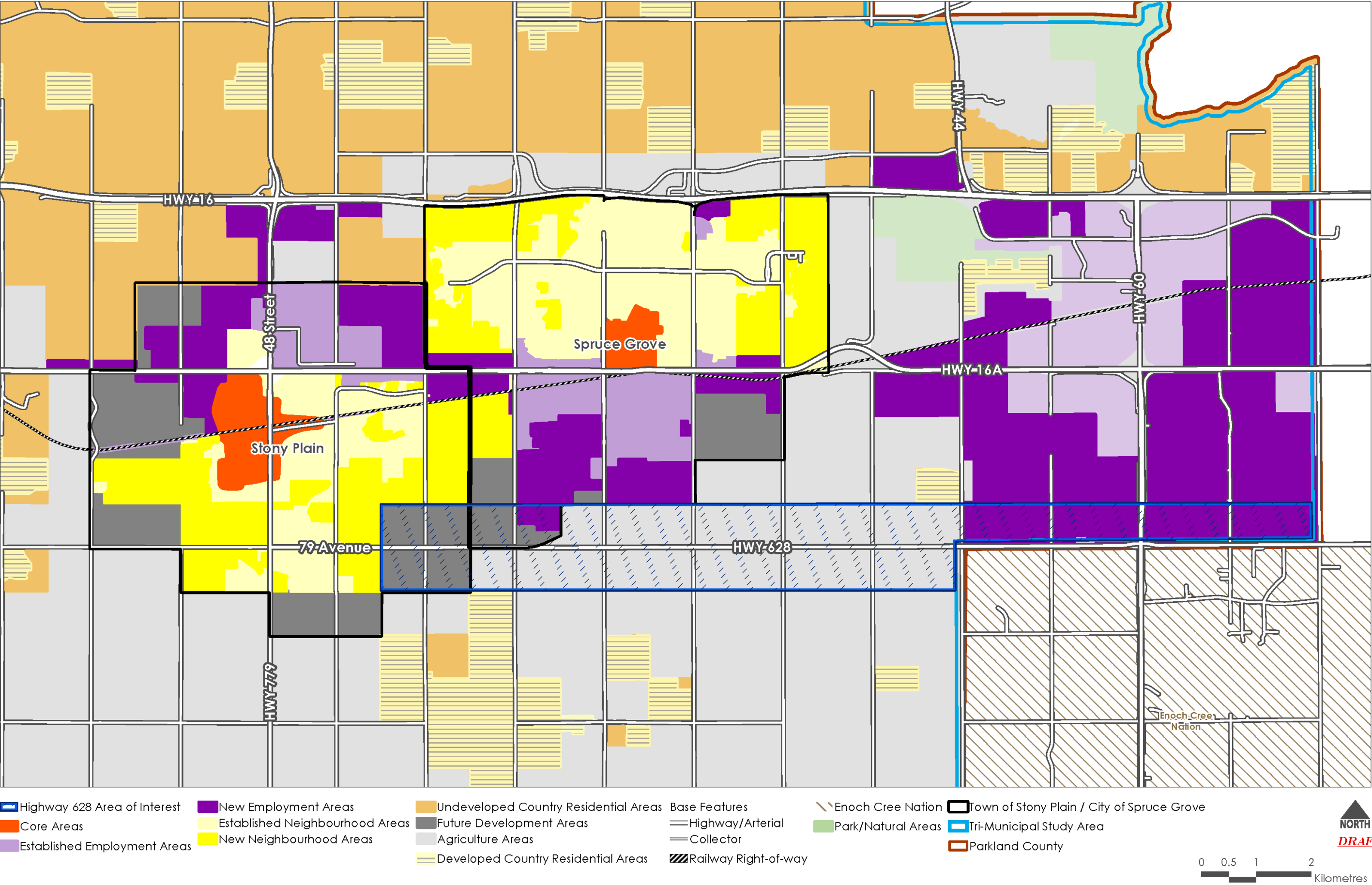


Figure 2: Tri-Municipal Regional Plan Preferred Land Use Concept – Urban Focus Areas



3.5 Residential Development

Overview

Residential development within the Tri-Municipal Region, in particular within the urban municipalities of Spruce Grove and Stony Plain, is anticipated to develop out in areas that have previously been identified for residential development. These areas, and their respective development concepts, will be guided by existing statutory planning documents such as the various Area Structure Plans that have been approved and are currently in place.

Infill development, which is residential development occurring in already built-up areas through replacement and / or intensification, is anticipated to occur over the course of the 40-year planning horizon of the Tri-Region's Regional Plan, and the Preferred Land Use Concept assumes that the aspirational targets of 10% and 15% for Spruce Grove and Stony Plain respectively are being met. Furthermore, due to the relatively new age of housing stock within the Established Neighbourhood Areas, it has been assumed that infill development will occur primarily in the Core Areas of both municipalities in an effort to intensify and redevelop the Core Areas of both municipalities in the near to medium term. However, in the medium to long term, opportunities for infill development may be facilitated in the Established Neighbourhood Areas.

Parkland County

Residential development within Parkland County that is included as part of the Tri-Municipal Region's Regional Plan study area is guided by several ASPs, which include the Acheson Area ASP, Atim Creek ASP, Big Lake ASP, Fifth Meridian ASP, and Glory Hills ASP.

Within these ASPs, a total area of 22,618 gross ha of land has been designated for Country Residential development. These lands have also been zoned for Country Residential uses in the Parkland County Land Use Bylaw. Currently, 8,777 gross ha of the land that has been designated has already been developed for Country Residential purposes. Over the course of the 40-year planning horizon of the Tri-Municipal Regional Plan, it is anticipated that the total area designated for County Residential development will be able to absorb the forecasted growth of 5,630 gross ha of new Country Residential growth. It should be noted that 159 gross ha of estate residential development with municipal servicing connections (water and sanitary) has been assumed to be within the Fifth Meridian ASP area.

City of Spruce Grove

Over the 40-year planning horizon of the Tri-Municipal Regional Plan, it is anticipated that residential growth within the majority of areas that are currently designated for residential development under the existing and approved ASPs will build out, except for the eastern portions of the East Pioneer and Pioneer Lands ASPs and the West Central ASP due to historical development patterns and direction of growth. While these lands are not anticipated to be built out during the 40 year planning horizon of the Tri-Municipal Region Plan, these lands have been identified as 'New Neighbourhood Areas' on the Preferred Land Use Concept and development rights to these areas have been conferred as a result of the approved Area Structure Plans.

While there are several factors that may impact the direction of growth within Spruce Grove, it is anticipated that near term growth will occur in both the west and east with a higher proportion of growth within the western half of Spruce Grove. In the medium to long term growth will occur in both the west and west. In total, residential growth over the next 40 years amounts to approximately 449 gross ha of additional residential development within Spruce Grove. Furthermore, as previously mentioned, the Preferred Land Use Concept has reflected 10% of future residential development as infill development, which has contributed to the East Pioneer ASP, Pioneer Lands ASP, and West Central ASP not fully building out due to the reallocation of greenfield development to infill.

Town of Stony Plain

Over the 40-year planning horizon of the Tri-Municipal Regional Plan, it is anticipated that residential growth within Stony Plain will be well accommodated within the current areas designated for residential development under existing and approved ASPs.

While there are several factors that may impact the direction of growth within Stony Plain, it is anticipated that near term growth will occur by filling in the developing areas in the northeast portion of Stony Plain, and then will shift to developing out residential areas that are located within The Brickyard at Old Town ASP, and the northern portions of the Deerfield and Southeast ASPs.

In total, residential growth of the next 40 years amounts to approximately 206 gross ha of additional residential development within the town of Stony Plain.

3.6 Industrial Development

Overview

Industrial development within the Tri-Municipal Region is anticipated to develop out in a predominantly contiguous manner stemming from areas where industrial development already exists within the member municipalities. It is anticipated the fastest industrial growth, and most industrial growth for that matter, will occur within the Acheson area within Parkland County.

The majority of the anticipated industrial growth within the Tri-Municipal Region will be guided by existing and approved statutory plans, except for the recently annexed areas within southwest Spruce Grove, and a portion within the northwestern industrial area in Stony Plain west of 48 Street.

As previously referenced in this document, industrial development in the context of the Preferred Land Use Concept has been grouped together with commercial development and reflected as Established Employment Areas and New Employment Areas. With that being said, industrial development contains land uses such as, but not limited to, areas predominantly zoned for traditional light, medium, and heavy industrial production, value-added services, logistic centres, professional offices, and warehouses.

Parkland County

Industrial development within Parkland County is predominantly focused within the Acheson ASP area. As the Acheson ASP has recently been updated, the industrial land uses that are included as part of

Parkland County's allocation of industrial growth reflect this updated ASP. Given that a substantive portion of the Acheson ASP is anticipated to build out over the 40 year horizon of the Tri-Municipal Regional Plan, there is the possibility that industrial infill development may occur due to the age of some of the structures that are currently developed as well as the rapidly shifting economic conditions within Alberta.

In total, industrial growth over the next 40 years amounts to approximately 2,676 gross ha of additional industrial development within Parkland County.

City of Spruce Grove

Industrial development within the city of Spruce Grove has been allocated south of Highway 16A. It is anticipated that industrial development will continue to grow southwards in contiguous manner from the existing industrial development but will also extend eastwards along Highway 16A.

In total, industrial growth of the next 40 years amounts to approximately 391 gross ha of additional industrial development within the city of Spruce Grove.

Town of Stony Plain

Industrial development within the town of Stony Plain has been allocated north of Highway 16A. Similar to industrial development within the city of Spruce Grove, it is anticipated that industrial development within the town of Stony Plain will grow in a contiguous manner from the existing industrial development north of Highway 16A. This growth is anticipated to start in the northeast corner of Stony Plain and then once fully built out the lands designated for industrial development west of 48 Street will begin to see industrial development take place.

In total, industrial growth of the next 40 years amounts to approximately 285 gross ha of additional industrial development within the town of Stony Plain.

3.7 Commercial Development

Overview

Over the course of the 40-year planning horizon of the Tri-Municipal Regional Plan, commercial development within the Tri-Municipal Municipal Region will occur predominantly along the Highway 16A corridor.

As previously referenced in this document, commercial development in the context of the Preferred Land Use Concept has been grouped together with industrial development and reflected as Established Employment Areas and New Employment Areas. With that being said, commercial development contains land uses such as, but not limited to, areas predominantly identified for large-format retail services and/or professional office use.

Parkland County

Commercial development within Parkland County is not anticipated to build out within the 40-year timeframe of the Tri-Municipal Regional Plan. The proposed commercial area along Highway 16 on the northwest corner of the Highway 44 interchange, which is in alignment with the existing and approved zoning within Parkland County's Land Use Bylaw for the denoted area, is not anticipated to be developed in the horizon of the Tri-Municipal Regional Plan.

City of Spruce Grove

Commercial development within Spruce Grove is anticipated to continue occurring predominately along the Highway 16A corridor, extending westward and eastward from the existing commercial development. In addition to this commercial development, a parcel of land which has recently been annexed by Spruce Grove, along the city's eastern boundary south of Highway 16A, has been identified for commercial development in the later portion of the Tri-Municipal Regional Plan's buildout.

In total, commercial growth of the next 40 years amounts to approximately 133 gross ha of additional commercial development within the city of Spruce Grove.

Town of Stony Plain

Commercial development within Stony Plain is anticipated to occur in a contiguous manner in the northeast corner of the municipality, south of Highway 16A. In the later portions of the 40-year time frame of the Tri-Municipal Regional Plan, commercial development is anticipated to occur north of Highway 16A on the eastern boundary of the town and adjacent to Highway 16A on both sides of the Highway in the northwestern corner of the municipality.

In total, commercial growth of the next 40 years amounts to approximately 149 gross ha of additional commercial development within the town of Stony Plain.

4 EVALUATION FRAMEWORK

An evaluation framework has been prepared to enable the analysis of the Preferred Land Use Concept from both qualitative and quantitative perspectives.

The evaluation framework utilized to analyze the Preferred Land Use Concept is as follows:

CATEGORY	METRIC	DEFINITION	MEASUREMENT
POLICY ALIGNMENT	EDMONTON METROPOLITAN REGION BOARD GROWTH PLAN	Alignment with density targets	Dwelling units per net residential hectare
	MUNICIPAL DEVELOPMENT PLAN	Alignment with infill targets	Percentage of new development occurring in existing built-up areas
LAND USE	LAND USE CHANGE	Change from “undeveloped” to “urban” designations	Hectares of total land that have been converted from vacant or agricultural land to residential, commercial, or industrial uses
	LAND USE MIX	Ratio of residential, commercial, and industrial development	Measurement in gross hectares of residential, commercial, and industrial land uses
	INFILL VS. GREENFIELD	Proportion of new residential units in developed areas (infill)	Percentage of all newly projected residential that is located in existing developed areas
	CONTIGUOUS GROWTH	Development patterns are contiguous and not fractured	Qualitative observation of the contiguous nature of development patterns
	AGRICULTURAL LAND CONVERSION	Conversion of agricultural land to developable land	Qualitative observation of agricultural conversion and fragmentation
ACCESSIBILITY	ACCESS TO AMENITIES AND SERVICES	Distance of residents to identified major commercial areas, identified community services, and identified regional amenities	Qualitative observation of proximity between new residential areas and commercial/amenity uses
	ACCESS TO MAJOR TRANSPORTATION ROUTES	Distance of residents from major highways and arterial roadways	Qualitative observation of proximity between new residential areas and major highways/arterial roadways
	CENTRALITY	Distance of residents to city/town centres	Qualitative observation of proximity between new residential areas and city/town centres.
FINANCIAL PERFORMANCE	VIABILITY	Ability for development to occur without exceeding parameters	Effect on tax rates and debt

5 PREFERRED LAND USE CONCEPT EVALUATION

5.1 Policy Alignment

Edmonton Metropolitan Region Board Growth Plan

To produce the Preferred Land Use Concept, no residential development was allocated outside of areas that are not currently guided by existing ASPs, and the density for new residential development within Spruce Grove and Stony Plain was set at 28.3 du/nrha and 25 du/nrha respectively, based on approved ASPs.

The Edmonton Metropolitan Region Board's (EMRB) Growth Plan stipulates a minimum residential density of 35 du/nrha for greenfield development in urban areas that are not currently governed by a statutory plan such as an ASP.

The areas that have been identified for future residential growth are all guided by ASPs that were approved prior to the EMRB Growth Plan's new minimum density requirement of 35 du/nrha, as a result the identified residential growth area do not comply with this new minimum but are grandfathered in. Prior to the 35 du/nrha minimum being established, a minimum density target of 25 du/nrha was in place and new residential development complies with this target for both municipalities.

With regards to Parkland County and existing Country Residential Development, the EMRB's Growth Plan identifies areas for Country Residential development based on current plans within member municipalities such as Parkland County. The Growth Plan does not provide regulatory oversight from a Regional Evaluation Framework perspective of areas already planned for Country Residential development, as it is reflective of an area within a single land use type and oversight would be redundant. However, if Parkland County were to identify new areas for Country Residential development within an area that is not already planned or through an amendment to an existing ASP, then specific approval criteria under Section 4.4.4 of the EMRB Growth Plan would apply.

