BYLAW 1555/21
STURGEON VALLEY SOUTH AREA STRUCTURE PLAN
STURGEON COUNTY, MORINVILLE, ALBERTA

A BYLAW OF STURGEON COUNTY, ALBERTA, FOR THE PURPOSE OF ADOPTING THE STURGEON VALLEY SOUTH AREA STRUCTURE PLAN.

WHEREAS, section 633 of the *Municipal Government Act,* RSA 2000 c. M-26 ("MGA"), as amended from time to time, authorizes Council to adopt area structure plans;

AND WHEREAS, the Council of Sturgeon County has deemed it desirable to adopt the Sturgeon Valley South Area Structure Plan Bylaw 1555/21;

NOW THEREFORE, the Council of Sturgeon County, in the Province of Alberta, duly assembled, hereby enacts as follows:

1. Title

1.1. This Bylaw may be referred to as the "Sturgeon Valley South Area Structure Plan" or "Sturgeon Valley South ASP".

2. Purpose

2.1. The purpose of this Bylaw is to adopt the Sturgeon Valley South Area Structure Plan.

3. Definitions

3.1. In this Bylaw:

i. "Bylaw" means this area structure plan Bylaw;

ii. "County" means the Municipality of Sturgeon County;

iii. "County Commissioner" means the person appointed as the County Commissioner for Sturgeon County.

4. General

4.1. The Sturgeon Valley South Area Structure Plan, attached to this Bylaw as Schedule "A" is hereby adopted.

5. Severability

5.1. If any portion of this Bylaw is declared invalid by a court of competent jurisdiction, then the invalid portion must be severed and the remainder of the Bylaw is deemed valid.

6. Effective Date

6.1. This Bylaw shall come into force and take effect upon being passed.

Read a first time this 8th day of June, 2021.

Read a second time this 13th day of July, 2021.

Read a third time this 14th day of September, 2021.

Alanna Hnatiw
MAYOR

Reegan McCullough
COUNTY COMMISSIONER (CAO)

DATE SIGNED

July 2021

Our Future Valley:

Sturgeon Valley South Area Structure Plan

Bylaw No.: 1555/21
Date Adopted:
Date Amended:

Sturgeon County

FOREWORD

In spring 2019, the Edmonton Metropolitan Region Board (EMRB) amended the Edmonton Metropolitan Region Growth Plan (EMRGP) to add in special policies relating to the Sturgeon Valley area of Sturgeon County. The area, deemed as the "Sturgeon Valley Special Study Area" (SVSSA) within the EMRGP, borders existing residential development in Sturgeon County, CFB Edmonton, the City of St. Albert, and the City of Edmonton.

To meet the goals, objectives, policies, and aspirations of the EMRGP, specifically those contained within the SVSSA, and to align with other County policy documents, Sturgeon County undertook a comprehensive review and rewrite of its existing Sturgeon Valley Area Structure Plan (ASP) with the creation of a new ASP for the "Sturgeon Valley Special Study Area". This new ASP has been called "Sturgeon Valley South Area Structure Plan". The framework provided in this new ASP is both visionary and tangible, containing innovative and agile approaches to land use planning and development married to objectives and policies that contain clear tools for monitoring and implementation.

ACKNOWLEDGMENTS

Sturgeon County would like to thank the following individuals and groups for their participation in the re-envisioning of Our Future Valley – Sturgeon Valley South ASP:

- Sturgeon County, City of Edmonton, City of St. Albert, CFB Edmonton, EMRB,
- Sturgeon County Council and Administration
- Stakeholders/Public
- Developers
- V3 Companies of Canada Ltd., Bunt and Associates, Applications Management, Spencer Environmental, Serecon

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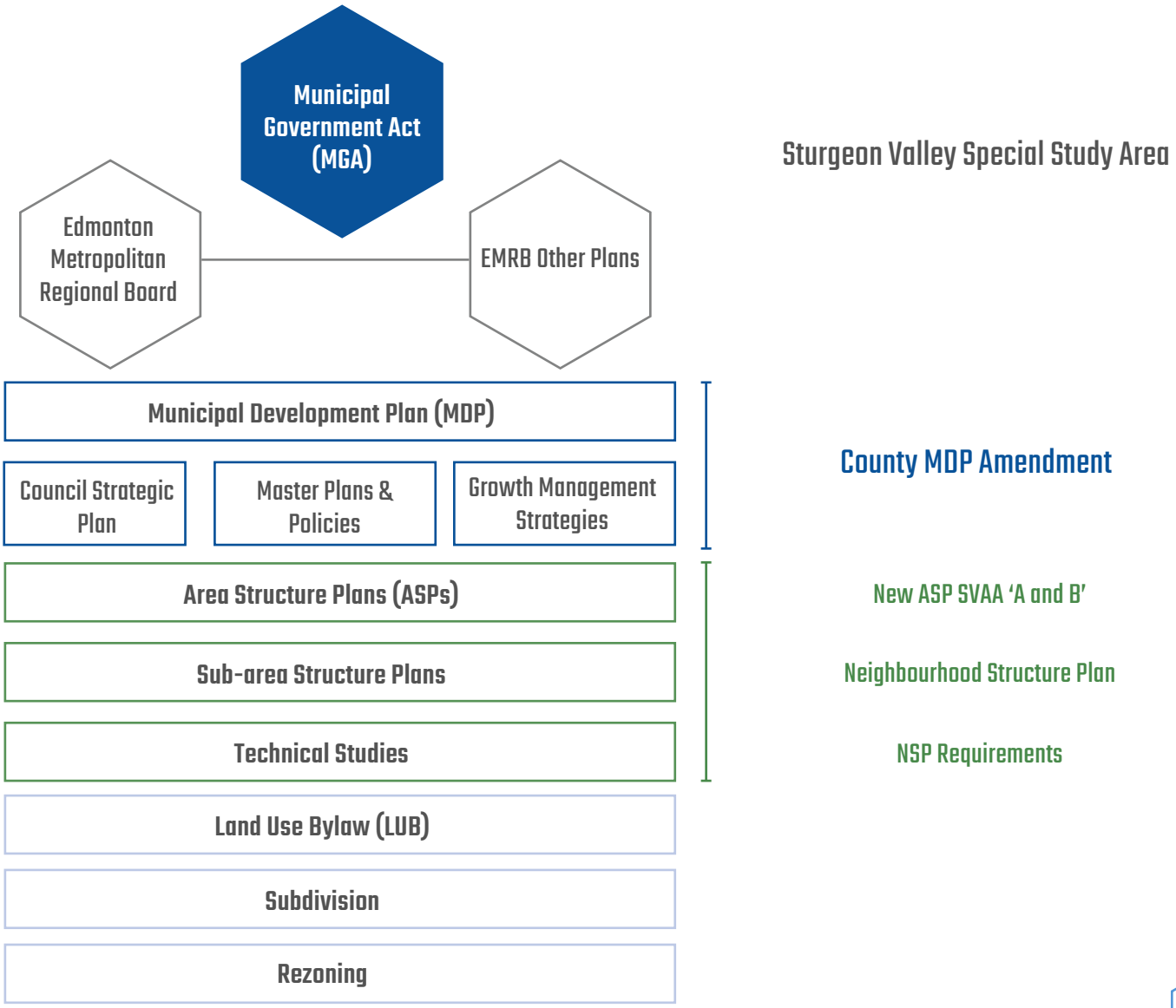
1. INTRODUCTION

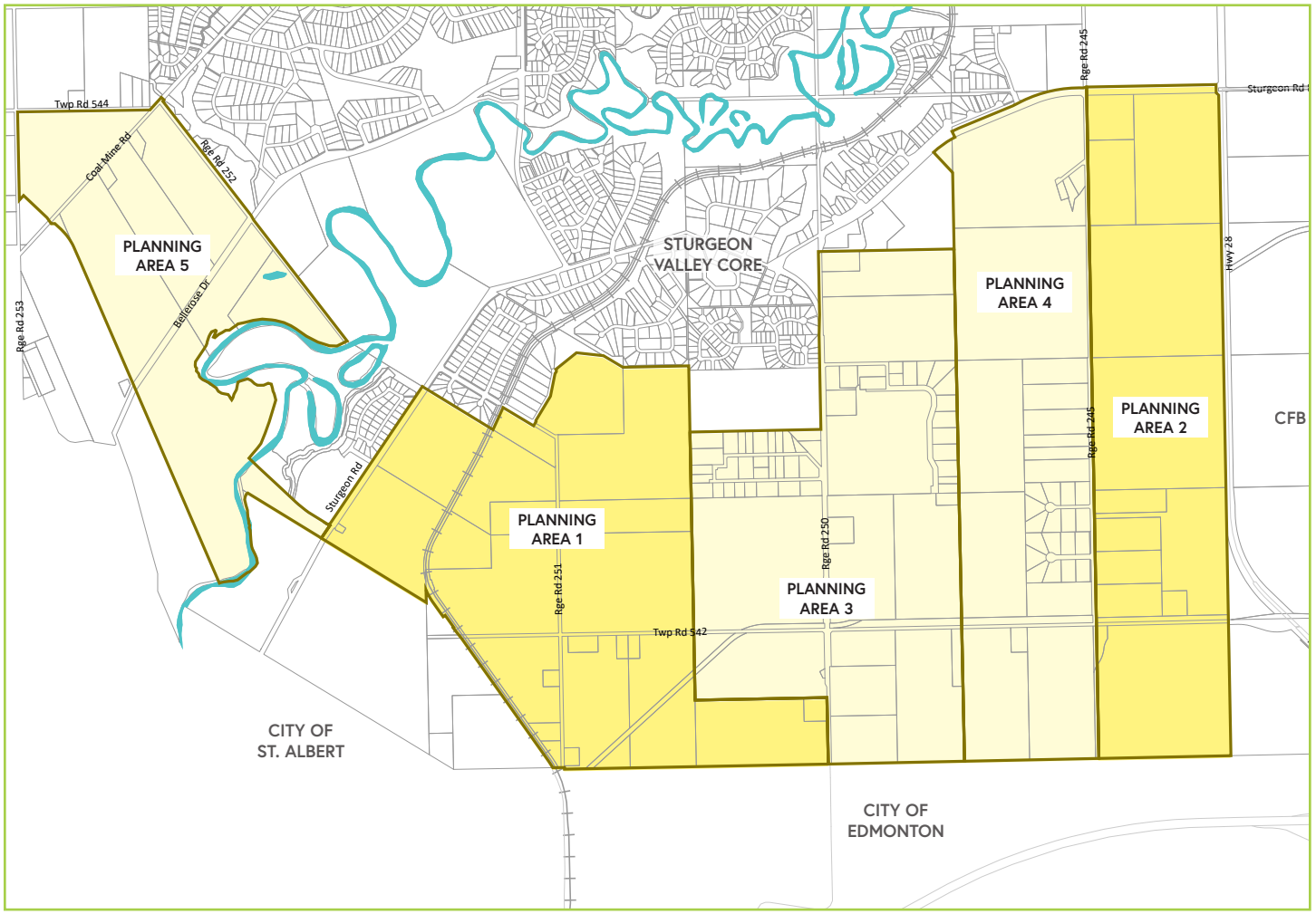
1.1 PURPOSE

The purpose of the Sturgeon Valley South Area Structure Plan (herein referred to as "the Plan") is to guide the development of the Plan area in an orderly and phased manner, and in a direction that provides a framework for complete communities. The Plan is intended to drive development in the Sturgeon Valley in a contiguous, compact manner, with transitions that are sensitive to existing landowners, surrounding agricultural areas, and the metropolitan boundaries.

The Plan focuses on strategic priority areas as outlined in the Municipal Development Plan with a focus on the build out of Planning Areas 1 & 2 with the remaining Planning Areas 3, 4 & 5 recognized as future planning phases (Figure 1). This is to enable the municipality to manage infrastructure requirements for the ongoing development of the Plan area along with aligning with the policies and objectives of the Edmonton Metropolitan Region Growth Plan (EMRGP). As additional Planned Areas are considered they will be required to update the Plan in relation to servicing to accommodate for water, wastewater and stormwater. Key elements to be retained for the overall build out will be meeting the required minimum densities and understanding the importance of protecting future transportation corridors.



▼ FIGURE 1: Planning Areas | V3 Companies of Canada



LEGEND

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Railway Line

N

SCALE: 1:15,000

0 0.5 1.0

1.2 INTERPRETATION

Figures

All symbols, locations, and boundaries shown in the figures of this Plan are intended to be interpreted as conceptual unless otherwise stated in the document, or where they coincide with clearly recognizable physical or fixed features within the Plan area. Locations of infrastructure and other fixed elements should be independently confirmed.

Policies

All policy statements containing "**shall**" are mandatory and must be implemented. Where a "shall" policy proves impractical, an applicant may apply to amend the Plan. All policy statements containing "**should**" are an advisory statement and indicate the preferred objective, policy and/or implementation strategy of the County. If the "should" statement is not followed because it is impractical or impossible, the intent of the policy may be met through other agreed-upon means. Where "**may**" is used in a policy it denotes a choice in applying the policy, creating discretionary compliance or the ability to vary the requirements to achieve the intent of the vision and objective of the Plan.

Definition

With the exception of those words, terms outlined in the definitions section of the Plan, all other words, terms and phrases shall retain the definition from the County's Municipal Development Plan, the Land Use Bylaw, the Municipal Government Act, or any other provincial legislation.

1.3 PLAN AREA

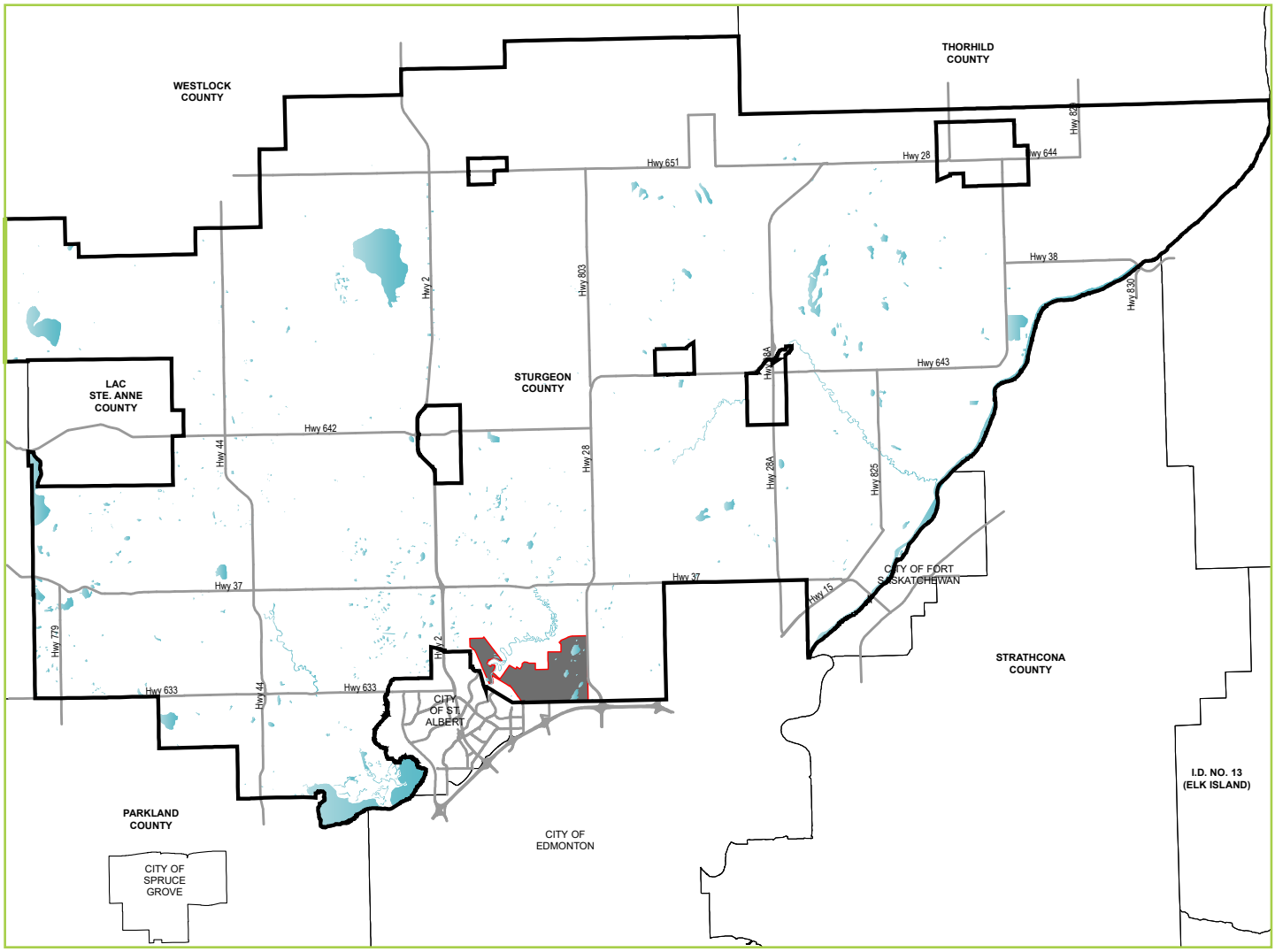
The Plan area covers approximately 1,750 hectares (Figure 2) of land, all completely contained within Sturgeon County. It is geographically positioned to the west of the Highway 28 and the Canadian Forces Base (CFB); to the north of the City of Edmonton; to the north east of the City of St Albert and to the south of the established Sturgeon Valley residential development. The Plan area already contains a level of water and sanitary services generally located east of Sturgeon Road along with plans for future upgrades.

The Plan provides the structure and policy to guide the development of Neighbourhood Area Structure Plans (NASPs) for the Planning Areas identified in Figure 1. As part of the Plan process, County Council provided initial direction on future development of residential/mixed-use and non-residential Planning Areas (Planning Areas 1 and 2). While the Plan's primary focus is on these two Planning Areas, the Plan serves as a framework for all other areas to ensure that development can be responsive to future servicing needs, market demands, changes in technology and growth opportunities. The reasons behind the two approved Planning Areas proceeding are based on the following factors in order of priority:

1. *Transportation infrastructure needs, especially the development of future 127 Street connecting to the Anthony Henday to accommodate for growth and to reduce traffic pressures on other adjoining communities.*
2. *The identification through the County's Commercial Development Analysis (2020) and engagement with CFB of the opportunity for development of non-residential along Highway 28.*
3. *The ability for new residential and mixed-use growth in Planning Area 1 to accommodate the projected population for the County as outlined in the Edmonton Metropolitan Region Growth Plan.*
4. *Access to existing water and sanitary services and stormwater management.*

The remaining areas will be considered as future Planning Areas that will require an amendment to this Area Structure Plan and meeting the criteria outlined in the implementation section prior to moving forward with the development of a Neighbourhood Area Structure Plan (NASP).

▼ FIGURE 2: Project Location | V3 Companies of Canada



LEGEND

- Sturgeon County Boundary
- Municipality Boundary
- Sturgeon Valley South ASP Boundary
- Highway

N

1.4 REGIONAL INFLUENCES

There are a number of statutory acts and documents which the Plan needs to adhere to or be consistent with, which are listed below.

1.4.1 Municipal Government Act

The Municipal Government Act (MGA) is the provincial legislation that all municipalities are required to follow; it provides a framework for how municipalities are empowered to shape their individual communities. Section 633 of the MGA regulates the contents of an Area Structure Plan, stating that they must describe the proposed land uses and density, the location of transportation routes and public utilities, and the sequence of development, and they may also contain other provisions as deemed appropriate by a municipality's Council.

The MGA also states that an ASP must be consistent with other high-level planning documents, such as any Intermunicipal Development Plan (IDP) that the Plan area falls within, and the municipality's Municipal Development Plan (MDP). In the case of this Plan, the contents are required to be consistent with the Edmonton Metropolitan Region Growth Plan (in lieu of the IDP), and the Sturgeon County MDP (2014).

1.4.2 Alberta's Land Use Framework

Alberta's Land Use Framework (LUF), enabled through the Alberta Land Stewardship Act (ALSA), sets an approach to plan for and manage the cumulative impacts on the environment and natural resources, while supporting Alberta's long-term goals of economic growth, vibrant community development, and a healthy environment. The LUF establishes seven (7) land use regions across Alberta, requiring a regional plan for each; this Plan falls within the North Saskatchewan Region.

At the time this Plan was prepared, the Government of Alberta had not formally adopted the North Saskatchewan Regional Plan.

1.4.3 Edmonton Metropolitan Region Growth Plan

Established through Section 708 of the MGA, growth management boards are required for the Edmonton region. In compliance with this, the Edmonton Metropolitan Region Board (EMRB) was established in 2017 and includes thirteen (13) member municipalities. Through intermunicipal collaboration, the EMRB created the Edmonton Metropolitan Region Growth Plan (EMRGP), which contains six interrelated policy areas to support and manage growth within the region – economic competitiveness and employment; natural living systems; communities and housing; integration of land use and infrastructure; transportation systems; and agriculture.

The Plan area is subject to specific policies contained within Appendix G: Negotiated Policies for the Sturgeon Valley Special Study Area (SVSSA), of the EMRGP. The guiding principle of the SVSSA is stated as follows:

> *Sturgeon County, in collaboration with the City of St. Albert and City of Edmonton, will plan for the completion of the Sturgeon Valley in a contiguous, compact manner with transitions that are sensitive to existing established communities, surrounding agricultural area and metropolitan boundaries.*
>
> *The Plan area falls within areas A, B1 and B2 as outlined in Schedule 12: Sturgeon Valley Special Study Areas.*

Objectives and Planning Policies that pertain specifically to the Plan area are as follows:

OBJECTIVE 3.1

» *Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities.*

POLICIES

3.1.1: While negotiated Policies relating to the Sturgeon Valley Special Study Area (SVSSA) shall take precedence over the EMRB Growth Plan Policies Tiers and density targets, all other Growth Plan policies will continue to apply.

3.1.2: Area structure plans(s), led by the jurisdictional municipality, for Areas A and B require consideration of the following:

a. *Density of development in Areas A and B shall achieve an* ***overall minimum of 35 du/nrha.*** *This is comprised of minimum densities of 35 du/nrha in Areas A and B2, 20 du/nrha in Area B1, and up to 125 du/nrha around a proposed transit centre (see policy 3.1.3). Plan developments will vary in density but will be managed to ensure that overall area minimums are maintained or surpassed.*

b. *Within the overall density target above, development will demonstrate a gradient/ transitioned approach. This ensures that:*

   i. *The character and built form of the established Sturgeon Valley community (Area C) is protected, such that higher densities shall be applied progressively between that community and the urban areas of Edmonton and St. Albert (areas E and F); and*

   ii. *Higher densities are available to provide fiscal support for required infrastructure investments.*

c. *The future extension of 127 Street will be in general accordance with the outcomes of the Edmonton Metropolitan Region Board's Integrated Regional Transportation Master Plan. The future corridor for the extension of 127 Street will be further refined and protected as determined by Area Structure Planning across the entire Planning Area with input from Edmonton, St. Albert, and Sturgeon County.*

d. *A variety of non-residential developments will be incorporated within the Planning Areas to provide diverse employment opportunities.*

e. *Community amenities will be positioned within a hierarchy of mixed-use centres. Development of mixed-use areas will be consistent with other policies contained within the EMRB Growth Plan.*

f. *Greenspace and protection of natural areas will be incorporated to contribute to an open and connected environment that can be actively used by residents of the community and also may assist with the transitional gradient.*

g. *Sustainable and innovative design techniques will be promoted to enhance the environment and seek to minimize required capital and operating infrastructure costs.*

h. *Inclusion of a comprehensive Fiscal Impact Assessment that illustrates the full, life-cycle development costs.*

i. *Collaboration with neighbouring planning partners on issues of common interest.*

3.1.3: A transit centre (a location where multiple transportation modes, excluding light rail transit, can stop simultaneously to allow transfers between routes) will be located in Area B that could enable development densities between 42 du/nrha and 125 du/nrha. The increased densities in proximity to the transit centre provide the opportunity for the development of a mixture of residential and non-residential uses.

1.5 STURGEON COUNTY PLANNING DOCUMENTS

The following provides a summary of key County documents that have guided and influenced the development of the Plan.

1.5.1 Sturgeon County Municipal Development Plan 2014

The Sturgeon County Municipal Development Plan was adopted in April of 2014. In accordance with the Edmonton Metropolitan Region Board the County's Municipal Development Plan is also required to be updated to reflect the Edmonton Region Growth Plan. This update has been carried out concurrently with the development of the Plan.

1.5.2 Sturgeon County Strategic Plan 2018 - 2027

The County's Strategic Plan provides direction for Planned Growth and Prosperity that includes a number of goals that relate to how development proceeds within the Sturgeon Valley. This includes maximizing development around existing County infrastructure and identified future growth areas (Goal 1.3).

1.5.3 Sturgeon County Open Space Plan 2016

The Open Space Plan covers the entire County, but recognizes reserves and key environmental features within the Plan area, including River Lot 56 and the Sturgeon River. The Plan outlines short and long term recommendations for creating a trail system along Range Road 520, Township Road 542 and adjacent to Bellerose Drive. The Plan recognizes the strong desire by the community for trail development and the need for neighbourhood level open spaces and County wide recreational facilities along with the role of environmental stewardship within an open space network.

1.5.4 Sturgeon County Infrastructure Master Plan 2019

The Sturgeon County Infrastructure Master Plan (IMP) covers the entire County, including portions of the Sturgeon Valley based on previous growth expectations. It provides a framework in providing guidance on servicing of the Sturgeon Valley South Area Structure Plan. ISL completed additional analysis in June 2021 to update the work they had carried out in the IMP to reflect the change in population (refer to Appendix H).

1.5.5 127 Street Functional Planning Study (Designation of ROW)

127 Street extension is recognized in the EMRGP as a Regional Arterial Road that extends from the City of Edmonton boundary to Highway 2 that involves crossing a railway line and the Sturgeon River. In August of 2012 a 127 Street Functional Planning Study was prepared by ISL and outlines the staging for the construction of the road based on traffic needs within the County and as necessitated by development. The study defines the alignment of the road to enable protection of the right-of-way and long-term access locations.

1.5.6 Traffic Impact Analysis

As part of the Growth Analysis for the Plan area, Bunt & Associates completed a Traffic Review based on a number of development scenarios. The analysis identified potential major road/infrastructure upgrades as the development increased over time. The scenarios were based on a 30 year projected build out, a 60 year build out and a full build out of the Plan area. It also identified potential traffic generated based on high level concept plans provided by developers. At varying development stages the traffic demand is projected to require additional accesses, bridge crossings and flyovers. This includes additional accesses to Highway 28 to service the future light industrial lands. The Traffic Review for the Plan area was further updated to reflect the full build out and projected traffic volumes for Planning Areas 1 & 2 along with the development of the road network for the overall Plan area. The development of the 112 Street flyover; extension of the 127 Street to Highway 2. These key infrastructure requirements will be required at critical thresholds prior to proceeding with adopting, or at critical development phases of implementing, a new Neighborhood Area Structure Plan. The Sturgeon Valley Offsite Bylaw for the Plan will be updated to pay for the capital costs of new and expanded transportation infrastructure required to service the Plan area.

1.5.7 Stormwater Analysis Study

The County's Infrastructure Master Plan 2019 provides future planning for stormwater infrastructure based on previous stormwater studies carried out by Sameng Inc. The majority of stormwater within the Plan drains to the west towards Sturgeon River, however, a north-south ridge located towards Range Road 250 results in stormwater collecting in the eastern area that is limited in its ability to discharge, potentially resulting in the numerous wetland areas in the area. Where possible, naturalized wetland systems are recommended to be used for stormwater management.

1.5.8 Environmental Study

Spencer Environmental in 2019 completed an environmental features and natural areas mapping analysis of the lands contained within the Plan area. This involved mapping previously identified and newly recognized environmental features and natural areas within the Plan area along with a literature review and developed a criteria to determine key features of influence. In total 67 natural features were identified within the Plan area with most clustered near the west, south and eastern boundaries. Three features were formally recognized by Sturgeon County as Environmentally Sensitive Areas that include:

- Sturgeon Valley– Sturgeon River.
- Lancaster/Cutbank Lake and has potential to be a Crown-owned body of water.
- River Lot 56 which is provincially owned and managed as Natural Area.

In addition to the above the study supports the following natural areas as potential Environmentally Sensitive Areas:

- Eastern portion of the study area contains three water bodies (likely wetlands) with high potential to be Crown claimed.
- Several relatively large natural areas previously identified as woodlands and wetlands are scattered throughout the study area, mainly to the south of which some have been recognized to have a local core area ecological connectivity function.

Since the Spencer desktop study was completed, Green Plan Ltd have carried out greater detailed field investigations pertaining to Planning Area 1. This confirmed that the uncategorized Natural areas were not considered of environmental protection value and therefore the Environmental Constraints plan has been updated to reflect this more recent analysis.

1.5.9 Sturgeon Valley Fiscal Impact Assessment 2020

Prior to proceeding with the development of the Plan, a comprehensive analysis was completed that involved working with developers and landowners on potential development scenarios. These scenarios were further analyzed to understand population growth, demand on servicing and the transportation infrastructure. Three scenarios were eventually developed and further analyzed which included carrying out a fiscal impact assessment for the County to understand the impacts of development on capital and operational budgets. The fiscal analysis was updated to reflect this current Plan.

1.5.10 Sturgeon County Commercial Development Analysis

In January of 2020 the County carried out a commercial development analysis within the County. This identified areas within the Plan area that could accommodate upscale, boutique retail node with a focus on food and beverage and shopping concepts, personal services, health and wellness and small-scale medical offices. Retail node PA4 is viewed as a retail and service node that includes grocery, convenience retail, a gas bar, grab and go food and beverage, personal services as well as institutional and recreational amenities.

Retail nodes PA6, PA7 and PA8 are areas considered appropriate to provide light industrial services that would complement CFB operations and other markets based on the area's location to major transportation connections, such as the Anthony Henday and Highway 28.

1.5.11 Growth Framework Land Use Analysis

From 2019 to 2020, the County carried out a comprehensive Growth Framework Land Use Analysis of the Plan Area to understand the potential growth scenarios and how development could proceed based on infrastructure demands and its fiscal implications. This analysis was based on meeting the minimum overall density requirement of 35du/nrha and working on what a transitional gradient could look like while meeting other policy contained within the EMRGP. This analysis enabled the County to identify key infrastructure upgrades, particularly transportation connections, and understand the fiscal implications of moving forward with varying scenarios. The Growth Framework also guided Council on how to proceed with developing the Plan in alignment with the Special Study Policy Area. This resulted in identifying Planning Areas that could proceed in developing a NASP and enabling future NASPs to be developed through an amendment to the Plan.

1.5.12 Agricultural Impact Assessment

In May of 2021, Serecon completed an Agricultural Impact Assessment on the Plan area that recognises that large-scale agriculture at full build out in the Plan area will be unsustainable. However, it also recognises that the build out of the Plan area will occur over a considerable period of time and recommends implementing mitigation through avoiding agricultural parcels from being isolated that could cause access and land use conflicts.

While some of the land within the ASP is highly suitable for annual crop production or pasture, it is not dissimilar to land surrounding the Sturgeon County or the greater Edmonton area. Overall, the Agricultural Impact Assessment concludes that the development of the Plan will not unduly impact the overall viability of either the local agricultural community in the County or its surrounding areas.

1.6 ALBERTA ENVIRONMENT AND PROTECTION OF STURGEON RIVER FLOOD HAZARD STUDY

The purpose of the St. Albert Flood Hazard Study is to assess and identify flood hazards along Sturgeon River through the City of St. Albert and adjacent areas of Sturgeon County. The study will be completed under the provincial Flood Hazard Identification Program (FHIP), the goals of which include enhancement of public safety and reduction of future flood damages through the identification of flood hazards.

Hydraulic modelling and flood mapping are required for approximately 31 km of the Sturgeon River, extending from the outlet of Big Lake to approximately 1 km downstream of the Highway 37 crossing at SW 5 55 24 W4M. Mapping along the shore of Big Lake is part of the scope of work, but mapped lake elevations may not correspond to Sturgeon River model boundary conditions. Modelling along Big Lake tributaries is not required, including along the Sturgeon River upstream of Big Lake. A provincial flood hazard study for St. Albert was completed in 1986 and revised in 1990, and the new study will replace and expand hydraulic model and flood mapping coverage.

The County will update the flood risk mapping upon completion of this study and policy is included for Planning Areas 2 & 5 to confirm the flood boundary at the time of developing a NASPs.

2. STURGEON VALLEY SOUTH PLANNING PROCESS

2.1 PROCESS OVERVIEW

The preparation of this Plan was extensive and multi-faceted; it involved working collaboratively with the EMRB, stakeholder engagement with area land owners, and an intensive analysis that resulted in the creation of a Growth Framework that was unanimously supported by Council in August 2020. The diagram below indicates the many stages that have influenced the development of this Plan.

▼ FIGURE 3: PROCESS CHART | V3 Companies of Canada

2.2 TRI-PARTY COLLABORATION

This Plan has been developed to reflect the Edmonton Metropolitan Region Growth Plan (EMRGP) "Appendix G: Negotiated Policies for the Sturgeon Valley Special Study Area". The development of the policy was created in collaboration with the City of Edmonton, City of St. Albert, and Sturgeon County. The Cities had representation from their respective planning departments that were involved in regular meetings where each party identified their concerns. Subsequently, policies were jointly developed that addressed their concerns, with direct collaboration between the Mayors of the respective municipalities to finalize the Sturgeon Valley Special Study Area Policy. This policy was brought before the EMRB for adoption in December 2018 and was subsequently approved by the Province in March 2019. The outcomes of the Tri Party Committee and the intermunicipal collaboration is now known as Appendix G of the EMRGP.

2.3 COMMUNITY CONSULTATION

Engagement for the 2021 Plan was completed in collaboration with the public consultation efforts for both the Sturgeon Valley Core (Area C), amending ASP and the Sturgeon County MDP amendment. Engagement for all three projects was completed under the Our Future Valley Project Planning process. Due to COVID-19 pandemic, public consultation for the Our Future Valley project(s) was completed virtually. As identified below, public consultation efforts for the Our Future Valley Project consisted of the following:

- Our Future Valley Email Launch
- Our Future Valley Website Launch
- 4 Public Information session(s) via Zoom
- 2 Developer Information session(s) via Zoom
- Developer Survey via online survey
- 4 Call-a-planner sessions via Zoom
- 2 Our Future Valley Workbook Consultation via Zoom
- 1 public engagement session to outline proposed policy for the MDP and ASP.
- Our Future Valley Homeowners Association Information and Workbook Consultation session via Zoom
- Meetings with neighbouring Municipalities
- Meetings with appropriate regional bodies
- Council sessions

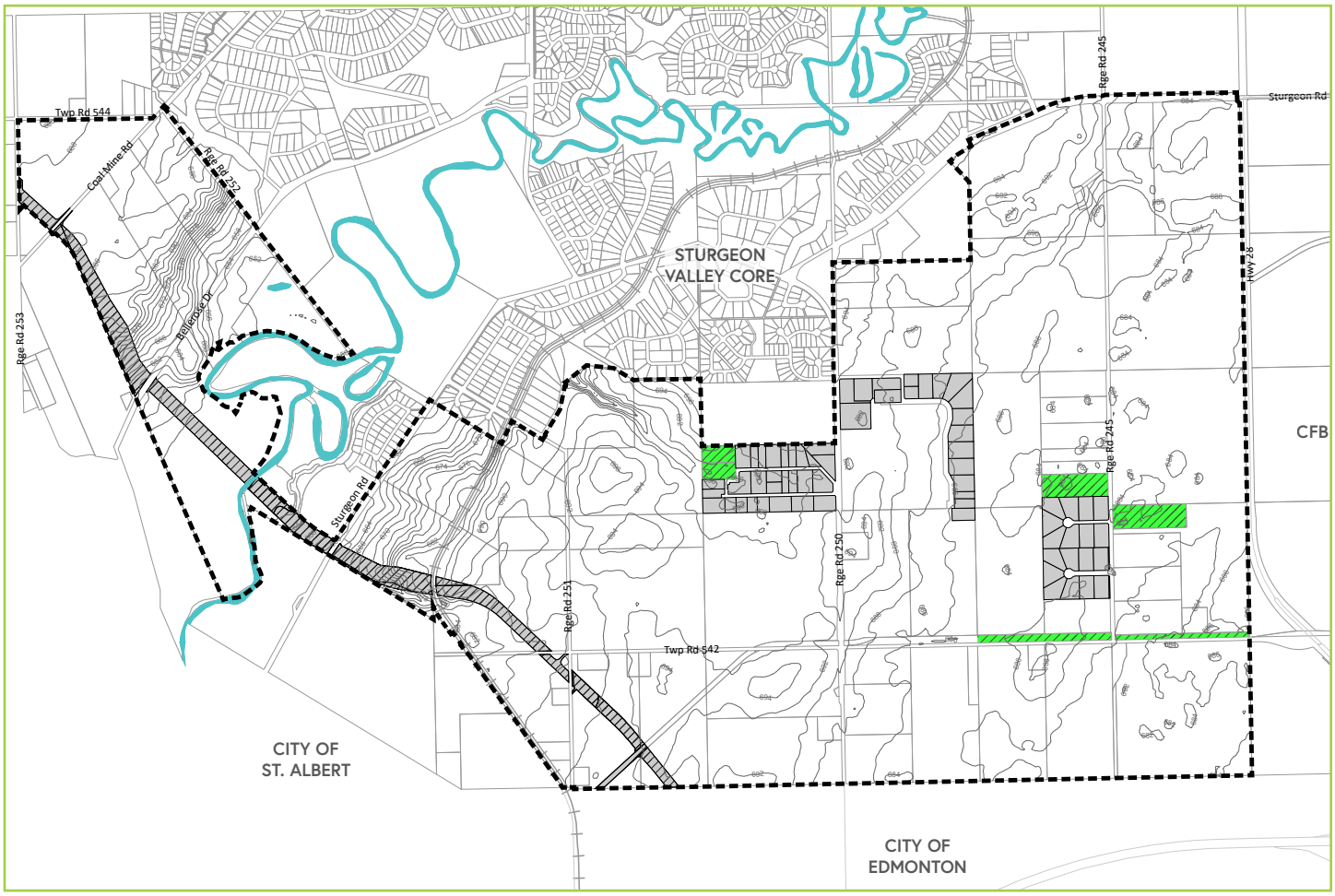
Details regarding the key timelines of the engagement completed as part of the Plan is found in Appendix J. The "Our Future Valley - What We Heard Report" is available under seperate cover.

3. STURGEON VALLEY SOUTH: CONTEXT

3.1 TOPOGRAPHY

The topographical plan is indicated in Figure 4 outlines the contours of the Plan area which influence the drainage areas indicated in Figure 5.

▼ FIGURE 4: TOPOGRAPHICAL PLAN | V3 Companies of Canada



3.2 DRAINAGE

The study area is divided by the Sturgeon River that effectively creates three catchment areas within the Plan as indicated in Figure 5 below. Drainage Area 1 encompasses the lands to the west of the Sturgeon River Valley and generally encompasses most of the lands within Planning Area 5; Drainage Area 3 covers those lands to the east of the Sturgeon River Valley that flow into the river and generally encompasses most of the lands within the Planning Area 1; and further to the east is Drainage area 5 that covers Planning Areas 2, 3 & 4.

▼**FIGURE 5: Drainage Basins | V3 Companies of Canada**

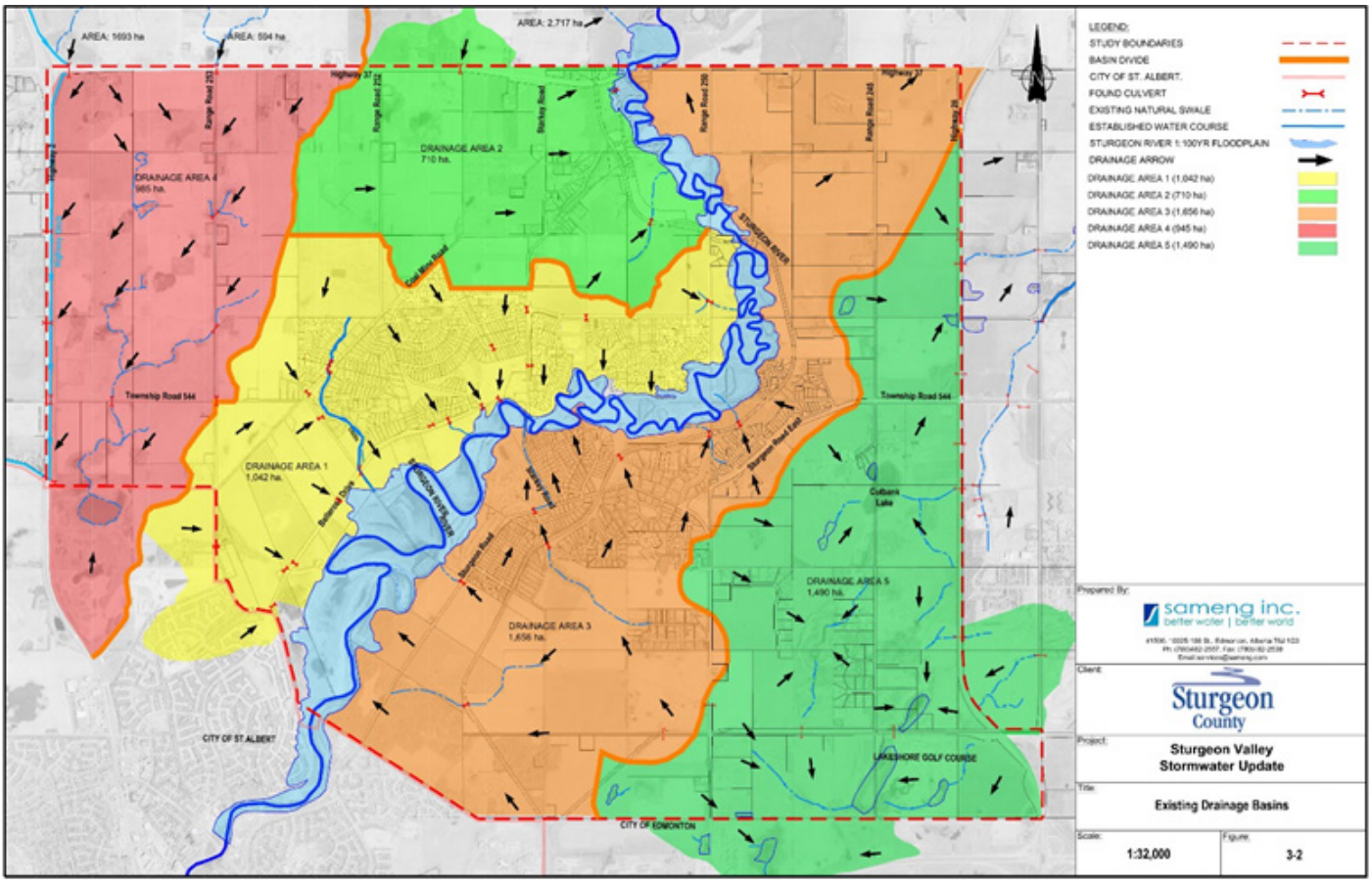
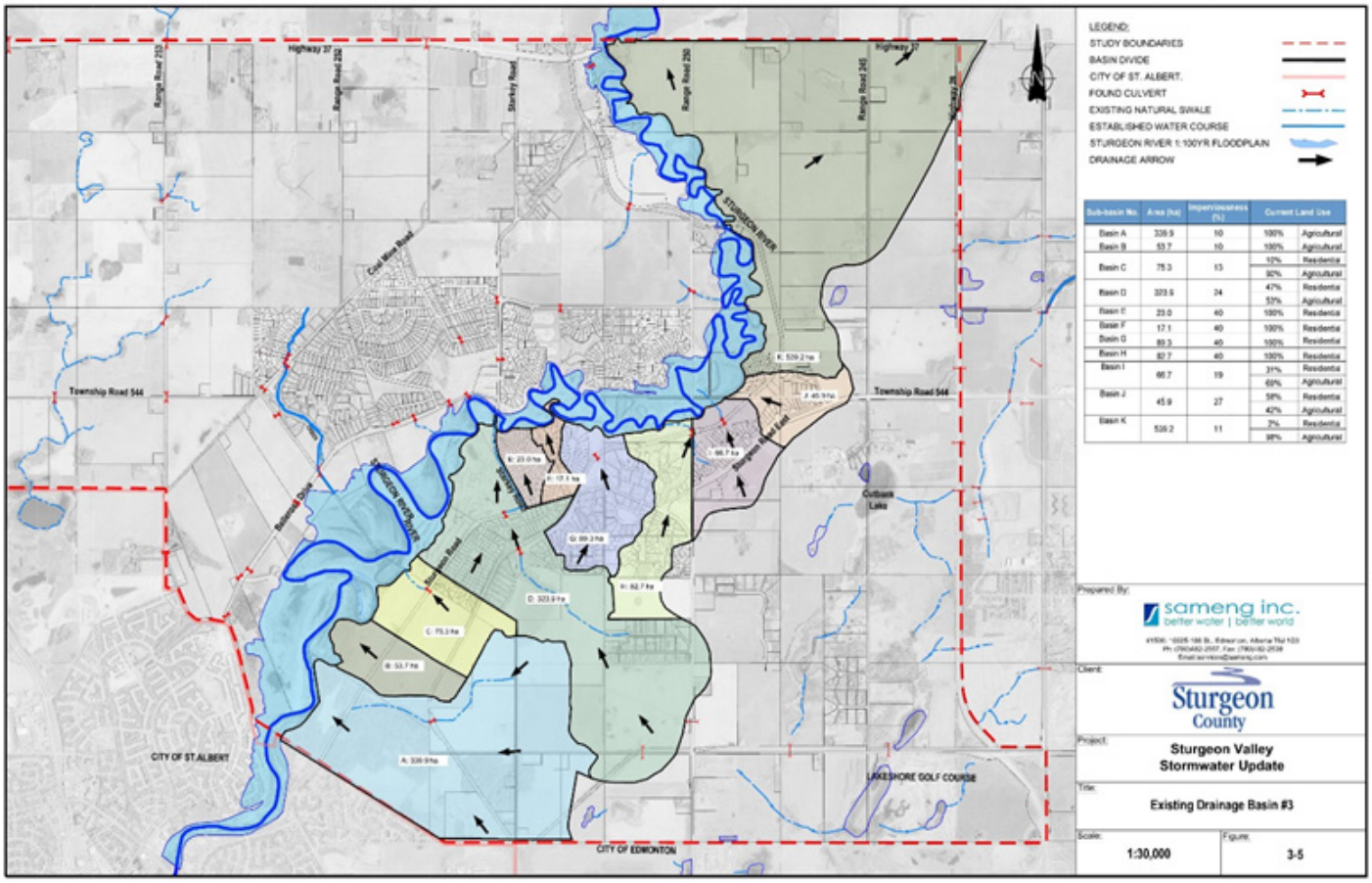


Figure 6, provides further breakdown of the drainage areas within predominantly Planning Area 1:

▼**FIGURE 6: Drainage Basin Area 3 | V3 Companies of Canada**



3.3 AGRICULTURAL

Through the development of the Sturgeon Valley Special Study Area (SVSSA), over 25 quarter sections of land (Area D of the SVSSA) were protected for long term agricultural purposes. The lands included within this Plan focus on an area of over 30 quarter sections in between the Sturgeon Valley community and the cities of Edmonton and St Albert.

Planning Areas 1 & 2 are anticipated to accommodate near term growth. The remaining lands will be retained for agricultural purposes until such time as development brings forth amendments to the Plan to accommodate additional growth opportunities.

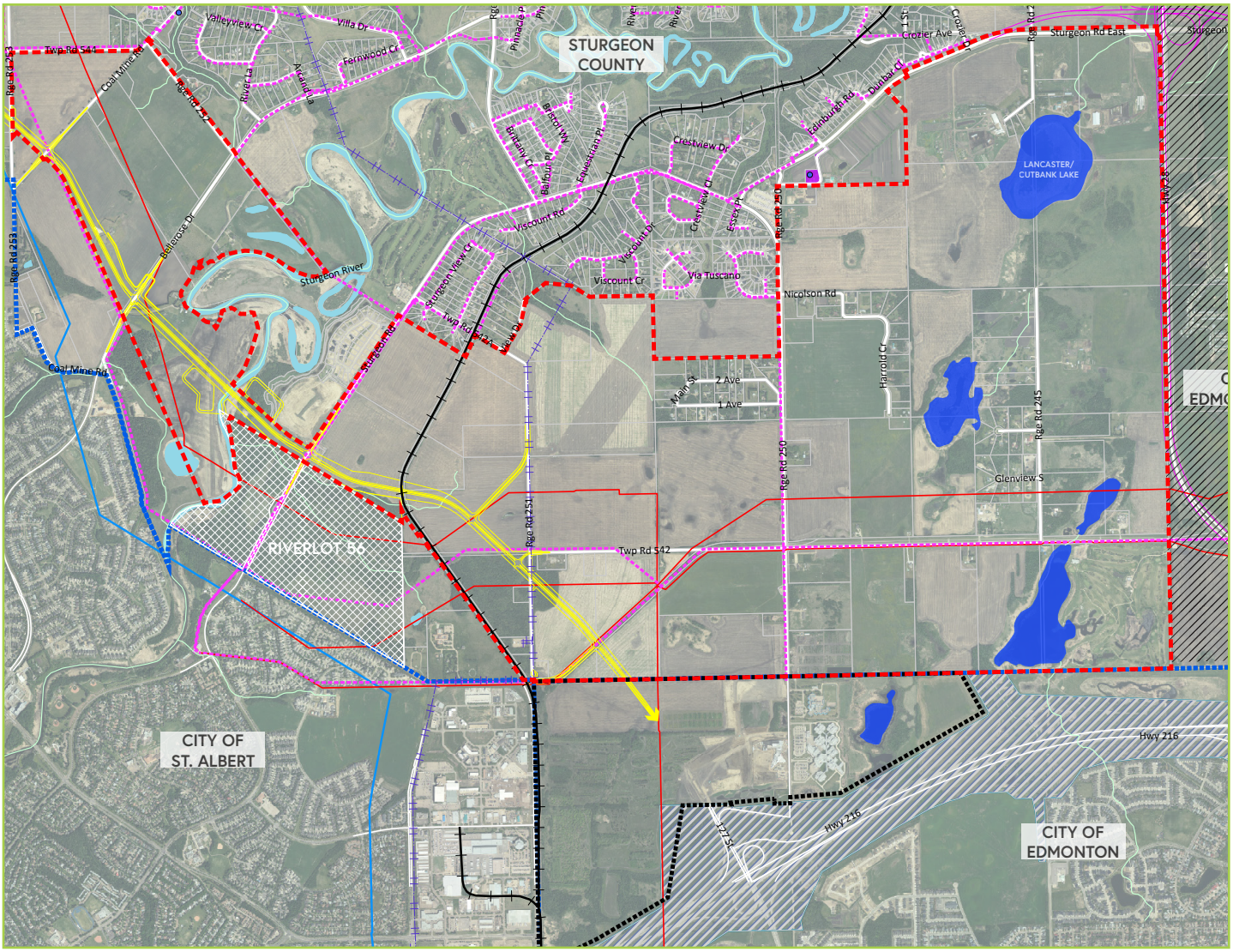
3.4 EXISTING LAND USE AND DEVELOPMENT

The Plan area is currently comprised of small pockets of established residential areas with the remaining land predominantly being used for agricultural purposes. There are a number of environmentally significant features with wetlands located to the east and the Sturgeon River to the west. The lands are effectively surrounded by existing development with the City of St. Albert, City of Edmonton bordering to the south and south west, the established Sturgeon Valley residential communities to the north, and the Canadian Forces Base (CFB) to the east (Refer to Figure 8). With urban development predominantly surrounding the lands, it makes the Plan area a logical extension to accommodate growth and additional urban development over the long term.

3.5 EXISTING MUNICIPAL INFRASTRUCTURE

Figures 7 shows the existing Municipal Infrastructure that is located within the Plan area, including a north-south railway line and high-tension power lines running north-south along Range Road 251. The roads are laid out in a grid formation, generally aligning with quarter sections. Sturgeon Road, Valor Road (Township 542), and Range Roads 251, 250 and 245 are located to the east of Sturgeon River and Bellerose Drive and Old Coalmine Road located to the west of the river.

▼FIGURE 7: Existing Municipal Infrastructure | V3 Companies of Canada



LEGEND

- ASP Boundary
- Municipal Boundary
- Goodridge Corners Boundary
- CFB Edmonton Boundary
- Provincial Park
- Prominent FWMIS Water Bodies (Spencer)
- 127 Street Extension
- Hwy 28 Twinning
- Existing Railway Line
- Existing High Power Transmission Line (EMRGIS)
- Wastewater Regional Existing (EMRGIS)
- Existing Sanitary Line
- Waterline Regional Existing (EMRGIS)
- Potable Water Outlet
- Utilities Parcel
- Transportation Utility Corridor
- FWMIS Watercourses

N

SCALE: 1:15,000

0 0.5 1.0

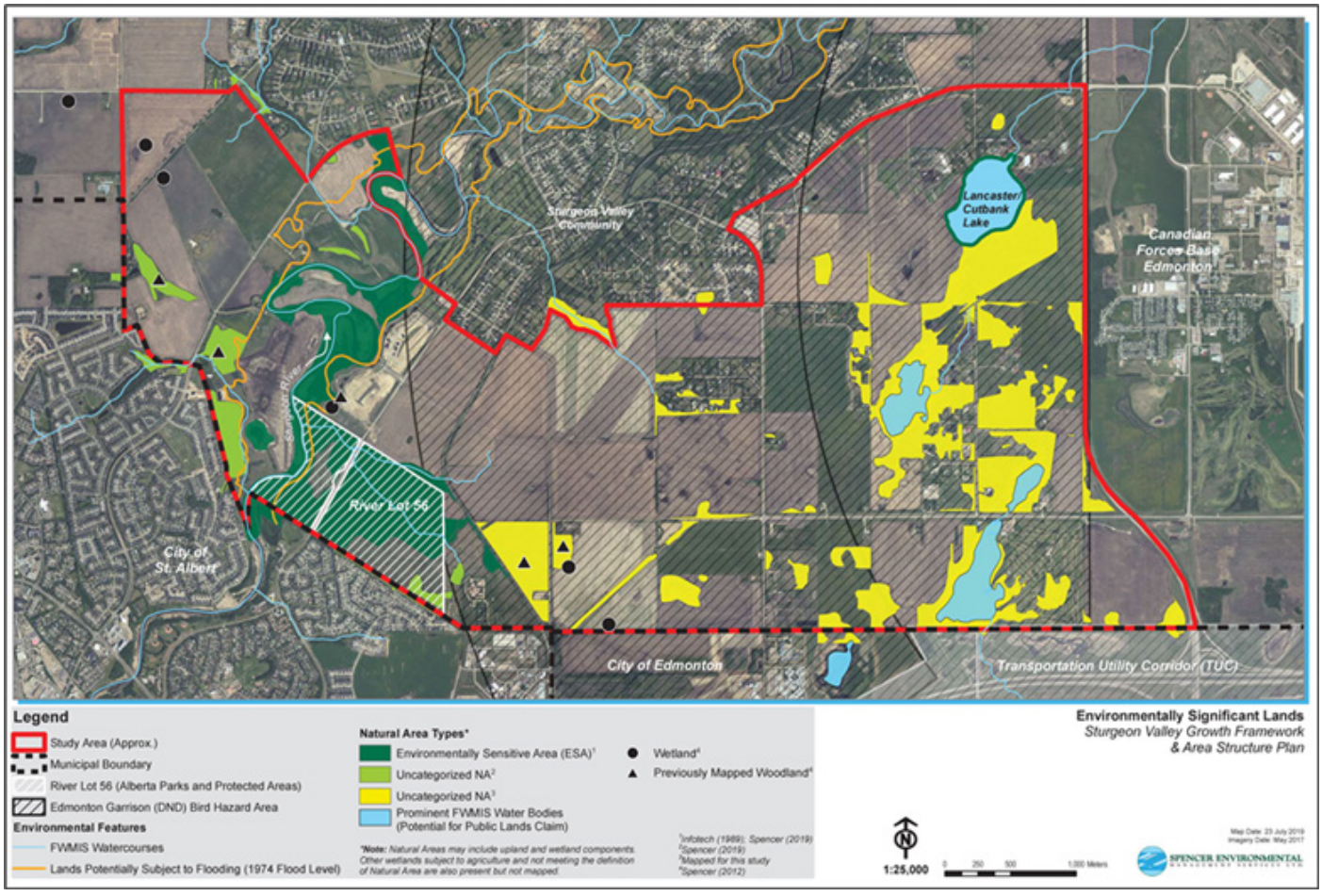
3.6 PROTECTIVE AND EMERGENCY SERVICES

Currently no Protective Emergency Services are located within the Plan area, however, located in the established residential community of Sturgeon Valley to the north is a new fire hall. This community in 2017 also received additional fire protection rating and accreditation as per the Fire Underwriters Survey resulting in the community being considered to be hydrant protected.

3.7 DEVELOPMENT CONSTRAINTS

The development of the Plan area is driven by key aspects predominantly relating to transportation infrastructure and servicing. There are some significant natural features within the Plan area that also place limitations on development as shown in Figure 8. As development proceeds, further detailed analysis of these areas will need to be carried out.

▼FIGURE 8: ENVIRONMENTALLY SIGNFICANT LANDS | V3 Companies of Canada

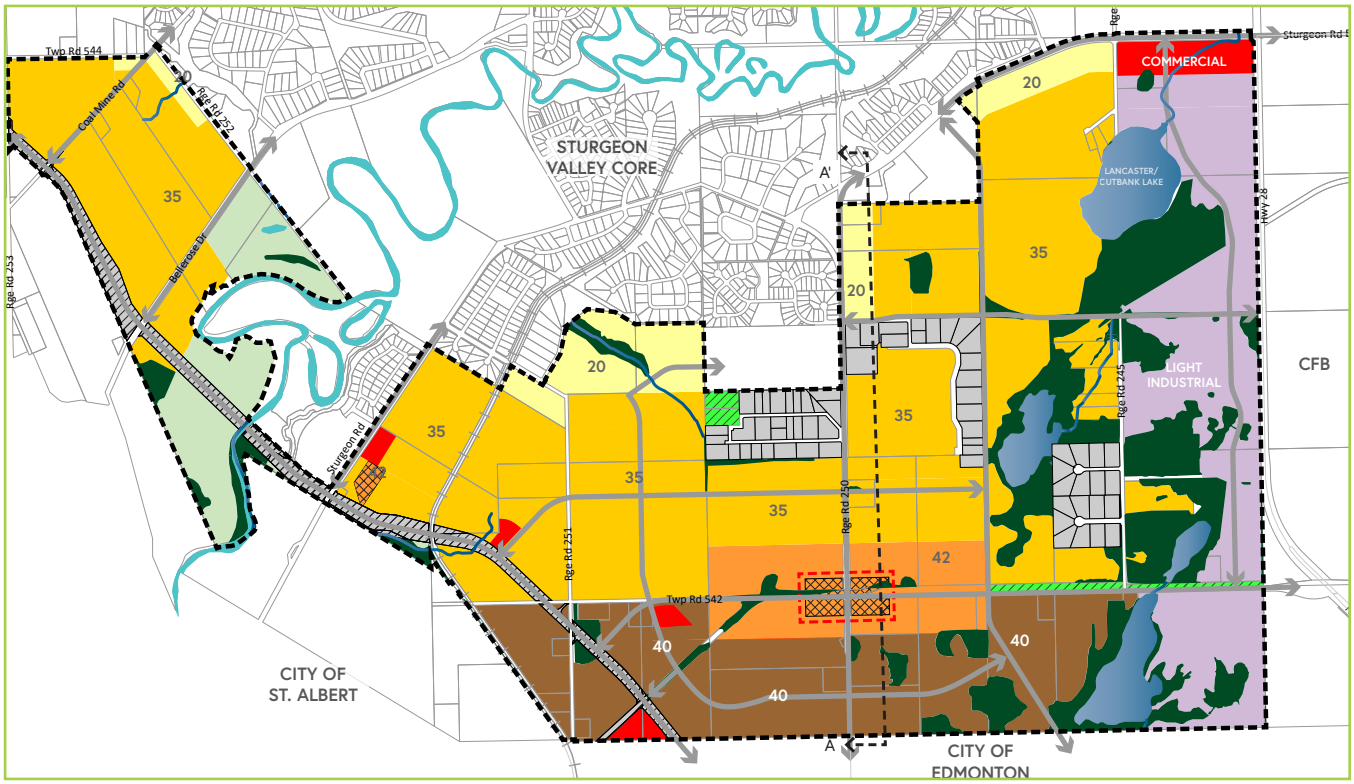


4. STURGEON VALLEY SOUTH: VISION

The Sturgeon Valley South Area Structure Plan (the Plan) details unique development guidance that is sensitive to the surrounding natural environment, whilst being cognisant of the various urban and rural neighbours. Sturgeon Valley South is a place where identity is maintained and strengthen through showcasing its history, while capitalizing on innovative emerging technologies and embracing different approaches throughout the many years of the Plan's implementation. The Plan will be developed in a fiscally responsible manner that creates long term resilience through managing the varying phases of development.

The Sturgeon Valley South Plan area is a place where people want to visit, play, work, live and be part of a strong community.

▼FIGURE 9: Concept Plan | V3 Companies of Canada



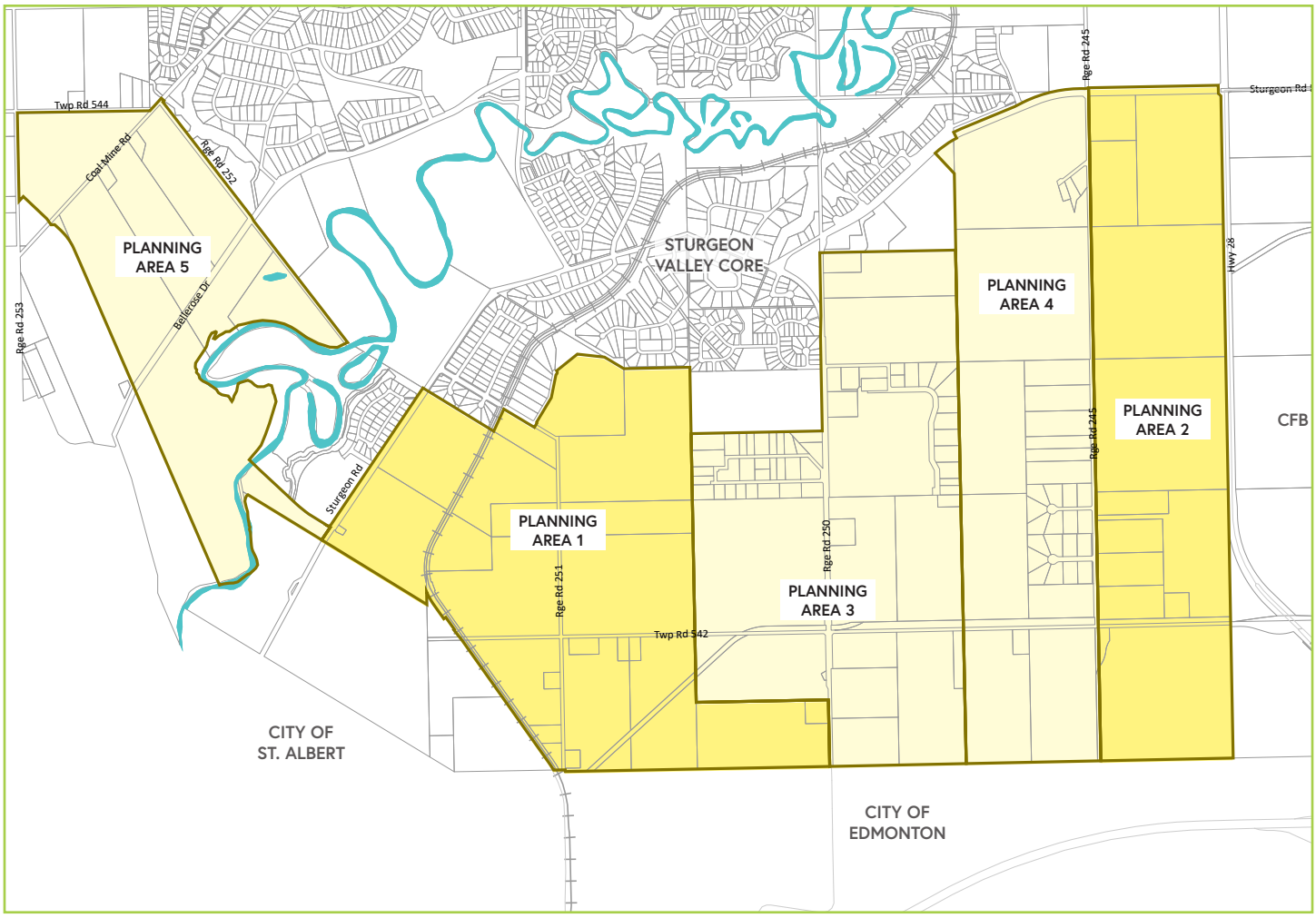
LEGEND

- ASP Boundary
- Existing Parcel
- Existing Developed Residential
- Exisiting Open Space
- Potential Significant Natural Features (Desktop Assessment)
- Potential Environmental Reserve (Potential for Public Lands Claim)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- FWMIS Watercourses
- Sturgeon River
- Preliminary Road Network

LAND USE DESIGNATIONS

- Agriculture Holdings
- Residential (max density 20 du/nrha)
- Residential (min density 35 du/nrha)
- Residential (min 40 density du/nrha)
- Residential (min density 42 du/nrha)
- Potential Transit Hub
- Mixed-Use (min density 42 du/nrha)
- Commercial
- Light Industrial

▼FIGURE 10: Planning Areas | V3 Companies of Canada



LEGEND

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Railway Line

N

SCALE: 1:15,000

0 0.5 1.0

5. STURGEON VALLEY SOUTH: POLICIES

5.1 OVERVIEW

The following tables provide two statistical breakdowns on the potential land uses and residential densities related to the full build out and build out of Planning Areas 1 & 2. Figure 11 is based on a projected build out of the entire area with the main purpose to establish the projected population over the long term and how this influences transportation in the area. Overall, the Plan has been broken down into five Planning Areas; each area will require a Neighbourhood Area Structure Plan (NASP) to be completed. Figures 12 & 13 indicates the Planning Areas 1 & 2 where a Neighbourhood Area Structure Plans will be required to provide greater detail on how development will proceed and is consistent with the policies contained within this Plan. This Plan recognizes the overall development of the Plan area is projected to occur over a significant period and that changes will occur over this time. The core focus has been related to the Planning Areas 1 and 2 with the remaining Planning Areas 3, 4 & 5 requiring an amendment to this Area Structure Plan.

▼**FIGURE 11: Full Build Out | V3 Companies of Canada**

LAND USES	AREA (Ha)	DEVELOPMENT AREA (Ha)****	AREA (nrHa)***	PERCENTAGE (%)	UNITS/ nrHa	POPULATION / nrHa
Gross Area	**1700.00**					
Existing Railroad ROW	7.50					
Future 127 Street Extension	45.00					
ROW (Existing Roads, etc.)	52.84					
Potential Significant Natural Features & Potential Environmental Reserve*	243.67					
Existing Open Space	21.40					
Existing Residential	71.51					
Agriculture Holdings	68.73					
Gross Developable Area (GDA)**	**1189.35**			100%		
Commercial	25.72	7.716		2.16		
Light Industrial	178.62	53.59		15.02		
Residential (20 du/nrha)	71.51		50.057	6.01	1001	2503
Residential (35 du/nrha)	637.40		446.18	53.59	15616	39041
Residential (40 du/nrha)	195.60		136.92	16.45	5477	13692
Residential (42 du/nrha)	68.90		48.23	5.79	2026	5064
Mixed Use (42 du/nrha)	11.60		8.12	0.98	341	853
Subtotal	**1189.35**	**61.30**	**689.50**	**100.00**	**24461**	**61152**

Notes:

* Potential Environmental Reserve areas currently excludes the 1970 floodplain areas and requires formal in-field analysis.

** Gross Developable Area excludes the following areas: Existing Railroad ROW, Future 127 Street ROW, Existing Roads/Other ROW, Potential Environmental Reserve, Existing Open Space, Existing Residential and Agriculture Holdings.

*** Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Roads Area and 5% PUL and Stormwater Management Areas from the Developable Residential Land Area.

**** Light Industrial and Commercial area excludes the 10% of Municipal Reserve and 15% Road Area and 5% PUL to accommodate Stormwater Management and utilities.

Overall density in this scenario (All Planning Areas) is 35 du/nrha.

▼**FIGURE 12: Planned Area 1 | V3 Companies of Canada**

LAND USES	AREA (Ha)	DEVELOPMENT AREA (Ha)****	AREA (nrHa)***	PERCENTAGE (%)	UNITS/ nrHa	POPULATION / nrHa
Gross Area	**410.05**					
Existing Railroad ROW	7.50					
Future 127 Street Extension	20.33					
ROW (Existing Roads, etc.)	9.98					
Potential Significant Natural Features & Environmental Reserve*	13.60					
Gross Developable Area (GDA)**	**358.64**			100%		
Commercial	9.70	2.91		2.70		
Residential (20 du/nrha)	38.50		26.95	10.73	539	1348
Residential (35 du/nrha)	206.11		144.277	57.47	5050	12624
Residential (40 du/nrha)	101.73		71.211	28.37	2848	7121
Residential (42 du/nrha)	2.60		1.82	0.72	76	191
Subtotal	**358.64**	**2.91**	**244.30**	**100.00**	**8514**	**21284**

Notes:

** Gross Developable Area excludes the following areas: Existing Railroad ROW, Future 127 Street ROW, Existing Roads/Other ROW, and Potential Environmental Reserve.

*** Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Roads Area and 5% PUL and Stormwater Management Areas from the Developable Residential Land Area.

**** Light Industrial and Commercial area excludes the 10% of Municipal Reserve and 15% Road Area and 5% PUL to accommodate Stormwater Management and utilities.

Overall density in this scenario (Planning Area 1) is 35 du/nrha.

▼**FIGURE 13: Planned Area 2 | V3 Companies of Canada**

LAND USES	AREA (Ha)	DEVELOPMENT AREA (Ha)****	AREA (nrHa)***	PERCENTAGE (%)	UNITS/ nrHa	POPULATION / nrHa
Gross Area	327.92					
ROW (Existing Roads, etc.)	6.84					
Potential Significant Natural Features & Environmental Reserve*	111.96					
Existing Open Space	8.70					
Gross Developable Area (GDA)**	200.42			100%		
Commercial	15.86	4.76		7.91		
Light Industrial	178.62	53.59		89.12		
Residential (35 du/nrha)	5.94		4.20	2.96	146	364
Subtotal	**200.42**	**58.35**	**4.20**	**100.00**	**146**	**364**

Notes:

** Gross Developable Area excludes the following areas: Existing Roads/Other ROW, Potential Environmental Reserve, and Existing Open Space.

*** Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Roads Area and 5% PUL and Overall density in this scenario (Planning Area 2) is 35 du/nrha.

**** Light Industrial and Commercial area excludes the 10% of Municipal Reserve and 15% Road Area and 5% PUL to accommodate Stormwater Management and utilities.

Overall density in this scenario (Planning Area 2) is 35 du/nrha.

5.2 TRANSITIONAL DEVELOPMENT

The urban form of development within the Plan area is being driven by the minimum density requirements outlined in the Edmonton Metropolitan Region Growth Plan (EMRGP). The policy contained within the EMRGP also recognizes the need to transition from a higher density to a lower density at the interface with the established residential development indicated as Sturgeon Valley Core (Figure 9) in the Plan. The development of light industrial on the eastern border also requires careful consideration of the interface between residential and the Canadian Forces Base (CFB). It should be recognized that light industrial development has evolved to be relatively nuisance-free and high-tech operations combined with natural and man-made features can mitigate the potential impacts. The light industrial area includes existing wetlands that have been identified as potentially Crown claimable and Highway 28, both of which create significant buffers between the residential uses on the CFB base and higher density residential development to the west.

5.2.1 Objective:

» *To be sensitive of the density and urban form within the Plan areas that border the existing Sturgeon Valley Core community.*

Policies:

5.2.1.1 Transitional density levels shall be in general accordance with Figure 9.

5.2.1.2 Where possible, the development of roads, parks and/or green corridors may be used to offset the built form of varying densities.

5.2.1.3 Landscaping, the use of berms and existing natural features may be leveraged as an important tool to assist with transitioning from higher to lower urban densities through buffering.

5.2.2 Objective:

» *To be sensitive of the potential impacts light industrial development may have on residential development and the operations within CFB.*

Policies:

5.2.2.1 The development of the Neighbourhood Area Structure Plan (NASP) for Planning Area 2 (Light Industrial) shall be carried out in consultation with CFB to avoid any potential conflicts relating to operations.

5.2.2.2 The development of the NASP for Planning Area 2 should seek to protect wetlands and natural water features indicated in Figure 9 as Environmental Reserve based on the recommendations of the detailed biophysical assessment. Any alteration or removal of wetlands or watercourses must be in compliance with Provincial and Federal Legislation.

5.3 RESIDENTIAL

The majority of the planned development within the Plan is to accommodate for residential development of varying densities that will provide a range of choices for housing. The densities will also be able to support non-residential services located within the Plan area where people can live, work and play. Development has been structured in a manner to enable contiguous development to avoid fragmentation of existing agricultural lands and maintain existing operations until such time as there is demand for development.

5.3.1 Objective:

» *To create a residential community that meets the overall 35du/nrha within the Plan while respecting established communities by creating transitional densities.*

Policies:

5.3.1.1 Density levels shall be in general accordance with Figure 9 with each NASP for Planning Areas 1, 3, 4 & 5 demonstrating compliance with meeting the overall average density of 35du/nrha.

5.3.1.2 Alternative/innovative housing should be encouraged.

5.3.1.3 Clustering together of more than four multi unit residential dwellings shall be encouraged, only if integrated within a mixed-use area, adjoining a commercial area or located along a public transit route. This excludes triplex, fourplex and/or townhouses.

5.3.1.4 Sturgeon County shall record and monitor the densities as development unfolds to confirm compliance with the EMRGP density policies.

5.3.2 Objective:

» *To create a residential community that is unique and consists of character that reflects the history of the Plan area while incorporating innovative emerging technologies that create a modern, resilient, and functioning community.*

Policies:

5.3.2.1 The NASP's should be designed in a manner that reflects the Sturgeon Valley's unique character through design elements of dwellings, street signage, and community public spaces.

5.3.2.2 Development within the Plan should incorporate Smart City concepts.

5.4 COMMERCIAL/MIXED USE DEVELOPMENT

To create a complete community there needs to be opportunities for commercial uses as standalone development and/or through mixed use development. This includes enabling small corner stores and restaurants that are within walking distance of residential communities. Commercial sites present an opportunity of creating attractive and interesting spaces for people to gather and socialize with design and massing becoming an important element that contributes to the identity of an area. Commercial development also creates employment opportunities that are within close proximity to employees.

5.4.1 Objective:

» *To create a unique commercial destination that focuses on small to medium sized boutique businesses.*

Policies:

5.4.1.1 Community architectural design standards shall be established through the development of NASPs for the commercial/mixed use areas indicated in Figure 9. These design standards should include accommodating winter design principles. The design character and elements for these areas should be based around linking to the agricultural heritage of the community.

5.4.1.2 Commercial nodes, as generally indicated in Figure 9, should be enabled through the Land Use Bylaw the ability to incorporate offices or residential development above ground level.

5.4.1.3 Commercial nodes should look to create spaces that enable programming of indoor/outdoor community activities, such as community markets.

5.4.2 Objective:

» *To enable the ability to develop local corner commercial stores within residential communities.*

Policies:

5.4.2.1 The NASPs should identify locations within residential communities that could provide for small local corner stores and services which are within walking distance of residential land uses.

5.4.2.2 Small local corner stores should be enabled through the Land Use Bylaw to include offices and/or residential above ground level.

5.4.3 Objective:

» *To create a commercial node that is focused on servicing highway traffic and the surrounding community.*

Policies:

5.4.3.1 The lands located on the corner of Sturgeon Road and Highway 28 shall be developed for the purpose of providing highway commercial or civic related services (Figure 9).

5.4.3.2 The highway commercial area, through the Land Use Bylaw, should allow for above ground offices and inclusion of civic facilities such as libraries/recreational facilities/fire stations/ambulance that service the wider community.

5.4.3.3 The development of a NASP shall involve engagement with Alberta Transportation and CFB.

5.4.4 Objective:

» *To create mixed use nodes comprised of small to medium sized retail stores.*

Policies:

5.4.4.1 Community architectural and landscape design standards shall be established through the development of the NASP for Planning Areas 1 & 3 for the mixed-use nodes (Figure 9), that includes complete streets and winter design principles. The design of the character and elements shall be established through engagement with the community at the time of preparing the NASP.

5.4.4.2 All office and residential should be located above the first-floor level within mixed use nodes when the building is orientated towards the public road to encourage active street frontage.

5.4.4.3 The design of mixed-use nodes within the Planning Areas 1 & 3 should focus the building orientation towards the public road with parking being encouraged to be accommodated underground, at the rear of the building and/or within the public right-of-way. These design features shall be further developed in accordance with policy 5.4.4.1 of this Plan.

5.4.4.4 The development of the NASP's for Planning Areas 1 & 3 should create spaces that enable programming of indoor/outdoor community activities, such as community markets.

5.4.4.5 The future design of mixed-use nodes should incorporate pocket parks if not located within a five-minute walking distance of a public park. These parks shall be considered as part of the municipal reserve contribution in accordance with the Municipal Government Act.

5.4.4.6 The mix use node in Planning Area 3 should incorporate civic facilities, including the provision of a public bus transit hub or other modes of public transportation appropriate at the time of development.

5.5 LIGHT INDUSTRIAL

Highway 28 is a major corridor through to the north that connects into the Anthony Henday, providing excellent opportunities to capitalize on existing infrastructure. To the west of the Plan area is the Canadian Forces Base (CFB) which is one of the largest army bases in Canada. The development of the Plan will support CFB in providing opportunities for accommodation, services and employment that is within close proximity that is easy to access. The light industrial development will be focused on providing a location for off-site light industrial services that support the CFB operations. Through a Commercial Development Analysis carried out by the County, the land was identified as most suitable for light industrial purposes.

5.5.1 Objective:

» *To enable the light industrial development that could include warehousing, logistics, flex industrial and light manufacturing activities along Highway 28.*

Policies:

5.5.1.1 Light industrial development shall occur on the lands designated as Light Industrial in Planning Area 2 (Figure 9).

5.5.1.2 Development within the light industrial area shall be carried out in consultation with Alberta Transportation and CFB.

5.5.1.3 The lands should be developed to accommodate light industrial activities that support CFB operations.

5.5.1.4 The NASP for Planning Area 2 shall include community architectural and landscape design standards that focus on mitigating the visual impact of the lands when viewed from Highway 28, CFB and surrounding residential areas.

5.5.1.5 The development of the industrial lands shall comply with all requirements regarding aerodromes in consultation with CFB at the time of preparing the NASP for Planning Area 2.

5.6 AGRICULTURE

The land surrounding the City of Edmonton is recognized as containing prime agriculture lands. As guided by the EMRGP, municipalities are seeking to reduce the impact of urban development on prime agricultural areas within the Metropolitan Tier of the EMRGP until the market compels development on those lands. The Plan area has been recognized for future growth that will develop over time in a cohesive manner through a series of subsequent NASP(s) within defined Planning Areas. The lands will remain protected for agricultural purposes until such time as the County approves the NASP that will lead to subsequent development.

5.6.1 Objective:

» *To continue the productive use of agricultural lands until the market determines the lands are needed for development.*

Policies:

5.6.1.1 Existing agricultural lands within the Plan area should remain as agricultural until development is approved by the County.

5.6.1.2 In preparing a NASP, development staging shall be carried out in a manner to avoid impacts on agricultural operations so as not to constrain, or restrict, existing agricultural lands until the demand requires the lands to be developed.

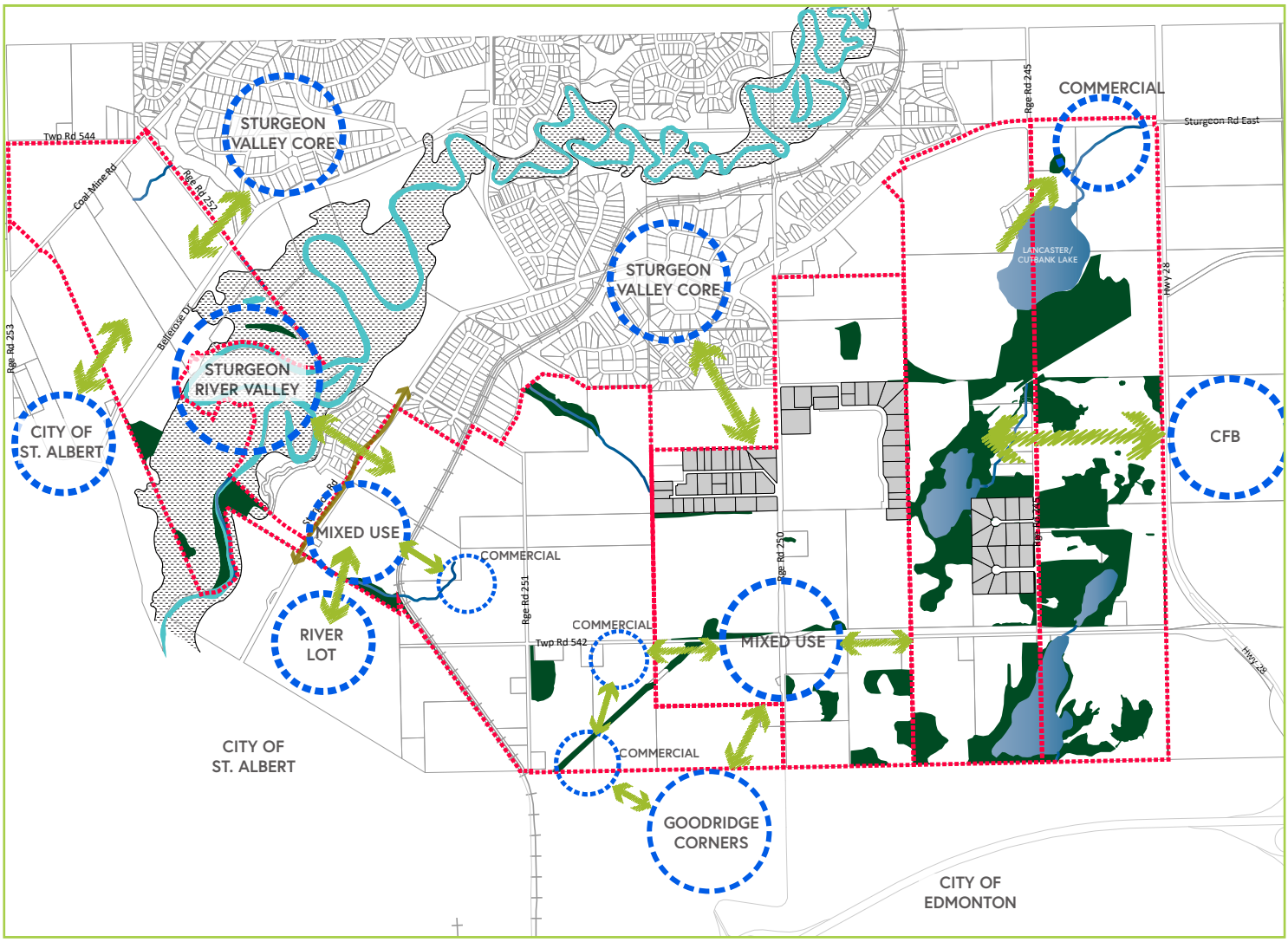
5.6.1.3 In preparing a NASP, areas of land may be retained for urban agriculture. The development of a NASP should identify opportunities to incorporate agricultural elements into new development, examples include: community gardens, greenhouses etc.

5.6.1.4 The development of a NASP located within the Planning Areas 3 through to 5 (Figure 10) shall require an amendment to this Plan in accordance with the criteria outlined in section 6.1.

5.7 PARKS, SCHOOL, OPEN SPACE AND ENVIRONMENTAL RESERVE

The development of any residential community requires lands to accommodate schools, parks and areas of open space. The Municipal Government Act provides municipalities with the ability to capture 10% of land for this purpose or the equivalent cash value at the time of subdivision, however, it is important in the development of the NASPs to clearly delineate those areas where schools may be developed in the long term which form part of the 10% reserve contribution. This includes potential parks and open spaces that are interconnected with Environmental Reserves. Environmental Reserves are not recognized as part of the 10% contribution but are critical in protecting key environmental features, such as wetlands and watercourses, and can play an integral part of the parks, schools and open spaces system.

▼ FIGURE 14: Key Trail Connections | V3 Companies of Canada



LEGEND

- NASP Planning Areas Boundary
- Existing Parcels
- Existing Developed Residential
- Existing Open Space
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Potential Significant Natural Features
- Potential Environmental Reserve (Potential for Public Lands Claim)
- Existing Railway Line
- FWMIS Watercourses
- Sturgeon River
- Key Destinations
- Key Connections
- Multi-Purpose Trail

N

SCALE: 1:15,000

0 0.5 1.0

5.7.1 Objective:

» *To designate lands to accommodate future schools.*

Policies:

5.7.1.1 The development of a NASP shall be carried out in consultation with the local School Boards to determine future school requirements.

5.7.1.2 A NASP shall define the land area for future schools based on the recommendations of the local School Boards that is supported by the County.

5.7.1.3 The County shall encourage innovative, mixed use developments of school facilities, which may include joint recreation and library facilities and the use of school facilities for the overall enjoyment of the community.

5.7.1.4 Where possible, school lands should be designed to integrate with the overall NASP(s) trail systems.

5.7.2 Objective:

» *To create an interconnected network of green corridors, naturalized open spaces and parks that provide for the enjoyment of the community and protection of areas of ecological value.*

Policies:

5.7.2.1 The development of a NASP shall include an interconnected multipurpose trail system that provides connections to key destinations as indicated in Figure 14.

5.7.2.2 Notwithstanding policy 5.7.2.1, the development of a NASP that contains Bellerose Drive and Sturgeon Road (Planning Area 1) should have a multi-purpose trail developed within the right-of-way in accordance with County standards.

5.7.2.3 The trail system developed with a NASP should interconnect with parks, environmental reserve, schools, established utility easements, retail locations, transit nodes and enable connection through to the adjoining NASP Planning Area(s).

5.7.2.4 The development of trails may be used as a buffer to transition to other forms of residential or commercial development.

5.7.2.5 The creation of open spaces and parks within the Plan area should be focused on creating naturalized spaces that require low maintenance.

5.7.2.6 The planting of new plant species should incorporate species that are native to Alberta.

5.7.2.7 The design of naturalized opens spaces, parks and trails should incorporate Crime Prevention Through Environmental Design (CPTED) principles.

5.7.2.8 The development of parks, trails and recreational facilities shall be in accordance with County standards and per conditions of subdivision / development approvals.

5.7.2.9 The County shall encourage the protection of the potentially significant Natural Areas shown on Figure 14 through municipal reserve contribution, the creation of conservation reserves or other methods to protect the natural features that contribute to the character of the Sturgeon Valley.

5.7.3 Objective:

» *To champion the protection of key environmental and heritage sensitive areas within the Plan.*

Policies:

5.7.3.1 Environmental Reserve areas shall include any identified flood prone areas; watercourses and significant wetlands as defined by the outcomes of the biophysical and wetland assessment prepared for as part of a NASP, unless a matrix criterion is established by the County for determining environmental reserve lands.

5.7.3.2 The development of a NASP should seek to retain all naturalized features identified from the biophysical and wetland assessment where possible and create appropriate buffers around wetlands and natural water systems.

5.7.3.3 The development of a NASP should seek to retain and protect any historical features arising from a Heritage Impact Assessment. Any required Provincial or Federal approvals, or protections, shall be the responsibility of the developer.

5.7.3.4 The development of a NASP should be designed to maintain key visual corridors of natural areas, the Sturgeon River and other identified key visual perspectives in the development of the trail network.

5.7.3.5 Any alteration or removal of wetlands or watercourses must be in compliance with Provincial and Federal legislation.

5.8 COMMUNITY SERVICES

The development of the Sturgeon Valley Special Study Area will require community service facilities to accommodate the needs of future residents. This includes emergency services, such as policing, fire and emergency responses along with medical support. Other soft services that future residents are likely to seek are libraries, recreational facilities and community halls.

5.8.1 Objective:

» *To work cooperatively with neighbouring municipalities, CFB, private, public, and non-profit groups to provide community services in the most cost-effective manner possible.*

Policies:

5.8.1.1 The County shall require future subdivision and development in the Plan area to meet all fire protection requirements as outlined in the National Building Code – Alberta Edition & National Fire Code – Alberta Edition.

5.8.1.2 The County shall encourage homeowners to install and/or implement additional fire protection parameters if required.

5.8.1.3 The County shall use the RCMP to provide policing services in the Plan area, until such a time other services are needed.

5.8.1.4 The County shall continue to use the County's bylaw enforcement officers to enforce municipal bylaws within the Plan area.

5.8.1.5 The County shall continue to work with Alberta Health Services to provide ambulance and other medical support services to the Plan area.

5.8.1.6 The County should continue to identify opportunities for providing shared protective and preventative services with neighbouring municipalities, other groups, or on their own.

5.8.1.7 The County shall, through the NASP process, identify if any community facilities, such as libraries, community halls, police, fire or recreational facilities that are needed to service the overall community. This may be achieved through negotiations with the developer via land acquisition, construction of such facilities and/or collection of off-site levies in accordance with the Municipal Government Act (Section 648).

5.9 GREEN DEVELOPMENT

Sturgeon County recognizes the challenges and impacts development can have on the environment and beyond in protecting the natural water systems, wetlands and important ecological systems. The County also recognize the importance of championing innovative development and new technologies that reduce our human footprint on the land and build in climate resiliency.

5.9.1 Objective:

» *To provide leadership in the incorporation of green development techniques and technologies that reduce the overall impact on the natural environment.*

Policies:

5.9.1.1 The County shall encourage the installation of energy efficient technology (e.g. LED lighting).

5.9.1.2 The County shall encourage the inclusion of low impact design into the development of the Plan area.

5.9.1.3 The County shall encourage the development of net zero carbon buildings.

5.9.1.4 The County shall support the ability to utilize greywater for other household and business uses subject to compliance with provincial and federal health regulations.

5.9.1.5 The County shall work with developers on incorporating climate adaptation design standards and initiatives.

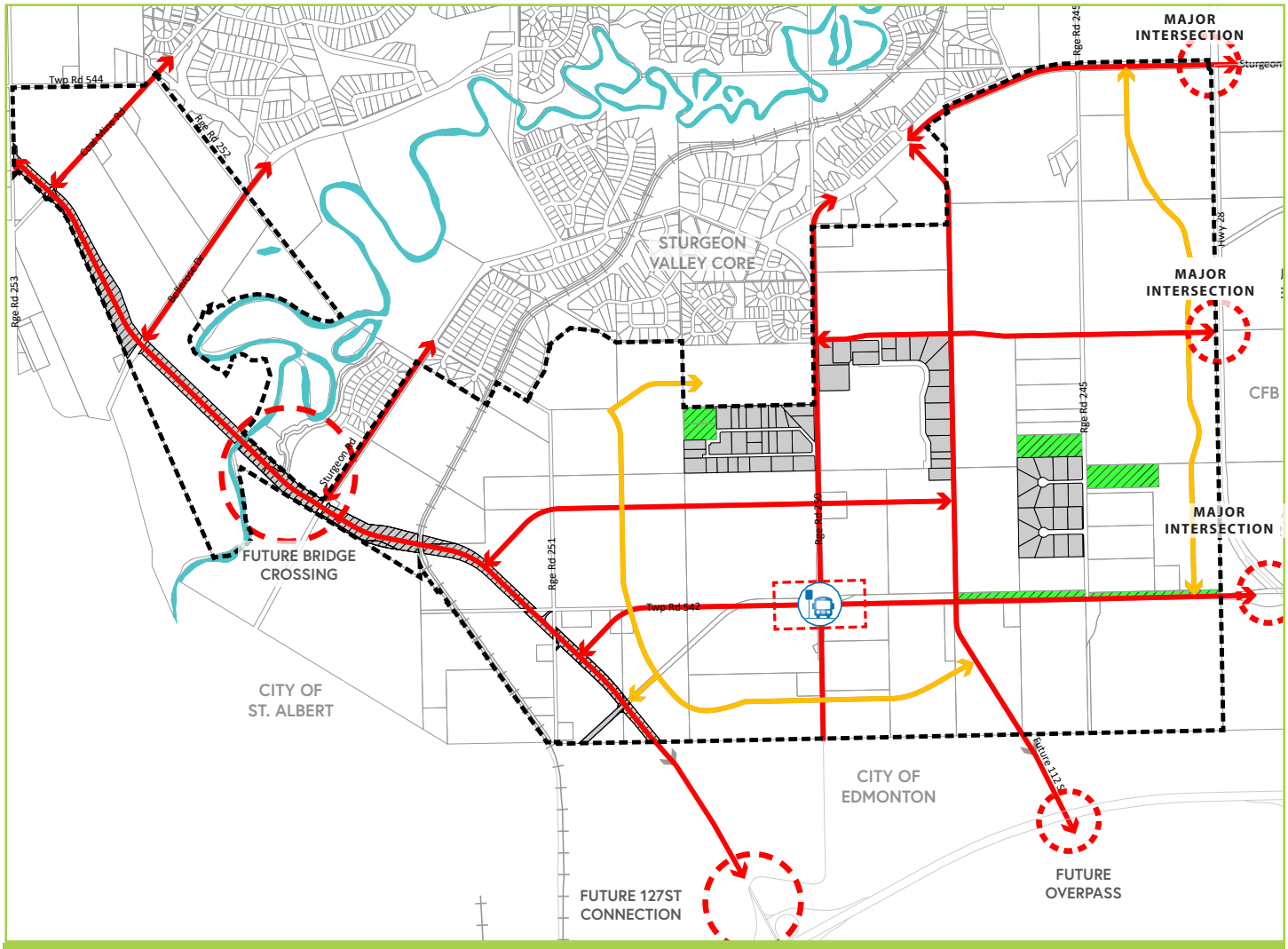
5.9.1.6 The development of a NASP should consider EV charging stations and other alternative energy charging facilities to support the transportation network.

5.9.1.7 The County shall encourage the incorporation of solar and other emerging technologies.

5.10 TRANSPORTATION

Transportation connections are critical to the movement of people, goods and services within the Plan area and beyond. This will involve working with Alberta Transportation to obtain access to key corridors, such as Highway 28, along with identifying funding to support the construction of new infrastructure. Providing choice in the modes of transportation is also important, including creating a safe transportation corridor for non-motorized forms of transportation that contribute to the health and wellness of a community. It is also important to build in resiliency through protecting transportation corridor rights-of-ways that can accommodate future transportation demands based on the long-term projection of the full built out of the area. Transportation infrastructure requirements within and beyond the County is one of the key elements on how development moves forward within the Plan area.

▼ **FIGURE 15: Transportation Plan | V3 Companies of Canada**



5.10.1 Objective:

» *To create a safe and efficient road network system that ties into the surrounding road network.*

Policies:

5.10.1.1 A NASP road network shall be in general conformance with the arterial and collector road network shown in Figure 15.

5.10.1.2 A NASP shall accommodate for the width of road rights-of-way and intersections based on accommodating for a projected full build out of the Plan area.

5.10.1.3 A NASP should accommodate for the inclusion of a public bus transit system in consultation with the County and in accordance with Edmonton Metropolitan Region policy.

5.10.1.4 In preparing a Traffic Impact Assessment for a NASP application, it shall be required to consider the downstream impacts on adjoining municipalities roading network and collaborate with those municipalities in carrying out the required upgrades to address the additional increase in demand arising from the developments traffic.

5.10.1.5 A Traffic Impact Assessment shall need to confirm what transportation infrastructure is required to support the varying phases of development when creating a NASP. Where new major infrastructure is required, as indicated in policy 5.10.1.8, the County shall identify the availability for funding, timing of construction and determine what level of development may or may not occur.

5.10.1.6 The County shall develop transportation engineering design standards that are in alignment with complete street design principles consistent with the policies within the Plan.

5.10.1.7 The County may consider alternative forms of design standards that meet the intent of the services being required where there is a demonstrated capital or operational cost efficiencies.

5.10.1.8 The County shall work with the development community on updating its off-site development levies bylaw to support future major road infrastructure (refer to Figure 14) that will service the Plan area. This will include:

- 127 Street Extension
- Upgrades to Highway 28
- Extension of 112 Street overpass
- Other arterial road infrastructure identified to benefit multiple areas of the Plan.

5.10.1.9 The design and construction of the portion of 127 Street that crosses the railway line and power easement within Planning Area 1 shall be carried out in consultation with Canadian National Railway and the appropriate power utility agency.

5.10.1.10 The developer shall collaborate with the County and City of Edmonton in determining the number of lanes and design parameters for the eventual development of 127 Street extension prior to approval of the NASP for Planning area 1 and the 112 Street overpass prior to approval of the NASP for Planning area 3. The NASP shall require policy to accommodate the need for completing a concept plan for the road ways to confirm right-of-way requirements.

5.10.2 Objective:

» *To work with other government agencies on funding support and collaboration relating to major transportation infrastructure that benefits the Plan area and other communities.*

Policies:

5.10.2.1 The County shall collaborate with benefiting neighbouring municipalities and the Province relating to the construction of major road infrastructure within the Plan area.

5.10.2.2 The County should work with Municipal and Regional partners to obtain infrastructure funding for major projects in the Plan area from the province and federal governments that supports major transportation projects that benefits those municipalities.

5.10.3 Objective:

» *To create a higher density mixed use hub within the Plan area that would support transit orientated development when determined necessary.*

Policies:

5.10.3.1 The development of a NASP for Planning Area 3 should include a bus transit centre in the general area indicated in Figure 15, if applicable at the time of development.

5.10.3.2 The incorporation of complete street design principles should be adopted in the development of the road network.

5.10.3.3 The County shall consider other modes of public transportation should the nature of transportation systems change at the time of preparing a NASP.

5.10.3.4 The County shall work with the Municipal, Regional, and Provincial partners on the planning and implementation of local service transit facilities linking the Plan area to the planned Light Rail Transit (LRT) extension in Edmonton and St. Albert.

5.10.4 Objective:

» *To create an active transportation network system that is attractive, functional, and useable.*

Policies:

5.10.4.1 A NASP shall include an active transportation network that connects into parks, environmental reserve, schools, and commercial nodes.

5.10.4.2 NASPs shall demonstrate active mode connections between different NASP areas.

5.10.5 Objective:

» *To balance the interface of residential development around the existing railway corridor that passes through the Plan area.*

Policies:

5.10.5.1 The development of the NASP for Planning Area 1 should include policy that is in general alignment with the Guidelines for New Development in Proximity to Railway Operations (May 2013) or subsequent updated version.

5.10.5.2 All railway crossings within Planning Area 1 shall obtain the approval of the appropriate railway operator and carry out the design in accordance with these standards.

5.11 UTILITY SERVICES

The Plan covers a significant area that is bounded by established residential subdivisions to the north, two Cities to the south and south west, and a major army base to the east that all have varying degrees of infrastructure servicing. Naturally, the development within the Plan area will build upon the existing infrastructure that over the long term will require upgrades to accommodate for the full build out. This Plan focuses on providing direction for utility services for Planning Areas 1 & 2. Future NASPs (Planning Areas 3 through to 5) will need to meet the implementation criteria and amend this Plan prior to proceeding. This will involve confirming how servicing will be carried out for their specific areas guided by infrastructure studies already completed and the policy of this Plan.

WATER DISTRIBUTION

5.11.1 Objective:

» *To provide sufficient water supply to the Plan area to meet the needs of development in a cost-efficient manner.*

Policies:

5.11.1.1 The NASP Planning Areas 1 & 2 water network should be in general accordance with Figure 16 and shall provide future connections based on the overall network to accommodate future development as projected by this Plan.

5.11.1.2 Development of the water distribution system shall be in general accordance with Sturgeon County's engineering design standards and shall provide a level of service that meets the Fire Protection standards.

5.11.1.3 The water distribution system shall comply with all Provincial and/or Federal regulations and standards.

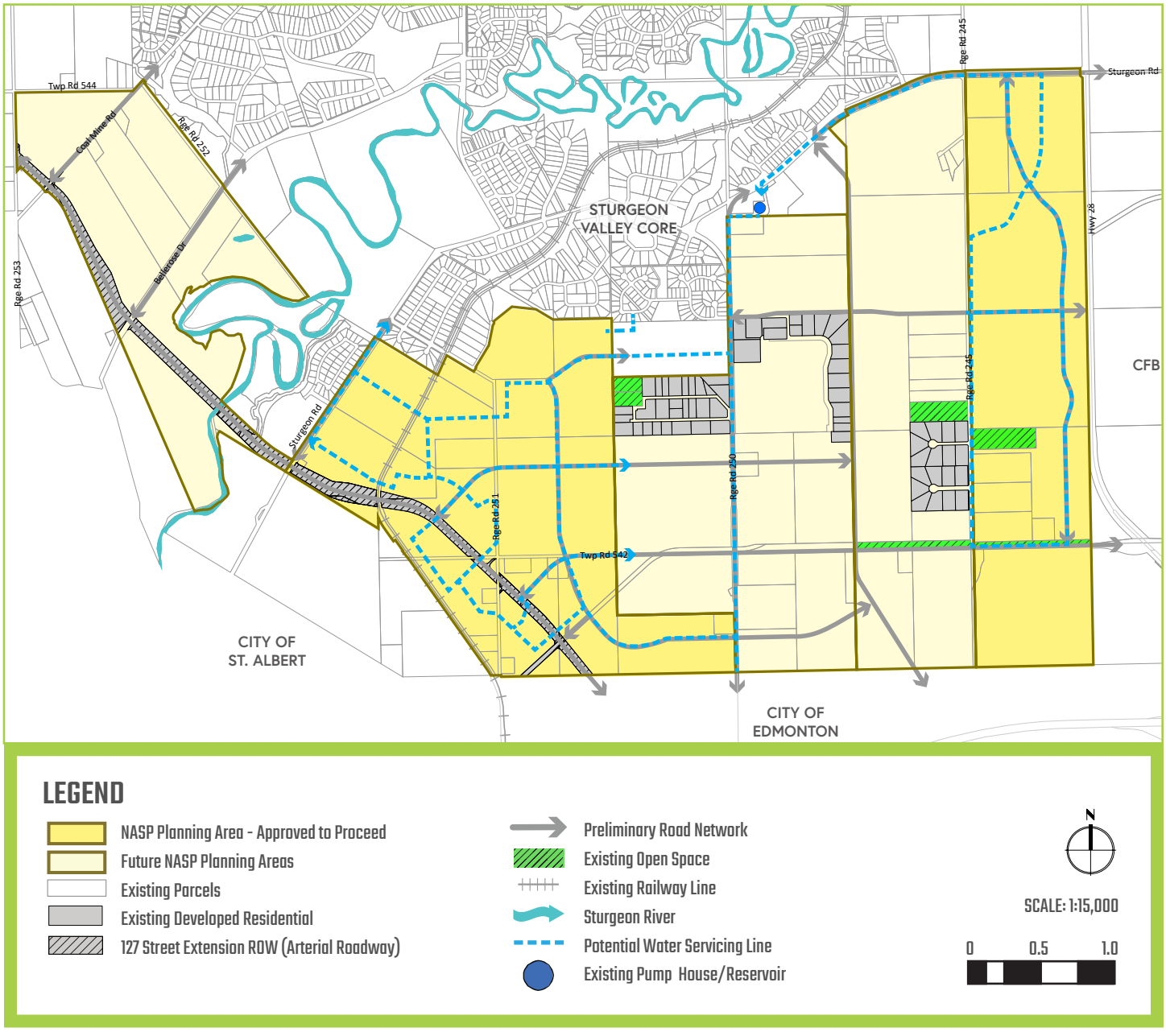
5.11.1.4 The County may consider alternative options that demonstrate cost efficiency to the County without undermining the service delivery for the overall planned development of the Plan area. Where initiatives involve cross boundary solutions, the County shall work with the neighbouring municipality to identify existing water services that could be extended to service the development area.

5.11.1.5 The design of water services through the development of the NASPs (Planning Areas 1, 2, 3, & 4) in the Plan area should include extending the services to the boundary of existing residential areas and providing them the opportunity to connect (refer to Figure 16).

5.11.1.6 The connection of services to existing residential areas shall be determined through engagement with the land owners. The County may work with land owners to assist with repayment of the services through a tax levy.

5.11.1.7 Development of the overall water distribution system for each NASP shall be guided by the Sturgeon County Infrastructure Master Plan (July 2019, prepared by ISL Engineering and Land Services Ltd.) and any subsequent approved County studies.

▼ **FIGURE 16: Water Distribution | V3 Companies of Canada**



5.11.2 Objective:

» *To provide adequate wastewater servicing to the Plan area to meet the needs of development in a cost-efficient manner.*

Policies:

5.11.2.1 The NASP Planning Areas 1 & 2 should be in general accordance with Figure 17 and shall provide future connections based on the overall road network to accommodate additional development as projected by this Plan.

5.11.2.2 Development of the wastewater distribution system shall be in general accordance with Sturgeon County's engineering design standards.

5.11.2.3 The wastewater distribution system shall comply with all Provincial and/or Federal regulations and standards.

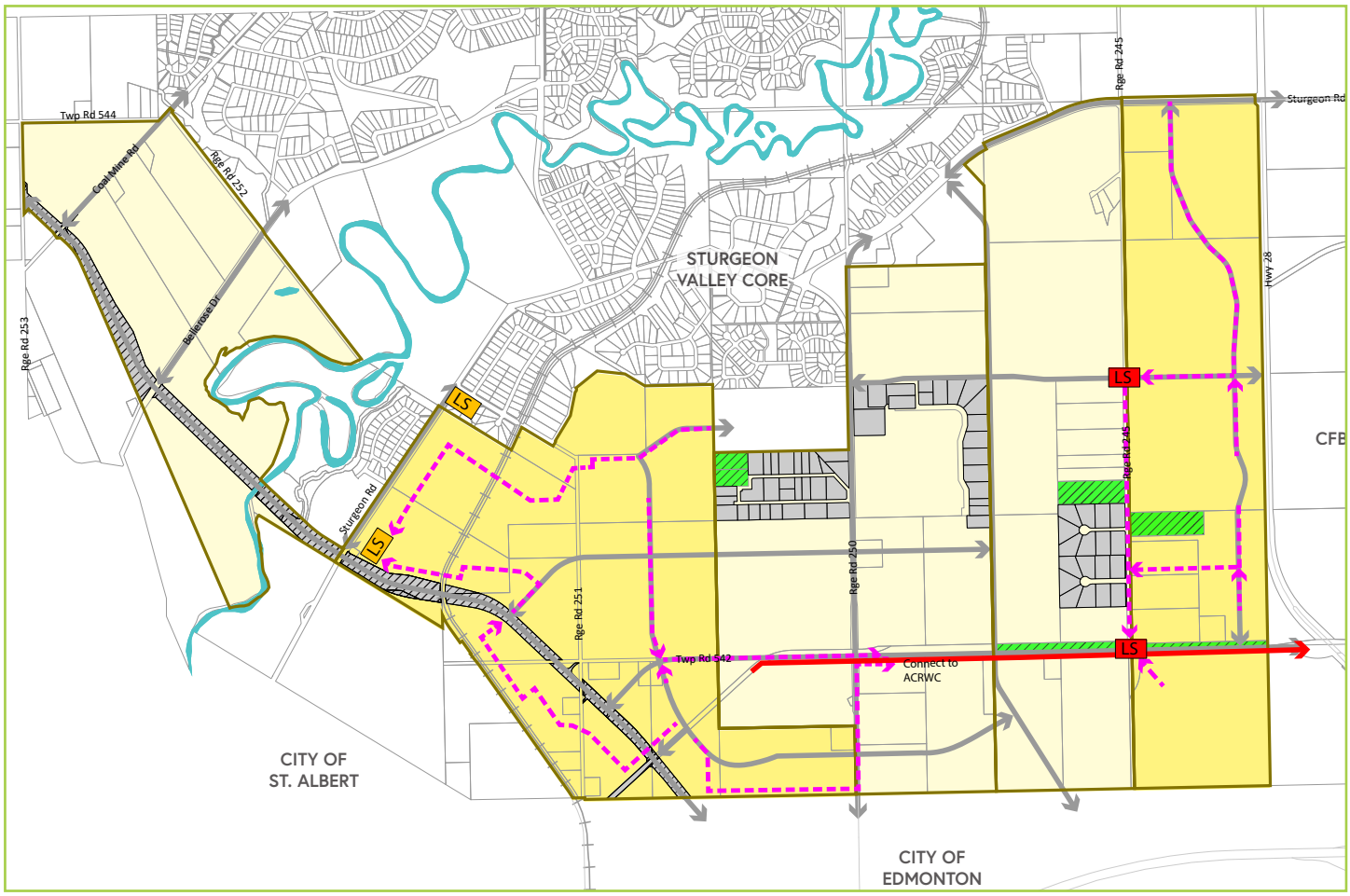
5.11.2.4 Sturgeon County may consider alternative options that demonstrate cost efficiency to the County without undermining service delivery for the overall planned development of the Plan area. Where initiatives involve cross boundary solutions, the County shall work with the neighbouring municipality to identify existing wastewater services that could be extended to service the development area.

5.11.2.5 The design of wastewater services through the development of the NASPs (Planning Areas 1, 2, 3, & 4) should include extending the services to the boundary of existing residential areas as shown on Figure 17, providing them the opportunity to connect.

5.11.2.6 The connection of services to existing residential areas shall be determined through engagement with the land owners. The County may work with land owners to assist with repayment of the services through a tax levy.

5.11.2.7 Development of the overall wastewater distribution system for each NASP shall be guided by the Sturgeon County Infrastructure Master Plan (July 2019, prepared by ISL Engineering and Land Services Ltd.) and any subsequent approved County studies.

▼ FIGURE 17: Wastewater Distribution | V3 Companies of Canada



LEGEND

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Developed Residential
- 127 Street Extension ROW (Arterial Roadway)
- Preliminary Road Network
- Existing Open Space
- Existing Railway Line
- Sturgeon River
- Potential Sanitary Sewer
- Existing ARCWC Gravity Line
- LS Existing SE Sanitary Lift Station
- LS Proposed Sanitary Lift Station

N

SCALE: 1:15,000

0 0.5 1.0

STORMWATER MANAGEMENT

5.11.3 Objective:

» *To provide adequate stormwater servicing to the Plan area to meet the needs of development in a cost-efficient manner.*

Policies:

5.11.3.1 The NASP Planning Areas 1 & 2 should be in general accordance with Figure 18 and, where applicable, needs to accommodate for future development as projected by this Plan.

5.11.3.2 Development of the stormwater distribution system shall be in general accordance with Sturgeon County's engineering design standards.

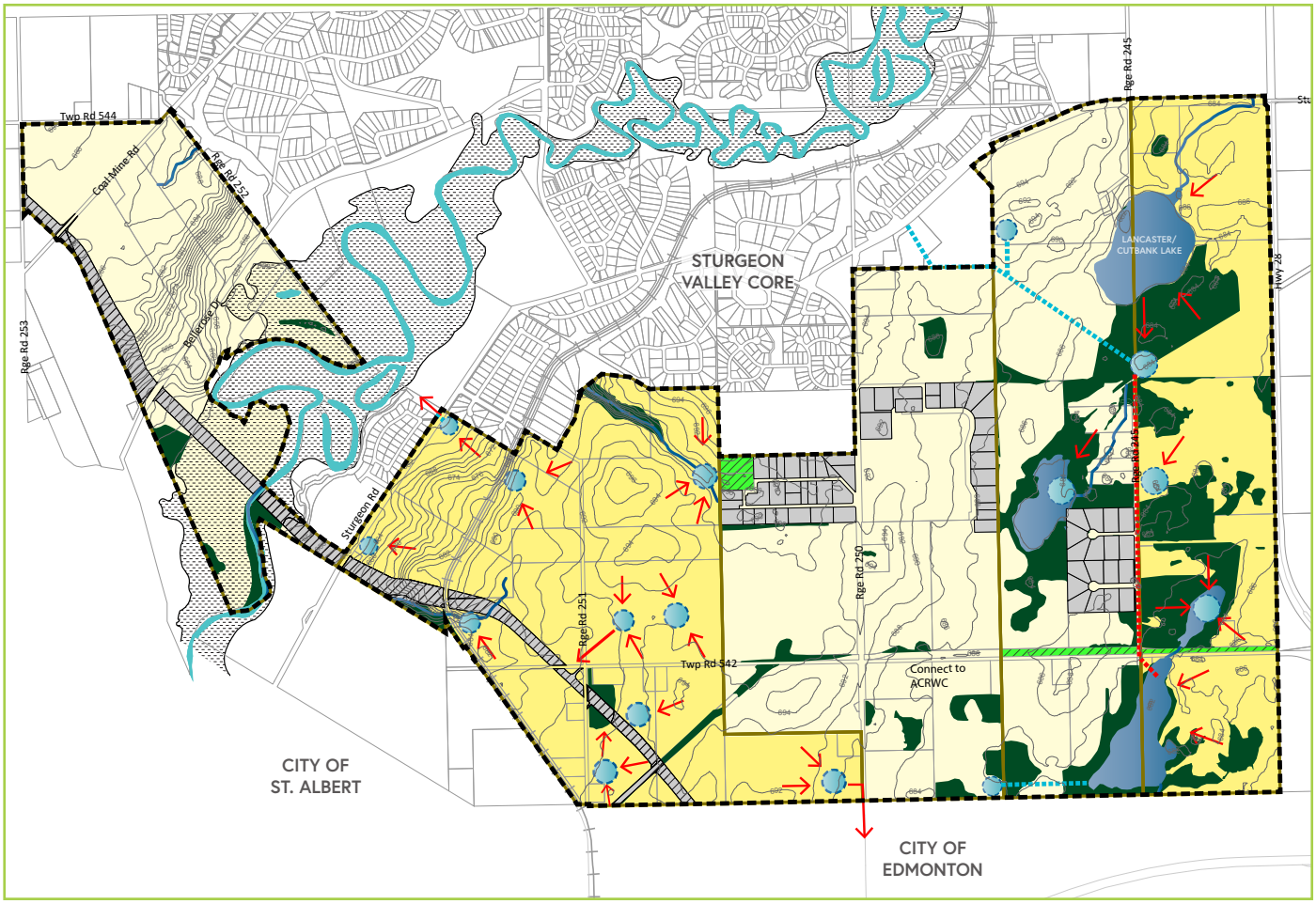
5.11.3.3 Stormwater Management system shall comply with all Provincial and/or Federal regulations and standards.

5.11.3.4 Sturgeon County may consider alternative options that demonstrate cost efficiency to the County without undermining service delivery for the overall planned development of the Plan area.

5.11.3.5 Development of the overall stormwater management system for each NASP shall be guided by the Sturgeon County Infrastructure Master Plan (July 2019, prepared by ISL Engineering and Land Services Ltd.) and any subsequent approved County studies.

5.11.3.6 Sturgeon County may consider alternative options that demonstrate cost efficiency to the County without undermining service delivery for the overall planned development of the Plan area. Where initiatives involve cross boundary solutions, the County shall work with the neighbouring municipality to identify existing stormwater water services that could be extended to service the development area.

▼ FIGURE 18: Stormwater Management | V3 Companies of Canada



LEGEND

- ASP Boundary
- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Contours (2m Interval)
- Existing Developed Residential
- 127 Street Extension ROW (Arterial Roadway)
- Existing Open Space
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Potential Significant Natural Features
- Existing Railway Line
- FWMIS Watercourses
- Potential Environmental Reserve (Potential for Public Lands Claim)
- Sturgeon River
- Potential Storm-water Management Facility
- Potential Storm Sewer Pipe
- Potential Storm Drainage Channel
- Storm Drainage Flow

N

SCALE: 1:15,000

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UTILITIES

5.11.4 Objective:

» *To enable the provision for telecommunications, gas and power services to be provided to the residents and businesses located within the Plan area.*

Policies:

5.11.4.1 The development of new urban engineering design standards should include provisions for integrated utility services within the right-of-way or easement to avoid requiring additional land area for one utility operator.

5.11.4.2 Development of a NASP should be carried out in consultation with utility operators. The County recognizes the importance of telecommunications and may work with developers and utility providers to incorporate the latest technology throughout the Plan area.

OIL AND GAS INFRASTRUCTURE

5.11.5 Objective:

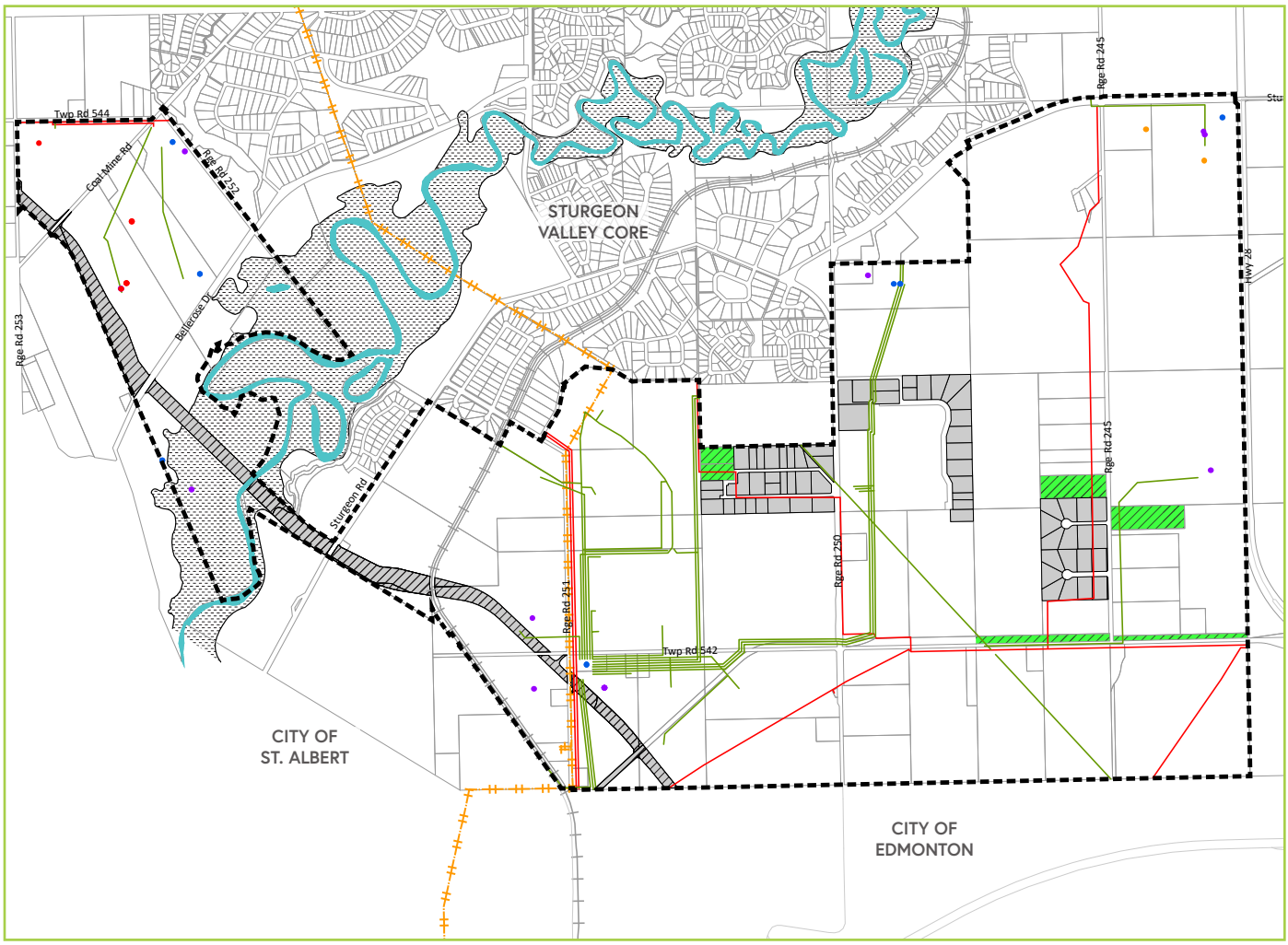
» *To manage the transition of development throughout the Plan area with the phasing out of existing oil and gas infrastructure.*

Policies:

5.11.5.1 A NASP may require the completion of a decommissioning strategy relating to any oil and gas infrastructure.

5.11.5.2 At a minimum, the existing oil and gas facilities shall be separated from development in accordance with the Alberta Energy Regulator setbacks requirements.

▼ FIGURE 19: Oil and Gas | V3 Companies of Canada



LEGEND

- ASP Boundary
- Existing Parcels
- Existing Developed Residential
- Existing Open Space
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- Sturgeon River
- Existing High Power Transmission Line
- Operating Pipeline
- Abandoned Pipeline
- Existing Facility
- Abandoned Well
- Suspended Well
- Issued Well

N

SCALE: 1:15,000

0 0.5 1.0

5.12 INTER-MUNICIPAL COORDINATION

Throughout the development of the Plan, there has been ongoing dialogue with the County's bordering Municipalities, the City of Edmonton and the City of St. Albert. Throughout the implementation of the Plan, it is anticipated there will be continued inter-municipal coordination regarding services and transportation networks to create cost efficiencies that benefit all while avoiding any downstream conflict points that may arise from increased servicing infrastructure. These factors have also influenced how development has been planned within the Plan area.

5.12.1 Objective:

» *To enable development of the Plan area in coordination and collaboration with adjoining municipalities where services, and the benefits, may extend across boundaries.*

Policies:

5.12.1.1 A NASP shall be referred to the adjoining municipalities for review and comment, including all supporting technical studies and reports.

5.12.1.2 Where applicable, a NASP shall include a referral policy for amendments to the NASP.

5.12.1.3 The County shall continue to work with neighboring municipalities to identify opportunities that provide cost efficiencies to development and ongoing servicing of the Plan area.

5.12.1.4 The County shall work with regional partners in identifying funding sources and establishing a cost sharing framework for the development of 127 Street across the Sturgeon River when traffic demand identifies its need.

6. STURGEON VALLEY SOUTH: IMPLEMENTATION

6.1 AMENDMENT TO THE AREA STRUCTURE PLAN

The Plan covers a large area of land that will take time to be fully developed. The Plan has focused on two initial areas to proceed with developing NASPs (Planning Areas 1 & 2) in accordance with the policy contained within this Plan. The development of NASP's for Planning Areas 3, 4 & 5 will require an amendment to this Plan to update servicing, projected population and infrastructure requirements. In addition, there may be situations that arise where the objectives and policies within this Plan may also require amending.

6.1.1 Objective:

» *To accommodate for the future development of NASPs that are located within the Planning Areas 3, 4 & 5.*

Policies:

6.1.1.1 Prior to the adoption of a NASP within those areas designated within the Planning Areas 3, 4 & 5 outlined in Figure 10, the applicant shall be required to make an amendment to this Plan.

6.1.1.2 An amendment to the Plan shall be in accordance with the Municipal Government Act and consistent with the policy contained within the County's Municipal Development Plan and the Edmonton Metropolitan Region Growth Plan.

6.1.1.3 An application to amend this Plan to enable a NASP within the Planning Areas 3, 4, & 5 must outline how the proposed amendments to the Plan, and the establishment of the new NASP, will:

I. Contribute to the orderly and logical development pattern to Planning Areas 1 & 2 through:

   a. Connections to existing and planned infrastructure (water, wastewater, and stormwater) upgrades;

   b. The extension of the Plan's collector and arterial roadway network using the County's traffic impact assessment methodology;

   c. The extension of the Plan's open space and active transportation network; and

   d. Potential impacts the future development could have on approved NASPs in the Plan areas, and the transition to existing development areas.

II. Consider the financial impact on the County using the County's fiscal impact assessment methodology, and the Off-site Development model; and

III. Align with the existing policies in the Plan and Edmonton Metropolitan Region Growth Plan.

6.1.2 Objective:

» *To enable amendments to the objectives and policies contained within this Plan.*

Policies:

6.1.2.1 An amendment application shall present reasons why an amendment is required and recommended wording on any new, or changes, to objectives and/or policies.

6.1.2.2 Any Plan amendment shall be in alignment with the County's Municipal Development Plan.

6.1.2.3 Any Plan amendment shall be in alignment with the Edmonton Metropolitan Region Growth Plan and, if applicable, shall be required to go through the REF process.

6.1.2.4 An amendment to the Plan shall be in accordance with Section 633, 636 and 638 of the Municipal Government Act.

6.2 NEIGHBOURHOOD AREA STRUCTURE PLANS (NASPS)

The Plan covers a large area that is identified as being suitable for residential, mixed-use and light industrial development within Sturgeon County. The Plan is the focus of providing development opportunities within the County and limiting additional development pressure on other parts of the County's agricultural resources. The lands are already surrounded by development to the south, north, and east and contain infrastructure making it ideal for accommodating the County's future growth. While this Plan provides general direction to the overall area for development, it is recognized that more detailed planning is required through the development of Neighbourhood Area Structure Plans (NASPs). Effectively, this Plan provides the geographical boundaries for the development of two NASPs (Planning Areas 1 & 2) and a future three additional NASPs (Planning Areas 3, 4 & 5) as indicated in Figure 10.

6.2.1 Objective:

» *To enable development to occur in a contiguous manner within the Plan area that aligns with the policy.*

Policies:

6.2.1.1 A NASP shall include at least the following:

I. Show the layout of the road network and varying land uses that generally aligns with this Plan.

II. General identification of potential transit routes and stops, if applicable.

III. Show the location of a multipurpose trail system that is connected to parks, schools, and other key destinations and other NASP areas.

IV. Show the location of any lands to provide community services such as emergency services, libraries and/or recreational facilities.

V. Show the locations of local commercial nodes to accommodate convenience stores and other service industry activities.

VI. Identification of all setbacks from utilities, railway lines, landfills etc. in accordance with Provincial and/or Federal standards.

VII. Completion of the following studies:

a. Traffic Impact Assessment,

b. Phase 1 Environmental Site Assessment,

c. Biophysical and Wetland Assessment; and

d. Historical Resource Overview and based on outcomes the potential for a Heritage Impact Assessment,

e. Fiscal Impact Assessment

VIII. Servicing study (stormwater, sanitary and water) and drawings showing how the development will provide services consistent with the objectives and policies of this Plan.

IX. An outline of the staging of development.

X. Community architectural and landscaping design guidelines for commercial and mixed-use lands as outlined by policy within this Plan.

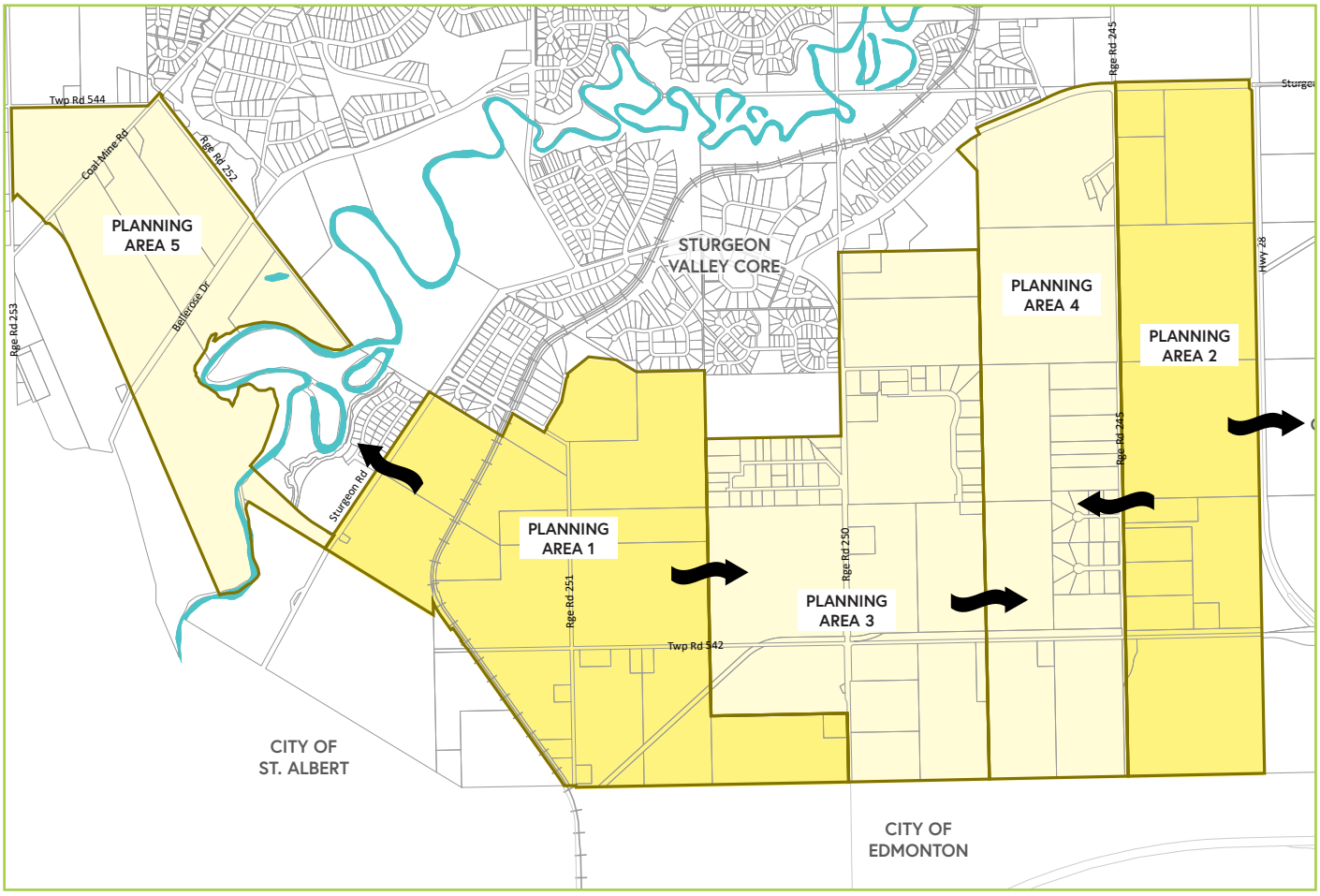
XI. Report demonstrating how the NASP is consistent with the objectives and policies of this Plan, including demonstration of compliance with meeting the minimum average overall density of 35 du/nrha.

XII. Planning Areas 1 & 5 shall be required to show the flood mapping in accordance with the latest Provincial Flood Hazard Mapping.

XIII. Any other items as determined necessary by the County upon submission of the NASP.

6.2.1.2 The NASPs should proceed in the general direction of development as indicated in Figure 20.

▼ FIGURE 20: Development Direction | V3 Companies of Canada



LEGEND

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Railway Line
- Development Direction

N

SCALE: 1:15,000

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6.3 REDISTRICTING AND SUBDIVISION

The Plan provides a framework to guide the development of NASPs that will provide greater detail and context to development that will influence the nature and type of new districting and subdivision provisions required in the County's Land Use Bylaw.

6.3.1 Objective:

» *To develop new standards to enable the implementation of the residential densities required by the Plan.*

Policies:

6.3.1.1 The County shall work with landowners/developers to create new land use districts and regulations within the Land Use Bylaw that accommodate the required densities.

6.3.1.2 The County shall work with landowners/developers to create new subdivision regulations within the Land Use Bylaw that accommodate the required densities.

6.3.1.3 The County shall work with landowners/developers to create engineering design standards that accommodate for urban development. In the absence of engineering design standards, the County may use as a guide best practice design standards from neighbouring municipalities.

6.4 OFFSITE LEVY REQUIREMENTS

The Municipal Government Act provides the County with the ability to establish development levies towards the contribution of infrastructure, including fire halls and libraries, that benefit the wider community.

6.4.1 Objective:

» *To establish levy options and arrangements between benefitting municipalities for intermunicipal, regional, and provincial infrastructure projects, where mutual benefit is determined.*

Policies:

6.4.1.1 The County shall identify key infrastructure that benefits all new development and amend the development levy bylaw accordingly.

6.4.1.2 The County shall work with neighbouring municipalities in the development of levy options where mutual benefit is determined.

7. DEFINITIONS

With the exception of those words outlined below, all other words, terms and phrases shall retain the definition from the County's Municipal Development Plan, the Land Use Bylaw, the Municipal Government Act, or any other provincial legislation.

Active Transportation: means using your own power to get from one place to another and may include walking, biking, jogging, skateboarding, etc.

Agricultural Impact Assessment: means a study carried out that evaluates the potential impacts on agricultural operations and Agricultural System and recommend ways to avoid or, if avoidance is not possible, minimize and mitigate the adverse impacts.

Alternative/Innovative Housing: means housing that meets the Canada Building Code – Alberta Edition and incorporates design elements that are not traditional to housing construction. This may include net zero housing, affordable housing, tiny homes or 3-D printed dwellings.

Biophysical Assessment: means an assessment and evaluation of the identified biological and physical elements of an ecosystem relating to a planned area for development.

Contiguous: Being in actual contact, sharing common border, touching or connected through an unbroken sequence. Adjacent to a built-up urban area or planned area approved for urban development through a statutory plan.

Complete Streets: is a transportation policy and design approach that requires streets to be planned, designed, operated and maintained to enable safe, convenient and comfortable travel and access for uses of all ages and abilities regardless of their mode of transportation. This includes but is not limited to walking, cycling, driving automobiles, public transportation and delivery of goods.

Crime Prevention Through Environmental Design (CPTED): is a multi-disciplinary approach of crime prevention that uses urban and architectural design and management of the built and natural environments to reduce victimization, deter offenders and build a sense of community so they gain territorial control of areas. Design of a space plays a key role in how people feel about entering and participating in a safe manner within the space.

EV Charging Station: means a structure that provides electric power to vehicles that operate through a battery supply system.

Fiscal Impact Assessment (FIA): means an analysis completed by a professional economist/accountant that assesses the potential impact of a development on the municipalities current and future capital and operating costs. The assessment also identifies whether over time how the development may positively or negatively influence the municipalities taxes.

Flex Industrial: means light industrial buildings that are designed to enable their internal structural walls to be changed easily to accommodate varying sizes of space for a tenant.

Gross Area (GA): means the total land area being considered for development.

Low Impact Design (LID): is the process in which the design of developments promotes increased evapotranspiration, infiltration and groundwater recharge, and lower the impermeable surface runoff volume and flow rates.

Mixed Use Development: means the development of a combination of uses such as residential, office and retail.

Naturalization: is an ecologically-based approach to landscape management used to transform highly maintained land to a more natural condition.

Net Residential Hectare (nrha): means the developable land area minus public roads and other non-residential lands upon which the density calculation will be measured against.

Net Zero Carbon Building: is a building with net zero energy consumption, meaning the total amount of energy used by the building on an annual basis is equal to the amount of renewable energy created, that can include heat pumps, high efficiency windows and insultation and solar panels.

Node: is a specific location that becomes a destination that often includes a mix of uses and activities such as shops, transportation and other services within the same area.

Planned Area: The boundary area within the Plan that requires a Neighbourhood Area Structure Plan (NASP) to be completed prior to proceeding with subdivision and development.

Smart City concepts: is an urban area that uses different technology to collect data and to assist in managing services such as traffic, collection of waste etc.

Transitional Development: means creating a range of residential land uses which provide varying density levels from areas that are planned or developed for high densities through to lands that are developed or planned for lower densities.

Winter Design Principles: is an urban design approach relating to accommodate in the function and design of transportation, buildings and recreational areas that encourages people to use the infrastructure for all four seasons of the year.

July 2021

Our Future Valley

Sturgeon Valley South Area Structure Plan

To find out more, visit:
sturgeoncounty.ca

Sturgeon County

July 2021

Our Future Valley:

Sturgeon Valley South Area Structure Plan

Appendices

Sturgeon County

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Appendix A
Traffic Analysis

May 28, 2021
03-20-0038

Nick Pryce
V3 Companies of Canada
Suite 130, 2899 Broadmoor Blvd
Sherwood Park, AB T8H 1B5

Dear Mr. Pryce:

Re: Sturgeon Valley South ASP
Traffic Review

V3 Companies of Canada (V3), on behalf of Sturgeon County, is preparing an Area Structure Plan (ASP) for Sturgeon Valley South, which includes the lands south of Sturgeon Road between Highway 28 and the future 127 Street and the lands north of the Sturgeon River east of the future 127 Street in Sturgeon Valley. As part of the overall planning process, Bunt & Associates updated traffic estimates initially generated for the Growth Framework to help guide the identification of the ultimate roadway network within the plan area and the identification of transportation related policies in the ASP. It is noted that Select Engineering Consultants (Select) is concurrently developing a Neighbourhood Area Structure Plan (NASP) for the west-central portion (Planning Area 1) of the ASP; therefore, more detailed information is available for this portion of the plan area.

In addition to the ASP/NASP, Sturgeon County is currently planning for low-density residential lands outside the ASP within Sturgeon Valley (Area C). These lands were also included in the traffic review.

The following outlines the land use assumptions, trip generation assumptions, and findings of the traffic review.

1. LAND USE CONCEPT & STATISTICS

The ASP is planned to include a combination of residential, commercial, and industrial land uses as shown in **Exhibit 1.1**. A copy of the proposed Planning Area 1 NASP and Area C land use plans are also attached for reference.

P:\03200038 - Sturgeon Valley NBHD 1 NSP TIA\CAD\210526_ASP_Report\210528_Exhibit_1.1.dwg

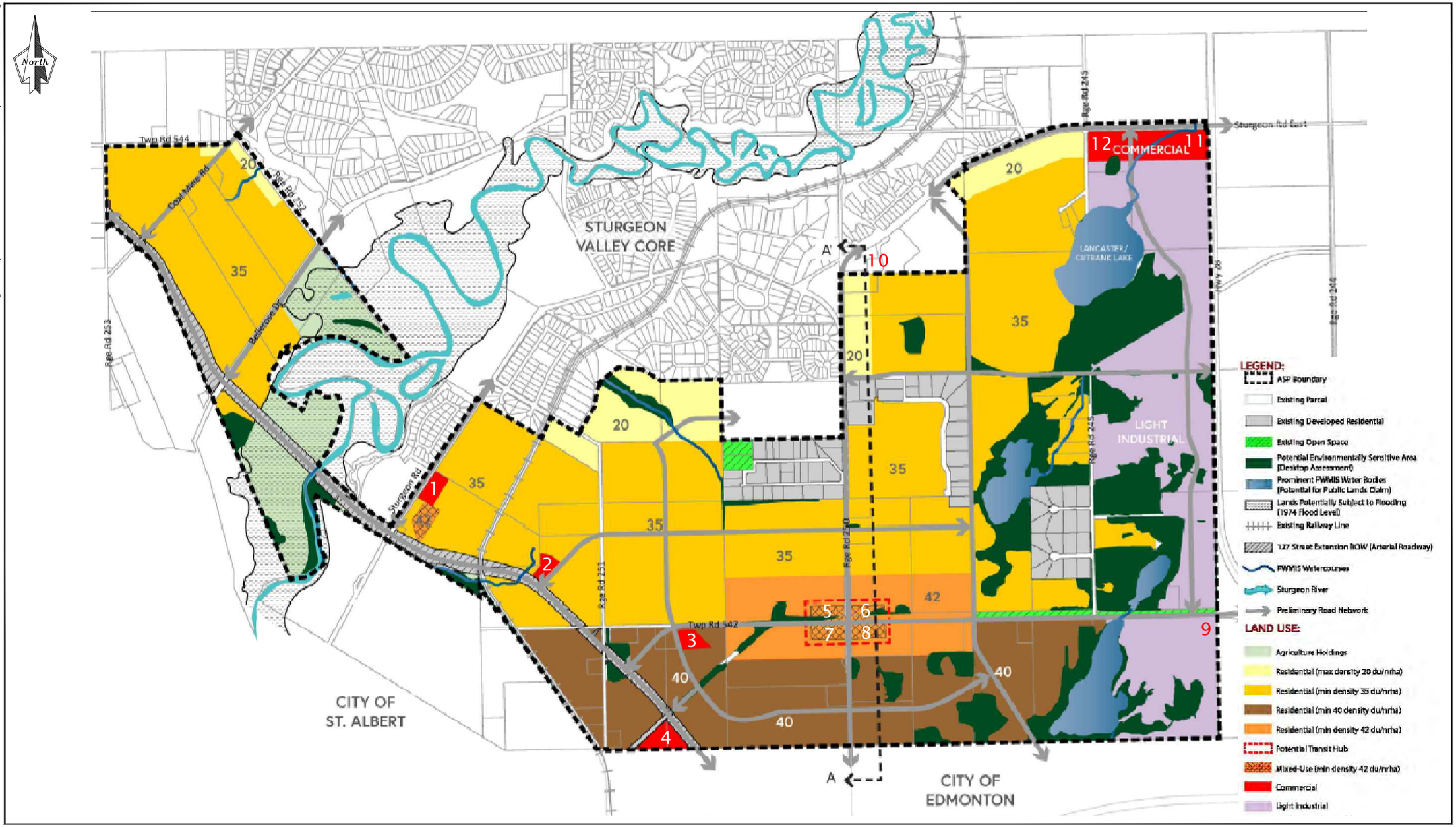

Exhibit 1.1

N.T.S.

Sturgeon Valley South ASP Land Use Concept

1.1 Residential Land Uses

1.1.1 ASP – Excluding Planning Area 1

The plan identifies a range of residential density targets ranging from 20 du/ha up to 42 du/ha. To determine the number and type of dwellings within each density target area, the following assumptions were used:

- Low Density Residential 1 – 20 du/ha
- Low Density Residential 2 – 25 du/ha
- Row Housing – 45 du/ha
- Medium Density Residential 1 – 90 du/ha
- Medium Density Residential 2 – 125 du/ha

Table 1.1 summarizes the calculation of total units by type for use in the assessment.

Table 1.1: ASP (Excluding Planning Area 1) Residential Trip Generating Land Uses

RESIDENTIAL LAND USE	DENSITY	NET 20		NET 35		NET 40		NET 42		TOTAL	
		AREA	UNITS	AREA	UNITS	AREA	UNITS	AREA	UNITS	AREA	UNITS
LDR 1	20	22.4	449	0.0	0	0.0	0	0.0	0	22.4	449
LDR 2	25	0.0	0	186.2	4,655	23.8	596	31.9	799	241.9	6,050
Row Housing	45	0.0	0	75.9	3,415	16.5	745	21.5	970	113.9	5,130
MDR 1	90	0.0	0	20.0	1,803	5.5	491	3.6	323	29.1	2,617
MDR 2	125	0.0	0	0.0	0	0.0	0	3.6	456	3.6	456
TOTAL		22.4	449	282.1	9,873	45.8	1,832	60.6	2,548	410.9	14,702

As shown in Table 1.1, the ASP, excluding Planning Area 1, has the potential to include up to 14,702 dwelling units.

1.1.2 Planning Area 1

Planning Area 1 is anticipated to include a mix of low, medium, and high-density residential land uses. As shown in **Table 1.2**, Planning Area 1 has the potential to include up to 7,595 dwelling units.

Table 1.2: Residential Housing Units

HOUSING TYPE	AREA (HA)	DENSITY (UNITS/HA)	UNITS (DU)
Estate Residential	12.94	20	259
Low Density Residential	163.77	27	4,422
Medium Density Residential	25.29	90	2,276
High Density Residential	4.56	140	638
TOTAL	206.56	-	7,595

1.1.3 Area C

Area C is anticipated to include up to 2,482 low-density residential units based on a density of 20 units/ha.

1.1.4 Total Study Area

Based on the above, the overall study area is projected to include 24,779 residential units, including:

- 13,662 low-density residential units
- 5,130 townhouse units
- 5,987 medium/high density residential units

1.2 Non-Residential Land Uses

1.2.1 Commercial

Within the study area, 10 commercial sites have been identified; however, an additional two neighbourhood commercial sites were assumed within the study area to account for smaller commercial sites that may be identified through future NASP processes. The location of the commercial sites is illustrated in Exhibit 1.1. Commercial sites 1 to 4 are located within Planning Area 1, sites 5 to 8 are located within the mixed-use centre of the ASP, site 9 is assumed within the industrial lands south of Valour Avenue, site 10 is assumed within Area C south of Sturgeon Road, and sites 11 and 12 are located within the northeast corner of the ASP. For the purposes of this assessment a Floor Area Ratio (FAR) of 0.25 was used to estimate the potential Gross Floor Area (GFA) that may be developed. A FAR of 0.25 is anticipated to be typical for commercial sites with at-grade parking. As shown in **Table 1.3**, the commercial sites are anticipated to accommodate between 40,000 SF and 108,000 SF of GFA.

To be consistent with previous traffic work completed as part of the Sturgeon Valley Growth Framework, Commercial Site 12 is assumed to include commercial employment land uses that are not anticipated to generate the same intensity of traffic as the other commercial sites. Therefore, an employment density of 35 employees/ha was assumed to generate a potential employment base for Commercial Site 12. Based on 4.80 ha, Commercial Site 12 is assumed to accommodate 170 employees.

Table 1.3: Commercial GFA Estimates

SITE	SIZE (HA)	FAR/EMPLOYEE DENSITY)	GFA (SF)/ NUMBER OF EMPLOYEES
Commercial Site 1	1.67	0.25	40,000
Commercial Site 2	1.58	0.25	40,000
Commercial Site 3	1.93	0.25	50,000
Commercial Site 4	3.60	0.25	100,000
Commercial Site 5	3.00	0.25	81,000
Commercial Site 6	3.00	0.25	81,000
Commercial Site 7	3.00	0.25	81,000
Commercial Site 8	3.00	0.25	81,000
Commercial Site 9	1.62	0.25	44,000
Commercial Site 10	1.62	0.25	44,000
Commercial Site 11	4.00	0.25	108,000
Commercial Site 12	4.80	35 employees/ha	170 employees

1.2.2 Light Industrial

The ASP concept identifies approximately 178.45 gross ha of light industrial land uses in the eastern portion of the plan area immediately west of Highway 28. For the purposes of this assessment, the net developable area for industrial land uses is assumed to represent 75% of the gross area and are assumed to generate employment at a rate of 35 employees/net ha. Therefore, the light industrial lands are projected to accommodate about 4,690 employees.

1.2.3 School

One school site is planned to be located centrally within Planning Area 1. For the purposes of this assessment, the school site is assumed to accommodate an elementary/junior high school (K-9) with up to 900 students.

2. TRIP GENERATION ESTIMATES

2.1 Trip Generation Rate Assumptions

The daily trip generation rates used in the assessment are based on trip generation rates published in the Institute of Transportation Engineer's (ITE's) Trip Generation Manual, 10th Edition and are summarized in **Table 2.1**.

Table 2.1: Trip Generation Rates

LAND USE	SOURCE	DAILY
Estate Residential / Low Density Residential	ITE LUC 210	9.44 trips/du (50% in/50% out)
Townhouse	ITE LUC 220	7.32 trips/du (50% in/50% out)
Medium / High Density Residential	ITE LUC 221	5.44 trips/du (50% in/50% out)
Commercial Sites 1 & 2	ITE LUC 820 Fitted Curve	80.60 trips/1,000 SF (50% in/50% out)
Commercial Site 3	ITE LUC 820 Fitted Curve	75.05 trips/1,000 SF (50% in/50% out)
Commercial Site 4	ITE LUC 820 Fitted Curve	60.12 trips/1,000 SF (50% in/50% out)
Commercial Site 5, 6, 7 & 8	ITE LUC 820 Fitted Curve	64.31 trips/1,000 SF (50% in/50% out)
Commercial Site 9 & 10	ITE LUC 820 Fitted Curve	78.18 trips/1,000 SF (50% in/50% out)
Commercial Site 11	ITE LUC 820 Fitted Curve	58.66 trips/1,000 SF (50% in/50% out)
Commercial Site 12	ITE LUC 820	16.11 trips/employee (50% in/50% out)
Light Industrial	ITE LUC 130	2.91 trips/employee (50% in/50% out)
Elementary/Jr. High School	ITE LUC 520	1.89 trips/student (50% in/50% out)
	ITE LUC 522	2.13 trips/student (50% in/50% out)

2.2 Gross Trip Generation Estimates

Table 2.2 summarizes the projected two-way daily vehicle trips anticipated to be generated by the study area at full build-out. As shown in Table 2.2, the study area is projected to generated in the order of 267,552 two-way trips on a daily basis.

Table 2.2: Trip Generation Estimates

LAND USE	INTENSITY	DAILY	
		IN	OUT
Estate Residential / Low Density Residential	13,662 du	64,484	64,484
Townhouse	5,130 du	18,776	18,776
Medium/High Density Residential	5,987 du	16,285	16,285
Commercial Site 1	40,000 SF	1,612	1,612
Commercial Site 2	40,000 SF	1,612	1,612
Commercial Site 3	50,000 SF	1,876	1,876
Commercial Site 4	100,000 SF	3,006	3,006
Commercial Site 5	81,000 SF	2,605	2,605
Commercial Site 6	81,000 SF	2,605	2,605
Commercial Site 7	81,000 SF	2,605	2,605
Commercial Site 8	81,000 SF	2,605	2,605
Commercial Site 9	44,000 SF	1,720	1,720
Commercial Site 10	44,000 SF	1,720	1,720
Commercial Site 11	108,000 SF	3,168	3,168
Commercial Site 12	170 employees	1,369	1,369
Light Industrial	4,690 employees	6,824	6,824
Elementary/Jr. High School	900 students	904	904
TOTAL		133,776	133,776

2.3 Net Trip Generation Estimates

The gross trip generation estimates summarized in Table 2.2 represent the total trips anticipated to access each land use within the plan area. The gross trips were adjusted to account for internal trips and pass-by trips to determine the potential net new trips on the roadway network.

2.3.1 Non-Residential Trips

Pass-by Trips

For the purposes of this assessment, external commercial trips have been divided into pass-by and primary trips. Primary trips have a destination that is the primary purpose of the trip, while pass-by trips represent an intermediate stop along the way from an origin to a primary destination.

Pass-by trip percentages published in the ITE Trip Generation Handbook were reviewed to identify the potential magnitude of pass-by trips that could be generated by the commercial land uses. Where information is not available, engineering judgement was used to estimate pass-by trip percentages. Based on the review, a pass-by percentage of 50% was assumed for site ≥50,000 SF and a pass-by percentage of 30% was assumed for sites >50,000 SF.

Internal Trips

Where both the origin and destination of a trip are within the study area, there is the potential to double count the trip. For example, a trip from a residence to the school site is generated by both land uses, but ultimately represents only one trip on the network. The percentage of internal trips associated with the non-residential land uses was established based on a review of the potential catchment areas that may be associated with the different land uses as follows:

- For commercial site 1, it was assumed that about 90% of the trips would stay within the study area, while 10% of trips would be drawn from existing Sturgeon Valley and eastern St. Albert.
- For commercial site 2, it was assumed that about 80% of the trips would stay within the study area, while 20% would be drawn from existing Sturgeon Valley, eastern St. Albert, and the Goodridge Corners neighbourhood in Edmonton.
- For commercial site 3, it was assumed that about 85% of the trips would stay within the study area, while 15% of the trips would be drawn from existing Sturgeon Valley and the Goodridge Corners neighbourhood in Edmonton.
- For commercial site 4, it was assumed that about 50% of the trips would stay within the study area, while 50% of the trips would be drawn from existing Sturgeon Valley, eastern St. Albert, and northwest Edmonton.
- For commercial sites 5, 6, 7 and 8 it was assumed that about 30% of the trips would stay within the study area, while 70% of the trips would be drawn from existing Sturgeon Valley, Edmonton Garrison, eastern St. Albert, and north Edmonton.
- For commercial site 9, it was assumed that 70% of trips would stay within the study area, while 30% of the trips would be drawn from north Edmonton.
- For commercial site 10, it was assumed that 95% of the trips would stay within the study area, while 5% would be drawn from existing Sturgeon Valley.
- For commercial sites 11 and 12, it was assumed that 75% of trips would stay within the study area, while 25% of trips would be drawn from existing Sturgeon Valley, Sturgeon County, and Edmonton Garrison.
- It was assumed that about 20% of the light industrial trips would stay within the study area, while 80% of the trips would be drawn from the surrounding metropolitan area.
- It was assumed that about 70% of the school trips would stay within the study area, while 30% of the trips would be drawn from existing Sturgeon Valley, Edmonton Garrison, and northwest Edmonton.

It is noted that the above percentages were applied to the total primary trips, i.e., pass-by trips were already removed from the gross trip generation estimates.

Mode Split

For the purposes of this assessment, it was assumed that 5% of the light industrial trips and 15% of trips generated by commercial sites 5-8 would use active modes or public transit.

Net Non-Residential Trips

Table 2.3 summarizes the net non-residential site generated traffic upon application of the above noted pass-by, internal trip, and mode split percentages.

Table 2.3: Non-Residential Net Trip Generation

TRIP COMPONENT	DAILY	
	IN	OUT
Total Gross Trips	34,231	34,231
Total Pass-by Trips	9,248	9,248
Total Internal Trips	11,118	11,118
Total Model Shift Trips	1,435	1,435
TOTAL EXTERNAL TRIPS	12,430	12,430

2.3.2 Residential Trips

Mode Split

To be consistent with Sturgeon County's Infrastructure Master Plan (July 2019), Final Report, it was assumed that 15% of residential trips generated within the ASP would use active modes or public transit. As Area C is not anticipated to have the same level of transit service, 5% of residential trips within Area C were assumed to use active modes or public transit.

Internal Trips

The internal vehicle trips generated by the non-residential land uses are assumed to access the residential land uses within the study area. As can be determined from Table 2.5, the non-residential land uses are anticipated to generate in the order of 22,236 two-way daily internal vehicle trips. The allocation of non-residential trips to the residential areas was based on the potential trip generating characteristics of the different residential land uses.

Net Residential Trips

The net external vehicle trips generated by the residential land uses were determined by subtracting the mode split and internal trips from the gross residential trips. **Table 2.4** summarizes the number of external residential trips anticipated to be generated by the study area.

Table 2.4: Residential Net Trip Generation

TRIP COMPONENT	DAILY	
	IN	OUT
Total Gross Trips	99,545	99,545
Mode Split Trips	13,760	13,760
Internal Trips	11,118	11,118
TOTAL EXTERNAL TRIPS	74,667	74,667

2.3.3 Total Trips

As shown in **Table 2.5**, the study area is anticipated to generate in the order of 174,194 external two-way vehicle trips on a typical weekday.

Table 2.5: Total Net Trip Generation

TRIP COMPONENT	DAILY	
	IN	OUT
Total External Non-Residential Trips	12,430	12,430
Total External Residential Trips	74,667	74,667
TOTAL EXTERNAL TRIPS	87,097	87,097

2.4 Trip Distribution

2.4.1 External Non-Residential Trip Distribution

The distribution of external non-residential vehicle trips was primarily based on a review of population estimates within the assumed catchment areas for each specific land use.

2.4.2 External Residential Trip Distribution

The external trips anticipated to be generated by the study area were distributed based on a review of origin-destination information for the Edmonton Region in the 2050 horizon from the City of Edmonton's regional travel model. As the proposed land use concepts for Sturgeon Valley South are based on urban development characteristics, the potential trip distribution was assumed to reflect the characteristics of neighbouring urban development within the City of Edmonton and St. Albert in addition to Sturgeon County. Therefore, the assumed distribution reflects an average of the origin -destination tables for Sturgeon County, northeast Edmonton, and St. Albert. The aggregate distribution of trips is calculated as follows:

- Remainder of Sturgeon County – 20%
- St. Albert – 25%
- Edmonton and Remaining Region – 55%

2.4.3 Internal Distribution

The distribution of internal vehicle trips was based on the location of non-residential land uses in relation to residential land uses within the study area.

2.5 Trip Assignment

The internal and external vehicles trips were assigned to the roadway network using the above noted distributions, the availability of collector and arterial accesses, and the location of land uses in relation to the collector and arterial roadways. **Exhibit 2.1** illustrates the daily site generated traffic volume estimates.

3. TRAFFIC ANALYSIS

A review of future daily volumes was completed for roadways within the Sturgeon Valley South ASP and Area C to identify recommended roadway classifications and a high-level identification of future cross-section requirements (number of lanes). Identifying the network components as part of the ASP ensures that network connectivity between future NASPs and external access points are protected as the study area lands develop.

3.1 Background Traffic

Background traffic is the traffic that would utilize the roadway network regardless of development occurring in Sturgeon Valley South. Typically for large scale ASPs, background traffic is derived from regional travel models. New regional roadway links, such as the 127 Street extension between Sturgeon County's southern boarder and Highway 2, will draw traffic from outside the study area and will significantly change existing traffic patterns; therefore, estimating background traffic based on existing volumes is not practical.

As the development of future traffic volume projections on the complete roadway network requires consideration for growth within each of these communities and an understanding of how development within the different jurisdictions will support and influence each other, this traffic review uses projected site generated traffic and existing traffic volumes, where available, to estimate the number of travel lanes required within the study area. **Table 3.1** summarizes the existing traffic volumes available in the study area.

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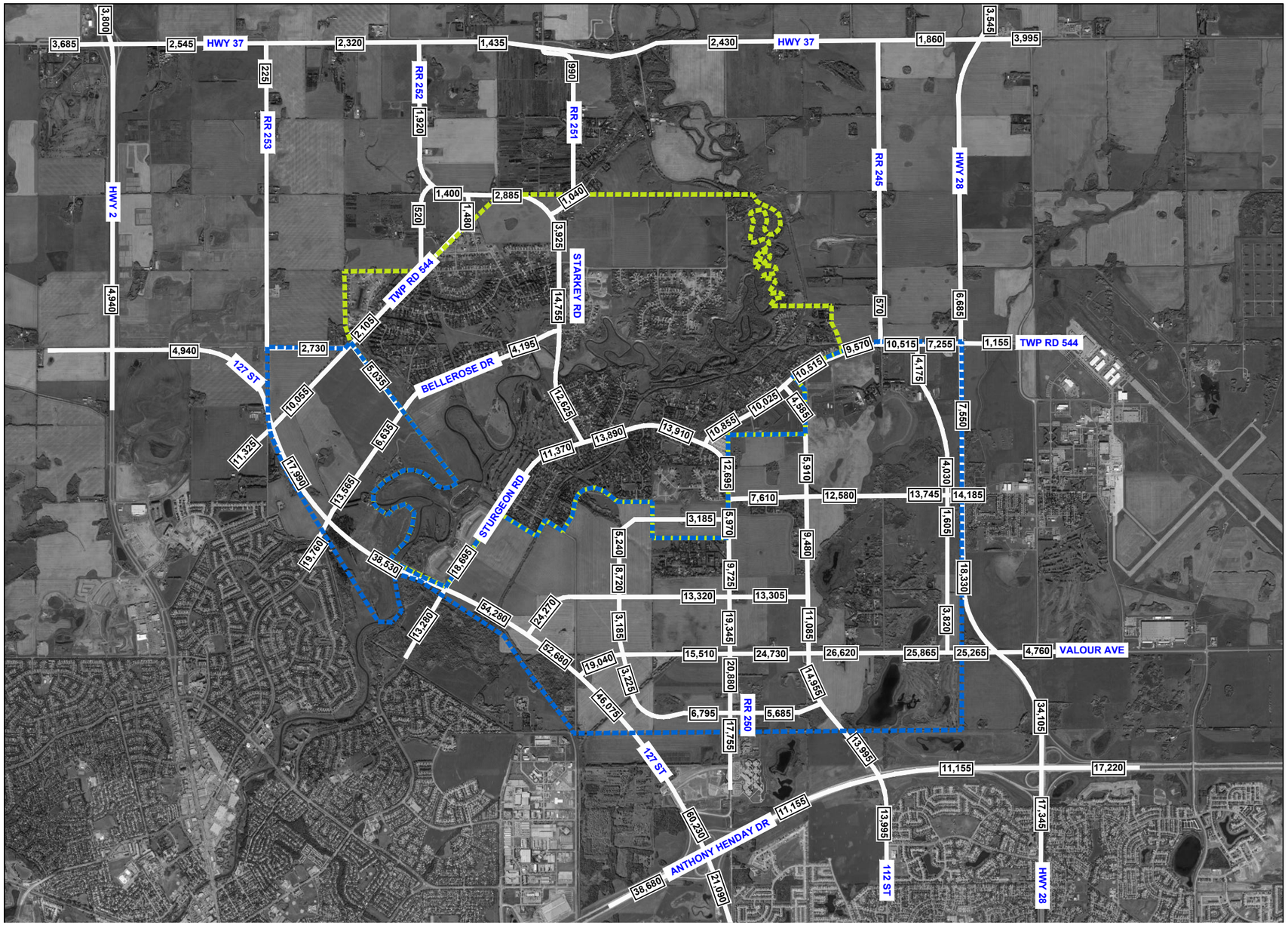

Exhibit 2.1

Daily Site Generated Traffic Volumes

LEGEND

- ASP Boundary
- Area C Boundary
- 7,570 Daily Volumes

N.T.S.

bunt & associates

Sturgeon Valley ASP
bunt & associates | Project No. 03-20-0038

Table 3.1: Existing Traffic Volumes

LOCATION	DAILY VOLUME
Sturgeon Road – East of St. Albert	4,465
Sturgeon Road – West of Starkey Road	4,425
Sturgeon Road – East of Starkey Road	6,815
Sturgeon Road – West of Highway 28	3,120
Bellerose Drive – East of St. Albert	5,310
Bellerose Drive – West of RR 252C	4,425
Bellerose Drive – East of RR 252C	3,635
Bellerose Drive – West of Starkey Road	2,805
Coal Mine Road – East of St. Albert	680
Coal Mine Road – East of RR 252C	695

3.2 Roadway Network

The roadway network was evaluated based on the projected daily volumes identified in Exhibit 2.1 in combination with existing traffic volumes in Table 3.1. **Table 3.2** summarizes the daily volume thresholds assumed for the review. The thresholds are based on the City of Edmonton's thresholds for urban arterials; however, they have been increased by 15% to account for the potential for roadway capacity to increase in the long term through technological advances in traffic signal operations and connected vehicle operations as per Sturgeon County's Infrastructure Master Plan.

Table 3.2: Arterial Roadway Thresholds

ROADWAY CROSS-SECTION	PROJECTED VOLUMES
Two-Lane Undivided Arterial	up to 13,800 vpd
Four-Lane Undivided Arterial	up to 23,000 vpd
Four-Lane Divided Arterial	up to 46,000 vpd
Six-Lane Divided Arterial	up to 69,000 vpd

Exhibit 3.1 illustrates the recommended roadway classifications within the study area.

3.2.1 127 Street, Highway 28, and Highway 37

As noted, 127 Street, Highway 28, and Highway 37 represent regional roadways that are influenced by land use planning and transportation decisions within multiple regional partners. Sturgeon County and the City of St. Albert are currently collaborating on a transportation study that examines the transportation network needs and opportunities for both jurisdictions. This study includes the expansion of the City's 20-year traffic model to include updated land use information for Sturgeon County. As well, the Edmonton Metropolitan Region Board recently tabled their Integrated Transportation Master Plan which identifies Highway 28 and Highway 37 as Existing/Future Expressways or Freeways, and 127 Street as a regional arterial. The ultimate cross-sections identified for these roadways are anticipated to be defined through additional studies that consider the regional implications in addition to access and service to Sturgeon Valley South.

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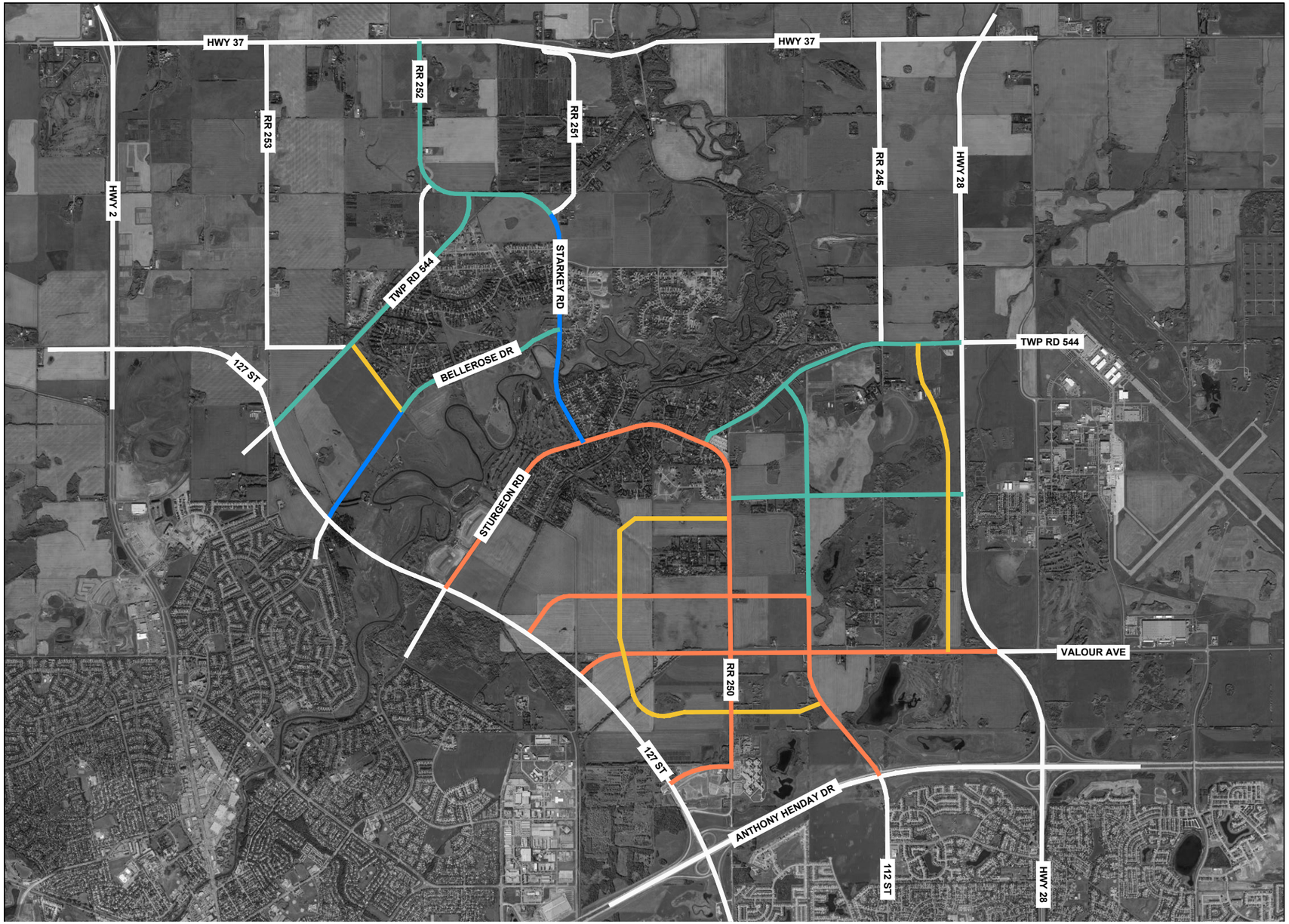

Exhibit 3.1

Roadway Classifications

LEGEND

- Four-Lane Divided Arterial
- Four-Lane Undivided Arterial
- Two-Lane Undivided Arterial
- Collector

N.T.S.

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4. STAGING

The recommended roadway network outlined in Exhibit 3.1 is based on the potential long term full build out of the ASP area plus Area C, however, roadway construction will be staged as development progresses. NASP Transportation Impact Assessments (TIAs) will be prepared for the different plan areas to identify how the NASPs meet the network objectives of the ASP and identify network elements in more detail.

Work has been initiated on the first NASP TIA (Planning Area 1), and preliminary traffic estimates are available for a Stage 1 development program that generally aligns with the Consolidated Plan – 30 Years outlined in Sturgeon Valley, The Growth Framework (July 2020), which focuses on leveraging existing municipal infrastructure and the extension of 127 Street to Sturgeon Road. **Exhibit 4.1** illustrates the Stage 1 traffic volumes for information. Additional information will be provided via the TIA for Planning Area 1.

5. CONCLUSIONS

The traffic review considered the potential trip generation characteristics of Sturgeon Valley under full build-out. Based on the traffic review, the following conclusions are advanced based on the full build out of the study area:

- The order of magnitude traffic projections are consistent with the level and intensity of development proposed under an urban design framework;
- Additional access to the plan area is required from Highway 28;
- The development of the 112 Street flyover is required to support development in the basin;
- The extension of 127 Street to Highway 2 is required to support the full build out of the basin;
- Investment in transit infrastructure and operations, including opportunities to connect residential, commercial, and employment land uses within Sturgeon Valley South via transit and active modes and the development of a specific strategy to provide connections within the Region based on desire lines, will be required to achieve a mode split to transit of 15%; and
- The roadway network can be staged and expanded as development progresses.

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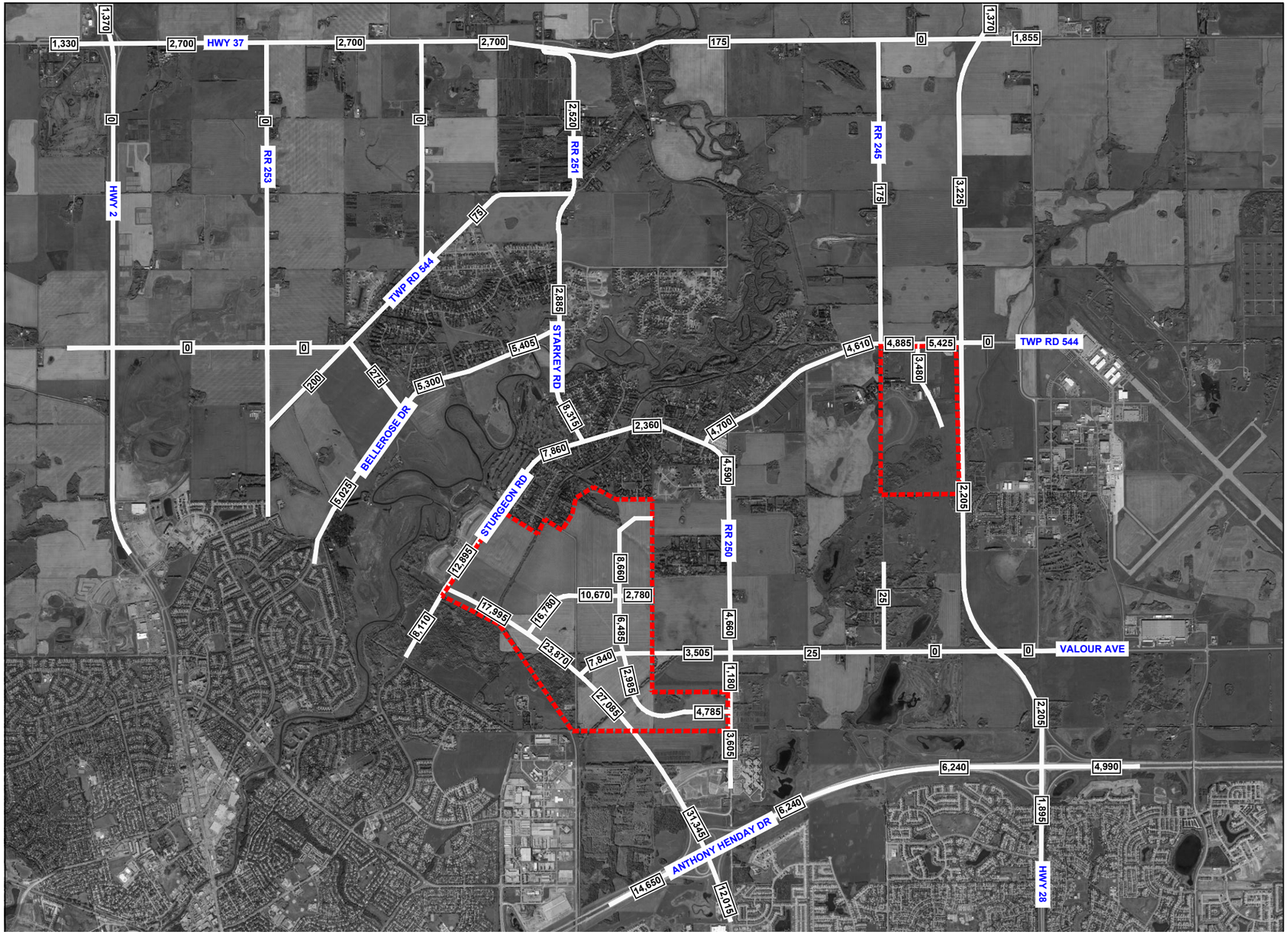

Exhibit 4.1

Daily Site Generated Traffic Volumes - Stage 1

LEGEND

Stage 1 Boundary

7,570 Daily Volumes

N.T.S.

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Sturgeon Valley ASP
bunt & associates | Project No. 03-20-0038 | May 26, 2021

In addition to the above, the following should be considered during the completion of the ASP TIA.

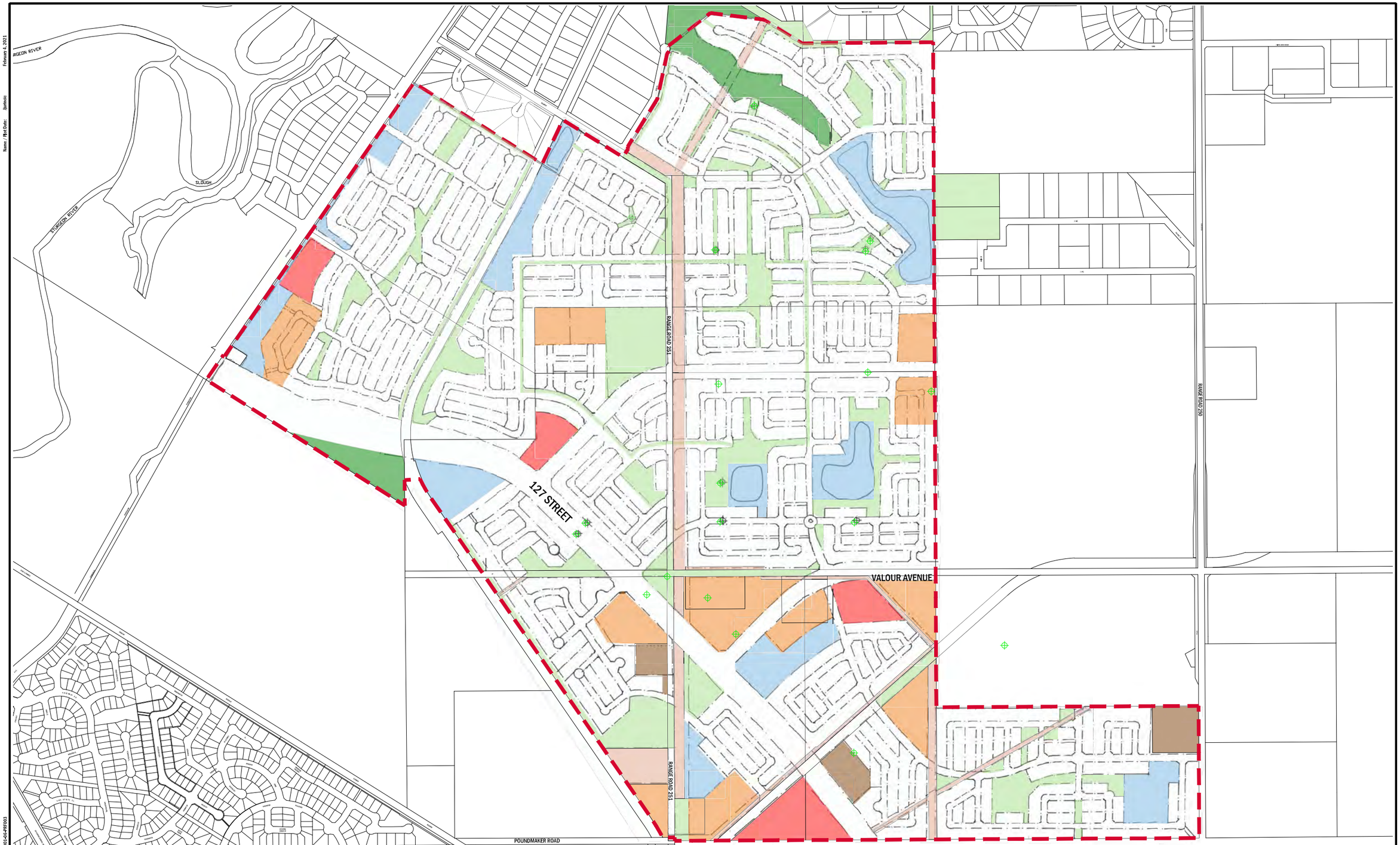
- Additional study is required to determine appropriate background traffic volumes along 127 Street;
- Development within Sturgeon Valley South may alter traffic patterns associated with Goodridge Corners as additional employment and service opportunities would be provided north of Anthony Henday Drive; and
- The addition of community uses, such as schools, play fields, or other civic uses within Sturgeon Valley South would further reduce the need for residents to leave the area.

Yours truly,
Bunt & Associates

Janelle Willis, P.Eng.
Associate | Sr. Transportation Engineer

Attachments (2)

This electronic document includes a digital signature and represents the original document retained on file. Any printed versions of this report are considered copies and can be confirmed by referring to the original electronic document.



LEGEND

- Medium Density Residential
- High Density Residential
- Commercial
- Park/Municipal Reserve
- Environmental Reserve
- Stormwater Management Facility
- Public Utility Lot/Pipeline Right of Way/Power Sub-Station
- NSP Boundary

SCALE 1:5000

0 50 100 150 m

LAND USE CONCEPT

STURGEON VALLEY NSP
STURGEON COUNTY

Figure 3

Name / Plot Date: jlyetsic February 4, 2021

File Name: 309-20001-04-FIG03

Area C - 2,482 du
468 du
744 du
576 du
200 du
348 du
146 du
Starkey Rd
Bellerose Dr
Sturgeon Rd
543
250
251
© 2021 Google

MEMO

DATE: June 3, 2020
PROJECT NO: 03-19-0060
PROJECT: Sturgeon Valley Growth Framework
SUBJECT: Traffic Review v2.0

TO: Nick Pryce, V3 Companies of Canada
Michael Klassen, Sturgeon County
FROM: Catherine Oberg

V3 identified five development concepts for the review of the potential build out roadway network required to support the development. The following outlines the land use assumptions, trip generation assumptions, and initial findings of the traffic review.

1. DEVELOPMENT CONCEPTS

V3 provided land use concepts (attached) and associated preliminary statistics for the following development concepts:

Consolidated Option – 30 Years (CO30)

Identifies the development of residential and commercial land uses in the western portion of Sturgeon Valley along 127 Street and the development of commercial and industrial land uses on the southwest corner of the Sturgeon Road/Highway 28 intersection.

Consolidated Option – 60 Years (CO60)

Expands CO30 to extend residential development east approximately 800m east of RR 250 and industrial development south to the northern boundary of the City of Edmonton.

Consolidated Option – Full Build Out (COFB)

Builds on CO60 to illustrate the full build out of Sturgeon Valley from Sturgeon Road south to the City of Edmonton.

Consolidated Option – Landowners/Developers Input (COLD)

Identifies a build out concept for Sturgeon Valley based on input from area landowners/developers.

Consolidated Option – Net Neutral (CONN)

Identifies a land use concept that presents an option where the non-residential to residential tax base could potentially be balanced.

2. TRIP GENERATING LAND USES

The preliminary land use concepts provided by V3 were further refined to provide estimates of trip generating land uses for use in the traffic review. The following outlines the approach to identifying the trip generating land uses.

2.1 Residential Land Uses

Residential trip generation rates vary by housing type. In the Edmonton region, separate trip rates are typically applied to low density residential land uses (single family and semi-detached units), row housing, and apartment units.

V3 identified a range of target densities by location for CO30, CO60, and COFB. These were further separated into the above unit types based on the following assumptions:

- Low Density Residential 1 – 20 du/ha
- Low Density Residential 2 – 25 du/ha
- Row Housing – 45 du/ha
- Medium Density Residential 1 – 90 du/ha
- Medium Density Residential 2 – 125 du/ha

The COLD land use concept is similar to new neighbourhoods in Edmonton, which typically include a mix of single family, row housing, and apartment units. The COLD land use concept also identifies a central mixed-use area that is anticipated to act as a town centre, where higher density land uses are anticipated to be concentrated. Overall, an average target density of 35 du/ha was identified for COLD.

The CONN land use concept reflects a smaller residential footprint, which is identified to meet the minimum residential density target of 35 du/ha.

Table 1 on the following page summarizes calculation of total units by unit type for use in the assessment.

Table 1: Residential Trip Generating Land Uses

5/31/2020

CONSOLIDATED OPTION - 30 YEARS		NET 20		NET 35		NET 45		NET 60		TOTAL	
Residential Land Use	Density	Area	Units	Area	Units	Area	Units	Area	Units	Area	Units
LDR 1	20	84.5	1690	0.0	0	0.0	0	0.0	0	84.5	1690
LDR 2	25	0.0	0	77.4	1935	19.8	495	0.0	0	97.2	2430
Row Housing	45	0.0	0	33.3	1499	15.4	693	0.0	0	48.7	2192
MDR 1	90	0.0	0	8.3	747	8.8	792	0.0	0	17.1	1539
MDR 2	125	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Total		84.5	1690	119.0	4181	44.0	1980	0.0	0	247.5	7851

CONSOLIDATED OPTION - 60 YEARS		NET 20		NET 35		NET 45		NET 60		TOTAL	
Residential Land Use	Density	Area	Units	Area	Units	Area	Units	Area	Units	Area	Units
LDR 1	20	143.9	2878	0.0	0	0.0	0	0.0	0	143.9	2878
LDR 2	25	0.0	0	133.9	3348	45.9	1148	18.3	458	198.1	4954
Row Housing	45	0.0	0	57.7	2597	35.7	1607	21.2	954	114.6	5158
MDR 1	90	0.0	0	14.4	1296	20.4	1836	12.1	1089	46.9	4221
MDR 2	125	0.0	0	0.0	0	0.0	0	9.1	1138	9.1	1138
Total		143.9	2878	206.0	7241	102.0	4591	60.7	3639	512.6	18349

CONSOLIDATED OPTION - FULL BUILDOUT		NET 20		NET 35		NET 45		NET 60		TOTAL	
Residential Land Use	Density	Area	Units	Area	Units	Area	Units	Area	Units	Area	Units
LDR 1	20	184.4	3688	0.0	0	0.0	0	0.0	0	184.4	3688
LDR 2	25	0.0	0	186.9	4673	60.4	1510	18.3	458	265.6	6641
Row Housing	45	0.0	0	80.5	3623	47.0	2115	21.2	954	148.7	6692
MDR 1	90	0.0	0	20.1	1809	26.9	2421	12.1	1089	59.1	5319
MDR 2	125	0.0	0	0.0	0	0.0	0	9.1	1138	9.1	1138
Total		184.4	3688	287.5	10105	134.3	6046	60.7	3639	666.9	23478

CONSOLIDATED OPTION - LANDOWNERS/ DEVELOPERS INPUT		RESIDENTIAL		MIXED USE		TOTAL	
Residential Land Use	Density	Area	Units	Area	Units	Area	Units
LDR 1	20	0.0	0	0.0	0	0.0	0
LDR 2	25	564.5	14113	0.0	0	564.5	14113
Row Housing	45	209.6	9432	8.3	374	217.9	9806
MDR 1	90	24.2	2178	8.3	747	32.5	2925
MDR 2	125	8.1	1013	11.0	1375	19.1	2388
Total		806.4	26736	27.6	2496	834.0	29232

CONSOLIDATED OPTION - NET NEUTRAL		NET 20		NET 35		NET 45		NET 60		TOTAL	
Residential Land Use	Density	Area	Units	Area	Units	Area	Units	Area	Units	Area	Units
LDR 1	20	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
LDR 2	25	0.0	0	53.6	1340	0.0	0	0.0	0	53.6	1340
Row Housing	45	0.0	0	23.1	1040	0.0	0	0.0	0	23.1	1040
MDR 1	90	0.0	0	5.8	522	0.0	0	0.0	0	5.8	522
MDR 2	125	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Total		0.0	0	82.5	2902	0.0	0	0.0	0	82.5	2902

2.2 Commercial Land Uses

2.2.1 Commercial Retail Land Uses

All five development concepts include a major commercial area on the southwest corner of the Sturgeon Road/Highway 28 intersection and a second commercial node along 127 Street south of Sturgeon Road. CO60, COFB, and COLD introduce a mixed-use area within the central portion of the plan area and COLD also identifies another four commercial nodes throughout Sturgeon Valley. No additional commercial areas are identified within CONN.

The Sturgeon County Commercial Development Analysis was reviewed to gain an understanding of the potential magnitude and type of commercial retail uses that could be developed within Sturgeon Valley. The study identified the following within the valley:

- Highway 28 Retail Service Node – 70,000 SF – fuel station, commercial/retail, food and beverage, personal services, and grocery store
- Sturgeon Valley Retail (127 Street) – 80,000 SF – food and beverage, specialty retail, health & wellness, medical office, professional services, and grocery anchored retail

The above was based on a detailed analysis that included the potential for an additional 14,202 people within Sturgeon Valley. Four of the development concepts identified include population estimates in the order of 19,576 (CO30), 45,797 (CO60), 58,584 (COFB), and 72,976 (COLD) people, which are anticipated to support additional commercial uses. CONN identifies an additional 7,220 people; therefore, the retail estimates were reduced to reflect the reduced population estimates.

The population under CO30 is slightly higher than the population estimate for Sturgeon Valley used in the Commercial Development Analysis. The increase in population as compared to the Commercial Development Analysis is not anticipated to warrant additional commercial sites but may increase the potential development within the two areas identified above. Each of the two commercial retail sites is assumed to be about 4.0ha in size, accommodating 108,000 SF of retail land uses based on a Floor Area Ratio of 0.25.

CO60 expands the development basin, including the expansion of the commercial land uses on the southwest corner of Sturgeon Road and Highway 28 and the introduction of the mixed-use area in the centre of the plan area. The population under CO60 is more than double the population identified for CO30; therefore, additional commercial development is anticipated to be viable; however, it is anticipated to be located within the mixed use area in the centre of the plan area and is not anticipated to draw from the commercial area identified in the statistics. An additional 216,000 SF of commercial retail uses was added to the analysis.

The full build out of Sturgeon Valley south of Sturgeon Road is anticipated to further increase the population, increasing the potential for commercial retail sites to be developed. An additional 107,000 SF of commercial retail land uses, over and above the commercial retail land uses identified in CO60, were added to the mixed-use area in the centre of the plan area, for a total commercial retail area of 539,000 SF.

In addition to the northeast and northwest commercial sites identified in CO30, CO60, and COFB, COLD identifies five additional commercial retail sites in the study area. Of these, one is located in the central mixed-use area and is anticipated to be integrated with residential uses in the mixed-use area. The other four sites are assumed to include a mix of grocery anchored commercial sites and smaller convenience commercial sites. In total, 633,000 SF of commercial retail land uses are assumed to be developed under COLD.

Commercial retail opportunities under CONN are anticipated to be less than identified in the Sturgeon County Commercial Development Analysis; however, it is recognized that existing residents within Sturgeon Valley and residents and employees at the Canadian Forces Base (CFB) Edmonton would also support new commercial retail land uses in Sturgeon Valley. For the purposes of this assessment, it is assumed that the northeast and northwest commercial sites will each accommodate 50,000 SF of commercial retail development.

2.2.2 Commercial Employment Land Uses

Based on the development statistics provide by V3, the gross commercial area identified for each development concept exceeds the anticipated land required to meet the commercial retail needs of the community and surrounding catchment areas. The commercial employment land area was calculated by removing 10% of the gross commercial area for municipal reserve and 15% of the gross commercial area for internal roadways and subtracting the assumed land area identified for the commercial retail sites. The remaining commercial lands are not anticipated to generate the same intensity of traffic as the commercial retail sites; therefore, an employment density of 35 employees/ha was assumed to generate a potential employment base for the remaining commercial lands.

2.3 Light Industrial

All four development concepts identify light industrial land uses in the eastern portion of the plan area abutting Highway 28. For the purposes of this assessment, industrial land uses are assumed to generate employment at a rate of 35 employees/ha.

Table 2 on the following page summarizes the assumed non-residential trip generating land uses for each of the four development scenarios.

Table 2: Non-Residential Trip Generating Land Uses

LAND USE	GROSS AREA (HA)	NET AREA (HA)	TRIP GENERATING AREA (HA)	FAR/DENSITY	TRIP GENERATING VARIABLE
Consolidated Option – 30 Years					
Commercial Retail	27.7	20.8	8.0	FAR 0.25	216,000 SF
Commercial Employment			12.8	35 emp/ha	450 employees
Mixed Use Commercial Retail	0.0	0.0	0.0	FAR 0.25	0 SF
Industrial	69.2	51.9		35 emp/ha	1,820 employees
Consolidated Option – 60 Years					
Commercial Retail	27.7	20.8	8.0	FAR 0.25	216,000 SF
Commercial Employment			12.8	35 emp/ha	450 employees
Mixed Use Commercial Retail			9.0	FAR 0.22	216,000 SF
Industrial	178.5	133.9	133.9	35 emp/ha	4,690 employees
Consolidated Option – Full Buildout					
Commercial Retail	27.7	20.8	8.0	0.25	216,000 SF
Commercial Employment			12.8	35 emp/ha	450 employees
Mixed Use Commercial Retail			9.0	FAR 0.33	323,000 SF
Industrial	178.5	133.9	133.9	35 emp/ha	4,690 employees
Consolidated Option – Landowners/Developers Input					
Commercial Retail	64.7	48.5	23.5	FAR 0.25	633,000 SF
Commercial Employment			25.0	35 emp/ha	880 employees
Mixed Use Commercial Retail	36.8	27.6	0.0	FAR 0.25	0 SF
Industrial	68.4	51.3	51.3	35 emp/ha	1,800 employees
Consolidated Option – Net Neutral					
Commercial Retail	27.7	20.8	4.0	FAR 0.25	100,000 SF
Commercial Employment			16.8	35 emp/ha	590 employees
Mixed Use Commercial Retail	0.0	0.0	0.0	FAR 0.25	0 SF
Industrial	69.2	51.9	51.9	35 emp/ha	1,820 employees

3. TRIP GENERATION ESTIMATES

3.1 Trip Generation Rate Assumptions

The daily trip generation rates used in the assessment are based on trip generation rates published in the Institute of Transportation Engineer's (ITE's) Trip Generation Manual, 10th Edition.

3.1.1 Residential Land Uses

The rates assumed for residential land uses are based on the following:

- Low Density Residential 1 and 2 – ITE Land Use Code (LUC) 210 – Single Family – Average Rate
- Row Housing – ITE LUC 220 – Multifamily Housing (Low-Rise) – Average Rate
- Medium Density Residential 1 and 2 – ITE LUC 221 – Multifamily Housing (Mid-Rise) – Average Rate

3.1.2 Non-Residential Land Uses

The rates assumed for non-residential land uses are based on the following:

- Commercial Retail – ITE LUC 820 – Shopping Centre – Fitted Curve Equation based on 1,000 SF
- Commercial Employment – ITE LUC 820 – Shopping Centre - Average Rate based on employees
- Light Industrial – ITE LUC 130 – Industrial Park – Average Rate based on employees

Table 3-1 summarizes the assumed trip generation rates used in the assessment.

Table 3-1: Trip Generation Rates

LAND USE	SOURCE	DAILY RATE
Low Density Residential 1 and 2	ITE LUC 210	9.44 trips/du
Row Housing	ITE LUC 220	7.32 trips/du
Medium Density Residential 1 and 2	ITE LUC 221	5.44 trips/du
Commercial Retail	ITE LUC 820	58.66 trips/1,000 SF to 80.60 trips/1,000 SF
Commercial Employment	ITE LUC 820	16.11 trips/employee
Light Industrial	ITE LUC 130	2.91 trips/employee

3.2 Trip Generation Adjustment Factors

The trip generation rates summarized in Table 3-1 are used to provide estimates of traffic activity anticipated to access the individual land uses. In order to estimate the potential number of trips on the roadway network, adjustments to the gross trip generation estimates are made to reflect non-primary trips associated with commercial retail land uses and the identification of trips between land uses within the plan area (internal trips). For the purposes of this assessment, non-primary trips are assumed to represent 30% of the trips generated by the commercial retail uses.

The estimation of internal trips associated with commercial retail land uses is typically determined based on an assumed catchment area. For the purposes of this assessment, commercial retail sites on the periphery of the area are assumed to generate 60% of the primary trips from residents and employees within the new Sturgeon Valley development, and commercial retail sites located centrally within the plan are assumed to generate 80% of the primary trips from residents and employees within the new Sturgeon Valley development for CO30, CO60, COFB, and COLD. It was assumed that 30% of the primary trips would be generated by new residents and employees within Sturgeon Valley for CONN.

The commercial and industrial employment areas are also anticipated to generate trips from within Sturgeon Valley. For the purposes of this assessment, 20% of the commercial and industrial employment trips are assumed to be generated by new residents within Sturgeon Valley for CO30, CO60, COFB, and COLD. It was estimated that 5% of the commercial and industrial employment trips would be generated by new residents within Sturgeon Valley under CONN.