Densities for future Country Residential in Parkland County were assumed based on the existing amount and population of Country Residential, as well as an assumption of 2.8 persons per household. This equated to approximately 1.06 hectares of land per household, or 0.94 units per hectare.

Municipal Development Plan

As all new residential growth within Spruce Grove and Stony Plain is guided by pre-existing ASPs that were either developed in alignment with the current or previous MDPs for each municipality, it is assumed that the Preferred Land Use Concept is in alignment with the existing MDP or grandfathered in from a previous MDP.

Regarding infill development, there are 15% and 10% targets set out in Stony Plain's and Spruce Grove's MDPs, respectively. Through the allocation of new residential development within the two municipalities, we have assumed that the aspirational infill targets are met through an intensification of

Spruce Grove’s and Stony Plain’s cores and transitional areas in the near to medium term, with opportunity for infill in established areas in the medium to long term.

Most land within Parkland County has already been designated as part of preexisting ASPs that were either developed in alignment with the current or previous MDPs. Of particular note, ASPs and Parkland County’s Land Use Bylaw have delineated large portions of land north of Highway 16 and west of Stony Plain as future country residential. With regards to the Acheson area, the land absorption within the Preferred Land Use Concept has been illustrated as a scaled back reflection of the Acheson ASP that was recently approved by Parkland County’s Council to allow for some allocation of industrial lands within the Fifth Meridian ASP area.

5.2 Land Use

The following metrics evaluate the land use pattern in the Preferred Land Use Concept.

Quantitative Metrics

Land Use Change

In the Preferred Land Use Concept, 9,294 gross hectares of available land are converted from vacant and agricultural uses to urban development by 2060. This generally includes undeveloped land within the boundaries of existing ASPs, which covers almost all of the area of Spruce Grove and Stony Plain, and both country residential and Acheson industrial within Parkland County.

Land Use Mix

Newly projected development from 2020 to 2060 in the Preferred Land Use Concept, in gross hectares, is as follows:

	Industrial	Commercial	Residential	Infill
Parkland County	2,676 ha	-	5,630 ha	-
Spruce Grove	391 ha	133 ha	449 ha	10%
Stony Plain	285 ha	149 ha	206 ha	15%
Subtotals	3,352 ha	282 ha	6,285 ha	-
Total	9,919 ha			

As a ratio to demonstrate the mix of land uses, there are 0.05 ha of commercial and 0.53 ha of industrial for each 1 ha of residential.

Infill vs. Greenfield

Infill development is introduced in both Spruce Grove and Stony Plain, at 10% and 15% of new development, respectively. The remaining development will occur on lands identified for New Neighbourhood Areas.

Qualitative Metrics

Contiguous Growth

Most of the land uses were planned with the criteria of the Best Location scenario in mind, ensuring that projected urban and industrial development is contiguous to existing development, supporting servicing efficiency and reducing agricultural fragmentation.

There are some parcels left undeveloped between built up areas, such as along the northwest boundary of Spruce Grove and in the Fifth Meridian area. Many of these are identified as future natural area or park spaces, so they have little to no development potential and will serve as amenities for surrounding development.

If the Highway 628 Area of Interest is developed prior to other areas contiguous to the urban areas, there would also be some large agricultural areas remaining between areas of urban development.

It is important to note that existing ASPs allow for country residential development in Parkland County throughout most of the north portion of the regional plan area, as well as some areas to the west and south. As a result, development may occur in a non-contiguous manner if new country residential is developed away from existing development.

Agricultural Land Conversion

Country residential development converts the most agricultural land, with the pattern of development being unpredictable. As country residential converts agricultural uses, agricultural areas may become increasingly fragmented.

Industrial growth also converts a fair amount of agricultural land, with expansion to the west, south, and east of Acheson. In the urban areas, residential, industrial, and commercial growth occurs within existing urban boundaries, where future development is already planned on land that may currently be used for agriculture. The only lands being proposed for development where there is not an existing ASP or ARP are the recently annexed lands in Spruce Grove and the industrial lands west of 48 Street in Stony Plain.

Additionally, any future development in the Highway 628 Area of Interest would also require agricultural land conversion.

5.3 Accessibility

Access to Amenities and Services

New commercial development is concentrated around Highway 16A, which provides central access for residents both in Stony Plain to the south and Spruce Grove to the north. Although some residential areas are relatively far from these large commercial areas, there are neighbourhood-level commercial nodes in each urban ASP that are not depicted at the high level of the Preferred Land Use Concept.

Some country residential areas would have good access to commercial areas and urban services where located close to Spruce Grove or Stony Plain, but access would be limited for much of the country residential farther away as is typical for this type of residential development.

Access to Major Transportation Routes

Much of the expanded urban residential development is located along major transportation routes such as Highway 16, Highway 16A, and Jennifer Heil Way within Spruce Grove, and 48 Street and Highway 16A in Stony Plain. Collector roadway networks through new ASP areas will provide connections to major transportation routes for other new urban residential development.

As noted throughout this document, the majority of infill development is expected to occur in and around the Core Areas of Stony Plain and Spruce Grove, which are both well connected to Highway 16A, the internal arterial roadway network of both communities, and are centrally located within each community.

Highways 779, 16, and 16A also bisect large areas of country residential development. Any development within the Highway 628 Area of Interest would be able to take advantage of strong connections via Highway 628 to Edmonton and other major roadways.

Centrality

In Stony Plain, some new development is located fairly close to the town centre, offering convenient access to central amenities. In Spruce Grove, most new development is located on the edges of the city, relatively far from the city centre. As indicated in the overview of residential development, it is assumed that infill development will largely occur within the central core areas of Stony Plain and Spruce Grove in the near to medium term. As both municipalities develop over the course of the 40-year horizon of the Tri-Municipal Regional Plan, there will also be opportunities for redevelopment and gentle densification within established areas.

5.4 Financial Performance

The analysis shows that across the Tri-Municipal region as a whole, the overall infrastructure needs that have been reported by the municipalities and the land use plan can be met by the forecasted growth in the Preferred Land Use plan. Debt and debt servicing levels for all 3 municipalities remain below internal and MGA limits. However, the expected growth vs planned infrastructure needs leads to a forecast of a diverging tax situation across the region:

- Spruce Grove maintains close to but slightly lower to current levels while Stony Plain faces short term increasing tax rates before returning to current levels and Parkland County enjoys gradually decreasing tax rates. Note that the potential for reduction in tax rates is indicative of a greater ability to fund additional infrastructure to support growth and services rather than a trend towards a lower tax rate.

Plans and forecasts currently available do not include increases in some asset categories such as protective services or recreation facilities. These plans may drive further divergence between the

municipalities as their costs are more likely to be focused in Spruce Grove and Stony Plain who will require these additional assets to continue to attract new residential development and supporting commercial development. Aggressive infrastructure plans in categories such as broadband internet access and other potential commercial incentives may also be required to achieve the forecasted commercial/industrial growth that is driving the decline in estimated tax rates. This issue is particularly acute in Parkland County where the Preferred Use plan relies strongly on non-residential growth to achieve the estimated resulting ranges in taxes and debt.

There is sufficient flexibility for Spruce Grove and Parkland County to choose to either maintain tax rates according to historical trend parameters or to take on additional debt to fund these additional pieces of infrastructure throughout the duration of the buildout period. The simulation only attempts to maintain tax rates according to historical data from each municipality, but of course tax rates could also be increased beyond those limits if desired.

Spruce Grove has significant flexibility throughout the buildout period to both incur additional debt or adjust tax rates. Parkland County has flexibility to take on additional debt but has less flexibility to adjust tax rates compared to Spruce Grove. Stony Plain does not have significant flexibility, only having a limited period with additional tax room from years 28-40 to make small tax revenue increase adjustments. However, Stony Plain has some flexibility to increase debt near the beginning of the buildout period but the debt to revenue ratio that begins to reach internal limits near the end with the current plan.

Ultimately, development will need to be monitored carefully to ensure that it continues to be financially viable and sustainable. The current analysis does not model a levy or other method for handling developer funded infrastructure. The assets are received at zero cost as they become necessary, and the model incorporates the operational and rehab costs incurred as a result. The method chosen to achieve this net zero infrastructure cost for a development project or phase of the buildout plan will need to be tested and confirmed, and will also require significant planning effort. Finally, the municipalities will need to consider plans for the more than \$1 billion in capital infrastructure that will need to be operated, maintained, and renewed, as necessary.

See Appendix A for more details.

6 IMPLEMENTATION PLAN

6.1 Overview

While it is anticipated that the majority of growth and the direction in which growth occurs will follow well-established development patterns within the respective municipalities that make up the Tri-Municipal Region, the Implementation Plan is intended to provide some high-level strategic direction that could be implemented by the Tri-Municipal Region municipal partners to facilitate the realization of various components of the Preferred Land Use Concept that would not otherwise occur organically. Additionally, the Implementation Plan provides some high-level guidance on the timing for the respective implementation components and anticipated project fees from a consulting perspective.

At a high-level, the table on the following page identifies the individual components of the Implementation plan with the following pages providing greater details for each component:

IMPLEMENTATION PLAN	
Developing an Approach to Encourage and Facilitate Infill Development	This component of the implementation plan recognizes that infill development has been incorporated as a component of growth for Spruce Grove and Stony Plain, mainly in the core areas of both municipalities, as well as the importance of utilizing land in an efficient manner to achieve positive economic, social, and environmental benefits. It also recognizes that in order for infill development to occur within other areas of the municipalities, various planning initiatives will need to occur.
Planning for the Development of the Highway 628 Corridor	While growth and development has not been allocated in this corridor as part of the Tri-Municipal Regional Plan, this component of the implementation plan recognizes the strategic importance of the Highway 628 corridor from a future regional growth and accessibility perspective.
Planning for Future Infrastructure Rehabilitation	The implementation plan includes more than \$1 billion in future infrastructure needs. This infrastructure will require rehabilitation and renewal over its lifespan. These costs are significant. This component of the implementation plan recognizes the need for municipalities to plan for future infrastructure rehabilitation, and perhaps explore cost sharing or operational efficiencies to achieve maximum benefit.
Planning for Developer Funded Infrastructure	The infrastructure required is expected to be largely funded by developers, but careful planning will be necessary to achieve these outcomes. It can be challenging to fully capture infrastructure capital costs through levies, especially in Alberta's market where construction prices can fluctuate rapidly. Collaborative planning for developer funded infrastructure will be key for success.

6.2 Developing an Approach to Encourage and Facilitate Infill Development

The benefits of infill development from an economic, environmental, and social perspective are now, more than ever, widely known and accepted within municipal governments. However, infill development is occurring most frequently within larger urban municipalities, with smaller municipalities not seeing as much of an uptake in infill development. While this is likely due to several factors, as these smaller urban municipalities continue to grow, the housing stock within these municipalities continues to age, and as the residents of these communities may begin to demand greater diversity of housing choices.

The following text will provide details regarding the guidance from a policy perspective as it relates to infill development, and some high-level direction that Stony Plain and Spruce Grove should implement to encourage, facilitate, and prepare for future infill development within their respective municipalities.

Policy Guidance

In its 2017 Growth Plan, the Edmonton Metropolitan Region Board identified the aspirational infill targets of 15% and 10% for Stony Plain and Spruce Grove, respectively. These targets have been set on a community-wide basis with the assumption that the majority of infill development within these communities will take place within and around the downtown cores of these communities; this assumption is also reflected within each of the municipalities' MDPs and central Area Redevelopment Plans.

Tri-Municipal Approach to Infill Development

As previously referenced, there are several benefits to increasing the rate of infill development within the urban municipalities of Stony Plain and Spruce Grove, but Stony Plain and Spruce Grove are currently seeing, and will continue to see, very slow uptake of infill development within their respective communities without some form of policy intervention.

When considering the age of the housing stock within each of the municipalities in the mid to later portions of the Tri-Municipal Regional Plan's planning horizon, there is the potential that infill development will become more prevalent as building stock starts to turnover.

While the implementation plan is not intended to outline the steps that each municipality should take with regards to increasing the amount of infill development, the items listed below are examples as to how Spruce Grove and Stony Plain can reduce barriers to infill development.

- **Leverage opportunities to update statutory planning documents (Municipal Development Plans and Land Use Bylaws) to facilitate infill development that is gentle in nature, which could include the following:**
 - **Explore the creation / promotion of incentives to encourage and facilitate infill development projects (i.e. Stony Plain's Commercial, Industrial and Multi-Unit Residential Infill Policy C-CAO-023)**
 - **Complete a thorough review of residential zones from an infill development perspective**

- **Reduce lot width minimums for single-detached lots to facilitate the subdivision of one single-detached lot into two single-detached lots**
- **Explore opportunities to allow for attached housing product (semi-detached) in low-density residential zones, and/or row housing on corner-lots**
- **Explore opportunities for the inclusion of secondary suites, garage suites, and garden suites within the low density residential land use zones**
- **Review the impact that minimum parking requirements may have on the proliferation of infill development and make the necessary adjustments**
- **Review opportunities to permit innovative housing forms (e.g. tiny homes)**
- **As part of any amendments to statutory plans to permit varying forms of infill development, a strategic communications and engagement campaign will need to be developed and executed**

While the efficient utilization of land within the Tri-Municipal Region is a collective responsibility, it is important to note that Stony Plain and Spruce Grove are different municipalities with unique contexts regarding their respective development patterns, level of support for infill development from their respective residents, and the configuration of their respective statutory planning documents. As is the case, how infill development unfolds within each community and how the municipalities approach infill development should be done on a municipality by municipality basis.

Timing & Costs

The timing associated with completing various implementation components to help facilitate and increase the rate of infill development within Stony Plain and Spruce Grove is largely contingent on efficiencies that can be created when completing other projects such as updates to the respective MDPs or Land Use Bylaws for each municipality. Further to this, Stony Plain recently completed an update to their MDP in 2020, and it is anticipated that an update to Spruce Grove's MDP is imminent.

While MDPs are important statutory plans that help create the conditions and consent for downstream planning to occur, it is more likely that facilitating and increasing the uptake of infill development within both municipalities will come from updates to the respective Land Use Bylaws as these statutory plans set the rules and regulations for what can be built and where. As is the case, it is the report's recommendation to align the timing of this implementation component with the next large-scale updates to the Land Use Bylaws for Stony Plain and Spruce Grove.

With regards to costs associated with this implementation component, it is anticipated that a consultant review and update of the residential zones within each Land Use Bylaw, as well as the development and execution of a public engagement and stakeholder program, would cost approximately \$100,000 - \$150,000 for each municipality. However, please note that this cost is approximate in nature and may vary depending upon the number of residential zones that are to be reviewed, whether or not commercial and industrial zones are included as part of the scope, and the scope and scale of the public and stakeholder engagement program that is developed and executed.

6.3 Planning for the Development of the Highway 628 Corridor

Over the course of developing the Preferred Land Use Concept for the Tri-Municipal Regional Plan, the Highway 628 corridor has been referenced as an opportunity for further exploration due to its strategic location and importance to the future growth of the Tri-Municipal Region. As is the case, the Highway 628 corridor has been identified on the Preferred Land Use Concept as an “Area of Interest” to reflect this importance and to indicate that further analysis and planning is required for this corridor.

The following text will provide details regarding the Highway 628 corridor, why it has been identified as a corridor of strategic regional importance, what identifying it as an “Area of Interest” means, and a high-level overview of various implementation components that may be undertaken to assist in realizing the growth and development of this strategic corridor.

Highway 628 Corridor

The Highway 628 corridor is a Provincial Highway that is approximately 19 kilometres long that intersects the southern portion of the Tri-Municipal Regional Plan’s study area in a west to east manner. It serves as a western extension of the Whitemud Drive in Edmonton whereby it forms the southern boundary of the Acheson ASP area within Parkland County. It travels further west and is located south of the city of Spruce Grove, where it eventually terminates at 48 Street within the town of Stony Plain. Highway 628’s current construction is a 2-lane undivided rural roadway that serves approximately 5,000 vehicles per day.

Figure 4: Highway 628 Area of Interest Corridor



Strategic Importance

In their 2017 Growth Plan, the Edmonton Metropolitan Region Board has identified Highway 628 as a 'Regional Expressway,' signaling the corridor's importance from a connectivity standpoint within the Tri-Municipal Region as well as between the Tri-Municipal Region and Edmonton. Furthermore, the Tri-Municipal Region's partnering municipalities have advocated to other orders of government for this Provincial highway to be upgraded to a higher standard with areas identified for future expansion of the highway as the Tri-Municipal Region continues to grow.

Highway 628 has not only been identified for strategic connectivity purposes but has also been identified from a strategic growth and development standpoint. The corridor, especially the areas that are located within or adjacent to the urban municipalities of Stony Plain and Spruce Grove and the Acheson ASP area, represent an opportunity for employment (commercial and industrial) growth along the Highway 628 corridor similar to the development that is currently underway along the Highway 16A corridor.

Area of Interest Designation

While it is not anticipated that development from a residential or employment perspective will reach the Highway 628 corridor over the planning horizon of the Tri-Municipal Regional Plan, except for the area adjacent to the southern boundary of the Acheson ASP area, the Area of Interest designation has been applied to the Highway 628 corridor as a recognition of the corridor's future importance within the Tri-Municipal Region.

This is to ensure that prior to the development of this area a concerted and coordinated approach to planning this area is undertaken by the Tri-Municipal Region's partnering municipalities.

Implementation

Through this project the Tri-Municipal Region's partnering municipalities it has been established that this area is of future strategic importance for all three municipalities. Implementation components related to realizing the potential of this corridor should be centred around conducting a Special Study for the Highway 628 corridor. While the implementation plan is not intended to outline that parameters and logistics associated with the referenced Special Study, it is suggested that the Special Study focus on the following:

- **Identifying the extent of the Study Area;**
- **Developing land use absorption projections from a residential, commercial, and industrial perspective;**
- **Delineating strategic locations for these respective land uses;**
- **Identifying and planning for environmentally sensitive areas, agriculturally significant areas, as well as necessary transportation and municipal infrastructure upgrades**
- **Completing the planning exercises necessary to ensure that the results of the Special Study can be implemented in a coordinated manner across the Tri-Municipal Region's partnering municipalities.**

Timing & Costs

In order to catalyze and/or leverage future investment in the upgrades to Highway 628 from other orders of government, as well as to ensure that the planning associated with this strategic corridor is done so in a concerted manner, it is our recommendation that the Special Study for this corridor be initiated and completed within a timeframe of the next 5 to 10 years. Additionally, it should be noted that this timing is contingent on the final alignment and design of the Highway 628 corridor as determined by Alberta Transportation.

With regards to the potential costs, it is anticipated that a Special Study for this area would cost approximately \$250,000 to \$400,000 depending on several variables with the scope, scale, and level of detail of the study. It is recommended that the eventual Special Study include exploration and planning for the following matters

- Land use designations along the Highway 628 Corridor
- Financial Viability / Market Study to inform and confirm the identified land uses
- Municipal Engineering Analysis
- Environmental Analysis
- Transportation Analysis

In addition to the components identified above, it should also be noted that public and stakeholder engagement will likely be required for a Special Study of this nature. The costs associated with public and stakeholder engagement for the Special Study are dependent on the scope and scale of engagement efforts.

Furthermore, these costs only consider the expenditures associated with the procurement of external consultants to complete the Special Study for the Highway 628 Corridor and do not include the overhead costs associated with municipal Administration to manage the Special Study as well as provide subject matter expertise to the eventual consultants hired to complete the Special Study. Additionally, as the Special Study includes all three municipalities within the Tri-Municipal Region, a cost-sharing agreement between the municipalities would need to be completed.

It should be noted that while the Provincial government has indicated support for this project and has allocated funding, this realization of this corridor's potential is likely contingent on the completion of the upgrades to Highway 628 and continued advocacy efforts from the Tri-Municipal Region.

Further to the potential action items outlined on the previous page, it is important to note that the Enoch Cree Nation also abuts the Highway 628 corridor opposite of the Acheson ASP area to the north. While external engagement is outside the scope of this project, it may be in the Tri-Municipal Region's interests to engage with the Enoch Cree Nation for the coordinated planning and development of this strategic corridor.

6.4 Planning for Future Infrastructure Rehabilitation

Over the next 40 years of buildout, the implementation plan will mean that municipalities will acquire more than \$1 billion in additional infrastructure. While the initial capital cost is expected to be largely funded by developers, this infrastructure will require rehabilitation and renewal over its lifespan. These costs are significant and become more significant toward the end of buildout.

This component of the implementation plan recognizes the need for municipalities to plan for future infrastructure rehabilitation and renewal, and perhaps explore cost sharing or operational efficiencies to achieve maximum benefit. As all three municipalities have different approaches to levels of service for infrastructure renewal, this will require some coordination. However, planning for the future can help avoid the need to take on debt for infrastructure renewal, and may allow for efficiencies in inter-municipal planning.

The initial planning exercise is under way with the Transportation, Utilities, and Servicing strategy, as well as other relevant strategies for additional infrastructure such as libraries, community recreation facilities, and fire halls. Once the projections for infrastructure are finalized, the next step will involve an assessment of current and future rehabilitation and renewal needs based on current assets as well as planned future assets.

For maximum benefit this should be a priority within the next few years. It could be accomplished with internal resources, or through a consulting study; asset management studies can vary widely in scope and cost, but a basic high-level assessment and projection could likely be performed for \$50,000 to \$100,000 in consulting fees per municipality. Note that an aggregate study would likely have some efficiencies of scale. These projections can then be used to provide input into future taxation decisions so that the infrastructure renewal budgets continue to be adequate, or potentially through development of a reserve for major future renewal. Long-term projections should be refreshed on a regular basis such as once every five years; short term projections should be reviewed annually as part of the planning process.

There are also opportunities for the three municipalities to share resources and find efficiencies through the completion of the cost sharing strategy. The inclusion of rehabilitation and renewal needs in the discussions around cost sharing will be important. These cost sharing discussions are also an opportunity to begin to rationalize levels of service for activities like road resurfacing. Some tactics may include:

- Pool resources and projects to attract more competitive bids on standing arrangements for road rehabilitation or other major infrastructure renewal projects
- Plan to time major projects or renewal initiatives collaboratively to avoid overwhelming the market

Suggested implementation components are as follows:

- **Complete planning for Transportation, Utilities, and Infrastructure servicing strategy**

- **Complete planning for additional infrastructure such as libraries, community recreation facilities, and fire halls**
- **Complete analysis of projections for future rehabilitation/renewal needs based on these strategies**
- **Complete planning for cost sharing strategy. Include rehabilitation and renewal in the cost sharing discussions, as well as rationalization of differing levels of service**
- **Continue to explore operational efficiencies for rehabilitation and renewal**
- **Discuss future funding strategies for infrastructure rehabilitation and renewal, including development of a reserve**

6.5 Planning for Developer Funded Infrastructure

The infrastructure required is expected to be largely funded by developers, but while Alberta's new regulations around off-site levies (OSL) allow more flexibility for municipalities, careful planning will be necessary to achieve successful outcomes. It can be challenging to fully capture infrastructure capital costs through levies, especially in Alberta's market where both housing and construction prices can fluctuate rapidly. In addition, in an environment where growth is occurring in close proximity across municipal borders, collaborative planning for developer funded infrastructure will be key for success. If the cost of an asset is to be eventually recovered through levies it is also important to plan at the time for the engineering reports and other documentation necessary to justify its inclusion so that the OSL regime remains resistant to court challenges.

A review of existing OSL bylaws is not in the scope of this report, but will be an important consideration if a new OSL Regime is the chosen tool for recovering costs. The Alberta Urban Municipalities Association recommends reviewing OSL bylaws every three to five years. Taking the next review as an opportunity to perform a study that ensures OSL calculation methods and fee structures are consistent and fair across the Tri-Municipal region will be important to ensure developers' incentives are aligned with the land use plan. An inter-municipal OSL strategy may also be an option to spread some costs such as protective services and recreation over the areas they serve that may cross municipal boundaries. This could be an internally performed study or could be performed or supported by a consultant; the fees required would depend on the levy structure complexity, the level of future levy planning included, and the level of support needed, but could range from \$30,000 to over \$100,000 per municipality.

When developing a levy fee schedule for infrastructure costs that are planned to be recovered from developers an indexation method is required. The index is used to adjust the original cost for inflation and market variability. This ensures the levies are adequate to fully cover the municipality's original cost. Options include the Consumer Price Index (CPI), sector specific Producer Price Indices (PPI) or a custom index derived from local market research. A study on the most appropriate method and an agreement between municipalities on a fair and consistent method to be used in the region may help ensure levies are accurately calculated to cover the true original cost.

Finally, some developers may prefer to contribute new works in kind rather than pay full levies. For example, constructing more new road than the individual development requires for the municipality's benefit rather than paying levies for the existing roads the developer benefited from. In many cases this can have an additional benefit to the municipality when a maintenance bond is required before accepting the new assets. Works in kind may also be desirable to avoid the costly engineering reports and documentation needed to justify including an asset in the OSL regime. However, inconsistent practice around the region may make some areas more attractive to developers which makes the land use plan harder to execute. Developing a consistent policy between municipalities for if and when works in kind will be accepted can also help ensure an equitable distribution of development and fulfillment of the land use plan.

Suggested implementation components are as follows:

- **Develop strategy for developer levies and coordinate among municipalities to ensure an equitable approach**
- **Test strategy against both "boom" and "bust" conditions to ensure flexibility and robust function**
- **Consider indexation methods and "works in kind" credits**
- **Monitor levy progress carefully and adjust strategy as needed to respond to growth patterns and economic conditions**

7 DEFINITIONS

Access to Recreation & Natural Areas – Theme based on connectivity between various recreation / natural areas, integrating them into land use planning, and creating an active transportation network.

Active Transportation – Human powered personal travel including walking, running, cycling, and rolling.

Agricultural Fragmentation – The process of reducing the size and connectivity of an agricultural area, as it is divided into isolated parcels separated by non-agricultural uses or linear infrastructure like roads and utilities, which can impact the productivity of land.

Area of Interest – A designation given to an area to recognize its future importance and ensure that prior to development, a concerted and coordinated approach to area planning is undertaken.

Area Redevelopment Plan (ARP) – A statutory plan which describes the land use, development concept, servicing issues, and other planning items for the redevelopment of an existing developed area of a municipality. ARPs are adopted by the Council of a municipality as a bylaw, per Section 633 of the *Municipal Government Act*.

Area Structure Plan (ASP) – A statutory plan which describes land use, road networks, servicing, park locations, and public facilities within an undeveloped area of land within a municipality. ASPs are adopted by the Council of a municipality as a bylaw per Sections 634 and 635 of the *Municipal Government Act*.

Best Location – Scenario where land uses are placed based on their best location, defined with the following parameters: being in close proximity to major transportation corridors such as Highway 16 and Highway 16A, the development is contiguous in nature so as to utilize land efficiently, tie into pre-existing servicing infrastructure, and leverage well-established development clusters.

Complete Communities – Theme focused on creating neighbourhoods made complete with a diversity of land uses and transportation modes in close proximity, providing affordability, social, and environmental benefits.

Conversion of Agricultural Land – The change from agricultural to non-agricultural use (such as residential, commercial, industrial, infrastructure, or rural residential).

Economic Diversification – Theme prioritizing the diversification of economic opportunities ranging from value added agricultural to new employment nodes and industrial development, as well as defining the region's brand and competitive advantage.

Equitable Distribution – Scenario where land uses are placed based on distributing and allocating the anticipated growth for the various land use categories equitably throughout each municipality.

Evaluation Scenarios – Land use scenarios that were created to enable meaningful discussion, ideas, and learnings that will be used to better understand the future growth of the Tri-Municipal Region over the course of the next 40 years. They were intended to provide insights from a policy alignment, land use, accessibility, and financial performance perspective, that can then be utilized to generate discussion, ideas, questions, and insights into the future growth of the Tri-Municipal Region.

Focused Growth with an Urban / Rural Mix – Theme that focuses on a continuum of densities from urban to rural, as well as focused areas for urban intensification and industrial development.

Highway 628 – Scenario where the vast majority of commercial, industrial, and residential growth that is to occur over the next 40 years is directed south to reach the Highway 628 corridor as fast as possible.

Municipal Development Plan (MDP) – A statutory plan which describes the future land use and development within a municipality; coordinates land use, growth patterns, and infrastructure with adjacent municipalities if there are no Intermunicipal Development Plans in place; and provides for transportation systems, municipal services, and facilities. An MDP is adopted by the Council of a municipality as a bylaw per Section 632 of the *Municipal Government Act*.

Tri-Municipal Region Regional Plan Area – The municipal areas of Spruce Grove and Stony Plain, as well as the portion of Parkland County east of Highways 43 and 770.

APPENDIX A – FINANCIAL VIABILITY ANALYSIS



Preferred Land Use Concept

Financial Viability Analysis

March 18, 2021



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1. INTRODUCTION

1.1 Purpose

The purpose of this report is to present and discuss the financial viability analysis of the Preferred Land Use strategy for the Tri-Municipal area, which includes Spruce Grove, Stony Plain and Parkland County. The report will assess the current state of high-level potential future costs and revenues over time and review the financial impact on each of the municipalities to help support decisions around the favored direction for development. The information presented in this report relies on a range of assumptions and future growth projections over multiple decades, and given the preliminary nature of the information provided, these assumptions are likely to change. The current analysis, however, gives the Tri-Municipal area municipalities more insight into a plan to map out the future and explore possibilities.

1.2 Model Overview

The purpose of this model is to provide information to municipalities regarding the viability of development. The focus of the model is on the “base” level of viability: with the basic servicing required to support growth, is that growth sustainable? Additional discretionary infrastructure, such as recreation facilities or community halls, is not at present included. However, the results of the model do allow exploration of whether the municipalities can support additional infrastructure plans – for example, how do future projected tax rates compare with current tax rates, and would a municipality be able to take on additional debt. Rehabilitation costs which are also a substantial cost center for constructed assets is also discussed.

The initial focus of designing the model was to accommodate important plan variables, as well as various asset properties. Assets used in the analysis include water utilities, wastewater utilities, storm water utilities, roads, fleet, public transit, and information technology. The information gathered during the background review includes current state information such as debt levels, along with operation of capital infrastructure and other operating and rehabilitation costs that were made available by the municipalities. The model also separates capital expenditures between onsite and offsite costs. Onsite costs such as local roads, water and wastewater servicing will be constructed by and at the cost of developers, considered standard practice in municipal development in Alberta. Offsite capital infrastructure costs such as arterial roads, highways or interchanges will include cost sharing among third parties such as developers, Alberta Transportation, or a utility company. The cost sharing level will vary depending on the type of asset, but for this project, these costs were assumed to require no front-ended funding from the municipality.