In addition to the above, the Sturgeon County Infrastructure Master Plan identified the potential to reduce automobile trips by 15% based on the provision of a transit station and regional transit service within Sturgeon Valley. Therefore, a mode split of 15% was applied to CO60, COFB, and COLD. CO30 and CONN are not anticipated to have sufficient residential development to support a robust transit system; therefore, no mode split was assumed for these options.

3.3 Total External Trip Generation

Table 3-2 summarizes the total trips anticipated to be generated by the five land use concepts.

Table 3-2: External Trip Estimates

TRIP COMPONENT	CO30	CO60	COFB	COLD	CONN
Total Gross Trips	88,500 vpd	184,500 vpd	228,500 vpd	292,000 vpd	45,500 vpd
Non-Primary	4,000 vpd	7,000 vpd	8,000 vpd	11,500 vpd	2,500 vpd
Alternate Modes	12,500 vpd	26,500 vpd	33,000 vpd	42,000 vpd	0 vpd
Internal Trips	13,500 vpd	26,000 vpd	29,000 vpd	39,500 vpd	7,500 vpd
TOTAL EXTERNAL TRIPS	**58,500 VPD**	**125,000 VPD**	**158,500 VPD**	**199,000 VPD**	**35,500 VPD**

As shown in Table 3-2, COFB and COLD are projected to generate between 155,000 vpd and 200,000 vpd external trips on a typical weekday. This magnitude of traffic activity is consistent with traffic projections for urban growth areas in Edmonton, based on net residential densities of 30 du/ha to 35 du/ha.

3.4 Trip Distribution and Assignment

The external trips anticipated to be generated by the study area were distributed based on a review of origin-destination information for the Edmonton Region in the 2050 horizon City of Edmonton's regional travel model. As the proposed land use concepts for Sturgeon Valley are based on urban development characteristics, the potential trip distribution was assumed to reflect the characteristics of neighbouring urban development within the City of Edmonton and St. Albert in addition to Sturgeon County. Therefore, the assumed distribution reflects an average of the origin -destination tables for Sturgeon County, northeast Edmonton, and St. Albert. The aggregate distribution of trips is calculated as follows:

- Remainder of Sturgeon County – 10%
- St. Albert – 30%
- Edmonton and Remaining Region – 60%

A preliminary assignment was completed to estimate the potential number of trips by direction. The assignment assumed that all existing roadways would continue to be available and the following new roadways and accesses would be constructed:

CO30 and CONN

- 127 Street would be constructed between Anthony Henday Drive and Sturgeon Road; and
- A new all-directional access would be constructed along Highway 28 between Anthony Henday Drive and Sturgeon Road.

CO60, COFB and COLD

- Network improvements identified under CO30 and CONN would be implemented;
- 127 Street would be constructed between Sturgeon Road and Highway 2; and
- The 112 Street flyover would be constructed.

Table 3-3 summarizes the site generated traffic anticipated to travel to/from the City of Edmonton, the City of St. Albert, and Sturgeon County (north and east).

Table 3-3: External Trips by Direction

TO/FROM	CO30	CO60	COFB	COLD	CONN
City of Edmonton	32,000 vpd	69,500 vpd	89,000 vpd	110,000 vpd	17,500 vpd
St. Albert	17,000 vpd	37,000 vpd	47,000 vpd	56,000 vpd	9,500 vpd
Sturgeon County North	7,750 vpd	12,500 vpd	15,000 vpd	23,000 vpd	8,000 vpd
Sturgeon County East	1,750 vpd	6,000 vpd	7,500 vpd	10,000 vpd	500 vpd
TOTAL	58,500 VPD	125,000 VPD	158,500 VPD	199,000 VPD	35,500 VPD

4. TRAFFIC ANALYSIS

4.1 Background Traffic

Background traffic is the traffic that would utilize the roadway network regardless of development occurring in Sturgeon Valley. Typically for large scale Area Structure Plans, background traffic is derived from regional travel models. For the purposes of this high-level review, measured volumes on existing roads (Alberta Transportation Average Annual Daily Traffic (AT AADT), City of St. Albert Average Daily Volumes (ADV)) have been identified to understand available capacity within the existing network. **Table 4-1** summarizes the available existing traffic information and the relevant source. The existing roadway network includes primarily two-lane rural roadways that are accommodating volumes within the typical range for these types of roadways.

Table 4-1: Existing Traffic Volumes

ROADWAY LINK	SOURCE	EXISTING VOLUME
97 Street North of Anthony Henday Drive	AT 2019 AADT	13,560 vpd
127 Street North of Anthony Henday Drive	AT 2019 AADT	8,250 vpd
Sturgeon Road East of St. Albert	St. Albert 2019 ADV	4,484 vpd
Bellerose Drive East of St. Albert	St. Albert 2019 ADV	4,353 vpd
Starkey Road South of Highway 37	AT 2019 AADT	1,920 vpd
Highway 28 North of Sturgeon Road	AT 2019 AADT	10,930 vpd
Sturgeon Road East of Highway 28	AT 2019 AADT	3,570 vpd

Traffic will increase on these roadways as development occurs outside the Sturgeon Valley. For example, the St. Albert TMP identifies future volumes along 127 Street assuming it is constructed between Anthony Henday Drive and Highway 2 within the 2042 horizon. As well, the Goodridge Corners Neighbourhood Area Structure Plan Transportation Impact Assessment (Goodridge NASP TIA) assumes the majority of traffic generated by the NASP area would utilize 127 Street south to Anthony Henday Drive.

As the development of future traffic volume projections on the complete roadway network requires consideration for growth within each of these communities and an understanding of how development within the different jurisdictions will support and influence each other, this high level review uses the projected external traffic volumes identified in Table 3-3 to estimate the number of travel lanes that may be required to support urban development within Sturgeon Valley.

4.2 Build Out Roadway Network

The potential build out roadway network is based on the traffic projections for COFB, which represents the build out of Sturgeon Valley south of Sturgeon Road, and the traffic projections for COLD, which represents the build out of Sturgeon Valley south of Sturgeon Road plus the area east of the future 127 Street north of the Sturgeon River.

The City of Edmonton identifies the following volume thresholds for urban arterials within their TIA Guidelines:

- Two-Lane Undivided Arterial – up to 12,000 vpd;
- Four-Lane Undivided Arterial – up to 20,000 vpd;
- Four-Lane Divided Arterial – up to 40,000 vpd; and
- Six-Lane Divided Arterial – up to 60,000 vpd.

The Sturgeon County Infrastructure Master Plan identified the potential for roadway capacity to increase by 15% in the long term through technological advances in traffic signal operations and connected vehicle operations.

As noted above, existing roadways in the study area are primarily two-lane rural roadways. It is assumed that the expansion of these roadways, or the construction of new roadways (e.g. 127 Street) will result in a network of 4-lane divided arterials or greater. Therefore, the number of additional travel lanes was estimated based on a per lane volume range of 10,000 vpd to 11,500 vpd (15% capacity increase). **Table 4-2** summarizes the new lanes anticipated to be required to support the build out network. Although new roadways would typically include the construction of an even number of lanes, there is the potential that existing available capacity could be utilized to support future development and the ranges shown in Table 4-2 are solely based on the projected traffic volumes by direction divided by the projected per lane capacity.

Table 4-2: Additional Lanes by Direction

ROADWAY LINK	TOTAL TRAFFIC		ROADWAY LANES	
	COFB	COLD	COFB	COLD
City of Edmonton	89,000 vpd	110,000 vpd	8-9 lanes	10-11 lanes
St. Albert	47,000 vpd	56,000 vpd	5 lanes	5-6 lanes
Sturgeon County North	15,000 vpd	23,000 vpd	2 lanes	2 lanes
Sturgeon County East	7,500 vpd	10,000 vpd	1 lane	1 lane
TOTAL	158,500 VPD	199,000 VPD	16-17 LANES	18-20 LANES

4.3 Staged Roadway Network

CO30 and CO60 provide traffic projections based on the staging of development within Sturgeon Valley. **Table 4-3** summarizes the potential number of lanes by direction based on the staged development of the roadway network.

Table 4-3: Staged Roadway Network

ROADWAY LINK	TOTAL TRAFFIC		ROADWAY CROSS-SECTIONS	
	CO30	CO60	CO30	CO60
City of Edmonton	32,000 vpd	69,500 vpd	3 lanes	6-7 lanes
St. Albert	17,000 vpd	37,000 vpd	1-2 lanes	3-4 lanes
Sturgeon County North	7,750 vpd	12,500 vpd	1 lane	1 lane
Sturgeon County East	1,750 vpd	6,000 vpd	0 lanes	1 lane
TOTAL	58,500 VPD	125,000 VPD	5-6 LANES	11-13 LANES

The traffic volume projections and cross-sections under CO60 support the extension of 127 Street north of Sturgeon Road to provide additional access opportunities to/from St. Albert. The construction of the 112 Street flyover under CO60 would be a strategic network improvement to allow shifts in traffic patterns, prior to full build out of the neighbourhood. As well, the construction of the 112 Street flyover could provide a strategic transit connection to the future Castledowns Station at 153 Avenue.

4.4 Net Neutral Roadway Network

As shown in **Table 4-4**, the CONN option requires minimal roadway upgrades to support future development.

Table 4-4: CONN Roadway Network

ROADWAY LINK	TOTAL TRAFFIC	ROADWAY CROSS-SECTIONS
	CONN	CONN
City of Edmonton	17,500 vpd	2 lanes
St. Albert	9,500 vpd	1 lane
Sturgeon County North	8,000 vpd	1 lane
Sturgeon County East	500 vpd	0 lanes
TOTAL	35,500 VPD	4 LANES

5. CONCLUSIONS

The traffic review considered the potential trip generation characteristics of Sturgeon Valley under five land use concepts: CO30, CO60, COFB, COLD, CONN. CO30, CO60, and COFB represent the staged development of residential land uses from west to east and the development of commercial and industrial land uses from northeast to southeast, while COLD provides an alternate build out development concept and CONN represents a balance of residential and non-residential uses that are anticipated to support a net neutral tax condition.

Based on the preliminary traffic review, additional arterial roadway network capacity is anticipated to be required to the south, west, and north to accommodate the potential external traffic generated by the build out of Sturgeon Valley based on COFB and COLD.

Based on the preliminary traffic review completed, the following conclusions are advanced based on the full build out of the study area under either COFB or COLD:

- The order of magnitude traffic projections are consistent with the level and intensity of development proposed under an urban design framework;
- Additional access to the plan area is required from Highway 28;
- The development of the 112 Street flyover is required to support development in the basin;
- The extension of 127 Street to Highway 2 is required to support the full build out of the basin;
- Investment in transit infrastructure and operations, including opportunities to connect residential, commercial, and employment land uses within Sturgeon Valley via transit and active modes and the development of a specific strategy to provide connections within the Region based on desire lines, will be required to achieve a mode split to transit of 15%; and
- The roadway network can be staged and expanded as development progresses.

In addition to the above, the following should be considered during the completion of the ASP TIA.

- Additional study is required to determine appropriate background traffic volumes along 127 Street;
- Development within Sturgeon Valley may alter traffic patterns associated with Goodridge Corners as additional employment and service opportunities would be provided north of Anthony Henday Drive; and
- The addition of community uses, such as schools, play fields, or other civic uses within Sturgeon Valley would further reduce the need for residents to leave the area.

Appendix A: Traffic Analysis

Appendix B

Fiscal Impact Assessment

APPLICATIONS
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May 31, 2021

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Attention: **Nick Pryce, MCIP, RPP - Director, Planning Group**
Subject: **Sturgeon Valley South ASP Fiscal Impact Analysis (FIA) - Addendum**

Please find attached the fiscal impact analysis of the proposed Sturgeon Valley South Area Structure Plan to support the County's plans to guide future development in Areas A and B of the Sturgeon Valley Special Study Area.

This report serves as an Addendum to the FIA report (*Fiscal Impact Analysis of Developing Sturgeon Valley*) included in Appendix F of the *Sturgeon Valley: The Growth Framework* report dated July 2020.

Do not hesitate to contact us if you have any questions on the analysis or information provided.

Sincerely,

Applications Management Consulting Ltd.

Per:

Drina Schneider

Associate

Encl.

Sturgeon Valley South ASP: Fiscal Impact Analysis - Update

1. Introduction

Further to the analysis undertaken to support Sturgeon County's growth framework for Sturgeon Valley (*Sturgeon Valley: The Growth Framework , June 2020),* the fiscal impact analysis presented in this report evaluates the impacts of development of the proposed Sturgeon Valley South ASP on the financial operations of Sturgeon County.

The analysis considers the municipal property tax revenues generated from the proposed development, as well as the operating revenues and costs associated with providing municipal services to the development. While the costs of constructing the linear infrastructure (roads, utilities) required to service the proposed development will be primarily funded by developers directly or through off-site development levies, the analysis includes the capital costs that would be incurred by the County to provide any additional infrastructure (not funded from developers) as well as the costs incurred by the County to maintain and replace any new and/or enhanced assets that are added to the County's asset base.

The fiscal impact analysis presented in this report builds on the fiscal impact methodology, modelling, and baseline forecasts developed in The Growth Framework study. The analysis reflects the land use statistics in the proposed Sturgeon Valley South ASP, along with selective updated assumptions regarding assessment yields and neighbourhood level infrastructure costs.

The assumptions incorporated into the fiscal impact analysis are based on the best information available at the time of completing the analysis. The assumptions and results of the fiscal impact analysis that has been undertaken serve as a starting point for further discussions and subsequent refinements to the analysis as more detail becomes available. This includes refining the fiscal impact analysis to reflect the more detailed land use and servicing information that would be developed at the Neighbourhood Area Structure Plan level. [1] It is also expected that refinements and updates to the fiscal impact analysis

[1] In the proposed *Sturgeon Valley South ASP,* Policies 6.1 (Amendment to the Area Structure Plan) and 6.2 (Neighbourhood Area Structure Plans) outline the requirement or consideration of undertaking fiscal impact analyses (using the County's fiscal impact assessment methodology) to evaluate the financial impacts of proposed development on the County's municipal operations.

methodology, model data and base assumptions will be made further to on-going County review and input.

1.1. Development Assumptions

The analysis is based on the following development assumptions.

Table 1: Sturgeon Valley South ASP: Residential Development Assumptions[2]

	Net Area (ha)	Units / ha	Number of Units	People / Unit	Population	Assessment / Unit
20 du/nrha	50.06	20	1,001	2.50	2,503	500,000
35 du/nrha	446.18	35	15,616	2.50	39,041	425,000
40 du/nrha	136.92	40	5,477	2.50	13,692	350,000
42 du/nrha	48.23	42	2,026	2.50	5,064	325,000
42 du/nrha (Mixed Use)	10.44	42	438	2.50	1,096	250,000
Total	691.83		24,558		61,396	

Table 2: Sturgeon Valley South ASP: Non-Residential Development Assumptions[3]

	Net Area (ha)	Assessment / ha
Commercial / Retail	23.15	6,500,000
Industrial	148.25	3,000,000
Total	171.40	

The fiscal impact analysis includes a 60-year forecast period (2020-2079). All growth in the ASP area is assumed to start in 2026 and develop at a constant rate over the forecast period to full build-out by 2079.

1.2. Municipal Cost/Revenue Assumptions

The financial analysis for this scenario is based on the following assumptions.

[2] Source: Land Use Statistics - V3 Companies of Canada Ltd. (V3), Assessment - Applications Management Consulting Ltd. (Applications). The conversation of gross land areas to net developable land areas was provided by V3.

[3] Source: Land Areas - V3, Assessment - Applications. Table 2 does not include the 10.44 net hectares of Mixed Use lands that would include commercial / retail development. However, projected commercial assessment from these lands is incorporated in the fiscal impact analysis. The conversation of gross land areas to net developable land areas was provided by V3.

1.2.1. Municipal Operating Expenditures

To estimate the annual operating expenditures for the ASP, historic operating expenditures for 18 Alberta municipalities with populations that are within the range of the ASP options were analyzed. These municipalities include towns, cities and specialized municipalities that have a current population of 15,000 to 102,000. Based on this analysis, operating expenditures have been grouped into three tiers that correspond to the population of the municipalities. Using historic average municipal operating expenditures per capita, these estimates provide a reasonable proxy for the annual per capita operating costs of providing municipal services to the ASP within each of the three tiers.

Table 3: Operating Expenditures Per Capita by Growth Tier

	Tier 1	Tier 2	Tier 3
Population Threshold	**Less than 30,000**	**Less than 60,000**	**More Than 60,000**
airport	0	0	0
ambulance_first_aid	0	0	0
bylaws_enforcement	37	40	44
cemeteries_crematoriums	2	3	5
common_and_equipment_pool	30	115	99
convention_centers	0	0	0
council_and_legislative	32	17	12
culture_libraries_museums	93	132	128
daycare	13	0	0
disaster_emergency	3	10	4
economic_agricultural_development	13	4	14
electric	0	0	0
family_community_support	57	50	57
fire	112	200	243
gas	0	0	0
general_administration	254	300	397
land_building_rentals	3	0	0
land_use_planning	93	67	54
other	16	0	2
other_environment	5	6	1
other_general_government	3	47	0
other_planning_development	4	6	0
other_protective_services	8	0	7
other_public_welfare	0	0	0
other_recreation_culture	1	8	0
other_transportation	0	0	0
parks_and_rec	317	351	380
police	198	258	291
public_housing	0	11	28
public_transit	15	110	166
recreation_boards	2	11	8
roads_streets_walks_lighting	162	173	169
sewers_drainage	4	16	9
subdivision_land_development	8	16	18
waste_management	82	68	88
wastewater_treatment	108	111	132
water_distribution	157	130	131
Total	1,835	2,264	2,488

The municipalities included in each Tier are as follows:

- **Tier 1 (Seven municipalities - Population between 15,000 - 30,000):**
  - Brooks
  - Stony Plain
  - Camrose
  - Beaumont
  - Chester mere
  - Fort Saskatchewan
  - Okotoks
- **Tier 2 (Seven municipalities - Population between 30,000 - 60,000):**
  - Cochrane
  - Lloydminster
  - Leduc
  - Spruce Grove
  - Medicine Hat
  - St Albert
  - Grande Prairie
  - Airdrie
- **Tier 3 (Population greater than 60,000):**[4]
  - St Albert
  - Grande Prairie
  - Airdrie
  - Strathcona County
  - Red Deer
  - Lethbridge

It should be noted that some municipal functions that are part of the operations of some municipalities have been excluded to reflect the scope of operations that can be expected in the ASP area. Those functions excluded from the analysis include the following:

- Airport
- Ambulance
- Electric
- Gas
- Other Transportation

Further, it is noted that while Municipal Affairs attempts to encourage municipalities to provide a consistent set of data across municipalities and over years, the data is sometimes uneven. As a result, there will be figures in some municipal functions in some years and not others due to reclassification of information.

It can be expected that these annual operating expenditures per capita will reflect the average costs of delivering services for the municipalities included. As a result, the services delivered and associated operating expenditures will be reflective of the average of the municipalities included in each category.

Further, it is noted that the average cost of services generally increases with the size of the municipalities in each tier. This reflects the reality that the range of services provided by municipalities generally expands as the population grows. Using this approach will be reflective of this reality for the ASP financial analysis. As seen from the table above, average cost per capita increases from

[4] For the purposes of calculating average annual operating expenditures that would be a reasonable proxy for the development in the ASP area, some municipalities have been included in both the Tier 2 and Tier 3 categories.

approximately $1,800 per capita in Tier 1 to approximately $2,300 per capita in Tier 2 and $2,500 per capita in Tier 3. The increase from Tier 2 to Tier 3 is not as great in part because of the overlap of municipalities included in both tiers.

1.2.2. Capital Expenditures

The investment in infrastructure and facilities to support the growth proposed in the ASP has been estimated based on the type of development assumed in the ASP scenario, the total amount of growth and services that would be provided. Detailed assumptions have been made regarding the infrastructure that would be required and associated investment for each of the following categories:

- Neighbourhood Water Lines
- Neighbourhood Wastewater Lines
- Neighbourhood Drainage
- Local and Collector Roads
- Arterial Roads
- Regional Infrastructure (Roads, Water, Wastewater)
- Other Infrastructure (Recreation, Police, Fire, Equipment, Library, Transit, Maintenance Facilities, Administration Facilities)

For this analysis, the cost profiles for the neighbourhood level infrastructure where updated to align with the proposed land uses in the ASP and to bring estimated costs to current dollars.

The capital requirements for each investment in new infrastructure totals an estimated $1.3 billion by 2079.

1.2.3. Financing Capital

The source of investment in infrastructure has been assumed as follows:

- **Developer Contributed Assets**
  - Neighbourhood Water Lines
  - Neighbourhood Wastewater Lines
  - Neighbourhood Drainage
  - Local and Collector Roads
- **Development Levy Funded**
  - Arterial Roads
  - Fire Stations
  - Police Stations
  - Major Recreation Facilities including: arenas, pools, indoor soccer fields, specialty recreation facilities.
- **Tax Supported**
  - Neighbourhood Recreation Facilities (e.g. playgrounds, outdoor rinks, etc.)
  - Library
  - Transit
  - Vehicles
  - Maintenance Facilities
  - Administration Facilities

Tax supported infrastructure included in this ASP option includes the following:

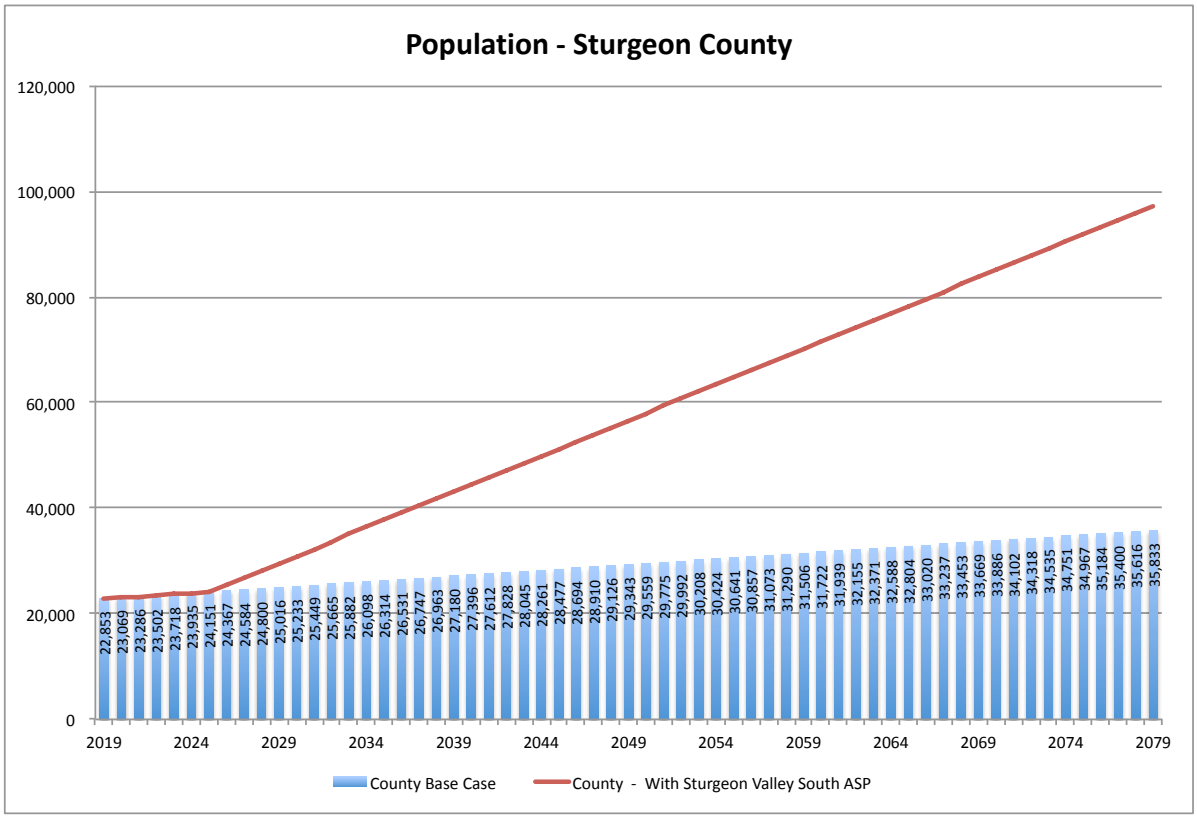
- Playgrounds
- Outdoor Rinks
- Transit Buses
- Municipal Vehicles & Equipment

All major infrastructure associated with water, wastewater and transportation have been assumed to be funded through either utility rates, grants or development levies.

1.3. Fiscal Impact Analysis Results

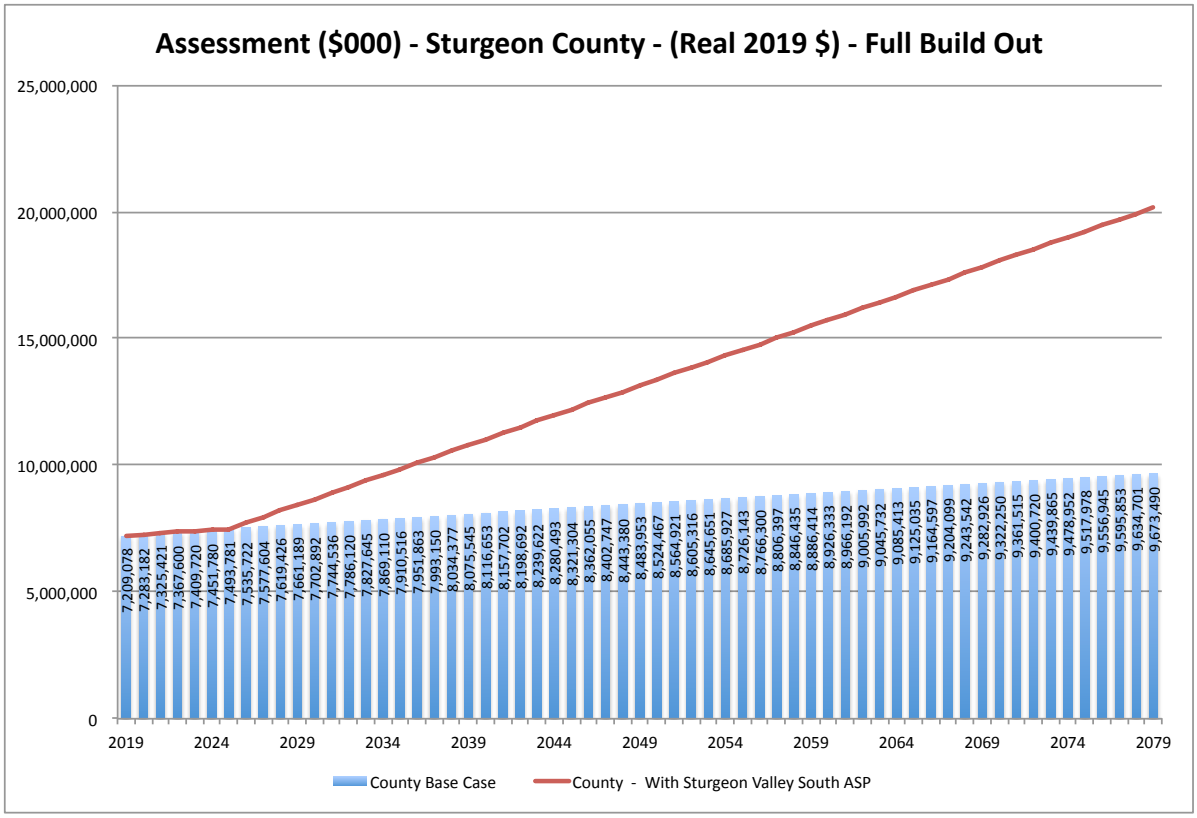
1.3.1. Population Growth

The population of the County is projected to increase to approximately 36,000 by 2079 (60 year forecast period) without development of the ASP. With the proposed Sturgeon Valley South ASP, the total population of the County is projected to increase to over 97,000 by 2079.



1.3.2. ASSESSMENT

The assessment base of the County is projected to increase to almost $9.7 billion by 2079 (60 year forecast period) without development of the ASP. With the proposed Sturgeon Valley South ASP, the assessment base of the County is projected to increase to $20.2 billion by 2079.

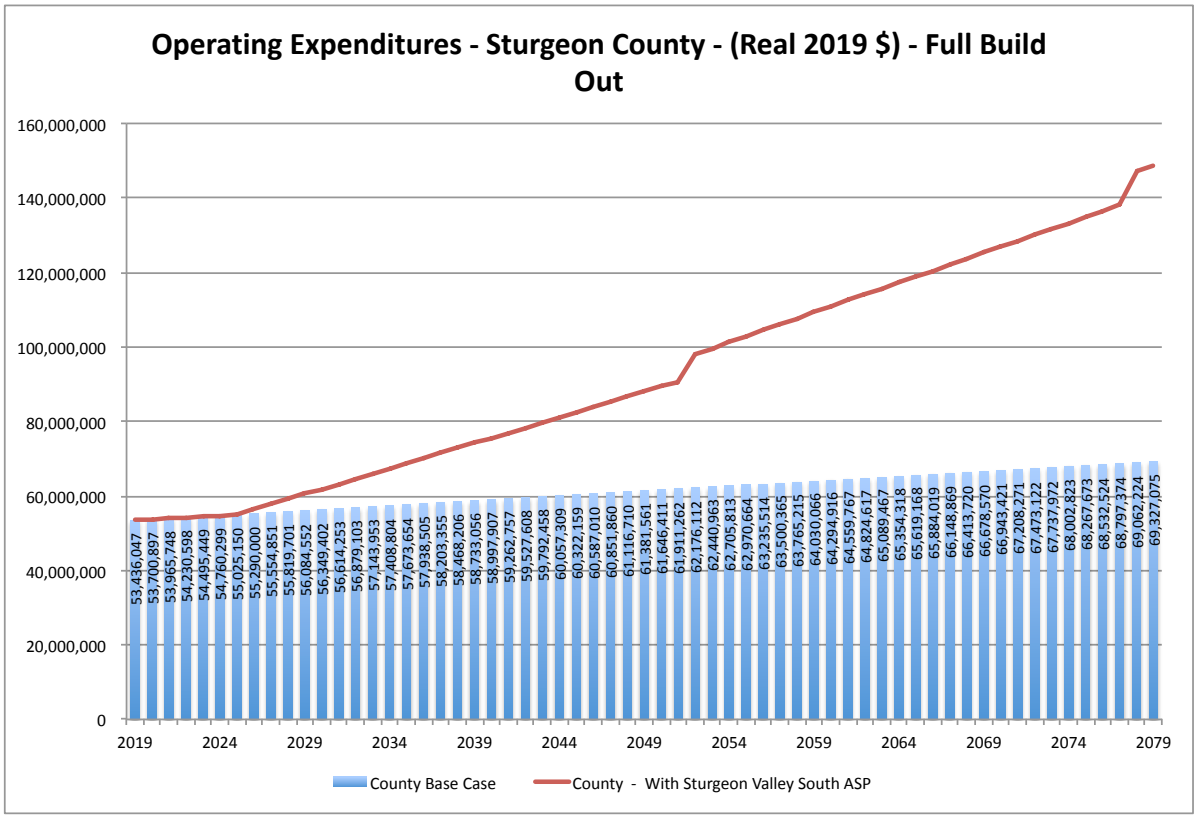


1.3.3. Operating Expenditures

Total operating expenditures for the County without the ASP development are projected to increase to $69.3 million by 2079. With the proposed Sturgeon Valley South ASP, these expenditures are projected to increase to just over $148 million by the end of the forecast period.

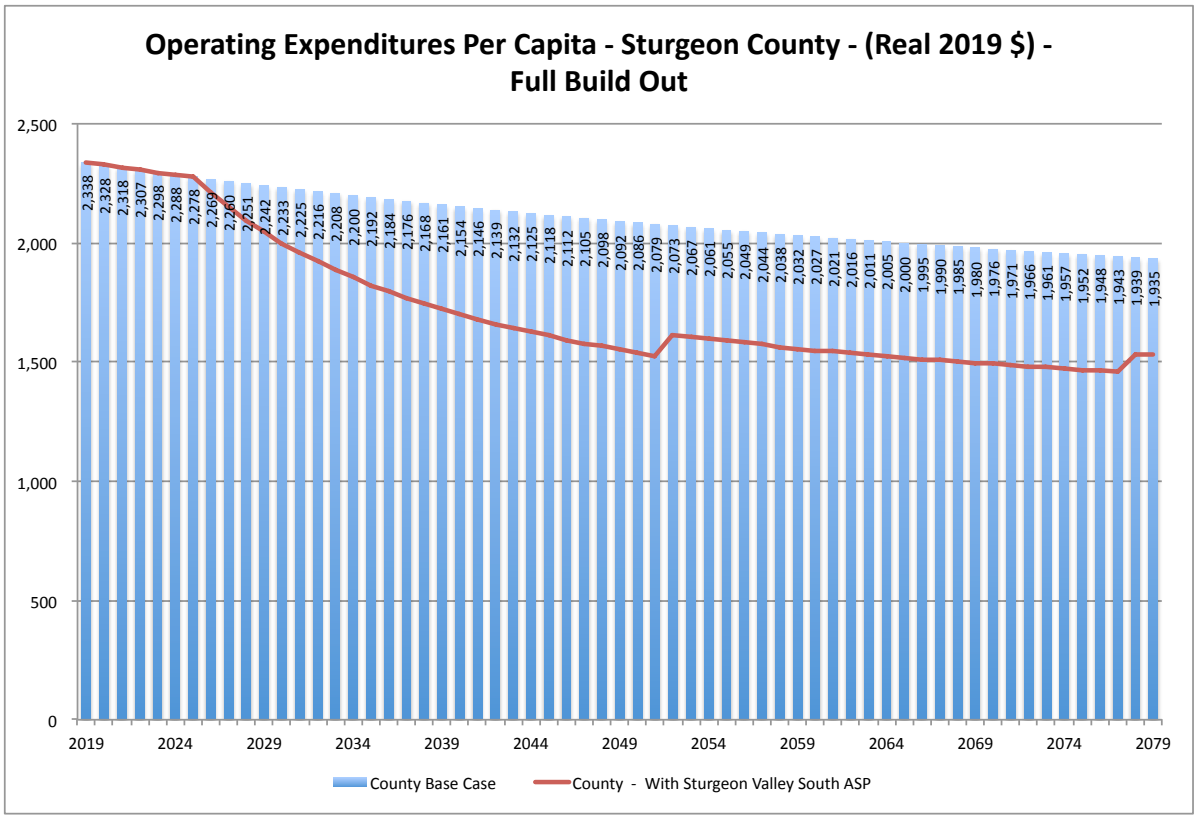
There is an adjustment in operating expenditures in 2052 as this is the year that development in the ASP plan area exceeds 30,000. This is when the Tier 2 operating expenditures take effect. In 2078, as the ASP plan area reaches a projected population of 60,000, this triggers the Tier 3 operating expenditures cost profile. In reality, this would happen gradually over time and not as a single year adjustment.

Note that all financial forecasts are in real 2019 dollars, and thus do not include inflation.



On a per capita basis, operating expenditures are projected to decrease with growth in the County. Without the ASP, these decreases in operating expenditures per capita reflect the benefit of economies of scale without any change in the scope of services provided.

When development in the proposed Sturgeon Valley South ASP is included, operating expenditures per capita decrease further. This is a result of operating expenditures per capita being generally lower for urban communities. In this analysis, the Tier 1 average costs per capita are applied to growth until 2052. The slight increases in per capita costs in 2052 and 2078 illustrate the application of the Tier 2 and Tier 3 average operating cost per capita profiles to the analysis.

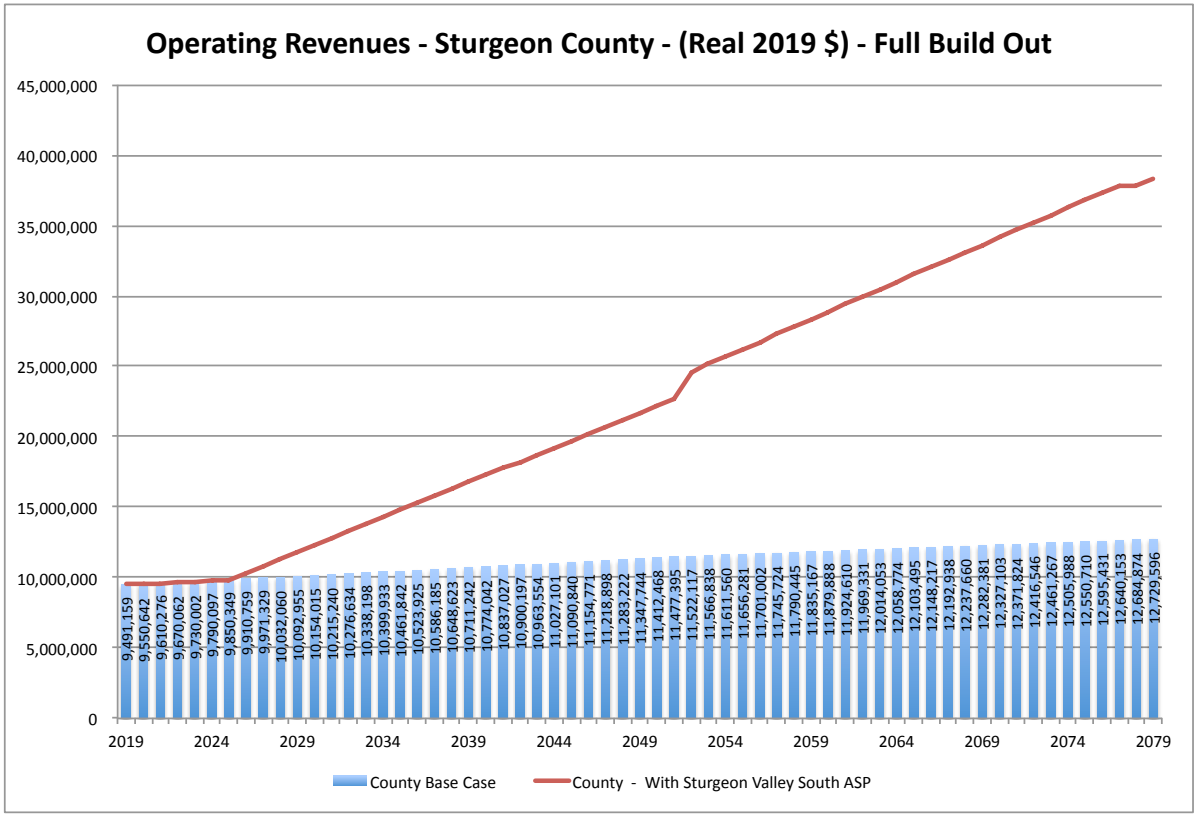


1.3.4. Operating Revenues

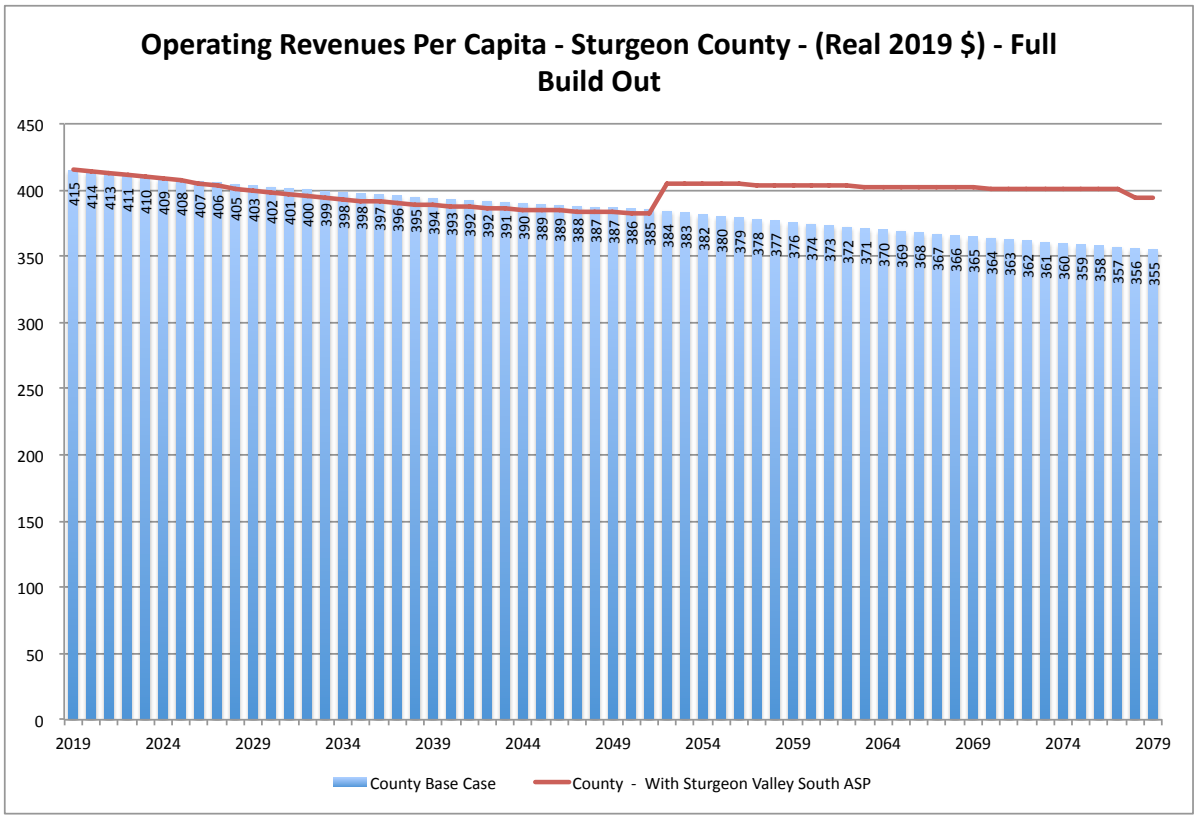
Total operating revenues (non-tax revenues) for the County without the ASP development are projected to increase to $12.7 million by 2079. With the proposed Sturgeon Valley South ASP, these expenditures are projected to increase to $38.4 million by the end of the forecast period.

The adjustment in operating expenditures to Tier 2 levels in 2052 and Tier 3 levels in 2078 also affect operating revenues as the cost recovery rates are based on operating expenditures by function area.

Note that all financial forecasts are in real 2019 dollars, and thus do not include inflation.

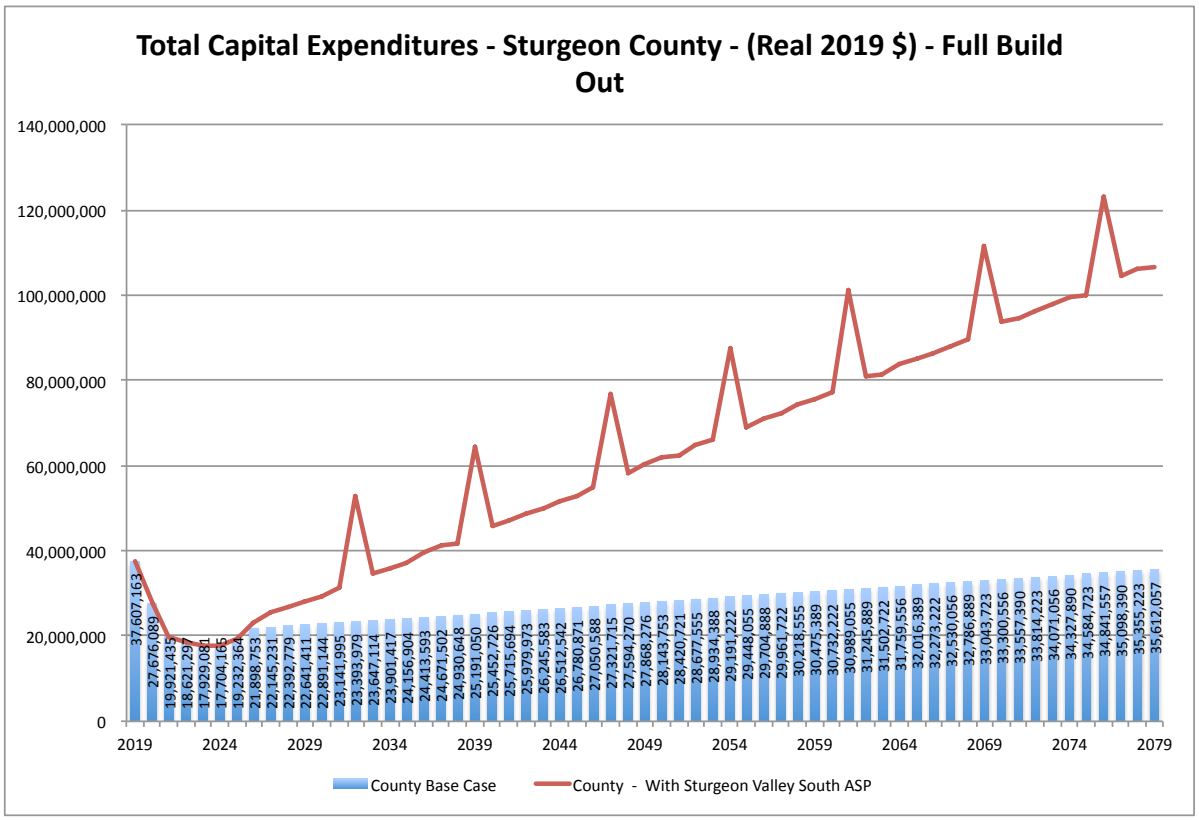


On a per capita basis, operating revenues are projected to largely remain the same for the County in both sets of forecasts until the operating expenditure adjustments to Tier 2 levels in 2052 and Tier 3 levels in 2078. From 2052 to 2079, operating revenues per capita increase with the proposed Sturgeon Valley South ASP based on the results for the Tier 2 and Tier 3 municipalities.



1.3.5. Capital Expenditures

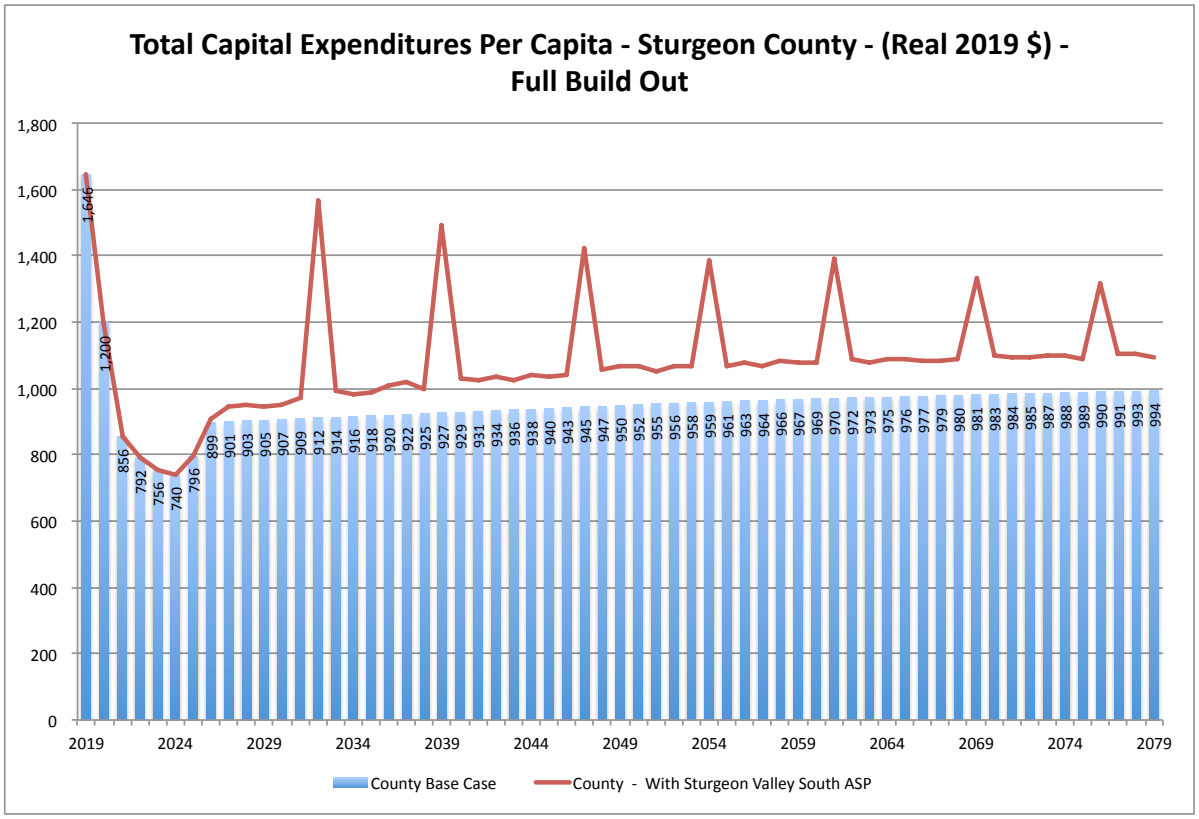
Total capital expenditures for County without the ASP development reflect the County's five year capital plan (2020-2025) plus future capital expenditures on a per capita basis consistent with historical capital investment. Total capital expenditures for the County without the ASP development are projected to increase to $35.6 million by 2079. With the proposed Sturgeon Valley South ASP, capital expenditures are expected to increase significantly. Further, there are spikes in capital expenditures associated with required investment in major infrastructure. Note that all financial forecasts are in real 2019 dollars, and thus do not include inflation.



Contributing to the increase in capital expenditures for the ASP option are the following:

- Major water, wastewater and road infrastructure ($224 million)
- Fire Stations (4)
- Police Stations (4)
- Arenas (4)
- Pools (2)
- Indoor Soccer (2)
- Specialty Recreation Facilities (Spray Park, Skateboard Park)

On a per capita basis, capital expenditures with the proposed Sturgeon Valley South ASP are generally higher than for the County in the Base Case scenario. In addition, there are seven periods where significant capital investments are projected to be required.

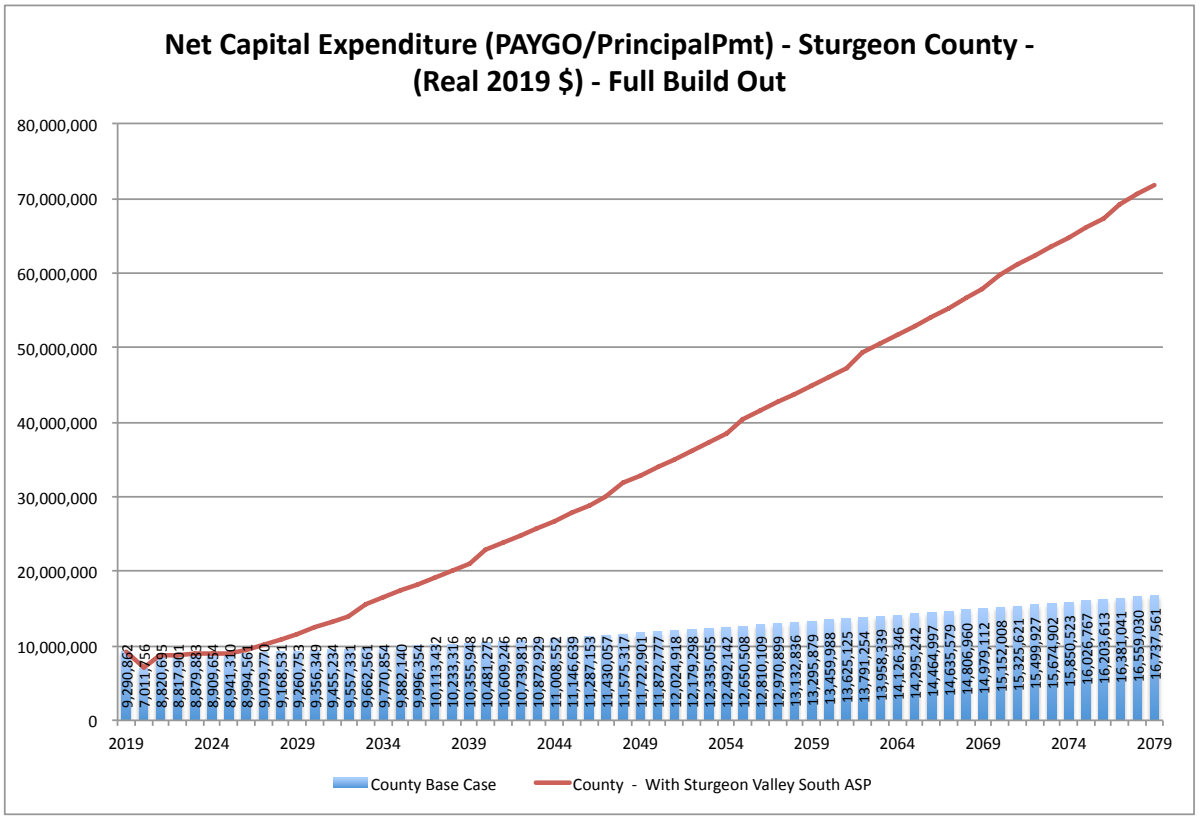


1.3.6. Tax Supported Capital Expenditures

Tax supported capital expenditures include those that are funded from the County's operating budget, including pay-as-you-go (contributions from operating budget) and principal repayments on debt financed projects. This excludes funding that is from third party sources as well as donated assets acquired through development.

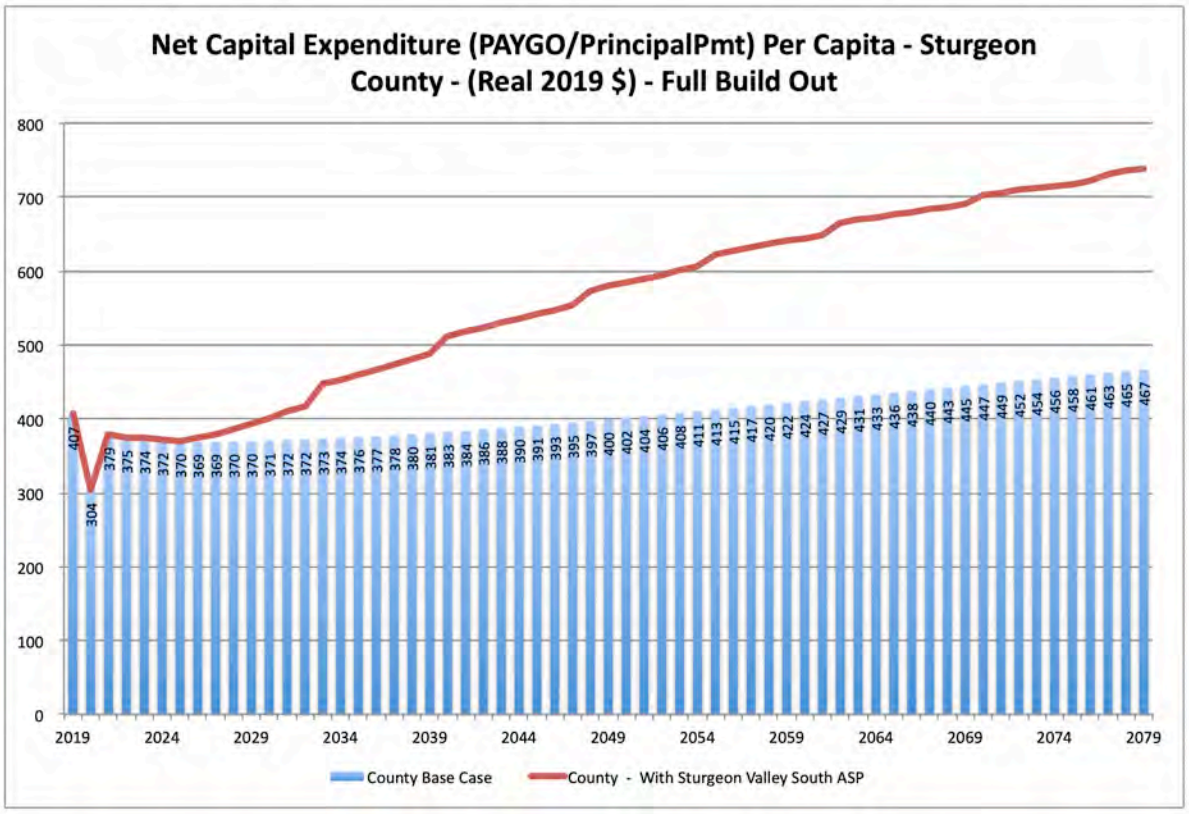
Net capital expenditures without development in the ASP area are projected to increase modestly to almost $17 million by 2079. When the tax supported expenditures associated with the proposed Sturgeon Valley South ASP are included, these expenditures increase significantly to $71.7 million by the end of the forecast period.

Note that all financial forecasts are in real 2019 dollars, and thus do not include inflation.



Even when net capital expenditures are normalized on a per capita basis, the annual expenditures increase significantly for the County with the proposed Sturgeon Valley South ASP. This is a result of a general increase in expenditures as well as share of these expenditures that will be funded by rate payers through taxes or utility rates.

It should be noted that it is assumed that development levies would be applied to not only the traditional infrastructure investments (major roads and utilities), but also police, fire and major recreation infrastructure. It should also be noted that the forecast that includes the proposed Sturgeon Valley South ASP assumes that life cycle costs associated with acquired assets (donated or purchased) is 100% funded. While the analysis assumes that a greater proportion of life cycle costs will be also be funded in the Baseline Forecast, it likely does not include 100% of these costs.

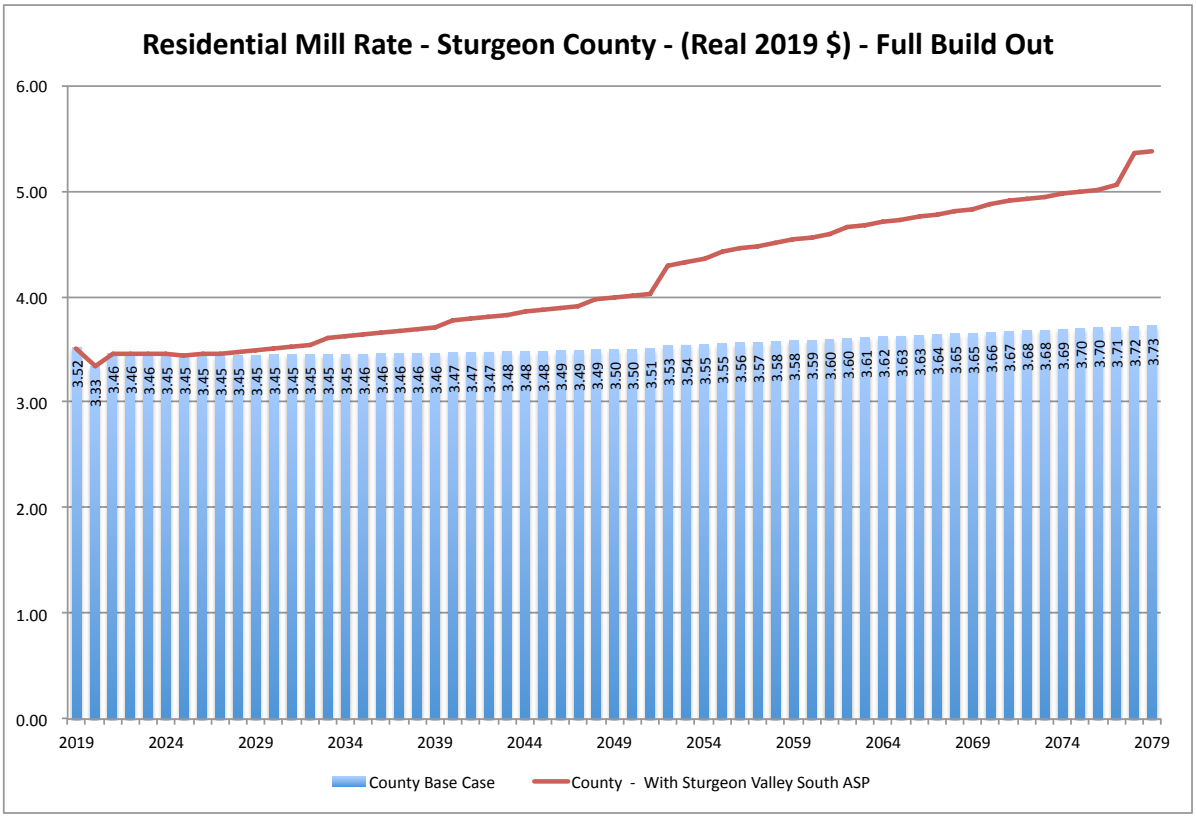


1.3.7. Municipal Tax Rates

Municipal tax rates have been calculated based on the annual shortfall between total expenditures and operating (non-tax revenues).

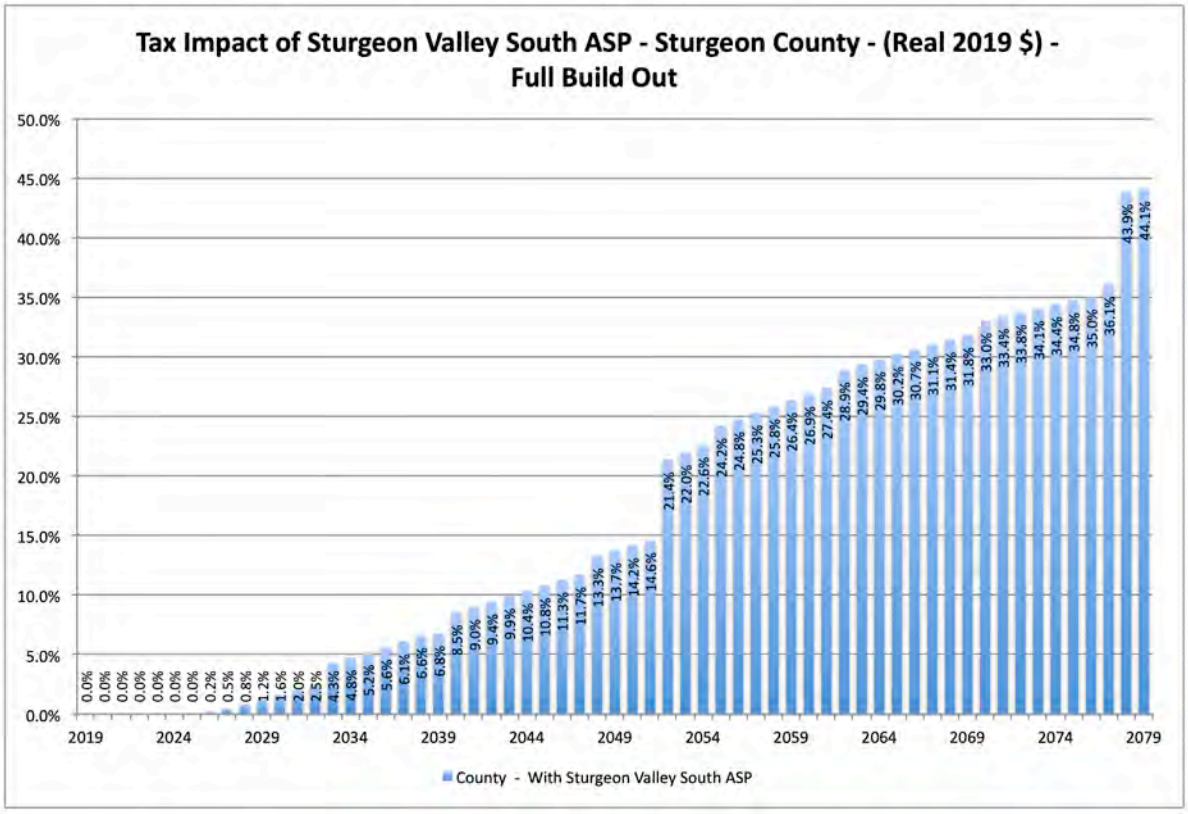
In the Baseline Forecast, real municipal residential tax rates (without inflation) are projected to gradually increase over the forecast period. When the proposed Sturgeon Valley South ASP is included, residential municipal tax rates are projected to increase (in real terms) by approximately 1.44 mills by 2079. This increase is significant.

Note that all financial forecasts are in real 2019 dollars, and thus do not include inflation.



Over the forecast period, in the Blended Scenario where all municipal expenditures and revenues are considered in developing a single set of municipal tax rates for residential and other assessment classes (based on the 2019 tax rate splits), tax rates are projected to increase when the proposed Sturgeon Valley South ASP is included. The magnitude of this increase builds to 44% by the end of the forecast period. This increase is the same for both residential and non-residential tax rates as the split between rates has been assumed to remain constant over the forecast period.

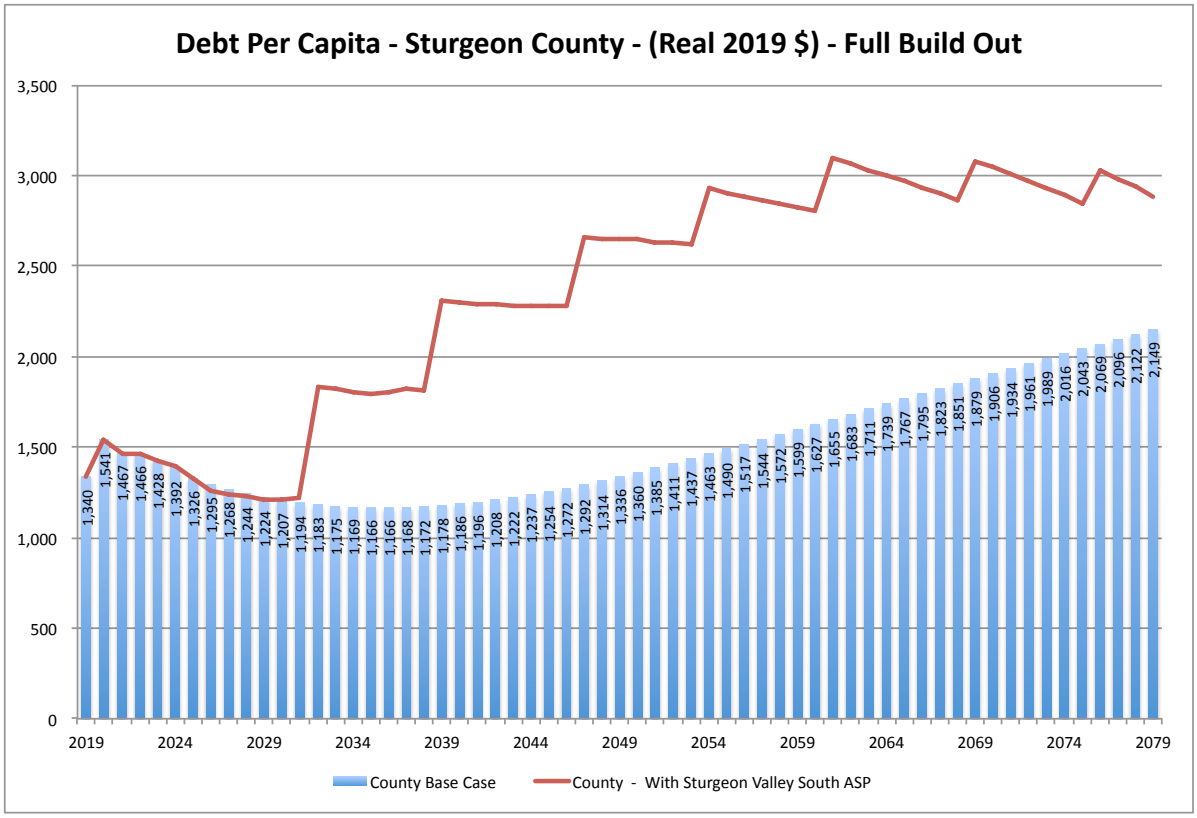
Of concern for existing Sturgeon County ratepayers is the increase in taxes paid to support additional infrastructure and investment in services that they may perceive as not providing a direct benefit to them.



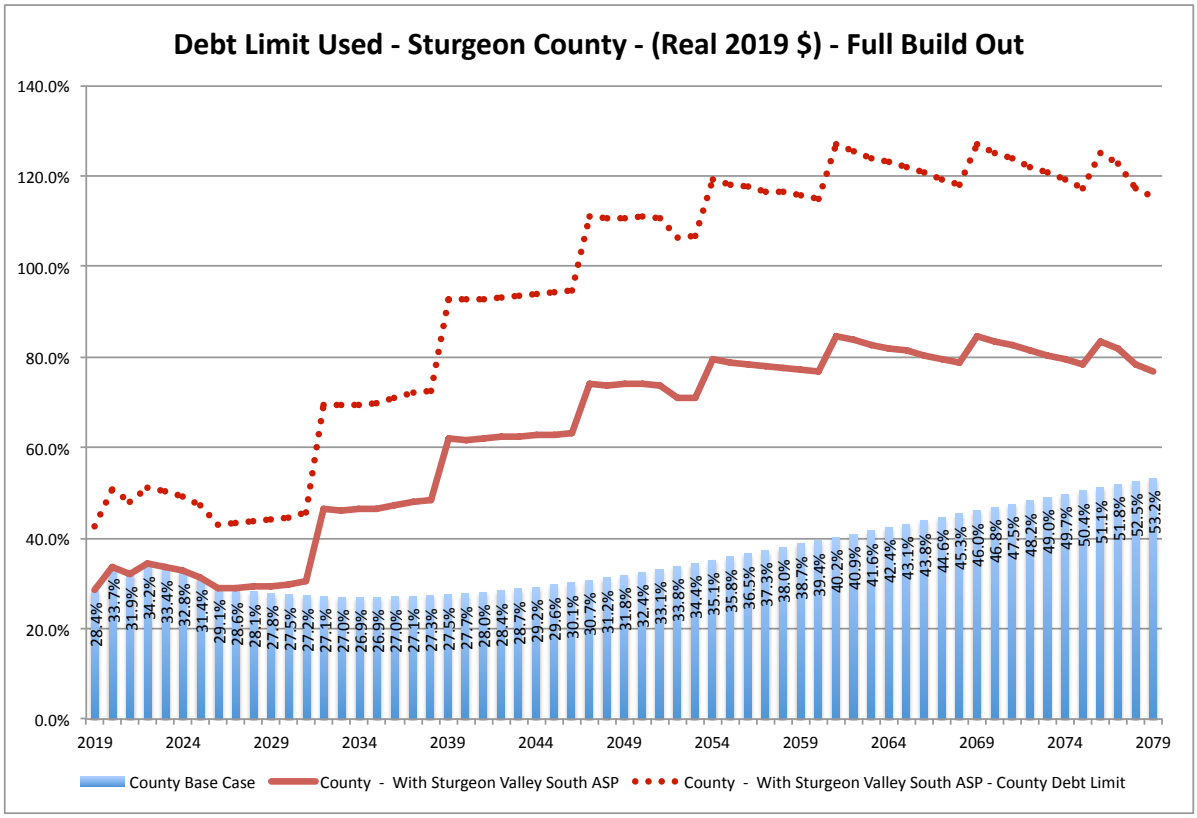
1.3.8. Municipal Debt

Contributing to the higher projected municipal tax rates is an increase in capital investment and municipal debt. On a per capita basis, the change in municipal debt levels decline in the mid term for the Baseline Forecast, and then increase to over $2,100 per capita by the end of the forecast. This increase is a result of the catch up in life cycle costs assumed for the Baseline Forecast.

The total debt per capita increases dramatically when the proposed Sturgeon Valley South ASP is included. Notably significant increases occur at points where significant infrastructure investments are required (see capital expenditures presented earlier in this section).



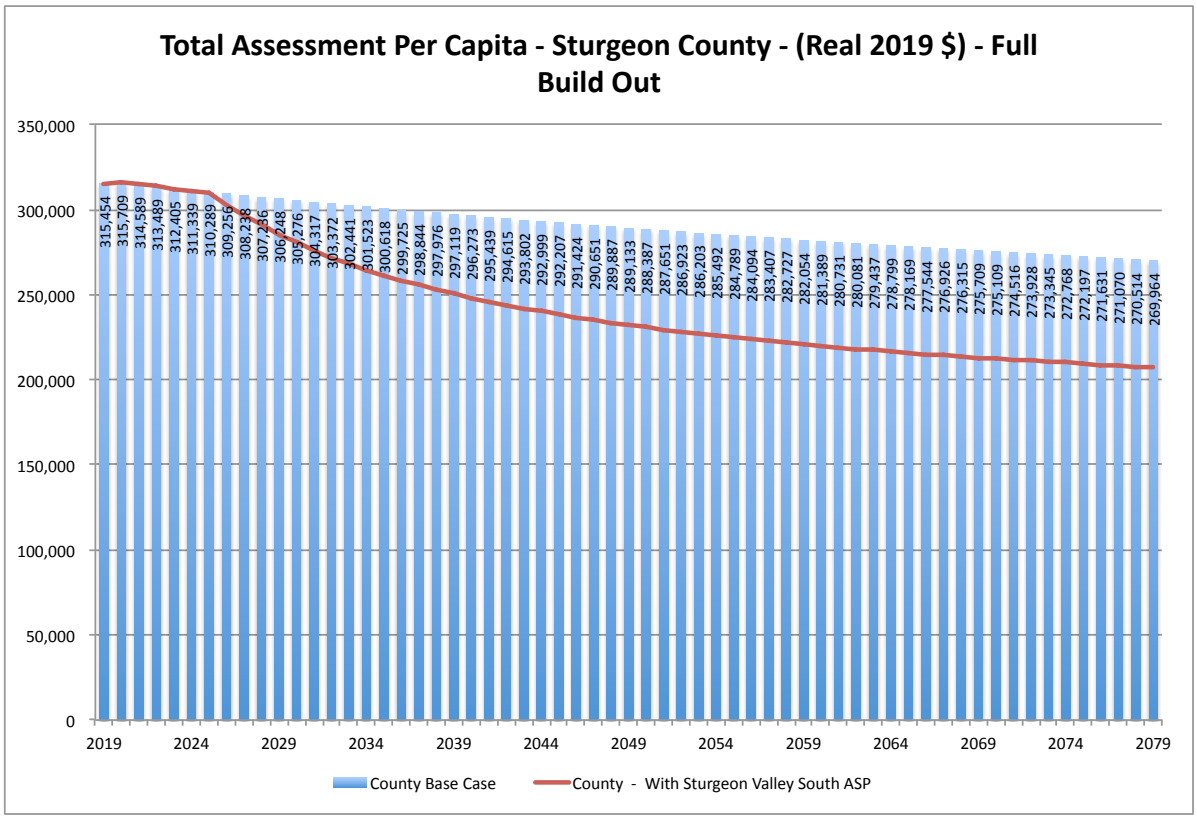
The increased debt levels with the proposed Sturgeon Valley South ASP also results in an increase in the usage of the County's debt limit. While remaining below the MGA prescribed debt limit, the County's debt limit is violated about half way through the forecast.



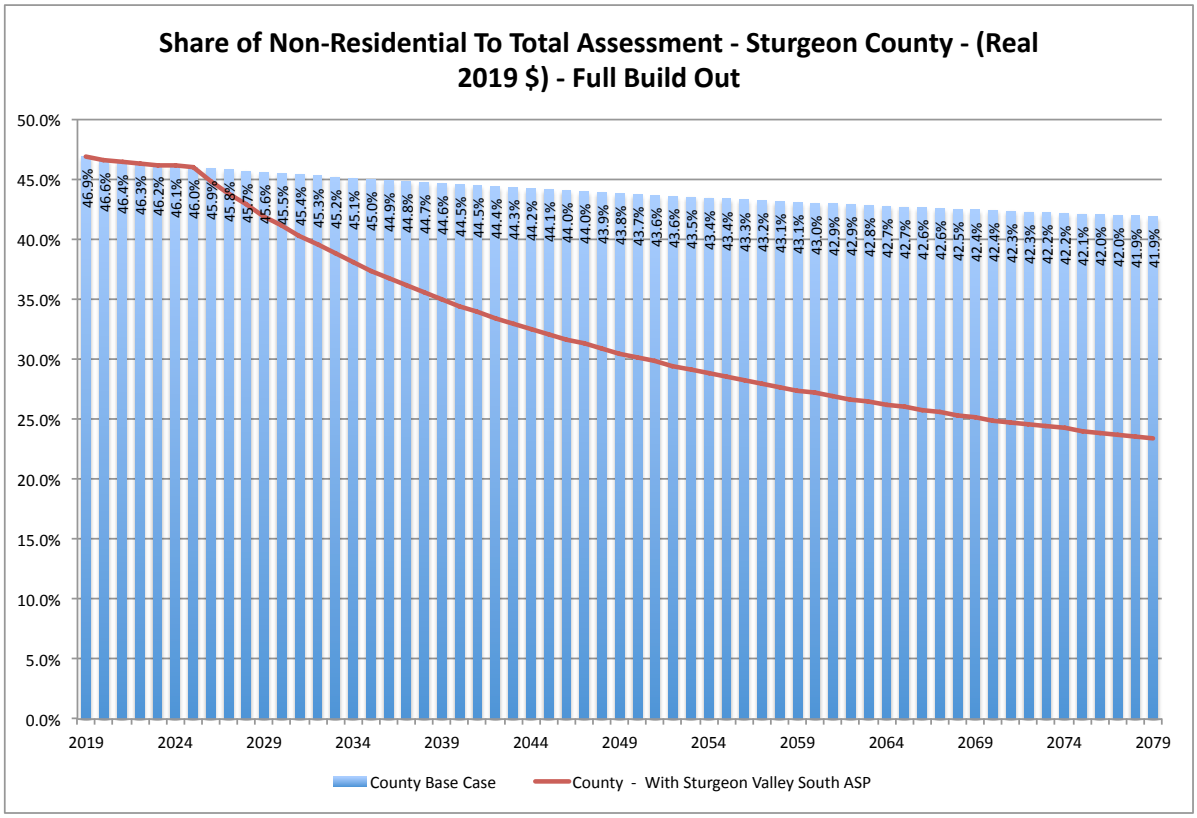
1.3.9. Fiscal Capacity

The County currently benefits from a favourable fiscal capacity by most measures. Based on the development in the proposed Sturgeon Valley South ASP, this fiscal capacity is projected to deteriorate compared to that for the Baseline Forecast.

Using assessment per capita, there is a significant decline in the County's fiscal capacity when development in the ASP plan area is included. This represents a decline of approximately 23% at the end of the forecast period.



A similar pattern is revealed using share of non-residential assessment that contributes to the total assessment base of the County. As with assessment per capita, the share of non-residential assessment also declines when development in the ASP plan area is included in the analysis.



The amount of non-residential development included in proposed Sturgeon Valley South ASP is not sufficient to maintain the County's current favourable fiscal capacity. It is recognized that as the County embarks on developing the Sturgeon Valley Special Study Area in accordance with the Edmonton Metropolitan Region Growth Plan, the residential / non-residential assessment split is expected to shift to reflect an increased residential assessment base. However, to ensure that the County continues to have a favourable residential / non-residential assessment split, the County will need to balance future residential growth with increased non-residential development opportunities either within the Sturgeon Valley South ASP plan area or elsewhere in the County.

Appendix B: Fiscal Impact Assessment

Appendix C

Stormwater Analysis Study

sameng inc.
better water | better world

1500 Baker Centre • 10025 – 106 Street
Edmonton, AB T5J 1G3

Sturgeon County

Sturgeon Valley Stormwater Update

Final Report
June 2013

sameng inc.
better water | better world

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E-mail: david.yue@sameng.com
Website: www.sameng.com

June 10, 2013 File: 1107

Sturgeon County
9613 – 100 Street
Morinville, Alberta
T8R 1L9

Attention: Yao Kouadio, M.Eng., P.Eng., PMP - Engineering Services

Re: Sturgeon Valley Stormwater Update
Final Report

Dear Mr. Kouadio,

Enclosed is a copy of the engineering report entitled “Sturgeon Valley Stormwater Update”. This report provides a summary of Sturgeon Valley’s existing drainage patterns and stormwater infrastructure as well as a preliminary stormwater management plan for the undeveloped land along the west boundary of the study area.

On behalf of the project team, I would like to thank you for providing guidance and support over the course of this study. It has been a privilege to be involved with the preliminary stormwater analysis for the Sturgeon Valley area and we have particularly enjoyed working with you on this project.

Should you have any questions or wish to discuss any aspect of this document, please contact me at 482-2557.

Sincerely,

David Yue, P. Eng.
Project Manager

Executive Summary

Sturgeon Valley is located on the south-central region of Sturgeon County. The area borders the City of Edmonton to the south and the City of St. Albert to the west. Sturgeon Valley currently has a mix of country residential and agricultural land uses. Figure 1 outlines the Study Area location, which has an area of 5,880 ha.

The existing stormwater system in the study area primarily consists of a system of drainage ditches, swales and culverts. The system also includes sewer pipes in some residential subdivisions, and a few stormwater management facilities. Most drainage from the Sturgeon Valley flows into the Sturgeon River (River) and the majority of the existing residential developments rely on road ditches, drainage channels and natural swales to convey runoff to the River.

Some developments in the Valley that have incorporated storm sewer systems include; Greystone Manor, Pinnacle Ridge, Riverstone Pointe, Bristol Oaks, and Tuscany Hills. Of those, only Greystone Manor and Tuscany Hills utilize stormwater management facilities. Figure 2 outlines the Valley's main drainage divides and existing stormwater infrastructure, which includes culverts, major drainage channels and outfalls. It should be noted that only those culverts located at major crossings were identified and analyzed in this Study.

A hydrologic and hydraulic study completed in May 2004, on the Big Lake Basin concluded that developing lands in the basin must control stormwater runoff to a rate of no more than 2.5 L/s/ha. As such, this study complies with the Big Lake Basin's post development runoff rate. This recommendation on post development rate control is thus adopted for the current study area. The capacities of all of the culverts that were identified exceed the 2.5 L/s/ha release rate control criteria. The existing culverts have been in use for some time with no apparent flood concerns. Therefore, no culvert capacity upgrades are required for the study area.

Stormwater management facilities and piping for existing developments were reassessed. These developments have implemented stormwater management plans and already control runoff to rates approved at the time of development. As the developing lands will not drain though the existing developments, no major improvements to the existing system are anticipated.

In developing the stormwater management plan, the Sturgeon Valley area was divided into the West and East Areas of the Sturgeon River. Two drainage options were evaluated for the West Area and three drainage options were evaluated for the East Area. The evaluation of each option considers the overall run off rate control as well as their potential to address environmental stewardship aspects.

Drainage Options for West Study Area

The western part of the study area currently discharges primarily to Carrot Creek. The watershed for Carrot creek is approximately 3,272 hectares, which has been developed for agricultural purposes. Carrot Creek has been a managed watercourse since the early 1900's, but there are concerns with erosion caused by increased runoff from development. The recommended improvements will direct about half of this watershed to a new system, away from Carrot Creek. Most of the watershed outside the study area will continue to drain to Carrot Creek through a licensed ditch.

The options for this area are shown in Figure 3.

Drainage Option 1

Under this option, 1,278 hectares will be directed into a new trunk along Range Road 253. This new trunk will start at Highway 37 to the north, where it will provide drainage to an additional 594 hectares upstream of the study area, for a total drainage basin of 1,872 hectares. The trunk continues south to the St. Albert City limits, where it turns southeast to discharge into the Sturgeon River through a new river outfall. Developers in this area would be required to control runoff discharges to the trunk to 2.5 litres per second per hectare.

A total of 5,550 meters of trunk will be required for this option, ranging in diameter from 1350 mm to 1800 mm. Improvements to an existing drainage channel will provide service to an additional 200 hectares. The total estimated cost of all these improvements is $39,451,619, or $19,040 per gross hectare.

Drainage Option 2

This option also calls for a new trunk sewer along Range Road 253, however the trunk will continue only to Township Road 544, where turns east and discharges into a ditch at Range Road 252C.

This option serves a slightly smaller area than the first option, only 1,992 hectares. The excluded area is in the proposed alignment of 127th Street, however, and will likely have different drainage needs than the rest of the area. The drainage for this area should be considered in the drainage plan for 127th Street,

This option will require 4,300 meters of trunk sewer, as well as improvements to 1,100 meters of existing ditch. The pipe diameters for this option ranging from 1350 mm to 1800 mm.

The discharges from this area will be accommodated in existing ditches managed by the County. The existing outfall for these ditches into Sturgeon River may need to be upgraded, but the location will be unchanged. As a significant portion of the outlet channel will be located within the flood plain of Sturgeon River, there is a good opportunity to implement storm water quality improvement wetlands immediately prior to discharge into the river. This option also requires improvements to the existing drainage channel. The total estimated cost of these improvements is $ $21,459,357, or $10,793 per gross hectare.

Comparison of Options for West Study Area

The first option will require the construction of a new outfall, south of the proposed service area, before any other parts of the trunk can be finished, while the second option requires no new outfall, and the construction can start immediately at the south part of the service area.

Both options will require improvements to existing culverts, and existing drainage paths, and both options will work best if development occurs contiguously from south to north to allow staging.

Option 2 is selected because it can be completed for the lowest overall cost, and significantly less initial costs for the first phase of construction. This option also provides the best opportunity for a constructed wetland to improve water quality prior to discharge into Sturgeon River.

Drainage Options for East Study Area

The East part of the study area, shown in Figure 4, drains primarily to the northeast through a series of ill-defined channels and natural waterbodies. Of particular note in the area is Cutbank Lake. This lake has a variable area, dependent on annual rainfall volumes. The size of the lake has been observed to be as small as 1 hectare, and as large as 9 hectares during wet years. This lake can be managed to provide consistent storage and water-quality management, and also provide an opportunity for the shore of the lake to be developed. Managing this wetland may also reduce potential impacts of waterfowl on the nearby airfield. It is recommended that the area north of Sturgeon Road (192 hectares) continue to drain across Highway 28 towards the existing unnamed watercourse. Three options were developed to drain the area south of Sturgeon Road.

Drainage Option 1

For this option, runoff will be directed towards Cutbank Lake through a planned channel along Range Road 245. This ditch, as well as a new outlet on the south side of Cutbank Lake, will drain through a trunk sewer to a new outfall on an existing drainage channel north of Sturgeon Road.

The total service area for this option is 1,120, and includes 80 hectares east of Highway 28. The northern part of the area, approximately 195 hectares, is not served by this option, but will discharge across Highway 28 as it does presently.

This option requires the construction of 2,450 meters of drainage channel, 1,550 meters of 1650 mm diameter pipe, and 1,400 meters of 900 mm diameter pipe. The estimated total cost for these improvements is $16,339,202, or $14,600 per gross hectare served.

Drainage Option 2

Under this option, the area served is 1,120 hectares, the same as in Option 1. A planned channel along Range Road 245 would discharge directly into Cutbank Lake. An outlet on the west side of Cutbank lake would discharge through a forcemain towards the Sturgeon River, discharging into the same natural channel as Option 1. The forcemain could operate

as a syphon in most cases, but would require a suction pump for priming. Using a forcemain allows for a more direct route for the drainage of Cutbank Lake.

This option will require the construction of 2,640 meters of drainage channel and about 2000 meters of forcemain, which can be laid in stages. The first phase will require a forcemain pipe with a diameter of 675mm, with two additional 825mm diameter pipes installed as needed. These improvements will cost an estimated $9,366,709 million for the completion of the first phase, with an additional $6,098,960 for the subsequent phases, for a total cost of $15,465,669, or $13,808 per gross hectare served.

Drainage Option 3

This option calls for a channel along Range Road 245 to Cutbank Lake. Under this option, an outlet and control facility will be constructed on the northeast side of the lake. An existing drainage path to the northeast would be modified to flow away from Cutbank Lake, towards Highway 28. A new channel would convey flows from Highway 28 to the existing unnamed creek to the northeast. Improvements to a section of this watercourse would also be required to accommodate the increased flows.

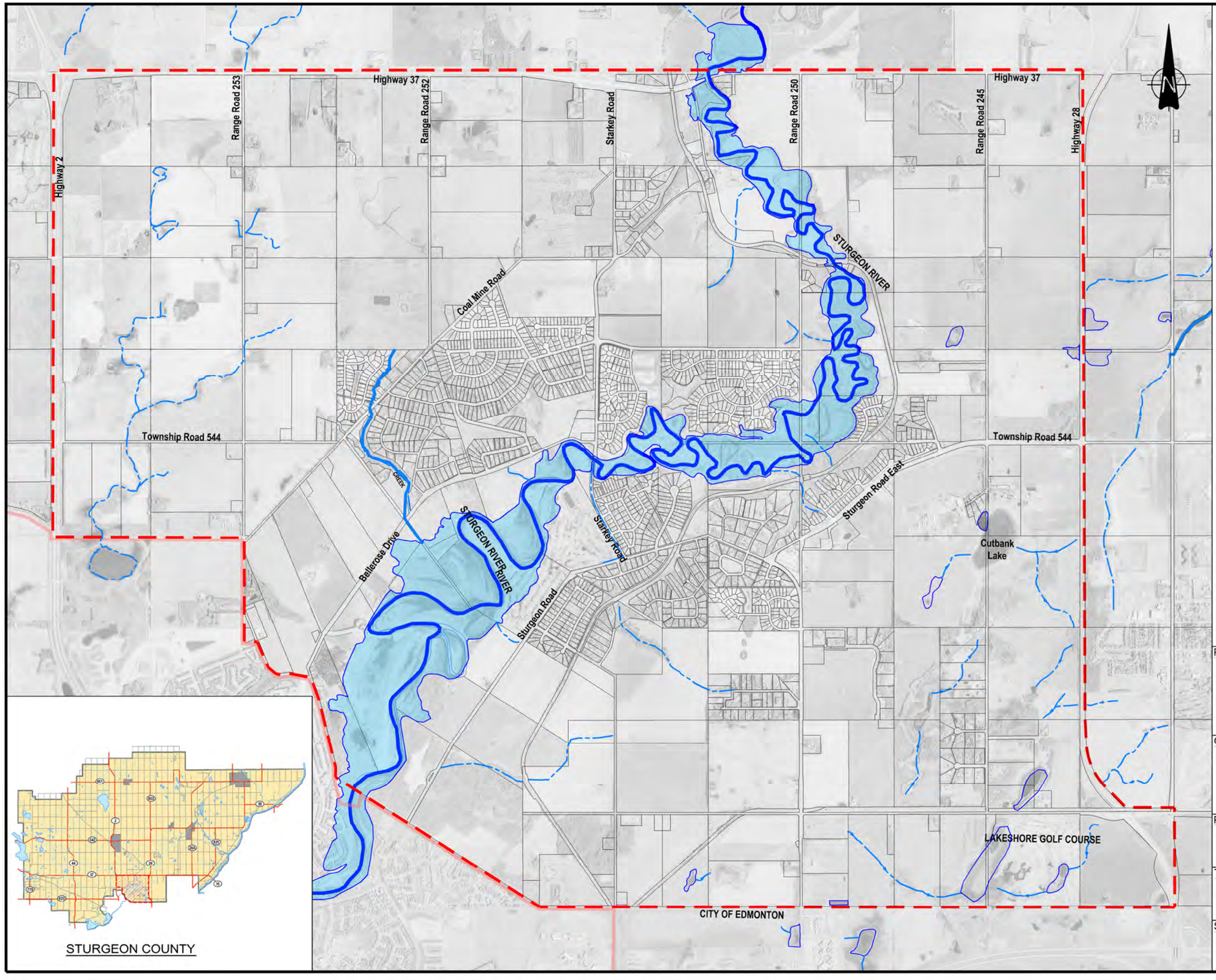
This option serves a total gross area of 1,185 hectares, as it includes part of the northern area excluded by the other options.

A total of 5,800 meters of new and upgraded drainage channel would be required for this option, as well as an additional 900 meters of incidental piping. The total estimated cost of these improvements is $13,080,089 or $11,038 per gross hectare served.

Comparison of Options for the East Study Area

For the East Study Area, Option 1 is the most conventional, but is also the most expensive. The downstream pipe would need to be completed prior to any development, and carried potentially high volumes to an existing area of development. Option 2 uses a syphon forcemain, which is uncommon in the Edmonton Region. It provides cost savings in both initial construction, and final staging, and provides the best fit for current development plans. The third option has the lowest overall estimated cost, but involves several unknowns related to land acquisition and right-of-ways, which may increase the final cost. The option has technical challenges and potential environmental impacts which would require addition design, and may not fit well with current development plans. The estimated capital cost for this option is the lowest of the three, but the unknown factors may escalate this cost.

Option 2 is the recommended option for the East side of the study area, due the lower initial cost, and the flexibility in routing of the outlet pipe.



STURGEON COUNTY

LEGEND:

- STUDY BOUNDARIES
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- CITY OF ST. ALBERT.

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Client:

Sturgeon County

Project:

Sturgeon Valley Stormwater Update

Title:

Location Plan

Scale:	Figure:
1:32,000	1

AREA: 1693 ha

AREA: 594 ha

AREA: 2,717 ha

Highway 37

Range Road 253

Range Road 252

Starkey Road

Range Road 250

Range Road 245

Highway 37

Highway 28

Highway 2

Highway Ditch

DRAINAGE AREA 4
985 ha.

DRAINAGE AREA 2
710 ha.

STURGEON RIVER

Coal Mine Road

Township Road 544

Township Road 544

CREEK

DRAINAGE AREA 1
1,042 ha.

Bellerose Drive

STURGEON RIVER RIVER

Starkey Road

Sturgeon Road East

Cutbank
Lake

Sturgeon Road

DRAINAGE AREA 5
1,490 ha.

DRAINAGE AREA 3
1,656 ha.

CITY OF ST.ALBERT

LAKESHORE GOLF COURSE

CITY OF EDMONTON

LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW
- PROPOSED OUTFALL LOCATION

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Project:

Sturgeon Valley Stormwater Update

Title:

Main Drainage Basins and Existing Stormwater Infrastructure

Scale:

1:32,000

Figure:

2

Highway 37
Range Road 253
Range Road 252
Starkey Road
Highway 2
Highway Ditch
PIPE
PIPE
Coal Mine Road
BASIN 4 - 261.4 ha
Township Road 544
Licenced Ditch to Carrot Creek
DITCH IMPROVEMENTS
CREEK
PIPE
OUTFALL
Bellerose Drive
OPTION 2
STURGEON RIVER
Starkey Road
PIPE
OUTFALL
OPTION 1
Sturgeon Road

LEGEND:

- STUDY BOUNDARIES
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW
- FUTURE 127th STREET ALIGNMENT
- STORMWATER MANAGEMENT FACILITY
- OPTION 1 ALIGNMENT
- OPTION 2 ALIGNMENT

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Sturgeon County

Project:

Sturgeon Valley Stormwater Update

Title:

Drainage Options for the West Study Area

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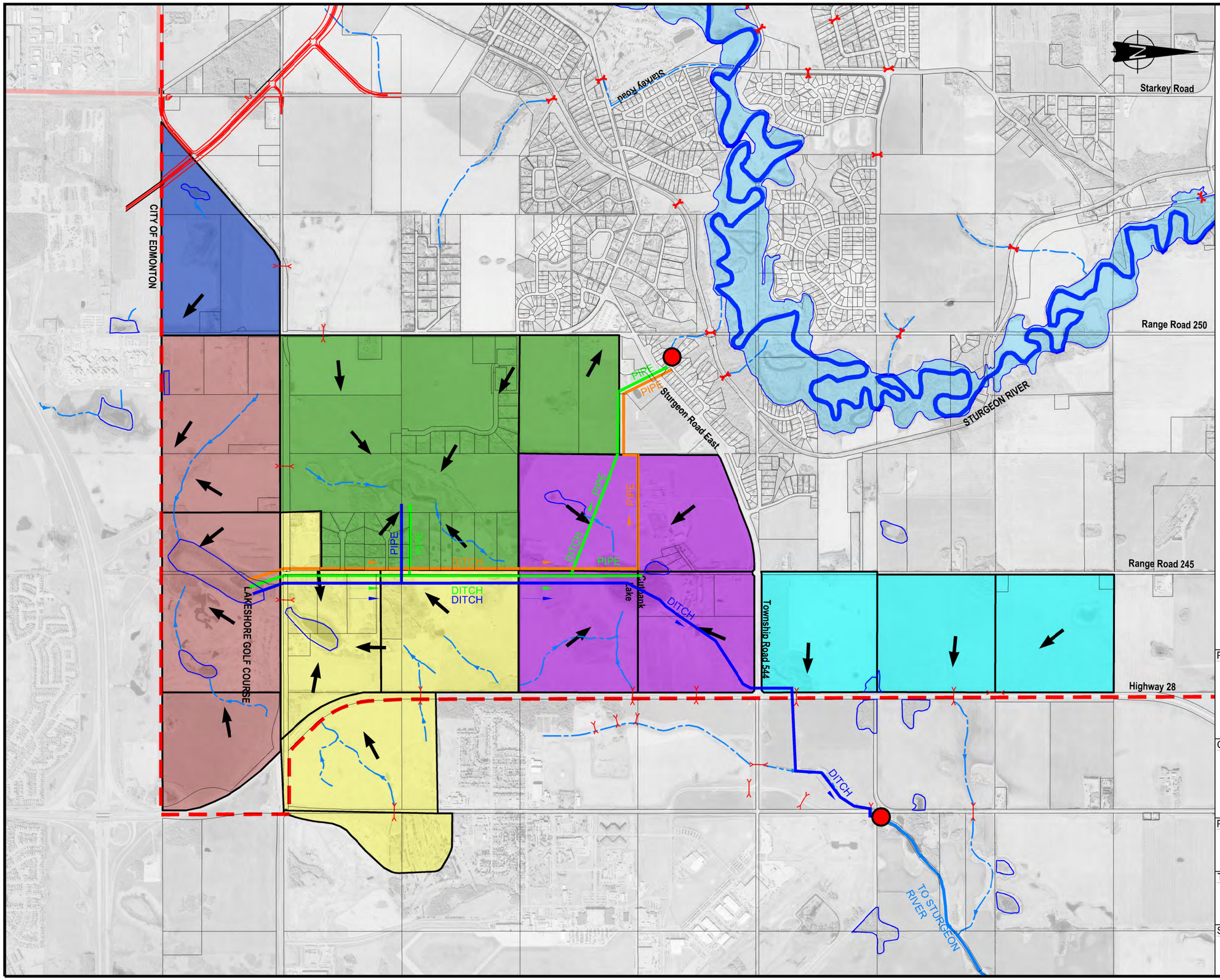

LEGEND:

- STUDY BOUNDARIES
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW
- PROPOSED OUTFALL LOCATION
- FUTURE 127th STREET ALIGNMENT
- OPTION 1 ALIGNMENT
- OPTION 2 ALIGNMENT
- OPTION 3 ALIGNMENT

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Project:

Sturgeon Valley Stormwater Update

Title:

Drainage Options for the East Study Area

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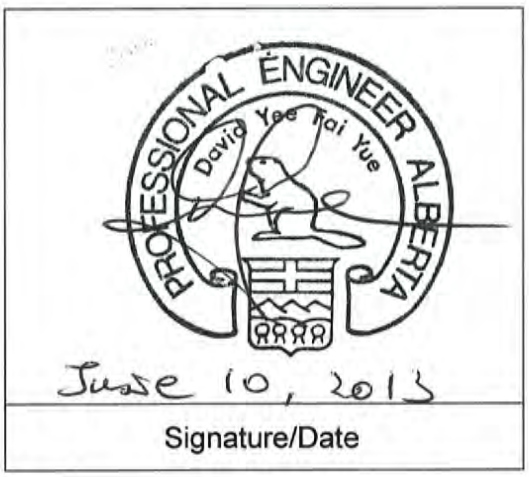

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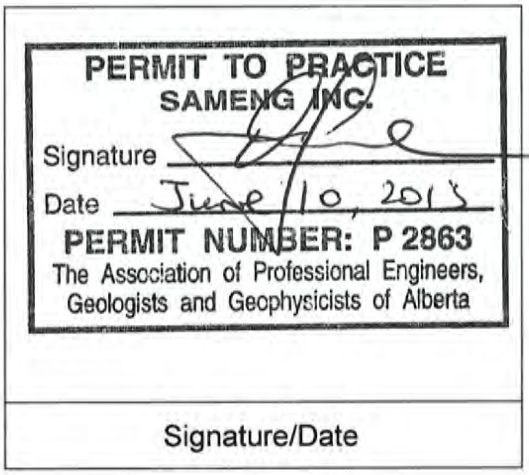

COMPANY PERMIT

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Yi Fang, M.Sc.

Jared Nicholas, T.T. – Project Technologist

1.0 Introduction

1.1 Project Overview

Sturgeon Valley is located on the south-central edge of Sturgeon County. The area borders the City of Edmonton to the south, and the City of St. Albert to the southwest. Sturgeon Valley currently has a mix of country residential and agricultural land use.

The existing stormwater system primarily consists of a system of drainage ditches, swales and culverts. The system also includes sewer pipes in some residential subdivisions, and a few stormwater management facilities. Most drainage from the Sturgeon Valley flows into the Sturgeon River (River) and keeping in consideration the existing natural drainage, the outlet for the drainage to the northwest and to the southeast is the Sturgeon River.

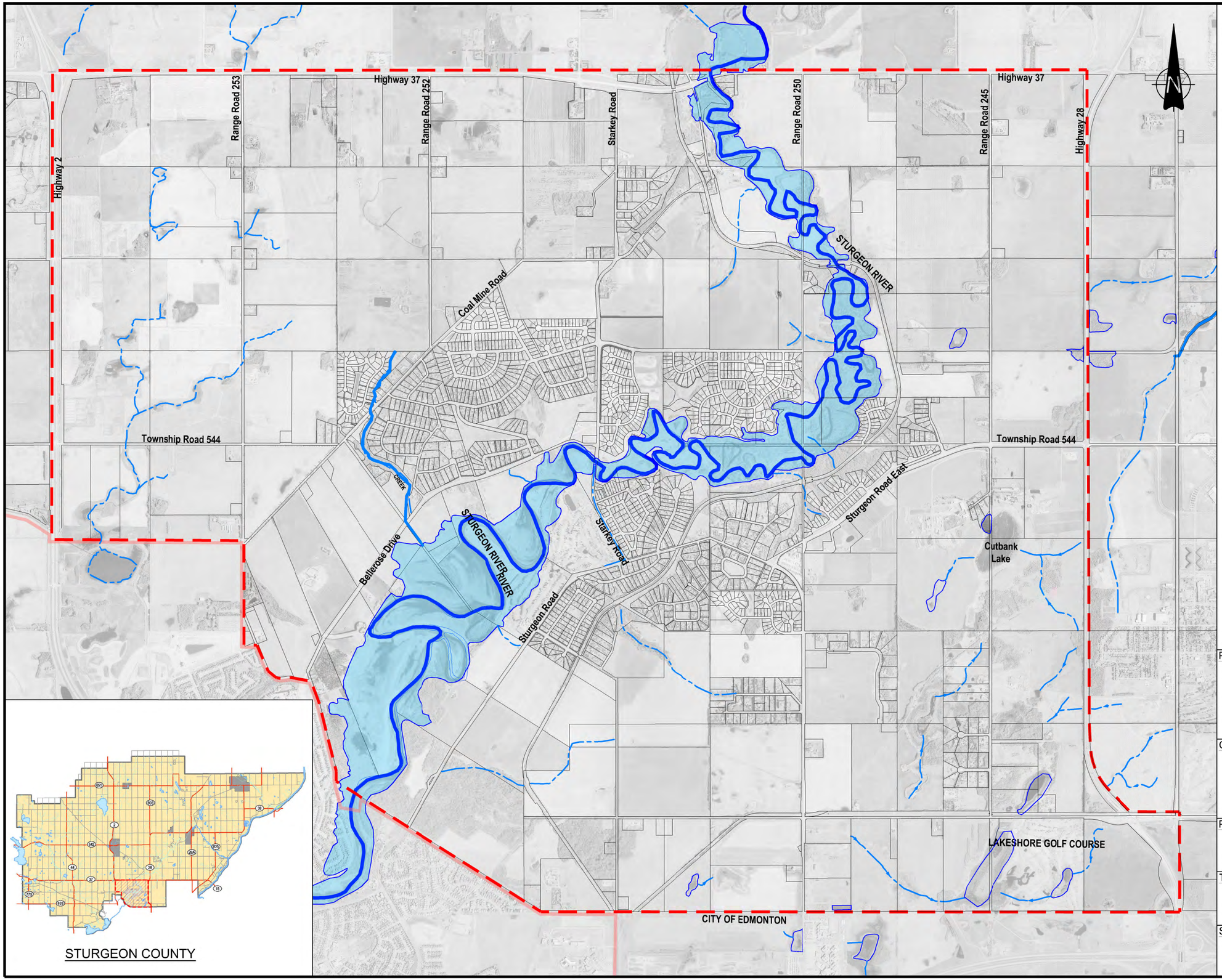
1.2 Project Background

In 2008, Sameng completed the Sturgeon Valley Utility Servicing Update, followed by the Sturgeon Valley Preliminary Stormwater Analysis in 2011. The latter study provided an assessment of the existing drainage in the Sturgeon Valley for Drainage Areas 1, 2 and 3 (immediately adjacent to Sturgeon River), and presented a stormwater management plan for some basins to the northwest of the existing Valley developments where development is planned for the immediate future..

1.3 Project Objectives

The key objectives of this study are to:

1. Delineate the Valley's existing drainage basins,
2. Identify and analyze the existing stormwater infrastructure, including culverts, outfalls and drainage channels for the entire Sturgeon County Study Area,
3. Develop a stormwater management plan for the undeveloped land along the west boundary of the Valley, adjacent to the City of St. Albert, and on the north side of the City of Edmonton,
4. Recommend a stormwater levy and provide detailed cost estimates, and
5. Identify phasing options and potential conflicts with future road plans.



STURGEON COUNTY

LEGEND:

- STUDY BOUNDARIES
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- CITY OF ST. ALBERT.

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Project:

Sturgeon Valley Stormwater Update

Title:

Study Area Location Plan

Scale:	Figure:
1:32,000	1-1

2.0 Data Collection, Previous Studies and Design Criteria

2.1 Overview

This section contains the key information that was collected and reviewed for technical evaluation of the stormwater system. The collected information consisted in relevant reports and drawings, existing drainage studies, stormwater management plans, cadastral and air photos for the existing and future developments.

2.2 Data Collection

The following identifies the key information that was collected and reviewed for this project

- *General Topographic, Cadastral and Air Photo* –Updated topographic, cadastral information and air photos of the study area were provided to Sameng by Sturgeon County.
- Site Investigation – Sameng conducted a stormwater study in January 2011 where several culverts were measured and creeks were surveyed. To expand upon this study, our team conducted additional field surveys, site investigations to identify and measure other culverts and watercourses, as well as identify suitable drainage outlets for some drainage basins.
- Big Lake Stormwater Management Plan (Associated Engineering, 2004)
- City of St. Albert Utility Master Plan (2007)
- Sturgeon Valley Utility Servicing Update (Sameng, 2008)
- Sturgeon Valley Preliminary Stormwater Analysis (Sameng, 2011)
- "Stormwater Management Benefitting Lands Proposed Schedule N" - Drawing prepared by ISL Engineering in November 201*2*
- Cadastral
- Aerial Photos
- Google Street View
- LIDAR imagery
- Record drawings

A summary of relevant reports is presented below..

2.3 Previous Reports and Documentation

2.3.1 General

This section contains a brief description about the previous reports and documentation reviewed for the study area. Most of this information is related to stormwater management in the Sturgeon Valley Area. The following previous reports and documentation relevant to the study area were reviewed.

2.3.2 Big Lake Stormwater Management Plan (2004)

The Big Lake Basin Task Force (which Sturgeon County is a member) completed a hydrologic and hydraulic study of the Big Lake Basin in May 2004. This report, entitled "Big Lake Stormwater Management Plan" was prepared by Associated Engineering and was commissioned to investigate drainage problems within the basin. The Big Lake Basin is part of the Sturgeon River watershed, which includes the Sturgeon Valley study area. The study recommended that developing lands within the study area control their stormwater runoff to a rate no more than 2.5 L/s/ha. This recommendation on post development discharge rates has been adopted for the current study.

2.3.3 City of St. Albert Utility Master Plan (2007)

This report was completed by Stantec Consulting Company in 2007. For this study, three areas of the City of St. Albert were identified as having surface drainage issues in the existing system, which would need to be addressed.

The report also presented a recommended future servicing strategy to accommodate future growth within the City. This strategy includes construction of a gravity sewer network and some stormwater management facilities to be constructed by developers of the new areas. It also recommends the construction of a new storm outfall to Carrot Creek, and upgrades to the Deer Ridge Outlet structure in the North Central region.

2.3.4 Sturgeon Valley Servicing Update (2008)

In September 2008, Sameng Inc completed a Utility Servicing Update for the Sturgeon Valley Area as part of the overall Area Structure Plan. This Utility Servicing Update was a component of a larger initiative that includes Land Use Planning and Transportation. Utility Servicing includes the potable water distribution system, the sanitary sewer system, and the stormwater system. The purpose of this project was to analyze the existing utility systems and provide an effective plan for servicing future developments in the Sturgeon Valley Area.

It was recommended that the County regard the stormwater collection, transport, and discharge system as a utility.

2.3.5 Sturgeon Valley Preliminary Stormwater Analysis (2011)

The preliminary stormwater analysis presents an inventory of the Valley's existing stormwater infrastructure and a preliminary stormwater plan for the lands bordering the City of St. Albert to the west. The purpose of the preliminary stormwater plan was to establish a framework around which a comprehensive stormwater system can be designed for the subject lands.

A preliminary stormwater management plan (SWMP) was developed for the west portion of the Valley due to anticipated development in both Sturgeon Valley and the City of St. Albert to the west. Six post development basins were identified and each basin contains a SWMF, which were sized based on a release rate of 2.5 L/s/ha. The SWMF's shape, size and location may be significantly altered as development of the land and its stormwater management facilities is ultimately the responsibility of the developer.

Costs for the improvements to the unnamed watercourse, erosion protection and culvert replacement were estimated to be $2,500,000. Upgrades to the common outlet and outfall facility for Basin # were estimated to cost $1,020,000.

2.3.6 Stormwater Management Benefitting Lands Proposed Schedule "N"

This a figure prepared by ISL Engineering and Land Services Ltd in November 2012, that proposes to join 269 ha of Sturgeon County to City of St. Albert storm water management infrastructure. The Sturgeon County land is located immediately north of St. Albert.

2.4 Design Criteria

The stormwater distribution system has been analyzed using available design standards. Where applicable, Sturgeon County Design Standards were utilized. However, through consultation with the County, standards that were not available were adopted from the City of Edmonton Design and Construction Standards. Should Sturgeon County release new standards, the most current standards should always be used unless directly specified by the County.

The design criteria used for this study are summarized below.

2.4.1 Release Rate

A maximum release rate of 2.5 L/s/ha is the recommended stormwater release rate for the Big Lake Basin (Associated Engineering, 2004). This release rate is consistent with pre-development flows in the basin, as well as other basins of similar size in the Capital region. This release rate also conforms to standards published by Alberta Environment and Sustainable Resource Development for controlling water quality. The controlled release rate will also protect downstream waterways.

2.4.2 Stormwater Management Facility and Wetlands

Stormwater management facilities should be designed to satisfy the level-of-service requirements for major system storage elements as indicated below

- Avoid all property damage and flooding and to minimize inconvenience to the public due to runoff from 1 in 5 year and more frequent rainfall events;
- Avoid significant property damage from a 1 in 100 year return frequency rainfall event;
- Avoid loss of life and injuries and minimize damage to property, through control of runoff during unusual or infrequent storm events with high-intensity rainfall and large runoff volume;
- Avoid degradation of receiving watercourses, by implementing the requirements of the ESC Guidelines;

Constructed Wetlands are typically designed according to the following guidelines:

- A minimum drainage area of 5 ha is required to generate constant or periodic flow to the constructed wetland;
- The smallest practical drainage area is considered to be 20 ha. For drainage areas between 5 and 20 ha in size, the Sturgeon County may approve the use of constructed wetlands on a site-specific basis;
- To determine that a permanent pool can be maintained in a constructed wetland, hydrological studies are to be conducted using the size and characteristic of the drainage area;
- The wetland surface area is typically about 5% of the watershed area;
- Sameng recommends that larger wetlands be constructed rather than a series of smaller constructed wetlands.
- From 0.1 m to 0.6 m with an average permanent water depth of 0.3 m, to encourage emergent vegetation;
- Deep water areas, i.e. greater than 2 m, are to be limited to less than 25% of wetland surface area;
- Water level fluctuation in excess of 1 m above NWL should be infrequent to prevent killing of the vegetation.

Stormwater management facilities are required to meet the following criteria for suspended solids removal

- The minimum design requirement for total suspended solids removal is 85% of particle size 75µm or greater, as recommended by Alberta Environment, April 2001;
- Constructed wetlands are considered to be the most effective treatment for sediment control and it is expected that this recommended criteria for reduction of total suspended solids will be achieved;
- The Developer is required to implement the ESC Plan during development in the drainage area to minimize sediment loading to the forebay and wetland during the construction phase.

2.4.3 Manholes

Manholes are to be installed at the end of each sewer, at all changes in sewer size, grade, or alignment and at all junctions. Manholes are placed following these guidelines:

- The maximum permitted manhole spacing for all sewers less than 1200 mm in diameter is 150 meters;
- All manholes shall be 1200 mm minimum inside diameter and constructed to the Construction Specifications;
- Manholes are required to be 1500 mm diameter or larger when connecting sewers 750 mm or larger;
- The maximum permitted manhole spacing for all sewers less than 1200 mm in diameter is 150 m. For sewers 1200 to 1650 mm in diameter the access manholes were spaced at a maximum of 500 m. For sewers 1800 mm in diameter or larger the access manholes were spaced at a maximum of 800 m.

2.4.4 Storm Sewer Pipes

An urban area will have two separate storm drainage systems; a minor system composed of underground sewer pipes, and a major system composed of overland drainage paths, channels, ponds and wetlands.

The minor storm system is designed should provide at least a 5-year level of service, with more intense storm events being carried by the major system. The storm sewer system is designed according to the following criteria:

- Storm mains which service areas of 30 hectares or less are to be designed to convey runoff from 1 in 5 year and more frequent rainfall events. Mains servicing areas greater than 30 hectares are to be designed to convey 1.25 times the rate of runoff which would occur in a 1 in 5 year rainfall event;
- All storm sewers should be designed and constructed to give mean velocities, when flowing full, of greater than 0.6 m/s based on Manning's Formula. The sewer should be designed to keep flow velocities between 0.6 and 3.0 m/s;
- The sewer should be designed such that supercritical flow does not occur where steep grades are utilized;
- All storm sewers should be designed with a minimum slope of 0.1% or greater;
- Catchbasin leads must be installed at a minimum grade of 1.0%;
- A minimum of 2.8 m of cover, measured from the pipe top, should be provided for all storm sewer main lines. Where storm sewer services are to be provided to the properties, the storm mains must be installed at adequate depth to permit the storm sewer services to be 2.74 m deep (to invert) at the property line;

2.4.5 Storm Sewer Outfall Structures

At the end of an outfall sewer, energy dissipaters are often necessary to avoid downstream erosion and damage of creeks, ravines or river banks from high exit flow velocities. Outfall

structures are required to convert supercritical flow to subcritical, to dissipate flow energy, and to establish suitably tranquil flow conditions downstream.

- When sewers discharge at subcritical flow, then smaller concrete structures with suitable baffles, aprons and rip-rap will be acceptable. For all outfalls, it is required that a rigorous hydraulic analysis be completed, to ensure that the exit velocities will not damage natural watercourses;
- The final exit velocities, where the flow passes from an apron or erosion control medium to the natural channel, shall not exceed 1.0 m/s;
- Appropriate erosion control measures should be provided at and downstream of the outfall to prevent erosion in the downstream channel;
- All sewer outlets shall be constructed with provisions to prevent the entrance of children or other unauthorized persons. A grate with vertical bars spaced at no more than 150 mm shall be installed with adequate means for locking in a closed position.

2.4.6 Drainage Ditch and Culverts

Channels and ditches are designed along with each proposed development according to proposed land use characteristics and required channel capacity. To allow for the drainage of future stormwater retention ponds into the conveyance channel, the recommended dimension of the proposed ditches are as follows:

- Minimum Ditch Depth: 1.3 m
- Minimum Bottom Width: 1.2 m
- Side Slope: 3H:1V

The retention capacity of the proposed ditches should be enough to provide retention for a 1:100 year - 24 hour rainfall event.

2.5 Rainfall-Runoff Analysis

Pre and post development runoff analysis was done using HEC-HMS, a hydrological modeling program developed by the US Army Corps of Engineers. The runoff analysis was used to analyze existing culvert capacities in each basin and to develop a preliminary stormwater management plan for the anticipated residential development. A simulated 24-hour storm event is used to design storage facility sizing because of its relatively long duration and large rainfall volume. A 4-hour event is used for the analysis of both major and minor conveyance systems (i.e. storm sewers, roads, ditches, etc.) because of its high intensity over a short period of time. By modeling both high-intensity and high-volume events, the limits of storage facilities and conveyance systems can be assessed.

3.0 Existing Drainage and Sewer Systems

3.1 Overview

This section provides an overview of drainage patterns for all the lands within the study area and includes a brief description of its basin characteristics, drainage channels, culverts, etc.

3.2 Major Watercourses

3.2.1 Sturgeon River

The Sturgeon River is a major Tributary of the North Saskatchewan River, and runs through the study area from the south to the North. Sturgeon River follows a meandering course through the sturgeon valley area, and its floodplain is reserved from development as a natural feature of the community. The sturgeon river is the primary discharge point for stormwater in the Sturgeon Valley.

As a major watercourse, Sturgeon River is subject to strict regulations for things that may disturb the natural characteristics of the river. As the sturgeon river is one of the defining features of the Sturgeon Valley Area, observing these regulations is important to the quality of the area.

3.2.1 Carrot Creek

Carrot Creek is a natural seasonal watercourse that lies a few kilometers west of the Study Area. This creek feeds into Big Lake, which is the source of Sturgeon River. There is a licensed ditch that conveys runoff from Highway 2 to Carrot Creek. The known tributary area of Carrot Creek includes part of the Study Area.

Carrot Creek, and the ditch from Highway 2, have been used for over 100 years as the primary drainage channel for the farms and homes within its basin. As development has increased, there have been rising concerns of erosion and water quality. Reducing the runoff to Carrot Creek will therefore be beneficial to the County.

3.2.1 Unnamed Creek

An unnamed watercourse begins just west of Highway 28, and serves as a tributary of Sturgeon River. This is the largest watercourse in the immediate area, and serves an unknown drainage area. Though this watercourse has not been subject to the same level of study as the previous watercourses, it is thought to be important for a significant area, including part of the study area.

3.3 Drainage Divides

Drainage divides and catchment areas were delineated using air photos, cadastral information, contours provided by the County and a site visit. Three major drainage divides exist in the Valley's study area as shown in Figure 3-1. From the three drainage divides, seven drainage basins were delineated. A brief description of the drainage patterns and basin characteristics is presented below.

The first divide starts at Highway 2, at the west boundary of the study area and runs north-northeast towards Highway 37. West of the divide, designated as Drainage Area 4, is part of the Carrot Creek watershed. East of the divide is in the Sturgeon River watershed.

The second divide bisects the northwest portion of the study area, as seen in Figure 3-1. Stormwater runoff on both sides of the drainage divide is conveyed to the Sturgeon River; The land north of the divide, designated as Drainage Area 2, drains northeast. Land to the south of the divide, designated as Drainage Area 1, drains to the southeast.

The east side of the Sturgeon River has a drainage divide starting at the south boundary of the study area in section NW12 54-25-4. The divide follows the top of the river valley northeast to the intersection of Highway 37 and Highway 28 at the northeast corner of the study area. The land to the west of the divide is part of the Sturgeon River watershed and is designated as Drainage Area 3. Land to the east of the divide drains in a southeasterly direction and collects in low-lying areas at the southeast corner of the study area and has been designated as Drainage Area 5.

The next section describes the designated drainage in more detail.

3.4 Existing Drainage Basin Characteristics

3.4.1 General

Sturgeon County's existing stormwater conveyance system is mainly comprised of a network of natural drainage channels, ditches and culvert crossings. Some pipe networks have been incorporated in the newer developments. A summary of each drainage basin is provided below with descriptions of associated catchment areas and existing conveyance systems. The drainage basins are illustrated and summarized on Figure 3-2.

3.4.2 Drainage Area 1

Drainage Area 1, shown in Figure 3-3, is bounded by a natural drainage divide to the west and north, and the Sturgeon River and City of St. Albert to the south. The total area of the basin is 1,042 hectares, and includes about 100 hectares within the City of St. Albert, outside the study area. Much of Drainage Area 1 has already been developed and can be further divided into twelve sub-basins. The remaining undeveloped land is mainly used for agricultural purposes and livestock. The specific land usage for each basin is detailed in Table 3-1. Runoff in Drainage Basin 1, west of Starkey Road, collects in drainage channels that convey the flow south through culverts along Bellerose Drive to the Sturgeon River. East of Starkey Road contains relatively new development that utilizes storm sewers and they have more pronounced outfalls that discharge into natural drainage paths out letting into the Sturgeon River.

The residential developed areas in this basin are located mainly between Township Road 544 and Bellerose Dr. and between Range Road 252C and Range Road 251.

Table 3-1: Drainage Area 1 – Basin Land Use

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	81.8	65	100%	Residential
Basin B	134.9	10	100%	Agricultural
Basin C	76.7	10	100%	Agricultural
Basin D	301.4	21	35%	Residential
			65%	Agricultural
Basin E	124.9	40	100%	Residential
Basin F	55.8	34	79%	Residential
Basin G	78.0	26	52%	Residential
			48%	Agricultural
Basin H	30.0	40	100%	Residential
Basin I	53.2	31	69%	Residential
			31%	Agricultural
Basin J	25.2	40	100%	Residential
Basin K	63.8	17	23%	Residential
			77%	Agricultural
Basin L	16.4	40	100%	Residential

An imperviousness of 40% was used for rural residential development, 65% for residential and 10% for agricultural lands. Imperviousness of basins that contain various land use types was calculated using a weighted average based on the impervious values specified above and the associated land use areas.

Sub-basin D and Sub-basin I contain a significant unnamed natural watercourse which collects runoff for over 350 hectares of land. Upstream of Bellerose Drive, the watercourse is in the form of vegetated ravine while downstream of Bellerose Drive the watercourse becomes a man-made drainage ditch located along a county road right-of-way. The unnamed watercourse is well defined and segments of the channel do exhibit relatively steep grades in excess of 5%. The characteristics of this channel are highlighted as future development of the basin and will increase its erosion potential which should be addressed.

There are several culvert crossings located in this area. All culverts appear to have capacity to convey the defined maximum runoff rate from their upstream basins.

The unnamed natural watercourse in Drainage Area 1 has a peak discharge of approximately 2.4 m^3/s during the 1:100 year storm. In a post development condition, the peak flows are expected to reduce to 1.35 m^3/s. Under either flow conditions, the expected channel velocity is estimated to be higher than the maximum permissible for non-erosion protected channels in northern Alberta. On this basis, some erosion protection works should be anticipated for the steepest sections of this channel.

3.4.3 Drainage Area 2

Drainage Area 2 is generally bounded by natural drainage divides to the west and south, Highway 37 to the north and Sturgeon River to the East. Some of the land to the north of Highway 37 drains south across the highway and into the Sturgeon County study area. There are three drainage sub-basins, illustrated in Figure 3-4, that drain in a northeasterly direction through a series of channels and culverts to the Sturgeon River. The majority of the land in Drainage Area 2 is undeveloped. Approximately 7% of the total area is residential developed area and a specific land usage for each sub-basin is detailed in Table 3-2.

Table 3-2: Drainage Area 2 – Basin Land Use

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	51.0	10	100%	Agricultural
Basin B	567.7	12	93%	Agricultural
			7%	Residential
Basin C	90.6	10	100%	Agricultural

There are three major culvert crossings located in Drainage Area 2 as shown in Figure 3-4. The level of service provided by these culverts is greater than 2.5 L/s/ha for their upstream areas.

3.4.4 Drainage Area 3

Drainage Area 3, shown in Figure 3-5, is bounded by Sturgeon River to the west, Highway 37 to the north, a natural drainage divide to the east and the City of Edmonton to the south. The Canadian National (CN) Railway runs parallel to the River within these drainage areas. Residential development is centrally located within the Drainage Area 3 and the land to the south of this basin is mostly undeveloped.

Runoff is conveyed via channels and ditches through a series of culvert crossings, located along the CN Rail and Sturgeon Road. The neighborhoods of Tuscany Hills, Bristol Oaks and Allin Ridge Pointe use storm sewers for their stormwater management, which discharge into management facilities before being outlet into natural channels. The Tuscany Hill's stormwater management facility was designed to accommodate runoff from the 30 ha parcel of land (Section NE13-54-25-4) to the south of Tuscany Hills. Specific land usage for each sub-basin is detailed in Table 3-3.

Table 3-3: Drainage Area 3 – Basin Land Use

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	339.9	10	100%	Agricultural
Basin B	53.7	10	100%	Agricultural
Basin C	75.3	13	10%	Residential
			90%	Agricultural
Basin D	323.9	24	47%	Residential
			53%	Agricultural
Basin E	23.0	40	100%	Residential
Basin F	17.1	40	100%	Residential
Basin G	89.3	40	100%	Residential
Basin H	82.7	40	100%	Residential
Basin I	66.7	19	31%	Residential
			69%	Agricultural
Basin J	45.9	27	58%	Residential
			42%	Agricultural
Basin K	539.2	11	2%	Residential
			98%	Agricultural

There are six significant culvert crossings within Drainage Area 3, operating as road crossing for natural channels within the basin. These culverts appear to be sized appropriately to their corresponding channels.

3.4.5 Drainage Area 4

Drainage Area 4, shown in Figure 3-6, is part of the Carrot Creek watershed, and stormwater generally drains in a southwesterly direction through culvert crossings along Range Road 253 into the licensed ditch at Highway 2, which leads to Carrot Creek.

Drainage Area 4 covers 985 hectares and is bounded by Highway 2 to the east, City of St. Albert to the south, Highway 37 to the north, and a natural drainage divide to the West. Approximately 2,290 hectares of the lands north of Highway 37 drain across the Highway into Drainage Area 4. Most of this runoff (from 1,693 hectares), drains directly into the Highway 2 ditch, without affecting the study area. The remainder of these flows (from 594 hectares) drains through the study area, and must be routed as part of any stormwater management plan. The drainage Area also includes about 140 hectares within the City of St. Albert, outside of the study area.

There are twelve drainage sub-basins, that generally drain in a northwesterly direction through a series of channels and culverts to the Carrot Creek. The majority of the land in Drainage Area 4 is undeveloped and a specific land usage for each sub-basin is detailed in Table 3-4.

Table 3-4: Drainage Area 4 – Basin Land Use

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	136	10	100%	Agricultural
Basin B	86	10	100%	Agricultural
Basin C	71	10	100%	Agricultural
Basin D	70	10	100%	Agricultural
Basin E	68	10	100%	Agricultural
Basin F	65	10	100%	Agricultural
Basin G	128	10	100%	Agricultural
Basin H	79	10	100%	Agricultural
Basin I	152	10	100%	Agricultural
Basin J	60	10	100%	Agricultural
Basin K	54	10	100%	Agricultural
Basin L	16	10	100%	Agricultural

There are seven major culvert crossings within the study area. These crossings correspond to natural channels at existing roadways, and appear to be sized appropriately for their respective channels.

3.4.6 Drainage Area 5

Drainage Area 5, shown in Figure 3-7, is located on the east side of the study area, and is bounded by Highway 28 to the east, the City of Edmonton to the south, and a natural drainage divide to the northwest. Most of the 1,493 hectares in this drainage area are undeveloped, and are mainly used for agricultural purposes. The existing developed area is composed of a country-residential development occupying about 18% of the total area of the basin.

Drainage in this basin is split into ten sub-basins, three of which are located outside the study boundary. For the northern sub-basins, runoff is generally directed towards the northeast, crosses Highway 28 through culverts and ultimately reaches a large natural watercourse which connects to Sturgeon River in the northeast. Cutbank Lake is a major feature of this part of the basin, and collects and stores runoff from sub-basin ‘B’.

For the southern sub-basins, runoff flows south toward the City of Edmonton boundary and it collects in the Lakeshore Golf Course and low lying areas in the southwest corner of the study area as shown in Figure 3-7. This part of the watershed has an area of 501.6 ha in which 288.9 ha are within the study area. These southern sub-basins contain two natural drainage paths, and runoff conveys to the Lakeshore Golf Course from northwest using this path.

The majority of the land in Drainage Area 5 is undeveloped and a specific land usage for each sub-basin is detailed in Table 3-5.

Table 3-5: Drainage Area 5 – Basin Land Use

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	249.2	10	100%	Agricultural
Basin B	307.8	10	100%	Agricultural
Basin C	232.4	20	65%	Agricultural
			35	Residential
Basin D	97.2	10	100%	Agricultural
Basin E	151.4	10	100%	Agricultural
Basin F	92.5	10	100%	Agricultural
Basin G	84.7	10	100%	Agricultural
Basin H	51.2	10	100%	Agricultural
Basin I	104.8	10	100%	Agricultural
Basin J	121.8	10	100%	Agricultural

Information for the eight significant culvert crossings within Drainage Area 5 was obtained as part of this study as shown in Figure 3-7. It appears that these culverts have sufficient capacity to provide adequate drainage for the area, and will not need to be upgraded at this time.

3.5 Existing Drainage Infrastructure

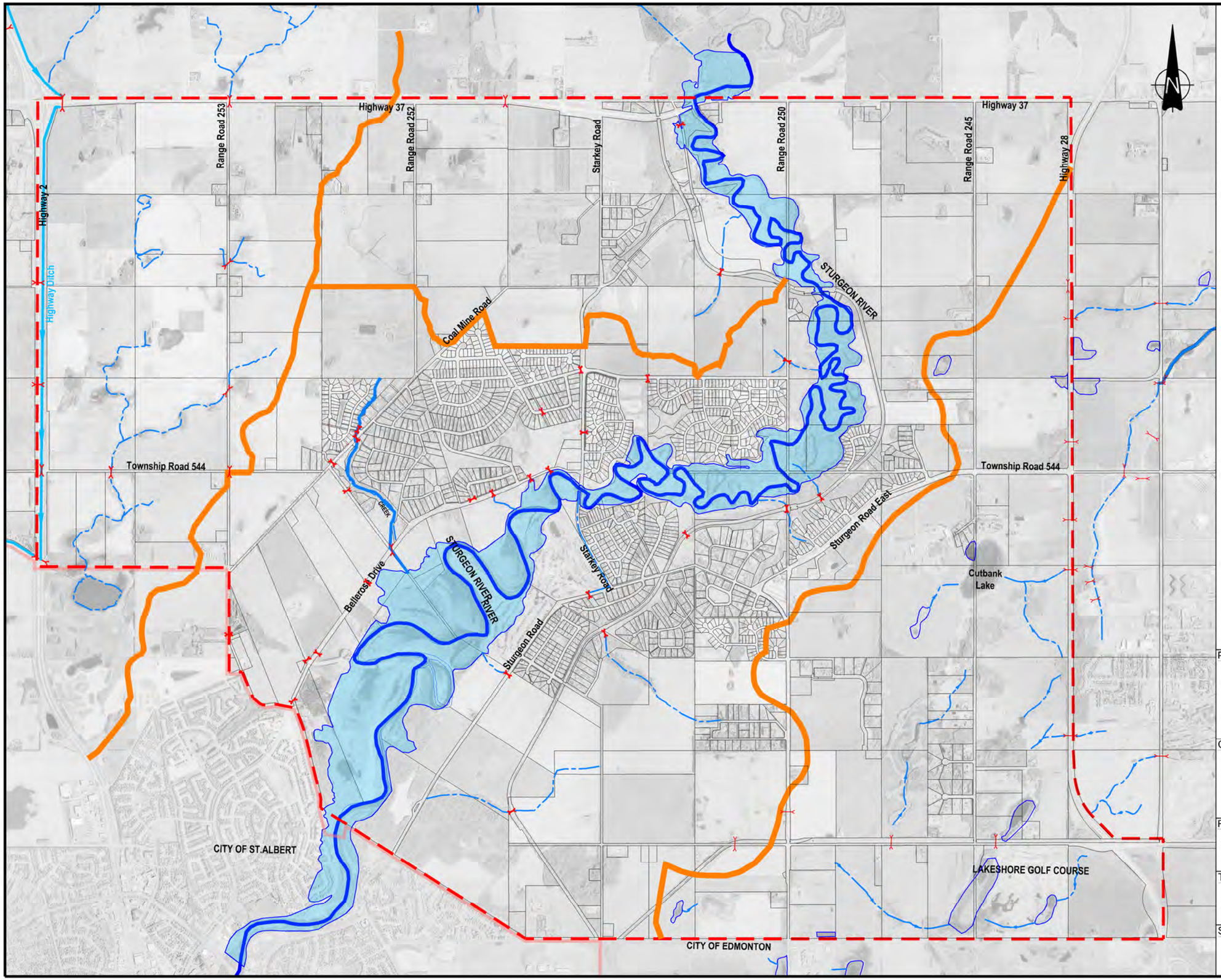
The existing infrastucture of the sturgeon valley area consists of storm sewers, ditches, stormwater management facilities, natural channels, and culvert crossings. In the developed areas of Sturgeon Valley, runoff is collected in storm sewers or ditches, conveyed to local stormwater management facilities, and discharged via natural channels into Sturgeon River. Controlling discharge into these channels to 2.5l/s/ha should limit flows in these channels to pre-development rates. As long as the outlets are designed properly, the risk of erosion should be unchanged.

The level of service provided by the culverts in the Sturgeon County study area is not consistent. However, it appears that all of the culverts examined have been in operation for some time and no concerns of flooding have been reported in any of them. Since stormwater management will aim to keep runoff rates at pre-development levels, the culvert should not require upgrading unless the basin areas change.

An existing ditch along Highway 2 serves as the main drainage channel for approximately 3,272 hectares, including Basin 4. This ditch drains across Highway 2 into a licensed ditch that flows into Carrot Creek, a tributary of Sturgeon River. This drainage system has served

the area for over 100 years, but as development increases runoff rates, erosion has become a concern in both the ditch and the creek.

A number of permanent ponds and wetlands were identified within Basin 5. These ponds and wetlands have a total permanent area of 16.7 hectares, and a seasonal flooding area of over 27 hectares.



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW
- PROPOSED OUTFALL LOCATION

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Client:

Sturgeon County

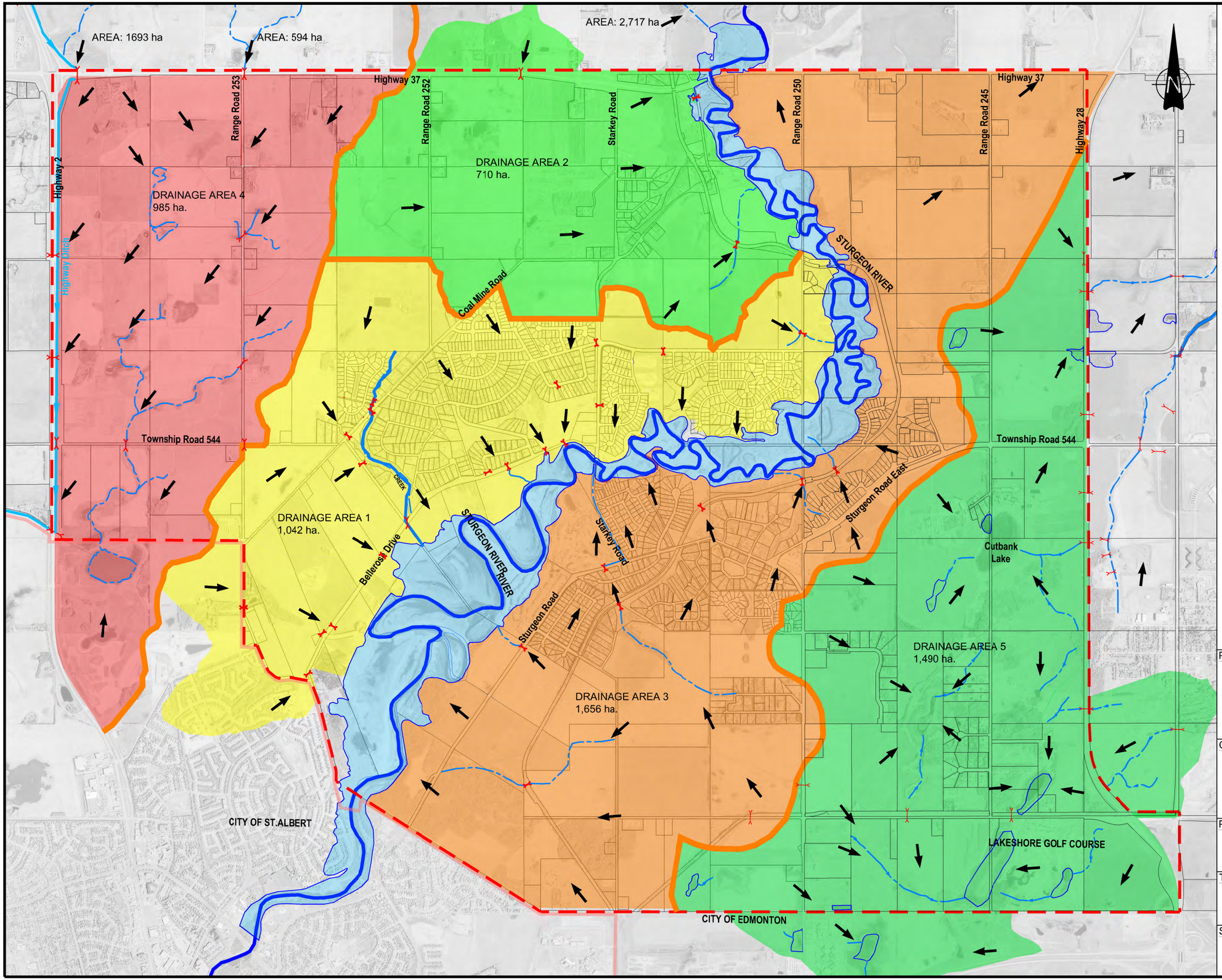
Project:

Sturgeon Valley Stormwater Update

Title:

Main Drainage Divides

Scale:	Figure:
1:32,000	3-1



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW
- DRAINAGE AREA 1 (1,042 ha)
- DRAINAGE AREA 2 (710 ha)
- DRAINAGE AREA 3 (1,656 ha)
- DRAINAGE AREA 4 (945 ha)
- DRAINAGE AREA 5 (1,490 ha)

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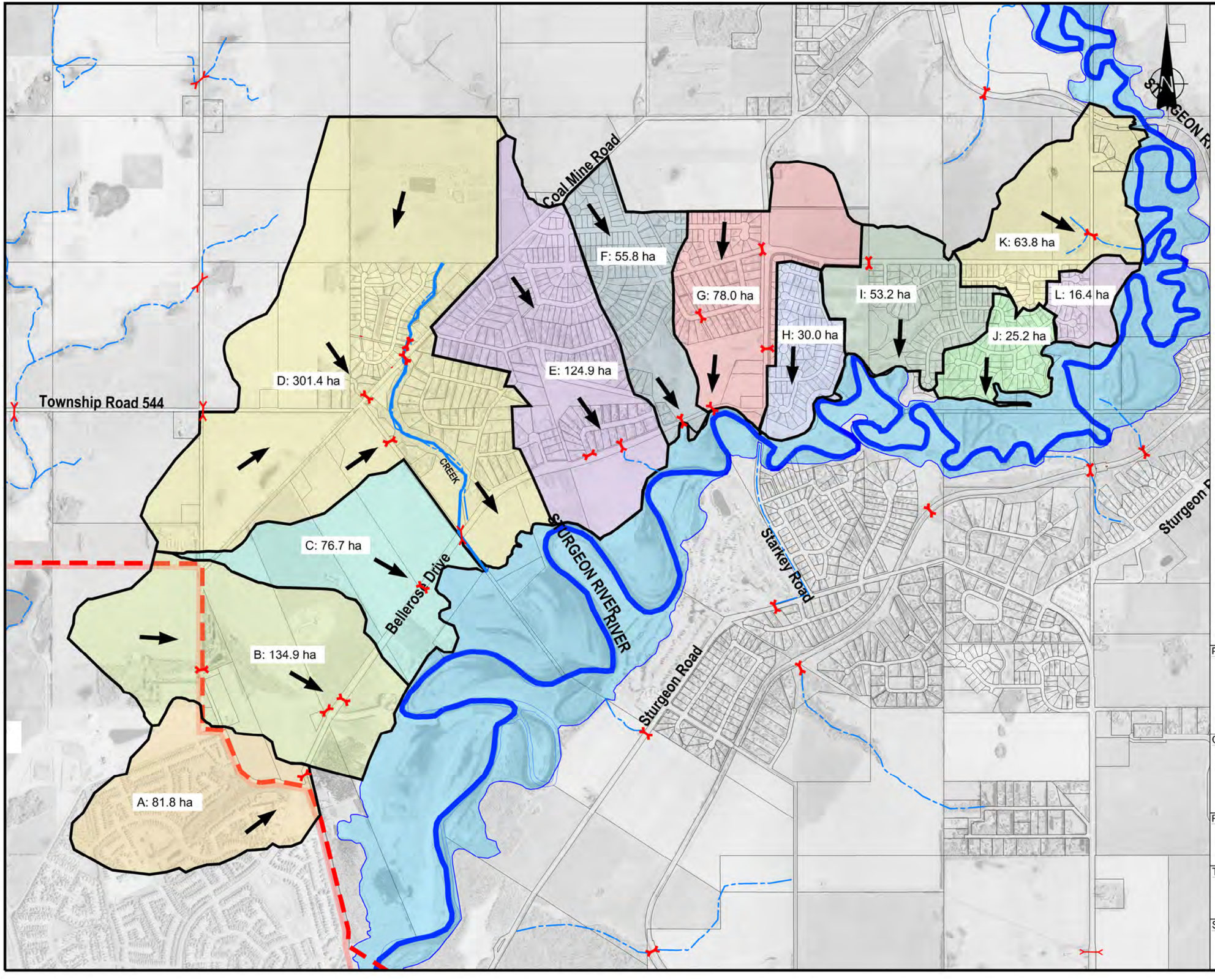
Client: Sturgeon County

Project: **Sturgeon Valley Stormwater Update**

Title: **Existing Drainage Basins**

Scale: **1:32,000**

Figure: **3-2**



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	81.8	65	100%	Residential
Basin B	134.9	10	100%	Agricultural
Basin C	76.7	10	100%	Agricultural
Basin D	301.4	21	35%	Residential
			65%	Agricultural
Basin E	124.9	40	100%	Residential
Basin F	55.8	34	79%	Residential
Basin G	78.0	26	52%	Residential
			48%	Agricultural
Basin H	30.0	40	100%	Residential
Basin I	53.2	31	69%	Residential
			31%	Agricultural
Basin J	25.2	40	100%	Residential
Basin K	63.8	17	23%	Residential
			77%	Agricultural
Basin L	16.4	40	100%	Residential

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Client:

Sturgeon County

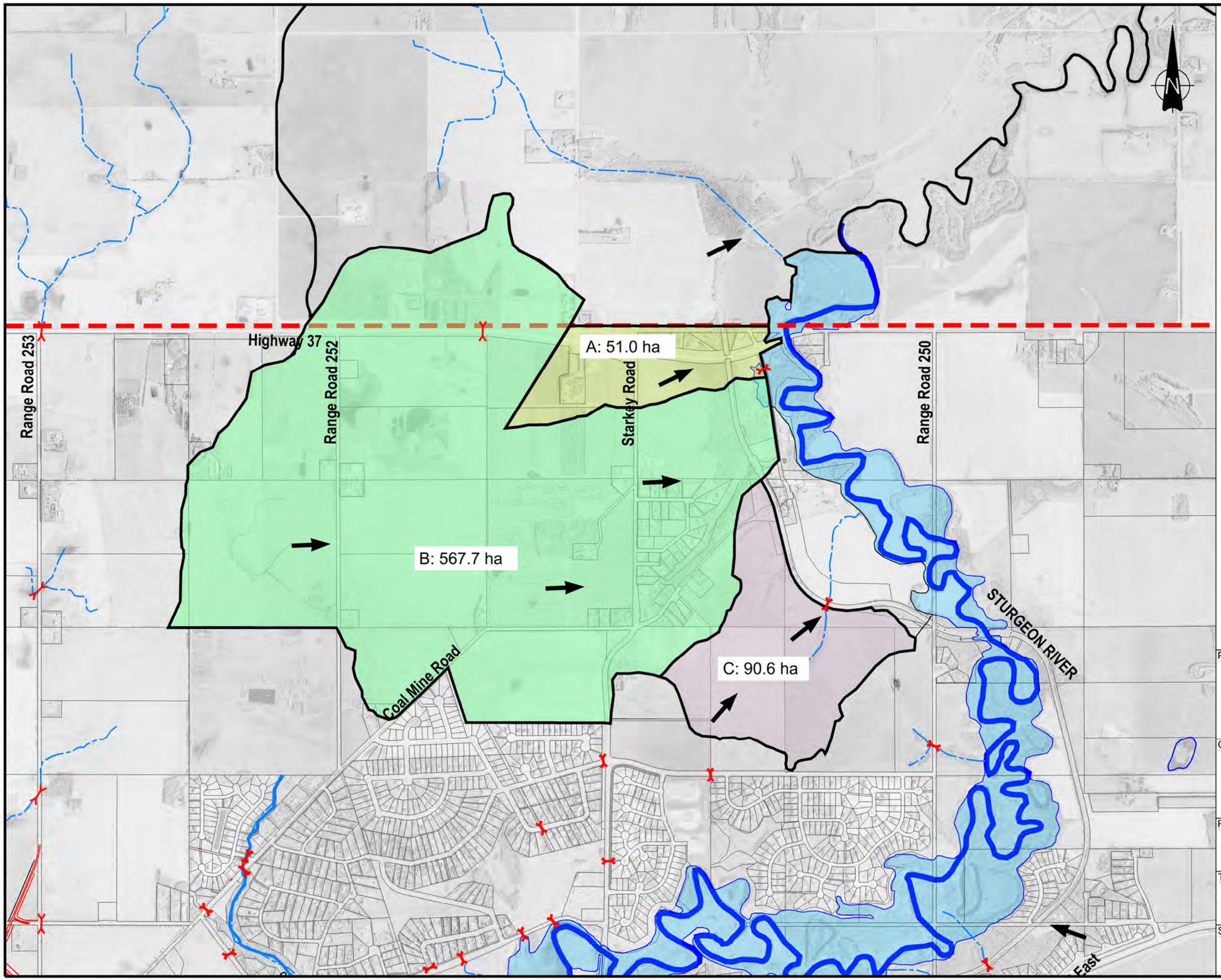
Project:

Sturgeon Valley Stormwater Update

Title:

Existing Drainage Basin #1

Scale:	Figure:
1:20,000	3-3



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	51.0	10	100%	Agricultural
Basin B	567.7	12	93%	Agricultural
			7%	Residential
Basin C	90.6	10	100%	Agricultural

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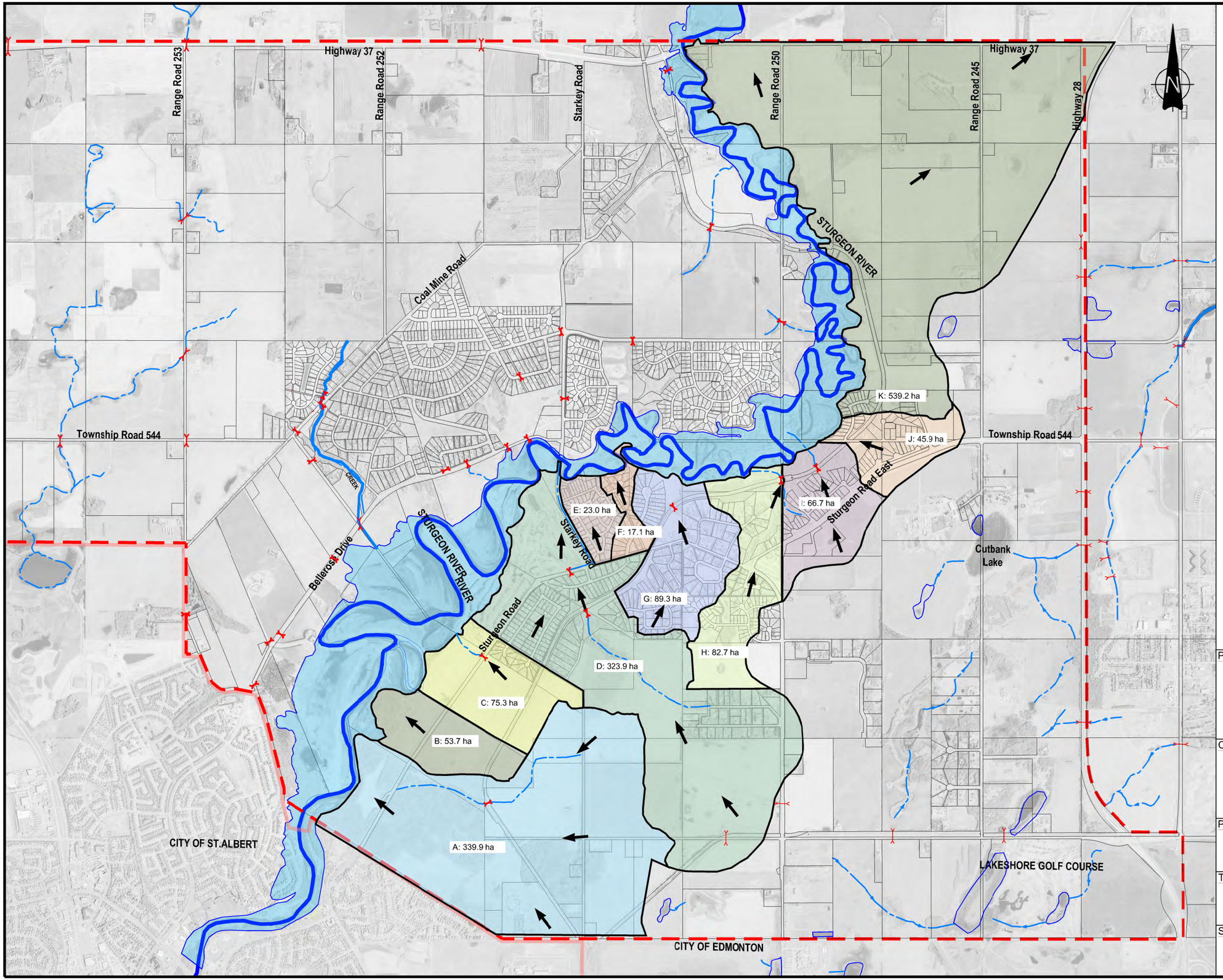
Client: Sturgeon County

Project: **Sturgeon Valley Stormwater Update**

Title: **Existing Drainage Basin #2**

Scale: **1:20,000**

Figure: **3-4**



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	339.9	10	100%	Agricultural
Basin B	53.7	10	100%	Agricultural
Basin C	75.3	13	10%	Residential
			90%	Agricultural
Basin D	323.9	24	47%	Residential
			53%	Agricultural
Basin E	23.0	40	100%	Residential
Basin F	17.1	40	100%	Residential
Basin G	89.3	40	100%	Residential
Basin H	82.7	40	100%	Residential
Basin I	66.7	19	31%	Residential
			69%	Agricultural
Basin J	45.9	27	58%	Residential
			42%	Agricultural
Basin K	539.2	11	2%	Residential
			98%	Agricultural

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Client:

Sturgeon County

Project:

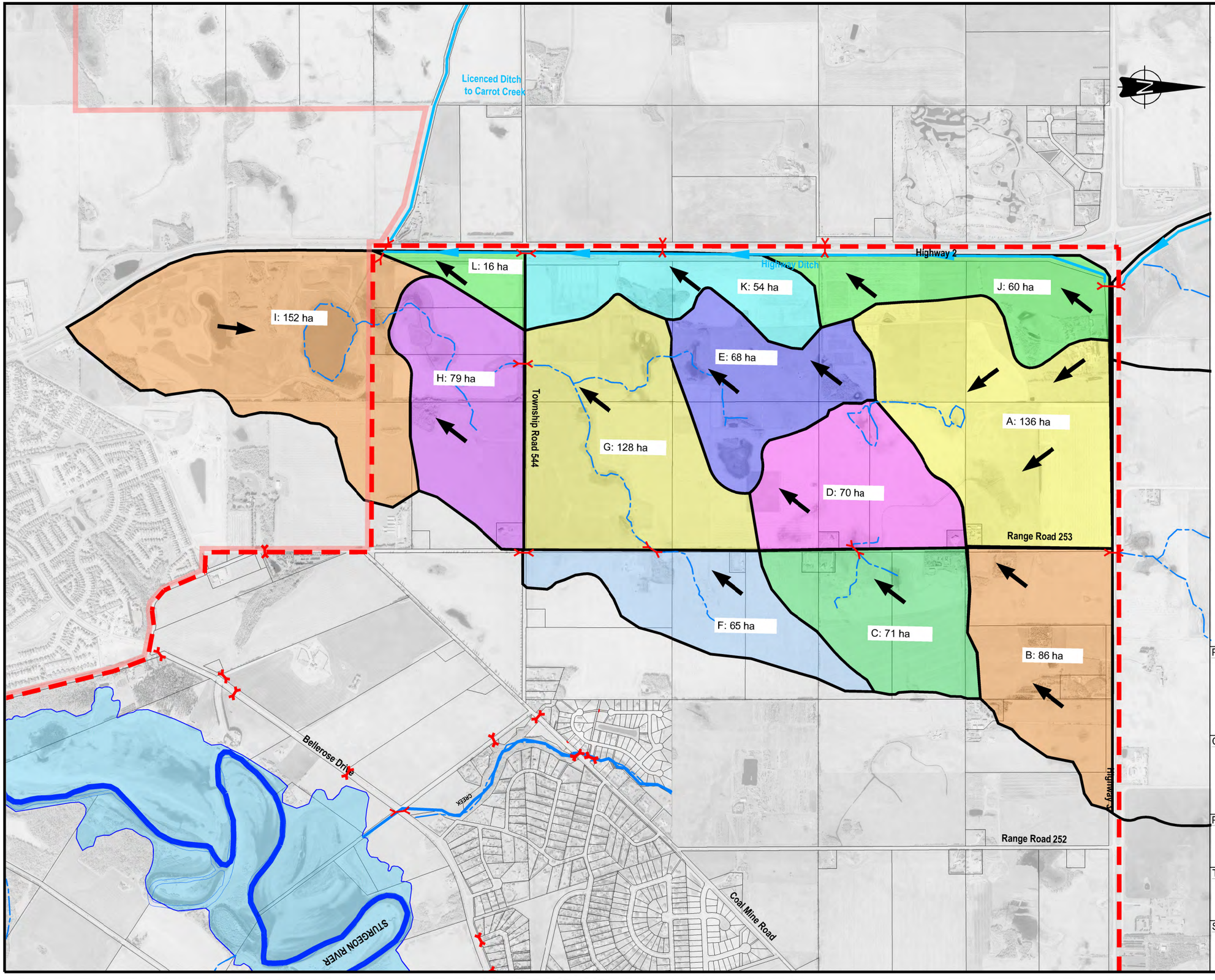
Sturgeon Valley Stormwater Update

Title:

Existing Drainage Basin #3

Scale: **1:30,000**

Figure: **3-5**



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	136	10	100%	Agricultural
Basin B	86	10	100%	Agricultural
Basin C	71	10	100%	Agricultural
Basin D	70	10	100%	Agricultural
Basin E	68	10	100%	Agricultural
Basin F	65	10	100%	Agricultural
Basin G	128	10	100%	Agricultural
Basin H	79	10	100%	Agricultural
Basin I	152	10	100%	Agricultural
Basin J	60	10	100%	Agricultural
Basin K	54	10	100%	Agricultural
Basin L	16	10	100%	Agricultural

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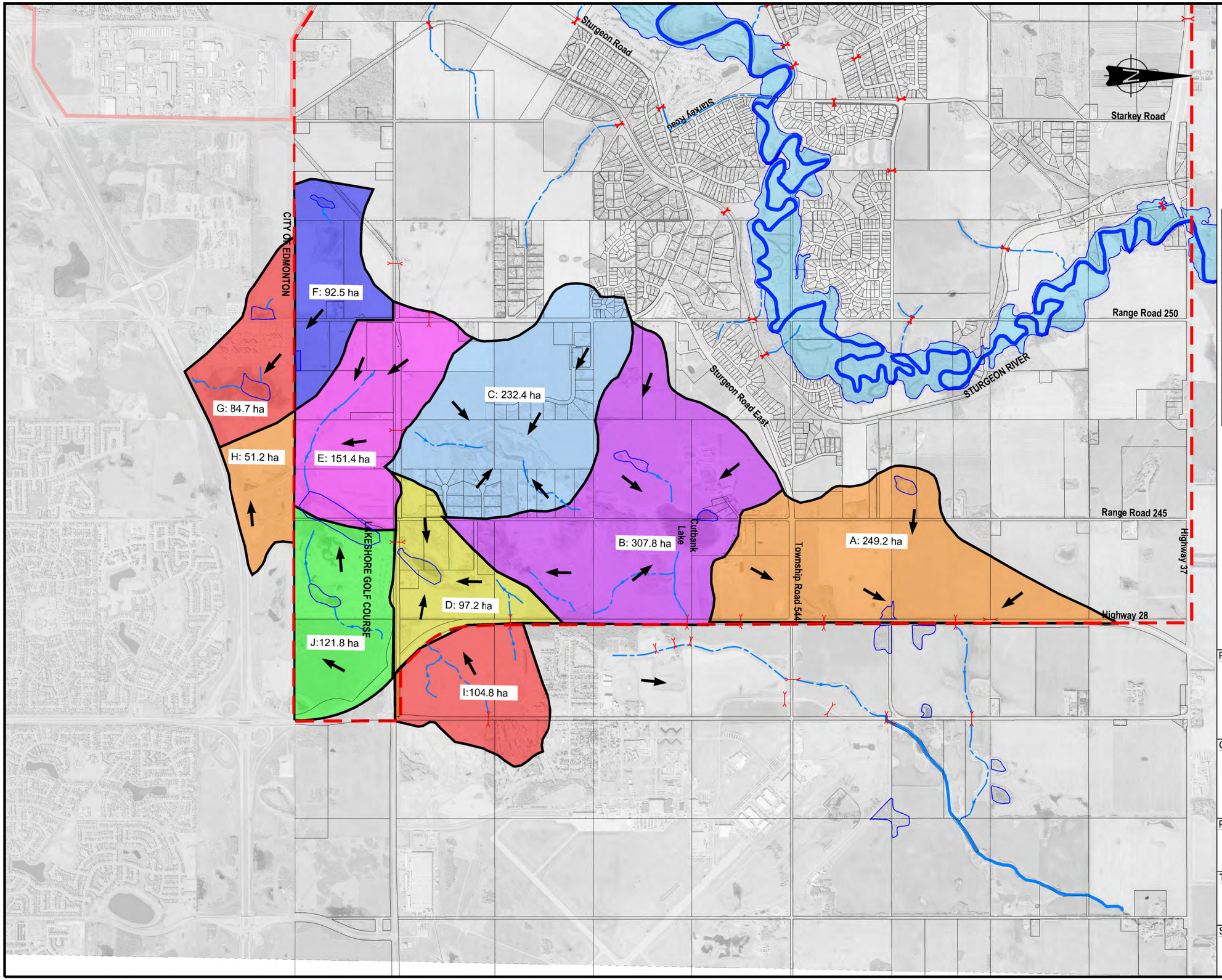
Client:
Sturgeon County

Project:
Sturgeon Valley Stormwater Update

Title:
Existing Drainage Basin #4

Scale:
1:20,000

Figure:
3-6



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW

Sub-basin No.	Area (ha)	Imperviousness (%)	Current Land Use	
Basin A	249.2	10	100%	Agricultural
Basin B	307.8	10	100%	Agricultural
Basin C	232.4	20	65%	Agricultural
			35	Residential
Basin D	97.2	10	100%	Agricultural
Basin E	151.4	10	100%	Agricultural
Basin F	92.5	10	100%	Agricultural
Basin G	84.7	10	100%	Agricultural
Basin H	51.2	10	100%	Agricultural
Basin I	104.8	10	100%	Agricultural
Basin J	121.8	10	100%	Agricultural

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Sturgeon County

Project:

Sturgeon Valley Stormwater Update

Title:

Existing Drainage Basin #5

Scale: **1:30,000**

Figure: **3-7**

4.0 Proposed Stormwater Management Plan

4.1 Overview

The Stormwater Management Plan has been developed using available design standards, existing topography and drainage patterns. Each sub-basin will require at least one stormwater management facility (SWMF), and in some cases more than one. The actual configuration may vary from basin to basin to suit the individual needs of each development.

Each of the proposed drainage basins is assumed to be graded such that the runoff is directed towards a stormwater management facility, or else designed with a storm sewer system that will do the same. Proposed locations of stormwater management facilities were identified based on the natural topography of the undeveloped lands, within local depressions where runoff will naturally collect already.

Stormwater management facilities and piping for existing developments, as outlined in Section 3, were not reevaluated. These developments have implemented stormwater management plans and already control runoff to rates approved at the time of development.

Other areas that were not included in the stormwater management plan are the existing golf courses and environmental natural areas. The existing golf courses are assumed to store all surface runoff on-site; utilizing it for irrigation purposes. Environmental lands are not developed areas and are mostly located close to Sturgeon River and at the southwest side of the study area. As such, the runoff generated by these areas will remain at pre-development rates or lower, and do not need to be controlled or stored.

The post development release rate for all study areas is to be kept at 2.5 L/s/ha. This is done to conform to the control criteria established by the Big Lake Drainage Study.

Six post development drainage basins have been developed with two drainage options for the west study area “West of Sturgeon River” and three drainage options for east side of the study area “East of Sturgeon River”.

4.2 General Design Criteria

The following design criterion has been used in the development of the overall Stormwater Management Plan. Additional criteria should be required for the design of individual stormwater management facilities

- Stormwater management facilities shall be designed to contain a 100-year rainfall event.
- Areas North of Highway 37 will provide storage for 100% of the surface runoff from the 100-year rainfall event, once the piped storm system is constructed.
- The maximum allowable discharge rate of stormwater management facilities is 2.5 L/s/ha. L/s/ha. This is done to conform to the control criteria established by the Big Lake Drainage Study.

4.3 Post-Development Stormwater Management Plan

4.3.1 General

The proposed stormwater drainage basins were delineated based on natural contours as well as land ownership. Upstream drainage basins outside of the study area were delineated where topographical information was available and external runoff is considered to be an important factor. As future development occurs, any contributing upstream development drainage areas will need to be considered in the design of the stormwater management plan. The collection system has been sized to accommodate future development of these upstream areas only for the western area of Sturgeon River. Any additional external stormwater runoff will need to be stored and discharged until after the proposed facilities of the study area have drained.

The ultimate drainage plan for Sturgeon County Study Area was developed around natural drainage patterns as much as possible. However, this was not always feasible for various reasons, such as the concern over the capacity of Carrot Creek, and areas located along Range Road 245, which generally do not have a definable drainage route. Other external factors impacted the development of the ultimate drainage plan as well, such as St. Albert boundaries, existing residential areas, and limitations of the existing drainage system.

The basin areas and the proposed land use for each of the proposed SWM facilities are presented below.

4.3.2 Drainage Improvements for the West Study Area

The West Study Area is bounded by Highway 2 to the West, Highway 37 to the north, Sturgeon River to the east, and City of St. Albert to the south. The west drainage area is approximately 1,872 ha with 594 ha located in the north side of Highway 37 and 1278 ha are located within the study area.

For current planning purposes, it is assumed that the lands (594 ha) located on the north side of Highway 37 currently draining through the area will continue to drain southerly, and will be managed with similar post development criteria as set-forth in this document. A series of SWMFs can provide runoff retention for individual developments, as shown in Figure 4-1. Each facility would likely occupy about 6% of the total development area.

In order to drain this area, two potential improvement options have been identified; both would include sewers directing water south along Range Road 253.

The two potential outlet locations are shown in Figure 4-1 and Figure 4-3, which will discharge to the Sturgeon River. It is proposed that a piped outlet facility with an outlet structure on the Sturgeon River be implemented for this purpose. Currently, there are no well-defined drainage courses and the majority of the runoff drains across private property towards the Sturgeon River or Carrot Creek.

It is assumed that the flows along the Highway 2 Ditch will continue discharging into Carrot Creek and will not be diverted to the proposed sewer system. Five post development drainage basins have been delineated for the west study area. The basins were delineated based on the existing topography and drainage patterns. The configuration may vary to suit future development. Two drainage options were developed to drain the proposed basins.

Drainage Option 1

For this option, shown in Figure 4-1 and Figure 4-2, runoff from basin 'B' will drain along Range Road 253 from Highway 37 to Sturgeon River where it collects in future pipes and discharges into the Sturgeon River through a main sewer system, which would have an approximate length of 5,550 m. This option will require at least 15 manholes and pipe diameters ranging from 1350 mm to 1800 mm. Culvert improvements at Coalmine Road and Bellerose Drive are also recommended. The proposed outlet for this option is located at 53.671099°N and 113.599862°E, and an elevation of 650.8 m.

This pipe does not serve sub-basin 'D', which will continue to drain through a natural channel. Although this channel is capable of conveying flows in its present condition, the velocities associated with the steep grade of the channel mean that the channel is unstable, and must be reinforced to serve as permanent drainage for the area.

A cost breakdown for this option is shown in Table 4-1. The estimated cost for the piping and new outfall facility is $37,478,450, and serve a gross area of 1,872 hectares, for a per gross hectare cost of $20,000. The estimated cost for erosion protection of the creek, including replacement of the existing culverts, is $1,973,169, and serves a gross undeveloped area of 200 hectares, at a cost of $9,900 per gross hectare. If taken together, the per hectare cost is $19,000 per hectare.

Each future developer will be required to construct a stormwater management facility to ensure the rate of discharge from the developed area is less than 2.5 L/s/ha. Each developer is also required to manage stormwater quality, as there is no opportunity for treatment between the developers and the River.

Table 4-1: Cost Estimate for West Study Area - Option 1

Item		Description	Quantity	Unit	Unit Price	Cost
1		**General Requirements**				**$180,000**
	1.1	Mobilization & Demobilization	1.0	L.S.	$ 150,000	$ 150,000
	1.2	Site Office Trailers	1.0	L.S.	$ 15,000	$ 15,000
	1.3	Site Engineering & Surveys	1.0	L.S.	$ 11,000	$ 11,000
	1.4	Project and Safety Signs	1.0	L.S.	$ 4,000	$ 4,000
2		**Gravity Main along Range Rd 253 from HWY 37 to TWS Rd 544**				**$11,286,715**
	2.1	Land Acquisition - 5m wide easement	1.61	ha	$ 148,000	$ 238,650
	2.2	1350mm Pipe (0m to 4m)	150.0	m	$ 1,650	$ 247,500
	2.3	1350mm Pipe (4m to 5m)	650.0	m	$ 1,900	$ 1,235,000
	2.4	1500mm Pipe (5m to 6m)	550.0	m	$ 2,650	$ 1,457,500
	2.5	1500mm Pipe (6m to 7m)	250.0	m	$ 3,200	$ 800,000
	2.6	1650mm Pipe (5m to 6m)	400.0	m	$ 2,850	$ 1,140,000
	2.7	1650mm Pipe (6m to 7m)	400.0	m	$ 3,400	$ 1,360,000
	2.8	1800mm Pipe (6m to 7m)	300.0	m	$ 4,250	$ 1,275,000
	2.9	1800mm Pipe (7m to 8m)	225.0	m	$ 5,350	$ 1,203,750
	2.10	1800mm Pipe (8m to 9m)	300.0	m	$ 6,450	$ 1,935,000
	2.11	2400mm Manhole	22.6	m	$ 4,350	$ 98,310
	2.12	2400mm Drop manhole	7.9	m	$ 10,000	$ 79,000
	2.13	3000mm Manhole	39	m	$ 5,550	$ 217,005
3		**Gravity Main along Range Rd 253 fromTWS Rd 544 to Coal Mine Rd**				**$4,526,138**
	3.1	Land Acquisition - 5m wide easement	0.41	ha	$ 148,000	$ 61,050
	3.2	1800mm Pipe (7m to 8m)	825.0	m	$ 5,350	$ 4,413,750
	3.3	3000mm Manhole	9.25	m	$ 5,550	$ 51,338
4		**Gravity Main from Coal Mine Rd to Sturgeon River**				**$11,809,766**
	4.1	Land Acquisition - 20m wide easement	2.94	ha	$ 148,000	$ 435,416
	4.2	1800mm Pipe (7m to 8m)	494.0	m	$ 5,350	$ 2,642,900
	5.2	1800mm Pipe (8m to 9m)	399.0	m	$ 6,450	$ 2,573,550
	4.3	1800mm Pipe (9m to 10m)	578.0	m	$ 7,550	$ 4,363,900
	4.4	3000mm Drop manhole	79.4	m	$ 10,000	$ 794,000
	4.5	Outfall (1800mm, sedimenter, power dissipation, wetland)	1	L.S.	$ 1,000,000	$ 1,000,000
5		**Unnamed Creek Improvements**				**$377,000**
		Culvert #40				
	5.1	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	5.2	Roadway Reclamation	1.0	Lump	$ 40,000	$ 40,000
	5.3	Culvert End Treatment (Flared Ends, Riprap, etc.)	2.0	ea.	$ 15,000	$ 30,000
		Culvert #41				
	5.4	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	5.5	Roadway Reclamation	1.0	Lump	$ 40,000	$ 40,000
	5.6	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 15,000	$ 30,000
		Culvert #50				
	5.7	Concrete Pipe: Supply and Install, 1000mm diam, Class III	46.0	m	$ 1,400	$ 65,000
	5.8	Roadway Reclamation	1.0	Lump	$ 60,000	$ 60,000
	5.9	Culvert End Treatment, Flared Ends, Riprap, etc.	4.0	ea.	$ 15,000	$ 60,000
6		**Erosion Protection**				**$1,085,000**
	6.1	Gabion Mat	500	m	$ 2,000	$ 1,000,000
	6.2	Gabion Mat Under Drain, Gravel	500	m	$ 120	$ 60,000
	6.3	Environmental Approvals	1	Lump	$ 25,000	$ 25,000
Total						**$28,179,619**
		Contingency			25%	**$7,045,000**
		Engineering			15%	**$4,227,000**
Grand Total						**$39,451,619**

Note: Manhole spacing is based on City of Edmonton Standards

Drainage Option 2

Option 2, shown in Figure 4-3, collects runoff through a main pipe system located along Range Road 253 from Highway 37 to Township Road 544. At this point, a new pipe along Township Road 544 will convey flows to where they can be discharged to the Sturgeon River via the existing channel at Range Road 252C. The benefiting area of this trunk would be about 1,792 hectares.

This drainage option requires the installation of about 4,300 m of pipe, and 1,100 meters of ditch improvements. This option will require at least 10 manholes and pipe diameters will range from 1350 mm to 1800 mm. This option also includes improvements to culverts at Coal mine Road and Bellerose Drive. This option does not require a new outfall at the river, but there is a good opportunity to implement stormwater quality improvement wetlands where the existing ditch reaches the river.

In this option, the upgrades to the existing channel are an integral component of the storm trunk system, so basin 'D' is included in the benefiting area. Sub-basin B-10, however, is not included in the benefiting area, and would require a separate outlet to Sturgeon River. The benefiting area of this option is therefore approximately 1,992 hectares, plus 87.5 hectares of already developed land.

The estimated cost for the piping, ditch improvements, and outlet facility is $21,459,357, or $10,793 per gross hectare. The details of this estimate are presented in Table 4-2.

Comparison of Options for West Study Area

The first option will require the construction of a new outfall, south of the proposed service area, before any other parts of the trunk can be finished, while the second option requires no new outfall, and the construction can start immediately at the south part of the service area.

Both options will require improvements to existing culverts, and existing drainage paths, and both options will work best if development occurs contiguously from south to north to allow staging.

Option 2 provides no benefit to about 80 hectares of the west area. However, this excluded area is the planned route of the future 127th Street alignment, and will likely have different drainage requirements than the other areas. Option 2 also allows the opportunity of water quality improvement prior to discharge to the river.

Option 2 is selected because it can be completed for the lowest overall cost, and significantly less initial costs for the first phase of construction.

Table 4-2: Cost Estimate for West Study Area - Option 2

Item		Description	Quantity	Unit	Unit Price	Cost
1	General Requirements					$180,000
	1.1	Mobilization & Demobilization	1.0	L.S.	$ 150,000	$ 150,000
	1.2	Site Office Trailers	1.0	L.S.	$ 15,000	$ 15,000
	1.3	Site Engineering & Surveys	1.0	L.S.	$ 11,000	$ 11,000
	1.4	Project and Safety Signs	1.0	L.S.	$ 4,000	$ 4,000
2	Gravity Main along Range Rd 253 from HWY 37 to TWS Rd 544					$11,286,715
	2.1	Land Acquisition - 5m wide easement	1.61	ha	$ 148,000	$ 238,650
	2.2	1350mm Pipe (0m to 4m)	150.0	m	$ 1,650	$ 247,500
	2.3	1350mm Pipe (4m to 5m)	650.0	m	$ 1,900	$ 1,235,000
	2.4	1500mm Pipe (5m to 6m)	550.0	m	$ 2,650	$ 1,457,500
	2.5	1500mm Pipe (6m to 7m)	250.0	m	$ 3,200	$ 800,000
	2.6	1650mm Pipe (5m to 6m)	400.0	m	$ 2,850	$ 1,140,000
	2.7	1650mm Pipe (6m to 7m)	400.0	m	$ 3,400	$ 1,360,000
	2.8	1800mm Pipe (6m to 7m)	300.0	m	$ 4,250	$ 1,275,000
	2.9	1800mm Pipe (7m to 8m)	225.0	m	$ 5,350	$ 1,203,750
	2.10	1800mm Pipe (8m to 9m)	300.0	m	$ 6,450	$ 1,935,000
	2.11	2400mm Manhole	22.6	m	$ 4,350	$ 98,310
	2.12	2400mm Drop manhole	7.9	m	$ 10,000	$ 79,000
	2.13	3000mm Manhole	39	m	$ 5,550	$ 217,005
3	Gravity Main along Range Rd 253 from Coal Mine Rd to TWS Rd 544					$1,883,550
	3.1	Land Acquisition - 5m wide easement	0.41	ha	$ 148,000	$ 61,050
	3.2	750mm Pipe (5m to 6m)	825.0	m	$ 2,100	$ 1,732,500
	3.3	1500mm Manhole	30.0	m	$ 3,000	$ 90,000
4	Gravity Main along TWS Rd 544 from Range Rd 253 to Range Rd 252C					$6,504,013
	4.1	Land Acquisition - 20m wide easement	0.91	ha	$ 148,000	$ 134,088
	4.2	1800mm Pipe (6m to 7m)	251.0	m	$ 4,250	$ 1,066,750
	4.3	1800mm Pipe (8m to 9m)	808.0	m	$ 6,450	$ 5,211,600
	4.4	3000mm Manhole	16.5	m	$ 5,550	$ 91,575
5	Ditch					$1,552,092
	5.1	Land Acquisition (10m wide easement)	0.6	ha	$ 148,000	$ 87,468
	5.2	Topsoil - Stripping (30cm thickness)	1329.8	m3	$ 7	$ 9,308
	5.3	Subsoil - Stripping (30cm thickness)	1010.6	m3	$ 7	$ 7,074
	5.4	Subsoil - Disposal	1010.6	m3	$ 7	$ 7,074
	5.5	Overburden - Excavation	822.6	m3	$ 7	$ 5,758
	5.6	Overburden - Disposal	822.6	m3	$ 7	$ 5,758
	5.7	Topsoil - Placement	1010.6	m3	$ 7	$ 7,074
	5.8	Landscaping and Enhancements	0.6	ha	$ 33,000	$ 19,503
	5.9	Hydro - Seeding	0.6	ha	$ 5,200	$ 3,073
	5.10	Erosion Protection for natural ditch(400m)	1	L.S.	$ 400,000	$ 400,000
	5.11	Outfall (sedimenter, power dissipation, wetland)	1	L.S.	$ 1,000,000	$ 1,000,000
6	Unnamed Creek Improvements					$426,000
		Culvert #40				
	6.1	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	6.2	Roadway Reclamation	1.0	ump Su	$ 40,000	$ 40,000
	6.3	Culvert End Treatment (Flared Ends, Riprap, etc.)	2.0	ea.	$ 15,000	$ 30,000
		Culvert #41				
	6.4	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	6.5	Roadway Reclamation	1.0	ump Su	$ 40,000	$ 40,000
	6.6	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 15,000	$ 30,000
		Culvert #50				
	6.7	Concrete Pipe: Supply and Install, 1950mm diam, Class III	23.0	m	$ 5,800	$ 134,000
	6.8	Roadway Reclamation	1.0	ump Su	$ 60,000	$ 60,000
	6.9	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 20,000	$ 40,000
7	Erosion Protection					$1,085,000
	7.1	Gabion Mat	500.0	m	$ 2,000	$ 1,000,000
	7.2	Gabion Mat Under Drain, Gravel	500.0	m	$ 120	$ 60,000
	7.3	Environmental Approvals	1.0	ump Su	$ 25,000	$ 25,000
Total						$15,328,357
		Contingency			25%	$3,832,000
		Engineering			15%	$2,299,000
Grand Total						$21,459,357

Note: Manhole spacing is based on City of Edmonton Standards

Improvements to the West of Highway 2

Sameng evaluated the options included in the “Stormwater Management Benefitting Lands Proposed Schedule N” drawing proposed by ISL Engineering. The ISL proposal suggests collecting the runoff from the west and east sides of Highway 2 that falls into St. Albert territory along with the runoff that falls into Sturgeon County.

The presented options could manage inflow west of Highway 2 into our study area; however, this may require the construction of a deeper/larger storm sewer. For the Option 1, the connection point will be located on the intersection of range Road 253 and Coal Mine Road. For Option 2, the connection point will be located on the intersection of Range Road 253 and Township Road 544. The estimated costs for Option 1 and Option 2 are revised to $42,455,619 and $23,852,157 respectively, in order to collect inflow west of Highway 2.

4.3.1 Drainage Improvements for the East Study Area

The East Study Area is bounded by Sturgeon River to the West, Highway 28 to the East, Highway 37 to the North, and the City of Edmonton to the South. This area roughly encompasses the existing Drainage Area 5, but excludes some areas at the fringe so that the basin can be delineated following section boundaries. The post-development drainage basins, as shown in Figure 4-6, have a total area of 1,315 hectares.

As mentioned in §3.4.6, the existing flow pattern of the runoff in this Drainage Area has two types. In the northern section of the drainage area, runoff crosses Highway 28 through culverts and ultimately reaches the unnamed creek which connects to Sturgeon River in the northeast.

In the southern part of the drainage area, drainage tends to collect in various trapped low areas, some of which are continually wet. Of particular note in the area is Cutbank Lake. This lake has a variable area, dependent on annual rainfall volumes. The size of the lake has been observed to be as small as 1 hectare, and as large as 9 hectares during wet years. This lake can be managed to provide consistent storage and water-quality management, and also provide an opportunity for the shore of the lake to be developed. Managing this wetland may also reduce potential impacts of waterfowl on the nearby airfield. It is recommended that the area north of Sturgeon Road (192 hectares) continue to drain across Highway 28 towards the existing unnamed watercourse. Three options were developed to drain the area south of Sturgeon Road, encompassing about 1,150 hectares.

Taking into account the existing flow pattern, six post development drainage basins were developed with 12 stormwater management facilities for the study area as is shown in Figure 4-6. Each basin will likely require at least a stormwater management facility due to topography. However; the actual configuration may vary to suit development proposals.

In order to drain each drainage basin, three drainage options were developed.

Drainage Option 1

For this option, shown in Figure 4-7, runoff from the southern basins will drain along Range Road 245 towards Cutbank Lake through a new channel starting at the Lakeshore Golf Course in the south. The channel, as well as a new outlet on the south side of Cutbank Lake, will drain west to a pipe inlet to be installed in SE19-54-24 W4. This pipe will convey flows to a natural drainage channel north of Sturgeon Road East.

This option will require the construction of 2,450 meters of new drainage channel, as well as 1,550m of new 1650 mm diameter storm trunk. An additional 1,400 meters of smaller 900 mm diameter trunk will be required to convey flows to the ditch. At least 11 manholes will be required for this option. The outfall for this option can be located at 53.684304^{o} N, 113.541095^{o} E, at an elevation of 664m.

This option serves a total drainage area of 1,120 hectares, including about 80 hectares East of Highway 28 (sub-basin D-3), which naturally drains through the area. Sub-basin 'A' is not served by this option.

The estimated cost for the piping, ditch and outlet facility is $16,339,202 ($14,600 per gross hectare). Details of this cost estimate are shown in Table 4-3.

Drainage Option 2

For this option, shown in Figure 4-8, runoff will drain along Range Road 245 from the Lakeshore Golf Course to Cutbank Lake, using a future ditch with an approximate length of 2640 m and an average depth of 2.8m. From Cutbank Lake, a forcemain and liftstation would be required to pump water over a ridge, as shown in Figure 4-8. This forcemain would able to operate as a syphon, without the need of active pumping, once the pipe reaches minimum pressure. The discharge from this pipe is then released into a natural ditch towards Sturgeon River. This option uses the same outfall location presented in Option 1.

The forcemain can be staged to provide capacity as the service area develops. The initial phase would require the installation of a 675 mm diameter forcemain. Two additional 825 mm diameter mains would be required to service the ultimate development of the area.

The estimated total cost for the piping, ditch and outlet facility is $15,465,669 ($13,808 per gross hectare served), but phases of the forcemain/syphon that comprise $6,098,960 of this cost, these can be delayed until development progresses. Details of this cost estimate are shown in Table 4-4.

Table 4-3: Cost Estimate for East Study Area - Option 1

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$145,000**
	1.1	Mobilization & Demobilization	1	L.S.	$120,000	$120,000
	1.2	Site Office Trailers	1	L.S.	$13,000	$13,000
	1.3	Site Engineering & Surveys	1	L.S.	$8,000	$8,000
	1.4	Project and Safety Signs	1	L.S.	$4,000	$4,000
2	**Main Ditch From Long Lake (1m to 4m Depth, 2450m long)**					**$2,546,306**
	2.1	Easement Acquisition (25m wider)	6.1	ha	$148,000	$906,500
	2.2	Topsoil - Stripping (30cm thickness)	13547	m^3	$7	$94,831
	2.3	Subsoil - Stripping (30cm thickness)	12224	m^3	$7	$85,570
	2.4	Subsoil - Disposal	12224	m^3	$7	$85,570
	2.5	Overburden - Excavation	51879	m^3	$7	$363,155
	2.6	Overburden - Disposal	51879	m^3	$7	$363,155
	2.7	Culvert Disposal (900mm)	26	m	$170	$4,420
	2.8	900 mm Culvert	26	m	$550	$14,300
	2.9	Topsoil - Placement	13547	m^3	$7	$94,831
	2.10	Landscaping and Enhancements	6.1	ha	$33,000	$202,125
	2.11	Hydro - Seeding	6.1	ha	$5,200	$31,850
	2.13	Erosion Protection	1	L.S.	$300,000	$300,000
3	**Main Pipe**					**$7,226,503**
	3.1	Easement Acquisition (5m Wide)	0.8	ha	$148,000	$118,400
	3.2	1650mm Pipe (0m to 4m)	59	m	$2,700	$158,706
	3.3	1650mm Pipe (4m to 6m)	365	m	$2,850	$1,040,051
	3.4	1650mm Pipe (6m to 7m)	83	m	$3,400	$283,390
	3.5	1650mm Pipe (7m to 10m)	472	m	$4,000	$1,886,920
	3.6	1650mm Pipe (>10m)	562	m	$4,600	$2,583,636
	3.7	3000 mm Manhole	28	m	$5,550	$155,400
	3.8	Outfall (sedimenter, power dissipation, wetland)	1	L.S.	$1,000,000	$1,000,000
4	**Cutbank Lake Pipe**					**$797,590**
	4.1	Easement Acquisition (5m Wide)	0.3	ha	$148,000	$37,000
	4.2	900mm Pipe (0m to 4m)	97	m	$1,000	$97,470
	4.3	900mm Pipe (4m to 6m)	394	m	$1,500	$590,520
	4.4	1800 mm Manhole	22	m	$3,300	$72,600
5	**Minor Pipe Connects to Main Ditch**					**$955,460**
	5.1	Easement Acquisition (5m Wide)	0.2	ha	$148,000	$36,260
	5.2	900mm Pipe (0m to 4m)	840	m	$1,000	$840,000
	5.3	1800mm Manhole	24	m	$3,300	$79,200
Total						**$11,670,858**
	Contingency				25%	**$2,917,715**
	Engineering				15%	**$1,750,629**
Grand Total						**$16,339,202**

Table 4-4: Cost Estimate for East Study Area - Option 2

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$160,000**
	1.1	Mobilization & Demobilization	1	L.S.	$130,000	$130,000
	1.2	Site Office Trailers	1	L.S.	$15,000	$15,000
	1.3	Site Engineering & Surveys	1	L.S.	$11,000	$11,000
	1.4	Project and Safety Signs	1	L.S.	$4,000	$4,000
2	**Main Ditch From Long Lake (1m to 4m Depth, 2450m Long)**					**$3,725,239**
	2.1	Easement Acquisition (25m wider)	6.6	ha	$148,000	$973,100
	2.2	Topsoil - Stripping (30cm thickness)	14697	m^3	$7	$102,882
	2.3	Subsoil - Stripping (30cm thickness)	13277	m^3	$7	$92,941
	2.4	Subsoil - Disposal	13277	m^3	$7	$92,941
	2.5	Overburden - Excavation	57047	m^3	$7	$399,330
	2.6	Overburden - Disposal	57047	m^3	$7	$399,330
	2.7	Culvert Disposal (900mm)	26	m	$170	$4,420
	2.8	900 mm dia. Culvert	26	m	$550	$14,300
	2.9	Topsoil - Placement	13547	m^3	$7	$94,831
	2.10	Landscaping and Enhanment	6.6	ha	$33,000	$216,975
	2.11	Hydro - Seeding	6.6	ha	$5,200	$34,190
	2.12	Outfall (sedimenter, power dissipation, wetland)	1	L.S.	$1,000,000	$1,000,000
	2.13	Erosion Protection	1	L.S.	$300,000	$300,000
3	**Siphon Pipe (Phase 1)**					**$1,724,418**
	3.1	Easement Acquisition (5m Wide)	0.8	ha	$148,000	$114,700
	3.2	675mm Pipe (0m to 4m)	2000	m	$500	$1,000,000
	3.3	MH 3m Slab Top/Base (2.45m Depth)	1	each	$5,000	$5,000
	3.4	MH Vertical Tunneling Excavation	18	m	$2,000	$36,000
	3.5	3m MH Installation&Grovel Base&Back Fill	2.5	m	$5,000	$12,500
	3.6	MH 2.1m Slab Top/Base (2.45m Depth)	1	each	$3,000	$3,000
	3.7	1.2m x 1.22m Barrel	18	m	$807	$11,907
	3.8	1.2m x 1.22m Barrel Installation	18	m	$2,800	$41,311
	3.9	Vacuum Pump	1	each	$500,000	$500,000
4	**Cutbank Excavation (2m Live, 2m Dead)**					**$124,650**
	4.1	Lake Surface Easement Acquisition	0.2	ha	$148,000	$33,300
	4.2	Lake Excavation	13050	m^3	$7	$91,350
5	**Minor Pipe Connects to Main Ditch**					**$956,200**
	5.1	Easement Acquisition (5m Wide)	0.3	ha	$148,000	$37,000
	5.2	900mm Pipe (0m to 4m)	840	m	$1,000	$840,000
	5.3	1800mm Manhole	24	m	$3,300	$79,200
6	**Siphon Pipe (Phase 2 and 3)**					**$4,356,400**
	6.1	825mm Pipe (0m to 4m) (Phase 2)	2000	m	$750	$1,500,000
	6.2	Vacuum Pump	1	each	$500,000	$500,000
	6.3	825mm Pipe (0m to 4m) (Phase 3)	2000	m	$750	$1,500,000
	6.4	Vacuum Pump	1	each	$500,000	$500,000
	6.5	1800mm Manhole	108	m	$3,300	$356,400
Total						**$11,046,907**
		Contingency			25%	**$2,761,727**
		Engineering			15%	**$1,657,036**
Grand Total						**$15,465,669**

Drainage Option 3

For this option, shown in Figure 4-9, runoff will drain through a future ditch along Range Road 245 from the Lakeshore Golf Course to Cutbank Lake. A new channel from Cutbank Lake will be constructed to the East, crossing Sturgeon Road and Highway 28, and ultimately discharging into a natural water course.

This option will have a main outfall located in the unnamed creek. The final location of the outfall may vary to suit future development needs.

This option involves substantial modifications to an existing watercourse, which may alter the characteristics of that creek in unknown ways. Even with flows limited to 2.5l/s/ha, the discharge to the existing creek may be significantly changed from existing patterns.

This option provides direct benefit to part of sub-basin 'A', for a total area of 1,185 hectares.

The estimated cost for the, channel upgrades, ditch and outfall is $13,080,089 ($11,400 per gross hectare). Details of this estimate are shown in Table 4-5.

Table 4-5: Cost Estimate for East Study Area - Option 3

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$145,000**
	1.1	Mobilization & Demobilization	1	L.S.	$120,000	$120,000
	1.2	Site Office Trailers	1	L.S.	$13,000	$13,000
	1.3	Site Engineering & Surveys	1	L.S.	$8,000	$8,000
	1.4	Project and Safety Signs	1	L.S.	$4,000	$4,000
2	**Main Ditch From Long Lake**					**$8,242,461**
	2.1	Easement Acquisition	14.6	ha	$20,000	$292,500
	2.2	Topsoil - Stripping (30cm thickness)	33233	m^3	$7	$232,631
	2.3	Subsoil - Stripping (30cm thickness)	30004	m^3	$7	$210,026
	2.4	Subsoil - Disposal	30004	m^3	$7	$210,026
	2.5	Overburden - Excavation	133946	m^3	$7	$937,623
	2.6	Overburden - Disposal	133946	m^3	$7	$937,623
	2.7	Culvert Disposal (900mm)	66	m	$170	$11,220
	2.8	900 mm dia. Culvert	26	m	$550	$14,300
	2.9	Topsoil - Placement	33233	m^3	$7	$232,631
	2.10	Hydro - Seeding	14.6	ha	$5,200	$76,050
	2.11	Highway 28 Crossing	1	each	$2,000,000	$2,000,000
	2.12	Culvert (Microtunnelling)	80.0	m	$13,000	$1,040,000
	2.13	Detail Field Survey	144	hour	$103	$14,832
	2.14	Erosion Protection	1	L.S.	$1,000,000	$1,000,000
	2.15	Landscaping and Enhancements	1.0	ha	$33,000	$33,000
	2.16	Outfall (sedimenter, power dissipation, wetl	1.0	L.S.	$1,000,000	$1,000,000
3	**Minor Pipe Connects to Main Ditch**					**$955,460**
	3.1	Easement Acquisition (5m Wide)	0.2	ha	$148,000	$36,260
	3.2	900mm Pipe (0m to 4m)	840	m	$1,000	$840,000
	3.3	1800mm Manhole	24	m	$3,300	$79,200
Total						**$9,342,921**
	Contingency				25%	**$2,335,730**
	Engineering				15%	**$1,401,438**
Grand Total						**$13,080,089**

Comparison of Options for the East Study Area

For the East Study Area, Option 1 is the most conventional, but is also the most expensive. The downstream pipe would need to be completed prior to any development, and carried potentially high volumes to an existing area of development. Option 2 is more innovative, as this type of syphon forcemain is rarely used in the Capital Region. It provides cost savings in both initial construction, and final staging, and provides the best fit for current development plans. The third option has the lowest overall estimated cost, and serves a slightly larger area than the other options; however, it involves several unknowns related to land acquisition and right-of-ways, which may increase the final cost. The option has technical and environmental challenges, and may not fit well with current development plans.

Option 2 is regarded as the best option for serving the East Study Area, due to a lower initial cost, greater flexibility in alignment and staging, and opportunities for environmental enhancement.

4.4 Storm Water Retention Ponds

The possible stormwater management facilities are shown in Figure 4-1 and Figure 4-6. As these facilities are ultimately the responsibility of the individual developers, their final location, number and shape are subject to change. Regardless of final design, all stormwater management facilities should have storage necessary to achieve the 2.5 L/s/ha post development release rate.

Table 4-6 presents a summary of the delineated basins, their estimated storage required and the anticipated peak discharge rates. These estimates are based on the 100-year, 24-hour storm event.

In the west area, the storm ponds will connect by outlet pipe to the storm trunk through designated connection points. These connections will be the responsibility of the developer. In the East area, connections from existing ponds, that will serve as management facilities will be part of the main system. Figure 4-10 shows potential connection profiles from existing ponds. For the recommended option, an additional pipe from Cutbank Lake is not required, as flows will be directed through the lake as part of the system.