Lifecycle costs have been assessed over a 75-year period (allowing for steady state costs after a complete 40-year infrastructure build-out period), with information available for any time frame from the start of the project to the projected end date. The analysis is a bottom-up approach intended to determine the approximate cost of growth for eventual build-out, as well as at each stage in development over the 40-year life cycle of the project, based on infrastructure, land use, projected population, and density, including revenue modeling based on estimates for funding and taxation provided. The model differentiates between assets and revenues based on development type, allowing

for finer-grained analysis of different residential and non-residential types. Costs for the entire model length are presented without inflation in 2020 dollars.

The collected information was integrated with asset rehabilitation strategies developed using an in-house Risk-Based Infrastructure Modeling System (RIMS). RIMS allows a proactive approach that enables effective decision-making for asset allocation and funding strategies, weighing the cost of growth versus projected revenue. It is also imperative to understand how the infrastructure required for the development relates to existing infrastructure, timing, and implications for operations, both existing and projected. The final outputs of the model include annual cash flows as well as capital, operation of capital, and rehabilitation costs by category, along with projected tax rates and borrowing costs. Monte Carlo simulation is applied to specific input variables to model uncertainty with items such as property values or construction capital costs.

1.2.1 Major Capital Costs

Capital costs for major utilities (stormwater, sanitary, water) and transportation (roadways, transit, active mode routes, and goods movement routes) come from two major sources - the Transportation, Utilities, and Infrastructure (TUI) Strategy Document and the TUI Land Use Option Cost Comparison (Table 1) estimates for servicing from ISL. The TUI Strategy Document outlines timing and costs for the projects shown in the Table 2 below. All amounts are in millions of dollars. Note that the updating servicing values are significantly higher than the previous values used in the scenario analysis; additional infrastructure has been added as ISL has matured the servicing plan. The capital costs of construction for these assets are currently assumed to be offsite funded including the Parkland Meridian development.

Table 1: Transportation and Infrastructure Servicing Costs Per Decade in Millions of Dollars

Water Costs	Costs (\$M)				
Municipality	2020/30	2030/40	2040/50	2050/60	Total
Stony Plain	\$ 3.6	\$ 11.0	\$ 3.1	\$ 11.5	\$ 29.2
Parkland Meridian	\$ -	\$ -	\$ 11.8	\$ 2.7	\$ 14.5
Spruce Grove	\$ 8.6	\$ 15.6	\$ 14.1	\$ 6.3	\$ 44.6
Acheson / Big Lake	\$ 23.8	\$ 16.6	\$ 14.8	\$ 8.9	\$ 64.1
Wastewater Costs	Costs (\$M)				
Municipality	2020/30	2030/40	2040/50	2050/60	Total
Stony Plain	\$ 1.6	\$ 2.4	\$ 1.2	\$ 2.6	\$ 7.9
Parkland Meridian	\$ -	\$ -	\$ 6.4	\$ 0.6	\$ 7.0
Spruce Grove	\$ 4.7	\$ 3.1	\$ 1.7	\$ 1.0	\$ 10.5
Acheson / Big Lake	\$ 10.6	\$ 11.1	\$ 17.5	\$ 2.5	\$ 41.7

TRI-MUNICIPAL REGION REGIONAL PLAN – FINANCIAL VIABILITY ANALYSIS FOR PREFERRED LAND USE CONCEPT

Stormwater Costs	Costs (\$M)				
Municipality	2020/30	2030/40	2040/50	2050/60	Total
Stony Plain	\$ 1.7	\$ 0.4	\$ 2.0	\$ 3.0	\$ 7.2
Parkland Meridian	\$ -	\$ -	\$ 0.4	\$ -	\$ 0.4
Spruce Grove	\$ 5.3	\$ 2.8	\$ 0.7	\$ 0.3	\$ 9.1
Acheson / Big Lake	\$ 13.3	\$ 15.5	\$ 12.8	\$ 4.4	\$ 45.9
Roadway Costs	Costs (\$M)				
Municipality	2020/30	2030/40	2040/50	2050/60	Total
Stony Plain	\$ 12.4	\$ 19.3	\$ 25.5	\$ 15.3	\$ 72.5
Parkland Meridian	\$ -	\$ -	\$ 2.6	\$ -	\$ 2.6
Spruce Grove	\$ 18.9	\$ 18.1	\$ 30.5	\$ 13.3	\$ 80.8
Acheson / Big Lake	\$ 32.8	\$ 32.6	\$ 38.1	\$ 13.0	\$ 116.5
Transit Costs	Costs (\$M)				
Municipality	2020/30	2030/40	2040/50	2050/60	Total
Stony Plain	\$ 12.4	\$ 19.0	\$ 22.7	\$ 26.5	\$ 80.6
Parkland Meridian	\$ -	\$ -		\$ -	\$ -
Spruce Grove	\$ 28.0	\$ 36.0	\$ 43.1	\$ 50.2	\$ 157.3
Acheson / Big Lake	\$ 8.3	\$ 10.4	\$ 12.5	\$ 14.5	\$ 45.7
Active Modes Costs	Costs (\$M)				
Municipality	2020/30	2030/40	2040/50	2050/60	Total
Stony Plain	\$ 1.4	\$ -	\$ -	\$ -	\$ 1.4
Parkland Meridian	\$ -	\$ -	\$ -	\$ -	\$ -
Spruce Grove	\$ 1.9	\$ -	\$ -	\$ -	\$ 1.9
Acheson / Big Lake	\$ -	\$ -	\$ -	\$ -	\$ -
Goods Movement Costs	Costs (\$M)				
Municipality	2020/30	2030/40	2040/50	2050/60	Total
Stony Plain	\$ -	\$ 0.2	\$ -	\$ -	\$ 0.2
Parkland Meridian	\$ -	\$ 0.1	\$ -	\$ -	\$ 0.1
Spruce Grove	\$ -	\$ 0.2	\$ -	\$ -	\$ 0.2
Acheson / Big Lake	\$ -	\$ 0.2	\$ -	\$ -	\$ 0.2

Table 2: TUI Strategy Project Costs Summary

TUI Strategy Project Name	Estimated Total Costs
Capital Region Parkland Water Services Commission (CRPWSC) Twinning	\$60.3M (Costs were assumed to be divided equally between affected customers)
Pumping Capacity & Storage Upgrades for Stony Plain	\$63.8M
Pumping Capacity & Storage Upgrades for Parkland County's Acheson and Big Lake districts	\$108.1M
Sanitary Upgrades for Spruce Grove	\$32.9M
Sanitary Upgrades for Stony Plain	\$24M
Sanitary Upgrades for Parkland County	\$43M
Stormwater Upgrades for Spruce Grove	\$5.4M
Stormwater Upgrades for Stony Plain	\$15.8M

2. FINANCIAL VIABILITY MODEL RESULTS

The preferred location plan for this analysis reflects existing plans for growth using costs and asset classes provided by each municipality. The model does not attempt to guess or estimate costs for asset classes that were not provided by the municipality. The initial plan options presented in the previous preliminary memo were developed by Stantec. Following the presentation of preliminary analysis comparing the four scenario options (Base Scenario, Best Location, Equitable Distribution and Highway 628), the final option -- the Preferred Land Use Concept -- was developed by Stantec in consultation with the municipalities. Servicing costs were then prepared by ISL based on this concept and implementation plan. The results presented in this report reflect the latest developments in the preferred land use concept, but it should be noted that various key inputs may change significantly as more information becomes available.

2.1 How to Interpret the Results and Some Limitations

The results from the financial modeling analysis provide a snapshot of the current estimated development plans and their associated revenues and costs to provide a potential range of tax mill rates and debt levels that could be incurred. The results are presented on a per-decade average annual or total basis in line with long term development estimates and costs provided by Stantec and ISL with discussion on trends and assumptions observed. The buildout section provides values on residential and non-residential property values added, total capital costs per decade, and operation of capital and rehab averages. Mill rate averages for both residential and non-residential taxation per decade are then provided in the next section with potential ranges provided resulting from Monte Carlo simulation

results. Debt results per decade and their relation to Alberta MGA and internal limits are discussed in the section after, in addition to decade averages for debt servicing levels. Finally, a discussion of potential flexibility analysis for each municipality is discussed based on the observations from tax and debt servicing results in relation to the plan and associated costs.

The results for mill rates and debt are described in comparison to present-day mill rates and to debt servicing limits that have been passed by the municipalities in question, where available in historical provincial census data or published policy documentation from each municipality. Municipalities should review their policies to confirm that the limits and amounts on debt servicing described in these results from the published policy documentation reflect a reasonable level of actual affordability to the municipality with additional policy analysis if required.

Also of importance is that the model does not assume or attempt to model the function of offsite levies; there are too many unknowns with respect to timing of funds and agreements that may or may not presently exist. The model instead assumes that assets funded by offsite levies are effectively funded separately. The cost of operating and rehabilitating future drainage assets is also assumed to be operated in a net zero cost recovery manner (i.e., the utilities fees collected by each municipality is sufficient to cover the operation and rehabilitation costs). These costs are reported along with capital and operating cost results but they do not contribute to tax or debt increases in the model. However, existing utility asset revenues and costs continue from the present cost-to-revenue trend for each municipality.

It is also important to stress that the number results presented in this report are not indicative of a specific discrete finite cost or dollar value but instead represent a mean with a range of potential values provided by the Monte Carlo simulation. For a detailed list of definitions and assumptions used in the model, please see Appendices I and II.

2.2 Spruce Grove

2.2.1 Buildout

Current development plans add approximately \$144M in average annual total residential and commercial property value from years 1 to 10, \$184M for years 11-20, \$184M for years 21-30 and \$166M the remainder of the buildout. Table 3 splits the average annual added property values into their respective Residential and Non-Residential amounts. For Spruce Grove, the residential properties were assumed to be composed of 70% low density and 30% medium to high density. For the medium to high density properties this was further split into a weighted average of 60% townhouses and 40% midrise residences. The 60%/40% split is based on the 2018 City of Spruce Grove Census Demographic Report.

Table 4 outlines the total capital costs per decade associated with the buildout plan, with the lowest amount of \$134.88M in years 31-40 and the highest amount of \$146.30M in years 21-30. Years 21-30 that have the highest total capital costs coincide with the highest level of projected new annual added property values in both the Residential and Non-Residential property development categories. The offsite capital costs are currently assumed to be completely developer funded.

The average annual operation and rehabilitation of capital assets is outlined in Table 5. Both operation and rehabilitation of capital increase as additional assets are constructed to a maximum of \$29.61M per year and \$4.23M per year respectively. Most of the rehabilitation costs are concentrated in the later stages of the buildout and the steady state period as many assets that have longer service life spans begin to require rehabilitation to keep them in good condition.

Table 3: Average annual added property value per decade of buildout for Spruce Grove

Period	Average Annual Residential Property Value Added (\$M)	Average Annual Non-Residential Property Value Added (\$M)	Average Annual Total Property Value Added (\$M)
1-10	\$121.40	\$23.23	\$144.63
11-20	\$156.71	\$27.21	\$183.92
21-30	\$156.94	\$27.26	\$184.20
31-40	\$156.89	\$8.70	\$165.58

Table 4: Total Capital Costs per decade for Spruce Grove

Period	Total Capital Costs (\$M)
1-10	\$ 117.09
11-20	\$ 130.62
21-30	\$ 130.15
31-40	\$ 112.76

Table 5: Average annual operation and rehabilitation of capital assets per decade of buildout and steady state periods for Spruce Grove

Period	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
1-10	\$5.96	
11-20	\$13.68	\$0.45
21-30	\$21.79	\$1.50
31-40	\$29.56	\$2.72
41-75	\$33.10	\$3.75

2.2.2 Tax Rates

Spruce Grove’s anticipated residential tax rate range in the long-term trends somewhat downwards from the current levels (Figure 1) with the current plans for transportation and utilities infrastructure and maintaining operations and rehabilitation for the current level of services. The existing growth projections show increases in the commercial/industrial tax base that outpace the infrastructure needs in the existing plans until year 30. Following year 30, non-residential growth (commercial non-industrial development, but to a lesser extent industrial development) is expected to slow down considerably in the plan and may be an area of concern if additional infrastructure such as recreation facilities or other services are desired in that period. Growth estimates may also assume large infrastructure investments such as fiber optic data trunks or other commercial business incentives, residential facilities, or services to attract the planned growth that are not yet included in the development model. The residential mean tax mill rate over the length of the model is 5.90, a decrease from the present 6.27. Table 6 shows the residential and non-residential tax mill rate annual averages per decade. The lower long term tax rates are an indication that Spruce Grove will have the ability to fund some additional infrastructure by maintaining similar tax rates present without needing to take on additional debt.

Table 6: Average annual residential and non-residential tax mill rates per decade of buildout and steady state periods for Spruce Grove

Period	Average Residential Tax Rate (Thousandths of a Dollar)	Average Non-Residential Tax Rate (Thousandths of a Dollar)
1-10	6.80	9.64
11-20	6.49	9.20
21-30	6.13	8.69
31-40	6.17	8.74
41-75	5.98	8.47

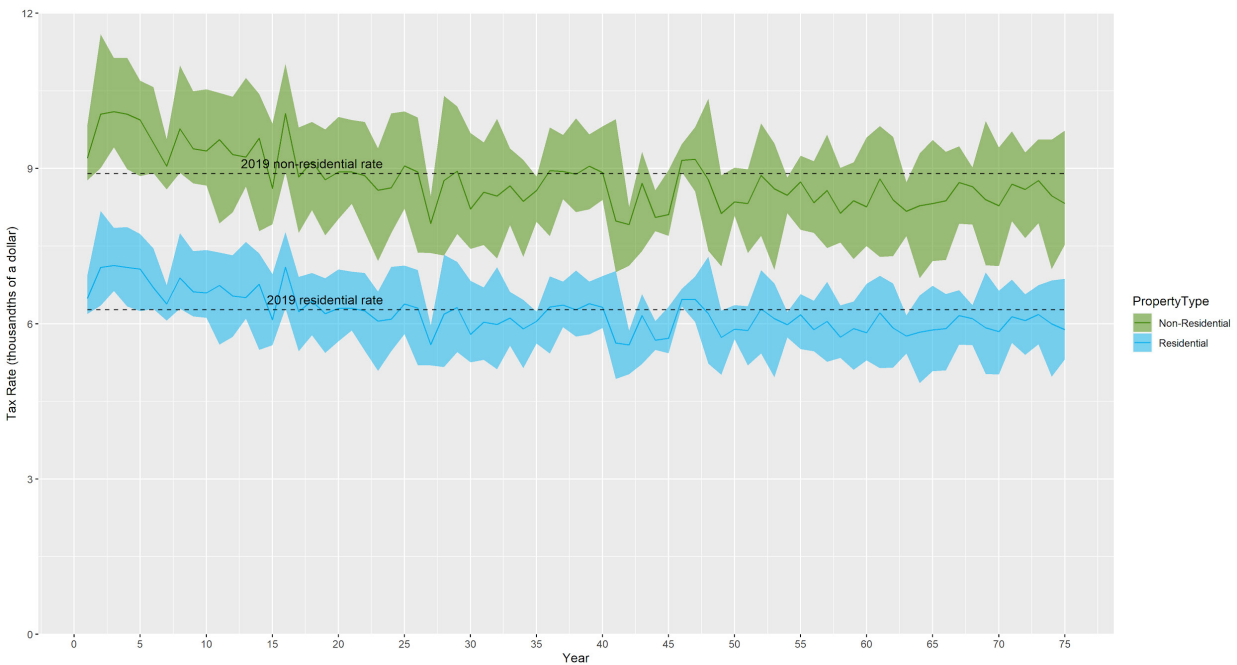


Figure 1: Mean residential and non-residential tax mill rates and potential variability throughout the duration of the financial analysis simulation for Spruce Grove.

2.2.3 Debt

There is sufficient room for taking on additional debt if required to fund the construction of new infrastructure for Spruce Grove as the current and long-term levels do not exceed either the MGA or internal limits on debt servicing or total debt. The maximum average annual debt to revenue ratio through the buildout is 0.534 in years 1-10 and decreases for the rest of the buildout and remains below Spruce Grove’s internal limit of 0.75. The average annual debt service maximum level is 5.73%, also in years 1-10. Debt service also decreases through the rest of the buildout and remains below the internal limit of 12.5%.

The average annual debt levels shown in Table 7 are well below the limits set forth by the Spruce Grove and the Province and debt could be used to fund additional infrastructure without significant tax rate increases. Table 7 also provides the average annual Debt to Revenue and Debt Servicing for Spruce Grove over each decade of the buildout and steady state periods and how they compare to the allowable limits. Average annual debt servicing levels remain between \$4.52M and \$5.06M during the buildout but start to increase during the steady state period to an annual average of \$5.56M, as significant rehabilitation of capital assets begin to become required to keep these assets in good condition, and additional property buildout is not modeled in those years.

Table 7: Average annual debt to revenue and debt service ratios and debt servicing per decade of buildout and steady state periods for Spruce Grove

Period	Average Debt to Revenue Ratio (MGA Limit: 1.5, Internal Limit 0.75)	Average Debt Service Level (MGA Limit: 25%, Internal Limit 12.5%)	Average Total Annual Debt (\$M)	Average Debt Service per Year (\$M)
1-10	0.524	5.56%	\$43.16	\$4.58
11-20	0.461	4.89%	\$44.05	\$4.68
21-30	0.408	4.33%	\$45.17	\$4.79
31-40	0.399	4.03%	\$51.10	\$5.16
41-75	0.419	4.38%	\$56.00	\$5.86

2.2.4 Growth Room and Flexibility

At this stage of planning the falling tax rate should not necessarily be taken as a prediction of declining rates but rather as an indicator of how much room exists for planning additional services and amenities expected by the growing population. The results indicate that Spruce Grove will have the flexibility to fund some additional infrastructure (e.g., protective services, recreation, further recommendations to drainage referenced in the ISL servicing strategy) at current tax level parameters in the long term with the current buildout plans. These additional developments may offset the current decline in tax rates or require new debt at a higher than present level.

Spruce Grove will have the ability in most years to increase the tax rates if necessary, to accommodate this additional growth with between \$2 to \$15M in additional tax revenue depending on the year and remain within established historical ranges for tax increases. This space for additional tax increases will give Spruce Grove significant flexibility to adjust infrastructure and service spending as required. As noted previously, there is also room for additional debt to be taken on as Spruce Grove currently enjoys a very low debt to revenue ratio well below MGA limits. This means additional infrastructure can be funded with the options of either moderate tax increases or maintaining tax rates and funding with additional debt. The growth plan is not currently developed at a detailed level to provide the model with the costs of the additional required infrastructure.

2.3 Stony Plain

2.3.1 Buildout

Current development plans add approximately \$45M in average annual total residential and commercial property value from years 1 to 10, \$72M for years 11-20, \$74M for years 21-30 and \$82M the remainder of the buildout. Table 8 splits the average annual added property values into their respective Residential and Non-Residential values. For Stony Plain, the residential properties were assumed to be composed of 70% low density and 30% medium to high density. The medium to high density residential properties were assumed to be townhouse construction in line with current census data.

Table 9 outlines the total capital costs per decade associated with the buildout plan, with the lowest amount of \$69.32M in years 1-10 and the highest amount of \$169.65M in years 31-40. Years 34-40 that have the highest total capital costs coincide with the highest level of projected new annual added property values in both the Residential and Non-Residential property development categories.

The average annual operation and rehabilitation of capital assets is outlined in Table 10. Both operation and rehabilitation of capital increase as additional assets are constructed to a maximum of \$13.71M per year and \$3.06M per year, respectively. Most of the rehabilitation costs are concentrated in the later buildout years and steady state period as many assets that have longer service life spans begin to require rehabilitation to keep them in good condition.

Table 8: Average annual added property value per decade of buildout for Stony Plain

Period	Average Annual Residential Property Value Added (\$M)	Average Annual Non-Residential Property Value Added (\$M)	Average Annual Total Property Value Added (\$M)
1-10	\$42.88	\$2.92	\$45.80
11-20	\$66.28	\$5.78	\$72.06
21-30	\$68.64	\$5.81	\$74.45
31-40	\$68.69	\$13.33	\$82.02

Table 9: Total Stony Plain and offsite capital costs per decade for Stony Plain

Period	Stony Plain Capital Cost Total (\$M)	Total Offsite Costs (\$M)	Total Capital Costs (\$M)
1-10	\$0.33	\$62.14	\$62.47
11-20	\$0.52	\$97.17	\$97.69
21-30	\$0.65	\$96.59	\$97.25
31-40	\$0.90	\$152.87	\$153.77

Table 10: Average annual operation and rehabilitation of capital assets per decade of buildout and steady state periods for Stony Plain

Period	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
1-10	\$2.25	\$0.05
11-20	\$5.25	\$0.26
21-30	\$8.56	\$0.90
31-40	\$12.98	\$1.68
41-75	\$15.92	\$2.85

2.3.2 Tax Rates

Stony Plain’s anticipated residential tax rate range increases in the short term but in the long-term trends lower than current tax rates (Figure 2) with the current plans for transportation and utilities infrastructure and maintaining operations and rehabilitation for the current level of services. The existing growth projections show increases in the commercial/industrial tax base that can keep up the required infrastructure needs in the long term. Growth estimates may also however assume large infrastructure investments such as fiber optic data trunks or other commercial and business incentives or residential facilities or services that are not yet included in the development model. The residential mean tax mill rate over the length of the model is 6.05, a decrease from the present 6.13.

The first 20 years of the buildout will likely require average annual tax rate increases over current levels with an average annual mill rate of 6.65 for years 1-10 and 6.33 for years 11-20 before beginning to move to levels below the current mill rate. Stony Plain may choose to consider deferring or debt-funding certain infrastructure to reduce the impact of these potential increases. Table 11 shows the residential and non-residential tax mill rate annual averages per decade. The somewhat lower long

term tax rates are an indication that Stony Plain will have some but limited ability to fund some additional infrastructure by maintaining similar tax rates present without needing to take on additional debt or increase tax rates higher than historical trends.

Table 11: Average annual residential and non-residential tax mill rates per decade of buildout and steady state periods for Stony Plain

Period	Average Residential Tax Rate (Thousandths of a Dollar)	Average Non-Residential Tax Rate (Thousandths of a Dollar)
1-10	7.04	8.79
11-20	6.56	8.20
21-30	6.24	7.80
31-40	6.06	7.57
41-75	6.42	8.02

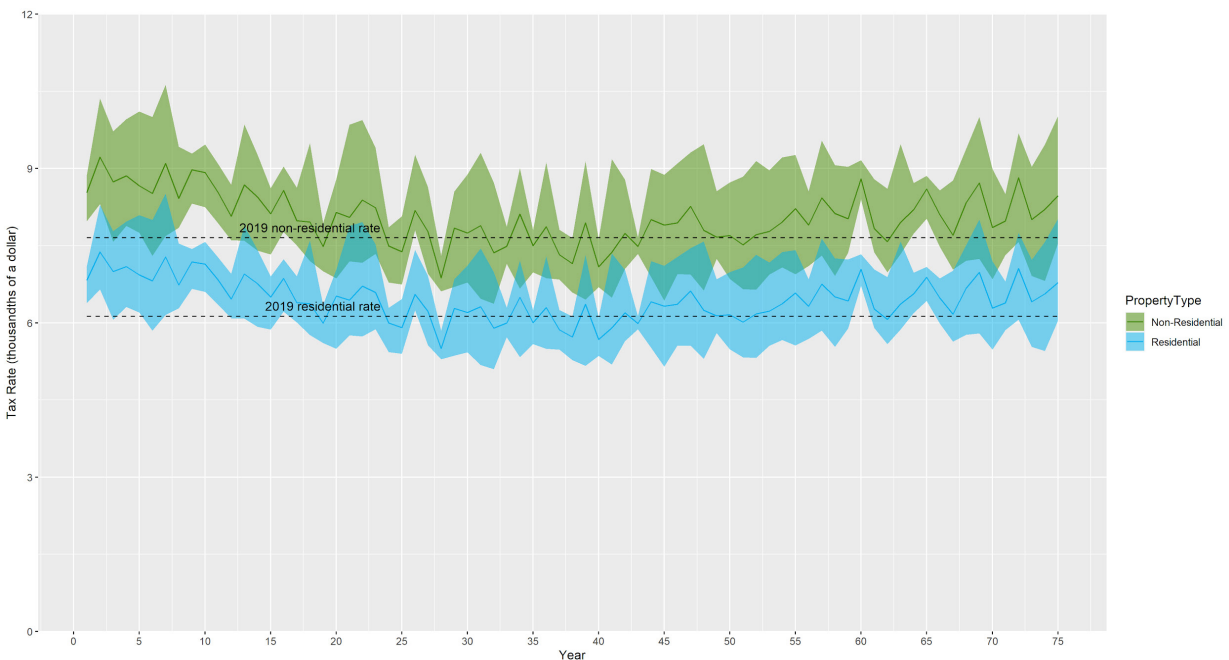


Figure 2: Mean residential and non-residential tax mill rates and potential variability throughout the duration of the financial analysis simulation for Stony Plain.

2.3.3 Debt

There is sufficient room for taking on additional debt if required to fund the construction of new infrastructure for Stony Plain as the current and long-term levels do not exceed either the MGA or internal limits on debt servicing or total debt. The maximum average annual debt to revenue ratio through the buildout is 0.731 in years 31-40 but is still below Stony Plain's internal limit of 1.2. The average annual debt service level maximum level is 6.41% in year 31-40 and remains below the internal limit of 20%.

The debt levels shown in Table 12 are below the limits set forth by the Stony Plain and the Province and could be used to fund additional infrastructure without significant tax rate increases. Table 12 also provides the average annual Debt to Revenue and Debt Servicing for Spruce Grove over each decade of the buildout and steady state periods and how they compare to the allowable limits. average annual debt servicing levels remain between \$2.18M and \$3.76M during the buildout but starts to increase during the steady state period to an average of \$6.08M as significant rehabilitation of capital assets begin to become required to keep these assets in good condition and additional property buildout is not modeled in those years.

Table 12: Average annual debt to revenue and debt service ratios and debt servicing per decade of buildout and steady state periods for Stony Plain

Period	Average Debt to Revenue Ratio (MGA Limit: 1.5, Internal Limit 1.2)	Average Debt Service Level (MGA Limit: 25%, Internal Limit 20%)	Average Total Annual Debt (\$M)	Average Debt Service per Year (\$M)
1-10	0.539	5.09%	\$23.06	\$2.18
11-20	0.517	4.77%	\$24.91	\$2.30
21-30	0.582	5.12%	\$31.41	\$2.77
31-40	0.681	5.99%	\$41.32	\$3.63
41-75	0.935	8.80%	\$61.60	\$5.80

2.3.4 Growth Room and Flexibility

The results indicate that Stony Plain will have only limited flexibility to fund some additional infrastructure at current tax level parameters in the long term with the current buildout plans. There is likely to be additional infrastructure required (e.g., protective services, recreation) to support and attract the anticipated commercial and industrial growth that will support the current land use plan. These additional developments may offset the current estimated tax rate averages or require new debt at a higher than present level.

Stony Plain currently has a higher estimated non-capital operating cost per capita than the other municipalities. Some additional flexibility that is not apparent in the modelling may be realized if some

sources of fixed cost are not at capacity and the per capita operating rate turns out to fall as population increases.

Stony Plain is not likely to have significant ability in most years to increase the tax rates if necessary, to accommodate this additional growth with the current buildout plan and remain within established historical ranges for tax increases. Most of the estimated years for additional tax increases are between years 28 to 40 and only allow for minor (under \$1M) additional revenues. Despite the limited ability to increase tax mill rates with the current buildout plan, additional debt can be taken out and still fall within MGA and internal limits for debt to revenue and debt servicing ratios during the buildout period. Stony Plain will have more flexibility near the start of the buildout period to incur additional debt compared to near the end of the buildout and steady state periods. In years 1-20 the average debt to revenue ratio remains at a relatively low 0.552 and 0.540 per decade out of an internal limit of 1.2, which allows for a certain amount of flexibility to maintain tax rates rather than lowering vs increasing debt to fund any additional infrastructure. The growth plan is not currently developed at a detailed level to provide the model with the costs of the additional required infrastructure. Between years 20 to 55, the total debt as a multiple of revenue ratio increases up to an average of 1.01 out of an internal limit of 1.2 by the end of buildout so careful planning will be required during this period if additional infrastructure is required to ensure that Stony Plain does not exceed internal debt limits. Debt servicing as a percentage of total revenue limits is not as much of a concern, only reaching an average maximum of 9.51% out of an internal limit of 20%.

2.4 Parkland County

2.4.1 Buildout

Current development plans add approximately \$143M in average annual total residential and commercial property value from years 1 to 10, \$135M for years 11-20, \$159M for years 21-30 and \$123M the remainder of the buildout. Table 13 splits the average annual added property values into their respective Residential and Non-Residential values. For Parkland County, the residential properties were assumed to be entirely composed of low-density county residential. Table 14 outlines the total capital costs associated with the buildout plan, with the lowest amount of \$145.9M in years 31-40 and the highest amount of \$314.6M in years 21-30. Years 21-30 that have the highest total capital costs coincides with the highest level of projected new annual added property values in both the Residential and Non-Residential property development categories.

The average annual operation and rehabilitation of capital assets is outlined in Table 15. Both operation and rehabilitation of capital increase as additional assets are constructed to a maximum of \$13.42M per year and \$7.15M per year, respectively. Most of the rehabilitation costs are concentrated in the steady state period as many assets that have longer service life spans begin to require rehabilitation to keep them in good condition.