Table 4-6: Post Development Retention Ponds

Basin No.	Basin Area (ha)	Imperviousness (%)	Water Retention Pond		
			Outflow Release Rate		Storage Capacity
			(L/s/ha)	(m^3/s)	(m^3)
West Study Area					
Basin B-1	64.8	40	2.5	0.162	38000
Basin B-2	64.4	40	2.5	0.161	39000
Basin B-3	64.5	40	2.5	0.162	38000
Basin B-4	65.0	40	2.5	0.165	74000
Basin B-5	126.2	40	2.5	0.316	75000
Basin B-6	131.8	40	2.5	0.330	78000
Basin B-7	131.7	40	2.5	0.329	78200
Basin B-8	135.1	40	2.5	0.338	79900
Basin B-9	134.8	40	2.5	0.340	80400
Basin B-10	79.5	40	2.5	0.199	49360
Basin D-1*	87.5	N/A	N/A	N/A	N/A
Basin D-2	73.8	40	2.5	0.185	45330
Basin D-3	59.1	40	2.5	0.148	36060
Basin D-4	60.9	40	2.5	0.152	37560
East Study Area					
Basin A-1	64.7	40	2.5	0.162	40090
Basin A-2	64.8	40	2.5	0.162	40100
Basin A-3	64.6	40	2.5	0.162	40090
Basin B-1	64.7	40	2.5	0.162	40090
Basin B-2	55.5	40	2.5	0.139	33280
Basin B-3	65.5	40	2.5	0.164	40560
Basin B-4	64.7	40	2.5	0.162	40560
Basin C-1	55.2	40	2.5	0.138	32600
Basin C-2	248.7	40	2.5	0.622	150180
Basin D-1	78.1	40	2.5	0.195	47500
Basin D-2	74.8	40	2.5	0.187	45830
Basin D-3	106.7	40	2.5	0.267	64300
Basin E-1	97.2	40	2.5	0.243	59200
Basin E-2	98.8	40	2.5	0.247	59190
Basin E-3	54.8	40	2.5	0.137	33620
Basin F	80	40	2.5	0.200	48285

*Developed Basin - Existing Residential Area

4.5 Potential Conflicts With 127th Street Alignment

Shape files of the 127th Street alignment were obtained from Sturgeon County, which show the outline and features for this future roadway.

In accordance with the street alignment planes there will be no apparent conflicts with the Proposed Stormwater Management Plan. The alignment starts at Township Road 544 (West Study Area) and continues over Sturgeon River. It reaches the Anthony Henday Freeway on the East Study Area, as show in Figure 4-11.

The 127th street alignment was overlaid on the drainage plane of proposed options and it was observed that Drainage Option 1 of the West Study Area goes beside (underground pipe) the 127th Street alignment a boundary, and should have no impact on this option.

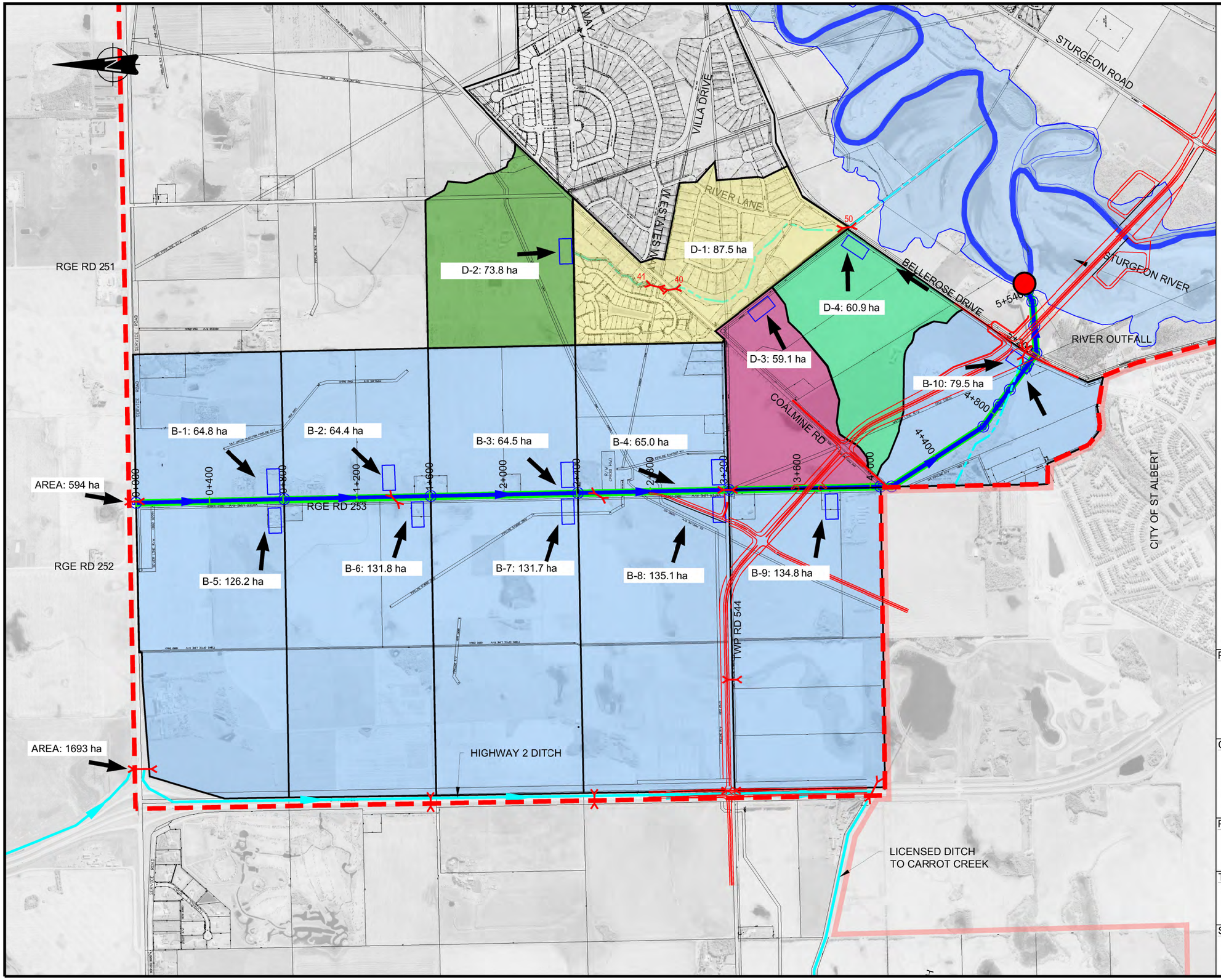
4.6 Development of Existing Ponds

Within the East area there are several ponds and lakes. These ponds provide runoff collection, and are generally beneficial to agriculture in the area. However, the location of these ponds can be problematic to developers and residents, and are a dangerous nuisance to the nearby CFB airfield in Namao. These ponds will be developed in such a way as to maximize the benefits provided by them, while minimizing the negative impacts.

The wetland on Lakeshore Golf Course occupies an area of 7.9 hectares. As this wetland serves as part of the landscape of the Golf Course, it is unlikely to change in any substantial way. The presence of human activity and maintenance should minimize any negative impacts from the wetland. Similarly, the pond immediately north of the Golf Course will not be substantially altered, but will serve as the primary stormwater management facility for the surrounding development. Maintenance and minor modifications will minimize negative impacts.

There is a wetland located in the center of sub-basin C-2 (See Figure 4-6) that serves as the primary drainage feature of the existing development. This wetland will also be left mostly unchanged, but providing an outlet to the proposed ditch, and maintaining the wetland will enhance the neighborhood, without causing additional problems.

Cutbank Lake will be substantially developed. Although the main basin of the lake covers only 1 hectare, the flood plain of the lake is approximately 10 hectares. This region is flooded by shallow water during wet years, but is usually dry. This is a prime breeding location for mosquitos, and attracts other wildlife that are a nuisance to aircraft landing nearby. It is proposed that the floodplain be filled, and the lake controlled and managed as a stormwater storage facility.



LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- PROPOSED MAJOR MANHOLES
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL

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Client:

Sturgeon County

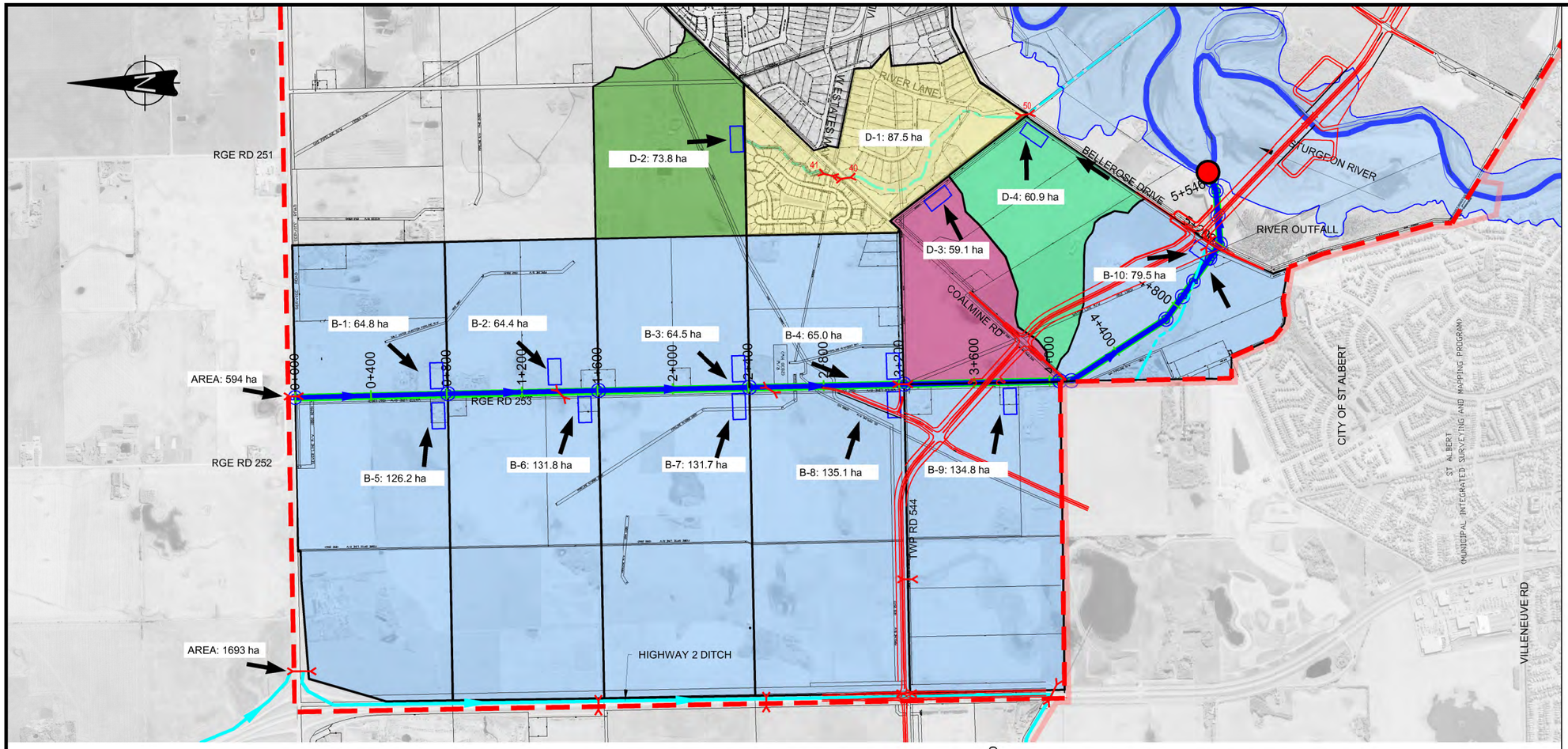
Project:

Sturgeon Valley Stormwater Update

Title:

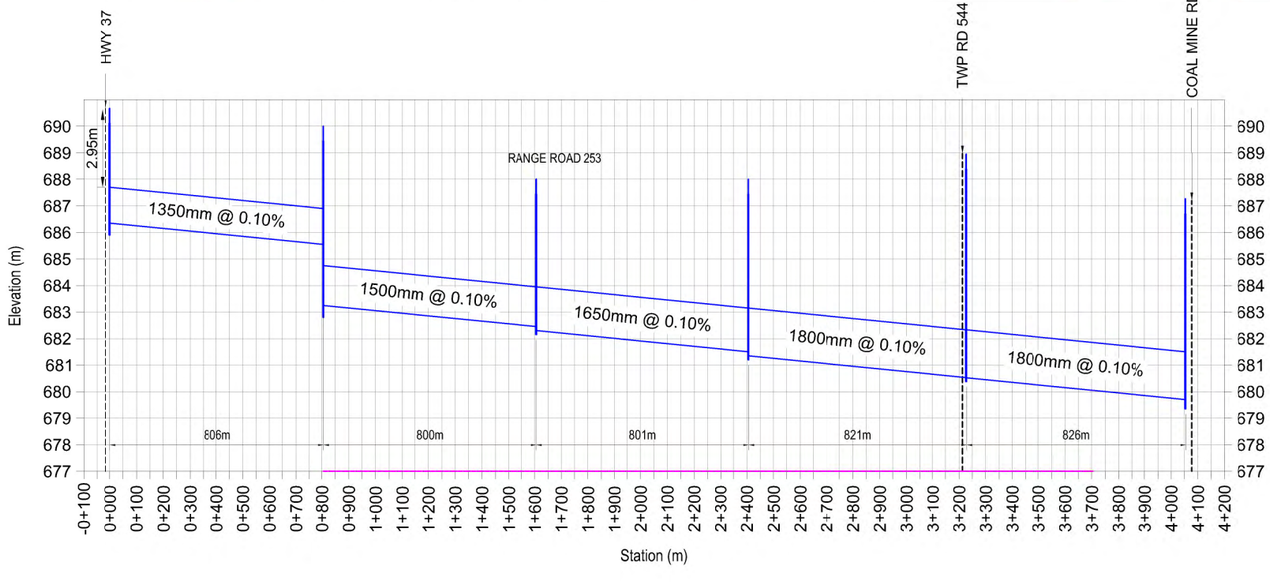
Proposed Improvements for the West Study Area - Option 1

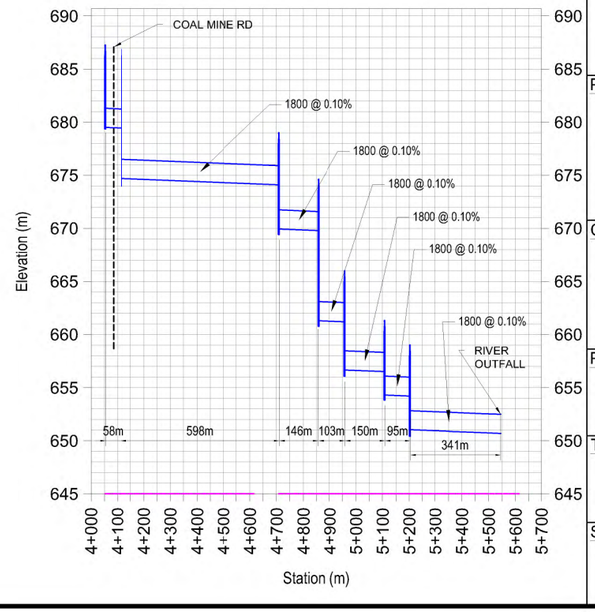
Scale:	Figure:
1:20,000	4-1



LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- PROPOSED MAJOR MANHOLES
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL





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Client:
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Project:
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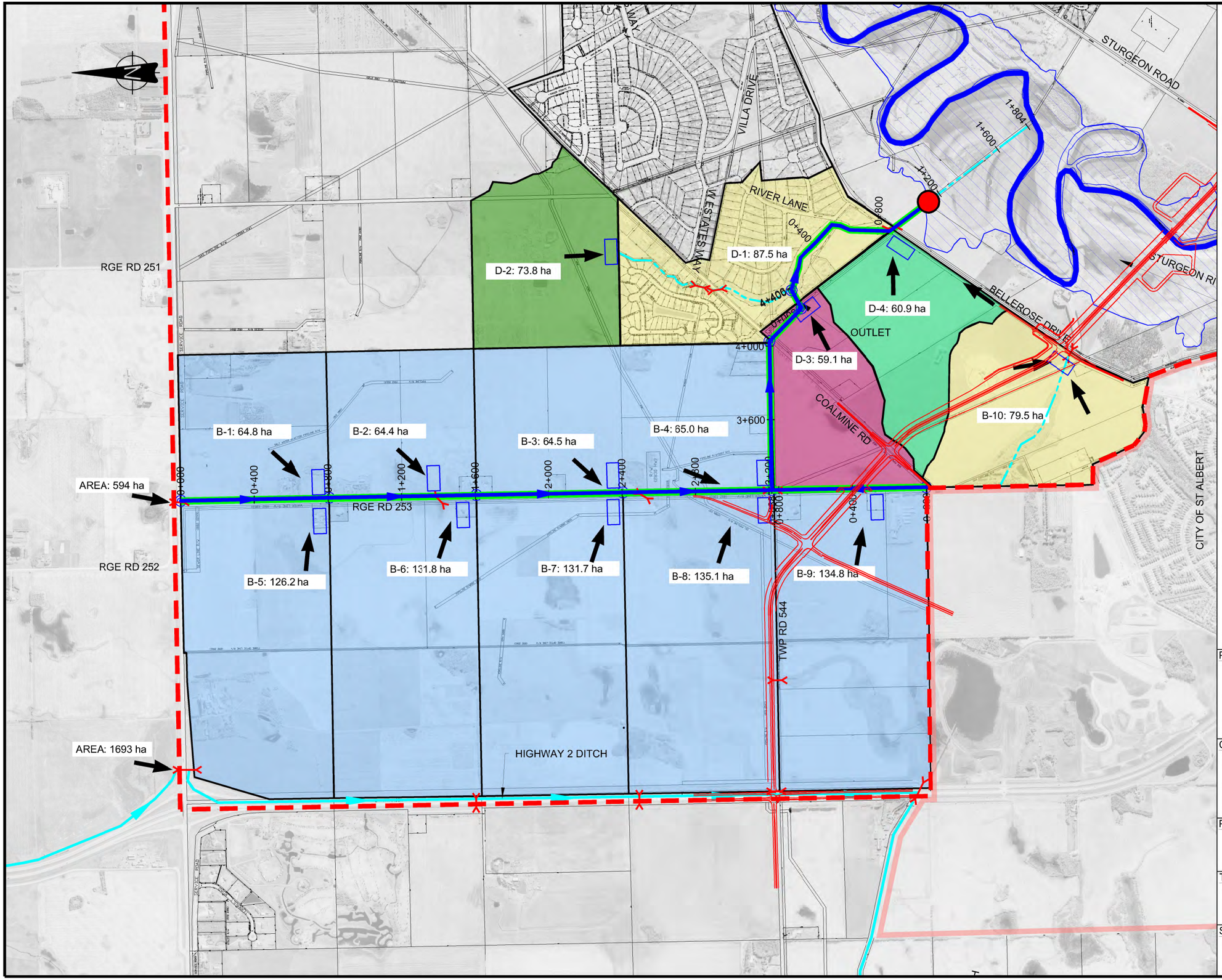
Title:
Proposed Improvements for the West Study Area - Option 1 Plan and Profile

Scale:
1:25,000

Figure:
4-2



LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- PROPOSED MAJOR MANHOLES
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL

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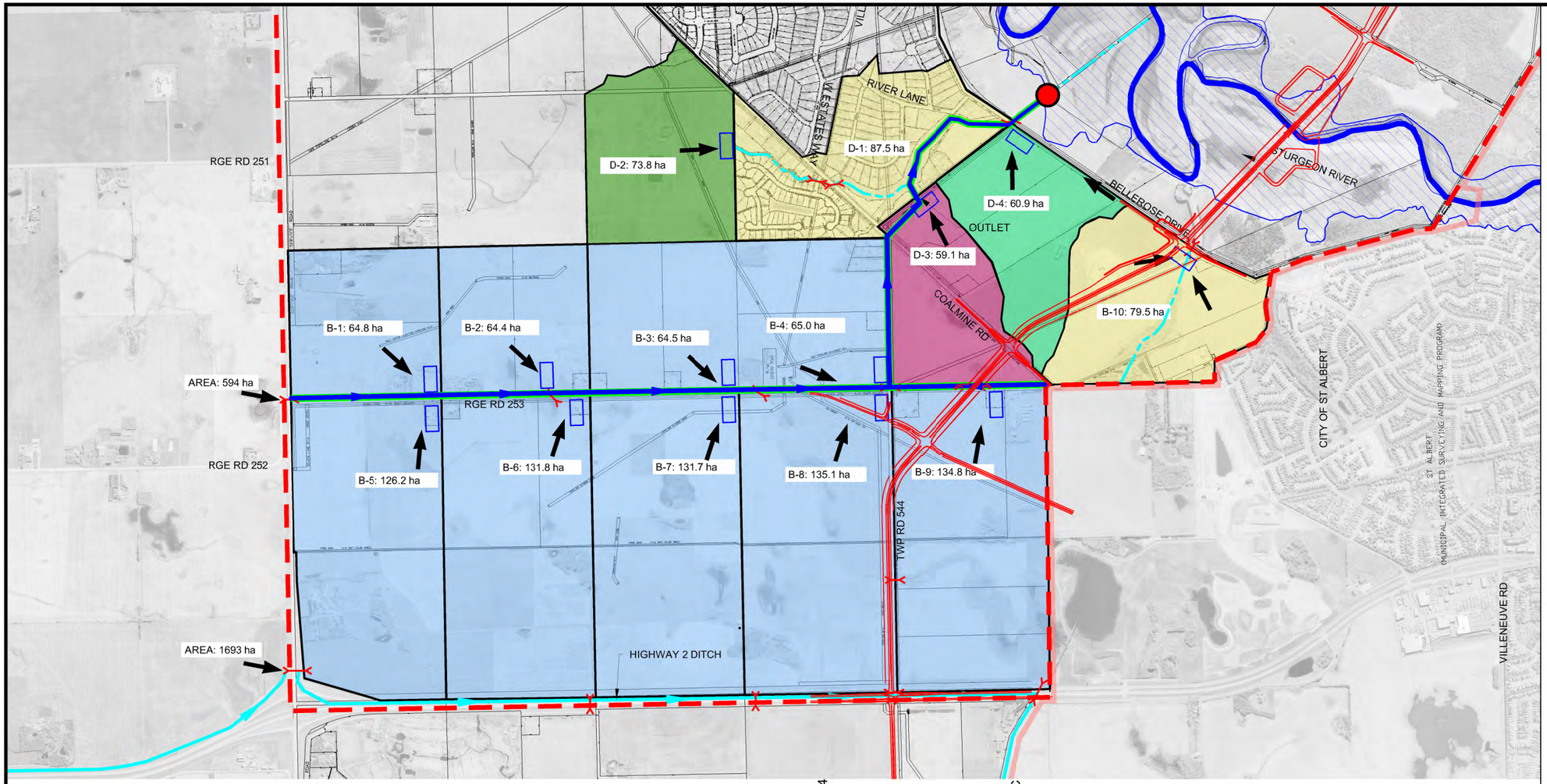
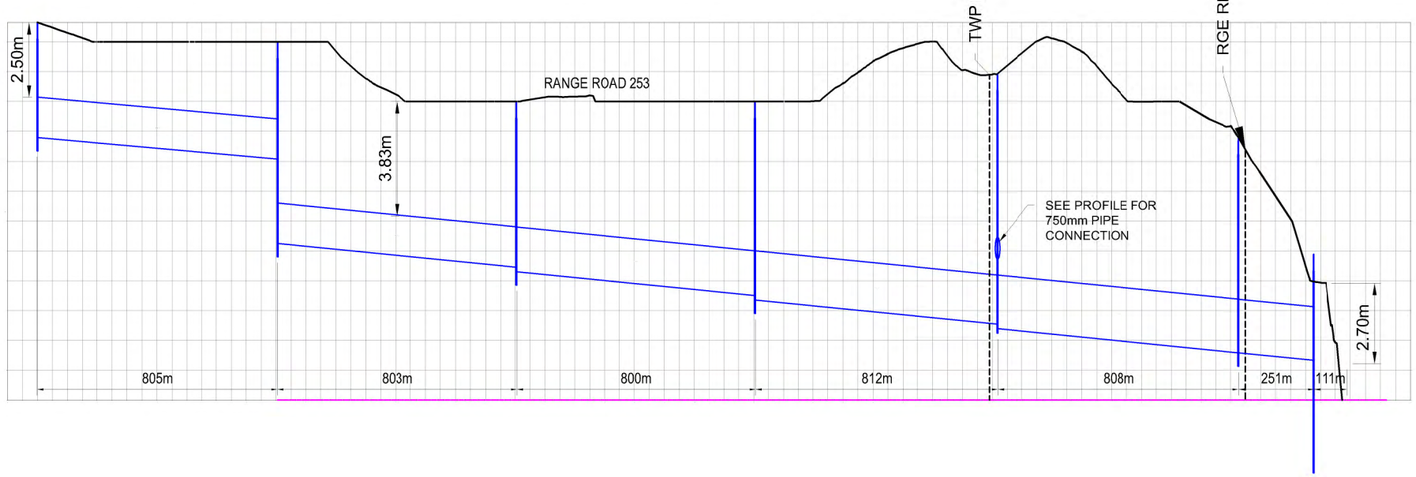
Project: **Sturgeon Valley Stormwater Update**

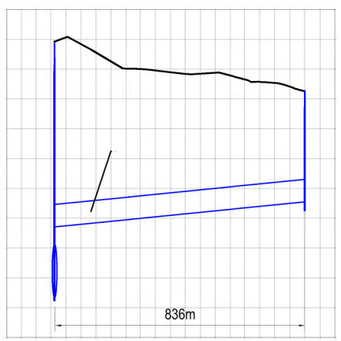
Title: **Proposed Improvements for the West Study Area - Option 2**

Scale:	Figure:
1:32,000	4-3





PROFILE FOR
750mm PIPE



LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- PROPOSED MAJOR MANHOLES
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL

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Project:

Sturgeon Valley Stormwater Update

Title:

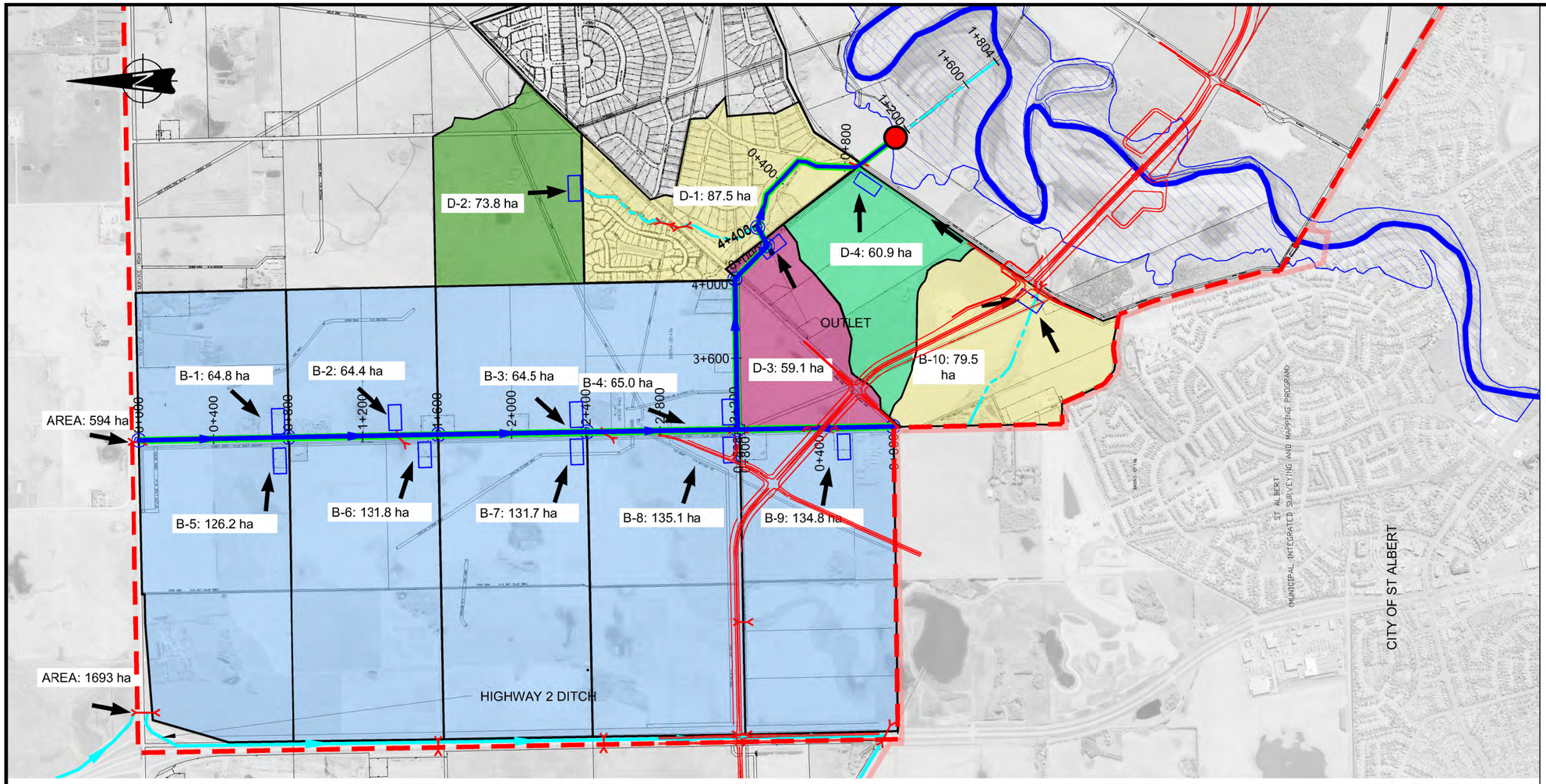
Proposed Improvements for the West Study Area - Option 2 Pipe Profile

Scale:

1:32,000

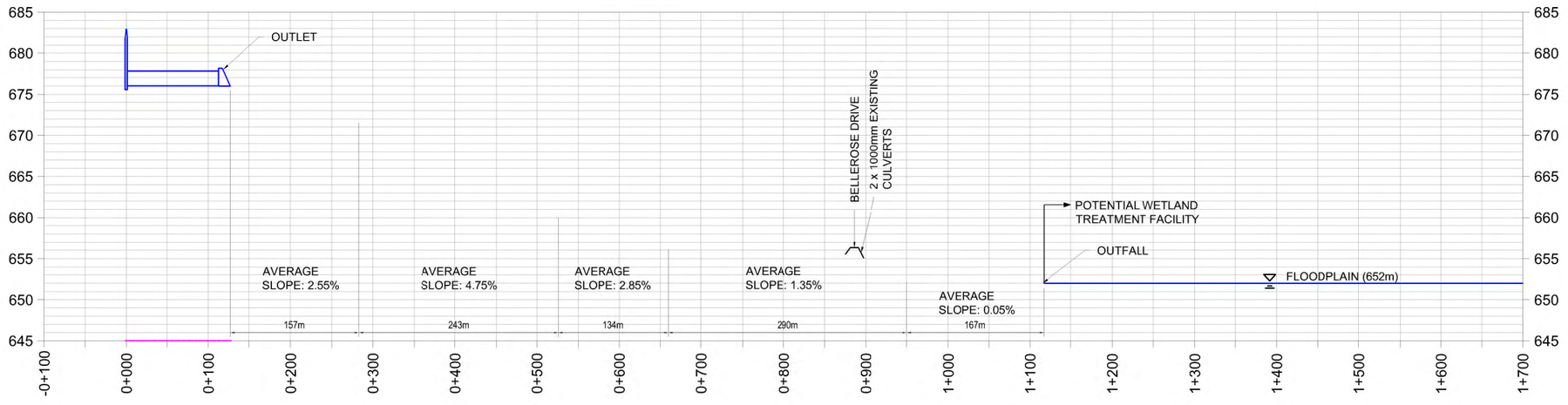
Figure:

4-4



LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- PROPOSED MAJOR MANHOLES
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL



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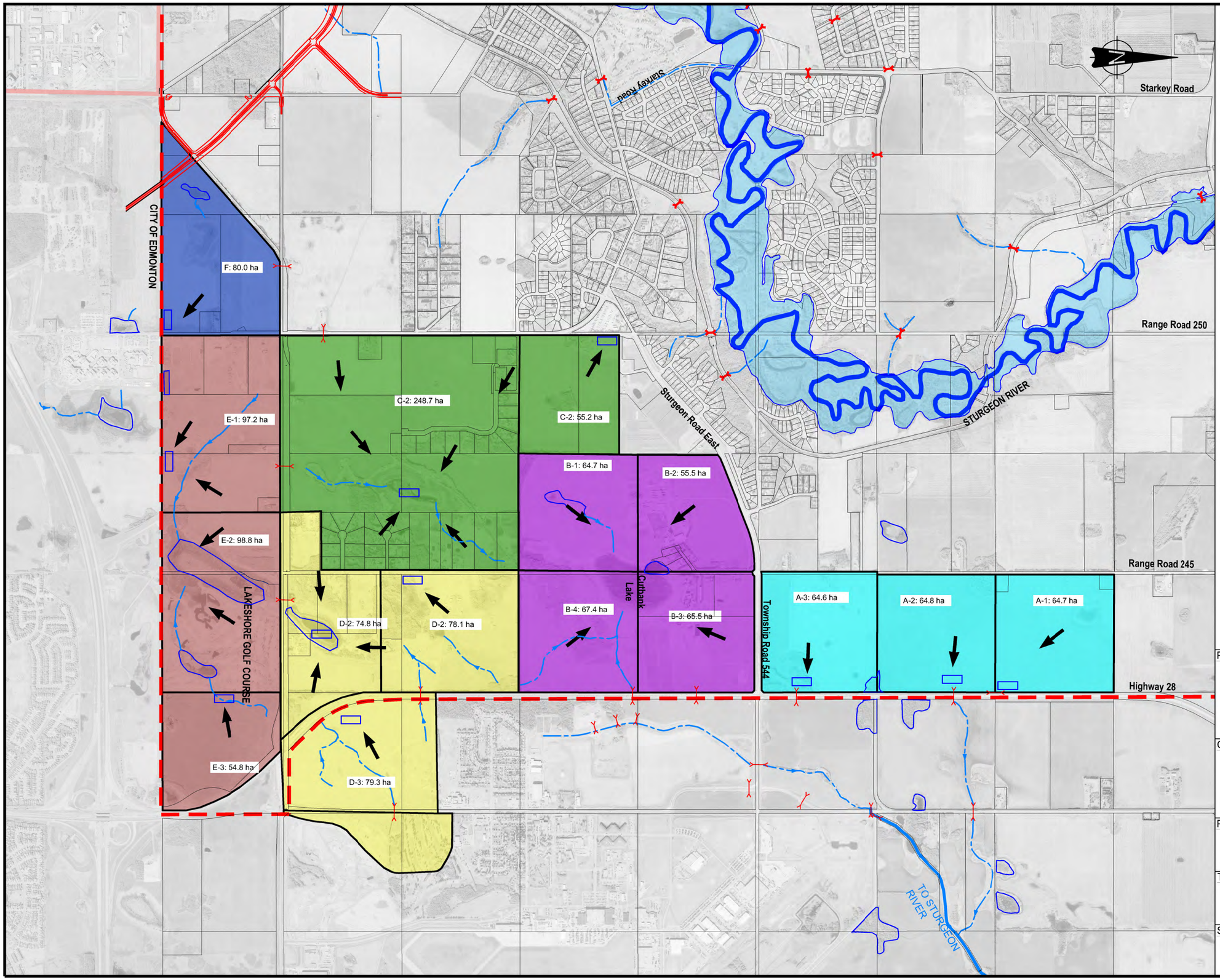
Project: **Sturgeon Valley Stormwater Update**

Title: **Proposed Improvements for the West Study Area - Option 2 Ditch Profile**

Scale: **1:25,000**

Figure: **4-5**



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW
- FUTURE 127th STREET ALIGNMENT

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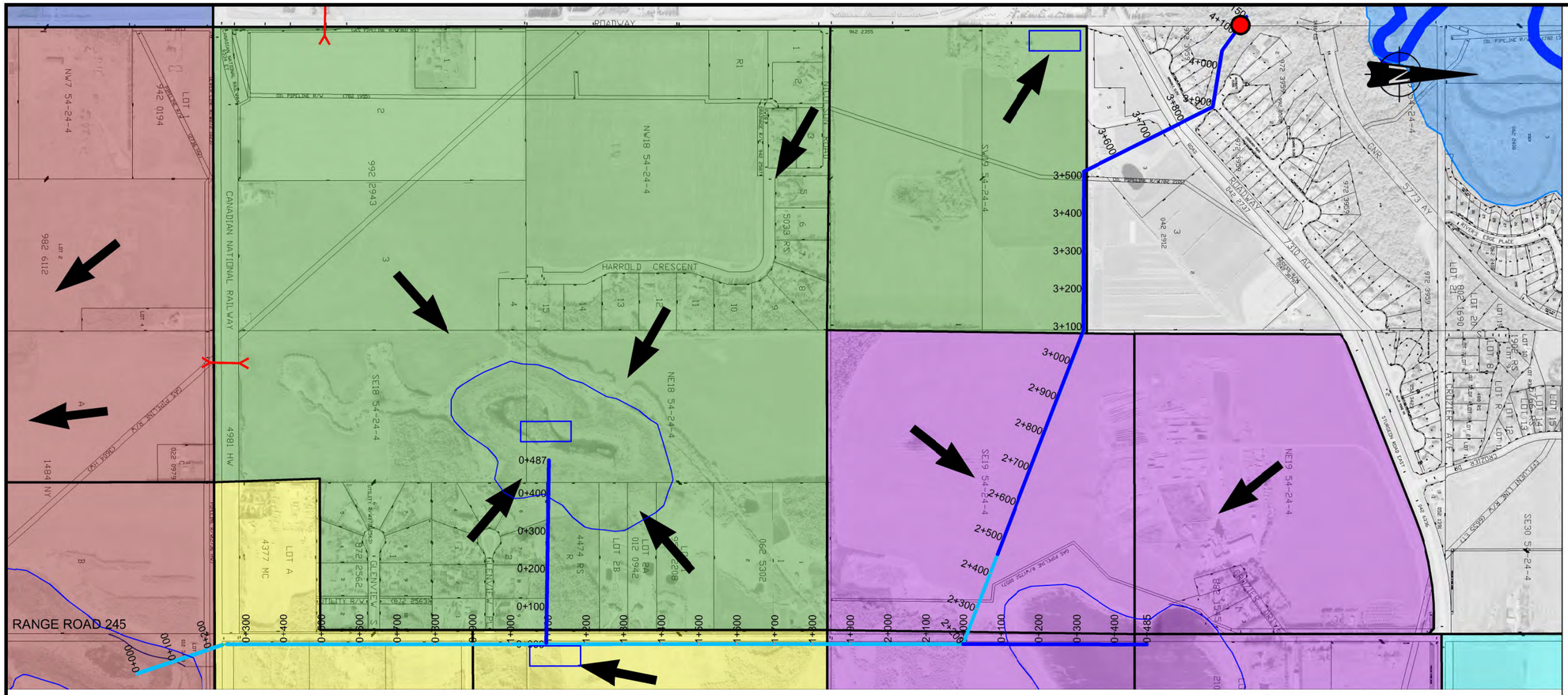
Client: Sturgeon County

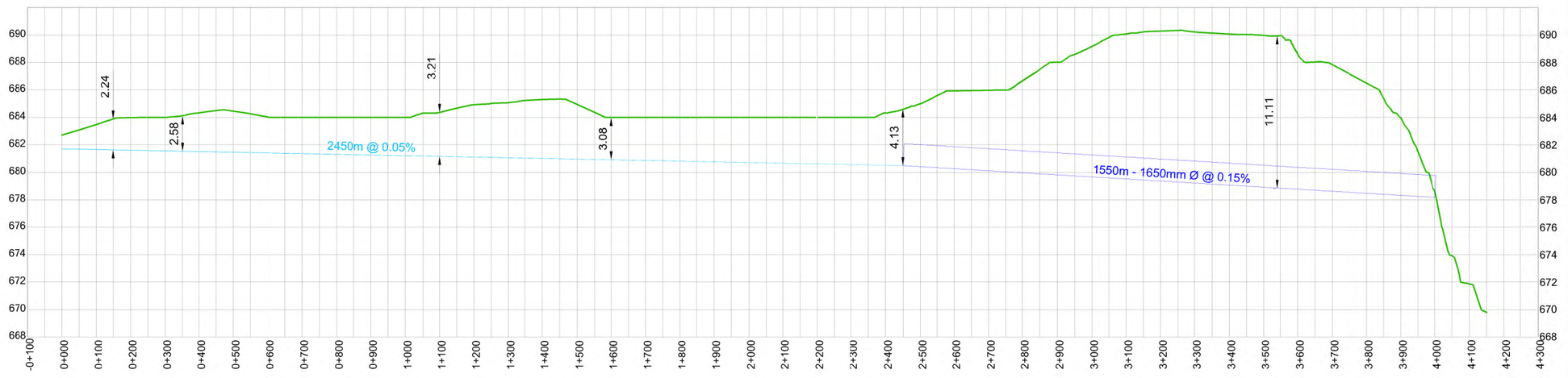
Project: **Sturgeon Valley Stormwater Update**

Title: **Post Development Drainage Areas for the East Study Area**

Scale: **1:25,000**

Figure: **4-6**





LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL
- PROPOSED CHANNEL

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Client:

Sturgeon County

Project:

Sturgeon Valley Stormwater Update

Title:

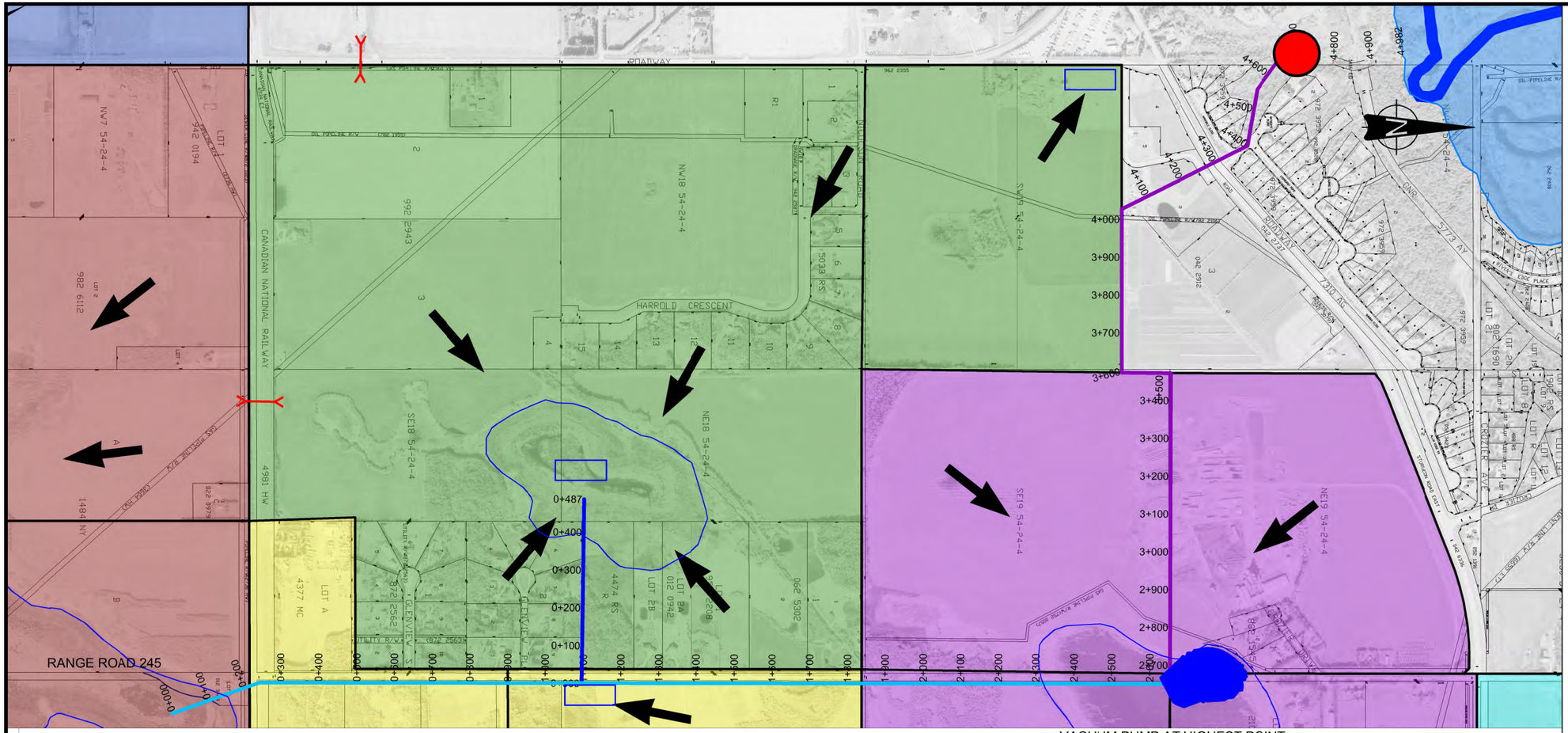
Proposed Improvements for the East Study Area - Option 1

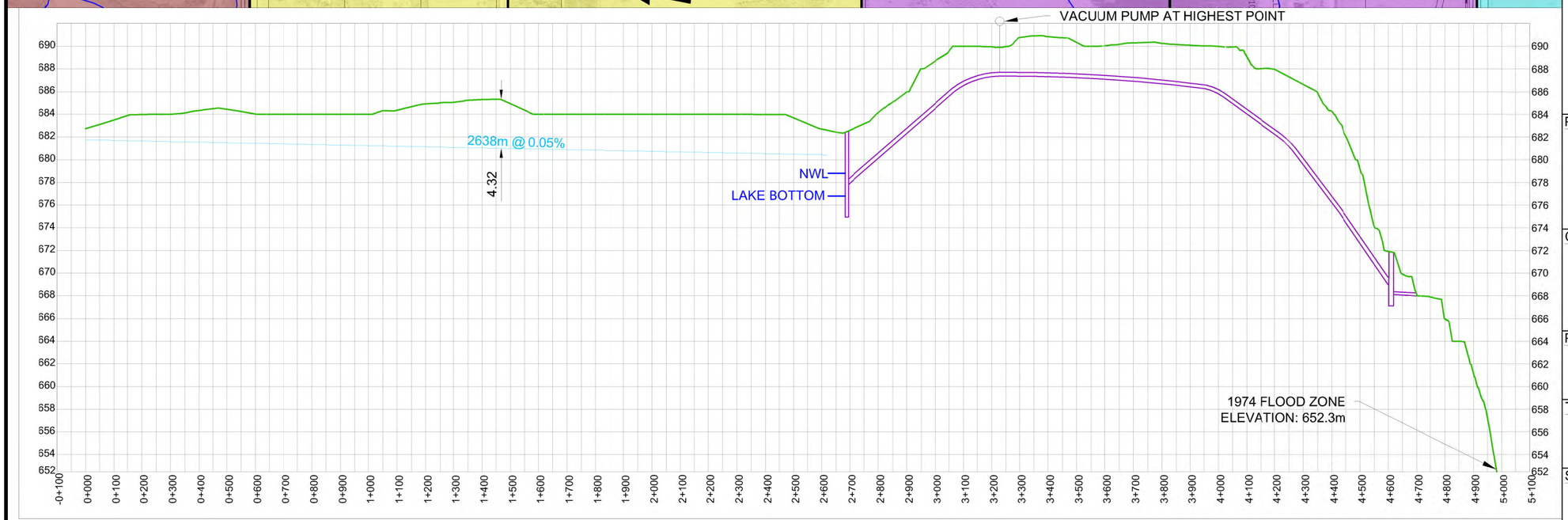
Scale:

1:32,000

Figure:

4-7





LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL
- PROPOSED CHANNEL

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Sturgeon County

Project:

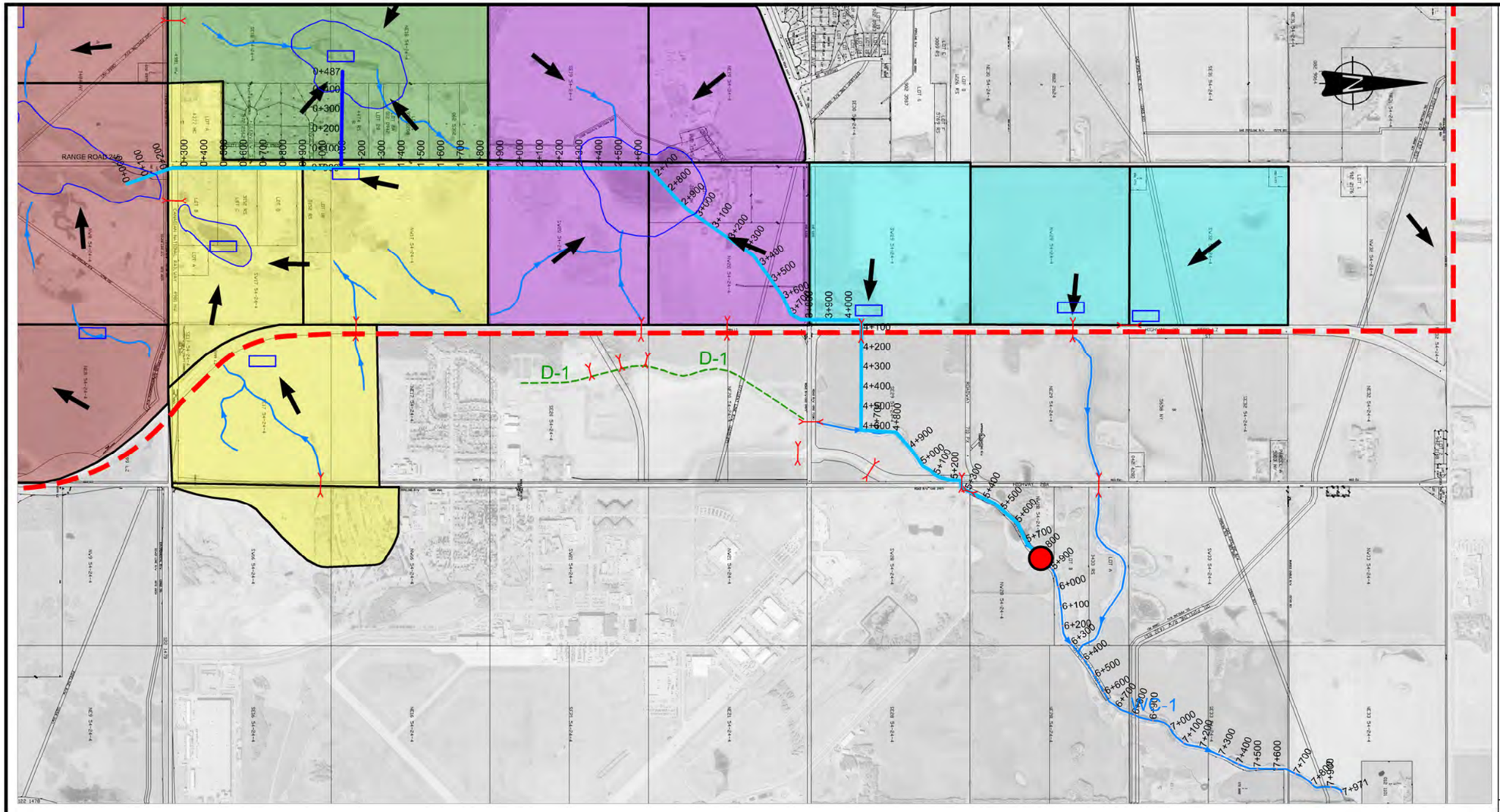
Sturgeon Valley Stormwater Update

Title:

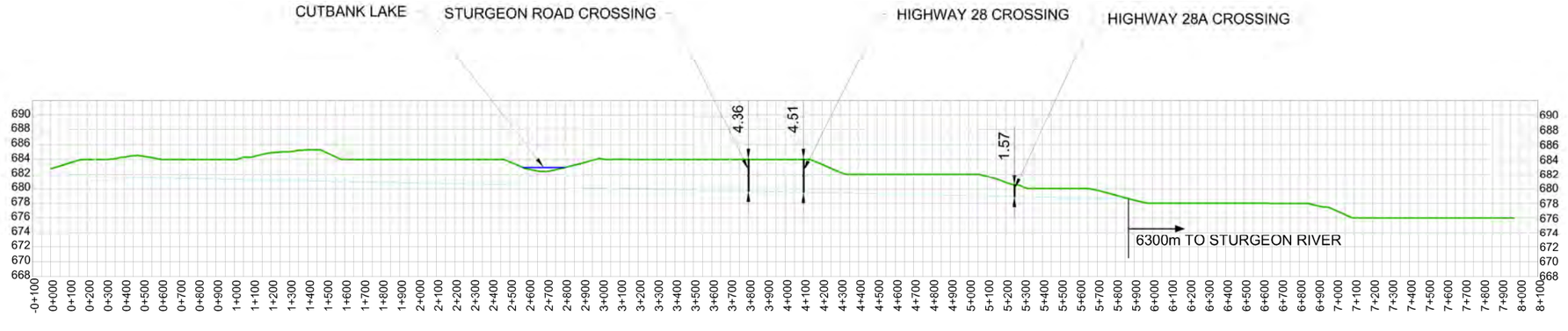
Proposed Improvements for the East Study Area - Option 2

Scale: **1:32,000**

Figure: **4-8**



1974 FLOOD ZONE ELEVATION = 652.3m



LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL
- PROPOSED CHANNEL
- MAN DRAINAGE DITCH — D-1

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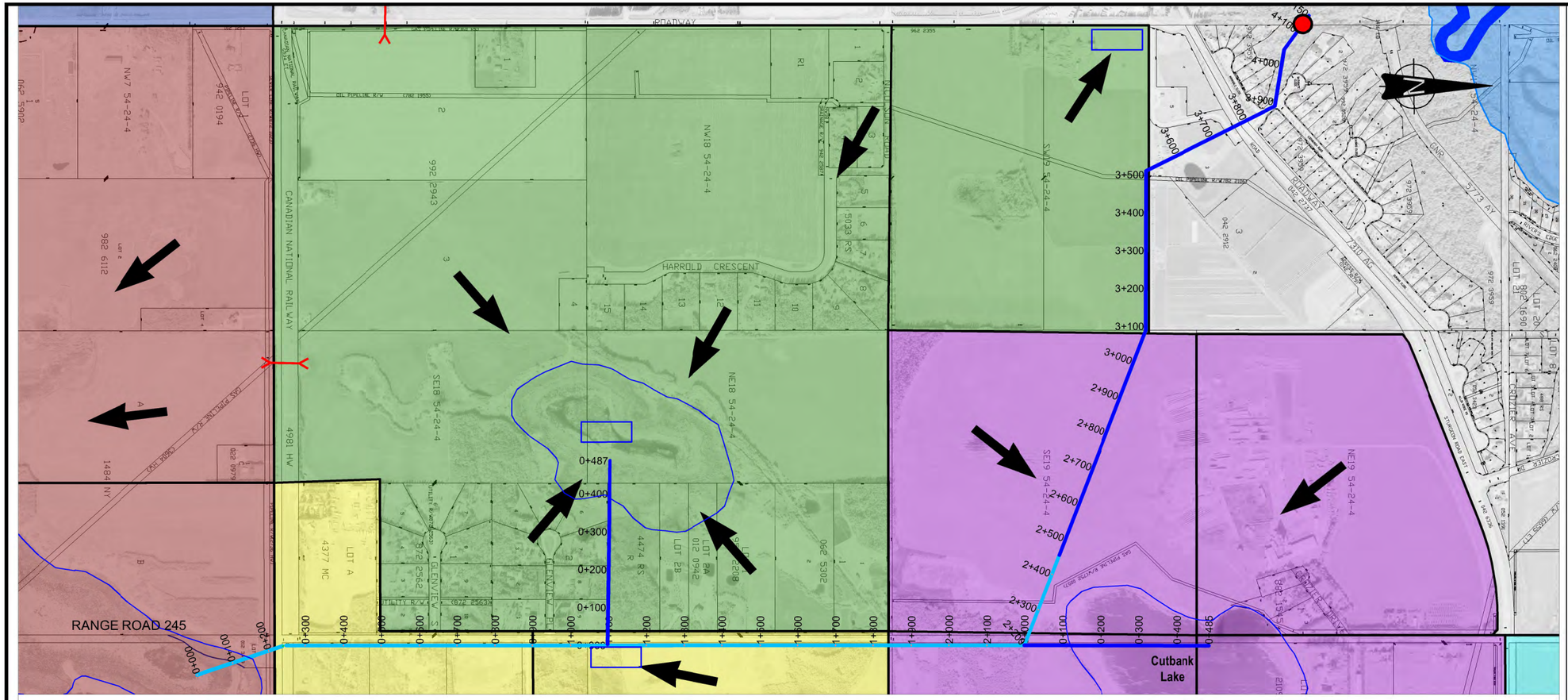
Client: Sturgeon County

Project: **Sturgeon Valley Stormwater Update**

Title: **Proposed Improvements for the East Study Area - Option 3**

Scale: **1:32,000**

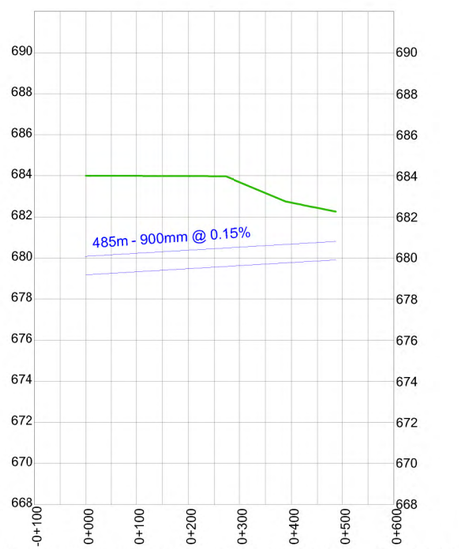
Figure: **4-9**



LEGEND:

- STUDY BOUNDARY
- CULVERT
- NATURAL WATERCOURSE
- FLOODPLAIN
- DRAINAGE ARROW
- CITY OF ST. ALBERT
- PROPOSED STORM PIPE
- STORM WATER MANAGEMENT FACILITY
- FUTURE 127TH STREET ALIGNMENT
- PROPOSED OUTFALL
- PROPOSED CHANNEL

SOUTH PIPE FROM POND TO DITCH (ALL OPTIONS)



NORTH PIPE FROM POND TO DITCH (OPTION 1)

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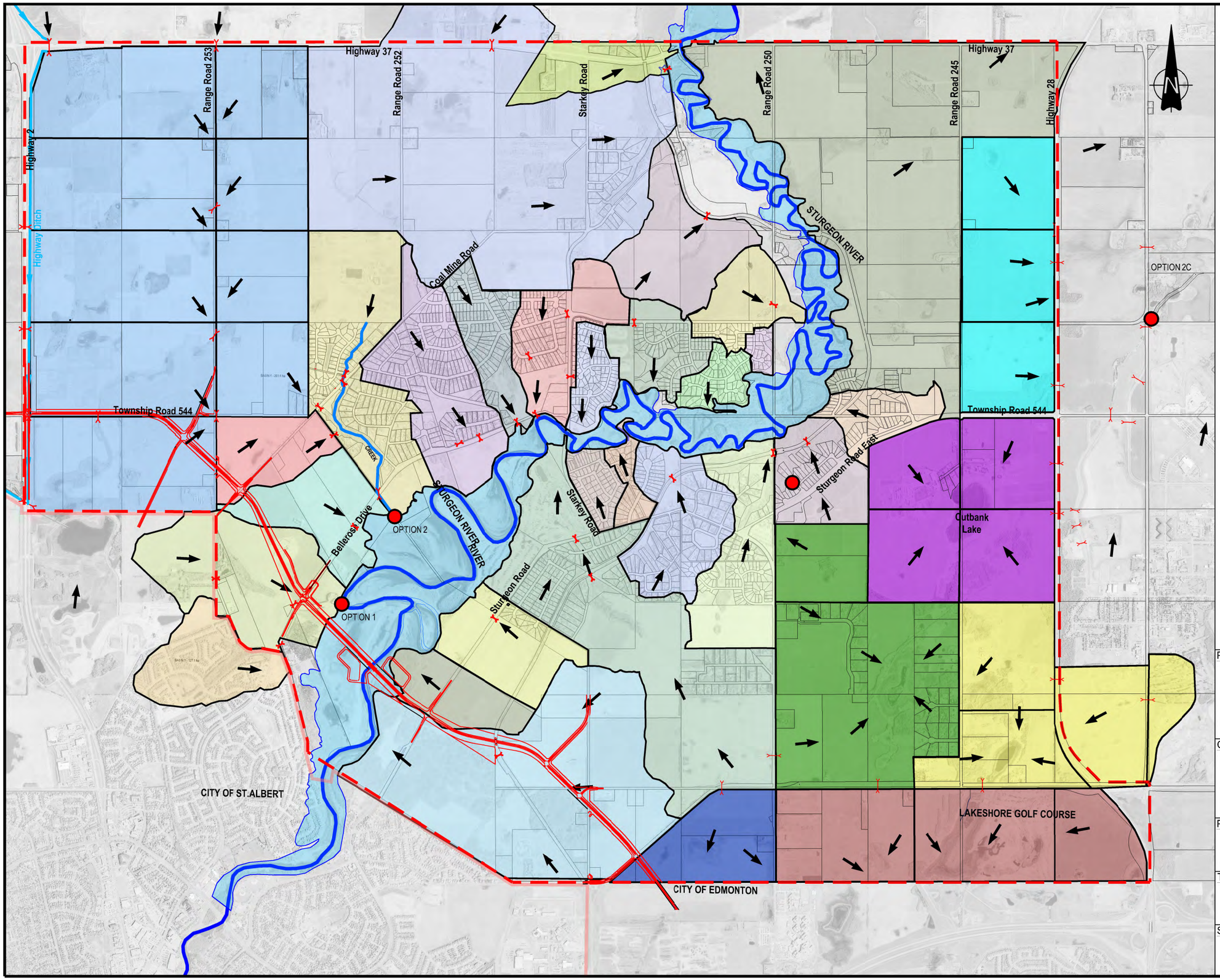
Client:
Sturgeon County

Project:
Sturgeon Valley Stormwater Update

Title:
Post Development Drainage Plan Minor Connections

Scale:
1:12,500

Figure:
4-10



LEGEND:

- STUDY BOUNDARIES
- BASIN DIVIDE
- CITY OF ST. ALBERT.
- FOUND CULVERT
- EXISTING NATURAL SWALE
- ESTABLISHED WATER COURSE
- STURGEON RIVER 1:100YR FLOODPLAIN
- DRAINAGE ARROW
- PROPOSED OUTFALL LOCATION
- FUTURE 127th STREET ALIGNMENT

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Client:

Sturgeon County

Project:

Sturgeon Valley Stormwater Update

Title:

Proposed Drainage Basins and 127th Street Alignment

Scale:	Figure:
1:32,000	4-11

5.0 Conclusions and Recommendations

5.1 Conclusions

The following are the key conclusions of the study:

- Approximately 1500 ha of the land within Sturgeon Valley Region is residential and 4,380 ha is currently used for agricultural purposes. It is anticipated that all of the lands in the Sturgeon County Study Area will be developed eventually. The dominant future land use of the valley area is residential.
- The Sturgeon River bisects the Sturgeon County Study Area, originating at the southwest corner and flowing northeast approximately 35 km to the North Saskatchewan River. The 1974 Sturgeon River flood zone has been used as the development limit for the Sturgeon Valley.
- Sturgeon River and Sturgeon Valley are an integral part of the Big Lake Basin. A report entitled “Big Lake Stormwater Management Plan” concluded that developing areas within the Big Lake Basin must control their stormwater discharge rate to 2.5 L/s/ha in order to prevent flooding of Big Lake and surrounding areas.
- About 60% of the Sturgeon Valley area drains directly into the Sturgeon River.
- The western part of the Study Area – about 985 hectares – drains west across Highway 2 towards Carrot Creek, a tributary of Sturgeon River.
- The eastern part of the study area (1,490 ha) collects in local wetlands, or drains east across Highway 28 towards an unnamed tributary of Sturgeon River.
- Runoff within the Sturgeon River watershed flows overland and through natural channels and defined ditches to the Sturgeon River. Most of the older developments have grading typical of rural developments and utilize natural creeks and swales as sub-division outlets.
- Newer developments employ curb and gutter design, and are expected to use stormwater ponds to buffer peak flow into the Sturgeon River.
- Most of the major culvert crossings were inspected as part of this study, and their estimated capacity are more than the 2.5 L/s/ha of post development control target. There are no reported flooding problems resulting from small culverts.
- All of the culverts inspected in the valley area are made of corrugated steel. As these culverts become due for replacement in the future, the County should consider other pipe materials, with preference to materials that have longer service life, such as reinforced concrete.

- North of the west side of the study area, a portion of the lands located at north of Highway 37 within Sturgeon County currently drain across the Highway 2 ditch and outlets to Carrot Creek. It is probable that future development within Sturgeon County will continue this drainage pattern.
- The Sturgeon County Study Area was divided into two parts, West Area and East Area of the Sturgeon River. Two drainage options for the West Area and three options for the West Area were assessed.
- Option 1 for the West Study Area would require about 5,550 m of pipe, while Option 2 would require 4300 m of pipe and approximately 1,100 m of ditch. Both options include improvements to an existing natural channel.
- The estimated costs for Option 1 and Option 2 of the West Study Area, including piping, improvements to the existing channel, and outfall facility, are $39,451,619 and $21,459,357, respectively.
- Option 2 has more flexibility in construction, provides better service to a larger area, and has more opportunity for water quality improvements.
- The Options for the east study area include mostly construction of future ditches, and utilizes existing wetlands for stormwater retention.
- The estimated cost for the East Drainage Area Options One and Two are $16,339,202 and $15,465,669, respectively. Drainage Option Three has an estimated cost of $13,080,089.
- Option 3 for the East Area has serious technical and environmental challenges would make implementation difficult.

5.2 Recommendations

- Sameng recommends building the option #2 for the west study area and option #2 for the east study area, which have an estimated cost of $21,459,357 and $15,465,669, respectively.
- Future development in the valley will require a wide range of infrastructure to convey and control stormwater runoff. It is recommended that the County complete the stormwater management plan for the entire valley area so that development can be managed for sustainability and economy.
- Sameng recommends that the Sturgeon County continue to work towards reducing the discharge of sediment to the Sturgeon River before removing the sediments that have already accumulated. In this regard these are the recommendations:
- Install oil/grit separators at storm sewer outfalls to reduce the discharge of sediment to the river;

- Require stormwater management (wet ponds or wetlands) for new development areas. It is possible to design some of these settling ponds close or adjacent to Sturgeon River but out of flood area;
- Continued vigilance in regulating construction practices which generate sediment;
- Ponds need to be designed to limit outflow at 2.5/L/ha for all new developments in the Sturgeon Valley Area and should provide sufficient storage to retain rainfalls associated with a 100yr 24hour rainfall event.
- In the western portion of the study area, the current study has identified a number of infrastructure improvements to preserve an existing natural channel. As this channel is part of the assessed drainage options for the area, the costs to do so have been included in the cost estimates for those options.
- It is recommended that a regular maintenance program be developed to maintain the existing stormwater management infrastructure, especially catch basins, outfalls, and culverts. Such a maintenance program is essential to ensure the adequate function of the stormwater management system to reduce the risk of flood. In addition, regular maintenance will help protect the downstream receiving environment from water quality and erosion issues.
- It is recommended that the County regard the stormwater collection, transport, and discharge system as a utility. This would mean that the system is managed in a comprehensive manner and that utility levy costs are collected from future developers. This financing of the system will become more important as development moves further from the Sturgeon River and therefore the stormwater management system increases in complexity.

6.0 References

1. Associated Engineering, 2004. Big Lake Stormwater Management Plan
2. Stantec Consulting Company, 2007, City of St. Albert Utility Master Plan
3. Sameng Inc. 2007. Big Lake Basin Task Force: Floodplain Delineation
4. Sameng Inc., 2008. Sturgeon Valley Utility Servicing Update
5. Sameng Inc., 2011. Sturgeon Valley Preliminary Stormwater Analysis
6. ISL Engineering, 2012. "Stormwater Management Benefitting Lands Proposed Schedule N" Drawing

Appendix A: Hydraulic Assessment Results

Provided on DVD

Appendix B: Detailed Cost Estimates

Table 4 -1: Estimating Cost for West Study Area - Option 1

Table 4 -2: Estimating Cost for West Study Area - Option 2

Table 4 -3: Estimating Cost for East Study Area - Option 1

Table 4- 4: Estimating Cost for East Study Area - Option 2

Table 4 -5: Estimating Cost for East Study Area - Option 3

sameng inc.

Table 4-1
Estimating Cost for West Study Area - Option 1

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$180,000**
	1.1	Mobilization & Demobilization	1.0	L.S.	$ 150,000	$ 150,000
	1.2	Site Office Trailers	1.0	L.S.	$ 15,000	$ 15,000
	1.3	Site Engineering & Surveys	1.0	L.S.	$ 11,000	$ 11,000
	1.4	Project and Safety Signs	1.0	L.S.	$ 4,000	$ 4,000
2	**Gravity Main along Range Rd 253 from HWY 37 to TWS Rd 544**					**$11,286,715**
	2.1	Land Acquisition - 5m wide easement	1.61	ha	$ 148,000	$ 238,650
	2.2	1350mm Pipe (0m to 4m)	150.0	m	$ 1,650	$ 247,500
	2.3	1350mm Pipe (4m to 5m)	650.0	m	$ 1,900	$ 1,235,000
	2.4	1500mm Pipe (5m to 6m)	550.0	m	$ 2,650	$ 1,457,500
	2.5	1500mm Pipe (6m to 7m)	250.0	m	$ 3,200	$ 800,000
	2.6	1650mm Pipe (5m to 6m)	400.0	m	$ 2,850	$ 1,140,000
	2.7	1650mm Pipe (6m to 7m)	400.0	m	$ 3,400	$ 1,360,000
	2.8	1800mm Pipe (6m to 7m)	300.0	m	$ 4,250	$ 1,275,000
	2.9	1800mm Pipe (7m to 8m)	225.0	m	$ 5,350	$ 1,203,750
	2.10	1800mm Pipe (8m to 9m)	300.0	m	$ 6,450	$ 1,935,000
	2.11	2400mm Manhole	22.6	m	$ 4,350	$ 98,310
	2.12	2400mm Drop manhole	7.9	m	$ 10,000	$ 79,000
	2.13	3000mm Manhole	39	m	$ 5,550	$ 217,005
3	**Gravity Main along Range Rd 253 fromTWS Rd 544 to Coal Mine Rd**					**$4,526,138**
	3.1	Land Acquisition - 5m wide easement	0.41	ha	$ 148,000	$ 61,050
	3.2	1800mm Pipe (7m to 8m)	825.0	m	$ 5,350	$ 4,413,750
	3.3	3000mm Manhole	9.25	m	$ 5,550	$ 51,338
4	**Gravity Main from Coal Mine Rd to Sturgeon River**					**$11,809,766**
	4.1	Land Acquisition - 20m wide easement	2.94	ha	$ 148,000	$ 435,416
	4.2	1800mm Pipe (7m to 8m)	494.0	m	$ 5,350	$ 2,642,900
	5.2	1800mm Pipe (8m to 9m)	399.0	m	$ 6,450	$ 2,573,550
	4.3	1800mm Pipe (9m to 10m)	578.0	m	$ 7,550	$ 4,363,900
	4.4	3000mm Drop manhole	79.4	m	$ 10,000	$ 794,000
	4.5	Outfall (1800mm, sedimenter, power dissipation, wetland)	1	L.S.	$ 1,000,000	$ 1,000,000
5	**Unnamed Creek Improvements**					**$377,000**
		Culvert #40				
	5.1	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	5.2	Roadway Reclamation	1.0	Lump	$ 40,000	$ 40,000
	5.3	Culvert End Treatment (Flared Ends, Riprap, etc.)	2.0	ea.	$ 15,000	$ 30,000
		Culvert #41				
	5.4	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	5.5	Roadway Reclamation	1.0	Lump	$ 40,000	$ 40,000
	5.6	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 15,000	$ 30,000
		Culvert #50				
	5.7	Concrete Pipe: Supply and Install, 1000mm diam, Class III	46.0	m	$ 1,400	$ 65,000
	5.8	Roadway Reclamation	1.0	Lump	$ 60,000	$ 60,000
	5.9	Culvert End Treatment, Flared Ends, Riprap, etc.	4.0	ea.	$ 15,000	$ 60,000
6	**Erosion Protection**					**$1,085,000**
	6.1	Gabion Mat	500	m	$ 2,000	$ 1,000,000
	6.2	Gabion Mat Under Drain, Gravel	500	m	$ 120	$ 60,000
	6.3	Environmental Approvals	1	Lump	$ 25,000	$ 25,000
Total						**$28,179,619**
		Contingency			25%	**$7,045,000**
		Engineering			15%	**$4,227,000**
Grand Total						**$39,451,619**

Note: Manhole spacing is based on City of Edmonton Standards

Table 4-1A
Estimating Cost for West Study Area and ISL Proposal- Option 1A

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$180,000**
	1.1	Mobilization & Demobilization	1.0	L.S.	$ 150,000	$ 150,000
	1.2	Site Office Trailers	1.0	L.S.	$ 15,000	$ 15,000
	1.3	Site Engineering & Surveys	1.0	L.S.	$ 11,000	$ 11,000
	1.4	Project and Safety Signs	1.0	L.S.	$ 4,000	$ 4,000
2	**Gravity Main along Range Rd 253 from HWY 37 to TWS Rd 544**					**$11,286,715**
	2.1	Land Acquisition - 5m wide easement	1.6	ha	$ 148,000	$ 238,650
	2.2	1350mm Pipe (0m to 4m)	150.0	m	$ 1,650	$ 247,500
	2.3	1350mm Pipe (4m to 5m)	650.0	m	$ 1,900	$ 1,235,000
	2.4	1500mm Pipe (5m to 6m)	550.0	m	$ 2,650	$ 1,457,500
	2.5	1500mm Pipe (6m to 7m)	250.0	m	$ 3,200	$ 800,000
	2.6	1650mm Pipe (5m to 6m)	400.0	m	$ 2,850	$ 1,140,000
	2.7	1650mm Pipe (6m to 7m)	400.0	m	$ 3,400	$ 1,360,000
	2.8	1800mm Pipe (6m to 7m)	300.0	m	$ 4,250	$ 1,275,000
	2.9	1800mm Pipe (7m to 8m)	225.0	m	$ 5,350	$ 1,203,750
	2.10	1800mm Pipe (8m to 9m)	300.0	m	$ 6,450	$ 1,935,000
	2.11	2400mm Manhole	22.6	m	$ 4,350	$ 98,310
	2.12	2400mm Drop manhole	7.9	m	$ 10,000	$ 79,000
	2.13	3000mm Manhole	39.1	m	$ 5,550	$ 217,005
3	**Gravity Main along Range Rd 253 fromTWS Rd 544 to Coal Mine Rd**					**$4,526,138**
	3.1	Land Acquisition - 5m wide easement	0.4	ha	$ 148,000	$ 61,050
	3.2	1800mm Pipe (7m to 8m)	825.0	m	$ 5,350	$ 4,413,750
	3.3	3000mm Manhole	9.3	m	$ 5,550	$ 51,338
4	**Gravity Main from Coal Mine Rd to Sturgeon River**					**$13,955,766**
	4.1	Land Acquisition - 20m wide easement	2.9	ha	$ 148,000	$ 435,416
	4.2	2100mm Pipe (9m to 10m)	494.0	m	$ 6,350	$ 3,136,900
	4.3	2100mm Pipe (10m to 11m)	399.0	m	$ 7,450	$ 2,972,550
	4.4	2100mm Pipe (11m to 12m)	578.0	m	$ 8,550	$ 4,941,900
	4.5	3000mm Drop manhole	96.9	m	$ 10,000	$ 969,000
	4.6	Outfall (2100mm, sedimenter, power dissipation, wetland)	1.0	L.S.	$ 1,500,000	$ 1,500,000
5	**Unnamed Creek Improvements**					**$377,000**
		Culvert #40				
	5.1	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	5.2	Roadway Reclamation	1.0	Lump Sum	$ 40,000	$ 40,000
	5.3	Culvert End Treatment (Flared Ends, Riprap, etc.)	2.0	ea.	$ 15,000	$ 30,000
		Culvert #41				
	5.4	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	5.5	Roadway Reclamation	1.0	Lump Sum	$ 40,000	$ 40,000
	5.6	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 15,000	$ 30,000
		Culvert #50				
	5.7	Concrete Pipe: Supply and Install, 1000mm diam, Class III	46.0	m	$ 1,400	$ 65,000
	5.8	Roadway Reclamation	1.0	Lump Sum	$ 60,000	$ 60,000
	5.9	Culvert End Treatment, Flared Ends, Riprap, etc.	4.0	ea.	$ 15,000	$ 60,000
6	**Erosion Protection**					**$1,085,000**
	6.1	Gabion Mat	500.0	m	$ 2,000	$ 1,000,000
	6.2	Gabion Mat Under Drain, Gravel	500.0	m	$ 120	$ 60,000
	6.3	Environmental Approvals	1.0	Lump Sum	$ 25,000	$ 25,000
Total						**$30,325,619**
		Contingency			25%	**$7,581,000**
		Engineering			15%	**$4,549,000**
Grand Total						**$42,455,619**

Note: Manhole spacing is based on City of Edmonton Standards

Table 4-2
Estimating Cost for West Study Area - Option 2

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$180,000**
	1.1	Mobilization & Demobilization	1.0	L.S.	$ 150,000	$ 150,000
	1.2	Site Office Trailers	1.0	L.S.	$ 15,000	$ 15,000
	1.3	Site Engineering & Surveys	1.0	L.S.	$ 11,000	$ 11,000
	1.4	Project and Safety Signs	1.0	L.S.	$ 4,000	$ 4,000
2	**Gravity Main along Range Rd 253 from HWY 37 to TWS Rd 544**					**$11,286,715**
	2.1	Land Acquisition - 5m wide easement	1.61	ha	$ 148,000	$ 238,650
	2.2	1350mm Pipe (0m to 4m)	150.0	m	$ 1,650	$ 247,500
	2.3	1350mm Pipe (4m to 5m)	650.0	m	$ 1,900	$ 1,235,000
	2.4	1500mm Pipe (5m to 6m)	550.0	m	$ 2,650	$ 1,457,500
	2.5	1500mm Pipe (6m to 7m)	250.0	m	$ 3,200	$ 800,000
	2.6	1650mm Pipe (5m to 6m)	400.0	m	$ 2,850	$ 1,140,000
	2.7	1650mm Pipe (6m to 7m)	400.0	m	$ 3,400	$ 1,360,000
	2.8	1800mm Pipe (6m to 7m)	300.0	m	$ 4,250	$ 1,275,000
	2.9	1800mm Pipe (7m to 8m)	225.0	m	$ 5,350	$ 1,203,750
	2.10	1800mm Pipe (8m to 9m)	300.0	m	$ 6,450	$ 1,935,000
	2.11	2400mm Manhole	22.6	m	$ 4,350	$ 98,310
	2.12	2400mm Drop manhole	7.9	m	$ 10,000	$ 79,000
	2.13	3000mm Manhole	39	m	$ 5,550	$ 217,005
3	**Gravity Main along Range Rd 253 from Coal Mine Rd to TWS Rd 544**					**$1,883,550**
	3.1	Land Acquisition - 5m wide easement	0.41	ha	$ 148,000	$ 61,050
	3.2	750mm Pipe (5m to 6m)	825.0	m	$ 2,100	$ 1,732,500
	3.3	1500mm Manhole	30.0	m	$ 3,000	$ 90,000
4	**Gravity Main along TWS Rd 544 from Range Rd 253 to Range Rd 252C**					**$6,504,013**
	4.1	Land Acquisition - 20m wide easement	0.91	ha	$ 148,000	$ 134,088
	4.2	1800mm Pipe (6m to 7m)	251.0	m	$ 4,250	$ 1,066,750
	4.3	1800mm Pipe (8m to 9m)	808.0	m	$ 6,450	$ 5,211,600
	4.4	3000mm Manhole	16.5	m	$ 5,550	$ 91,575
5	**Ditch**					**$1,552,092**
	5.1	Land Acquisition (10m wide easement)	0.6	ha	$ 148,000	$ 87,468
	5.2	Topsoil - Stripping (30cm thickness)	1329.8	m3	$ 7	$ 9,308
	5.3	Subsoil - Stripping (30cm thickness)	1010.6	m3	$ 7	$ 7,074
	5.4	Subsoil - Disposal	1010.6	m3	$ 7	$ 7,074
	5.5	Overburden - Excavation	822.6	m3	$ 7	$ 5,758
	5.6	Overburden - Disposal	822.6	m3	$ 7	$ 5,758
	5.7	Topsoil - Placement	1010.6	m3	$ 7	$ 7,074
	5.8	Landscaping and Enhancements	0.6	ha	$ 33,000	$ 19,503
	5.9	Hydro - Seeding	0.6	ha	$ 5,200	$ 3,073
	5.10	Erosion Protection for natural ditch(400m)	1	L.S.	$ 400,000	$ 400,000
	5.11	Outfall (sedimenter, power dissipation, wetland)	1	L.S.	$ 1,000,000	$ 1,000,000
6	**Unnamed Creek Improvements**					**$426,000**
		Culvert #40				
	6.1	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	6.2	Roadway Reclamation	1.0	ump Su	$ 40,000	$ 40,000
	6.3	Culvert End Treatment (Flared Ends, Riprap, etc.)	2.0	ea.	$ 15,000	$ 30,000
		Culvert #41				
	6.4	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	6.5	Roadway Reclamation	1.0	ump Su	$ 40,000	$ 40,000
	6.6	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 15,000	$ 30,000
		Culvert #50				
	6.7	Concrete Pipe: Supply and Install, 1950mm diam, Class III	23.0	m	$ 5,800	$ 134,000
	6.8	Roadway Reclamation	1.0	ump Su	$ 60,000	$ 60,000
	6.9	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 20,000	$ 40,000
7	**Erosion Protection**					**$1,085,000**
	7.1	Gabion Mat	500.0	m	$ 2,000	$ 1,000,000
	7.2	Gabion Mat Under Drain, Gravel	500.0	m	$ 120	$ 60,000
	7.3	Environmental Approvals	1.0	ump Su	$ 25,000	$ 25,000
Total						**$15,328,357**
		Contingency			25%	**$3,832,000**
		Engineering			15%	**$2,299,000**
Grand Total						**$21,459,357**

Note: Manhole spacing is based on City of Edmonton Standards

Table 4-2A
Estimating Cost for West Study Area and ISL Proposal- Option 2A

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$180,000**
	1.1	Mobilization & Demobilization	1.0	L.S.	$ 150,000	$ 150,000
	1.2	Site Office Trailers	1.0	L.S.	$ 15,000	$ 15,000
	1.3	Site Engineering & Surveys	1.0	L.S.	$ 11,000	$ 11,000
	1.4	Project and Safety Signs	1.0	L.S.	$ 4,000	$ 4,000
2	**Gravity Main along Range Rd 253 from HWY 37 to TWS Rd 544**					**$11,286,715**
	2.1	Land Acquisition - 5m wide easement	1.61	ha	$ 148,000	$ 238,650
	2.2	1350mm Pipe (0m to 4m)	150.0	m	$ 1,650	$ 247,500
	2.3	1350mm Pipe (4m to 5m)	650.0	m	$ 1,900	$ 1,235,000
	2.4	1500mm Pipe (5m to 6m)	550.0	m	$ 2,650	$ 1,457,500
	2.5	1500mm Pipe (6m to 7m)	250.0	m	$ 3,200	$ 800,000
	2.6	1650mm Pipe (5m to 6m)	400.0	m	$ 2,850	$ 1,140,000
	2.7	1650mm Pipe (6m to 7m)	400.0	m	$ 3,400	$ 1,360,000
	2.8	1800mm Pipe (6m to 7m)	300.0	m	$ 4,250	$ 1,275,000
	2.9	1800mm Pipe (7m to 8m)	225.0	m	$ 5,350	$ 1,203,750
	2.10	1800mm Pipe (8m to 9m)	300.0	m	$ 6,450	$ 1,935,000
	2.11	2400mm Manhole	22.6	m	$ 4,350	$ 98,310
	2.12	2400mm Drop manhole	7.9	m	$ 10,000	$ 79,000
	2.13	3000mm Manhole	39	m	$ 5,550	$ 217,005
3	**Gravity Main along Range Rd 253 from Coal Mine Rd to TWS Rd 544**					**$3,071,350**
	3.1	Land Acquisition - 5m wide easement	0.4	ha	$ 148,000	$ 61,050
	3.2	1200mm Pipe (8m to 9m)	825.0	m	$ 3,500	$ 2,887,500
	3.3	2100mm Manhole	8.2	m	$ 4,000	$ 32,800
	3.4	2100mm Drop manhole	9.0	m	$ 10,000	$ 90,000
4	**Gravity Main along TWS Rd 544 from Range Rd 253 to Range Rd 252C**					**$7,856,338**
	4.1	Land Acquisition - 20m wide easement	0.91	ha	$ 148,000	$ 134,088
	4.2	1950mm Pipe (9m to 10m)	251.0	m	$ 6,850	$ 1,719,350
	4.3	1950mm Pipe (10m to 11m)	808.0	m	$ 7,300	$ 5,898,400
	4.4	3000mm Manhole	19.0	m	$ 5,500	$ 104,500
5	**Ditch**					**$2,052,092**
	5.1	Land Acquisition (10m wide easement)	0.6	ha	$ 148,000	$ 87,468
	5.2	Topsoil - Stripping (30cm thickness)	1329.8	m3	$ 7	$ 9,308
	5.3	Subsoil - Stripping (30cm thickness)	1010.6	m3	$ 7	$ 7,074
	5.4	Subsoil - Disposal	1010.6	m3	$ 7	$ 7,074
	5.5	Overburden - Excavation	822.6	m3	$ 7	$ 5,758
	5.6	Overburden - Disposal	822.6	m3	$ 7	$ 5,758
	5.7	Topsoil - Placement	1010.6	m3	$ 7	$ 7,074
	5.8	Landscaping and Enhancements	0.6	ha	$ 33,000	$ 19,503
	5.9	Hydro - Seeding	0.6	ha	$ 5,200	$ 3,073
	4.10	Erosion Protection for natural ditch(400m)	1	L.S.	$ 400,000	$ 400,000
	5.11	Outfall (sedimenter, power dissipation, wetland)	1	L.S.	$ 1,500,000	$ 1,500,000
6	**Unnamed Creek Improvements**					**$447,000**
		Culvert #40				
	6.1	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	6.2	Roadway Reclamation	1.0	Lump Sum	$ 40,000	$ 40,000
	6.3	Culvert End Treatment (Flared Ends, Riprap, etc.)	2.0	ea.	$ 15,000	$ 30,000
		Culvert #41				
	6.4	Concrete Pipe: Supply and Install, 900mm diam, Class III	23.0	m	$ 1,100	$ 26,000
	6.5	Roadway Reclamation	1.0	Lump Sum	$ 40,000	$ 40,000
	6.6	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 15,000	$ 30,000
		Culvert #50				
	6.7	Concrete Pipe: Supply and Install, 2100mm diam, Class III	23.0	m	$ 6,300	$ 145,000
	6.8	Roadway Reclamation	1.0	Lump Sum	$ 60,000	$ 60,000
	6.9	Culvert End Treatment, Flared Ends, Riprap, etc.	2.0	ea.	$ 25,000	$ 50,000
7	**Erosion Protection**					**$1,085,000**
	7.1	Gabion Mat	500.0	m	$ 2,000	$ 1,000,000
	7.2	Gabion Mat Under Drain, Gravel	500.0	m	$ 120	$ 60,000
	7.3	Environmental Approvals	1.0	Lump Sum	$ 25,000	$ 25,000
Total						**$17,037,157**
		Contingency			25%	**$4,259,000**
		Engineering			15%	**$2,556,000**
Grand Total						**$23,852,157**

Note: Manhole spacing is based on City of Edmonton Standards

Table 4-3
Estimating Cost for East Study Area - Option 1

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$145,000**
	1.1	Mobilization & Demobilization	1	L.S.	$120,000	$120,000
	1.2	Site Office Trailers	1	L.S.	$13,000	$13,000
	1.3	Site Engineering & Surveys	1	L.S.	$8,000	$8,000
	1.4	Project and Safety Signs	1	L.S.	$4,000	$4,000
2	**Main Ditch From Long Lake (1m to 4m Depth, 2450m long)**					**$2,546,306**
	2.1	Easement Acquisition (25m wider)	6.1	ha	$148,000	$906,500
	2.2	Topsoil - Stripping (30cm thickness)	13547	m^3	$7	$94,831
	2.3	Subsoil - Stripping (30cm thickness)	12224	m^3	$7	$85,570
	2.4	Subsoil - Disposal	12224	m^3	$7	$85,570
	2.5	Overburden - Excavation	51879	m^3	$7	$363,155
	2.6	Overburden - Disposal	51879	m^3	$7	$363,155
	2.7	Culvert Disposal (900mm)	26	m	$170	$4,420
	2.8	900 mm Culvert	26	m	$550	$14,300
	2.9	Topsoil - Placement	13547	m^3	$7	$94,831
	2.10	Landscaping and Enhancements	6.1	ha	$33,000	$202,125
	2.11	Hydro - Seeding	6.1	ha	$5,200	$31,850
	2.13	Erosion Protection	1	L.S.	$300,000	$300,000
3	**Main Pipe**					**$7,226,503**
	3.1	Easement Acquisition (5m Wide)	0.8	ha	$148,000	$118,400
	3.2	1650mm Pipe (0m to 4m)	59	m	$2,700	$158,706
	3.3	1650mm Pipe (4m to 6m)	365	m	$2,850	$1,040,051
	3.4	1650mm Pipe (6m to 7m)	83	m	$3,400	$283,390
	3.5	1650mm Pipe (7m to 10m)	472	m	$4,000	$1,886,920
	3.6	1650mm Pipe (>10m)	562	m	$4,600	$2,583,636
	3.7	3000 mm Manhole	28	m	$5,550	$155,400
	3.8	Outfall (sedimenter, power dissipation, wetland)	1	L.S.	$1,000,000	$1,000,000
4	**Cutbank Lake Pipe**					**$797,590**
	4.1	Easement Acquisition (5m Wide)	0.3	ha	$148,000	$37,000
	4.2	900mm Pipe (0m to 4m)	97	m	$1,000	$97,470
	4.3	900mm Pipe (4m to 6m)	394	m	$1,500	$590,520
	4.4	1800 mm Manhole	22	m	$3,300	$72,600
5	**Minor Pipe Connects to Main Ditch**					**$955,460**
	5.1	Easement Acquisition (5m Wide)	0.2	ha	$148,000	$36,260
	5.2	900mm Pipe (0m to 4m)	840	m	$1,000	$840,000
	5.3	1800mm Manhole	24	m	$3,300	$79,200
Total						**$11,670,858**
	Contingency				25%	**$2,917,715**
	Engineering				15%	**$1,750,629**
Grand Total						**$16,339,202**

Table 4-4
Estimating Cost for East Study Area - Option 2

Item	Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**				**$160,000**
1.1	Mobilization & Demobilization	1	L.S.	$130,000	$130,000
1.2	Site Office Trailers	1	L.S.	$15,000	$15,000
1.3	Site Engineering & Surveys	1	L.S.	$11,000	$11,000
1.4	Project and Safety Signs	1	L.S.	$4,000	$4,000
2	**Main Ditch From Long Lake (1m to 4m Depth, 2450m Long)**				**$3,725,239**
2.1	Easement Acquisition (25m wider)	6.6	ha	$148,000	$973,100
2.2	Topsoil - Stripping (30cm thickness)	14697	m^3	$7	$102,882
2.3	Subsoil - Stripping (30cm thickness)	13277	m^3	$7	$92,941
2.4	Subsoil - Disposal	13277	m^3	$7	$92,941
2.5	Overburden - Excavation	57047	m^3	$7	$399,330
2.6	Overburden - Disposal	57047	m^3	$7	$399,330
2.7	Culvert Disposal (900mm)	26	m	$170	$4,420
2.8	900 mm dia. Culvert	26	m	$550	$14,300
2.9	Topsoil - Placement	13547	m^3	$7	$94,831
2.10	Landscaping and Enhanment	6.6	ha	$33,000	$216,975
2.11	Hydro - Seeding	6.6	ha	$5,200	$34,190
2.12	Outfall (sedimenter, power dissipation, wetland)	1	L.S.	$1,000,000	$1,000,000
2.13	Erosion Protection	1	L.S.	$300,000	$300,000
3	**Siphon Pipe (Phase 1)**				**$1,724,418**
3.1	Easement Acquisition (5m Wide)	0.8	ha	$148,000	$114,700
3.2	675mm Pipe (0m to 4m)	2000	m	$500	$1,000,000
3.3	MH 3m Slab Top/Base (2.45m Depth)	1	each	$5,000	$5,000
3.4	MH Vertical Tunneling Excavation	18	m	$2,000	$36,000
3.5	3m MH Installation&Grovel Base&Back Fill	2.5	m	$5,000	$12,500
3.6	MH 2.1m Slab Top/Base (2.45m Depth)	1	each	$3,000	$3,000
3.7	1.2m x 1.22m Barrel	18	m	$807	$11,907
3.8	1.2m x 1.22m Barrel Installation	18	m	$2,800	$41,311
3.9	Vacuum Pump	1	each	$500,000	$500,000
4	**Cutbank Excavation (2m Live, 2m Dead)**				**$124,650**
4.1	Lake Surface Easement Acquisition	0.2	ha	$148,000	$33,300
4.2	Lake Excavation	13050	m^3	$7	$91,350
5	**Minor Pipe Connects to Main Ditch**				**$956,200**
5.1	Easement Acquisition (5m Wide)	0.3	ha	$148,000	$37,000
5.2	900mm Pipe (0m to 4m)	840	m	$1,000	$840,000
5.3	1800mm Manhole	24	m	$3,300	$79,200
6	**Siphon Pipe (Phase 2 and 3)**				**$4,356,400**
6.1	825mm Pipe (0m to 4m) (Phase 2)	2000	m	$750	$1,500,000
6.2	Vacuum Pump	1	each	$500,000	$500,000
6.3	825mm Pipe (0m to 4m) (Phase 3)	2000	m	$750	$1,500,000
6.4	Vacuum Pump	1	each	$500,000	$500,000
6.5	1800mm Manhole	108	m	$3,300	$356,400
Total					**$11,046,907**
	Contingency			25%	**$2,761,727**
	Engineering			15%	**$1,657,036**
Grand Total					**$15,465,669**

Table 4-4
Estimating Cost for East Study Area - Option 3

Item		Description	Quantity	Unit	Unit Price	Cost
1	**General Requirements**					**$145,000**
	1.1	Mobilization & Demobilization	1	L.S.	$120,000	$120,000
	1.2	Site Office Trailers	1	L.S.	$13,000	$13,000
	1.3	Site Engineering & Surveys	1	L.S.	$8,000	$8,000
	1.4	Project and Safety Signs	1	L.S.	$4,000	$4,000
2	**Main Ditch From Long Lake**					**$8,242,461**
	2.1	Easement Acquisition	14.6	ha	$20,000	$292,500
	2.2	Topsoil - Stripping (30cm thickness)	33233	m^3	$7	$232,631
	2.3	Subsoil - Stripping (30cm thickness)	30004	m^3	$7	$210,026
	2.4	Subsoil - Disposal	30004	m^3	$7	$210,026
	2.5	Overburden - Excavation	133946	m^3	$7	$937,623
	2.6	Overburden - Disposal	133946	m^3	$7	$937,623
	2.7	Culvert Disposal (900mm)	66	m	$170	$11,220
	2.8	900 mm dia. Culvert	26	m	$550	$14,300
	2.9	Topsoil - Placement	33233	m^3	$7	$232,631
	2.10	Hydro - Seeding	14.6	ha	$5,200	$76,050
	2.11	Highway 28 Crossing	1	each	$2,000,000	$2,000,000
	2.12	Culvert (Microtunnelling)	80.0	m	$13,000	$1,040,000
	2.13	Detail Field Survey	144	hour	$103	$14,832
	2.14	Erosion Protection	1	L.S.	$1,000,000	$1,000,000
	2.15	Landscaping and Enhancements	1.0	ha	$33,000	$33,000
	2.16	Outfall (sedimenter, power dissipation, wetl	1.0	L.S.	$1,000,000	$1,000,000
3	**Minor Pipe Connects to Main Ditch**					**$955,460**
	3.1	Easement Acquisition (5m Wide)	0.2	ha	$148,000	$36,260
	3.2	900mm Pipe (0m to 4m)	840	m	$1,000	$840,000
	3.3	1800mm Manhole	24	m	$3,300	$79,200
Total						**$9,342,921**
	Contingency				25%	**$2,335,730**
	Engineering				15%	**$1,401,438**
Grand Total						**$13,080,089**

Appendix C: Stormwater Analysis Study

Appendix D
Environmental Analysis

SPENCER ENVIRONMENTAL
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Memorandum

To: Nick Pryce, V3 Companies of Canada **Date: 23 July 2019**

From: Lynn Maslen, M.Sc., P. Biol. **Our file: EP 853**
Spencer Environmental

Re: Sturgeon Valley Growth Framework and Area Structure Plan, Phase 1 - Influencing Environmental Features/Natural Areas Mapping

Introduction

In support of the Sturgeon Valley Growth Framework study, we have prepared a natural features map showing all potential Environmentally Significant Lands within the project's study area. The map is intended as a preliminary step in identifying environmental features that are potentially undevelopable lands and/or are suitable for conservation and/or incorporation into parks and open space. This memo sets out the mapping methods used and identifies those mapped natural features that have the greatest potential to influence the growth framework and ultimately the ASP.

Methods

We undertook the following tasks to prepare this memo and the attached map:

- Mapped previously identified and newly recognized environmental features and Natural Areas within Sturgeon Valley.
- Conducted a literature review of other relevant planning and environmental reports.
- Developed criteria to determine key features of influence.

Mapping Data and Methods

This study maximized the use of existing databases. The following open databases were searched for records in the study area:

- The Alberta Conservation Information Management System (ACIMS; AEP 2019a) was searched on 8 July 2019 for recorded special status plant species and protected areas within the study area.

- The Fish and Wildlife Management Information System (FWMIS; AEP 2019b) was searched using the Fish and Wildlife Internet Mapping Tool (FWIMT) on 08 July 2019 to identify special status wildlife species records specific to the study area.
- FWMIS mapped hydrological layers were downloaded and used to identify water bodies/wetlands on the final map.

Other databases used to map environmental features included:

- Previously identified Natural Areas from the City of St. Albert Growth Management Study (2019) within and bordering the study area.
- The 1974 flood level data from Sturgeon County to describe the floodplain within and bordering the study area.

Mapping efforts extended 100 m beyond the study area boundary to provide context and account for ecological connectivity. City of St. Albert Growth Management Study (GMS) data provided natural area mapping for approximately 1/3 of the Sturgeon Valley Growth Framework study area (and into the 100m buffer). We overlaid that GIS data on the study area and retained the natural area designations assigned during that study (ESA or Uncategorized NA).

For the remainder of the lands, we reviewed 2017 high resolution color aerial photography and identified and delineated all areas meeting the following definition of a Natural Area: an area of naturally occurring land and/or surface water that is dominated by native plant species and subject to natural processes (e.g., succession) that result in naturally occurring vegetation patterns. The character of each natural area was not described. Natural areas may consist of ravines, floodplains, woodlands, wetlands or more open grassland/shrubland areas. Any information regarding woodland or wetland Natural Area components available in reports was included on the map as notations.

For the most part, wetlands forming part of a Natural Area were not separately delineated. However, FWMIS has records of delineated water bodies and these were considered likely to be wetlands. To further explore the potential for those water bodies identified to be permanent wetlands, aerial photography from 2005, 2008, 2010, 2012 and 2015 was reviewed. Those mapped water bodies that displayed evidence of a potential Crown claimable bed and shore were carried forward and are displayed on the map as 'prominent water bodies' and probable wetlands.

All FWMIS mapped watercourses are shown on the map, unmodified. Imagery interpretation suggests that many of those watercourses are either ephemeral, rather than permanent, or historical. All watercourses are nevertheless displayed on this map for future ground truthing.

Contours were not included in this mapping exercise to allow the Natural Areas to show prominently on the map. Additional, unmapped disturbed wetlands not associated with natural vegetation were visible on the imagery, scattered throughout the study area. These disturbed wetlands were not mapped as natural areas as they presented as frequently tilled/cultivated/hayed and therefore are not "subject to natural processes that result in naturally occurring vegetation patterns".

For this study, mapped Natural Areas were categorized as follows:

> **Environmentally Sensitive Area (ESA):** areas previously mapped as ESAs in Infotech (1989) *and* areas previously mapped as ESAs by City of St. Albert.

Infotech (1989) defined ESAs as follows: Lands that embody several dominant diagnostic attributes, including (1) hazard lands and areas which are unsuitable for development; (2) areas which perform a vital environmental, ecological or hydrological function; (3) areas which contain unique geological or physiographic features; (4) areas which are important for cultural or historic reasons; (5) areas which contain significant, rare or endangered species; (6) areas which are unique habitats with limited representation in the region or are a small remnant of once larger habitats which have virtually disappeared. St. Albert (2015) defined ESAs as follows: an undisturbed or relatively undisturbed natural area equal to or greater than 0.5 ha which, because of its features, characteristics or ecological functions is significant *and* is highly sensitive to most forms of disturbance (i.e., its values and functions would be susceptible to significant alteration by natural or human-caused disturbance such as development of surrounding lands or human use of the site).

Uncategorized NA (UNA): Areas mapped as UNA by St. Albert *and* all other areas meeting the definition of Natural Area and delineated in this study through desktop efforts.

Prominent FWMIS Water Bodies - likely permanent, delineated wetlands

Literature Review

The following reports were reviewed for information on natural features identified on our map. Sturgeon County Municipal Development Plan (Bylaw 1313/13) (Sturgeon County 2014):

- Edmonton Metropolitan Region Growth Plan (Edmonton Metropolitan Region Board 2017).
- Sturgeon Valley Area Structure Plan (Bylaw 882/99) (Armin A. Preiksaitis & Associates Ltd. 1999).
- Open Space Plan for Sturgeon County (EDA Collaborative Inc. & Sierra Planning and Management 2016).
- Natural Area Mapping for the Sturgeon River Watershed (ALCES Landscape and Land Use Ltd. 2019)
- Environmentally Sensitive Areas Study – Phase two Report: Technical Report (InfoTech Services and Associates 1989).
- City of Edmonton Environmental Sensitivities Project (Solstice 2017), where the study area expands into Sturgeon Valley.
- Sturgeon Valley Vision – Draft Development Concept (Sturgeon County 2009).
- Sturgeon Watershed Riparian Area Assessment (Fiera Biological Consulting 2018).
- Breathe: Edmonton's Green Network Strategy (City of Edmonton 2017).
- 127th Street, Sturgeon County, Functional Planning Study Environmental Overview (Spencer Environmental 2012).

Additional information in these reports was added to the map if the feature described was still present on the imagery.

Results

In total, we identified 67 natural features within the study area. Most of these features are clustered near the west, south and east boundaries of the study area. There are several small natural features scattered throughout the middle portion of the study area.

Only three features have been formally recognized by Sturgeon County as Environmentally Sensitive Areas (ESAs) in their documented county-wide inventories (Infotech 1989; EDA Collaborative Inc. & Sierra Planning and Management 2016). Because of the large area covered, those inventories focused on prominent (large) natural features. The three ESAs are:

- Sturgeon Valley Namao - Sturgeon River reach between St. Albert city limits and Highway 37. This area was first recognized as an ESA in InfoTech (1989) because of its diverse valley habitats. The Sturgeon River Valley is also noted as an important conservation area in the Edmonton Metropolitan Regional Growth Plan (EMRGP). Fiera Biological Consulting (2018) notes this area as having a low to very low bank intactness but marks it as a high restoration priority. Sturgeon Valley Namao was also identified as an important regional ecological corridor in the City of St. Albert's GMS.

- Lancaster/Cutbank Lake was also identified in InfoTech (1989). This wetland has remained on the landscape since that time and has potential to be a Crown-owned body of water. The lake and adjacent lands have been incorporated into design maps in the County's Municipal Development Plan (MDP), in Sturgeon Valley's Area Structure Plan (ASP) and Sturgeon Valley Vison map as part of a greenbelt. This area is also recognized by Edmonton's Environmental Sensitivities Project as being of high value.

- River Lot 56 is a provincially owned and managed Natural Area. The most sizeable features are an ephemeral tributary of the Sturgeon River and complex river valley habitats. It is mapped on all municipal planning documents, is recognized as an area of high to very high value in Edmonton's Environmental Sensitivities Project. The City of St. Albert's GMS also identifies River Lot 56 as having a local core area ecological connectivity function.

The study area supports several other notable/sizeable natural features many of which have been previously mapped, but not named, by more recent studies:

- The east portion of the study area supports three other water bodies with high potential to be Crown claimed. These are all likely wetlands, rather than true lakes, which must have depths >2 m deep. These features and various extents of adjacent lands have been mapped by the County's MDP, Sturgeon Valley ASP and the Sturgeon Valley Vision map. They are recognized as areas of high to very high value in Edmonton's Environmental Sensitivities Project. Combined, these areas create a sizable ecological corridor connecting the northernmost portions of the City of Edmonton (e.g., Goodridge Corners Neighborhood) to natural areas north of the Sturgeon Valley study area.

- Several relatively large natural areas previously identified as woodlands and wetlands are scattered throughout the study area, but mainly in the south. These areas have been

described by Spencer Environmental (2012) as being of high conservation value. A few of the woodlands have also been recognized to have a local core area ecological connectivity function by the City of St. Albert's GMS.

ACIMS and FWMIS searches did not result in any records of rare plants or wildlife species of management concern within the study area.

Environmental policy in Sturgeon County's Municipal Development Plan (MDP) states that the County "*Should ensure that settlement patterns, new subdivisions and development avoid Environmentally Significant Lands unless there is potential for significant net positive Countywide municipal, community and environmental gain*" (Sturgeon County 2014). This responsibility is mentioned in several County and regional planning documents including the Open Space Plan for Sturgeon County (OSP), the Sturgeon Valley ASP and the EMRGP.

Sturgeon County's MDP defines Environmentally Significant Lands as "*All lands in Sturgeon County that are: (a) a swamp; (b) a gully, ravine or coulee; (c) an escarpment; (d) a natural drainage course; (e) riparian lands adjacent to the beds and shores of rivers, streams, creeks, watercourses and natural drainage courses; (f) wetlands; (g) lands subject to flooding, including Flood Risk Areas, floodways and flood fringes; (h) unstable lands; (i) natural areas including forests, woodlands, meadows and prairies; or (j) contaminated lands*" (Sturgeon County 2014). Accordingly, we have collectively named the mapped features Environmentally Significant Lands. The MDP and other planning documents indicate that all of the mapped features merit consideration during planning exercises; however, some features are more noteworthy than others and will have greater potential to influence development.

Areas having the greatest potential to influence planning decisions meet one or more of the following five criteria:

- The feature is a previously recognized ESA
- The feature is or has high potential to be a Crown claimable water body
- The feature is potentially subject to flooding
- The feature has been previously noted in a planning document as important environmentally
- The feature provides structural or functional connectivity to other influencing features

Key Influencing Environmental Features

Table 1 lists this study's key influencing environmental features, the above established criteria they meet, and which reviewed documents support our findings.

Table 1. Key Influencing Environmental Features within the Study Area.

Key Environmental Feature	Previously Recognized ESA	Potential to be a Crown Claimable Waterbody	Potential to flood	Previously noted as important environmentally	Provides Connectivity	Supporting Documents
Influencing Feature Criteria						
River Lot 56	✓		✓	✓	✓	GMS, Infotech, OSP, EMRGP, Sturgeon Valley Vison, SVASP, MDP, ALCES, Solstice, Spencer
Sturgeon Valley Namao	✓		✓	✓	✓	GMS, Infotech, OSP, EMRGP, Sturgeon Valley Vision, SVASP, MDP, ALCES, Solstice, Fiera
Lancaster/Cutbank Lake	✓	✓		✓	✓	Infotech, OSP, Sturgeon Valley Vison, SVASP, Solstice
Labelled Woodlands				✓	✓	Spencer, GMS

Additional Regulatory Influences

A sizeable portion of the study area falls within the Canadian Forces Base (CFB) Edmonton Bird Hazard Area, which was established by the Department of National Defense (DND) pursuant to the *Aeronautics Act* and the *Edmonton Garrison Heliport Zoning Regulations* (EGHZR). The Bird Hazard Area delineates a zone in which DND deems there to be a higher risk of birds colliding with aircraft using CFB Edmonton. The EGHZR specify land use conditions, built structure conditions and prohibitions for lands within the Bird Hazard Area. Construction of any new open water reservoirs within that area requires approval from DND. DND will only approve new open water reservoirs that are designed to be unattractive to large flocking waterbirds, such as gulls, geese and ducks, on the basis that an increase in open water area may increase local bird populations and thus the risk of aircraft/bird strikes.

This mapping exercise only delineated wetlands with a high probability of being Crown claimable. Other mapped Natural Areas also support smaller wetlands, many of which are not yet identified. In addition, there are numerous other unmapped, disturbed wetlands that are not associated with natural uplands and have been cultivated. All wetlands, including disturbed wetlands, remain subject to assessment and approval pursuant to the *Water Act* and the *Alberta Wetland Policy* if they are identified for disturbance or removal during planning.

References

Armin A. Preiksaitis & Associates Ltd. 1999. Sturgeon Valley Area Structure Plan. Prepared for Sturgeon County, Alberta.

EDA Collaborative Inc. and Sierra Planning and Management. 2016. Open Space Plan for Sturgeon County. Prepared for Sturgeon County, Alberta.

Edmonton Metropolitan Region Board. 2017. Edmonton Metropolitan Regional Growth Plan. Prepared for the City of Edmonton, Town of Beaumont, Town of Devon, City of Fort Saskatchewan, City of Leduc, Leduc County, Town of Morinville, Parkland County, City of St. Albert, City of Spruce Grove, Town of Stony Plain, Strathcona County, and Sturgeon County, Alberta.

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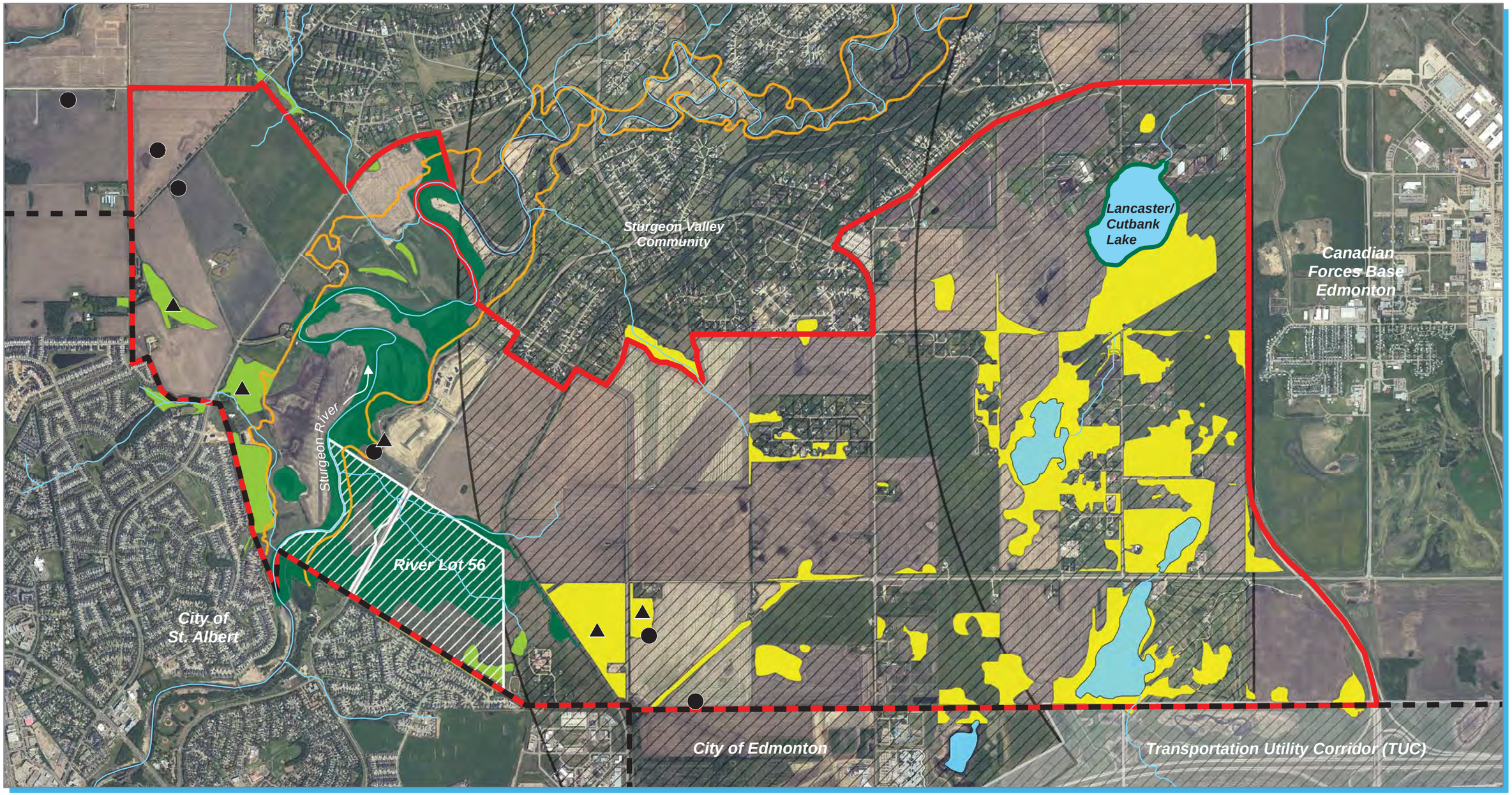

Legend

- Study Area (Approx.)
- Municipal Boundary
- River Lot 56 (Alberta Parks and Protected Areas)
- Edmonton Garrison (DND) Bird Hazard Area

Environmental Features

- FWMIS Watercourses
- Lands Potentially Subject to Flooding (1974 Flood Level)

Natural Area Types*

- Environmentally Sensitive Area (ESA)[1]
- Uncategorized NA[2]
- Uncategorized NA[3]
- Prominent FWMIS Water Bodies (Potential for Public Lands Claim)
- Wetland[4]
- Previously Mapped Woodland[4]

***Note:** Natural Areas may include upland and wetland components. Other wetlands subject to agriculture and not meeting the definition of Natural Area are also present but not mapped.*

[1]*Infotech (1989); Spencer (2019)*
[2]*Spencer (2019)*
[3]*Mapped for this study*
[4]*Spencer (2012)*

Environmentally Significant Lands
Sturgeon Valley Growth Framework & Area Structure Plan

1:25,000

0 250 500 1,000 Meters

Map Date: 23 July 2019
Imagery Date: May 2017

SPENCER ENVIRONMENTAL MANAGEMENT SERVICES LTD.

Appendix D: Environmental Analysis

Appendix E

Sturgeon Valley Fiscal Impact Assessment

Fiscal Impact Analysis of Developing Sturgeon Valley

Prepared For:
Sturgeon County

Working Paper - Update

DRAFT

June 1, 2020

APPLICATIONS
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1. Introduction

Sturgeon County is considering the potential development of lands in the Sturgeon Valley area of the County. The potential for development of this area creates some significant financial issues that require careful consideration. This analysis is intended to provide an initial financial evaluation of each of three major development options. Based on a review of these results, it is intended that the development options and financial analysis may be modified to determine how best to frame this development.

1.1. Purpose of this Analysis

The financial impacts of develop proposed in the Sturgeon Valley ASP. This includes consideration of three general scenarios.

- **Option 1 - Consolidated Option 30:** Includes residential and non-residential development to a build out density of 32 units per NRHA over a 30 year forecast timeframe to 2049.
- **Option 1a - Consolidated Option 60** Includes residential and non-residential development to a build out density of 35 units per NRHA over a 60 year forecast timeframe to 2079. This also includes a variation that considers the full build out of the ASP planning area.
- **Option 2 - Landowners/Developers Concept:** Includes residential and non-residential development as proposed by developers with land holdings in the ASP area. This includes both residential and non-residential development to a build out density of 35 units per NRHA over a 60 year forecast timeframe to 2079.

1.2. Approach to the Analysis

The analysis of each development option has been considered in the context of a Baseline Financial Forecast. This Baseline Forecast provides a 30 and 60 projection of the County's financial picture. The results for each of the development options has been compared against this Baseline Forecast to provide context regarding the impact of the development option on the financial position of the County.

As would be expected, incorporating the development of a significant urban node in the County results in a fundamental change in its approach to service delivery, including the types of services provided, and importantly, in some instances the nature of funding these services (e.g. police). While these changes are things the County will face to some degree in the future with additional growth, they are clearly a marked departure from what is both the status quo and a likely evolution of municipal services provided by the County.

In recognition of this fundamental change, two scenarios for each option have been evaluated. These are as follows:

- **Blended Scenario:** In this scenario the financial implications of each development option are 'blended' into the Baseline Forecast for the County, resulting in a combined service delivery approach and a single tax rate for each assessment class across the County. This is similar to how Strathcona County delivers services and sets municipal tax rates.
- **Urban Services Area (USA) Scenario:** Because the nature and cost of services delivered are different in the ASP area than what is typical of the County, there is a spillover of the financial impacts of development in the ASP area to the ratepayers in the rest of the County. In some instances, these spillover effects are significant, resulting in existing County ratepayers subsidizing the cost of services provided to the ASP area. To shield existing ratepayers from these spillover effects it is possible to establish an Urban Services Area which would encompass development in the ASP area, and for the County to establish separate tax rates for the ASP area. This would ensure that development in the ASP area paid for all the services received and protect existing ratepayers from subsidizing the costs. This is similar to how the Regional Municipal of Wood Buffalo treats the Urban Services Area of Fort McMurray.
- **'Net Neutral' Scenario:** As a result of the financial implications of the Blended and USA Scenarios, additional analysis has been done to evaluate the potential for creating a better balance in residential and non-residential development. In some instances, this involves reducing the amount of residential development while keeping the non-residential development whole, and in others it involves increasing the amount of non-residential development and keeping the residential development as defined in the original scenario.

The analysis provided includes results for each of these scenarios. It is noted that there are options that lie between these to options that could be explored as a part of refinement of the development options and the associated financial analysis.

2. Baseline Financial Forecast

The Baseline Financial Forecast has been developed to consider how the financial picture of the County will evolve without development in Sturgeon Valley. This forecast includes the following assumptions:

- **Population Growth:** Outside of Sturgeon Valley, the population growth in the rest of the county is expected to be modest and limited to growth in the hamlets in the County, country residential infill development and some additional subdivision of farm parcels. On average, population in the Baseline Scenario is projected to increase at 0.75% per year. This is below the long term population growth of the County which averaged approximately 0.85% per year between 2001 and 2016.
- **Density (Dwelling Unit occupancy):** Average occupancy per occupied dwelling unit is currently 2.98. This has been assumed to continue over the forecast period. The number of unoccupied dwelling units has been assumed to remain constant.
- **Assessment Per Dwelling Unit:** Currently the average assessment per dwelling units is approximately $475,000. It is projected this average would decrease to $450,000 per units by the end of the forecast period.
- **Non-Residential Assessment Growth:** Non-residential assessment growth in the Baseline Forecast has been limited to the equivalent of completion of the Integrated Propane Dehydrogenation and Polypropylene Plant. This includes additions to the County's non-residential, machinery and equipment and linear assessment categories. NOTE: The forecast does not assume this particular project proceeds, but rather a project similar in scope and assessment to this project would be completed over the forecast period.[1]
- **Operating Expenditures:** Each municipal service delivery has been evaluated to determine a fixed and variable portion of operating expenditures. Based on this analysis, the growth in the County has been applied to the variable portion of these expenditures to project future operating expenditures. This assumes that the current levels of funding and services levels would largely remain in the Baseline over the forecast period.[2]
- **Operating Revenues:** Operating (non-tax) municipal revenues have been estimated based on the historic cost recover rates. This compares the operating revenues of a function area against annual operating expenditures. The level of cost recover (operating revenues divided by operating expenditures) has been assumed to remain constant over the forecast period. This reflects a continuation of current rates and fees established for municipal services provided would remain over the forecast period.[3]
- **Operating Grants:** Operating grants have been assumed to increase with population growth, but at a decreasing rate. It has been assumed that operating grants would increase only 10% of the 2019 per capita rate for all future growth.
- **Capital Expenditures:** The County's 5 year capital plan has been incorporated into the Baseline Financial Forecast (2021- 2025).[4] Following this it has been assumed that County capital expenditures would be consistent with the per capita levels of spending over the period 2009 to 2018. This ranges from approximately $850 to $950 per capita per year.

[1] Alberta Major Projects https://majorprojects.alberta.ca/#/

[2] Alberta Municipal Affairs https://open.alberta.ca/opendata/municipal-financial-and-statistical-data

[3] Alberta Municipal Affairs https://open.alberta.ca/opendata/municipal-financial-and-statistical-data

[4] Sturgeon County Approved Operating and Capital Budget 2020 - 2021-2025 Financial Forecast

- **Life Cycle Costs:** It is estimated that the County is not currently keeping up with a full investment required to fully cost the refurbishment and replacement of infrastructure. Over the forecast period capital investment in life cycle costs has been increased by 30%.
- **Capital Grants:** It is assumed that capital grants available to finance future investment in replacement of existing assets and purchase of new assets would be half of the historic levels between 2009 and 2018.
- **Other Capital Financing:** It is assumed that capital financing from non-grant sources would be shared based on historic levels observed between 2009 and 2018. As grants have been reduced, capital financing from all other sources has been increased on a pro-rata basis.

The results of the Baseline Financial Forecast are presented in the results for each of the development options, presented in the next sections of the Working Paper.

3. Option 1 - Consolidated Option 30

The analysis provided below includes a preliminary analysis of the Consolidated Option 30 development scenario. This analysis should be considered preliminary and subject to revision upon review of the financial results and assumptions contained therein.

3.1. Development Assumptions

The analysis is based on the following development assumptions.

Table 1: Option 1 - Consolidated Option 30: Residential Development Assumptions[5]

	Area (ha)	Units / ha	Number of Units	People / Unit	Population	Assessment / Unit
LDR 1	84.21	20	1,684	2.60	4,379	400,000
LDR 2	97.20	25	2,430	2.60	6,318	375,000
Row Housing	48.70	45	2,192	2.60	5,698	325,000
MDR 1	17.10	90	1,539	2.20	3,386	250,000
MDR 2	0.00	125	0	2.20	0	250,000
Total	247.21		7,845		19,781	

Table 2: Option 1 - Consolidated Option 30: Non-Residential Development Assumptions[6]

	Area (ha)	Assessment / ha
Commercial / Retail	20.8	6,500,000
Industrial	51.9	2,500,000
Total	72.7	

All growth in the ASP area is assumed to start in 2026 and develop at a constant rate over the forecast period.

[5] Source: Area and Units V3, Population and Assessment Applications

[6] Source: Area V3, Assessment Applications

3.2. Municipal Cost/Revenue Assumptions

The financial analysis for this scenario is based on the following assumptions.

3.2.1. Municipal Operating Expenditures

To estimate the annual operating expenditures for the ASP historic operating expenditures for 18 Alberta municipalities with populations that are within the range of the ASP options. These municipalities include towns, cities and specialized municipalities that have a current population of 15,000 and 102,000. Based on this analysis, operating expenditures have been grouped into three tiers that correspond to the population of the municipalities. Using historic average municipal operating expenditures per capita, these estimate provide a reasonable proxy for he annual per capita operating costs of providing municipal services to the ASP within each of the three tiers.

Table 3: Operating Expenditures Per Capita by Growth Tier

	Tier 1	Tier 2	Tier 3
Population Treshold	**Less than 30,000**	**Less than 60,000**	**More Than 60,000**
airport	0	0	0
ambulance_first_aid	0	0	0
bylaws_enforcement	37	40	44
cemeteries_crematoriums	2	3	5
common_and_equipment_pool	30	115	99
convention_centers	0	0	0
council_and_legislative	32	17	12
culture_libraries_museums	93	132	128
daycare	13	0	0
disaster_emergency	3	10	4
economic_agricultural_development	13	4	14
electric	0	0	0
family_community_support	57	50	57
fire	112	200	243
gas	0	0	0
general_administration	254	300	397
land_building_rentals	3	0	0
land_use_planning	93	67	54
other	16	0	2
other_environment	5	6	1
other_general_government	3	47	0
other_planning_development	4	6	0

	Tier 1	Tier 2	Tier 3
Population Treshold	**Less than 30,000**	**Less than 60,000**	**More Than 60,000**
other_protective_services	8	0	7
other_public_welfare	0	0	0
other_recreation_culture	1	8	0
other_transportation	0	0	0
parks_and_rec	317	351	380
police	198	258	291
public_housing	0	11	28
public_transit	15	110	166
recreation_boards	2	11	8
roads_streets_walks_lighting	162	173	169
sewers_drainage	4	16	9
subdivision_land_development	8	16	18
waste_management	82	68	88
wastewater_treatment	108	111	132
water_distribution	157	130	131
Total	1,835	2,264	2,488

The municipalities included in each Tier are as follows:

- **Tier 1 (Seven municipalities - Population between 15,000 - 30,000):**
  - Brooks
  - Stony Plain
  - Camrose
  - Beaumont
  - Chestermere
  - Fort Saskatchewan
  - Okotoks
- **Tier 2: (Seven municipalities - Population between 30,000 - 60,000):**
  - Cochrane
  - Lloydminster
  - Leduc
  - Spruce Grove
  - Medicine Hat
  - St Albert
  - Grande Prairie
  - Airdrie

- **Tier 3 (Population greater than 60,000):**[7]
  - St Albert
  - Grande Prairie
  - Airdrie
  - Strathcona County
  - Red Deer
  - Lethbridge

It should be noted that some municipal functions that are part of the operations of some municipalities, have been excluded to reflect the scope of operations that can be expected in the ASP area. Those functions excluded form the analysis include the following:

- Airport
- Ambulance
- Electric
- Gas
- Other Transportation

Further, it is noted that while Municipal Affairs attempts to encourage municipalities to provide a consistent set of data across municipalities and over years, the data is sometimes uneven. As a result, there will be figures in some municipal functions in some years and not others due to reclassification of information.

It can be expected that these annual operating expenditures per capita will reflect the average costs of delivering services for the municipalities included. As a result, the services delivered and associated operating expenditures will be reflective of the average of the municipalities included in each category.

Further, it is noted that the average cost of services generally increases with the size of the municipalities in each tier. This reflects the reality that the range of services provided by municipalities generally expands as the population grows. Using this approach will be reflective of this reality for the ASP financial analysis. As seen from the table above, average cost per capita increases from approximately $1,800 per capita in Tier 1 to approximately $2,300 per capita in Tier 2 and $2,500 per capita in Tier 3. The increase from Tier 2 to Tier 3 is not as great in part because of the overlap of municipalities included in both tiers.

3.2.2. Capital Expenditures

The investment in infrastructure and facilities to support the growth proposed in the ASP has been estimated based on the type of development assumed in the ASP scenario, the total amount of growth and services that would be provided. Detailed assumptions have been made regarding the infrastructure that would be required and associated investment for each of the following categories:

- Neighbourhood Water Lines
- Neighbourhood Wastewater Lines
- Neighbourhood Drainage
- Local and Collector Roads
- Arterial Roads

[7] For the purposes of calculating average annual operating expenditures that would be a reasonable proxy for the development in the ASP area, some municipalities have been included in both the Tier 2 and Tier 3 categories.

- Regional Infrastructure (Roads, Water, Wastewater)
- Other Infrastructure (Recreation, Police, Fire, Equipment, Library, Transit, Maintenance Facilities, Administration Facilities)

The detailed assumptions regarding costing of each asset category is provided in Appendix A. The capital requirements for each investment in new infrastructure totals an estimated to total $370 million by 2049.

3.2.3. Financing Capital

The source of investment in infrastructure has been assumed as follows:

- **Developer Contributed Assets**
  - Neighbourhood Water Lines
  - Neighbourhood Wastewater Lines
  - Neighbourhood Drainage
  - Local and Collector Roads
- **Development Levy Funded**
  - Arterial Roads
  - Fire Stations
  - Police Stations
  - Major Recreation Facilities including: arenas, pools, indoor soccer fields, specialty recreation facilities.
- **Tax Supported**
  - Neighbourhood Recreation Facilities (e.g. playgrounds, outdoor rinks, etc.)
  - Library
  - Transit
  - Vehicles
  - Maintenance Facilities
  - Administration Facilities

Tax supported infrastructure included in this ASP option includes the following:

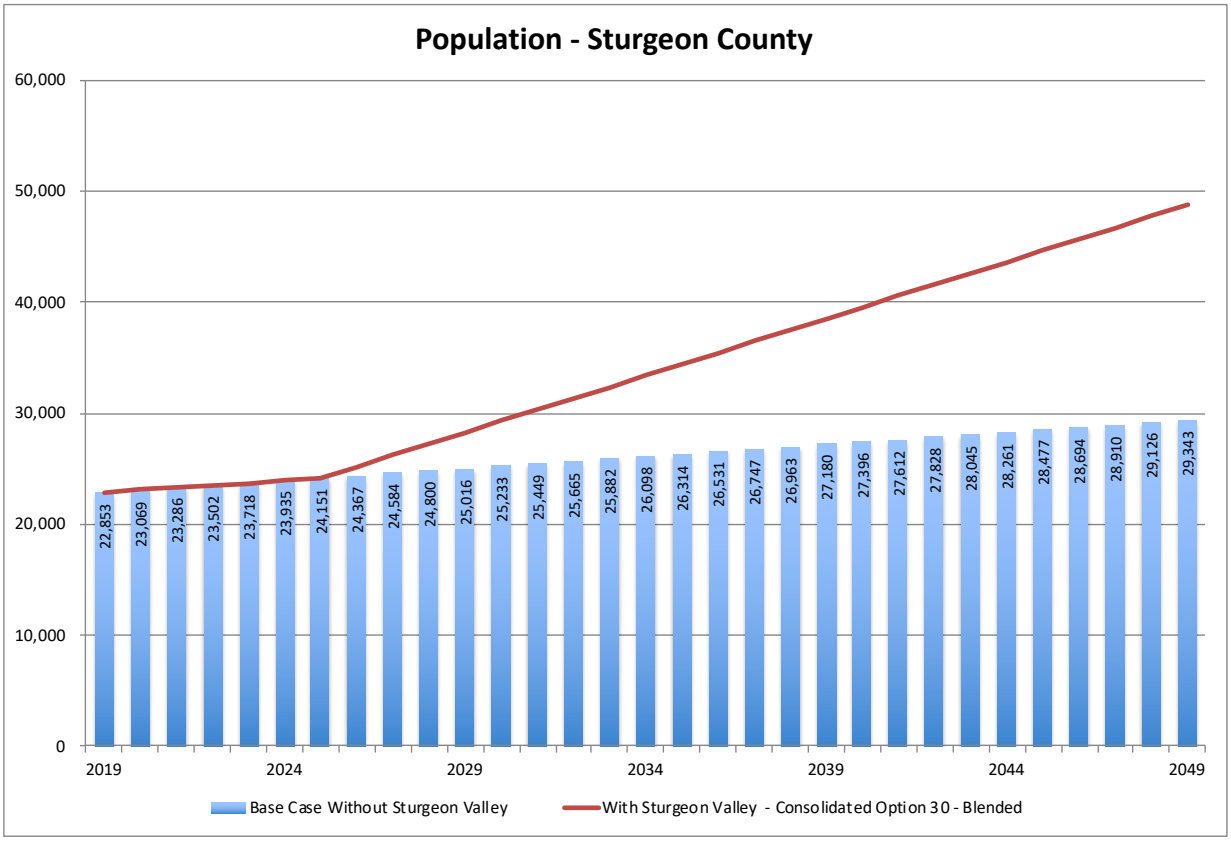
- Playgrounds
- Outdoor Rinks
- Transit Buses
- Municipal Vehicles & Equipment

All major infrastructure associated with water, wastewater and transportation have been assumed to be funded through either utility rates, grants or development levies.

3.3. Blended Scenario Results

3.3.1. Population Growth

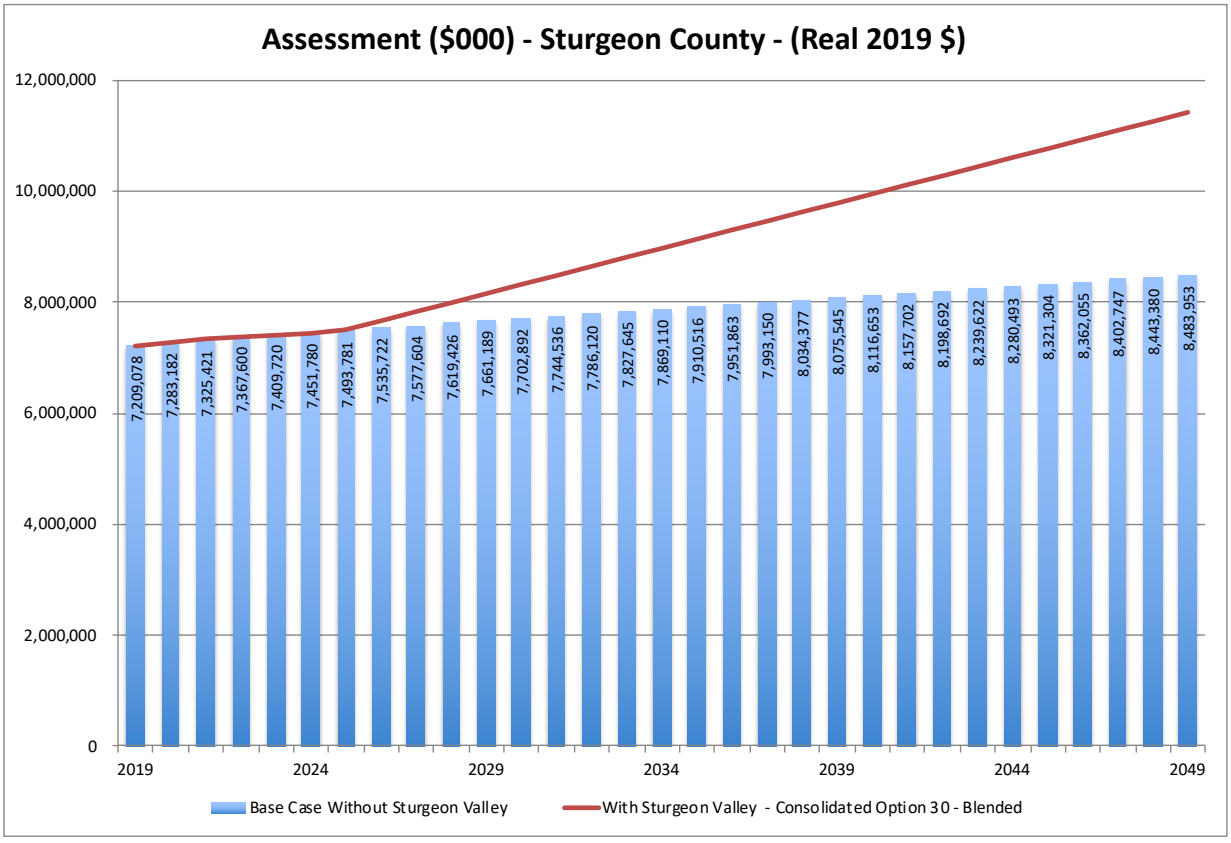
The population of the County is projected to increase to just over 29,000 by 2049 (30 year forecast period) without development of the ASP. With the ASP scenario, the total population of the County is projected to increase to almost 49,000 by 2049.



3.3.2.

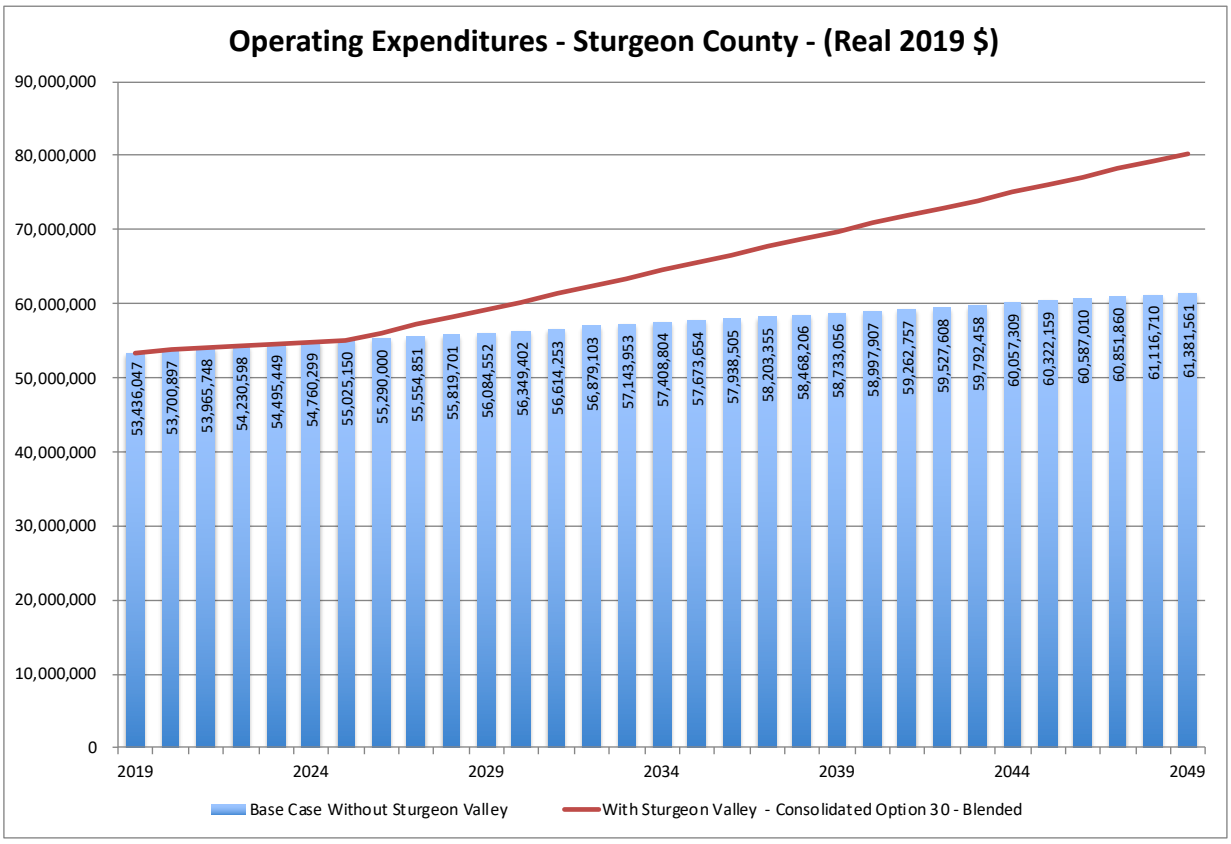
3.3.3. ASSESSMENT

The assessment base of the County is projected to increase to almost $8.5 billion by 2049 (30 year forecast period) without development of the ASP. With the ASP scenario, the assessment base of the County is projected to increase to almost $11.4 billion by 2049.



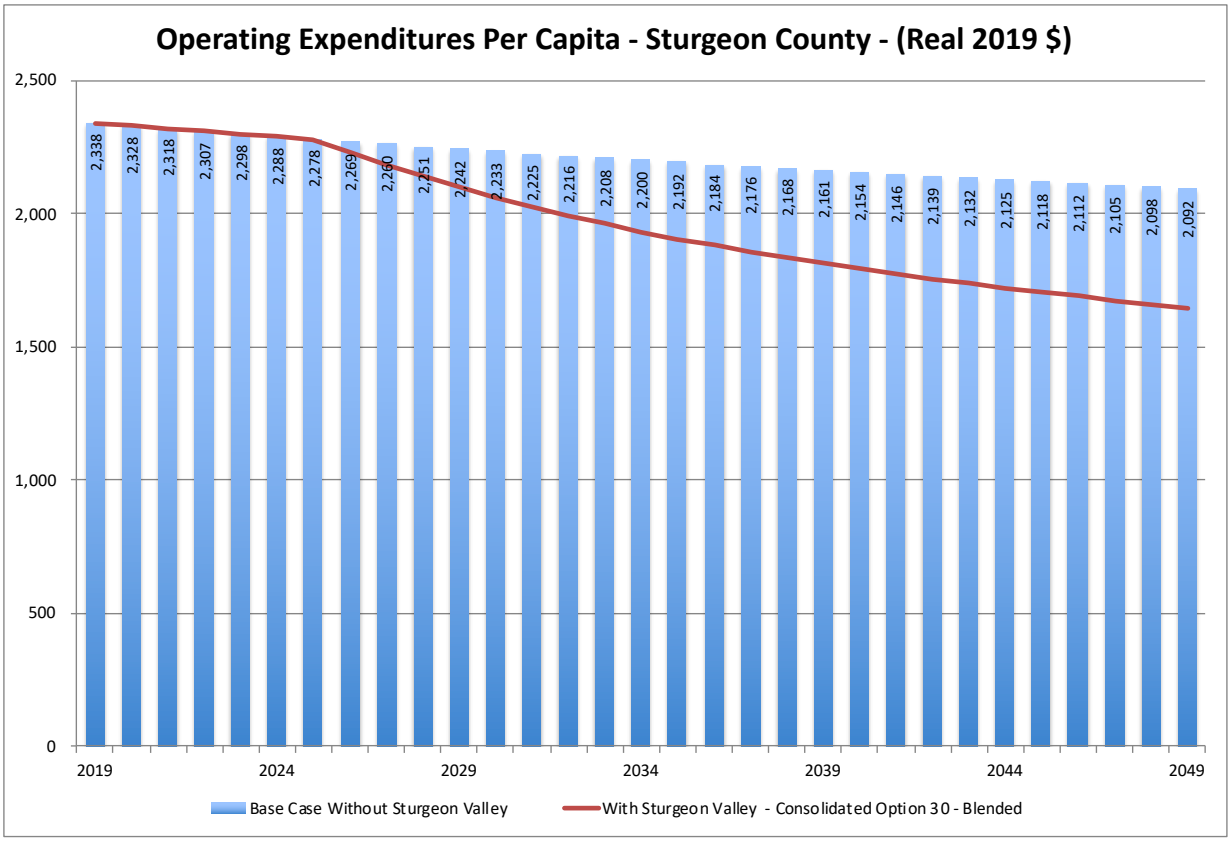
3.3.4. Operating Expenditures

Total operating expenditures for the County without the ASP development are projected to increase to approximately $61.4 million over the forecast period. With the growth defined for the ASP area, these expenditures are projected to increase to just over $80 million by the end of the forecast period. Note that all financial information is in real 2019 dollars, and thus do not include inflation.



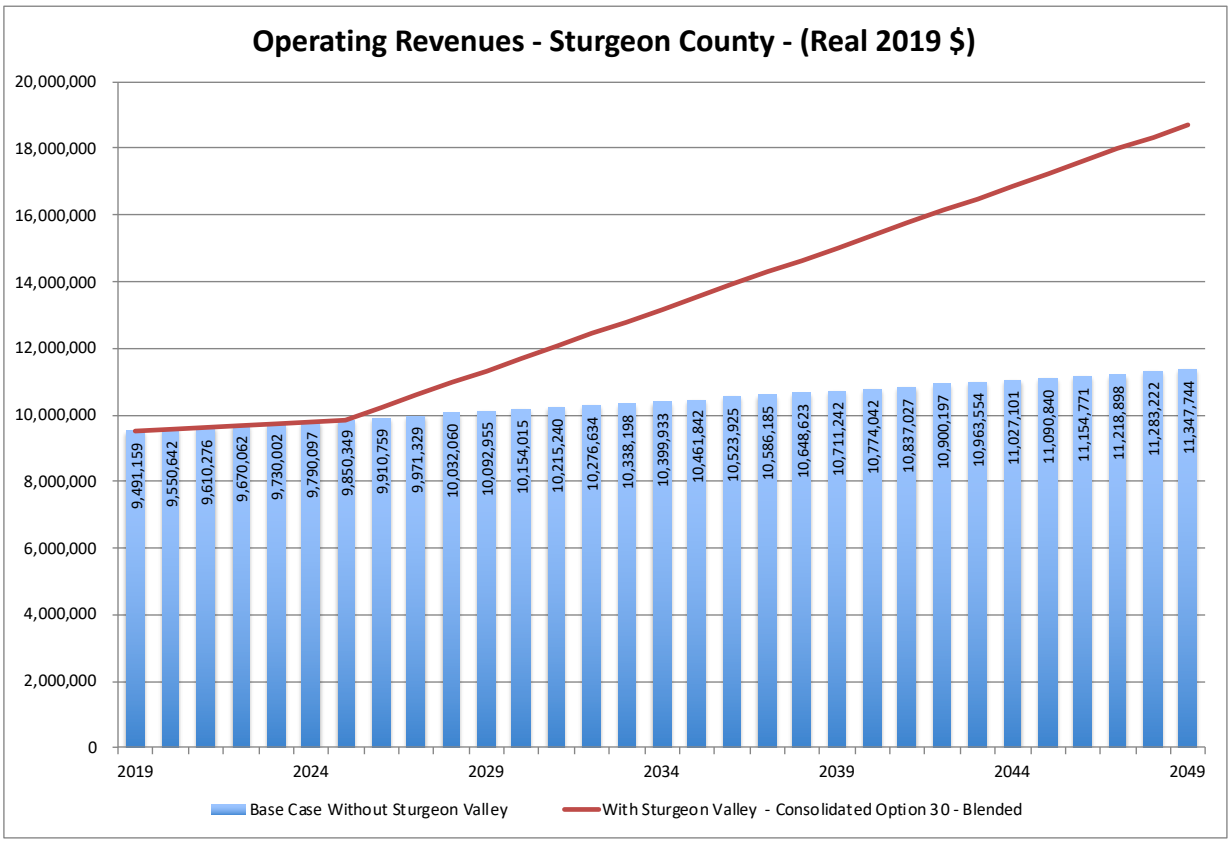
On a per capita basis, operating expenditures are projected to decrease with growth in the County. Without the ASP these decreases in operating expenditures per capita reflect the benefit of economies of scale without any change in the scope of services provided.

When development in the ASP area is included operating expenditures per capita decrease further. This is a result of operating expenditures per capita being generally lower for urban communities. In this ASP option, the Tier 1 average cost per capita are applied to all growth. The estimated operating expenditures per capita of delivering services to the municipalities included in this Tier is approximately $1,800 versus the current expenditure in the County of just over $2,300 per capita.

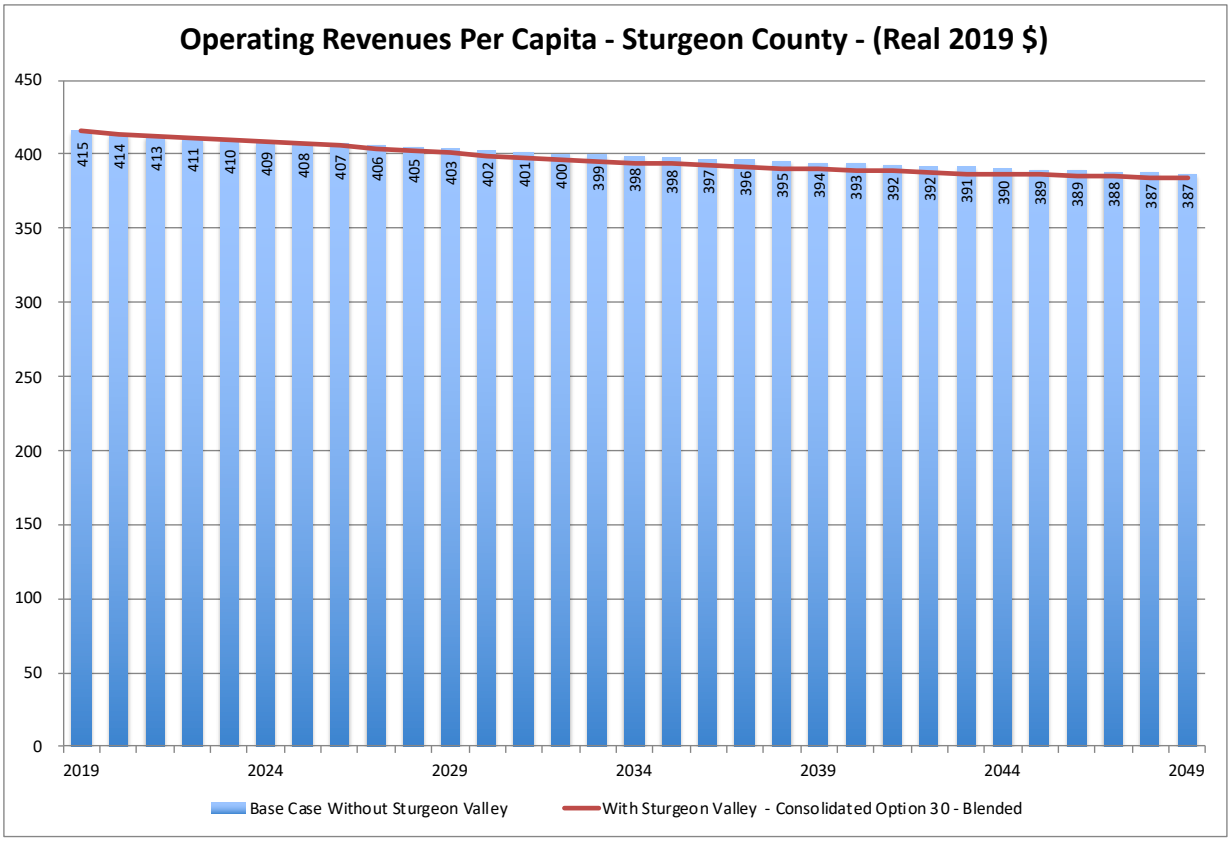


3.3.5. Operating Revenues

Total operating revenues (non-tax revenues) for the County without the ASP development are projected to increase to approximately $11.3 million over the forecast period. With the growth defined for the ASP area, these expenditures are projected to increase to just over $17.7 million by the end of the forecast period. Note that all financial information is in real 2019 dollars, and thus do not include inflation.

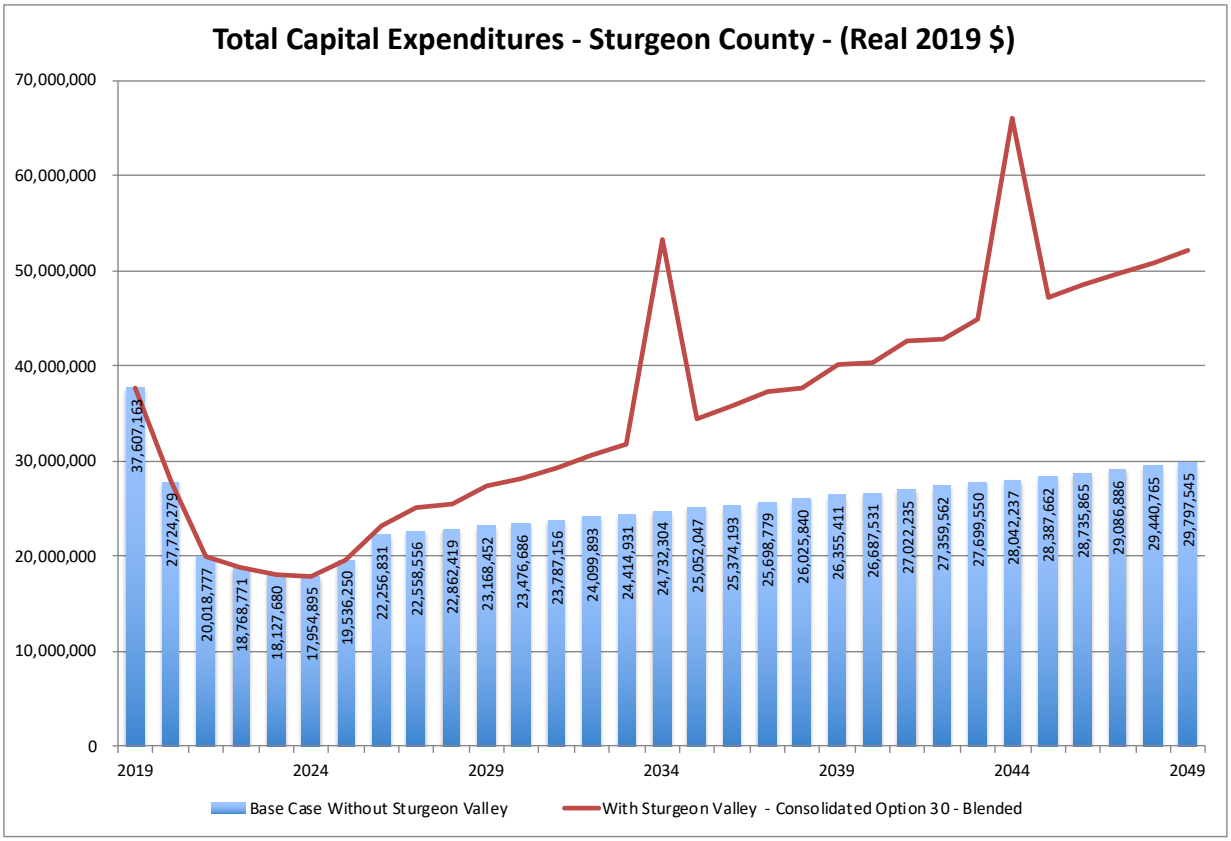


On a per capita basis, operating revenues are projected to largely remain the same in both the Baseline Forecast at that for the County including the ASP area. This is an expected result given that the cost recovery rates (operating revenues per expenditure) remain constant over the forecast period.



3.3.6. Capital Expenditures

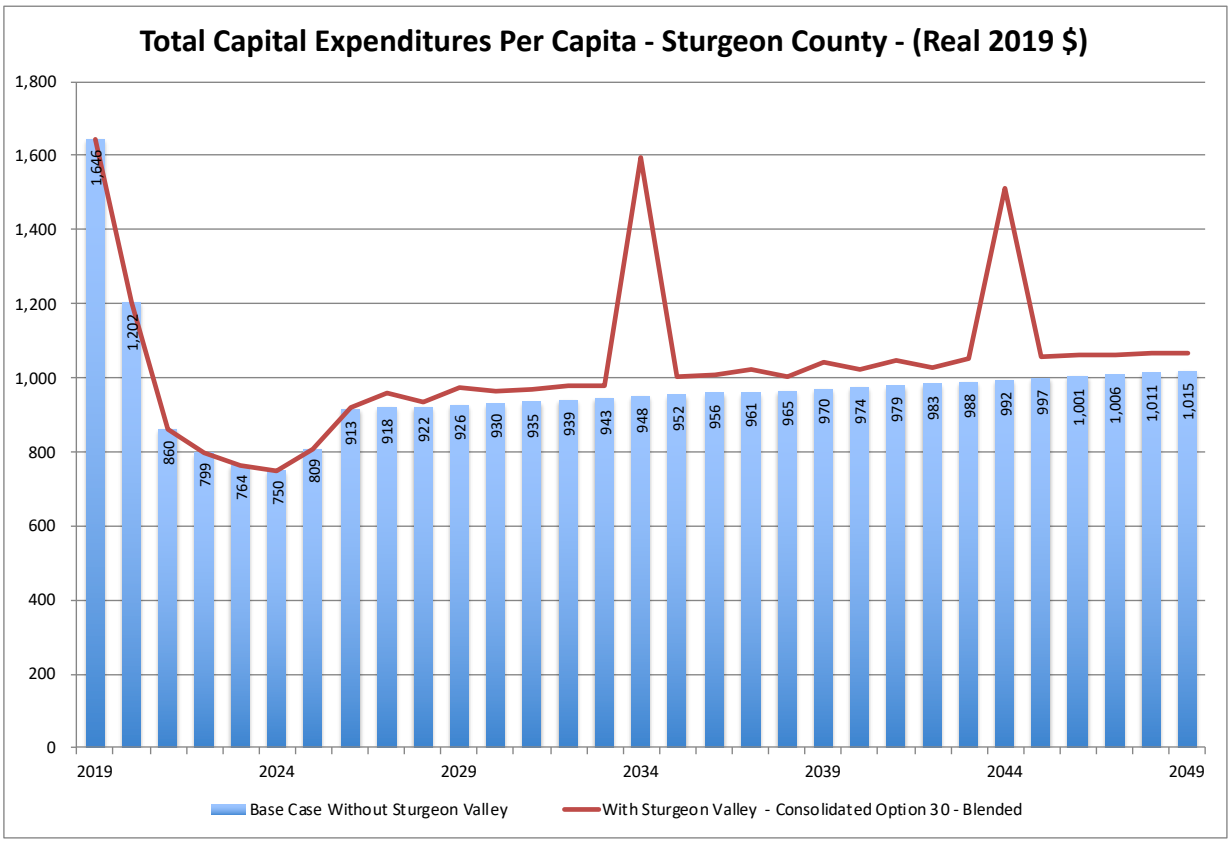
Total capital expenditures for County without the ASP development reflect the County's five year capital plan plus future capital expenditures on a per capita basis consistent with historical capital investment. With the growth defined for the ASP area, capital expenditures are expected to increase significantly. Further, there are spikes in capital expenditures associated with required investment in major infrastructure. Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Contributing to the increase in capital expenditures for the ASP option are the following:

- Major water, wastewater and road infrastructure
- Fire Station
- Police Station
- Arenas (2)

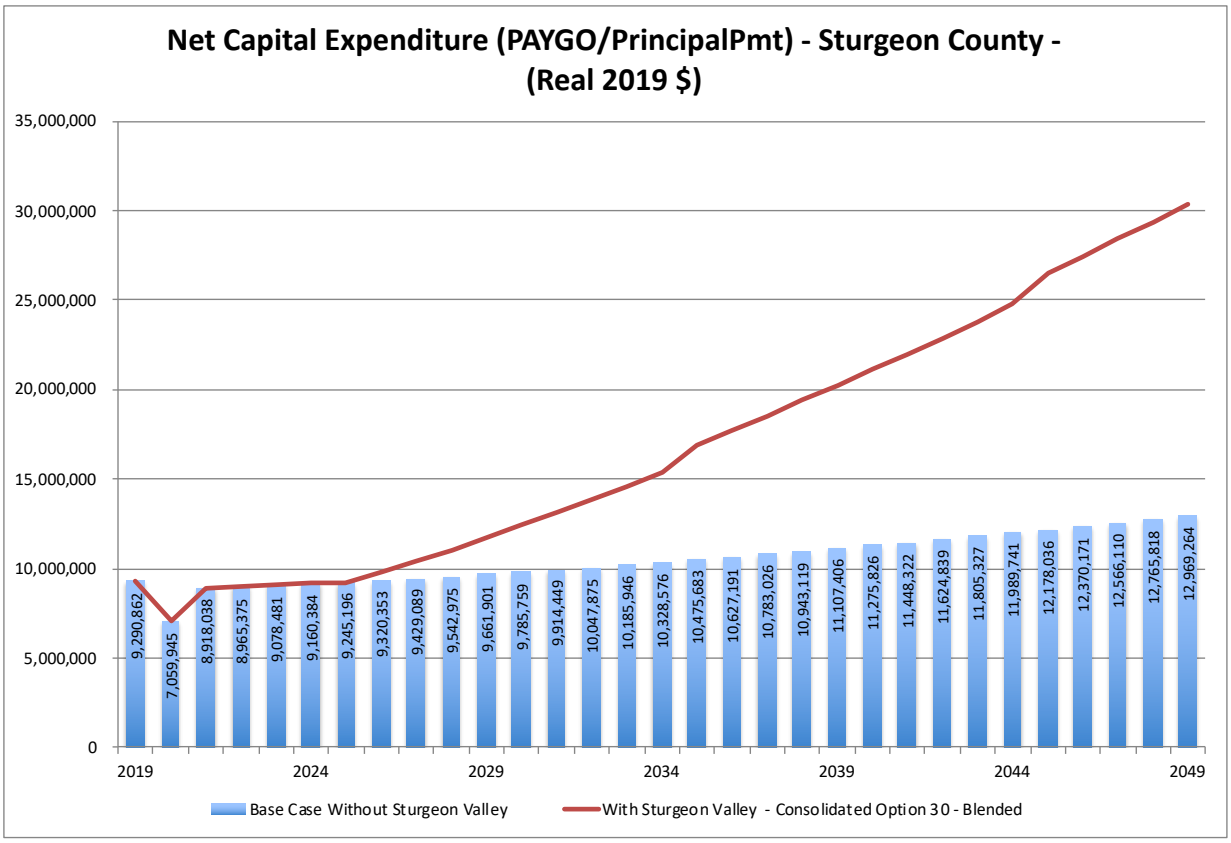
On a per capita basis, capital expenditures with the ASP option are similar to that for the County generally with the exaction of the spikes in investment required for major infrastructure projects noted above.



3.3.7. Tax Supported Capital Expenditures

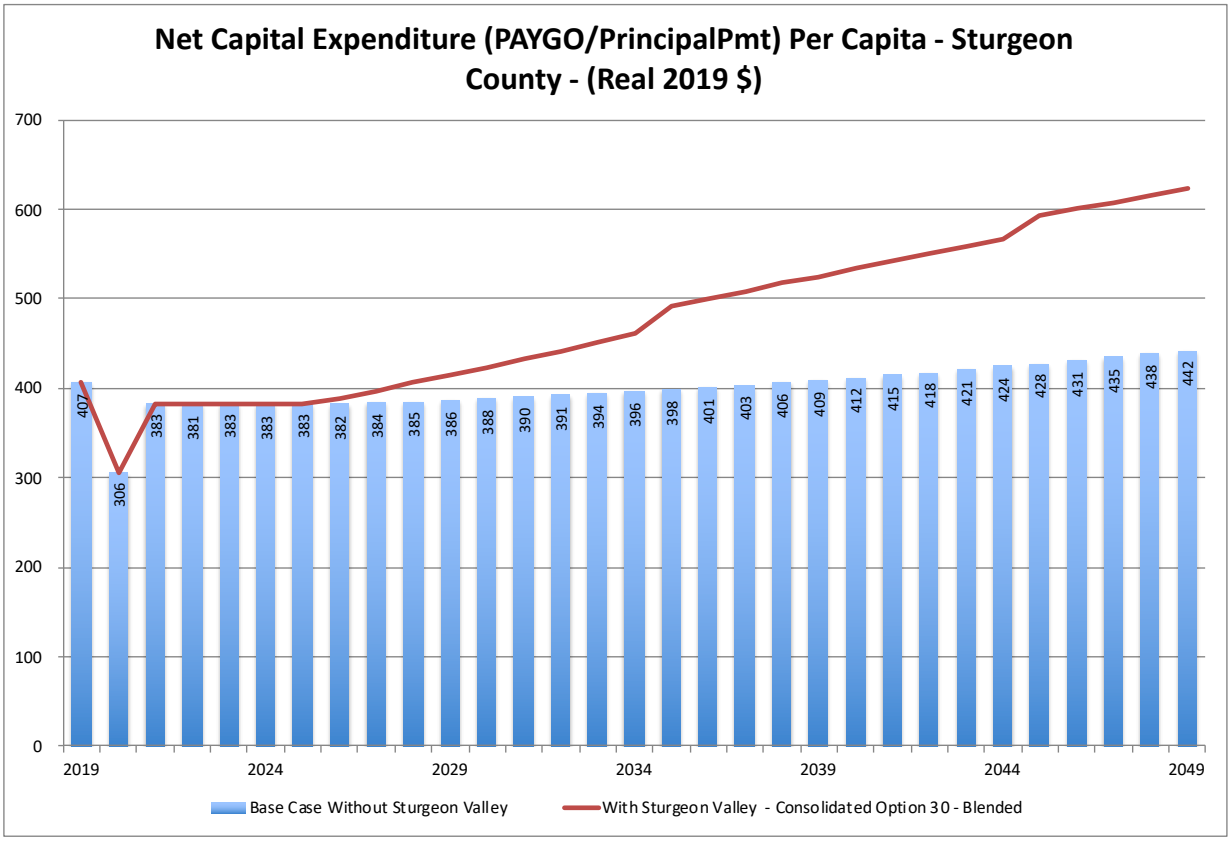
Tax supported capital expenditures include those that are funded from tax or utility rate sources. This excludes funding that is from third party sources as well as donated assets acquired through development.

Net capital expenditures without development in the ASP area are project to increase modestly to almost $13 million to the end of the forecast period. When the tax supported expenditures associated with the growth in the ASP area are included, these expenditures increase significantly, to over $30 million by the end of the forecast period. Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Even when net capital expenditures are normalized on a per capita basis, the annual expense increases significantly when development in the ASP area is included. This is a result of a general increase in expenditures as well as share of these expenditures that will be funded by rate payers through taxes or utility rates.

It should be noted that this assumes that development levies would be applied to not only the traditional infrastructure investments, but also police, fire and recreation infrastructure. It should also be noted that the forecast that includes the ASP development assumes that life cycle costs associated with acquired assets (donated or purchased) is 100% funded. While the analysis assumes that a greater proportion of life cycle costs will be funded in the Baseline Forecast, it likely does not include 100% of these costs.

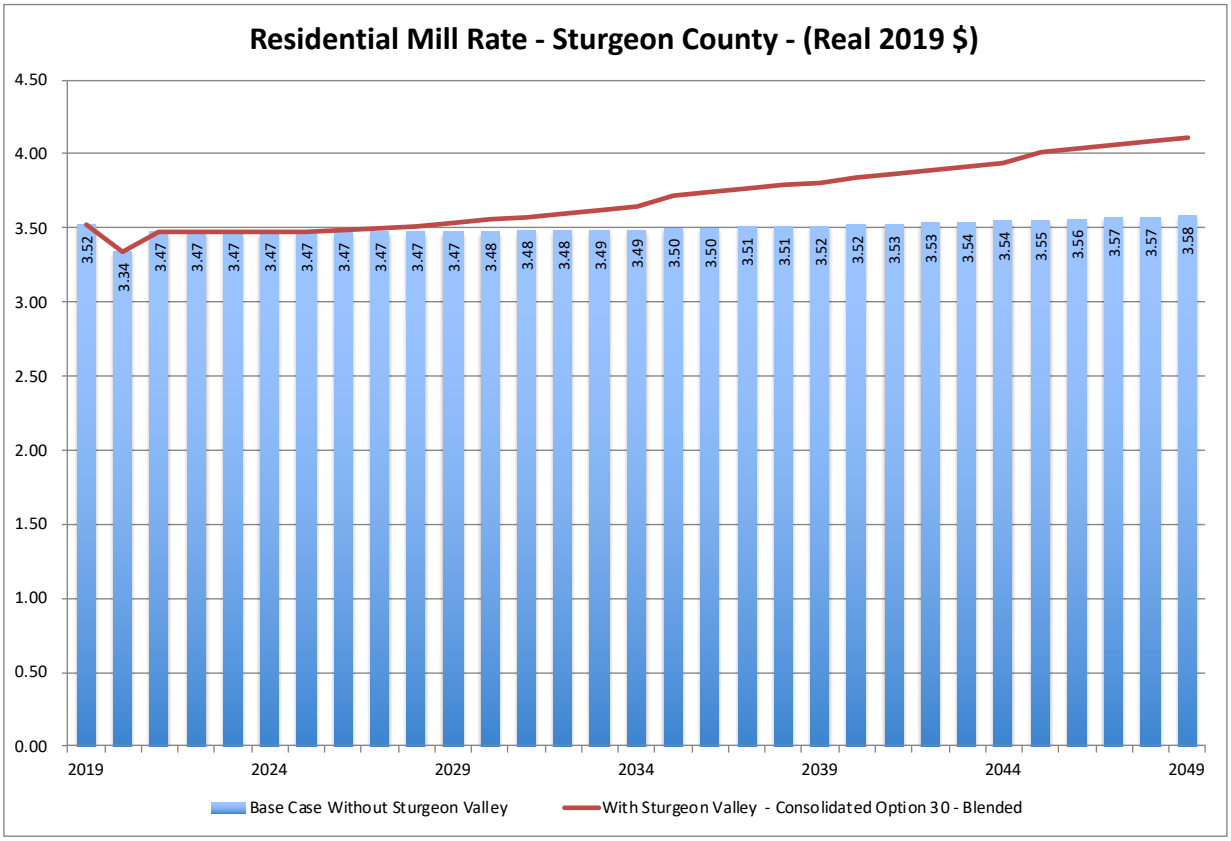


3.3.8. Municipal Tax Rates

Municipal tax rates have been calculated based on the annual shortfall between total expenditures and operating (non-tax revenues). In the Blended Scenario, the base year municipal tax rate split between residential and other tax rates has been assumed throughout the forecast.

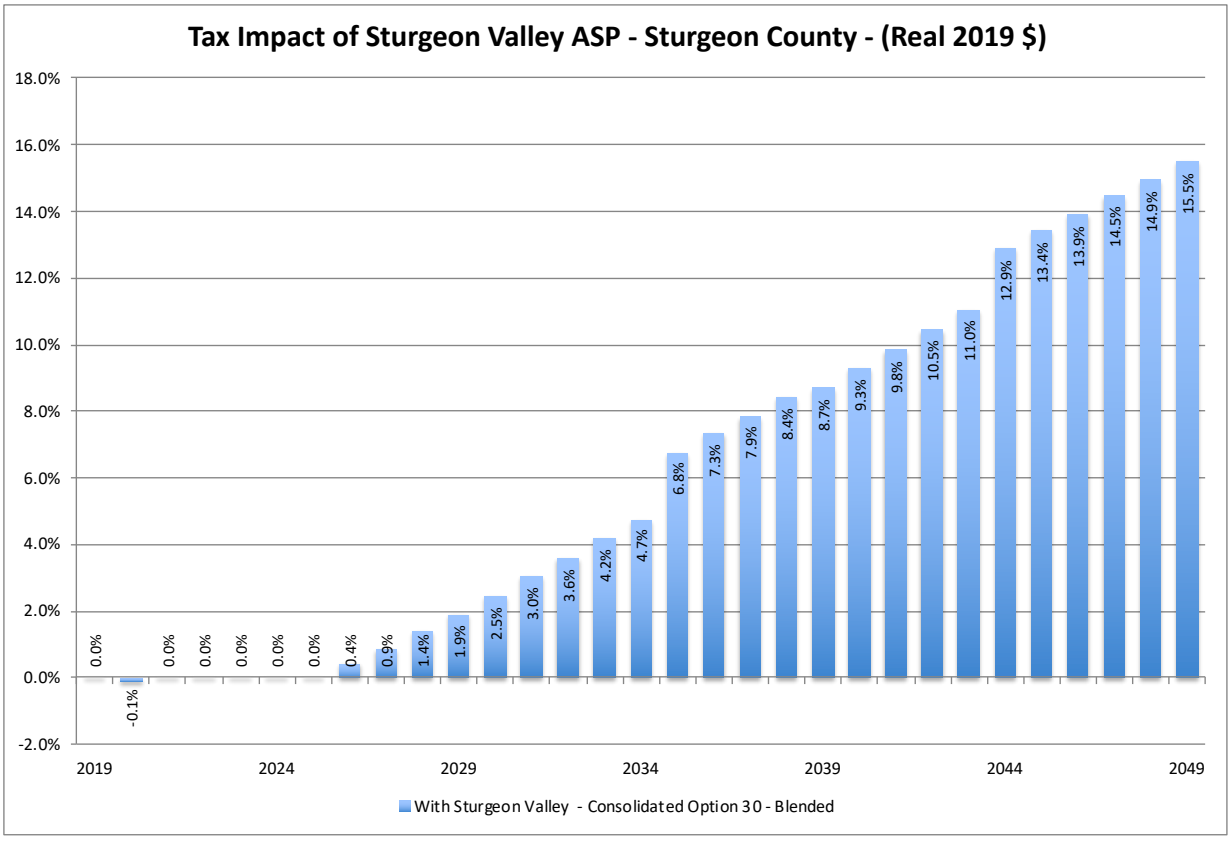
In the Baseline Forecast, real municipal residential tax rates (without inflation) are projected to remain relatively constant over the forecast period. When growth in the ASP area for this scenario is included, residential municipal tax rates are projected to increase (in real terms) by approximately a half mill.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



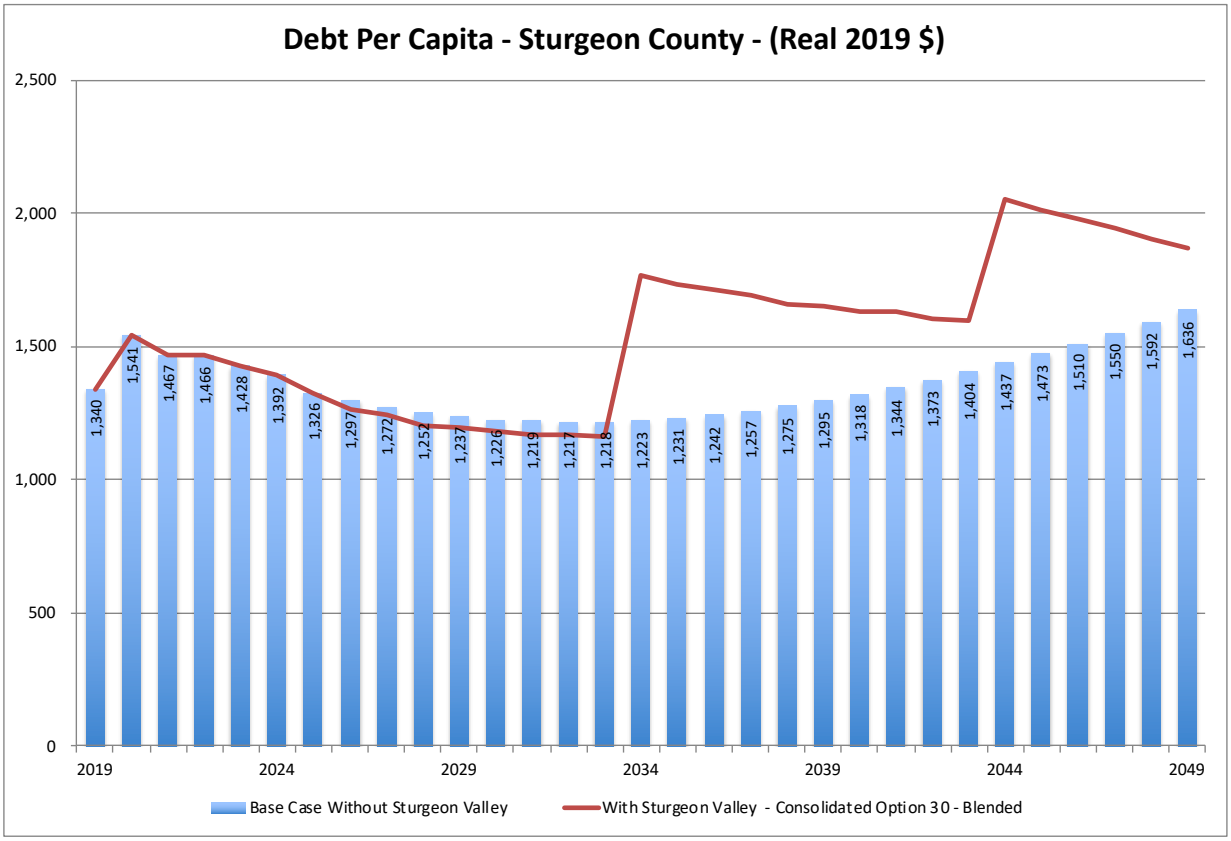
Over the forecast period, in the Blended Scenario where all municipal expenditures and revenues are considered in developing a single set of municipal tax rates for residential and other assessment classes (based on the 2019 tax rate splits), tax rates are projected to increase when the ASP area development is included. The magnitude of this increase builds to just over 15% by the end of the forecast period. This increase is the same for both residential and non-residential tax rates as the split between rates has been assumed to remain constant over the forecast period.

Of concern for existing Sturgeon County ratepayers is the increase in taxes paid to support additional infrastructure and investment in services that they may perceive as not providing a direct benefit to them.

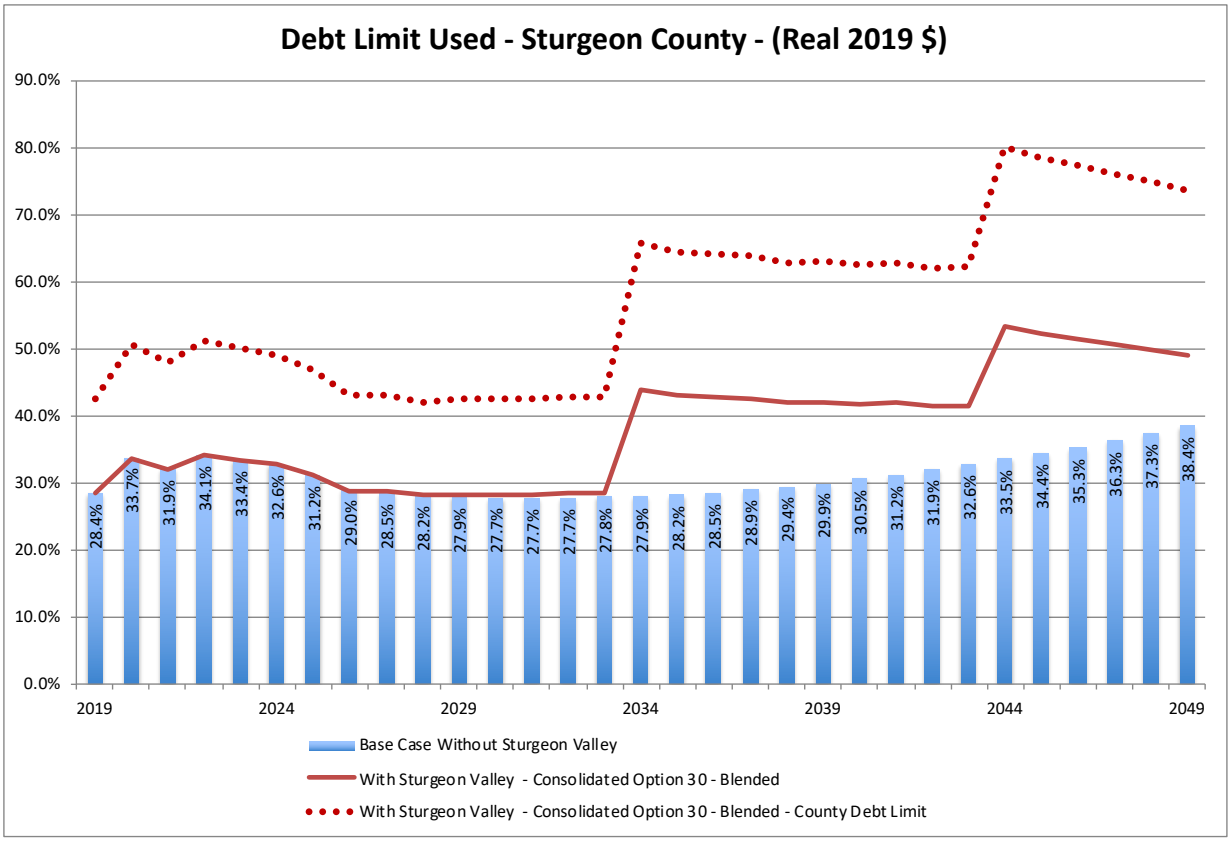


3.3.9. Municipal Debt

Contributing to the higher tax rates including development in the ASP area is an increase in capital investment and municipal debt. On a per capita basis the change in municipal debt levels is evident for most of the forecast period, with some significant increases with major infrastructure investments.



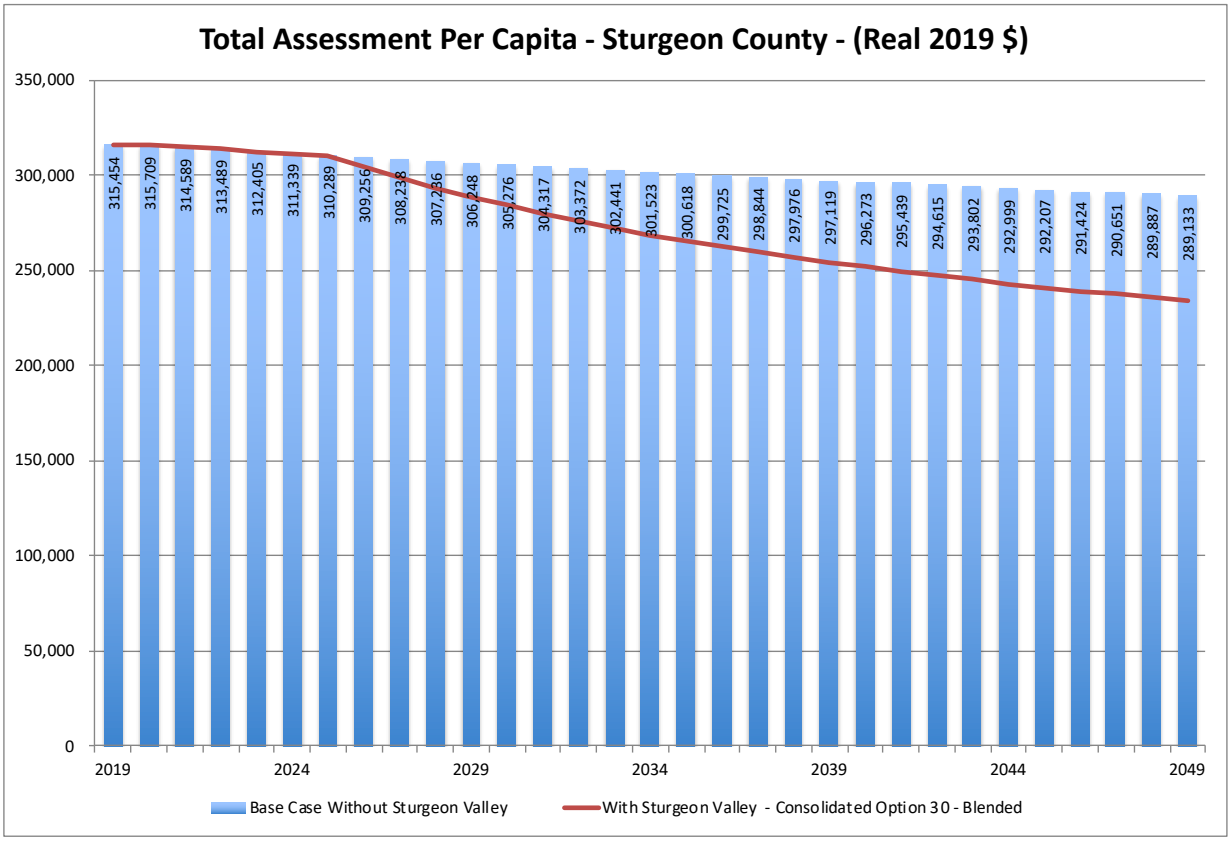
The increased debt levels with the ASP area development also results in an increase in the usage of the County's debt limit. While remaining well below the MGA and County prescribed debt limits the use of debt capacity increases significantly with development in the ASP area.



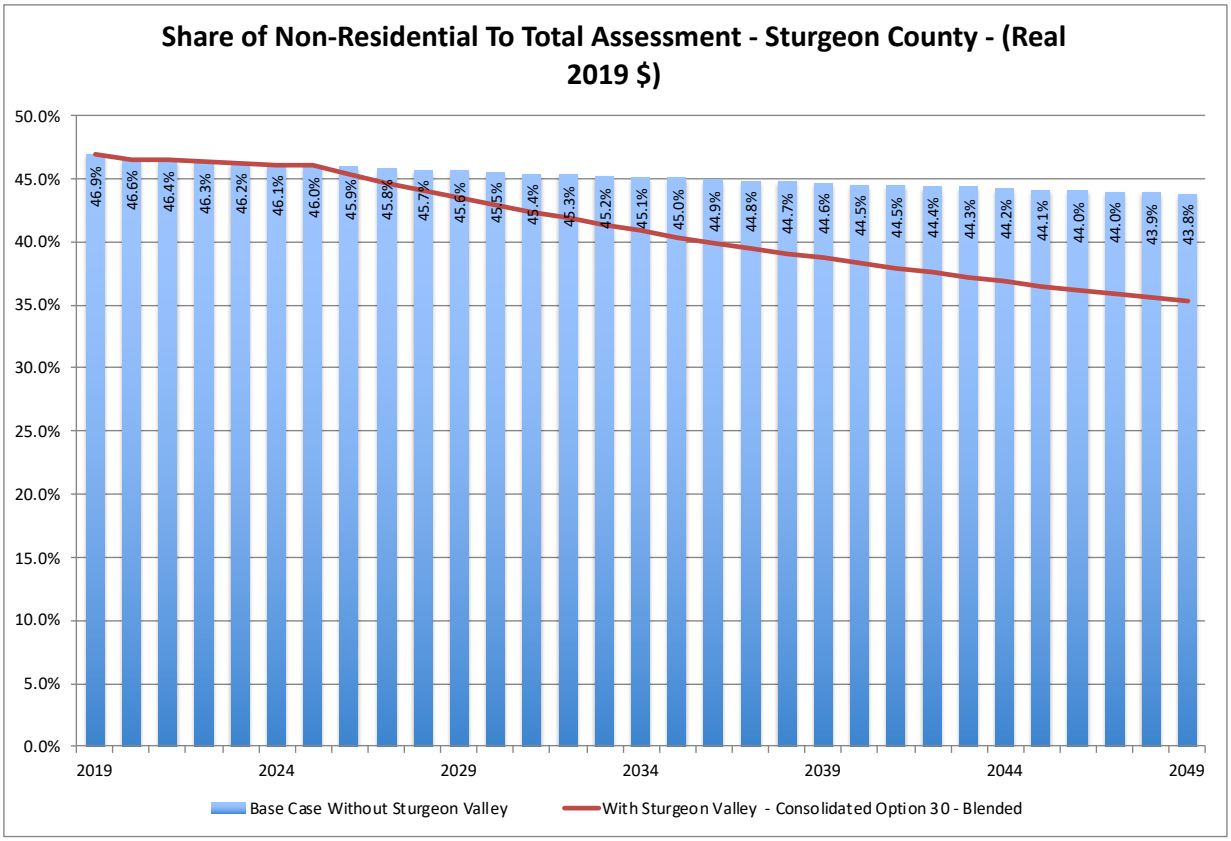
3.3.10. Fiscal Capacity

The County currently benefits from a favourable fiscal capacity by most measures. Based on the development assumed for the ASP area, this fiscal capacity is projected to deteriorate compared to that for the Baseline Forecast.

Using assessment per capita, there is a significant decline in the County's fiscal capacity when development in the ASP area is included. This represents a decline of approximately 18%.



A similar pattern is revealed using share of non-residential assessment that contributes to the total assessment base of the County. As with assessment per capita, the share of non-residential assessment also declines when development in the ASP area is included in the analysis.



Clearly the assessment included in the ASP area development is not as rich as that for the County's current assessment base. For the County to maintain its currently favourable fiscal capacity with the ASP development would require a greater proportion of non-residential development.

3.4. Urban Services Area Scenario

As noted above, when the financial implications of development in the ASP area is blended into the County's overall financial position, there are spillover implications for existing ratepayers in the County. To protect existing County ratepayers from these implications, an alternative scenario has been constructed whereby the development in the ASP area would be a stand alone Urban Services Area where all related costs and revenues would be contained within the ratepayers in the area.

The assumption regarding the services, municipal cost of services, capital investment and financing of this investment in this scenario are the same as those in the Blended Scenario, except separate tax rates have been calculated for the development in the ASP area. The tax rates and financial implications for existing ratepayers in the County would follow the Baseline Forecast.

It is noted that there would be some savings associated with scope economies and sharing of facilities and infrastructure. All of these benefits have been assumed to flow to ratepayers in the ASP area.

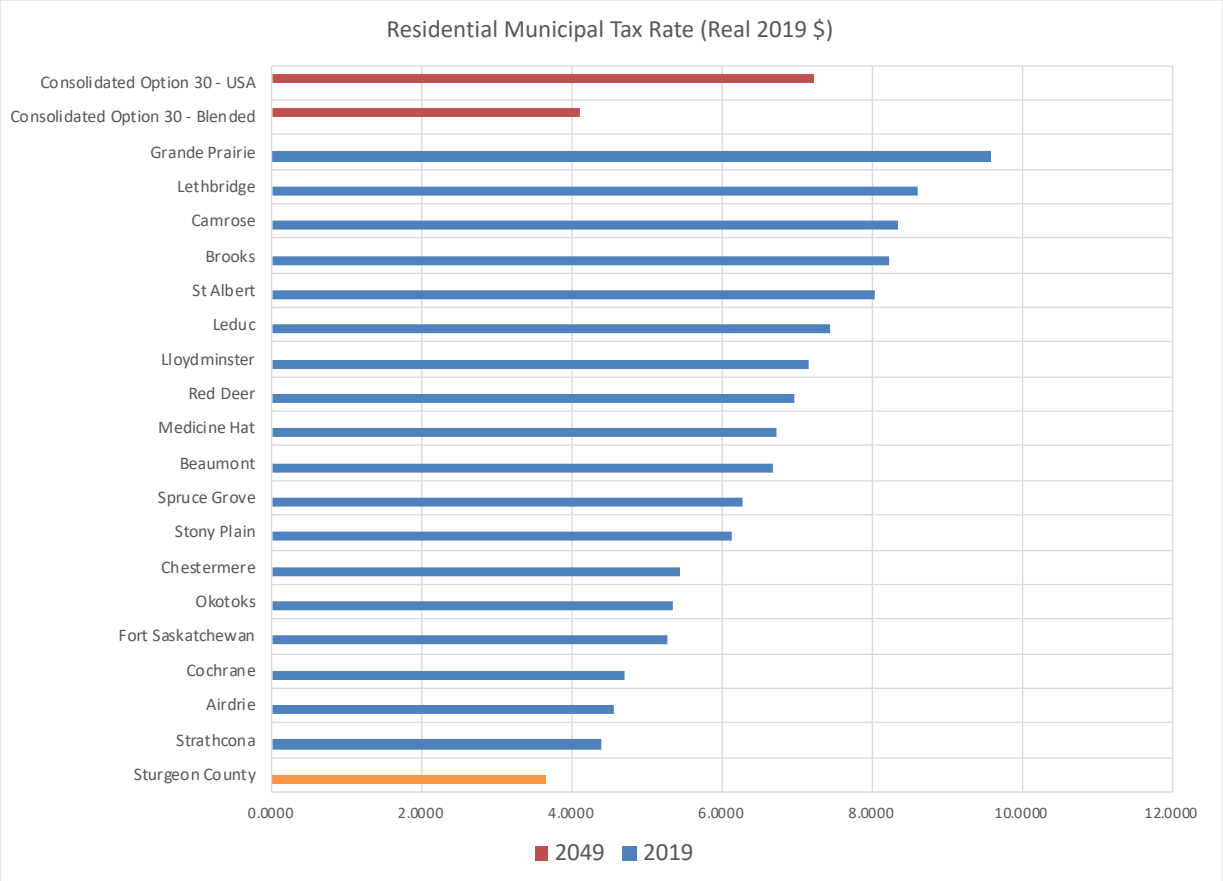
3.4.1. Residential Municipal Tax Rates

The Urban Services Area (USA) Scenario residential municipal tax rate results are presented in the context of the Blended Scenario results, as well as the 2019 residential municipal tax rates for all the municipalities included in the analysis of municipal operating expenses and revenues.

To provide a comparable municipal tax rate comparison for the USA Scenario results with other urban municipalities, the tax rate split for the USA Scenario is assumed to be 1.6. This is significantly smaller than the currently County tax split of 2.8. It is thought that for an urban area, a tax rate split more consistent with that currently used by the comparable urban's would be appropriate.

As seen in the figure below, the 2049 (real 2019 $) Blended Scenario municipal tax rate result is higher than the existing rate for Sturgeon (approximately 15% higher). When development in the ASP area is required to pay for itself, without subsidization of the County's existing tax base, and with the shift of tax burden to the residential rate, the USA Scenario residential tax rate is significantly higher than the existing County rate (almost double). In spite of this, the residential tax rate for the USA Scenario is lower than that for 5 of the comparable municipalities included in the analysis.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.

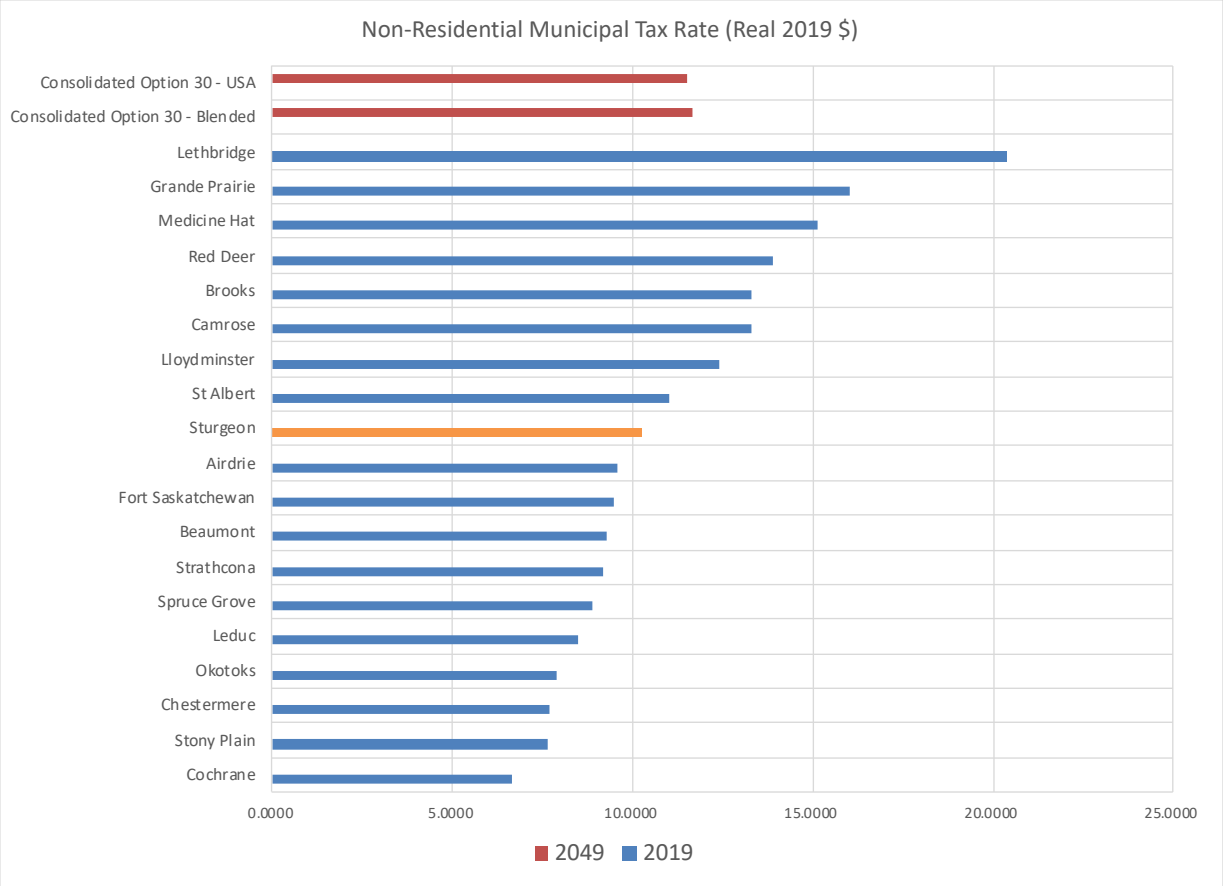


3.4.2. Non-Residential Municipal Tax Rates

As noted above, to provide a comparable municipal tax rate comparison for the USA Scenario results with other urban municipalities, the tax rate split for the USA Scenario is assumed to be 1.6. This is significantly smaller than the currently County tax split of 2.8. It is thought that for an urban area, a tax rate split more consistent with that currently used by the comparable urban's would be appropriate.

As seen in the figure below, the 2049 (real 2019 $) Blended Scenario municipal tax rate result is similar to that estimated for the Blended Scenario. This is largely a result of adjusting the tax rate split for the USA Scenario. Based on this, the USA Scenario non-residential tax rate in 2049 would be below seven of the comparable municipalities included in the operating expenditure and revenue analysis.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.

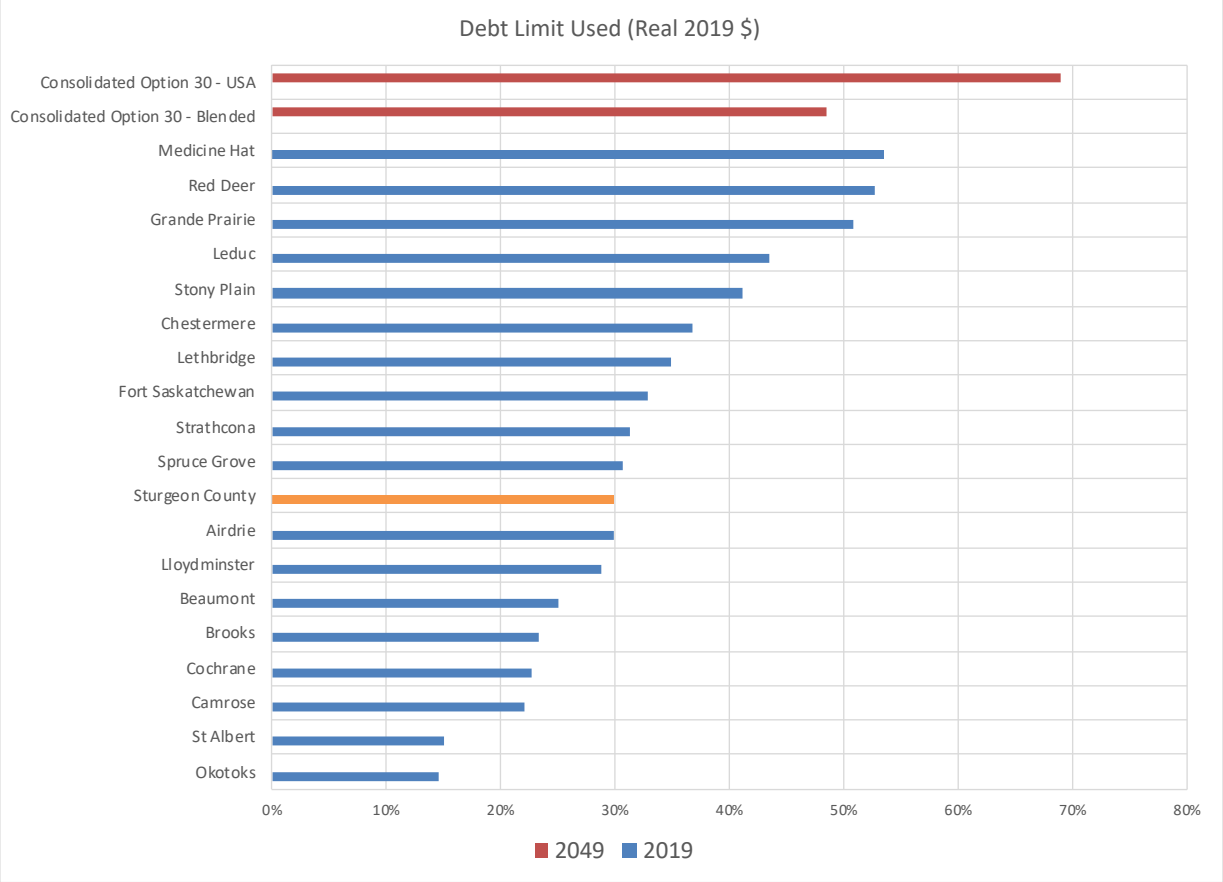


3.4.3. Debt Limit Used

As noted above, development in the ASP area will require a significant capital investment. This puts some additional strain on the share of available debt limit used. The results for the Blended and USA scenarios is provided in the figure below.

When all the debt associated with development in the ASP area is attributed to the area (USA scenario), this urban area would be using the highest proportion of available debt limit by a significant margin (69% by 2049). This compares to the Blended Scenario result of 48%, which is among the highest of the comparable municipalities.

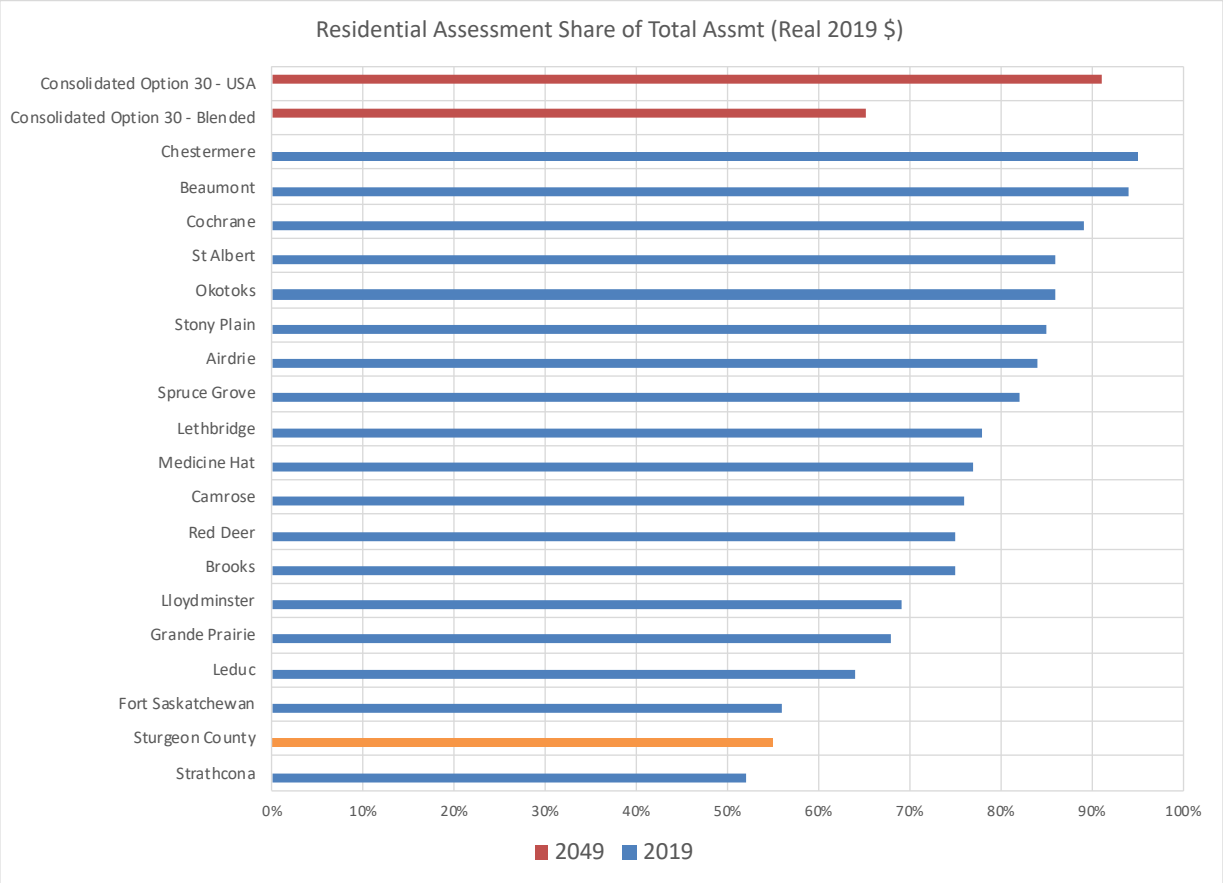
Note that all financial information is in real 2019 dollars, and thus do not include inflation.



3.4.4. Residential Assessment

As noted above, when the ASP area development is blended into the County's current assessment base, the share of non-residential assessment declines. This is reflected by an increase in the share of residential assessment as noted in the figure below. When the ASP area assessment is considered in isolation of the rest of the County, the share of residential assessment increases to almost 91% in 2049. This is among the highest of those municipalities included in the comparable analysis, being higher than only two of these municipalities.

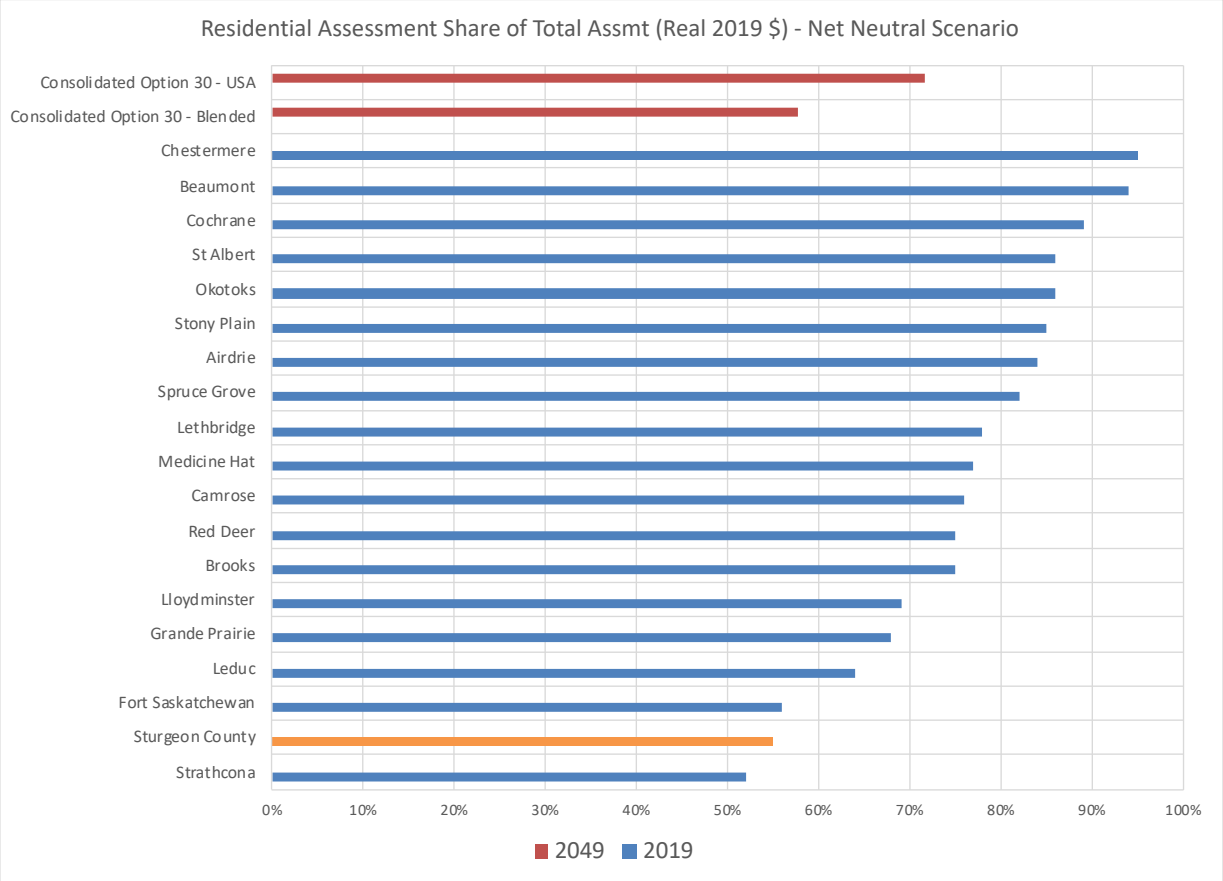
This relatively poor mix of assessment in the ASP area contributes to the financial drag development in the area has on the fiscal performance of the County in the Blended Scenario.



3.5. Net Neutral Alternative

As noted in both the Blended and USA Scenarios, the fiscal capacity of the County deteriorates with development in Sturgeon Valley as defined. This contributes to a relatively smaller tax base against which the costs of providing municipal services can be recovered, leading to higher municipal tax rates. In this Consolidated Option 30 the scale of residential development has been reduced to produce a fiscal capacity result that is 'roughly' average when compared to the 18 'comparable' municipalities used to develop a municipal service profile and associated operating costs and revenues associated with delivering municipal services.

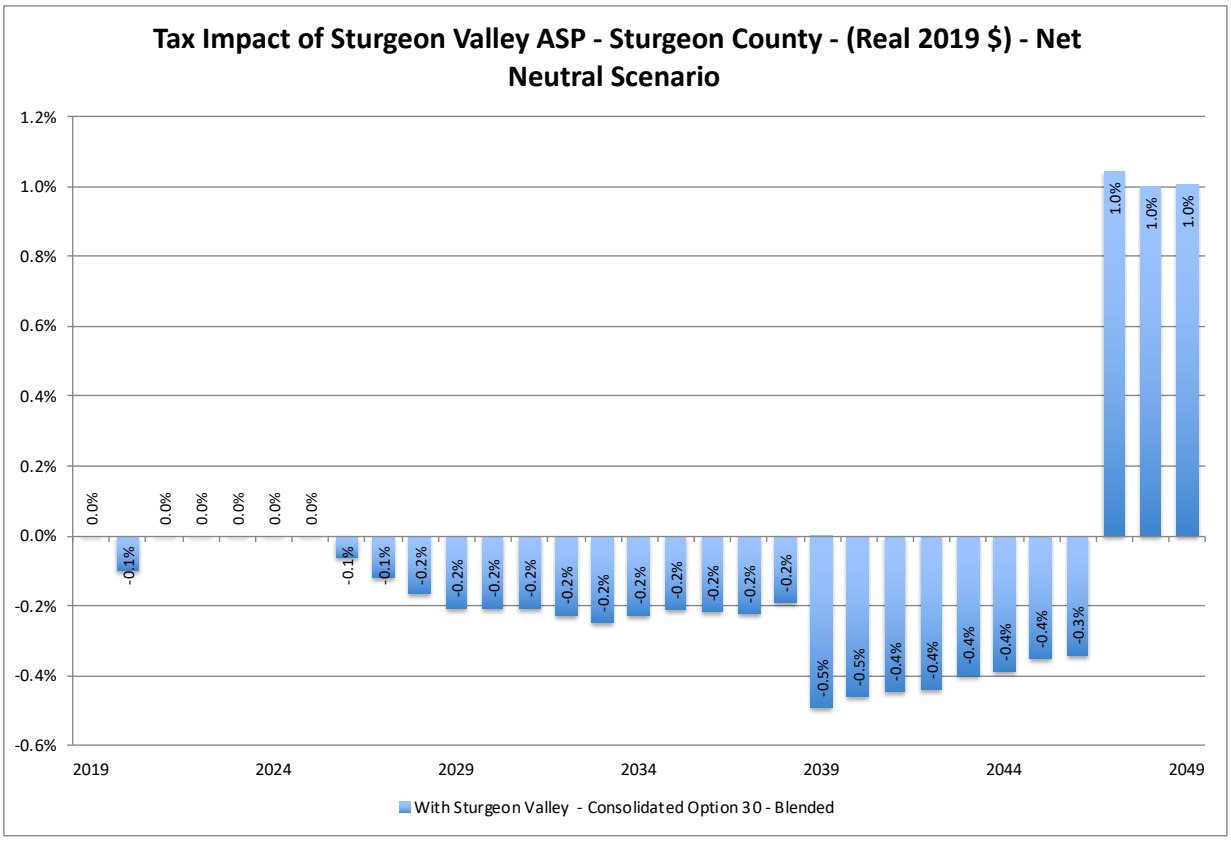
To achieve a roughly 'average' fiscal capacity result at the end of the 30 year forecast period, the residential development of this assumption has been reduced to be 25% of that assumed in both the Blended and USA analysis presented above. The resulting share of residential assessment in the Urban Services Area is 71.6% which just below the average for the 18 'comparable' municipalities.



Note that the share of residential assessment for Sturgeon County in the Blended Scenario is 57.7% which is somewhat higher than the Base Year level of 55%.

The resulting financial implications of Sturgeon Valley on the County's financial position are moderated dramatically. For the Blended Scenario, the net impact on municipal tax rates is negligible. As noted in the figure below, until the end of the forecast, the municipal tax rate impacts are effectively nil until the last two years of the forecast where there is an infrastructure investment required as population growth threshold of 10,000 people triggers the need for municipal infrastructure.[8]

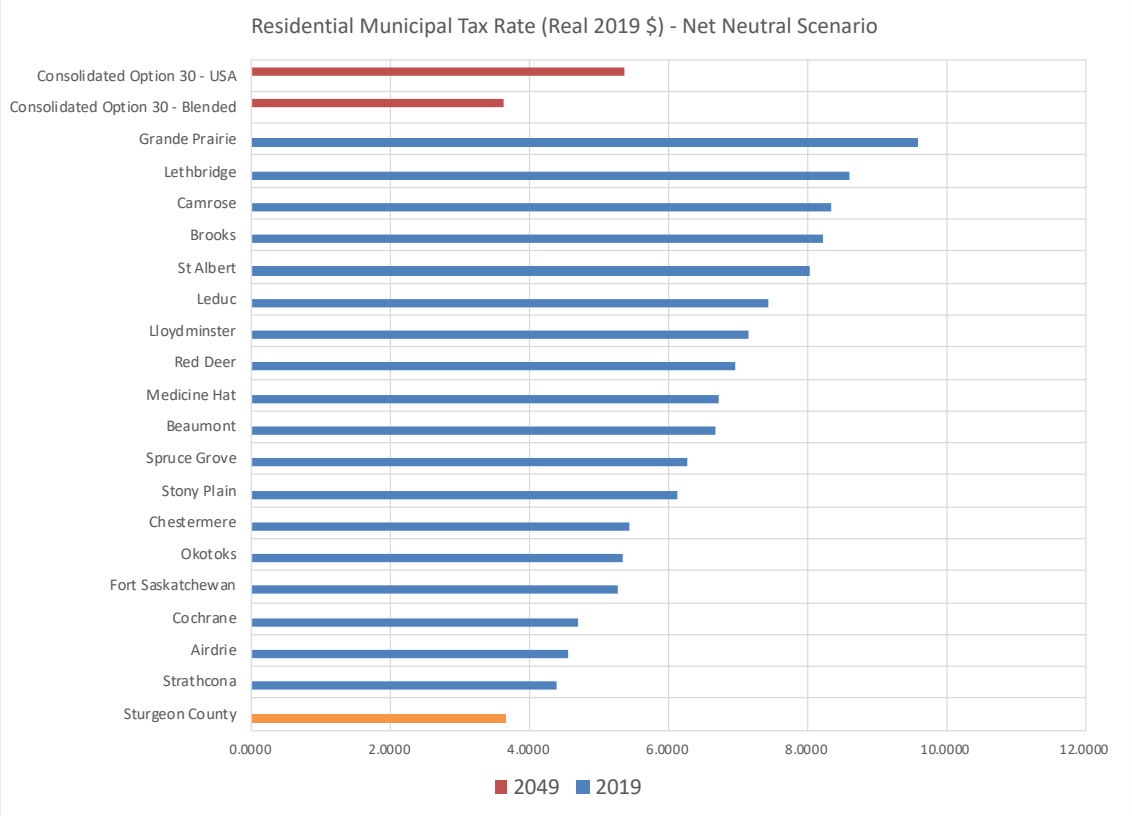
[8] It is noted that this population threshold is somewhat arbitrary and this infrastructure could be required sooner or beyond the analysis timeframe depending on the decision of Council. However, for consistency, the infrastructure thresholds have been applied consistently in each of the scenarios to allow for a comparison of the scenario results.

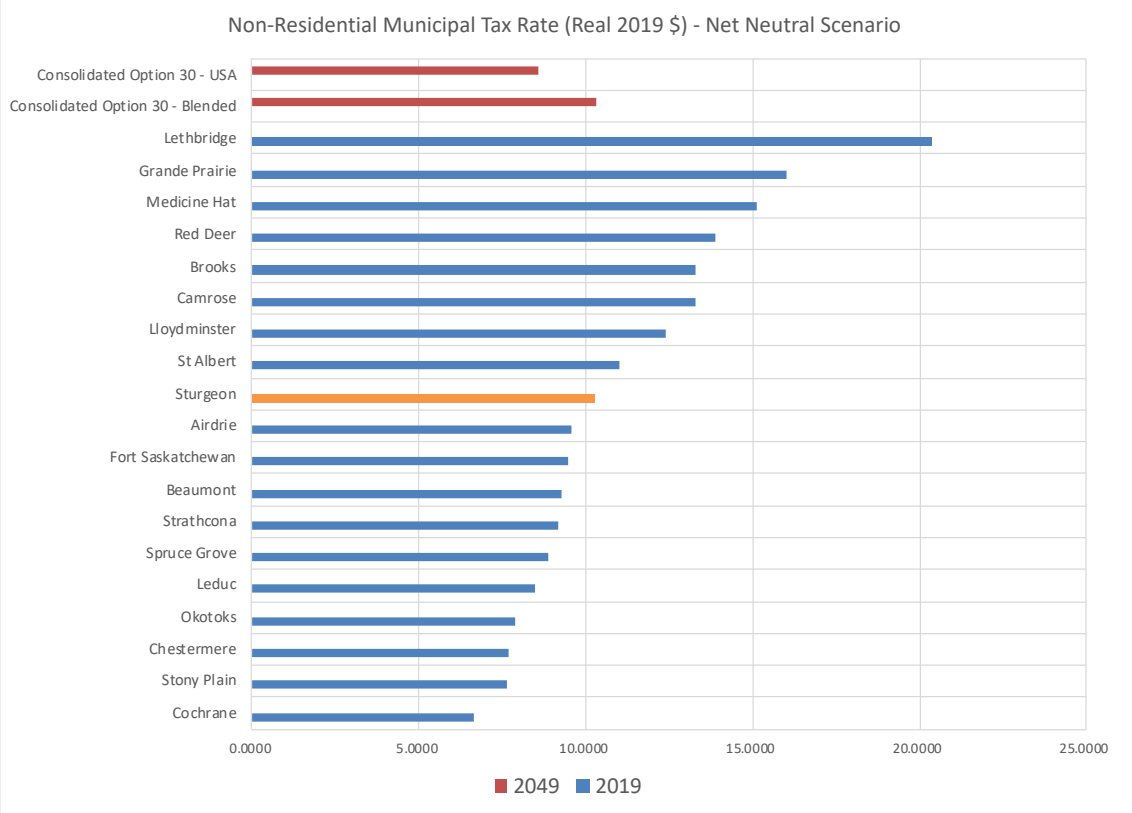


It is important to note that keeping the population growth in this scenario below the point where significant expected investment in infrastructure will be required, plus the better fiscal balance of the development assumptions, provides a better net financial result on the tax rates for County ratepayers.

This result is also evident which viewing the Urban Services Area Scenario results with the reduced Net Neutral residential development assumptions. Net Neutral municipal residential tax rates are projected to reach 5.37 (real 2019 $), which ranks the 6th lowest of the 18 'comparable' municipalities. The result for non-residential municipal rates is projected to reach 8.59, which also ranks 6th lowest of the 18 'comparable' municipalities.

It is noted that the USA non-residential municipal tax rate is lower than the current non-residential tax rate for the County. This is a result of the residential/non-residential tax rate split assumption used in the USA scenario, reducing the split from the current (Base Year) rate of 2.8 to a more typical split used by the 'comparable' municipalities of 1.6.


Residential Municipal Tax Rate (Real 2019 $) - Net Neutral Scenario
Consolidated Option 30 - USA
Consolidated Option 30 - Blended
Grande Prairie
Lethbridge
Camrose
Brooks
St Albert
Leduc
Lloydminster
Red Deer
Medicine Hat
Beaumont
Spruce Grove
Stony Plain
Chestermere
Okotoks
Fort Saskatchewan
Cochrane
Airdrie
Strathcona
Sturgeon County
0.0000
2.0000
4.0000
6.0000
8.0000
10.0000
12.0000
2049
2019


Non-Residential Municipal Tax Rate (Real 2019 $) - Net Neutral Scenario
Consolidated Option 30 - USA
Consolidated Option 30 - Blended
Lethbridge
Grande Prairie
Medicine Hat
Red Deer
Brooks
Camrose
Lloydminster
St Albert
Sturgeon
Airdrie
Fort Saskatchewan
Beaumont
Strathcona
Spruce Grove
Leduc
Okotoks
Chestermere
Stony Plain
Cochrane
0.0000
5.0000
10.0000
15.0000
20.0000
25.0000
2049
2019

4. Option 2 - Consolidated Option 60

The analysis provided below includes a preliminary analysis of the Consolidated Option 60 development scenario. This analysis should be considered preliminary and subject to revision upon review of the financial results and assumptions contained therein.

4.1. Development Assumptions

The analysis is based on the following development assumptions.

Table 4: Option 2 - Consolidated Option 60: Residential Development Assumptions[9]

	Area (ha)	Units / ha	Number of Units	People / Unit	Population	Assessment / Unit
LDR 1	143.90	20	2,878	2.60	7,483	400,000
LDR 2	198.00	25	4,950	2.60	12,870	375,000
Row Housing	114.60	45	5,157	2.60	13,408	325,000
MDR 1	46.90	90	4,221	2.60	10,975	250,000
MDR 2	9.10	125	1,138	2.60	2,958	250,000
Total	512.50		18,344		47,693	

Table 5: Option 2 - Consolidated Option 60: Non-Residential Development Assumptions[10]

	Area (ha)	Assessment / ha
Commercial / Retail	20.8	6,500,000
Industrial	133.9	2,500,000
Total	154.7	

All growth in the ASP area is assumed to start in 2026 and develop at a constant rate over the forecast period.

[9] Source: Area and Units V3, Population and Assessment Applications

[10] Source: Area V3, Assessment Applications

4.2. Municipal Cost/Revenue Assumptions

The financial analysis for this scenario is based on the following assumptions.

4.2.1. Municipal Operating Expenditures

Refer to Section 3.2.1 for the assumptions on this variable.

4.2.2. Capital Expenditures

The investment in infrastructure and facilities to support the growth proposed in the ASP has been estimated based on the type of development assumed in the ASP scenario, the total amount of growth and services that would be provided. Detailed assumptions have been made regarding the infrastructure that would be required and associated investment for each of the following categories:

- Neighbourhood Water Lines
- Neighbourhood Wastewater Lines
- Neighbourhood Drainage
- Local and Collector Roads
- Arterial Roads
- Regional Infrastructure (Roads, Water, Wastewater)
- Other Infrastructure (Recreation, Police, Fire, Equipment, Library, Transit, Maintenance Facilities, Administration Facilities)

The detailed assumptions regarding costing of each asset category is provided in Appendix A. The capital requirements for each investment in new infrastructure totals an estimated to total $353 million by 2049 and a total of $850 million by 2079.

4.2.3. Financing Capital

Refer to Section 3.2.3 for the assumptions on this variable.

Tax supported infrastructure included in this ASP option includes the following:

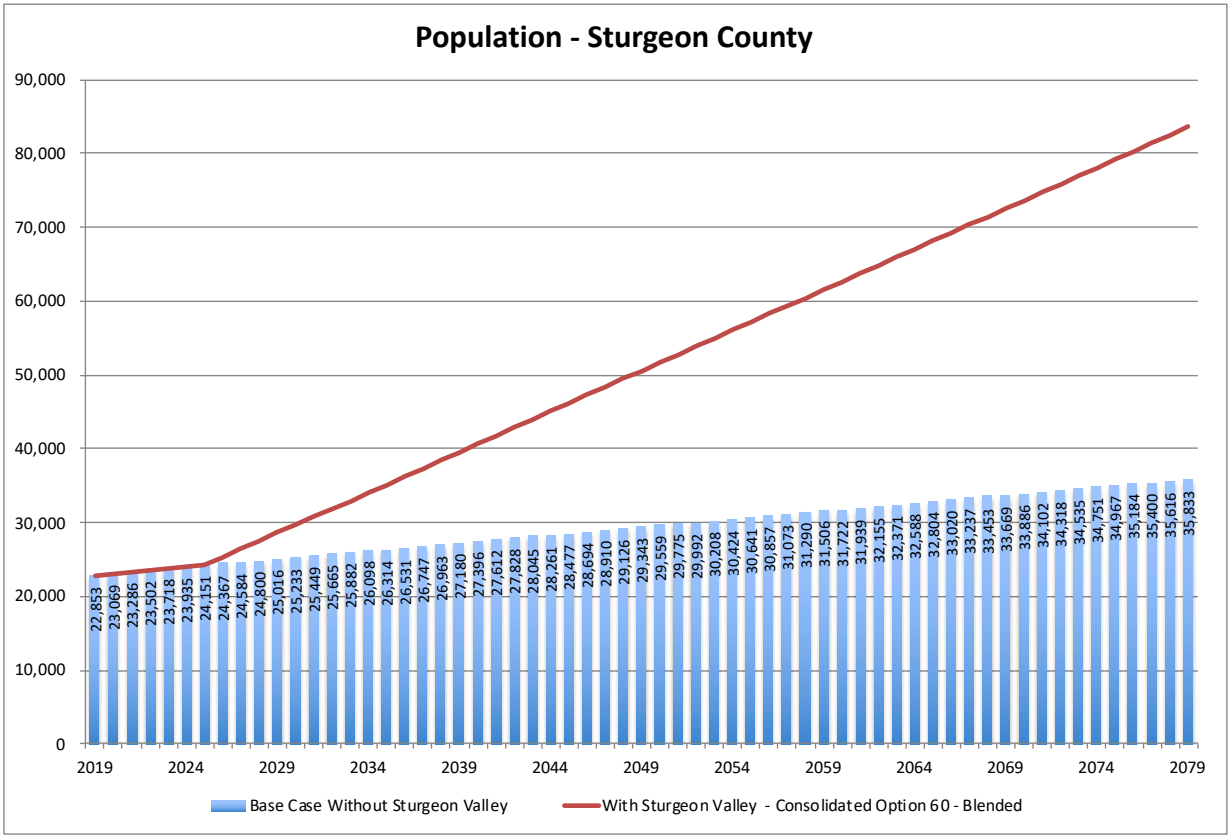
- Playgrounds
- Outdoor Rinks
- Transit Buses
- Municipal Vehicles & Equipment

All major infrastructure associated with water, wastewater and transportation have been assumed to be funded through either utility rates, grants or development levies.

4.3. Blended Scenario Results

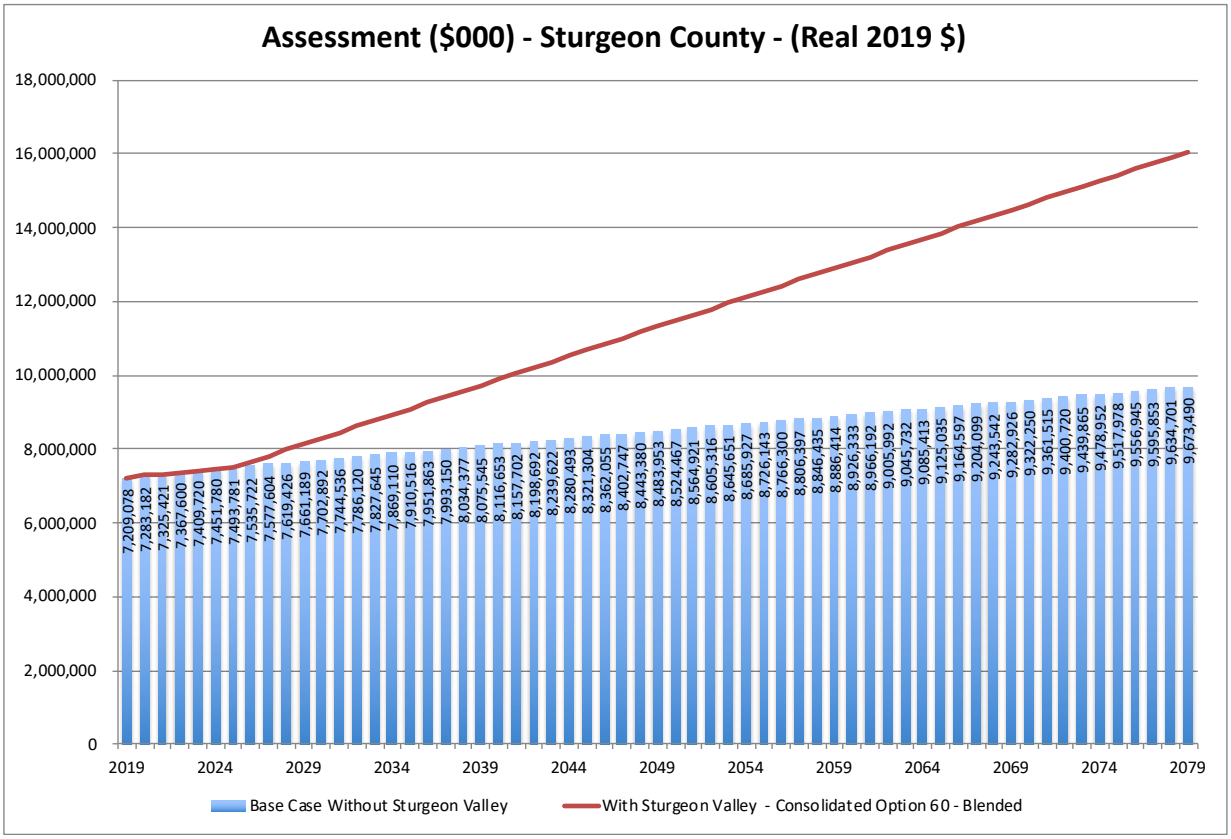
4.3.1. Population Growth

The population of the County is projected to increase to just over 36,000 by 2079 (60 year forecast period) without development of the ASP. With the ASP scenario, the total population of the County is projected to increase to almost 83,500 by 2079.


Population - Sturgeon County
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
2019
2024
2029
2034
2039
2044
2049
2054
2059
2064
2069
2074
2079
22,853
23,069
23,286
23,502
23,718
23,935
24,151
24,367
24,584
24,800
25,016
25,233
25,449
25,665
25,882
26,098
26,314
26,531
26,747
26,963
27,180
27,396
27,612
27,828
28,045
28,261
28,477
28,694
28,910
29,126
29,343
29,559
29,775
29,992
30,208
30,424
30,641
30,857
31,073
31,290
31,506
31,722
31,939
32,155
32,371
32,588
32,804
33,020
33,237
33,453
33,669
33,886
34,102
34,318
34,535
34,751
34,967
35,184
35,400
35,616
35,833
Base Case Without Sturgeon Valley
With Sturgeon Valley - Consolidated Option 60 - Blended

4.3.2. ASSESSMENT

The assessment base of the County is projected to increase to almost $9.7 billion by 2079 (60 year forecast period) without development of the ASP. With the ASP scenario, the assessment base of the County is projected to increase to almost $16.2 billion by 2079.

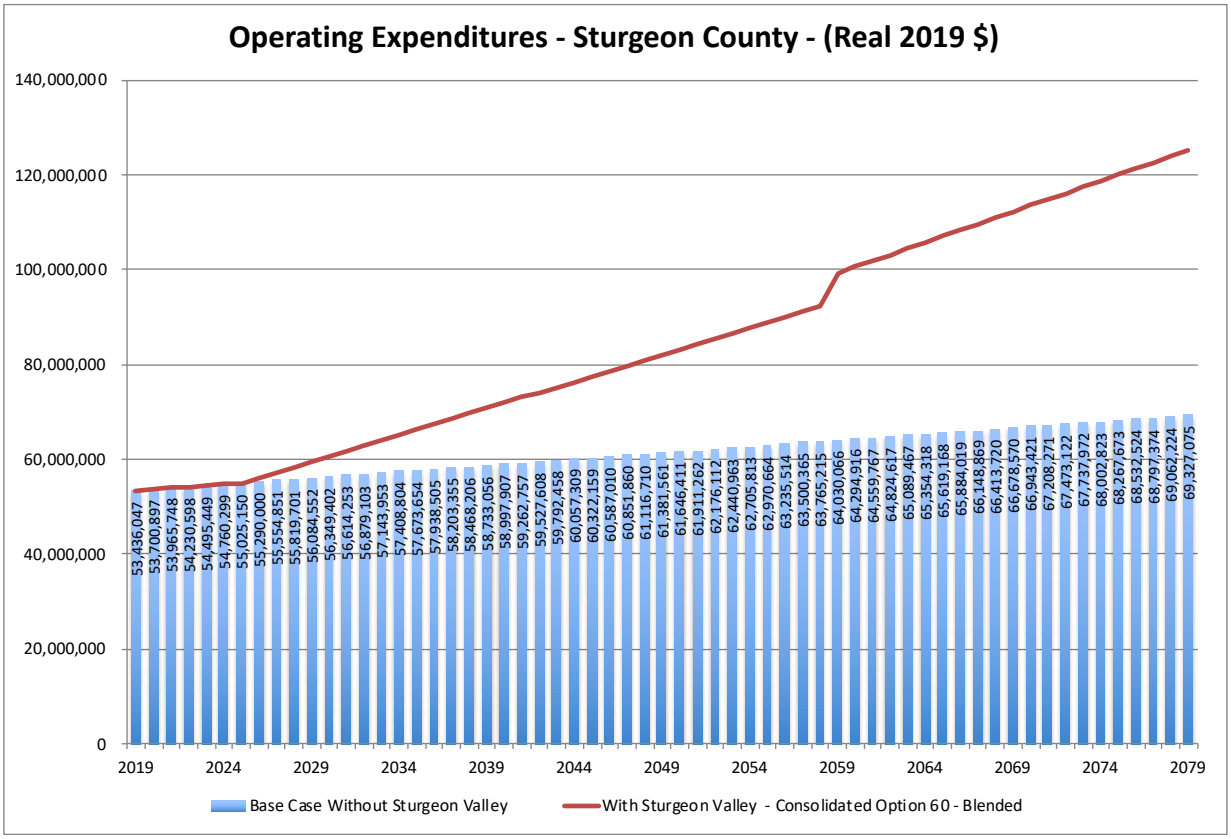


4.3.3. Operating Expenditures

Total operating expenditures for the County without the ASP development are projected to increase to approximately $69.3 million over the forecast period. With the growth defined for the ASP area, these expenditures are projected to increase to just over $125 million by the end of the forecast period.

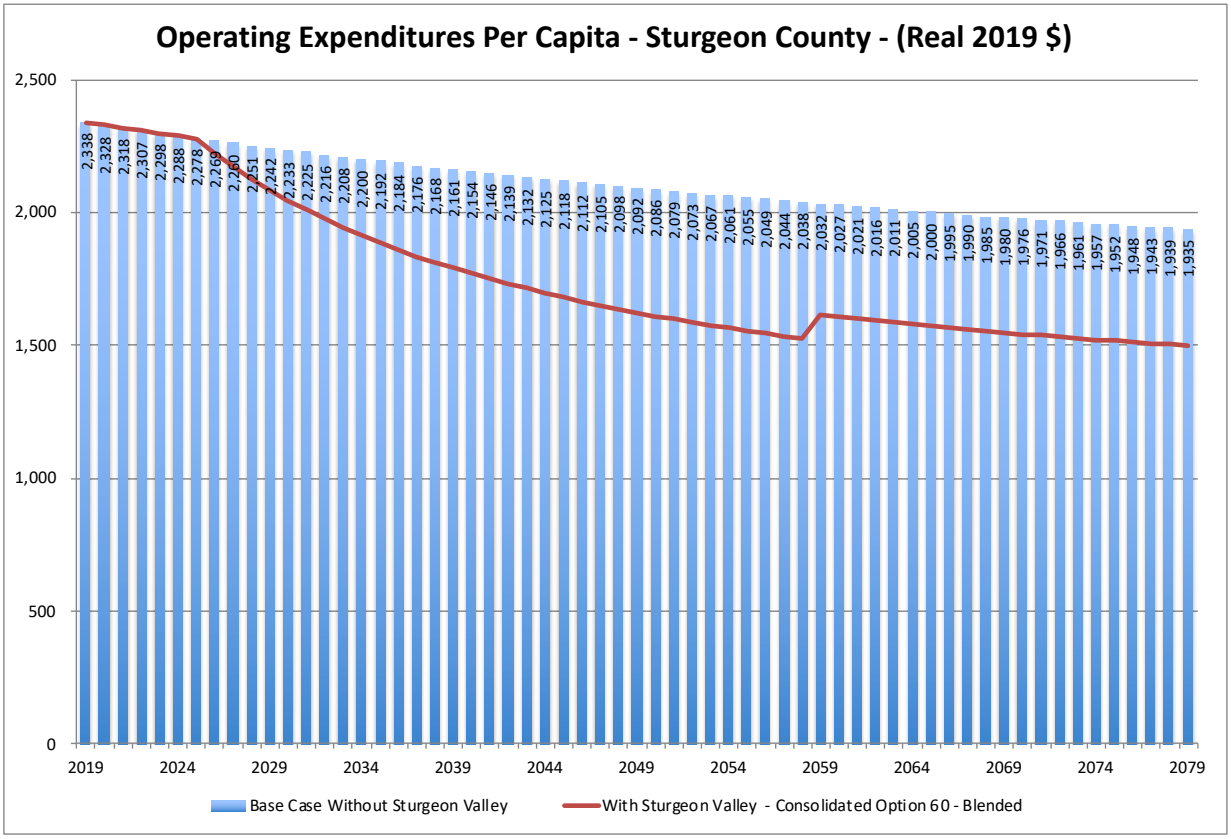
There is an adjustment in operating expenditures in 2059 as this is the year that development in the ASP area exceeds 30,000. This is then the Tier 2 operating expenditures take effect. In reality, this would happen gradually over time and not as a single year adjustment.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



On a per capita basis, operating expenditures are projected to decrease with growth in the County. Without the ASP these decreases in operating expenditures per capita reflect the benefit of economies of scale without any change in the scope of services provided.

When development in the ASP area is included operating expenditures per capita decrease further. This is a result of operating expenditures per capita being generally lower for urban communities. In this ASP option, the Tier 1 average cost per capita are applied to growth until 2059 when the Tier 2 operating expenditures reflecting an ASP area population of over 30,000.

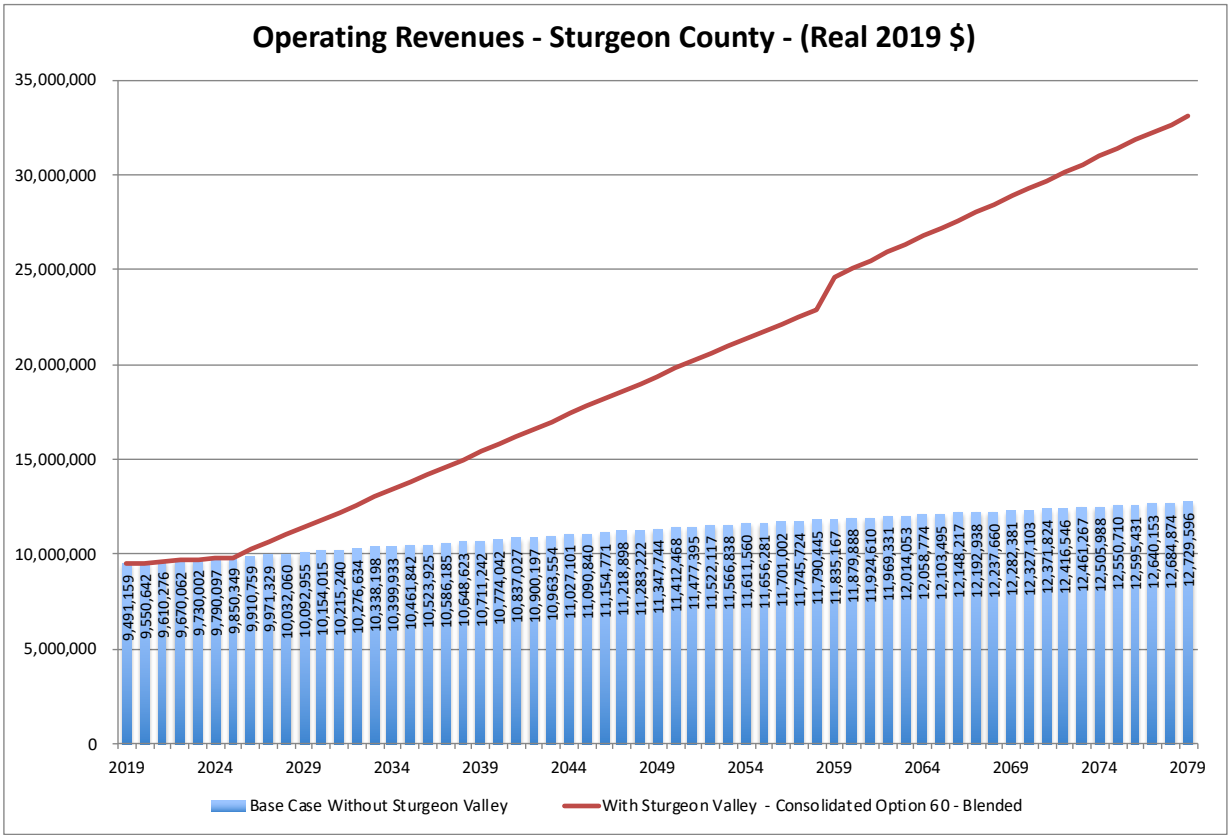


4.3.4. Operating Revenues

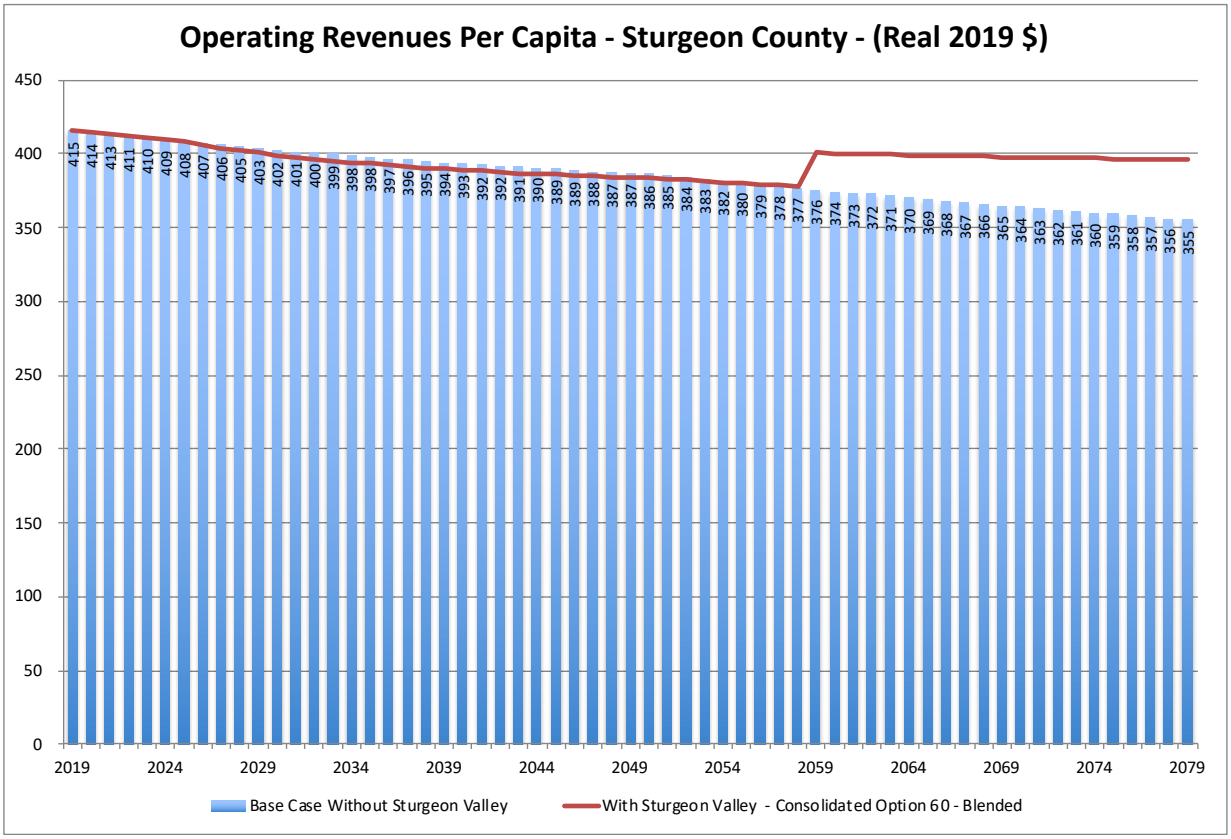
Total operating revenues (non-tax revenues) for the County without the ASP development are projected to increase to approximately $12.7 million over the forecast period. With the growth defined for the ASP area, these expenditures are projected to increase to just over $33 million by the end of the forecast period.

The adjustment in operating expenditures to Tier 2 levels in 2059 also affect operating revenues as the cost recover rates are based on operating expenditures by function area.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.

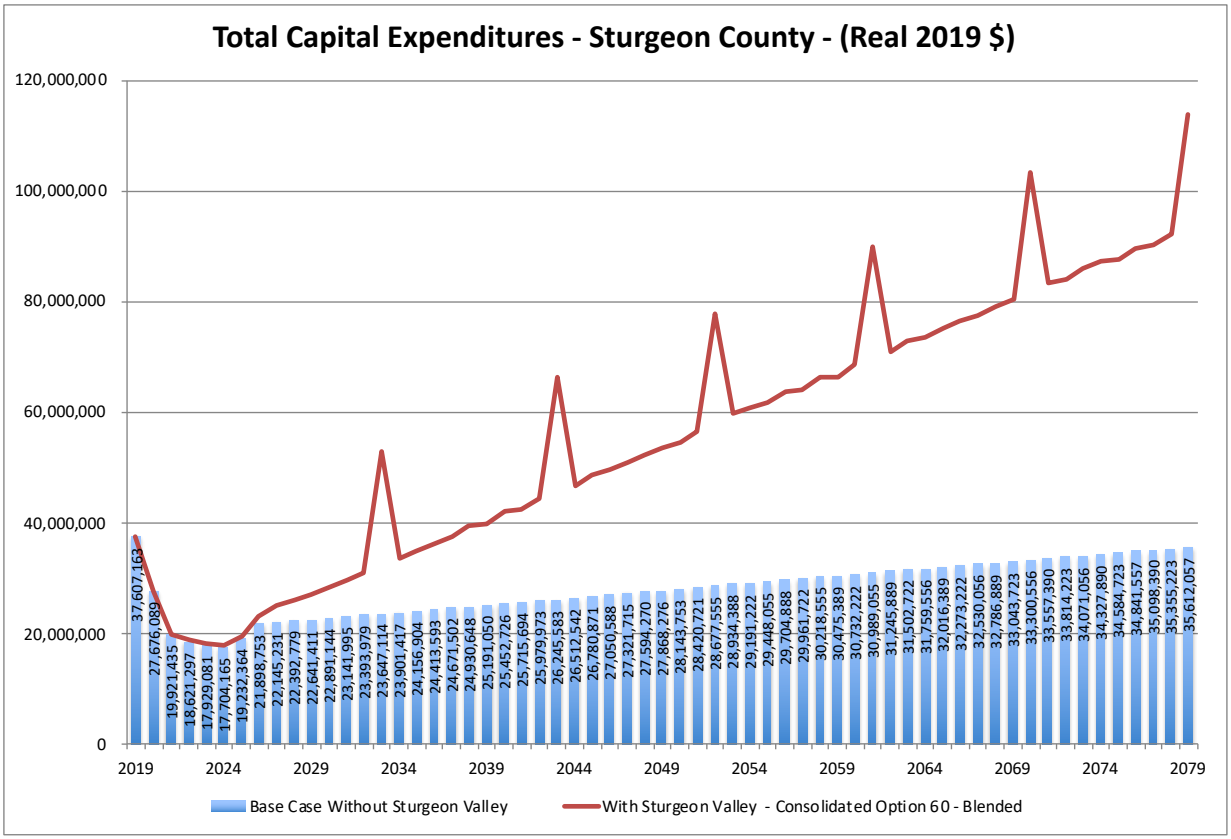


On a per capita basis, operating revenues are projected to largely remain the same in both the Baseline Forecast at that for the County including the ASP area until the operating expenditure adjustment to Tier 2 levels in 2059. From this point on operating revenues per capita increase based on the results for the Tier 2 municipalities.



4.3.5. Capital Expenditures

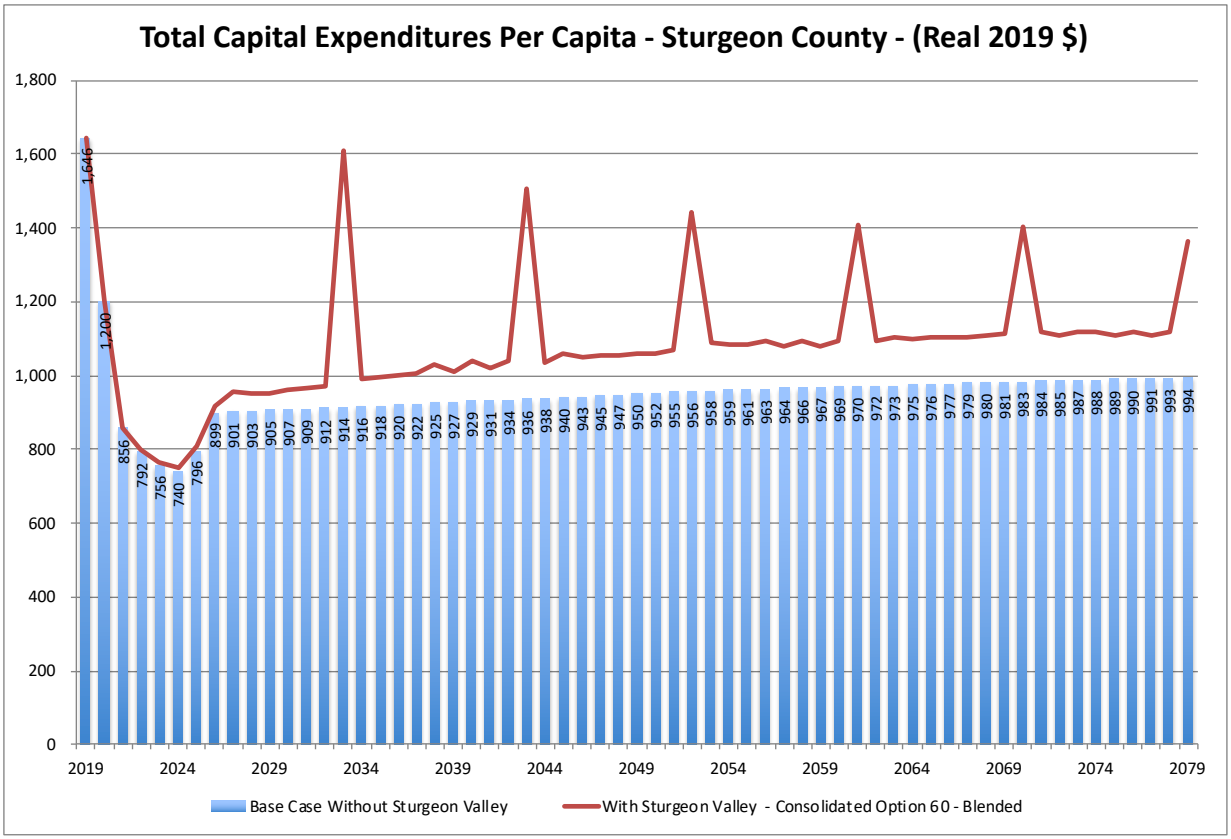
Total capital expenditures for County without the ASP development reflect the County's five year capital plan plus future capital expenditures on a per capita basis consistent with historical capital investment. With the growth defined for the ASP area, capital expenditures are expected to increase significantly. Further, there are spikes in capital expenditures associated with required investment in major infrastructure. Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Contributing to the increase in capital expenditures for the ASP option are the following:

- Major water, wastewater and road infrastructure
- Fire Stations (4)
- Police Stations (4)
- Arenas (4)
- Pools (2)
- Indoor Soccer (1)
- Specialty Recreation Facilities (Spray Park, Skateboard Park)

On a per capita basis, capital expenditures with the ASP option are generally higher to that for the County generally. In addition, there are five periods where significant capital investments are projected to be required.

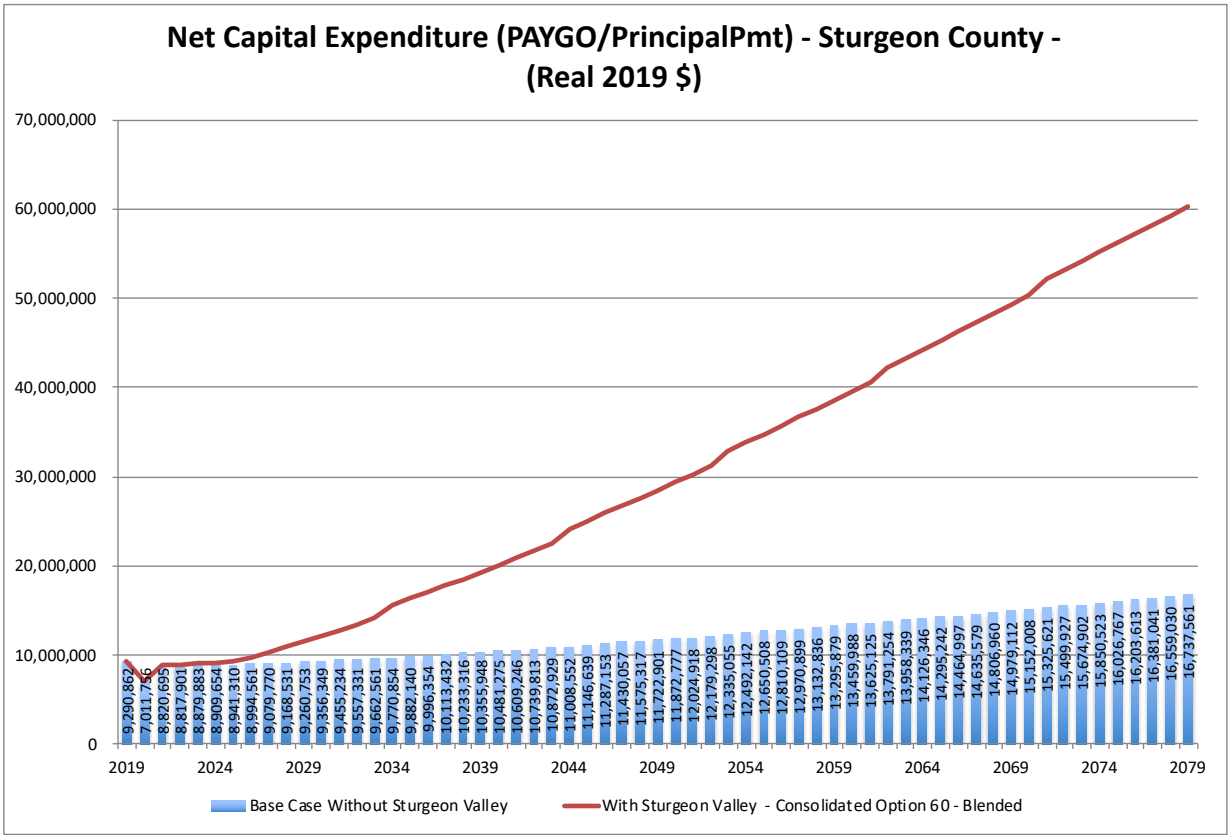


4.3.6. Tax Supported Capital Expenditures

Tax supported capital expenditures include those that are funded from tax or utility rate sources. This excludes funding that is from third party sources as well as donated assets acquired through development.

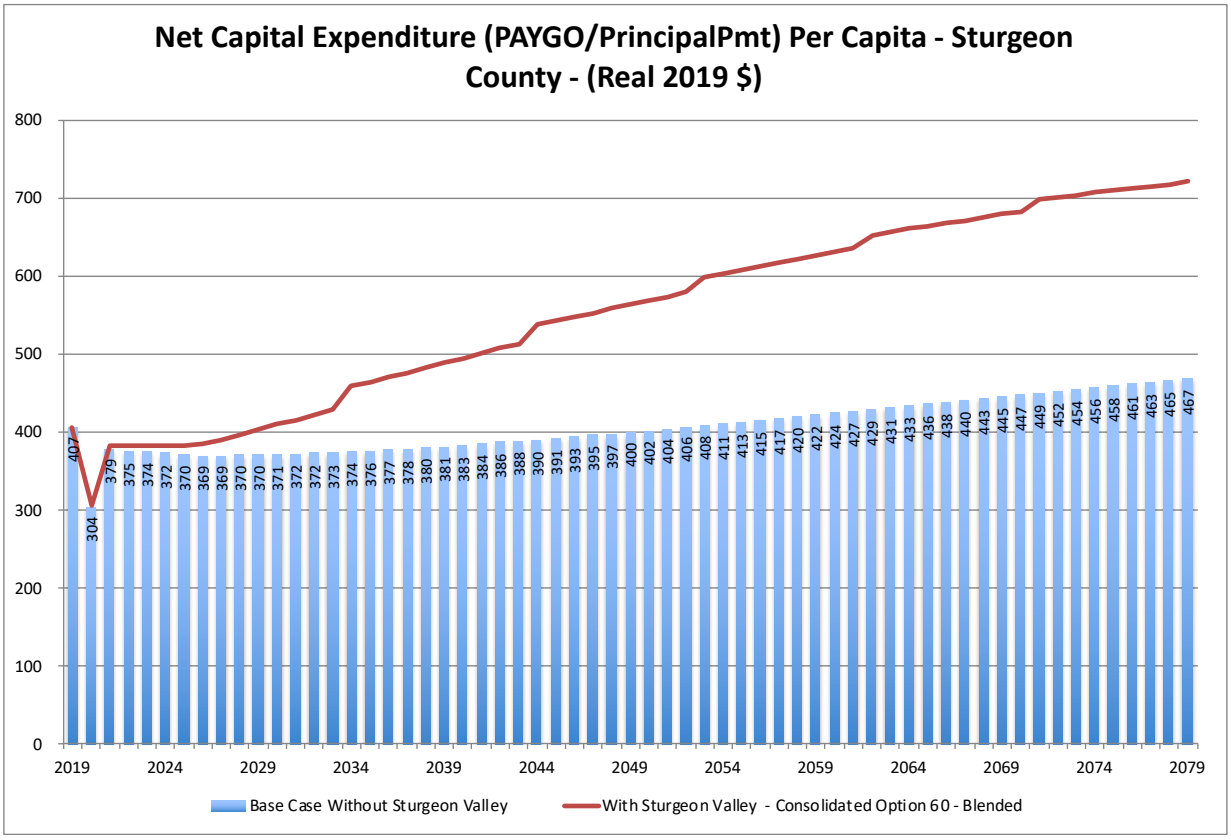
Net capital expenditures without development in the ASP area are project to increase modestly to almost $17 million to the end of the forecast period. When the tax supported expenditures associated with the growth in the ASP area are included, these expenditures increase significantly, to over $60.0 million by the end of the forecast period.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Even when net capital expenditures are normalized on a per capita basis, the annual expense increases significantly when development in the ASP area is included. This is a result of a general increase in expenditures as well as share of these expenditures that will be funded by rate payers through taxes or utility rates.

It should be noted that this assumes that development levies would be applied to not only the traditional infrastructure investments, but also police, fire and major recreation infrastructure. It should also be noted that the forecast that includes the ASP development assumes that life cycle costs associated with acquired assets (donated or purchased) is 100% funded. While the analysis assumes that a greater proportion of life cycle costs will be funded in the Baseline Forecast, it likely does not include 100% of these costs.

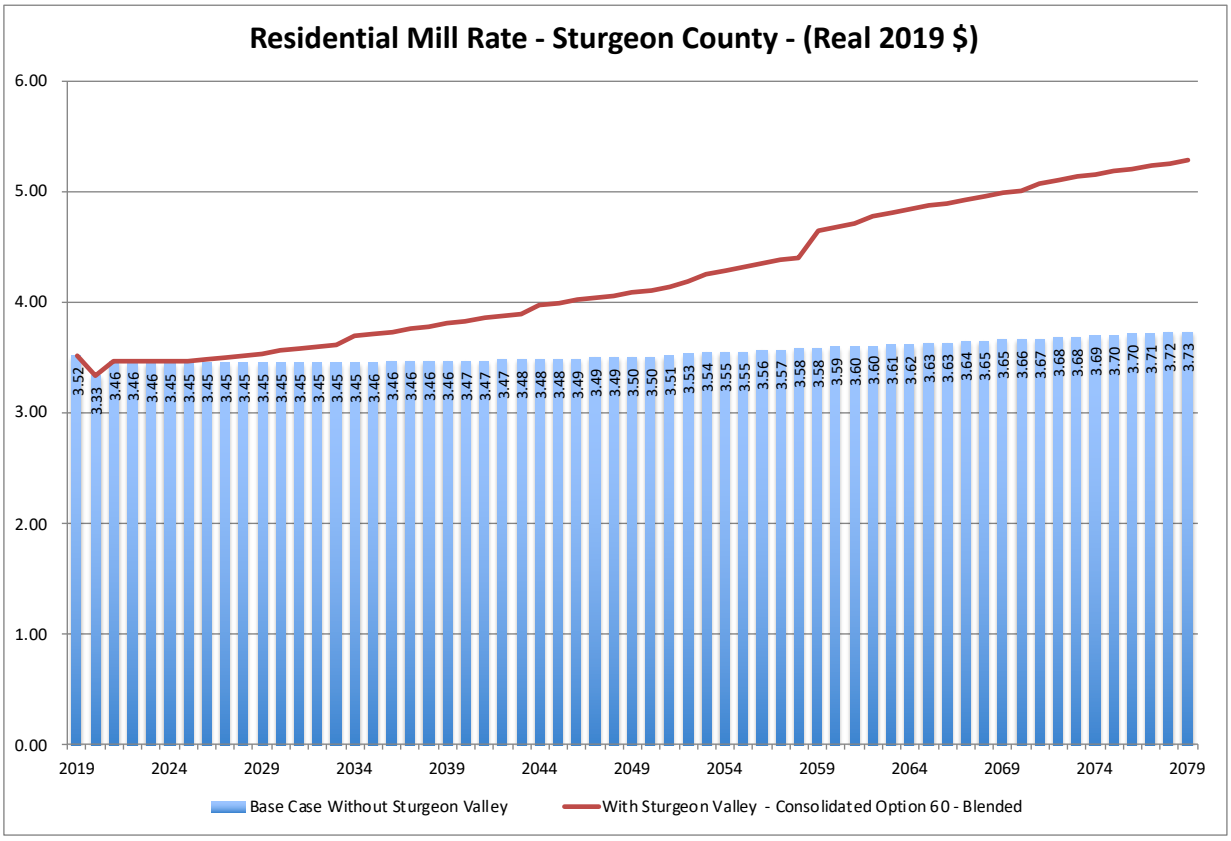


4.3.7. Municipal Tax Rates

Municipal tax rates have been calculated based on the annual shortfall between total expenditures and operating (non-tax revenues). In the Blended Scenario, the base year municipal tax rate split between residential and other tax rates has been assumed throughout the forecast.

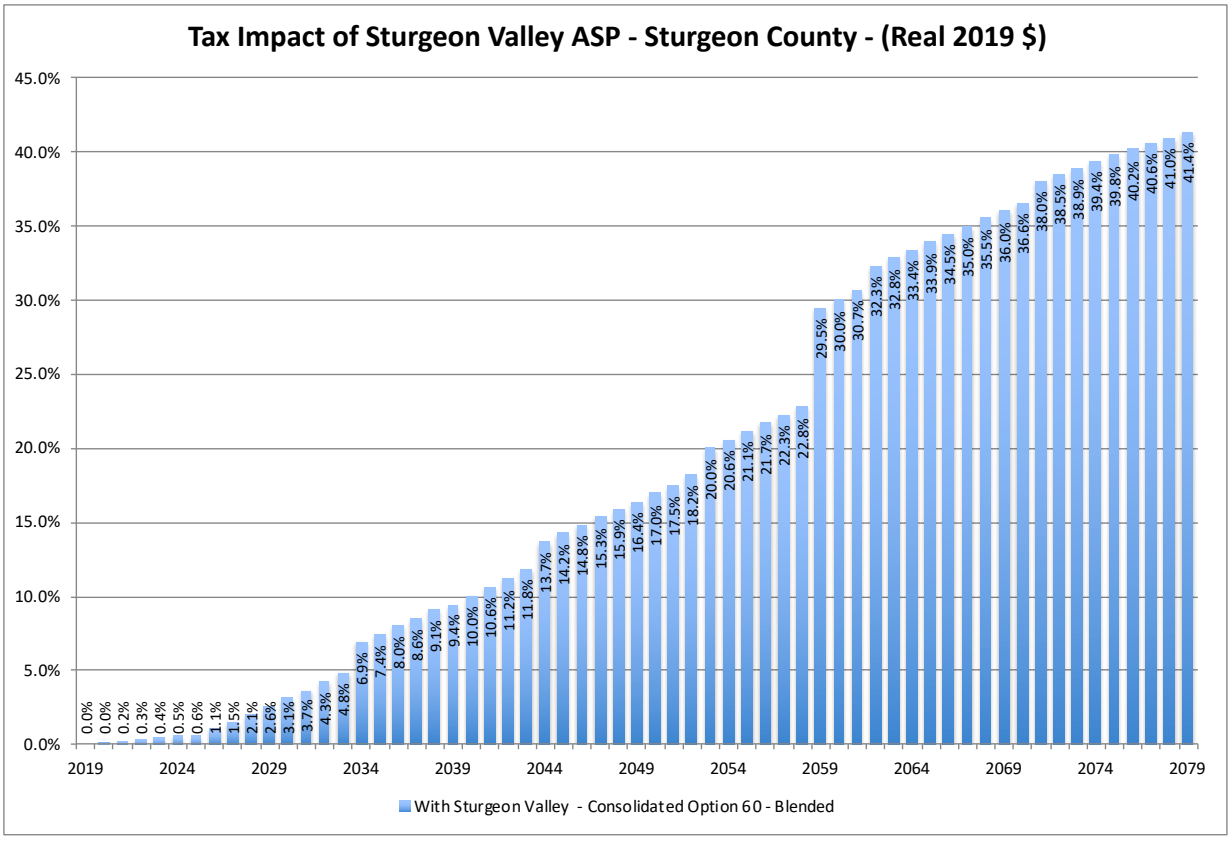
In the Baseline Forecast, real municipal residential tax rates (without inflation) are projected to gradually increase over the forecast period. When growth in the ASP area for this scenario is included, residential municipal tax rates are projected to increase (in real terms) by approximately a one and a half mills. This increase is significant.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Over the forecast period, in the Blended Scenario where all municipal expenditures and revenues are considered in developing a single set of municipal tax rates for residential and other assessment classes (based on the 2019 tax rate splits), tax rates are projected to increase when the ASP area development is included. The magnitude of this increase builds to almost 41% by the end of the forecast period. This increase is the same for both residential and non-residential tax rates as the split between rates has been assumed to remain constant over the forecast period.

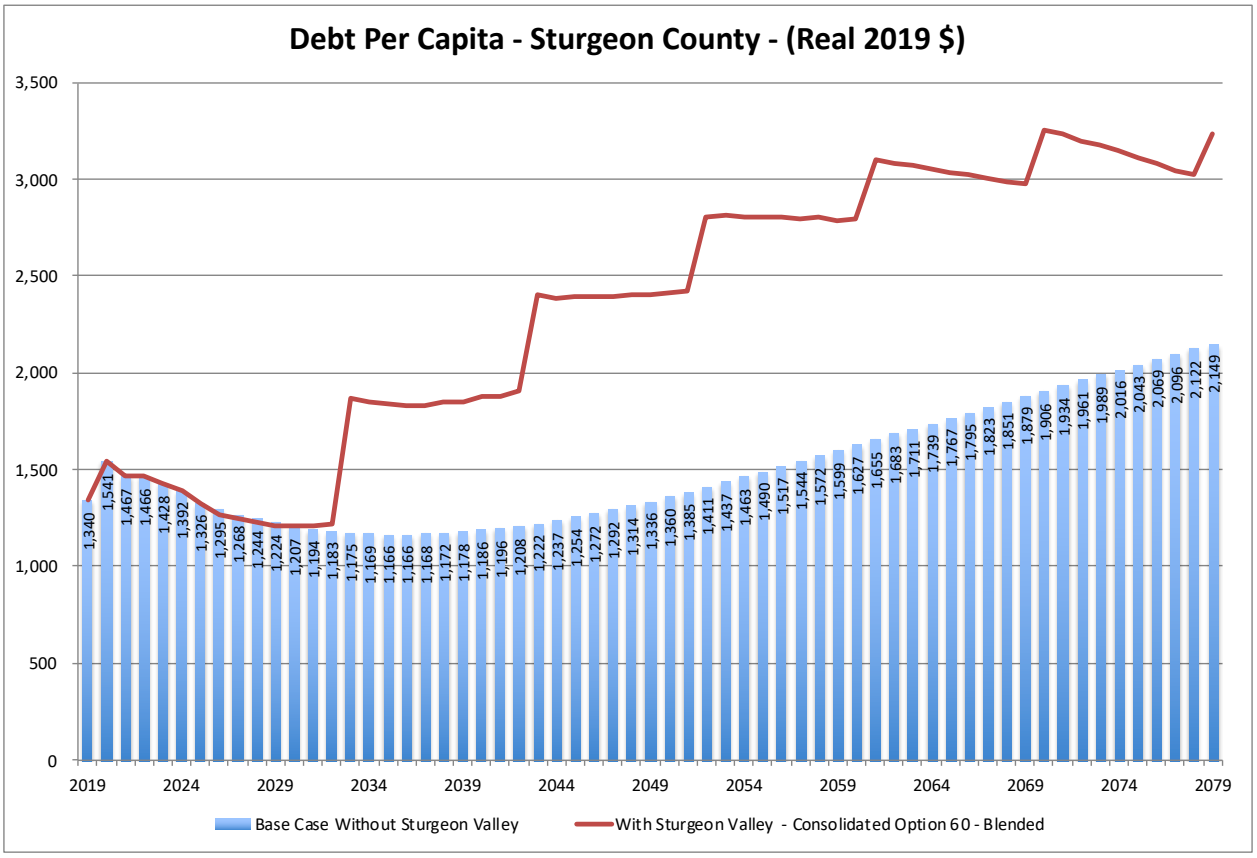
Of concern for existing Sturgeon County ratepayers is the increase in taxes paid to support additional infrastructure and investment in services that they may perceive as not providing a direct benefit to them.



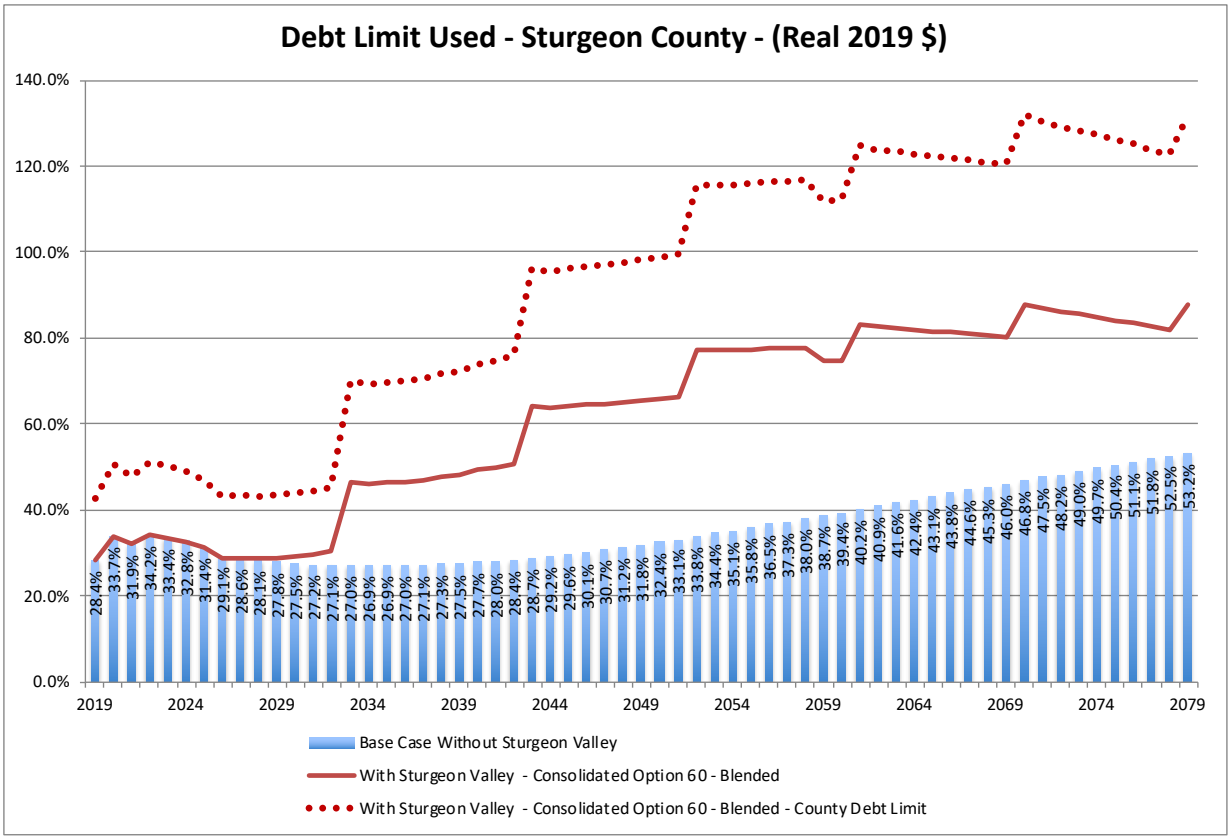
4.3.8. Municipal Debt

Contributing to the higher tax rates including development in the ASP area is an increase in capital investment and municipal debt. On a per capita basis the change in municipal debt levels decline in the mid term for the Baseline Forecast, and then increase to over $2,100 per capital by the end of the forecast. This increase is a result of the catch up in life cycle costs assumed for the Baseline Forecast.

The total debt per capita increases dramatically when development in the ASP area is included. Notably significant increases occur at points where significant infrastructure investments are required (see capital expenditures presented earlier in this section).



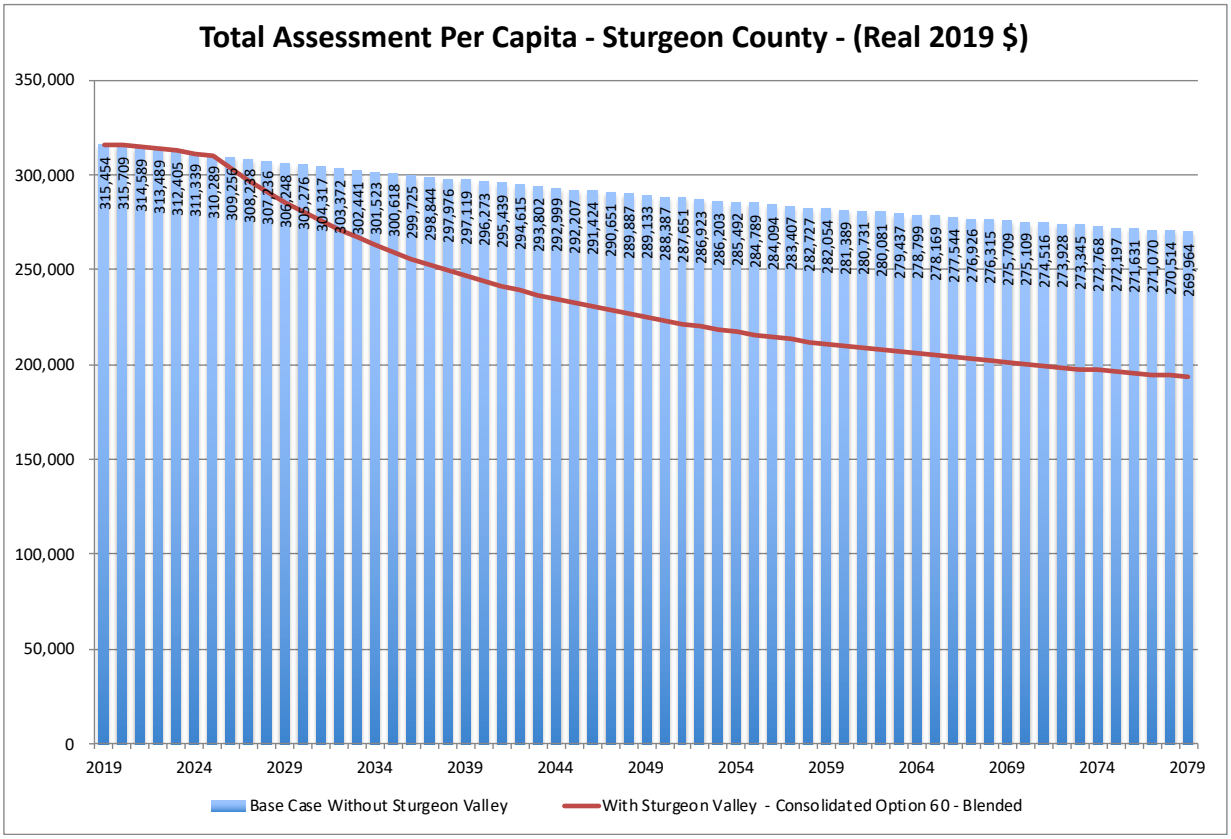
The increased debt levels with the ASP area development also results in an increase in the usage of the County's debt limit. While remaining below the MGA prescribed debt limit, the County's debt limit is violated about half way through the forecast.



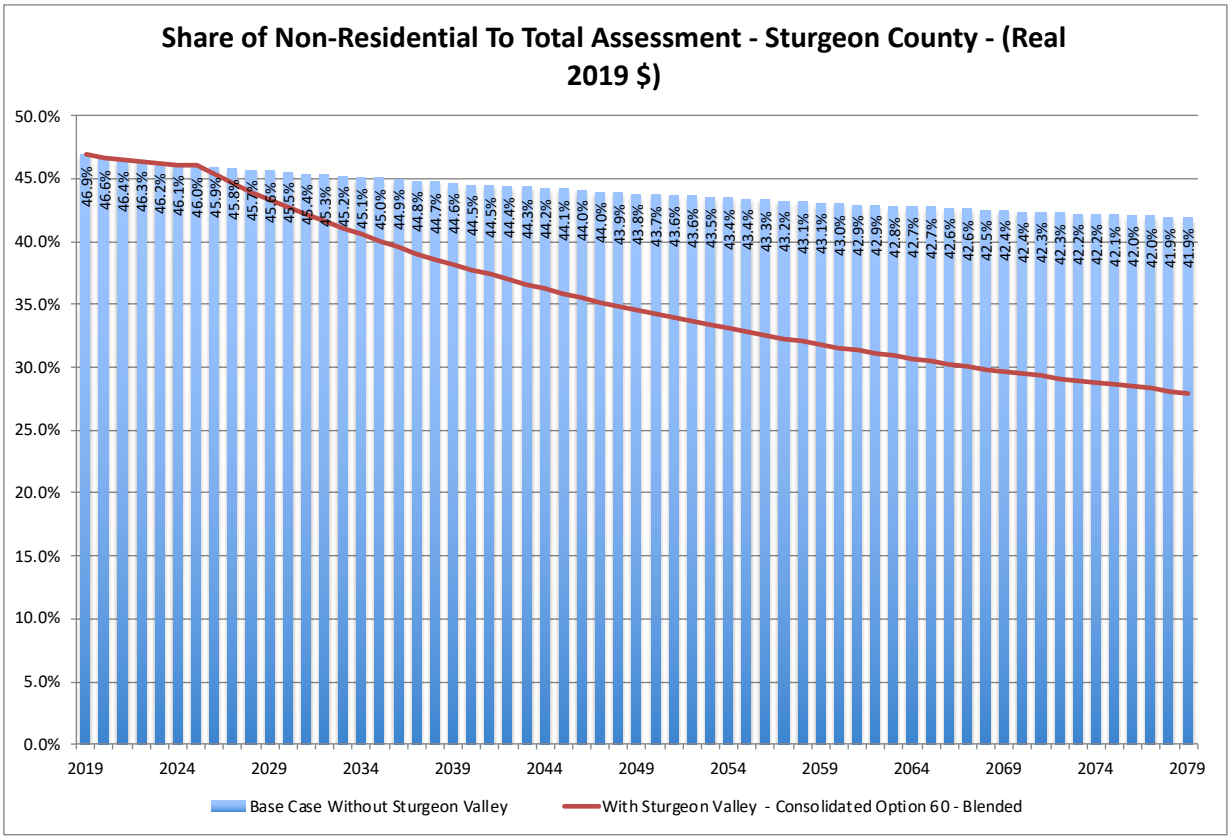
4.3.9. Fiscal Capacity

The County currently benefits from a favourable fiscal capacity by most measures. Based on the development assumed for the ASP area, this fiscal capacity is projected to deteriorate compared to that for the Baseline Forecast.

Using assessment per capita, there is a significant decline in the County's fiscal capacity when development in the ASP area is included. This represents a decline of approximately 28%.



A similar pattern is revealed using share of non-residential assessment that contributes to the total assessment base of the County. As with assessment per capita, the share of non-residential assessment also declines when development in the ASP area is included in the analysis.



As with the Consolidated Option 30 development option, the non-residential development included in the ASP area is not sufficient to maintain the County's current favourable fiscal capacity. The results for this scenario indicate that this balance deteriorates to a greater extend than those for the Consolidated Option 30. For the County to maintain its currently favourable fiscal capacity with the ASP development would require a greater proportion of non-residential development.

4.4. Urban Services Area Scenario

As noted above, when the financial implications of development in the ASP area is blended into the County's overall financial position, there are spillover implications for existing ratepayers in the County. To protect existing County ratepayers from these implications, an alternative scenario has been constructed whereby the development in the ASP area would be a stand alone Urban Services Area where all related costs and revenues would be contained within the ratepayers in the area.

The assumption regarding the services, municipal cost of services, capital investment and financing of this investment in this scenario are the same as those in the Blended Scenario, except separate tax rates have been calculated for the development in the ASP area. The tax rates and financial implications for existing ratepayers in the County would follow the Baseline Forecast.

It is noted that there would be some savings associated with scope economies and sharing of facilities and infrastructure. All of these benefits have been assumed to flow to ratepayers in the ASP area.

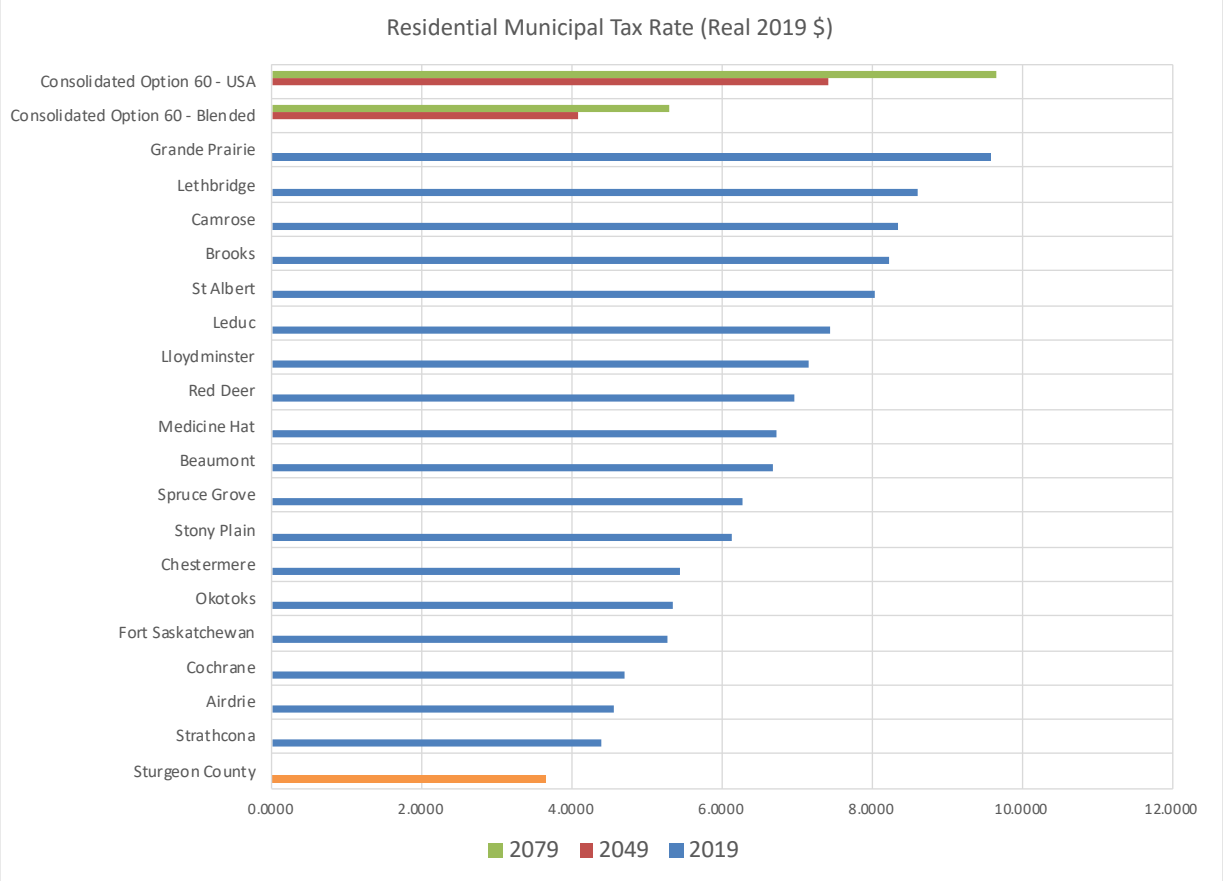
4.4.1. Residential Municipal Tax Rates

The Urban Services Area (USA) Scenario residential municipal tax rate results are presented in the context of the Blended Scenario results, as well as the 2019 residential municipal tax rates for all the municipalities included in the analysis of municipal operating expenses and revenues.

To provide a comparable municipal tax rate comparison for the USA Scenario results with other urban municipalities, the tax rate split for the USA Scenario is assumed to be 1.6. This is significantly smaller than the currently County tax split of 2.8. It is thought that for an urban area, a tax rate split more consistent with that currently used by the comparable urban's would be appropriate.

As seen in the figure below, the 2079 (real 2019 $) Blended Scenario municipal tax rate result is higher than the existing rate for Sturgeon (approximately 45% higher). When development in the ASP area is required to pay for itself, without subsidization of the County's existing tax base, and with the shift of tax burden to the residential rate, the USA Scenario residential tax rate is significantly higher than the existing County rate (2.6x). In spite of this, the residential tax rate for the USA Scenario is similar to the City of Grande Prairie, reporting the highest residential municipal tax rate. This would make the residential municipal tax rates in the ASP area USA among the highest in the province.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.

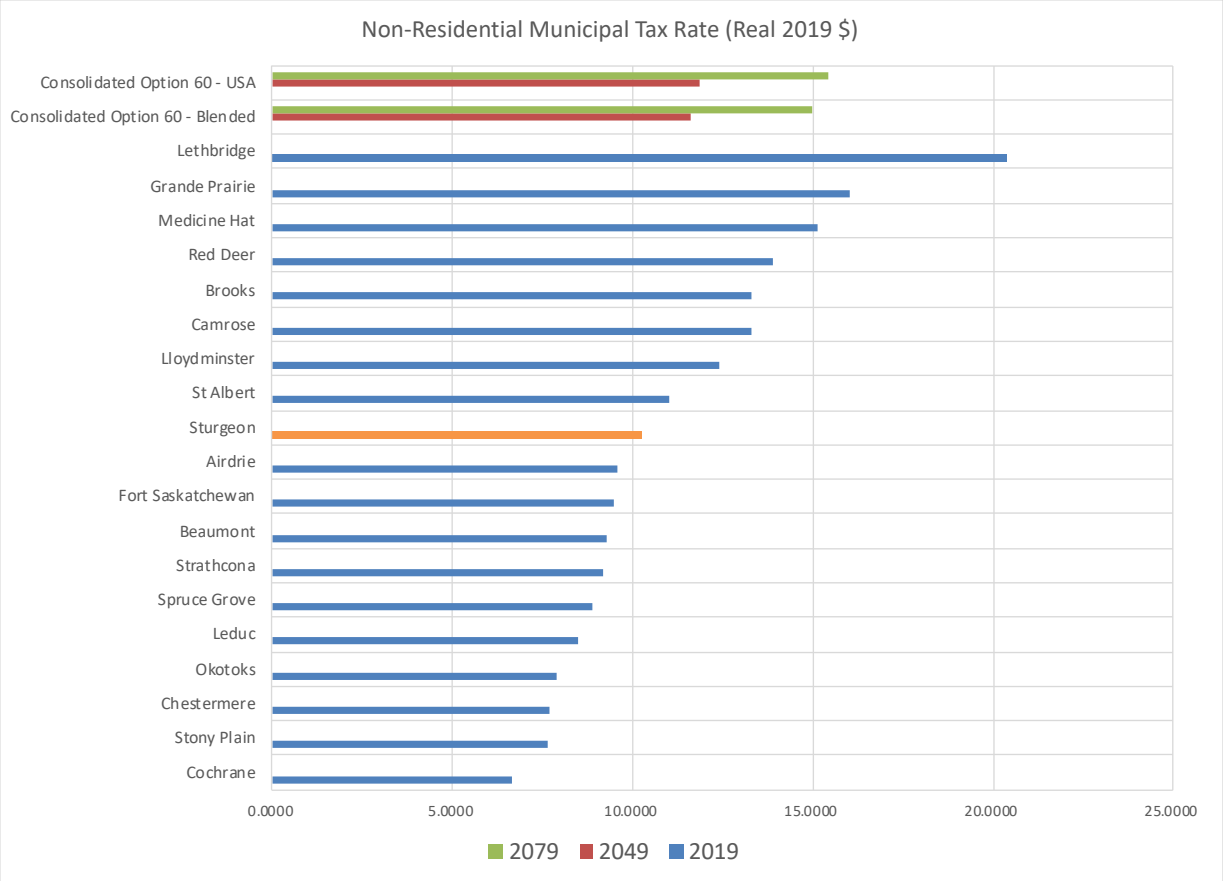


4.4.2. Non-Residential Municipal Tax Rates

As noted above, to provide a comparable municipal tax rate comparison for the USA Scenario results with other urban municipalities, the tax rate split for the USA Scenario is assumed to be 1.6. This is significantly smaller than the currently County tax split of 2.8. It is thought that for an urban area, a tax rate split more consistent with that currently used by the comparable urban's would be appropriate.

As seen in the figure below, the 2079 (real 2019 $) Blended Scenario municipal tax rate result is similar to that estimated for the Blended Scenario. This is largely a result of adjusting the tax rate split for the USA Scenario. Based on this, the USA Scenario non-residential tax rate in 2079 would be below two of the comparable municipalities included in the operating expenditure and revenue analysis.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



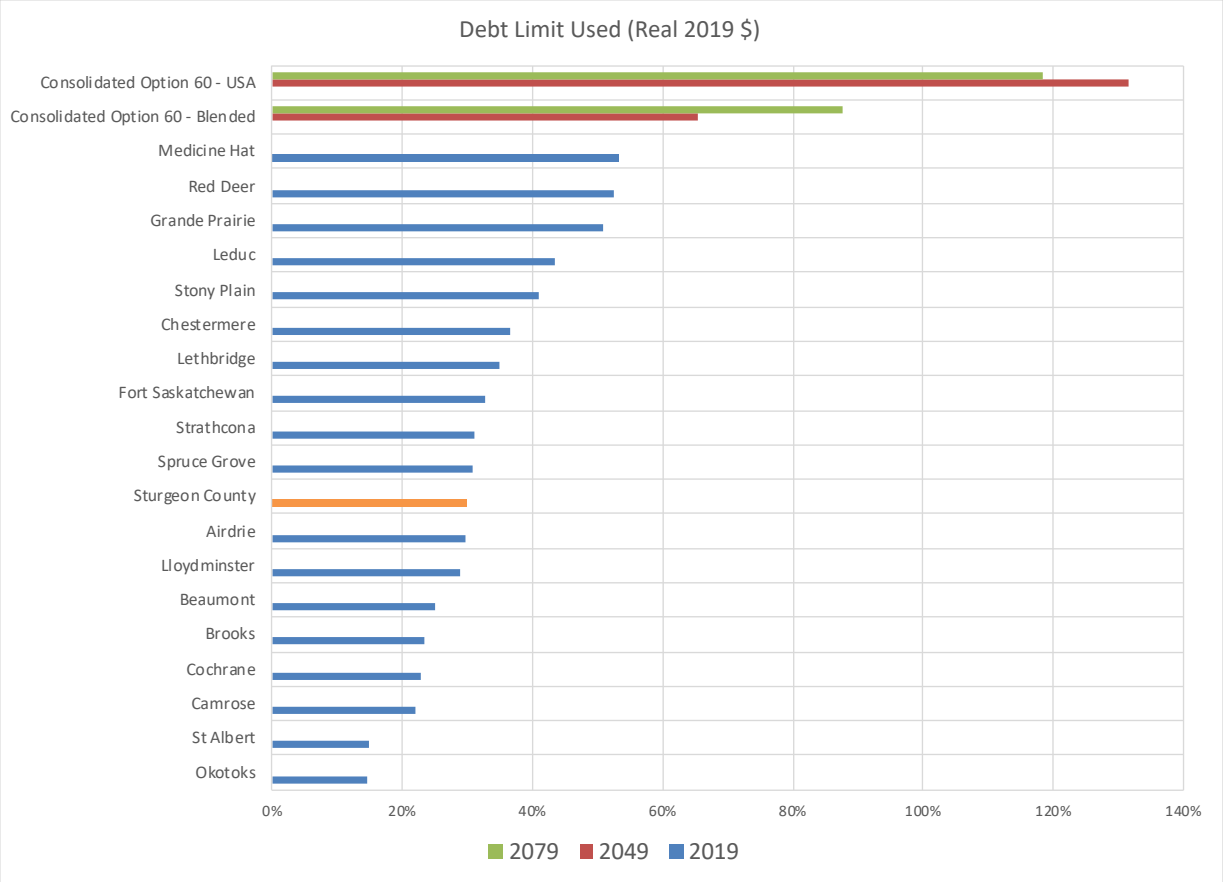
4.4.3. Debt Limit Used

As noted above, development in the ASP area will require a significant capital investment. This puts some additional strain on the share of available debt limit used. The results for the Blended and USA scenarios is provided in the figure below.

When all the debt associated with development in the ASP area is attributed to the area (USA scenario), this urban area would be above the MGA prescribed debt limit in each of the forecast years beyond 2033 as noted by the reported rates in the two reference years (2049 and 2079).

It should be recognized that while this analysis assumes that developer funding of all MGA allowable infrastructure is assumed, it is also assumed that life cycle costs are funded at 100%. It is unlikely that the other municipalities noted in the figure do not have deferred maintenance. As a result, this analysis is holding the ASP area to a higher standard of financial diligence than generally practiced.

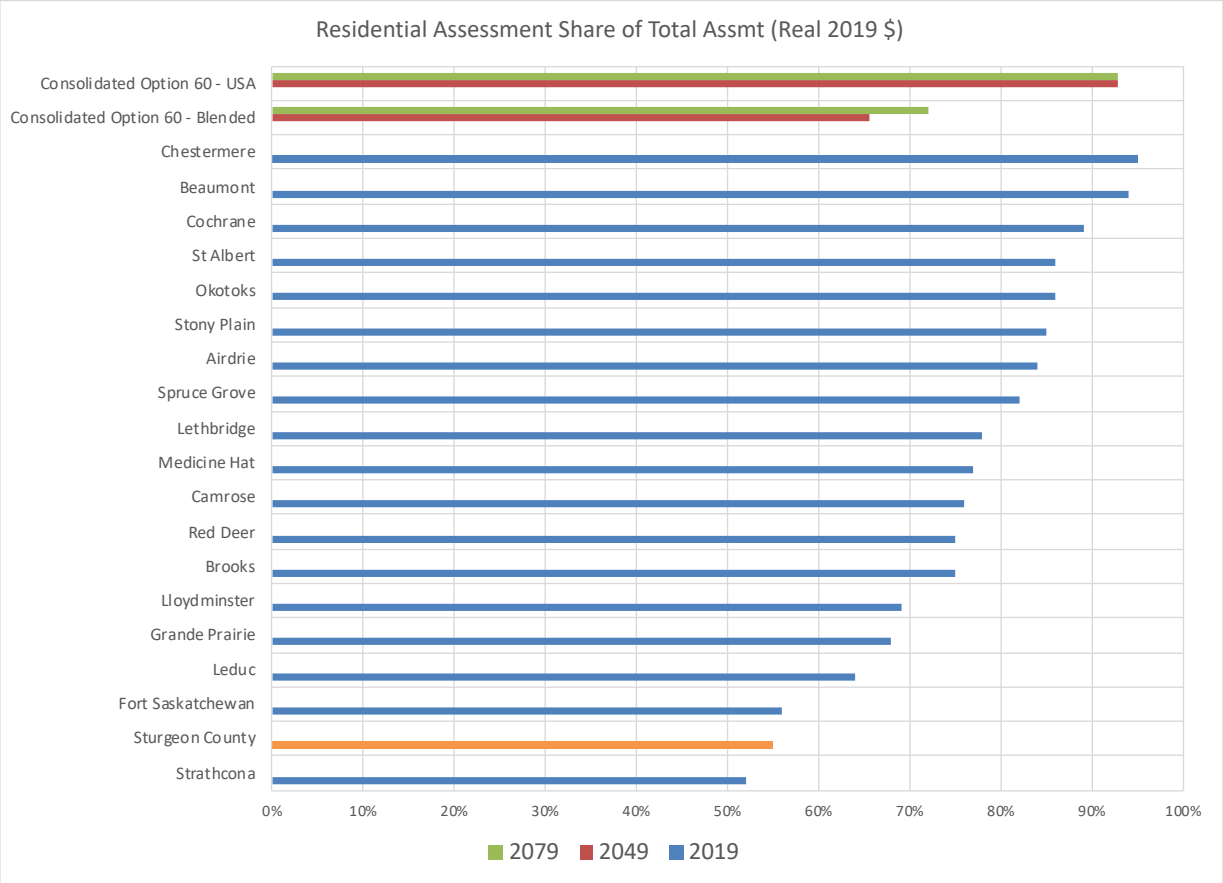
Note that all financial information is in real 2019 dollars, and thus do not include inflation.



4.4.4. Residential Assessment

As noted above, when the ASP area development is blended into the County's current assessment base, the share of non-residential assessment declines. This is reflected by an increase in the share of residential assessment as noted in the figure below. When the ASP area assessment is considered in isolation of the rest of the County, the share of residential assessment increases to 93% in 2079. This is among the highest of those municipalities included in the comparable analysis, being higher than only two of these municipalities.

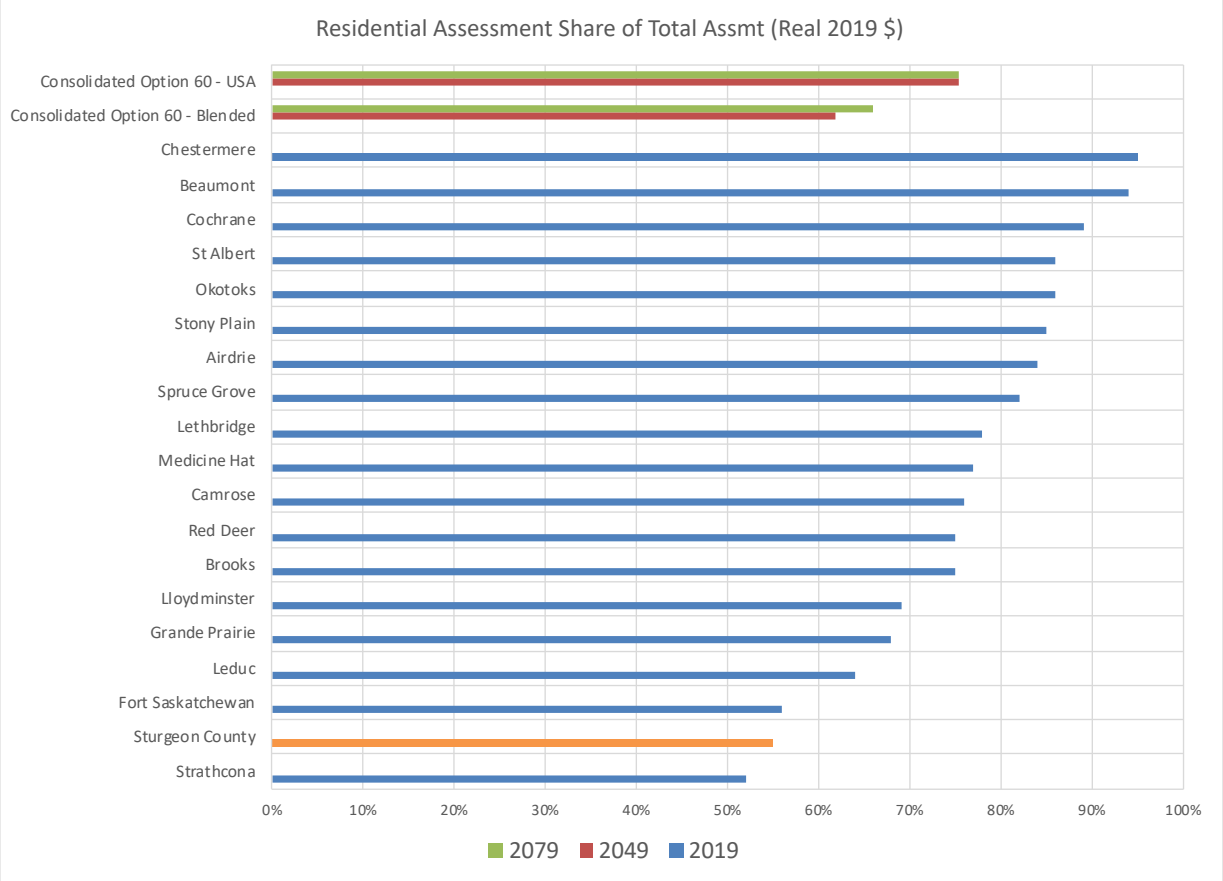
This relatively poor mix of assessment in the ASP area contributes to the financial drag development in the area has on the fiscal performance of the County in the Blended Scenario.



4.5. Net Neutral Alternative

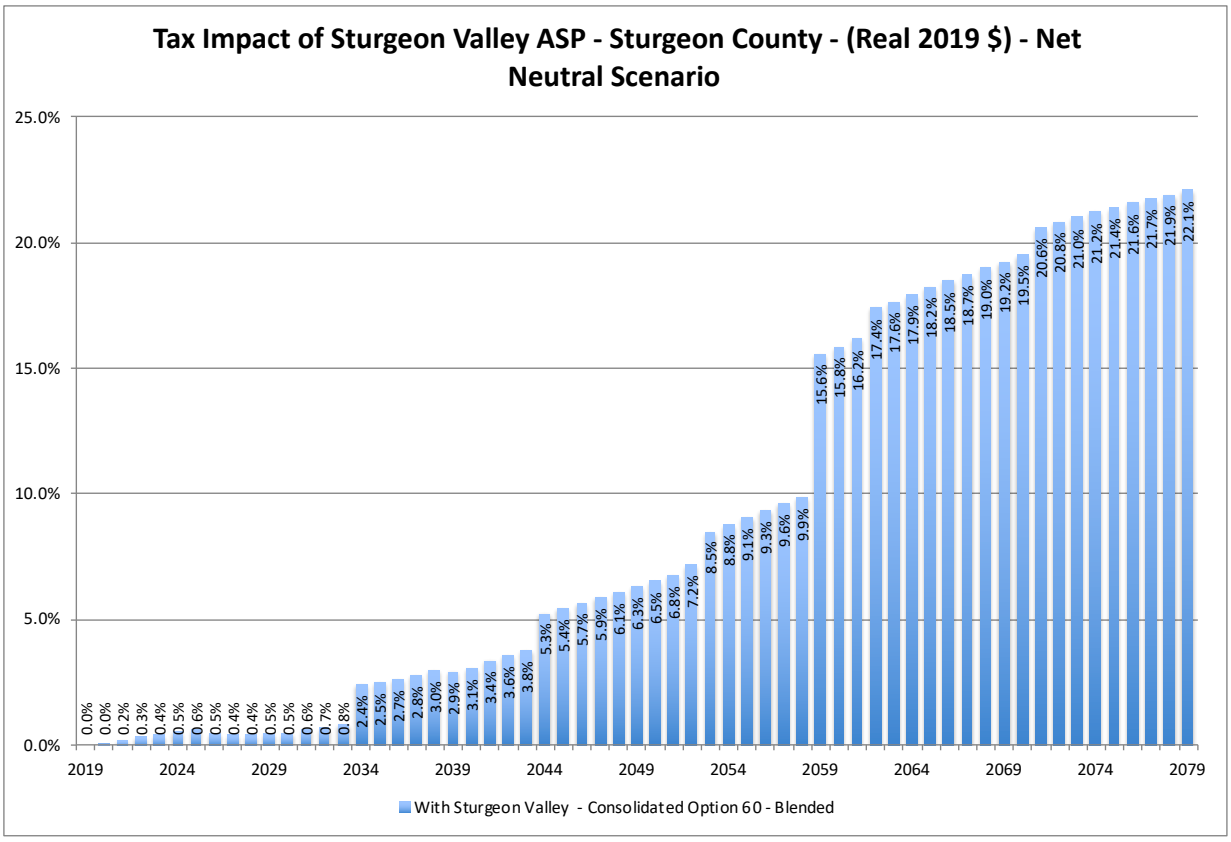
As noted in both the Blended and USA Scenarios, the fiscal capacity of the County deteriorates dramatically with development in Sturgeon Valley as defined in this development scenario. This contributes to a relatively smaller tax base against which the costs of providing municipal services can be recovered, leading to higher municipal tax rates. In this Consolidated Option 60 the scale of commercial development has been increased to produce a fiscal capacity result that is 'roughly' average when compared to the 18 'comparable' municipalities used to develop a municipal service profile and associated operating costs and revenues associated with delivering municipal services.

To achieve a roughly 'average' fiscal capacity result at the end of the 60 year forecast period, the commercial development of this land use scenario has been increased by 10x of that assumed in both the Blended and USA analysis presented above. While this increase over that assumed in the planning version of the scenario, it is consistent with the amount of commercial development on average in the 18 comparable' municipalities. The resulting share of residential assessment in the Urban Services Area is 75% which just above the average for the 18 'comparable' municipalities.



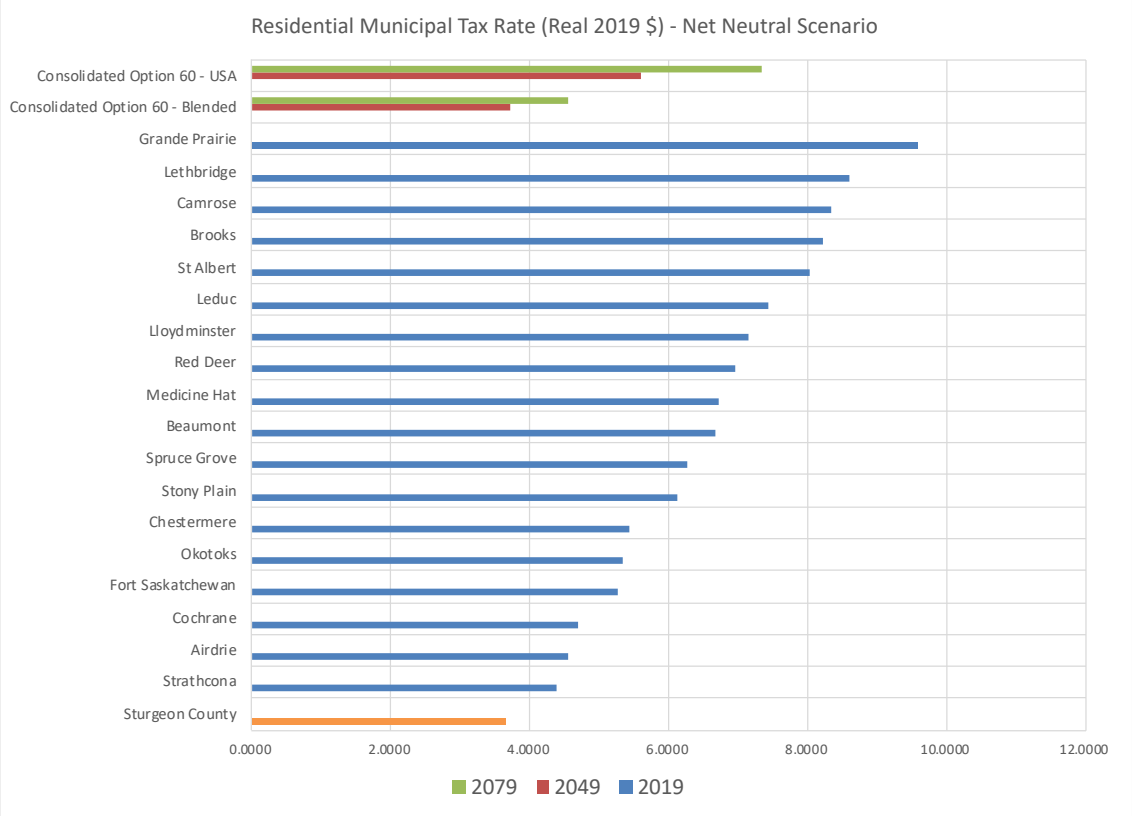
Note that the share of residential assessment for Sturgeon County in the Blended Scenario is 66% which is about 20% higher than the Base Year level of 55%.

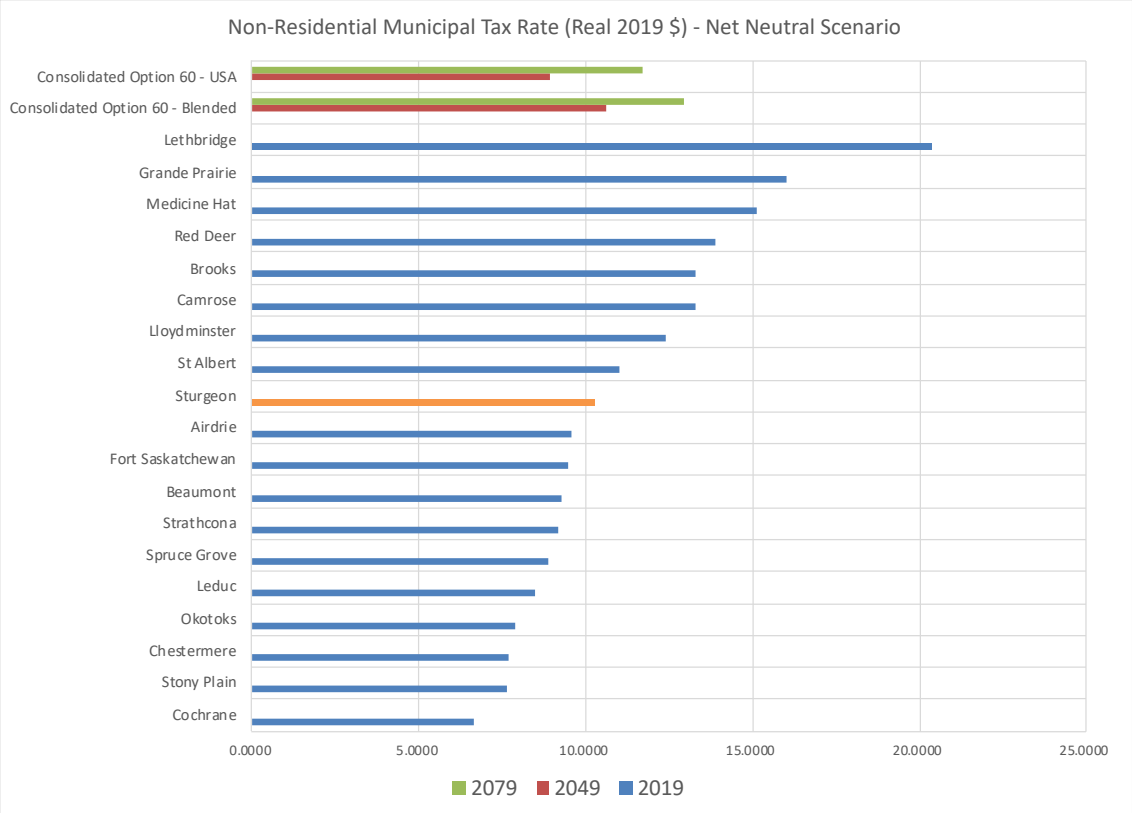
The resulting financial implications of Sturgeon Valley on the County's financial position still result in significant increases in municipal tax equivalents, but are moderated dramatically from the original planning scenario. In the Blended Scenario for this land use alternative, municipal tax increases exceed 41%. With the increase in non-residential development to be roughly average of the 'comparable' municipalities these tax increases reach approximately 22% over the municipal tax rates without the Sturgeon Valley development.



The benefit of increasing the share of non-residential assessment to the land use scenario is also evident which viewing the Urban Services Area Scenario results. Net Neutral municipal residential tax rates are projected to reach 7.3 (real 2019 $), which ranks the 7th lowest of the 18 'comparable' municipalities. The result for non-residential municipal rates is projected to reach 11.7, which also ranks 7th highest of the 18 'comparable' municipalities.

It is noted that the USA non-residential municipal tax rate is lower than the current non-residential tax rate for the County. This is a result of the residential/non-residential tax rate split assumption used in the USA scenario, reducing the split from the current (Base Year) rate of 2.8 to a more typical split used by the 'comparable' municipalities of 1.6.


Residential Municipal Tax Rate (Real 2019 $) - Net Neutral Scenario
Consolidated Option 60 - USA
Consolidated Option 60 - Blended
Grande Prairie
Lethbridge
Camrose
Brooks
St Albert
Leduc
Lloydminster
Red Deer
Medicine Hat
Beaumont
Spruce Grove
Stony Plain
Chestermere
Okotoks
Fort Saskatchewan
Cochrane
Airdrie
Strathcona
Sturgeon County
0.0000
2.0000
4.0000
6.0000
8.0000
10.0000
12.0000
2079
2049
2019


Non-Residential Municipal Tax Rate (Real 2019 $) - Net Neutral Scenario
Consolidated Option 60 - USA
Consolidated Option 60 - Blended
Lethbridge
Grande Prairie
Medicine Hat
Red Deer
Brooks
Camrose
Lloydminster
St Albert
Sturgeon
Airdrie
Fort Saskatchewan
Beaumont
Strathcona
Spruce Grove
Leduc
Okotoks
Chestermere
Stony Plain
Cochrane
0.0000
5.0000
10.0000
15.0000
20.0000
25.0000
2079
2049
2019

4.6. Consolidated Option 60 - Full Build Out

To test the implications of fully building out this option, additional residential development has been included within the 60 year timeframe.

The analysis is based on the following development assumptions.

Table 6: Consolidated 60 - Full Build Out: Residential Development Assumptions[11]

	Area (ha)	Units / ha	Number of Units	People / Unit	Population	Assessment / Unit
LDR 1	184.40	20	3,688	2.60	9,589	400,000
LDR 2	265.00	25	6,625	2.60	17,225	375,000
Row Housing	148.50	45	6,683	2.60	17,375	325,000
MDR 1	59.10	90	5,319	2.60	13,829	250,000
MDR 2	9.10	125	1,138	2.60	2,958	250,000
Total	666.10		23,452		60,975	

Table 7: Consolidated 60 - Full Build Out: Non-Residential Development Assumptions[12]

	Area (ha)	Assessment / ha
Commercial / Retail	20.8	6,500,000
Industrial	133.9	2,500,000
Total	154.7	

All growth in the ASP area is assumed to start in 2026 and develop at a constant rate over the forecast period.

4.6.1. Municipal Tax Rates

Municipal tax rates have been calculated based on the annual shortfall between total expenditures and operating (non-tax revenues). In the Blended Scenario, the base year municipal tax rate split between residential and other tax rates has been assumed throughout the forecast.

In the Baseline Forecast, real municipal residential tax rates (without inflation) are projected to increase over the forecast period. When growth in the ASP area for this scenario is included, residential municipal

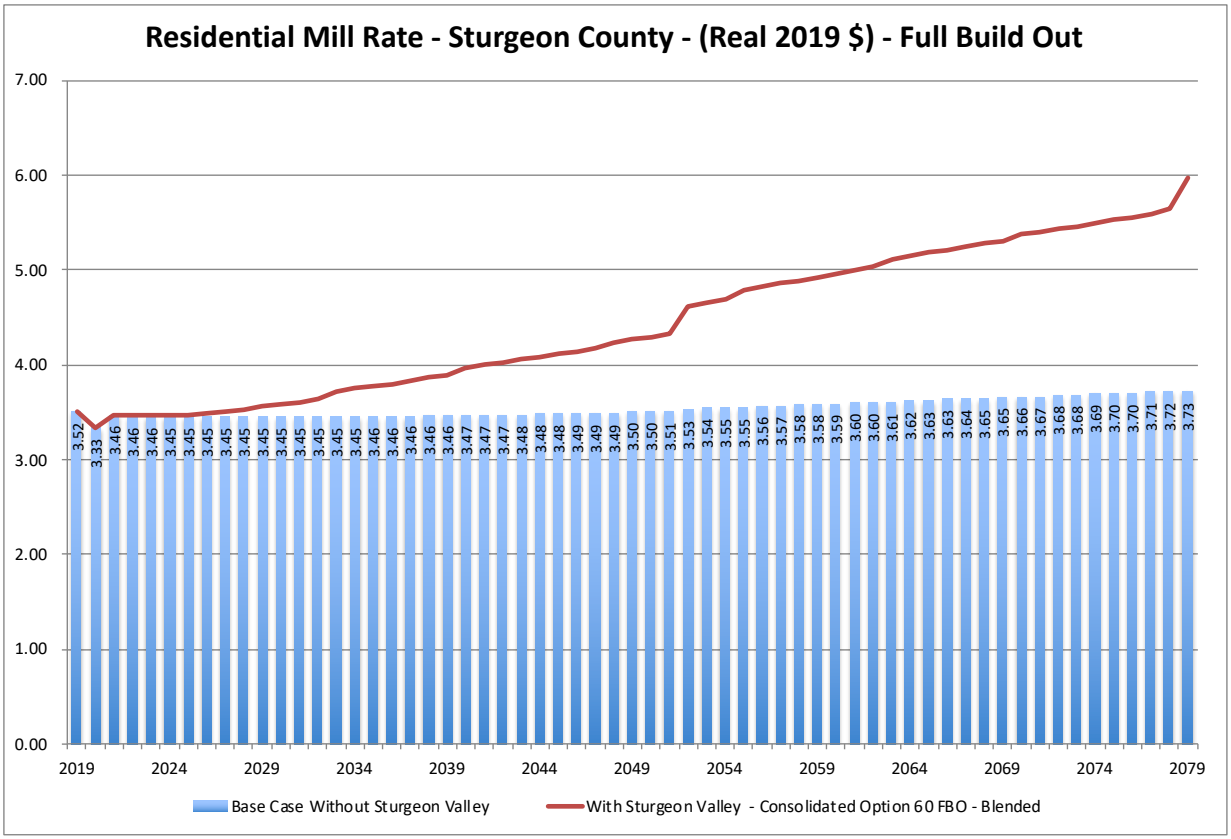
[11] Source: Area and Units V3, Population and Assessment Applications

[12] Source: Area V3, Assessment Applications

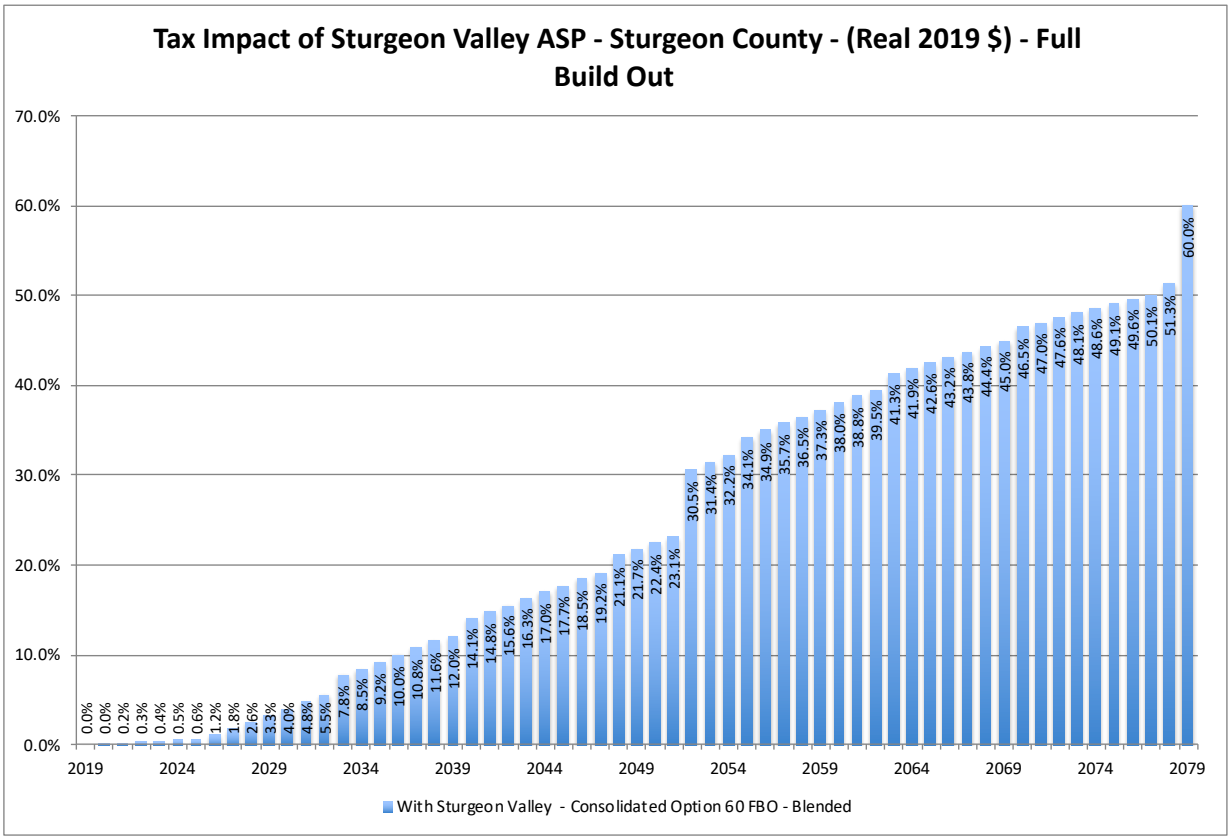
tax rates are projected to increase (in real terms) by approximately a two and a half mills. This increase is significant.

There are significant increases in the municipal tax rate in 2052 and 2079. These increases occur because the population growth of Sturgeon Valley in this scenario reaches the thresholds of moving from Tier 1 to Tier 2 in 2052 and Tier 2 to Tier 3 in 2079. At each Tier there is an operating expenditure adjustment to reflect an increase in the number and scope of municipal services provided.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Over the forecast period, in the Blended Scenario where all municipal expenditures and revenues are considered in developing a single set of municipal tax rates for residential and other assessment classes (based on the 2019 tax rate splits), tax rates are projected to increase when the ASP area development is included. The magnitude of this increase builds to almost 51% by 2079 and then jump to a 60% increase at the end of the forecast period as the municipal service levels and associated costs increase moving from the Tier 2 to Tier 3 municipal group. This increase is the same for both residential and non-residential tax rates as the split between rates has been assumed to remain constant over the forecast period.



As expected, the financial results for this Full Build Out Scenario worse than for the Consolidated 60 scenario. This is a result of the increase in residential growth and no commensurate increase in non-residential development. As noted above, the financial results improve dramatically when residential growth is balanced with non-residential growth.

5. Option 3 - Landowner/Developers Option

The analysis provided below includes a preliminary analysis of the Landowner/Developers Option development scenario. This analysis should be considered preliminary and subject to revision upon review of the financial results and assumptions contained therein.

5.1. Development Assumptions

The analysis is based on the following development assumptions.

Table 8: Option 3 - Developers Option: Residential Development Assumptions[13]

	Area (ha)	Units / ha	Number of Units	People / Unit	Population	Assessment / Unit
LDR 1	0.00	20	0	2.60	0	400,000
LDR 2	564.60	25	14,115	2.60	36,699	375,000
Row Housing	218.00	45	9,810	2.60	25,506	325,000
MDR 1	32.50	90	2,925	2.60	7,605	250,000
MDR 2	19.10	125	2,388	2.60	6,208	250,000
Total	834.20		29,238		76,018	

Table : Option 3 - Developers Option: Non-Residential Development Assumptions[14]

	Area (ha)	Assessment / ha
Commercial / Retail	76.1	6,500,000
Industrial	51.4	2,500,000
Total	127.5	

All growth in the ASP area is assumed to start in 2026 and develop at a constant rate over the forecast period.

5.2. Municipal Cost/Revenue Assumptions

The financial analysis for this scenario is based on the following assumptions.

[13] Source: Area and Units V3, Population and Assessment Applications

[14] Source: Area V3, Assessment Applications

5.2.1. Municipal Operating Expenditures

Refer to Section 3.2.1 for the assumptions on this variable.

5.2.2. Capital Expenditures

The investment in infrastructure and facilities to support the growth proposed in the ASP has been estimated based on the type of development assumed in the ASP scenario, the total amount of growth and services that would be provided. Detailed assumptions have been made regarding the infrastructure that would be required and associated investment for each of the following categories:

- Neighbourhood Water Lines
- Neighbourhood Wastewater Lines
- Neighbourhood Drainage
- Local and Collector Roads
- Arterial Roads
- Regional Infrastructure (Roads, Water, Wastewater)
- Other Infrastructure (Recreation, Police, Fire, Equipment, Library, Transit, Maintenance Facilities, Administration Facilities)

The detailed assumptions regarding costing of each asset category is provided in Appendix A. The capital requirements for each investment in new infrastructure totals an estimated to total $557 million by 2049 and a total of $1.335 billion by 2079.

5.2.3. Financing Capital

Refer to Section 3.2.3 for the assumptions on this variable.

Tax supported infrastructure included in this ASP option includes the following:

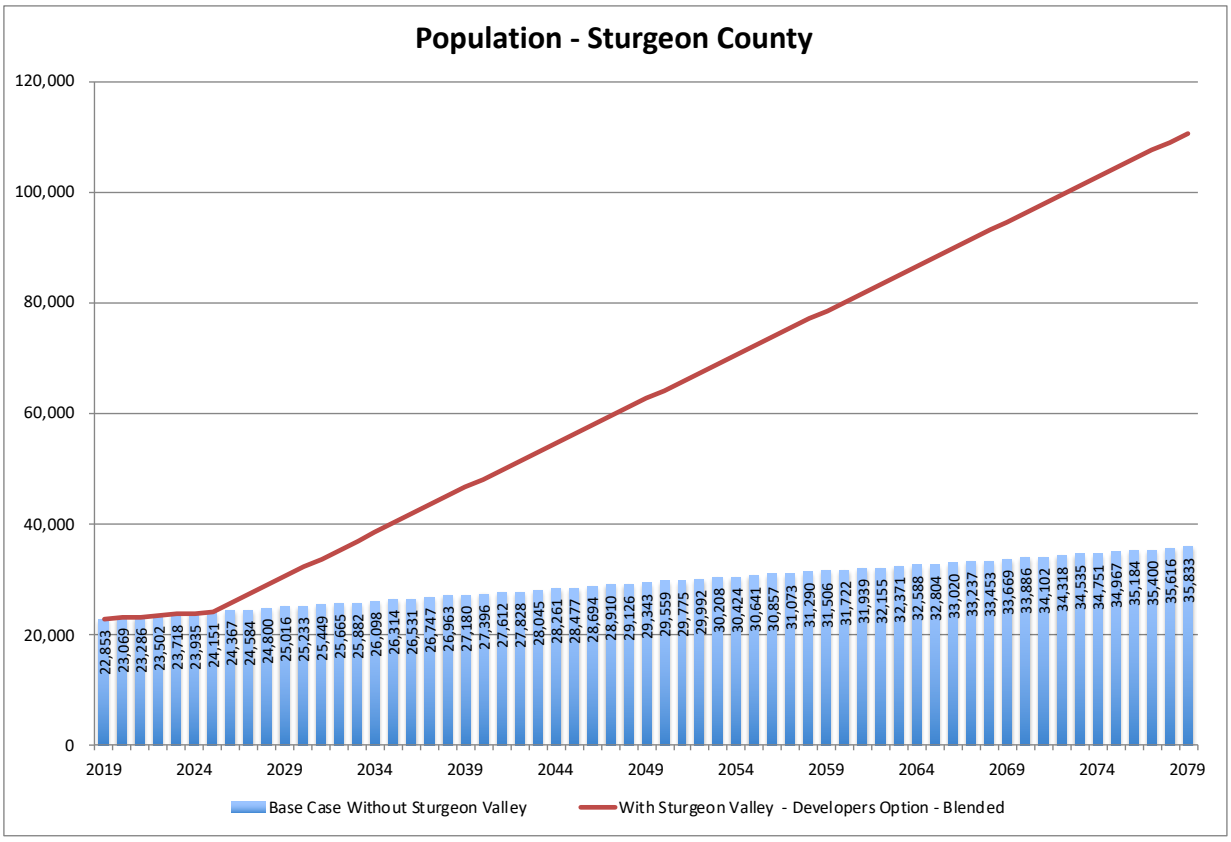
- Playgrounds
- Outdoor Rinks
- Transit Buses
- Municipal Vehicles & Equipment

All major infrastructure associated with water, wastewater and transportation have been assumed to be funded through either utility rates, grants or development levies.

5.3. Blended Scenario Results

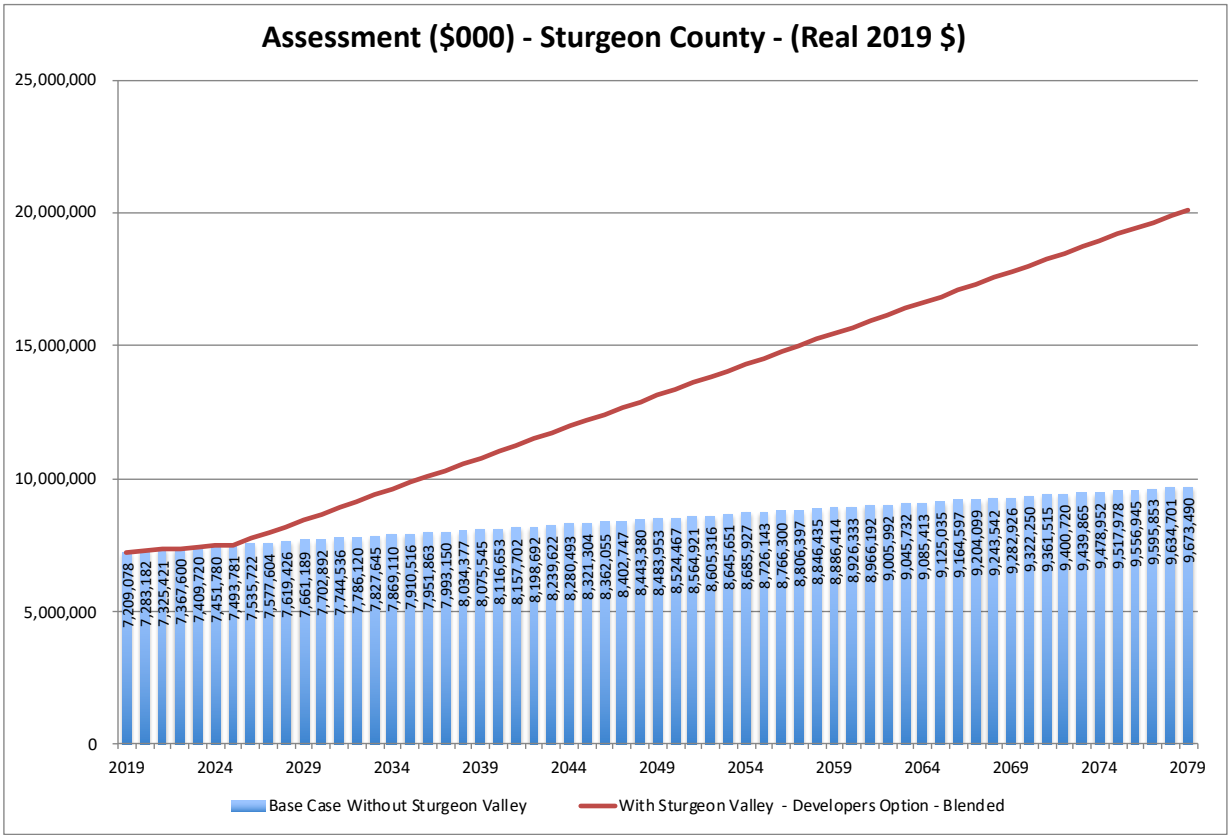
5.3.1. Population Growth

The population of the County is projected to increase to just over 36,000 by 2079 (60 year forecast period) without development of the ASP. With the ASP scenario, the total population of the County is projected to increase to almost 111,000 by 2079.


Population - Sturgeon County
120,000
100,000
80,000
60,000
40,000
20,000
0
2019
2024
2029
2034
2039
2044
2049
2054
2059
2064
2069
2074
2079
22,853
23,069
23,286
23,502
23,718
23,935
24,151
24,367
24,584
24,800
25,016
25,233
25,449
25,665
25,882
26,098
26,314
26,531
26,747
26,963
27,180
27,396
27,612
27,828
28,045
28,261
28,477
28,694
28,910
29,126
29,343
29,559
29,775
29,992
30,208
30,424
30,641
30,857
31,073
31,290
31,506
31,722
31,939
32,155
32,371
32,588
32,804
33,020
33,237
33,453
33,669
33,886
34,102
34,318
34,535
34,751
34,967
35,184
35,400
35,616
35,833
Base Case Without Sturgeon Valley
With Sturgeon Valley - Developers Option - Blended

5.3.2. ASSESSMENT

The assessment base of the County is projected to increase to almost $9.7 billion by 2079 (60 year forecast period) without development of the ASP. With the ASP scenario, the assessment base of the County is projected to increase to almost $20.1 billion by 2079.

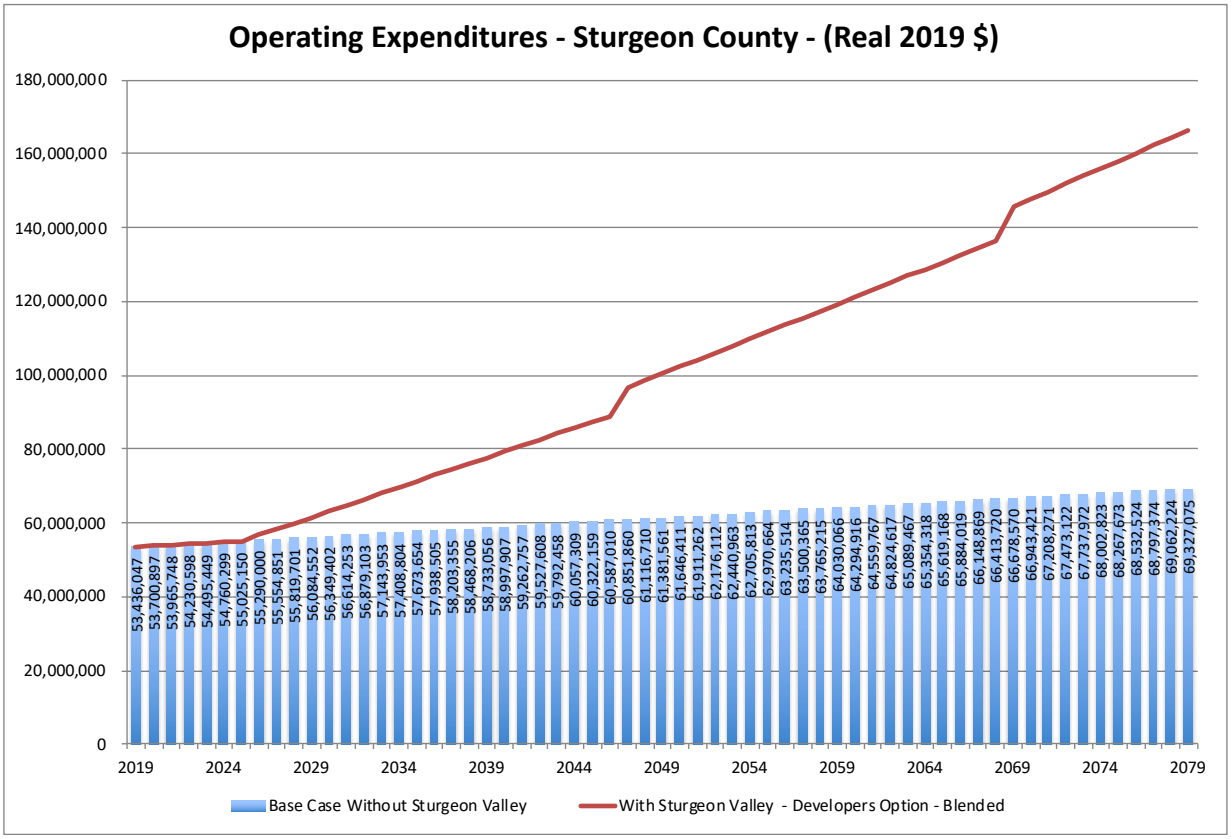


5.3.3. Operating Expenditures

Total operating expenditures for the County without the ASP development are projected to increase to approximately $69.3 million over the forecast period. With the growth defined for the ASP area, these expenditures are projected to increase to just over $167 million by the end of the forecast period.

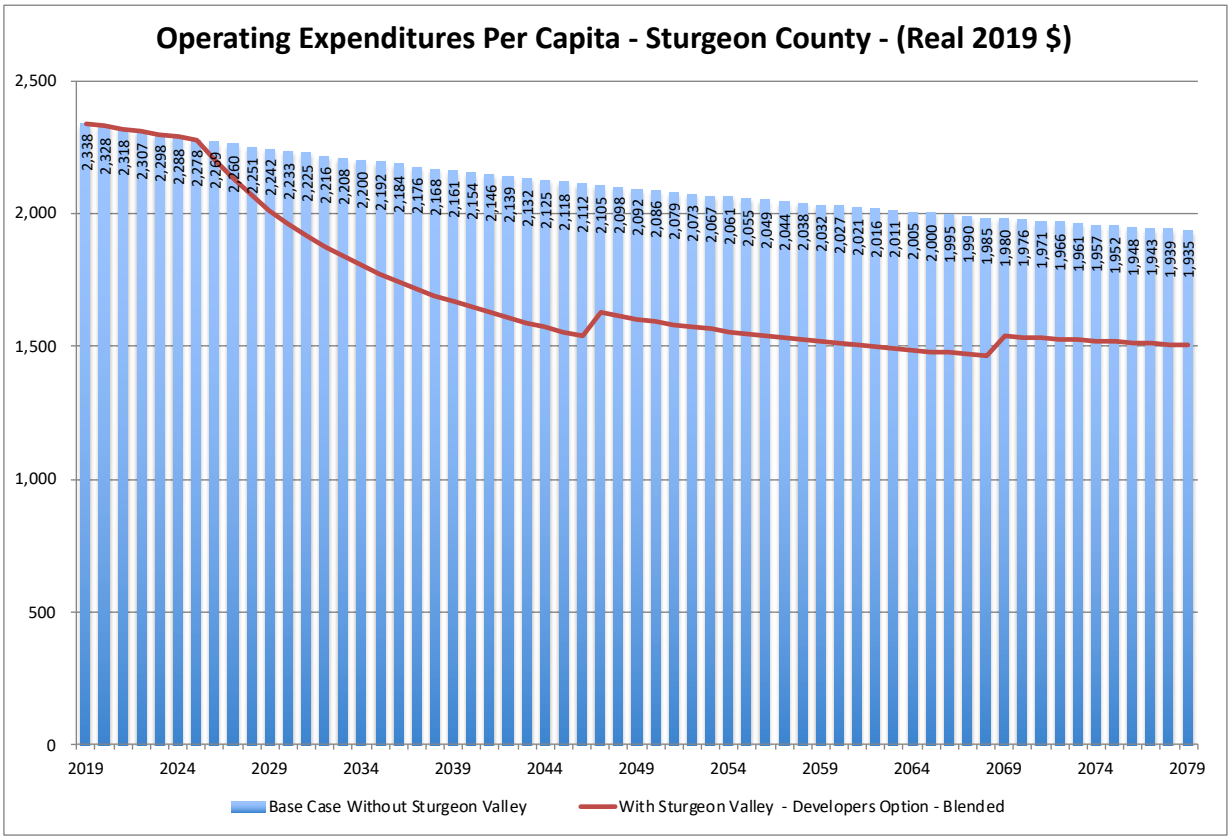
There are two adjustments in operating expenditures associated with population growth and the application of Tier 2 and Tier 3 costs. The first is an adjustment in operating expenditures in 2047 as this is the year that development in the ASP area exceeds 30,000 when Tier 2 operating expenditures take effect. The second is in 2069 when the ASP area population exceeds 60,000 when Tier 3 operating expenditures take effect. In reality these operating cost adjustments would happen over time and not as a single year adjustment.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



On a per capita basis, operating expenditures are projected to decrease with growth in the County. Without the ASP these decreases in operating expenditures per capita reflect the benefit of economies of scale without any change in the scope of services provided.

When development in the ASP area is included operating expenditures per capita decrease further. This is a result of operating expenditures per capita being generally lower for urban communities. In this ASP option, the Tier 1 average cost per capita are applied to growth until 2047 when the Tier 2 operating expenditures reflecting an ASP area population of over 30,000. A second adjustment occurs in 2069 when the Tier 3 operating expenditures when the ASP area population exceeds 60,000. Each of these adjustments result in higher average operating expenditures per capita being applied in subsequent years, slowing the gains in economies of scale achieved in the delivery of municipal services.

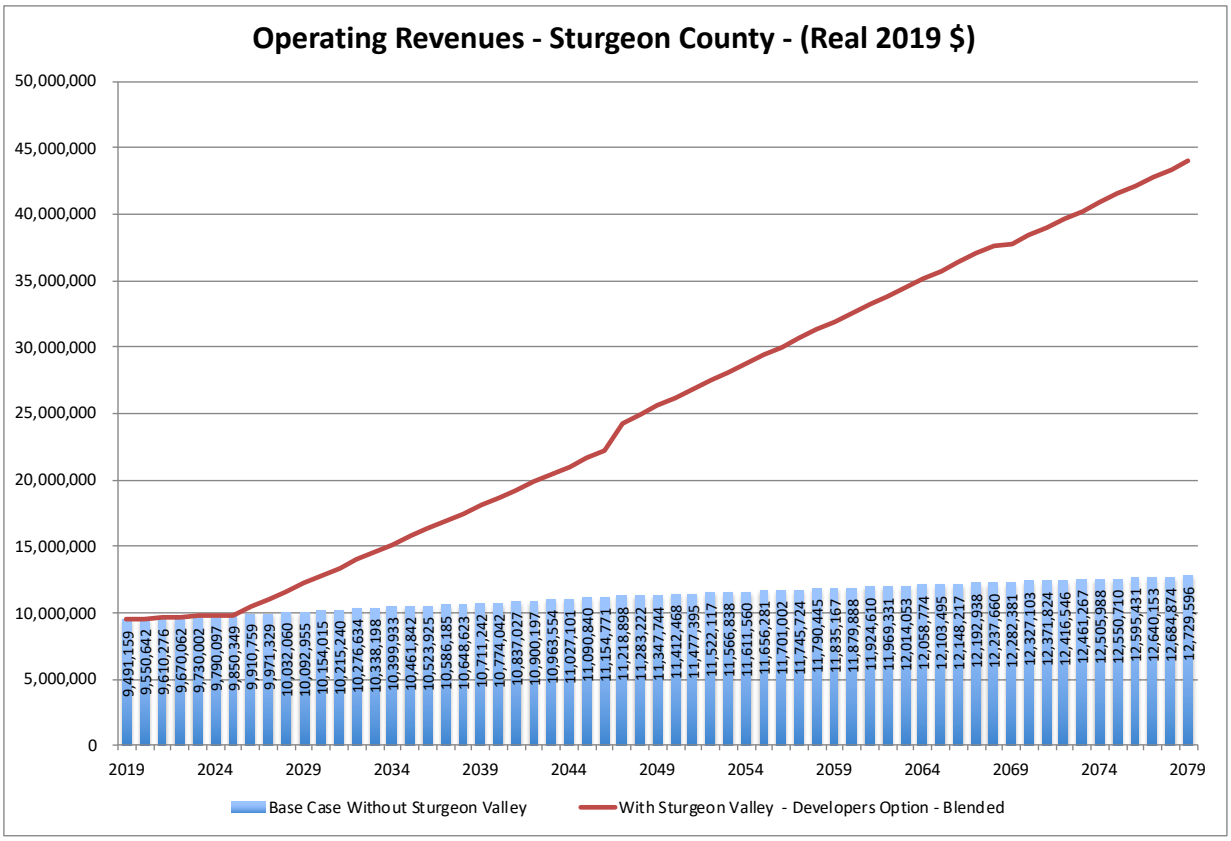


5.3.4. Operating Revenues

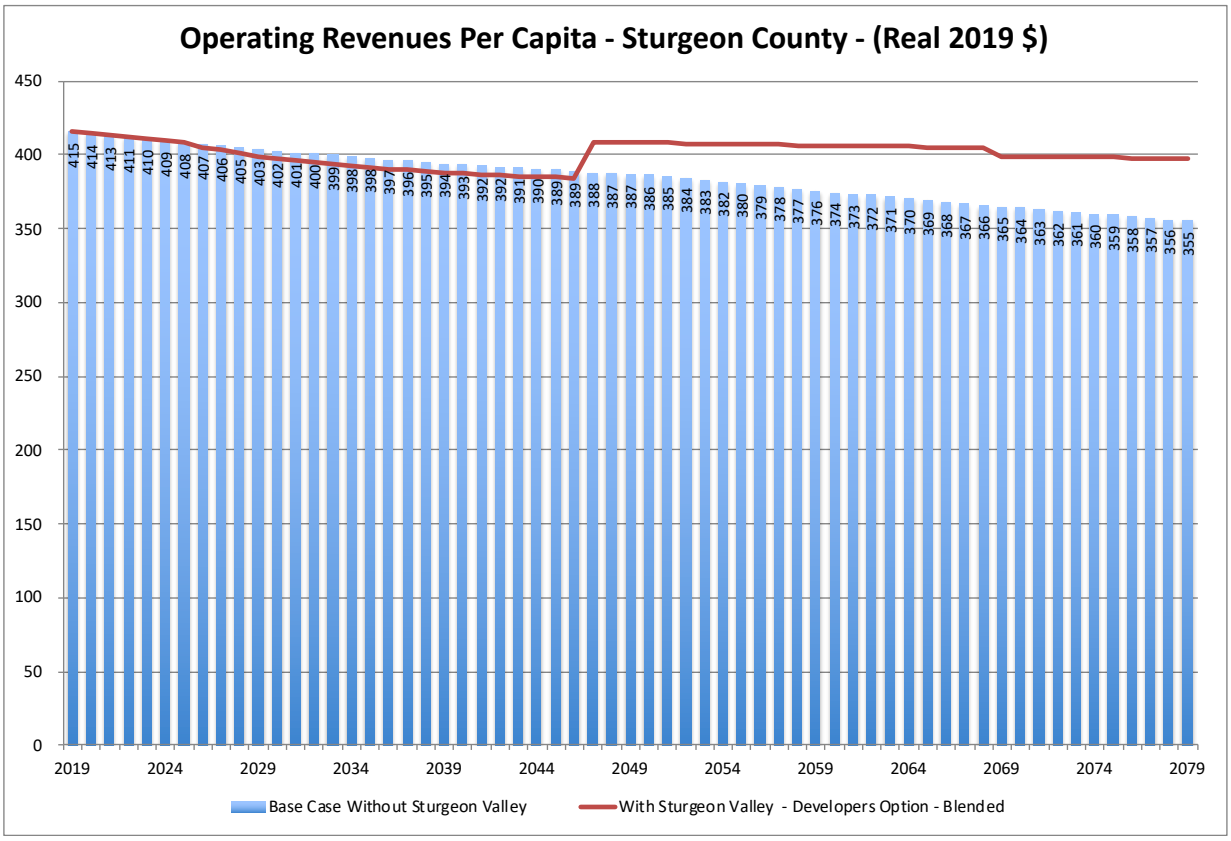
Total operating revenues (non-tax revenues) for the County without the ASP development are projected to increase to approximately $12.7 million over the forecast period. With the growth defined for the ASP area, these expenditures are projected to increase to just almost $44.8 million by the end of the forecast period.

The adjustment in operating expenditures to Tier 2 levels in 2047 also affect operating revenues as the cost recover rates are based on operating expenditures by function area. The second adjustment in 2069 yields a net reduction in operating revenues. This reflects the increase in operating expenditures, but a greater than corresponding decrease in cost recover rates for municipalities included in Tier 3.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.

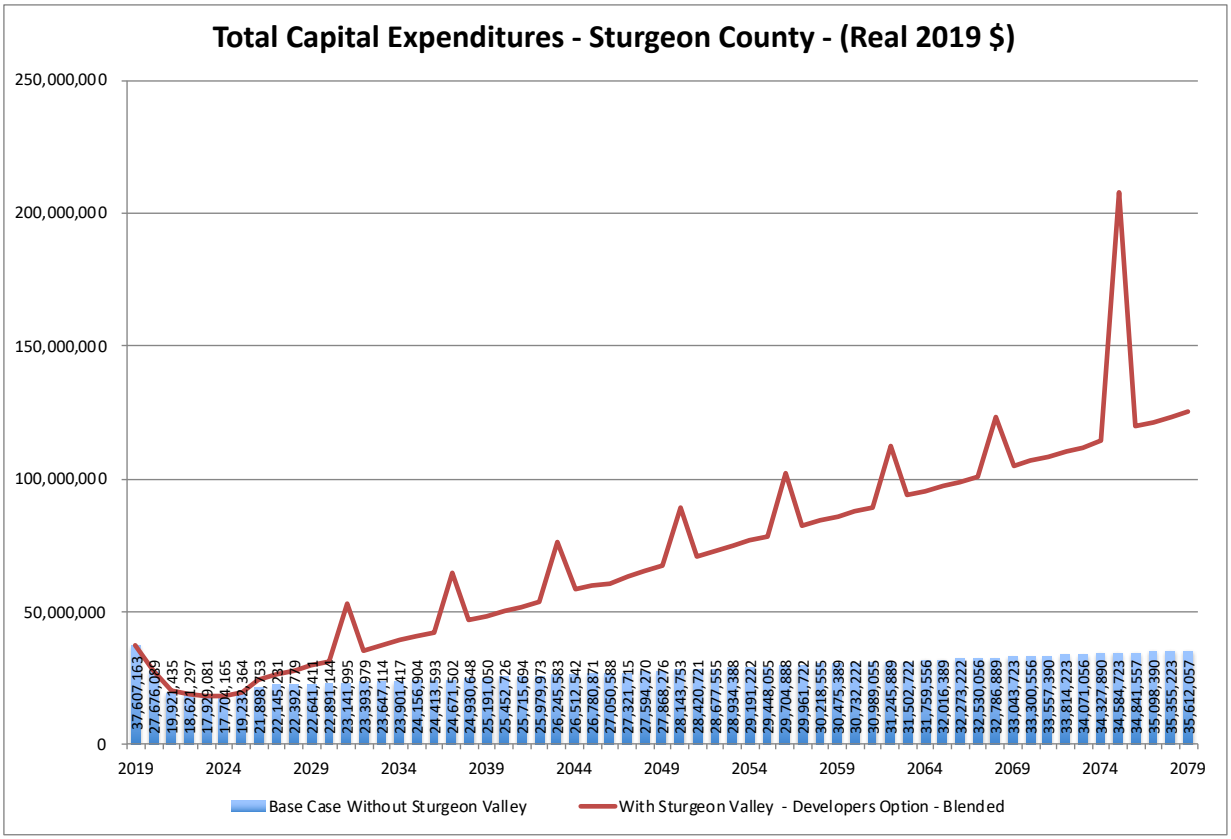


On a per capita basis, operating revenues are projected to largely remain the same in both the Baseline Forecast at that for the County including the ASP area until the operating expenditure adjustment to Tier 2 levels in 2047 and Tier 3 levels in 2069. Over all operating revenues per capita are essentially flat over the forecast period for this development option.



5.3.5. Capital Expenditures

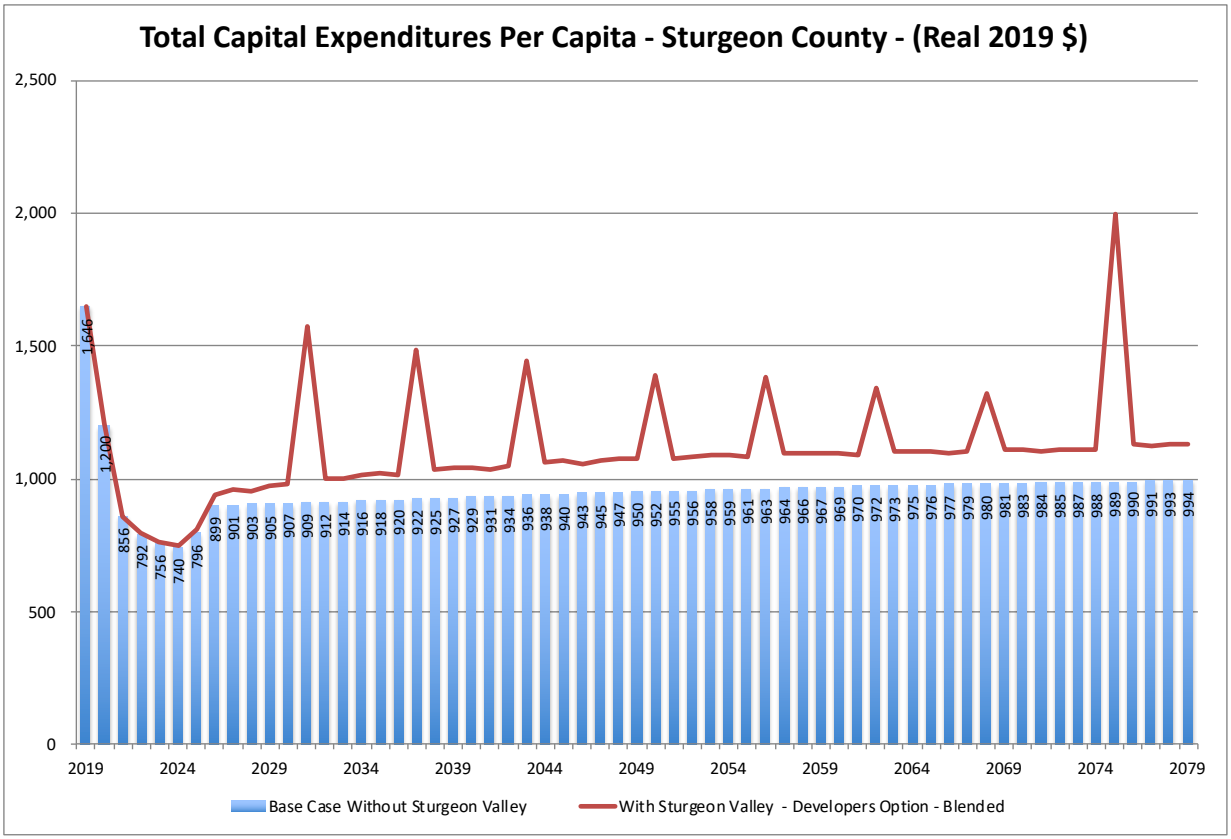
Total capital expenditures for County without the ASP development reflect the County's five year capital plan plus future capital expenditures on a per capita basis consistent with historical capital investment. With the growth defined for the ASP area, capital expenditures are expected to increase significantly. Further, there are spikes in capital expenditures associated with required investment in major infrastructure. Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Contributing to the increase in capital expenditures for the ASP option are the following:

- Major water, wastewater and road infrastructure
- Fire Stations (5)
- Police Stations (5)
- Arenas (5)
- Pools (2)
- Indoor Soccer (2)
- Specialty Recreation Facilities (Spray Park, Skateboard Park)
- Maintenance Facility
- Administration Office

On a per capita basis, capital expenditures with the ASP option are generally higher to that for the County generally. In addition, there are eight periods where significant capital investments are projected to be required.

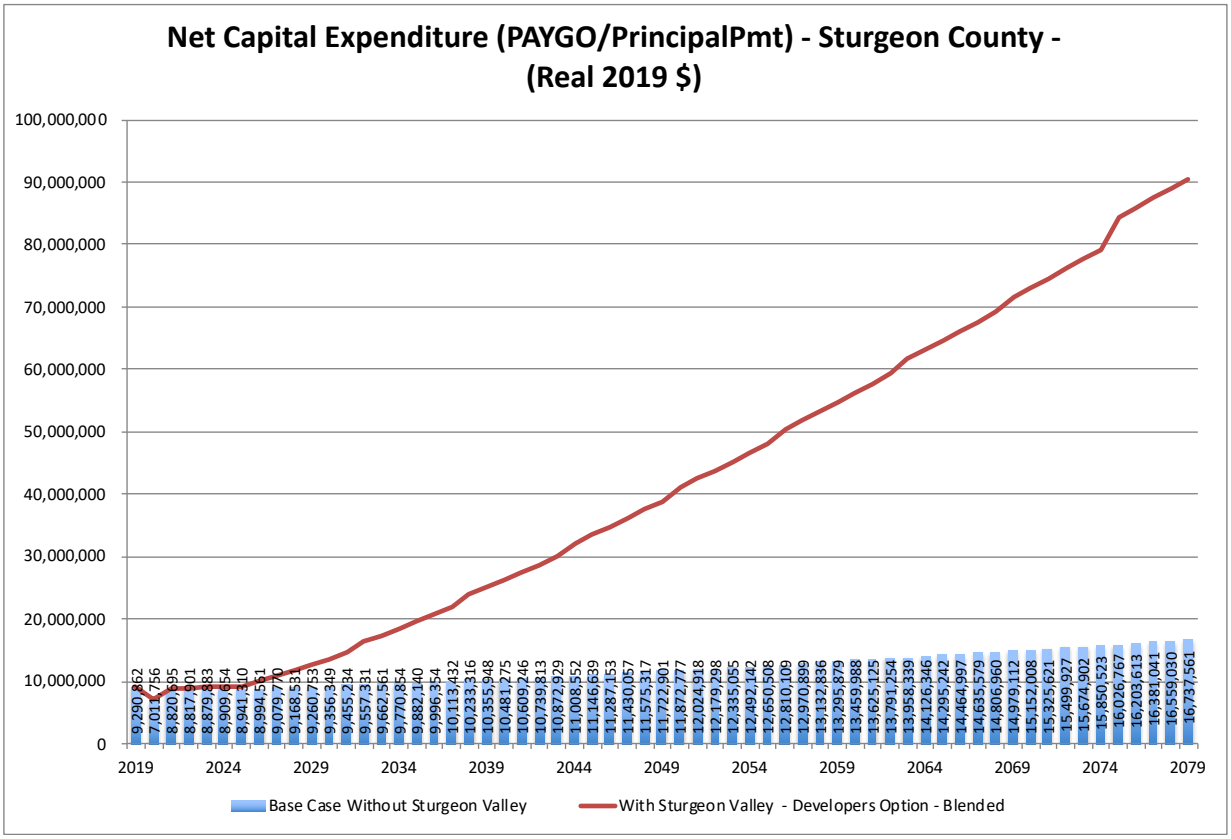


5.3.6. Tax Supported Capital Expenditures

Tax supported capital expenditures include those that are funded from tax or utility rate sources. This excludes funding that is from third party sources as well as donated assets acquired through development.

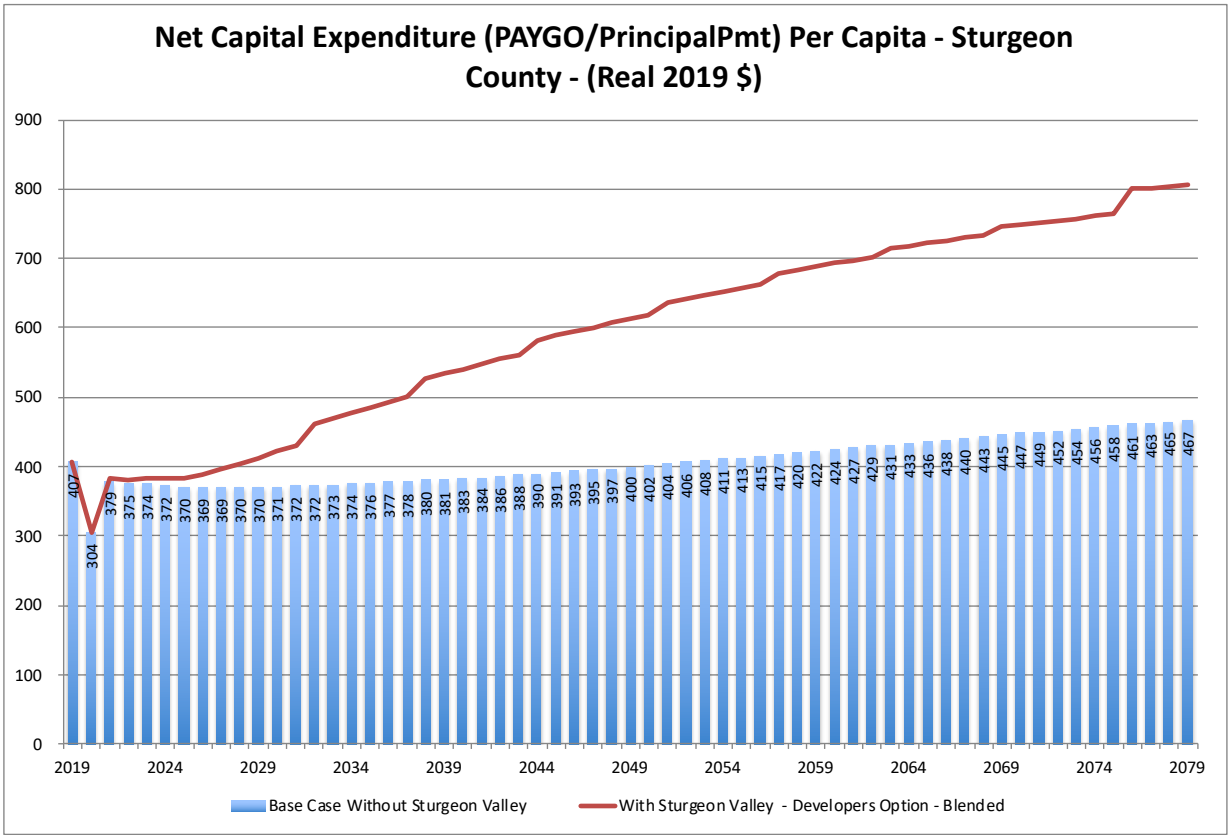
Net capital expenditures without development in the ASP area are project to increase modestly to almost $17 million to the end of the forecast period. When the tax supported expenditures associated with the growth in the ASP area are included, these expenditures increase significantly, to over $90.4 million by the end of the forecast period.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Even when net capital expenditures are normalized on a per capita basis, the annual expense increases significantly when development in the ASP area is included. This is a result of a general increase in expenditures as well as share of these expenditures that will be funded by rate payers through taxes or utility rates.

It should be noted that this assumes that development levies would be applied to not only the traditional infrastructure investments, but also police, fire and major recreation infrastructure. It should also be noted that the forecast that includes the ASP development assumes that life cycle costs associated with acquired assets (donated or purchased) is 100% funded. While the analysis assumes that a greater proportion of life cycle costs will be funded in the Baseline Forecast, it likely does not include 100% of these costs.

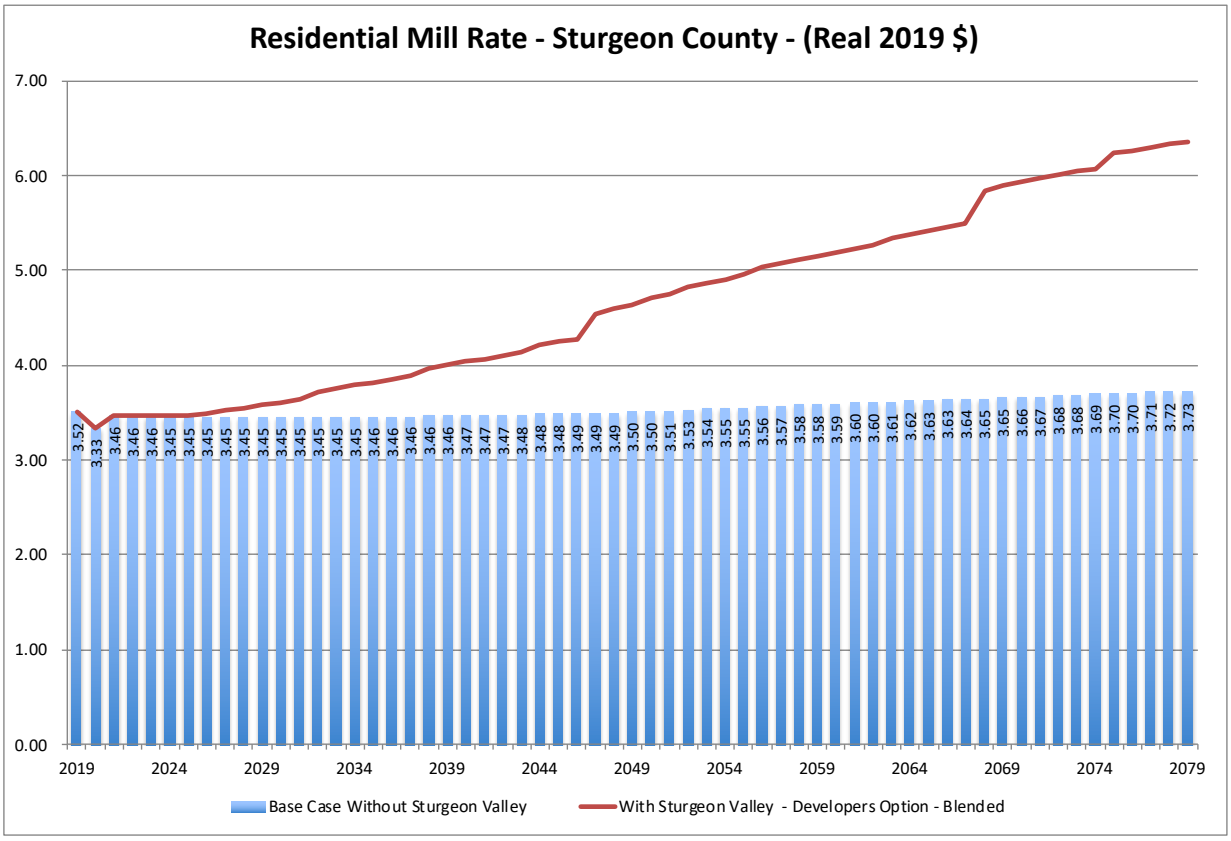


5.3.7. Municipal Tax Rates

Municipal tax rates have been calculated based on the annual shortfall between total expenditures and operating (non-tax revenues). In the Blended Scenario, the base year municipal tax rate split between residential and other tax rates has been assumed throughout the forecast.

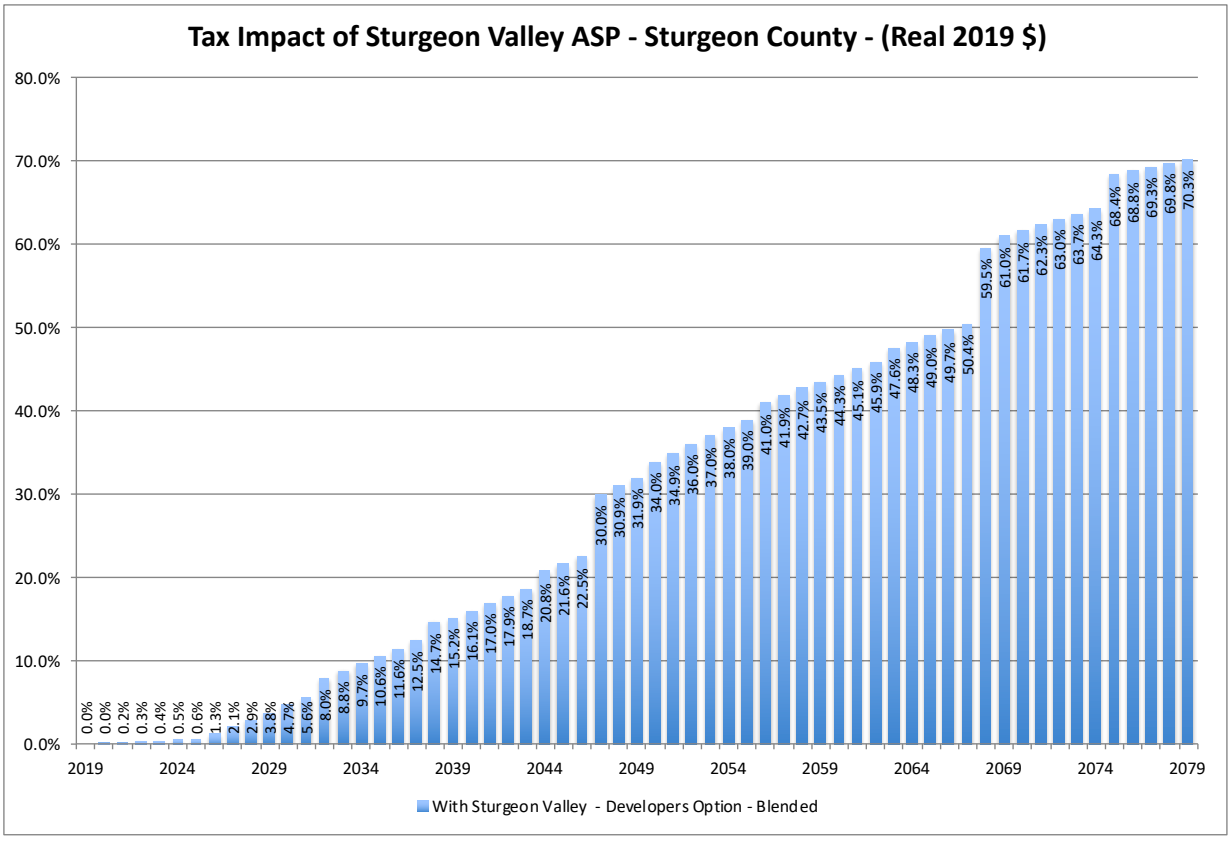
In the Baseline Forecast, real municipal residential tax rates (without inflation) are projected to gradually increase over the forecast period. When growth in the ASP area for this scenario is included, residential municipal tax rates are projected to increase (in real terms) by over a two and a half mills. This increase is significant.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



Over the forecast period, in the Blended Scenario where all municipal expenditures and revenues are considered in developing a single set of municipal tax rates for residential and other assessment classes (based on the 2019 tax rate splits), tax rates are projected to increase when the ASP area development is included. The magnitude of this increase builds to almost 70% by the end of the forecast period. This increase is the same for both residential and non-residential tax rates as the split between rates has been assumed to remain constant over the forecast period.

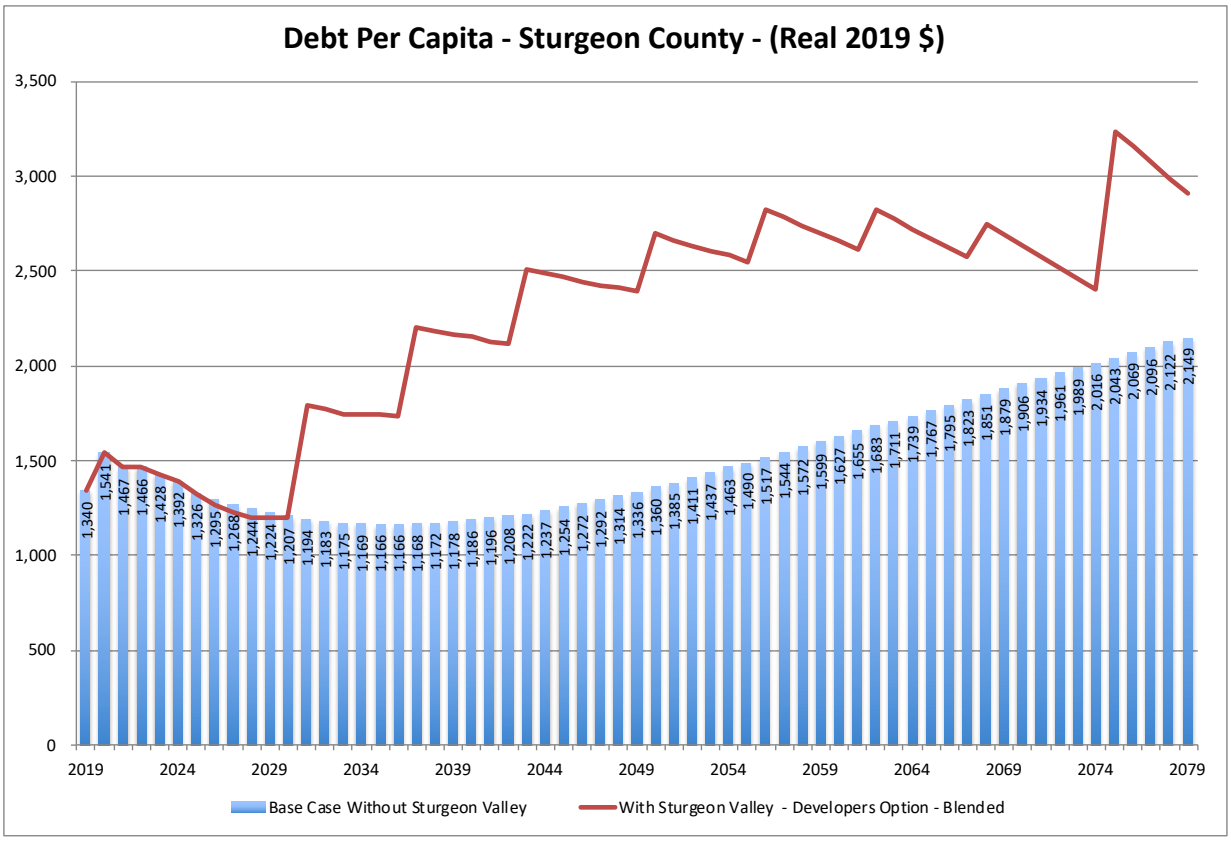
Of concern for existing Sturgeon County ratepayers is the increase in taxes paid to support additional infrastructure and investment in services that they may perceive as not providing a direct benefit to them.



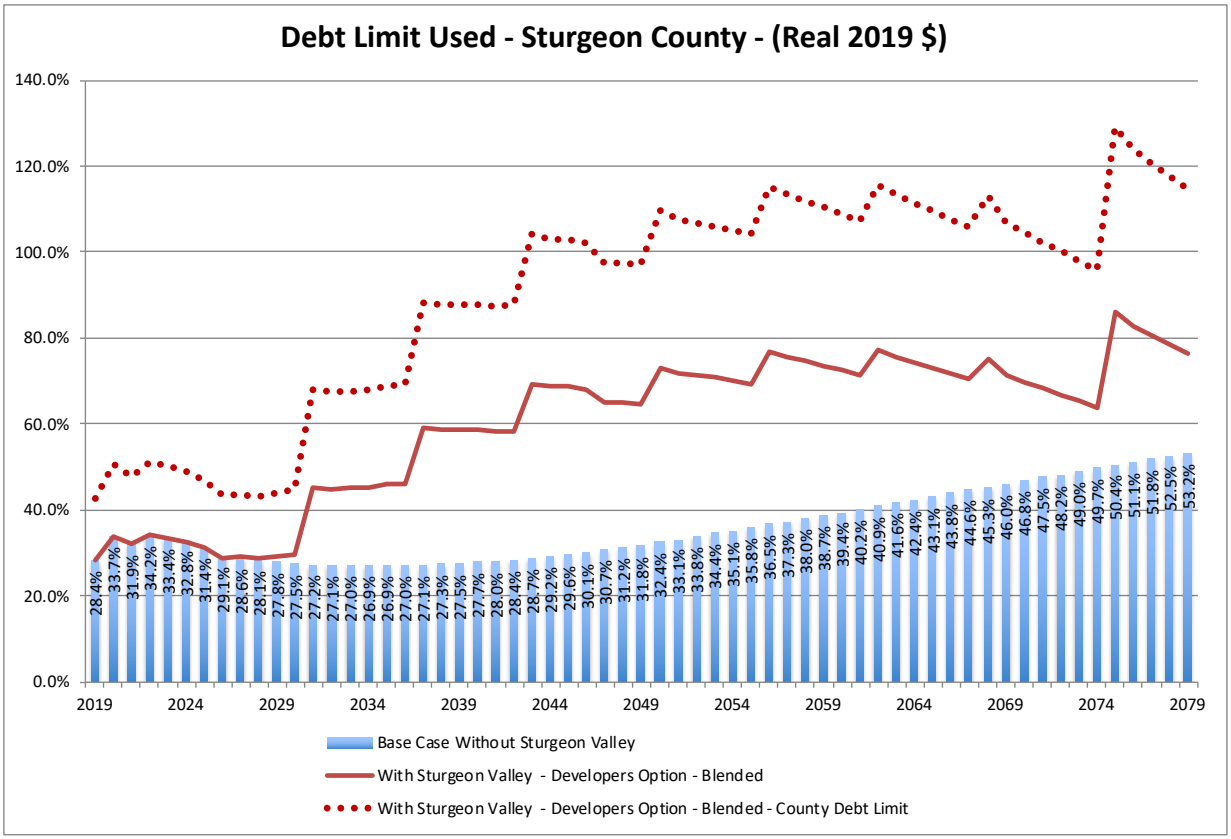
5.3.8. Municipal Debt

Contributing to the higher tax rates including development in the ASP area is an increase in capital investment and municipal debt. On a per capita basis the change in municipal debt levels decline in the mid term for the Baseline Forecast, and then increase to over $2,100 per capital by the end of the forecast. This increase is a result of the catch up in life cycle costs assumed for the Baseline Forecast.

The total debt per capita increases dramatically when development in the ASP area is included. Notably significant increases occur at points where significant infrastructure investments are required (see capital expenditures presented earlier in this section).



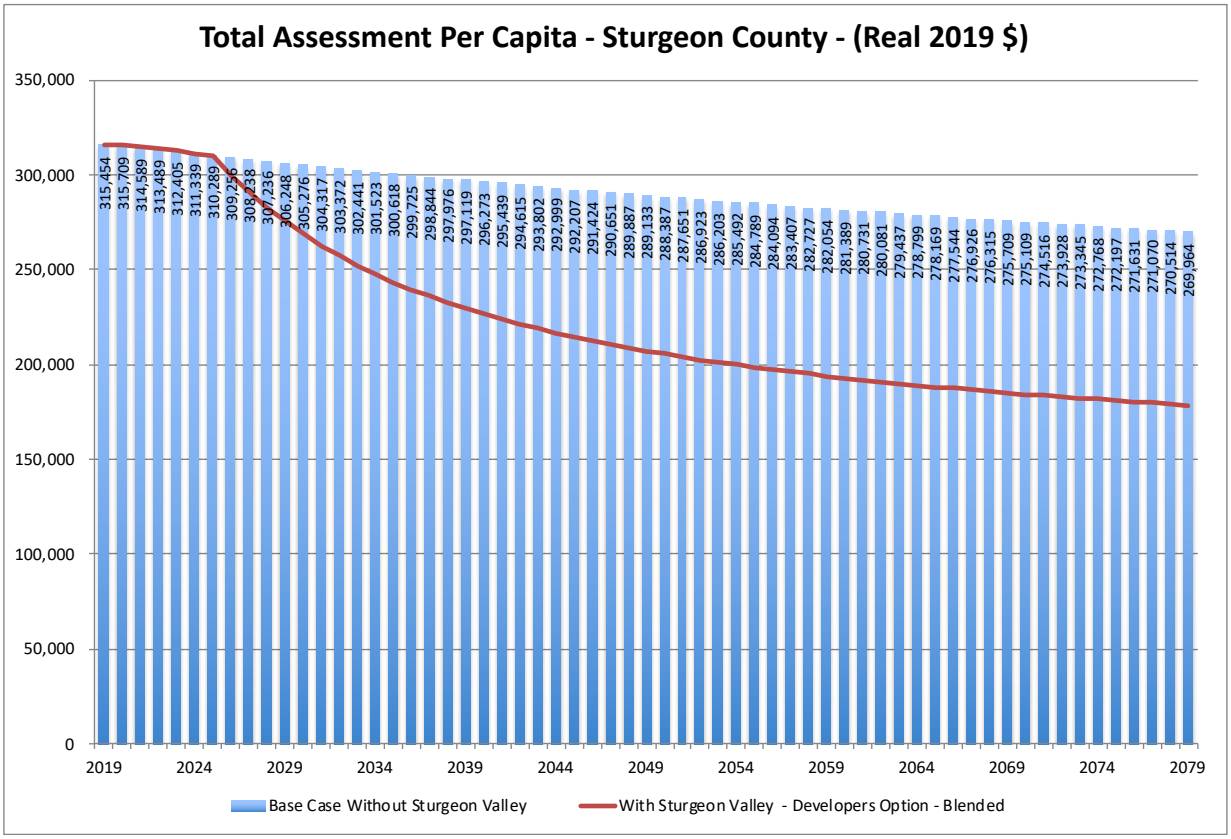
The increased debt levels with the ASP area development also results in an increase in the usage of the County's debt limit. While remaining below the MGA prescribed debt limit, the County's debt limit is violated about half way through the forecast.



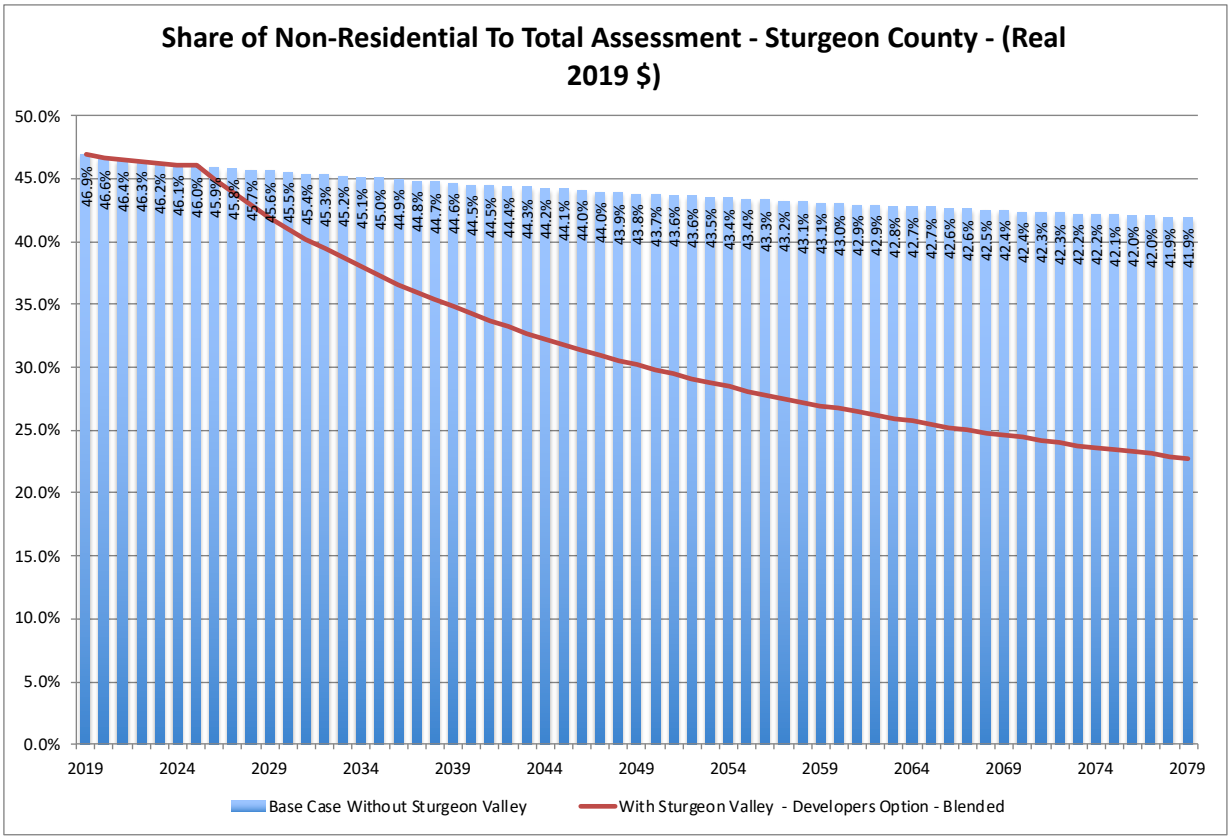
5.3.9. Fiscal Capacity

The County currently benefits from a favourable fiscal capacity by most measures. Based on the development assumed for the ASP area, this fiscal capacity is projected to deteriorate compared to that for the Baseline Forecast.

Using assessment per capita, there is a significant decline in the County's fiscal capacity when development in the ASP area is included. This represents a decline of approximately 35%.



A similar pattern is revealed using share of non-residential assessment that contributes to the total assessment base of the County. As with assessment per capita, the share of non-residential assessment also declines when development in the ASP area is included in the analysis.



As with the Consolidated Option 60 development option, the non-residential development included in the ASP area is not sufficient to maintain the County's current favourable fiscal capacity. In the Developers Option this position is worsened as a result of a significant increase in the population and a decline in non-residential development as compared to the Consolidated Option 60.

5.4. Urban Services Area Scenario

As noted above, when the financial implications of development in the ASP area is blended into the County's overall financial position, there are spillover implications for existing ratepayers in the County. To protect existing County ratepayers from these implications, an alternative scenario has been constructed whereby the development in the ASP area would be a stand alone Urban Services Area where all related costs and revenues would be contained within the ratepayers in the area.

The assumption regarding the services, municipal cost of services, capital investment and financing of this investment in this scenario are the same as those in the Blended Scenario, except separate tax rates have been calculated for the development in the ASP area. The tax rates and financial implications for existing ratepayers in the County would follow the Baseline Forecast.

It is noted that there would be some savings associated with scope economies and sharing of facilities and infrastructure. All of these benefits have been assumed to flow to ratepayers in the ASP area.