Table 13: Average annual added property value per decade of buildout for Parkland County

Period	Average Annual Residential Property Value Added (\$M)	Average Annual Non-Residential Property Value Added (\$M)	Average Annual Total Property Value Added (\$M)
1-10	\$67.81	\$75.40	\$143.21
11-20	\$78.69	\$57.05	\$135.74
21-30	\$81.77	\$77.43	\$159.20
31-40	\$79.22	\$30.42	\$109.64

Table 14: Total County and offsite capital costs per decade for Parkland County

Period	County Capital Cost Total (\$M)	Total Offsite Costs (\$M)	Total Capital Costs (\$M)
1-10	\$0.94	\$214.81	\$215.75
11-20	\$0.90	\$196.15	\$197.05
21-30	\$0.90	\$314.25	\$315.16
31-40	\$0.88	\$134.40	\$135.27

Table 15: Average annual operation and rehabilitation of capital assets per decade of buildout and steady state periods for Parkland County

Period	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
1-10	\$2.40	\$0.19
11-20	\$5.70	\$1.33
21-30	\$9.48	\$3.29
31-40	\$13.37	\$5.34
41-75	\$14.82	\$7.16

2.4.2 Tax Rates

Parkland County's anticipated residential tax rate range in the long-term trends somewhat downwards (Figure 3) with the current plans for transportation and utilities infrastructure and maintaining operations and rehabilitation for the current level of services. The existing growth projections show increases in the commercial/industrial tax base that outpace the infrastructure needs in the existing plans. Notably growth estimates may assume large infrastructure investments such as fiber optic data trunks or other commercial incentives that are not yet included in the development model. The residential mean tax mill rate over the length of the model is 3.42, a decrease from the present 4.09. Table 16 shows the annual average residential and non-residential tax mill rate averages per decade. The lower long term tax rates are an indication that Parkland County will have the ability to fund some additional infrastructure by maintaining similar tax rates present without needing to take on additional debt rather than indication or recommendation that tax rates should be lower over time.

Table 16: Average annual residential and non-residential tax mill rates per decade of buildout and steady state periods for Parkland County

Period	Average Residential Tax Rate (Thousandths of a Dollar)	Average Non-Residential Tax Rate (Thousandths of a Dollar)
1-10	3.85	7.70
11-20	3.54	7.08
21-30	3.39	6.78
31-40	3.16	6.29
41-75	3.30	6.55

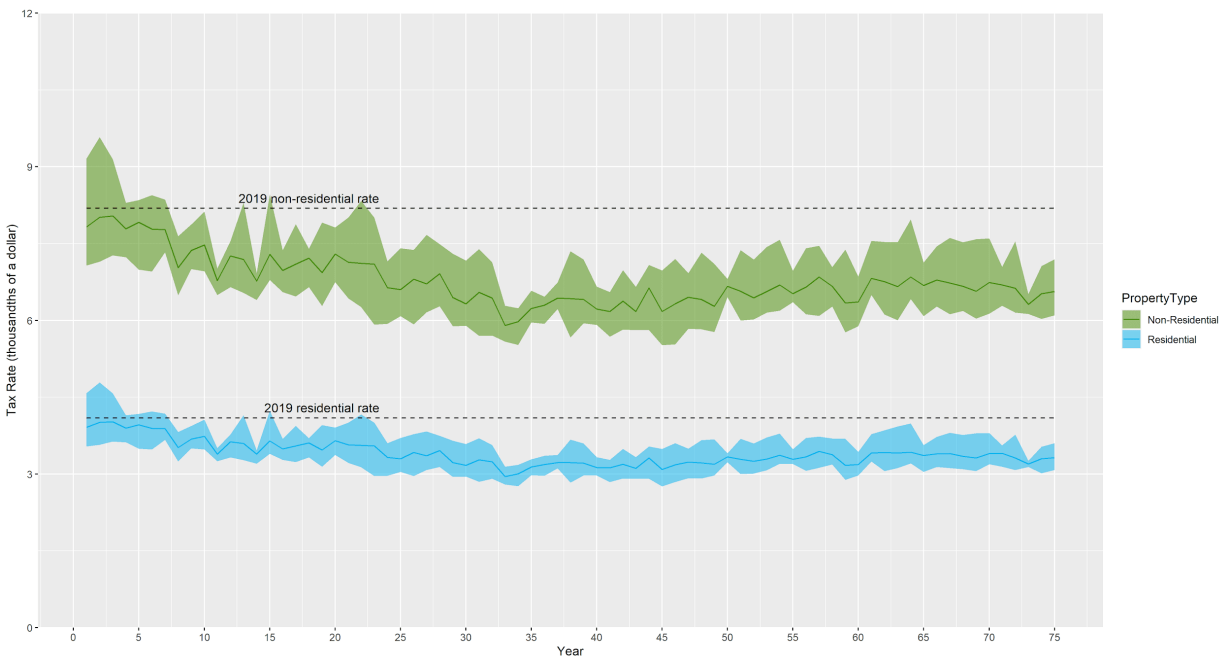


Figure 3: Mean residential and non-residential tax mill rates and potential variability throughout the duration of the financial analysis simulation for Parkland County.

2.4.3 Debt

There is sufficient room for taking on additional debt if required to fund the construction of new infrastructure for Parkland County as the current and long-term levels do not exceed either the MGA or internal limits on debt servicing or total debt. The debt levels shown in Table 17 are well below the limits set forth by the County or the Province and debt could be used to fund additional infrastructure without significant tax rate increases. Table 17 also provides the average annual Debt to Revenue ratio and Debt Servicing level for the County over each decade of the buildout and steady state periods, and how they compare to the allowable limits. The average annual debt ratios and servicing increase over the lifetime of the buildout, with the debt to revenue ratio average remaining under 0.8 (out of an MGA and internal limit of 1.5) and debt service limit remaining under 8% (out of an MGA and internal limit of 25%), but well below allowable limits. Average annual debt servicing levels remain between \$2.5M and \$4.3M during the buildout but start to increase significantly during the steady state period to an average of \$6.3M as significant rehabilitation of capital assets begin to become required to keep these assets in good condition and additional property buildout is not modeled in those years to offset these costs with additional growth.

Table 17: Average annual debt to revenue and debt service ratios and debt servicing per decade of buildout and steady state periods for Parkland County

Period	Average Debt to Revenue Ratio (Limit: 1.5)	Average Debt Service Level (Limit: 25%)	Average Total Annual Debt (\$M)	Average Debt Service per Year (\$M)
1-10	0.387	3.36%	\$29.81	\$2.59
11-20	0.420	3.53%	\$33.65	\$2.83
21-30	0.517	4.28%	\$43.55	\$3.60
31-40	0.583	5.09%	\$51.36	\$4.48
41-75	0.794	7.23%	\$72.77	\$6.62

2.4.4 Growth Room and Flexibility

The results indicate that Parkland County will have the flexibility to fund some additional infrastructure at current tax level parameters in the long term with the current buildout plans. There is likely to be additional infrastructure required (e.g., protective services, recreation) to support and attract the anticipated commercial and industrial growth that will support the current land use plan. The ISL servicing report indicates recommendations for stormwater upgrades in the long-term including a substantial 31 stormwater management facilities and several pumping facilities which can incur significant costs. These additional developments may offset the current decline in tax rates or require new debt at a higher than present level. Parkland County in particular will have a higher reliance on long term commercial and industrial growth to maintain tax rates and support services as urban population centers to attract significant residential growth do not currently exist.

There are also several years observed where Parkland County would be able to increase tax rates if necessary, to accommodate additional infrastructure or other priorities and remain within established historical ranges for tax increases. This space for additional tax increases will give the County significant flexibility. As noted previously, there is also room for additional debt to be taken on as the County currently enjoys a very low debt to revenue ratio well below MGA limits. This means additional infrastructure can be funded with the options of either moderate tax increases or maintaining tax rates and funding with additional debt. The growth plan is not currently developed at a detailed level to provide the model with the costs of the additional required infrastructure.

3. CONCLUSIONS

The analysis shows that across the Tri-Municipal region as a whole, the basic infrastructure needs that have been reported by the municipalities and the land use plan can be met by the forecasted growth in the Preferred Land Use plan. Debt and debt servicing levels for all 3 municipalities remain below internal and MGA limits. However, the expected growth vs planned infrastructure needs leads to a forecast of a diverging tax situation across the region:

- Spruce Grove maintains close to but slightly lower to current levels.
- Stony Plain faces short-term increasing tax rates before returning to current levels.
- Parkland County enjoys gradually decreasing tax rates.

Note that the potential for reduction in tax rates is indicative of a greater ability to fund additional infrastructure to support growth and services rather than a trend towards a lower tax rate.

Plans and forecasts currently available do not include increases in some asset categories such as protective services or recreation facilities. These plans may drive further divergence between the municipalities as their costs are more likely to be focused in Spruce Grove and Stony Plain who will require these additional assets to continue to attract new residential development and supporting commercial development. Aggressive infrastructure plans in categories such as broadband internet access and other potential commercial incentives may also be required to achieve the forecasted commercial/industrial growth that is driving the decline in estimated tax rates. This issue is particularly acute in Parkland County where the Preferred Use plan relies strongly on non-residential growth to achieve the estimated resulting ranges in taxes and debt.

There is sufficient flexibility for Spruce Grove and Parkland County to choose to either maintain tax rates according to historical trend parameters or to take on additional debt to fund these additional pieces of infrastructure throughout the duration of the buildout period. The simulation only attempts to maintain tax rates according to historical data from each municipality, but of course tax rates could also be increased beyond those limits if desired.

- Spruce Grove has significant flexibility throughout the buildout period to both incur additional debt or adjust tax rates.
- Parkland County has flexibility to take on additional debt but has less flexibility to adjust tax rates compared to Spruce Grove.
- Stony Plain does not have significant flexibility, only having a limited period with additional tax room from years 28-40 to make small tax revenue increase adjustments. However, Stony Plain has some flexibility to increase debt near the beginning of the buildout period but the debt to revenue ratio that begins to reach internal limits near the end with the current plan.

Ultimately, development will need to be monitored carefully to ensure that it continues to be financially viable and sustainable. The current analysis does not model a levy or other method for handling developer funded infrastructure. The assets are received at zero cost as they become necessary, and the model incorporates the operational and rehab costs incurred as a result. The method chosen to achieve this net zero infrastructure cost for a development project or phase of the buildout plan will need to be tested and confirmed and will also require significant planning effort. Finally, the municipalities will need to consider plans for the more than \$1 billion in capital infrastructure that will need to be operated, maintained, and renewed, as necessary.

APPENDIX I - MODEL DEFINITIONS

1 RIMS - RISK-BASED INFRASTRUCTURE MODELING SYSTEM

RIMS is an analytical tool that assists in the ranking of rehabilitation needs and the allocation of rehabilitation funds across various infrastructure assets to ensure long-term value. RIMS warehouses all relevant infrastructure assets at a conceptual level, with relevant properties including approximate units and dimensions, deterioration behaviors, unit costs for capital construction, as well as approximate costs of rehabilitation, and operations costs. RIMS includes methods for simulating asset deterioration over time, incorporating various rehabilitation scenarios to develop an asset management plan over time. It also enables the testing of various funding strategies so that municipalities can see the impact of certain funding levels on infrastructure and assess infrastructure status over a given length of time. RIMS was used to generate rehabilitation timing and cost information for assets in the model.

2 MONTE CARLO SIMULATION

Monte Carlo simulation is a simple method for handling complex problems; it enables the reliable assessment of uncertainty associated with estimates and the impact they may have on decisions. It acts as an additional layer for the financial analysis, producing a distribution for project costs and allowing for planning within a specified level of certainty. The Monte Carlo simulation model's main advantage is that it allows for decisions to be made based on a range of probabilistic results, a much more realistic way of describing uncertainty in variables such as costs, timing, price fluctuations, and escalation, than using traditional "point form" or "deterministic" values (i.e., pre-determined sets of values that will give a fixed set of results).

This Monte Carlo modeling process works by calculating results using a different set of random numbers, based on the probability functions desired, over as many iterations as required (SMA generally chooses to use 1,000 iterations). The results of each iteration are captured, creating a distribution of these random values representing each potential scenario. The most likely values can then be identified, along with all extreme possibilities. The key to undertaking this process on a project is to have the correct input for modelling (i.e., choosing the correct ranges). This involves properly identifying those items that can have a critical effect on the project outcome and understanding the detailed possibilities of its range of values.

3 OTHER DEFINITIONS

Appurtenances – accessories such as poles and cables related to gas mains, underground hydro, telephone, streetlights, etc., as defined by design and construction standards.

Asset Degradation – the rate at which an asset deteriorates in terms of its physical condition, demand condition, and function, and the resulting need for rehabilitation and/or replacement.

Asset Threshold – the level of population which initiates the development of certain assets.

Capital Costs – expenditures for items such as land purchase, equipment, or construction costs for assets such as roads, and buildings.

Non-Capital Operating Costs – expenditures that include items such as Staff Salaries, Corporate Services (e.g., Human Resources or Fleet Services), Corporate Finance and Planning, Community Services, etc.

Operation of Capital Costs – costs associated with utilizing an asset during its life cycle (for the purposes of this financial model, these costs do not include other operating costs). Examples include items such as snow clearing from roads, upkeep of facilities such as rec centers, and costs of maintaining data centers.

Rehabilitation (Rehabilitation) Costs – costs of replacing or maintaining assets at an acceptable service level. These costs are expected to rise near the end of the life cycle as assets start to require replacement.

Revenue – amount of money the municipality receives for a given year, which includes property taxes, grants, transit fees, user fees, fines, and “other” fees, and “other revenue sources” as listed by the municipality.

Right of Way (ROW) – roads, lanes, road allowances, bridges, public utility lots, public space within the jurisdiction of a municipality.

APPENDIX II - MODEL ASSUMPTIONS

1 MODEL OVERVIEW

The model takes a development plan with all asset quantities and integrates it with an asset management plan, which was derived from asset degradation curves and rehabilitation costs; the model then adds costs for annual operations & rehabilitation. The revenue model uses the development plan similarly. The final output is annual cash flow, tax rates and borrowing amounts. Sources for external inputs and design inputs and descriptions of model results are included below.

1.1 Information Sources

Creating a financial baseline model is a complex process, requiring the input of multiple variables from a variety of sources to ensure maximum accuracy. Some of the sources of the data used in the financial modeling include:

- Province of Alberta Municipal Statistical Information Returns
- Province of Alberta Municipal Financial Information Returns
- Historical lending rates for the Alberta Capital Finance Authority (loans are now directly administered by the Government of Alberta)
- Current major infrastructure asset quantities and operation and rehabilitation costs provided by each municipality.
- Rehabilitation data for the Capital Region from SMA's RIMS software database
- Average property values collected from realtor new build listings for each municipality.
- Census and financial data from the local municipalities involved in the analysis.

The information sources were used to determine the external and design inputs as described below. These in turn, allowed for the generation of the model results.

1.2 External Inputs

- Expected development rates (provided by Stantec)
- Expected population growth (provided by Stantec)
- Asset triggers (provided by ISL)
- Asset degradation (RIMS)
- Operation & Rehabilitation rates (provided by Spruce Grove, Stony Plain, Parkland County and data from the Province of Alberta)
- Rehabilitation rates (RIMS, checked against other sources provided)

1.3 Design Inputs

- Area design (developed by Stantec and ISL in consultation with municipalities)
- Development schedule (developed by Stantec and ISL in consultation with municipalities)
- Revenue model, including taxation, developer levies, and other funding sources as applicable.