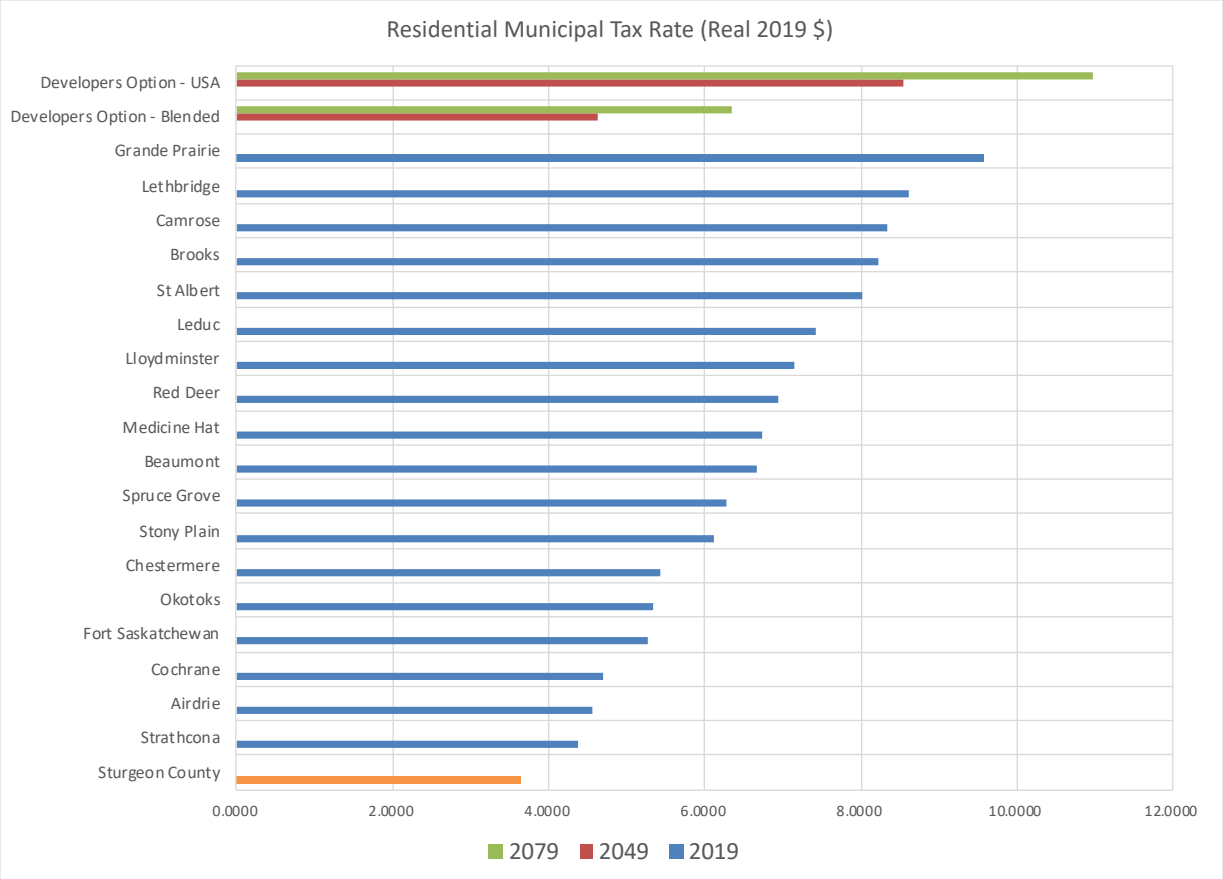
5.4.1. Residential Municipal Tax Rates

The Urban Services Area (USA) Scenario residential municipal tax rate results are presented in the context of the Blended Scenario results, as well as the 2019 residential municipal tax rates for all the municipalities included in the analysis of municipal operating expenses and revenues.

To provide a comparable municipal tax rate comparison for the USA Scenario results with other urban municipalities, the tax rate split for the USA Scenario is assumed to be 1.6. This is significantly smaller than the currently County tax split of 2.8. It is thought that for an urban area, a tax rate split more consistent with that currently used by the comparable urban's would be appropriate.

As seen in the figure below, the 2079 (real 2019 $) Blended Scenario municipal tax rate result is higher than the existing rate for Sturgeon (approximately 74% higher). When development in the ASP area is required to pay for itself, without subsidization of the County's existing tax base, and with the shift of tax burden to the residential rate, the USA Scenario residential tax rate is significantly higher than the existing County rate (almost triple). By the end of the forecast period (2079) the ASP area Urban Services area would have the highest municipal residential mill rate by approximately 1.4 mills.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.

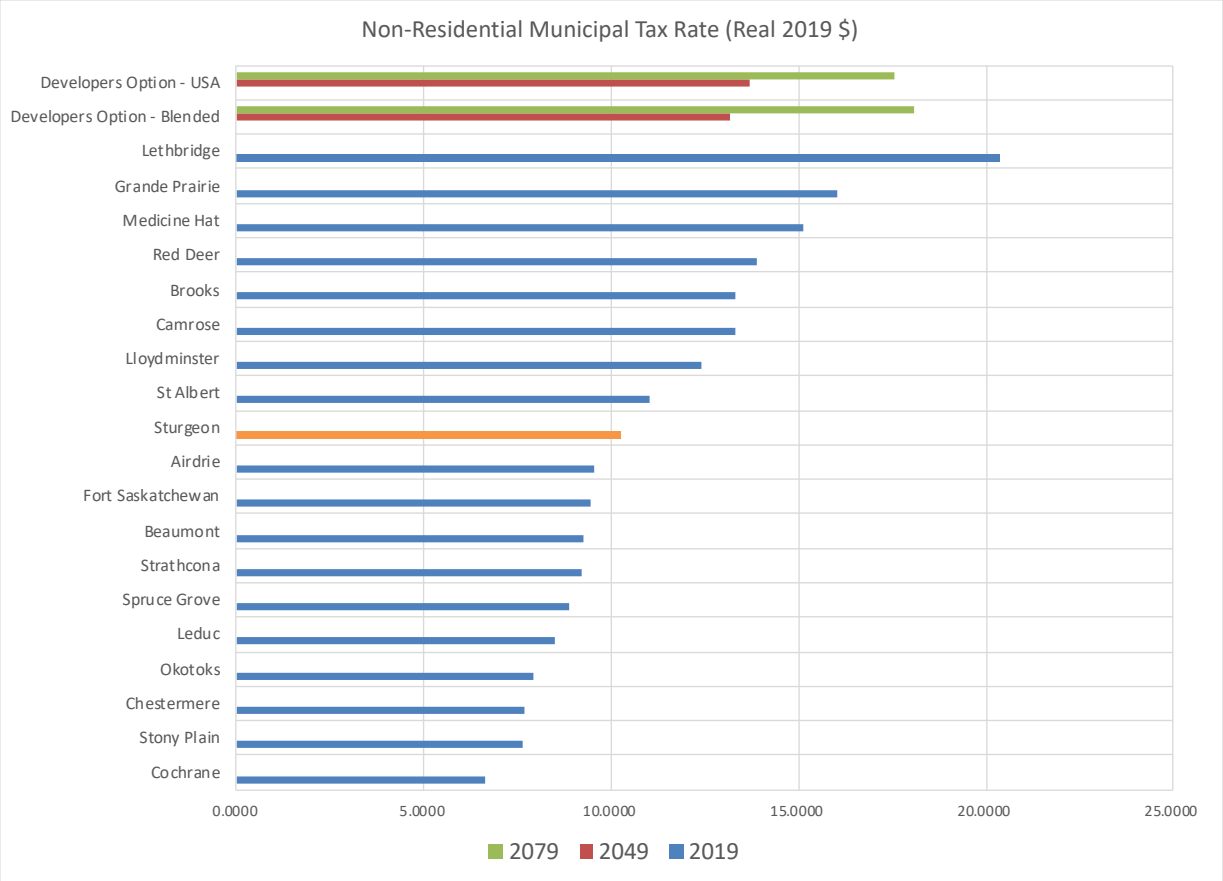


5.4.2. Non-Residential Municipal Tax Rates

As noted above, to provide a comparable municipal tax rate comparison for the USA Scenario results with other urban municipalities, the tax rate split for the USA Scenario is assumed to be 1.6. This is significantly smaller than the currently County tax split of 2.8. It is thought that for an urban area, a tax rate split more consistent with that currently used by the comparable urban's would be appropriate.

As seen in the figure below, the 2079 (real 2019 $) Blended Scenario municipal tax rate result is similar to that estimated for the Blended Scenario. This is largely a result of adjusting the tax rate split for the USA Scenario. Based on this, the USA Scenario non-residential tax rate in 2079 would be below only the City of Grande Prairie.

Note that all financial information is in real 2019 dollars, and thus do not include inflation.



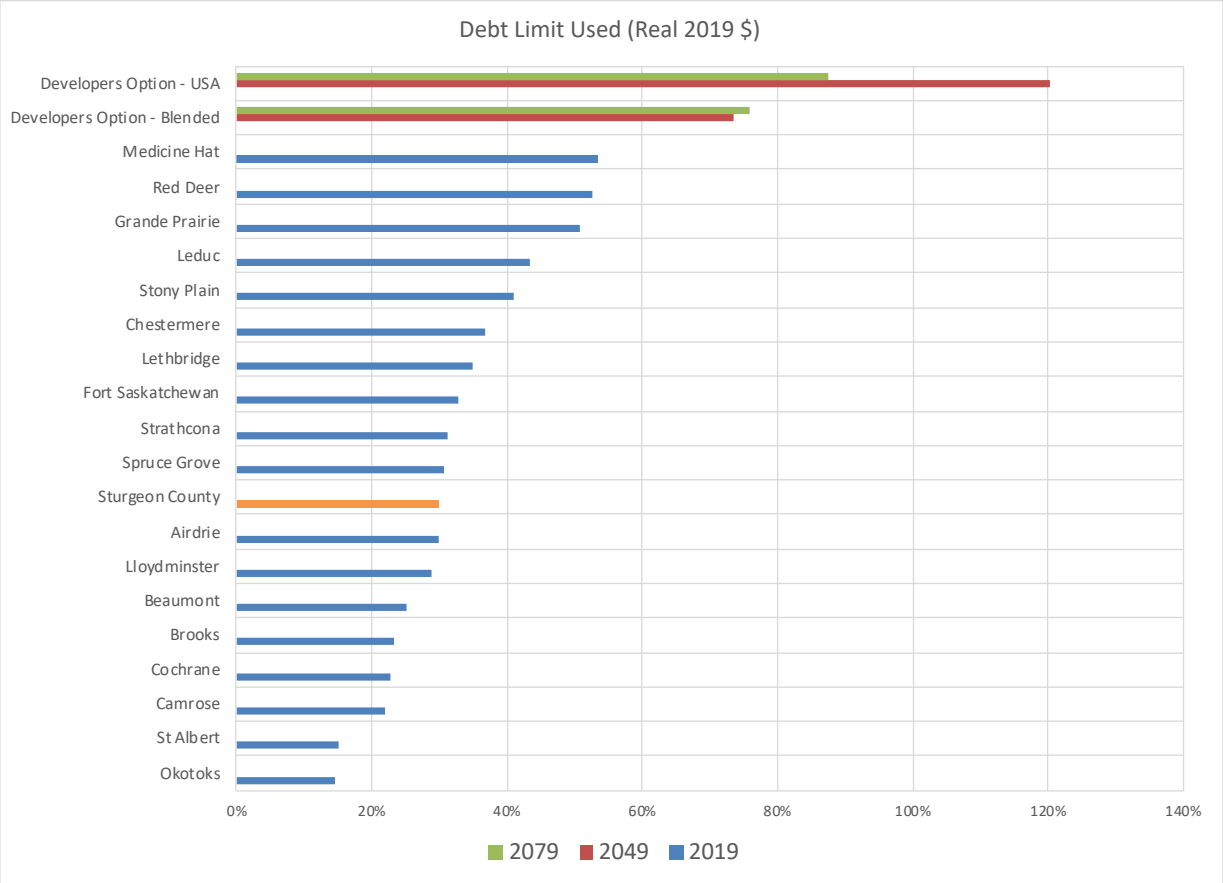
5.4.3. Debt Limit Used

As noted above, development in the ASP area will require a significant capital investment. This puts some additional strain on the share of available debt limit used. The results for the Blended and USA scenarios is provided in the figure below.

When all the debt associated with development in the ASP area is attributed to the area (USA scenario), this urban area would be above the MGA prescribed debt limit for most years between 2033 and 2064 as noted by the result for 2049. After 2064 the revenue growth for the USA catches up to the debt levels to keep total debt below the limit.

It should be recognized that while this analysis assumes that developer funding of all MGA allowable infrastructure is assumed, it is also assumed that life cycle costs are funded at 100%. It is unlikely that the other municipalities noted in the figure do not have deferred maintenance. As a result, this analysis is holding the ASP area to a higher standard of financial diligence than generally practiced.

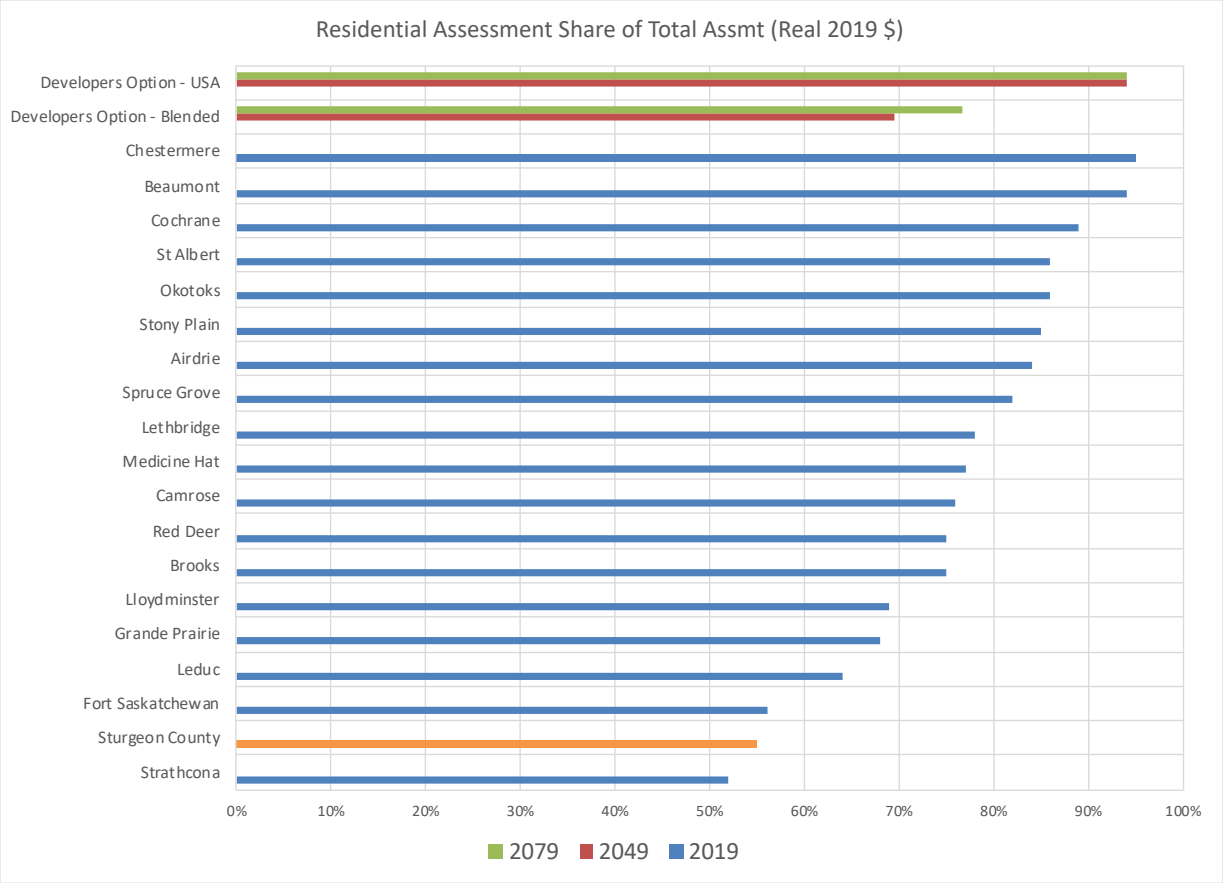
Note that all financial information is in real 2019 dollars, and thus do not include inflation.



5.4.4. RESIDENTIAL ASSESSMENT

As noted above, when the ASP area development is blended into the County's current assessment base, the share of non-residential assessment declines. This is reflected by an increase in the share of residential assessment as noted in the figure below. When the ASP area assessment is considered in isolation of the rest of the County, the share of residential assessment increases to 94% in 2079. This is the highest rate of all the comparable municipalities included in the analysis.

This relatively poor mix of assessment in the ASP area contributes to the financial drag development in the area has on the fiscal performance of the County in the Blended Scenario.



Appendix E: Sturgeon Valley Fiscal Impact Assessment

Appendix F

Sturgeon County Commercial Development Analysis

STURGEON COUNTY

COMMERCIAL DEVELOPMENT ANALYSIS

MXD DEVELOPMENT STRATEGISTS

wsp

JANUARY 23, 2020

PROJECT PREFACE

MXD Development Strategists Ltd. ("MXD") of Vancouver, Canada was commissioned by **Sturgeon County Economic Development ("the Client")** in August 2019 to prepare a Commercial Development Analysis. Work was completed between August 2019 and January 2020.

The first key objective of the study was to gain an understanding of the opportunities for commercial development in Sturgeon County from a market, planning and infrastructure perspective. The second key objective was to identify immediate and medium-term opportunities for commercial development in Sturgeon County and the optimal mix and positioning of land uses for these priority sites.

The third key objective was to identify gaps in infrastructure and zoning that would challenge the viability of the commercial development areas as well as recommendations to overcome the identified deficiencies.

The resulting Commercial Development Analysis document highlights eight recommended priority areas for immediate and medium-term commercial development that balances market, economic and planning considerations. A time-based action plan was created to outline how key recommendations and initiatives would be implemented over the immediate, medium and long-term time frames.

PROJECT TEAM

MXD DEVELOPMENT STRATEGISTS

Prime Consultant
Market Analysis, Development Strategy, and Land Use Planning

wsp

Sub-Consultant
Urban Planning, Infrastructure & Servicing and Transportation Analysis

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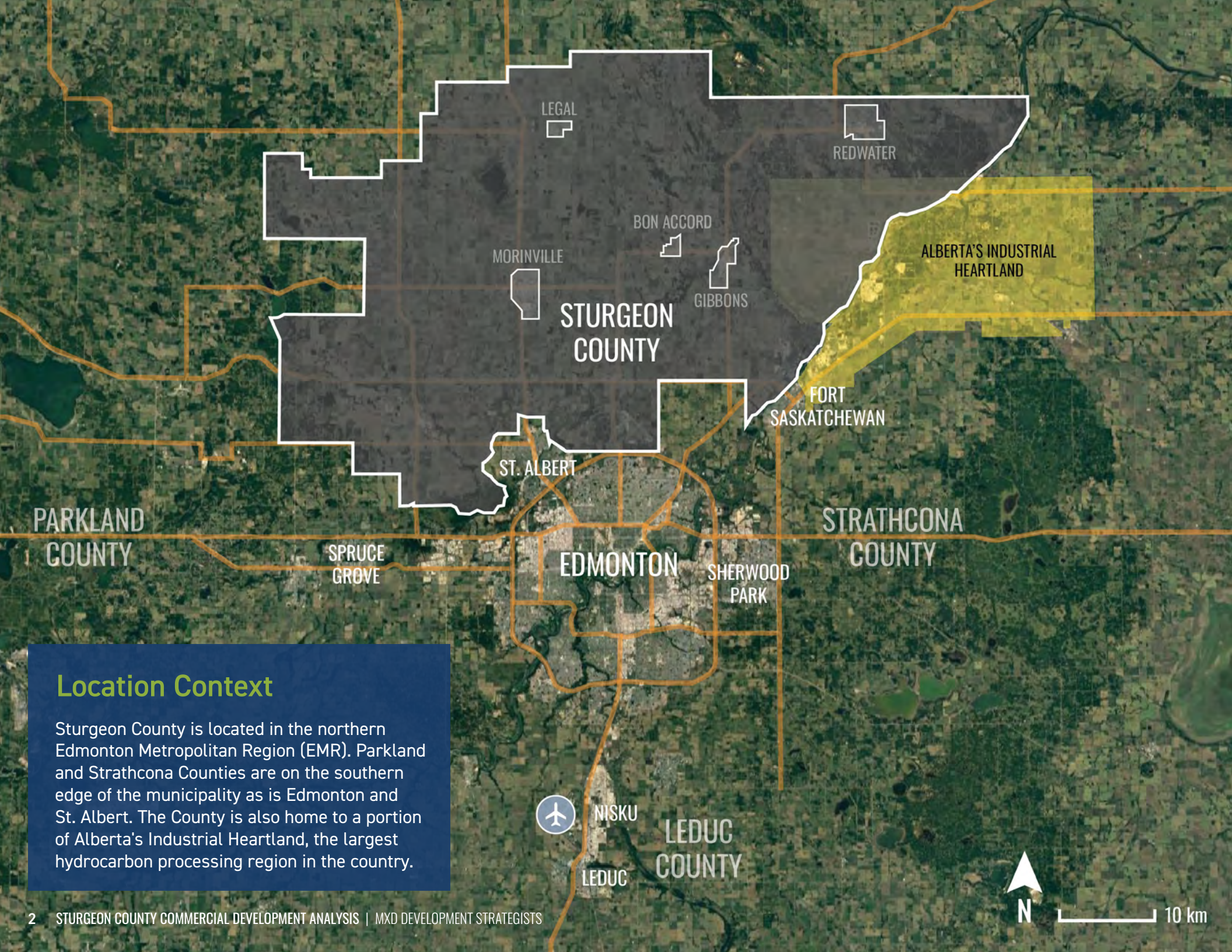
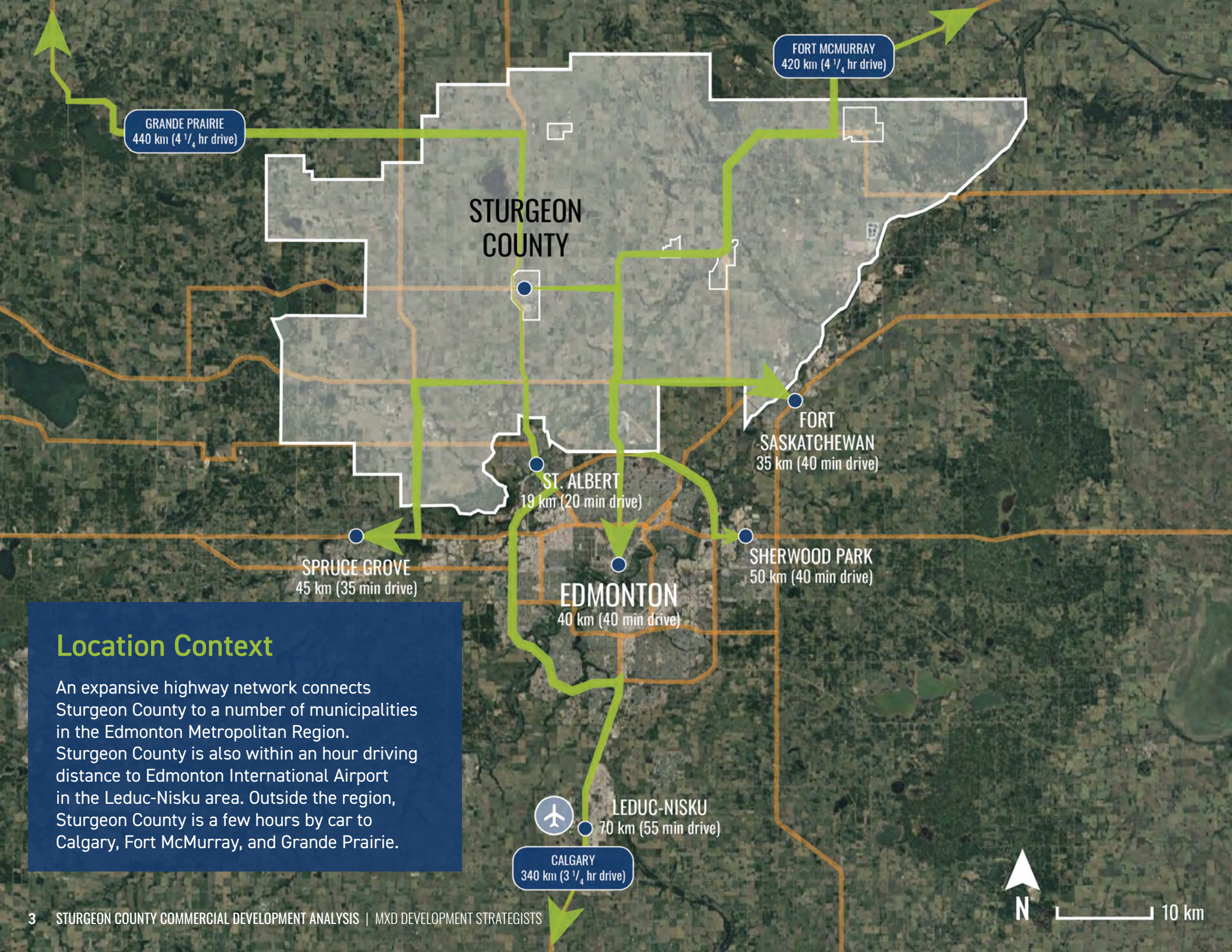
01 CURRENT CONTEXT



Location Context

Sturgeon County is located in the northern Edmonton Metropolitan Region (EMR). Parkland and Strathcona Counties are on the southern edge of the municipality as is Edmonton and St. Albert. The County is also home to a portion of Alberta's Industrial Heartland, the largest hydrocarbon processing region in the country.



Location Context

An expansive highway network connects Sturgeon County to a number of municipalities in the Edmonton Metropolitan Region. Sturgeon County is also within an hour driving distance to Edmonton International Airport in the Leduc-Nisku area. Outside the region, Sturgeon County is a few hours by car to Calgary, Fort McMurray, and Grande Prairie.

Economic Analysis

Global Economic Outlook

Global economic growth has been slow due to trade and political uncertainty that has eroded investment confidence. Growth is projected to slow to 3% in 2020, which represents the weakest annual growth rate since the 2008 financial crisis. [1]

Trade tensions between the U.S. and China have most heavily impacted industrial based sectors, particularly manufacturing. Investors and corporations have contracted due to uncertainty and reduced demand.

The service sector has remained resilient as a result of continued consumer demand but will likely weaken with time. This is due to diminished labor demand in the manufacturing sector and reduced household incomes and spending.

Canada Economic Outlook

Canada's economy has remained strong amidst global uncertainty. Both the housing market and energy sector exports are beginning to rebound after a weak start to 2019. Employment growth has risen to 2% and real Gross Domestic Product (GDP) growth is expected to climb to 1.8% in 2020.[2]

The energy sector continues to be a significant driver of the Canadian economy, contributing approximately $170 billion to the national GDP in 2018.[3] The oil and gas industry provides 528,000 direct and indirect jobs (2017) and produces $8 billion in average annual revenue for the government (2016 -2018). [4]

Canada has the third-largest reserve of crude oil and is the fifth largest producer of natural gas in the world. Canada continues to be a top exporter of manufactured goods, agricultural products and automotive products.

Canada's prominence in chemical-related industries is growing. Investment continues to flow into the country due to a highly skilled workforce, competitive tax system, government subsidies, as well as plentiful and affordable feedstock.

Plastics have also become a significant industry in Canada. As of 2019, the annual sale of plastics was valued at $35 billion, with exports accounting for 40% of the County's annual domestic output. [5]

Alberta Economic Outlook

Alberta is a national leader in the energy sector due to the abundant supply of hydrocarbon feedstock. Alberta's oil sands have a reserve of 165.4 billion barrels (bbl). [6]

However, Alberta's economy is still recovering from the 2015-2016 recession which has been further challenged by delays in pipeline constriction and slowed global economic growth. As of November 2019, the Western Canadian Select (WCS) oil price was priced at $42.32 per barrel.[7]

The economy is showing signs of improvement, with real GDP growth forecasted to grow by 2.7% as oil production rebounds. The unemployment rate of 6.6% sits above the national average, yet is forecasted to decline to 5.2% by 2023.[8]

Manufacturing and services continue to provide a strong foundation for the economy, with manufacturing sales growing by 11% year over year to $7 billion. The service sector, which makes up more than 60% of the Alberta economy, continues to remain strong due to an uptick in industrial construction and sustained population growth.

As part of the 2020 Alberta Provincial budget cuts, the Partial Upgrading and Petrochemical Feedstock program that was established to fund new midstream processing facilities, has been discontinued.

While cuts to programs may present future challenges, the Province is still committed to the Petrochemical Diversification Program that provides royalties to companies who invest in the development of petrochemical facilities.

Economic Analysis

Sturgeon County Economic Overview

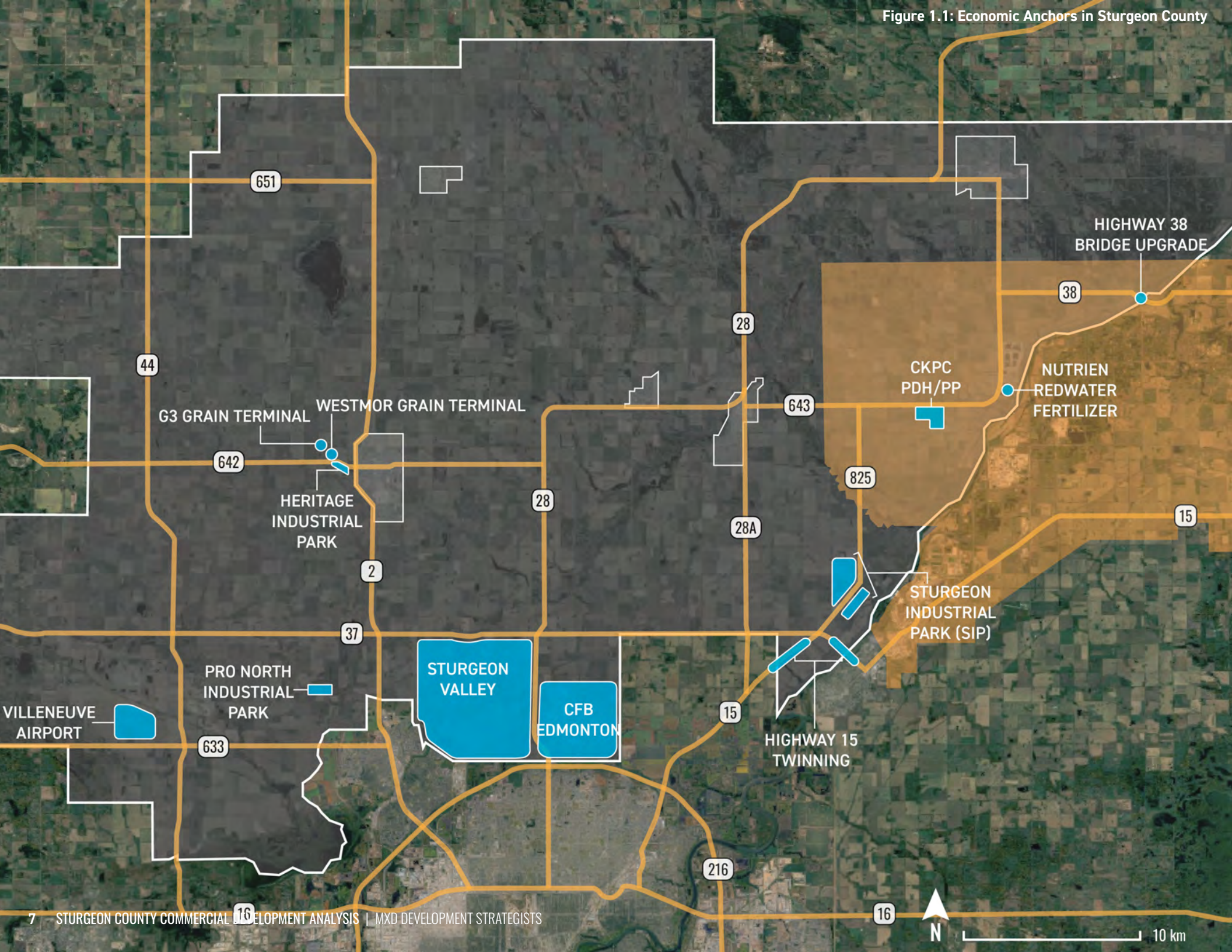
Sturgeon County continues to experience steady economic growth despite low oil and gas prices. The County's economic resilience is predicated on its focus on downstream chemicals, construction, transportation and logistics, as well as a strong agricultural sector. The County's key economic anchors are highlighted in Figure 1.1.

Access to low cost hydrocarbon feedstock has fueled growth and development in downstream energy and petrochemical industries. The County is home to several major players in these sectors such as Pembina, CKPC, Evonik and Inter Pipeline.

Approximately 24,700 acres of County land is encompassed in Alberta's Industrial Heartland, which accounts for 43% of the nation's chemical processing.

The County also supports a strong agriculture sector due to the abundance of fertile farmland. As of 2016, the County's average farm size was 657 acres, eclipsing all other counties in the metro region. Total gross sales across all farms in 2016 was $230,940,000 which was significantly more than other metro counties.[9]

Figure 1.1: Economic Anchors in Sturgeon County



Economic Sector Overview

Advanced Energy

Energy production is a key economic driver for the EMR. The region's growing petrochemical and energy refining sector is predicated on access to an abundant supply of cost advantaged hydrocarbon feedstock. Oil and natural gas are transported to Alberta's Industrial Heartland from the northern oil sands via the extensive network of pipeline infrastructure to manufacture $13.5 billion worth of feedstock.[10]

Many of Sturgeon County's top employers are petrochemical and energy refinery companies such as Pembina, Nutrien and NWR Sturgeon Refinery. These companies are involved in the processing of bitumen into diesel, natural gas, and other consumer ready products

The $4.5 billion dollar joint investment by Pembina Pipeline Corporation and Petrochemical Industries Company of Kuwait to construct an integrated propane dehydrogenation and polypropylene upgrading facility is a significant economic development initiative that signifies the County's strength in the petrochemical sector.[11] The facility will work synergistically with Pembina's Redwater Fractionation complex (RFS), consuming approximately 23,000 barrels of propane feedstock from RFS and other fractionation facilities in the region.

The County is also home to Northwest Redwater (NWR) Sturgeon Refinery, the first new oil refinery constructed in Canada in 34 years. Phase 1 of the refinery has the capacity to produce 80,000 barrels per day of diluted bitumen used to make consumer ready products.[12]

Agriculture & Agribusiness

The EMR has a strong food and agriculture sector that is predicated on 1.7 million acres of farmland that covers roughly 80% of region's land area. The region supports the entire agriculture supply chain from raw production through to transportation and logistics. The agriculture and food sector is the second largest processing industry in the province, accounting for over 4.5 billion in direct annual revenue.[13]

The EMR continues to be a key driver of growth in the province's food and beverage processing industry, accounting for 25% of the province's activities. This generates 3.7 billion in annual revenues, and accounts for over 6,000 jobs.

Continued population growth is linked to a growing global demand for food. Canada is projected to be one of six countries that will be a net exporter of food, with a large proportion of the supply coming from the western provinces. Accordingly, the EMR has designated the food and agriculture industry as a key economic growth sector.

Agriculture and agribusiness continue to be key economic drivers in the County due to the abundance of productive farmland and supportive farming infrastructure. The County has experienced significant growth in agricultural processing, particularly in the alfalfa, oats, cereals, and grain handling markets. Major production includes beef, dairy, grain/oilseed and hay with many other businesses providing value added agricultural services in research and testing, food processing, and farm inputs

The County has experienced significant investment from notable agriculture and agribusiness companies which speaks to its competitiveness in the industry. Accordingly, the County has the infrastructure and investment in place to grow its primary grain handling capacity to one million metric tonnes annually.

The expansion of G3 Canada's grain origination network into the County with its new grain elevator is a significant economic win. The high-efficiency elevator will have the capacity to handle 42,000 tonnes and will move grain using CN Rail to G3's Vancouver terminal, which will be operational in 2020.[14]

G3's planned expansion will be located adjacent to the Westmor Terminal, an existing grain handling operation in the County. The Westmor elevator has a concrete and steel bin capacity that can handle 41,840 tonnes of grain.[15]

Advanced Manufacturing

The presence of significant hydrocarbon processing and agriculture companies in Sturgeon County has fuelled growth in advanced manufacturing.

The County is home to several large companies that provide products and support services to various firms involved in oil sands, conventional oil and gas, construction and agricultural industries. As of 2019, there are 50 businesses in the manufacturing sector.

Major contributing sectors are petrochemicals, agri-food, natural resources processing industries, food processing, chemicals, machinery, metal fabrication, and construction materials.

Evonik Industries is a global leader in specialty chemicals. It's Canadian subsidiary, Evonik Canada, has a facility in Sturgeon County which manufactures and distributes approximately 90,000 tonnes of hydrogen peroxide annually.[16]

Hexion Inc recently completed the expansion of its resin coated proppant manufacturing plant in Sturgeon Industrial Park, which will provide continued support to service companies and operators in oil and gas. In addition to increasing the company's manufacturing capacity, the expansion involved a redesign of the railyard to improve logistics, thereby allowing a more efficient response to market demand.

Guardian Chemicals is one of Canada's top chemical suppliers. Located within Sturgeon Industrial Park, Guardian Chemicals is primarily involved in the research, development and manufacturing of specialty chemicals which serve a wide variety of industries including oil and gas, agriculture, mining and forestry.

Eco-Flex is located adjacent to Legal and is an industry leader through an innovative process of recycling Canadian passenger car tires to manufacture high value, end use rubber products. The company produces rig mats, industrial sidewalks and access ramps that are used in several sectors such as oil and gas, construction, and mining.

Transportation and Logistics

Sturgeon County is home to significant transportation assets that support its transportation and logistics sector. The County is serviced by 14 highways, as well as the Canadian National (CN) Rail network that provides access and connectivity to North American and international markets. The County enjoys unencumbered access to the Trans-Canada highway, as well as to the Anthony Henday Drive. The County features access to key east-west and north-south corridors which allow for the seamless movement of goods, services and people.

The Province of Alberta has invested in several infrastructure projects that will help to unlock economic development opportunities. The provincial government has committed $90 million to upgrade the Highway 38 bridge in the northern part of the County.[17] Once completed, the bridge will have the capacity to accommodate heavy or oversized loads of over 200 tonnes and will become a significant part of the High Load Corridor. The bridge upgrade will provide a more direct crossing over the North Saskatchewan River which will save time and money, thus making the energy sector more competitive.

The $200 million infrastructure project that involves renovations to the Highway 15, 37 and 825 connection as well as the twinning of Highway 15 will help to improve access in and out of the County by alleviating congestion and improving connectivity.[18]

Villeneuve Airport is a general aviation airport located in southwest Sturgeon County and is a significant regional asset. The airport houses 23 businesses that are involved in aviation related activities such as aircraft flight training, fixed-wing aircraft maintenance and helicopter maintenance. The airport is committed to establishing a hub for aviation, manufacturing and transportation and logistics activities at Villeneuve Airport.

The County is also home to established transportation and logistics companies such as Total Transload Services and On-Track Railway Operations Ltd that offer a wide variety of material handling, storage and transportation solutions.

The construction of the Condo Sturgeon Terminal is a significant investment into the County's transportation infrastructure. With a projected completion in late 2020, the new terminal will be roughly 300 acres in size and will include 46 kilometers of rail track. It will provide value-added services such as material handling and rail car repair and cleaning.[19]

This landmark project will enable growth in the energy sector by allowing product from the Industrial Heartland to reach global markets more efficiently.

Key Takeaways

Agriculture and petrochemicals are well established economic sectors that serve as key pillars of Sturgeon County's economy. It is advantageous for the County to strategically target investment and economic development efforts on advancing and diversifying growth in these key economic sectors.

There are many sub-sectors and support industries that can leverage the County's strength in agriculture and petrochemicals and present opportunities for synergistic growth with manufacturing and logistics and distribution. The various sub-sectors highlighted in Figure 1.2 are representative industries that offer opportunities for economic clustering and tend to take space in light industrial typologies that are being recommended in this study.

The County should focus on traditional light industrial and retail development to attract these types of industries and ultimately increase employment and residential growth.

The presence of two key institutional anchors, Villeneuve Airport and the Canadian Forces Base (CFB) Edmonton, present opportunities to target aerospace and aviation as well as defense as supplementary economic sectors.

Figure 1.2: High-Growth Prime Economic Sectors

Demographic Overview

Sturgeon County has a population of 20,506 people. Growth in the County has been moderate compared to other jurisdictions in the EMR. Sturgeon Valley and CFB Edmonton boast the highest concentrations of population in the County, comprising approximately 4,300 and 1,431 residents respectively.

Sturgeon County has one of the higher median household incomes relative to adjacent jurisdictions in the region. As of 2017, median household incomes in the County were $128,877.

Sturgeon County's labour force totals 11,305 people, with 10,495 people employed.[20] The sectors that employ the largest number of people in the County include construction (1,864), agriculture and forestry (937), transportation and warehousing (888) and manufacturing (588).[21]

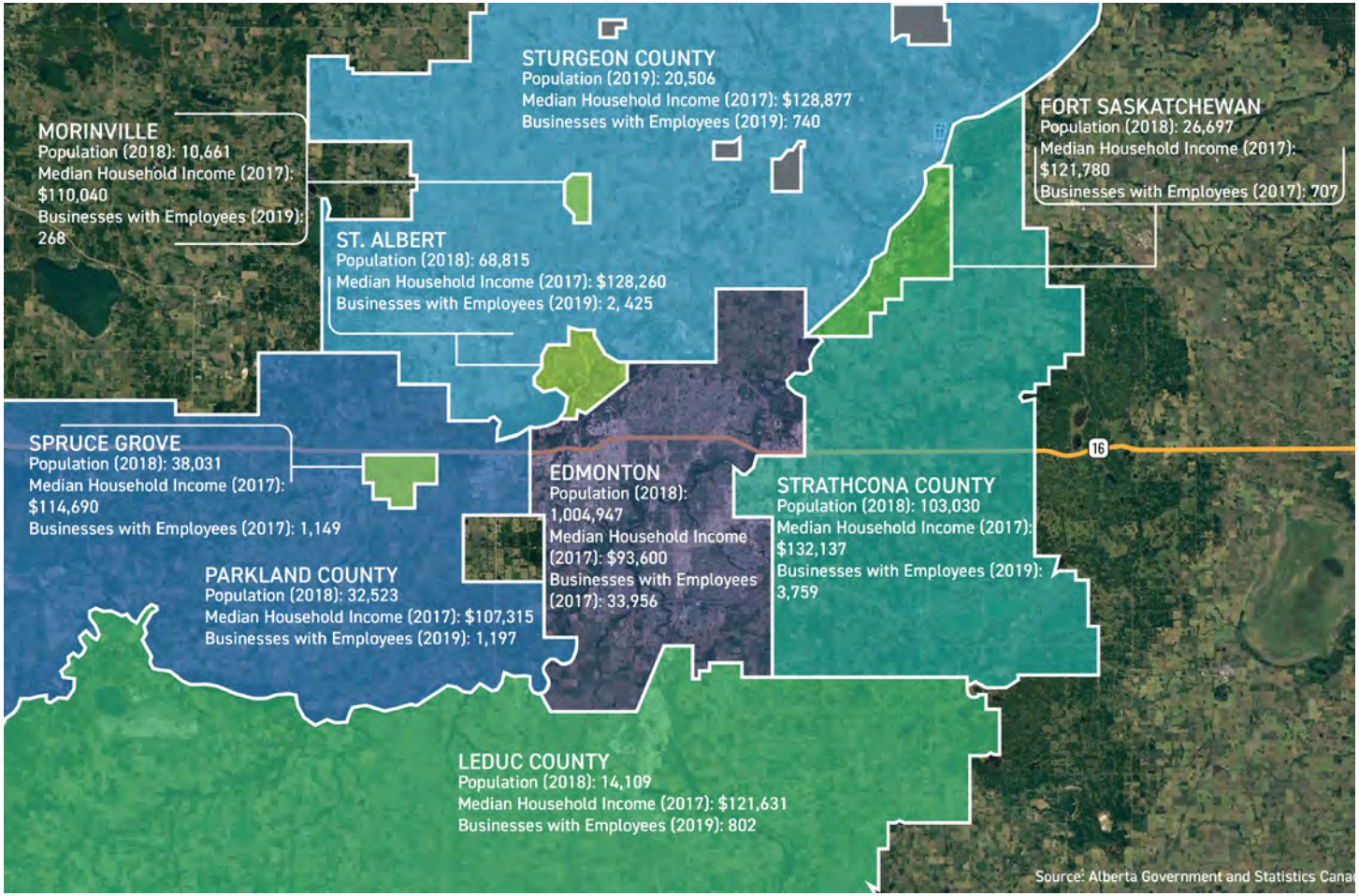


Figure 1.3: Edmonton Metropolitan Region Demographic Overview

Population & Employment Projections

Population and Employment projections in the Edmonton Metropolitan Region Growth Plan provided an important input for the real estate market demand models developed in this study.

Sturgeon County is forecast to grow from 20,600 residents in 2014 to a range of 31,000 and 39,200 residents by 2044. An average of these Low and High forecasts suggest 35,100 residents by 2044. Similarly, the 2014 employment base of 7,555 jobs in Sturgeon County is forecast to grow to 12,406 jobs by 2044. Both population and employment growth rates in Sturgeon County are close to the Metro average.

There will be slightly fewer jobs per resident in Sturgeon County in 25 years, although this will be true for the entire Metro. These moderate growth rates, coupled with the lack of new Employment Areas slated for Sturgeon County, provide important inputs to the real estate demand models described in this Section.

Population and Employment projections were detailed on an annual basis to refine the real estate market demand estimates and planning efforts.

Table 1.1: Population and Employment Projections, 2014 to 2044

	Population					Employment			% of Metro Jobs		Jobs per Pop	
Municipality	2014			2044 (Mid)	CAGR	2014	2044	CAGR	2014	2044	2014	2044
Beaumont	15,800			48,300	3.8%	2,474	8,022	4.0%	0.3%	0.7%	0.16	0.17
Bon Accord	1,600			3,000	2.1%	200	412	2.4%	0.0%	0.0%	0.13	0.14
Bruderheim	1,300			2,700	2.5%	300	551	2.0%	0.0%	0.0%	0.23	0.20
Calmar	2,100			3,850	2.0%	508	802	1.5%	0.1%	0.1%	0.24	0.21
Devon	6,700			12,200	2.0%	1,930	3,110	1.6%	0.3%	0.3%	0.29	0.25
Edmonton	877,900			1,416,250	1.6%	564,098	909,065	1.6%	77.7%	75.9%	0.64	0.64
Fort Saskatchewan	22,800			53,550	2.9%	12,341	21,275	1.8%	1.7%	1.8%	0.54	0.40
Gibbons	3,200			5,900	2.1%	651	1,135	1.9%	0.1%	0.1%	0.20	0.19
Lamont	1,900			3,450	2.0%	900	1,802	2.3%	0.1%	0.2%	0.47	0.52
Lamont County	4,200			7,850	2.1%	1,625	2,566	1.5%	0.2%	0.2%	0.39	0.33
Leduc	28,600			58,800	2.4%	16,230	23,985	1.3%	2.2%	2.0%	0.57	0.41
Leduc County	14,100			21,250	1.4%	20,339	46,669	2.8%	2.8%	3.9%	1.44	2.20
Legal	1,400			2,450	1.9%	300	680	2.8%	0.0%	0.1%	0.21	0.28
Morinville	9,400			16,550	1.9%	2,779	4,344	1.5%	0.4%	0.4%	0.30	0.26
Parkland County	31,800			46,350	1.3%	11,700	20,550	1.9%	1.6%	1.7%	0.37	0.44
Redwater	2,200			3,950	2.0%	800	1,681	2.5%	0.1%	0.1%	0.36	0.43
Spruce Grove	29,500			60,600	2.4%	11,348	19,043	1.7%	1.6%	1.6%	0.38	0.31
St. Albert	63,300			104,050	1.7%	21,140	35,437	1.7%	2.9%	3.0%	0.33	0.34
Stony Plain	16,700			36,100	2.6%	6,755	12,452	2.1%	0.9%	1.0%	0.40	0.34
Strathcona County	96,800			149,000	1.4%	39,888	68,671	1.8%	5.5%	5.7%	0.41	0.46
Sturgeon County	20,600			35,100	1.8%	7,555	12,406	1.7%	1.0%	1.0%	0.37	0.35
Thorsby	1,000			1,950	2.3%	1,084	1,457	1.0%	0.1%	0.1%	1.08	0.75
Wabamun	700			1,250	2.0%	200	376	2.1%	0.0%	0.0%	0.29	0.30
Warburg	900			1,450	1.6%	400	654	1.7%	0.1%	0.1%	0.44	0.45
Total	**1,254,500**			**2,095,900**	**1.7%**	**725,545**	**1,197,145**	**1.7%**	**100.0%**	**100.0%**	**0.58**	**0.57**

Source: Edmonton Metropolitan Region Growth Plan

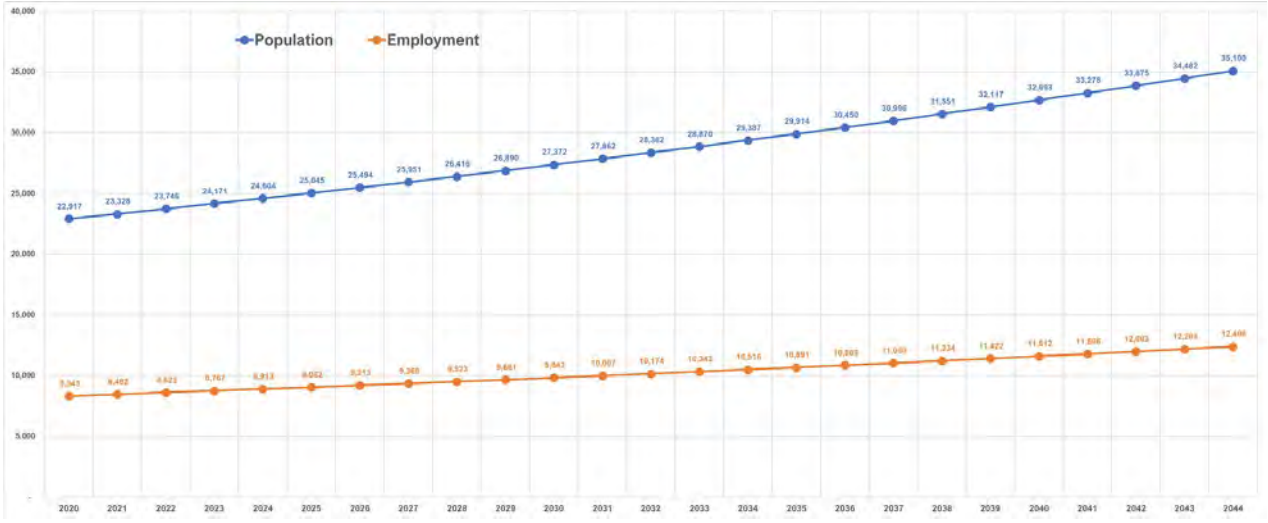


Figure 1.4: Sturgeon County Population and Employment Projections, 2014 to 2044

Source: Edmonton Metropolitan Region Growth Plan

Policy Context

Summary of Policies and Plans

Sturgeon County is governed by several levels of policies and plans. This section outlines the plans and policies that are relevant to the study of commercial priority areas.

EMRB Growth Plan (2017)

Sturgeon County is a member municipality of the Edmonton Metropolitan Region Board (EMRB) and falls within the growth plan (2017) area. This growth plan is the highest tier of policy within the County.

The guiding principles of the plan that align with the intent of this exercise include:

1. Collaborate and coordinate as a Region to manage growth responsibly

We will work together to create a Region that is well managed and financially sustainable with a shared commitment to growing responsibly and achieving long term prosperity.

2. Promote global economic competitiveness and regional prosperity

We will foster a diverse and innovative economy that builds upon our existing infrastructure and employment areas to achieve sustained economic growth and prosperity.

3. Achieve compact growth that optimizes infrastructure investment

We will make the most efficient use of our infrastructure investments by prioritizing growth where infrastructure exists and optimizing use of new and planned infrastructure.

4. Rural Area

The EMRB growth plan characterizes the County as a "Rural Area", further described as:

- Small urban communities;
- Existing and planned country
- residential areas;
- Major employment areas, local employment areas and resource extraction areas;
- Local and sub regional levels of service;
- Potential for lifeline transportation to some urban communities; and
- Rural working landscapes, natural resource assets, agricultural lands and pipeline, power and recreation corridors and natural living systems.

Rural Area Growth Directions are as follows:

- Encourage growth in existing towns, villages and in the built up urban

Policy Context

area and brownfield sites and plan and develop compact and contiguous greenfield areas to optimize servicing capacity and transportation connections;
- Plan and build rural centres and sub regional centres with a mix of land uses and higher densities;
- Support employment growth in the major employment areas including Alberta's Industrial Heartland and regional airports local employment areas , within rural/sub regional centres and within agriculture, forestry, resource extraction and processing areas;

Rural Centres, Sub-Regional Centres & Major Employment Areas

Rural Centres: urban areas within the rural area that provide a local level of service to serve their own community with potential to accommodate higher density mixed use development, appropriate to the size and scale of the community. Rural centres include central areas of towns, villages and some growth hamlets Rural centres provide level of service consisting of:
- local employment;
- convenience retail and small scale entertainment uses;

Sub-Regional Centres: centres that provides a sub regional level of service to meet the needs of their own communities and those in the wider area within the rural area. Sub regional centres have potential to accommodate higher density mixed use development, appropriate to the scale of the community. Sub-regional centres and provide a local level of service consisting of:
- local employment
- convenience and major retail and entertainment;
- lifeline transportation services with potential for local or commuter transit service;

Major Employment Area

An area with a concentration of industrial, commercial and/or institutional land uses that have regionally significant business and economic activities and high levels of employment.

Regional Policy Area 1: Economic Competitiveness and Employment

Guiding Principal: Promote global economic competitiveness and regional prosperity.

We will foster a diverse and innovative economy that builds upon our existing infrastructure and employment areas to achieve sustained economic growth and prosperity.

Policy Context

Objective 1.2: Promote job growth and the competitiveness of the Region's employment base

1.2.3 Within major employment areas, growth will be accommodated by:

- supporting employment intensive land uses with a range of employment types including commercial, industrial and institutional uses;

1.2.4 Regional infrastructure investment, including municipal services, telecommunications and utilities, will support commercial and industrial development, economic diversification opportunities and job growth in major employment areas

Sturgeon Valley Special Study (2019) - Amendment to EMRBGP

In 2019, an amendment to the EMRBGP was adopted "The Sturgeon Valley Special Study Area," to provide detail and clarity on the Sturgeon Valley. The EMRBGP alone does not provide detailed policy related to the ongoing and future development to occur within the Valley. The special study area has been divided into 4 distinct areas, each with its own intent and character.

The objectives as developed by this study are as follows:

Objective 3.1: Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities.

Objective 3.2: Complete Area C in a manner consistent with the existing community and maintain Area D for ongoing agricultural use.

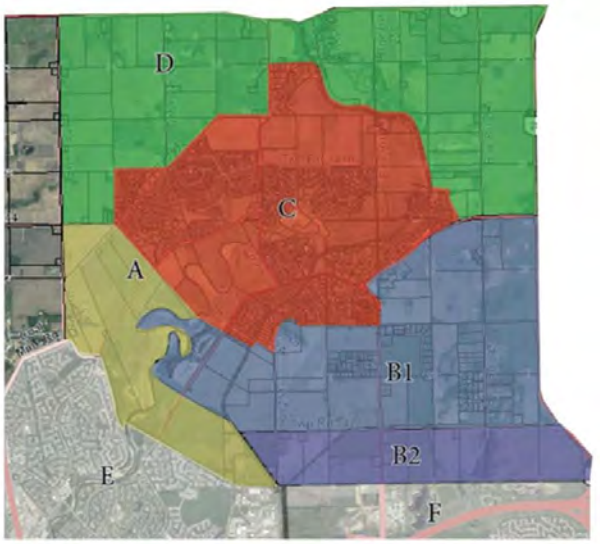
Relevant policies pertaining to each contemplated priority area are explored in section 5.

Sturgeon County Municipal Development Plan (2014)

The Sturgeon County Municipal Development Plan guides the continued growth and development within Sturgeon County. The following guiding principles align with the intent of this exercise:

Guiding Principle #5: Economic Health

5.4.19 Shall locate new Commercial Development to areas as identified in Growth Strategy Concept Map . Type and scale of the development shall reflect infrastructure capacity and support County residents.



Policy Context

5.4.20 Should develop and incorporate a commercial Needs Assessment that identifies and attracts key retail and corporate sectors.

5.4.21 Should recognize the potential of Commercial Development that improves the facilitation of goods and associated services, by encouraging highway Commercial Developments to locate in close proximity to the convergence of regionally significant roadways.

5.4.22 Shall develop and implement commercial retail development standards that promote high quality design principles , including both a type and scale appropriate to the area in which the development is located.

Sturgeon Valley Area Structure Plan (1999)

The relevancy of this plan is low given that an ASP update is currently underway and recommendations of this study are to be developed in alignment with the updated document.

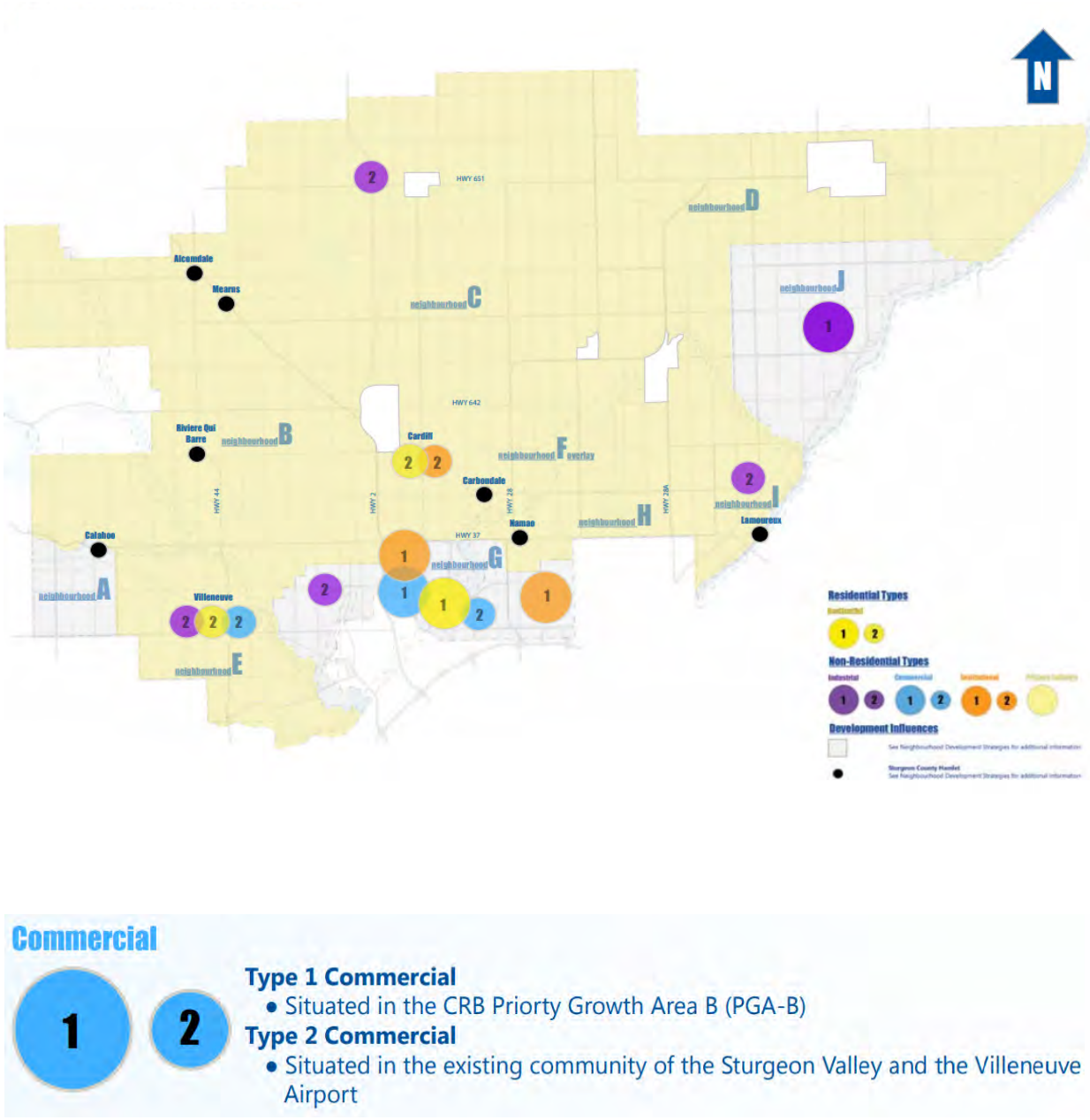


Figure 1.5: Sturgeon County Growth Strategy Concept Map

Key Takeaways

Approved in 2017, the Edmonton Metropolitan Region Board Growth Plan (EMRBGP) is the highest level statutory plan, providing a framework for growth within Sturgeon County. It is the first key piece of policy to be considered in the identification of commercial priority growth areas in the County.

In 2019, the Sturgeon Valley special study area policy was released to provide further detail and direction within the Sturgeon Valley related to the EMRBGP. The special study area speaks specifically to the Sturgeon Valley where the intended form reflects a denser residential growth pattern formed around complete communities.

As such, the special study area delineates specific areas that are to be considered for future development. The feasibility of contiguous development has been evaluated in this policy, and is intended to shape long-term development. In keeping with the directions and intent of this plan, commercial development is limited to areas that are not meant to be retained for on-going agricultural operations while the area builds out. While minor amendments to this policy may be considered, the likelihood of approval of major amendments is low. It is understood in the metro-Edmonton region that the policy directions enforced by the EMRBGP will prohibit or facilitate development.

It is understood that the Sturgeon Valley Municipal Development Plan (MDP) will be amended in 2020 and will require approval from the EMRB. As such, recommended amendments to facilitate development in specific priority areas can be encompassed within this round of amendments. Generally, the Sturgeon Valley MDP is supportive of future non-residential growth, provided that it is serviceable, accessible with transportation infrastructure and will directly benefit residents and business owners in the County.

Area Structure Plans (ASP) in the County encompassing any identified priority areas will be generally in-line with the intent and policy directions for commercial development. Where an ASP does not allow commercial development, an amendment should be considered with the County, on the basis of growth areas identified within this study.

Infrastructure Existing Conditions

Summary - Water, Sanitary & Storm

An overall review of the County's servicing infrastructure was conducted by ISL Engineering and Land Services Ltd under the Sturgeon County Infrastructure Master Plan (2019). Based on the information in that report, the following summaries provide an overview of existing infrastructure in Sturgeon County.

Sturgeon County receives most of its treated water supply from EPCOR either or through regional water systems. Direct connections exist to EPCOR at 127 Street south of 195 Avenue. Transmission for the County is primarily through the Morinville Water Line, and the CRNWSC transmission system.

A major investment into the County's water infrastructure has been put forward to Council. Bylaw-1447/19 - Debenture for Alberta Industrial Heartland Waterline project has gone through its first of three readings.[22] The proposed project, known as The Alberta Industrial Heartland Waterline project, would involve the construction of 4.8 kilometres of pipeline which will run along Highway 825 to service the Industrial Heartland. Also proposed as part of the project would be a 1.6 kilometre pipeline that would loop the water system in the Heartland.

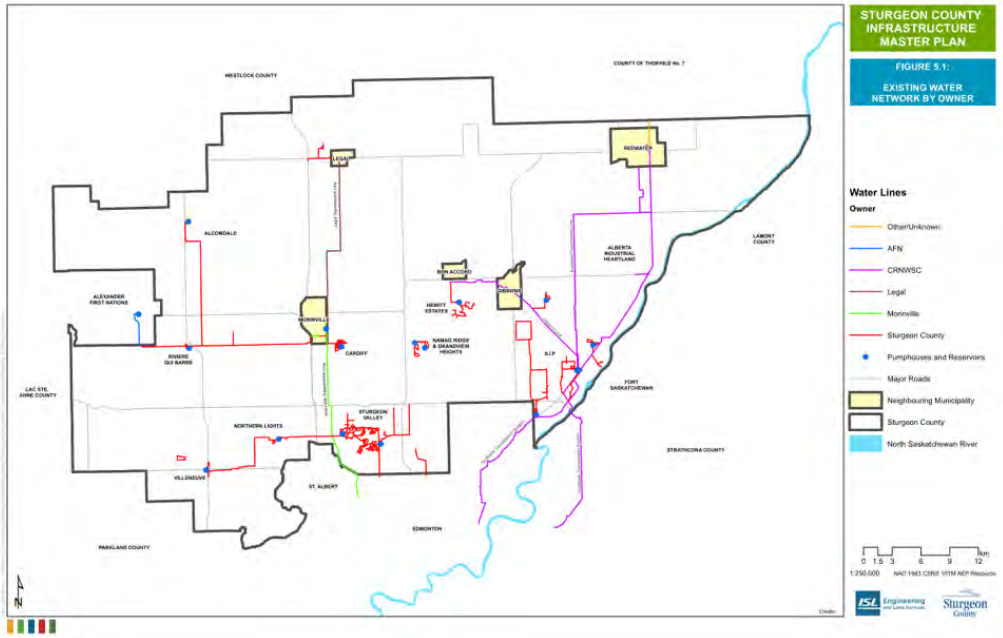


Figure 1.6: Sturgeon County Infrastructure Master Plan - Existing Water

Wastewater is collected locally for residential and non-residential sites. Conveyance is either through gravity sewers leading toward central lift stations, or by low pressure systems. Disposal of wastewater is either to lagoons, or to ACRWC infrastructure.

Stormwater is conveyed mainly overland through ditches, culverts, watercourses, and naturalized creeks. The stormwater drains towards Big Lake, Carrot Creek, the Sturgeon River, and the North Saskatchewan River.

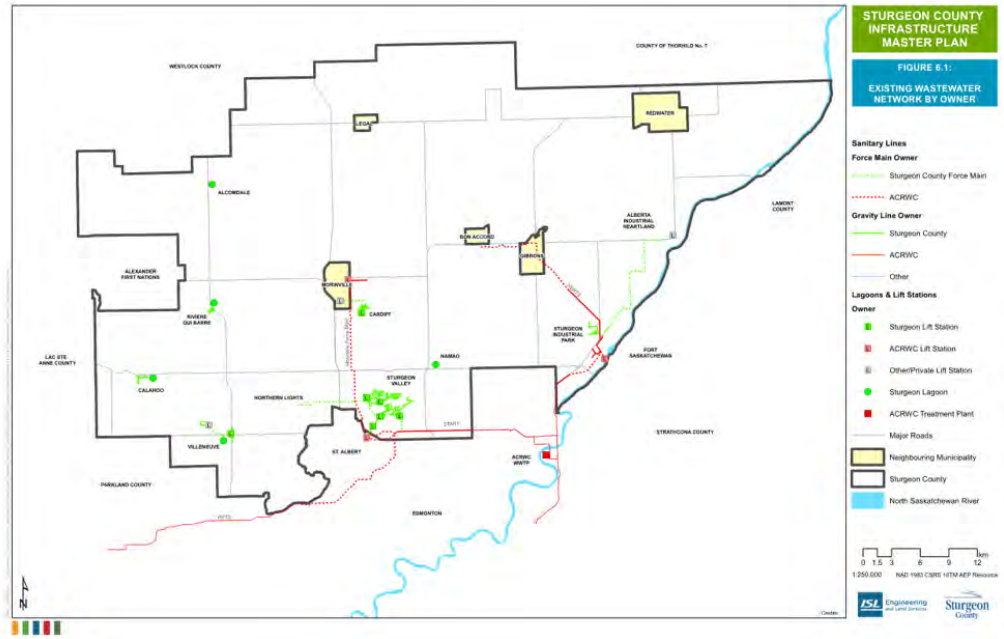


Figure 1.7: Sturgeon County Infrastructure Master Plan - Existing Sanitary

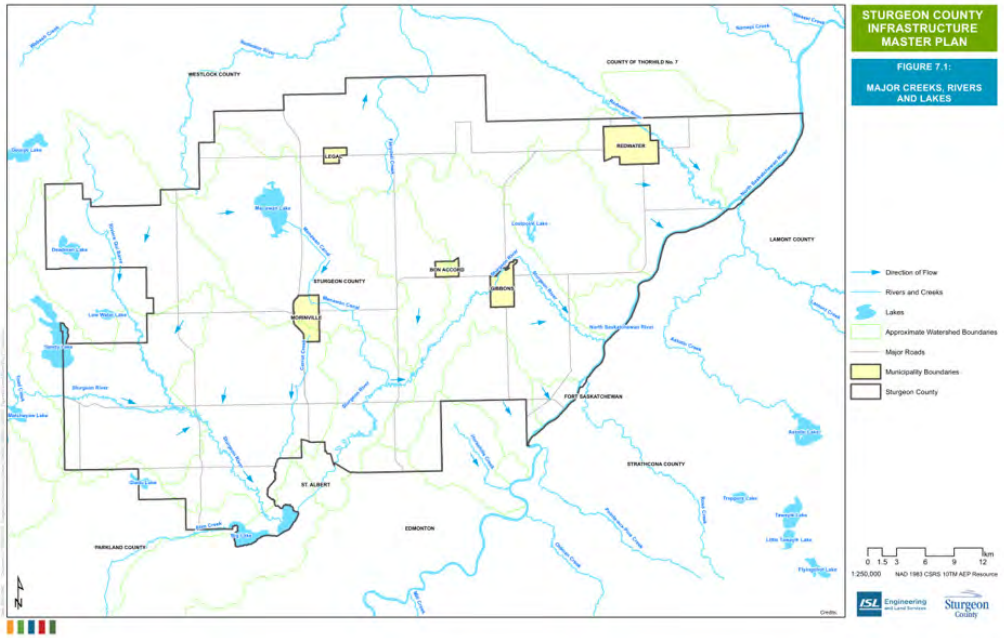


Figure 1.8: Sturgeon County Infrastructure Master Plan - Existing Stormwater

Transportation

Sturgeon County's road network consists of approximately 185 kilometres of secondary roads and 1,776 kilometres of local roads. Almost all of Sturgeon County's original roads were built over 65 years ago. Sturgeon County considers all Range Roads and Township Roads to be for local traffic, while highways are part of the regional traffic network.

The Provincial Highways 44, 2, 28, 28A in the north-south direction and the Provincial Highways 37, 633, 642, 651, 38, 651, 642 in the east-west direction connects the County with the rest of the Province.

Sturgeon County also has a network of rail lines owned and operated by the CN Rail. The rail network supports industrial growth and plays a key role in movement of goods to and from the County.

The Villeneuve Airport, operated by Edmonton Airports, is a general aviation, recreational flying and training facility is in Sturgeon County, 9 km northwest of St. Albert.

Priority Areas will require individual review likely through traffic studies to evaluate the intensity of use and the capacity of existing transportation networks to handle the increase in traffic. Future upgrades to transportation infrastructure will also be determined as development progresses, in line with existing policies and plans.

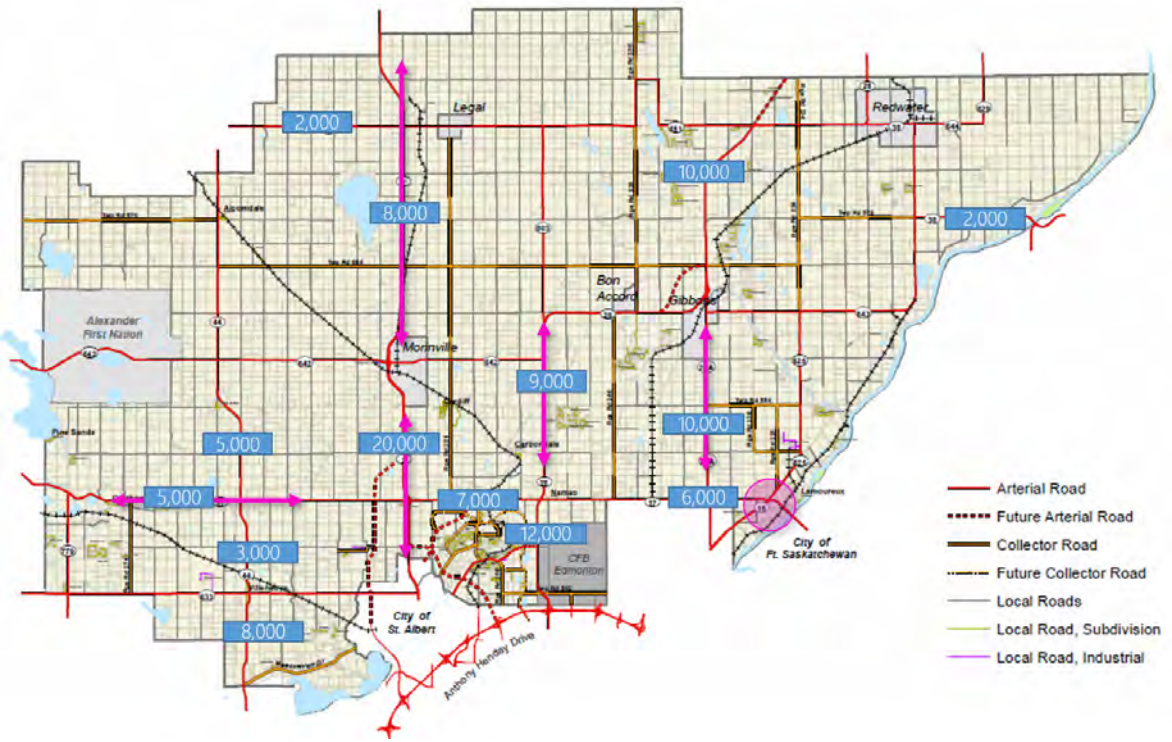


Figure 1.9: Sturgeon County Average Daily Traffic Counts

Higher AADT represents where current travel demand patterns exist. Highway 2 in particular has a high grade facility between St. Albert and Morinville and reflects the higher usage of this stretch of roadway; highways with lower volumes likely have lower grade facilities. Larger developments in proximity to the smaller highways might require upgrades for capacity and safety reasons, although this may also be the case with developments in proximity to Highway 2 – this would depend on factors such as current roadway capacity, local area growth, assessment horizon, and development details such as size, function and phasing. This would require specific TIAs or other studies to occur during a further planning stage (such as ASP stage) to fully understand the effects of an commercial development on the road network.

Stakeholder Feedback

Introduction

As part of the process to identify viable opportunities for commercial development in Sturgeon County, MXD and WSP conducted stakeholder focus group sessions on September 30 and October 1, 2019.

Key stakeholders from Sturgeon County and the Metro Edmonton development community were invited to participate in focus group sessions. The stakeholders were divided into six groups based on their areas of professional expertise. The six stakeholder groups included: Developers and Brokers; Economic Development Advisory Board; Alberta's Industrial Heartland: Sturgeon County companies; Internal Staff; Mayor, Council and Leadership Team; and Local Businesses.

MXD also conducted one-on-one focus group sessions with Sturgeon County's two institutional anchors, Edmonton International Airport (Villeneuve Airport) and the Canadian Forces Base Edmonton, to garner feedback on their operations and the related commercial development opportunities.

Stakeholders were provided with an overview of the County as well as the main objectives of the Commercial Development Analysis. Each focus group was centered around five key questions that were used to guide the discussion and garner insight into the strengths, challenges and development opportunities in the County from a variety of different perspectives. The feedback from the focus groups was synthesized into eight key themes. These themes provided insight that informed the identification of the Priority Commercial Development Areas as well as the strategic recommendations translate the plan into action.

It should be noted that the bulleted items in the below sections are cautionary insights from the development community and other stakeholders that participated in the focus groups and are therefore not fully reflective of the experience with Sturgeon County. These are general comments and suggestions based on interactions with the County as well as other jurisdictions in the region to help the County overcome challenges and build on existing strengths to enable commercial development opportunities.

Key Themes & Takeaways

Flexible Zoning & Transparent Development Process

- Municipal Development Plan (MDP) focuses on heavy industrial and residential development with limited planned commercial growth nodes
- Less restrictive and transparent approvals process is needed
- Conversion of agricultural land to commercial could be a challenge
- The development community has limited experience with rezoning in Sturgeon County
- Flexible approaches to zoning are key to remaining agile to changes in development typologies and market demand over time
- Time is money. A slow permitting and approvals process can kill a development; reduce the red-tape and increase efficiencies
- Pre-approved zoning developed jointly with the community will create certainty for development community

Proximity to the Henday is King

- 5 minutes from the Henday is the threshold for industrial development
- Industrial land is priced based on distance to the Henday
- Truck access is key to unlock development opportunities

"Be realistic and have an open-door policy"

"The planning and development process should be transparent"

"Opportunities need to be flexible and the right-size"

"Logistics companies want Henday access"

Key Themes & Takeaways

The County Needs to Create Certainty

- The County should take the lead on creating Area Structure Plans in strategic development areas as there are limited precedents to follow
- The County should cost out the infrastructure for specific development sites as well as identify which group will pay for what
- Clear and transparent guidelines and policies to guide the development community (development checklist)
- Reflect commercial development areas in the MDP to create certainty for the private development community

Infrastructure Enables Investment

- Water, sewer and fibre-optics are limited in Sturgeon County
- The upfront cost of development is an issue
- Other counties offer pad ready sites which make them competitive from a development standpoint
- Front end infrastructure costs need to be shared
- Not enough in the County's off-site levy reserve to pay for infrastructure and costs are being downloaded onto developers

"Build in certainty of where commercial areas can be located in the MDP"

"How much will the County front end in terms of servicing"

"Upfront cost of servicing is a challenge"

"Share the cost of servicing"

Key Themes & Takeaways

Change the Rural and Industrial Perception

- The County is known for farming and heavy industry
- There is limited commercial development in Sturgeon County which makes investment challenging
- Currently an untested market for light industrial product
- The County should bolster the effort to create a unique brand that showcases the County's value proposition

Leverage Existing Strengths

- Cluster sectors that are already strong in the County (ie. defence, agriculture, chemicals)
- Value-add is a big opportunity as well as food processing
- Gateway to the North – leverage high traffic on 28A going to/from Fort McMurray and Industrial Heartland
- The County is viewed as a blank slate for opportunity
- The cost of land is more affordable than other surrounding jurisdictions, but not in all areas of the County
- The County has strong access to a large labour force
- Lands west of Highway 28 and below Highway 37 are conducive to light industrial uses due to proximity to the Henday

Key Themes & Takeaways

Collaboration to Generate Success

- Consider joint efforts between the County and other municipalities for certain types of commercial development
- Need to foster a stronger relationship with Alberta Transportation to enable future infrastructure upgrades
- Work with local landowners and developers to create plans that are implementable
- County departments and senior leadership must reduce "silo" effect to increase chance of success for commercial development
- Leverage marketing and real estate development resources of Edmonton International Airport to unlock development opportunities at Villeneuve Airport and adjacent fee simple land

Create a Clustered Approach

- Cluster development to reduce infrastructure and servicing costs
- Each cluster of commercial development should have its own positioning so that each cluster is not in competition
- Employment, retail, and residential need to be closer together
- Focus on two to three priority areas rather than spreading development throughout the County
- Build off existing aviation activities at Villeneuve Airport to create an aviation and aerospace cluster
- The introduction of employment along the west side of Highway 28 would create demand for more retail at the Sturgeon Valley Road and Highway 28 intersection.
- Demand for retail and commercial amenity node adjacent to CFB to support the population at the base as well as adjacent neighborhoods.

SWOT Analysis of Sturgeon County

02 REAL ESTATE MARKET OVERVIEW

Introduction

A series of market analyses were conducted for the light industrial, retail, office, and hotel asset classes in the EMR to inform existing market conditions and the optimal development mix for future commercial development in Sturgeon County.

A detailed examination of the EMR's market indicators (rents, vacancy rates, cap rates, etc.) and its component submarkets was undertaken to identify the total amount of new development supportable in Edmonton over the next 20 years, and to estimate each submarket's share of this future growth. Data was collected from a variety of sources including CBRE, Colliers, and NAI. As well, an inventory of existing and future supply in the Region was catalogued to illustrate capacity for development and potential opportunities.

Finally, the supportable demand over a 20 year period for light industrial and retail was estimated by projecting Sturgeon County's achievable market share of local submarket demand in the Region.

Light Industrial Market Overview

Growth in the EMR's industrial market remains relatively flat due to uncertainty in the energy sector, with the metro vacancy rates growing slightly to 7.2% year over year as of Q2 2019.[23] Sluggish performance in the oil and gas industry is offset by steady growth and expansion by transportation and warehousing, maintenance and service companies who are taking advantage of affordable rental rates. Rental rates remain steady, holding at $10.50 per square foot (PSF). Building sales have eclipsed land sales due to the perceived cost and risk associated with preparing land and building new product.

Construction activity is business as usual, with 3.5 million square feet of product currently under construction. The majority of this new construction is occurring on the periphery where land is more affordable. The Nisku-Leduc submarket accounts for a large share of this new construction, with the 1 million square foot Amazon fulfillment center currently under construction. Year-to-date net absorption has been strong, with over 1 million square feet of absorption recorded as of Q3 2019.[24]

North Edmonton Market

Performance in Edmonton's northern submarkets have been stable. Vacancy rates in Northeast and Northwest hold steady at 1.3% and 9.3% respectively, while asking rates hover slightly below Metro averages at $9.00 per SF and $10.00 PSF. Construction activity was quiet in the Northeast submarket, resulting in negative 52,892 SF of absorption. The Northwest's 183,958 square feet positive absorption can be attributed to the completion of MTE Logistics' 500,000 square foot warehouse. Overall, land absorption in both the Northeast and Northwest Industrial Districts have been strong over the past 10 years, averaging an annual absorption of 40 net acres and 84 net acres respectively.[25] Absorption has slowed for heavy industrial zoned land, with demand shifting towards light and business-zoned industrial land.

Acheson continues to feature strong performance in the Metro industrial market. Vacancy rates sit at 4.1%, pushing rental rates to $14.00 per square foot. Easy access to the Henday coupled with affordable land costs continue to bring new construction activity and investment interest to the industrial area. The recent completion of the 400,000 square foot Champion Pet Food facility helped to push absorption to 398,000 square feet in Q3 2019.

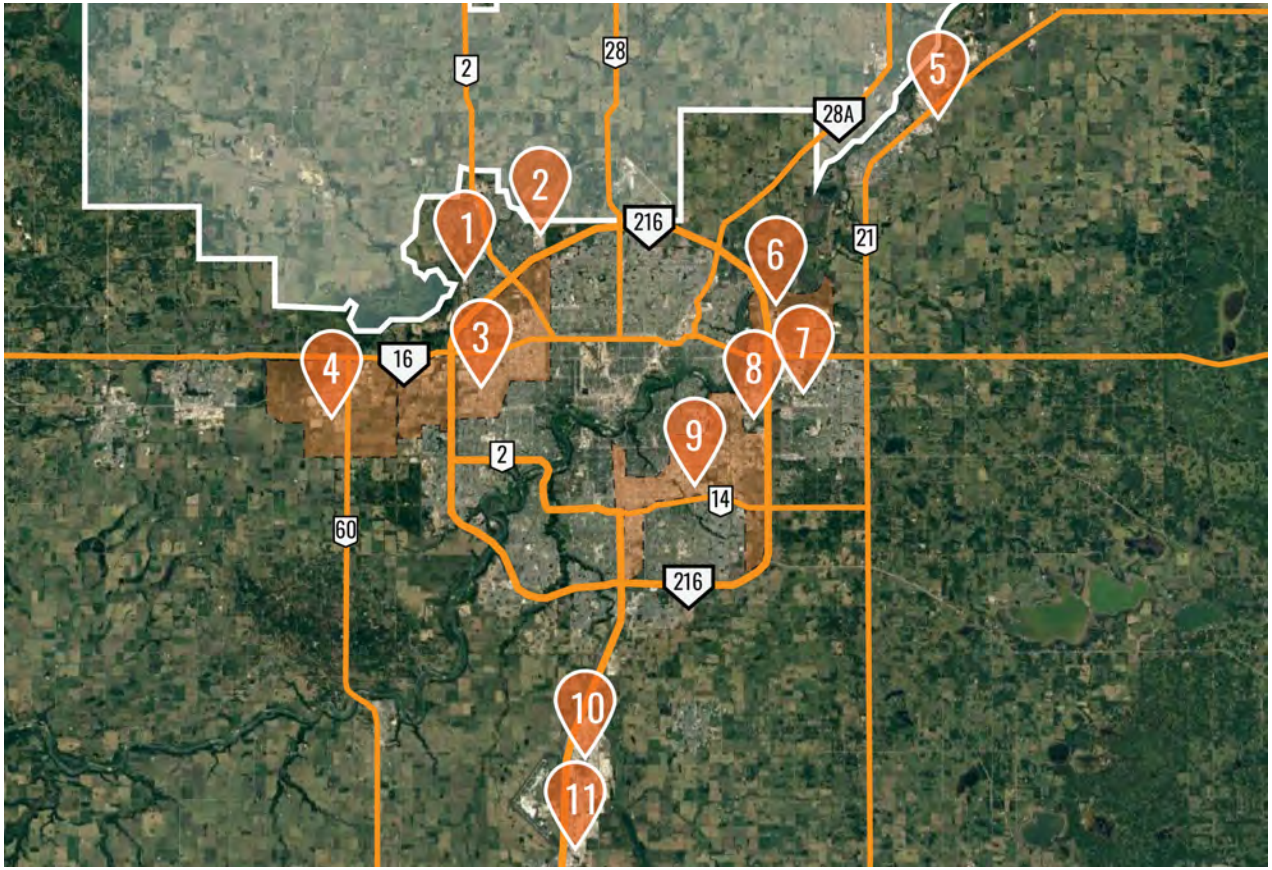


Figure 2.1: Light Industrial Market Supply

#	Development Name	Format	Size (Approx)
1	Riel Business Park	Industrial/Commercial Park	95 acres
2	Campbell Business Park	Industrial/Commercial Park	136 acres
3	Northwest Industrial Area	Industrial District	3,100 acres
4	Acheson Industrial Area	Industrial District	10,000 acres
5	Fort Industrial Park	Industrial Park	300 acres
6	Northeast Industrial Area	Industrial District	1,600 acres
7	Buckingham Business Park	Multi-Tenant/Commercial Park	150 acres
8	Laurin Industrial Park	Multi-Tenant Industrial Park	171 acres
9	South/Southeast Industrial Area	Industrial District	1,900 acres
10	Leduc Industrial Park	Industrial Park	8,000 acres
11	Nisku Business Park	Industrial Park	5,050 acres

Supply Analysis

There is approximately 152 million square feet of industrial space in the Metro Edmonton market. The City of Edmonton's three industrial districts comprise the largest proportion of industrial stock in the region, 79% percent of the Metro product is concentrated in the Northeast, Northwest and South/Southeast Industrial Districts.

The Northwest Industrial District comprises the largest amount of industrial inventory in Metro Edmonton. The Northwest District is home to major logistics, transportation and warehousing companies due to its connectivity to the Anthony Henday Highway, Yellowhead Highway, and CN intermodal facility. McKesson, Loblaws and the Brick are some large end user tenants that occupy warehouse and distribution space. The recently completed MTE Logistix warehouse in the Northwest District was the largest development to be delivered to the Metro Edmonton area in 2019, comprising just over 500,000 square feet.

The Northeast Industrial District has a smaller inventory of industrial product yet supports a number of large companies in the Energy sector such as Mammoet, Kiewit and Gibson Energy.

Supply Analysis

The Northeast and Northwest Industrial Districts comprise of over 800 net acres of undeveloped designated light and medium industrial land. Approximately 70% of this land is considered shovel-ready which means these sites could be developed in the short-term due to zoning and servicing.

Acheson is a prominent industrial area that also contains a significant amount of available land supply for new development. This industrial area continues to attract significant development and investment activity due to its relative affordable cost of land and access to key highway infrastructure. Acheson is home to prominent manufacturing, warehousing, distribution and construction companies such as Sysco, Kal Tire and the North American Construction Group.

Sturgeon County currently has the largest supply of shovel-ready light and medium industrial land available for development in the Metro area. The County should leverage its large proportion of light and medium industrial zoned land to absorb the demand for these land uses in North Edmonton by actively marketing and promoting the development potential of strategic areas.

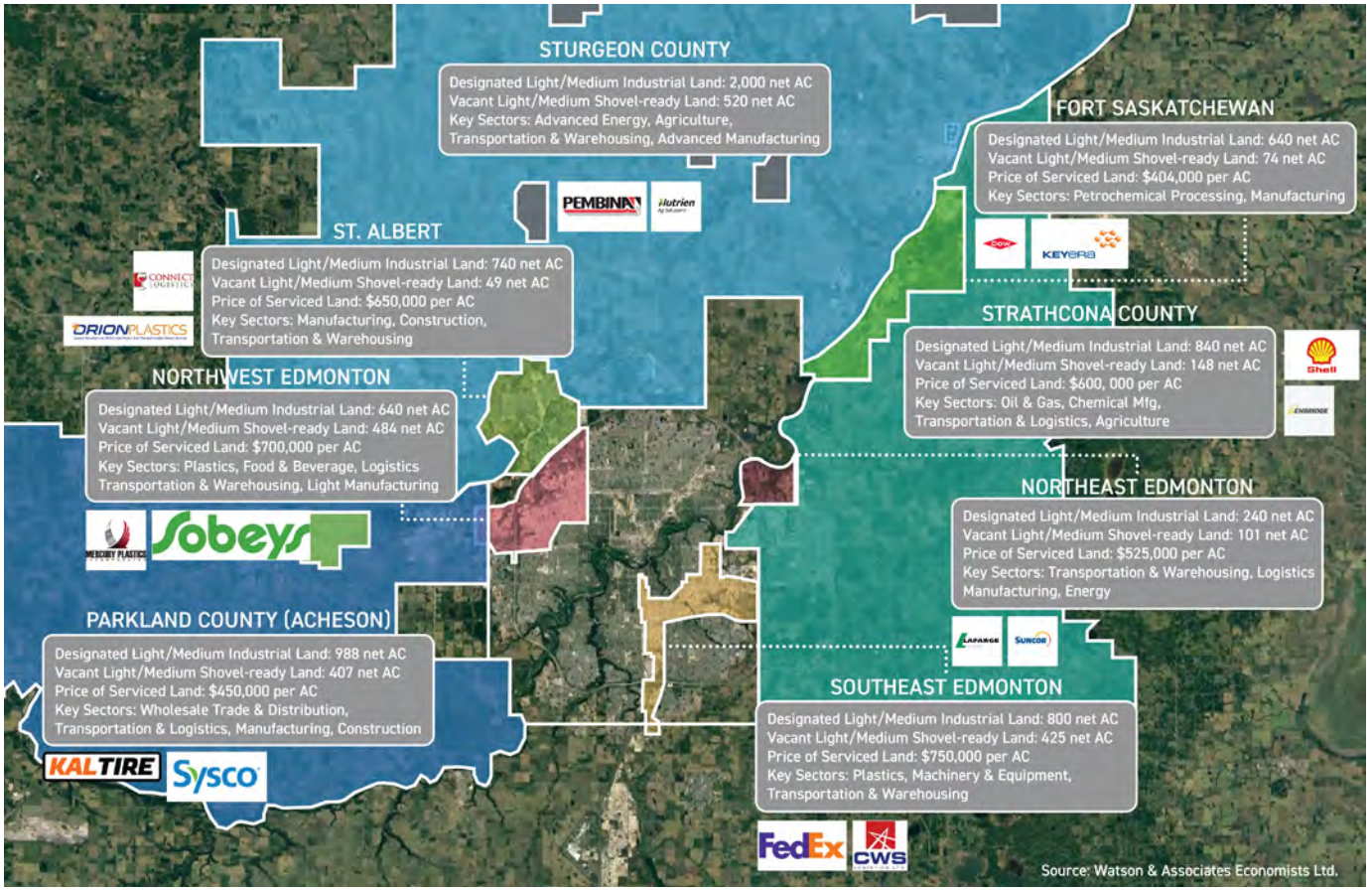


Figure 2.2: Light Industrial Market Supply - Edmonton Metropolitan Region

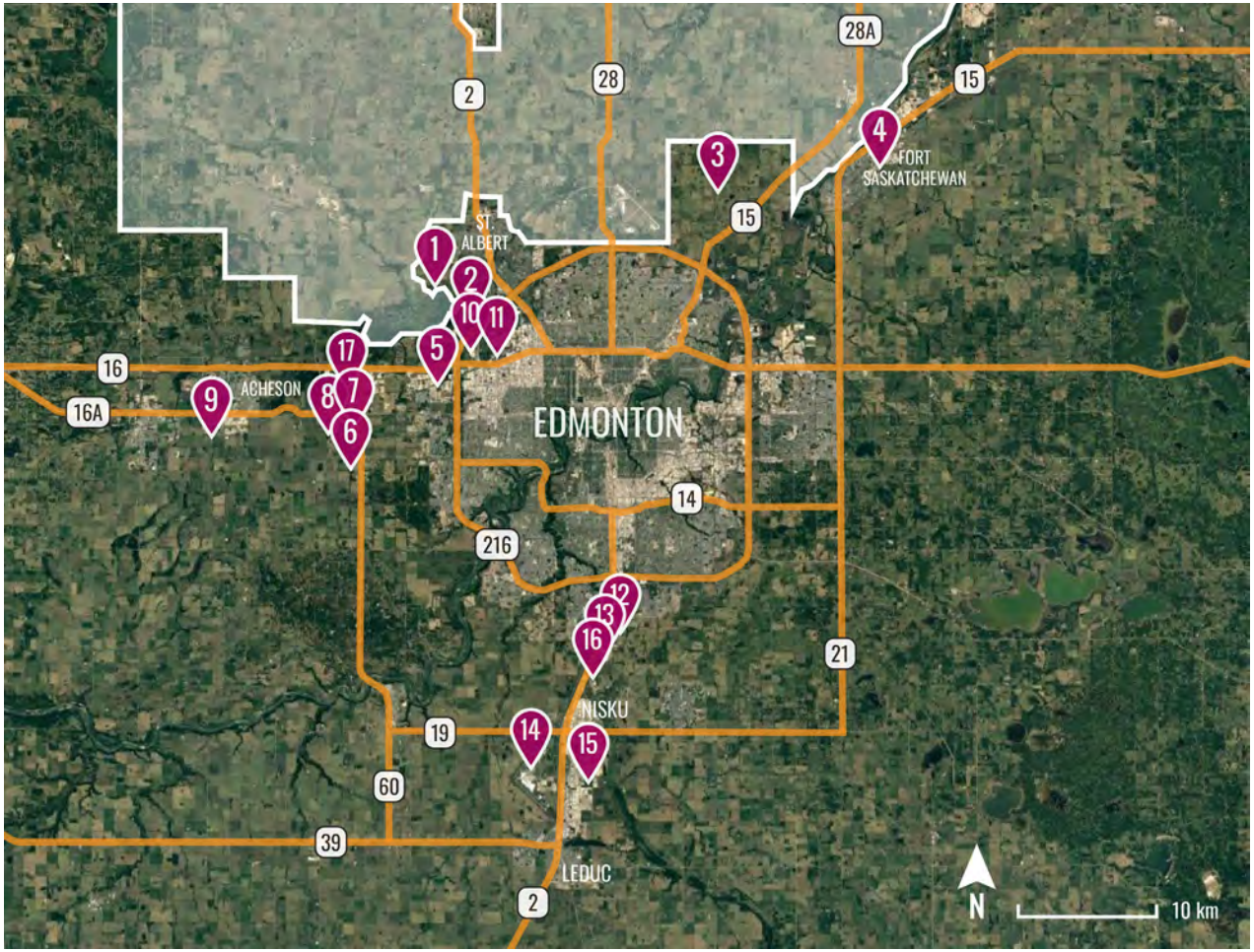


Figure 2.3: Light Industrial Market Supply (Proposed & Under Construction)

#	Development Name	Type	Format	Approx Size (AC)	Status
1	Lakeview Business District	Industrial/Commercial District	Multi-tenant	617	Proposed
2	Anthony Henday Business Park	Business Park (Light Industrial, Retail)	Multi-tenant	129	Under Construction
3	Edmonton Energy and Technology Park	Industrial Park	Multi-tenant	8400	Proposed
4	Heartland Industrial Park	Industrial Park	Multi-tenant	1000	Under Construction
5	Henday Industrial Park	Industrial Park	Multi-tenant	238	Under Construction
6	Highlands Business Park	Industrial Park	Multi-tenant	312	Proposed
7	Acheson Business Park	Business Park (Light Industrial, Hotel, Office, Retail)	Multi-tenant	37	Proposed
8	Southview Business Park	Industrial Park	Multi-tenant	120	Under Construction
9	Campsite Industrial Park	Industrial Park	Multi-tenant	300	Under Construction
10	Apex Business Park - Building 1	Business Park (Flex Office)	Multi-tenant	5	Under Construction
11	Apex Business Park - McKesson Building	Business Park (Flex Office)	Multi-tenant	7	Under Construction
12	Southport Crossing (Buildings 1 & 2)	Business Park (Flex Industrial)	Multi-tenant	5	Under Construction
13	Amazon Fulfillment Facility	Logistics Distribution	Single-use	23	Under Construction
14	Aurora Polaris	Manufacturing	Single-use	7	Under Construction
15	Cannabis Genomics Facility	Manufacturing	Single-use	4	Under Construction
16	Monarch Industrial Business Park (Buildings 1 & 2)	Business Park (Flex Industrial)	Multi-tenant	5	Under Construction
17	SMS Equipment Expansion	Manufacturing	Single-use	4	Under Construction

Supply Analysis

Numerous proposed and under construction developments are slated to expand the Edmonton Metropolitan Region's light industrial supply. This "in-the-pipeline" development includes over 700 acres of industrial land in St. Albert as well as several new industrial parks in the Acheson Industrial Area. A significant cluster of future industrial development is also underway in Nisku. Proximity to Edmonton International Airport and access to the QEII Highway are key factors that make Leduc and Nisku a prime location for new industrial development.

The proposed and under construction supply comprises a mix of single-use developments and multi-tenant sites part of larger business parks or industrial parks. Typologies include flex industrial, flex office, manufacturing, and logistics distribution.

Table 2.1: Industrial Submarket Demand Forecast Model (Excerpt)

Market Analysis Assumptions

Year 1 of Projection	2020
Balanced Vacancy Rate [1]	5.0%
10-Yr Average Annual Absorption SF [2]	4,538,163
Floor-Area Ratio (FAR)	0.50
Rental Premium for New Buildings	20%
Project Annual Rental Rate Increase	2.50%

[1] Vacancy rate at which supply is sufficiently constrained to cause market rent increases.
[2] Source: Colliers, Avison Young

Submarket Summary

	Current Market Conditions (Q2-2019)									Historic Market Conditions (Q2-2014)						
Submarket	Inventory SF	Total Vacancy SF	Vacancy %	Occupied SF	% of Metro Occupied Inventory	5-Year Avg. Net Absorption (SF/Yr)	YTD Delivered SF	Asking Base Rents	Cap Rate	Inventory SF	Total Vacancy SF	Vacancy %	Occupied SF	% of Metro Occupied Inventory	Asking Rents	Cap Rate
Edmonton Northwest	58,535,170	5,443,726	9.3%	53,091,444	37.5%	2,679,397	60,495	$10.00	6.25%	40,985,500	1,291,043	3.1%	39,694,457	40.3%	$10.00	6.00%
Edmonton Northeast	6,451,507	82,344	1.3%	6,369,163	4.5%	1,025,604	0	$9.00	6.25%	1,284,872	43,730	3.4%	1,241,142	1.3%	$9.00	6.00%
Edmonton Southside	52,277,472	3,997,938	7.6%	48,279,534	34.1%	2,968,408	115,000	$9.00	6.25%	34,679,000	1,241,508	3.6%	33,437,492	34.0%	$9.00	6.00%
Edmonton Central	3,738,414	50,497	1.4%	3,687,917	2.6%	(443,307)	0	$14.00	6.00%	5,961,376	56,922	1.0%	5,904,454	6.0%	$14.00	5.75%
Leduc/Nisku	17,533,308	914,552	5.2%	16,618,756	11.7%	1,568,093	0	$12.00	6.50%	9,092,425	314,135	3.5%	8,778,290	8.9%	$12.00	6.25%
St. Albert	3,437,600	46,122	1.3%	3,391,478	2.4%	99,376	0	$13.00	6.25%	2,894,600	-	0.0%	2,894,600	2.9%	$13.00	6.00%
Sherwood Park	4,088,275	260,877	6.4%	3,827,398	2.7%	(37,289)	0	$13.00	6.50%	4,025,800	11,955	0.3%	4,013,845	4.1%	$13.00	6.25%
Acheson	6,766,043	274,495	4.1%	6,491,548	4.6%	793,094	50,000	$14.00	6.50%	2,559,103	33,025	1.3%	2,526,078	2.6%	$14.00	6.25%
Metro Area	**152,827,789**	**11,070,551**	**7.2%**	**141,757,238**	**100.0%**	**3,933,353**	**225,495**	**$10.29**	**6.29%**	**101,482,676**	**2,992,318**	**2.9%**	**98,490,358**	**100.0%**	**$10.38**	**6.02%**

Submarket Forecast Adjustments

	Development Momentum Adjustments				Vacancy-based Adjustments					
Submarket	2014 Aggregate Value	2019 Aggregate Value	Historic 5-Yr Value Increase	Submarket Development Momentum Adjustment	Vacancy SF @ Balanced State	Vacant SF	New Construction SF	Fair Share Absorption SF/Yr	Years to Balance (from 2019)	Additional Warranted New SF
Edmonton Northwest	$6,615,742,833	$8,494,631,040	0.94	0.94	2,926,759	5,443,726	60,495	1,899,649	1.5	-
Edmonton Northeast	$186,171,300	$917,159,472	3.61	3.61	322,575	82,344	-	203,900	0.0	240,231
Edmonton Southside	$5,015,623,800	$6,952,252,896	1.02	1.02	2,613,874	3,997,938	115,000	1,545,603	1.0	-
Edmonton Central	$1,437,606,191	$860,513,967	0.44	0.44	186,921	50,497	-	118,064	0.0	136,424
Leduc/Nisku	$1,685,431,680	$3,068,078,031	1.33	1.33	876,665	914,552	-	532,027	0.1	-
St. Albert	$627,163,333	$705,427,424	0.82	0.82	171,880	46,122	-	108,573	0.0	125,758
Sherwood Park	$834,879,760	$765,479,600	0.67	0.67	204,414	260,877	-	122,529	0.5	-
Acheson	$565,841,472	$1,398,179,569	1.81	1.81	338,302	274,495	50,000	207,818	0.0	13,807
Metro Area	**$16,968,460,370**	**$23,161,721,999**	**1.00**	**1.00**	**7,641,389**	**11,070,551**	**225,495**	**4,538,163**	**0.8**	-

Demand Analysis

An Industrial Demand Analysis was undertaken to estimate the amount of Industrial development that could be feasibly absorbed in Sturgeon County by 2040, and the amount of land it requires.

Estimates were based upon the overall historic absorption of industrial land in the Metro, the relative development momentum of each submarket, the amount of developable land remaining in each, the distance (drive time) from each submarket to Sturgeon County, as well as the County's inherent strengths and weaknesses as a location for industrial development.

The model forecasts demand for 169 acres of industrial development over the next decade (2030) in the County, and 325 acres over the next two decades, in the moderate scenario.

Table 2.2: Sturgeon County Projected Demand for New Industrial Land

Scenario	2025	2030	2035	2040
Conservative				
Gross Bldg Area (SF)	1,038,000	1,932,000	2,826,000	3,719,000
Net Developable Area (Acres)	68.1	126.7	185.4	243.9
Moderate				
Gross Bldg Area (SF)	1,384,000	2,576,000	3,768,000	4,959,000
Net Developable Area (Acres)	90.8	169.0	247.1	325.3
Aggressive				
Gross Bldg Area (SF)	1,730,000	3,220,000	4,710,000	6,199,000
Net Developable Area (Acres)	113.5	211.2	308.9	406.6

2.6M SF
Light Industrial Demand by 2030 (moderate scenario)

5M SF
Light Industrial Demand by 2040 (moderate scenario)

Retail Market Overview

The retail market in Edmonton has remained resilient amidst the uncertainty in the energy sector due to increases in household incomes and disposable income levels. Vacancy rates are holding steady at 3.2% as of Q2 2019 and rents climbed to $22.70 PSF due to sustained retail activity.[26] Much of the new development occurring is following the suburban big-box retail format and is concentrating in areas that are experiencing high population growth, such as South Edmonton.

St. Albert's vacancy rates mirror Metro trends, holding steady at 3.2%. The city has experienced a surge in new retail construction due to sustained population growth and high incomes. The submarket features approximately 1.5 million square feet of organized retail and notable projects like Urban District, Riverside Landing and Bellevue Village will add nearly 600,000 square feet of new product to the market.

The Fort Saskatchewan/Sherwood Park submarket's vacancy rate of 4.7% is higher than the Metro Average, yet still proves to be very healthy. Fort Saskatchewan has grown into a regional retail destination with over 1.5 million square feet of inventory and big box tenants such as Walmart, Canadian Tire and Home Depot.

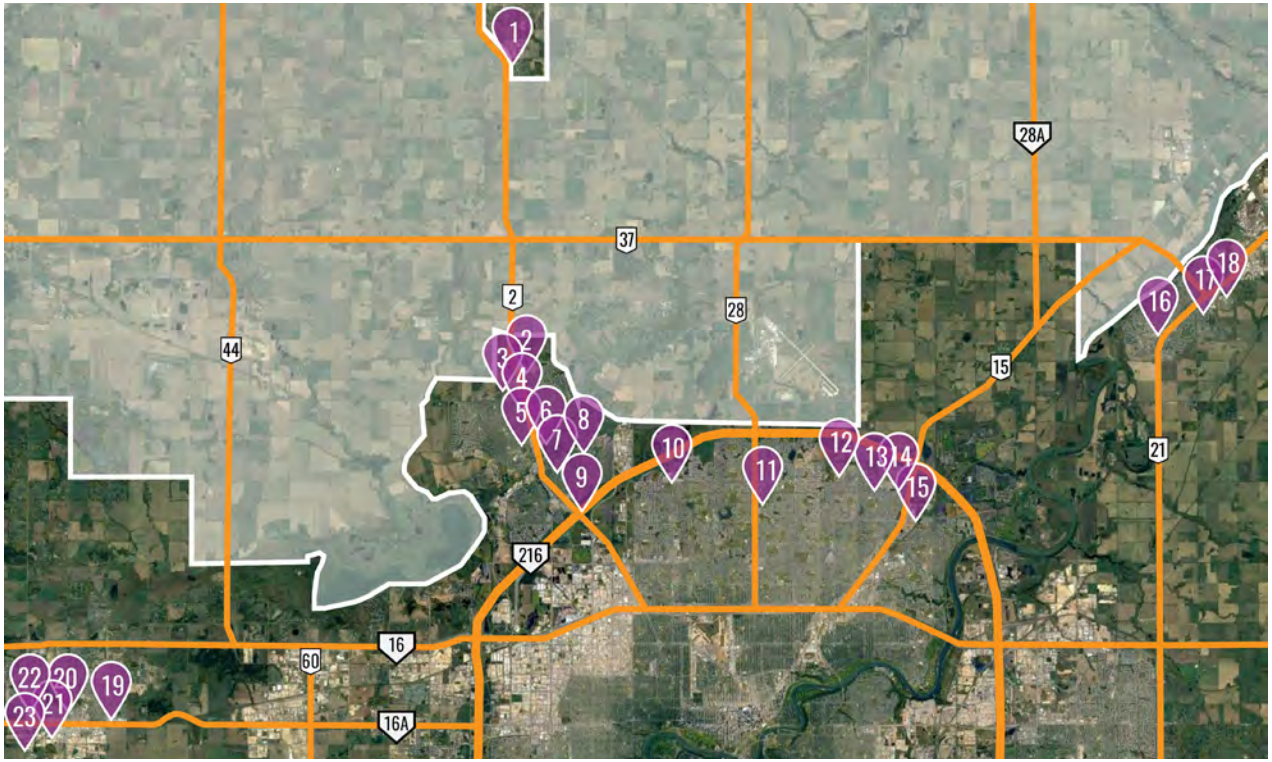


Figure 2.4: Major Retail Market Supply

#	Development Name	Format	Square Footage (Approx.)	Anchors
1	Westmor Landing	Neighborhood Retail Center	600,000	No Frills
2	Erin Ridge Shopping Center	Retail Power Center	480,000	Coscto, Lowes, HomeSense
3	Jensen Lakes Crossing	Neighborhood Retail Center	105,000	Landmark Cinemas, Canadian Brewhouse, Browns Socialhouse
4	Walmart Supercenter	Power Center	200,000	
5	McKenney Corner	Outdoor Retail Center	46,000	Rexall, Earls
6	Inglewood Town Center	Outdoor Retail Center	60,000	Safeway, Long Drugs
7	St. Albert Center	Enclosed Shopping Mall	500,000	Hudson's Bay, Atmosphere, Winners
8	Shops at Boudreau	Mixed-use Plaza (Retail & Office)	52,000	Italian Bakery's Mercato, Hicks Fine Wines
9	Gateway Village	Outdoor Retail Center	105,000	Safeway, CIBC, A&W
10	Albany Market Square	Retail Power Center	407,000	Walmart, London Drugs, Dollarama
11	Namao Center	Neighborhood Retail Center	108,000	Sobeys, Shoppers Drug Mart
12	McConachie Landing - West	Mixed-use (Office/Retail)	50,000	Tim Hortons
13	Hollick Kenyon Landing	Neighborhood Retail	138,000	Sobeys, Shoppers Drug Mart
14	50th Street Market	Neighborhood Retail	80,000	Save-On-Foods, Starbucks
15	Manning Town Center	Outdoor Retail Center	850,000	Cabelo's, Boston Pizza, Lowe's, Canadian Tire
16	Westpark Center	Outdoor Retail Center	98,000	Shoppers Drug Mart, Freson Bros Fresh Market, Tim Hortons
17	SouthPointe	Outdoor Retail Center	140,000	Home Depot, Shoppers Drug Mart, Starbucks
18	Cornerstone	Retail Power Center	385,000	Walmart, Canadian Tire, Staples, Safeway
19	Century Crossing	Retail Power Center	282,000	Sportchek, Winners, Shoppers Drug Mart
20	Westland Market Mall	Neighborhood Shopping Center	270,000	Canadian Tire, Shoppers Drug Mart
21	Sunrise Town Center	Neighborhood Shopping Center	196,000	Rona, Dollarama
22	Westgrove Common	Neighborhood Shopping Center	224,000	Real Canadian Superstore, Home Depot, Canadian Tire
23	Walmart Supercenter	Power Center	215,000	Walmart, Subway, Marks Wearhouse

Supply Analysis

The supply of major organized retail product in the north Edmonton Metro is clustered along major highways and thoroughfares due the high degree of accessibility and visibility. Much of the retail supply includes big box retail tenants such as Costco, Walmart and Home Depot, that serve a large trade area.

There is a significant concentration of large format retail product in St. Albert along St. Albert Trail (Highway 2) which serves as a primary shopping destination for residents of St. Albert and neighboring jurisdictions. St. Albert's population continues to grow rapidly, with new shopping centers and retail concepts being developed as an amenity to support new residential neighborhoods. There is close to 1.5 million square feet of organized retail product in St. Albert.

Fort Saskatchewan, Spruce Grove and North Edmonton also have a significant supply of retail due to their growing population bases. They are primarily characterized by Retail Power Centers and Outdoor Retail Center typologies that are anchored by a big box retailer like Canadian Tire, Winners or Shoppers Drug Mart. These retail centers are auto-oriented and therefore comprise a large amount of surface parking.

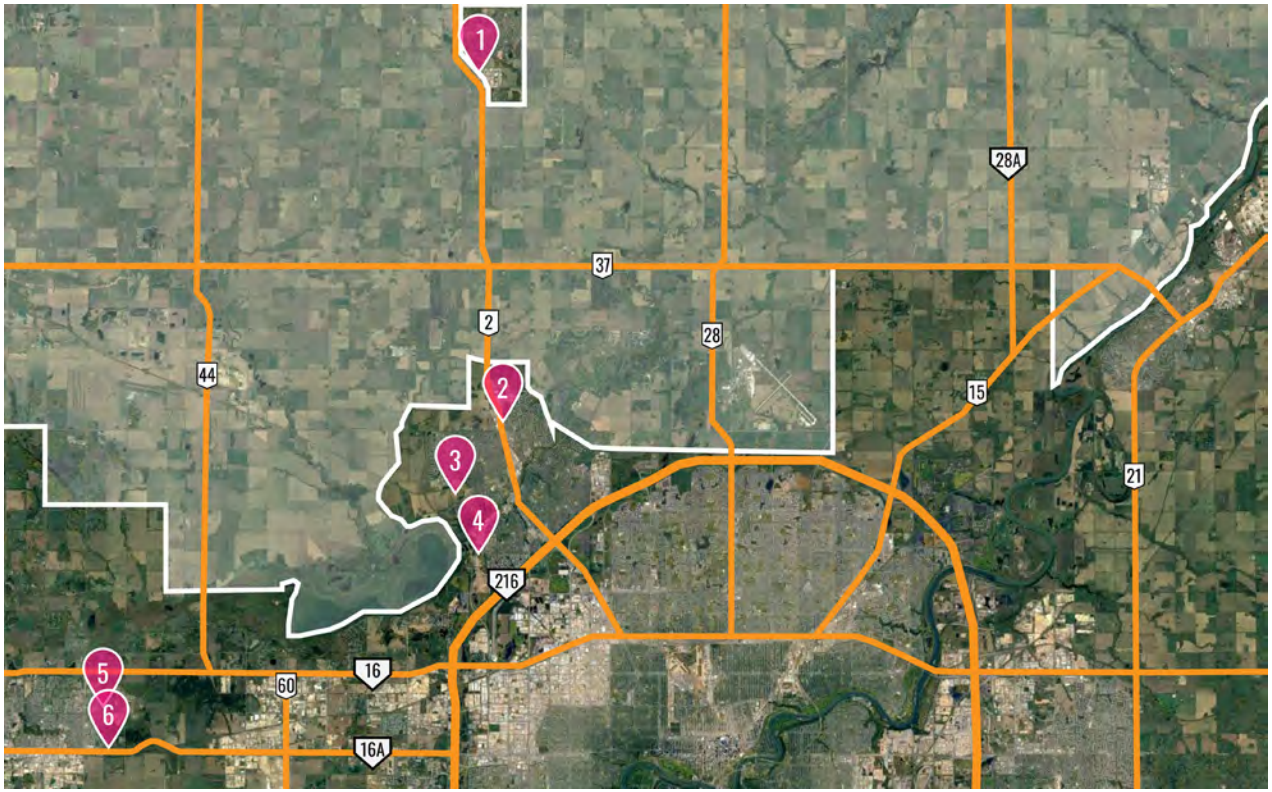


Figure 2.5: Retail Market Supply (Proposed & Under Construction)

#	Development Name	Format	Size (Approx.)	Status
1	100 Street South Corridor Commercial Area	Corridor Commercial	14 acres	Under Construction
2	Urban District	Multi-use (Retail, Office, F&B, Residential)	400,000 SF	Under Construction
3	Riverside Landing	Neighborhood Retail	36,000 SF	Proposed
4	Bellevue Village	Multi-use (Retail, Office, F&B, Hotel)	150,000 SF (Retail)	Under Construction
5	Westwind Center	Outdoor Retail Center	110,000 SF	Under Construction
6	Pioneer Point	Outdoor Retail Center	238,000 SF	Under Construction

Supply Analysis

Retail follows rooftops. New retail development is occurring in jurisdictions that are experiencing significant population growth.

New highway commercial development is being built along 100 Street in Morinville due to the development momentum stemming from the Westmor, Westwinds and South Business Commercial Area Structure Plans. Morinville's population base is growing and therefore will continue to absorb retail demand as residential development builds out.

New retail development in St. Albert is a significant part of the product mix of planned and under construction multi-use projects and master planned communities. The Urban District project will provide an amenity package to support the planned residential units which will include retail, food and beverage, as well as medical and professional buildings. Bellevue is another notable development that is currently under construction. Designed to be a complete and walkable community, it will provide retail, food and beverage, office and personal services in addition to multi-family residential units.

Demand Analysis

Population and Employment projections were used to forecast demand for Retail/F&B space in Sturgeon County over the next 25 years.

Based on the County's income and retail expenditure profile, the average resident is estimated to support 25 SF of shopping, dining and entertainment ("Retail") space across the Metro region. Of this 25 SF, the majority is expected to be spent in neighbouring jurisdictions, with just 20% of spending anticipated to be made in the County. Similarly, the local workforce is expected to support 4 SF of Retail per job based on industry averages, but with 30% leakage to outside the County. Based on these assumptions Sturgeon County could support nearly 200,000 SF of Retail by 2025, growing to 289,000 SF by 2040.

Leakage rates could be reduced further with strategic introduction of Retail/F&B nodes at interceptory locations for local-oriented spending, including Grocery, Pharmacy, Personal Services, Fast Food and Restaurants.

Table 2.3: Sturgeon County Projected Demand for New Retail/F&B Floorspace

Sturgeon County			SUPPORTED SF (across Metro area)					WARRANTED SF (Sturgeon County only)		
			Retail @ 25 SF	Retail @ 4 SF	Total	Population	Employment			
	Population	Employment	Per Pop	Per Job	Retail SF	Leakage	Leakage	Population	Employment	Total
2014	20,600	7,555	515,000	30,220	545,220	80%	30%	103,000	21,154	**124,154**
2015	20,969	7,681	524,230	30,724	554,954	80%	30%	126,353	23,353	**149,705**
2016	21,345	7,809	533,625	31,236	564,861	80%	30%	128,590	25,590	**154,180**
2017	21,728	7,939	543,189	31,757	574,946	80%	30%	130,867	27,867	**158,735**
2018	22,117	8,071	552,925	32,286	585,211	80%	30%	133,185	30,185	**163,370**
2019	22,513	8,206	562,834	32,824	595,658	80%	30%	135,544	32,544	**168,088**
2020	22,917	8,343	572,922	33,371	606,293	80%	30%	137,944	34,944	**172,889**
2021	23,328	8,482	583,190	33,928	617,117	80%	30%	140,387	37,387	**177,775**
2022	23,746	8,623	593,642	34,493	628,135	80%	30%	142,874	39,874	**182,747**
2023	24,171	8,767	604,281	35,068	639,350	80%	30%	145,404	42,404	**187,808**
2024	24,604	8,913	615,112	35,653	650,764	80%	30%	147,979	44,979	**192,959**
2025	25,045	9,062	626,136	36,247	662,383	80%	30%	150,600	47,600	**198,200**
2026	25,494	9,213	637,358	36,851	674,209	80%	30%	153,267	50,267	**203,535**
2027	25,951	9,366	648,781	37,466	686,246	80%	30%	155,982	52,982	**208,964**
2028	26,416	9,523	660,408	38,090	698,498	80%	30%	158,745	55,745	**214,490**
2029	26,890	9,681	672,244	38,725	710,970	80%	30%	161,556	58,556	**220,113**
2030	27,372	9,843	684,293	39,371	723,663	80%	30%	164,418	61,418	**225,836**
2031	27,862	10,007	696,557	40,027	736,584	80%	30%	167,330	64,330	**231,660**
2032	28,362	10,174	709,041	40,694	749,735	80%	30%	170,294	67,294	**237,588**
2033	28,870	10,343	721,748	41,373	763,121	80%	30%	173,310	70,310	**243,621**
2034	29,387	10,516	734,684	42,062	776,746	80%	30%	176,380	73,380	**249,761**
2035	29,914	10,691	747,851	42,763	790,615	80%	30%	179,505	76,505	**256,009**
2036	30,450	10,869	761,254	43,476	804,731	80%	30%	182,684	79,684	**262,369**
2037	30,996	11,050	774,898	44,201	819,099	80%	30%	185,920	82,920	**268,841**
2038	31,551	11,234	788,786	44,938	833,724	80%	30%	189,214	86,214	**275,427**
2039	32,117	11,422	802,923	45,687	848,610	80%	30%	192,565	89,565	**282,131**
2040	32,693	11,612	817,313	46,449	863,762	80%	30%	195,977	92,977	**288,953**
2041	33,278	11,806	831,961	47,223	879,184	80%	30%	199,448	96,448	**295,896**
2042	33,875	12,003	846,872	48,010	894,882	80%	30%	202,981	99,981	**302,963**
2043	34,482	12,203	862,050	48,810	910,860	80%	30%	206,577	103,577	**310,154**
2044	35,100	12,406	877,500	49,624	927,124	80%	30%	210,237	107,237	**317,474**

226K SF
Retail Demand by 2030

289K SF
Retail Demand by 2040

Office Market Overview

Office market conditions in Metro Edmonton have stagnated relative to other asset classes with vacancy rates and absorption remaining flat. Vacancy rates continue to hover around 20% as of Q3 2019 and net absorption to date was negative -270,112 square feet. This is due to reduced office footprints, lack of new supply coming online, a reduction of new office tenants entering the market, and the consolidation of business operations to increase efficiencies.[27]

Metro rental rates continue to remain flat, holding at $18 per square foot. There is 231,881 square feet of new product under construction, with the suburban submarkets proving to be more active than the downtown.

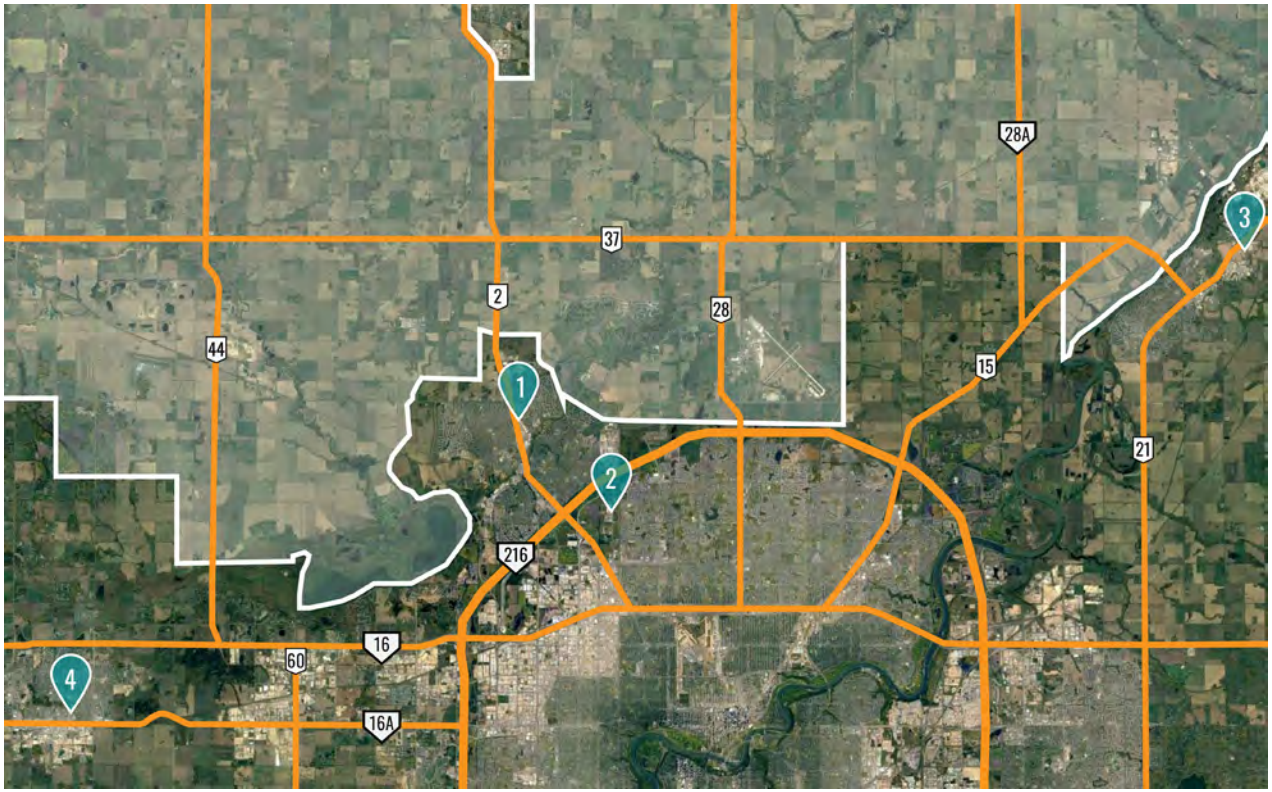


Figure 2.6: Office Market Supply

#	Development Name	Format	Size (Approx)
1	Summit Office Node	Mixed-Use (Office & Retail)	72,173 SF
2	Rampart Business Center	Flex Office	142,000 SF
3	Heartland Center	Flex Office	177,200 SF
4	Queen Street Place	Multi-Tenant Medical Office Building	70,000 SF

Supply Analysis

There is a minimal amount of office product located in the north Edmonton Metro as the majority of new office development is occurring downtown and in suburban markets connected by Light Rail Transit (LRT). The majority of office supply is housed in a mixed-use development and includes professional service and medical tenants.

Flex office is also a common format due to the predominance warehousing and logistics companies in the area. Flex office is office product that contains warehouse, manufacturing, processing, or assembly facilities within the same building, however the office component is greater than 50% of the entire leasable area.

High vacancy rates in the Metro market, coupled with the County's relatively rural nature challenges the viability of office development in Sturgeon County in the immediate term. An office demand analysis has not been included due to the limited opportunities for new office product.

Hotel Market Overview

The hotel market in the Edmonton Metropolitan Region has experienced a steady decline in performance, with Occupancy Rates, Average Daily Rates (ADR), and Revenues Per Available Room (RevPAR) decreasing since 2012.[28] According to the Alberta Hotel & Lodging Association, Edmonton's hotel market reported the following metrics as of fall 2019:

- **Occupancy Rate of 58%**
- **ADR of $130**
- **RevPAR of $76**

Edmonton's Occupancy Rate, ADR, and RevPAR are all below the 2019 national average. Its RevPAR trails those of several major Canadian metropolitan areas including Vancouver, Toronto, Montreal, Ottawa, Calgary, and Winnipeg.

In 2018, Edmonton International Airport (YEG) experienced an uptick in air passenger volumes of 6.5%. The development of new visitor attractions such as Rogers Place has also contributed to the recent rise in Edmonton's tourism.

Regardless of tourism numbers, key factor behind Edmonton's declining hotel market can be attributed to the downturn of Alberta's oil industry. Sinking prices and production of oil and gas has resulted in less foreign activity and business operations, therefore lowering hotel occupancies and revenues.

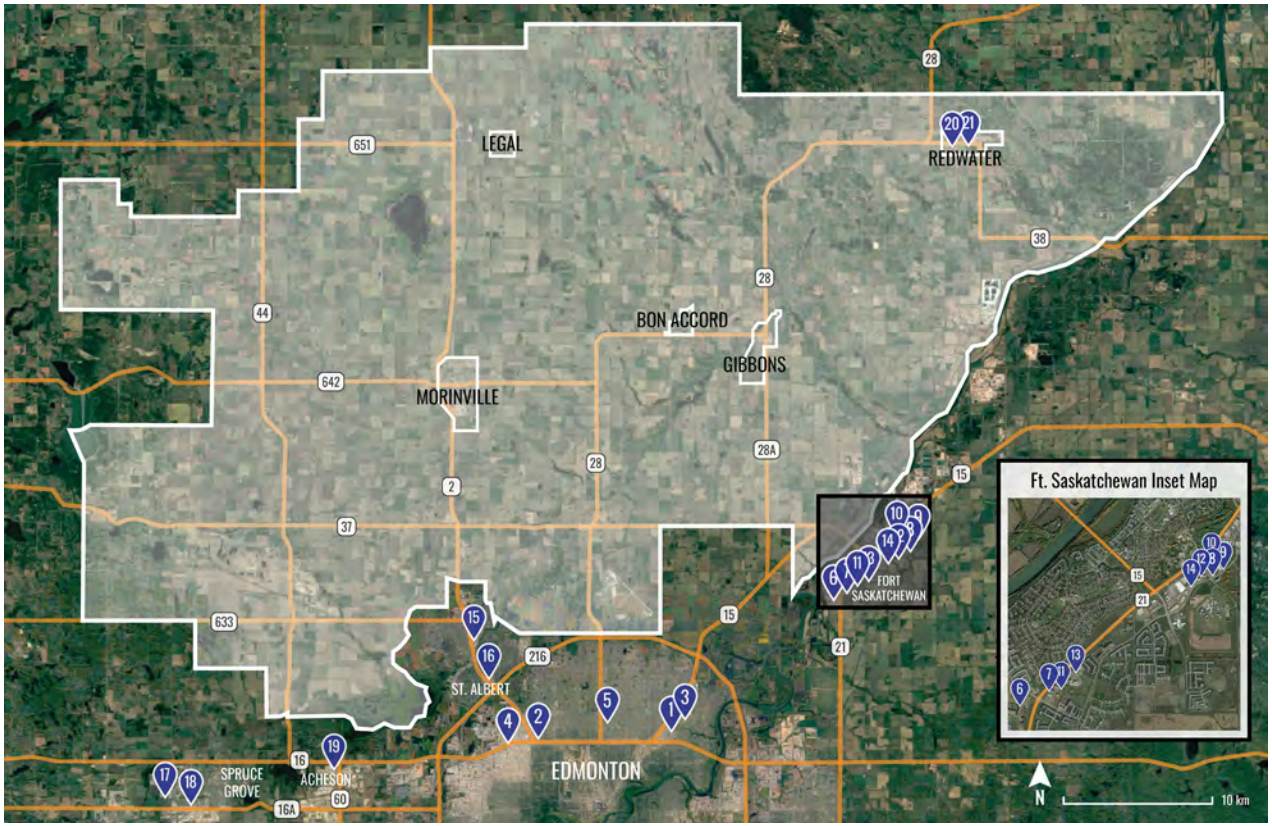


Figure 2.7: Hotel Market Supply

#	Development Name	City	Number of Rooms	Class (Stars)
1	Century Casino & Hotel Edmonton	Edmonton	26	3
2	Chateau Nova Yellowhead	Edmonton	127	3
3	Holiday Inn Express & Suites Edmonton North	Edmonton	95	2
4	Ramada by Wyndham Edmonton Yellowhead NW	Edmonton	153	3
5	Rosslyn Inn & Suites	Edmonton	92	2
6	Best Western Plus Fort Saskatchewan Inn & Suites	Fort Saskatchewan	100	3
7	Comfort Inn & Suites	Fort Saskatchewan	114	3
8	Hampton Inn by Hilton Fort Saskatchewan	Fort Saskatchewan	124	3
9	Holiday Inn Express & Suites Fort Saskatchewan	Fort Saskatchewan	128	2
10	Lakeview Inns & Suites - Fort Saskatchewan	Fort Saskatchewan	69	3
11	Southfort Inn	Fort Saskatchewan	92	2
12	Stars Inn and Suites	Fort Saskatchewan	99	2
13	Super 8 by Wyndham Fort Saskatchewan	Fort Saskatchewan	96	2
14	The Kanata Inns - Fort Saskatchewan Hotel	Fort Saskatchewan	97	3
15	Best Western Plus The Inn at St. Albert	St. Albert	90	3
16	St Albert Inn & Suites	St. Albert	148	3
17	Holiday Inn Express & Suites	Spruce Grove	130	2
18	Travelodge Inn & Suites by Wyndham Spruce Grove	Spruce Grove	48	2
19	Nova Inn Acheson	Acheson	103	3
20	Days Inn Wyndham Redwater	Redwater	89	2
21	Paradise Inn & Suites	Redwater	78	2

Supply Analysis

There are currently no hotels in Sturgeon County. There are two hotels in Redwater, the municipality closest to Alberta's Industrial Heartland. Both hotels in Redwater are classified as 2-star hotels. There is also a large supply of hotels south of Sturgeon County. Notably, Fort Saskatchewan has a significant cluster of hotels located off Highways 15 and 21 adjacent to commercial uses.

Hotels in surrounding municipalities are situated near regional highway infrastructure, suggesting that access and visibility are key factors in the location of these hotels.

Demand Analysis

Hotel demand in Sturgeon County is limited due to the primarily rural nature of the County. Hotels typically locate in high traffic locations where there is ample residential and employment density, or major anchors such as an international airport. While there is opportunity in Sturgeon Valley due to the proximity to St. Albert, the recent construction and future planning of several hotels on the north side of the City negates the potential for hotel development in the near to medium term.

Stakeholder discussions have demonstrated that there is interest from groups such as Villeneuve Airport, CFB Edmonton, and the Industrial Heartland in having a hotel outside of St. Albert, Fort Saskatchewan, and Edmonton. Demand from these users does not quantify a new hotel, however collaborating with the Town of Morinville on a hotel within or on the edges of the Town's boundaries may be feasible due to its central location in the County and growing residential population.

A suburban resident on average supports 0.01 hotel rooms. Using the official population (2016 Census) of 9,893, the Town of Morinville could support 99 hotel rooms. The Word Economic Forum (using data from the UN World Tourism Organization) states that Canada has 1.2 hotel rooms per 100 population. This method calculates that the Town could support 119 hotel rooms.

Including supplemental demand from the above noted anchors, it is recommended that Sturgeon County explore collaborative hotel opportunities with the Town of Morinville due to the following factors:

- Central location in Sturgeon County
- No modern 2 or 3-star hotel currently present in the area
- Distance is far enough from Edmonton, St. Albert, and Fort Saskatchewan
- Growing residential population in Morinville
- Will support Sturgeon County anchors

Overall Development Program & Takeaways

Light Industrial Market

- Edmonton's northern submarkets continue to experience stable industrial performance due to sustained demand from end user tenants seeking space for wholesale trade and distribution, as well as transportation and warehousing.
- The large proportion of shovel-ready medium industrial land in Sturgeon Industrial Park presents an opportunity to additionally target light industrial users that are aligned with the County's well-established economic sectors.
- There is demand for light industrial product in the north Edmonton metro submarket moving forward, and Sturgeon County is well positioned to capture a significant amount of this demand.

Retail Market

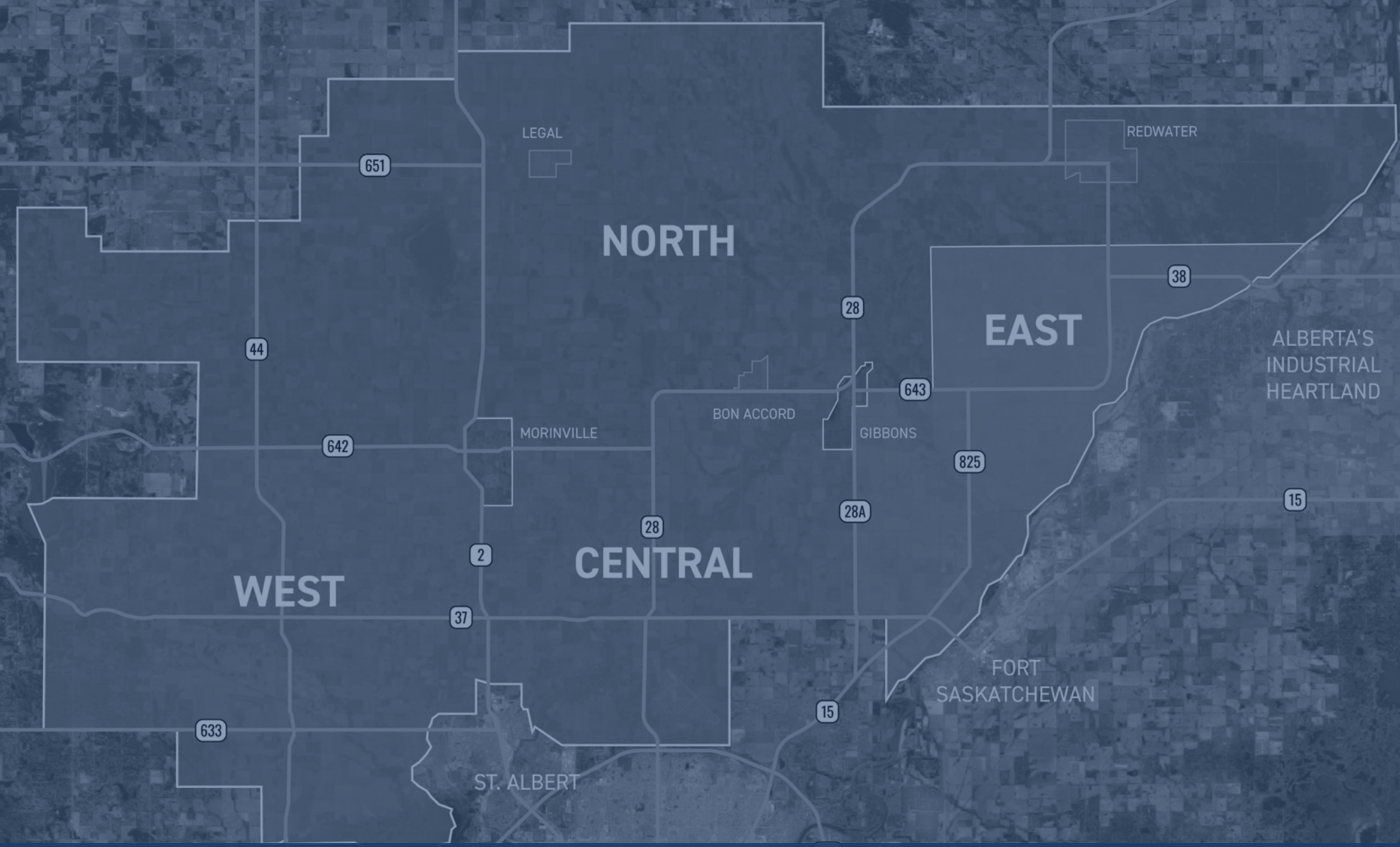
- Low vacancy rates and rising rental prices provide favorable conditions for new retail development in the Edmonton Metro. New retail construction is occurring in submarkets that are experiencing residential construction and population growth and typically follow a big box format.
- Sturgeon Valley and CFB have the largest concentrations of residential development in the County and therefore could support new retail development, if positioned correctly. Proposed residential development in the Sturgeon Valley ASP provides opportunity for a higher end retail node that is differentiated from the concentration of big box retail along St. Albert Trail and can reduce leakage from the County. As residential development moves east in Sturgeon Valley, a service commercial node code be supported along the Highway 28 corridor.

Office Market

- New office development is concentrated in the downtown market and in the south Edmonton submarket. High vacancy rates that are expected to stay near 20% in the medium term negate speculative office development
- Supply of office product in northern Edmonton submarkets is minimal and therefore Sturgeon County should focus on a flex industrial and flex office typologies which provide a small percentage of in-house office space to support light industrial activities.

Hotel Market

- There is a large supply of hotels in St. Albert, Parkland County and Fort Saskatchewan which challenges the viability of hotel construction in the southern part of the County.
- Morinville's sustained population growth and distance from St. Albert could support a mid-scale (2.5 to 3 star) hotel as part of the build out of the new commercial development along 100 Street. The County could also explore the opportunity of locating a hotel on the edges of the Town.



03 DEVELOPMENT DISTRICTS

Introduction

Sturgeon County was divided into four Development Districts based on an analysis of predominant land uses, economic anchors, major transportation corridors, stakeholder feedback and conversations with Sturgeon County Economic Development.

The division of the County into four distinct Development Districts allowed for a more detailed analysis of the development realities of each district from a market, development, transportation and servicing perspective. This analysis has been synthesized into a "Strengths, Challenges, and Opportunities" assessment. The findings from this analysis informed the Priority Area identification as well as the land use and development program allocation.

The four Development Districts are:

- **West Development District**
- **Central Development District**
- **East Development District**
- **North Development District**

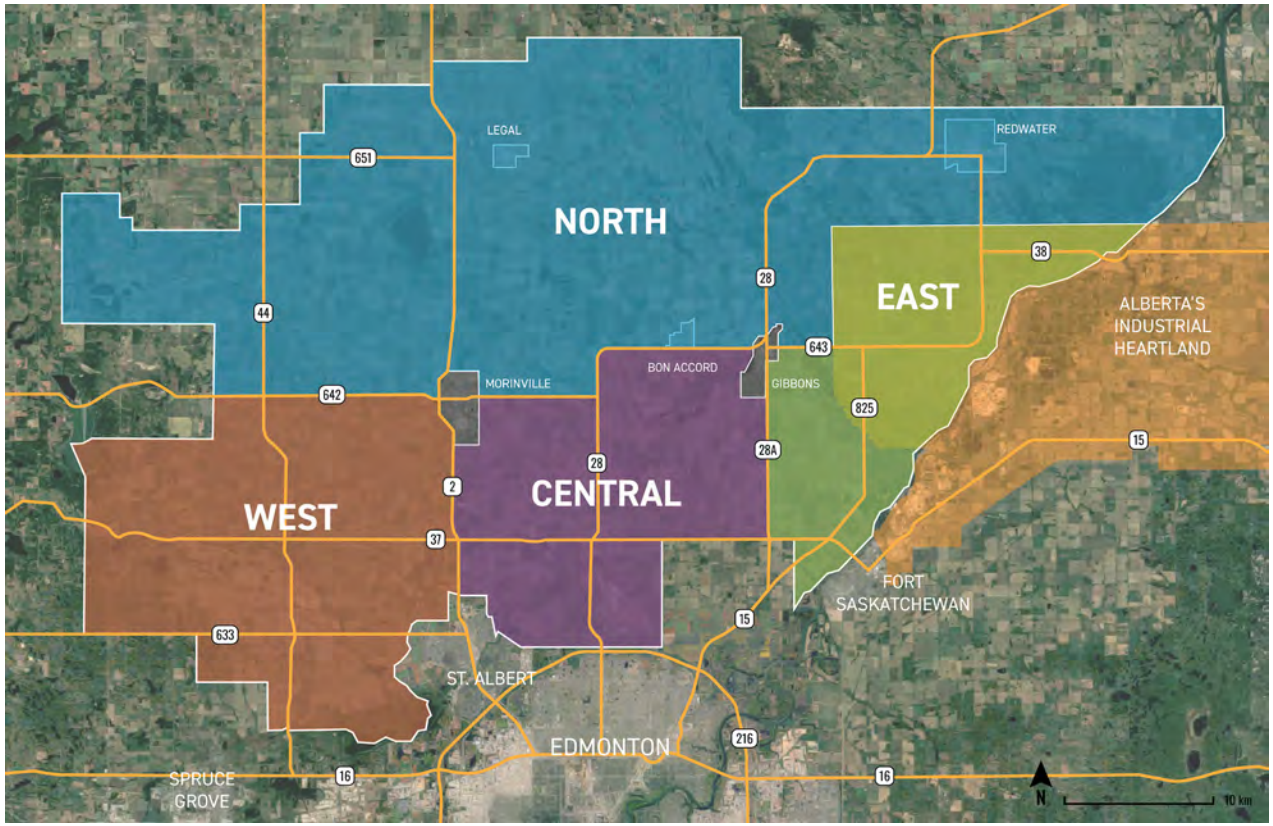
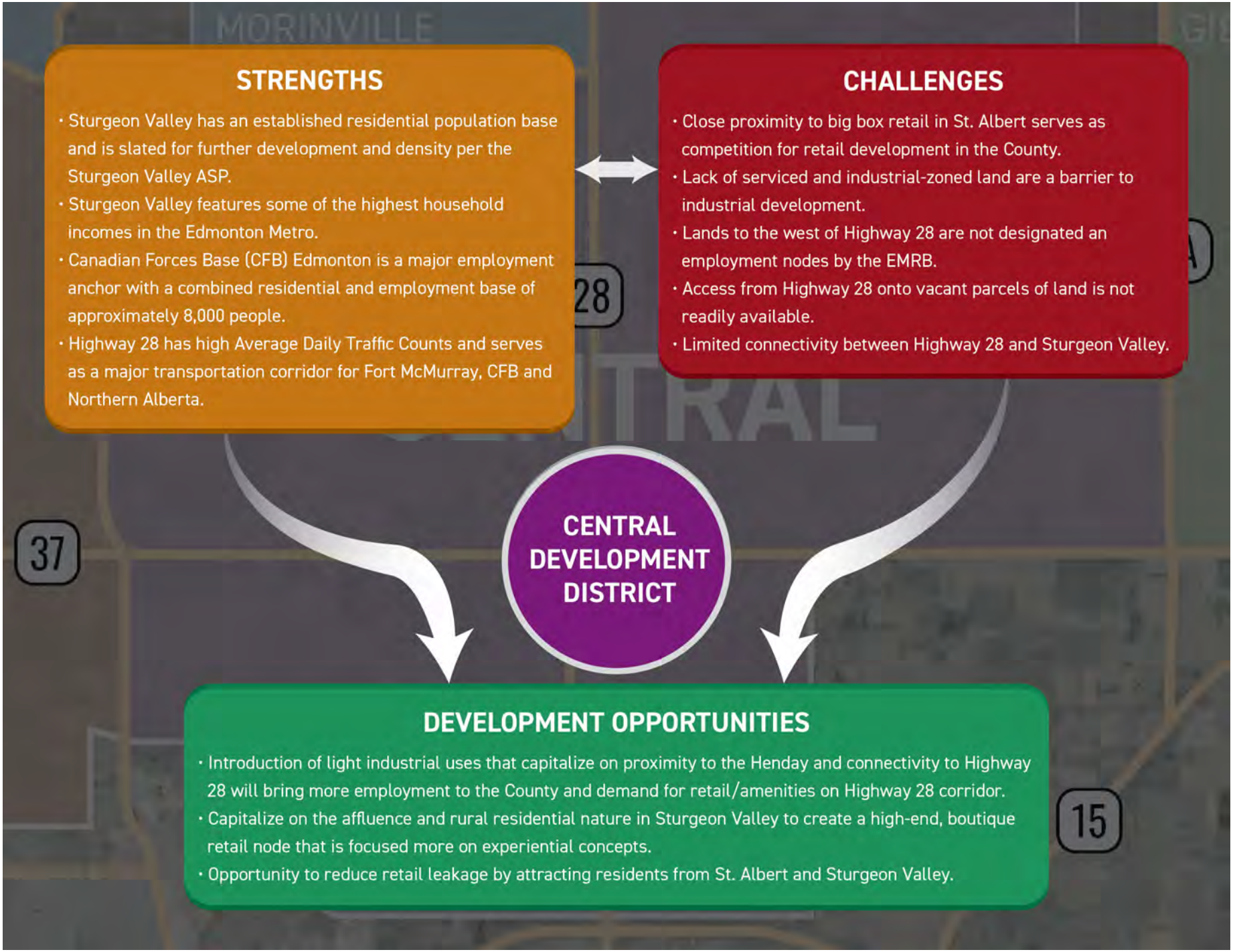


Figure 3.1: Sturgeon County Development Districts

STRENGTHS
• Villeneuve Airport has designated approximately 160 acres of land for future light industrial development in the 2019-2023 Strategic Plan.
• Likely lower cost for servicing and infrastructure.
• The Edmonton Metropolitan Region Growth Plan designates Villeneuve Airport as a major employment node.
• Zoning amendments on Airport land do not require approval from the EMRB.
• Connectivity to Yellowhead Trail and Highway 44, which is a key trucking corridor.
CHALLENGES
• Close proximity to the Acheson and Northwest Edmonton Industrial areas, which are well positioned to capture a portion of future demand for light industrial product.
• Lacks direct access to the Anthony Henday Drive.
• Villeneuve Airport can only dispose of land via a land lease which impacts the viability of development.
WEST DEVELOPMENT DISTRICT
DEVELOPMENT OPPORTUNITIES
• Leverage Edmonton International Airport as a strategic partner to unlock the development opportunities at Villeneuve Airport.
• Villeneuve Airport's existing recreational flying and training facility and general aviation activities coupled with its large tract of available land provide the supportive infrastructure to establish an Aviation/Aerospace hub at Villeneuve.
• Development of Villeneuve Airport's light industrial pocket could build development momentum on the fee simple land adjacent to the airport lands.

STRENGTHS
• Cluster of agriculture manufacturing and warehousing activities at Legal Crossroads Industrial Park.
• G3 and Westmor Grain Terminals are major economic anchors that help to grow the County's Agriculture sector.
• Redwater Provincial Recreation Area offers year-round activities such as snowmobiling in the winter and hiking in the summer.
CHALLENGES
• Servicing is limited and would be extremely costly to introduce to more remote areas of the County.
• Lack of critical mass and development precedent in the Northern part of the County.
• The distance from the Anthony Henday Drive is too far to support light industrial development.
NORTH DEVELOPMENT DISTRICT
DEVELOPMENT OPPORTUNITIES
• As Sturgeon County builds out and generates critical mass, there could be development in the north in the long term.
• Development is challenged in the short term due to servicing issues and distance to established urban areas with a growing population base.
28
643
GIBBONS


STRENGTHS
• Sturgeon Valley has an established residential population base and is slated for further development and density per the Sturgeon Valley ASP.
• Sturgeon Valley features some of the highest household incomes in the Edmonton Metro.
• Canadian Forces Base (CFB) Edmonton is a major employment anchor with a combined residential and employment base of approximately 8,000 people.
• Highway 28 has high Average Daily Traffic Counts and serves as a major transportation corridor for Fort McMurray, CFB and Northern Alberta.
CHALLENGES
• Close proximity to big box retail in St. Albert serves as competition for retail development in the County.
• Lack of serviced and industrial-zoned land are a barrier to industrial development.
• Lands to the west of Highway 28 are not designated an employment nodes by the EMRB.
• Access from Highway 28 onto vacant parcels of land is not readily available.
• Limited connectivity between Highway 28 and Sturgeon Valley.
CENTRAL DEVELOPMENT DISTRICT
DEVELOPMENT OPPORTUNITIES
• Introduction of light industrial uses that capitalize on proximity to the Henday and connectivity to Highway 28 will bring more employment to the County and demand for retail/amenities on Highway 28 corridor.
• Capitalize on the affluence and rural residential nature in Sturgeon Valley to create a high-end, boutique retail node that is focused more on experiential concepts.
• Opportunity to reduce retail leakage by attracting residents from St. Albert and Sturgeon Valley.

STRENGTHS
• Alberta's Industrial Heartland comprises the largest amount of industrial development and employment in the County.
• Construction of Canada Kuwait Petrochemical facility will bring significant employment and economic benefit to the County.
• Sturgeon Industrial Park has industrial zoning and servicing in place to support further growth and development.
• Sturgeon Industrial Park already has an established base of medium industrial tenants and is designated as a Major Employment Areas under the EMRB.
• Upgrades to Hwy 15, 37, 825 intersection will increase traffic flow to/from the County, particularly Sturgeon Industrial Park.
CHALLENGES
• Limited residential population base challenges the viability of new retail development.
• The district lacks strong precedent of light industrial development typologies.
• Close proximity to Fort Saskatchewan which has a large supply of newly developed big box retail and a growing residential population base
EAST DEVELOPMENT DISTRICT
DEVELOPMENT OPPORTUNITIES
• Leverage the existing infrastructure and critical mass of development to build out Sturgeon Industrial Park.
• Lack of retail and service to support the Heartland and SIP provides an opportunity to capture demand commercial node at intersection of these highways.
• Opportunity to capture truck traffic with a gas bar and service node prior to heading into the City of Edmonton & Fort Saskatchewan.
• The intersection of three highways creates a logical node for commercial activity.
28A
15
825

04 PRIORITY AREA IDENTIFICATION

Introduction

The following section highlights six (6) Opportunity Areas and eight (8) Priority Areas that form the foundation for the selection of the top five (5) immediate term commercial development Priority Areas. The Opportunity Areas, denoted with orange on the following page, are large nodes that represent future opportunities for growth and development. Using the Opportunity Areas map as a guide, the team zoomed into eight Priority Areas that present the highest potential for immediate to medium term commercial development in the County. Figure 4.2 illustrates the general locations of the Priority Areas in pink. These eight Priority Areas were further evaluated to ultimately select the top five Priority Areas for immediate term development.

This section also includes examples of commercial development typologies that could be supported in various Priority Areas in the County. The recommended development typologies section serves as a guide that identifies typical sizes, floor area ratios and general characteristics of commercial development that are viable in targeted areas in the County.

Figure 4.1: Sturgeon County Opportunity Areas

Opportunity Areas

MXD and WSP have identified six (6) opportunity areas that serve as a blueprint for future growth in the County. These opportunity areas were selected due to their proximity to key institutional or economic anchors, precedent commercial development, and the presence of servicing or key transportation infrastructure.

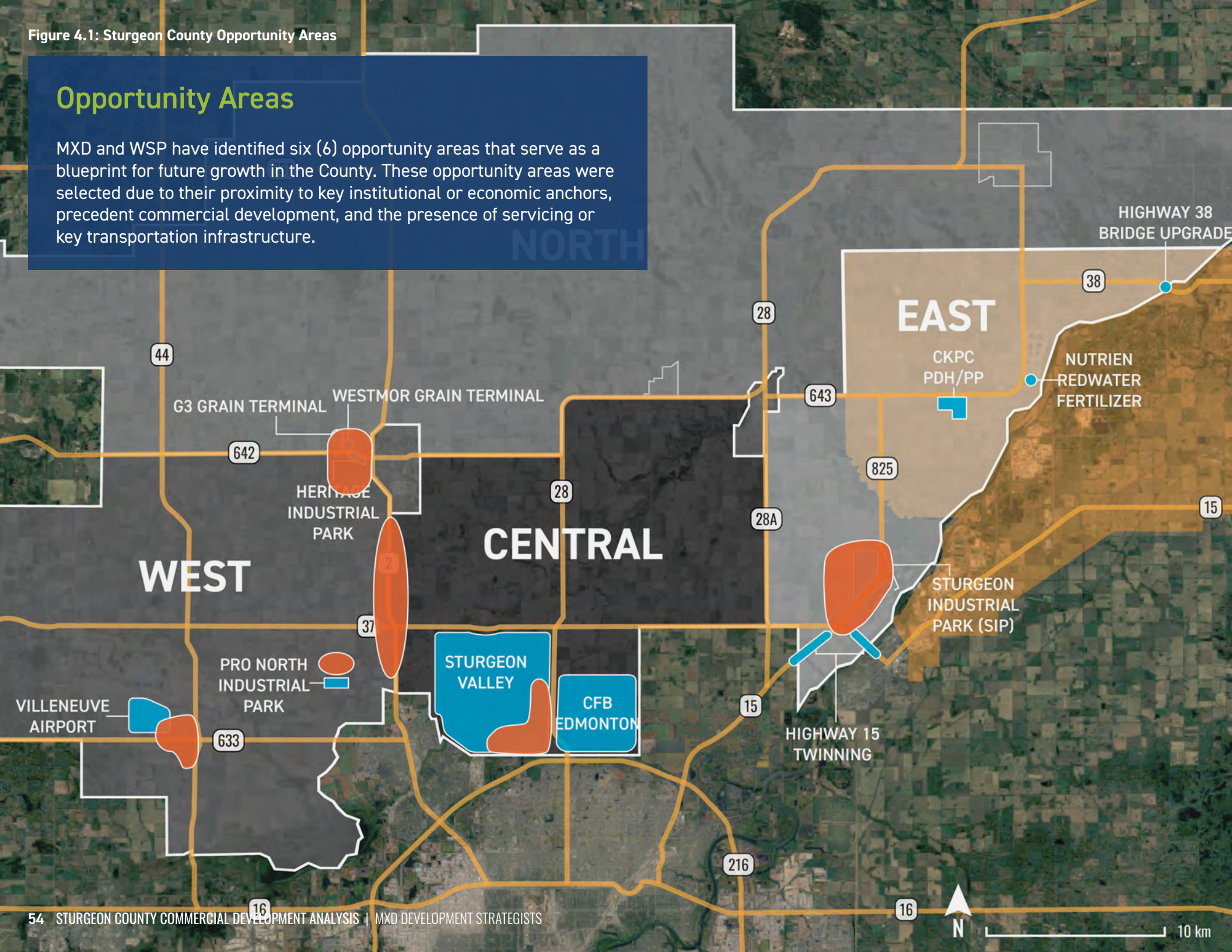
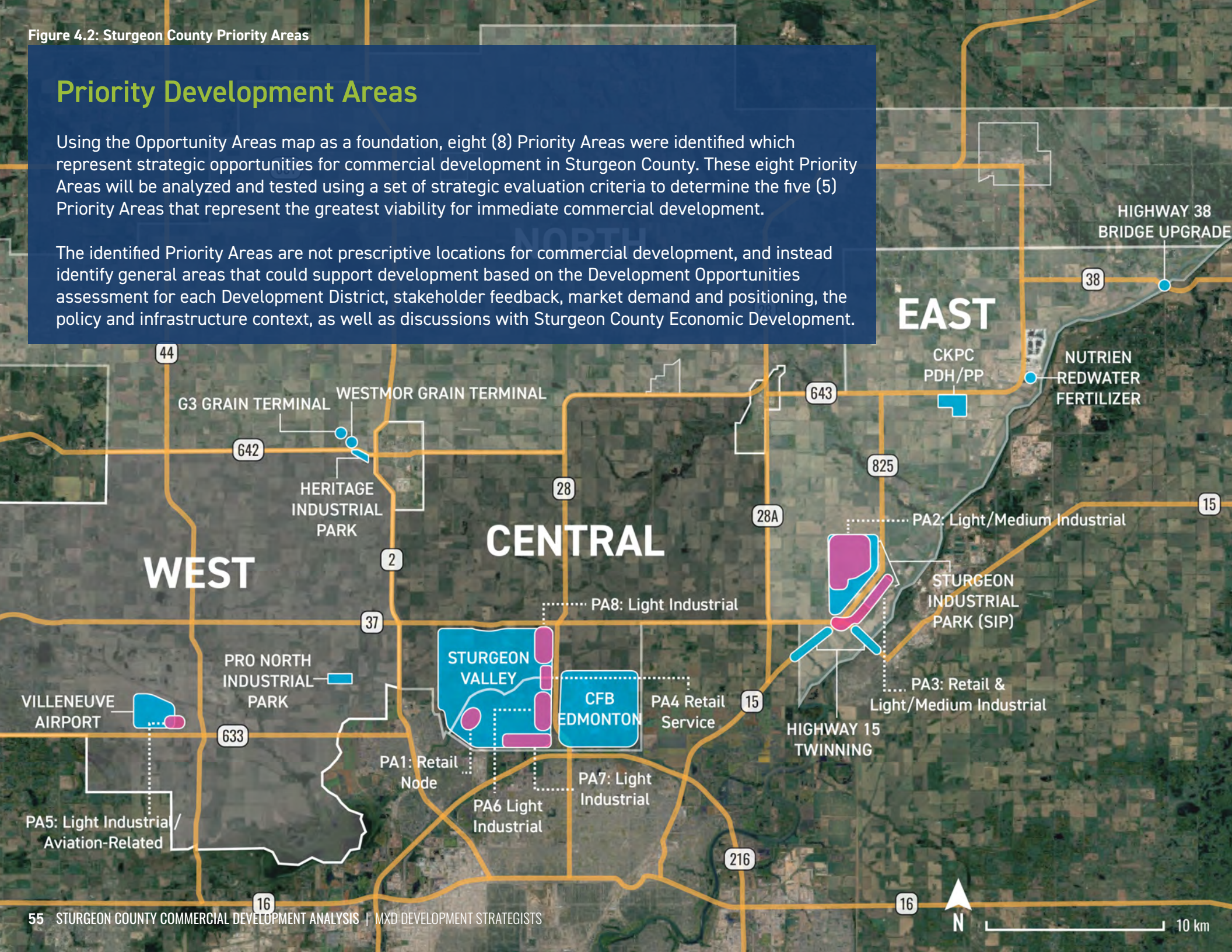


Figure 4.2: Sturgeon County Priority Areas

Priority Development Areas

Using the Opportunity Areas map as a foundation, eight (8) Priority Areas were identified which represent strategic opportunities for commercial development in Sturgeon County. These eight Priority Areas will be analyzed and tested using a set of strategic evaluation criteria to determine the five (5) Priority Areas that represent the greatest viability for immediate commercial development.

The identified Priority Areas are not prescriptive locations for commercial development, and instead identify general areas that could support development based on the Development Opportunities assessment for each Development District, stakeholder feedback, market demand and positioning, the policy and infrastructure context, as well as discussions with Sturgeon County Economic Development.



Priority Area Description

The following section provides a description of the general location of the eight Priority Areas as well as the recommended commercial development typologies and positioning for each respective area. The County should ensure future policy frameworks are flexible enough to accommodate other compatible uses that may not be listed, however the primary land uses and development typologies listed below represent the best opportunities for commercial development in the immediate term.

Priority Area 1: Retail Node

Priority Area 1 is imagined as an upscale, boutique retail node with a focus on experiential food and beverage and shopping concepts, personal services, health and wellness and small-scale medical offices. It is located along Sturgeon Road in southwest Sturgeon Valley. This retail node leverages the proximity to an established population base in Sturgeon Valley that boasts high household incomes.

Priority Area 2: Light/Medium Industrial

Priority Area 2 aims to continue development momentum in Sturgeon Industrial Park by building upon the existing critical mass of medium industrial product. This priority area would be focused on manufacturing, processing and petrochemical support industries that are typically housed in light industrial commercial typologies.

Priority Area 3: Retail & Light/Medium Industrial

Priority Area 3 is focused on a build out of light industrial product in the area of Sturgeon Industrial Park located south of Highway 825. This priority area would also include a retail and service node located at the intersection of Highways 15, 37 and 825. Anchored by a gas station, grab and go food and beverage and convenience retail, this strategic commercial node would serve as an amenity for Sturgeon Industrial Park and the Industrial Heartland.

Priority Area 4: Retail Service

Priority Area 4 highest and best use is a retail and service node that includes grocery, convenience retail, a gas bar, grab and go food and beverage, personal services as well as institutional and recreational amenities. This highway commercial service node would be located along Highway 28 on both sides of Sturgeon Road and would serve as a supportive amenity for future employment growth along the Highway 28 corridor.

Priority Area 5: Light Industrial/Aviation-Related

Priority Area 5 will be a light industrial and aviation related employment node at and around Villeneuve Airport. This development area is located on the east and west side of Range Road 270 at Highway 633 and would include both leased land on Villeneuve Airport as well as the fee simple, County land located directly east of the airport boundary.

Priority Area 6: Light Industrial

Priority Area 6 is positioned as a light industrial employment node that could include warehousing, logistics, flex industrial and manufacturing activities. Development would be located between Highway 28 to the east, Valour Avenue to the south and Sturgeon Road to the north. Locating light industrial product along Highway 28 has the potential to accommodate activities that are complimentary to CFB operations.

Priority Area 7: Light Industrial

Priority Area 7 leverages connectivity to Anthony Henday Drive via 127 Street Northwest to create a strategic light industrial employment pocket that can support a diversity of activities such as logistics, warehousing, flex industrial and manufacturing. This development area is generally located between Valour Avenue to the north, Highway 28 to the east, Anthony Henday Drive to the south and 127 Street Northwest to the west. The presence of a large wetland and other site specific constraints may make future development more difficult and will need to be given careful consideration during future planning processes.

Priority Area 8: Light Industrial

Priority Area 8 represents another opportunity to create a light industrial employment node along Highway 28 that supports logistics, warehousing, flex industrial and manufacturing activities. This priority area would be located between Highway 37 and Sturgeon Road on the west side of Highway 28.

Recommended Development Typologies

The following section illustrates a series of Development Typologies that are aligned with the recommended land uses for the Priority Areas. The table below includes a brief description of the physical form, the level of density, and general development characteristics.

Land Use Category	Typical Building Footprint	Floor Area Ratio	General Development Characteristics
Neighbourhood Retail	30,000 to 100,000 SF	0.25	Provides for the development of smaller scale commercial areas to serve adjacent neighbourhoods within several kilometers. Anchored by a small-format grocery store or pharmacy, with focus on daily services and food & beverage
Highway Convenience Commercial	20,000 to 60,000 SF	0.25	Provides for convenience-scale retail along major arterial corridors, highways, or near major anchors or activity nodes. Anchored by a gas-bar or fast food "grab n go" establishment.
Light Industrial	50,000 to 250,000 SF	0.25	Single-storey industrial buildings with limited outdoor storage space. Encompasses low intensity uses in comparison to medium and heavy industrial. Uses can include high-tech manufacturing, food processing, assembly and testing, etc.
Flex Light Industrial	30,000 to 150,000 SF	0.35	Smaller in size than light industrial product. Lower clear heights and a portion of the space (less than 50%) are fitted for office uses. Designed for companies that want to incorporate both office and industrial or research & development/testing uses in the same building.
Warehouse & Logistics	100,000 to 800,000 SF	0.50	Large-scale buildings for the storage of goods and inventory. This can include warehousing formats for retail wholesaling, logistics & distribution, or cold storage of goods. Modern warehouses have become larger, with higher clear heights, with most now at 28 to 32 foot clear heights. Low parking ratios, but truck turn-arounds and truck storage is often required.

05 LAND USE & INFRASTRUCTURE ASSESSMENT OF PRIORITY AREAS

Priority Area 1: Retail Node
SW Corner of Sturgeon Valley

Policy Alignment

EMRBGP | Sturgeon Valley Special Area Study (2019)

The location of the priority area is within area B of the Sturgeon Valley, which aligns with objective 3.1:

- Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities;

and, Policy 3.1.2 (d)

- A variety of non-residential developments will be incorporated within the planning areas to provide diverse employment opportunities.

As stated within the Special Area Study:

- Area B - Are lands that are likely to be developed first because of access and ease in servicing. Area B is broken into Areas B1 and B2; being lands mainly located either north or south of Valour Road.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this area as "Neighbourhood G" which intends that development is contiguous and supportive of surrounding communities and adjacent landowners. Specifically, the policy statement:

- Facilitating Sturgeon County's emerging Non-Residential sectors, while leveraging diversification and opportunities with the University of Alberta, CFB Edmonton and agricultural producers; and,
- Ensuring growth coincides with efficient municipal service provision and in a manner that does not preclude future infrastructure expansion and development.

Sturgeon Valley Area Structure Plan

The Sturgeon Valley Area Structure Planning process is currently underway. The recommendations of this priority area should be considered through the development of this statutory document.

Sturgeon County Land Use Bylaw

The priority area is currently designated as AG-Agriculture. This zone is not appropriate for this type of development and the recommendation for a retail node must be considered in the drafting of the Sturgeon Valley ASP land use concept. The bylaw should include language that is permissive of service commercial or service retail to allow for flexibility of commercial land use in the Valley.

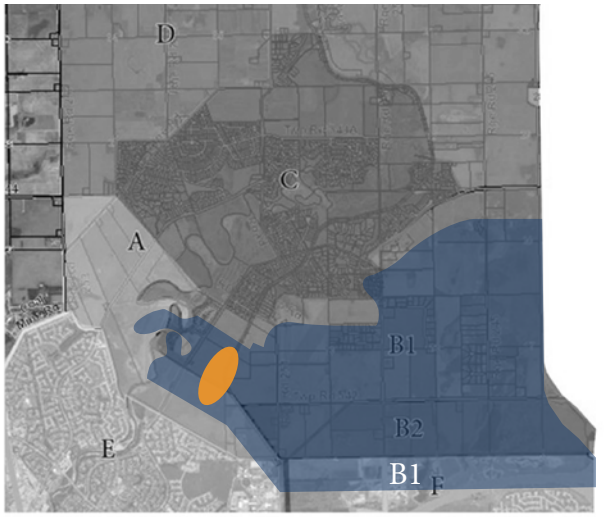


Figure 5.1: Priority Area 1 - Sturgeon Valley ASP

Policy Summary

Priority Area 1 is considered generally in-line with the EMRBGP and the MDP to be developed for commercial use while respecting impacts on adjacent uses and landowners.

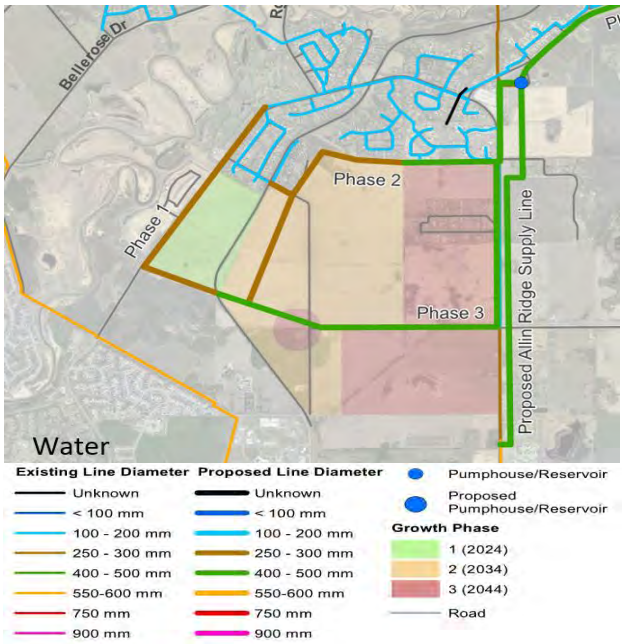
It is recommended that the Sturgeon Valley ASP's planning process consider incorporating this recommendation through an appropriate land use designation. The MDP should be amended to more accurately reflect the specific policy directions of the Sturgeon Valley ASP.

Infrastructure Context

Water

Existing
100-200mm (thin blue lines) services exist for the residential zone area immediately adjacent to PA1, and 550-600mm services (thin orange lines) exist to the south approximately 1.5km away, as shown below.

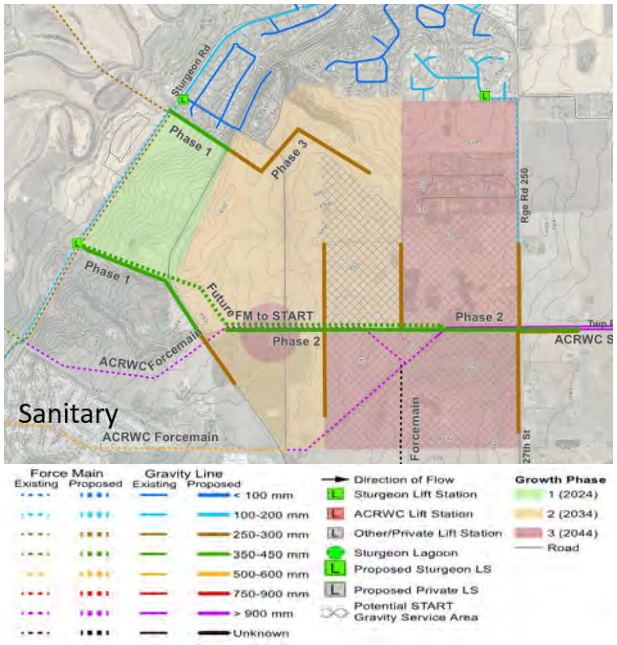
Proposed
There are 250-300mm (thick brown lines) and 400-500mm (thick green lines) proposed as indicated below as well as the Alin Ridge Supply Line.



Sanitary

Existing
<100mm (thin dark blue lines), and 100-200mm (thin blue lines) gravity lines exist in the residential zone. 100-200mm (thin dotted blue lines), and 250-300mm (thin dotted brown lines) forcemains exist to the east of PA1 with existing Sturgeon lift stations as indicated in the green squares below.

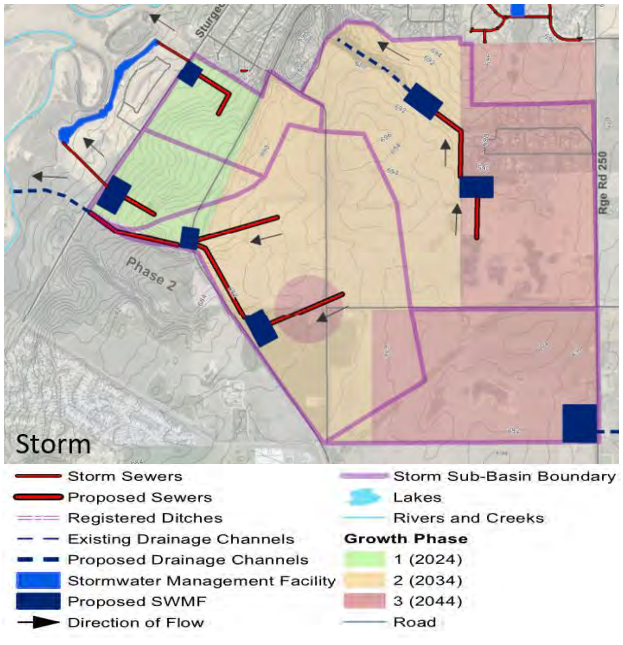
Proposed
Proposed lines include 250-300mm (thick brown lines) and 350-450mm (thick green lines) gravity lines as indicated below. A proposed 350-450mm (thick dotted green line) forcemain is also indicated below.



Storm

Existing
Two storm lines exist (thin red lines) draining northeast with no existing storm ponds in proximity to the site.

Proposed
There are 4 storm ponds proposed in proximity of PA1, as well as storm lines (thick red lines).



Transportation

Existing

PA 1 is planned to be located along Sturgeon Road, which provides a critical link for traffic through the area destined to and from Highway 28 (AB-28). Sturgeon Road is an undivided two-lane collector road with a posted speed limit of 70 km/hr.

Rail

An existing rail line is located within one-kilometre south-east of the PA 1 Site. The rail line is owned and operated by CN Rail.

Upgrades Required

A range of policies have been developed for the transportation network to inform the potential upgrades required to facilitate the development of PA 1- Retail Node.

Policies

- The County's Municipal Development Plan (MDP) has proposed the extension of 127 Street Northwest to connect Anthony Henday Drive (AB-216) and Highway 2 (AB-2). The proposed alignment of this new arterial road passes along the south of PA 1 and will significantly enhance connectivity to the retail node. The concept alignment of the proposed arterial road extension is presented in Figure 1.
- Permanent Access to the PA 1 will be provided from Sturgeon Road.
- Potential to provide a secondary access from the 127 Street Northwest extension may be evaluated in a subsequent Area Structural Plan (ASP) study for the Site.
- The internal roads should be paved and will be developed to urban standard roads acceptable to Sturgeon County.
- The Site will be developed to promote walkability and a bicycle-friendly environment. Appropriate connectivity will be developed with the Riverlot 56 trail network located towards the south of the Site (refer to Figure 2).
- To minimize friction and potential traffic hazards, access to arterial roads should be limited to controlled intersections where possible.

Implementation

- The road network within the Site should be developed to ensure proper access to Sturgeon Road and the proposed arterial.
- Development of access on arterials should be appropriately separated from roadway intersections in order to minimize traffic hazards.

Summary

The site is generally well serviced currently and has proposed service lines in close proximity to the site. Transportation networks to facilitate and service the development should be developed in accordance with the above policies. Given that internal road networks are undeveloped in the priority area, upgrades will be required prior to development, in addition to upgrading access to Sturgeon Road.

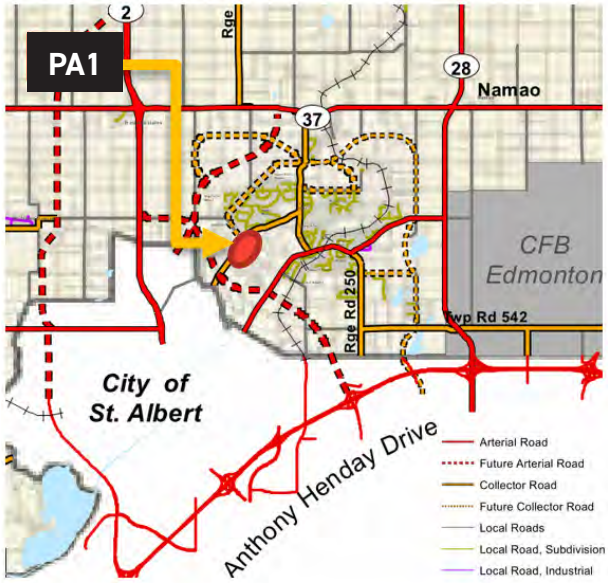


Figure 5.2: Priority Area 1 - Existing and Proposed Road Network

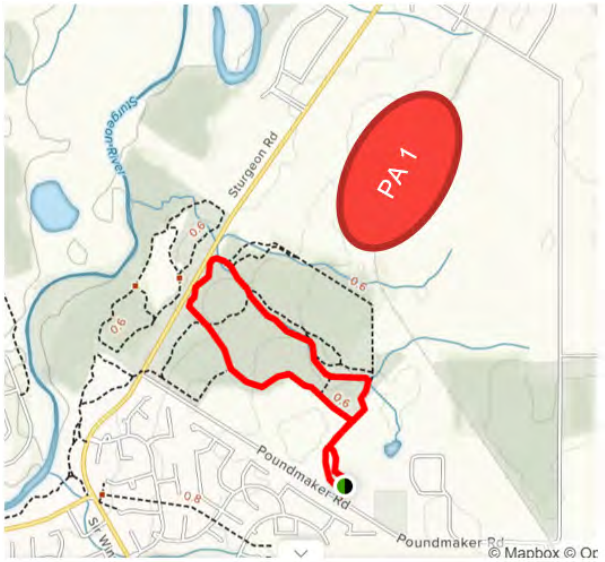


Figure 5.3: Priority Area 1 - Riverlot 56 Trail

Priority Area 2: Light/Medium Industrial Sturgeon Industrial Park (SIP)

Policy Alignment

EMRBGP (2017)

The location of the priority area is designated as a "Major Employment Area". Thus - the proposed light industrial development intended for this priority area complies with the directions of the EMRBGP.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this area as “Primary Industry”, defined as land use activities that harvest or extract raw material from nature such as Agriculture, oil and gas extraction, forestry, mining , fishing and trapping. This designation is not supportive of a light industrial land use. As such, to facilitate development, an amendment must be undertaken. An amendment will be required to accurately reflect the intent of this priority area.

Sturgeon County Land Use Bylaw

The priority area is currently designated as I4 – Medium Industrial Serviced District. This district provides for a broad range of compatible medium intensity industrial uses on fully serviced parcels within planned industrial park locations. These uses may require appropriate exterior storage or exterior manufacturing and processing activities which shall be considered accessory to a principal use on a parcel. Any nuisance factor should be of limited impact beyond the boundaries of the parcel.

To accommodate light industrial within SIP, a land use redesignation may be required to accurately reflect the intended land use and its intensity.

Policy Summary

Priority Area 2 is located such that its intent aligns with the EMRBGP. The MPD and the Land Use Bylaw will need to be amended to reflect the intent of this priority area.

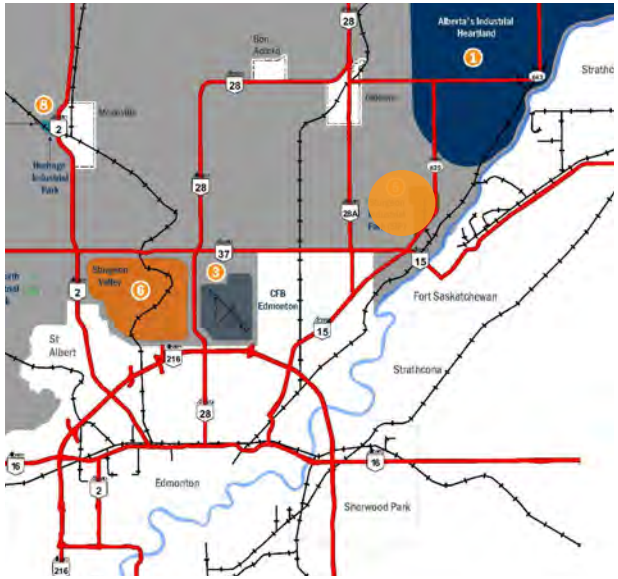


Figure 5.4: Priority Area 2

Infrastructure Context

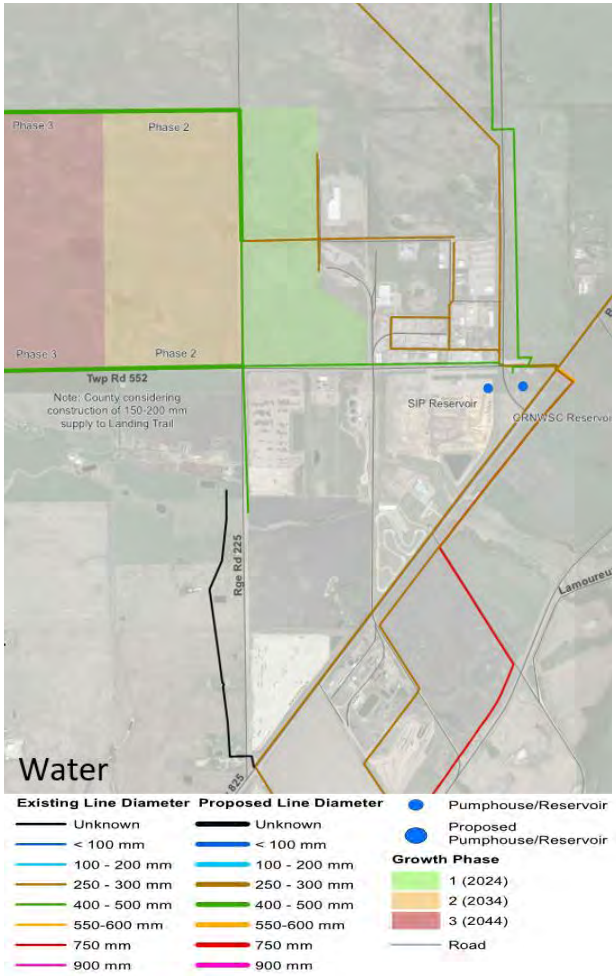
Water

Existing

There are 100-200mm (thin blue line), 250-300mm (thin brown lines), and 400-500mm (thin green lines) water lines exist up to site PA2.

Proposed

There are 400-500mm water trunks (thick green lines) proposed running east-to-west, which would connect to the existing network. The proposed water trunks total to approximately 4km of new infrastructure. There are 400-500mm water lines (thick green lines) proposed running east-to-west, which would connect to the existing network (approximately 4km of proposed service lines).



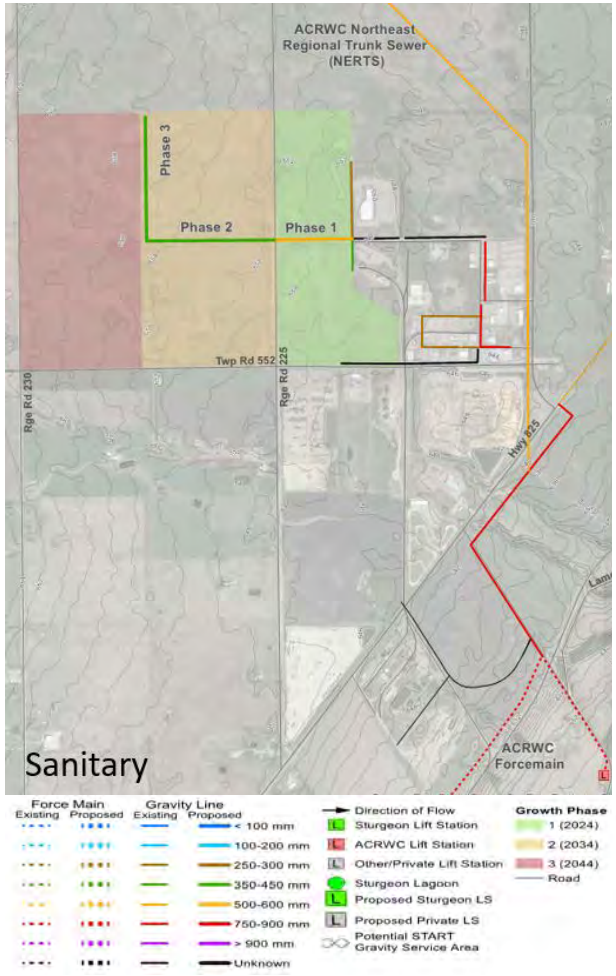
Sanitary

Existing

Discontinuous gravity mains are adjacent to the site: 250-300mm (thin brown lines), 750-900mm (thin red line). The nearest continuous existing sanitary line to the furthest portions of PA2 is the 500-600mm ACRWC Northeast Regional Trunk Sewer (solid orange line), approximately 3km away.

Proposed

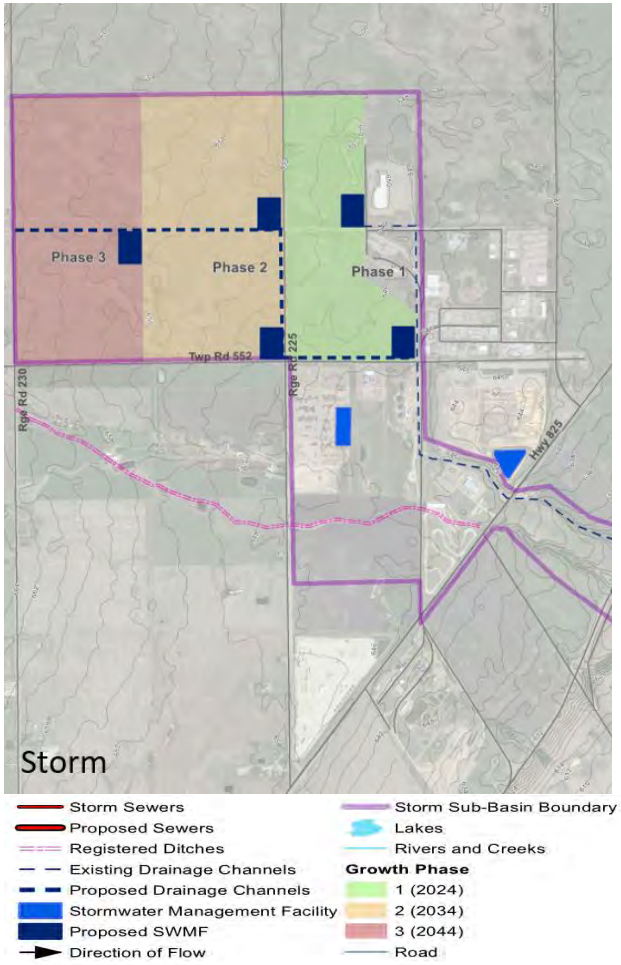
There are 350-450mm (thick green lines) and 500-600mm (thick orange lines) gravity trunks proposed. These proposed lines do not connect to the ACRWC.



Storm

Existing
There is no existing stormwater infrastructure near PA2.

Proposed
There are 5 storm ponds proposed with proposed drainage channels.



Transportation

Existing

The PA 2 Site is located towards the west of Highway 825 (AB-825) between Township Road 554 on the north and Township Road 552 located on the south of the Site.

Highway 825 is a north-south arterial class road. This is a two-lane road with a rural cross-section and a posted speed of 100 km/hr. The Township Roads 554 and part of 552 are two-lane collector class roads with rural cross-sections. Both the Township Roads are east-west roads parallel to each other connecting Highway 825 on the east and Highway 28 A on the west.

An existing rail line is located approximately three kilometres north-east of the PA 2 Site. The rail line is owned and operated by CN Rail.

Required Upgrades

A range of policies have been developed for the transportation network to inform the potential upgrades required to facilitate the industrial development on the Site.

Policies

- The PA 2 is located within the Sturgeon Industrial Park (SIP) area. The proposed access to the PA 2 will be developed to align with the overall master plan and vision of the SIP.
- Alignments of internal roads will be developed in the ASP in the subsequent planning stage.
- The internal local roads will be developed to industrial standard roads acceptable to Sturgeon County.
- Develop a multi-use trail network within the PA 2 to promote walkability and a bicycle-friendly environment.
- A transportation impact study needs to be completed for the PA 2 to highlight the impacts of the proposed industrial development on and potential improvements needed for the surrounding road network.
- Feasibility and potential land availability to extend the existing CN Rail into the Site must be studied in the ASP. The proposed rail line will be designed and constructed as per the CN rail standards.

Implementation

- The transportation network within the Site should be developed to ensure proper access to the east-west and north-south collector roads.
- Wherever possible, the access to the Site may be planned as an all moves signalized intersection.

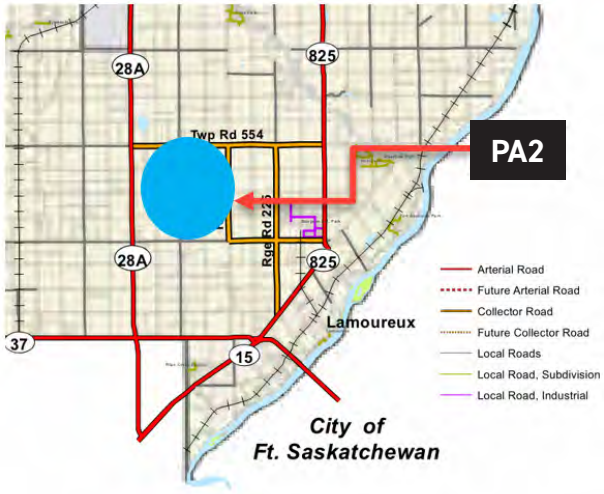


Figure 5.5: Priority Area 2 - Existing and Proposed Road Network

Infrastructure Summary

The transportation network internal to the site should be established as the site develops. Dependent on the intensity of use, intersection upgrades may be required.

Future water and sanitary lines have been proposed in the area and may be established as development is phased. Stormwater will be managed through 5 future ponds to be phased with development.

Priority Area 3: Retail & Light/Medium Industrial Hwy 15, Hwy 825 and Hwy 37

Policy Alignment

EMRBGP (2017)

The location of the priority area is designated as a "Major Employment Area". Thus - the proposed light industrial development intended for this priority area complies with the directions of the EMRBGP.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this area as “Primary Industry”, defined as land use activities that harvest or extract raw material from nature such as Agriculture, oil and gas extraction, forestry, mining , fishing and trapping. This designation is not supportive of a light industrial land use. As such, to facilitate development, an amendment must be undertaken.

Sturgeon County Land Use Bylaw

The priority area is currently designated as I4 – Medium Industrial Serviced District and AG - Agriculture. The I4 district provides for a broad range of compatible medium intensity industrial uses on fully serviced parcels within planned industrial park locations.
A portion of the node west of the intersection of Highway 37 and Highway 15 is designated Direct Control (DC4). The intent of this DC district is to provide for appropriate retail commercial and service uses within the context of highway commercial development. This piece of land will likely remained zoned as, in line with the recommendations of this study.

These uses may require appropriate exterior storage or exterior manufacturing and processing activities which shall be considered accessory to a principal use on a parcel. Any nuisance factor should be of limited impact beyond the boundaries of the parcel.

To accommodate a gas bar, retail service and light industrial, the area will require a land use redesignation. This should be achieved through a direct control district to accommodate the specifics of the development, or the use of a standard district to the land use bylaw should be contemplated. The direction of the redesigantion will be contingent on the specific uses to be present.

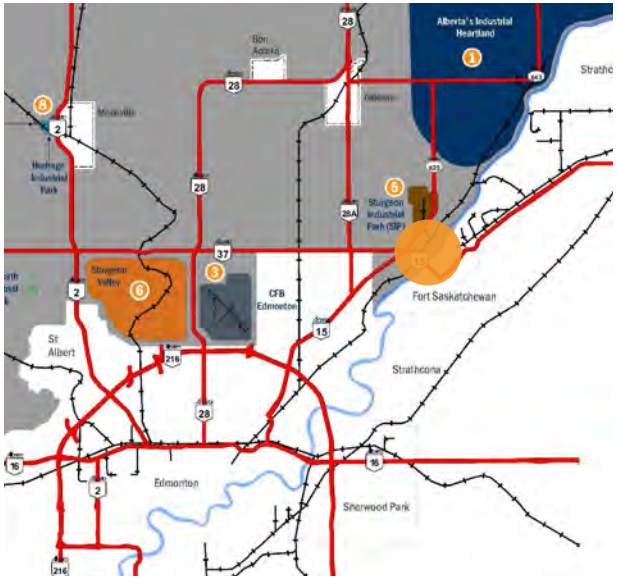


Figure 5.6: Priority Area 3

Policy Summary

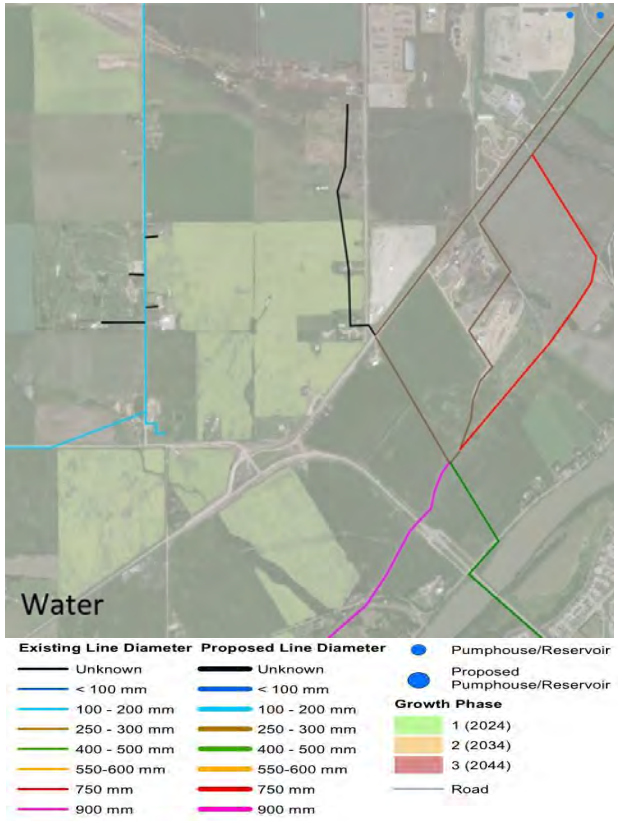
Priority Area 3 is located such that its intent aligns with the EMRBGP. The MDP and the Land Use Bylaw will need to be amended to reflect the intent of this priority area.

Infrastructure Context

Water

Existing
There are 100-200 mm (blue line), 250-300mm (brown lines), 400-500mm (green lines), 750mm (red lines), and 900mm (pink line) water lines in proximity to site PA3

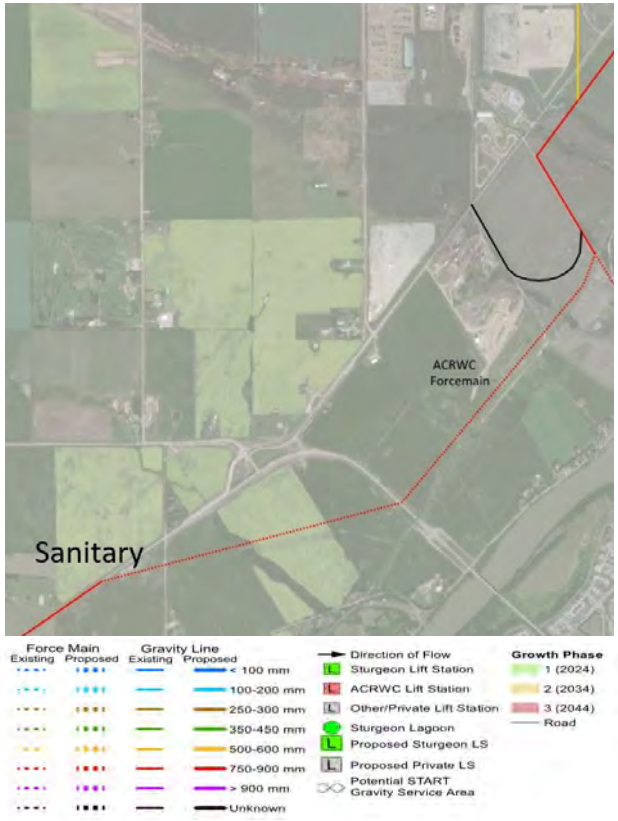
Proposed
There are no indicated water lines proposed



Sanitary

Existing
The ACRWC (red dotted line) forcemain is in the closest proximity to site PA3, including pump station, approximately 1km away

Proposed
There are no indicated sanitary lines proposed



Storm

Existing
There is no existing stormwater infrastructure near PA3.

Proposed
There is no indicated proposed stormwater system for PA3. On-site stormwater management may be required, or overland drainage courses would be the extent of stormwater management.

Transportation

PA 3 is located at the northeast quadrant of intersection of Highway 15 (AB-15), Highway 825 (AB-825) and Highway 37 (AB-37), situated along the eastern portion of Highway 825 until it heads north.

All the three Highways 15,825 and 37 are two-lane arterial class roads with rural cross-sections.

An existing CN rail line runs parallel to the site on the east side.

A range of policies have been developed for the transportation network to inform the potential upgrades require to facilitate the development of PA 3- Retail Node.

Policies

- Permanent Access to the PA 3 will be provided from the Highway 825.
- The internal roads should be paved and will be developed to urban standard roads acceptable to Sturgeon County.
- The Site will be developed to promote walkability and a bicycle-friendly environment. Appropriate multi-use path connectivity will be provided with the SIP located on the west of the Highway 825 (refer to Figure 8).
- To enhance safety and reduce friction on Highway 825, continuous auxiliary lane may be provided to safely accommodate the turning traffic into and out of access to the development.

Implementation

- The road network within the Site should be developed to ensure proper access to Highway 825.
- Development of access on arterials should be appropriately separated from the existing intersection of arterial roads in order to minimize traffic hazards

Infrastructure Summary

All services will require extension into the site from their current extent. Storm water management will require additional studies to determine the best method for retention whether on-site or through other means.

The site must be developed to ensure proper and safe access to Highway 825. Upgrades may be required to this highway based on the intensity of the use. The site is in proximity to rail service.

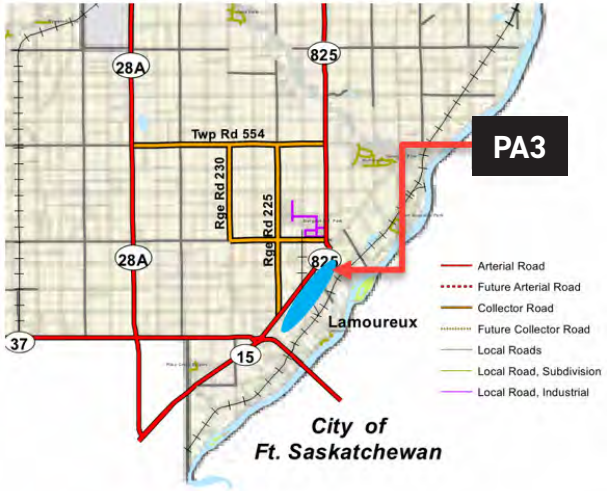


Figure 5.7: Priority Area 3 - Existing and Proposed Road Network

Priority Area 4: Retail Service
West Highway 28, south of Sturgeon Road

Policy Alignment

EMRBGP | Sturgeon Valley Special Area Study (2019)

The location of the priority area is within area B of the Sturgeon Valley, which aligns with objective 3.1:

- Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities;

and, Policy 3.1.2 (d)

- A variety of non-residential developments will be incorporated within the planning areas to provide diverse employment opportunities.

As stated within the Special Area Study:

- Area B - Are lands that are likely to be developed first because of access and ease in servicing. Area B is broken into Areas B1 and B2; being lands mainly located either north or south of Valour Road.

This priority area also encompasses land in Area D, further guided by policy 3.2.4:

- Area D shall maintain its existing agricultural status in accordance with the policies and regulations contained within the sturgeon County Municipal Development Plan and Land Use Bylaw for agricultural development.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this area as "Neighbourhood G" which intends that development is contiguous and supportive of surrounding communities and adjacent landowners. Specifically, the policy statement:

- Facilitating Sturgeon County's emerging Non-Residential sectors, while leveraging diversification and opportunities with the University of Alberta, CFB Edmonton and agricultural producers; and,
- Ensuring growth coincides with efficient municipal service provision and in a manner that does not preclude future infrastructure expansion and development.

Sturgeon Valley Area Structure Plan

The Sturgeon Valley Area Structure Planning process is currently underway. The recommendations of this priority area should be considered through the development of this statutory document.

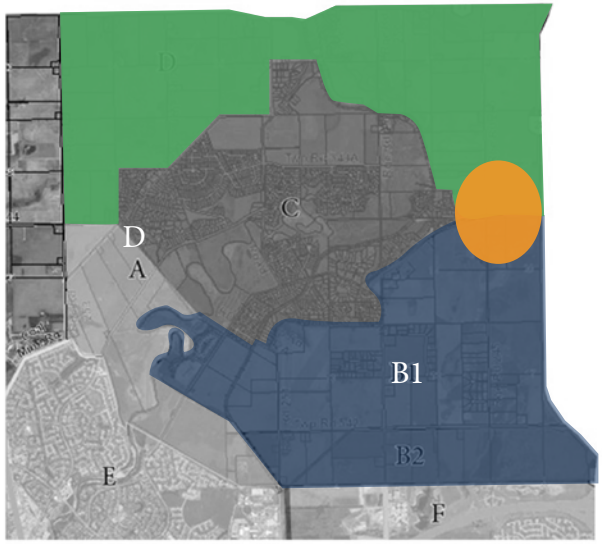


Figure 5.8: Priority Area 4

Sturgeon County Land Use Bylaw

The priority area is currently designated as AG-Agriculture. This zone is not appropriate for this type of development and the recommendation for a retail node must be considered in the drafting of the Sturgeon Valley ASP land use concept.

Policy Summary

The south portion of Priority Area 4 is considered generally in-line with the EMRBGP to be developed for commercial use while respecting impacts on adjacent uses and landowners. An amendment is recommended to the Sturgeon Valley Special Area Study to amend the boundary of Area B1 to facilitate the north portion of Priority Area 4. This will allow for both sides of Sturgeon Valley Road to be developed with commercial uses.

It is recommended that the Sturgeon Valley ASP's planning process consider incorporating this recommendation through an appropriate land use designation. The MDP should be amended to more accurately reflect the specific policy directions of the Sturgeon Valley ASP.

Infrastructure Context

Water

Existing

Water and sanitary service terminates at the residential area. The approximate distance between existing services and site PA4 is 3.5km.

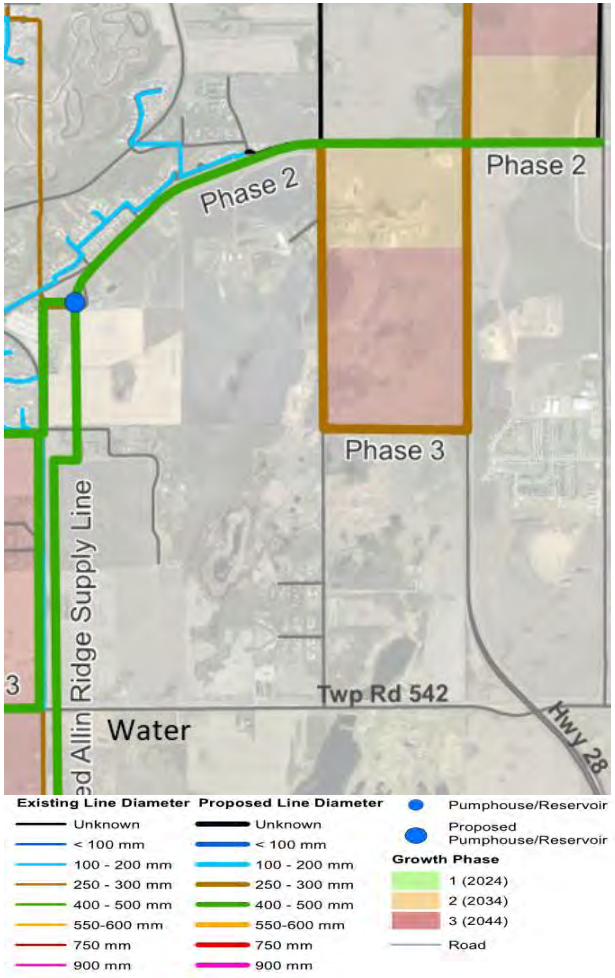
Proposed

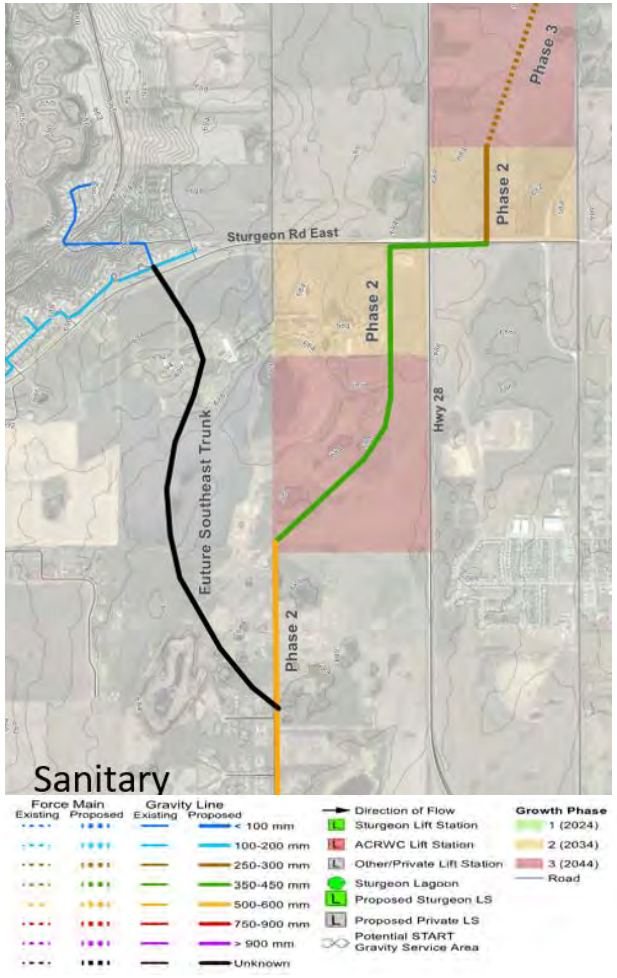
There are proposed 250-300mm water lines (solid brown lines), and 400-500mm water trunks (solid green lines).

Sanitary

Proposed

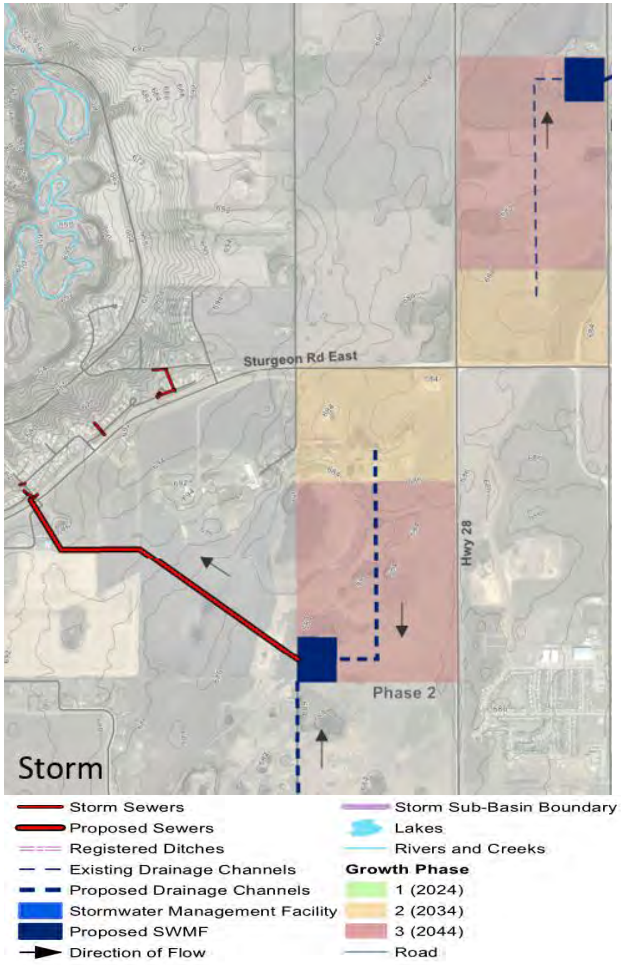
A Sturgeon lift station exists on the northern extents of the site. The lift station will connect a proposed 250-300mm (dotted brown line) forcemain to a 250-300mm gravity main, leading to a 350-450mm trunk (solid green line), 500-600mm trunk (solid orange line), and ultimately to the ACRWC START through an existing Sturgeon lift station.





Storm

Proposed
There are proposed drainage channels, and storm ponds, as well as a storm sewer connecting to the residential zone (~1,750m).



Transportation

Existing
Priority Area 4 is a Retail Service Node located on the west of Highway 28 (AB-28), between Township Road 544 and Valour Avenue (Township Road 542).

Highway 28 is a three-lane divided road with two lanes in the northbound direction and one lane in the southbound direction. The 2018 traffic data indicates an AADT of approximately 12,000 vehicles per day. This is an arterial class road with a posted speed of 70 km/hr. The road is under the jurisdiction of the Province.

An existing rail line is located within three kilometres north-west of the PA 4 Site. The rail line is owned and operated by the CN Rail.

Required Upgrades
A range of policies have been developed for the transportation network to inform the potential upgrades require to facilitate the retail development on the Site.

Policies:
- The MDP recommends upgrading Range Road 245 to a collector class road and implement missing road segments to provide a continuous road segment. This new road proposed on the west side of PA 4 will be a secondary access to the Site (refer to Figure 5.9).
- The main accesses to the PA 4 Site will be provided from Highway 28.
- Alignments of internal roads will be developed during the ASP stage. These internal roads will be implemented as per local road standards acceptable to Sturgeon County.
- Develop a multi-use paths network within the PA 4 to promote walkability and a bicycle-friendly environment.
- A transportation impact study needs to be completed for the PA 4 to highlight the impacts of development on and potential improvements needed for the surrounding road network.

Implementation:
- The transportation network within the Site should be developed to ensure proper access to Highway 28 and Range Road 245.
- To ensure safe movement of vehicles into and out of the development, the access on Highway 28 should be planned as a Right In Right Out (RIRO) intersection. A signalized access may be considered if the access satisfies the signal warrants.
- Continuous auxiliary lanes may be provided to safely accommodate the turning traffic into and out of access points.

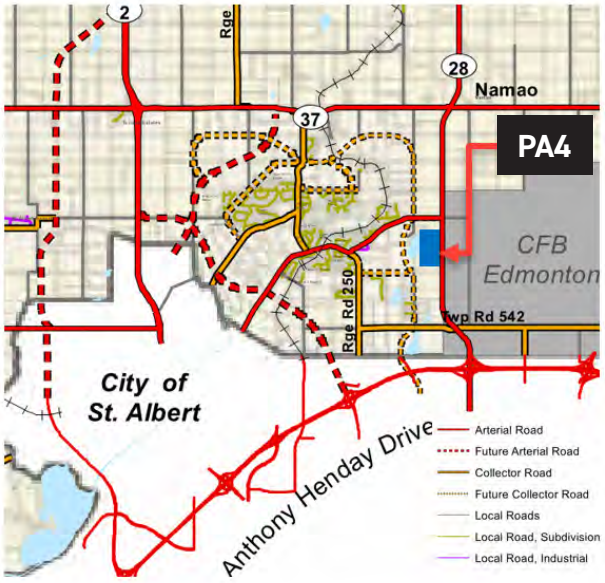


Figure 5.9: Priority Area 4 - Existing and Proposed Road Network

Infrastructure Summary

Water and sanitary service will need to be extended to service the site from the existing residential area.

Transportation upgrades to RR 245 will be instrumental in allowing service to PA 4, while upgrading to a right-in-right-out or possibly signalized intersection on Highway 28. Additional lanes may be constructed to allow for traffic to turn into the site from main access points.

Priority Area 5: Light Industrial/Aviation-related SE Villeneuve Airport area

Policy Alignment

EMRBGP (2017)

The location of the priority area is designated as a "Major Employment Area". Thus - the light industrial/aviation related development intended for this priority area complies with the directions of the EMRBGP.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this general area as "Industrial Type 2" and "Commercial Type 2" which can be further defined as:

- Industrial Type 2: Situated on lands already zoned industrial, in areas with existing Area Structure Plans, CRB regional employment areas and planned growth areas; and, Locations include the Sturgeon Industrial Park, ProNorth, Legal Crossroads and the Villeneuve Airport.
- Type 2 Commercial: Situated in the existing community of the Sturgeon Valley and the Villeneuve Airport

Sturgeon County Land Use Bylaw

The airport lands comprised in this priority area are currently designated as Designated as AP – Airport Support District.
General Purpose. This district is intended to regulate development which is not federally regulated at airports or helipads. The uses support and are compatible with the operations of the airport or heliport. The current land use designation is supportive of the intended development on airport lands in Priority Area 5.

The County lands located directly east of the airport boundary are currently zoned AG-Agriculture. A land use amendment will be required to support light industrial and aviation related activities.

Policy Summary

Priority Area 5 is located such the EMRBGP and MDP are generally aligned with the intended commercial/light industrial use. An amendment to the land use bylaw will be required for the lands in this Priority Area that are located within the County's jurisdiction to allow for the recommended uses.

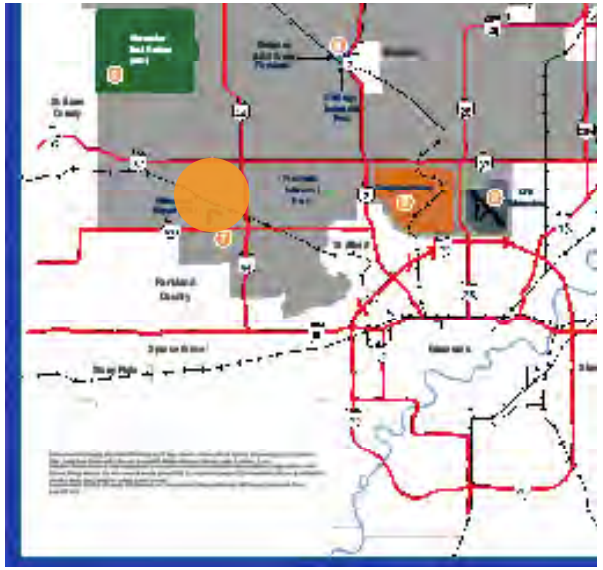


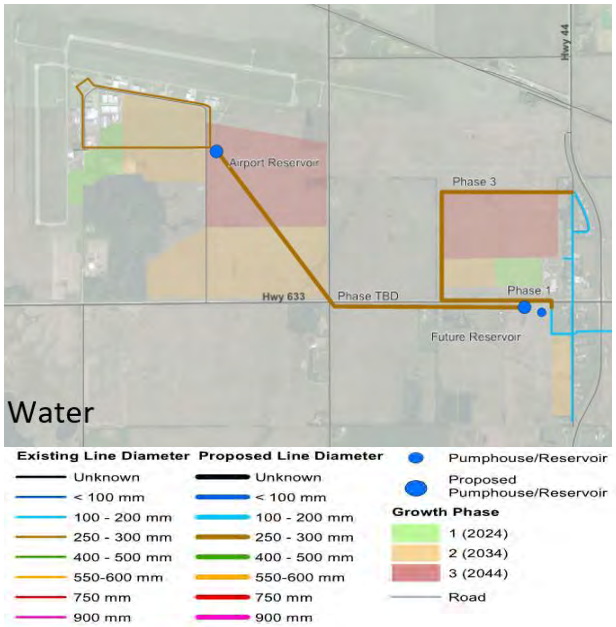
Figure 5.10: Priority Area 5

Infrastructure Context

Water

Existing
There exists a 100mm diameter water line up to Hwy 44 and Hwy 633 (blue) as well as an existing 250-300mm line (brown) built around the airport to the existing reservoir (thin lines are existing; future lines are thick).

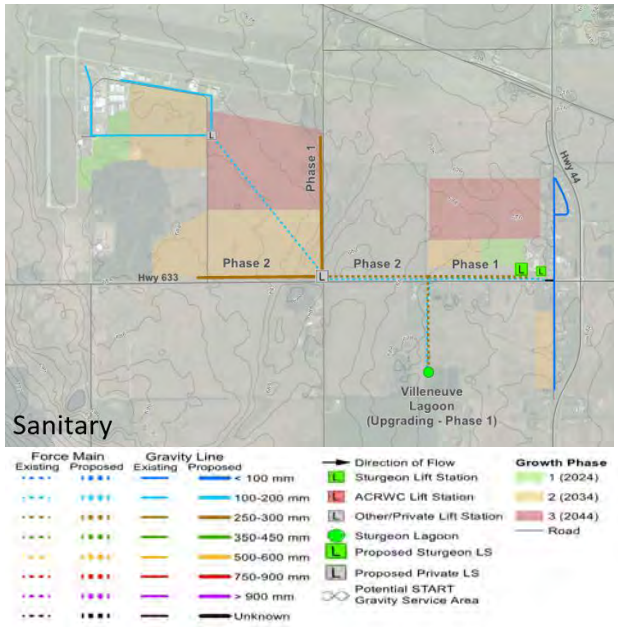
Proposed
There are 250-300mm lines proposed as indicated above (thick brown lines) to link the airport with existing water services.



Sanitary

Existing
There is a private lift station for the airport and an existing Sturgeon lift station. There is an existing <100mm gravity sewer line (solid dark blue), an existing 100-200 gravity line for the airport, and an existing 100-200mm forcemain (dotted blue). The existing Villeneuve Lagoon is indicated below.

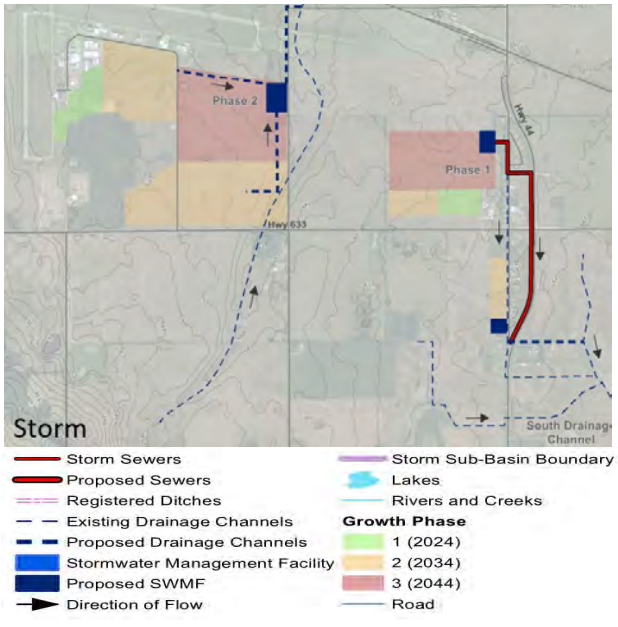
Proposed
There is a proposed private lift station for the airport, and a proposed Sturgeon lift station, as well as 2 proposed 250-300mm gravity lines.



Storm

Existing
No lines exist, and there is only the Villeneuve south ditch.

Proposed
Drainage channels are proposed for the airport site, and storm sewers are proposed for the residential as indicated below.



Transportation

Existing

The proposed Priority Area 5 Site is located towards the north-west quadrant of Villeneuve Road (AB-633) and Highway 44 (AB-44). Both Villeneuve and Highway 44 are arterial class roads under the jurisdiction of the Province. The intersection of these arterial roads is controlled by an unsignalized roundabout.

Villeneuve Road is an east-west undivided two-lane road with a posted speed of 50 km/hr. According to the 2018 traffic count program, the Annual Average Daily Traffic (AADT) on this road was approximately 3,000 vehicles per day. Villeneuve Road is connected to Highway 2 (AB-2) on the east and Highway 757 (AB-757) on the west.

Highway 44 is a north-south undivided two-lane road with a posted speed of 80 km/hr. The approximate AADT on this road is 5,000 vehicles per day

Required Upgrades

A range of policies have been developed for the transportation network to inform the potential upgrades require to facilitate the industrial development on the Site

Policies

- Permanent Access to the PA 5 will be provided from Villeneuve Road. Alignments of internal roads will be developed in an Area Structural Plan (ASP) as the next stage of study.
- Ensure appropriate berming, landscaping and fencing is provided wherever required in accordance with Sturgeon County's Land Use Bylaw to provide a visual buffer from the industrial development.
- Develop a multi-use trail network within the PA 5 to promote walkability and a bicycle-friendly environment.
- A traffic impact study to evaluate the impacts of the development on surrounding road network will be conducted.
- The potential for public transit connectivity from major destinations will need to be evaluated in the subsequent traffic study.

Implementation

- The transportation network within the Site should be developed to ensure proper access to Villeneuve Road.
- To enhance safety and reduce friction on Villeneuve Road, controlled intersections should be implemented where possible. Continuous auxiliary lanes may be provided to safely accommodate the turning traffic into and out of access points.
- Driveways from individual industrial units are not generally permitted onto arterial roadways.
- The access and internal roads will be implemented as per industrial standard roads to ensure maneuverability of large trucks and trailer vehicles.

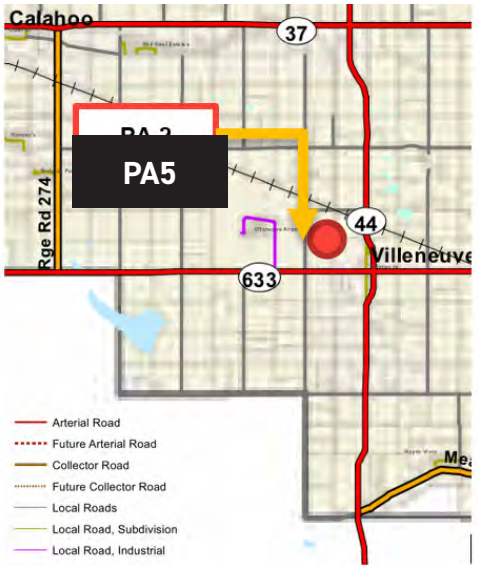


Figure 5.11: Priority Area 5 - Existing and Proposed Road Network

- Suitability to provide an emergency access to Highway 44 or Range Road 265 may reviewed during the ASP stage.
- Ensure access to major roadways and highways is unencumbered to enable the development of a transportation and logistics hub, as well as a potential flight school.

Infrastructure Summary

The area is fairly well serviced, however storm drainage infrastructure will need to be upgraded upon to facilitate further development. Major transportation routes exist in proximity to the priority area, and upgrades to existing infrastructure will be mainly achieved through signalizing existing intersections and providing emergency access to and from the site.

Priority Area 6: Light Industrial
West of Highway 28, SE Sturgeon Valley

Policy Alignment

EMRBGP | Sturgeon Valley Special Area Study (2019)

The location of the priority area is within area B of the Sturgeon Valley, which aligns with objective 3.1:

- Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities;

and, Policy 3.1.2 (d)

- A variety of non-residential developments will be incorporated within the planning areas to provide diverse employment opportunities.

As stated within the Special Area Study:

- Area B - Are lands that are likely to be developed first because of access and ease in servicing. Area B is broken into Areas B1 and B2; being lands mainly located either north or south of Valour Road.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this area as "Neighbourhood G" which intends that development is contiguous and supportive of surrounding communities and adjacent landowners. Specifically, the policy statement:

- Facilitating Sturgeon County's emerging Non-Residential sectors, while leveraging diversification and opportunities with the University of Alberta, CFB Edmonton and agricultural producers; and,
- Ensuring growth coincides with efficient municipal service provision and in a manner that does not preclude future infrastructure expansion and development.

Sturgeon Valley Area Structure Plan

The Sturgeon Valley Area Structure Planning process is currently underway. The recommendations of this priority area should be considered through the development of this statutory document.

Sturgeon County Land Use Bylaw

The priority area is currently designated as AG-Agriculture. This zone is not appropriate for this type of development and the recommendation for a retail node must be considered in the drafting of the Sturgeon Valley ASP land use concept.

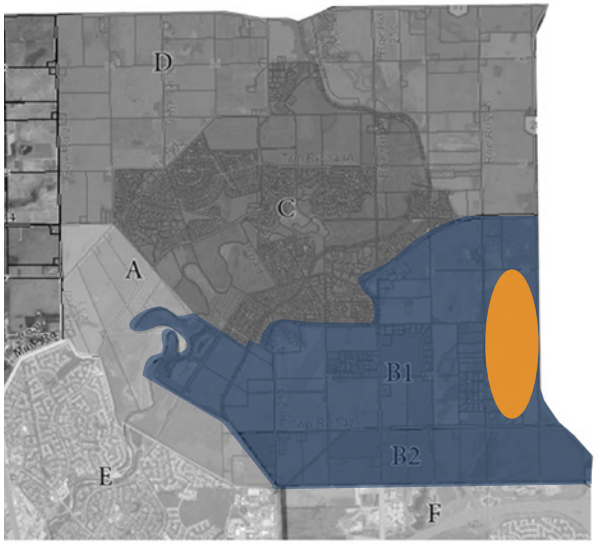


Figure 5.12: Priority Area 6 - Sturgeon Valley ASP

Policy Summary

Priority Area is considered generally in-line with the EMRBGP and the MDP to be developed for commercial use while respecting impacts on adjacent uses and landowners.

It is recommended that the Sturgeon Valley ASP's planning process consider incorporating this recommendation through an appropriate land use designation. The MDP should be amended to more accurately reflect the specific policy directions of the Sturgeon Valley ASP.

Infrastructure Context

Water

Existing

Water and sanitary service terminates at the residential area. The approximate distance between existing services and site PA5 is 2km.

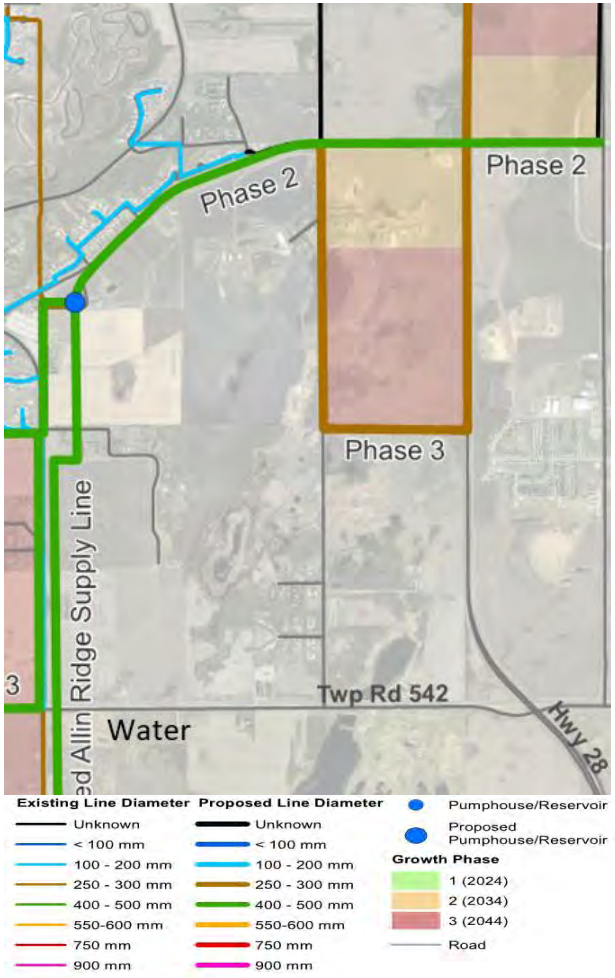
Proposed

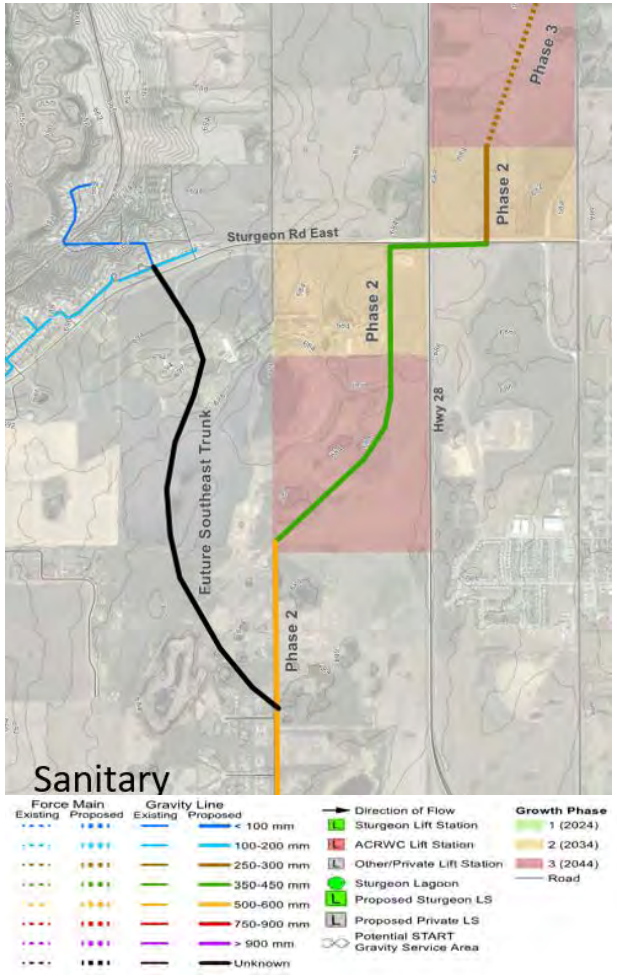
There are proposed 250-300mm water lines (solid brown lines), and 400-500mm water trunks (solid green lines).

Sanitary

Proposed

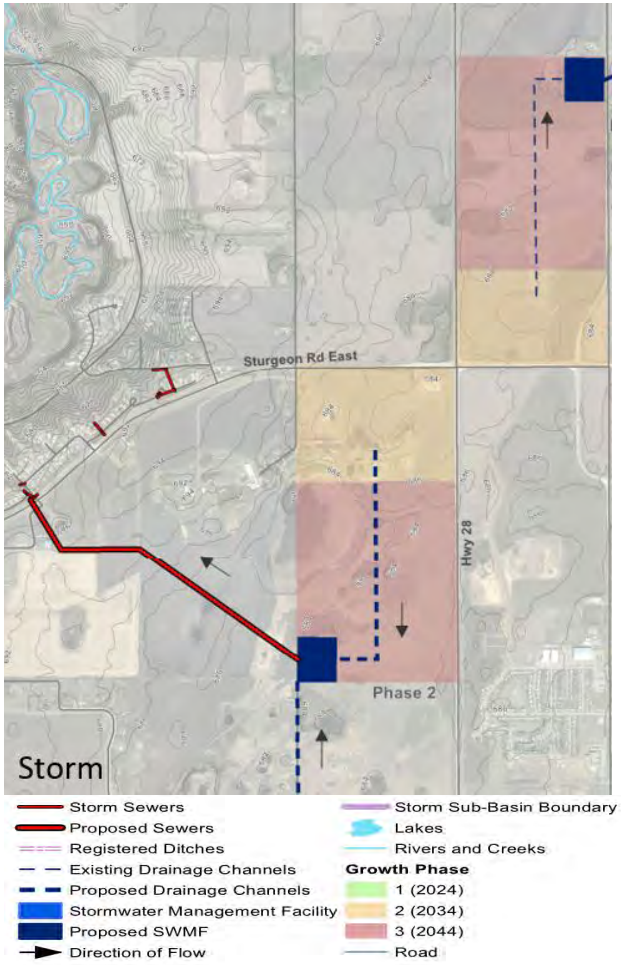
A Sturgeon lift station exists on the northern extents of the site. The lift station will connect a proposed 250-300mm (dotted brown line) forcemain to a 250-300mm gravity main, leading to a 350-450mm trunk (solid green line), 500-600mm trunk (solid orange line), and ultimately to the ACRWC START through an existing Sturgeon lift station.





Storm

Proposed
There are proposed drainage channels, and storm ponds, as well as a storm sewer connecting to the residential zone (~1,750m).



Transportation

Existing

The Site for the Priority Area 6 is located on the west of Highway 28 (AB-28), between Township Road 544 and Township Road 542.

Highway 28 is a three-lane divided road with two lanes in the northbound direction and one lane in the southbound direction. The 2018 traffic data indicate an AADT of approximately 12,000 vehicles per day. This is an arterial class road with a posted speed of 70 km/hr. The road is under the jurisdiction of the Province.

Rail

An existing rail line is located within three kilometres north-west of the PA 6 Site. The rail line is owned and operated by the CN Rail.

Required Upgrades

A range of policies have been developed for the transportation network to inform the potential upgrades require to facilitate the industrial development on the site.

Policies

- The MDP recommends upgrading Range Road 245 to a collector class road and implement missing road segments to provide a continuous road segment. This new road proposed on the west side of PA 6 will be a secondary access to the industrial area (see Figure 4).
- Permanent accesses to the PA 6 site will be provided from Highway 28, and the proposed collector road on the west (Range Road 245).
- Alignments of internal roads will be developed during the ASP stage.
- The internal collector and local roads will be developed to industrial standard roads acceptable to Sturgeon County.
- Ensure appropriate berming, landscaping and fencing is provided wherever required in accordance with Sturgeon County's Land Use Bylaw to provide a visual buffer from the industrial development.
- Develop a multi-use trail network within the PA 6 to promote walkability and a bicycle-friendly environment.
- A transportation impact study needs to be completed for the PA 6 to highlight the impacts of the proposed industrial development on and potential improvements needed for the surrounding road network.
- The potential for public transit connectivity from major destinations will need to be reviewed in the subsequent traffic study.
- Feasibility and potential land availability to extend the existing CN Rail into the site must be studied in the future. The proposed rail line will be designed and constructed as per the CN rail standards.

Implementation

- The transportation network within the site should be developed to ensure proper access to Highway 28 and Range Road 245.

Figure 5.13: Priority Area 6 - Existing and Proposed Road Network

- To ensure safe movement of trucks into and out of the development, the access on Highway 28 should be planned as an all moves signalized intersection.
- Continuous auxiliary lanes may be provided to safely accommodate the turning traffic into and out of access points.

Infrastructure Summary

Water and sanitary service will need to be extended to service the site from the existing residential area.

Transportation upgrades to RR 245 will be instrumental in allowing service to PA 6, while upgrading to a signalized intersection on Highway 28 and Sturgeon Road.

Priority Area 7: Light Industrial
West Highway 28, north Anthony Henday

Policy Alignment

EMRBGP | Sturgeon Valley Special Area Study (2019)

The location of the priority area is within area B of the Sturgeon Valley, which aligns with objective 3.1:

- Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities;

and, Policy 3.1.2 (d)

- A variety of non-residential developments will be incorporated within the planning areas to provide diverse employment opportunities.

As stated within the Special Area Study:

- Area B - Are lands that are likely to be developed first because of access and ease in servicing. Area B is broken into Areas B1 and B2; being lands mainly located either north or south of Valour Road.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this area as "Neighbourhood G" which intends that development is contiguous and supportive of surrounding communities and adjacent landowners. Specifically, the policy statement:

- Facilitating Sturgeon County's emerging Non-Residential sectors, while leveraging diversification and opportunities with the University of Alberta, CFB Edmonton and agricultural producers; and,
- Ensuring growth coincides with efficient municipal service provision and in a manner that does not preclude future infrastructure expansion and development.

Sturgeon Valley Area Structure Plan

The Sturgeon Valley Area Structure Planning process is currently underway. The recommendations of this priority area should be considered through the development of this statutory document.

Sturgeon County Land Use Bylaw

The priority area is currently partially designated as AG-Agriculture, and REC - Recreational . These zones are not appropriate for this type of development and the recommendation for a retail node

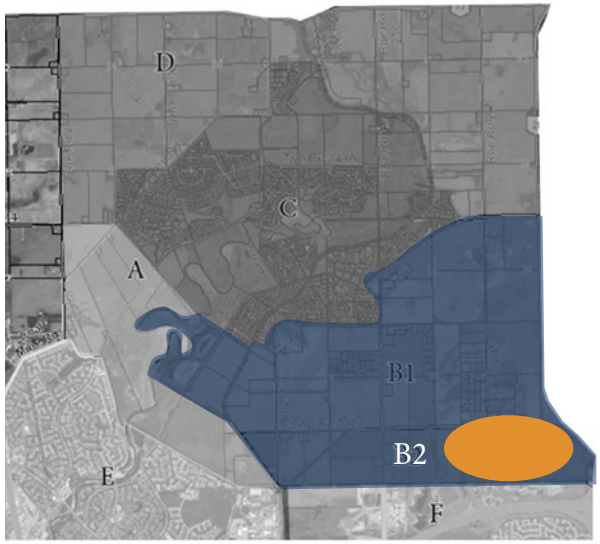


Figure 5.14: Priority Area 7 - Sturgeon Valley ASP

must be considered in the drafting of the Sturgeon Valley ASP land use concept.

Policy Summary

Priority Area 7 is considered generally in-line with the EMRBGP and the MDP to be developed for commercial use while respecting impacts on adjacent uses and landowners.

It is recommended that the Sturgeon Valley ASP's planning process consider incorporating this recommendation through an appropriate land use designation. The MDP should be amended to more accurately reflect the specific policy directions of the Sturgeon Valley ASP.

Infrastructure Context

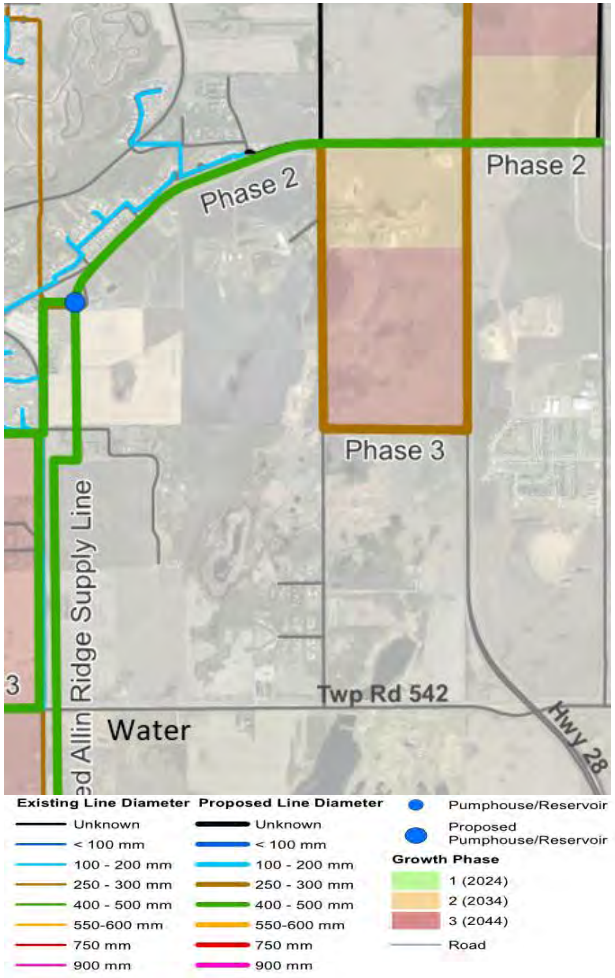
Water

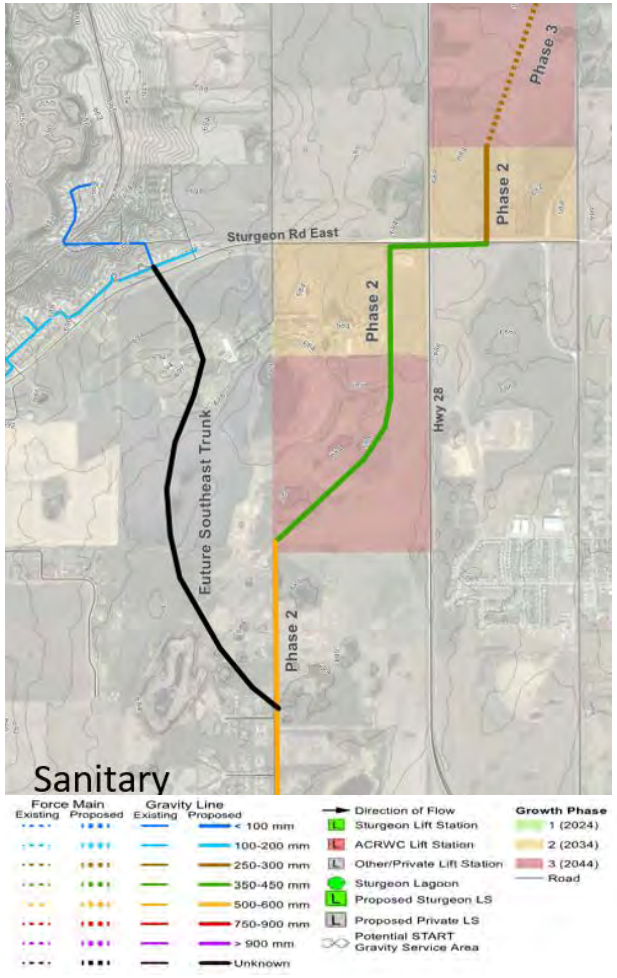
Existing
Water and sanitary service terminates at the residential area. The approximate distance between existing services and site PA7 is 4km.

Proposed
There are proposed 250-300mm water lines (solid brown lines), and 400-500mm water trunks (solid green lines).

Sanitary

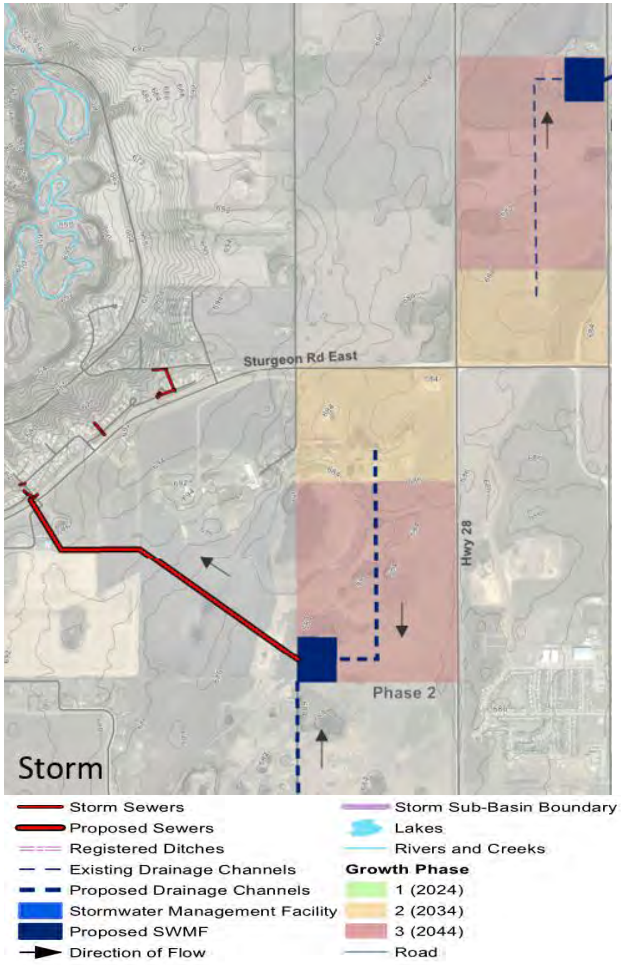
Proposed
A Sturgeon lift station exists on the northern extents of the site. The lift station will connect a proposed 250-300mm (dotted brown line) forcemain to a 250-300mm gravity main, leading to a 350-450mm trunk (solid green line), 500-600mm trunk (solid orange line), and ultimately to the ACRWC START through an existing Sturgeon lift station.





Storm

Proposed
There are proposed drainage channels, and storm ponds, as well as a storm sewer connecting to the residential zone (~1,750m).



Transportation

Existing

The Site for the Priority Area 7 is located on the northwest quadrant of the intersection of Highway 28 (AB-28) and the Anthony Henday Drive (AB-216), and south of Valour Avenue (Township Road 542).

At this location Highway 28 is a four-lane divided road with two lanes each in the northbound and southbound directions. The road has an AADT of approximately 12,000 vehicles per day. This is an arterial class road with a posted speed of 70 km/hr. The road is under the jurisdiction of the Province. Anthony Henday Drive is a four-lane divided road with two lanes in either directions. This is a freeway class road with a posted speed of 100 km/hr. The road is under the jurisdiction of the Province.

Valour Avenue is a two-lane collector road with a posted speed of 80 km/hr. The road has a rural cross-section.

Rail

An existing rail line is located within four kilometres north-west of the PA 7 Site. The rail line is owned and operated by the CN Rail.

Required Upgrades

A range of policies have been developed for the transportation network to inform the potential upgrades require to facilitate the industrial development on the Site.

Policies

- The location of PA 7 Site poses considerable access challenges. Accesses from Highway 28 or Anthony Henday Drive may be limited by Alberta Transportation, thus impacting the feasibility of development, as commercial development will require adequate transportation access and connectivity to an arterial class road.
- The MDP recommends upgrading Range Road 245 to a collector class road and implement missing road segments to provide a continuous road segment. This new road will pass through the PA 7 Site along the north-south direction and will form the primary access to the Site (refer to Figure 5.15).
- A secondary access to the Site may be provided from the Valour Avenue located on the north.
- Alignments of internal roads will be developed during the ASP stage.
- The internal collector and local roads will be developed to industrial standard roads acceptable to Sturgeon County.
- Ensure appropriate berming, landscaping and fencing is provided wherever required in accordance with Sturgeon County's Land Use Bylaw to provide a visual buffer from the industrial development.
- Develop a multi-use trail network within the PA 7 to promote walkability and a bicycle-friendly environment.
- A transportation impact study needs to be completed for the PA 7 to highlight the impacts of the proposed industrial development on and potential improvements needed for the surrounding road network.
- The potential for public transit connectivity from major destinations will need to be reviewed in the subsequent traffic study.
- Feasibility and potential land availability to extend the existing CN Rail into the Site must be studied in the future. The proposed rail line will be designed and constructed as per the CN rail standards.

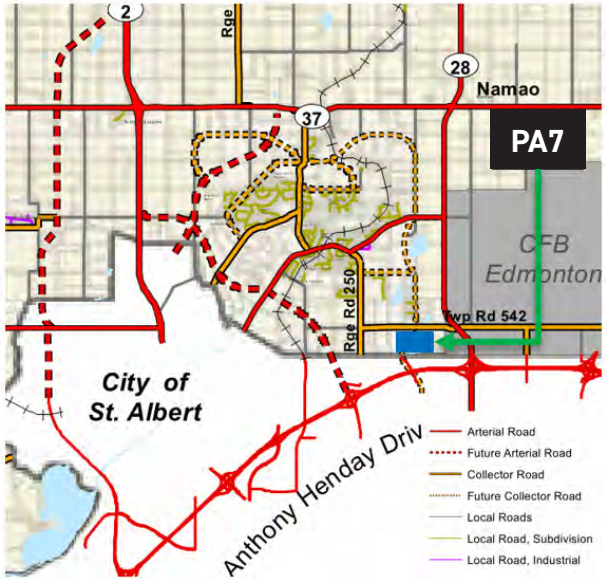


Figure 5.15: Priority Area 7 - Existing and Proposed Road Network

Implementation

- The transportation network within the Site will be developed to ensure proper access to the Range Road 245 and Valour Avenue (Township Road 542).
- To ensure safe movement of trucks into and out of the development, the access on the collector roads will be planned as an all moves intersection.

Infrastructure Summary

Water and Sanitary service exist in adjacent residential areas and are expected to be extended into the priority area. Stormwater will be managed through planned drainage channels.

The transportation network internal to the site will be established as development proceeds. Access off of collector roads (Valour Avenue and Range Road 245 in future) will require an all directional intersection for safe, efficient movement.

Priority Area 8: Light Industrial West of Highway 28, NE Sturgeon Valley

Policy Alignment

EMRBGP | Sturgeon Valley Special Area Study (2019)

The location of the priority area is within area D of the Sturgeon Valley, guided by policy 3.2.4:

- Area D shall maintain its existing agricultural status in accordance with the policies and regulations contained within the sturgeon County Municipal Development Plan and Land Use Bylaw for agricultural development.

As noted in the above policy, developing a light industrial node in this location would require an amendment to the Special Area Study. Given the identified node's location separation from existing or planned development, and the EMRB's position on the intended land use.

Sturgeon County Municipal Development Plan (2014)

The MDP identifies this area as "Neighbourhood G" which intends that development is contiguous and supportive of surrounding communities and adjacent landowners. Specifically, the policy statement:

- Facilitating Sturgeon County's emerging Non-Residential sectors, while leveraging diversification and opportunities with the University of Alberta, CFB Edmonton and agricultural producers; and,
- Ensuring growth coincides with efficient municipal service provision and in a manner that does not preclude future infrastructure expansion and development.

Sturgeon Valley Area Structure Plan

The Sturgeon Valley Area Structure Planning process is currently underway. The recommendations of this priority area should be considered through the development of this statutory document.

Sturgeon County Land Use Bylaw

The priority area is currently designated as AG-Agriculture.

Policy Summary

Priority Area 8 would not be recommended for development given the policy constraints employed by the EMRB in the Sturgeon Valley Special Area Study.

Figure 5.16: Priority Area 8 - Sturgeon Valley ASP

Infrastructure Context

Water

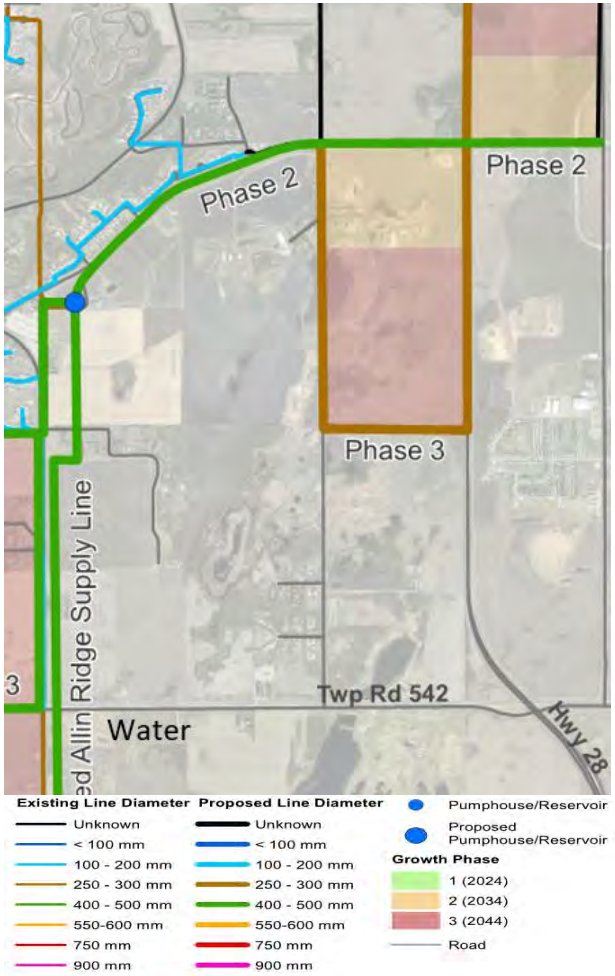
Existing

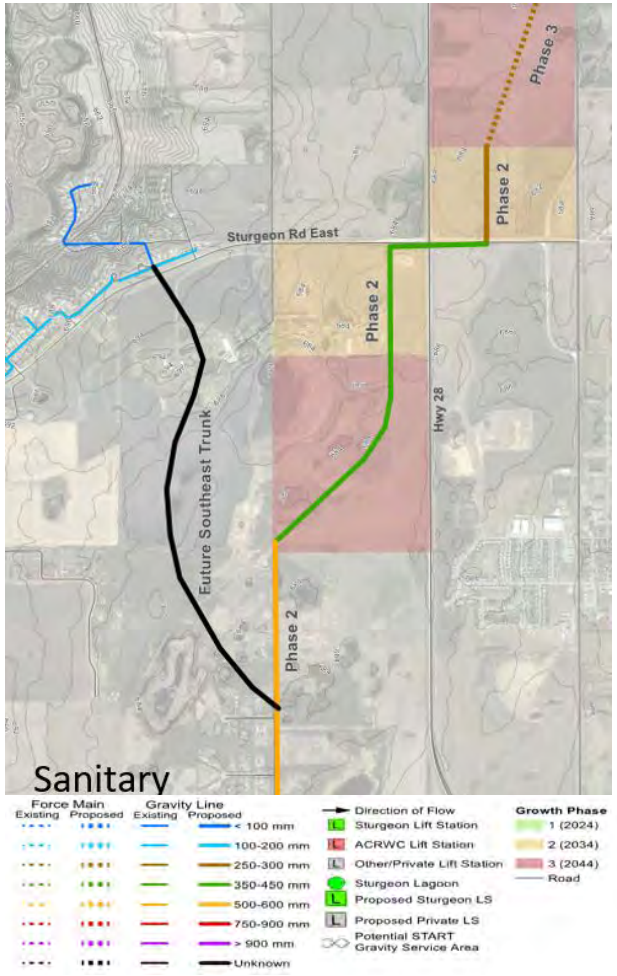
There is an existing line of unknown diameter that extends up to PA8. It is 3.2 km away from the proposed Allin ridge supply line.

Sanitary

Existing

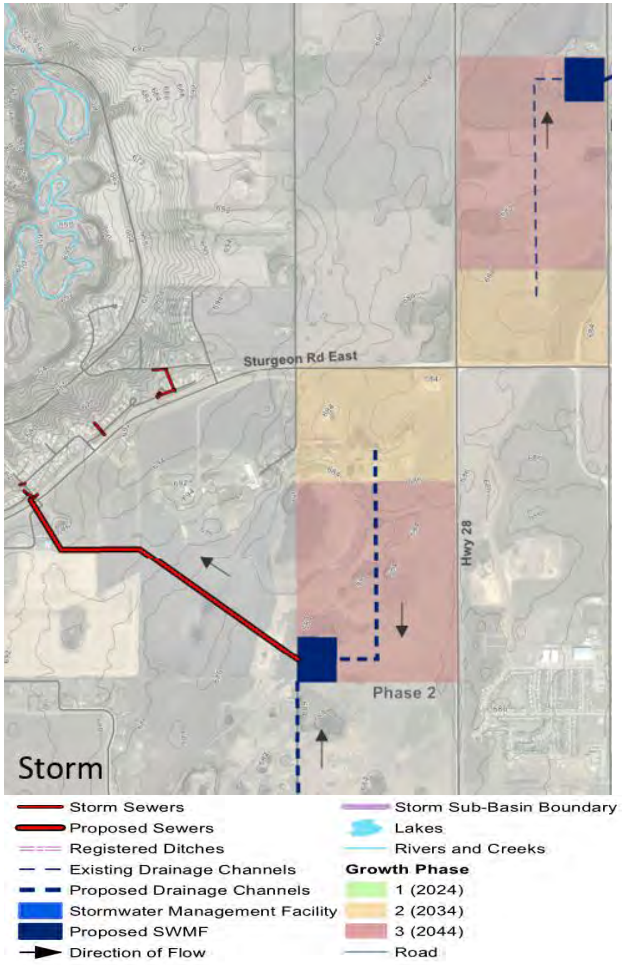
Everything is the same as PA6 but this site is the full 3.2km away from the proposed 350-450mm gravity trunk. The proposed lagoon that services PA4 is 1.6km away from the site.





Storm

Existing
The nearest proposed infrastructure is to service site PA4. PA8 would likely need its own storm water management facility because it is 1.6km away from PA4's storm pond.



Transportation

Existing

The Site for PA 8 is located on the west of Highway 28 (AB-28), between Sturgeon Road and south of Highway 37. Highway 28 is a three-lane divided road with two lanes in the northbound direction and one lane in the southbound direction. The 2018 traffic data indicate an AADT of approximately 12,000 vehicles per day. This is an arterial class road with a posted speed of 70 km/hr. The road is under the jurisdiction of the Province.

Rail

An existing rail line is located approximately one kilometer west of the PA 8. The rail line is owned and operated by the CN Rail.

Required Upgrades

A range of policies have been developed for the transportation network to inform the potential upgrades require to facilitate the industrial development on the site.

Policies

- The MDP recommends upgrading Range Road 245 to a collector class road and implement missing road segments to provide a continuous road segment. This new road proposed on the west side of PA 8 will be a secondary access to them, industrial area.
- Permanent accesses to the PA 8 site will be provided from Highway 28, Highway 37, and the proposed collector road on the west (Range Road 245).
- Alignments of internal roads will be developed during the ASP stage. The internal collector and local roads will be developed to industrial standard roads acceptable to Sturgeon County.
- Ensure appropriate berming, landscaping and fencing is provided wherever required in accordance with Sturgeon County's Land Use Bylaw to provide a visual buffer from the industrial development.
- Develop a multi-use trail network within the PA 8 to promote walkability and a bicycle-friendly environment.
- A transportation impact study needs to be completed for the PA 8 to highlight the impacts of the proposed industrial development on and potential improvements needed for the surrounding road network.
- The potential for public transit connectivity from major destinations will need to be reviewed in the subsequent traffic study.
- Feasibility and potential land availability to extend the existing CN Rail into the site must be studied in the future. The proposed rail line will be designed and constructed as per the CN rail standards.

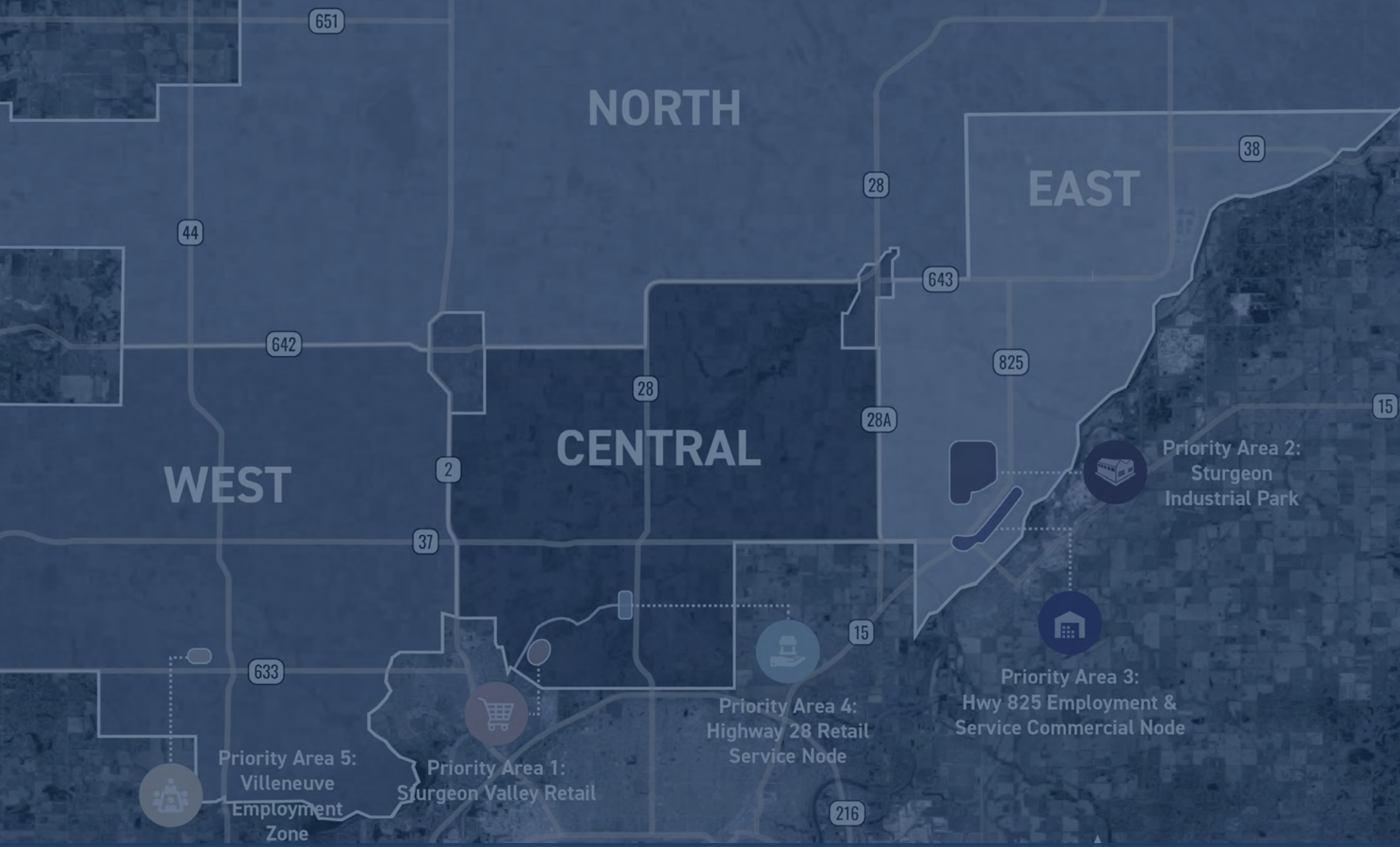
Implementation

- The transportation network within the site will be developed to ensure proper access to Highway 28, Highway 37 and Range Road 245.
- To ensure safe movement of trucks into and out of the development, the access on Highway 28 will be planned as an all moves signalized intersection.
- Continuous auxiliary lanes may be provided to safely accommodate the turning traffic into and out of access points.

Infrastructure Summary

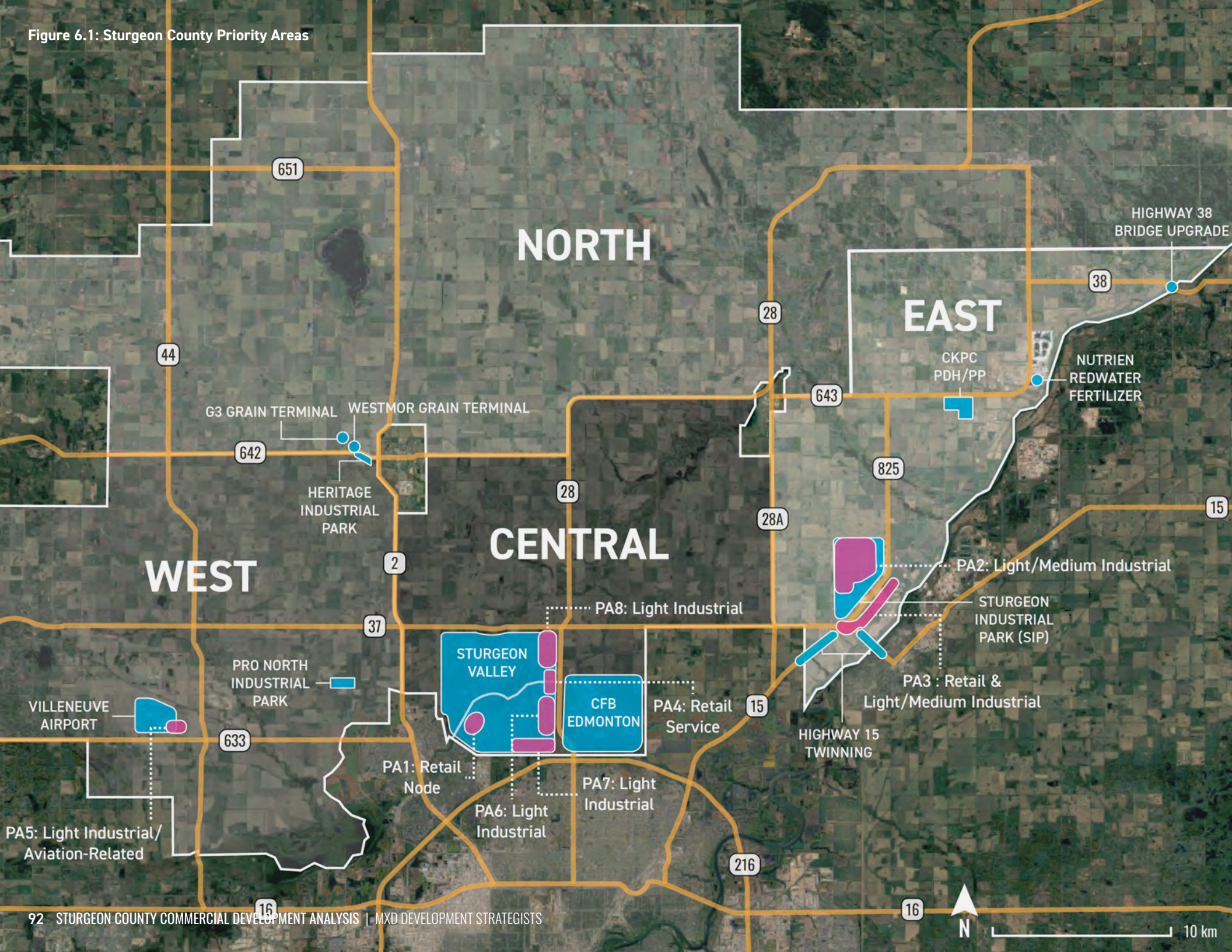
Water and sanitary service will need to be extended to service the site from the existing residential area.

Transportation upgrades to RR 245 will be instrumental in allowing service to PA 8, while upgrading to a signalized intersection on Highway 28 and Sturgeon Road, and possible intersection upgrades at Highway 37 and Range Road 245.



06 RECOMMENDED PRIORITY AREAS

Figure 6.1: Sturgeon County Priority Areas



Ranking Criteria

Table 6.1: Ranking Criteria for Priority Areas

	PRIORITY AREAS							
EVALUATION CRITERIA	**PA1**	**PA2**	**PA3**	**PA4**	**PA5**	**PA6**	**PA7**	**PA8**
Regulatory & Policy Context	3	3	3	2	3	2	2	1
Current Servicing Availability	3	3	2	2	3	2	1	1
Cost of Servicing/Upgrading	2	2	2	2	3	2	1	1
Transportation - Priority Area Access	3	3	3	2	3	2	2	2
Transportation - Network Linkages/Road Quality	2	2	3	3	2	2	2	2
Proximity to Precedent Commercial Development	3	3	3	2	1	1	3	1
Supportive Anchor Development Present	2	2	2	3	3	2	2	2
Proximity to Urban Area	3	2	2	3	1	3	3	3
SCORING	***21***	***20***	***20***	***19***	***19***	***16***	***16***	***13***

Ranking Criteria

MXD and WSP used the evaluation matrix (Table 6.2) to rank the eight priority areas against a set of strategic criteria to arrive at the top five priority sites that represent the best immediate term commercial development opportunities. Our team used a 1 to 3 rating system to rank the priority areas. The evaluation criteria considered a wide variety of factors including the regulatory context, infrastructure costing, transportation access and connectivity, proximity to precedent commercial development and an urban center as well as the presence of a supportive anchor that could help to facilitate development.

Based on the above Evaluation Criteria, the top five Priority Areas for immediate commercial development are as follows:

- **PA1: Retail Node (21 Points)**
- **PA2: Light/Medium Industrial (20 Points)**
- **PA3: Retail & Light/Medium Industrial (20 Points)**
- **PA4: Retail Service (19 Points)**
- **PA5: Light Industrial/Aviation Related (19 Points)**

The other Priority Areas are seen as development opportunities in the medium term.

Table 6.2: Ranking Criteria for Priority Areas (Definitions)

	LOW 1	MODERATE 2	STRONG 3
EVALUATION CRITERIA	**DEFINITION**		
Regulatory & Policy Context	Does the priority area currently conform to County and Regional plans, policies, and regulations? If not, can the plans, policies, and regulations be easily changed to accommodate commercial development?		
Current Servicing Availability	Is the priority area currently serviced? If not, is it readily available?		
Cost of Servicing/Upgrading	Would it be costly to provide the appropriate servicing to the priority area?		
Transportation - Priority Area Access	Does the priority area have easy access off of the primary roadway? Or do new roadways or intersections need to be created?		
Transportation - Network Linkages/Road Quality	Is the priority area located along a major transportation corridor and what is the quality of the roadway?		
Proximity to Precedent Commercial Development	Is there similar commercial development already built and leased in close proximity to the priority area?		
Supportive Anchor Development Present	Is there a supportive major anchor in close proximity to the priority area?		
Proximity to Urban Area	Is the priority area close to residential or employment base?		

Introduction

MXD and WSP selected five Priority Areas that represent the best opportunity for immediate term commercial development based on market demand, transportation and infrastructure realities, the regulatory context and feedback from stakeholders. An investment thesis for each of the five immediate-term Priority Areas was created to identify the competitive positioning a strategic rationale for each respective development area. Each investment thesis includes a summary of potential land use allocation and economic sectors, mix of uses, zoning and infrastructure action items as well and imagery that illustrates representative development typologies for each Priority Area.

The other three Priority Areas in this study have been identified as near to medium term opportunities and therefore the action items and recommendations for these areas are included in the Action and Implementation Plan in Chapter 7.

These Priority Areas represent general areas for priority commercial growth. The boundaries of the Priority Areas are not hard lines; they have been loosely delineated for the purpose of providing guidance for future planning processes. More detailed planning work would need to be completed at the ASP level to address site specific development considerations, such as environmental due diligence and site access.

Priority Area 1: Sturgeon Valley Retail

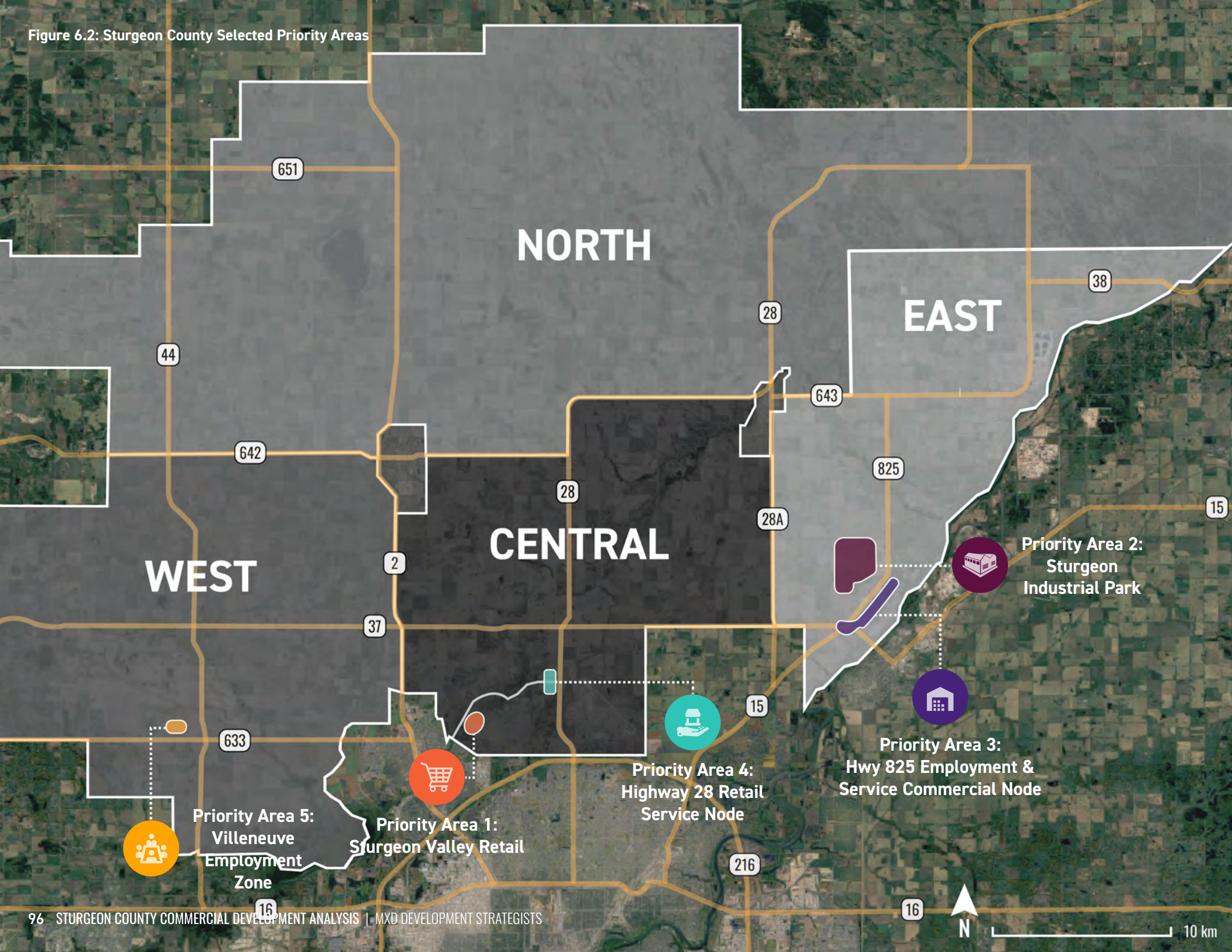
Priority Area 2: SIP Medium Industrial Area

Priority Area 3: Highway 825 Employment & Service Commercial Node

Priority Area 4: Highway 28 Retail Service Node

Priority Area 5: Villeneuve Employment Zone

Figure 6.2: Sturgeon County Selected Priority Areas



Priority Area 1: Sturgeon Valley Retail

Strategic Rationale

- Opportunity to reduce retail leakage from Sturgeon Valley and keep spending in the County.
- Directly adjacent to a full-time established and growing population base. Sturgeon Valley is anticipated to absorb 80% of projected residential growth by 2044, which will equate to 14,202 people.
- Alignment with the objectives of the EMRBGP's Sturgeon Valley Special Study Area policy context, that aims to incorporate non-residential development into Area B of the Sturgeon Valley Growth Area.
- The development area is included in Area B of the Sturgeon Valley Special Study Area which is expected to develop quickly due to relative ease of access and servicing.
- Ability to attract residents from St. Albert and Sturgeon Valley who want to avoid St. Albert Trail traffic.
- Will feature frontage onto Sturgeon Road, which serves as a critical access road for vehicles travelling to and from Highway 28 and St. Albert Trail Road.
- Expansion of water, sanitary and storm servicing will be reviewed and planned for through the Sturgeon Valley Area Structure Planning process.

> **Boutique, upscale retail node that is strategically differentiated from the big box retail cluster along St. Albert trail road**

Competitive Positioning

The Sturgeon Valley Retail Node is envisioned as a boutique, upscale retail node that is strategically differentiated from the big box retail cluster along St. Albert trail road. Situated within an area in Sturgeon Valley that is expected to see a significant amount of residential development build-out in the near term, this Priority Area is well positioned to support a neighborhood-scale commercial node with a mix of high-quality retail and medical office product. The mix will include experiential shopping and food and beverage concepts, personal services, health and wellness and medical offices to create a unique amenity package that will accommodate demand for commercial development from the growing residential population base in the Valley.

The Sturgeon Valley Retail Node competitively features land that fronts directly onto Sturgeon Road which makes it highly visible to vehicles travelling along this key collector road and provides an opportunity to capture spending from Sturgeon Valley residents. Residents in the Valley have some of the highest household income levels in the Metro region which enhances the viability of introducing an upscale retail node to the area.

Priority Area 1: Sturgeon Valley Retail

Recommended Economic Sectors & Land Uses

- Food & Beverage
- Specialty Retail
- Health & Wellness
- Medical Office
- Professional Services
- Grocery-anchored Retail

Potential Land Use Allocation (over 10 years)

80,000 SF
Retail Building Footprint

7.3 AC
Net Developable Land Required

Priority Area 1: Sturgeon Valley Retail

Infrastructure Actions

- Water infrastructure development is proposed in the area. The County has proposed the Allin Ridge Supply Line, which is in proximity to the site. Water infrastructure exists in the residential area to the east of the site. Construction of the remaining water mains would be developer-led.
- Sanitary infrastructure development is proposed in the area to connect to existing infrastructure. The County has proposed a future forcemain to connect to the ACRWC START gravity main, which is in proximity to the site. Sanitary infrastructure exists in the residential area to the east of the site. Construction of the remaining forcemains and gravity mains would be developer-led.
- Storm infrastructure development is proposed in the area. Underground storm lines, drainage channels, and 3 storm ponds are proposed to service the site, draining into the Sturgeon River. Construction of the stormwater infrastructure would be developer-led.
- Transportation: Roads within this area should be developed to an urban standard. Primary access to the site will be achieved from Sturgeon Road, with a future extension of 127 Street NW from the Anthony Henday, SW from the site and may provide further access and increase connectivity.

Policy & Zoning Actions

Municipal Development Plan Amendment
This will be undertaken following the Sturgeon Valley ASP Planning process. The designation of "Neighbourhood G" should be replaced by the land use outcomes of the Sturgeon Valley ASP Planning process. This commercial node should be designated as Commercial 2 as it is located within the Sturgeon Valley. It is anticipated that an MDP update will be undertaken by Sturgeon County in 2020, ultimately implementing these changes.

Land Use Bylaw Amendment
Redesignation would be required to facilitate development from Agriculture - AG to Local Commercial – C2 or Neighbourhood Commercial – C3 to accommodate proposed uses. The specific land use designation will depend entirely on the end user interested in developing within this area.

Priority Area 2: Sturgeon Industrial Park

Strategic Rationale

- Water and sanitary services already exist, and the Priority Area is in proximity to proposed infrastructure upgrades.
- Opportunity to build upon critical mass of industrial development and presence of economic anchors in SIP.
- EMRB has already designated SIP as a Major Employment Area in the Regional Growth Plan which provides a supportive regulatory framework.
- High degree of connectivity and proximity to Alberta's Industrial Heartland and major employers.
- Direct access to 825 Highway corridor, which is the primary transportation route for traffic travelling to and from Alberta's Industrial Heartland.
- Upgrades to the Highway 15, 37, 825 intersection coupled with the twinning of Highway 15 will improve traffic flow in and out of the industrial park.
- Leverages connections to the Canadian National Railway.

> **Target light and medium industrial product that is complimentary to existing medium and heavy industrial tenants in the Industrial Heartland**

Competitive Positioning

The Sturgeon Industrial Park will target light and medium industrial product that is complimentary to existing medium and heavy industrial tenants in the Industrial Heartland, thus creating a strategic cluster of economic activity. This priority development area features development parcels that are conducive to the needs of end user tenants that require space for light manufacturing, agribusiness, warehousing and petrochemical support activities. The proximity of SIP to many of the County's major employers and economic anchors provides an opportunity to leverage the available SIP land to target end user tenants that work synergistically with the petrochemical & agricultural industry and all of their subsectors.

This priority area is well positioned to build upon the supportive regulatory and infrastructure framework, development precedent and proximity to key regional transportation improvements to become a key employment node that can grow and diversify the County's well-established economic sectors.

Priority Area 2: Sturgeon Industrial Park

Recommended Economic Sectors & Land Uses

- Light Manufacturing
- Value-Add Manufacturing & Distribution
- Food Processing & Distribution
- Petrochemical Support
- Agriculture & Agribusiness
- Plastics & Resins
- Transportation & Warehousing

Potential Land Use Allocation (over 10 years)

1.1M-1.4M SF

Light/Medium Industrial Building Footprint

75-90 AC

Net Developable Land Required

Priority Area 2: Sturgeon Industrial Park

Infrastructure Actions

- Establish an internal circulation and road network may allow for the seamless transportation of goods and labour.
- Water infrastructure development is proposed in the area. Existing water services are relatively well-developed in proximity to the site. Construction of the remaining water mains and reservoirs would be developer-led.
- Sanitary infrastructure development is proposed in the area to connect to existing infrastructure. The ACRWC Northeast Regional Trunk Sewer exists east of the site. Construction of the remaining gravity mains would be developer-led.
- Storm infrastructure development is proposed in the area. Drainage channels and 5 storm ponds are proposed to service the site, draining into the North Saskatchewan River. Construction of the stormwater infrastructure would be developer-led.
- Transportation: The transportation network should be developed of north-south, east-west collector roads to service the site and provide connections to existing highways.

Policy & Zoning Actions

Municipal Development Plan Amendment
Although the Municipal Development Plan Fig 4 Growth Strategy concept map shows this PA as Industrial 2 designation, it is recommended that this map be updated to show the exact location where priority growth is permitted, delineating the entirety of SIP as within the Commercial 2 designation. It is anticipated that an MDP update will be undertaken by Sturgeon County in 2020, ultimately implementing these changes, if required.

Area Structure Plan
An area structure plan (or similar) should be undertaken to guide the development of SIP. The area currently lacks a plan but is zoned for industrial development. As ASP will provide a comprehensive framework for development, based on the recommendations of this study. It is recommended that the planning area be extended south from SIP (as currently defined) to encompass PA3.

Land Use Bylaw Amendment
The I4 district may be suitable to maintain but the full range of uses proposed should be evaluated against the permitted and discretionary uses as identified within the Land Use Bylaw.

Priority Area 3: Hwy 825 Employment & Service Commercial Node

Strategic Rationale

- Creates an important node of activity at the intersection of three prominent highways in the County.
- Upgrades to the Highway 15, 37, 825 intersection coupled with the twinning of Highway 15 will improve traffic flow in and out of the County as well as Sturgeon Industrial Park.
- Opportunity to capture truck traffic prior to entering the City of Edmonton and Fort Saskatchewan.
- There is currently no retail or service node to support the employment base at SIP and the Industrial Heartland.
- EMRB has already designated SIP as a Major Employment Area in the Regional Growth Plan which provides a supportive regulatory framework.
- Leverage the presence of anchors such as Bunge Canada to create a cluster of economic activity with a diversity of light and medium industrial land uses.
- There are already proposed services for this Priority Area per the Infrastructure Master Plan.
- The cost associated proposed servicing would likely be moderate given the relatively low complexity of service lines, and relatively small distance (approx. 1 km) covered to reach the area.

> **The intersection of Highways 15, 37 and 825 is a critical junction that is well positioned to support a retail and service commercial node due to its highly visible and connected location**

Competitive Positioning

Strategically located at the intersection of three highways, the Highway 825 Employment and Service Commercial Node is positioned as the gateway into Alberta's Industrial Heartland. The intersection of Highways 15, 37 and 825 is a critical junction that is well positioned to support a retail and service commercial node due to its highly visible and connected location. This node can capture spending from vehicles travelling in and out of the County into Fort Saskatchewan and Edmonton. The retail node will be anchored by a gas station, grab and go food and beverage concepts and convenience retail to serve Industrial Heartland employees as well as the SIP as it continues to build out.

The SIP lands south of Highway 825 competitively feature frontage onto Highway 825 as well as connectivity to significant economic anchors in Alberta's Industrial Heartland. These lands are right-sized and optimally located to enable growth in Sturgeon County's key economic sectors such as agribusiness, transportation and warehousing, logistics, and value-add activities.

Priority Area 3: Hwy 825 Employment & Service Commercial Node

Recommended Economic Sectors & Land Uses

- Light Manufacturing
- Value-Add Manufacturing & Distribution
- Food Processing & Distribution
- Agriculture & Agribusiness
- Plastics & Resins
- Transportation & Warehousing

Potential Land Use Allocation (over 10 years)

884,000-1.1M SF
Light/Medium Industrial Building Footprint

40,000 SF
Retail Building Footprint

50 AC
Net Developable Land Required

Priority Area 3: Hwy 825 Employment & Service Commercial Node

Infrastructure Actions

- The Northside Transmission System and other water mains exist north of the site. Construction of the remaining water mains and reservoirs would be developer-led.
- The ACRWC forcemain is in the closest proximity to the site, including a pump station, approximately 1km away. Construction of the remaining gravity mains would be developer-led.
- Storm infrastructure does not exist near the site. Overland or underground drainage systems, and/or storm ponds may be required for the site to drain the site.
- Transportation: Safe access should be established to Highway 825, and upgrades contemplated where required.

Policy & Zoning Actions

Municipal Development Plan
It is recommended that the SIP boundary and planning boundary is extended to encompass PA3, further requiring that the MDP Fig 4 Growth Strategy Concept Map is updated to show this node as an Industrial 2 designation. It is anticipated that an MDP update will be undertaken by Sturgeon County in 2020, ultimately implementing these changes

Area Structure Plan
An area structure plan (or similar) should be undertaken to guide the development of SIP. As an ASP will provide a comprehensive framework for development. Based on the recommendations of this study, the planning area should be extended south from SIP (as currently defined) to encompass the entire Priority Area.

Land Use Bylaw Amendment
The I4 district may be suitable to maintain but the full range of uses proposed should be evaluated against the permitted and discretionary uses are identified within the Land Use Bylaw. The portion of this node that is designated as Agricultural – AG must be re-designated.

If the intent is for uses that are not permitted or discretionary within the I4 district, a re-designation of this parcel/land would be advisable to accommodate these uses. As a service station use has been proposed, an appropriate designation may be Highway Commercial – C1.

It should be noted that an existing Direct Control District (DC4) exists in the SE corner of the intersection of Highway 15 and Highway 37. This DC is intended to: accommodate appropriate retail commercial and service uses, within the context of Highway Commercial, at the intersection of major transportation corridors, to serve the surrounding industrial business parks and/or the travelling public. As such, development which supports the travelling public would be feasible in this corner from a land use designation standpoint.

Priority Area 4: Highway 28 Retail Service Node

Strategic Rationale

- There is demand for more retail and amenities to support the CFB and residential base.
- Retail along the west side of Highway 28 is a supported land use by CFB.
- Land located south of Sturgeon Road is within the boundaries of Area B1 in the Sturgeon Special Study Area, which is supportive of commercial development.
- This retail node will reduce retail leakage from Sturgeon County as it provides a relief valve for the congested retail corridor along St. Albert Trail.
- Leverage strong Average Daily Traffic counts along Highway 28.
- Capture retail spending potential of highway traffic prior to entering City of Edmonton as there is currently no highway commercial along the Highway 28 corridor.
- Supportive amenity for future employment growth along Highway 28.
- Offers relative proximity to existing services and proposed infrastructure in the Infrastructure Master Plan covers the entire area.
- Servicing is likely less cost prohibitive due to minimal distance covered by new infrastructure.

> **Amenity package that includes grocery, convenience retail, a gas bar, grab & go food and beverage and personal services as well as institutional and recreational services could appeal to CFB employees and residents**

Competitive Positioning

The Highway 28 Retail Service Node will be strategically located at the intersection of Highway 28 and Sturgeon Road to capture vehicle traffic coming to and from Sturgeon Valley, CFB, Edmonton and northern Alberta. This priority development area should be positioned as highway commercial due to the high degree of visibility and accessibility. The provision of an amenity package that includes grocery, convenience retail, a gas bar, grab and go food and beverage, as well as institutional and recreational services could appeal to CFB employees and residents, as well as the surrounding residential neighborhoods and Highway 28 traffic.

With approximately 5,800 employees and 500 residents on the base at a given time, the minimal retail currently on the base creates demand for a greater diversity of commercial development. Demand from CFB, coupled with continued expansion of residential development in the Valley eastward toward Highway 28 will generate the critical mass needed to support this strategic retail service node. This Priority Area would create civic-centric amenities that will strengthen the brand identity and character of the Valley, while supporting residential and employment growth.

Priority Area 4: Highway 28 Retail Service Node

Recommended Economic Sectors & Land Uses

- Fuel Station
- Convenience/ Retail
- Food & Beverage
- Personal Services
- Grocery Store

Potential Land Use Allocation (over 10 years)

70,000 SF
Retail Building Footprint

6.4 AC
Net Developable Land Required

Priority Area 4: Highway 28 Retail Service Node

Infrastructure Actions

- Water infrastructure development is proposed in the area. The County has proposed the Allin Ridge Supply Line, which connects the water infrastructure proposed for this site. Water infrastructure exists in the residential area to the west of the site. Construction of the remaining water mains would be developer-led.
- Sanitary infrastructure development is proposed in the area to connect to existing infrastructure. Sanitary infrastructure exists in the residential area to the west of the site, as well as an existing Sturgeon lift station northeast of the site. Construction of the remaining forcemains and gravity mains would be developer-led.
- Storm infrastructure development is proposed in the area. Underground storm lines, overland drainage channels and a storm pond are proposed to service the site. Construction of the stormwater infrastructure would be developer-led.
- Transportation: The intersection of Highway 28 and Sturgeon Road should be upgraded, and possibly signalized with auxiliary lanes added. Range Road 245 should be upgraded to a collector class road and the missing links of this thoroughfare connected to create a continuous north-south route.

Policy & Zoning Actions

EMRB Sturgeon Valley Special Study Area
Although development can be accommodated from a policy standpoint south of Sturgeon Road, an amendment to the Special Study Area is recommended to extend the boundary of Area B1 in the Sturgeon Valley Special Study Area to allow for commercial on the north side of Sturgeon Road, and maximize visibility and access opportunities presented by the intersection. This would be an amendment reviewed and approved by the EMRB.

Municipal Development Plan Amendment
This will be undertaken following the Sturgeon Valley ASP Planning process. The designation of "Neighborhood G" should be replaced by the land use outcomes of the Sturgeon Valley ASP Planning process. This commercial node should be designated as Commercial 2 as it is located within the Sturgeon Valley. It is anticipated that an MDP update will be undertaken by Sturgeon County in 2020, ultimately implementing these changes.

Land Use Bylaw Amendment
Redesignation would be required to facilitate development from Agriculture - AG to Local Commercial – C2 or Neighbourhood Commercial – C3 to accommodate proposed uses. The specific land use designation will depend entirely on the end user interested in developing within this area.

Priority Area 5: Villeneuve Employment Zone

Strategic Rationale

- EMRB Growth Plan designates Villeneuve Airport as a Major Employment Area.
- Water and sanitary mains already exist near the priority area and there are proposed plans to extend water, sanitary and storm. The costs associated with these infrastructure upgrades are less extensive compared to other areas in the County.
- Zoning amendments on Airport land do not require approval from the EMRB which mitigates regulatory challenges associated with land development.
- The Edmonton Regional Airport Authority already has interest in developing land for light industrial development per the newly released Strategic Plan (2019-2023).
- Opportunity to form partnerships with the EIA marketing and commercial development team to attract end user tenants.
- Connectivity to Yellowhead Highway via Highway 44 which is already a busy trucking route.
- Transportation access into the Priority Area already exists via Range Road 270A.

> **Flexible development opportunities that offer adjacency to the largest and busiest general aviation airport in the region as well as Highway 44, which is a prominent aggregate trucking corridor**

Competitive Positioning

The Villeneuve Employment Zone will leverage the presence of a key institutional anchor and multi-modal connectivity to create a strategic employment area that supports manufacturing, warehousing, transportation and aviation related activities. This Priority Area provides flexible development opportunities that offer adjacency to the largest and busiest general aviation airport in the region as well as Highway 44, which is a prominent aggregate trucking corridor.

Land parcels on Villeneuve Airport property have already been designated for light industrial development and feature a supportive regulatory and infrastructure framework that help to simplify the development process for end user tenants. The regulatory and infrastructure context at and around Villeneuve provides an a competitive value proposition to attract investors and development partners interested in developing space for manufacturing, aerospace, transportation and logistics activities.

This Priority Area could establish Villeneuve Airport and Sturgeon County as a hub for general aviation and flight training.

Priority Area 5: Villeneuve Employment Zone

Recommended Economic Sectors & Land Uses

- Flex Industrial
- Aviation & Aerospace
- Defence
- Manufacturing

Potential Land Use Allocation (over 10 years)

550,000-760,000 SF

Light Industrial Building Footprint

36-50 AC

Net Developable Land Required

Priority Area 5: Villeneuve Employment Zone

Infrastructure Actions

- Water infrastructure development is proposed in the area. Water infrastructure exists in the residential area to the east of the site. Construction of the remaining water mains and reservoirs would be developer-led.
- Sanitary infrastructure development is proposed in the area to connect to existing infrastructure. The County has proposed upgrades to the Villeneuve Lagoon including a Sturgeon lift station. Sanitary infrastructure exists in the residential area to the east of the site. Construction of the remaining forcemains and gravity mains would be developer-led.
- Storm infrastructure development is proposed in the area. Drainage channels and a storm pond are proposed to service the site. Construction of the stormwater infrastructure would be developer-led.
- Transportation: The internal road network should be developed to provide safe access to Villeneuve Road. Controlled intersections should be developed on Villeneuve Road and auxiliary lanes added where required/ possible, and roads developed to an industrial standard. Emergency access must be established to Highway 44 or Range Road 265.

Policy & Zoning Actions

The MDP and EMRBGP align with the future intent for development.

Land Use Bylaw Amendment
With the understanding that it is the County's preference to develop further east towards Highway 44, the land directly east of land appropriately designated as Airport – AP, should be redesignated from Agriculture to an appropriate land use designation which supports the airport. This may be keeping in line with an AP designation, or perhaps a Highway Commercial designation or Medium Industrial (I4) designation to allow for aviation supportive general industrial activities.

07 ACTION & IMPLEMENTATION PLAN

Action & Implementation Plan

The Sturgeon County Commercial Development Action Plan provides a set of targeted and strategic recommendations to enable the development of the eight identified Priority Areas. The Action Plan, found in Appendix A, outlines the various initiatives the County should purse with respect to planning, infrastructure and servicing, marketing and governance as well as potential project partners that can help to enable commercial development in the Priority Areas.

Planning & Policy

The creation of a flexible and transparent zoning bylaw that is agile to changes in market conditions will play a critical role in enabling a competitive edge for the County from a development attraction standpoint. It is recommended that amendments be made to Land Use Bylaw 1385/17 to ensure logistics, warehousing, processing, light manufacturing, and assembly are clearly articulated as permissive land uses under the Medium Industrial Service District.

The County should explore the opportunity to take the lead on the creation of an Area Structure Plan for Sturgeon Industrial Park to build a clear and comprehensive framework for development in this strategic priority areas. Leading the entitlement process for Sturgeon Industrial Park would help to mitigate some of the perceived development and planning challenges by removing the onus of the approvals process from the developer. A County-led ASP process for Sturgeon Industrial Park would show the development community that the County is committed to building out this employment area and would provide certainty about the types of light industrial land uses that are being targeted. The County would need to reach out to existing landowners in Sturgeon Industrial Park to collaboratively develop this planning document.

The recommendations in this study should be used to guide the land use directions for the lands abutting the west side of Highway 28 as part of the Sturgeon Valley Special Study Area. With the creation of the Sturgeon Valley ASP currently underway, the timing is opportune to recommend land use bylaw amendments for Priority Area's 4,6,7 in conjunction with the existing planning process to proactively set up the policy framework for future development.

A common theme that was conveyed during the stakeholder focus groups was the importance of establishing quick and transparent permitting and approvals process. A review of the County's development and approvals process will help to identify potential challenges as well as opportunities to create efficiencies through pre-zoning and expedited approvals.

Physical Site Preparation

The cost of servicing and infrastructure was cited by various stakeholders as a significant consideration for the viability of commercial development in Sturgeon County. It is recommended that the County focus on each Priority Area and cost out the infrastructure and servicing required to support the proposed commercial land uses as well as identify the amount the County will front end. The identification of detailed costs will provide certainty to developers about what the County will pay and what the developer is expected to pay. The County should explore the availability of grants or financing tools to help offset the cost of servicing and infrastructure.

The County should also engage in discussions with Alberta Transportation to outline the transportation upgrades needed to unlock various development opportunities. The County can use the Commercial Development Analysis as a justification for why investment into the identified upgrades is necessary.

Marketing and Promotion

Sturgeon County is recognized locally and globally as a leader in petrochemicals and agriculture. Strength in these sectors manifests itself in the County's primary land uses, I5: Heavy Industrial and Ag: Agriculture, that continue to form the basis of the County's identity. While the petrochemicals industry has allowed Sturgeon County to avoid the boom-bust cycle of oil & gas, the County should remain focused and diligent on branding efforts that highlight its strengths from a real estate and economic diversification perspective. This will help to solidify a brand and identity that has its basis in petrochemicals, agriculture and heavy industry, but is also diversified in other emerging sectors such as advanced manufacturing, agri-business and logistics.

The creation of a Development Marketing Summary Document would be a useful tool to generate commercial development interest. This document would serve as a strategic marketing piece that would promote the strategic commercial development opportunities outlined in this report. This will help to showcase the County's ability to support a diversity of commercial land uses and economic sectors, while signaling to the development community that the County is open for business.

Collaboration and Partnerships

It is recommended that the County reach out to various stakeholders to explore the possibility of partnerships and joint development ventures. Collaboration will be key to unlocking the development potential of strategic parcels of land through transportation improvements, infrastructure upgrades and marketing efforts. This includes landowners of property that is identified as priority areas in the report. There may be limited interest from certain landowners in generating commercial development on their land holdings, and it would be advantageous to begin collaboration and discussion early in the process.

The County should engage in discussions with the Edmonton Regional Airports Authority to explore various tools and strategies to position the Villeneuve Airport light industrial development parcel and adjacent fee simple land "pad ready" for development. It will be advantageous for the County to leverage the Airport Authority's commercial real estate and marketing expertise and resources to promote the development opportunities at and around Villeneuve Airport that can benefit both groups.

The County should also continue discussions with developers and brokers who were involved in the focus group stakeholder process of this study. Local commercial developers are the entities who will ultimately make this plan a reality, and real estate brokers can assist in bringing targeted end-user tenants to Sturgeon County if the "right fit" is present.

Alexander First Nation occupies a large amount of land directly adjacent to Sturgeon County and therefore the County should explore potential opportunities to partner with this group for commercial development over a long-term phase.

APPENDIX A - ACTION PLAN

	IMMEDIATE	NEAR TO MEDIUM	LONG	PROJECT PARTNERS
PA1: RETAIL NODE	• MDP Amendment (2020 update expected internally) • ASP Inputs (SV ASP) • Land Use Bylaw Amendment			Sturgeon County Development Support Services EMRB
		• Extension of 127 NW Access Road		Alberta Transportation
		• Development of Allin Ridge Supply Line		Land Development Industry
PA2: LIGHT /MEDIUM INDUSTRIAL	• MDP Amendment (2020 update expected internally) • Land Use Bylaw Amendment			Sturgeon County Development Support Services
		• Signalized intersection into site		Alberta Transportation
		• Progressive development of services by industry		Land Development Industry
PA3: RETAIL & LIGHT/MED. INDUSTRIAL	• MDP Amendment (2020 update expected internally) • Land Use Bylaw Amendment			Sturgeon County Development Support Services
			• Upgrade access to Highway 825	Alberta Transportation
		• Progressive development of services by industry		Land Development Industry
PA4: RETAIL SERVICE	• MDP Amendment (2020 update expected internally) • ASP Inputs (SV ASP) • Land Use Bylaw Amendment • EMRG Sturgeon Valley Special Study Area Amendment (required only if development node is to straddle Sturgeon Valley Road - extending north into Area D)			Sturgeon County Development Support Services EMRB
		• Upgrade RR 245 to collector standard		Alberta Transportation
			• Development of Allin Ridge Supply Line • Extension of servicing via land development	CFB Edmonton Land Development Industry
PA5: LIGHT INDUSTRIAL/ AVIATION-RELATED	• MDP Amendment • Land Use Bylaw Amendment			Sturgeon County Development Support Services
	• Upgrade Hwy 633 to add auxillary lanes and provide signalized intersections • Establish emergency access to Hwy 44 or Range Road 265			Alberta Transportation
		• Extension of sanitary and water servicing from Villeneuve Airport		EMRB
	• Engage in discussions with Edmonton Regional Airports Authority			Edmonton Airports (EIA), Land Dev Industry
PA6: LIGHT INDUSTRIAL	• MDP Amendment (2020 update expected internally) • ASP Inputs (SV ASP) • Land Use Bylaw Amendment			Sturgeon County Development Support Services EMRB
		• Upgrade RR 245 to collector standard • Upgrades to Township Road 542		Alberta Transportation
			• Development of Allin Ridge Supply Line • Extension of servicing via land development	CFB Edmonton Land Development Industry
PA7: LIGHT INDUSTRIAL	• MDP Amendment (2020 update expected internally) • ASP Inputs (SV ASP) • Land Use Bylaw Amendment			Sturgeon County Development Support Services EMRB
		• Upgrade RR 245 to collector standard • Valour Ave/Range Road 245 intersection upgrade required • Upgrades to Township Road 542	• Explore feasibility of spur line extension for CN line • Consider overpass/underpass connection from Valour Ave to Anthony Henday	Alberta Transportation CN City of Edmonton
			• Development of Allin Ridge Supply Line • Extension of servicing via land development	CFB Edmonton Land Development Industry
PA8: LIGHT INDUSTRIAL	• MDP Amendment (2020 update expected internally) • ASP Inputs (SV ASP) • Land Use Bylaw Amendment • EMRG Sturgeon Valley Special Study Area Amendment			Sturgeon County Development Support Services EMRB
		• Signalization of Sturgeon Road/Hwy 28 intersection and possible dedicated deceleration lanes		Alberta Transportation CN
			• Development of Allin Ridge Supply Line • Extension of servicing via land development	CFB Edmonton Land Development Industry

Legend

- Policy & Planning
- Infrastructure & Servicing
- Transportation
- Collaboration & Partnership

SOURCES

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25: www.edmontonindustrial.ca/documents/Edmonton_2018_Investment_Competitiveness_Study_Public.pdf
26: www.naiedmonton.com/insights_resources/marketreport_Q2-2019.pdf
27: www.cbre.ca/en/research-and-reports/Edmonton-Office-MarketView-Q3-2019
28: www.ahla.ca/wp-content/uploads/2019/05/AHLA-Alberta-Accomm-Outlook-2019-FINAL.pdf

MXDdevelopment.com

Appendix F: Sturgeon County Commercial Development Analysis

Appendix G

Agricultural Impact Assessment

Agricultural Impact Assessment

Sturgeon Valley South
Area Structure Plan

Prepared For

Sturgeon County
& V3 Companies

Prepared By

Serecon Inc.

May 2021

May 27, 2021

V3 Companies
Attn: Nick Pryce & Aman Jhawer
Sherwood Park, AB

RE: AGRICULTURAL IMPACT ASSESSMENT: STURGEON VALLEY SOUTH – AREA STRUCTURE PLAN

Please find attached our review of the agricultural impact of development of the Sturgeon Valley Special Study Area Development Plan. We have reviewed the potential for conflict of new development with agricultural uses and outlined the anticipated impact on the agricultural community.

We thank you for this opportunity and remain available to provide further review as required.

Yours truly,
SERECON INC.

Markus Weber
B.Sc.Ag, MBA, LL.B., P.Ag.

Enclosure

/da

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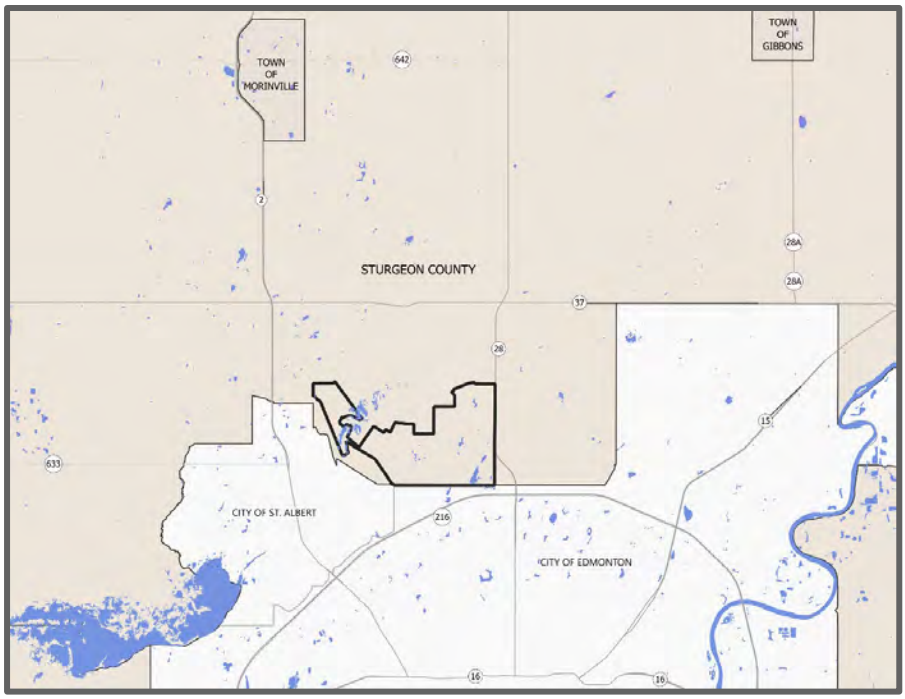
1.0 Introduction

1.1 Location

This agricultural impact assessment has been prepared for the area currently being described as "Sturgeon Valley Special South Area" and outlined below. The area is in the southern part of Sturgeon County, immediately north of Edmonton and northeast of St. Albert. This area is referred to simply as the subject area, the ASP, or as SVS (Sturgeon Valley South) throughout this report.

Figure 1:General Location of Sturgeon Valley South Area Structure Plan



The subject area is located west of Highway 28, south of Township Road 544, east of Range Road 253, and north of the Anthony Henday.

The area includes lands designated Agriculture, Country/Country-Estate Residential, as well as various less significant land use districts. The County Planning documents, and the designations applied within the subject area will be further discussed in Section 2.0 of this report.

1.2 Scope of the AIA

We were retained to produce this Agricultural Impact Assessment (AIA) to assess the impact of development in the study area on agricultural production in the region. Since Sturgeon County does not have specific requirements for an AIA, we have based our analysis on other agricultural impact assessments for area structure plans

completed in other municipalities in the Edmonton region. We have therefore assumed that the minimum requirements for an AIA include the following:

1. Review of land use planning documents
2. Size, configuration, and accessibility of parcels
3. Soil analysis, drainage
4. Soil maps
5. Suitability of proposed concept
6. Inventory of current property
7. Impacts on current and neighbouring lands:
    i. Fragmentation and conversion
    ii. Impact on ag lands
    iii. Loss of agricultural services
8. Final summary, including recommendations on mitigation or qualifications

An Agricultural Impact Assessment may on some occasions also require other professionally prepared reports upon request by certain parties, including biophysical, geotechnical, hydrogeological, environmental, floodplain, or servicing studies. However, under the circumstances of the current stage of development and consideration of the overall area structure plan, none of these additional reports should be required in the context of an AIA for the SVSSA. The assessment was conducted without accessing the said lands directly, but rather on the basis of existing knowledge and information.

2.0 Existing Planning Documents

2.1 Sturgeon County

The following section will outline the implications of current planning documents and bylaws on the subject area. Table 1 shows current designations from various Sturgeon County land use policies. Note that relevant inter-municipal policies are discussed in Section 2.2. These planning documents and policies are each a part of establishing and realizing the overall vision and strategy for the region.

Table 1: Sturgeon County Land Use Policy Documents

Policy	Subject Designation(s)
Land Use Bylaw	Agriculture General, Country Residential, Country Estate Residential, Environmental Preservation, Public Open Space, Public Utility, Recreational, and Split
Municipal Development Plan	Neighbourhood 'G'
Strategic Plan	County-wide strategy document, no designations

Land Use Bylaw

The Land Use Bylaw (LUB) is the most specific of the land use planning documents and is used to implement the vision of the broader planning documents through specific land districts or zones with certain regulations for appropriate land uses.

Most of the land within the subject area is zoned as AG (Agriculture General), with country residential being the second most common district.

The purpose of the Agriculture General district is to accommodate traditional agricultural operations and the supportive services that are essential to grow and sustain the agricultural industry. This includes limited residential and home-based businesses tied-into or compatible with the agricultural industry

There are three subdivision areas with parcels zoned R1 (Country Residential) and one parcel zoned R2 (Country-Estate Residential). The purpose of country residential is to provide for multi-lot residential subdivisions in rural areas where parcel size is determined through limited servicing availability. Country-Estate residential is the same as R1, with the added provision of municipal water and sanitary services.

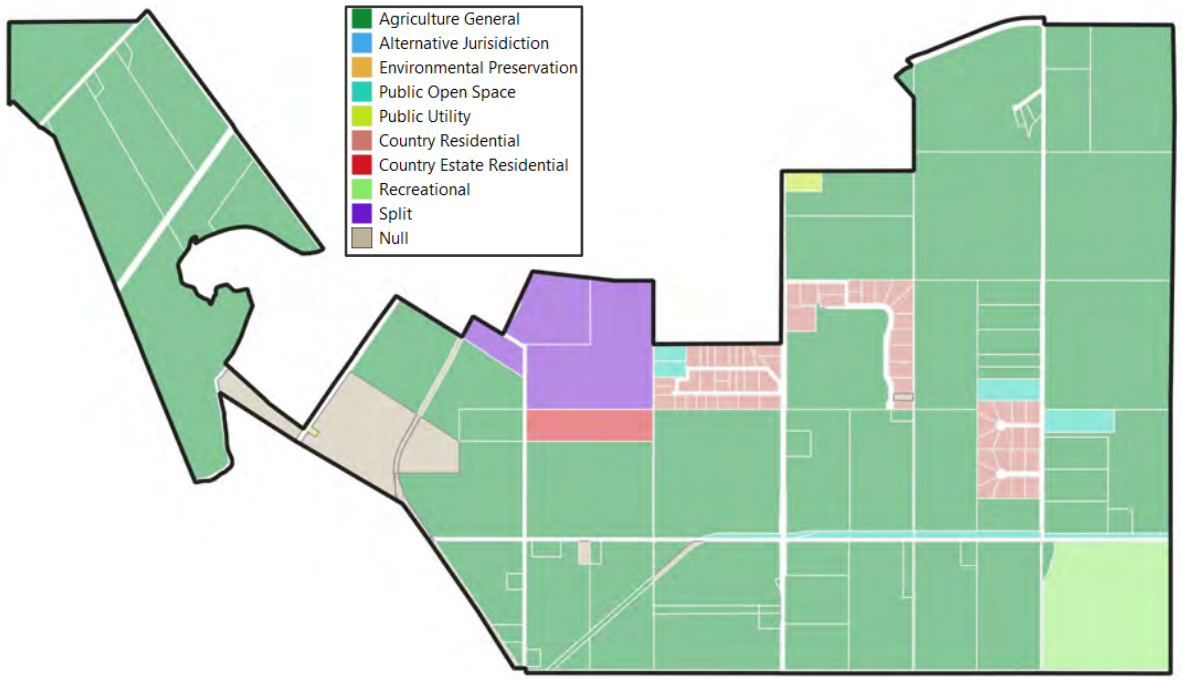
Country Residential lots have a minimum size of 0.8 ha (2 ac) if connected to a municipal sanitary line and 1 ha (2.47 ac) if not connected[1].

In comparison, Country-Estate Residential lots have a minimum size of 0.2 ha (0.5 ac) and a maximum of 0.8 ha (1.98 ac)[2].

1 Sturgeon County Land Use Bylaw 1385-17. pp 93.
2 Sturgeon County Land Use Bylaw 1385-17. pp 95.

One parcel is zoned Recreational (REC) which has a purpose of accommodating development intended to provide commercial indoor and outdoor recreational facilities and related land uses which are large in scale. In this case, the parcel is operated by a golf course.

Figure 2: Land Use Bylaw (2017) Land Use Districts for Sturgeon Valley South ASP



Municipal Development Plan

The Municipal Development Plan (MDP) is a county level plan used to strategize development and plan for the future needs and vision for the County. The underpinning objectives to the Sturgeon County's Integrated Regional Growth Strategy within its MDP are as follows:

- Sustainable Growth
- An Industrial and Agricultural Leader
- A Regional Partner: Influence on a Regional Scale
- Understanding the Public's Needs
- Consistency in Decision Making: Incorporating Strategic Thinking

The subject area is designated with the Neighbourhood G, with the affixed distinctive role *to support the regional vision of growth where positive intermunicipal dialogue is facilitated and sustainable communities are the result*[3].

3 Sturgeon County Municipal Development Plan. 2014. pp 108.

Strategic Plan

The Sturgeon County Strategic Plan is a broad planning document that discusses the overall vision for the County. The following are listed as the focus areas from the 2018-2027 Strategic Plan.

- Planned Growth and Prosperity
- Maintain and Enhance Strong Communities
- Strong Local and Regional Governance
- Community Identity and Spirit
- Environmental Stewardship

2.2 Edmonton Metropolitan Region

Sturgeon County is a prominent member of the Edmonton Metropolitan Region Board (EMB) and there are several EMRB strategy documents whose scope covers the subject area. These documents will be discussed and considered in connection with the County documents outlined previously.

Intermunicipal Growth Plan

The Edmonton Metropolitan Region Board Growth Plan (Growth Plan) is a multifaceted policy framework document with several guiding principals to be used to steer local governing bodies towards making development policies which are coherent within the region and enhance the effectiveness of individual municipalities' efforts.

The Growth Plan has been read as being an important strategy document, but it is recognized that it is broader in scope than local municipality documents and it may not fully reflect the nuance of a particular local area or specifically address individual areas the way a land use bylaw would. For this reason, we have listed all of the policy areas within the Growth Plan and the specific objectives on the policy areas deemed more relevant to the subject area for the purposes of this Agricultural Impact Assessment.

All regional Growth Plan policies apply to the study area except for policy tiers and density targets, which are specified within the 2019 amendment *Appendix G: Negotiated Policies for the Sturgeon Valley Special Study Area*[4].

Key Growth Plan policies and principles are outlined to contextualize the intention of the growth plan with respect to the subject area.

Policy Area 1: Economic Competitiveness and Employment

Guiding Principle: Promote global economic competitiveness and regional prosperity.

Policy Area 2: Natural Living Systems

Guiding Principle: Protect natural living systems and environmental assets

Policy Area 3: Communities and Housing

4 Edmonton Metropolitan Region Board Growth Plan Amendment. March 14, 2019. Appendix G: Policy 3.1.1. pp.124

Guiding Principle: Recognize and celebrate the diversity of communities and promote an excellent quality of life across the Region

Objectives:

1. Plan and develop complete communities within each policy tier to accommodate people's daily needs for living at all ages
2. Plan for and promote a range of housing options
3. Plan for and promote market affordable and non-market housing to address core housing need

Policy Area 4: Integration of Land Use and Infrastructure

Guiding Principle: Achieve compact growth that optimizes infrastructure investment

Objectives:

1. Establish a compact and contiguous development pattern to accommodate employment and population growth
2. Enable growth within built-up urban areas to optimize existing infrastructure and minimize the expansion of the development footprint
3. Plan and develop greenfield areas in an orderly and phased manner to contribute to complete communities
4. Plan for and accommodate rural growth in appropriate locations with sustainable levels of local servicing
5. Plan for and develop mixed use and higher density centres as areas to accommodate population and job growth
6. Prioritize investment and funding of regional infrastructure to support planned growth
7. Ensure compatible land use patterns to minimize risks to public safety and health

Policy Area 5: Transportation Systems

Guiding Principle: Ensure effective regional mobility

Policy Area 6: Agriculture

Guiding principle: Ensure the wise management of prime agricultural resources

Objectives:

1. Identify and conserve an adequate supply of prime agricultural lands to provide a secure local food source for future generations
2. Minimize the fragmentation and conversion of prime agricultural lands for non-agricultural uses
3. Promote diversification and value-added agriculture production and plan infrastructure to support the agricultural sector and regional food system

The policies, principles, and objectives of the Growth Plan generally indicate that agricultural lands and uses should be managed wisely to ensure an adequate supply of productive land remains into the future. Soil quality and productivity tend to be the emphases for priority of preservation with secondary considerations for socioeconomic and cultural values.

Regional Agricultural Master Plan	Work on the Edmonton Metropolitan Region Board's Regional Agriculture Master Plan (RAMP) was initiated in 2018. This regional master plan and the accompanying land evaluation and site assessment (LESA) tool has not yet been finalized and therefore the Sturgeon County Land Use Bylaw is the principal agriculture related planning document for the subject area.

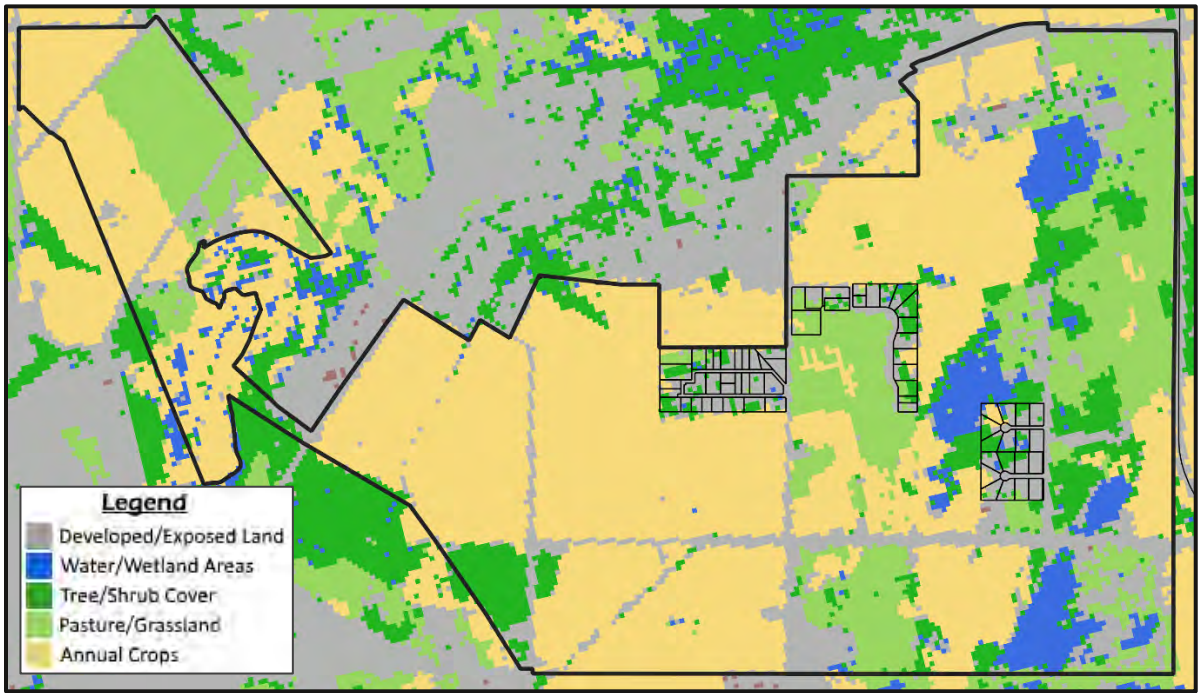
3.0 Area Description

3.1 Regional Influences

Current Land Use

Currently, there are multiple land uses within the subject area. Figure 3 shows remote sensing derived land uses from 2019. The remote sensing dataset is from Agriculture and Agri-Food Canada's Annual Crop Inventory. The thin black parcel boundaries indicate Country Residential parcels (R1). This dataset has been provided to us by the County.

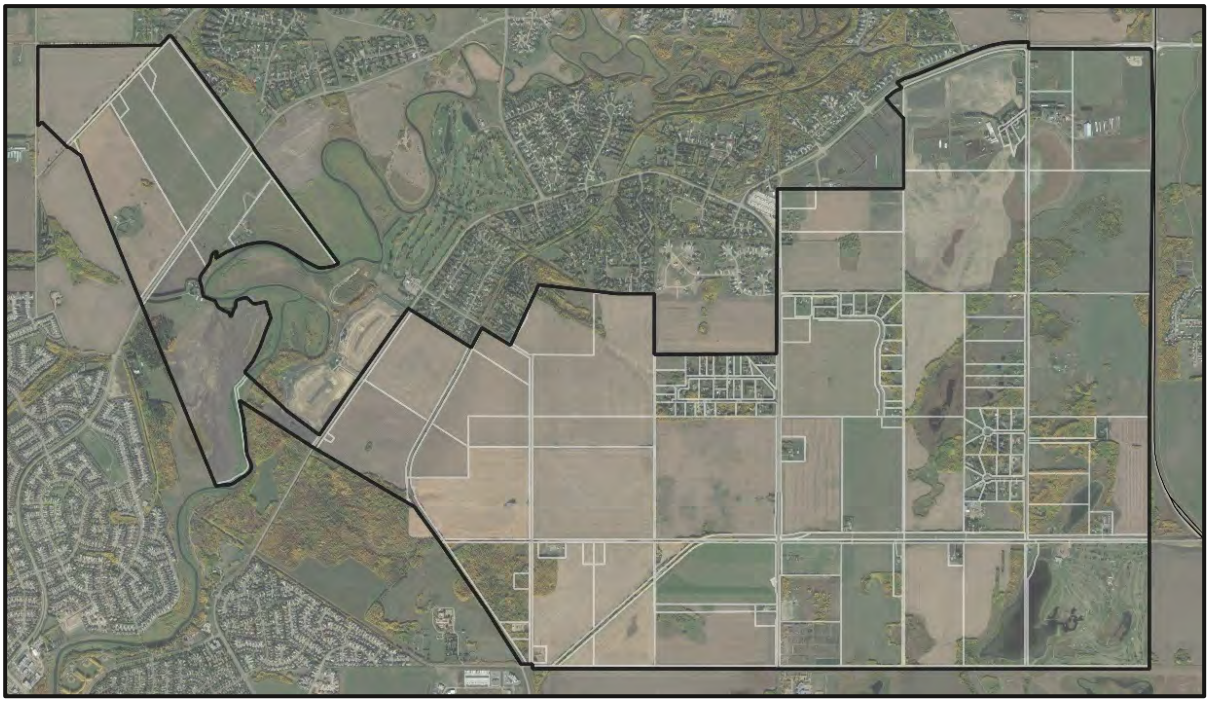
Figure 3:Remote Sensing Data and Country Residential Development Parcels Showing Land Use (2019)



As seen in Figure 3 above, annual crop production is the dominant land use within the subject area with exception only for the eastern band of quarter sections which is primarily in pasture and forage production. The central portion is where the three country residential subdivisions are concentrated.

The aerial imagery seen in Figure 4 displays a visual of the land use pattern noted above. Visual imagery indicates that the southeastern quarter section is a golf course.

Figure 4: Aerial Imagery and 2020 Parcel Boundaries



The AIA project team did visit the region to examine the various lands in question and to confirm that the primary use of those regions identified as "annual crops" and "pasture/grassland" remains for those purposes. The state of these lands was documented on May 23, 2021 by capturing a number of 360 panoramas using a small remotely piloted aircraft. These can be viewed at the URL http://tiny.cc/SVASP or by using the QR code below. Note that the eastern portion of the ASP cannot be accessed due to Class F airspace for the Department of National Defence facilities.

Figure 5:Locations of 360 Panoramas Confirm Current Land Use (May 23, 2021)

Landcover and Land Use Trends

The subject area is nested between the urban periphery of the Edmonton Metropolitan Region to the south, the Country Residential area of Sturgeon Valley Core to the north, and the Canadian Forces Base Edmonton to the east. Proximity to places of employment, amenities, and services all bring long standing residential development pressures to the area.

Figures 3 and 4 provide land use information for a single point in time, providing a view of the current agricultural land uses. Land use decisions are however inherently intertemporal and so it is important to also review the trends in land use for an accurate assessment of the state of agricultural use.

Land use trends are assessed by comparing remote sensing landcover data from 2000 (Figure 6) to the 2019 landcover data in Figure 3. The data for 2000 classified forage production within the annual crop land use category, and so it is best to compare the total agricultural landcovers from each year.

From 2000 to 2019, as shown in Table 2, the total agricultural land use decreased by 8% or 274 acres. This change appears to correspond to an increase in developed and exposed land uses of 321 acres. Upon review of areas of agricultural land conversion, the change in landcover appears to be due in part to shifting landcover classification techniques. For instance, within the 2019 dataset part of the southeast golf course as well as a 30-acre tree nursery are classified as developed/exposed landcover.

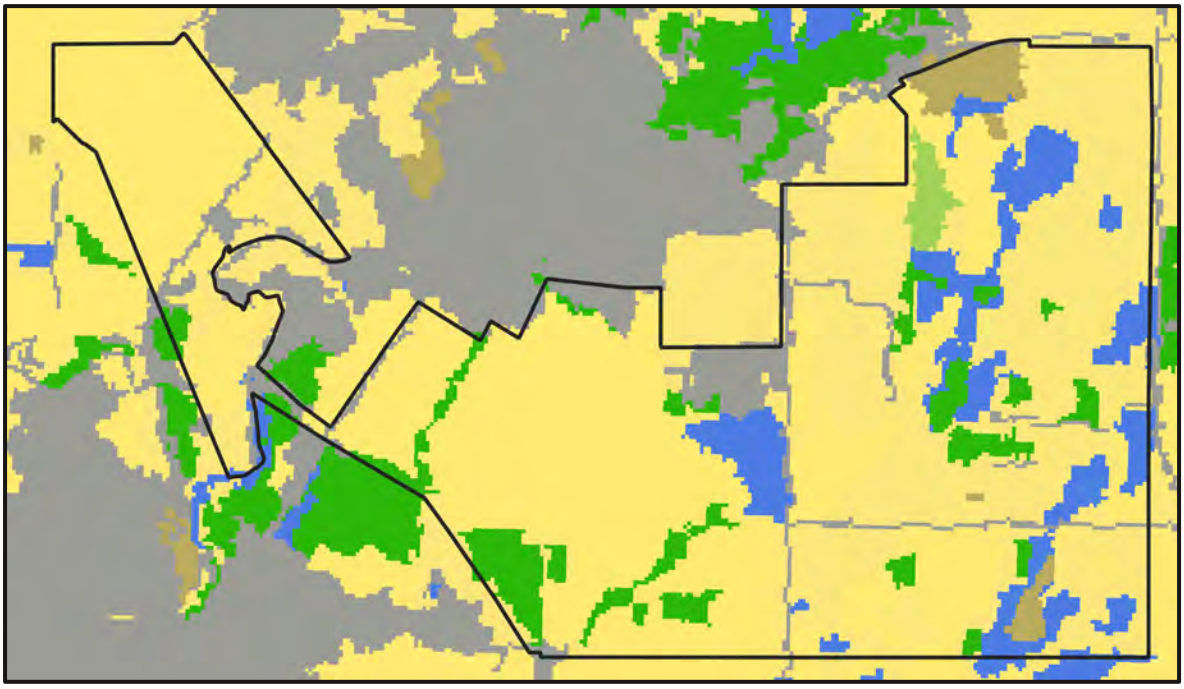
A 40% or 146 acre decrease in water and wetland landcover corresponds closely to a 105 acre increase in tree and shrub landcover. These changes are likely mostly due to a drier soil moisture regime whereby wetlands shifted to shrublands within low lying areas.

The increase in developed land uses indicates that the subject area has been undergoing a slow shift away from agricultural uses. Given the proximity to the Edmonton Metropolitan region urban periphery, the rate of agricultural land loss has been moderate through the nearly 20-year period.

Table 2: Land Use Trends within Subject Area

Landcover	2000 Acres	2019 Acres	00-19 trend
Developed/Exposed	324.3	645.3	+321 acres (99% increase)
Water/Wetlands	367.0	220.6	-146.4 acres (40% decrease)
Tree/Shrub cover	262.6	368.2	+105.6 acres (40% increase)
Pasture/Grassland	38.5	850.2	+811.7 acres (2100% increase)
Annual Crops	3212.2	2126.5	-1085.7 acres (34% decrease)
Agricultural Use	3250.7	2976.7	-274 acres (8.4% decrease)

Figure 6:Remote Sensing Landcover Data (2000)5



Access and Transportation

The primary accesses to the subject area are Highway 28, which borders the subject area to the east, Sturgeon Road, which bisects the subject area, and Bellerose Drive, which bisects the northeast portion of the subject area. Additionally, access to the southeastern component of the subject area from the Anthony Henday (Highway 216) is available via the 127-street exit onto Range Road 250. Township Roads 542A and 543A also give access along the north boundary of the subject area. Range Roads 251,250, and 245 each cut through the subject area at one-mile intervals.

Most properties within the subject area are accessible by paved roads, with the remaining properties having gravel road access. The current country residential subdivisions within the subject area are all accessible by paved roads.

The approximate driving distances and times to nearby communities are shown in the table below.

Table 3: Estimated Driving Distances within Region

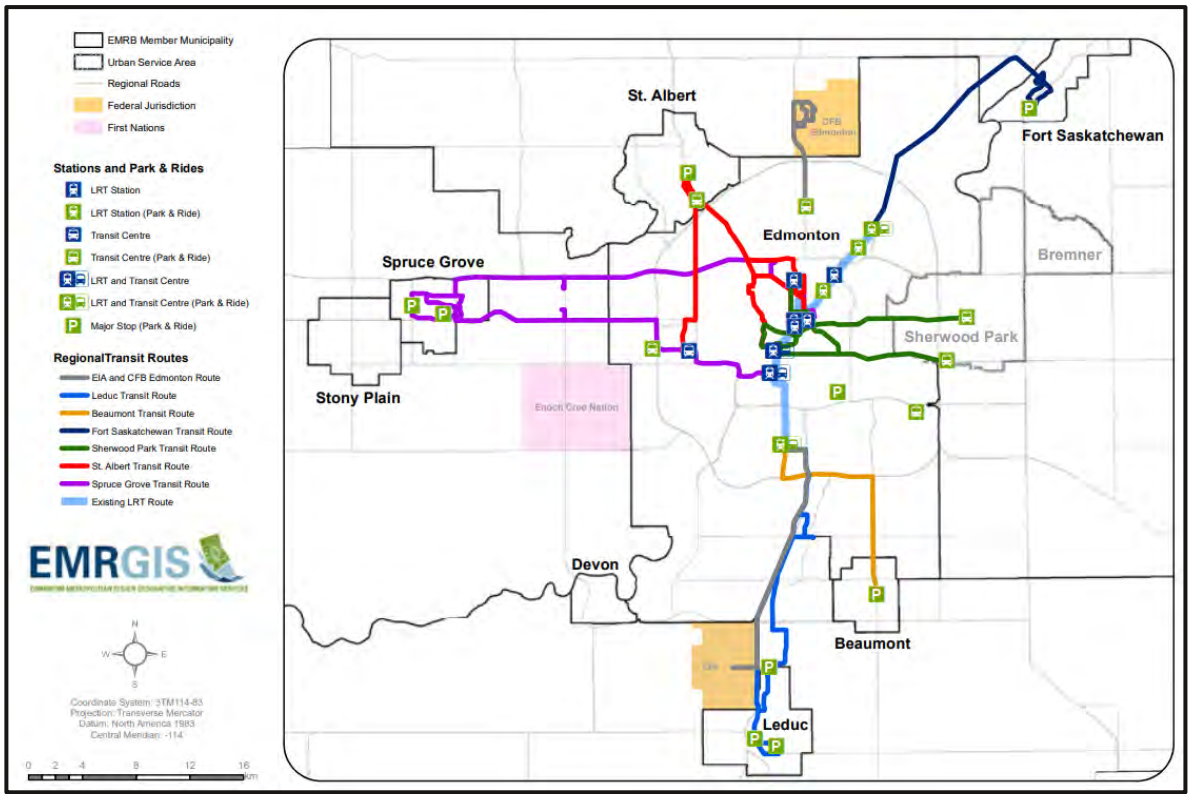
Community	Approx. Distance	Approx. Time
St. Albert	5 kms	5 mins
North Edmonton (Hwy216)	3 kms	3 mins
Morinville	20 kms	15 mins
Acheson	25 km	15 mins
Spruce Grove	30 kms	20 mins
Gibbons	30 kms	20 mins
Fort Saskatchewan	25 kms	20 mins

5 Both Figure 3 and Figure 5 were obtained from Agriculture & Agrifood Canada's *Annual Crop Inventory* dataset.

While the above table is approximate in times and distances, it shows the accessibility of the subject area to nearby communities and indicates a high potential for residents within the subject area to commute to these communities for employment and services.

Public transportation within the region is shown in Figure 7 below, retrieved from the EMRB Servicing Plan Report. The ASP currently does not have any hamlets within it and under these circumstances, one would not expect any direct public transportation opportunities within the region. This means that the infrastructure which might otherwise impair agricultural traffic would not be expected to be an issue in this area either currently or with the envisioned future development.

Figure 7: Regional Transit Routes



Business and Economic Influences

There are several small to medium-sized local businesses within the subject boundaries and the immediate surrounding area. Businesses within the agricultural sector or who serve the agriculture sector include:

- Apiary
- Butcher and custom meat packing/wrapping
- Commercial/custom transport services
- Dairy production
- Electrical services
- Equine boarding and training facilities

- Equipment and automotive repair services
- Excavation services
- Fertilizer Distributors
- General contracting and construction
- Grain farming
- Grain Elevators
- Greenhouse Facility
- Horticultural Operations
- Intensive Livestock Operations
- Metal fabrication and welding services
- Tree Nurseries

It should be noted that the majority of the businesses listed above are located in close proximity to the subject area, but not within the area's boundaries. Therefore, the following discussion on the potential impact will focus on indirect impacts as opposed to direct impacts of development.

Many of the businesses listed above would draw clientele from multiple sectors and not only from the agricultural industry. In addition, the specialized nature of these businesses would require them to draw from a relatively large geographic area (much larger than that of the subject area, including areas well beyond Sturgeon County's boundaries).

Considering these factors, it is unlikely that a conversion of subject lands from agriculture into residential or commercial development would have a noticeable impact on these businesses.

If the entire subject area was eventually converted out of agricultural use, agri-businesses that supply inputs would likely face relatively small decreases in business volumes. Input providers typically supply large regions and so the loss of the subject area would not have a large negative impact on these regional agribusinesses.

Subject Area Agri-businesses

Four agri-businesses appear to base their operations within the subject area. A dairy operation, an equestrian boarding and training facility, and two tree nurseries. It is assumed also that agricultural operations based outside of the subject area crop or hay portions of the area as well.

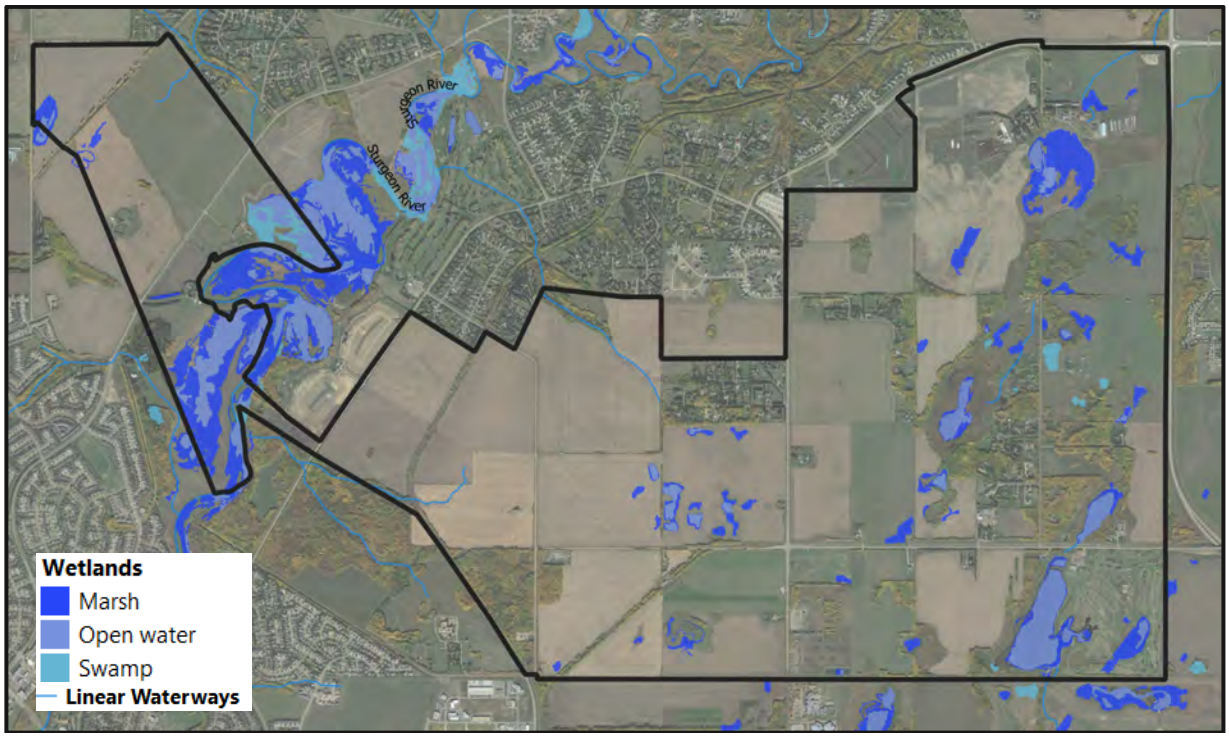
3.2 Physical Features

The aim of this section is to provide an overview of the predominant physical features of the subject area. As physical features inherently influence a region there is some overlap in concepts of this section and the previous section Regional Influences (3.1). These sections are meant to be taken into consideration together in providing an overall summary of the subject and surrounding area.

Topography and Drainage

Generally, land within the subject area is gently undulating with pockets of riparian and natural treed areas as well as shelterbelts. The exception is the Sturgeon River valley which is terraced with short steep slopes. The Canadian System of Soil Classification (CSSC) describes the subject area's terrain as "gently undulating". Figure 8 outlines the waterways and wetland areas within the subject area.

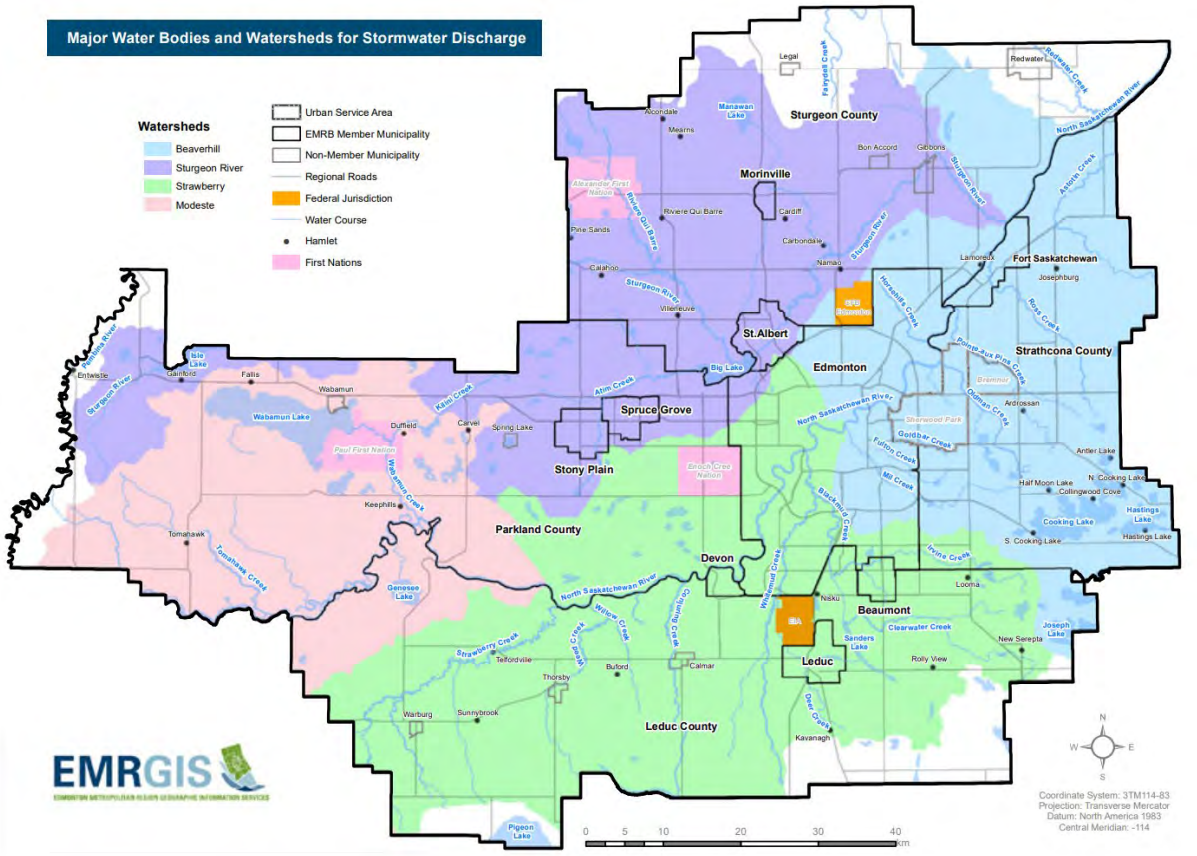
Figure 8: Waterways and Wetland Areas



CSSC classifies the area's dominant drainage as ranging from well to moderately well. This classification applies to approximately 90% of the surface area within the particular classification region.

The subject area is split between the Sturgeon River and Beaverhill sub watersheds of the North Saskatchewan River Watershed. A regional watershed map from EMRGIS is shown in the map below.

Figure 9:Regional Watersheds



Soil Productivity Ratings

Soil can be classified and rated using multiple metrics. The Canadian System of Soil Classification (CSSC) and the Land Suitability Rating System (LSRS) classifications for the subject area will be discussed in this section.

Canadian System of Soil Classifications

The following description of the Canadian System of Soil Classification was retrieved from the Canadian Society of Soil Science.

In a given area over the period of soil formation, environmental conditions cause a certain set of soil processes to occur, which leads to a distinctive set of soil horizons at the time we observe the soil. These soil horizons are the basis for classifying the soil in the Canadian System of Soil Classification. The Canadian System is a rigorous taxonomic system (taxonomy is the science of classification). The System is a comprehensive method for assigning pedons to the soil classes; if the system is correctly used, a pedon can only be assigned to one specific class. The System is also a hierarchical system: each group occupies a distinct position within the overall system. The major levels used in the classification include: Order, Great Group, and Subgroup.

The first level of categorization within the system is the Order. Which Order a given pedon is assigned to is based on properties of the pedon that reflect the nature of the overall soil environment and the effects of the dominant soil-forming process. There are ten Orders in the Canadian System of Soil Classification (shown in Table 4). The system has changed through time, and the last major addition to the system occurred in 1996, when the Vertisolic Order was added to the system.

Table 4: Soil Orders of Canada Descriptions[7]

Order	Diagnostic Horizon	Comments
Chernozemic	Ah, Ap, Ahe	A grassland soil whose diagnostic horizon is formed by high levels of organic matter additions from the roots of grasses.
Solonetzic	Bn or Bnt	A grassland soil with high sodium levels in the B horizon; usually associated with a clay-rich B horizon and often with saline C horizon material.
Podzolic	Bf or Bh	A forest soil normally associated with coniferous vegetation on igneous-rock derived parent materials. High acidity in the A horizon results in formation of a bleached Ae horizon and deposition of iron and aluminum in the B horizon.
Luvisolic	Bt	A forest soil found in areas with parent materials derived from sedimentary rocks. Dominant process is eluviation of clay from the Ae horizon and its deposition in the Bt horizon.
Brunisolic	Bm	A forest soil whose properties are not strongly enough developed to meet the criteria for the Luvisolic or Podzolic Orders.
Gleysolic	Bg, Cg	Found throughout Canada wherever temporary or permanent water saturation cause formation of gleyed features in the profile.
Regosolic	No B horizon	Found throughout Canada wherever pedogenic conditions prevent the formation of B horizons (unstable slopes, sand dunes, floodplains etc.).
Vertisolic	Bss, or Css and Bv	Associated with high clay glacio-lacustrine landscapes; characterized by shrinking and swelling of clays.
Cryosolic	By, Cy, Cz	A soil of arctic and tundra regions; characterized by presence of permafrost.
Organic	O horizon	Organic soils are associated with the accumulation of organic materials (peat) in water-saturated conditions. They are most commonly associated with Boreal Forest soils.

Great Groups are sub-divisions of each Order. The Great Groups reflect differences in the strengths of the major processes or a major contribution of a process in addition to the major one. For example, if someone describes a Prairie soil as a Dark Brown Chernozem, the Order is Chernozemic (i.e., soils with rich topsoil that

developed under grassland vegetation) and the Great Group is Dark Brown, which refers to the surface colour of the soil and reflects an intermediate level of soil organic matter (SOM) additions relative to the lower SOM levels to the south and the higher SOM levels to the north.

Subgroups are subdivisions of Great Groups. They are differentiated on: how closely they correspond to the central concept of the Great Group; intergrading towards soils of another Order; or additional special features within the profile. For example, an Orthic Dark Brown Chernozem reflects the central concept of the Dark Brown Great Group within the Chernozemic Order. In contrast, an Eluviated Dark Brown Chernozem has evidence of translocation of materials between horizons via eluviation and illuviation but does not meet the classification criteria of the Luvisolic Order. [6]

The subject lands are solely within the Chernozemic soil order, in the Black Chernozem Great Group.

Soil polygon descriptions within the subject area include **SC2 – Wide valley with one or more terraces, U1L -Undulating – Low relief, and U1h – Undulating – High Relief landform model classifications**. Land Suitability Rating System (LSRS) soil ratings in the subject area are listed as:

- 80% Class 2T, 20% Class 5W in the U1l areas,
- 60% Class 2H, 20% Class 5T, and 20% Class 5W in the SC2 areas,
- 60% Class 2H, 20% Class 3, and 20% Class 5W and 100% Class 2H within the U1h areas.

These classifications are described below. Descriptions and accompanying figures have been obtained through the Alberta Soils Information Viewer.[7]

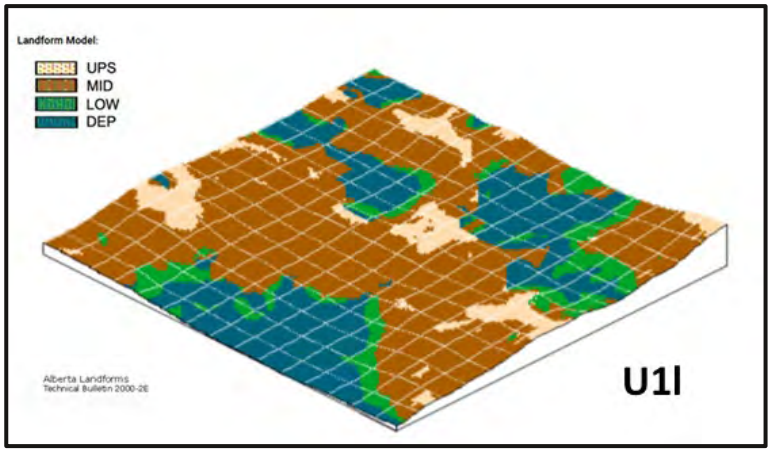
SC2: Eluviated Black Chernozem on fine textured materials water-laid sediments. Valley with terraces landform with slopes ranging from 1-5% on terraces and up to 35% on the side slopes.

U1l: Eluviated Black Chernozem on fine textured materials water-laid sediments. Undulating, low relief landform with a limiting slope of 2%.

Figure 10: Example Image of U1l Landforms

[6] Canadian Society of Soil Science, Soils of Canada. soilsofcanada.ca
[7] Alberta Agriculture and Forestry, Alberta Soils Information Viewer. soil.agric.gov.ab.ca/agrasidviewer/

Figure 11: Landform Model of U1l Lands



U1h: Eluviated Black Chernozem on fine textured materials water-laid sediments. Undulating, high relief landform with a limiting slope of 4%.

Figure 12:Example Image of U1h Landform

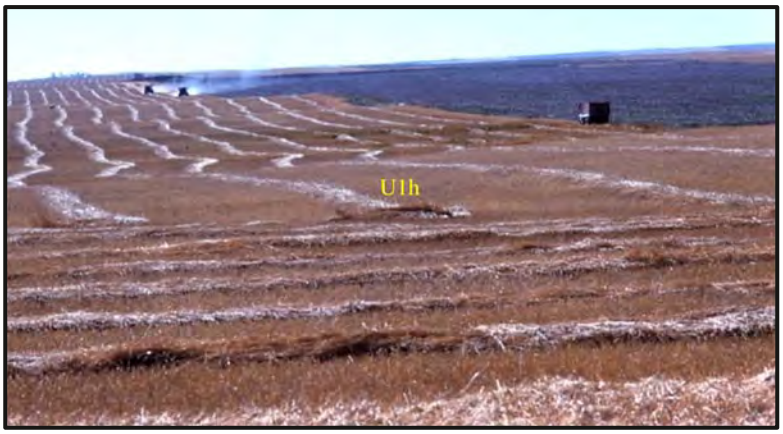
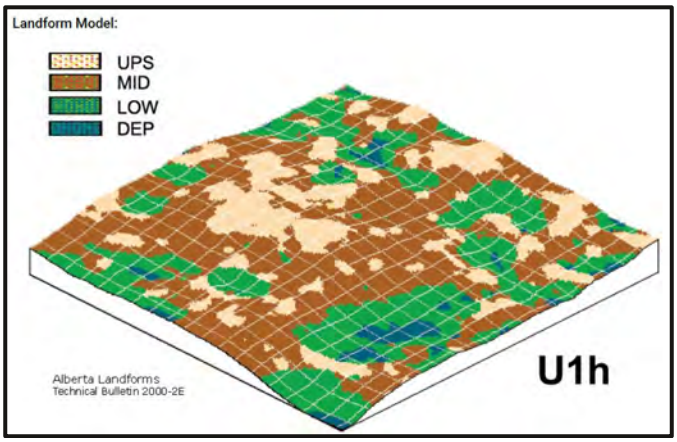


Figure 13: Landform Model U1h Lands



Land Suitability Rating System – Suitability for Small Grains

Land Suitability Rating System maps detail the soil types in different regions and rate them based on their suitability for agricultural use, using the following classes and subclasses.[8]

Class 1 – there are no Class1 soils in Alberta due to climactic limitations (heat units)

Class 2 land has slight limitations that may restrict the growth of the specified crops or require modified management practices.

Class 3 land has moderate limitations that restrict growth of the specified crops or require special management practices.

Class 4 land has severe limitations that restrict the growth of the specified crops or require special management practices or both. This class is marginal for sustained production of the specified crops.

Class 5 land has very severe limitations for sustained production of the specified crops. Annual cultivation using common cropping practices is not recommended.

Class 6 land has extremely severe limitations for sustained production of the specified crops. Annual cultivation is not recommended even on an occasional basis.

Class 7 land is not suitable for the production of the specified crops.

The subclasses are based on the kinds of limitations as outlined in Figure 14.

[8] Government of Canada, Land Suitability Rating System for Agricultural Crops 1. Spring-seeded small grains. 1995. https://sis.agr.gc.ca/cansis/publications/manuals/1995-lsrs/lsrs.pdf

Figure 14:LSRS Sub-Class Limitation Descriptions

Land Suitability Rating System Restrictions and Limitations			
General Restriction	**Subclass**	**Code**	**Limitation**
C – CLIMATE	Temperature	H	Inadequate heat units for the optimal growth.
	Moisture	A	Inadequate moisture for the optimal growth.
S – SOIL	Water holding capacity/texture	M	Crops are adversely affected by lack of water due to inherent soil characteristics.
	Soil structure	D	Crops are adversely affected either by soil structure that limits the depth of rooting, or by surface crusting that limts the emergence of shoots.
	Organic matter	F	Mineral soil with a low organic matter content in the Ap or Ah horizon.
	Depth of topsoil	E	Mineral soil with a thin Ap or Ah horizon.
	Soil reaction	V	Soils with a pH value either too high or too low for optimal growth.
	Salinity	N	Soils with amounts of soluble salts sufficient to have an adverse effect on growth.
	Sodicity	Y	Soils having amounts of exchangeable sodium suffcient to have an adverse effect on soil structure and/or growth.
	Organic surface	O	Mineral soils having a peaty surface layer up to 40 cm thick.
	Drainage	W	Soils in which excess water (not due to inundation) limits the production.
	Organic soil temperature	Z	Additional temperature limitation associated with organic soils.
	Rock	R	Soils having bedrock sufficiently close to the surface to have an adverse effect on production.
	Degree of decomposition or fibre content	B	Organic soils in which the degree of decomposition of the organic material is not optimum for production.
	Depth and substrate	G	Shallow organic soils with underlying material that is not optimum for production.
L – LANDSCAPE	Slope	T	Landscapes with slopes steep enough to incur a risk of water erosion or to limit production.
	Landscape pattern	K	Land areas with strongly contrasting soils and/or non-arable onstacles that limit production or substantially impact management practices.
	Stoniness and coarse fragments	P	Land that is sufficiently stony or gravelly so as to hinder tillage or limit production.
	Wood content	J	Organic soils with a content of wood or of Eriophorum sp. sufficient to limit production.
	Inundation	I	Land areas subject to inundation or flooding that limits production.

The location of the subject area is outlined on the Land Suitability Rating System map in Figure 15. The LSRS soil capability ratings within the subject area are generally equally productive to those in other areas of the County. The ratings and proportions for the SVS subject lands are listed in Table 4: LSRS Ratings for SVSSA.

Figure 15:Land Suitability Rating System (LSRS) Ratings for SVS Area and Region

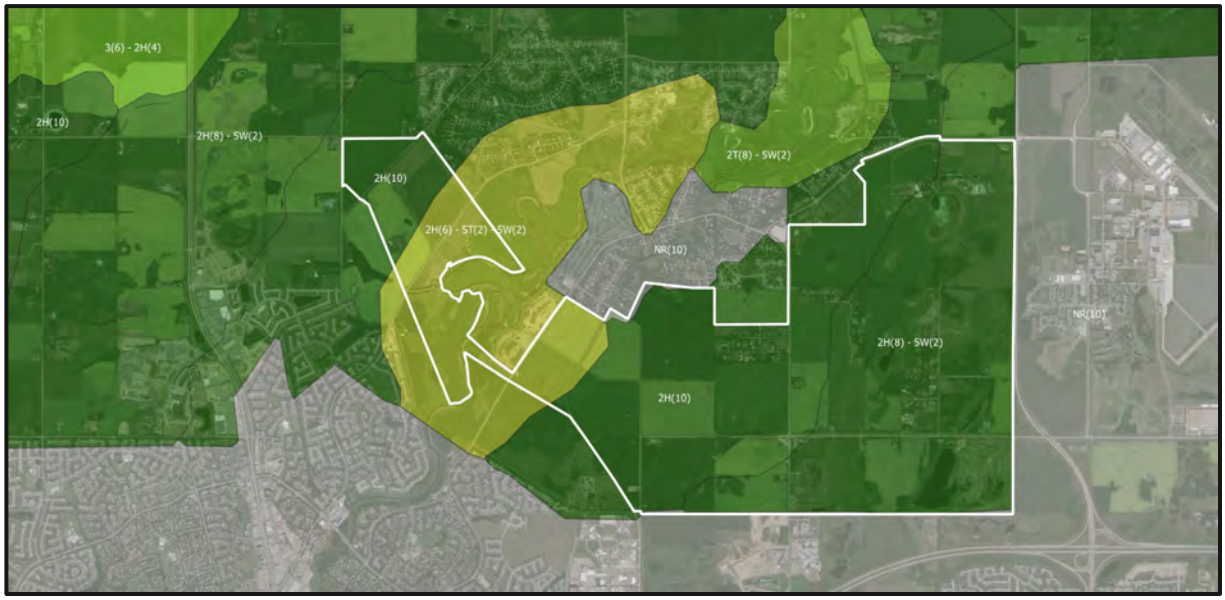


Table 5: LSRS Ratings for SVS Area

Percentage of Subject Area	LSRS Soil Class
45.0%	80% Class 2H, 20% Class 5W
41.4%	100% Class 2H
12.7%	60% Class 2H, 20% Class 5T, 20% Class 5W
0.9%	Non-Rated

Current Land Uses

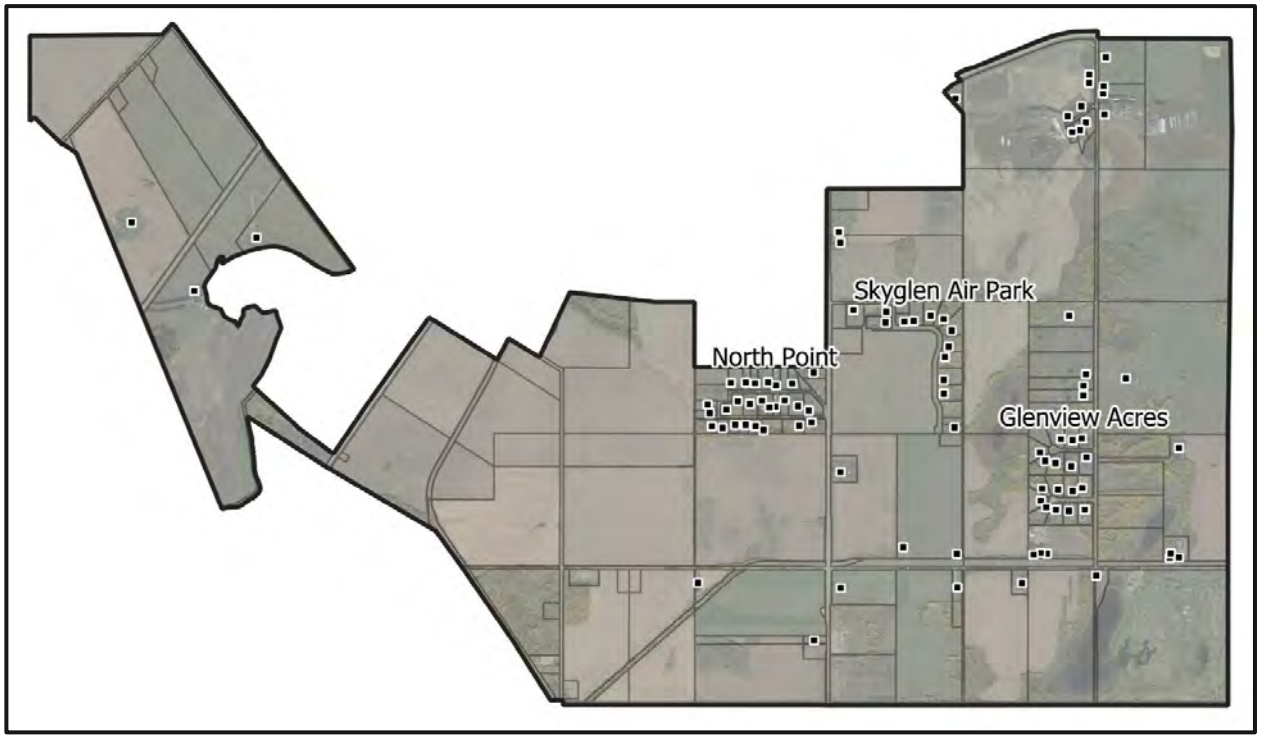
Pasture and annual cropland are currently the two predominant agricultural land uses with a combined coverage of 71% of the subject area. Developed/Exposed land cover 15% of the subject area and consist of country residential, linear infrastructure (roads), farm buildings and structures, tree farms, and some portions of a golf course. In addition, there are some natural riparian and treed areas covering the remaining 14% of the subject area.

This section examines existing development and agricultural uses in more detail.

Existing Development and Permanent Structures

Existing residential development within the subject area is focused around three country residential subdivisions, Township Road 542, and the northern farm operation. These areas can be seen clearly in parcel boundaries and in the locations of residences within the area. Figure 16 shows the locations of residences (black squares), parcel boundaries, as well as the names of the existing residential developments in the subject area. The central-west portion of the subject area is largely devoid of residences.

Figure 16: Existing Development and Residences

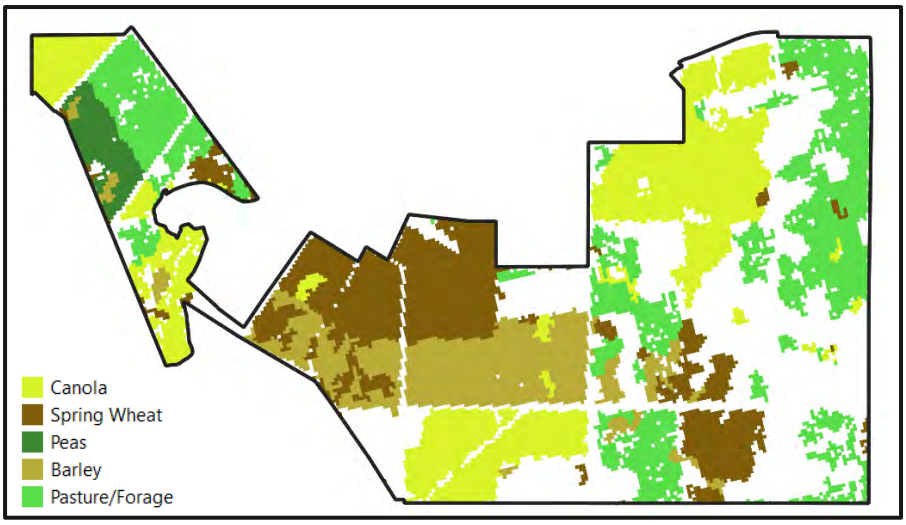


Current Agricultural Uses

The current agricultural use of the SVS area is currently quite similar to the agricultural areas surrounding it. That is, there is a mix of annual crop and pasture or other perennial forages. The map below shows the crops grown within the ASP in 2019. These maps are derived from data obtained from Agriculture and Agri-food Canada's Annual Crop Inventory, which relies on a combination of satellite imagery and other metadata to estimate the crop grown across the agricultural regions of the country.

The annual crop rotation in the subject area appears similar to areas right across central Alberta, dominated by the oilseed crop canola and the cereal crop wheat. It also appears from remote sensing data that barley and pulse crops are part of rotations, but to a lesser degree than canola and wheat. It appears that yellow peas were only grown on one field within 2019.

Figure 17:Crop Inventory in the Subject Area, 2019



Of the crops grown in the area, canola has historically often been the most profitable agricultural crop to cultivate. For this and because of canola's agronomic strengths, it's presence in a rotation can be used as an indicator of land's crop growth potential. In other words, the absence of canola from the rotation on a field is often used to indicate considerable limitations to production.

Canola is grown in the ASP area, as shown in the two maps below. The first shows the estimated prevalence of canola in the study area during the 2019 crop year, with canola acres (in 30m pixels) being shown in yellow superimposed over satellite imagery. The second map shows fields which had canola grown on them at some point in the past four crop years.

Figure 18: SVS Fields Where Canola was Grown in 2019

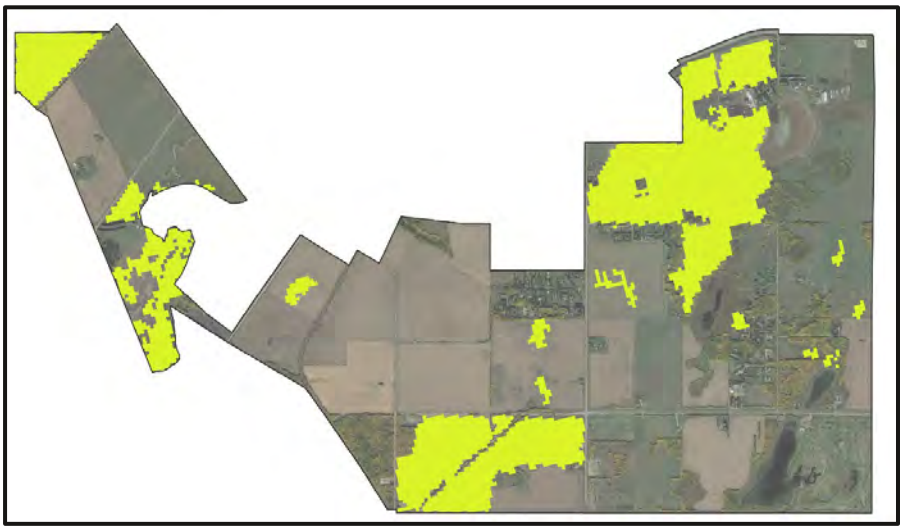
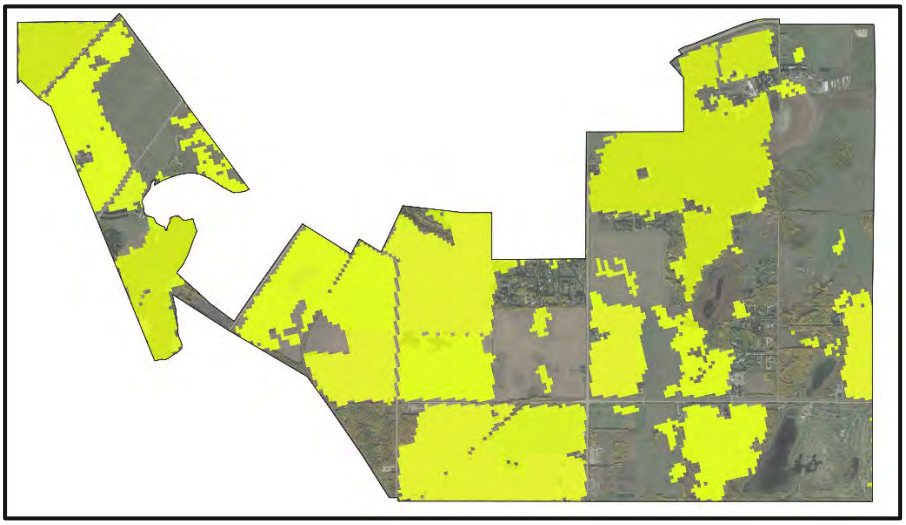
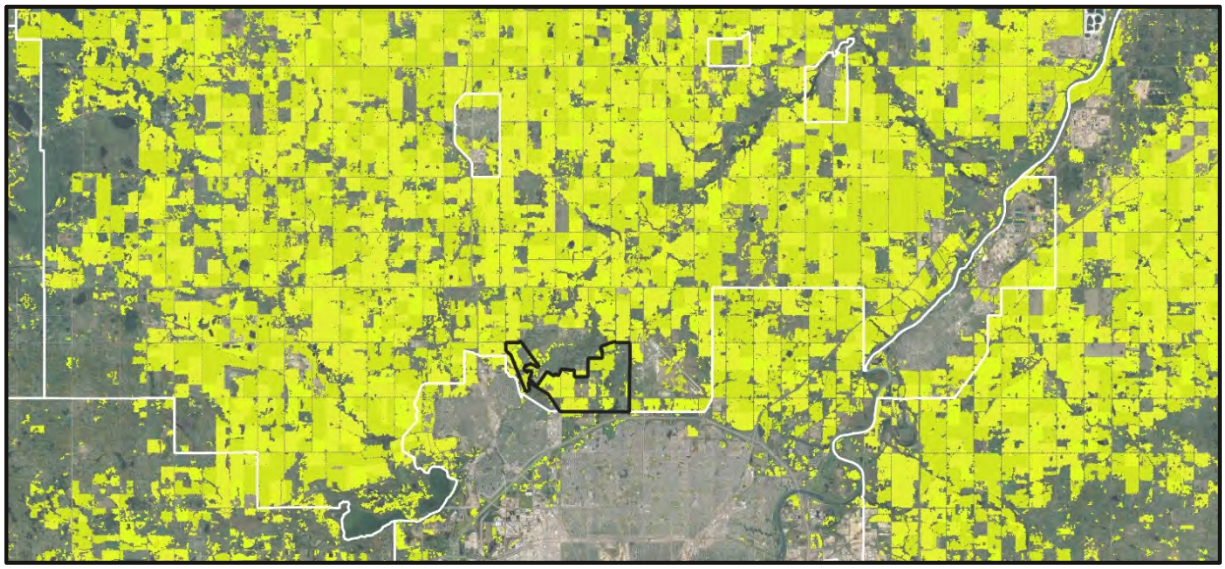


Figure 19:SVS Fields Where Canola was Grown at Least One Year 2016-2019



These maps show that the majority of the ASP's quarter-sections in agricultural use have sustained canola crops at some point in the last four years. However, the eastern band of quarter sections are mostly devoid of canola, which is consistent with their 2019 pasture/forage production use classification. For comparison, the map in Figure 20 of the southern portion of Sturgeon County shows on average a prevalence of canola similar to the annual cropland within the subject area. This indicates that the subject area's eastern band of land is on average of a lower productivity level than the southern portion of Sturgeon County.

Figure 20:Canola Fields 2016-2019, within South Portion of Sturgeon County



Agricultural Equipment Movement

The study area is quite unique in the extent to which urban pressures have already surrounded this still predominantly agricultural area. It is not only residential development, but also industrial development and the military base that have largely surrounded the area. The transportation arteries around and through the ASP have been developed to meet the traffic needs of those developments. However, access to farmland with large agricultural machines is not always eased by larger roads.

There are primary highways either bordering or in very close proximity to the ASP: Highway 2 to the west, Highway 216 (Anthony Henday) to the south, and Highway 28 to the east. Travelling along or crossing any of these main arteries is very challenging for large and slow-speed agricultural equipment. While it is feasible, large farms would plan their travel routes carefully and plan travel times to minimize conflict with other traffic.

There remain only two gravel roads that would not travelling along or crossing any of those major highways when accessing farmland in the ASP – Range Road 253 to access the areas west of Sturgeon Road and Range Road 245 to access the remainder of the ASP on the east side. And even those two roads are only four miles south of primary Highway 37.

One particular pinch-point that has already developed within the ASP is worthy of specific mention. The study area is already bisected through a combination of natural and transportation features. The aerial photo below, taken May 23, 2021 near the railway underpass at Fairway Drive, shows clearly how several arteries, both road and rail, already bisect the ASP.

Figure 21:River and Roadways Bisect the ASP

It would currently not be possible to access farmland on the two sides of Sturgeon Road or Bellerose Drive by simply crossing them. This is of course partly due to the natural landscape features of the Sturgeon River itself. Current roadways only cross the river at Sharkey Road to the north and Boudreau Road to the south. However, the urban development both to the north and south of the Riverlot 56 Natural Area essentially make it unrealistic to travel through this area at all with any larger agricultural equipment.

Even some routes that would appear to potentially feasible have other barriers to overcome, such as the railway underpass at Fairway Drive / Township Road 542A. Farms that have land on the two sides of Sturgeon Road but are not adjacent to the railway itself would have to take extreme detours to access their land for every farm operation, whether seeding, crop protection, or harvest activity.

Figure 22:Northwest Portion of the ASP Inaccessible for Farm Equipment

Development planning will need to consider traffic patterns to agricultural areas. Agricultural producers in this region will need to access their fields with very large implements that require access particularly from the months of May to October. Development activity during this time will need to consider that access to some fields can only be had from a single side or even a single approach, either from gravel or paved roads. Farm implements can also be very tall in transport modes, so the location of temporary detours and temporary powerlines should consider this impact on agricultural producers both within the ASP and at crossing points across the four highways that surround the ASP including Highways 2, 28, 37, and 216.

4.0 Impact and Suitability of Development

4.1 Impacts to Agriculture

This section outlines the potential impact to agriculture in view of the current strategy and land use planning documents, and the physical and socioeconomic characteristics of the study area and surrounding region.

The study area currently still has 3,000 acres of quality agricultural land being used largely for grains, oilseeds, and pasture production. Without the context of the many large urban developments in all directions, this land would certainly be seen as high-quality and desirable agricultural land not dissimilar to the areas around it. It is unfortunately a somewhat stranded agricultural area already due to its being surrounded by large arterial roadways and urban development.

Our study did not include interviewing stakeholders about their intentions with the land, but it would certainly have been foreseen for quite some time that these lands would eventually be engulfed by urban development. It is not apparent from our review of the information available to us that there have been any "urban agriculture" developments in this area, though it appears that there are some small horticultural operations adjacent to the ASP. There are only few farmsteads within the area at all, and only two small field-side grain storage bin sites in the ASP that came to our attention during the review. There is one notable operation in the northeast corner of the ASP, but otherwise most fields must be seeded and harvested by farms that have their home yard, buildings and equipment outside of the ASP.

It is expected that as development occurs within the subject area, farmland within the area would consequently decrease as result. This conversion would not be immediate but rather take place over time as individual projects are developed within the Sturgeon Valley South Area Structure Plan.

Those lands within the ASP that are currently being used for agricultural production are primarily being used for either perennial forages or annual crop production. We assume that the majority of the entire ASP area will eventually be used for residential purposes. This conversion would take place over numerous years, with the result that the agricultural land base would gradually be removed from production. The area within the soil polygon on the east side of the ASP is considerably less conducive to annual crop production than other surrounding areas in the greater Edmonton region or across central Alberta. However, the areas further west appear to be generally comparable to the better farming areas around the city.

While any loss of agricultural land should be considered carefully, we cannot see any particular feature of the subject area that makes these lands more favourable to agricultural production than the areas around it. The extent of urban development,

however, would already pose considerable challenges to agricultural operations with large equipment typical to the farms in the region.

As discussed above, the majority of business activity in or supporting the agriculture industry is located outside the ASP boundaries in nearby communities. The overall impact to these businesses following the transition of subject land use away from agriculture is deemed to be negligible. In fact, some of the service businesses currently serving agricultural enterprises would be expected to become relatively more sustainable due to increased local business from residential and commercial property development.

4.2 Mitigation and Qualification

The extent of urban development around the ASP will eventually make large-scale agriculture in the plan area unsustainable. It may certainly be possible for small-scale production or niche agricultural businesses to flourish, but access to the area by large equipment to the area will become increasingly challenging for farmers and farm operations increasingly problematic for urban neighbours.

Conversion of this farmland will not be instantaneous, however, and we recommend that some mitigation measures are in order to ensure that unconverted land can continue to be farmed in the meantime.

It is important, for example, to ensure that ASP lands are developed in such a manner that agricultural parcels are not isolated, causing access and land use conflict issues. This has already occurred at a pinchpoint at Sturgeon Road, for example. The Riverlot 56 Natural Area and a new residential development on the northwest side of Sturgeon Road have essentially separated the lands in the northwest side of the ASP from the remainder.

Two areas of the ASP clearly have lower suitability ratings for annual crop production, as well as significant barriers from arterial roadways. It may be worthwhile considering having those lands outside these areas available for agricultural production longer.

The band between Bellerose Drive to the northwest and the railway to the southeast is already quite divided and difficult to access, in addition to having more challenging landforms for large-scale agricultural production. The land in the soil polygon on the east side of the ASP has landform and soil issues limiting annual crop production as well, though it does support grassland/pasture.

Drainage issues will need to be considered as development, especially near the Sturgeon River, proceeds. If direct drainage into the Sturgeon River is obstructed, there is the potential for saturation and flooding within the central agricultural area. Similar drainage concerns will occur if the eastern band is developed. This slow drainage path alteration could create significant flooding issues to the south and central portion of the ASP if not managed properly.

Farmer access to agricultural lands is certainly already a significant issue, and this should be expected to be exacerbated whenever new development proceeds. An arterial road planned as an extension from the 127th street exit from the Anthony

Henday (connecting to Sturgeon Road) will reduce the risk of plugging up access routes for farmers operating during the buildout. However, there is no doubt that an increasing number of residents will still create the potential for access conflict over time.

In order to mitigate the impact to agriculture, it is recommended that development occur in clusters or pockets of residential development, as has already been the pattern for the area. This would mean considering development projects where multiple residential lots have been planned out with shared access from an existing road rather than having individual residential lots subdivided without consideration for how to maximize the utility of the larger parcel with a residential land use.

As the number of developments in the area increases, traffic volumes may require changes to traffic control and the number of lanes on all of the surrounding highways. The use of this infrastructure by agricultural producers must be considered carefully when deciding on traffic infrastructure particularly along that highway, but also along all of the secondary roads in the ASP.

Finally, consideration must be given to drainage patterns. Water is often a limiting factor in central Alberta agriculture, but development in the Sturgeon River watershed could cause flooding if development changes drainage patterns. In those circumstances, water can be damaging to crops, so diversion of that watershed must be considered carefully, both in terms of final outcomes and during transitional stages.

4.3 Suitability

Considering all the points within this report, the conclusion of this Agriculture Impact Assessment is that the ASP area is deemed to be suitable for development. While some of the land within the ASP is highly suitable for annual crop production or pasture, it is not dissimilar to the land surrounding it in Sturgeon County or the greater Edmonton area. The agricultural lands in the area are already becoming more difficult to access with primary highways surrounding the ASP, and this can only be expected to become more challenging over time as population and industrial development increases, even if the ASP itself were not itself developed.

The development of these lands will certainly reduce the agricultural use of the lands themselves as one would expect it would eventually be converted to the point where only some urban agriculture opportunities would still be pursued. However, in the larger scheme it would not unduly impact the overall viability of either the local agricultural community in the County or its surrounding areas.

Appendix G: Agricultural Impact Assessment

Appendix H

ISL Memo

Integrated Expertise. Locally Delivered.

7909 51 Avenue NW, Edmonton AB T6E 5L9, T: 780.438.9000 F: 780.438.3700

To:	**Sturgeon County**	Date:	**June 1, 2021**
Attention:	**Michael Klassen**	Project No.:	**15965**
Cc:	**Nick Pryce**		
Reference:	**Sturgeon Valley ASP Servicing Support**		
From:	**Barry Raynard and Nancy Lai**		

1.0 Introduction

Sturgeon County is currently developing an Area Structure Plan (ASP) for Sturgeon Valley south of the Sturgeon River and ISL was retained to support the water and wastewater servicing development in the ASP specifically for planning area 1 to 4. The purpose of this memo is to summarize the work done on reviewing and developing the water and wastewater servicing concept for the planning areas.

2.0 Water

2.1 Allin Ridge Reservoir and Supply Line

Water will be supplied to the ASP area via the existing Allin Ridge Reservoir. It has an existing reservoir capacity of 10,000m^3. The site has room for expansion and intended to supply the entire ASP area as well as virtually all of Sturgeon Valley.

The reservoir is supplied by an existing 300mm water transmission main from EPCOR. This existing line will need to be twinned in the medium term (currently estimated at 15 years). Once twinning is complete, the existing 300mm could be used as part of the distribution system (with proper valving), at least on a long term interim basis. The 300mm may be needed as a secondary water supply line to the reservoir for ultimate servicing.

2.2 Proposed Water Servicing

A conceptual water servicing network were developed for Planning Areas 1 to 4 as shown in Figure 2.1.

For Planning Area 1, the conceptual water network follows the proposed road layout in the Neighbourhood Structure Plan (NSP); ISL proposed pipe diameter of 300 mm to ensure a strong network for delivering fire flow to high density residential area with some commercial complex. Pipe sizing is currently being refined through the concurrent Water & Wastewater Infrastructure Assessment study and is subject to change. It should be noted that the existing water distribution system adjacent to Planning Area 1 is not adequate to service any development.

There is a pressure zone change along or near the railroad and PRVs are required to separate the pressure zone. The existing system is constrained by the small pipe sizes and cannot provide adequate fire flow to the planning area, therefore, ISL propose a 400 mm distribution line from the Allin Ridge reservoir feeding directly to Planning Area 1. The proposed 400mm main, combined with local distribution mains within Planning Area 1 will improve service levels (in particular fire flows) to the existing development that are connected (e.g. Manor Estates II, Rivers Gate). The construction costs for the 400mm are expected to be shared among developers in Planning Areas 1 and 2, recent developments (e.g. Rivers Gate), and potential the County based on its impacts on older developments.

DRAFT

For Planning Area 2, the existing 150mm and 200mm water distribution system is not adequate to service the proposed commercial / industrial development. ISL proposed to twin the 150 mm pipe along Township Road 543A with a 350mm and a loop of 300 mm west of Highway 28 along the proposed service road to provide commercial and industrial fire flow of 190 L/s and 230 L/s.

For Planning Area 3 and 4, ISL proposes a 300 mm main along Range Road 250 connecting the 400 mm main and the 300 mm main for Planning Area 1 and two east-west branches connecting Planning Area 2 with the 300 mm on Range Road 250. The proposed system is conceptual and should be refined based on the future detailed land use plans.

3.0 Wastewater

3.1 Topography

Topography plays a key role in the development of a cost effective wastewater collection system. Existing topography is shown in Figure 3.1. The following topographic features are noted:

- Planning Area 1 has a high spot of 696 m located just east of Township Road 542A where flow splits east, west, and south. The west side of Planning Area 1 falls significantly towards Sturgeon Road and the Sturgeon River.
- Planning Area 2 is relatively flat at 684 m with minimal change to elevations. Wetlands are present within the area with lower elevation.
- Planning Area 3 and 4 generally drains toward the east and are relatively flat to the north and south. There are local high points and some low areas.

3.2 Existing Wastewater Infrastructure

The existing wastewater infrastructure that has capacity to accept new wastewater flows from the ASP area are also shown in Figure 4.1, and include:

- Rivers' Gate Lift Station, located in the extreme northwest corner of Planning Area 1; and
- Alberta Capital Region Wastewater Commission (ACRWC) START Line which runs through the south part of the ASP area.

The Rivers' Gate Lift Station was designed to accept flows from the proposed ASP area, especially from Planning Area 1.

The ACRWC START Line services the north and west ACRWC municipalities and was designed as a transmission trunk to convey wastewater flows to the ACRWC treatment plant. Sections of this trunk are very shallow, making it difficult or impossible to provide gravity servicing to the adjacent lands within the ASP area. The ACRWC is currently upgrading sections of this trunk and will continue to do so to accommodate growth within its member municipalities, including Sturgeon County.

3.3 Proposed Wastewater Servicing

A conceptual wastewater servicing network were developed for Planning Area 1 to 4 is shown in Figure 3.1.

For Planning Area 1, the proposed collection system follows the drainage pattern where the west section goes to River's Gate Lift Station and the East section goes to ACRWC START. Servicing the east part of Planning Area 1,

plus the southwest part of Planning Area 2 should be serviced to START but will require a local trunk to parallel START and connect to START further east due to the shallow depth of START in this area.

The quarter section at the southeast most of Planning Area 1 has the potential to be serviced to Goodridge Corners within the City of Edmonton, connecting to the EPCOR trunk on 127 Street. However, this would introduce significant logistical and jurisdictional challenges and is not recommended at this time.

Planning Areas 2, 3 and 4 are proposed to be serviced to START. While each planning area could be serviced independently, it would be much more efficient to service these areas together, with a single sewer of forcemain conveying wastewater from the north end towards START. Planning Areas 3 and 4 should be serviced to the east towards Planning Area 2, utilizing the available topography.

Consideration was given to utilizing a single deep trunk sewer to service these areas from Sturgeon Road south towards START. However, the topography within Planning Area 2 is relatively flat which will result in a deep trunk. This trunk would be relatively expensive and cannot be staged.

It is anticipated that the preferred alternative, from an overall cost and staging perspective, will be to construct a central lift station approximately 1.6 km north of START to service the northern half to two-thirds of Planning Areas 2, 3 and 4. Wastewater would be pumped directly to START via a forcemain along Range Road 245. The lift station could be constructed in stages and multiple forcemains utilized. This would result in dramatically lower upfront costs for servicing the north end of these areas.

The southern half to one-third of Planning Areas 2, 3 and 4 should be serviced to START either by gravity or a lift station adjacent to START. There appears to be about two or three quarter sections that can be serviced by gravity, generally the lands above the 688m contour in Planning Areas 3 and 4. Further study is needed to determine the potential gravity service area and connection point to START. This will also require consultation with the ACRWC.

The remaining south service areas should be serviced to a local lift station in the vicinity of Valour Avenue and Range Road 245. By placing this lift station at the south end of Planning Area 2, it will facilitate development within the south part of that area.

The land north of Sturgeon Road and east of Highway 28 were not considered as they are outside the ASP area. This area was included in the service area in the 2019 Infrastructure Master Plan. While the wastewater infrastructure within Planning Area 2 could be oversized and deepened to accommodate that future development area, it was determined that the additional costs within Planning Area 2 could not be justified. This could be reviewed when more detailed planning and engineering studies are undertaken for Planning Area 2.

4.0 Staging Consideration

The following staging issues will need to be considered for water and wastewater servicing within the ASP area.

- The 400 mm proposed from the Allin Ridge Reservoir to planning area 1 is required to service fire flow, without which the area will not have fire flow protection.
- The 300mm main along Range Road 250 can be deferred until Planning Area 3 starts to develop.
- Preliminary analysis indicates that Planning Area 2 will have about 80% of 230L/s industrial fire flow at the south end on Valour Avenue without the east-west branches. Thus, these branches can be likely be deferred until Planning Area 3 and 4 starts to develop.

- In conjunction with water servicing, it is probable that the north section of Planning Area 2 to 4 will begin first, therefore, the 2 proposed lift stations will be required once development start.

5.0 Implementation

The following issues need to be considered when conducting detailed planning for the water and wastewater systems within the ASP area:

- The proposed conceptual servicing for water and wastewater is based on the proposed land use and road alignment on the ASP level. Detailed planning of water and wastewater systems to refine proposed system is required.
- Detailed land use planning is needed at the NSP level prior to detailed water and wastewater system planning. This will establish roadway layouts and environmental reserves (e.g., wetlands), which will help define watermain and sewer alignments and wastewater service areas.
- The County will need to develop a strategy for funding the 400 mm main to Planning Area 1 and the 350 mm main to Planning Area 2. These mains are needed to provide fire flows and development should not proceed without them. It is unlikely that individual developers would be able to front end these costs.
- Depending on development staging, the County may need to work with developers to facilitate the construction of the lift station and forcemain servicing Planning Areas 2, 3 and 4. For example, if the north end of Planning Area 3 was to precede development in the north end of Planning Area 2, the lift station and forcemain to START may need to be cost shared rather than front-ended by the developer.
- Any connection to START will need detail analysis to the connection inverts to ensure that there are adequate cover and clearance from the inverts of START.

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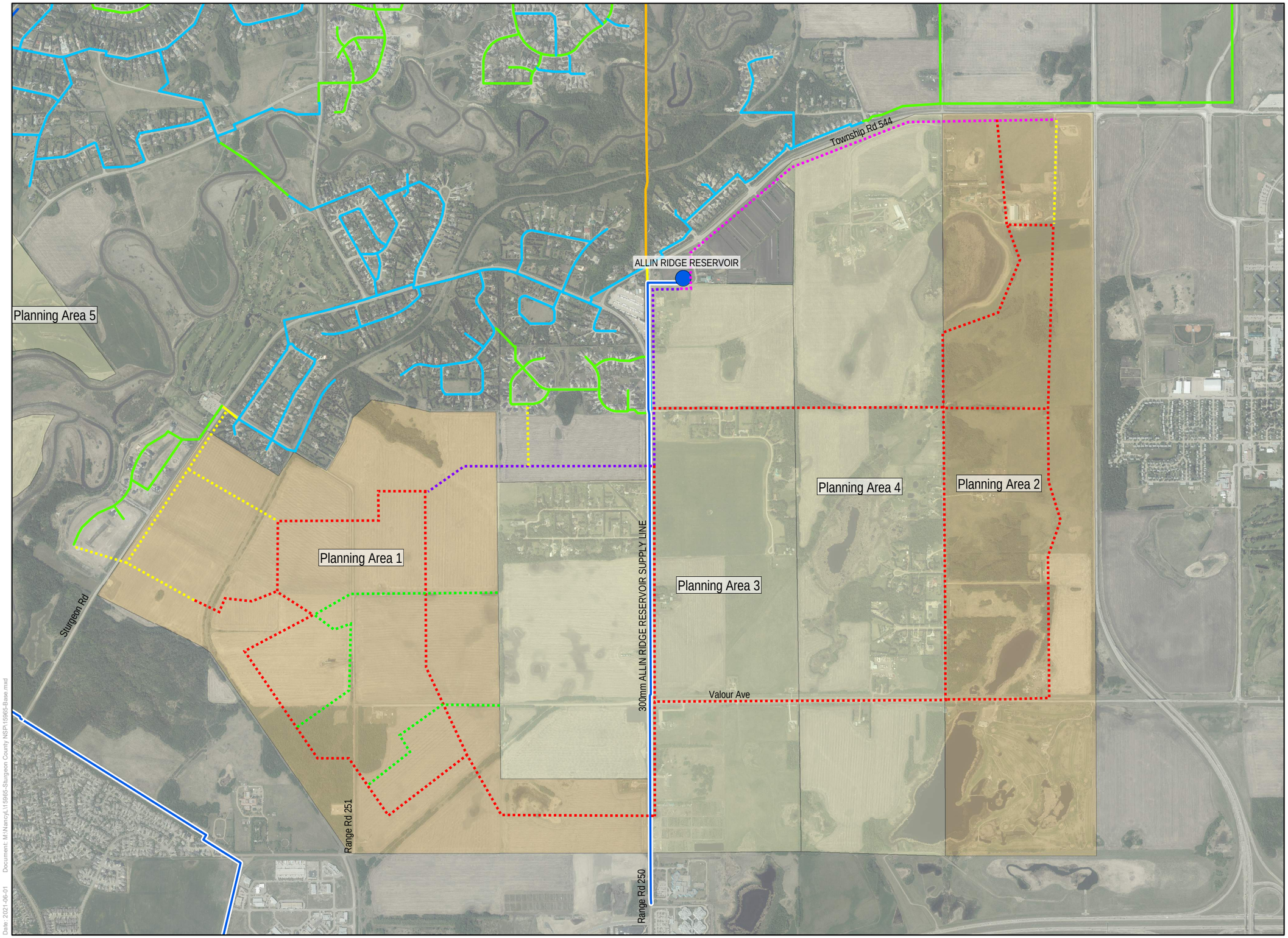

Legend

Diameter (mm)

- <= 100 mm
- 150 mm
- 200 mm
- 250 mm
- 261 mm
- 300 mm
- 350 mm
- Transmission Network

Proposed Water Main

- 200 mm
- 250 mm
- 300 mm
- 350 mm
- 400 mm

Coordinate System:
CANA83-3TM114

1:20,000

0 200 400 800 Meters

FIGURE 2.1

STURGEON COUNTY ASP
SERVICING SUPPORT
WATER SERVICING CONCEPT

Date: 2021-06-01 Document: M:\Nancy\L\15965-Sturgeon County NSP\15965-Base.mxd

Integrated Expertise. Locally Delivered.