- Infrastructure construction schedule (developed by Stantec and ISL based on area design)
- Types and amount of infrastructure (developed by Stantec and ISL based on area design)

1.4 Model Results

- Revenue received (integration of the revenue model with the development schedule)
- Asset management plan (integration of asset degradation with infrastructure construction schedule and types and amount of infrastructure)
- Asset management costs (integration of asset management plan with rehabilitation costs)
- Operational costs (integration of infrastructure construction schedule, types and amount of infrastructure, and operation and rehabilitation rates)
- Tax rates and borrowing costs associated with the input growth and funding rates given to the model

2 ASSUMPTIONS

2.1 General Assumptions

As with any analytical model, the reliability of the data generated is dependent on the accuracy of the information upon which it is based, including, but not limited to, projected traffic, population growth rate, information on desired future infrastructure, properties of the assets (including base design assumptions), as well as various population build-out triggers. It is also assumed that assets will be kept in good condition and renewed regularly as part of an asset management plan.

Recent MGA changes now allow levies to be charged for additional pieces of infrastructure (i.e., Rec Centers, Libraries, Police Stations, Fire Stations, etc.). Subject to future stakeholder discussion and council approval for project selection, additional levies may be charged for these additional infrastructure components if they are chosen for construction by municipalities in the future which would further shift funding for these items to developers; the model assumes that these assets will be funded by the respective municipality unless otherwise discussed (the current development plan does not currently plan for these population trigger based assets).

■ RIMS

- Asset degradation curves have been developed using the Risk-Based Infrastructure Management System (RIMS). This is an advanced methodology for calculating optimized maintenance plans over time.
- Deterioration properties of assets are based on infrastructure models from the Capital region.
- Rehabilitation strategies will focus on keeping assets in good condition, rather than minimizing costs over the lifecycle of the project.
- Costs were scaled to 2020 dollars using the City of Edmonton Metro Area inflation data

■ Monte Carlo

- Variables are sampled independently every year during a single run. The sampled variables include the following:
 - Property Values
 - Costs (Capital, Operating, Rehabilitation)
 - Borrowing Interest Rates
- All sampled variables can change 20% up or down with a standard mean of no change (0% change) except for Asset Capital Costs which can range up or down by 30%, these are industry standard choices given the current level of detail provided for model inputs.
- A beta distribution (Alpha = 2, Beta = 2) was used for sampling
- The model was run with 100 iterations

2.2 Development & Timing

■ Population & Density

- Design assumptions are based on plans provided by ISL and Stantec.
- Average property value assumptions are derived from existing census and assessment data. However, when the fully formed development plan becomes available the planner's target property values for new development may be higher or lower than the averages of existing property.
- Existing property values were determined from provincial financial return data.
- New non-residential property values were calculated from the total assessed value of non-residential properties from provincial data and scaled as a proportion of the total developed zoned land area data provided by Stantec between commercial and industrial.
- Population growth projections are provided by Stantec.
- Weighted average of number of people per household unit
 - Stony Plain - Low density - 3; Mid/High density - 2
 - Spruce Grove - Low density - 2.9; Mid/High density - 2
 - Parkland County - Low density - 2.8
- Infill percentages were developed by Stantec with the following parameters.
 - Spruce Grove - 10%
 - Stony Plain - 15%
 - Parkland County - 0%
- Lot frontage assumptions per unit (12.12m/single (36.36m/single in Parkland County), 6.72m/townhouse, 3.36m/midrise, 151.5m/ha commercial/industrial)
 - Frontage is used to derive quantities for linear surface and underground infrastructure and utilities.
- Residential development Low vs Medium/High density distribution is assumed to be:
 - Stony Plain - 70% Low; 30% Med/High
 - Medium and High density residential is assumed to be townhouses in line with current census data.

- Spruce Grove - 70% Low; 30% Med/High
 - The Medium and High-density residential portion is assumed to be a weighted average split of 60% townhouses and 40% midrises based on current census data.
- Parkland County - 100% Low density (County Residential)
- Non-Residential development and growth estimates provided by Stantec.
 - Parkland county non-residential development includes both the Acheson/Big Lake area and the Fifth Meridian developments.
 - Acheson is entirely an off-site levy area, with capital costs funded by developers.
 - Fifth Meridian is entirely an off-site levy area, with capital costs funded by developers.

■ Development Timing and Infrastructure Triggers

- Appurtenances for surface and underground are estimated using average spacings.
- Population triggered assets have a 2% allowable margin to trigger the asset for that year.
- Values of residential and commercial properties are average values derived from average listings of new properties in each municipality and scaled for higher density units.
- Non-residential development is assumed to keep pace with residential.
- Assets including local surface roads and sidewalks, local underground utilities, and streetlights are directly related to the units developed.
- Assets such as arterial roads (asphalt area, streetlights, walkways), are indirectly related to units developed via regular construction on a yearly basis and have been triggered by population thresholds to allow changes in population growth to affect their development.
 - The model allows for this development but is not currently developed to a detailed level to explicitly define population trigger thresholds.
- Major utilities and transportation network improvement costs were provided in 10-year totals by ISL but in the model are linearly interpolated on an annual basis.
- Facilities (i.e., Rec Centers, Storage) and interchanges are triggered by population thresholds. The model is not currently developed at a level of detail to explicitly define construction of these new facilities.
- Costs more closely related to population, such as fleet, transit, and information technology (IT), are scaled by population.
- The triggers will be determined from future development detail plans provided by Stantec and ISL but are not presently defined in the model.
 - Established asset triggers remain fixed throughout the life cycle of the buildout.
- Development numbers for population growth and commercial development per year were linearly interpolated between provided 10-year prediction values from Stantec.

■ Model Timing

- General inflation, construction escalation and changes in property values are not accounted for and all values are presented in 2020 dollars.

- Buildout is complete and duration for steady state operations and repairs after year 40 (2060)
- Tax revenue is assumed to be delayed one year after the beginning of property development for a given unit.
- Projected building costs will remain similar over time; note that this may result in discrepancies if the replacement cost for equipment varies. The model does not currently define any buildings at this level of plan design.
- No significant stoppages in development are foreseen.
- Rehabilitation strategies have not been smoothed on an overall basis.
- The expected useful life of the major infrastructure exceeds the project time frame, storm and sanitary lines are not expected to require replacement within the life cycle of this analysis.
- Highway interchange capital costs are accounted for, but operations and rehabilitation are assumed to be dealt with by Alberta Transportation unless otherwise specified. The model does not currently specify detailed interchange construction information at this level of plan development.
- Large capital assets (usually with a capital cost greater than \$25M) are assumed to be funded and completed over 2 to 4 years depending on size and capital cost. The model does not currently contain any plans for these asset types at this stage of plan development.
- Historical level trend of current existing industrial revenue is assumed to be consistent throughout the analysis.
- New hard capital infrastructure costs are borne by third parties or land developers

2.3 Costs & Funding

■ Funding

- Funding has “perfect foresight”. It is known how much will be spent in a given year before calculating tax or other funding requirements, in contrast to what happens in practice which is to forecast. Because of this there is no funding carried over from year to year
- The model does not use reserves, all assets are paid for (whether directly or by debt) when they are built.
- The model does not attempt to simulate levies.
- Funds are provided as either a lump sum, or as a percentage of the cost of specific asset capital, operating or rehabilitation costs.
- Revenue from other sources is calculated at a linear rate of per capita from reported provincial financial returns. Please see the section below on Non-Capital Operating costs for more details.
- Cost sharing regarding the highways, interchanges, and sanitary trunks are addressed in the model but are estimated costs only. At this stage of the preliminary plan development the model does not currently define cost sharing rules; all the assets are assumed to be completely developer funded.
- The model does not assume that costs will be borrowed for offsite levy funded assets and does not attempt to model their actual function given the complexities in actual agreements, timing,

and other considerations in doing so. The model assumes those levies are paid for up front with the construction of the asset.

■ **Additional Costs**

- Non-Capital operating expenses, such as salaries, employee benefits, professional services, and interest on debt, are accounted for by determining a rate of cost increase based on provided information from Non-Capital operating expenses.
- This amount does not include non-operating items such as principal payments, reserve transfers, or amortization.
- These non-capital operating expenses do not include amortization of large capital assets; these are accounted for by paying for capital and rehabilitation expenses directly.
- Operation costs for an asset come into effect the year after they are constructed.
- Operation costs are still in effect for a given year even if an asset has rehabilitation costs in that year.
- Operation and rehabilitation costs provided have been applied to assets on a per unit basis where possible. In some cases, operation and rehabilitation costs provided have been scaled to anticipated costs in the most suitable manner possible.
- For assets where operation and rehabilitation costs were not explicitly provided, the costs were estimated as a percentage of capital cost, typically 1%.
- Major utility and transportation asset cost sharing between municipalities is currently set as a proportion of the population received by each municipality each year.
- Municipalities own some amount of developer contributed assets that are still in like new condition and have not incurred any rehabilitation costs that would appear in existing municipal financial statements. The model is unable to account for these upcoming costs which may cause rate increases or new debt if they are not fully planned for in existing budgets and reserves.
- Transit costs were given as an operational shortfall per decade by ISL.

■ **Additional Revenue Sources**

- It was assumed that costs would scale from the existing population levels.
- Current Utility revenue is currently assumed to be operating at a surplus for Stony Plain and Spruce Grove but future revenues from additional utilities are expected to operate in a revenue neutral manner.
- Current grant levels for infrastructure from the provincial and federal levels of government will remain consistent.
- Current operation and revenue levels (including user fees and fines) for each municipality was assumed to stay consistent throughout the timespan of the model.
- Grant money for capital projects is assumed to remain roughly the same.
- A portion of the capital costs will be covered by developers; this assumption includes drainage and street assets and are divided into on-site and off-site assets.
 - On-site assets are local infrastructure items for which Developers are expected to pay 100% of the capital cost.

- Off-site assets include large drainage and road items such as interchanges which will have shared costs between the Developers and other stakeholders such as utility companies or Alberta Transportation, as well as “soft” off-site assets which include recreation centers and emergency services, and which will be funded by the municipality.
 - At this stage of the plan development, it is assumed that developers are responsible for 100% of the capital costs of major utility and transportation construction.
 - At this stage of the preliminary plan development, assets such as interchanges, recreation centers and emergency service buildings are not currently defined for construction.

2.4 Taxes, Borrowing & Debt

■ Taxes

- Tax rate change maximums are based on an average of historical variance from data provided by the province.
- Operation costs are completely funded by taxes, these costs cannot be borrowed.
- Tax rate increases between residential, business, and industrial properties are proportionally equal for each type in a given year.
- If tax rates cannot be increased in a given year to cover both capital and rehabilitation expenses according to the tax increase limits set, the rehabilitation expenses will be paid down first and the remaining capital expenses will be borrowed.
- There will never be a tax revenue surplus, the tax revenue can only be less than or equal to the costs in a given year.
- The tax rates for non-residential components are the same but are presented as separate components.
- The tax ratio between residential and non-residential properties are scaled by the long-term average ratios from each municipality according to historical provincial data.
- The tax rate for non-residential components is scaled by the average ratio from 2012 of residential to non-residential taxes using historical data.
- Utility infrastructure investments, including debt payments, reserve funding, utility operating costs and levy debt are not included in tax rate calculations.

■ Borrowing

- Loan terms are always 20 years in length and will have a set starting rate which will be varied during the Monte Carlo sampling process. This is a conservative assumption as shorter borrow terms are available.
- Interest rates are based on the long term historical 20-year interest rates published by the province and are varied yearly via monte Carlo sampling.

- Borrowing occurs on a per-year basis as needed to cover total capital and rehabilitation costs for a given year rather than a per-asset borrowing length. It is acknowledged that in practice, borrowing terms cannot be longer than the useful life of the asset being borrowed for
- Borrowing to finance utilities does not impact taxes but the amount is included when determining debt servicing to revenue ratios

■ Debt

- Per Alberta Regulation 255/2000 MGA Debt Limit Regulation
 - Debt servicing cannot exceed 25% of municipality revenue.
 - Total debt Outstanding cannot exceed 1.5x the revenue of the municipality.
- Per internal municipality regulations
 - Spruce Grove - 12.5% debt servicing, 0.75x outstanding debt compared to revenue.
 - Stony Plain - 20% debt servicing, 1.2x outstanding debt compared to revenue.
 - Parkland County - same as provincial MGA 255/2000
- The model will show when the limits of the above MGA Debt Limit Regulation are exceeded in the outputs but will not prevent the model from proceeding.
- Current debt service levels are assumed to be consistent and continue throughout the timespan of the model.
 - Current debt is not assumed to be going completely to fund new growth and should be reviewed

2.5 Residential Property Values

Average expected property values per dwelling for new residential development in each municipality were developed using a combination of local realtor listing for new development, provincially reported tax assessment data, and federal and local census reports. Expected property values per unit area for commercial and industrial development were calculated by averaging the existing tax assessment over the existing developed area and are listed in Table B1. As noted above, property types for each of the municipalities is assumed to be:

- Stony Plain - 70% Low; 30% Med/High
 - Medium and High density residential is assumed to be townhouses in line with current census data.
- Spruce Grove - 70% Low; 30% Med/High
 - The Medium and High-density residential portion is assumed to be a weighted average split of 60% townhouses and 40% midrises based on current census data.
- Parkland County - 100% Low density (County Residential)

Table B1: Assumed property values for residential and non-residential properties used in the model.

Municipality	Spruce Grove	Stony Plain	Parkland County
Low Density Single Family	\$471,507	\$449,214	\$555,000
Mid-High-Density Townhouse	\$318,036	\$302,999	
Mid-High Density Mid-Rise	\$286,602		
Commercial/Industrial	\$31/sqft	\$12/sqft	\$17/sqft

2.6 Costs by Municipality per Asset Category

■ Spruce Grove

**Drainage utility operation costs are assumed to be operated in a revenue neutral manner with costs being recovered by utility fees.*

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
Transportation - Roadways	1-10	\$85,466,615	\$2,555,474	\$0
	11-20	\$108,859,083	\$8,285,075	\$828,808
	21-30	\$113,478,218	\$14,509,025	\$1,499,038
	31-40	\$75,657,027	\$20,323,259	\$2,719,109
	41-75		\$23,015,314	\$3,837,145
Transportation - Public Transit (Costs provided as Operational Shortfall)	1-10		\$2,780,001	
	11-20		\$3,527,573	
	21-30		\$4,152,072	

TRI-MUNICIPAL REGION REGIONAL PLAN – FINANCIAL VIABILITY ANALYSIS FOR PREFERRED LAND USE CONCEPT

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
	31-40		\$4,920,060	
	41-75		\$5,013,337	
Utilities - Stormwater*	1-10	\$10,064,100	\$146,494	
	11-20	\$2,834,195	\$415,374	
	21-30	\$707,121	\$652,461	
	31-40	\$300,393	\$865,725	
	41-75		\$964,788	
Utilities - Wastewater*	1-10	\$7,232,955	\$244,789	
	11-20	\$3,137,859	\$807,422	
	21-30	\$1,717,293	\$1,371,483	
	31-40	\$30,491,490	\$1,933,249	
	41-75		\$2,413,852	
Utilities - Water*	1-10	\$14,331,128	\$229,948	
	11-20	\$15,790,516	\$647,519	
	21-30	\$14,243,433	\$1,108,062	
	31-40	\$6,308,250	\$1,516,541	
	41-75		\$1,693,073	

■ **Stony Plain**

**Drainage utility operation costs are assumed to be operated in a revenue neutral manner with costs being recovered by utility fees.*

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
IT	1-10		\$68,016	
	11-20		\$170,130	
	21-30		\$236,629	
	31-40		\$310,663	
	41-75		\$354,332	
Transportation - Roadways	1-10			
	11-20			
	21-30			
	31-40			
	41-75			
Transportation - Public Transit (Costs provided as Operational Shortfall)	1-10		\$1,223,593	
	11-20		\$1,848,592	
	21-30		\$2,195,587	
	31-40		\$2,589,820	
	41-75		\$2,662,798	
Transportation -	1-10	\$334,790	\$10,825	\$53,136

TRI-MUNICIPAL REGION REGIONAL PLAN – FINANCIAL VIABILITY ANALYSIS FOR PREFERRED LAND USE CONCEPT

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
Fleet	11-20	\$520,403	\$37,204	\$124,901
	21-30	\$654,509	\$72,045	\$268,567
	31-40	\$899,871	\$120,094	\$443,778
	41-75		\$152,621	\$585,344
Utilities - Stormwater*	1-10	\$4,544,611	\$76,728	
	11-20	\$12,683,939	\$341,220	
	21-30	\$2,081,903	\$563,928	
	31-40	\$3,032,865	\$842,887	
	41-75		\$1,033,496	
Utilities - Wastewater*	1-10	\$7,101,867	\$223,954	
	11-20	\$8,611,530	\$722,994	
	21-30	\$2,153,742	\$1,391,825	
	31-40	\$13,999,229	\$2,245,162	
	41-75		\$2,922,707	
Utilities - Water*	1-10	\$10,511,281	\$193,140	
	11-20	\$15,588,179	\$567,281	
	21-30	\$13,931,383	\$1,066,735	

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
	31-40	\$49,037,313	\$1,892,668	
	41-75		\$2,554,443	

■ **Parkland County**

**Drainage utility operation costs are assumed to be operated in a revenue neutral manner with costs being recovered by utility fees.*

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
IT	1-10	\$338,707	\$87,571	\$19,042
	11-20	\$183,655	\$217,858	\$48,694
	21-30	\$184,532	\$311,917	\$69,404
	31-40	\$178,694	\$405,655	\$91,331
	41-75		\$457,327	\$101,512
Transportation - Roadways	1-10	\$120,981,905	\$771,153	\$0
	11-20	\$141,591,047	\$2,353,347	\$1,110,843
	21-30	\$144,925,943	\$4,158,024	\$1,917,543
	31-40	\$115,481,454	\$5,860,431	\$3,392,899
	41-75		\$6,721,738	\$4,930,346
Transportation -	1-10		\$817,738	

TRI-MUNICIPAL REGION REGIONAL PLAN – FINANCIAL VIABILITY ANALYSIS FOR PREFERRED LAND USE CONCEPT

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
Public Transit (Costs provided as Operational Shortfall)	11-20		\$1,020,065	
	21-30		\$1,232,121	
	31-40		\$1,433,636	
	41-75		\$1,454,183	
Transportation - Fleet	1-10	\$599,337	\$22,964	\$307,616
	11-20	\$716,930	\$70,502	\$689,753
	21-30	\$720,352	\$124,830	\$1,300,409
	31-40	\$697,562	\$179,081	\$1,854,845
	41-75		\$208,920	\$2,225,260
Utilities - Stormwater*	1-10	\$13,309,841	\$69,523	
	11-20	\$16,184,913	\$214,617	
	21-30	\$13,091,540	\$367,664	
	31-40	\$4,357,845	\$465,254	
	41-75		\$493,881	
Utilities - Wastewater*	1-10	\$15,107,126	\$333,092	
	11-20	\$21,474,203	\$1,025,485	
	21-30	\$53,842,704	\$1,930,505	

Category	Period	Total Capital Costs (\$M)	Average Annual Operation of Capital (\$M)	Average Annual Rehab of Capital (\$M)
Utilities - Water*	31-40	\$3,070,300	\$2,977,177	
	41-75		\$3,340,861	
	1-10	\$65,410,174	\$296,982	
	11-20	\$16,897,456	\$795,284	
	21-30	\$102,392,319	\$1,352,600	
	31-40	\$11,488,865	\$2,044,244	
	41-75		\$2,138,597	

2.7 Non-Capital Operating Costs

Operation and rehabilitation costs provided by the municipalities focused on the capital assets and did not include the costs of services (i.e., fines and bylaw enforcement, salaries, etc.) and other non-capital operating expenses. Based on the historical data provided by provincial municipal financial return data, the total non-capital operating expenses for each municipality are shown below. This amount does not include other non-operating items such as principal payments, reserve transfers, or amortization. The projection of non-capital operating expenses used in the model are based on 2012-2019 historical costs per capita. Calculations used census figures for population. The following table B2 lists the non-capital operating costs for each municipality. Table B3 shows whether the entire expense amount was included in the calculation of the non-capital operating costs or is covered elsewhere.

Table B2: Per-capita non-capital operating costs for each of the tri-municipal areas

Municipality	Per Capita Non-Capital Operating Cost
Spruce Grove	\$364/person
Stony Plain	\$486/person
Parkland County	\$351/person

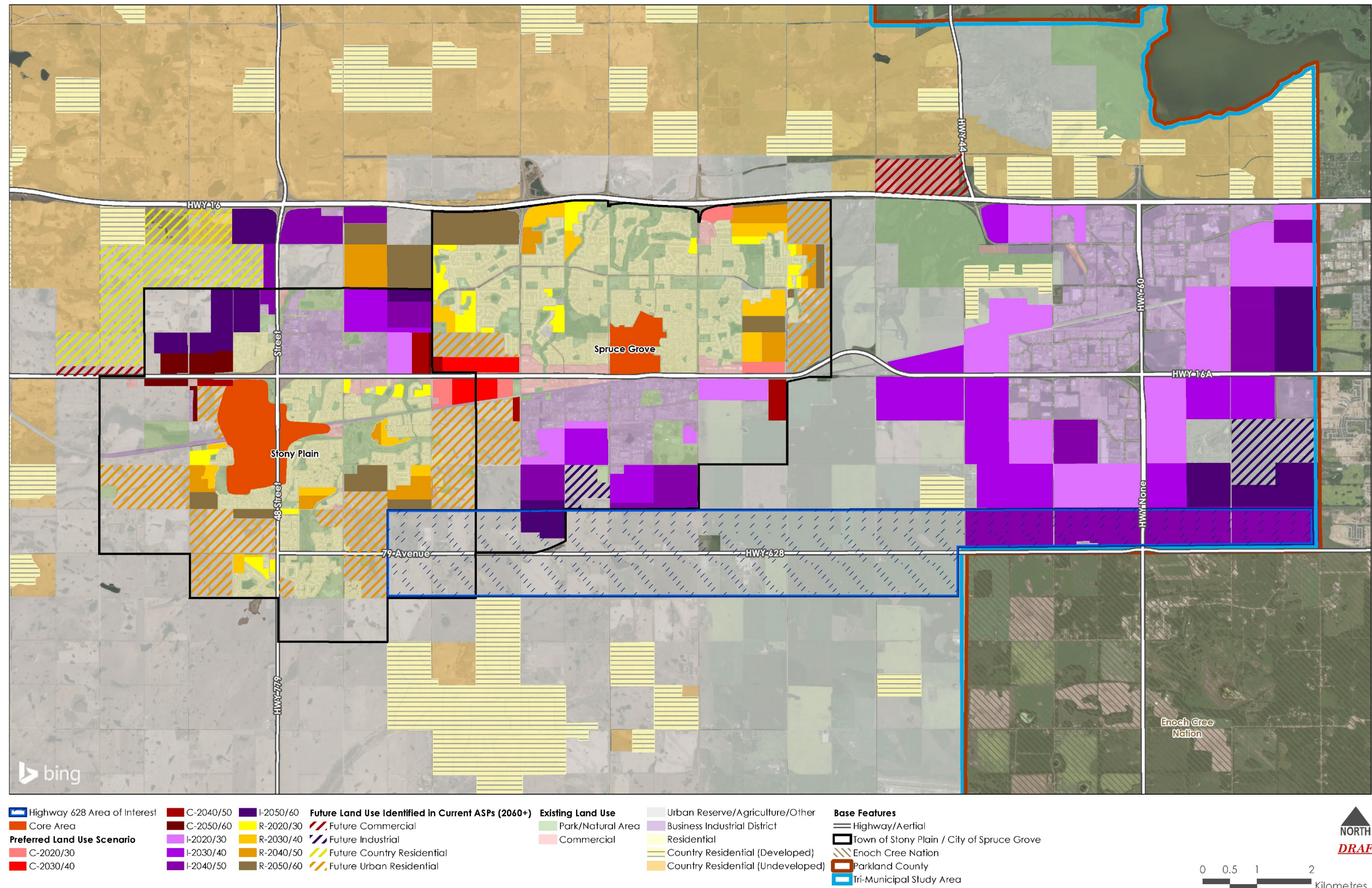
Table B3: Cost area expense and amount applied to the non-capital operation costs.

Cost Category	% Applied to Non-Capital Operating
Council and Other Legislative	100%
General Administration	100%
Other General Government	100%
Police	0%
Fire	0%
Disaster and Emergency Measures	0%
Ambulance and First Aid	0%
Bylaws Enforcement	100%
Other Protective Services	100%
Common and Equipment Pool	0%
Roads, Streets, Walks, Lighting	0%
Airport	0%
Public Transit	0%
Storm Sewers and Drainage	0%
Other Transportation	0%
Water Supply and Distribution	0%
Wastewater Treatment and Disposal	0%
Waste Management	0%
Other Environmental Use and Protection	0%
Family and Community Support	100%
Day Care	100%
Cemeteries and Crematoriums	100%
Other Public Health and Welfare	100%
Land Use Planning, Zoning and Development	100%
Economic/Agricultural Development	0%
Subdivision Land and Development	0%
Public Housing Operations	100%
Land, Housing and Building Rentals	100%
Other Planning and Development	100%
Recreation Boards	100%
Parks and Recreation	25%
Culture: Libraries, Museums, Halls	25%
Convention Centres	0%
Other Recreation and Culture	0%

Cost Category	% Applied to Non-Capital Operating
Gas	0%
Electric	0%
Other	100%

APPENDIX B – DETAILED LAND USE MAP

Figure 6: Tri-Municipal Regional Plan Preferred Land Use Concept – Detailed Land Use / Absorption Map



APPENDIX C – POPULATION & LAND USE ABSORPTION FORECASTS

TRI-MUNICIPAL REGION REGIONAL PLAN – FORECASTS FOR PREFERRED LAND USE CONCEPT

As the urban, commercial, and industrial nature of Parkland County is distinctly different from the urban centres of the town of Stony Plain and the city of Spruce Grove, a separate methodology to determine the population and land use absorption forecasts was applied to Parkland County.

C.1 Town of Stony Plain & City of Spruce Grove

Population Projections

Population projections for the town of Stony Plain and the city of Spruce Grove were provided to Stantec by Applications Management Consulting Ltd. These population projections were used across the various land use scenarios prepared for this project.

These projections for each municipality in ten-year increments, as well as the average annual growth rate (AAGR) that was used to develop these projections, are as highlighted in the following table:

Year	Stony Plain	Spruce Grove
2020	17,887	36,941
2030	20,738	44,456
2040	25,236	54,313
2050	29,734	64,171
2060	34,232	74,028
AAGR (%)	1.64%	1.75%

As indicated by the table above, the anticipated population projections to 2060 are as follows:

- The town of Stony Plain will grow by a total of 16,345 residents to a total population of 34,232 by 2060
- The city of Spruce Grove will grow by a total of 37,087 residents to a total population of 74,028 by 2060

Determining Current Land Designation Totals

We then examined the amount of land within each municipal boundary to determine, in hectares, the total land that has been designated and planned for residential development. This allowed us to gain an understanding of the area total of land that has been planned for and will be available for residential, commercial, and industrial growth purposes as the population of each municipality grows.

The area totals from a residential, commercial, and industrial perspective that are currently undeveloped but identified for future development as a result of this process are as follows:

Land Use	Stony Plain	Spruce Grove
Residential	583.92 ha	883.06 ha
Commercial	215.85 ha	165.40 ha
Industrial	324.65 ha	396.50 ha

Developing Projected Land Consumption in Hectares to 2060 for the Preferred Land Use Concept

In order to determine how many hectares of residential, commercial, and industrial land would be required to support the 2060 population projections, the following assumptions were applied:

- Greenfield residential development in areas with pre-existing ASPs builds out at 28.3 du/nrha for Spruce Grove and 25 du/nrha for Stony Plain
- Greenfield residential development builds out at an 70% low density to 30% medium-to-high density ratio
- Greenfield residential development applied a 3 and 2 people per household multiplier for low density and medium-to-high density development respectively
- Net developable area for new residential development is 63% of gross developable area due to Circulation, MR, Open Space, etc.
- 10% and 15% of new residential growth for Spruce Grove and Stony Plain respectively was allocated as infill development in already developed residential areas
- Stony Plain and Spruce Grove municipal boundaries are not considered in the Preferred land use concept for Commercial / Industrial development as the location of development was determined based on best location.

Utilizing the assumptions above, the total land residential, commercial, and industrial land required in hectares to accommodate the population levels in 2060 for the town of Stony Plain and the city of Spruce Grove is as follows:

Municipality	Residential	Commercial	Industrial
Stony Plain	206 ha	149 ha	285 ha
Spruce Grove	449 ha	133 ha	391 ha

C.2 Parkland County

The development of land use absorption forecasts for Parkland County required a variation on the approach outlined above for the town of Stony Plain and the city of Spruce Grove. This is due to the unique nature of residential development within Parkland County as well as the regional nature of Parkland County's main industrial node of Acheson.

The industrial development illustrated within the Preferred Land Use Concept is in line with previously developed studies associated with industrial development for Parkland County such as the Acheson ASP (2020), the Fifth Meridian ASP (2001) and Parkland County Community Scan (2015).

Population Projections

Population projections for Parkland County within the study area were provided to Stantec by Applications Management Consulting Ltd.

TRI-MUNICIPAL REGION REGIONAL PLAN – FORECASTS FOR PREFERRED LAND USE CONCEPT

These projections are in ten-year increments, as well as the average annual growth rate (AAGR) that was used to develop these projections, are as highlighted in the following table:

YEAR	Population (study area)
2020	23,156
2030	25,730
2040	29,830
2050	33,930
2060	38,030
AAGR (%)	1.25%

As indicated by the table above, the anticipated population projections to 2060 are as follows:

- Parkland County (study area) will grow by a total of 14,874 residents to a total population of 38,030 by 2060

Developing Projected Land Consumption in Hectares to 2060 for Each Scenario

In order to determine how many gross hectares of residential land would be required to support the 2060 population projections, the following assumptions were applied:

- All new residential development within the study area will be low density Country Residential (single-detached)
- People per household was set at 2.8 which is based on the Parkland Community Scan report
- Absorbed land includes zoned and subdivided land including vacant lots, as well as ghost subdivisions where lots are in place but infrastructure (i.e. roads) are not yet developed despite road ROW being dedicated
- Country Residential will not grow in areas that are not already zoned for Country Residential
- Residential land contained within the study area that is part of Parkland County will be able to absorb the anticipated residential growth to the end of the project horizon.

Utilizing the assumptions above, the total land residential land required in gross hectares to accommodate the population levels in 2060 for Parkland County is 5,630 ha.