Service Layer Credits:

GREYSTONE LS

BELLEROSE LS

Planning Area 5

STURGEON VALLEY LS

TUSCANY HILLS LS

RIVERS GATE LS

Planning Area 1

Planning Area 3

Planning Area 4

Planning Area 2

ACRWC ST. ALBERT LS

ACRWC START

Potential gravity connections to ACRWC START

LS

Legend

Lagoons & Lift Stations

- Sturgeon Lift Station
- ACRWC Lift Station
- Other/Private Lift Station
- Sturgeon Lagoon

Gravity Line Diameter

- < 100 mm
- 100 - 200 mm
- 250 - 300 mm
- 350 - 450 mm
- 500 - 600 mm
- 750 - 900 mm
- > 900 mm
- Unknown

Wastewater_Collection_Areas

- Bellerose LS
- Greystone LS
- River's Gate LS
- Sturgeon Valley LS
- Tuscany Hills LS

- Proposed Gravity Line
- Proposed Forcemain Line
- Drainage Arrows
- Proposed Lift Stations

Coordinate System:
NAD 1983 CSRS 10TM AEP Resource

1:25,000

0 250 500 1,000 Meters

FIGURE 3.1

STURGEON COUNTY ASP
SERVICING SUPPORT
WASTEWATER SERVICING CONCEPT

Date: 2021-06-01 Document: M:\Nancy\115965-Sturgeon County NSP\15965-Base_wastewater_contour.mxd

Service Layer Credits:

Appendix H: ISL Memo

Appendix I
Growth Strategy

July 2020

Sturgeon Valley
The Growth Framework

Sturgeon County

Prepared By:

V3 bunt & associates APPLICATIONS MANAGEMENT CONSULTING LTD. SPENCER ENVIRONMENTAL MANAGEMENT SERVICES LTD.

ACKNOWLEDGEMENTS

Sturgeon County would like to thank the following individuals and groups for their participation in Phase 01: The Growth Framework:

Sturgeon County, City of Edmonton, City of St. Albert, CFB Edmonton, V3 Companies of Canada Ltd., Bunt and Associates, Applications Management, Spencer Environmental, Sturgeon County Administration, Area Developers, and Landowners.

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1 EXECUTIVE SUMMARY

It is challenging to look into the future to understand the financial impacts within a changing environment. However, to develop a reasonable projection the project team have used present day situations to gauge the level of the potential fiscal impact on a municipality. Typically, the taxes derived from residential development do not cover the costs incurred by the municipality over the long term and is typically compensated through the non-residential tax base. A key focus of this report is identifying what the various impacts might be for Sturgeon County (the County) through enabling different forms of development within the Sturgeon Valley Areas A, B1 and B2. In developing concepts based on the adopted 2019 Sturgeon Valley Special Policy by the Edmonton Metropolitan Region Board (EMRB), key drivers identified are:

- A requirement to meet an overall average minimum density of 35 du/nrha;
- A bus transit centre located within Area B;
- The development of a transect from the boundaries of the City of Edmonton and City of St. Albert towards the established Sturgeon Valley country residential located to the north;
- Protection of the corridor for the future extension of 127 Street; and
- Provision of non-residential development to provide employment to residents in the Sturgeon Valley.

This report involved the development and analysis of five concepts along with additional variations based on responses received from stakeholders. A number of the concepts developed were influenced by previously completed studies that have informed future development of the Sturgeon Valley relating to servicing, non-residential development along with information regarding the natural characteristics of the lands. Effectively, the concepts were created based on the following:

1. Concept 1: Developers and landowners were invited to provide their vision of development for their lands. These were woven together to understand expectations regarding future land uses. Where no information was provided by land owners an assumption was made on the potential future uses of these lands. To simplify the process, an overall minimum 35 du/nrha was applied to all residential land uses that formed the basis for carrying out the analysis.
2. Concept 2: Taking the developers and land owners scenario, modifications were carried out that had a greater focus on developing a transect of varying densities to meet EMRB policy regarding higher densities at the existing urban limits through to lower densities while overall maintaining the minimum of 35 du/nrha. Greater non-residential land uses were included that was guided through discussions with CFB and the outcomes of the County's Commercial Development Analysis 2019.
3. From the overall development outlined above, the creation of varying build outs of this option based on the projected population growth rates were developed. This resulted in a consolidated scenario based on a 30-year projection and a 60-year projection. In both cases the minimum 35 du/nrha were met.

4. All four of the above scenarios showed a significant fiscal impact on the County and therefore a fifth concept was created that identified what development in the Sturgeon Valley might look like to obtain a "net neutral" option. The net neutral option effectively removes 75% of the residential development within the consolidated 30-year option while retaining all of the non-residential development. It was recognized that to increase the residential growth and maintain net neutrality would require an increase of approximately three to five times of non-residential development. As indicated in the report, how the non-residential development is developed could vary versus just adding additional land for commercial and industrial purposes.

Alternative options on how these scenarios could be developed without placing the financial burden on the municipality was also researched. This included looking at the developer taking on greater responsibility for not only constructing the services, but also being involved in the ongoing operation of the services (e.g. establishing their own utility authority for providing sanitary and water services) or, alternatively, the residents taking greater responsibility in the operation of the infrastructure. Opportunities were also explored regarding potential intermunicipal collaboration on services to reduce the financial costs.

Throughout the process, engagement was carried out with a range of stakeholders, predominantly landowners within the Sturgeon Valley who all provided varying comments and input that were taken into consideration through the analysis process. The analysis completed has guided the project team in formulating a recommendation that responds to the input received from Council, developers and landowners that has been incorporated into administration's report to Council.

2 INTRODUCTION

2.1 PROJECT CONTEXT

In spring of 2019, the Edmonton Metropolitan Region Board (EMRB) amended the Edmonton Metropolitan Region Growth Plan (EMRGP) to add in special policies relating to the Sturgeon Valley region of Sturgeon County, approved by the Government of Alberta on March 14th, 2019. The area, deemed as the "Sturgeon Valley Special Study Area" (SVSSA) within the EMRGP, borders existing country residential development in the north, Canadian Forces Base (CFB) Edmonton to the east, the City of St. Albert to the south west, and the City of Edmonton to the south.

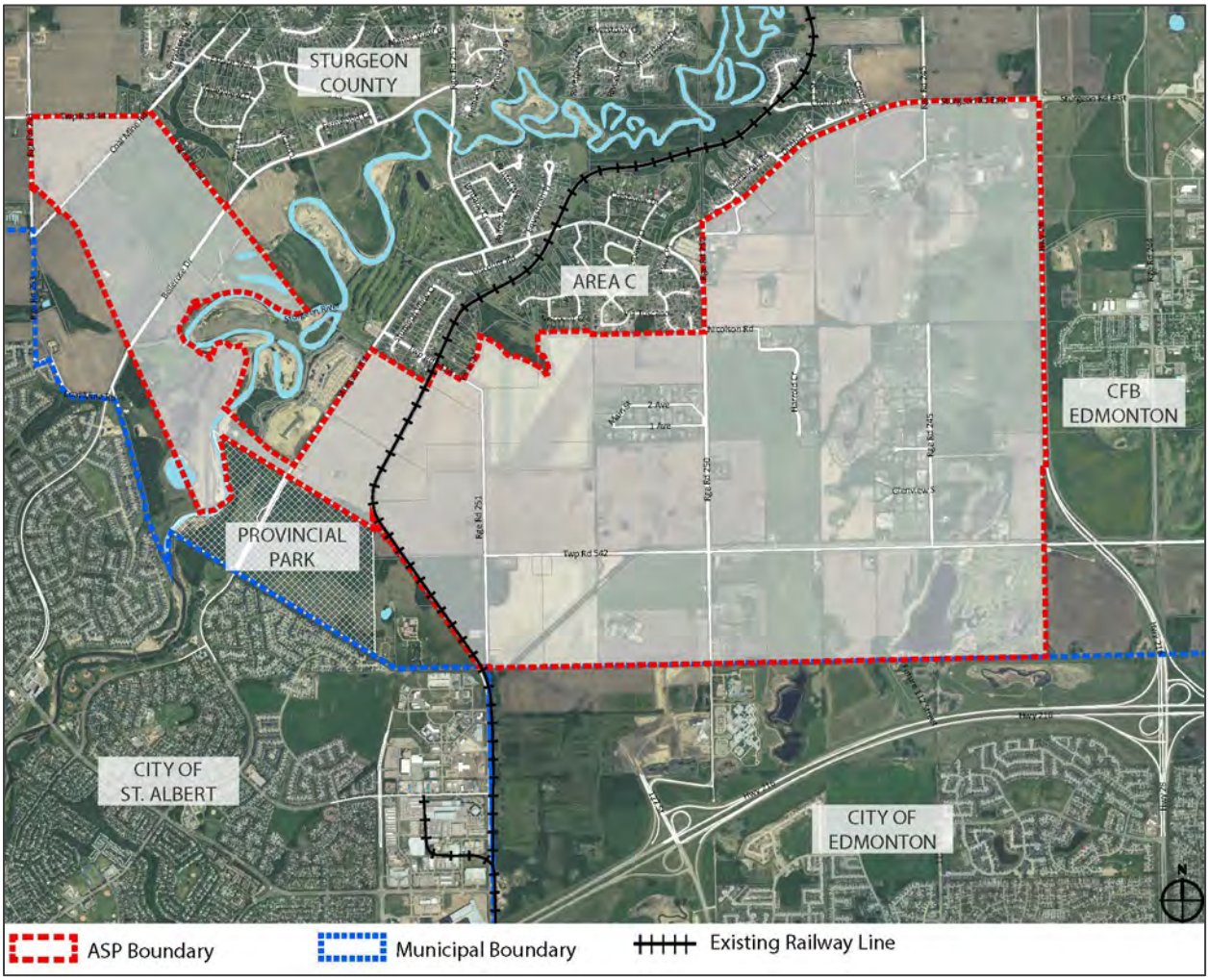
Appendix G. Negotiated Policies for the Sturgeon Valley Special Study Area

> **"Sturgeon County, in collaboration with the City of St. Albert and City of Edmonton, will plan for the completion of the Sturgeon Valley in a contiguous, compact manner with transitions that are sensitive to existing established communities, surrounding agricultural area and metropolitan boundaries."**

To meet the goals, objectives, policies, and aspirations of the EMRGP, Sturgeon County, in collaboration with community stakeholders and jurisdictional neighbours, is undertaking a comprehensive study to assess and outline future development potentials for the SVSSA. To best define and evaluate the development potentials, and to determine their fiscal impact on Sturgeon County and its neighbouring municipalities, the project has been broken down into two phases – Phase 1: The Growth Framework and Phase 2: The Area Structure Plan(s).

The purpose of this document is to outline the outcomes from Phase 1: The Growth Framework that will guide the second phase of the project. Ultimately, the goal is to guide the development of the SVSSA in an orderly, phased, and financially sustainable manner.

▼ FIGURE 1: Project Location | V3 Companies of Canada



2.2 WHY A GROWTH FRAMEWORK?

The purpose of the Growth Framework is to provide the foundation and business case on whether to proceed and if so, in what form for the development of an Area Structure Plan(s) (ASP). The ASP(s) will provide the high-level policy structure to guide the growth and development of Neighbourhood Area Structure Plans within the Sturgeon Valley Area. The Growth Framework is comprised of three different components:

» BASELINE EVALUATION

The first phase in developing the Growth Framework was to review a range of policy and research documents that relate to the Sturgeon Valley along with preparing a baseline analysis of constraints that influence how development may proceed.

» LAND USE CONCEPTS

The final aspect of the Growth Framework is the development of land use concepts and subsequent analysis relating to understanding the transportation, servicing and fiscal impacts related to each of the options that will inform and guide Council in their decision making. The development of these concepts has been influenced by the EMRGP, Council and input from varying developers/landowners within the Sturgeon Valley.

» FISCAL IMPACT ANALYSIS

The purpose of the Fiscal Impact Analysis (FIA) is to provide an indicator on the potential financial implications of growth that can be expected in Sturgeon Valley on affected ratepayers in Sturgeon County. The projections from the FIA provides Sturgeon County the ability to understand the potential change in costs, revenues, and taxes within the municipality as a result of changes in the scope or type of development, service delivery, and/or administrative or taxation policies.

Outcomes from the Growth Framework will help Sturgeon County Council to determine on whether to proceed with the development of an Area Structure Plan(s) that meets the vision of Council or to pursue a different course of action. Specifically, the Growth Framework is a tool that is used to:

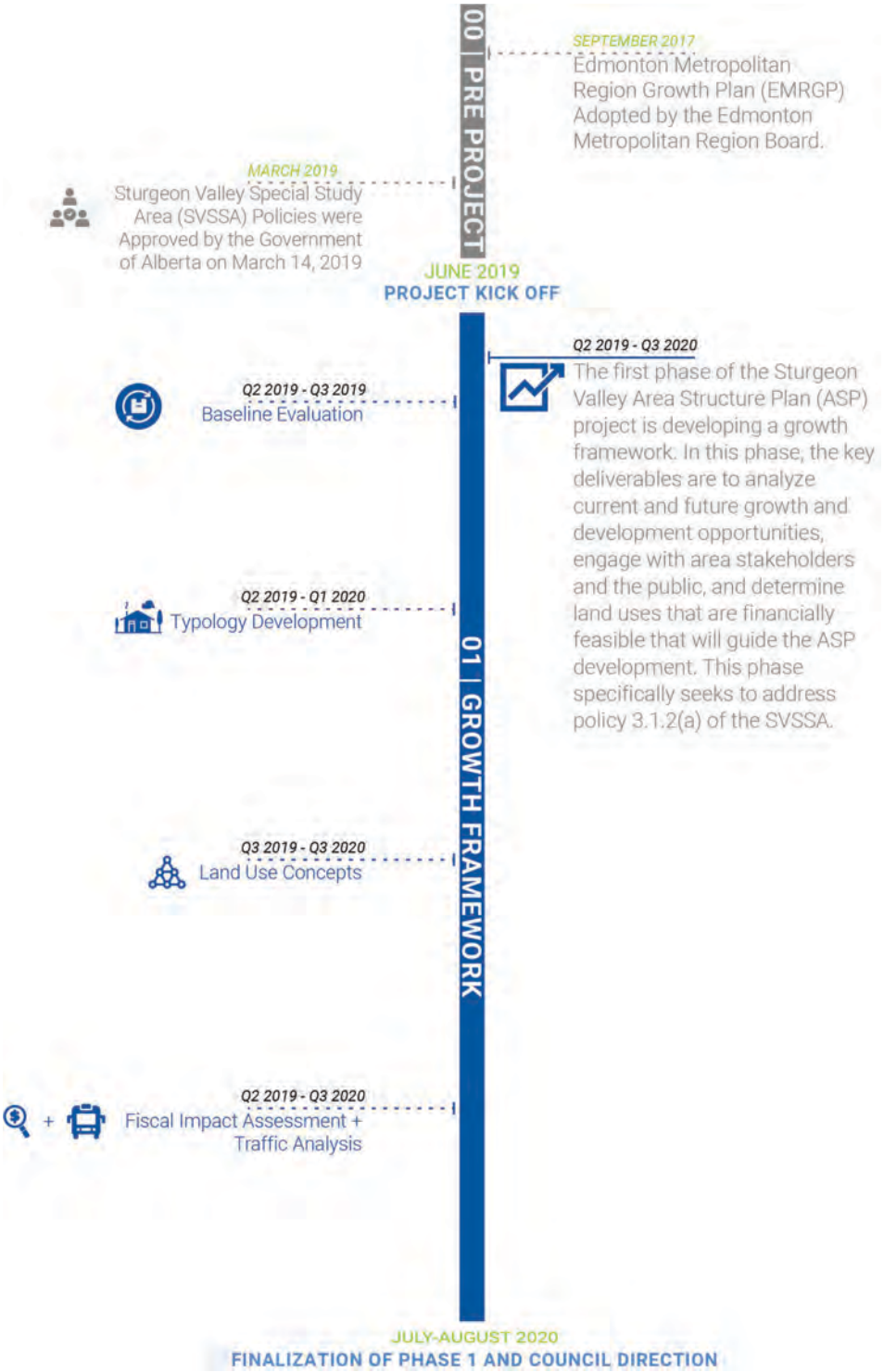
1. Assess the potential to move forward with Phase 2: the Area Structure Plan(s) or proceed through a different course of action; and

2. Engage with area developers, intermunicipal planning partners, and area stakeholders on how future, financially sustainable growth could be accommodated.

3 PROCESS + ENGAGEMENT

3.1 PROJECT PROCESS

▼ FIGURE 2: Project Process | V3 companies of Canada



3.2 LANDOWNERS & DEVELOPERS

The County is committed to planning in collaboration with area landowners and developers as part of the Phase I: Growth Framework portion of the project. This has been initiated via a variety of engagement methods such as information requests, project information sessions and provision of opportunities for review and feedback of key project deliverables. Additional details of key engagement activities with area landowners and developers is further detailed below.

TYPOLOGIES REQUEST

In late August and through to December of 2019, individual requests to area landowners and developers were sent out to better understand what was envisioned for development on their particular parcels of land. The purpose of this process was to better understand the expectations of the varying landowners and developers across the Sturgeon Valley to identify how it aligned with the EMRGB policy along with carrying out a high-level assessment of implications to the County. In addition, inputs on the following key topics were requested.

- What forms of development (e.g. residential/commercial/industrial/mixed-use) do you consider the market being most responsive to?
- With regard to residential development, what overall density would you consider appropriate and in which the market would best respond to?
- What level of residential density do you feel would be financially sustainable over the long term?
- What demographics do you think development in this area would attract?

Following receipt of the information, the plans were stitched together, and the following key tasks were completed.

1. Assessment of whether the proposed development meets the policy expectations (such as minimum densities or transitional gradient).
2. Analysis of the high-level transportation network improvements needed to support the proposed land uses, and
3. Analysis of the high-level FIA expectations for the associated populations.

A full summary of received feedback as part of the typologies request is found in Appendix A.

FEEDBACK ON LAND USE DEVELOPMENT SCENARIOS, FISCAL IMPACT ANALYSIS AND TRANSPORTATION ANALYSIS

Once the preliminary land use, transportation, and fiscal impact analysis were completed, several additional information and engagement sessions were initiated with area landowners and developers. The first session was held on June 3, 2020 with a purpose of sharing detailed information on the various land use scenarios, the fiscal impact analysis and transportation analysis. Following the presentation, draft working copies of the fiscal impact analysis and all the land use and transportation analysis was released for review and comment.

The second session on June 10, 2020 was a question and answer period where the County made available all key members of the project team to answer any questions on the documents or information that was provided at the June 3 2020 information session. A full listing of correspondence received as part of these information and feedback sessions is found in Appendix A.

3.3 CANADIAN FORCES BASE EDMONTON

Department of National Defence (DND) officials initiated updates to Canadian Forces Base (CFB) Edmonton's 20-year development plan in 2019. As part of engagement with Phase I: Growth Framework, administrative representatives from DND, CFB Edmonton and the County met on multiple occasions to discuss topics related to infrastructure alignment, recreation facilities, transit, community amenities and complementary land use planning. In specific reference to CFB Edmonton, the County's engagement focused on better understanding the CFB's needs pertaining to the following key items:

- Residential housing located near the base;
- Recreational facilities and the preferred distance from the base;
- Commercial needs and amenities which would provide diversity for residents and visitors of the base, and
- Integration and consideration of non-residential opportunities along Highway 28.

As part of consideration in Phase I: Growth Framework, planning recommendations extended beyond existing CFB boundaries and considered items related to complementary land use transitions, infrastructure planning requirements, stormwater management and open space planning. Listed below is a summary of key planning items noted as being important to CFB lands.

1. Promote development compatible with ongoing military activities on the northern, eastern, and southern boundaries of the Edmonton Garrison. These areas accommodate operational facilities, some with higher security levels, as well as terrain for military exercises. Light and noise pollution will occur regularly throughout the year, at odd hours, including overnight. CFB remain very interested in ensuring these government-mandated activities can continue and would like to see zoning and development on those borders that does not introduce neighbours for whom these disturbances would cause annoyance or other problems.
2. Promote development compatible with residential and community land use designations on the western boundary. Given that the western side of the Edmonton Garrison footprint accommodates residential housing and recreational facilities, it is important that adjacent and nearby development do not impact negatively on the quality of those uses.
3. Maintain traffic flow on Highway 28. Along with other users, maintaining traffic flow for heavy vehicles and vehicle transporters is important to CFB lands.

A copy of correspondence with CFB can be found in Appendix A.

3.4 ADJOINING MUNICIPALITIES

As a guiding principle of the Sturgeon Valley Special Study Area, Sturgeon County is committed to planning for the completion of the Sturgeon Valley in collaboration with the cities of St. Albert and Edmonton. This includes consideration of key intermunicipal items of common interest, such as integrated overland drainage basins and key existing/future transportation linkages.

Several important intermunicipal activities have been running concurrent to the Phase I: the Growth Framework portion of the project. This has included an in-progress annexation with the City of St. Albert and an amendment to abutting planning area in the City of Edmonton. Additional details of key engagement activities with key intermunicipal planning partners is detailed below.

CITY OF ST. ALBERT

ANNEXATION

Significant intermunicipal engagement and consultation has been completed with the City of St. Albert through negotiations on an adjustment to a common boundary. This has connection points with the Phase I: Growth Framework project as the entirety of 'Area A' of the SVSSA, lands that have been in consideration for annexation by St. Albert dating back to February 2017. The interphase of annexation and the development of the SVSSA policies was acknowledged given receipt the Notice of Intent in June 2017 (the SVSSA policies were approved by the EMRB in March 2019).

During the Phase I: Growth Framework project activities, the City of St. Albert has completed a series of studies to substantiate lands to include in the formal application to the Municipal Government Board. Certainty on the City of St. Albert's annexation boundary line was received on April 17, 2020 following the recommendation of intermunicipal negotiations. Given the challenges of approving an Area Structure Plan(s) in areas of unknown municipal jurisdiction given in-progress annexation negotiations and providing definitive planning recommendation as part of Phase I: the Growth Framework remains challenging.

SUB-REGIONAL TRANSPORTATION PLANNING

It should be noted that significant engagement on transportation has been previously completed with adjoining municipalities with the endorsement of the future 127 Street Functional Plan dating back to 2013. Future roadway connectivity and capacities has been a key topic of negotiation through annexation. As it pertains to the SVSSA, engagement on transportation continues on the following key regional and joint intermunicipal projects:

- Edmonton Metropolitan Region Integrated Regional Transportation Master Plan. The long-range plan looks to transportation network changes leading to 2045, which includes consideration for connectivity and capacity related to key roadways within/around the SVSSA (such as future 127 Street).

- Neil Ross Road Functional Study. A future connection to 127 Street within the SVSSA is planned within the City of St. Albert boundaries. The road is being planned as a 4-lane arterial and would extend to the proposed 127th Street corridor and connect with Old Coal Mine Road.

- Sturgeon County/City of St. Albert Transportation Network Improvement Strategy (TNIS). The project is evaluating existing and future transportation roadway networks serving both Sturgeon County and the City of St. Albert using current operational data and forecasted growth scenarios. The analysis will

ultimately help to prioritize network improvements, provide conceptual design recommendations with cost estimates, and identify a potential cost share of investment that would be incorporated into capital planning processes. The planning timeframe for the TNIS will be 30 years with 10/20/30 year horizons representing the short, medium, and long-term implementation periods. The strategy will build upon other transportation collaborations between both jurisdictions and is expected to produce greater clarity on the long-range transportation needs to serve each community.

SUB REGIONAL DRAINAGE & STORMWATER MANAGEMENT PLANNING

As it pertains to the SVSSA, engagement on sub regional drainage and stormwater management continues on the following key joint intermunicipal projects:

- Carrot Creek Regional Master Drainage Plan. A Master Drainage Plan on the Carrot Creek watershed area, which has interphase points with the SVSSA, is being completed as a joint intermunicipal project. A Master Drainage Plan, approved by the province will ultimately provide the direction and certainty for overall stormwater management planning, design and construction for the Carrot Creek Drainage Basin (which extends from Big Lake to Morinville and links with SVSSA Area A).

CITY OF EDMONTON

The Goodridge Corners Neighbourhood Area Structure Plan was adopted by Edmonton City Council in 2014 and has an overall density of approximately 42 du/nrha. Significant portion of that density is within the town centre (mostly 4-6 storey apartments and townhouses with density of 90 du/nrha). The town centre includes four intersections with collectors spaced 1.0-1.5km apart that then links with the functional alignment of future 127 Street. A future 112 Street alignment is also listed as an arterial roadway in the Goodridge NASP.

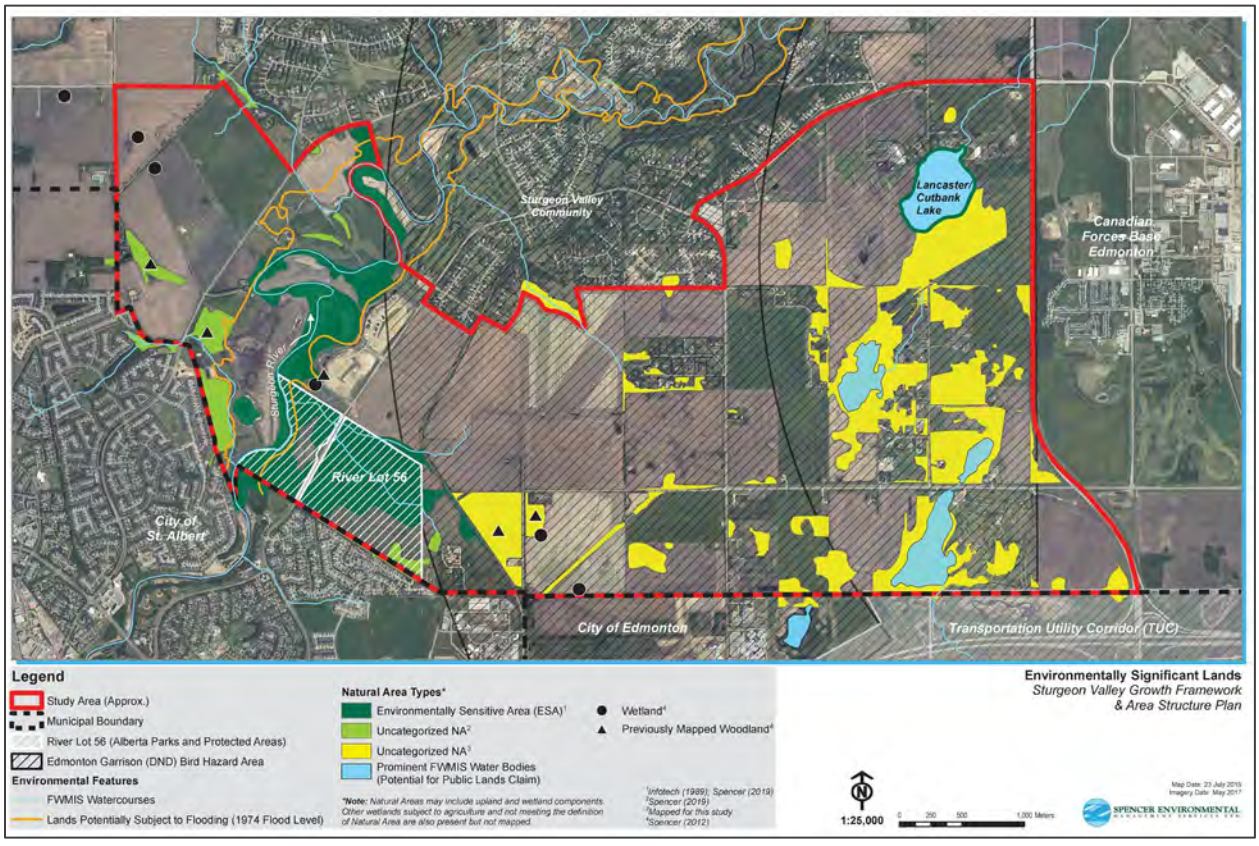
Discussions regarding potential sale of City of Edmonton owned land in Goodridge Corners was initiated at the February 24, 2020 City of Edmonton Executive Committee Meeting. Plan amendments to the Goodridge Corners NASP were then initiated at the March 9, 2020 City of Edmonton Council meeting. City of Edmonton and County administrative staff have meet on numerous occasions throughout Phase I: Growth Framework project activities to share information to ensure complementation planning.

4 EXISTING CONDITIONS + BACKGROUND ANALYSIS

4.1 ENVIRONMENTAL OBSERVATIONS

In support of the Growth Framework, Spencer Environmental undertook an influencing environmental features and natural areas study, mapping all potential Environmentally Significant Lands within the study area (Appendix C). The study was a preliminary step in identifying environmental features that are potentially undevelopable, are suitable for conservation, and/or are suitable for incorporation into parks and open spaces. The study included reviewing previously identified and newly recognized environmental features and natural areas within Sturgeon Valley and a literature review of other relevant planning and environmental reports. The analysis did not involve on-site formal delineation of environmentally significant areas. Any future development, or development of policy, will require formal analysis of these areas to determine if they warrant being designated as environmental reserve. Should the designation change through this process, Council should be aware the current analysis on projected population and subsequent impacts on the transportation system would change from the analysis carried out in support of this report.

▼ FIGURE 3: Environmentally Significant Lands | Spencer Environmental



KEY FINDINGS

In total, the desktop study found 67 natural features within the study area, with the majority of the features clustered near the west, south and east study area boundaries. The study also noted several small natural features scattered throughout the middle portion of the study area. Areas having the greatest potential to influence planning decisions met one or more the following criteria:

- The feature was a previously recognized Environmentally Significant Area (ESA).
- The feature is or has high potential to be a Crown-claimable water body.
- The feature is potentially subject to flooding.
- The feature has been previously noted in a planning document as important environmentally.
- The feature provides structural or functional connectivity to other influencing features.

The following table summarizes the Key Influencing Environmental Features within the study area:

Key Environmental Feature	Previously Recognized ESA	Potential to be a Crown Claimable Waterbody	Potential to Flood	Previously Noted as Important Environmentally	Provides Connectivity
River Lot 56	✔		✔	✔	✔
Sturgeon Valley Namao	✔		✔	✔	✔
Lancaster/ Cutbank Lake	✔	✔		✔	✔
Labelled Woodlands				✔	✔

4.2 INFRASTRUCTURE

STURGEON COUNTY INFRASTRUCTURE MASTER PLAN

Council endorsed Sturgeon County's Infrastructure Master Plan (IMP) to be used as a key infrastructure planning tool for the community (Motion 338/19 on September 10th, 2019). The IMP formed the foundation for the roadway infrastructure and municipal servicing review that helped guide the development of land use concepts. It should be noted that the IMP was a Countywide study and the analysis assumed the Sturgeon Valley area seeing an increase of 10,727 people and 139 ha of employment growth around CFB Edmonton. The following is a summary of the key findings from the report that have influenced the Growth Framework, and may also influence Phase 2: the Area Structure Plan(s) or alternative direction taken by Council. This report was carried out based on the current provisions for development under the County's Municipal Development Plan that resulted in a project population of 10,727.

While elements of this report have assisted in guiding the assumptions of future servicing infrastructure, the Sturgeon Special Policy Area requires a minimum population density of 35du/nrha that will place greater pressure on infrastructure than what was anticipated in this report. Should Council move forward with preparing an Area Structure Plan(s), a more detailed analysis on servicing will need to be carried out in understanding the services that will be required to support this new form of development.

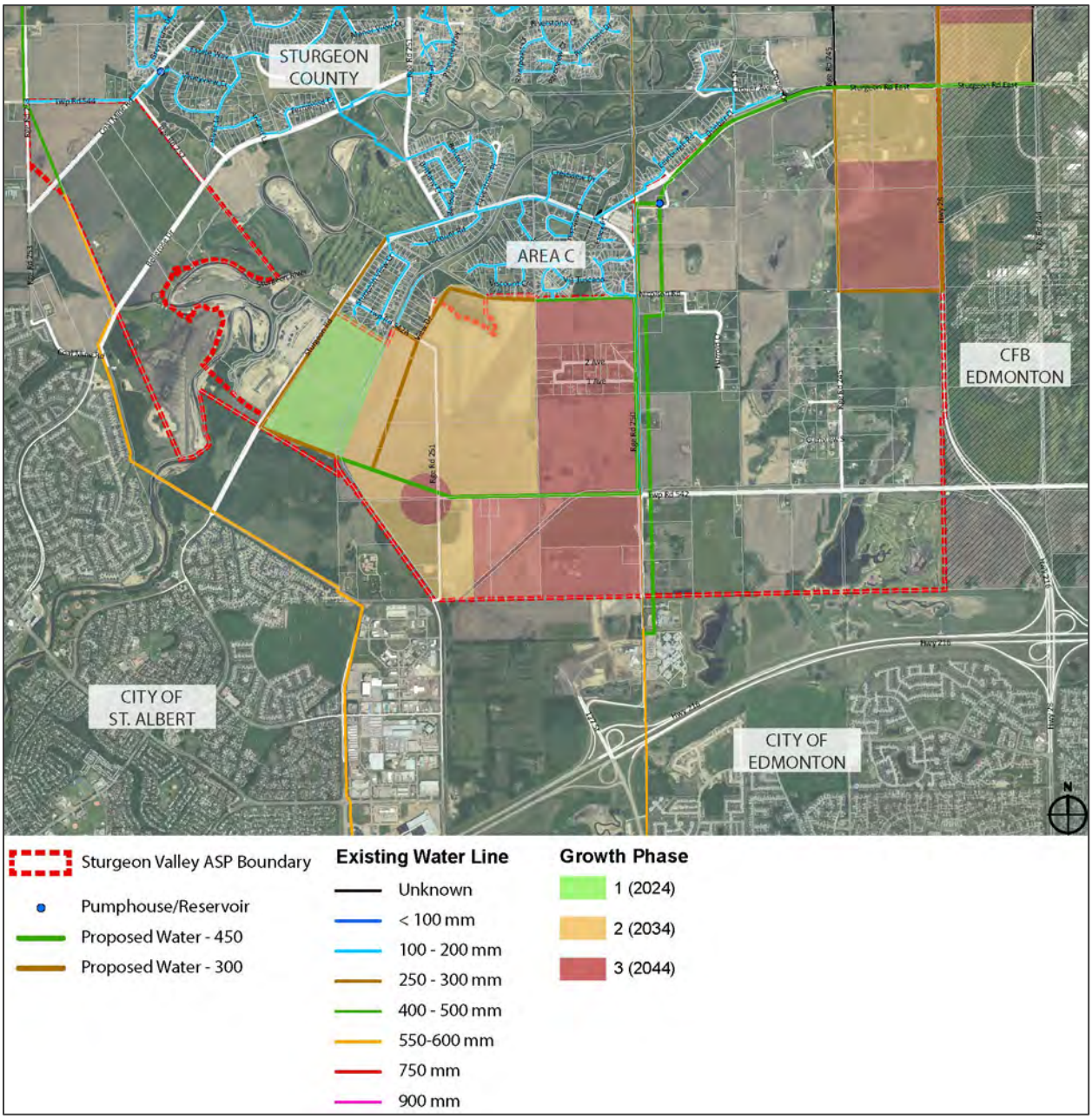
The following provides some key indicators arising from the report on servicing upgrades that would be required under the projected 10,727 population increase.

WATER INFRASTRUCTURE

Allin Ridge water distribution will require larger mains to provide adequate fire protection. Based on the larger densities it is anticipated that a new water line will need to be installed.

The existing developments north of Sturgeon River are serviced via the Summerbrook Reservoir which is connected to the Morinville Water Line. Development north of the river, west of existing developments will require additional water servicing studies to identify if it can be serviced via the Summerbrook Reservoir.

▼ FIGURE 4: Water Infrastructure | ISL (Sturgeon County Infrastructure Master Plan 2020)



Note: Information provided in this plan was from The Sturgeon County Infrastructure Master Plan 2020.

WASTEWATER INFRASTRUCTURE

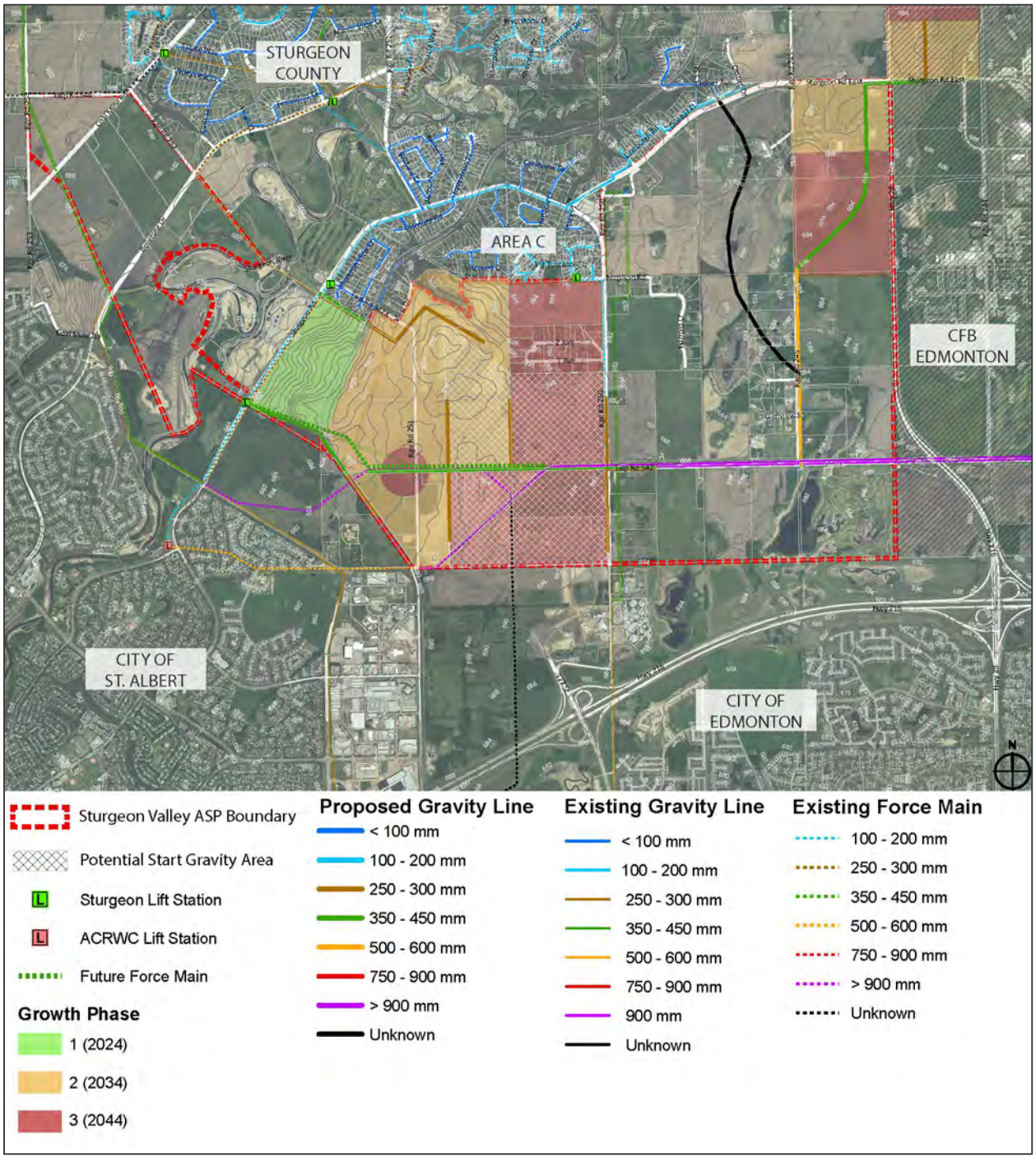
Based on the 10,727 population projection, the study identified the following upgrades would be required:

Lift Station	Description	Ex Lift Station Flows/ Pumping Capacity	Average DWF (L/s)	Peak Daily Flow (L/S)
Tuscany Hills LS	The Tuscany Hills development at the south end of Sturgeon Valley is serviced to the Tuscany Hills Lift Station. It pumps wastewater to START via a 1.8 km, 150 mm forcemain. **Does not have capacity for growth and cannot be cost effectively upgraded.**	Pump Cap: 37.2 L/s PDWF: 1.1 L/s	2024: 0.8 2034: 0.8 2044: 0.8	2024: 1.6 2034: 1.8 2044: 1.8
Sturgeon Valley LS	The remainder of the south side of Sturgeon Valley was serviced through low pressure sewers to the Sturgeon Valley Lift Station until 2017. These flows were diverted to the new Rivers Gate Lift Station in 2017. **Does not have any surplus capacity, nor can it be upgraded to accommodate growth.**	NA	NA	NA
Rivers Gate Lift Station	Accepts flows from the Bellerose LS. Pumps almost all the wastewater from Sturgeon Valley (except Tuscany Hills) to the ACRWC St. Albert Pump Station through the existing 200mm and 250mm forcemains. Design reports suggest that this lift station will ultimately be used to service new development lands north and west of the existing Sturgeon Valley developments via an inverted syphon under the Sturgeon River. **Has capacity for growth and can be upgraded as needed.**	Pump Cap: 90 L/s PDWF: 12.2 L/s	2024: 11.1 2034: 12.7 2044: 13.3	2024: 22.9 2034: 26.1 2044: 27.3

- Future servicing concepts:
  - Service the entire area to the Rivers Gate Lift Station (maximum potential impact on Rivers Gate);
  - Service the maximum potential area to START by gravity, and the remaining lands to the Rivers Gate Lift Station (minimum impact on Rivers Gate Lift Station without constructing a new lift station).
- East of Range Road 250 – Area not serviced; new infrastructure will be required to service it.
  - Concept: Discharge flows to START via gravity to a new lift station.

Lift Station	Description	Ex Lift Station Flows/ Pumping Capacity	Average DWF (L/s)	Peak Daily Flow (L/S)
SV East/CFB Edmonton	Located in the START line to tie in the future Southeast trunk.	6,170	2024: 0 2034: 72 2044: 211	2024: 0 2034: 5.1 2044: 15.1

▼ FIGURE 5: Wastewater Infrastructure | ISL (Sturgeon County Infrastructure Master Plan 2020)



Note: Information provided in this plan was from The Sturgeon County Infrastructure Master Plan 2020.

» North of Sturgeon River – West of Existing Development – Area not serviced; extension of existing infrastructure will be required to service the area.

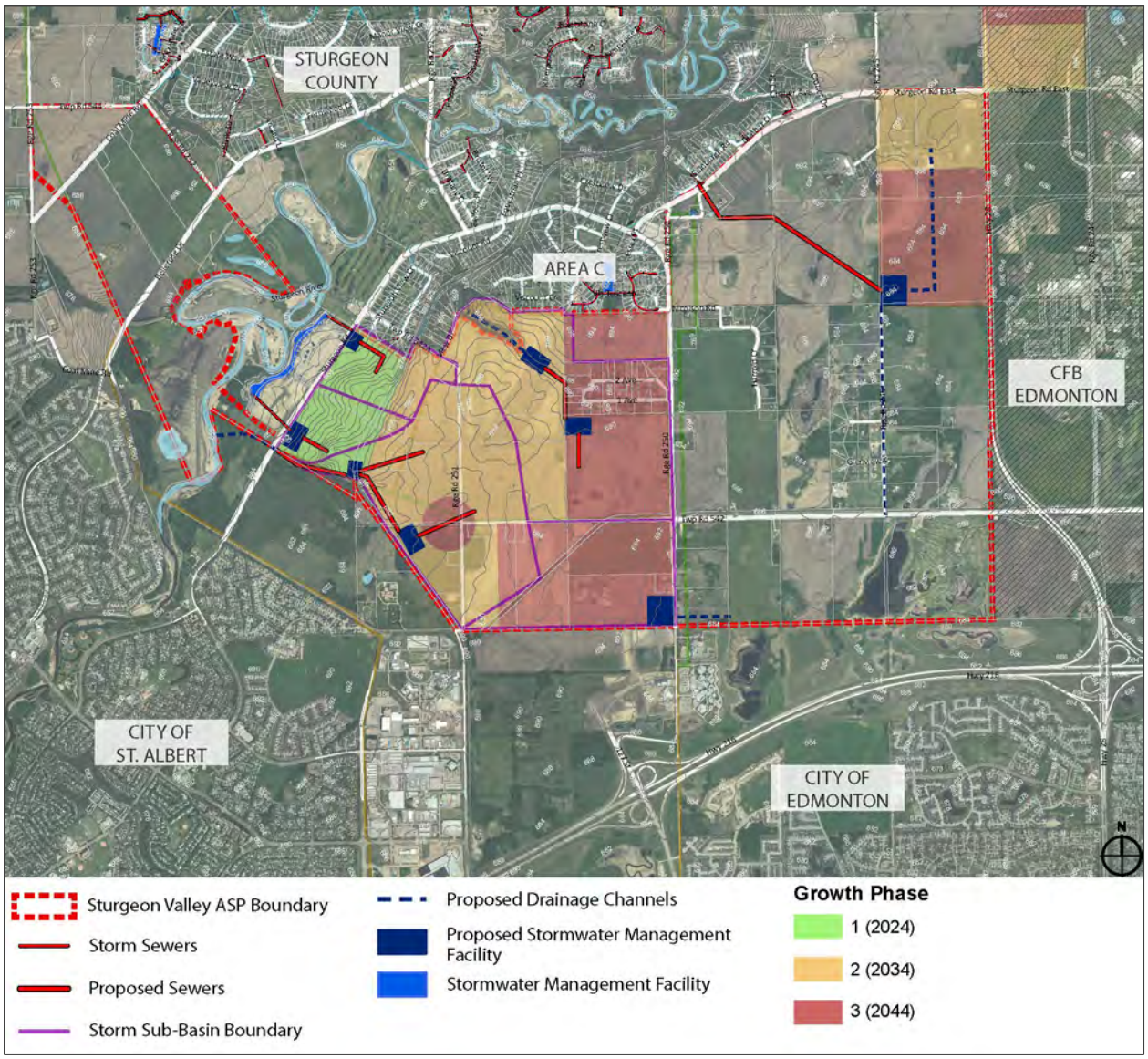
Potential existing lift stations that may service the area are as follows:

Lift Station	Description	Ex Lift Station Flows/ Pumping Capacity	Average DWF (L/s)	Peak Daily Flow (L/S)
Greystone Lift Station	Accepts low pressure flows from the Northern Lights/ ProNorth Industrial Park. May be an option to service the lands north of the river, west of the existing development.	Pump Cap: 77 L/s	2024: 1.8 2034: 2.9 2044: 3.5	2024: 3.6 2034: 5.8 2044: 7.0
Bellerose Lift Station	Services developments north of Sturgeon River, as well as services the Greystone Manor LS. Flows are discharged to the River Gate LS.	Pump Cap: 28 L/s	2024: 7.5 2034: 8.9 2044: 9.5	2024: 15.4 2034: 18.3 2044: 19.5

STORMWATER INFRASTRUCTURE

The majority of stormwater within the Sturgeon Valley drains to the west towards Sturgeon River, however, a north-south ridge located towards Range Road 250 results in stormwater collecting in the eastern area that is limited in its ability to discharge, potentially resulting in the numerous wetland areas in the area. Development in this area may involve lift stations to get the water directed back to the Sturgeon River.

▼ FIGURE 6: Stormwater Infrastructure | ISL (Sturgeon County Infrastructure Master Plan 2020)

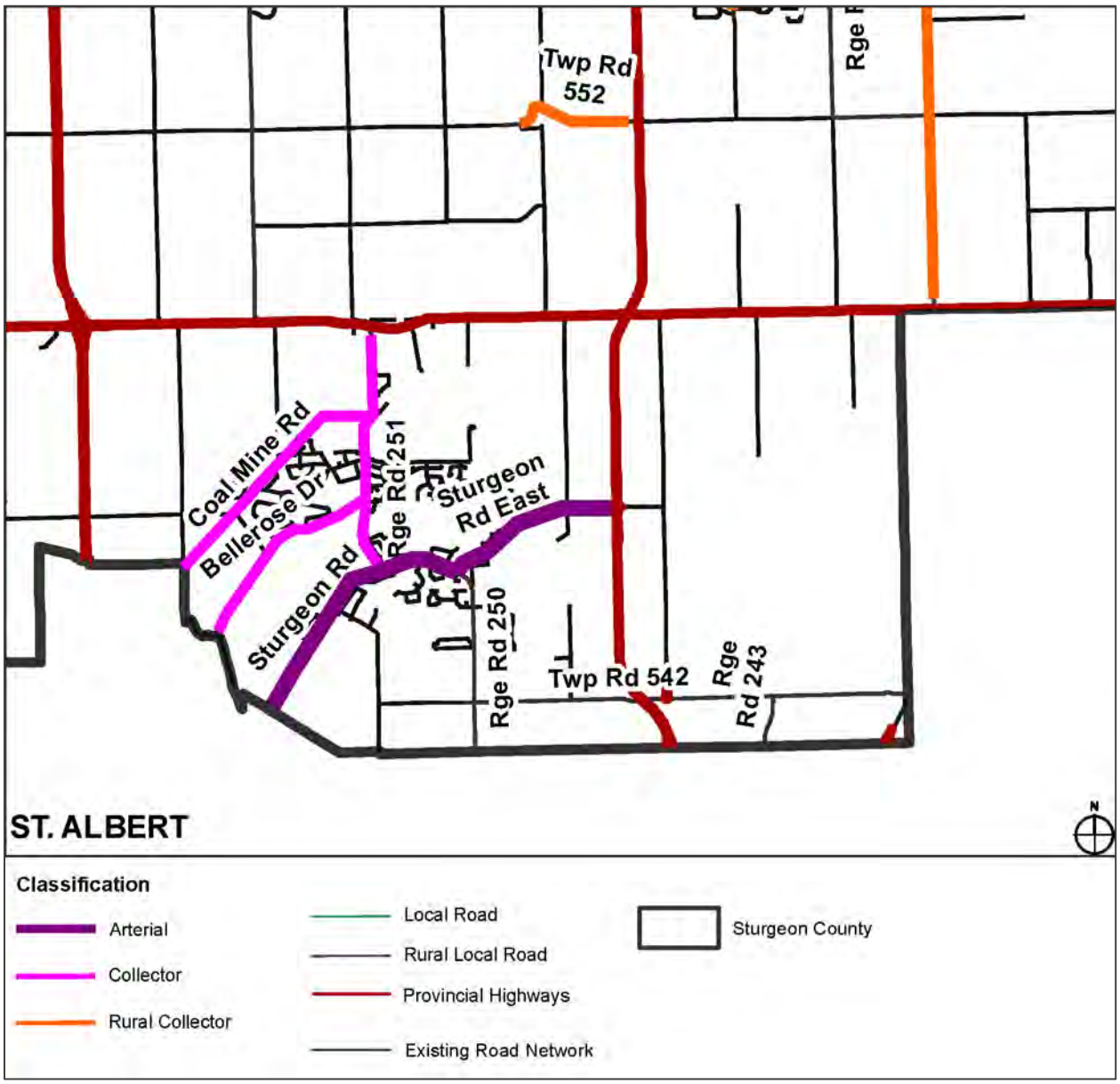


Note: Information provided in this plan was from The Sturgeon County Infrastructure Master Plan 2020.

ROAD NETWORK

The Sturgeon Valley is currently serviced by Sturgeon Road/Township Road 543A in the north and west that connects with Highway 28 to the east and Sir Winton Churchill Avenue located in the south west. Valour Drive provides a west-east connection through to CFB Edmonton and beyond and Range Road 250 provides a north-south connection from Anthony Henday Drive through to Sturgeon Road. 127 Street extends off Anthony Henday Drive and is planned to extend through the Valley to eventually connect up with Highway 2. To service both the planned development anticipated in the IMP and this analysis would require 127 Street extending through to at least Sturgeon Road. The road will need to be constructed to either go above or below the existing North/South railway line.

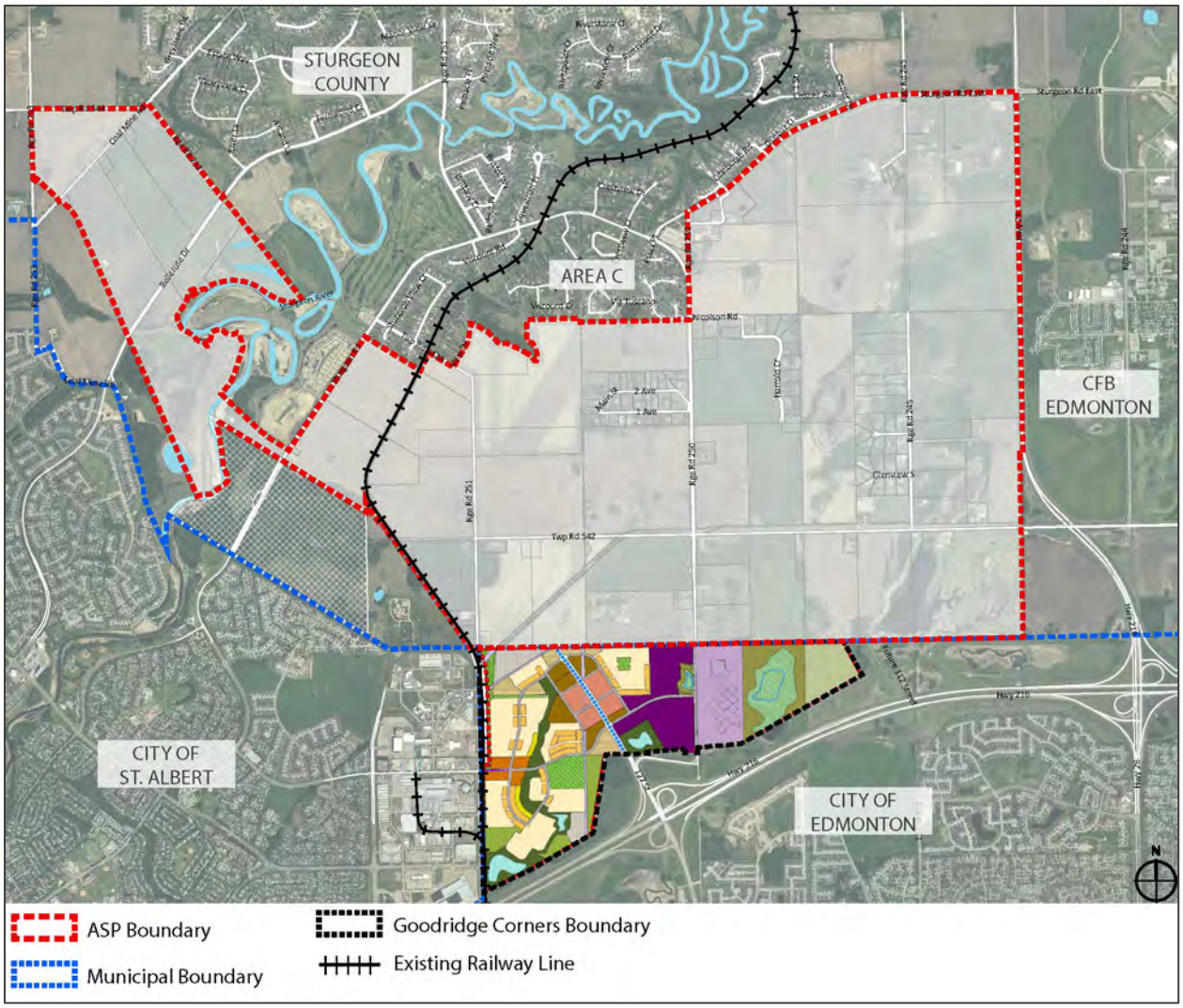
▼ **FIGURE 7: Road Network |** ISL (Sturgeon County Infrastructure Master Plan 2020)



RAILWAY

Transecting the study area is an active Canadian National Railway line. This line extends from Hay River, Northwest Territories to the City of Edmonton, and beyond, acting as a primary rail connector for the Northwest Territories and northern Alberta. Consideration in all levels of planning should be given to mitigate the impact the railway line has on adjacent land, such as vibrations, noise, odor, and visual impacts.

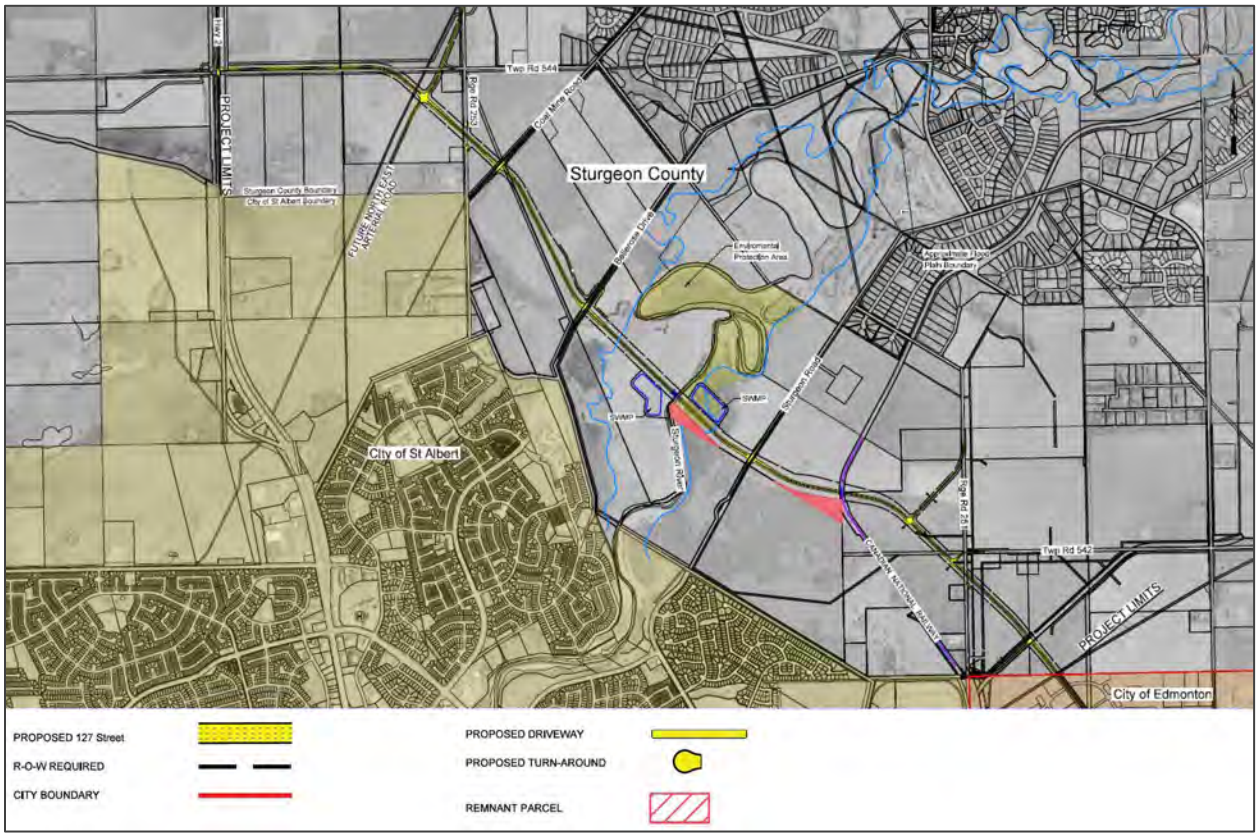
▼ FIGURE 8: Railway Alignment | V3 Companies of Canada



4.3 127 STREET FUNCTIONAL PLANNING STUDY

In August 2012 Sturgeon County engaged ISL to carry out a Functional Planning Study that was based on the acceleration of interest in the development in the Sturgeon Valley. Previous transportation studies have identified the need and general alignment for a new north-south arterial connection in the Sturgeon Valley with the ISL study identifying the preferred option for the alignment of 127 Street. This preferred alignment is indicated in Figure 9 and has been retained throughout the development of all the options presented in this report.

▼ FIGURE 9: 127 STREET ALIGNMENT | ISL (Sturgeon County Infrastructure Master Plan 2020)

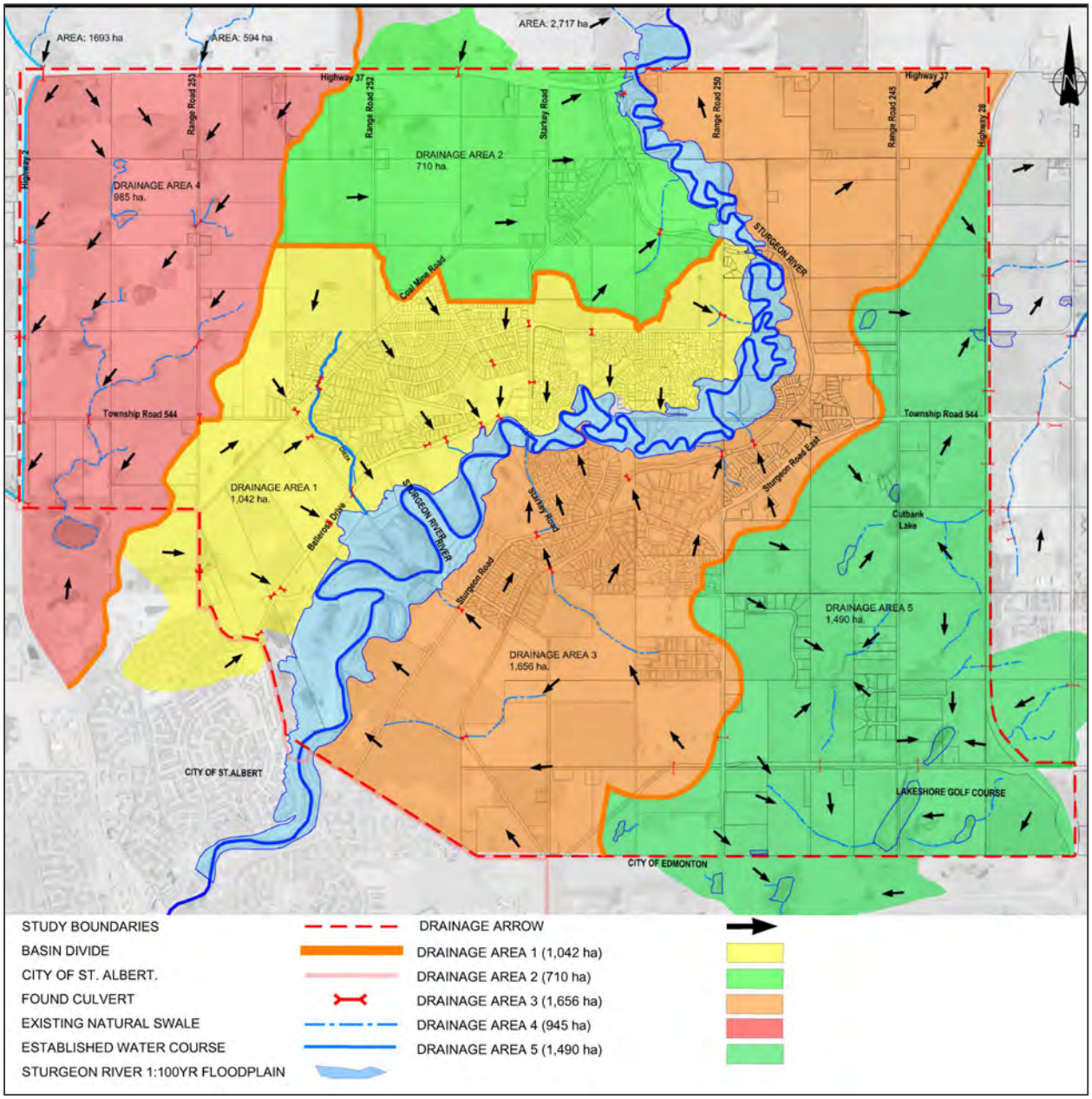


Note: Information provided in this plan was from The Sturgeon County Infrastructure Master Plan 2020.

4.4 STURGEON VALLEY PRELIMINARY STORMWATER ANALYSIS

In 2011 Sturgeon County engaged Sameng Inc to carry out a stormwater analysis of the Sturgeon Valley which was subsequently updated in June 2013. The study divides Sturgeon Valley into 5 drainage areas with the flows generally splitting east and west as indicated in Figure 10.

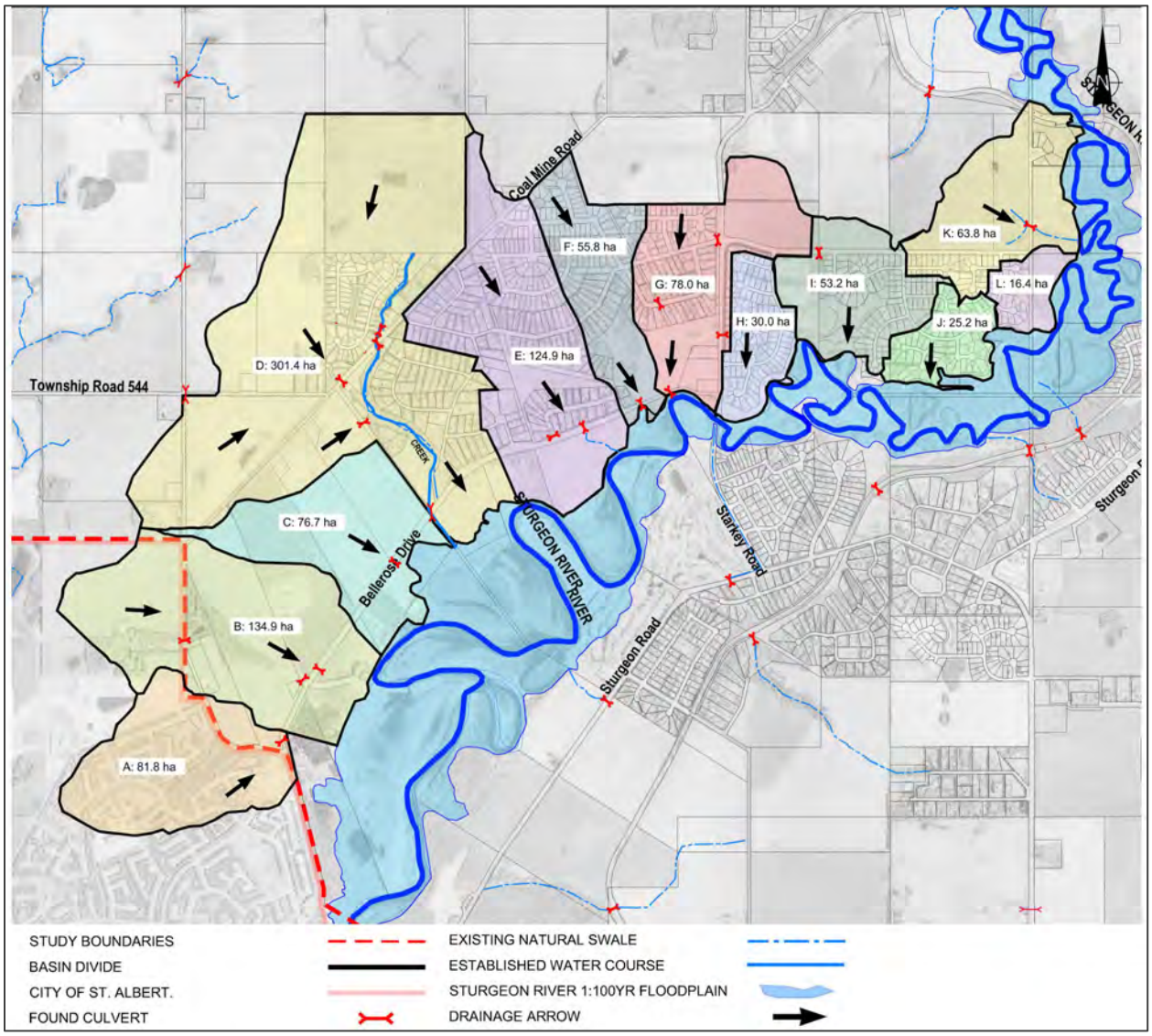
▼ **FIGURE 10: EXISTING DRAINAGE BASINS** | Sameng Inc (Sturgeon Valley Stormwater Analysis, Figure 3-2)



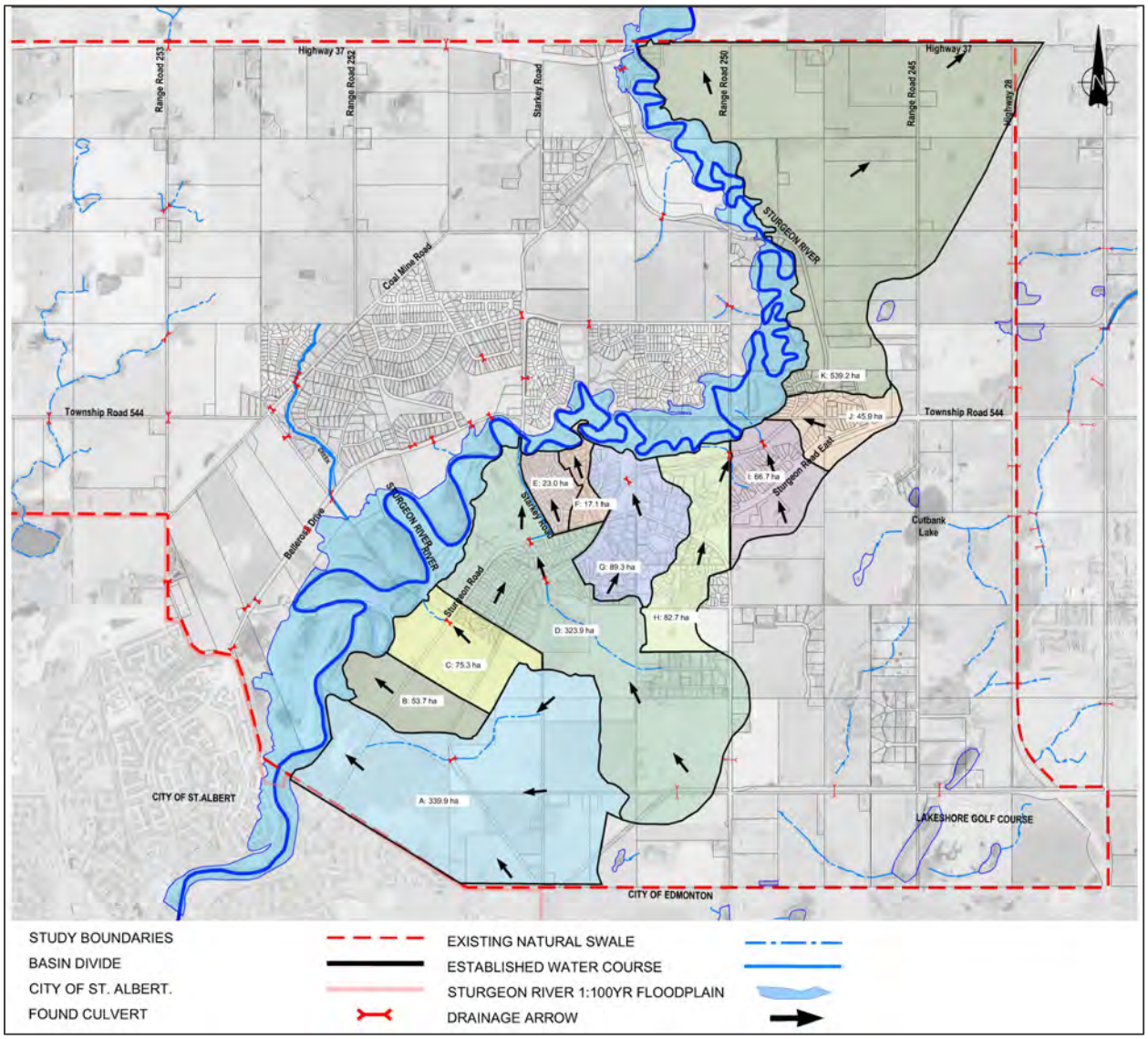
The majority of the drainage basins within the Sturgeon Valley project boundaries flow towards the Sturgeon River and are comprised of Drainage Basin 1 (Figure 11) located to the west of the Sturgeon River and Drainage Basin 3 located to the east of the Sturgeon River (Figure 12). The exception are those lands contained within

Drainage Basin 5 (Figure 13) which flows southeast towards the City of Edmonton and collects in low lying areas in the SE corner. Currently, the majority of the existing residential developments rely on road ditches, drainage channels, and natural swales to convey runoff to the Sturgeon River. Runoff from Drainage Basin 3 is also conveyed via channels and ditches through a series of culvert crossings, located along the CN Rail and Sturgeon River Road.

▼ FIGURE 11: EXISTING DRAINAGE BASIN # 1 | Sameng Inc (Sturgeon Valley Stormwater Analysis, Figure 3-3)



▼ FIGURE 12: EXISTING DRAINAGE BASIN # 3 | Sameng Inc (Sturgeon Valley Stormwater Analysis, Figure 3-5)

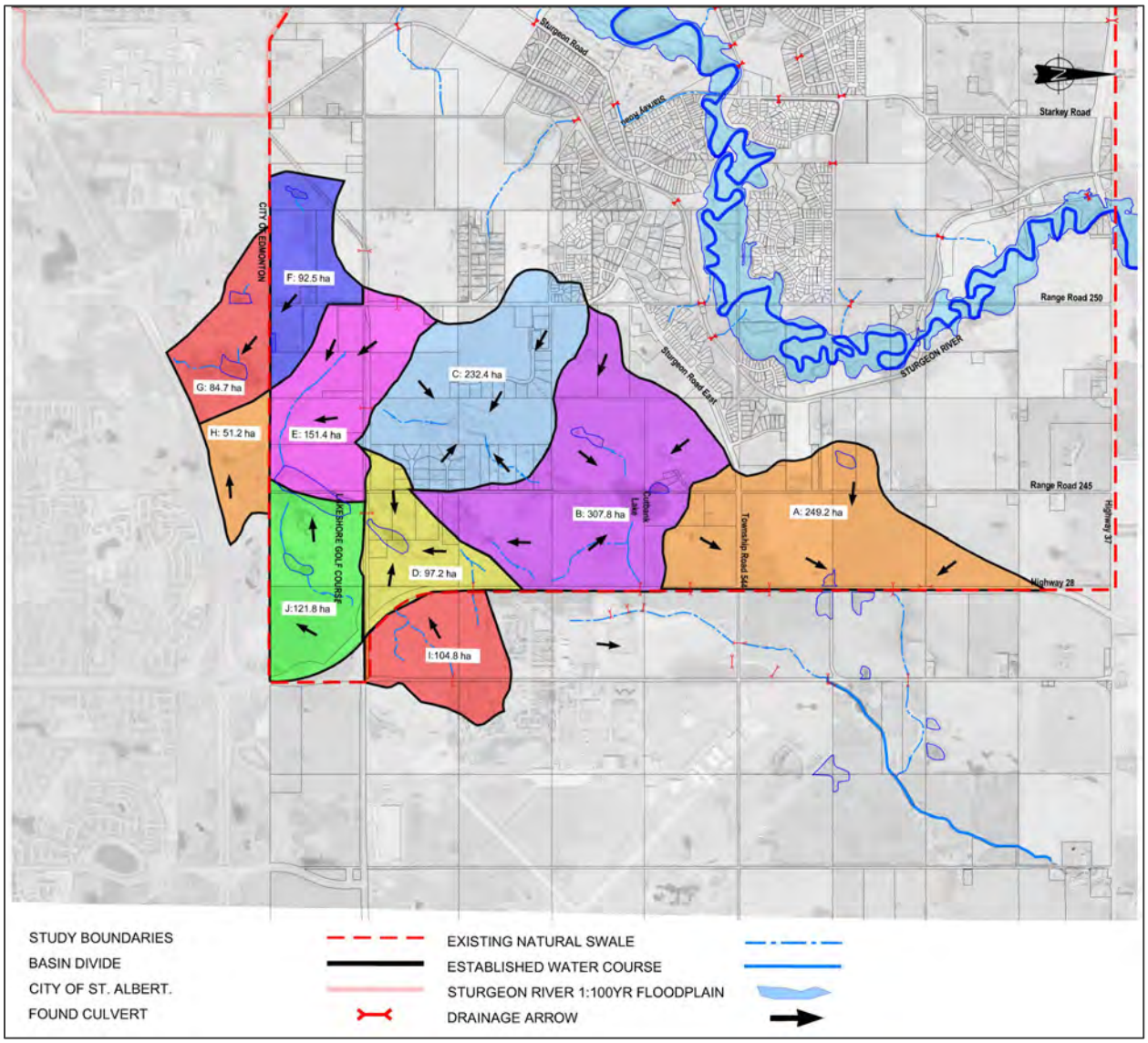


Drainage Basin 5 (Figure 13) is split into 10 sub-basins comprised of:

» Northern sub-basin – Storm runoff is generally directed towards the northeast – crosses Hwy 28 through culverts and ultimately reaches a large natural watercourse which connects to Sturgeon River in the northeast. Cutbank Lake is a major feature of this part of the basin, and collects and stores runoff from sub-basin 'B'.

» Southern sub-basin – Storm runoff flows south towards City if Edmonton and it collects in the Lakeshore Golf Course and low-lying areas in the southwest corner of the study area.

▼ FIGURE 13: EXISTING DRAINAGE BASIN # 3 | Sameng Inc (Sturgeon Valley Stormwater Analysis, Figure 3-7)

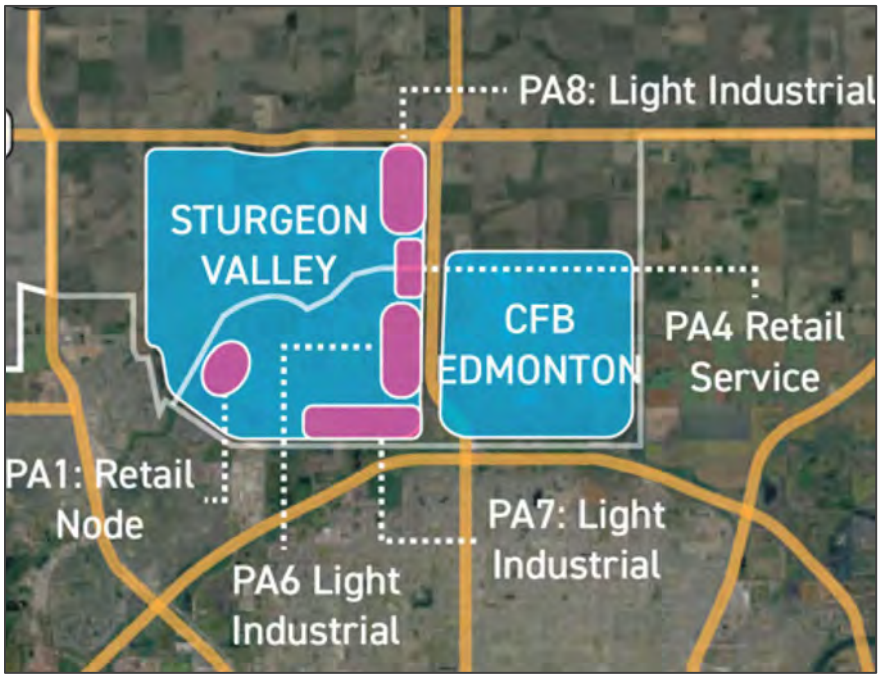


A number of stormwater management options were presented along with estimated costs associated with each. Should an Area Structure Plan(s) or amendments to the Municipal Development Plan be carried out this information will provide the basis for the development of an overall stormwater management plan.

4.5 STURGEON COUNTY COMMERCIAL DEVELOPMENT ANALYSIS

In 2019 Sturgeon County undertook a Commercial Development Analysis that identified a series of areas for future commercial and industrial development. This include lands contained within the Sturgeon Valley as identified in Figure 9:

▼ **FIGURE 14: COMMERCIAL DEVELOPMENT ANALYSIS |** MXD Development Strategies & WSP (Sturgeon County Commercial Development Analysis, Figure 4.2)



From Figure 14 there were four priority areas identified that include:

- Priority Area 1 (PA1) is viewed as being developed as an upscale, boutique retail node with a focus on food and beverage and shopping concepts, personal services, health and wellness and small-scale medical offices.

- Priority Area 4 (PA4) was identified as being lands for devleopment of a retail and service node that includes grocery, convenience retail, a gas bar, grab and go food beverage, personal services as well as institutional and recreational amenities.

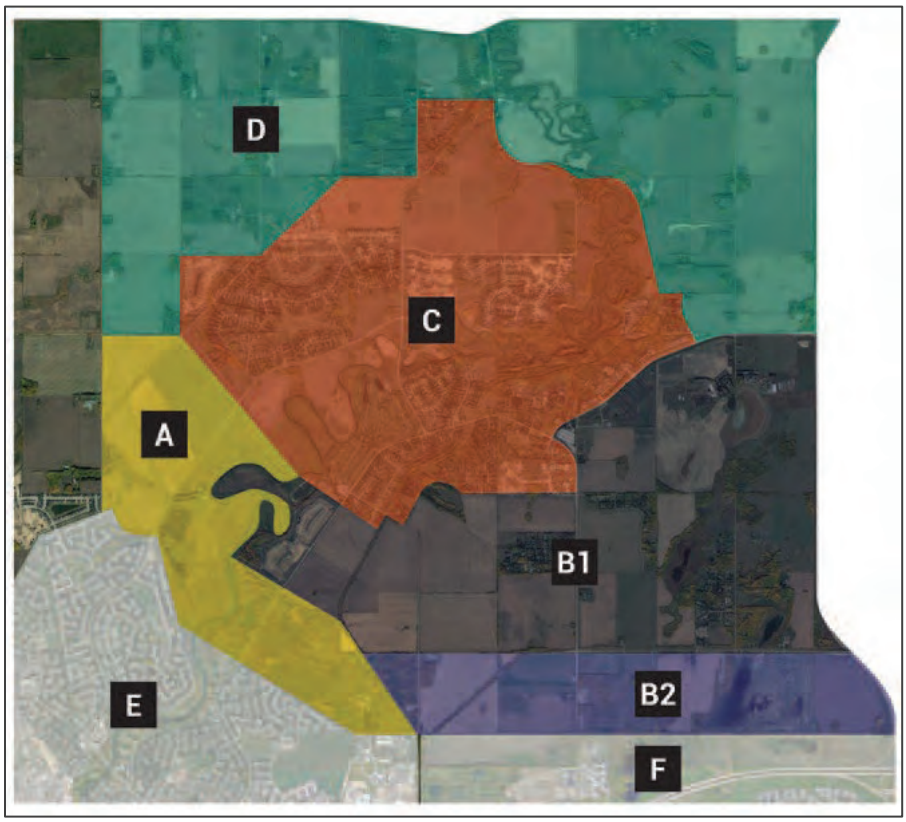
- Priority Area 6 (PA6) leverages connectivity to Anthony Henday Drive via 127 Street Northwest to create a strategic light industrial employment pocket that can support a diversity of activities such as logistics, warehousing, flex industrial and manufacturing. The presence of a large wetland and other site specific contraints relating to servicing may make this development more difficult. Through the analysis process it was identified that access to Highway 28 was critical to the success of light industrial being developed in this are along with its strategic viability in being located close to CFB Edmontonbut off-base.

- Priority Area 7 (PA7) represents another opportunity to create a light industrial employment node along Highway 28 that supports logistics, warehousing, flex industrial and manufacturing activities. Access to Highway 28 will be a key component for creating development in this area.

4.6 EDMONTON METROPOLITAN REGION PLAN

Established through Section 708 of the MGA, growth management boards are required for the Edmonton region. In compliance with this, the Edmonton Metropolitan Region Board (EMRB) was formed in 2017, and includes thirteen (13) member municipalities. Through intermunicipal collaboration, the EMRB created the Edmonton Metropolitan Region Growth Plan (EMRGP), which contains six interrelated policy areas to support and manage growth within the region – economic competitiveness and employment; natural living systems; communities and housing; integration of land use and infrastructure; transportation systems; and agriculture. While the entire County falls within the EMRGP, the study area is subject to specific policies contained within Appendix G: Negotiated Policies for the Sturgeon Valley Special Study Area (SVSSA), and more specifically, those relating to Areas A, B1, and B2.

▼ **FIGURE 15: Sturgeon Valley Special Policy Area |** Edmonton Metropolitan Region Growth Plan (Schedule 12)



Note: Exact alignments of the areas are subject to further refinement through the development of Area Structure Plan(s).

While Phase 2: the Area Structure Plan(s) will be subject to aligning with all of the policy contained within the EMRGP, and particularly those contained within Appendix G, Phase 1: the Growth Framework leveraged key policies to guide discussions with the various stakeholders and ultimately used these policies to formulate the land use concepts. The following table includes all of the policies related to Areas A and B1 and B2 of the Sturgeon Valley Special Study Areas, indicating their influence on the Growth Framework.

OBJECTIVE 3.1 (from the EMRGP Appendix G)		
Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities.		
POLICY (from the EMRGP Appendix G)		**INFLUENCE ON THE GROWTH FRAMEWORK**
3.1.1	While negotiated Policies relating to the Sturgeon Valley Special Study Area (SSVSA) shall take precedence over the EMRB Growth Plan Policy Tiers and density targets, all other Growth Plan policies will continue to apply.	▪ Proceeding forward with developing an Area Structure Plan(s) and/or carrying out amendments to the County's Municipal Development Plan in accordance with approved Regional Context Statement.
3.1.2	Area Structure Plan(s), led by the jurisdictional municipality, for Areas A and B require consideration of the following:	
3.1.2(a)	Density of development in Areas A and B shall achieve an overall minimum of **35 du/nrha.** This is comprised of minimum densities of 35 du/nrha in Areas A and B2, 20 du/nrha in Area B1, and up to 125 du/nrha around a proposed transit centre (see policy 3.1.3). Plan developments will vary in density but will be managed to ensure that overall area minimums are maintained or surpassed.	▪ Development to achieve overall minimum of 35 du/nrha has been the basis of the analysis carried out in the development of the varying concepts. ▪ The policy speaks to creating a transitional density from Areas A and B1 through to B2 that creates an overall density of 35du/nrha which has been taken into consideration through the development of concepts for the purposes of this analysis.
3.1.2(b)	Within the overall density target above, development will demonstrate a gradient/ transitioned approach. This ensures that: The character and built form of the established Sturgeon Valley community (Area C) is protected, such that higher densities shall be applied progressively between that community and the urban areas of Edmonton and St. Albert (areas E and F); and Higher densities are available to provide fiscal support for required infrastructure investments.	▪ Concepts outlined in this document have been developed with varying transitioning densities. Transects have been used to visually represent how the densities progress across the study area.
3.1.2(c)	The future extension of 127 Street will be in general accordance with the outcomes of the Edmonton Metropolitan Region Board's Integrated Regional Transportation Master Plan. The future corridor for the extension of 127 Street will be further refined and protected as determined by Area Structure Planning across the entire planning area with input from Edmonton, St. Albert, and Sturgeon County.	▪ The 127 Street corridor has been incorporated into all of the concepts. Should Council proceed with the development of an Area Structure Plan(s) and/or amendments to the County's Municipal Development Plan policy would be developed in consultation with the City of Edmonton and City of St. Albert for protecting the corridor.

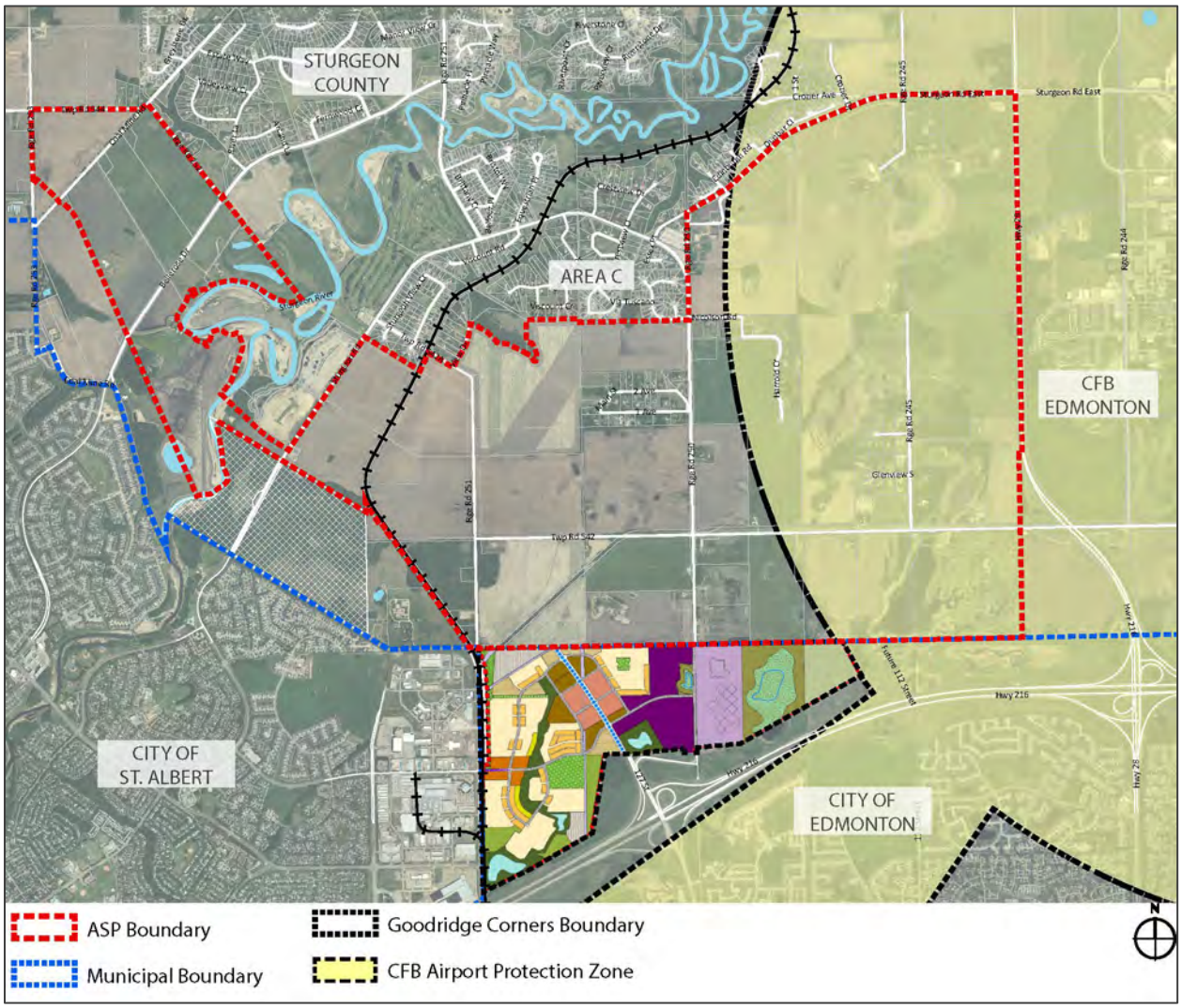
OBJECTIVE 3.1 (from the EMRGP Appendix G)		
Plan and develop greenfield areas of the Metropolitan Tier and the Sturgeon Valley Growth Area (Areas A and B) in an orderly and phased manner that also provides for complete communities.		
POLICY (from the EMRGP Appendix G)		**INFLUENCE ON THE GROWTH FRAMEWORK**
3.1.2(d)	A variety of non-residential developments will be incorporated within the planning areas to provide diverse employment opportunities.	▪ The land use studies included non-residential development guided through the study carried out by the County relating to potential non-residential development within the Sturgeon Valley that would provide diverse employment opportunities. Additional employment at a more local scale is also envisioned and would be enabled through policy development (e.g. ability for commercial development at key intersections throughout the study area providing local services).
3.1.2(e)	Community amenities will be positioned within a hierarchy of mixed-use centres. Development of mixed-use areas will be consistent with other policies contained within the EMRB Growth Plan.	▪ The development of an Area Structure Plan(s) and/or amendments to the County's Municipal Development Plan would include policy direction on providing for future community amenities to support residential development.
3.1.2(f)	Greenspace and protection of natural areas will be incorporated to contribute to an open and connected environment that can be actively used by residents of the community and also may assist with the transitional gradient.	▪ The majority of the Natural Areas are recommended to be maintained and incorporated into the final consolidated designs with an open space network providing connections to the developed areas.
3.1.2(g)	Sustainable and innovative design techniques will be promoted to enhance the environment and seek to minimize required capital and operating infrastructure costs.	▪ This new form of residential development density will require the County to develop new engineering standards that could include the ability for developers to propose sustainable innovative design solutions.
3.1.2(h)	Inclusion of a comprehensive Fiscal Impact Assessment that illustrates the full, life-cycle development costs.	▪ A comprehensive Fiscal Impact Assessment has been completed as part of this Growth Study.
3.1.2(i)	Collaboration with neighbouring planning partners on issues of common interest.	▪ The preparation of the Growth Framework included engagement with jurisdictional neighbours, including the City of Edmonton, the City of St. Albert, and CFB Edmonton. Should Council proceed with phase 2 ongoing engagement with the County's neighbours will be required.
3.1.3	A transit centre (a location where multiple transportation modes, excluding light rail transit, can stop simultaneously to allow transfers between routes) will be located in Area B that could enable development densities between 42 du/nrha and 125 du/nrha. The increased densities in proximity to the transit centre provide the opportunity for the development of a mixture of residential and non-residential uses.	▪ The majority of the options identify the opportunity to develop a mixed use centre where a transit centre could be created.

4.7 CFB EDMONTON HELIPORT REGULATION + APPROACH PATH OVERLAY

CFB Edmonton, the eastern jurisdictional neighbour to the study area, no longer operates fixed wing aircraft but relies heavily on the operation of helicopters. The CFB has zoning regulations relating to protecting the Edmonton Garrison Heliport that influences how development may be carried out within the Sturgeon Valley (Appendix B). These regulations will be important when developing a stormwater management plan in relation to the location of stormwater ponds and limiting the potential for bird hazards. In addition, no building/structure or object will be allowed to exceed the approach surface where the heights are established based on a ratio of a vertical to horizontal measurement as described in the regulations. Figure 16 below illustrates the area covered by the approach surfaces. Through engagement with the CFB and in accordance with their regulations additional policy would also be required to avoid and or mitigate potential impacts relating to:

- Creating environments (e.g. Stormwater ponds/food garbage disposal) that would attract birds or implementing appropriate mitigation measures.
- Ensuring buildings and structures do not exceed the Heliport approach surfaces.
- Visual, noise and odour interface between proposed light industrial development and the established residential development with the CFB.
- Any use that would cause interference with aeronautical communications.

▼ FIGURE 16: CFB Edmonton – Heliport Overlay | V3 Companies of Canada



5 CONCEPT SCENARIO DEVELOPMENT

5.1 PROCESS

In developing the land use concept scenarios, the project team identified a range of different options that could work towards meeting the objectives and policies of the Sturgeon Valley Special Study Area. The team was guided by the background information and understanding of the expectations of development by developers/landowners in the SVSSA. This created a baseline to understand the opportunities for development within the SVSSA and potential impacts that may arise (Scenario 1: Land Developers Concept). Based on the scenarios developed, varying alterations were analyzed and a transect gradient from the City of Edmonton's boundary through to the boundary with the established Sturgeon Valley Country residential community were created and projected population numbers calculated.

Based on the projected populations the ultimate build out was broken into a further three additional scenarios on how development of the SVSSA may occur with evolving alterations carried out through the engagement process. In developing the build out scenarios, there were key factors that influenced their location and anticipated timing. These were:

- Transportation is critical to the movement of people, goods and services and from a capital and operating cost is generally one of the largest costs to a developer and municipality. The impacts on the road network can cross intermunicipal boundaries creating additional challenges for accommodating for the growth. Moving forward will require engagement with these municipalities to obtain approval of both amendments to the MDP and the Area Structure Plan(s). These factors were critical in the development of the varying scenarios presented in this report.

- Servicing Infrastructure is another critical capital and operating cost to developers and a municipality. Prior to preparing the Growth Strategy, the County completed an Infrastructure Master Plan (IMP) for the County which included the Sturgeon Valley. The outcomes of this report, combined with the transportation factors, influenced the development of the scenarios.

- Drainage Basins influence how stormwater management will be developed and provides guidance in identifying natural areas where stormwater management may be easier to manage versus other areas. This will influence the capital and operating costs to developers and municipalities. The location of stormwater management facilities may also require additional controls in the management of birds and their potential impact on CFB Edmonton.

- Contiguous Development enables development to be carried out in a manner which is cost effective in the expansion of the infrastructure required to service the ultimate build out and seeks to avoid leap frogging. To advance developments earlier (leap frogging) in areas where there are no natural extensions of the required infrastructure can lead to unnecessary capital and operating costs inherited by the municipality. It could also result in infrastructure being developed below the capacity requirements at full build out resulting in the municipality carrying the burden of significant investment in capital infrastructure to accommodate future pressures arising from growth.

- Fiscal Impact Assessment highlights the importance of creating non-residential development to support residential development. Beyond the net neutral option, all the other options indicated additional financial costs on the County that will not be recovered through the tax base within the Sturgeon Valley.

- EMRGP is statutory policy that requires the development of an Area Structure Plan(s) within the Sturgeon Valley to meet. These policy requirements were key drivers that also influenced how development is envisioned to unravel based on densities and transitions between the existing urban and established country residential boundaries.

This resulted in the following scenarios:

- Scenario 2: Consolidated 30 Year
- Scenario 3: Consolidated 60 Year
- Scenario 4: Consolidated Ultimate Build Out
- Scenario 5: Net Neutral Development Option

The following provides a summary of the analysis for each of the scenarios. The analysis includes the potential fiscal impact (Appendix E) on the County; a high-level transportation analysis (Appendix D) along with a high-level review on the potential number of lift stations that could be required to service each scenario. It's important to recognize that the traffic analysis is not a full traffic impact assessment but rather a high-level look at each of the options to identify potential traffic pressures that would be generated by each scenario and what road infrastructure is likely to be required to support the proposed form of development.

Each of the development scenarios have been analyzed to determine the municipal services and level of services required to support the development. This analysis is based on current and historic information for each of 18 urban municipalities in Alberta. Based on this analysis, estimated operating expenditures and non-tax revenues have been determined for each year in the forecast based on the amount and type of growth in the development scenario. Similarly, the investment in infrastructure required to support this development has been estimated based on the service levels of the 18 comparable municipalities at each stage of development. The assumptions regarding this analysis are provided in the Fiscal Impact Assessment can be found in the report.

Two approaches to evaluating the financial implications of the development scenario have been employed. The first – "Blended Scenario" – assumes that all development and associated costs and revenues are 'blended' into the existing operations of the County and that municipal tax rates would be applied to all taxpayers in the County. For the Blended Scenario, the fiscal impact analysis results are compared to a Baseline Forecast for the County which includes all relevant financial information for the County without the Sturgeon Valley development. This comparison provides an indication to the impact of the Sturgeon Valley development on existing ratepayers in the County.

The second approach to evaluating the financial impacts of the Sturgeon Valley development on the County's financial picture is the "Urban Services Area" (USA) approach, whereby all municipal financial implications of development in Sturgeon Valley is borne by the ratepayers in the Urban Services Area. This protects ratepayers

elsewhere in the County from any financial impact of the Sturgeon Valley development. The results of this analysis for the Urban Services Area are compared against the 18 comparable municipalities. This provides an indication of the relative financial viability of the Sturgeon Valley development in context of other urban Alberta municipalities.

The Fiscal Impact Analysis carried out for Sturgeon Valley involved the following:

- Baseline Forecast: Projection of the financial picture of the County without developing Sturgeon Valley.
- Development Scenario: Projection of the financial picture of the development in Sturgeon Valley.
- Composite Scenario: Projection of the financial picture of the development in the County with development of Sturgeon Valley.
- Impact of developing Sturgeon Valley as a comparison of the results for the Composite Scenario (with Sturgeon Valley) against the Baseline Forecast (without Sturgeon Valley).

Each financial forecast incorporates assumptions about the future. A key assumption is how the new development in Sturgeon Valley will be taxed and what implications this will have for existing ratepayers in the County. This analysis provides Council with an understanding on the potential impact to the taxation. Greater detail regarding the assumptions and analysis are contained within the Fiscal Impact Assessment.

5.2 CONSOLIDATED OPTION – LANDOWNERS/ DEVELOPERS CONCEPT

The landowners/ developers option is a combination of feedback received during the stakeholder engagement. The predominant land use is residential development with small pockets of commercial development and one area with concentrated light industrial development. This plan, as presented, does not contain phasing; should Council proceed with this option, phasing would be recommended in Phase 2.

KEY COMPONENTS

The following is a summary of the key components of the Consolidated Option – Landowners/ Developers Concept:

1. For calculation purposes of the population, the minimum density of 35 du/nrha for all of the residential areas was applied. Please note that these densities would vary upon further planning at the Area Structure Plan(s) and/or Neighbourhood Area Structure Plan level.

2. 127 Street is extended from the City of Edmonton through to Highway 2, acting as the primary arterial road serving the study area and beyond. Grade separation will be required to cross the railway line along with a bridge to cross the Sturgeon River. At full build out the 112 Street overpass and two additional connections to Highway 28 is projected to be required to service the area.

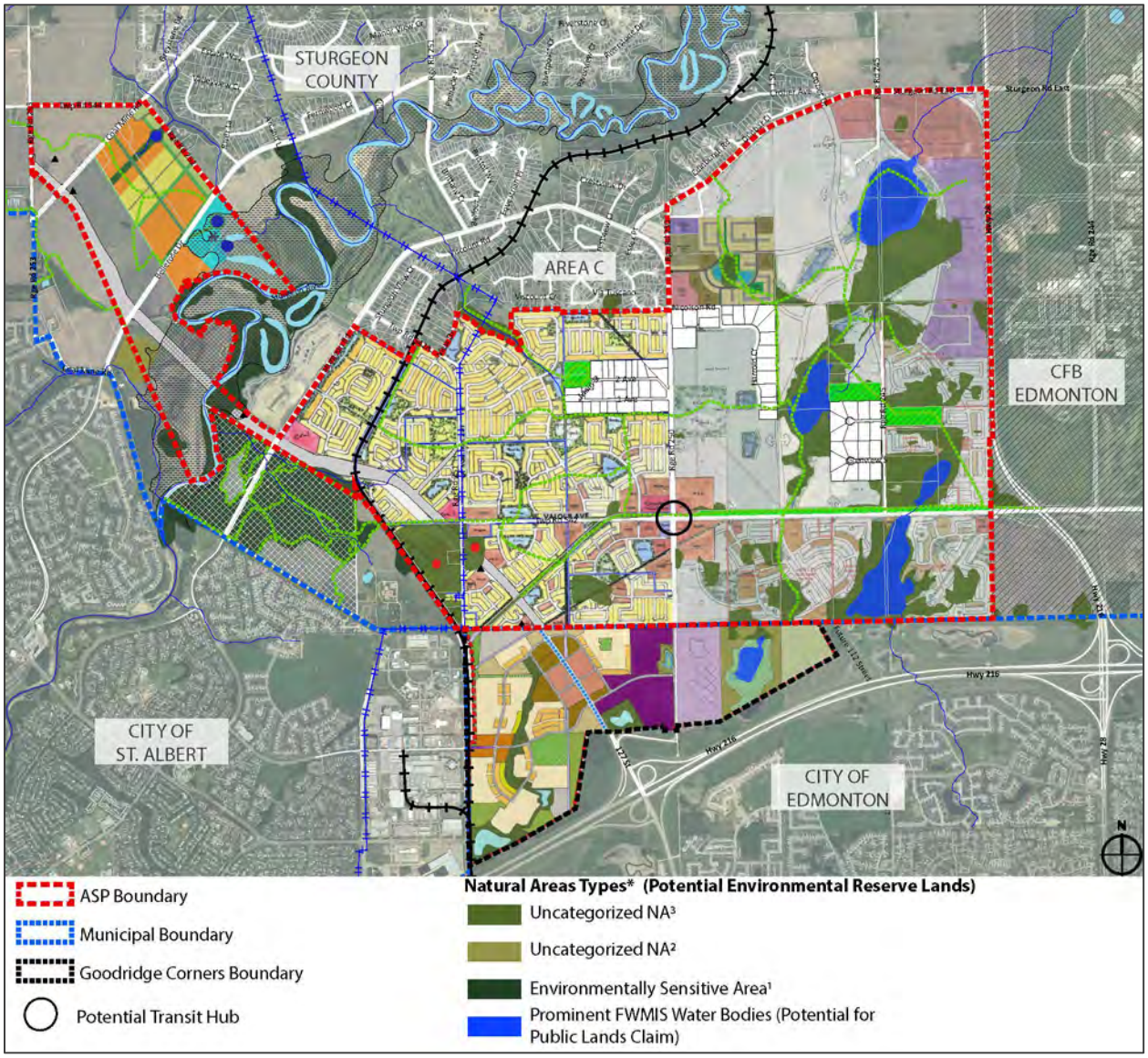
3. There are pockets of commercial development throughout the study area providing opportunity for local commercial/ retail amenities and employment opportunities to future residents.

4. A large commercial hub is located in the northeast corner of the study area, providing an amenity node for the CFB Edmonton and existing Sturgeon Valley residents.

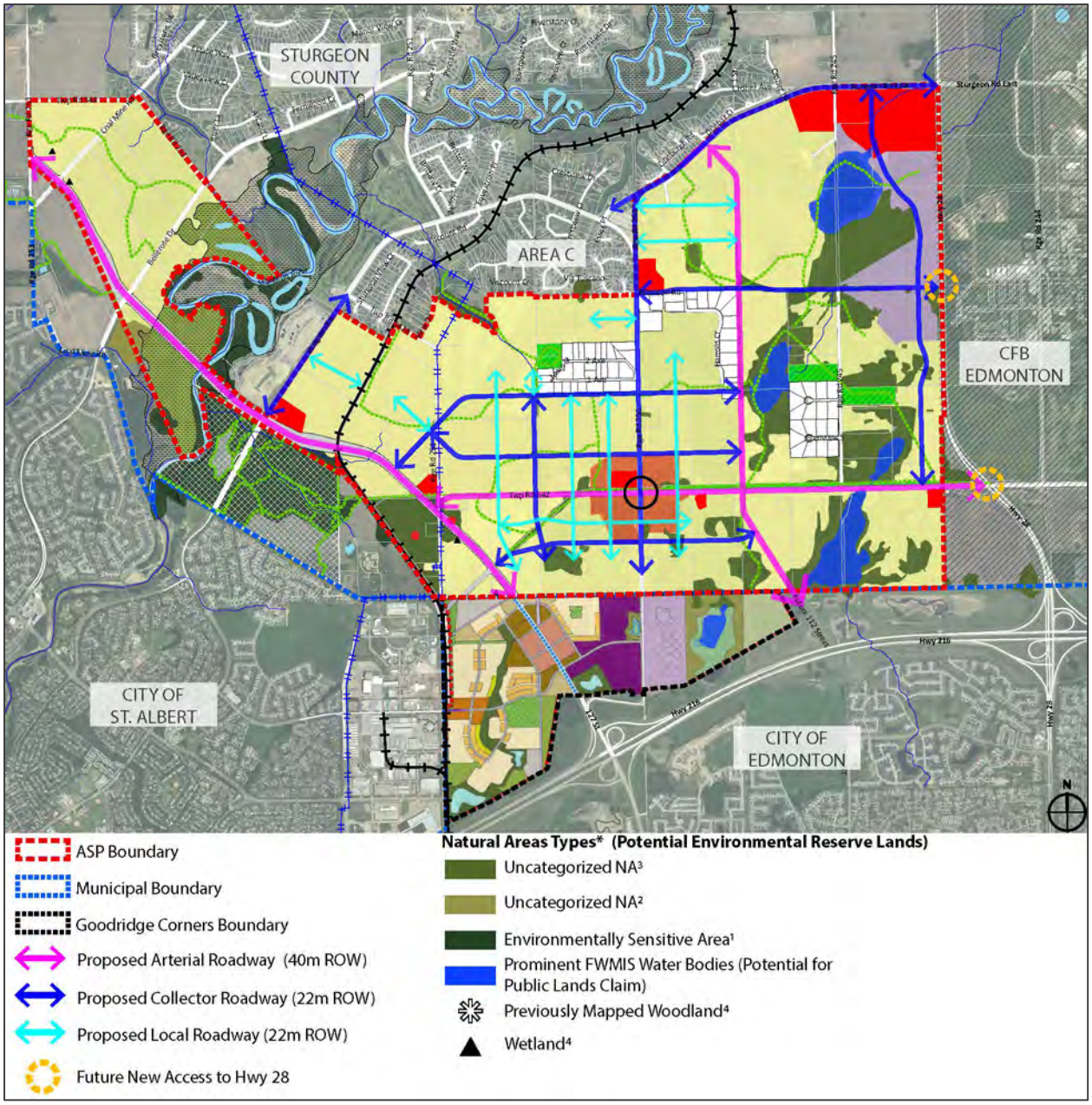
5. Light industrial lands are located adjacent to the CFB Edmonton, providing opportunities for employment for residents and development of industries that support CFB.

6. Natural areas are shown as being preserved, however, until in field investigations are completed it should be recognized that these areas are subject to change which could result in increased developable area.

▼ FIGURE 17: STURGEON VALLEY – Consolidated Plan – Landowners/ Developers Concept | V3 Companies of Canada



Please refer to Appendix D for a plan to scale of this option.



Please refer to Appendix D for a plan to scale of this option.

CONSOLIDATED OPTION – LANDOWNERS/ DEVELOPERS AREA CALCULATIONS					
Land Uses	**Area (Ha)**	**Area (nrha)[3]**	**Percentage (%)**	**Units /nrha**	**Population /nrha**
Gross Area	1,750.00				
Existing Railroad ROW	7.50				
Future 127 Street Extension	46.54				
ROW (Existing Roads, etc.)	21.42				
Potential Environmental Reserve [1]	270.33				
Existing Open Space	24.60				
Existing Residential	71.51				
Proposed Agriculture Holdings	62.70				
Gross Developable Area (GDA) [2]	**1245.40**		**100%**		
Municipal Reserve	124.54		10.00		
SWMF	Unknown				
PUL	Unknown				
Proposed Roads 15% of GDA	186.81		15.00		
Subtotal	**311.35**				
Proposed Commercial	64.72		5.20		
Proposed Industrial	68.42		5.49		
Subtotal	**133.14**				
Proposed Residential [4]					
Residential (35 du/nrha)	1,075.50	806.62	86.36	28,232	70,579
Mixed Use (35 du/nrha)	36.8	27.60	2.95	966	2,415
Subtotal	**1,112.30**	834.22	100.00	**29,198**	**72,994**
Du/nrha	**The dwelling unit per net residential hectare is 35.**				

NOTES:

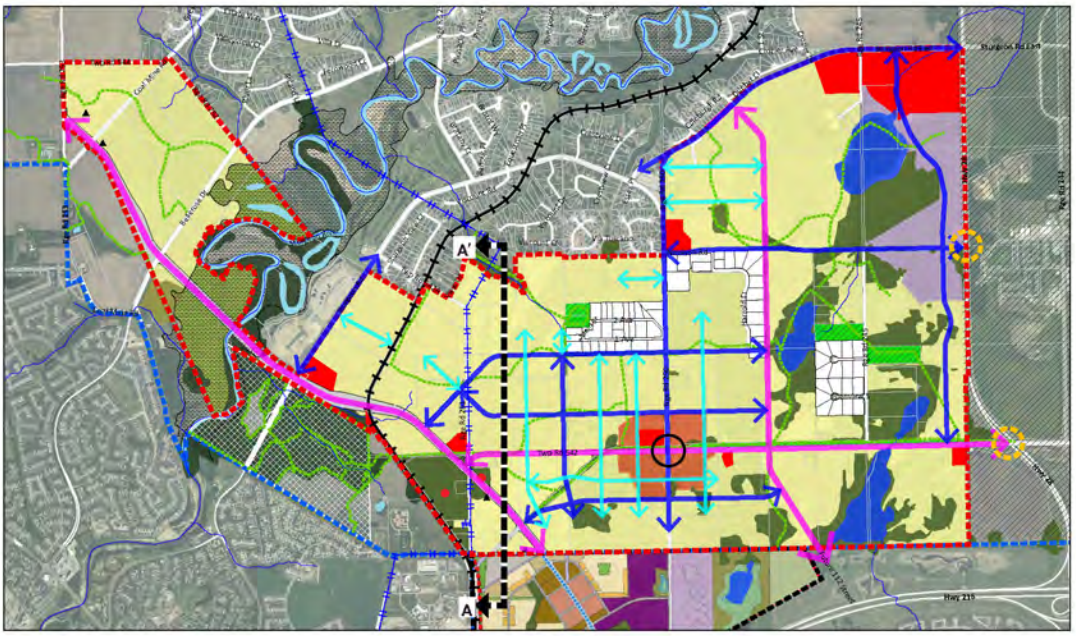
[1] Potential Environmental Reserve areas currently excludes the 1970 floodplain areas.

[2] Gross Developable Area excludes the following areas: Existing Railroad ROW, Future 127 Street ROW, Existing Roads/Other ROW, Environmental Reserve, Existing Open Space, Existing Residential and any Proposed Agriculture Holdings.

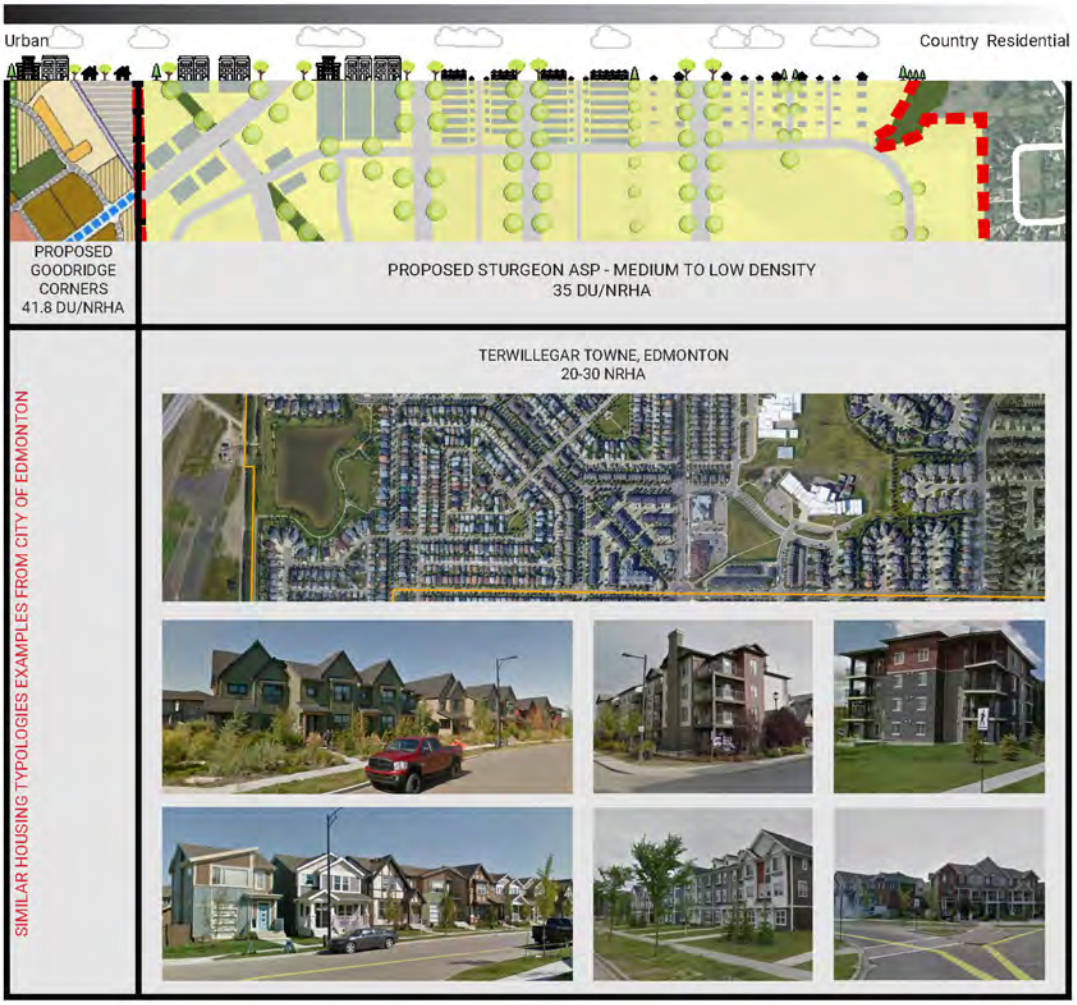
[3] Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Road Area from the Developable Residential Land Area in addition to the existing the municipal reserves and roads.

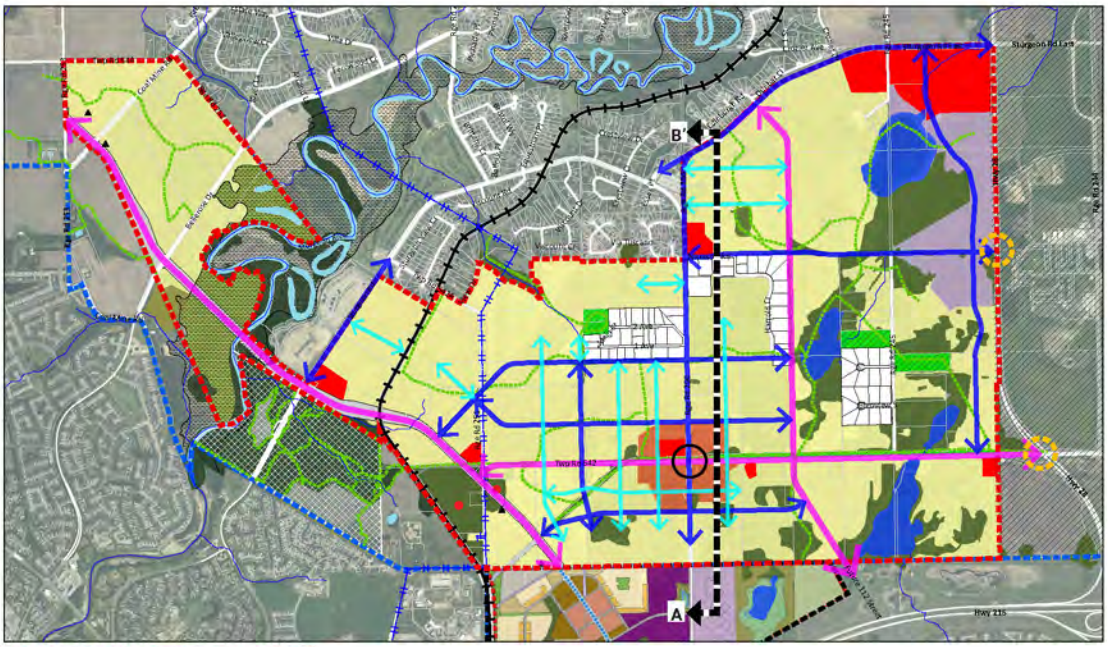
[4] Based on census data the number an average of 2.5 persons per dwelling were used in calculating the potential population.

▼FIGURE 18: STURGEON VALLEY – Consolidated Plan – Landowners/ Developers Concept Transects | V3 Companies of Canada

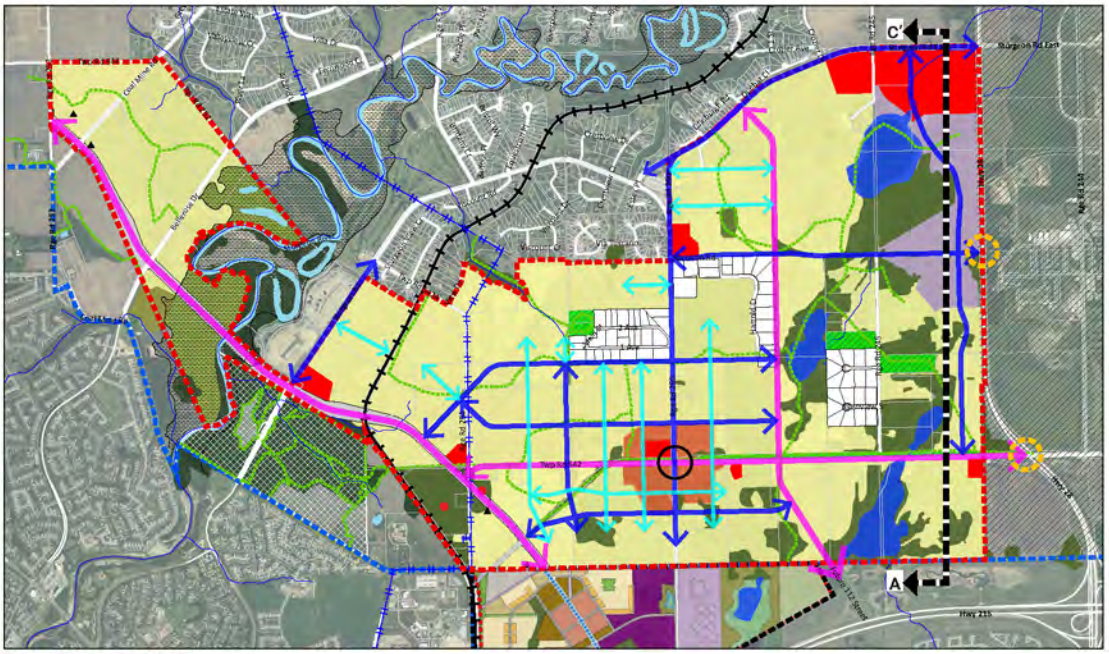


Proposed Density Through Transect A-A'

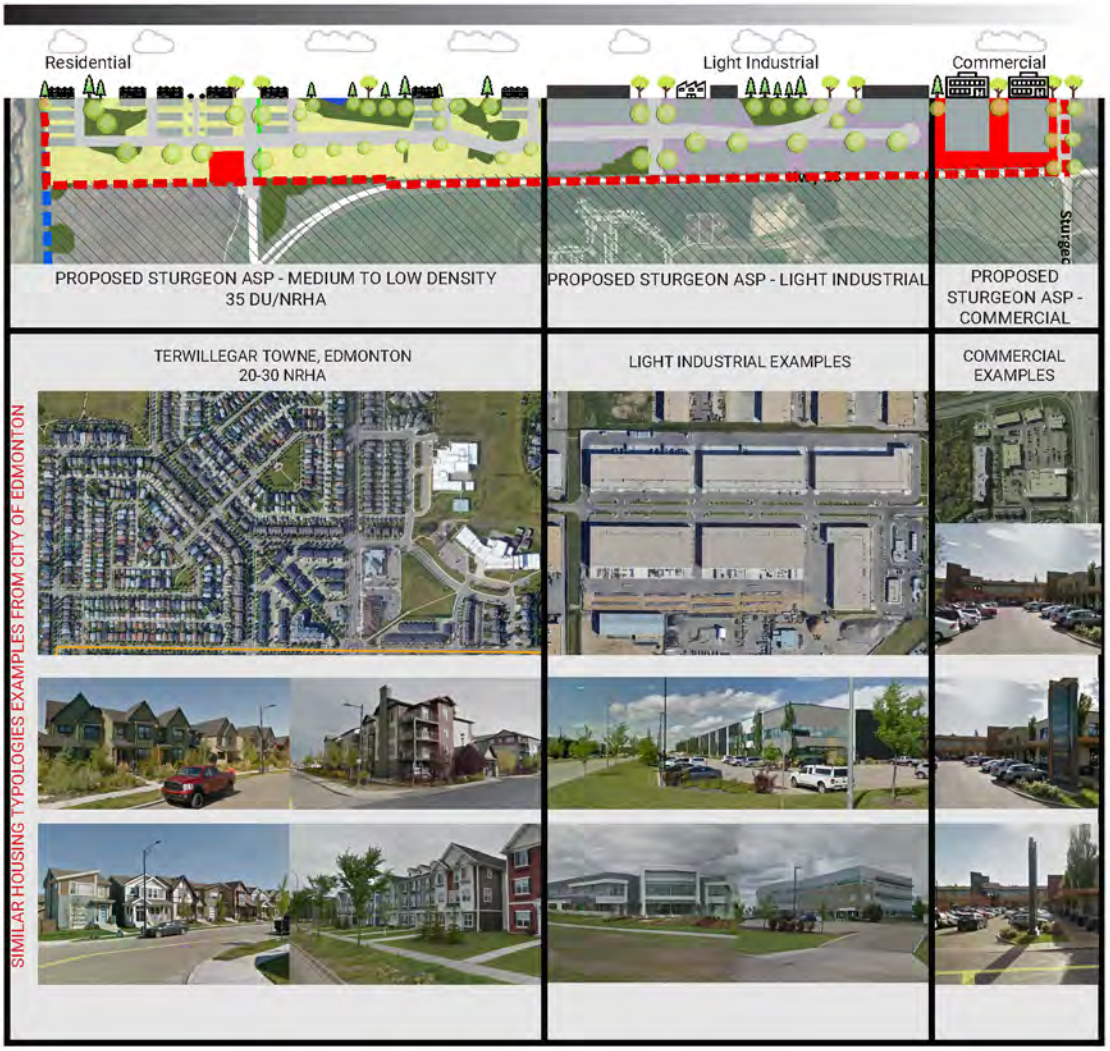




Proposed Density Through Transect A-B'



Proposed Transect A-C'



POPULATION PROJECTION

The population in the Consolidated Option – Landowners/ Developers is anticipated to be in the order of 72,994, with the majority of the population residing in residential communities with a minimum of 35 du/nrha.

INFRASTRUCTURE CONSIDERATIONS

The table shown below provides a high-level review of the anticipated number of wastewater and stormwater lift stations, and water reservoir/ booster stations for Consolidated Plan – Full Build Out. Please note, the number of lift stations and reservoir/ booster stations shown in the following table are not based on servicing analysis; numbers were determined through review of Sturgeon County's 2019 Infrastructure Master Plan (IMP) and topographic information. The numbers are for high-level consideration only, and may be adjusted upon completion of a servicing analysis should Council proceed with Phase 2.

CONSOLIDATED OPTION – FULL BUILDOUT INFRASTRUCTURE CONSIDERATIONS				
Infrastructure	West of RR 250	East of RR 250	North of Sturgeon	Total New Lift Stations/ Booster Station/ Reservoirs
Wastewater – Lift Stations	EX. River Gate Lift Station: Area may be serviced by existing River Gate Lift station – Lift station has capacity for upgrading. Gravity: Rest of area may flow via gravity to START line. It is also possible to service the new growth area with a new lift station.	Gravity: From IMP, the area west of HWY 28 can drain south via gravity to an existing lift station that connects to the START line. Gravity: From the IMP, the Area east of RR 250 can reach the START line via gravity. May need a new lift station as flows to the current lift station may be too great.	Gravity: Area will drain south and east. May drain to the Greystone LS or Bellerose LS. These areas were not included in the IMP. Potential Lift station may be required on the south side of the site to pump flows north and east. Upgrades to the Greystone and Bellerose Lift stations may be required as they were identified in the IMP as having limited available capacity.	**3 Lift Stations** Note: ▪ Existing River Gate Lift station to be upgraded to accommodate flows. ▪ Check with Commission that capacities can be met. ▪ Potential upgrade of the Greystone and Bellerose Lift Station.

CONSOLIDATED OPTION – FULL BUILDOUT INFRASTRUCTURE CONSIDERATIONS				
Infrastructure	West of RR 250	East of RR 250	North of Sturgeon	Total New Lift Stations/ Booster Station/ Reservoirs
Water – Booster Station/Reservoir	EX Allin Ridge Reservoir: Area may be serviced by upgrading ex. Reservoir. Allin Ridge Supply line is to be twinned and distribution lines upgraded to accommodate fire flows for the development area. To meet increased demands a new reservoir may be required.	Development to the West of HWY 28 may be supplied by Allin Ridge Reservoir. May need an additional reservoir to provide additional flows to the area should Allin Ridge not be able to upgraded to meet required demand.	Development North of Sturgeon River may potential be supplied by the Summerbrook Reservoir/pump house. Additional flows and fire flow may require upgrade of existing distribution lines, however, according to the IMP, this reservoir is scheduled for upgrades of pumping capacities.	**2 Lift Stations** Note: The following upgrades will be required: ▪ Twinning Supply Line ▪ Existing reservoir volume and pump requirements ▪ Distribution system upgrades
Stormwater – Lift Stations/ SWMF	Gravity drainage: the stormwater management appears to be able to drain via gravity for the most part to future SWMFs. Water to drain via gravity to Sturgeon River.	Gravity drainage: area west of RR 250 will drain east to a low-lying area. Other area will drain to a SWMF and be piped to the Sturgeon River.	Gravity: stormwater drains south and east towards the Sturgeon River. A SWMF facility is required to control flows to predevelopment rates and treat stormwater prior to discharge to the Sturgeon River.	**0 Lift Stations** **11 SWMF** Note: Stormwater detention facilities and piping to be constructed to hold, then release flows to the Sturgeon River.

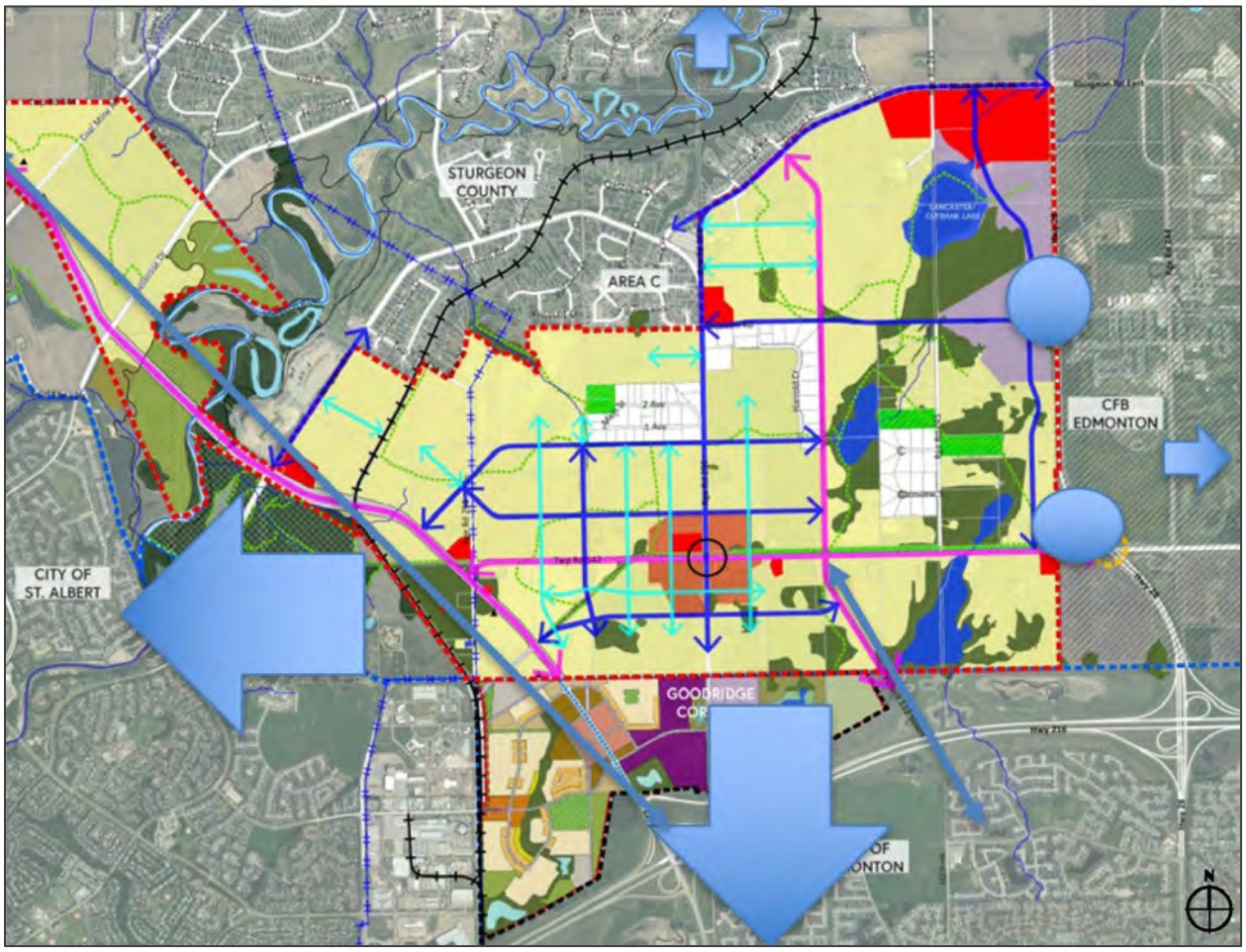
TRAFFIC ANALYSIS

It is estimated that at full build out of this scenario would generate approximately 199,000 external vehicle movements per day. Based on the full build out of this option it is anticipated it would require the following upgrades to the road infrastructure:

Anticipated Road Improvements
» Construction of 127 Street from Anthony Henday Drive to Highway 2.
» Construction of the 112 Street flyover.
» Two accesses to Highway 28 between Anthony Henday Drive and Sturgeon Road.
» Additional travel lanes: ▪ To/From City of Edmonton (10 to 11 lanes) ▪ To/from City of St Albert (5 to 6 lanes) ▪ To/From North (2 lanes) ▪ To/From East (1 lane)

The number of additional travel lanes is based on an assumed per lane capacity of 10,000 vpd to 11,500 vpd. Although new roadways would typically include the construction of an even number of lanes (e.g. 2-lane undivided, 4-lane divided), there is the potential that existing available capacity could be utilized to support future development and the ranges shown are solely based on the projected traffic volumes by direction divided by the projected lane capacity.

▼ FIGURE 19: STURGEON VALLEY – Anticipated Road Improvements | Bunt & Associates



FISCAL IMPACT ASSESSMENT

The fiscal impact analysis results for this development scenario are provided below.

Blended Scenario
» Municipal Tax Rates – 71% higher than the Baseline Forecast at the end of the forecast (2079). Generally, the results for this development option result in higher tax rates as more development occurs.
» Debt per Capita – 53% higher the Baseline Forecast at the end of the forecast (2079). Debt levels begin to be higher as new tax supported municipal infrastructure is required to support development (2030).
» Fiscal Capacity – 33% lower the Baseline Forecast at the end of the forecast (2079). Generally, the fiscal capacity of the County deteriorates over the forecast period as the residential/non-residential mix of development in Sturgeon Valley in this scenario is significantly below the current and projected level for the Baseline Forecast (County without Sturgeon Valley development).
Urban Service Area (USA) Scenario
» No impact on existing County ratepayers. All the financial impacts of development in Sturgeon Valley are borne by the ratepayers in Sturgeon Valley.
» USA Residential Municipal Tax rates – 18th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the highest residential tax rates at the end of the forecast period (2079).
» USA Non- Residential Tax Rates – 17th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the second highest residential tax rates at the end of the forecast period (2079).
» Debt Limited Used – 18 highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the second highest debt levels at the end of the forecast period (2079). There are periods where it is projected debt levels would exceed the maximum allowed by provincial guidelines. This could be managed through changing the timing and staging of capital projects. However, this would not alter the result that this development scenario results in significantly high debt levels relative to the 18 comparable municipalities in Alberta.
» Fiscal Capacity – 17 lowest out of 18 in the Province.[1] The Sturgeon Valley development scenario, as defined, would result in the second worst fiscal capacity of the 18 comparable municipalities. This is the single largest contributor to the relatively poor fiscal impact results for this scenario.

[1] This is based on analysis of a total of 18 comparative sized urban municipalities in Alberta with a ranking of 18 being the worst.

The financial results for this development scenario point to the relatively poor fiscal capacity assumed in the definition of development in the study area. The proportion of non-residential development is significantly below that which currently exists in the County and well below the average for the 18 comparable municipalities used in the fiscal impact analysis. As a result, the development suffers from having to support the municipal costs of delivering municipal services to a large urban residential development without the compensating share of non-residential development that would help support the cost of delivering these services. This is especially apparent for the USA results. While it is true that Sturgeon Valley is located in proximity to existing and proposed commercial and business areas, this is also true of other communities in the Edmonton region that have significantly better fiscal balance of residential and non-residential development. It is important that any development considered by the County should include sufficient non-residential development to offset the costs of providing services required by residential development.

5.3 CONSOLIDATED OPTION – 30 YEARS

Consolidated Option 30 Years, 60 Years, and Full Build Out are the combination of developing a single plan envisioning the study area developing in a sustainable, orderly and phased manner over an extended timeframe or alternatively where Council decide to proceed with only a portion of development within the Sturgeon Valley. This approach also assists with looking at a complete build out in a holistic manner, viewing them as a long-term phasing plans where future development will be triggered by population and the need to expand housing and employment opportunities.

KEY COMPONENTS

The Consolidated 30-year concept is focussed on leveraging the existing municipal infrastructure, and the extension of 127 Street. The density gently transitions from Goodridge Corners, which presents opportunities for capitalising on its existing sanitary and water services, through to the established Sturgeon Valley. The following is a summary of the key components of Consolidated Option – 30 Years:

1. Primary residential development adjoins the northern end of the City of Edmonton's Goodridge Corners, transitioning in density from a minimum of 40 du/nrha to a maximum of 20 du/nrha bordering the existing Sturgeon Valley residences. The maximum 20 du/nrha was based on providing certainty around the scale of development bordering the established Sturgeon County country residential area.

2. 127 Street is extended from the City of Edmonton to Sturgeon Road, acting as the primary arterial road serving the study area. Grade separation will be required to cross the railway line.

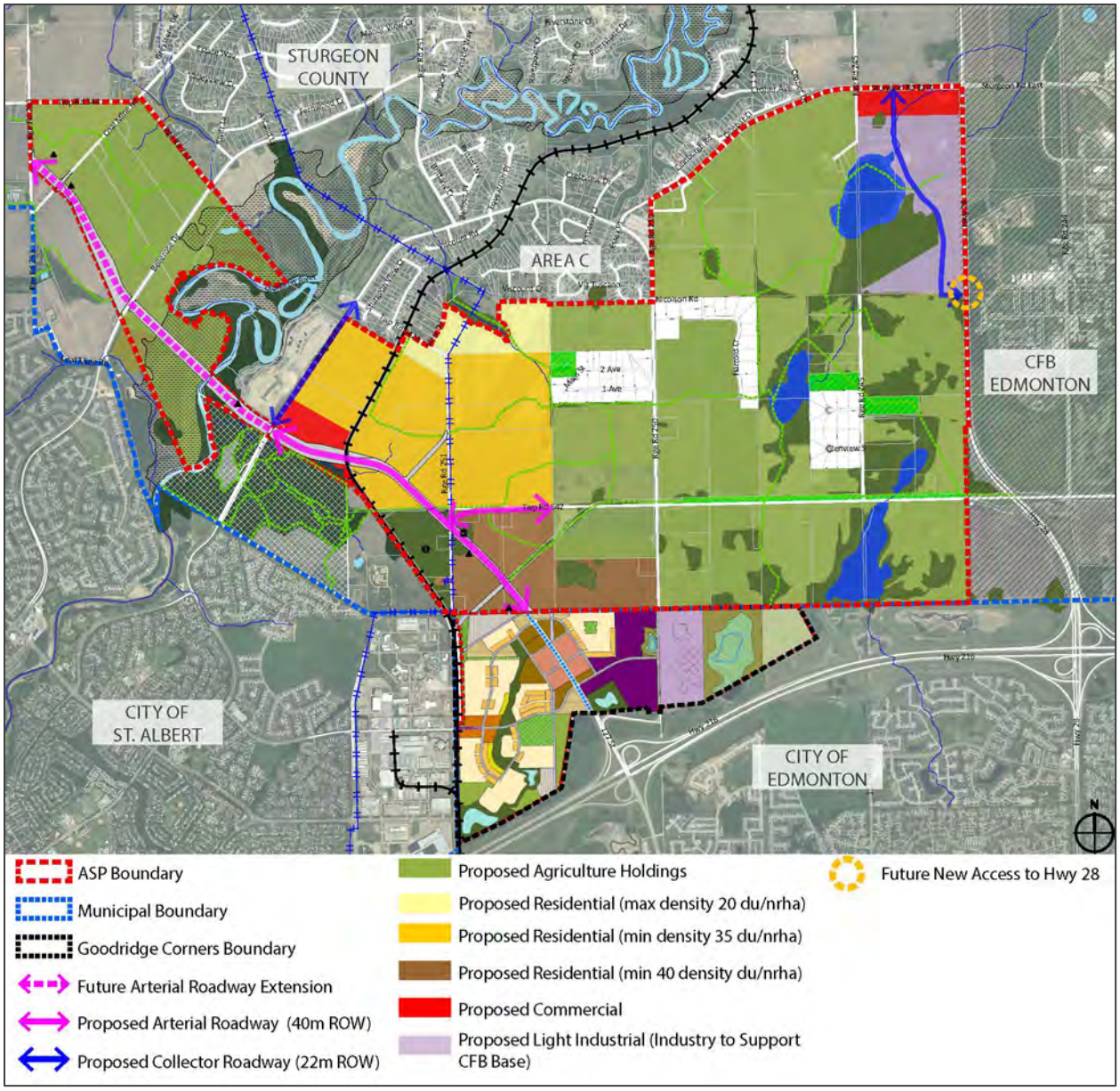
3. A commercial node is placed at the northeast corner of the study area, providing commercial amenities to the existing Sturgeon Valley residences and to CFB Edmonton.

4. A secondary commercial node is located along Sturgeon Road east of 127 Street, providing boutique commercial amenities to new and existing Sturgeon Valley residents and leveraging passer-by opportunities from 127 Street and Sturgeon Road.

5. Light Industrial activities are proposed in the northeast corner of the study area which are intended to support the CFB Edmonton. One new access to Highway 28 would be required to promote the industrial land development.

6. Natural areas are shown as being preserved, however, until field investigations are completed it should be recognized that these areas are subject to change which could result in increased developable lands.

▼ FIGURE 20: STURGEON VALLEY – Consolidated Plan – 30 Years | V3 Companies of Canada



Please refer to Appendix D for a plan to scale of this option.

CONSOLIDATED OPTION – 30 YEARS AREA CALCULATIONS

Land Uses	Area (Ha)	Area (nrha)[3]	Percentage (%)	Units /nrha	Population /nrha
Gross Area	1,750.00				
Existing Railroad ROW	7.50				
Future 127 Street Extension	46.54				
ROW (Existing Roads, etc.)	21.42				
Potential Environmental Reserve[1]	270.33				
Existing Open Space	24.85				
Existing Residential	71.51				
Proposed Agriculture Holdings	884.32				
Gross Developable Area (GDA) [2]	**423.53**		**100%**		
Municipal Reserve	42.35		10.00		
SWMF	Unknown				
PUL	Unknown				
Proposed Roads 15% of GDA	63.53		15.00		
Subtotal	**105.88**				
Anticipated Neighbourhood Commercial[4]	1.6		0.38		
Proposed Commercial	27.74		6.55		
Proposed Industrial	69.20		16.34		
Subtotal	**98.54**				
Proposed Residential[5]					
Residential (20 du/nrha)	34.58	25.88	8.16	518	1,294
Residential (35 du/nrha)	207	155.25	48.87	5,434	13,584
Residential (40 du/nrha)	83.4	62.55	19.69	2,502	6,255
Subtotal	**324.98**	243.68	100.00	**8,453**	**21,133**
Du/nrha	**The dwelling unit per net residential hectare is 35.**				

NOTES:

[1] Potential Environmental Reserve areas currently excludes the 1970 floodplain areas.

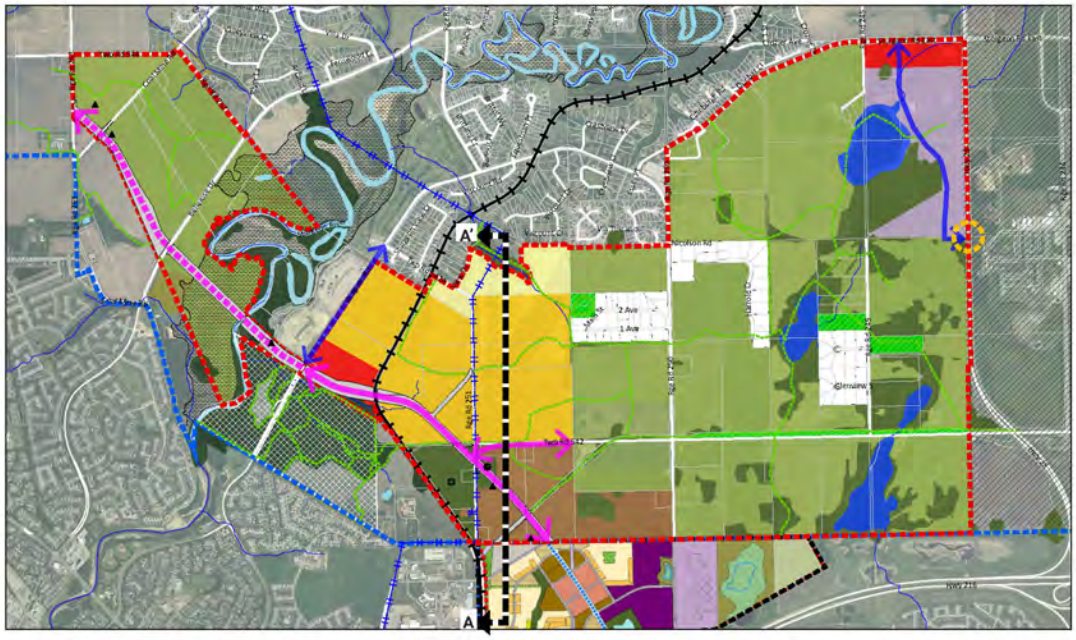
[2] Gross Developable Area excludes the following areas: Existing Railroad ROW, Future 127 Street ROW, Existing Roads/Other ROW, Environmental Reserve, Existing Open Space, Existing Residential and Proposed Agriculture Holdings.

[3] Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Road Area from the Developable Residential Land Area in addition to the existing the municipal reserves and roads.

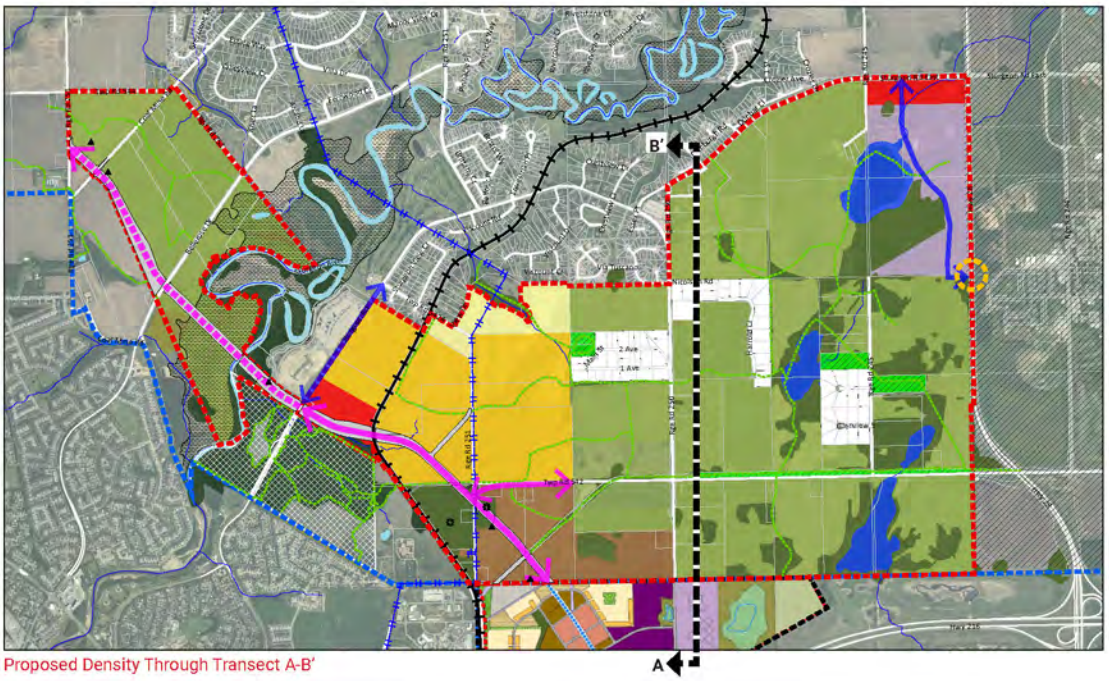
[4] It is recognized that there will be some form of neighbourhood commercial development that at this planning scale is not identifiable. For the purposes of this analysis an area has been allocated based on previous levels of neighbourhood commercial development at this scale of development.

[5] Based on census data the number an average of 2.5 persons per dwelling were used in calculating the potential population.

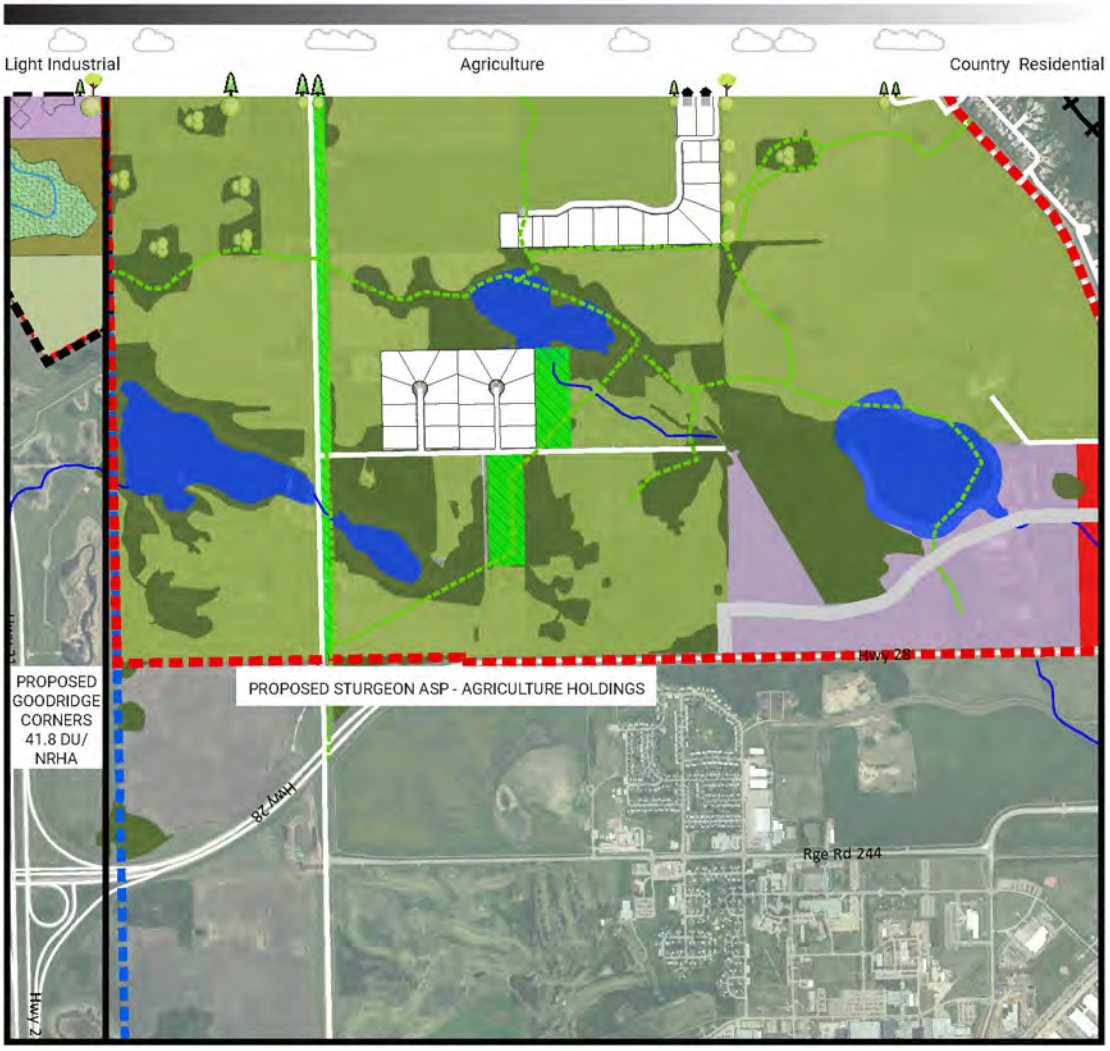
▼ FIGURE 21: STURGEON VALLEY – Consolidated Plan – 30 Years Transects | V3 Companies of Canada

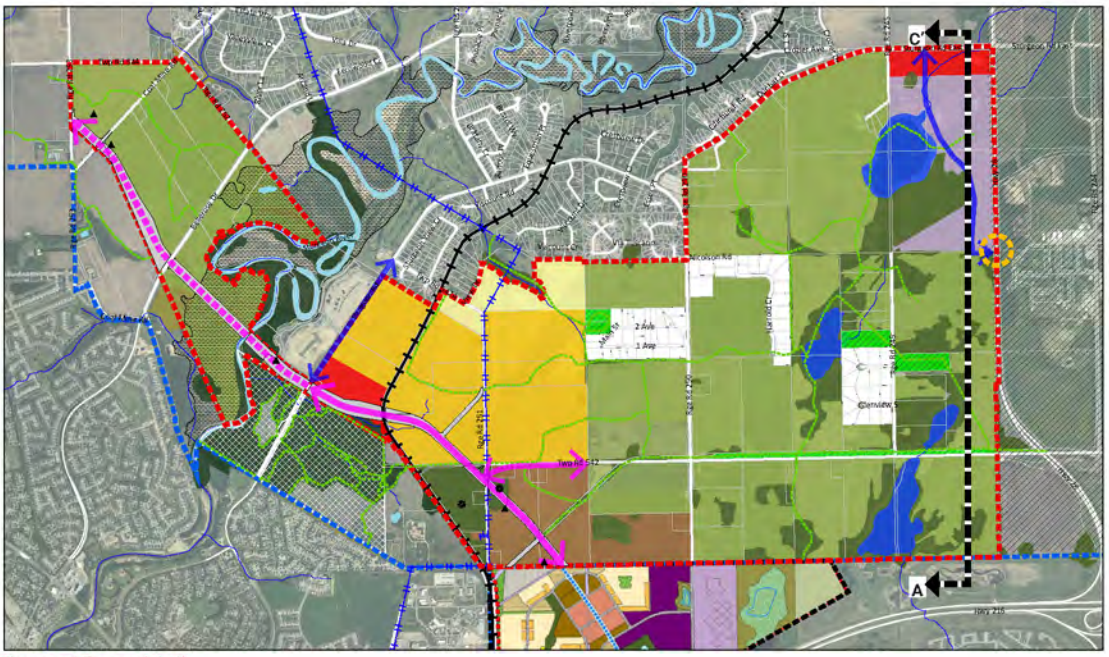


Proposed Density Through Transect A-A'

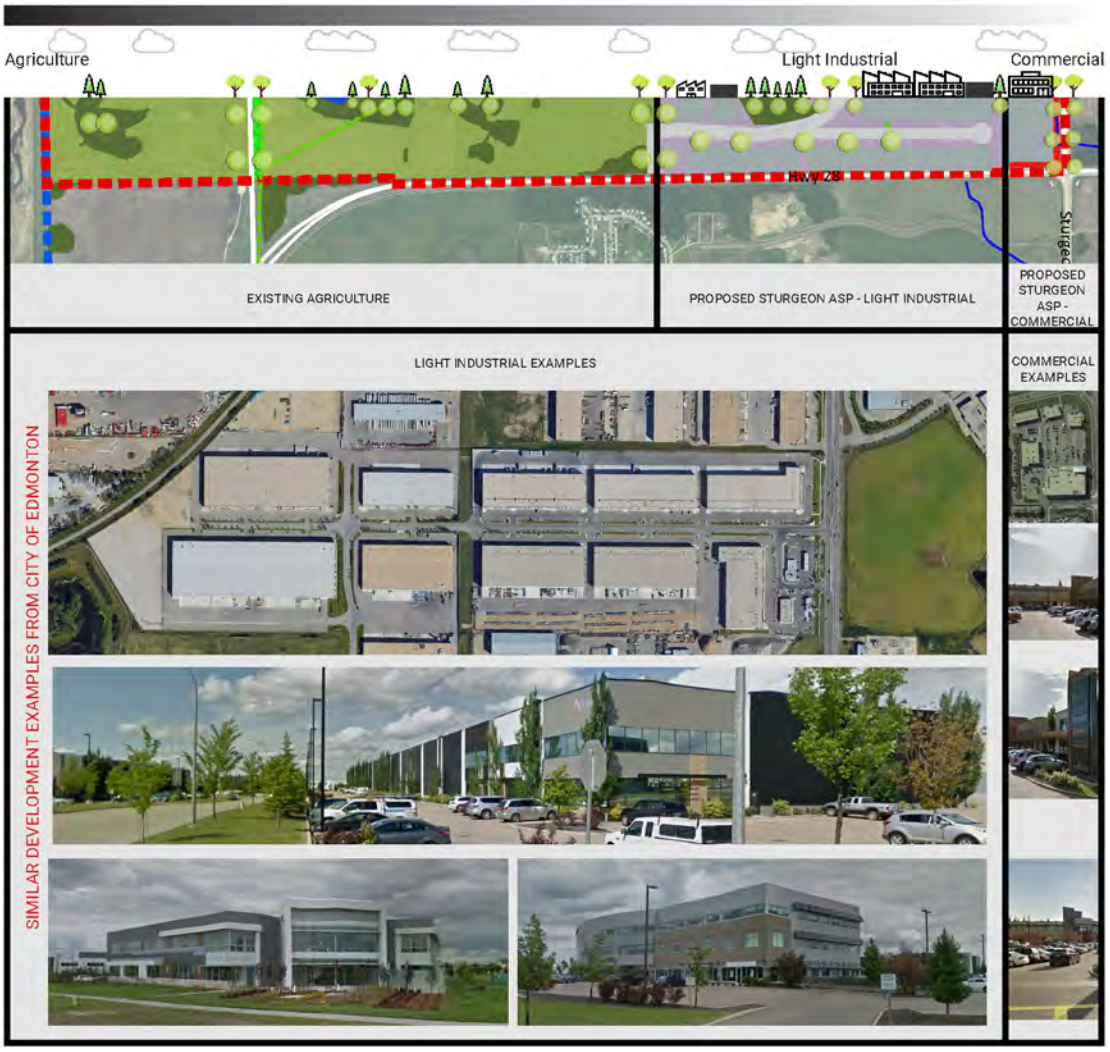


Proposed Density Through Transect A-B'





Proposed Transect A-C'



POPULATION PROJECTION

The population in Consolidated Option – 30 Years is projected to be a minimum of 21,133.

MUNCIPAL INFRASTRUCTURE CONSIDERATIONS

The table shown below provides a high-level review of the anticipated number of wastewater and stormwater lift stations, and water reservoir/ booster stations for Consolidated Plan – 30 Years. Note, the number of lift stations and reservoir/ booster stations shown in the following table are not based on servicing analysis; numbers were determined through review of Sturgeon County's 2019 Infrastructure Master Plan (IMP) and topographic information. The numbers are for high-level consideration only, and may be adjusted upon completion of a servicing analysis should Council proceed with phase 2.

CONSOLIDATED OPTION – 30 YEAR INFRASTRUCTURE CONSIDERATIONS			
Infrastructure	West of RR 250	East of RR 250	Total New Lift Stations/ Booster Station/ Reservoirs
Wastewater – Lift Stations	EX. River Gate Lift Station: Area may be serviced by existing River Gate Lift station – Lift station has capacity for upgrading. Gravity: Rest of area may flow via gravity to START line. It is also possible to service the new growth area with a new lift station.	Gravity: From IMP, the area can drain south via gravity to an existing lift station that connects to the START line.	1 In addition - existing River Gate Lift station to be upgraded to accommodate flows. Also need to check with Commission that capacities can be met.
Water – Booster Station/Reservoir	EX Allin Ridge Reservoir: Area may be serviced by upgrading ex. Reservoir. Allin Ridge Supply line is to be twinned and distribution lines upgraded to accommodate fire flows for the development area.	Little development to the west. Area may be supplied by Allin Ridge Reservoir.	0 Note: the following upgrades will be required: ▪ Twinning Supply Line. ▪ Existing reservoir volume and pump requirements. ▪ Distribution system upgrades.
Stormwater – Lift Stations/ SWMF	Gravity Drainage: the stormwater management appears to be able to drain via gravity for the most part to five (5) future SWMFs. Water to drain via gravity to Sturgeon River.	Gravity Drainage: area west of RR 250 will drain east to a low-lying area. Other area will drain to a SWMF and be piped to the Sturgeon River. Based on IMP one (1) new SWMF would be required	**0 Lift Stations** **Six (6) SWMFs Identified in the IMP** Note: Stormwater detention facilities and piping to be constructed to hold, then release flows to the Sturgeon River.

It should be noted, through the engagement process Strata Development identified that there were opportunities for connection to existing water, sanitary and stormwater infrastructure within the City of Edmonton Goodridge Corners development. This could provide capital and operational cost savings. Further research is required to validate the opportunity identified by the developer whether it presents financial benefits to the County and the City of Edmonton's desire to extend servicing to lands outside of their municipal jurisdiction.

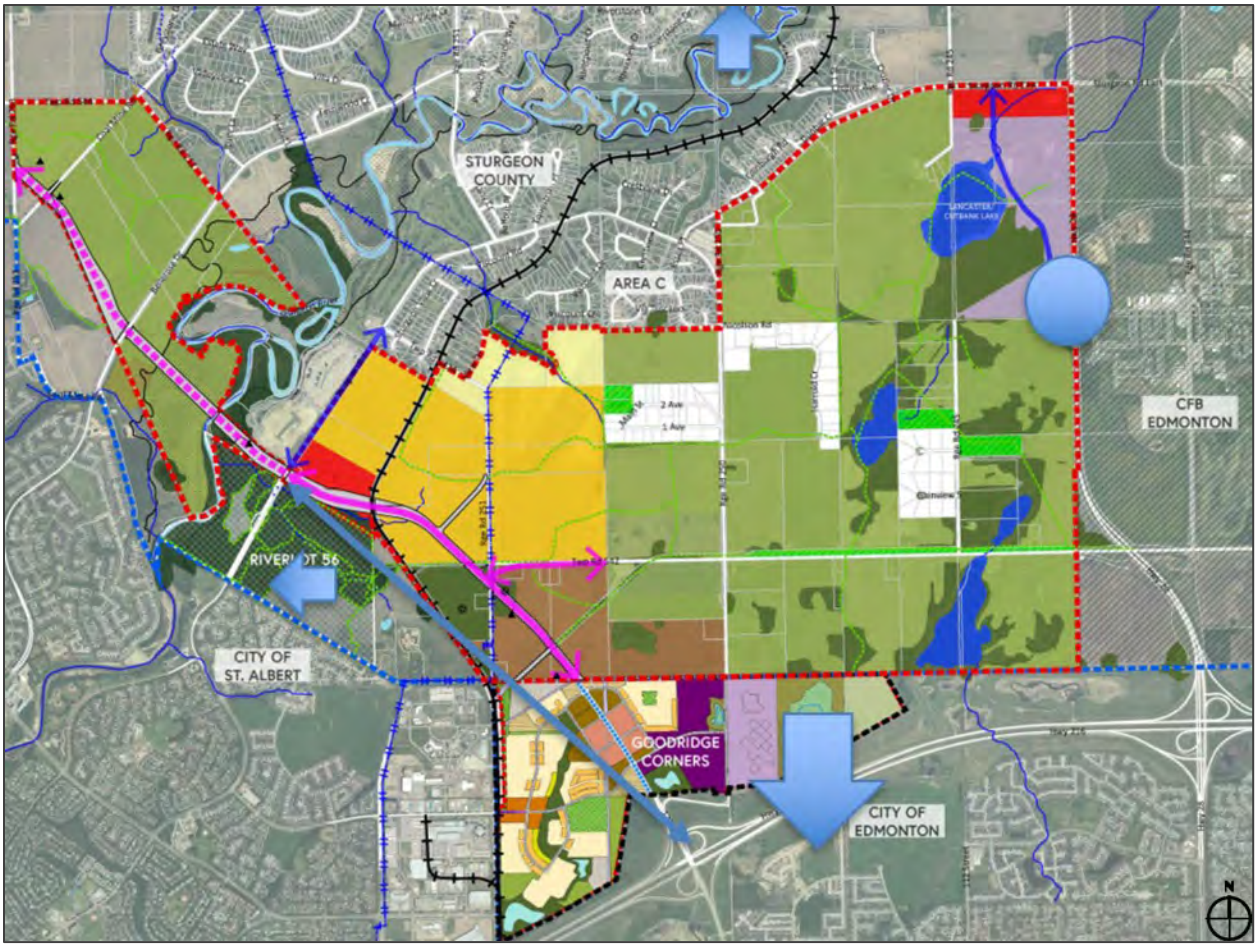
TRAFFIC ANALYSIS

It is estimated that at full build out this scenario would generate approximately 60,500 external vehicle movements per day. Based on the full build out of this option it is anticipated it would require the following upgrades to the road infrastructure:

Anticipated Road Improvements
» Construction of 127 Street from Anthony Henday Drive to Sturgeon Road
» One access to Highway 28 between Anthony Henday Drive and Sturgeon Road.
» Additional travel lanes: ▪ To/From City of Edmonton (3 lanes) ▪ To/from City of St Albert (2 lanes) ▪ To/From North (1 lane) ▪ To/From East (0 lanes)

The number of additional travel lanes is based on an assumed per lane capacity of 10,000 vpd to 11,500 vpd. Although new roadways would typically include the construction of an even number of lanes (e.g. 2-lane undivided, 4-lane divided), there is the potential that existing available capacity could be utilized to support future development and the ranges shown are solely based on the projected traffic volumes by direction divided by the projected lane capacity.

▼ FIGURE 22: STURGEON VALLEY – Anticipated Road Improvements | Bunt & Associates



BLENDED SCENARIO
Municipal Tax Rates – 17% higher than the Baseline Forecast at the end of the forecast (2049). Generally, the results for this development option result in higher tax rates as more development occurs.
Debt per Capita – 14% higher than the Baseline Forecast at the end of the forecast (2049). Debt levels begin to be higher as new tax supported municipal infrastructure is required to support development (2032).
Fiscal Capacity – 21% lower than the Baseline Forecast at the end of the forecast (2049). Generally, the fiscal capacity of the County deteriorates over the forecast period as the residential/non-residential mix of development in Sturgeon Valley in this scenario is significantly below the current and projected level for the Baseline Forecast (County without Sturgeon Valley development).
URBAN SERVICE AREA (USA) SCENARIO
No impact on existing County ratepayers. All the financial impacts of development in Sturgeon Valley are borne by the ratepayers in Sturgeon Valley.
USA Residential Municipal Tax rates – 14th highest out of 18 in the Province.[1] Only 4 of the 18 comparable municipalities would have higher residential tax rates at the end of the forecast period (2049).
USA Non- residential Tax Rates – 11th highest out of 18 in the Province.[1] Seven of the 18 comparable municipalities would have higher non-residential tax rates at the end of the forecast period (2049).
Debt Limit Used – 18th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the highest debt levels at the end of the forecast period (2049). The projected levels of debt are well below the provincial debt and debt service limit guidelines. They are also below the Sturgeon County debt limit guideline.
Fiscal Capacity – 16th lowest out of 18 in the Province.[1] The Sturgeon Valley development scenario, as defined, would result in the third worst fiscal capacity of the 18 comparable municipalities. This is the single largest contributor to the relatively poor fiscal impact results for this scenario.

[1] This is based on analysis of a total of 18 comparative sized urban municipalities in Alberta a ranking of 18 being the worst.

The financial results for this development scenario point to the relatively poor fiscal capacity assumed in the definition of development in the study area. The proportion of non-residential development is significantly below that which currently exists in the County and well below the average for the 18 comparable municipalities used in the fiscal impact analysis. As a result, the development suffers from having to support the municipal costs of delivering municipal services to a relatively urban residential development without the compensating share of non-residential development that would help support the cost of delivering these services. This is especially apparent for the USA results. While it is true that Sturgeon Valley is located in proximity to existing and proposed commercial and business areas, this is also true of other communities in the Edmonton region that have significantly better fiscal balance of residential and non-residential development. It is important that any development considered by the County should include sufficient non-residential development to offset the costs of providing services required by residential development.

5.4 CONSOLIDATED OPTION – 60 YEARS

KEY COMPONENTS

The following is a summary of the key components of Consolidated Option – 60 Years:

1. Development patterns from Consolidated Option – 30 Years are continued, reducing the number of Agricultural Holdings.

2. Residential land use patterns are continued from the developed portion of the study area, extending eastward that is anticipated to be combined with neighbourhood level commercial development. This option also leads to the requirement for the construction of 127 Street to the west over the Sturgeon River that would free up existing transportation challenges related to the development of these lands.

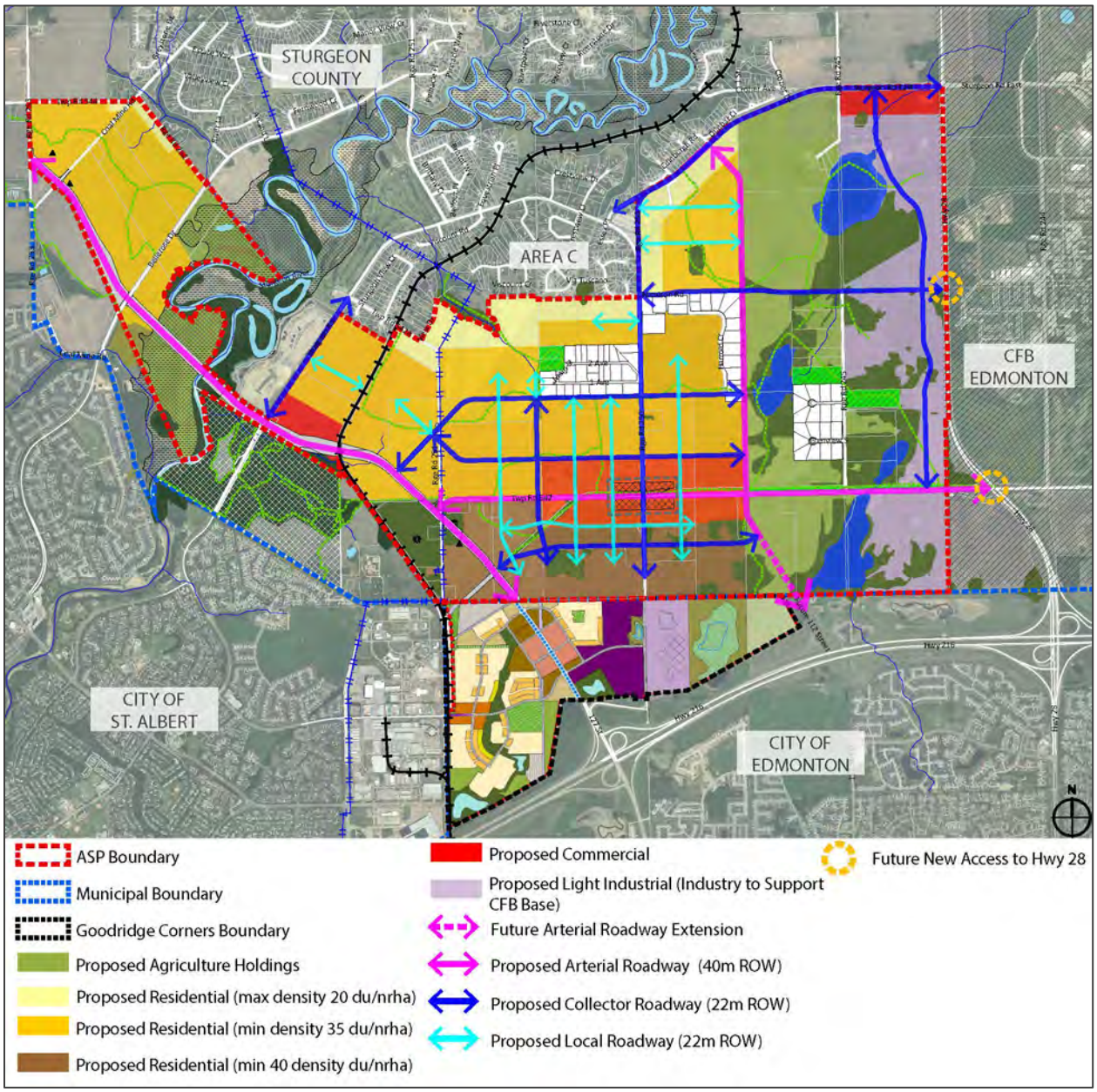
3. The transect gradient from the border with the City of Edmonton through to the north towards the established Sturgeon Valley Country Residential transitions from a minimum of 40 du/nrha through to a proposed mixed use transit centre with a minimum density of 42 du/nrha through to another minimum density of 35 du/nrha and finally transitioning down to a maximum density of 20 du/nrha.

4. Light Industrial extends south to the City of Edmonton Boundary, providing additional opportunities for employment in the area that support CFB Edmonton and other agribusiness operations in the area. Based on servicing challenges and related costs of providing water and sanitary services along with the creation of a natural break resulting from the natural existing wetlands, these lands have been identified as most suitable for light industrial development. A projected two new accesses to Highway 28 have been identified as critical to the success of development in this area including future residential development.

5. A mixed-use node is placed at the intersection of Range Road 250 and Township Road 542, which includes dwelling units with a minimum density of 42 du/nrha. The mixed-use area is intended to include commercial/retail amenities providing services to residents within Sturgeon Valley. This node is projected to require the construction of a 112 Street flyover to Edmonton.

6. Natural areas are shown as being preserved, however, until field investigations are completed it should be recognized that these areas are subject to change which could result in increased developable lands.

▼ FIGURE 23: STURGEON VALLEY – Consolidated Plan – 60 Years | V3 Companies of Canada



Please refer to Appendix D for a plan to scale of this option.

CONSOLIDATED OPTION – 60 YEARS AREA CALCULATIONS					
Land Uses	Area (Ha)	Area (nrha)[3]	Percentage (%)	Units /nrha	Population /nrha
Gross Area	1,750.00				
Existing Railroad ROW	7.50				
Future 127 Street Extension	46.54				
ROW (Existing Roads, etc.)	21.42				
Potential Environmental Reserve[1]	270.33				
Existing Open Space	21.40				
Existing Residential	71.51				
Proposed Agriculture Holdings	274.83				
Gross Developable Area (GDA)[2]	**1036.47**		**100%**		
Municipal Reserve	103.65		10.00		
SWMF	Unknown				
PUL	Unknown				
Proposed Roads 15% of GDA	155.47		15.00		
Subtotal	**259.12**				
Anticipated Neighbourhood Commercial[4]	4.8		0.46		
Proposed Commercial	27.74		2.68		
Proposed Industrial	178.45		17.22		
Subtotal	**210.99**				
Proposed Residential[5]					
Residential (20 du/nrha)	82.28	61.71	7.94	1,234	3,086
Residential (35 du/nrha)	527.92	395.93	50.93	13,858	34,644
Residential (40 du/nrha)	134.40	100.8	12.97	4,032	10,080
Residential (42 du/nrha)	71.92	53.92	6.94	2,265	5,662
Mixed Use (42 du/nrha)	9.00	6.75	0.87	284	709
Subtotal	**825.52**	619.11	100.00	**21,672**	**54,180**
Du/nrha	**The dwellings units per net residential hectare is 35.**				

NOTES:

[1] Potential Environmental Reserve areas currently excludes the 1970 floodplain areas.

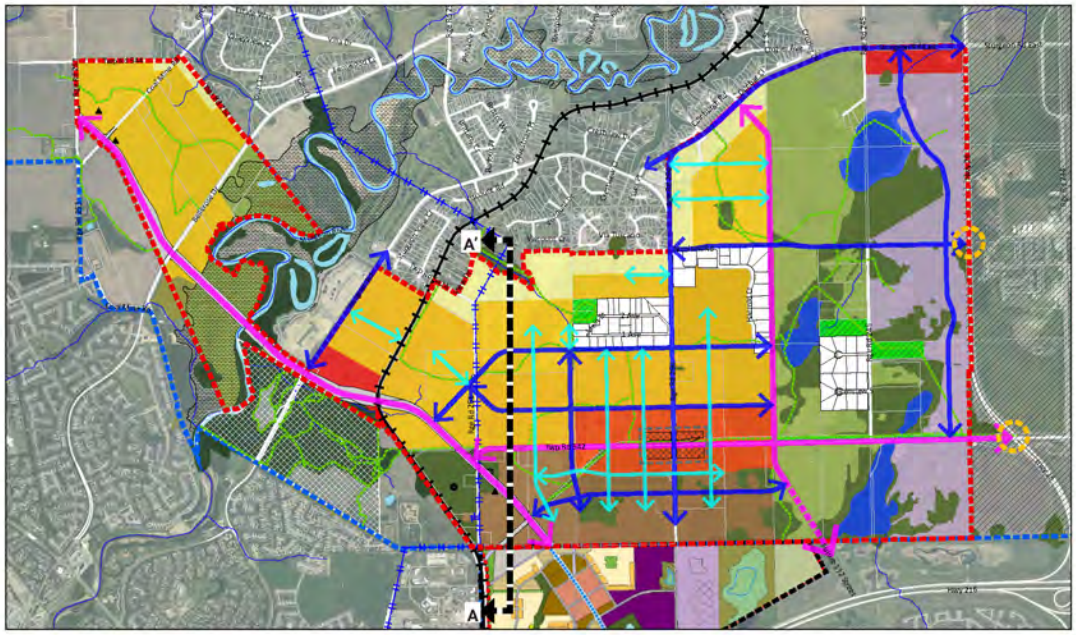
[2] Gross Developable Area excludes the following areas: Existing Railroad ROW, Future 127 Street ROW, Existing Roads/Other ROW, Environmental Reserve, Existing Open Space, Existing Residential and Proposed Agriculture Holdings.

[3] Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Road Area from the Developable Residential Land Area in addition to the existing the municipal reserves and roads.

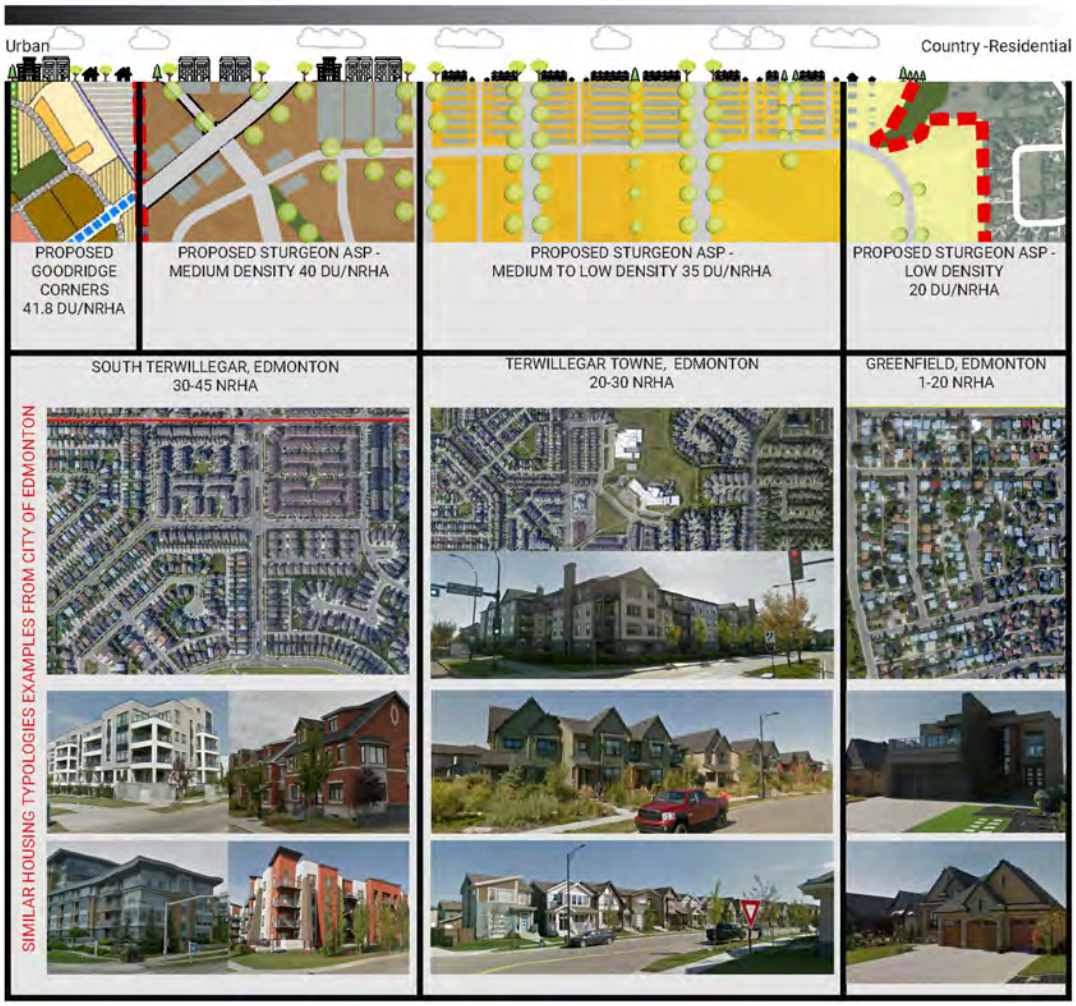
[4] It is recognized that there will be some form of neighbourhood commercial development that at this planning scale is not identifiable. For the purposes of this analysis an area has been allocated based on previous levels of neighbourhood commercial development at this scale of development.

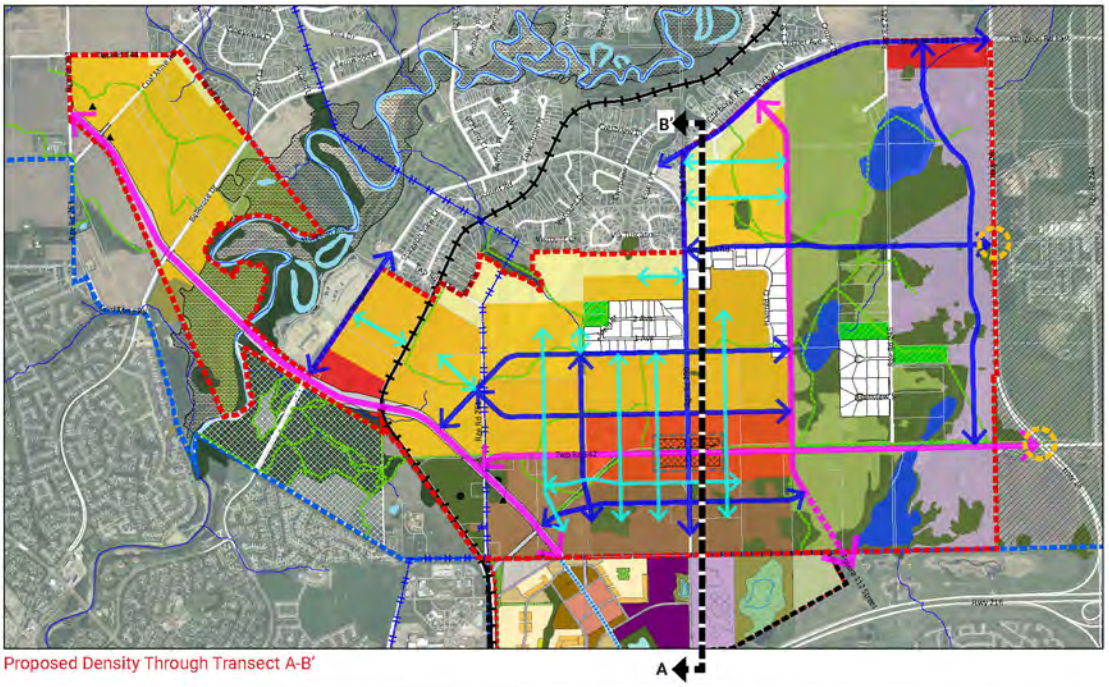
[5] Based on census data the number an average of 2.5 persons per dwelling were used in calculating the potential population.

▼ FIGURE 24: STURGEON VALLEY – Consolidated Plan – 60 Years Transects | V3 Companies of Canada

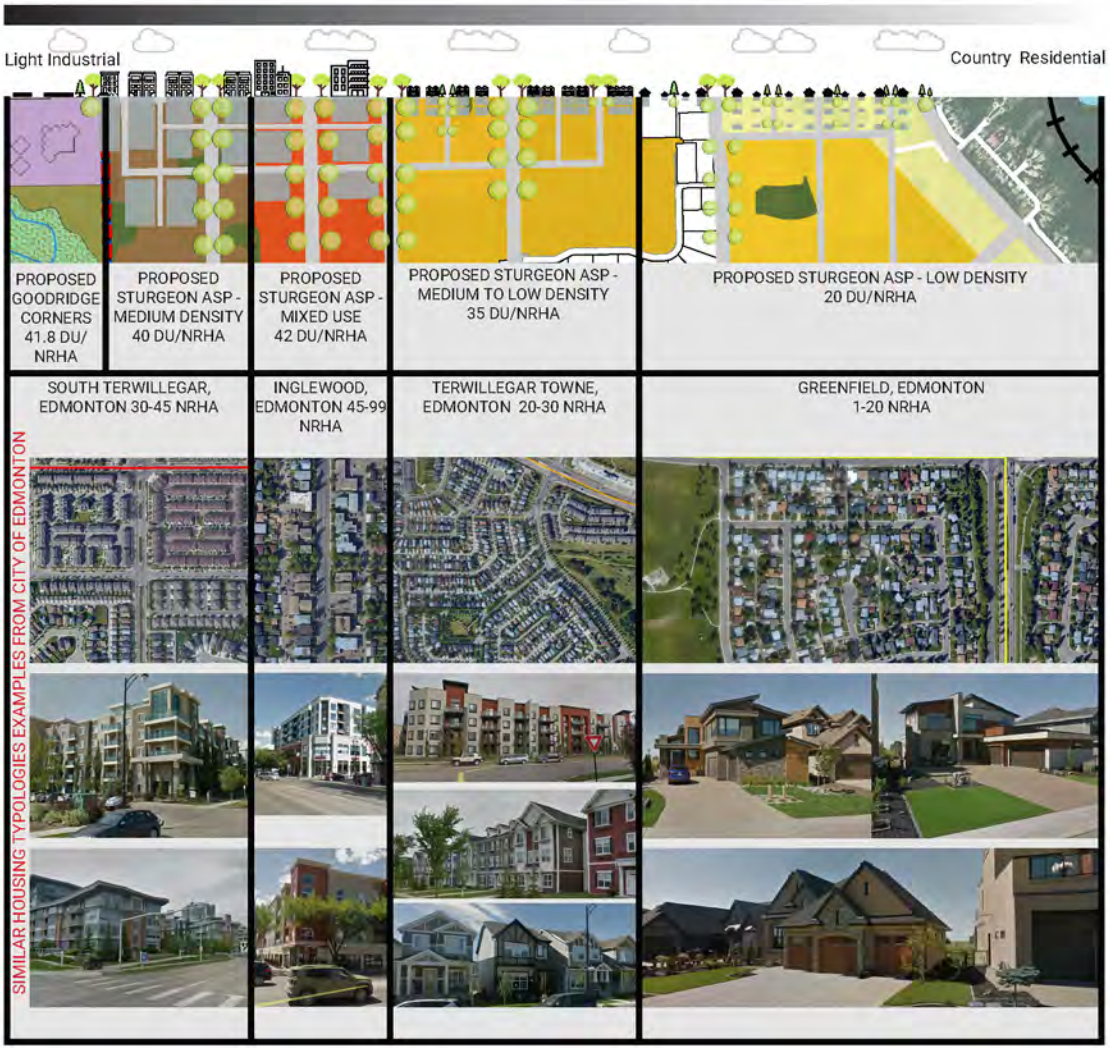


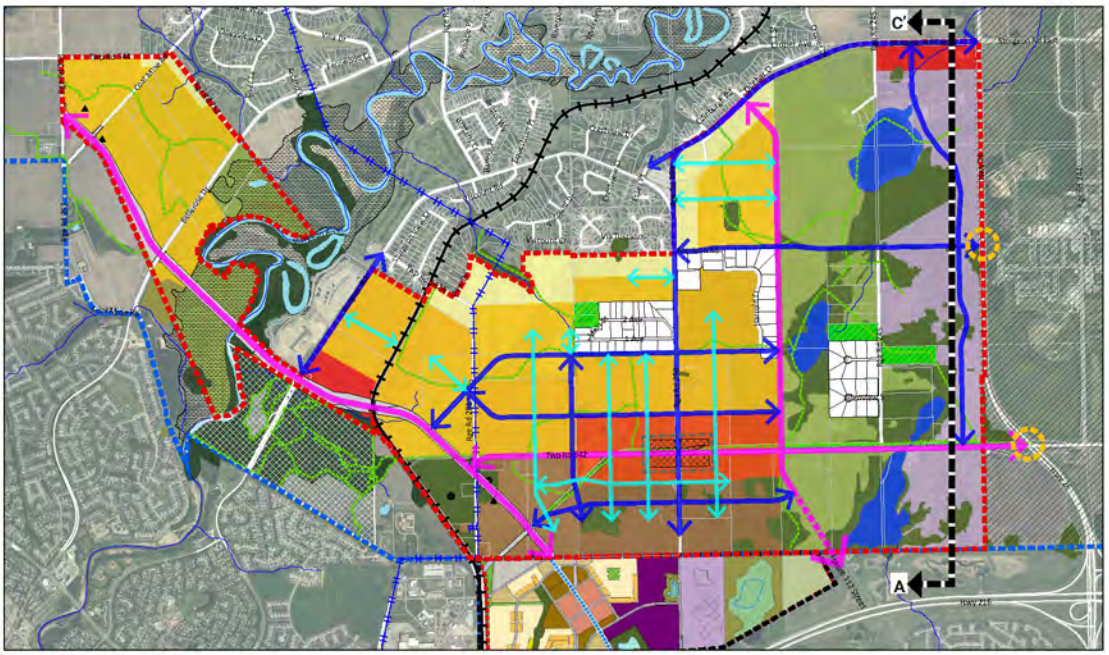
Proposed Density Through Transect A-A'



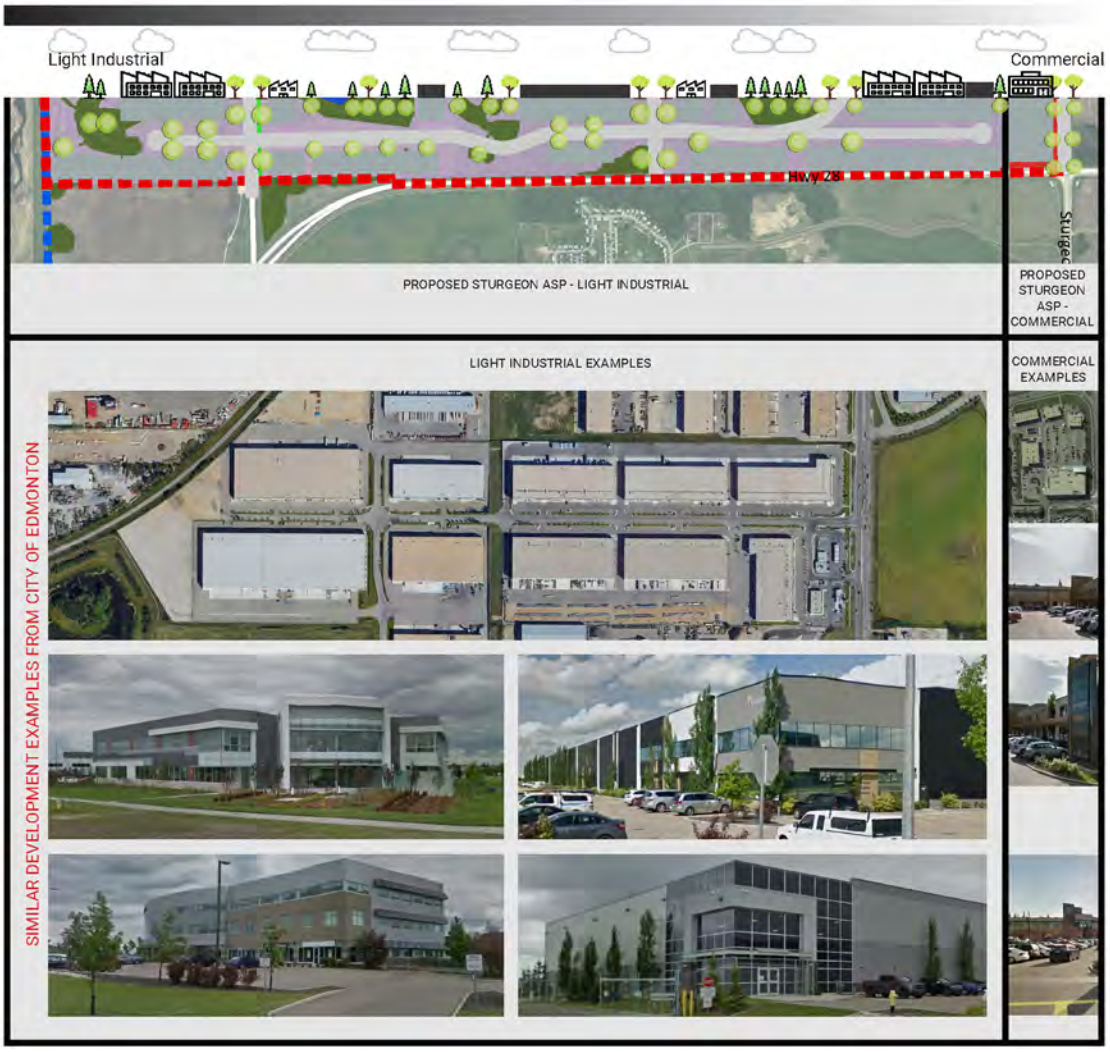


Proposed Density Through Transect A-B'





Proposed Transect A-C'



POPULATION PROJECTION

The population in Consolidated Option – 60 Years out is anticipated to be a minimum of 54,180, with the majority of the population residing in residential communities with a minimum density of 35 du/nrha.

INFRASTRUCTURE CONSIDERATIONS

The table shown below provides a high-level review of the anticipated number of wastewater and stormwater lift stations, and water reservoir/ booster stations for Consolidated Plan – 60 Years. Note, the number of lift stations and reservoir/ booster stations shown in the following table are not based on servicing analysis; numbers were determined through review of Sturgeon County's 2019 Infrastructure Master Plan (IMP) and topographic information. The numbers are for high-level consideration only, and may be adjusted upon completion of a servicing analysis should Phase 2 proceed.

CONSOLIDATED OPTION – 60 YEARS INFRASTRUCTURE CONSIDERATIONS			
Infrastructure	West of RR 250	East of RR 250	Total New Lift Stations/ Booster Stations/ Reservoirs
Wastewater – Lift Stations	EX. River Gate Lift Station: Area may be serviced by existing River Gate Lift station – Lift station has capacity for upgrading. Gravity: Rest of area may flow via gravity to START line. It is also possible to service the new growth area with a new lift station.	Gravity: From the IMP, the area west of HWY 28 can drain south via gravity to an existing lift station that connects to the START line. Gravity: From the IMP, the Area east of RR 250 can reach the START line via gravity.	1 Note: Existing River Gate Lift station to be upgraded to accommodate flows. Also need to check with Commission that the START line can accommodate the increased capacities.
Water – Booster Station/Reservoir	EX Allin Ridge Reservoir: Area may be serviced by upgrading ex. Reservoir. Allin Ridge Supply line is to be twinned and distribution lines upgraded to accommodate fire flows for the development area. To meet increased demands a new reservoir may be required	Development to the West of HWY 28 may be supplied by Allin Ridge Reservoir. Potentially may need reservoir to provide additional flows to the area should Allin Ridge not be able to upgrade to the required demand.	2 Note: the following upgrades will be required: ▪ Twinning Supply Line ▪ Existing reservoir volume and pump requirements. ▪ Distribution system upgrades.
Stormwater – Lift Stations/ SWMF	Gravity Drainage: the stormwater management appears to be able to drain via gravity for the most part to seven (7) future SWMFs. Water to drain via gravity to Sturgeon River.	Gravity Drainage: the area west of RR 250 will drain east to a low-lying areas. Other area will drain to a SWMF and be piped to the Sturgeon River. Three (3) SWMF were identified in the IMP.	**0 Lift Stations** **10 SWMF** Note: Stormwater detention facilities and piping to be constructed to hold, then release flows to the Sturgeon River.

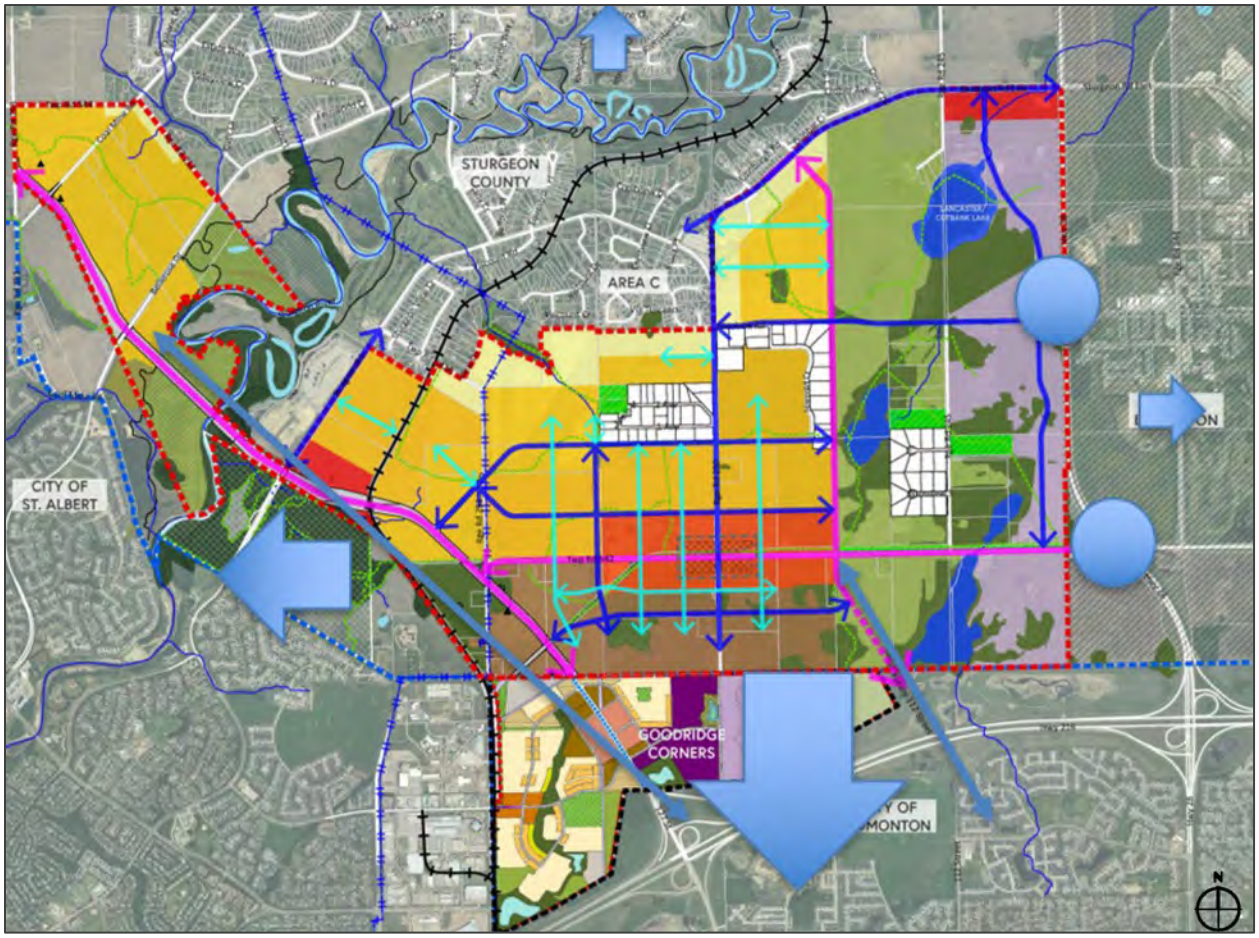
TRAFFIC ANALYSIS

It is estimated that at full build out this option will see an increase of 147,000 external trips per day. Based on the full build out of this option it is anticipated it would require the following upgrades to the road infrastructure:

Anticipated Road Improvements
» Construction of 127 Street from Anthony Henday Drive to Highway 2.
» Construction of the 112 Street flyover.
» Two accesses to Highway 28 between Anthony Henday Drive and Sturgeon Road.
» Additional travel lanes: ▪ To/From City of Edmonton (7 to 8 lanes) ▪ To/from City of St Albert (4 lanes) ▪ To/From North (1 lane) ▪ To/From East (1 lane)

The number of additional travel lanes is based on an assumed per lane capacity of 10,000 vpd to 11,500 vpd. Although new roadways would typically include the construction of an even number of lanes (e.g. 2-lane undivided, 4-lane divided), there is the potential that existing available capacity could be utilized to support future development and the ranges shown are solely based on the projected traffic volumes by direction divided by the projected lane capacity.

▼ FIGURE 25: STURGEON VALLEY – Anticipated Road Improvements | Bunt & Associates



FISCAL IMPACT ASSESSMENT

The fiscal impact analysis results for this development scenario are provided below.

Blended Scenario
» Municipal Tax Rates – 46% higher tax rates than the Baseline Forecast at the end of the forecast (2079). Generally, the results for this development option result in higher tax rates as more development occurs.
» Debt per Capita – 54% higher than the Baseline Forecast at the end of the forecast (2079). Debt levels begin to be higher as new tax supported municipal infrastructure is required to support development (2032).
» Fiscal Capacity – 30% lower than the Baseline Forecast at the end of the forecast (2079). Generally, the fiscal capacity of the County deteriorates over the forecast period as the residential/non-residential mix of development in Sturgeon Valley in this scenario is significantly below the current and projected level for the Baseline Forecast (County without Sturgeon Valley development).
Urban Service Area (USA) Scenario
» No impact on existing County ratepayers. All the financial impacts of development in Sturgeon Valley are borne by the ratepayers in Sturgeon Valley.
» USA Residential Municipal Tax rates – 18th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the highest residential tax rates at the end of the forecast period (2079).
» USA Non- residential Tax Rates – 16th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the third highest residential tax rates at the end of the forecast period (2079).
» Deb Limit used – 18th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the highest debt levels of all the 18 comparable municipalities at the end of the forecast period (2079). Debt levels in this development scenario are high, but below the provincial debt and debt service limits over the forecast period. In some years, the County's debt limit policy threshold is exceeded.
» Fiscal Capacity – 17th lowest out of 18 in the Province.[1] The Sturgeon Valley development scenario, as defined, would result in the second worst fiscal capacity of the 18 comparable municipalities. This is the single largest contributor to the relatively poor fiscal impact results for this scenario.

[1] This is based on analysis of a total of 18 comparative sized urban municipalities in Alberta with a ranking of 18 being the worst.

The financial results for this development scenario point to the relatively poor fiscal capacity assumed in the definition of development in the study area. The proportion of non-residential development is significantly below that which currently exists in the County and well below the average for the 18 comparable municipalities used in the fiscal impact analysis. As a result, the development suffers from having to support the municipal costs of delivering municipal services to a large urban residential development without the compensating share of non-residential development that would help support the cost of delivering these services. This is especially apparent for the USA results. While it is true that Sturgeon Valley is located in proximity to existing and proposed commercial and business areas, this is also true of other communities in the Edmonton region that have significantly better fiscal balance of residential and non-residential development. It is important that any development considered by the County should include sufficient non-residential development to offset the costs of providing services required by residential development.

5.5 CONSOLIDATED OPTION – FULL BUILD OUT

KEY COMPONENTS

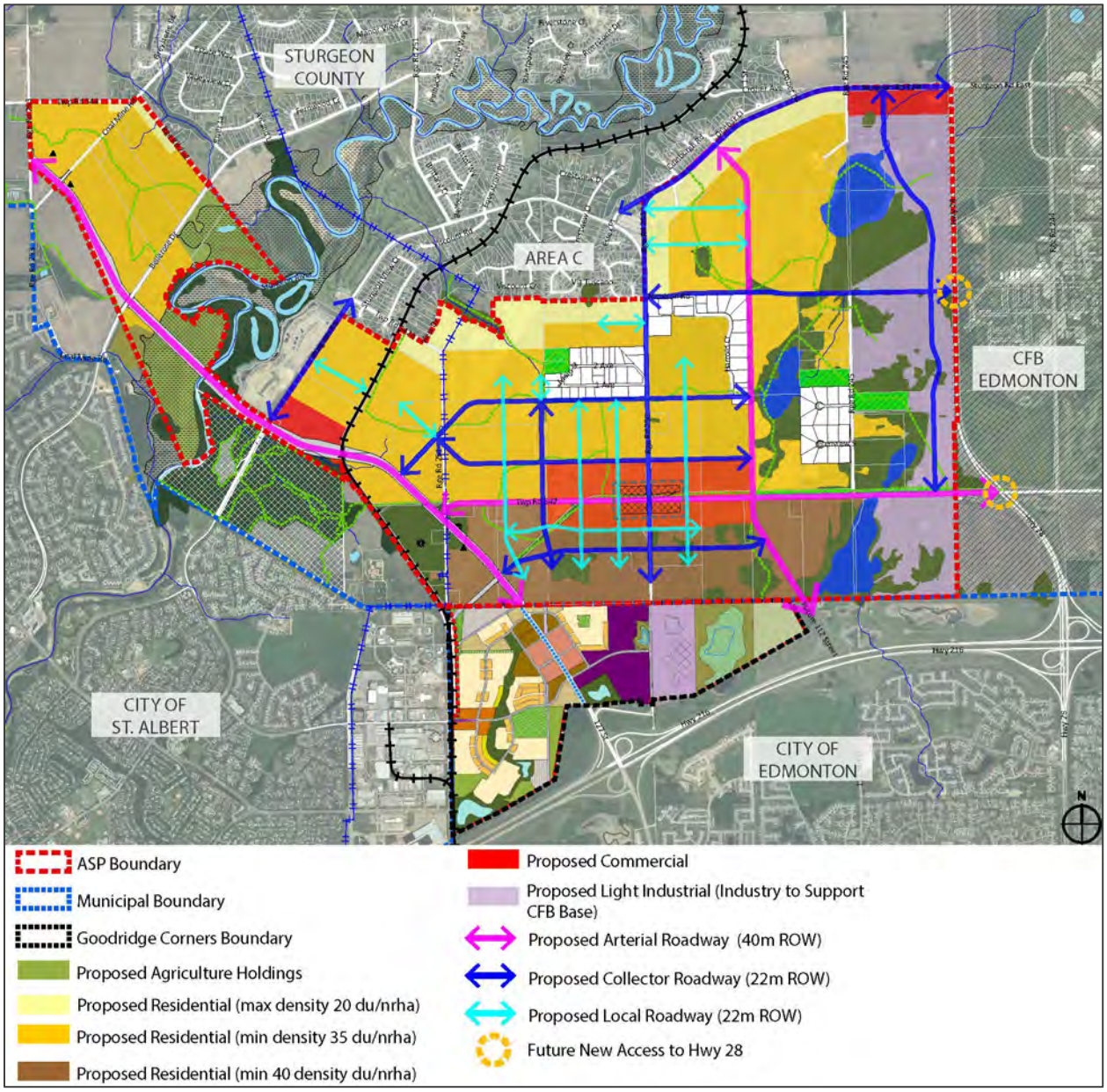
The following is a summary of the key components of Consolidated Option – Full Build Out:

1. The residential land use patterns from Consolidated Option – 30 and 60 Years are extended into the previously remaining Agricultural Holdings land.

2. The transition from the City of Edmonton boundaries of minimum 40du/nrha through to a minimum of 35 du/nrha with a final density transition of a maximum 20 du/nrha bordering the established Sturgeon Valley country residential is maintained.

3. Natural areas are shown as being preserved, however, until field investigations are completed it should be recognized that these areas are subject to change which could result in increased of developable lands.

▼ FIGURE 26: STURGEON VALLEY – Consolidated Plan – Full Build Out | V3 Companies of Canada



Please refer to Appendix D for a plan to scale of this option.

CONSOLIDATED OPTION – FULL BUILD OUT AREA CALCULATIONS					
Land Uses	Area (Ha)	Area (nrha)[3]	Percentage (%)	Units /nrha	Population /nrha
Gross Area	1,750.00				
Existing Railroad ROW	7.50				
Future 127 Street Extension	46.54				
ROW (Existing Roads, etc.)	21.42				
Potential Environmental Reserve [1]	270.33				
Existing Open Space	21.40				
Existing Residential	71.51				
Proposed Agriculture Holdings	67.90				
Gross Developable Area (GDA) [2]	**1,243.40**		**100%**		
Municipal Reserve	124.34		10.00		
SWMF	Unknown				
PUL	Unknown				
Proposed Roads 15% of GDA	186.51		15.00		
Subtotal	**310.85**				
Proposed Neighbourhood Commercial [4]	8.0		0.64		
Proposed Commercial	27.74		2.23		
Proposed Industrial	178.45		14.35		
Subtotal	**214.19**				
Proposed Residential [5]					
Residential (20 du/nrha)	96.93	72.69	7.80	1,454	3,635
Residential (35 du/nrha)	676.82	507.60	54.43	17,766	44,415
Residential (40 du/nrha)	174.60	130.90	14.04	5,236	13,090
Residential (42 du/nrha)	71.92	53.92	5.78	2,265	5,662
Mixed Use (42 du/nrha)	9.00	6.75	0.72	284	709
Subtotal	**1029.27**	**771.86**	**100.00**	**27,004**	**67,510**
Du/nrha	**The dwellings units per net residential hectare is 35.**				

NOTES:

[1] Potential Environmental Reserve areas currently excludes the 1970 floodplain areas.

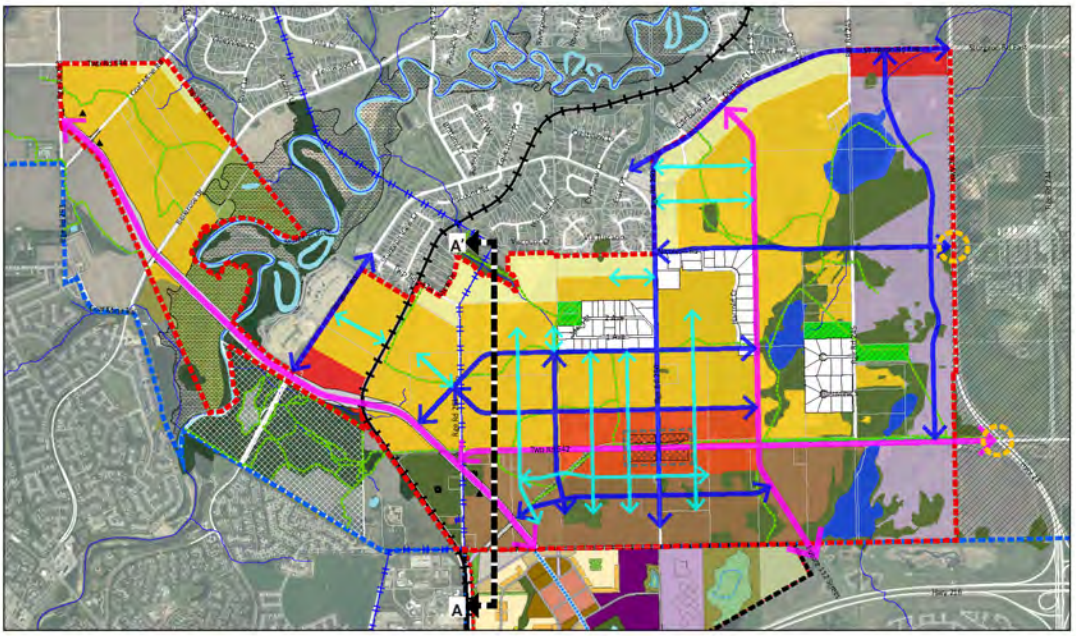
[2] Gross Developable Area excludes the following areas: Existing Railroad ROW, Future 127 Street ROW, Existing Roads/Other ROW, Environmental Reserve, Existing Open Space, Existing Residential and Proposed Agriculture Holdings.

[3] Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Road Area from the Developable Residential Land Area in addition to the existing the municipal reserves and roads.

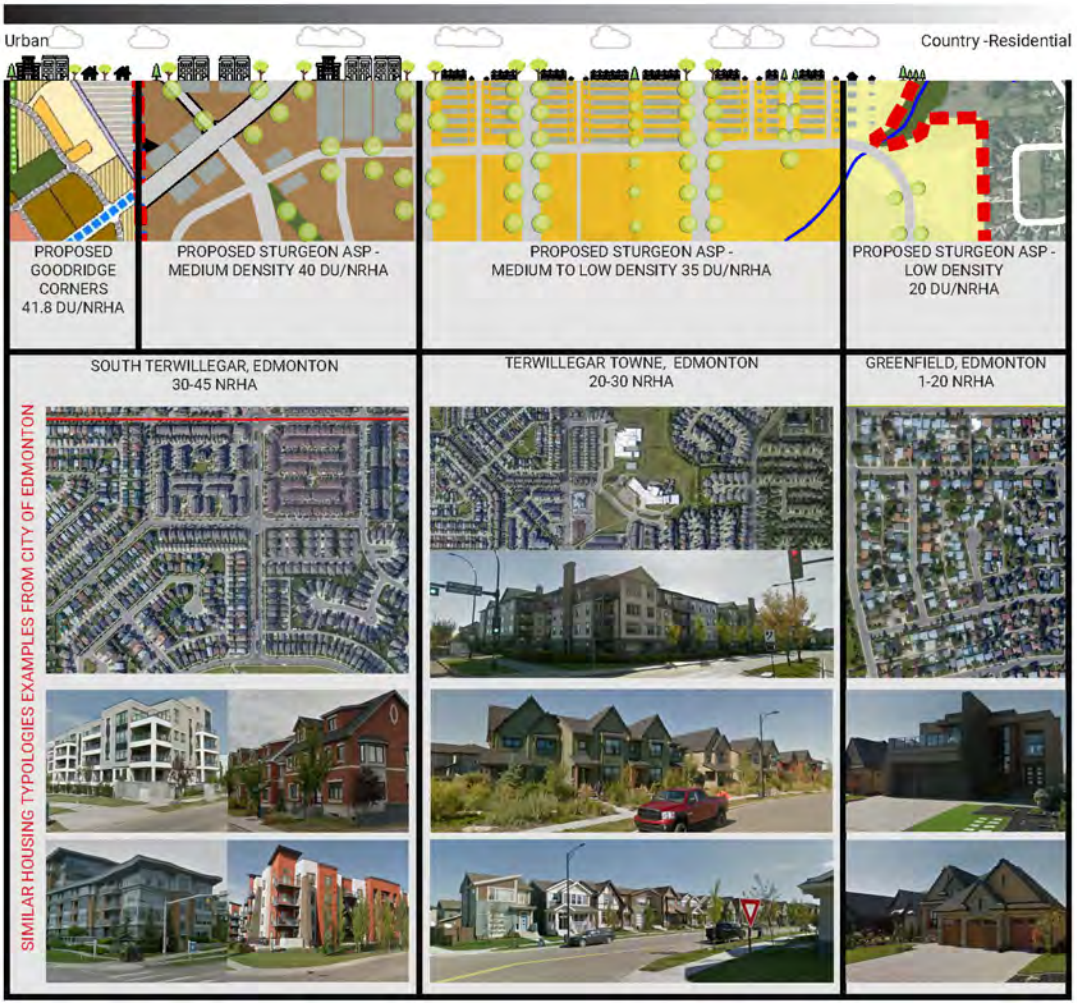
[4] It is recognized that there will be some form of neighbourhood commercial development that at this planning scale is not identifiable. For the purposes of this analysis an area has been allocated based on previous levels of neighbourhood commercial development at this scale of development.

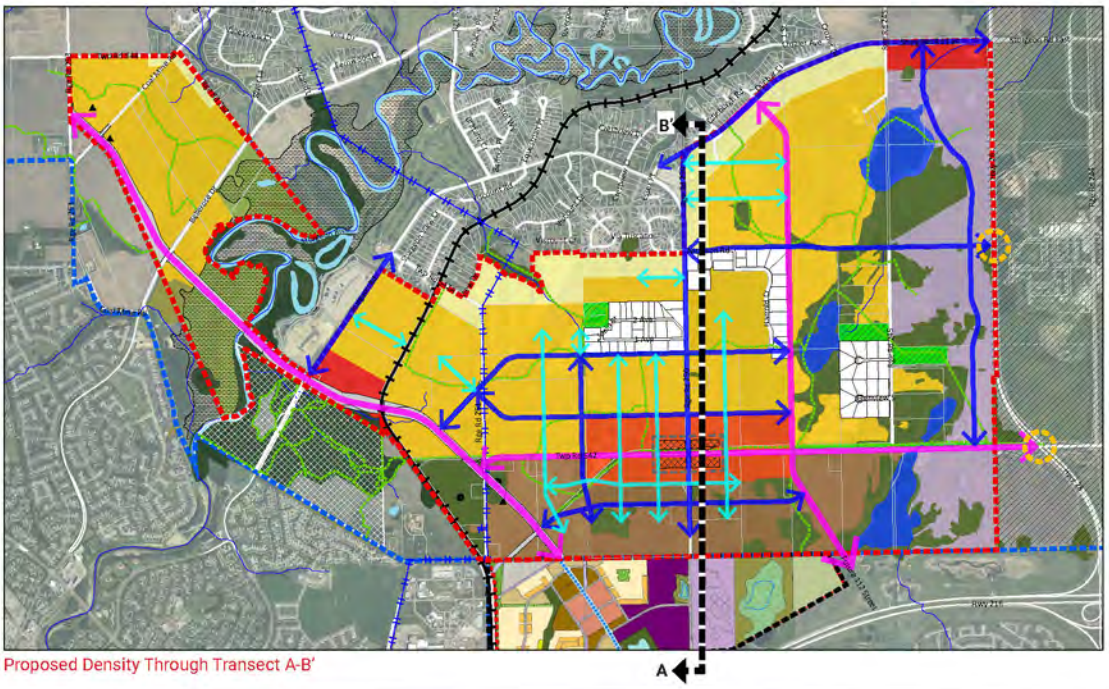
[5] Based on census data the number an average of 2.5 persons per dwelling were used in calculating the potential population.

▼ FIGURE 27: STURGEON VALLEY – Consolidated Plan Full Build Out Transects | V3 Companies of Canada

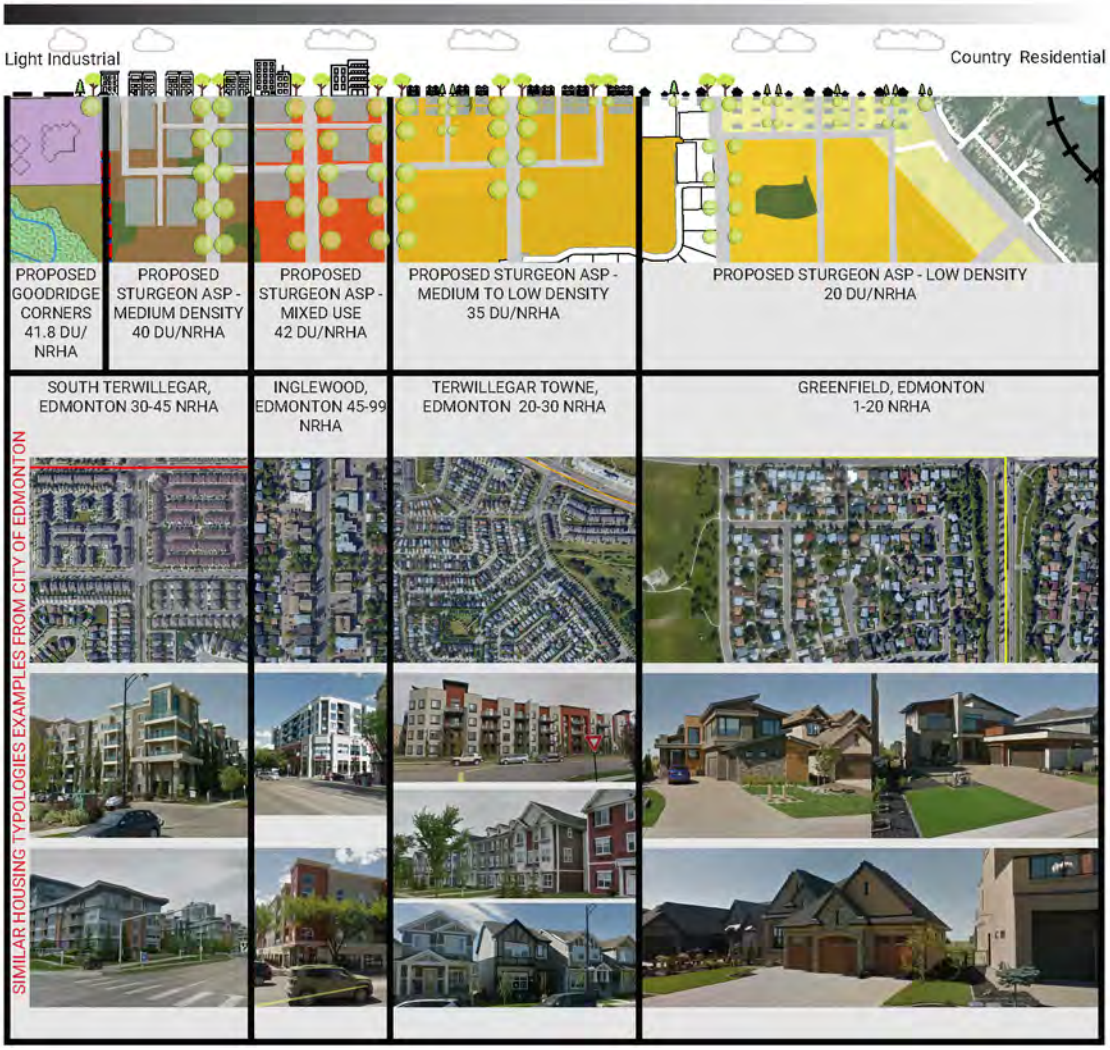


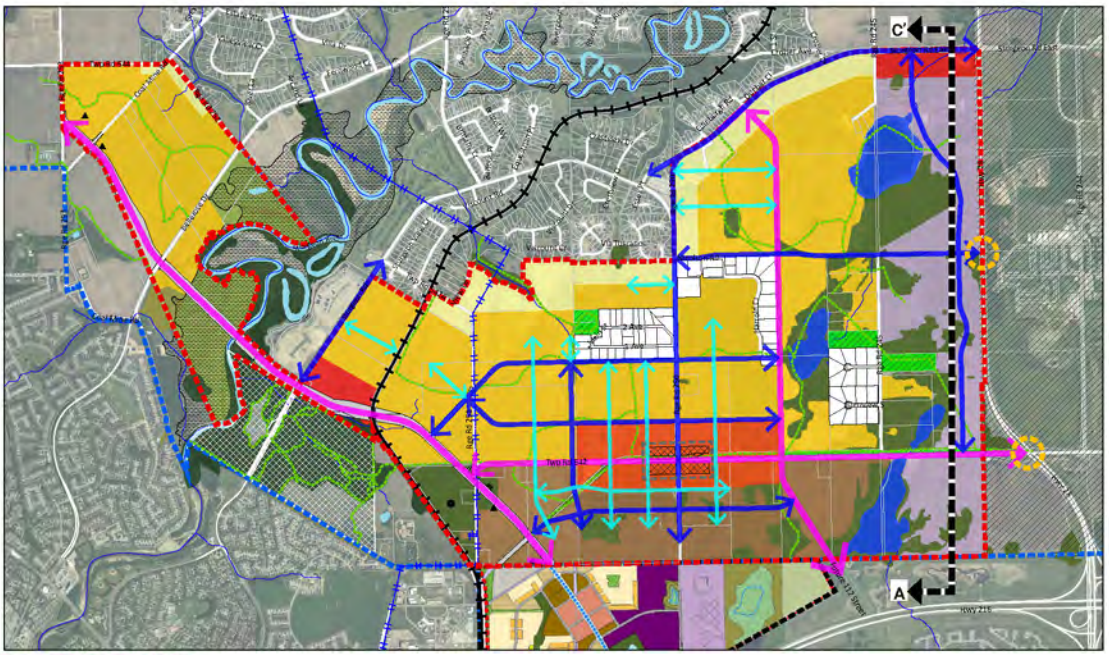
Proposed Density Through Transect A-A'



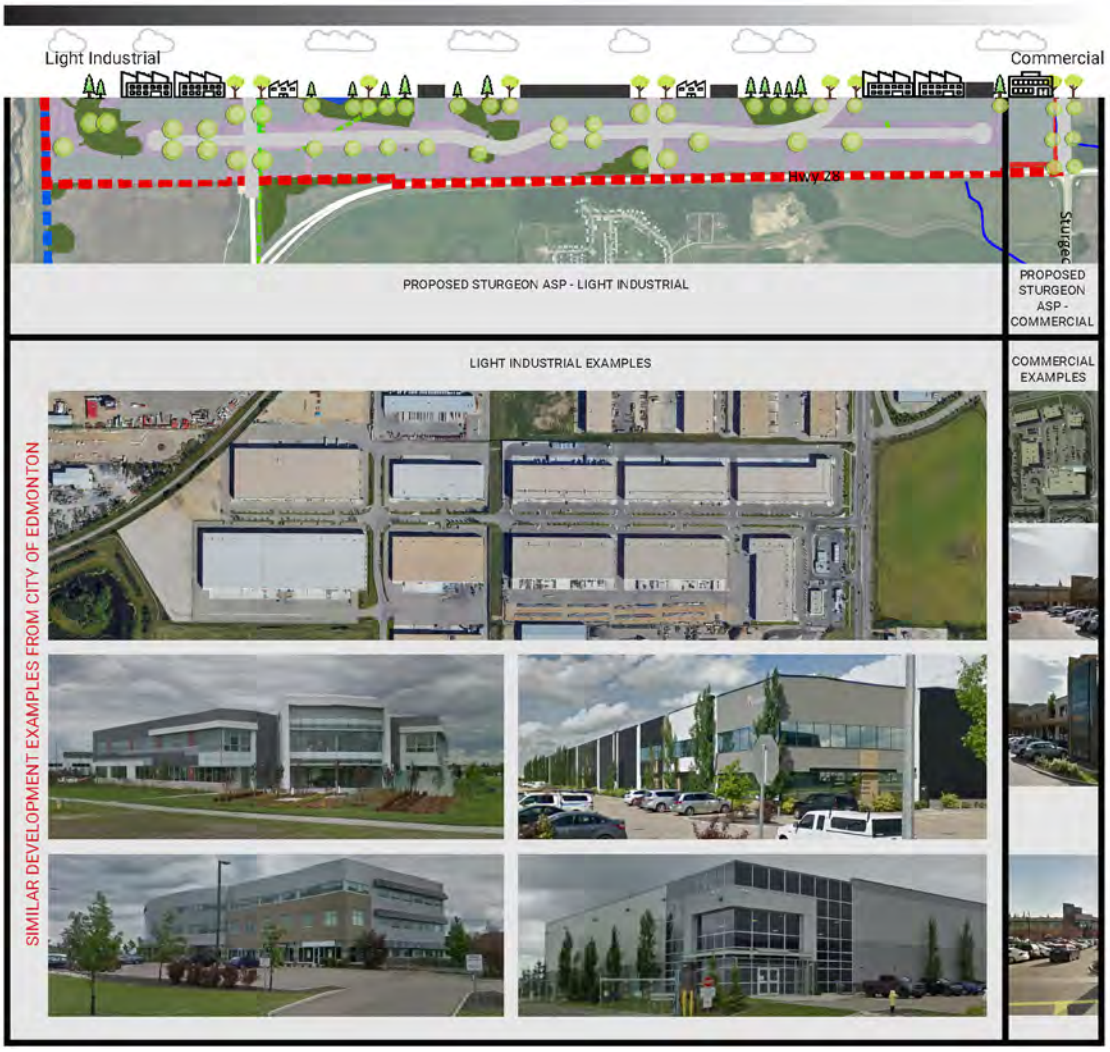


Proposed Density Through Transect A-B'





Proposed Transect A-C'



POPULATION PROJECTION

The population in Consolidated Option – Full Build Out is anticipated to be a minimum of 67,510, with the majority of the population residing in residential communities with a minimum of 35 du/nrha.

INFRASTRUCTURE CONSIDERATIONS

The table shown below provides a high-level review of the anticipated number of wastewater and stormwater lift stations, and water reservoir/ booster stations for Consolidated Plan – Full Build Out. Note, the number of lift stations and reservoir/ booster stations shown in the following table are not based on servicing analysis; numbers were determined through review of Sturgeon County's 2019 Infrastructure Master Plan (IMP) and topographic information. The numbers are for high-level consideration only, and may be adjusted upon completion of a servicing analysis in Phase 2: The Area Structure Plan(s).

CONSOLIDATED OPTION – FULL BUILDOUT INFRASTRUCTURE CONSIDERATIONS				
Infrastructure	West of RR 250	East of RR 250	North of Sturgeon River	Total New Lift Stations/ Booster Stations/ Reservoirs
Wastewater – Lift Stations	EX. River Gate Lift Station: Area may be serviced by existing River Gate Lift station – Lift station has capacity for upgrading. Gravity: Rest of area may flow via gravity to START line. It is also possible to service the new growth area with a new lift station.	Gravity: From the IMP, the area west of HWY 28 can drain south via gravity to an existing lift station that connects to the START line. Gravity: From the IMP, the Area east of RR 250 can reach the START line via gravity. May need a new lift station as flows to the current lift station may be too great.	Gravity: Area will drain south and east. May drain to the Greystone LS or Bellerose LS. These areas were not included in the IMP. Potential Lift station may be required on the south side of the site to pump flows north and east. Upgrades to the Greystone and Bellerose Lift stations may be required as they were identified in the IMP as having limited available capacity.	3 Existing River Gate Lift station to be upgraded to accommodate flows. Check with Commission that capacities can be met. Potential upgrade of the Greystone and Bellerose Lift Station.
Water – Booster Station/ Reservoir	EX Allin Ridge Reservoir: Area may be serviced by upgrading existing Reservoir. Allin Ridge Supply line is to be twinned and distribution lines upgraded to accommodate fire flows for the development area. To meet increased demands a new reservoir may be required.	Development to the West of HWY 28 may be supplied by Allin Ridge Reservoir. Potentially may need reservoir to provide additional flows to the area should Allin Ridge not be able to upgrade to the required demand.	Development north of Sturgeon River may potentially be supplied by the Summerbrook Reservoir/pump house. Additional flows and fire flow may require upgrade of existing distribution lines, however, according to the IMP, this reservoir is scheduled for upgrades of pumping capacities.	2 Note: the following upgrades will be required: ▪ Twinning Supply Line. ▪ Existing reservoir volume and pump requirements. ▪ Distribution system upgrades.

CONSOLIDATED OPTION – FULL BUILDOUT INFRASTRUCTURE CONSIDERATIONS				
Infrastructure	West of RR 250	East of RR 250	North of Sturgeon River	Total New Lift Stations/ Booster Stations/ Reservoirs
Stormwater – Lift Stations/ SWMF	Gravity Drainage: The stormwater management appears to be able to drain via gravity for the most part to future SWMF. Water to drain via gravity to Sturgeon River.	Gravity Drainage: Area west of RR 250 will drain east to a low-lying area. Other area will drain to a SWMF and be piped to the Sturgeon River.	Gravity: Stormwater drains south and east towards the Sturgeon River. A SWMF facility is required to control flows to predevelopment rates and treat stormwater prior to discharge to the Sturgeon River.	**0 Lift Stations** **11 SWMF** Note: Stormwater detention facilities and piping to be constructed to hold, then release flows to the Sturgeon River.

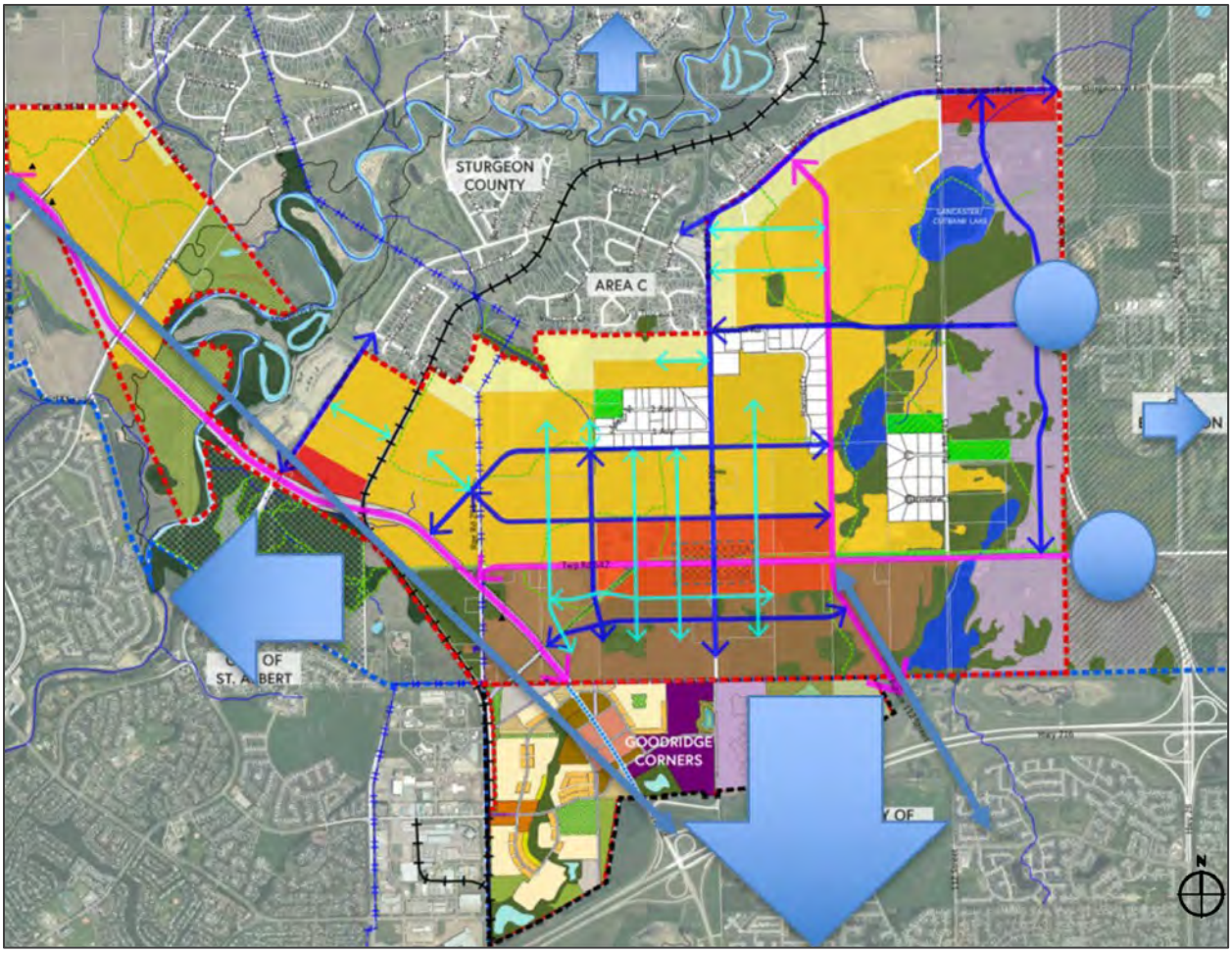
TRAFFIC ANALYSIS

It is estimated that at full build out this option will see an increase of 181,000 external trips per day. Based on the full build out of this option it is anticipated it would require the following upgrades to the road infrastructure:

ANTICIPATED ROAD IMPROVEMENTS
» Construction of 127 Street from Anthony Henday Drive to Highway 2.
» Construction of the 112 Street flyover.
» Two accesses to Highway 28 between Anthony Henday Drive and Sturgeon Road.
» Additional travel lanes: ▪ To/From City of Edmonton (9 to 10 lanes) ▪ To/from City of St Albert (5 lanes) ▪ To/From North (2 lanes) ▪ To/From East (1 lane)

The number of additional travel lanes is based on an assumed per lane capacity of 10,000 vpd to 11,500 vpd. Although new roadways would typically include the construction of an even number of lanes (e.g. 2-lane undivided, 4-lane divided), there is the potential that existing available capacity could be utilized to support future development and the ranges shown are solely based on the projected traffic volumes by direction divided by the projected lane capacity.

▼ FIGURE 28: STURGEON VALLEY – Anticipated Road Improvements | Bunt & Associates



FISCAL IMPACT ASSESSMENT

The fiscal impact analysis results for this development scenario are provided below.

Blended Scenario
» Municipal Tax Rates – 68% higher than the Baseline Forecast at the end of the forecast (2079). Generally, the results for this development option result in higher tax rates as more development occurs.
» Debt per Capita – 52% higher than the Baseline Forecast at the end of the forecast (2079). Debt levels begin to be higher as new tax supported municipal infrastructure is required to support development (2031).
» Fiscal Capacity – 32% lower than the Baseline Forecast at the end of the forecast (2079). Generally, the fiscal capacity of the County deteriorates over the forecast period as the residential/non-residential mix of development in Sturgeon Valley in this scenario is significantly below the current and projected level for the Baseline Forecast (County without Sturgeon Valley development).
Urban Service Area (USA) Scenario
» No impact on existing County ratepayers. All the financial impacts of development in Sturgeon Valley are borne by the ratepayers in Sturgeon Valley.
» USA Residential Municipal Tax rates – 18th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the highest residential tax rates at the end of the forecast period (2079).
» USA Non- residential Tax Rates – 17th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the second highest residential tax rates at the end of the forecast period (2079).
» Debt Limit Used – 18th highest out of 18 in the Province.[1] The Sturgeon Valley development scenario would have the highest debt levels of all the 18 comparable municipalities at the end of the forecast period (2079). Debt levels in this development scenario are high, but below the provincial debt and debt service limits over the forecast period. In some years, the County's debt limit policy threshold is exceeded.
» Fiscal Capacity – 18th lowest out of 18 in the Province.[1] The Sturgeon Valley development scenario, as defined, would result in the second worst fiscal capacity of the 18 comparable municipalities. This is the single largest contributor to the relatively poor fiscal impact results for this scenario.

[1] This is based on analysis of a total of 18 comparative sized urban municipalities in Alberta with a ranking of 18 being the worst.

The financial results for this development scenario point to the relatively poor fiscal capacity assumed in the definition of development in the study area. The proportion of non-residential development is significantly below that which currently exists in the County and well below the average for the 18 comparable municipalities used in the fiscal impact analysis. As a result, the development suffers from having to support the municipal costs of delivering municipal services to a large urban residential development without the compensating share of non-residential development that would help support the cost of delivering these services. This is especially apparent for the USA results. While it is true that Sturgeon Valley is located in proximity to existing and proposed commercial and business areas, this is also true of other communities in the Edmonton region that have significantly better fiscal balance of residential and non-residential development. It is important that any development considered by the County should include sufficient non-residential development to offset the costs of providing services required by residential development.

5.6 CONSOLIDATED OPTION – NET NEUTRAL

KEY COMPONENTS

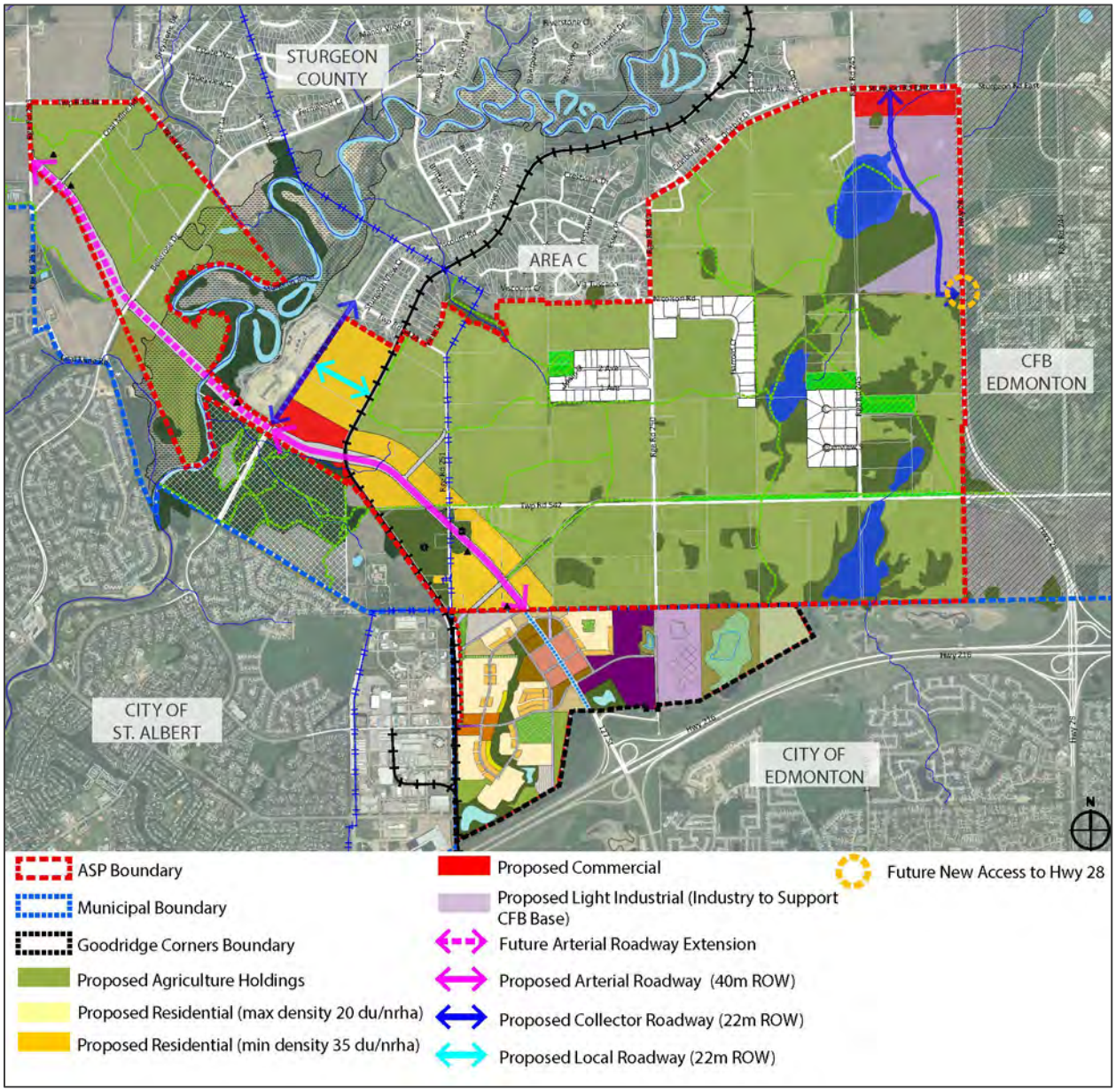
The following is a summary of the key components of Consolidated Option – Net Neutral:

1. Primary residential development adjoins the extension of 127 Street through to Sturgeon Road.
2. A commercial node is established on the corner of 127 Street and Sturgeon Road to service the residential community and beyond.
3. A commercial node is placed at the northeast corner of the study area, providing commercial amenities to the existing Sturgeon Valley residences and to CFB Edmonton.
4. Light Industrial activities are proposed in the northeast corner of the study area which are intended to support the CFB Edmonton. Access to Highway 28 is projected to be required to promote the industrial land development.
5. Natural areas are shown as being preserved, however, until field investigations are completed it should be recognized that these areas are subject to change which could result in increased of developable lands.

This option is projecting the non-residential to residential tax base to support services for the development that would have little to no impact on the existing residential tax base. Additional residential could be created, however, effectively it is projected to fiscally support further residential would need approximately three to five times the non-residential tax base to remain net neutral. This does not necessarily mean that additional land is required, but enabling the ability for increasing the capacity/density of the existing commercial areas through additional vertical floor space (e.g. instead of projecting a single level of non-residential development enabling for at least two - three levels of non-residential floor space). Examples of the types of additional non-residential activities to attract would be offices/ professional services such as dentistry, medical professions and other professions that service the community. The question raised is whether the market could support such non-residential development, however, other communities of similar size have been able to achieve this form of development based on similar population densities.

It should be noted that through the engagement process the proposed scenario as presented was identified as unviable from a developer's perspective based on the developable area required to support infrastructure. It was recognized that the purpose of this scenario was to provide Council with a visual context of the balance required between residential and non-residential to maintain a net neutrality.

▼ FIGURE 29: STURGEON VALLEY – Consolidated Plan – Net Neutral Option | V3 Companies of Canada



Please refer to Appendix D for a plan to scale of this option.

CONSOLIDATED OPTION – NET NEUTRAL AREA CALCULATIONS					
Land Uses	Area (Ha)	Area (nrha)[3]	Percentage (%)	Units /nrha	Population /nrha
Gross Area	1750				
Existing Railroad ROW	7.5				
Future 127 Street Extension	46.54				
ROW (Existing Roads, etc.)	21.42				
Potential Environmental Reserve[1]	270.33				
Existing Open Space	24.85				
Existing Residential	71.51				
Proposed Agriculture Holdings	1100.9				
Gross Developable Area (GDA)[2]	**206.95**		**100%**		
Municipal Reserve	20.70		10.00		
SWMF	Unknown				
PUL	Unknown				
Proposed Roads 15% of GDA	31.04		15.00		
Subtotal	**51.74**				
Proposed Commercial	27.74		13.40		
Proposed Industrial	69.2		33.44		
Subtotal	**96.94**				
Proposed Residential[4]					
Residential (35 du/nrha)	110.01	82.51	53.16	2,888	7,220
Subtotal	**110.01**	**82.51**	**100.00**	**2,888**	**7,220**
Du/nrha	**The dwelling units per net residential hectare is 35.**				

NOTES:

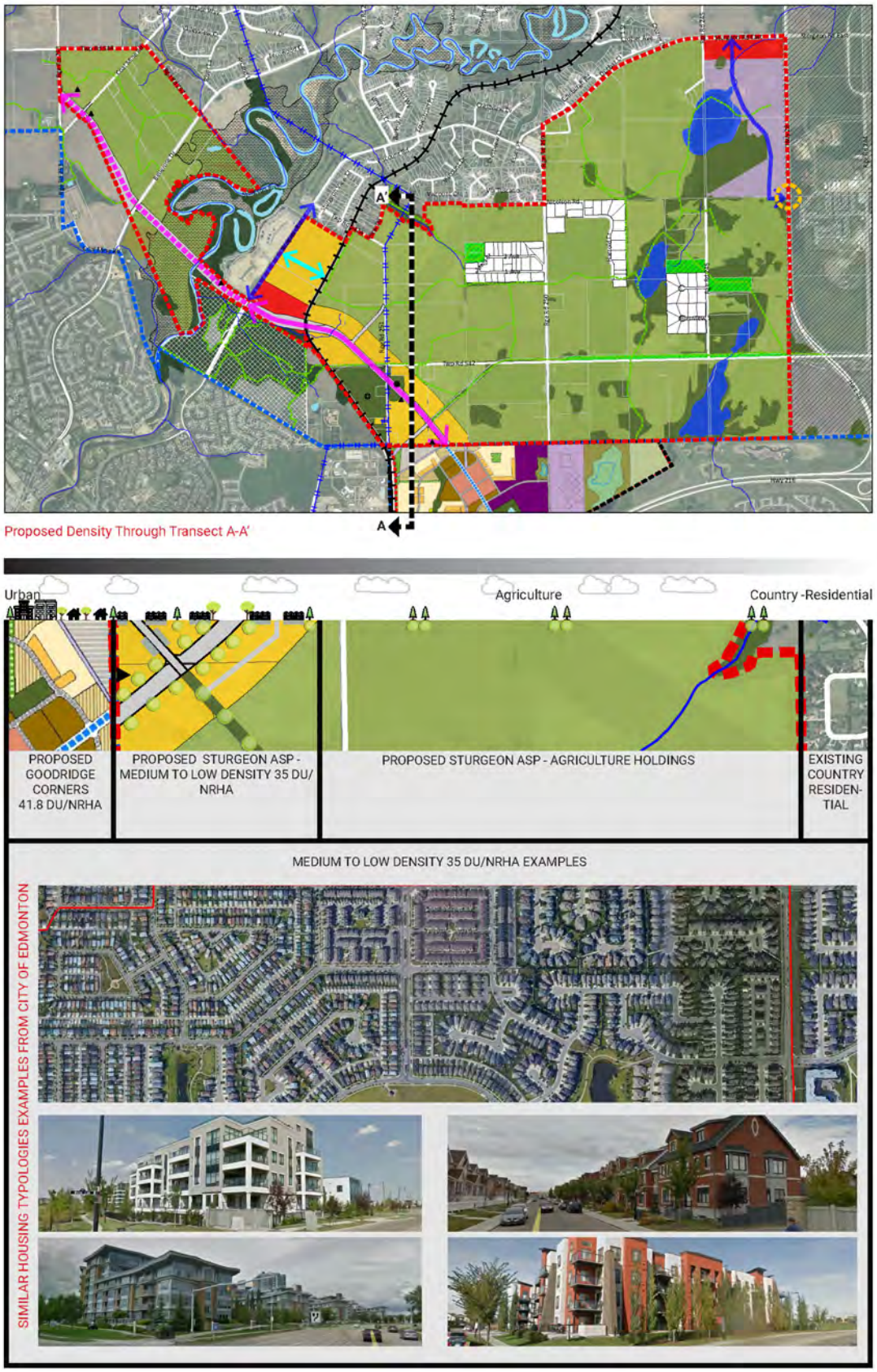
[1] Potential Environmental Reserve areas currently excludes the 1970 floodplain areas.

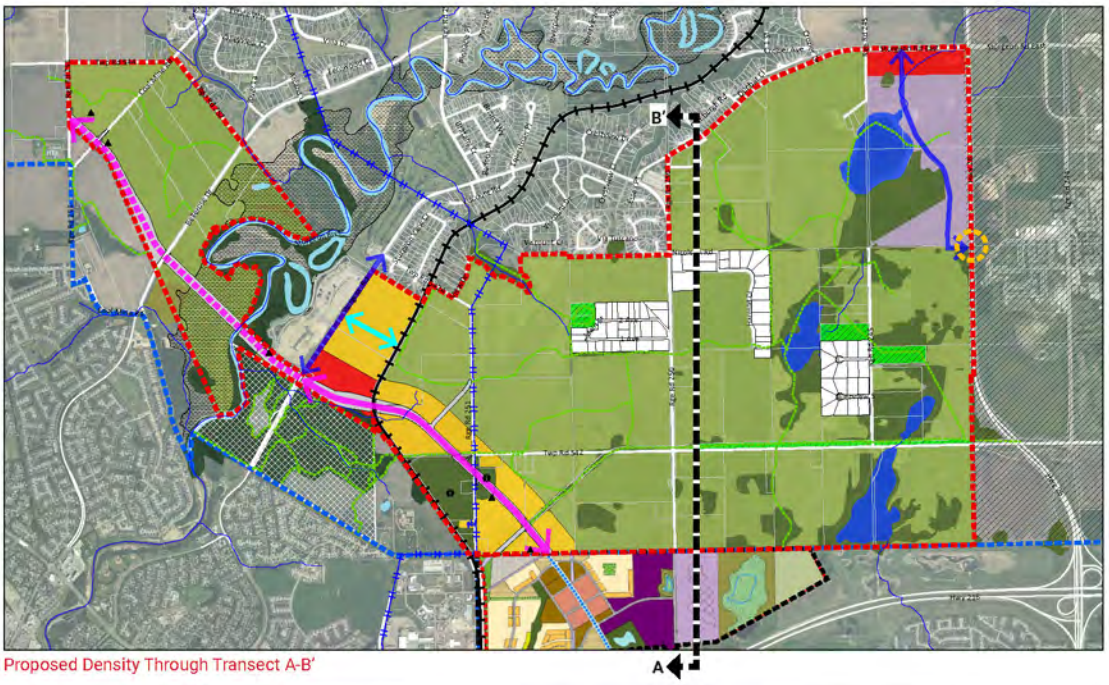
[2] Gross Developable Area excludes the following areas: Existing Railroad ROW, Future 127 Street ROW, Existing Roads/Other ROW, Environmental Reserve, Existing Open Space, Existing Residential and Proposed Agriculture Holdings.

[3] Net Residential Ha (nrha) excludes the 10% of Municipal Reserve and 15% Road Area from the Developable Residential Land Area in addition to the existing the municipal reserves and roads.

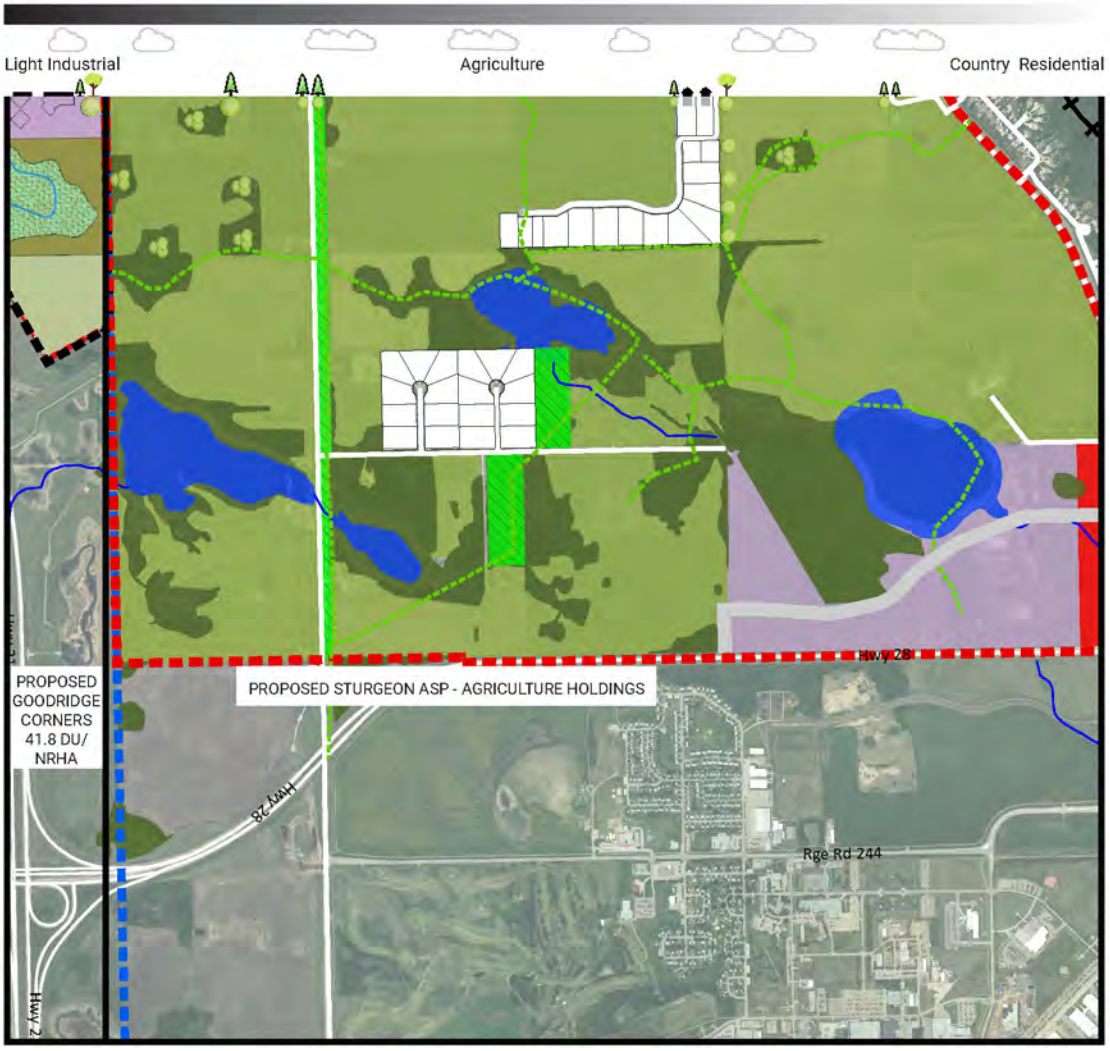
[4] Based on census data the number an average of 2.5 persons per dwelling were used in calculating the potential population.

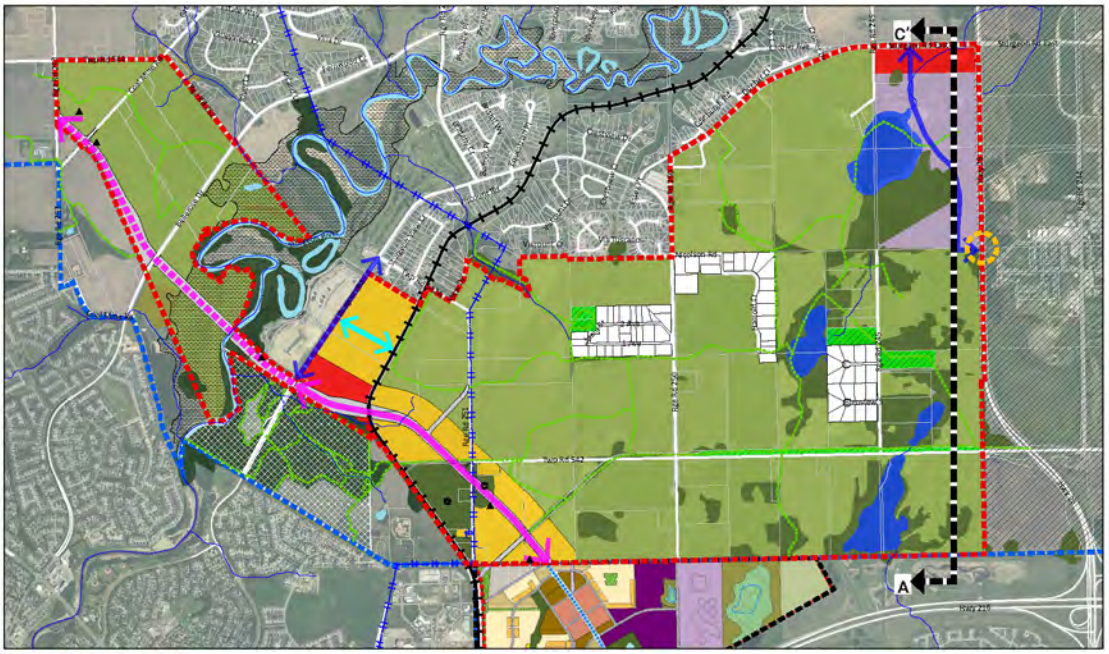
▼ FIGURE 30: STURGEON VALLEY – Net Neutral Build Out Transects | V3 Companies of Canada



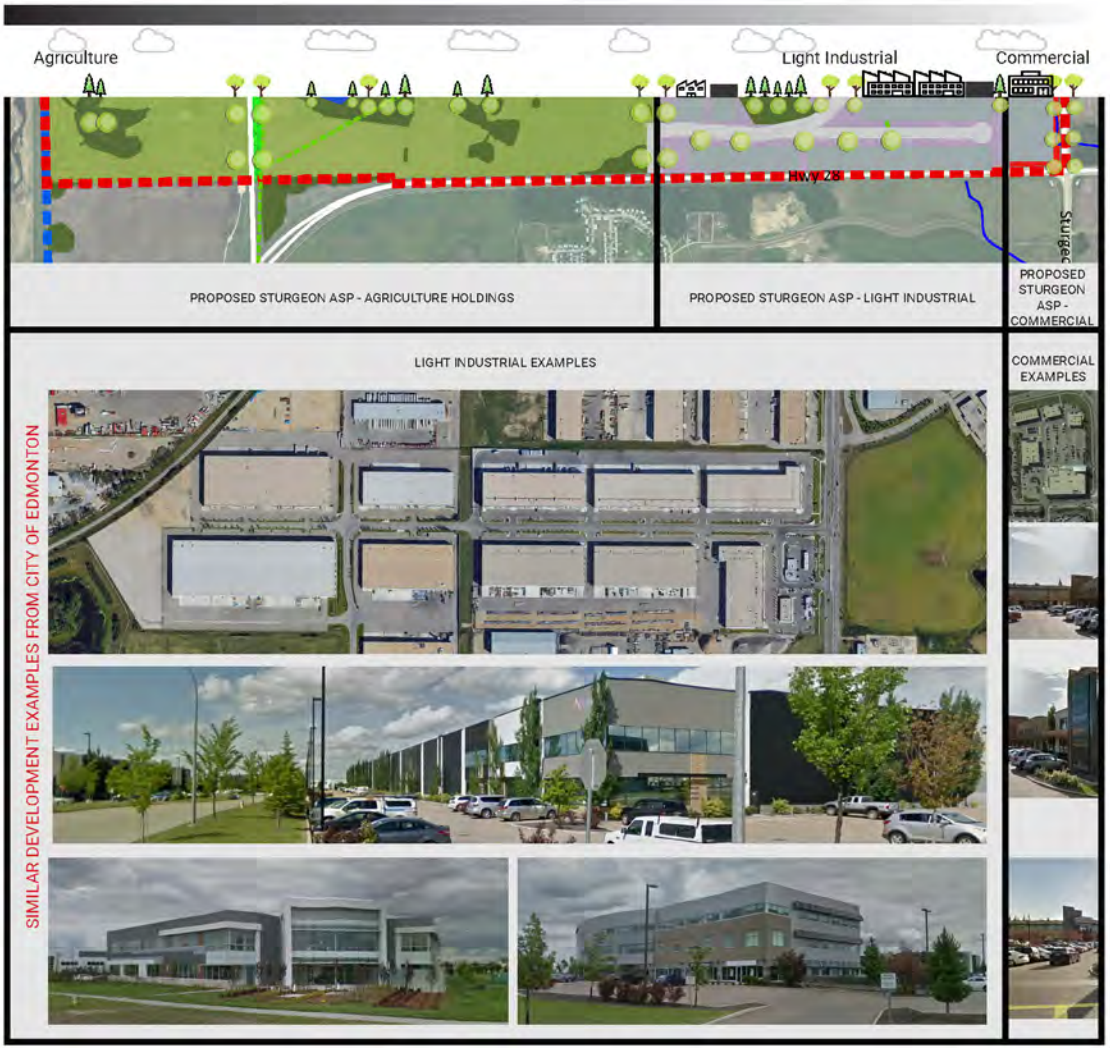


Proposed Density Through Transect A-B'





Proposed Transect A-C'



POPULATION PROJECTION

The population in Consolidated Option – Net Neutral is anticipated to be a minimum of 7,220, with the majority of the population residing in residential communities with a minimum of 35 du/nrha.

INFRASTRUCTURE CONSIDERATIONS

The table shown below provides a high-level review of the anticipated number of wastewater and stormwater lift stations, and water reservoir/ booster stations for Consolidated Net Neutral scenario. Please note, the number of lift stations and reservoir/ booster stations shown in the following table are not based on servicing analysis; numbers were determined through review of Sturgeon County's 2019 Infrastructure Master Plan (IMP) and topographic information. The numbers are for high-level consideration only, and may be adjusted upon completion of a servicing analysis in phase 2.

CONSOLIDATED OPTION – NET NEUTRAL INFRASTRUCTURE CONSIDERATIONS			
Infrastructure	West of RR 250	East of RR 250	Total New Lift Stations/ Booster Stations/ Reservoirs
Wastewater – Lift Stations	EX. River Gate Lift Station: Area may be serviced by existing River Gate Lift station – Lift station has capacity for upgrading. Gravity: Rest of area may flow via gravity to START line.	Gravity – From the IMP, the area can drain south via gravity to an existing lift station that connects to the START line.	0 Note: the existing River Gate Lift station to be upgraded to accommodate flows. Also need to check with Commission that capacities can be met.
Water – Booster Station/Reservoir	EX Allin Ridge Reservoir: Area may be serviced by upgrading ex. Reservoir. Allin Ridge Supply line is to be twinned and distribution lines upgraded to accommodate fire flows for the development area.	Little development to the west. Area may be supplied by Allin Ridge Reservoir.	0 Note: the following upgrades will be required: ▪ Twinning Supply Line. ▪ Existing reservoir volume and pump requirements ▪ Distribution system upgrades.
Stormwater – Lift Stations/ SWMF	Gravity Drainage: the stormwater management appears to be able to drain via gravity for the most part to future SWMFs (5)). Water to drain via gravity to Sturgeon River.	Gravity Drainage: area west of RR 250 will drain east to a low-lying area. Other area will drain to a SWMF and be piped to the Sturgeon River. Based on IMP 1 new SWMF would be required	**0 Lift Stations** **6 SWMFs Identified in the IMP** Note: Stormwater detention facilities and piping to be constructed to hold, then release flows to the Sturgeon River.

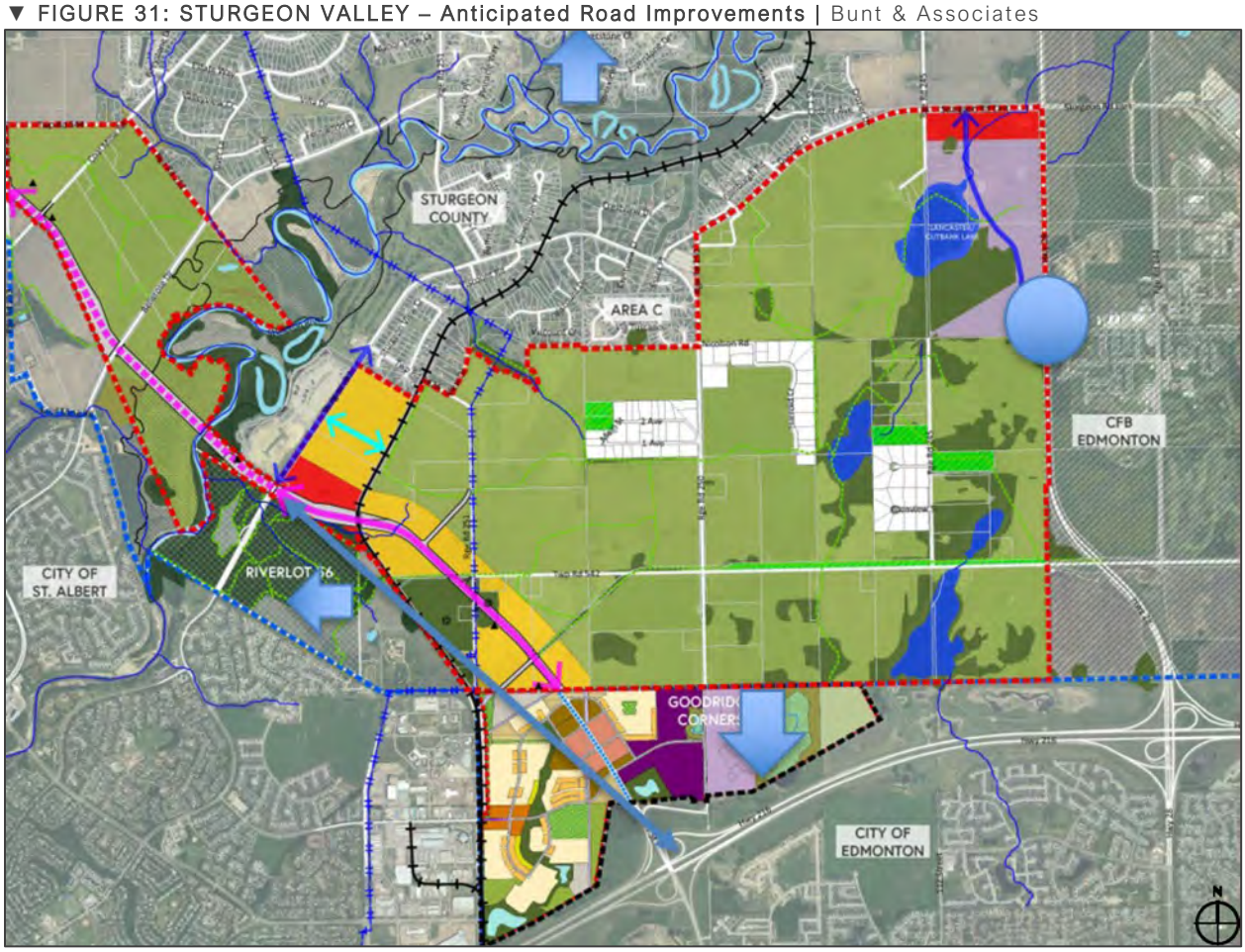
TRAFFIC ANALYSIS

It is estimated that the net neutral scenario would generate approximately 35,500 external vehicle movements per day. Based on the full build out of this option it is anticipated it would require the following upgrades to the road infrastructure:

Anticipated Road Improvements
» Construction of 127 Street from Anthony Henday Drive to Sturgeon Road
» One access to Highway 28 between Anthony Henday Drive and Sturgeon Road.
» Additional travel lanes: ▪ To/From City of Edmonton (2 lanes) ▪ To/from City of St Albert (1 lane) ▪ To/From North (1 lane) ▪ To/From East (0 lane)

The number of additional travel lanes is based on an assumed per lane capacity of 10,000 vpd to 11,500 vpd. Although new roadways would typically include the construction of an even number of lanes (e.g. 2-lane undivided, 4-lane divided), there is the potential that existing available capacity could be utilized to support future development and the ranges shown are solely based on the projected traffic volumes by direction divided by the projected lane capacity.

▼ FIGURE 31: STURGEON VALLEY – Anticipated Road Improvements | Bunt & Associates



FISCAL IMPACT ASSESSMENT

Originally, this scenario was devised to create a fiscal balance that would leave existing County taxpayers neutral to the development in Sturgeon Valley as analyzed in the Blended Scenario and roughly 'average' when compared to other urban municipalities in the Urban Services Area Scenario. Development in this scenario has changed since the original definition of the Net Neutral scenario. As a result, this development scenario has some differential implications in each of the financial analysis scenarios. The fiscal impact analysis results for this development scenario are provided below.

Blended Scenario
» Municipal Tax Rates – 3.0% higher than the Baseline Forecast at the end of the forecast (2049). Generally, the results for this development option result in higher tax rates as more development occurs.
» Debt per Capita – 10.0% higher than the Baseline Forecast at the end of the forecast (2049). Debt levels begin to be higher as new tax supported municipal infrastructure is required to support development (2041).
» Fiscal Capacity – 8.0% lower than the Baseline Forecast at the end of the forecast (2049). This is a departure from the original Net Neutral scenario that had a somewhat better fiscal balance between residential and non-residential development.
Urban Service Area (USA) Scenario
» No impact on existing County ratepayers. All the financial impacts of development in Sturgeon Valley are borne by the ratepayers in Sturgeon Valley.
» USA Residential Municipal Tax rates – 7th highest out of 18 in the Province.[1] This puts the Sturgeon Valley development as defined roughly average in the context of the 18 comparable municipalities.
» USA Non- residential Tax Rates – 9th highest out of 18 in the Province.[1] This puts the Sturgeon Valley development as defined roughly average in the context of the 18 comparable municipalities.
» Debt Limit Used – 15th highest out of 18 in the Province[1]. There are four municipalities that have a worse debt level than the Sturgeon Valley development in this scenario.
» Fiscal Capacity – 9th lowest out of 18 in the Province.[1] The Sturgeon Valley development scenario, as defined, would be close to being 'average' in the context of the 18 comparable municipalities.

[1] This is based on analysis of a total of 18 comparative sized municipalities in Alberta with a ranking of 18 being the worst.

By definition, this scenario largely eliminates the fiscal imbalance that was noted in each of the other development scenarios. The result are financial impact results that have minor implications for existing County ratepayers in the Blended Scenario and produce roughly 'average' financial results in the context of the 18 comparable urban municipalities used in this analysis.

6 DIFFERENT APPROACHES

The analysis carried out was based on the assumption of traditional development where the municipality takes over ownership and ongoing maintenance and operation of the capital costs to support the community. For Sturgeon County, this effectively means managing an urban form of development that compares in size to a town or city that brings new capital and operational costs currently not provided by the County (e.g. police force).

The following outlines different approaches and/or opportunities that could reduce the fiscal impact pressures on the County that have been raised through the engagement process.

Harmony Development Example – Established Developer Utility Company

Harmony Developments is a large-scale development located in Rocky View County which was developed through the creation of a Conceptual Scheme and governed under a Direct Control form of zoning. What is unique about this development is that the water and sanitary have been designed, constructed and their ongoing operation and maintenance is carried out by a Utility company created by the developer and not the municipality.

Risks/Challenges:

- The creation of a utility company creates a single entity for the operation. Utilities companies have greater responsibilities and powers to ensure cost recovery vs being managed by a home owner associations. In Harmony the development was carried out by a single development company enabling them to have greater control over the entire servicing area compared to the Sturgeon Valley that is comprised of a range of landowners and developers making it challenging for any single developer to create such an entity to service the eventual overall development. It is also likely that there would be little interest in a developer taking the lead on such an initiative. An alternative to this would be for the County to establish its own utility organization to be responsible for managing the operations of the sanitary, water and stormwater required to service the area in a structure similar to how EPCOR or AQUATERA have been established. These utility operators have operated in a manner in which the municipalities generally receive a revenue.

Home Owners Association

Home Owners Associations can be developed to operate a number of facilities related to the community, such as community halls/ice rinks through to infrastructure that supports their communities. A typical situation where this is often used in rural communities has been related to roads/waste water treatment facilities and water facilities. Effectively the home owners association are responsible for providing the funding to support the operation and ongoing maintenance of the facility. This again removes the responsibility for financing and funding these facilities through the municipality.

Risks/Challenges:

- Municipalities have often been challenged by Home Owners Associations because they are dependant on the people living in the community and the community being organized. Experiences in other jurisdictions have led to roads falling apart through to sanitary and water systems failing resulting in the municipality having to step in and take over responsibility of the assets.

Intermunicipal Cost Sharing

A development of this scale will require a range of services to support the community, such as libraries, police, social services etc. There is also infrastructure, such as 127 Street, where opportunities exist for cost sharing of the infrastructure. Other services provided by neighbouring municipalities could also provide the required services to the community avoiding the need for them to be provided by the County. This could overall reduce capital and/or operating costs for development within the Sturgeon Valley.

Risks/Challenges:

» The largest challenge relates to the political willingness of both parties to agree on sharing services and then arriving at an agreeable arrangement on the operation and costs. Should services not be provided within the area may push future residents to place pressure on Council in requiring such services to be installed within the community.

Developer/Market Driven Area Structure Plans

This project relates to moving forward with creating a high-level Area Structure Plan(s) that would create a framework to enable clear direction to landowners and developers on what areas could be developed, phasing of development and level of densities along with how the areas are anticipated to be serviced. It is recognized that this places significant pressure on Council in determining who should be first in the Sturgeon Valley to develop based on the projected growth anticipated to occur and subsequent impacts on infrastructure requirements, particularly transportation. It is also recognized that developers generally know what the market desires and how they visualize the development of their lands. Based on the outcomes of the studies carried out to date, it may be more desirable for Council to let the development community take the lead on developing the Area Structure Plan(s) with the County shifting the policy anticipated to be created in the ASP to the County's Municipal Development Plan. It should be noted that the County's Municipal Development Plan already requires amendments to be carried out to reflect the SVSSA policy that will also require approval from the EMRB.

Based on proceeding with this option would remove the requirement for developers and land owners to complete a Neighbourhood Area Structure Plan and would instead require the development of an Area Structure Plan that would be required to align with the approved policy contained within the Municipal Development Plan. Key aspects to be included in creating policy within the Municipal Development Plan to ensure connectivity as development proceeds would be:

- High level designation of lands for residential/transit mixed use/industrial and commercial and accompanying policy.
- Designated key arterial/collector level roads to service the entire plan area and accompanying policy.
- Master stormwater management plan and accompanying policy.
- Master water and sanitary servicing plan and accompanying policy.
- Environmental policy.
- Requirements for a fiscal impact analysis.
- Creation of 3 -4 areas that clearly delineate where Area Structure Plans need to be developed and the anticipated sequence of their development.
- Criteria upon which the Area Structure Plans will be assessed by the County.

Developer/Market Driven Area Structure Plans

Upon approval by the County, it is anticipated that the County would then be responsible for moving it through the EMRB approval process. This approach would save costs related to developing an Area Structure Plan (Phase 2) that is likely to increase based on the challenges it will be bring in its development with landowners and adjoining municipalities.

Risks/Challenges:

- It will likely to be viewed as being unacceptable by some developers/landowners in the Sturgeon Valley because of the expectations related to the overall process an EMRB policy. It may also be viewed as creating additional delays and greater uncertainty in the process based on the individual Area Structure Plans still having to proceed before the EMRB vs obtaining an overall approval on one Area Structure Plan from the EMRB which enables the decisions on future Neighbourhood Area Structure Plans not being required to proceed back to the EMRB. It should be noted that until an Area Structure Plan is approved there is no certainty on what the resulting policy may contain and it is assumed at this stage in the process that no referral policy would be included in an approved Area Structure Plan by the EMRB.

Change EMRB Policy – 35 Density Requirement

It appears that Council's vision may not align with the EMRB policy, in particular meeting the minimum density requirement. Council may want to reconsider a way in which to address the existing policy and seek to change it to align with Council's overall vision of development occurring within the Sturgeon Valley.

Risks/Challenges:

- Changing the EMRB policy has political challenges and would likely have a significant impact on time to enable this to occur. Further analysis and assessment would be required to understand the change in the land use framework. It should also be recognised that changing the density will not change the status regarding residential paying for itself and in some cases, as raised through the engagement process, lower densities (e.g. below 20du/nrha) may not be responsive to market demands.

Tax for Full Cost Recovery

The County could proceed with developing an Area Structure Plan(s) and provide clear direction to the landowners and developers that taxes for residential development within the Sturgeon Valley would be set on the basis of cost recovery and let the market determine whether development proceeds. This approach is based on the principle of user pays. Hence, if you want to live in this community you will have to pay for the actual costs associated to service the area.

Risks/Challenges:

- The ultimate risk is that no development may proceed because the taxes are too high making it undesirable when compared to other options within the wider region. If development does proceed, future residents are likely to place significant pressure on Council's of the day to reduce their taxes.

Creating a Desirable Destination

To increase the non-residential tax base has many different philosophies, however, it is our understanding that the County want to create a unique destination in the Valley where people want to live, work and play. Creating a community that attracts people and a significant amount of high paying non-residential use requires structured and controlled planning to ensure the vision created does not alter course through the life of the development. For example, creating architectural controls, unique and interesting public spaces, easy stress-free walkable environments with a range of choices for transportation modes and housing would likely require the development of a master planned community. This requires greater detail in the development of the plan extending through to outlining the overall architectural design, public spaces etc. This approach is far more detailed and regulated than an Area Structure Plan and likely to have greater overall costs related to building construction and public spaces. The emphasis of this approach is to increase the attractiveness of professional businesses locating in the area that may achieve a level of non-residential development to support the community.

Risks/Challenges:

» Maintaining a build out with private developers towards this ideal is extremely challenging and through changes in the politically and developer lifecycle it is extremely unlikely that a vision of this nature could be maintained to full build out. This approach would also be a more expensive option to pursue for developers.

Change in Design Standards

The development of fiscal impact analysis was based on the comparison of other similar sized urban communities and therefore in principle the costs related to their urban design standards. In discussions with stakeholders in the Valley, it has been suggested that the urban design standards could be changed to reduce capital and operational costs. There are many areas where further research could be carried out, some examples of different approaches may include:

- Change in the size of fire trucks to be able to reduce the size of cul-de-sacs,
- Design for ditches instead of curb on certain roads that would reduce costs on concrete curb and stormwater pipes along with possibly not requiring new machinery to maintain the roads.
- Only requiring side walks on one side and/or reducing road/lane widths.
- Enabling community-based treatment facilities (e.g. Micro Bio reactor MBR).
- Reviewing how the lot layout is designed to reduce the requirement for additional roads.

Risks/Challenges:

» The challenges with carrying out changes to urban design standards are linked to their intent and purpose. For example, only requiring a side walk on one side will create challenges for people with mobility/accessibility issues and reducing the side walk width will likely limit the usage of the sidewalk based on the carrying capacity. Hence, it is important to understand the impact on the overall community and the vision being sought when changing urban design standards. This is particularly relevant when developing higher density communities. It is also important to recognize that in some cases the capital cost may be reduced but the operational cost could be increased – a good example of this relates to

swales vs concrete curbs. Overall, it is important to understand the capital, operating cost and intent/value of the service being provided prior to changing a standard.

Goodridge Corners

Goodridge Corners is located between Anthony Henday Drive and the County's boundary and has an adopted Area Structure Plan that seeks to create a mixed-use downtown. The viability of this development being successful is linked to the development of the Sturgeon Valley. Development of a similar mixed-use community within the Sturgeon Valley will be in direct competition between the two communities until such time as the majority of the area is fully constructed. Currently, the fiscal analysis of development within the Sturgeon Valley is based solely on it being fiscally sustainable without context to what benefits it brings to proposed and existing developments. Hence, the commercial revenue generated from Goodridge Corners is not shared with the County, however, development in Sturgeon Valley will have a direct benefit to enabling this plan to succeed and therefore a shared benefit could be recognized.

In addition to the above, through the engagement process, it was identified that the services provided for Goodridge Corners have capacity and may be able to provide sanitary and water infrastructure to portions of the development within the Sturgeon Valley. This may result in reducing capital costs required for sanitary and water infrastructure, such as lift stations.

Risks/Challenges:

- The greatest challenge in recognizing that development of the Sturgeon Valley will drive commercial development in Goodridge Corners is the political aspect and the current debate around regional revenue sharing.

  Obtaining connection to the existing services provided for in Goodridge Corners may create political challenges, however, the operator (EPCOR) is run more like a business and may have greater interest in providing services to support new development irrespective of the boundary line.

7 SUMMARY

This is a large area of land to plan for development that effectively has a horizon of greater than 100 years based on the density requirements (overall minimum of 35 du/nrha) of the EMRB relating to the Sturgeon Valley. It is acknowledged and anticipated that the Sturgeon Valley will eventually be developed in some form. However, within this horizon there will be a lot of changes in the way we and future generations live, work and play and therefore its important to manage expectations on how development would role out in an orderly and phased manner that aligns with the EMRB policy. This in itself is challenging when landowners may all be expecting to benefit through the development of their lands within an expected horizon that is far less than what is projected based on the population growth.

It has been recognized that residential development does not pay for itself but is largely subsidized by non-residential tax base that has led other municipalities to seek higher densities in trying to capitalize on reducing the ongoing municipal operating and capital costs required to support residential communities. This drive has often conflicted with the expectations of where people are still uncomfortable moving into higher density communities of the nature prescribed within this report. Through the analysis carried out to date the fiscal impact analysis has demonstrated that the concepts developed, beyond the net neutral option, would over time result in the County needing to subsidize the residential tax base to provide the level of services required for the density of this nature. Effectively, to provide a more fiscally sustainable development within the Sturgeon Valley requires between 3 to 5 times more non-residential development than what has currently been anticipated. This would mean either creating policy that increases the non-residential vertically or allocating more land for the purposes of non-residential development. The nature of the non-residential use also has a strong correlation to the tax return – for example – professional services located within a concentrated area will provide greater tax revenue than light industrial. The question arises as to whether the market could absorb additional levels of non-residential development when viewed in context to the location of Sturgeon Valley to other existing services in neighbouring municipalities. As outlined in Section 6.0 of this report, there are a number of ideas on reducing the fiscal burden on the County of which each have their own challenges and risks.

In developing the concepts, the EMRB policy of developing a transect from the existing urban limits through to the existing Country Residential development was incorporated in the majority of the options. It is recognized that the higher densities may be challenging to develop within the market place and that higher densities generally require a higher level of architecture and urban designed community to attract and retain people.

Transportation has been identified as a significant driver on how and where development within the Sturgeon Valley may occur based on the impacts and costs to the surrounding road network along with the implications it has on neighbouring municipalities. In moving forward with the development of an Area Structure Plan(s) is going to involve engagement with the neighbouring municipalities and Alberta Transportation to create a road network that enables connectivity throughout the Sturgeon Valley at full build out that provides a level of service that meets the expectations of Council and future residents. The transportation planning is a critical component of enabling development while also recognizing it has the greatest capital, operational and maintenance costs that the County will be responsible for on an ongoing basis. Therefore, it is critical to build in a road network that will provide adequate right of ways and access points to the surrounding road network that can accommodate additional expansion over the long term.

In addition to the transportation network, is recognising the costs related to providing servicing of water and sanitary along with creating a plan for stormwater management. For the levels of density being proposed, it is anticipated the majority of the area, if not all, will be serviced by municipally owned and operated sanitary, water and stormwater infrastructure. Similar to transportation, it is important to plan for these services within the context of the overall build out for the Sturgeon Valley and to phase it accordingly in being cost efficient for the municipality to maintain and operate. Naturally, where existing services can be used for new development should be capitalized upon in alignment with transportation efficiencies as part of creating an orderly and efficient development of the Sturgeon Valley. It is based upon these principles on how the varying concepts and stages of development have been presented in developing the Sturgeon Valley combined with input obtained through the engagement process.

8 REFERENCES

The following provides a list of documents that were reviewed as a part of the Growth Framework study that informed and influenced the analysis undertaken by the project team.

Title	Author	Date
127 Functional Planning Study	ISL Engineering	August 2012
Agricultural Impact Assessment: Agricultural Baseline Assessment – Final Draft Report	Morris Seiferling Consulting Ltd.	April 2019
City of Edmonton Green Network Strategy Breathe – maps	O2 Planning + Design	July 2016
City of St Albert Natural Areas Assessment	Spencer Environmental Management Services Ltd.	2015 Update
Directive 026: Setback Requirements for Oil Effluent Pipelines	Alberta Energy Regulator	September 2005
Ecological Assessment – Final Draft	Spencer Environmental Management Services Ltd. And ISL Engineering	May 2019
Edmonton Garrison Heliport	Government of Canada	May 2019
Edmonton Metropolitan Region Growth Plan	Edmonton Metropolitan Region Board	October 2017
EMRGP Sturgeon Valley Special Study Area Policies Ministerial Order	Alberta Municipal Affairs	March 2019
Goodridge Corners Neighbourhood Area Structure Plan Bylaw 16714	Stantec	February 2014
Guidelines for New Development in Proximity to Railway Operations	Dialog and J.E. Coulter Associates Ltd.	May 2013
Historical Resources Study – Final Draft	Turtle Island Cultural Resource Management	April 2019
Infrastructure Servicing Study – Final Draft	ISL Engineering	May 2019
Initial Community Land Needs Assessment – Preliminary Draft City of St. Albert Growth Management Study	ISL Engineering, Metro Economics and Watson & Associates Economists Ltd.	May 2019
Joint Infrastructure Review – Sturgeon County and City of St Albert	Urban Systems	June 2015
Land Use Planning, Rail Proximity and Public Safety	CPCS	September 2017
Open Space Plan for Sturgeon County	EDA Collaborative Inc. and Sierra Planning and Management	February 2016

Title	Author	Date
Starky Road Functional Planning Study	ISL Engineering	April 2013
Sturgeon County 2019 Census	Sturgeon County	2019
Sturgeon County Commercial Development	MXD and WSP	December 2019
Sturgeon County Infrastructure Master Plan	ISL Engineering	2020
Sturgeon County Municipal Development Plan Bylaw 1313/13	Sturgeon County	April 2014
Sturgeon Transportation Analysis	ISL Engineering	January 30 2014
Sturgeon Valley Area Structure Plan (Draft)	Sturgeon County	March 2013
Sturgeon Valley Area Structure Plan Bylaw 882/99	Armin A Preiksaitis & Associates Ltd	September 1999
Sturgeon Valley Area Structure Plan Transportation Plan (Draft)	ISL Engineering	February 2013
Sturgeon Valley Ecological Land Classification	Pedocan Evaluation Ltd.	March 1999
Sturgeon Valley Fire Protection Study	Sameng Inc.	December 2017
Sturgeon Valley Near – Term Sanitary Servicing	Sameng Inc.	September 2010
Sturgeon Valley Preliminary Stormwater Analysis	Sameng Inc.	January 2011
Sturgeon Valley Stormwater Update	Sameng Inc.	June 2013
Sturgeon Valley Transportation Off-site Levy	ISL Engineering	January 2013
Sturgeon Valley Vision Transportation Planning Study	Stantec	May 2009
Transportation Requirements – 8000, 12000, 16000 and 20000 Population Scenario	ISL Engineering	September 2012
Transportation Study – Final Draft	ISL Engineering	May 2019

Appendix B:

CFB HELICOPTER REGULATIONS

APPENDIX B: CFB HELICOPTER REGULATIONS

CANADA

PRIVY COUNCIL • CONSEIL PRIVÉ

P.C. 2004-431
April 22, 2004

Whereas, pursuant to subsection 5.5(1) of the *Aeronautics Act*, a copy of the proposed *Edmonton Garrison Heliport Zoning Regulations*, substantially in the annexed form, was published in two successive issues of a newspaper serving the area to which the proposed Regulations relate, namely on March 28 and 29, 2002, and in two successive issues of the *Canada Gazette*, Part I, on March 30 and April 6, 2002, and a reasonable opportunity was afforded to interested persons to make representations to the Minister of National Defence with respect to the proposed Regulations;

And whereas the proposed Regulations would prevent lands adjacent to or in the vicinity of the Edmonton Garrison Heliport from being used or developed in a manner that is, in the opinion of the Minister of National Defence, incompatible with the safe operation of an airport or aircraft;

Therefore, Her Excellency the Governor General in Council, on the recommendation of the Minister of National Defence, pursuant to paragraph 5.4(2)(*b*) of the *Aeronautics Act*, hereby makes the annexed *Edmonton Garrison Heliport Zoning Regulations*.

CERTIFIED TO BE A TRUE COPY–COPIE CERTIFIÉE CONFORME

CLERK OF THE PRIVY COUNCIL–LE GREFFIER DU CONSEIL PRIVÉ

CANADA

PRIVY COUNCIL • CONSEIL PRIVÉ

C.P. 2004-431
22 avril 2004

Attendu que, conformément au paragraphe 5.5(1) de la *Loi sur l'aéronautique*, le projet de règlement intitulé *Règlement de zonage de l'héliport de la garnison d'Edmonton*, conforme en substance au texte ci-après, a été publié dans deux numéros consécutifs d'un journal desservant la zone visée, soit les 28 et 29 mars 2002, ainsi que dans deux numéros consécutifs de la *Gazette du Canada* Partie I les 30 mars et 6 avril 2002 et que les intéressés ont ainsi eu la possibilité de présenter leurs observations à cet égard au ministre de la Défense nationale;

Attendu que le projet de règlement vise à empêcher tout usage ou aménagement des biens-fonds situés aux abords ou dans le voisinage de l'héliport de la garnison d'Edmonton, incompatible, selon le ministre de la Défense nationale, avec la sécurité d'utilisation des aéronefs ou d'exploitation des aéroports,

À ces causes, sur recommandation du ministre de la Défense nationale et en vertu de l'alinéa 5.4(2)*b*) de la *Loi sur l'aéronautique*, Son Excellence la Gouverneure générale en conseil prend le *Règlement de zonage de l'héliport de la garnison d'Edmonton*, ci-après.

CERTIFIED TO BE A TRUE COPY–COPIE CERTIFIÉE CONFORME

CLERK OF THE PRIVY COUNCIL–LE GREFFIER DU CONSEIL PRIVÉ

EDMONTON GARRISON HELIPORT ZONING REGULATIONS

INTERPRETATION

1. The definitions in this section apply in these Regulations.

"approach surfaces" means the imaginary inclined planes that extend upward and outward from the heliport boundary or from each end of a strip and are described in Part 3 of the Schedule. (*surfaces d'approche*)

"bird hazard area" means the area adjacent to or in the vicinity of the heliport the outer limits of which are described in Part 5 of the schedule. (*zone de péril aviaire*)

"heliport" means the Edmonton Garrison Heliport, in the Municipal District of Sturgeon, in the Province of Alberta. (*héliport*)

"heliport zoning reference point" means the point that is 677 m above sea level and is described in Part 1 of the schedule. (*point de repère du zonage de l'héliport*)

"Plan" means the Department of Public Works and Government Services Plan, Edmonton Garrison Heliport, No. E 3104, dated December 31, 2001. (*plan*)

"strip" means a rectangular portion of the landing area of the heliport, including the runway, that is prepared for the take-off and landing of aircraft in a particular direction and is described in Part 2 of the schedule. (*bande*)

APPLICATION

2. These Regulations apply in respect of all lands, other than lands that form part of the heliport but including public road allowances, that are adjacent to or in the vicinity of the heliport, the outer limits of which lands are described in Part 4 of the schedule.

BUILDING RESTRICTION

3. No person shall place, erect or construct, or permit to be placed, erected or constructed, on any lands in respect of which these Regulations apply any building, structure or object, or an addition to any existing building, structure or object, the highest point of which would exceed an approach surface in elevation at the location of the building, structure or object.

NATURAL GROWTH

4. No owner or lessee of any lands in respect of which these Regulations apply shall permit an object of natural growth on the lands to exceed in elevation an approach surface that projects immediately over and above the surface of the lands at the location of the object.

ELECTRONIC COMMUNICATIONS

5. No owner or lessee of any lands in respect of which these Regulations apply shall permit the lands or any part of them to be used in a manner that may cause interference with aeronautical communications.

BIRD HAZARDS

6. (1) Subject to subsection (2), in order to reduce bird hazards to aviation, no owner or lessee of any lands in the bird hazard area shall permit

(*a*) the lands or any part of them, other than any lands described in Division 1 of Part 6 of the schedule, to be used as a site for sanitary land fill;

(*b*) the lands or any part of them to be used as a site for food garbage disposal;

(*c*) the lands or any part of them, other than lands described in Division 2 of Part 6 of the schedule, to be used as a site for a sewage lagoon; or

(*d*) the lands or any part of them, other than lands described in Divisions 3 and 4 of Part 6 of the schedule, to be used as a site for an open water reservoir.

(2) An owner or lessee of lands in the bird hazard area, other than lands described in Divisions 3 and 4 of Part 6 of the schedule, may permit the lands or any part of them to be used as a site for an open water reservoir if

(*a*) the lands are used as an open water reservoir for a period of 48 hours or less;

(*b*) the lands are used as an open water reservoir for a period of more than 48 hours, the owner or lessee ensures that all reasonable measures are taken in the design, construction and use of the reservoir, as well as in all other respects, to minimize bird hazards to aviation and the design and construction of the reservoir and the manner in which it is to

be used as an open water reservoir have been approved as minimizing bird hazards to aviation by

(i) the National Defence Airport and Heliport Zoning Manager, where the total surface area of the reservoir is greater than 2.5 ha but less than or equal to 6 ha, and

(ii) the Minister, where the total surface area of the reservoir is greater than 6 ha; or

(c) the open water reservoir consists of dry ponds, the owner or lessee ensures that all reasonable measures are taken to minimize bird hazards to aviation and, where the lands are used as an open water reservoir for a period of more than 48 hours more than once per calendar year, the measures have been approved by the Minister as minimizing bird hazards to aviation.

7. No owner or lessee of any lands described in Part 7 of the schedule shall modify or improve the lands or any part of them in a manner that increases their attractiveness to birds.

REPEAL

8. The *Namao Airport Zoning Regulations, 1990*[1] are repealed.

[1] SOR/91-301

SCHEDULE
(Sections 1, 2, 6 and 7)

PART 1

DESCRIPTION OF THE HELIPORT ZONING REFERENCE POINT

The heliport zoning reference point, shown on Sheet No. 54 of the Plan, is a point located at the intersection of the centre line of runway 11-29 with the centre line of runway 02-20.

PART 2

DESCRIPTION OF THE STRIPS

The strips located within the heliport and shown on the Plan are described as follows:

(*a*) the strip associated with runway 02-20 is 300 m in width, 150 m being on each side of the centre line of the runway, and 2,192.8 m in length; and

(*b*) the strip associated with runway 11-29 is 300 m in width, 150 m being on each side of the centre line of the runway, and 4,387.3 m in length.

PART 3

DESCRIPTION OF THE APPROACH SURFACES

The approach surfaces associated with the heliport and shown on the Plan are described as follows:

(*a*) an imaginary inclined plane extending upward and outward from the intersection of imaginary vertical planes passing through the heliport boundary, with imaginary horizontal planes lying 2 m above the general ground level of the heliport boundary at any point thereon, to a maximum elevation of 792 m above sea level at the outer limit of the approach surface, being 115 m, more or less, above the assigned elevation of the heliport zoning reference point, such outer limit being a circle of radius 5,000 m centred on the heliport zoning reference point;

(*b*) a surface abutting the end of the strip associated with runway approach 11 consisting of an inclined plane having a ratio of 1 m measured vertically to 20 m measured horizontally, rising to an intersection with the outer limit of the approach surface described in paragraph (*a*), thence said approach surface slopes upward at the ratio of 1 m measured vertically to 50 m measured horizontally, rising to an imaginary horizontal line drawn at right angles to the projected centre line of the strip and distant 15,000 m measured horizontally from the end of the strip, the outer ends of the imaginary horizontal line being 2,400 m from the projected centre line, said imaginary horizontal line being 379.4 m measured vertically above the assigned elevation at the end of the strip;

(*c*) a surface abutting the end of the strip associated with runway approach 29 consisting of an inclined plane having a ratio of 1 m measured vertically to 20 m measured horizontally, rising to an intersection with the outer limit of the approach surface described in paragraph (*a*), thence said approach surface slopes upward at the ratio of 1 m measured vertically to 50 m measured horizontally, rising to an imaginary horizontal line drawn at right angles to the projected centre line of the strip and distant 15,000 m measured horizontally from the end of the strip, the outer ends of the imaginary horizontal line being 2,400 m from the projected centre line, said imaginary horizontal line being 389 m measured vertically above the assigned elevation at the end of the strip;

(*d*) a surface abutting the end of the strip associated with runway approach 02 consisting of an inclined plane, having a ratio of 1 m measured vertically to 20 m measured horizontally, rising to an intersection with the outer limit of the approach surface described in paragraph (*a*), thence said approach surface slopes upward at the ratio of 1 m measured vertically to 50 m measured horizontally, rising to an imaginary horizontal line drawn at right angles to the projected centre line of the strip and distant 15,000 m measured horizontally from the end of the strip, the outer ends of the imaginary horizontal line being 2,400 m from the projected centre line, said imaginary horizontal line being 403.3 m measured vertically above the assigned elevation at the end of the strip; and

(*e*) a surface abutting the end of the strip associated with runway approach 20 consisting of an inclined plane having a ratio of 1 m measured vertically to 20 m measured horizontally, rising to an intersection with the outer limit of the approach surface described in paragraph (*a*), thence said approach surface slopes upward at the ratio of 1 m measured vertically to 50 m measured horizontally, rising to an imaginary

horizontal line drawn at right angles to the projected centre line of the strip and distant 15,000 m measured horizontally from the end of the strip, the outer ends of the imaginary horizontal line being 2,400 m from the projected centre line, said imaginary horizontal line being 430.9 m measured vertically, above the assigned elevation at the end of the strip.

PART 4

DESCRIPTION OF THE OUTER LIMITS OF THE LANDS IN RESPECT OF WHICH THESE REGULATIONS APPLY

Commencing at the intersection of a line drawn South Easterly on an assumed bearing of South 36°44'43" East from the South West corner of the strip associated with runway 11-29, as described in Part 2 of this schedule, with the South limit of Road Plan 3344 P.X. in NE ¼ 36-53-24-4; thence Westerly along the said South limit of Road Plan 3344 P.X to the East limit of NW ¼ 36-53-24-4; thence Northerly along said East limit to the North East corner of said Quarter; thence Westerly along the North limit of the said Quarter, and continuing Westerly along the North limits of NE ¼ 35, NW ¼ 35, NE ¼ 34 and NW ¼ 34, of the said Township and Range, and across intervening Road Allowances, to the North East corner of NE ¼ 33-53-24-W4M; thence Westerly along the North limit of the said Quarter to the North West corner of Lot 1 P.U.L., Plan 902 1665; thence Southerly along the West limit of the said Lot to its intersection with the South limit of 167 Avenue, Plan 902 1590; thence Westerly along the South limit of 167 Avenue, said Plan, to its intersection with the North limit of NW ¼ 33-52-24-W4M; thence Westerly along the North limit of the said Quarter, and continuing Westerly across the intervening Road Allowance and along the North limit of NE ¼ 32-53-24-W4M, to the North East corner of NW ¼ 32-53-24-W4M; thence Westerly along the North limit of said Quarter to its intersection with the South limit of Castle Downs Road, Plan 3867 T.R.; thence Westerly and South Westerly along the South and South East limits of Castle Downs Road and its production across 109 Street, to its intersection with the production Southerly of the West limit of 112 Street, Plan 782 2186; thence Northerly along the said West limit and its production Southerly, and continuing Northerly along the West limit of 112 Street, Plan 782 1682, to the South limit of 167 Avenue, Plan 782 1682; thence Westerly along the South limit of 167 Avenue, Plan 782 1682 to the intersection thereof with a line drawn South Westerly on a bearing of South 36°12'39" West from the South East corner of the strip associated with runway 02-20, as described in Part 2 of this schedule; thence South Westerly along said bearing South 36°12'39" West to a point distant 15,167.81 m South Westerly from the said South East corner of the strip associated with runway 02-20; thence

North Westerly on a bearing of North 45°15'30" West a distance of 4,800 m; thence North Easterly on a bearing of North 53°16'20" East to the intersection with a circle of radius 8,000 m centred on the heliport zoning reference point; thence in a generally Northerly direction along said circle of radius 8,000 m to the intersection with a line drawn North Westerly on a bearing of North 53°48'25" West from the North Westerly corner of the strip associated with runway 11-29, as described in Part 2 of this schedule; thence North Westerly on said bearing North 53°48'25" West to a point distant 15,167.81 m North Westerly from the said North Westerly corner of the strip associated with runway 11-29; thence North Easterly on a bearing of North 44°43'26" East a distance of 4,800 m; thence South Easterly on a bearing of South 36°44'43" East to the intersection with the said circle of radius of 8,000 m; thence in a generally Easterly direction along said circle of radius of 8,000 m to the intersection with a line drawn North Easterly on a bearing of North 36°12'39" East from the North West corner of the strip associated with runway 02-20, as described in Part 2 of this schedule; thence North Easterly on said bearing North 36°12'39" East to a point distant 15,167.81 m from the said North West corner of the strip associated with runway 02-20; thence South Easterly on a bearing of South 45°15'30" East a distance of 4,800 m; thence South Westerly on a bearing of South 53°16'20" West to the intersection with said circle of radius of 8,000 m; thence in a generally Southerly direction along said circle of radius of 8,000 m to the intersection with a line drawn South Easterly from the South East corner of the strip associated with runway 11-29 on a bearing South 53°48'25" East; thence South Easterly on said bearing South 53°48'25" East to a point distant 15,167.81 m South Easterly from the said South East corner of the strip associated with runway 11-29; thence South Westerly on a bearing of South 44°43'26" West a distance of 4,800 m; thence North Westerly along the said line drawn South Easterly from the South West corner of the strip associated with runway 11-29, as described in Part 2 of this schedule, to the point of commencement.

PART 5

DESCRIPTION OF THE OUTER LIMITS OF THE BIRD HAZARD AREA

Commencing at the intersection of a circle of radius 8,000 m, centred on the heliport zoning reference point, with the North limit of NW ¼ 32-53-23-W4M; thence Westerly along the said North limit, and across the intervening Road Allowance, to the North East corner of NE ¼ 31-53-23-W4M; thence Westerly along the North limit of the said Quarter to its intersection with the South limit of Road Plan 4838 P.X.; thence Westerly along the South limit of Road Plan 4838 P.X. to the East limit of Road Plan 6812 T., and across said Road Plan to the South limit of Road

Plan 3344 P.X.; thence Westerly along the South limit of Road Plan 3344 P.X., across intervening Railway Right-of-way, Plan 4514 A.Q. and the Road Allowance, to the South limit of said Road Plan in NE ¼ 36-53-24-W4M; thence Westerly along said South limit and its extension, to the East limit of NW ¼ 36-53-24-W4M; thence Northerly along said East limit to the North East corner of the said Quarter; thence Westerly along the North limit of the said Quarter, and continuing Westerly along the North limits of NE ¼ 35, NW ¼ 35, NE ¼ 34 and NW ¼ 34 of the said Township and Range, and across intervening Road Allowances, to the North East corner of NE ¼ 33-53-24-W4M; thence Westerly along the North limit of the said Quarter to the North West corner of Lot 1 P.U.L., Plan 902 1665; thence Southerly along the West limit of the said Lot to its intersection with the South limit of 167 Avenue, Plan 902 1590; thence Westerly along the South limit of 167 Avenue, said Plan, to its intersection with the North limit of NW ¼ 33-53-24-W4M; thence Westerly along the North limit of the said Quarter, and continuing Westerly across the intervening Road Allowance and along the North limit of NE ¼ 32-53-24-W4M, to the North East corner of NW ¼ 32-53-24-W4M; thence Westerly along the North limit of the said Quarter to its intersection with the South limit of Castle Downs Road, Plan 3867 T.R.; thence Westerly and South Westerly along the South and South East limit of Castle Downs Road and its production across 109 Street, to its intersection with the production Southerly of the West limit of 112 Street, Plan 782 2186; thence Northerly along the said West limit and its production Southerly, and continuing Northerly along the West limit of 112 Street, Plan 782 1682, to the South limit of 167 Avenue, Plan 782 1682; thence Westerly along the South limit of 167 Avenue, Plan 782 1682, and continuing Westerly along the said South limit as shown on Plans 772 2130, 782 2968, 782 2562 and 842 1192, to the point of deflection Southerly in the North limit of Lot 166, Block 57, Plan 842 1192; thence Westerly in a straight line to the North East corner of the NE ¼ 36-53-25-W4M; thence Westerly in a straight line to the North East corner of the NE ¼ 36-53-25-W4M; thence Westerly along the North limit of the said Quarter to the North West corner thereof; thence Southerly along the West limit of the said Quarter to its intersection with the North limit of Lot A, Plan 1966 M.C.; thence Westerly along the said North limit to its intersection with the said circle of radius 8,000 m, centred on the heliport zoning reference point; thence along the said circle to the point of commencement.

PART 6

DESCRIPTION OF EXCLUDED LANDS LOCATED WITHIN THE BIRD HAZARD AREA AND IDENTIFIED ON SHEET NOS. 1 TO 110 OF THE PLAN

DIVISION 1

EDMONTON GARRISON HELIPORT ZONING REGULATIONS

EDMONTON GARRISON HELIPORT
(NAMAO SITE) NEAR EDMONTON, ALBERTA

RÈGLEMENT DE ZONAGE DE L'HÈLIPORT DE LA GARNISON D'EDMONTON

HÉLIPORT DE LA GARNISON D'EDMONTON
(SITE NAMAO) PRÈS D'EDMONTON, ALBERTA

Public Works & Government Services Canada
Real Estate
File: 5555 - E9/290-1
Travaux public & Service gouvernementaux Canada
Biens immobiliers
Dossier: 5555 - E9/290-1

THIS IS A PLAN OF CERTAIN LANDS IDENTIFED AS SHEET NUMBERS 1 TO 110 INCLUSIVE, SHOWN COLOURED THEREON AND A DESCRIPTION OF WHICH IS ATTACHED THERETO, WHICH ARE AFFECTED BY ZONING REGULATIONS WITH RESPECT TO EDMONTON GARRISON HELIPORT (NAMAO SITE) NEAR EDMONTON, ALBERTA.

VOICI UN PLAN DE CERTAINS TERRAINS IDENTIFIÉS PAR LES NUMÉROS DE FEUILLE 1 À 110 INCLUSIVEMENT, QUI APPARAISSENT EN COULEUR AUX PRÉSENTES ET POUR LESQUELS UNE DESCRIPTION EST JOINTE; LES TERRAINS SONT ASSUJETTIS AUX RÈGLEMENTS DE ZONAGE QUI S'APPLIQUENT À L'HÉLIPORT DE LA GARNISON D'EDMONTON (SITE NAMAO) PRÈS D'EDMONTON EN ALBERTA.

THE SAID PLAN AND DESCRIPTION BEING DEPOSITED UNDER THE AUTHORITY OF THE AERONAUTICS ACT, CHAPTER A-2, S.C. 1985.

LES PLANS ET LA DESCRIPTION SONT SOUMIS EN VERTU DE LA LOI SUR L'AÉRONAUTIQUE, L.C. DE 1985, CHAPITRE A-2.

DATED AT OTTAWA THIS 14th DAY OF Feb, 2005.

OTTAWA, EN DATE DU JOUR DE ,2005.

HER MAJESTY THE QUEEN (CANADA)
SA MAJESTÉ LA REINE DU CANADA

DEPARTMENT OF NATIONAL DEFENCE
MINISTÈRE DE LA DÉFENSE NATIONALE

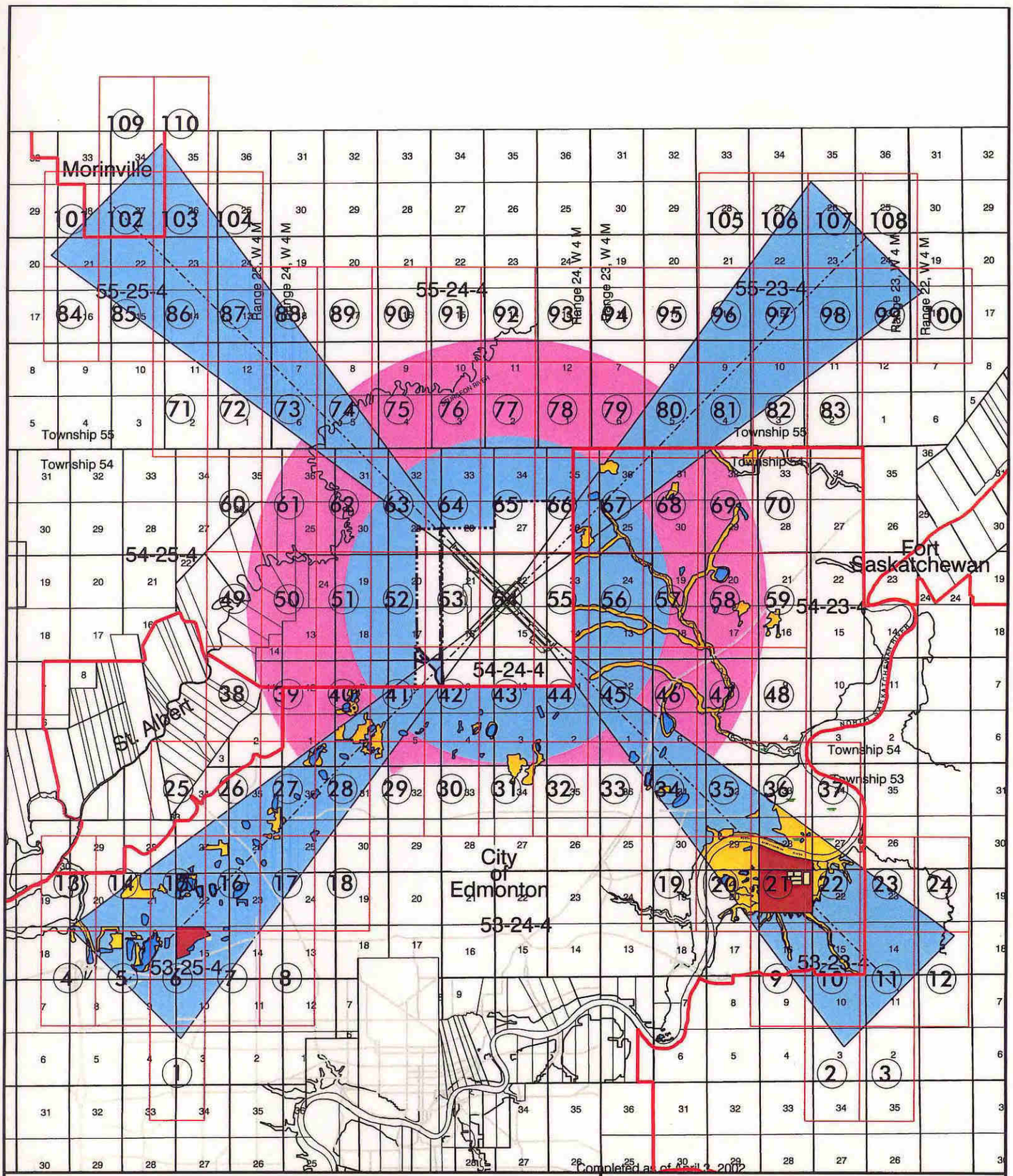
DIRECTOR GENERAL - CONSTRUCTION AND PROPERTY SERVICES
DIRECTEUR GÉNÉRAL - CONSTRUCTION ET SERVICES IMMOBILIERS

Ken Weimer
ALBERTA LAND SURVEYOR
ARPENTEUR-GÉOMÈTRE DE L'ALBERTA

NOTE/NOTA:

DISTANCES ARE IN METRES AND DECIMALS THEREOF.
ALL ELEVATIONS ARE GEODETIC.
BEARINGS SHOWN HEREON ARE 3TM, NAD83, ZONE 23.
INFORMATION CURRENT TO DECEMBER, 2001.

LES DISTANCES SONT EN MÈTRES AINSI QUE LES POINTS DÈCIMAUX.
TOUTES LES ÈLÈVATIONS SONT GÉODÉTIQUES.
TOUS LES RELÈVEMENTS DE RÉFÉRENCE GÉODÉSIQUE SONT DU SYSTÈM, MT 3°, ZONE 23, NAD 83.
L'INFORMATION EST À JOUR JUSQU'À DÈCEMBRE 2001.



LEGEND/LÉGENDE:

BIRD HAZARD AREA COLOURED RED
ZONE DE PÉRIL AVIAIRE - ROUGE

APPROACH SURFACES COLOURED LIGHT BLUE
SURFACE D'APPROCHE - BLEU PALE

Total Bird Hazard Area
Zone de péril aviaire

STORMWATER PONDS COLOURED DARK BLUE
LES RÉSERVOIRS À CIEL OUVERT SONT EN BLEU FONCÉ.

ENVIRONMENTALLY SENSITIVE/SIGNIFICANT
NATURAL AREAS COLOURED GOLDEN

CITY & PRIVATELY-OWNED LAND FILL FACILITIES
COLOURED BROWN

SEWAGE LAGOON AREAS COLOURED YELLOW

EDMONTON GARRISON BOUNDARIES ARE SHOWN THUS
LES LIMITES DE LA GARNISON D'EDMONTON SONT
MARQUÉES COMME SUIT

0 1000 2000 4000 6000 8000 10000 12000
Metres

Public Works & Government Services Canada /
Travaux publics et Services gouvernementaux

Real Property Services Branch
Direction des services immobiliers

KEY PLAN/
PLAN CLEF

HELIPORT ZONING REGULATIONS / RÈGLEMENT DE ZONAGE DE L'HÉLIPORT

Edmonton Garrison Heliport (Namao Site) Near Edmonton, Alberta

Héliport de la Garnison d'Edmonton (Site Namao) près d'Edmonton, Alberta

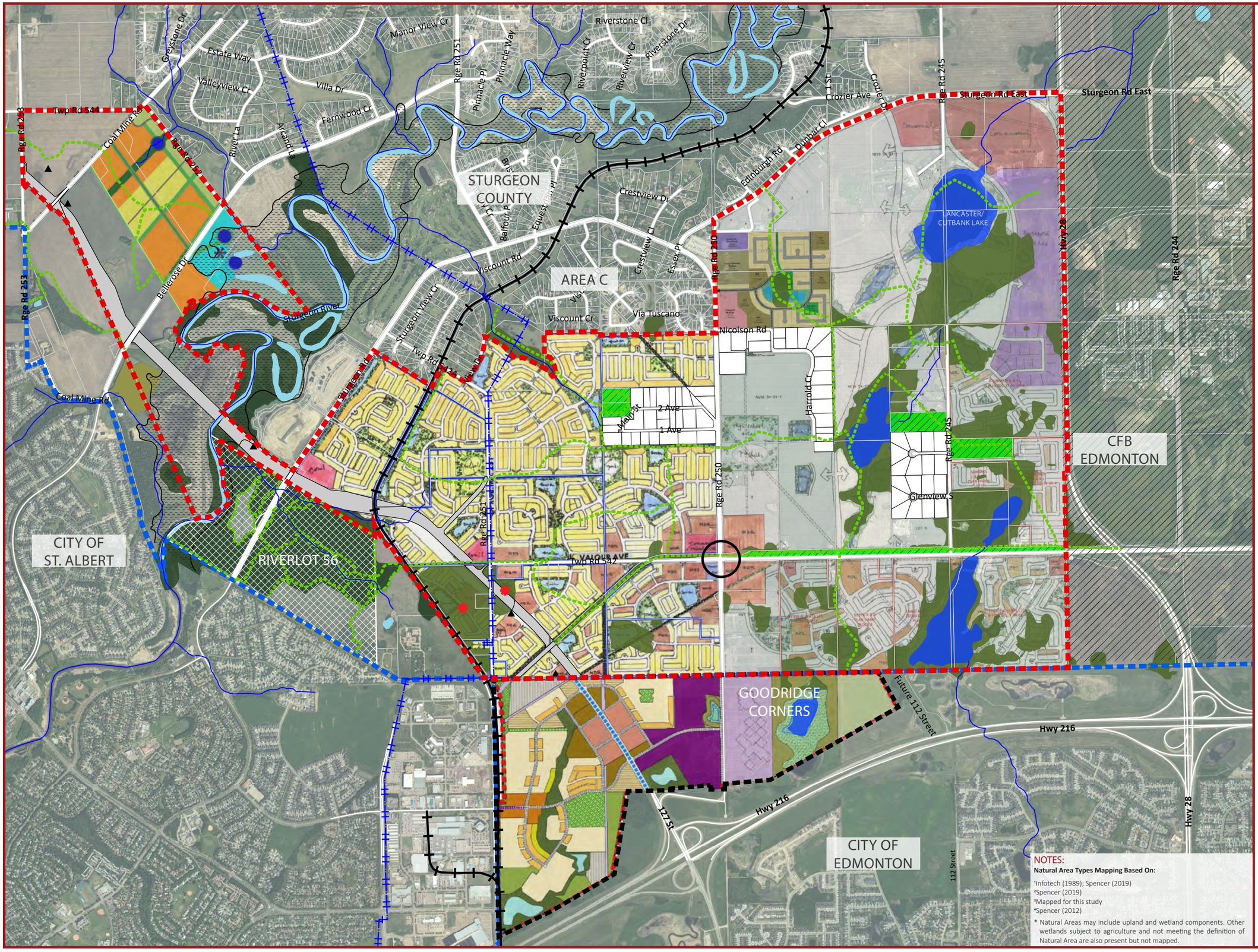
FILE/DOSSIER: 5555-E9/290-1 Date: May/mai , 1998

E 3104

Appendix D:

CONCEPTS

APPENDIX D: CONCEPTS



KEY PLAN:

Sturgeon County - Sturgeon Valley Growth Framework

LEGEND:

- ASP Boundary
- Municipal Boundary
- Goodridge Corners Boundary
- Existing Parcels
- CFB Edmonton Boundary
- Provincial Park (River Lot 56)
- Existing Country Residential
- Existing Open Space
- Proposed Agriculture Holdings
- Proposed Residential (min density 35 du/nrha)
- Proposed Mixed-Use (min density 35 du/nrha)
- Proposed Commercial
- Proposed Light Industrial (Industry to Support CFB Base)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Trails (Source: Municipal GIS Data)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- Proposed Arterial Roadway (40m ROW)
- Proposed Collector Roadway (22m ROW)
- Proposed Local Roadway (22m ROW)
- Existing Power Transmission
- FWMIS Watercourses
- Potential Transit Hub

Natural Areas Types* (Potential Environmental Reserve Lands)

- Uncategorized NA[3]
- Uncategorized NA[2]
- Environmentally Sensitive Area[1]
- Prominent FWMIS Water Bodies (Potential for Public Lands Claim)
- Previously Mapped Woodland[4]
- Wetland[4]

DATA SOURCES:
Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Alberta Environment & Parks (AEP)
Alberta Energy Regulator (AER)
Government of Canada - Open Data

CLIENT:
STURGEON COUNTY

TITLE:
Consolidated Option – Landowners/Developers Input

PROJECT: C19-048
DATE: 08/04/2020

DESIGNED: Aman Jhawer
CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

0 0.5 1.0 KM

NOTES:
Natural Area Types Mapping Based On:

[1]Infotech (1989); Spencer (2019)
[2]Spencer (2019)
[3]Mapped for this study
[4]Spencer (2012)

* Natural Areas may include upland and wetland components. Other wetlands subject to agriculture and not meeting the definition of Natural Area are also present but not mapped.

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780.482.3700

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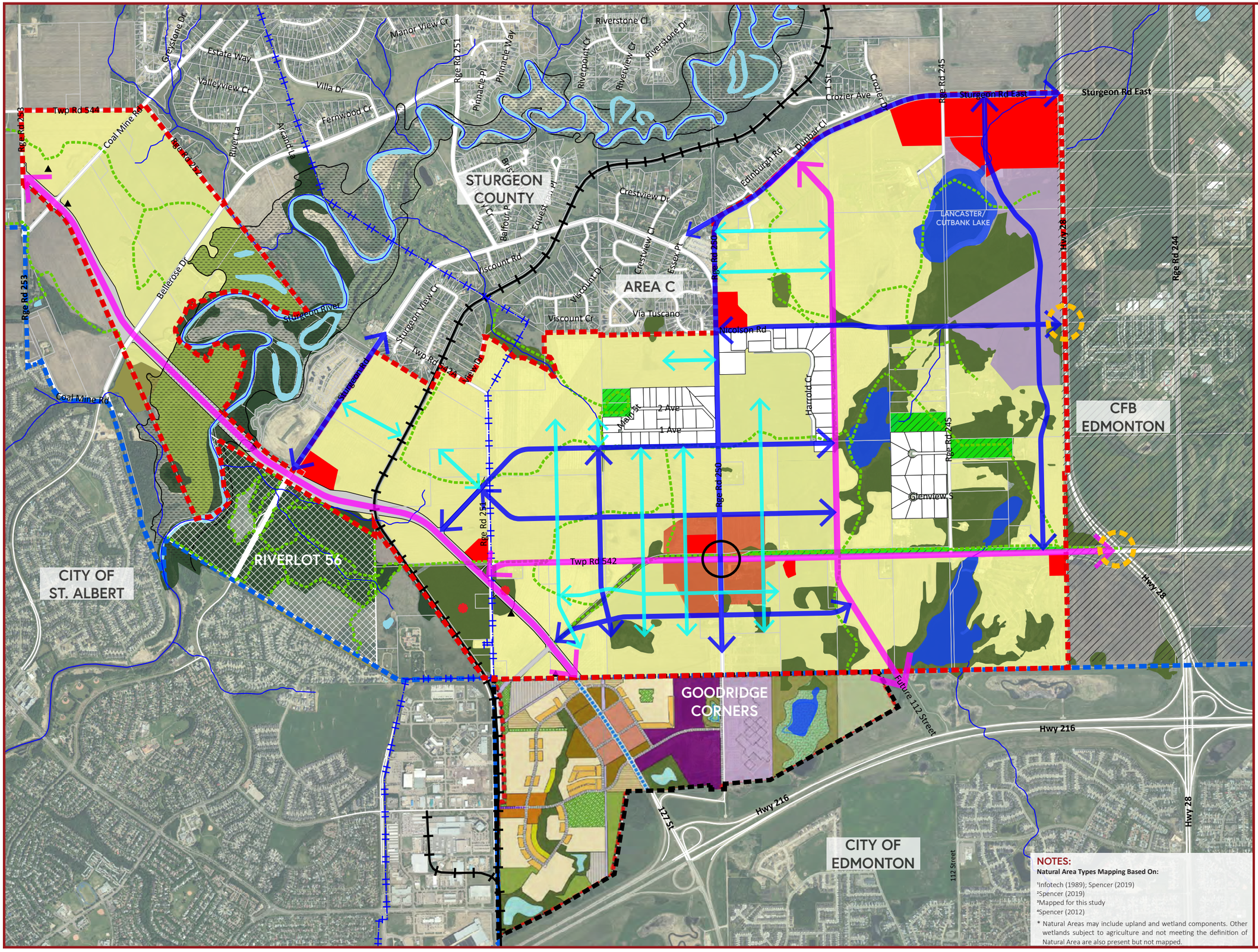

KEY PLAN:

Sturgeon County - Sturgeon Valley Growth Framework

LEGEND:

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- Existing Parcels
- CFB Edmonton Boundary
- Provincial Park (River Lot 56)
- Existing Country Residential
- Existing Open Space
- Proposed Agriculture Holdings
- Proposed Residential (min density 35 du/nrha)
- Proposed Mixed-Use (min density 35 du/nrha)
- Proposed Commercial
- Proposed Light Industrial (Industry to Support CFB Base)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Proposed Arterial Roadway (40m ROW)
- Proposed Collector Roadway (22m ROW)
- Proposed Local Roadway (22m ROW)
- Trails (Source: Municipal GIS Data)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- Existing Power Transmission
- FWMIS Watercourses
- Potential Transit Hub
- Future New Access to Hwy 28

Natural Areas Types* (Potential Environmental Reserve Lands)

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- Wetland[4]

DATA SOURCES:

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NOTES:

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CLIENT: STURGEON COUNTY

TITLE: Consolidated Option – Landowners/Developers Input

PROJECT: C19-048 DATE: 08/04/2020

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

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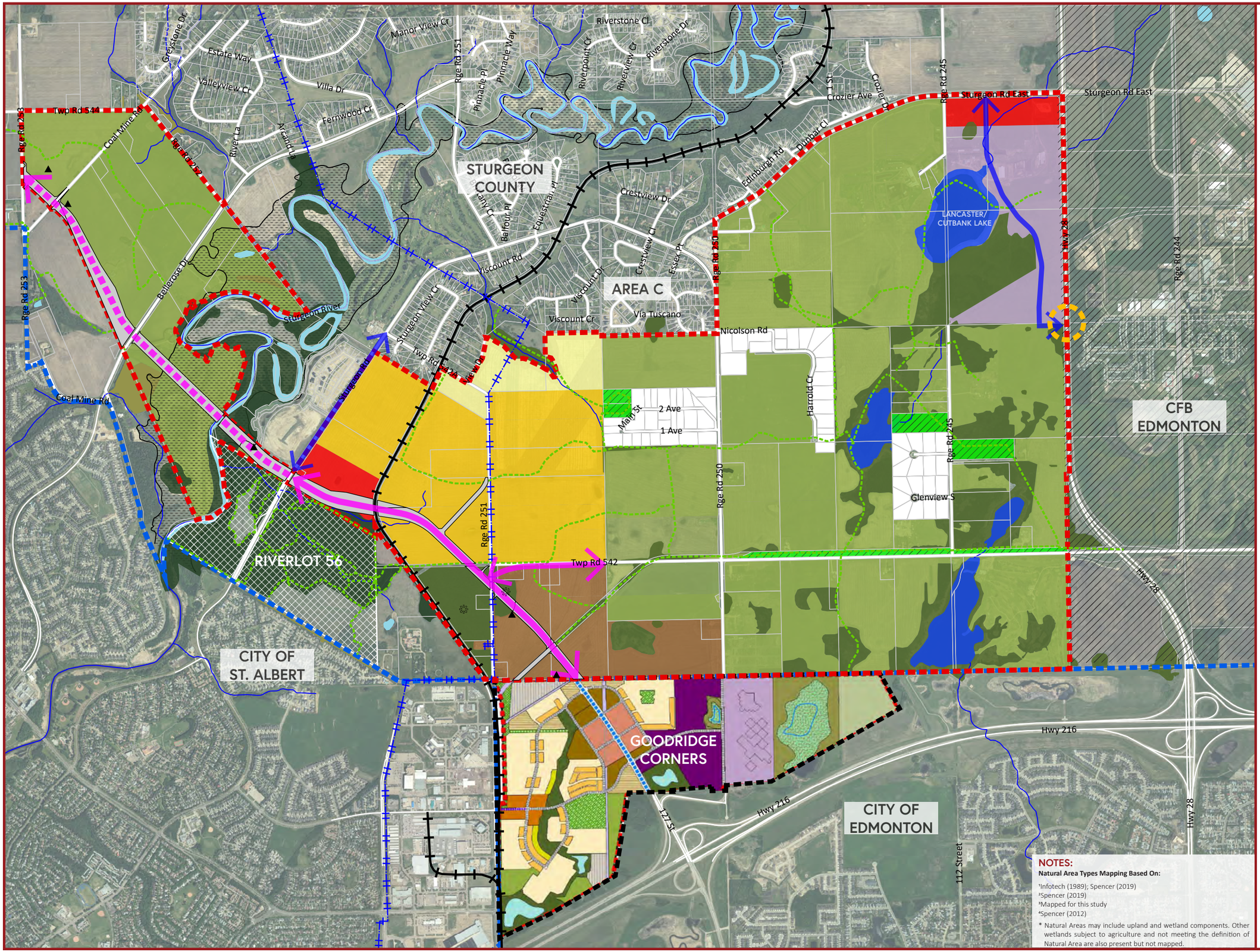

KEY PLAN:

Sturgeon County - Sturgeon Valley Growth Framework

LEGEND:

- ASP Boundary
- Municipal Boundary
- Goodridge Corners Boundary
- Existing Parcels
- CFB Edmonton Boundary
- Provincial Park (River Lot 56)
- Existing Country Residential
- Existing Open Space
- Proposed Agriculture Holdings
- Proposed Residential (max density 20 du/nrha)
- Proposed Residential (min density 35 du/nrha)
- Proposed Residential (min 40 density du/nrha)

  Overall Density 35 du/nrha
- Proposed Commercial
- Proposed Light Industrial (Industry to Support CFB Base)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- Trails (Source: Municipal GIS Data)
- Future Arterial Roadway Extension
- Proposed Arterial Roadway (40m ROW)
- Proposed Collector Roadway (22m ROW)
- Existing Power Transmission
- FWMIS Watercourses
- Future New Access to Hwy 28

Natural Areas Types* (Potential Environmental Reserve Lands)

- Uncategorized NA[3]
- Uncategorized NA[2]
- Environmentally Sensitive Area[1]
- Prominent FWMIS Water Bodies (Potential for Public Lands Claim)
- Previously Mapped Woodland[4]
- Wetland[4]

DATA SOURCES:

Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Alberta Environment & Parks (AEP)
Alberta Energy Regulator (AER)
Government of Canada - Open Data

CLIENT: STURGEON COUNTY

TITLE:

Consolidated Option – 30 Years

PROJECT: C19-048 DATE: 24/06/2020

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

0 0.5 1.0 KM

NOTES:

Natural Area Types Mapping Based On:

[1]Infotech (1989); Spencer (2019)
[2]Spencer (2019)
[3]Mapped for this study
[4]Spencer (2012)

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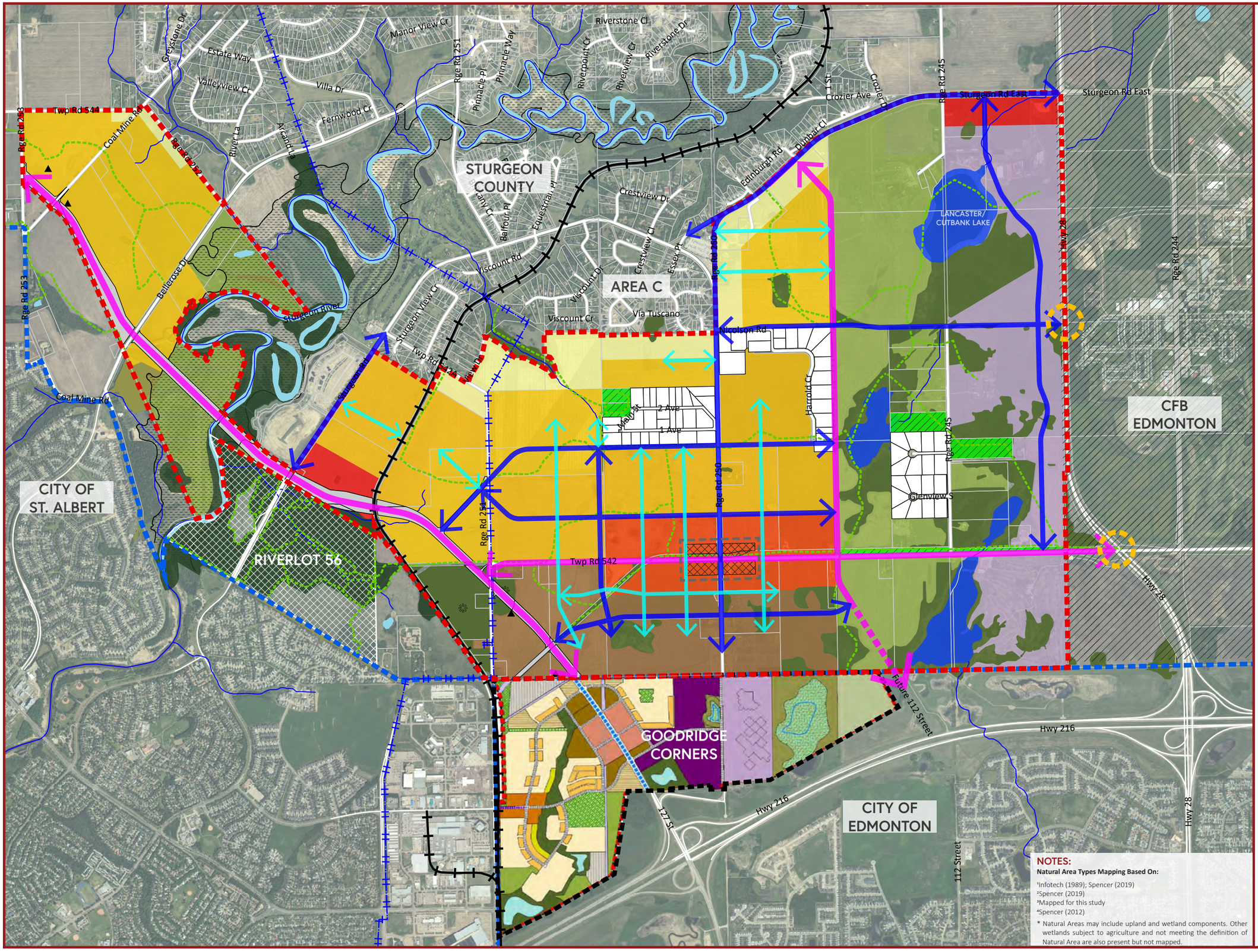

KEY PLAN:

Sturgeon County - Sturgeon Valley Growth Framework

LEGEND:

- ASP Boundary
- Municipal Boundary
- Goodridge Corners Boundary
- Existing Parcels
- Potential Transit Hub
- CFB Edmonton Boundary
- Provincial Park (River Lot 56)
- Existing Country Residential
- Existing Open Space
- Proposed Agriculture Holdings
- Proposed Residential (max density 20 du/nrha)
- Proposed Residential (min density 35 du/nrha)
- Proposed Residential (min 40 density du/nrha)
- Proposed Residential (min density 42 du/nrha)
- Proposed Mixed-Use (min density 42 du/nrha)

  Overall Density 35 du/nrha
- Proposed Commercial
- Proposed Light Industrial (Industry to Support CFB Base)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- Trails (Source: Municipal GIS Data)
- Future Arterial Roadway Extension
- Proposed Arterial Roadway (40m ROW)
- Proposed Collector Roadway (22m ROW)
- Proposed Local Roadway (22m ROW)
- Existing Power Transmission
- FWMIS Watercourses
- Future New Access to Hwy 28

Natural Areas Types* (Potential Environmental Reserve Lands)

- Uncategorized NA[3]
- Uncategorized NA[2]
- Environmentally Sensitive Area[1]
- Prominent FWMIS Water Bodies (Potential for Public Lands Claim)
- Previously Mapped Woodland[4]
- Wetland[4]

DATA SOURCES:

Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Alberta Environment & Parks (AEP)
Alberta Energy Regulator (AER)
Government of Canada - Open Data

CLIENT: STURGEON COUNTY

TITLE: Consolidated Option – 60 Years

PROJECT: C19-048 DATE: 24/06/2020

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

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NOTES:

Natural Area Types Mapping Based On:

[1]Infotech (1989); Spencer (2019)
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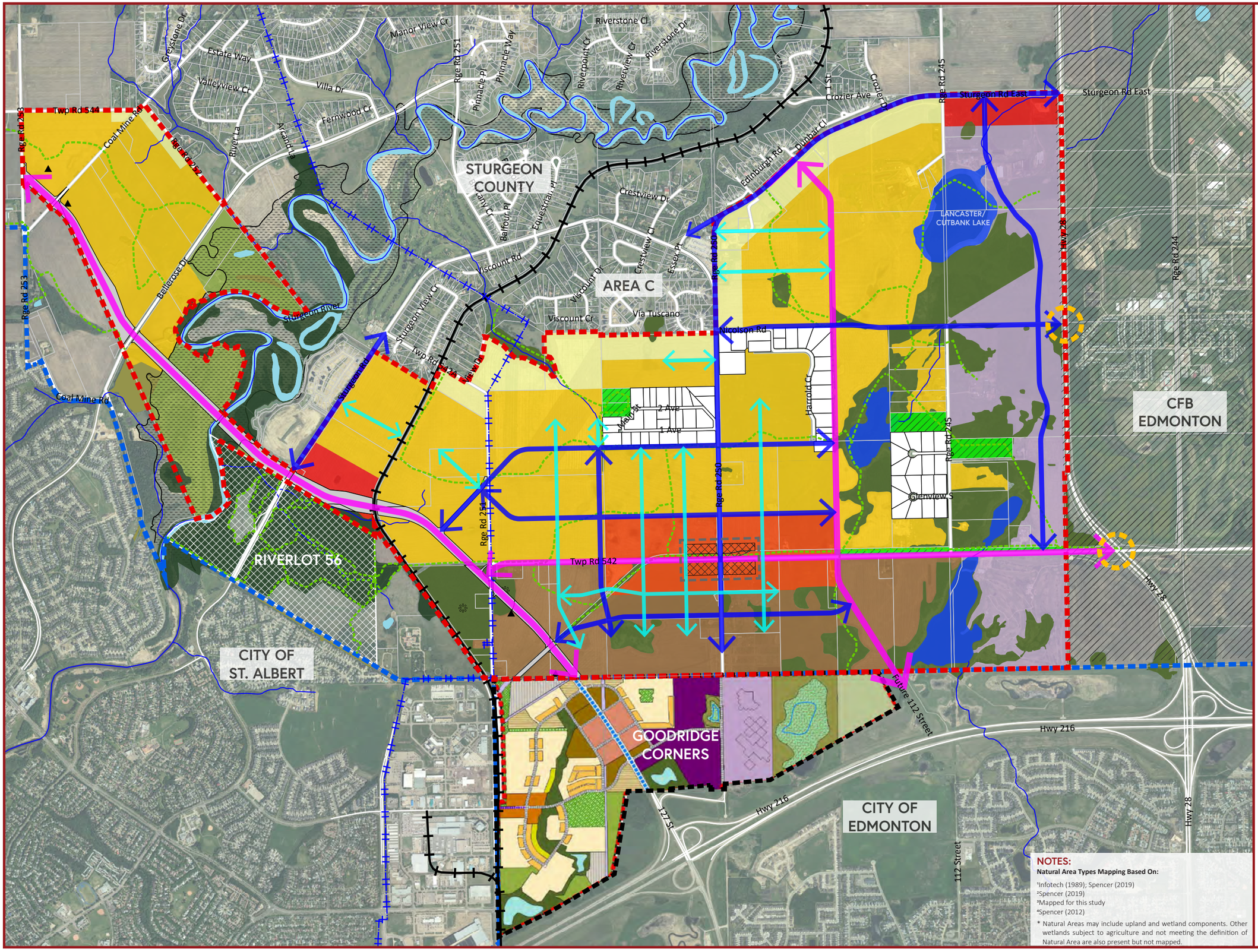

KEY PLAN:

Sturgeon County - Sturgeon Valley Growth Framework

LEGEND:

- ASP Boundary
- Municipal Boundary
- Goodridge Corners Boundary
- Existing Parcels
- Potential Transit Hub
- CFB Edmonton Boundary
- Provincial Park (River Lot 56)
- Existing Country Residential
- Existing Open Space
- Proposed Agriculture Holdings
- Proposed Residential (max density 20 du/nrha)
- Proposed Residential (min density 35 du/nrha)
- Proposed Residential (min 40 density du/nrha)
- Proposed Residential (min density 42 du/nrha)
- Proposed Mixed-Use (min density 42 du/nrha)

  Overall Density 35 du/nrha
- Proposed Commercial
- Proposed Light Industrial (Industry to Support CFB Base)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- Trails (Source: Municipal GIS Data)
- Proposed Arterial Roadway (40m ROW)
- Proposed Collector Roadway (22m ROW)
- Proposed Local Roadway (22m ROW)
- Existing Power Transmission
- FWMIS Watercourses
- Future New Access to Hwy 28

Natural Areas Types* (Potential Environmental Reserve Lands)

- Uncategorized NA[3]
- Uncategorized NA[2]
- Environmentally Sensitive Area[3]
- Prominent FWMIS Water Bodies (Potential for Public Lands Claim)
- Previously Mapped Woodland[4]
- Wetland[4]

DATA SOURCES:

Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Alberta Environment & Parks (AEP)
Alberta Energy Regulator (AER)
Government of Canada - Open Data

CLIENT:

STURGEON COUNTY

TITLE:

Consolidated Option – Full Build Out

PROJECT: C19-048

DATE: 24/06/2020

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE:

1:25,000 (11"x17" Paper Size)

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NOTES:

Natural Area Types Mapping Based On:

[1]Infotech (1989); Spencer (2019)
[2]Spencer (2019)
[3]Mapped for this study
[4]Spencer (2012)

* Natural Areas may include upland and wetland components. Other wetlands subject to agriculture and not meeting the definition of Natural Area are also present but not mapped.

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780.482.3700

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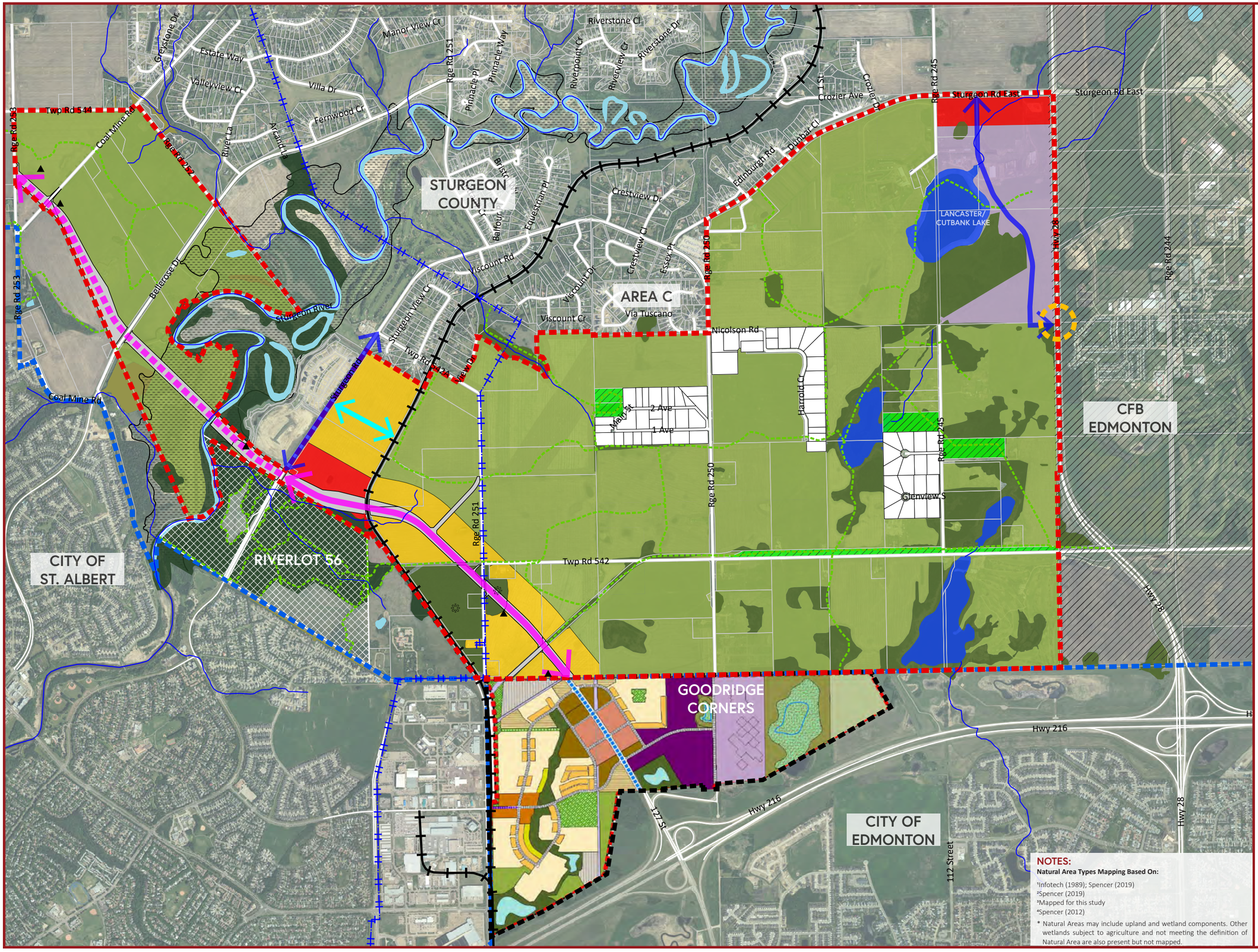

KEY PLAN:

Sturgeon County - Sturgeon Valley Growth Framework

LEGEND:

- ASP Boundary
- Municipal Boundary
- Goodridge Corners Boundary
- Existing Parcels
- CFB Edmonton Boundary
- Provincial Park (River Lot 56)
- Existing Country Residential
- Existing Open Space
- Proposed Agriculture Holdings
- Proposed Residential (min density 35 du/nrha)
- Proposed Commercial
- Proposed Light Industrial (Industry to Support CFB Base)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Trails (Source: Municipal GIS Data)
- Future Arterial Roadway Extension
- Proposed Arterial Roadway (40m ROW)
- Proposed Collector Roadway (22m ROW)
- Proposed Local Roadway (22m ROW)
- 127 Street Extension ROW (Arterial Roadway)
- Existing Railway Line
- Existing Power Transmission
- FWMIS Watercourses
- Future New Access to Hwy 28

Natural Areas Types* (Potential Environmental Reserve Lands)

- Uncategorized NA[3]
- Uncategorized NA[2]
- Environmentally Sensitive Area[1]
- Prominent FWMIS Water Bodies (Potential for Public Lands Claim)
- Previously Mapped Woodland[4]
- Wetland[4]

DATA SOURCES:

Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Alberta Environment & Parks (AEP)
Alberta Energy Regulator (AER)
Government of Canada - Open Data

NOTES:

Natural Area Types Mapping Based On:

[1]Infotech (1989); Spencer (2019)
[2]Spencer (2019)
[3]Mapped for this study
[4]Spencer (2012)

* Natural Areas may include upland and wetland components. Other wetlands subject to agriculture and not meeting the definition of Natural Area are also present but not mapped.

CLIENT: STURGEON COUNTY

TITLE: Consolidated Option – Net Neutral

PROJECT: C19-048 DATE: 06/05/2020

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

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July 2020

Sturgeon County

V3

bunt & associates

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SPENCER ENVIRONMENTAL MANAGEMENT SERVICES LTD.

Appendix I: Growth Strategy

Appendix J

Engagement Process

(2017-2019) – Valley Regional Approvals

Sept 2017

SVSSA Terms of Reference approved at EMR Board meeting

Dec 2018

SVSSA Policies approved at EMR Board Meeting

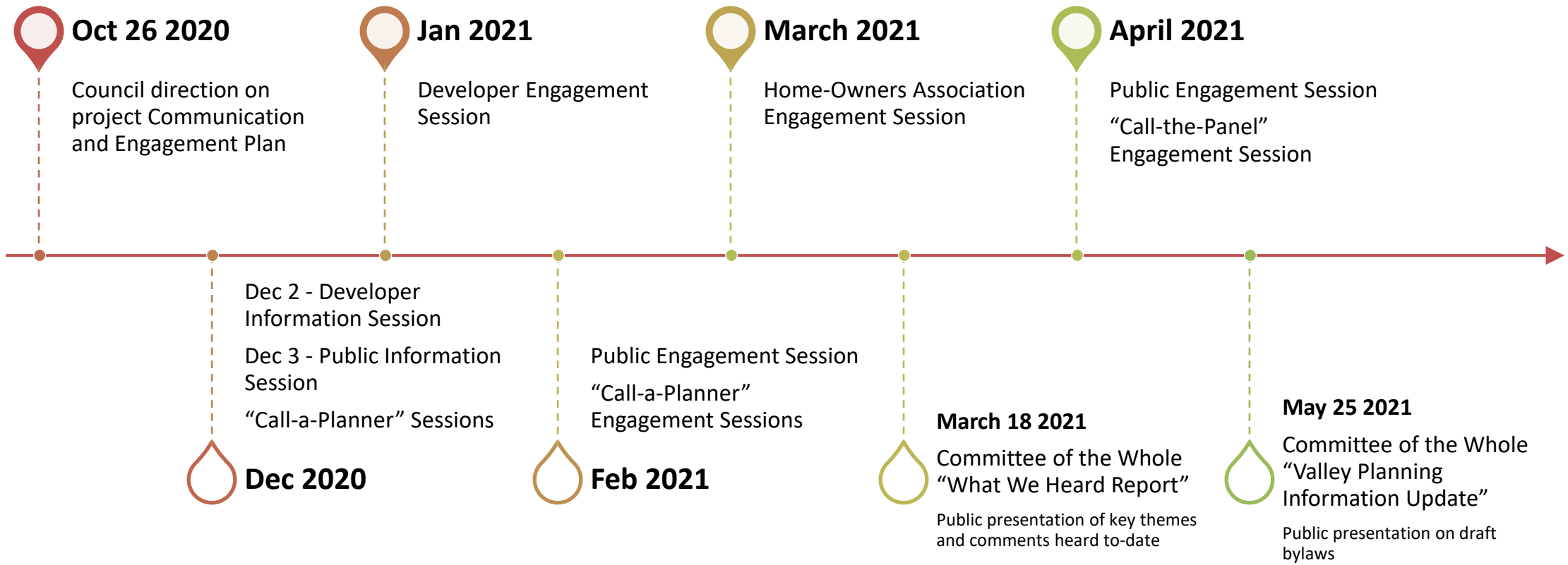
March 2019

EMRB Growth Plan amended to include SVSSA policies

- Overall minimum density of 35 du/nrha established for the area

(2019-2020) - Valley Growth Framework Analysis

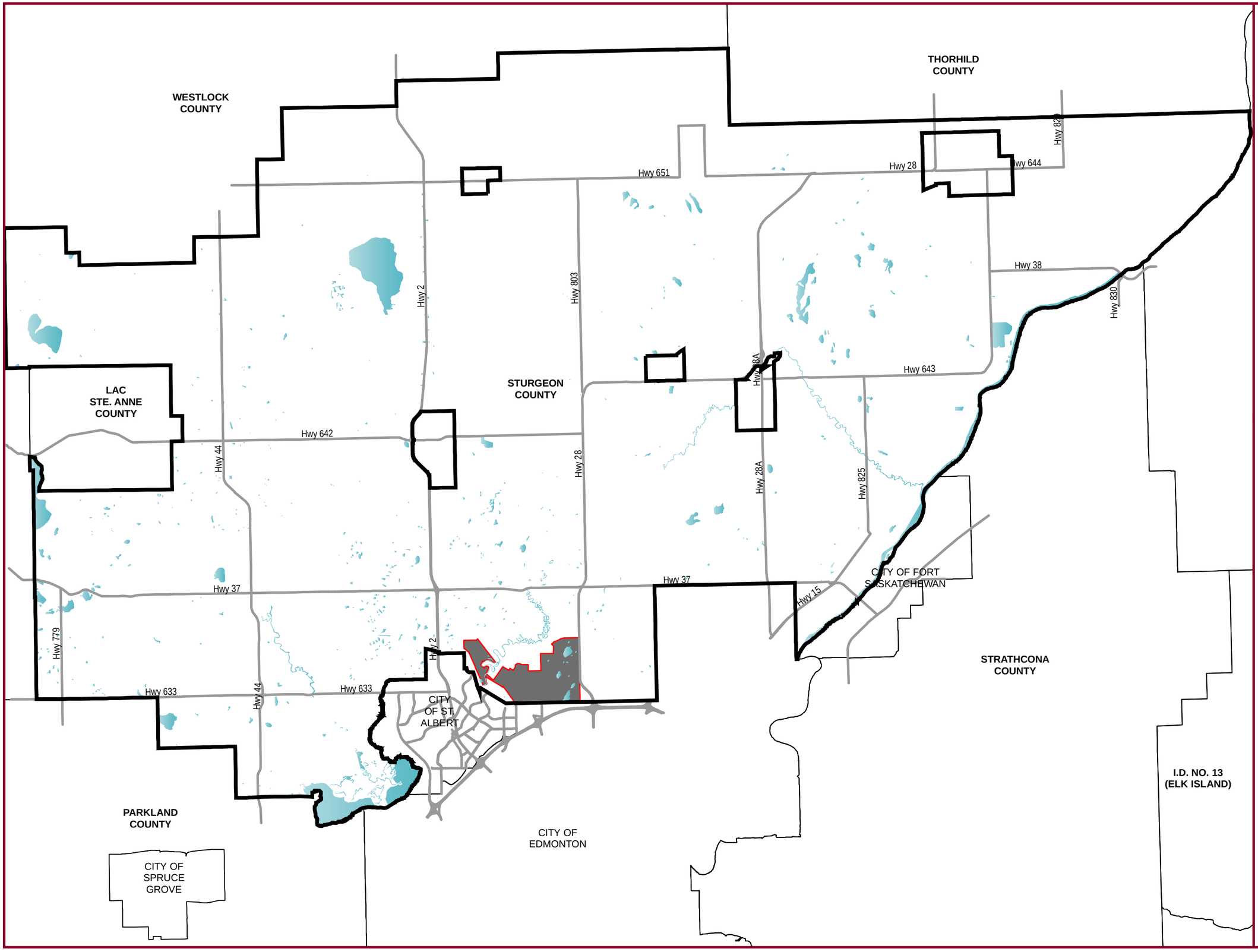
(2020-2021) - Valley Area Structure Plan Process



Appendix J: Engagement Process

Appendix K

Maps



KEY PLAN:

Sturgeon County - Sturgeon Valley Core ASP

LEGEND:

- Sturgeon County Boundary
- Municipality Boundary
- Sturgeon Valley Core ASP Boundary
- Highway

DRAFT

DATA SOURCES:
Sturgeon County
Alberta Environment & Parks (AEP)
Alberta Energy Regulator (AER)

CLIENT: STURGEON COUNTY

TITLE: Location Map

PROJECT: C20-056 DATE: 14/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

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SCALE: 1:2,25,000 (11"x17" Paper Size)

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STURGEON VALLEY CORE

CITY OF ST. ALBERT

CITY OF EDMONTON

CFB

COMMERCIAL

LIGHT INDUSTRIAL

LANCASTER/ CUTBANK LAKE

Twp Rd 544

Coal Mine Rd

Rge Rd 252

Bellerose Dr

Rge Rd 253

Sturgeon Rd

Rge Rd 251

Rge Rd 250

Twp Rd 542

Rge Rd 245

Sturgeon Rd East

Hwy 28

Rge Rd 244

A

A'

20

35

42

40

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- ASP Boundary
- Existing Parcel
- Existing Developed Residential
- Existing Open Space
- Potential Significant Natural Features (Desktop Assessment)
- Potential Environmental Reserve (Potential for Public Lands Claim)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- FWMIS Watercourses
- Sturgeon River
- Preliminary Road Network

LAND USE:

- Agriculture Holdings
- Residential (max density 20 du/nrha)
- Residential (min density 35 du/nrha)
- Residential (min 40 density du/nrha)
- Residential (min density 42 du/nrha)
- Potential Transit Hub
- Mixed-Use (min density 42 du/nrha)
- Commercial
- Light Industrial

DATA SOURCES:

Sturgeon County
Bunt & Associates
Spencer - Environmental Data
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: TRANSITIONAL DEVELOPMENT

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

N

SCALE: 1:25,000 (11"x17" Paper Size)

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City Boundary

Country Residential

PLANNING AREA 5

PLANNING AREA 1

PLANNING AREA 2

PLANNING AREA 3

PLANNING AREA 4

STURGEON VALLEY CORE

CFB

CITY OF ST. ALBERT

CITY OF EDMONTON

Twp Rd 544

Twp Rd 542

Coal Mine Rd

Bellerose Dr

Rge Rd 253

Rge Rd 252

Sturgeon Rd

Rge Rd 251

Rge Rd 250

Rge Rd 245

Rge Rd 244

Sturgeon Rd East

Hwy 28

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Railway Line
- Development Direction

DATA SOURCES:
Sturgeon County
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE:

DEVELOPMENT PHASING

PROJECT: C19-048

DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

N

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PLANNING AREA 5

PLANNING AREA 1

PLANNING AREA 3

PLANNING AREA 4

PLANNING AREA 2

STURGEON VALLEY CORE

CFB

CITY OF ST. ALBERT

CITY OF EDMONTON

Twp Rd 544

Twp Rd 542

Coal Mine Rd

Rge Rd 252

Rge Rd 253

Bellerose Dr

Sturgeon Rd

Rge Rd 251

Rge Rd 250

Rge Rd 245

Sturgeon Rd East

Hwy 28

Rge Rd 244

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Railway Line

DATA SOURCES:

Sturgeon County
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: PLANNING AREAS

PROJECT: C19-048

DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

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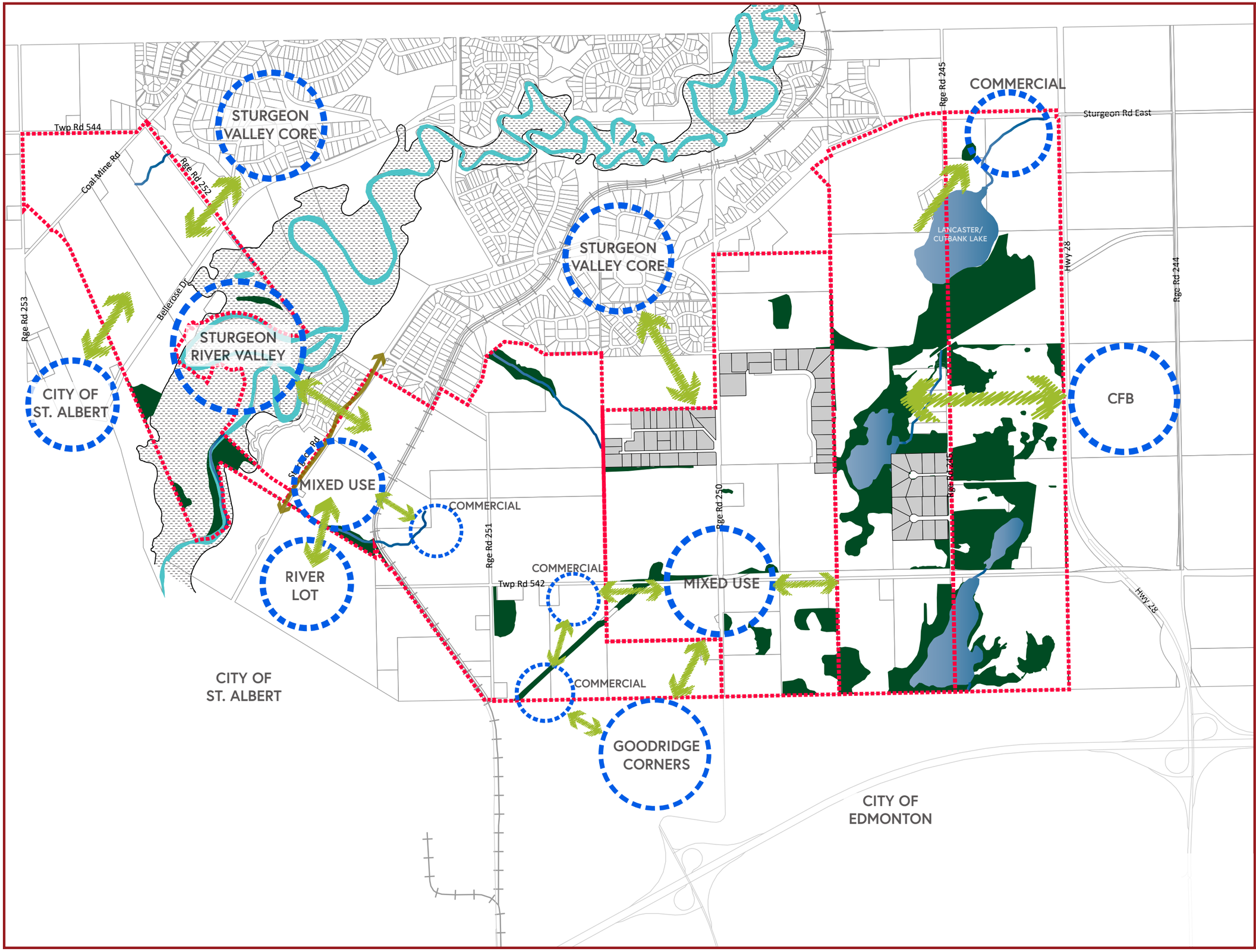

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- NASP Planning Areas Boundary
- Existing Parcels
- Existing Developed Residential
- Existing Open Space
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Potential Significant Natural Features
- Potential Environmental Reserve (Potential for Public Lands Claim)
- Existing Railway Line
- FWMIS Watercourses
- Sturgeon River
- Key Destinations
- Key Connections
- Multi-Purpose Trail

DATA SOURCES:

Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: OPEN SPACE AND KEY CONNECTIONS

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

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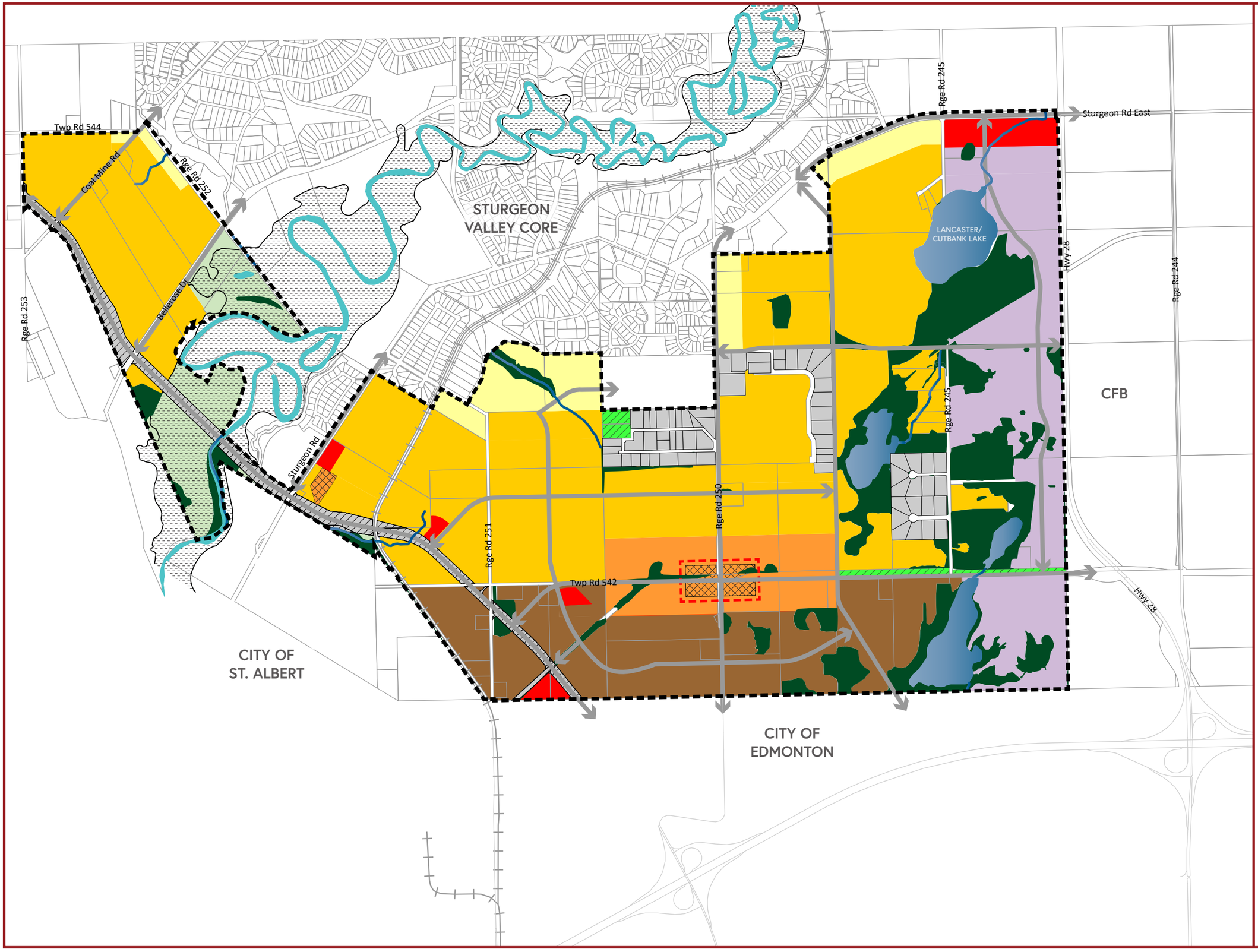

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- ASP Boundary
- Existing Parcel
- Existing Developed Residential
- Existing Open Space
- Potential Significant Natural Features (Desktop Assessment)
- Potential Environmental Reserve (Potential for Public Lands Claim)
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- FWMIS Watercourses
- Sturgeon River
- Preliminary Road Network

LAND USE:

- Agriculture Holdings
- Residential (max density 20 du/nrha)
- Residential (min density 35 du/nrha)
- Residential (min 40 density du/nrha)
- Residential (min density 42 du/nrha)
- Potential Transit Hub
- Mixed-Use (min density 42 du/nrha)
- Commercial
- Light Industrial

DATA SOURCES:

Sturgeon County
Bunt & Associates
Spencer - Environmental Data
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: LAND USE MAP

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

N

SCALE: 1:25,000 (11"x17" Paper Size)

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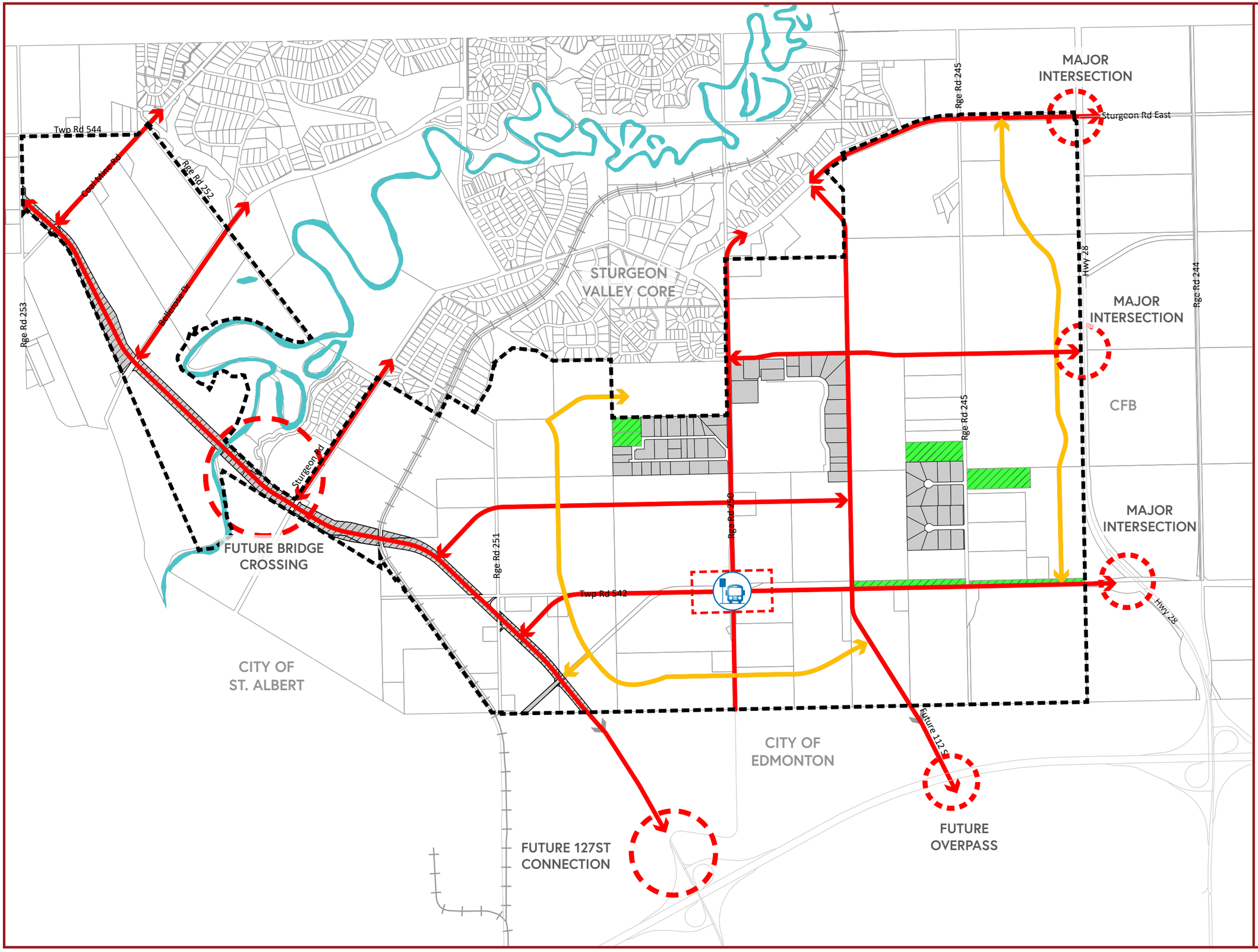

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- ASP Boundary
- Existing Parcels
- Existing Developed Residential
- Existing Open Space
- Existing Railway Line
- Sturgeon River
- Arterial
- Major Collector
- Potential Key Development Infrastructure
- Potential Future Bus Transit Centre

DATA SOURCES:
Sturgeon County
Bunt & Associates
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: ROAD NETWORK

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

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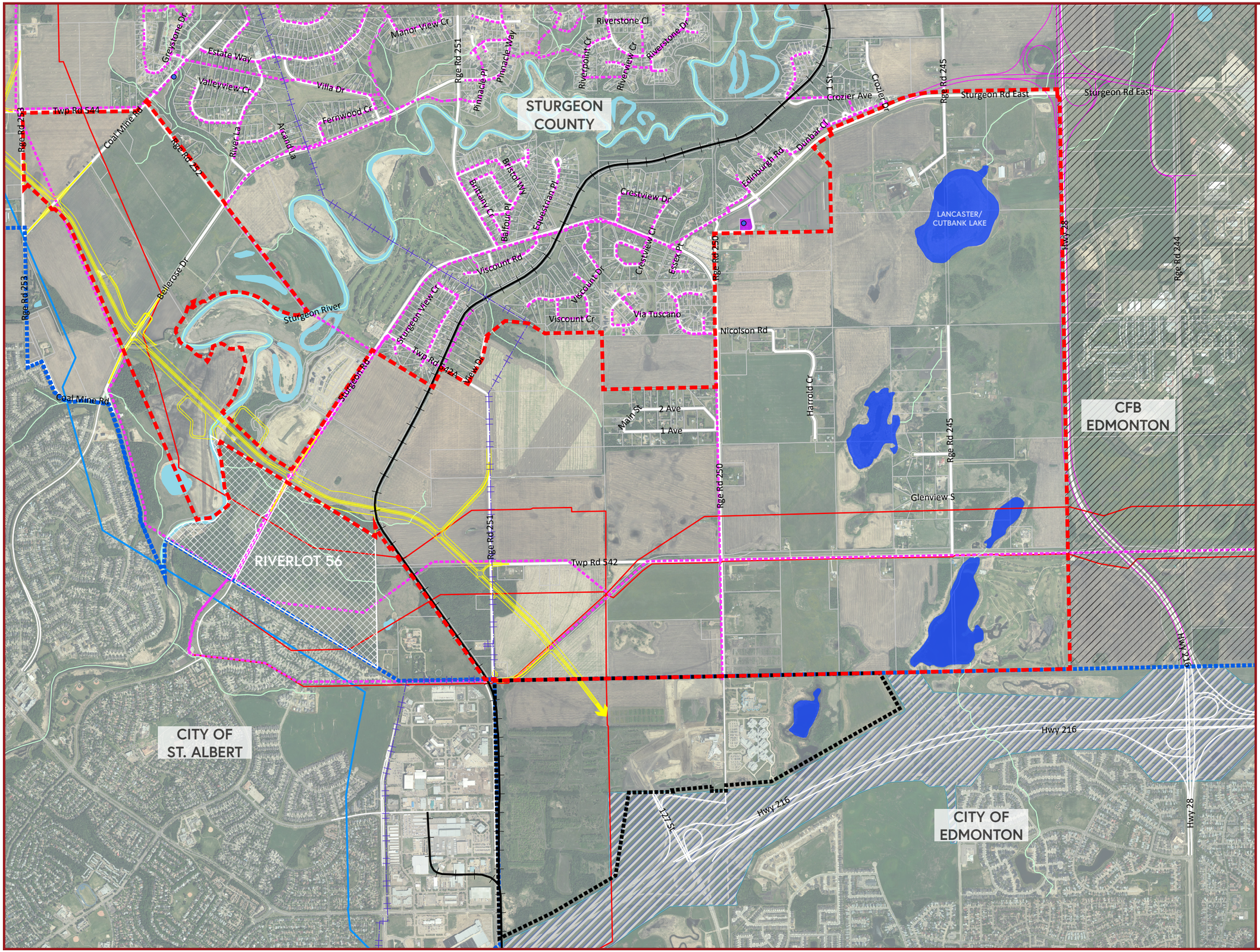

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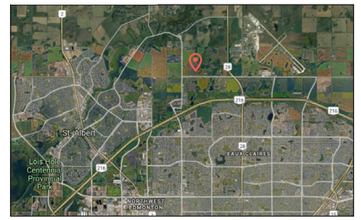

Sturgeon County - Special Area Structure Plan

LEGEND:

- ASP Boundary
- Municipal Boundary
- Goodridge Corners Boundary
- CFB Edmonton Boundary
- Provincial Park
- Prominent FWMIS Water Bodies (Spencer)
- 127 Street Extension
- Hwy 28 Twinning
- Existing Railway Line
- Exising High Power Transmission Line(EMRGIS)
- Wastewater Regional Existing (EMRGIS)
- Existing Sanitary Line
- Waterline Regional Existing (EMRGIS)
- Potable Water Outlet
- Utilities Parcel
- Transportation Utility Corridor
- FWMIS Watercourses

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DATA SOURCES:
Alberta Energy Regulator (AER)
Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Alberta Environment & Parks (AEP)
Government of Canada - Open Data
Edmonton Metropolitan Region Geographic Information Services

CLIENT:
STURGEON COUNTY

TITLE:
STUDY AREA - EXISTING UTILITIES

PROJECT: C19-048 DATE: 31/05/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000

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Twp Rd 544
Coal Mine Rd
Rge Rd 252
Rge Rd 253
Bellerose Dr
STURGEON VALLEY CORE
Sturgeon Rd
Rge Rd 245
Sturgeon Rd East
Hwy 28
Rge Rd 244
CFB
Rge Rd 250
Rge Rd 251
Twp Rd 542
CITY OF ST. ALBERT
CITY OF EDMONTON

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- ASP Boundary
- Existing Parcels
- Existing Developed Residential
- Existing Open Space
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Existing Railway Line
- 127 Street Extension ROW (Arterial Roadway)
- Sturgeon River
- Existing High Power Transmission Line
- Operating Pipeline
- Abandoned Pipeline
- Existing Facility
- Abandoned Well
- Suspended Well
- Issued Well

DATA SOURCES:

Sturgeon County
Alberta Energy Regulator (AER)
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: PHYSICAL CONSTRAINTS

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

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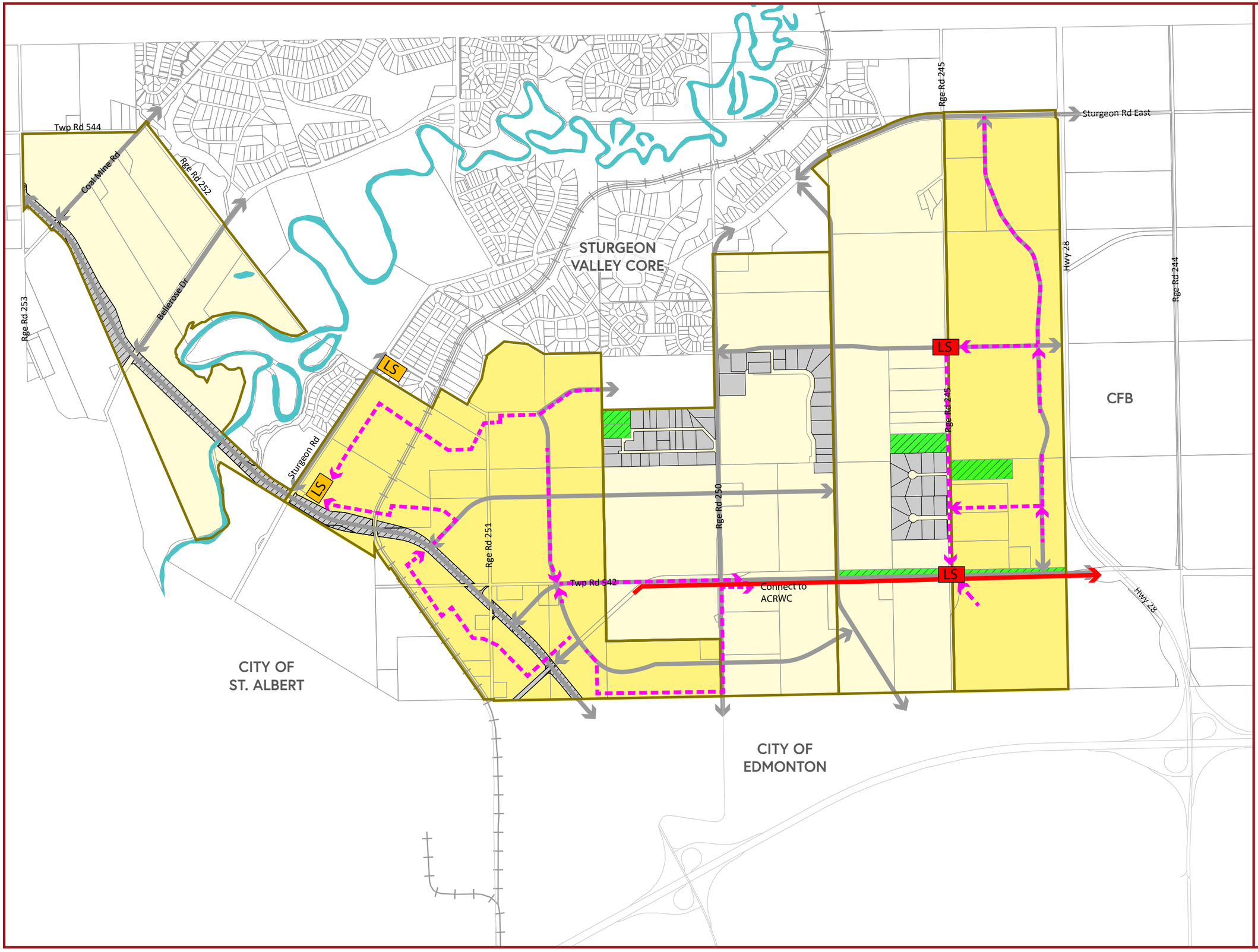

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Developed Residential
- 127 Street Extension ROW (Arterial Roadway)
- Preliminary Road Network
- Existing Open Space
- Existing Railway Line
- Sturgeon River
- Potential Sanitary Sewer
- Existing ACRWC Gravity Line
- LS Existing SE Sanitary Lift Station
- LS Proposed Sanitary Lift Station

DATA SOURCES:
Sturgeon County
Bunt & Associates
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: SANITARY COLLECTION

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

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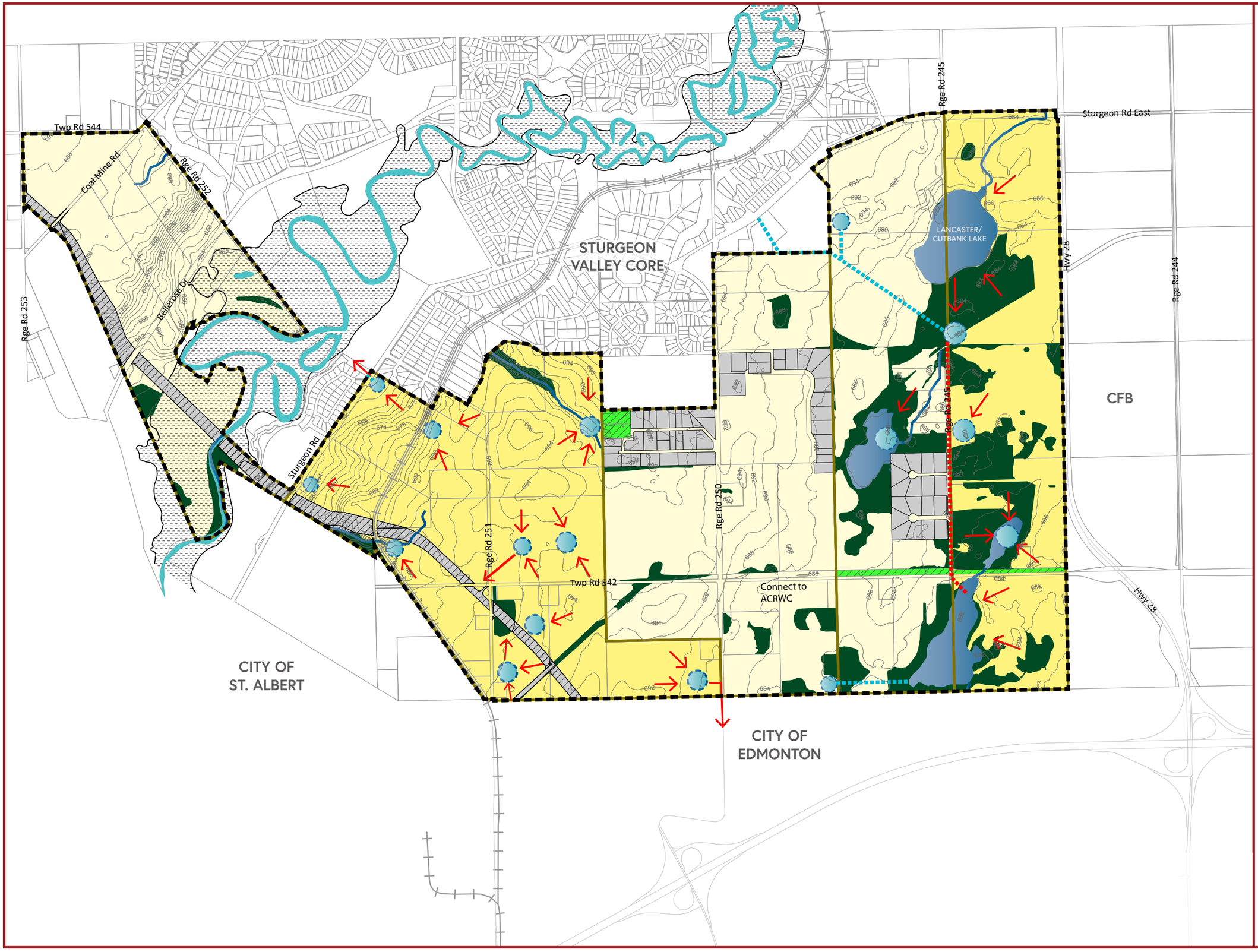

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- ASP Boundary
- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Contours (2m Interval)
- Existing Developed Residential
- 127 Street Extension ROW (Arterial Roadway)
- Existing Open Space
- Lands Potentially Subject to Flooding (1974 Flood Level)
- Potential Significant Natural Features
- Potential Environmental Reserve (Potential for Public Lands Claim)
- Existing Railway Line
- FWMIS Watercourses
- Sturgeon River
- Potential Storm-water Management Facility
- Potential Storm Sewer Pipe
- Potential Storm Drainage Channel
- Storm Drainage Flow

DATA SOURCES:

Sturgeon County
Spencer - Environmental Data
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE:

STORM WATER MANAGEMENT

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

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SCALE: 1:25,000 (11"x17" Paper Size)

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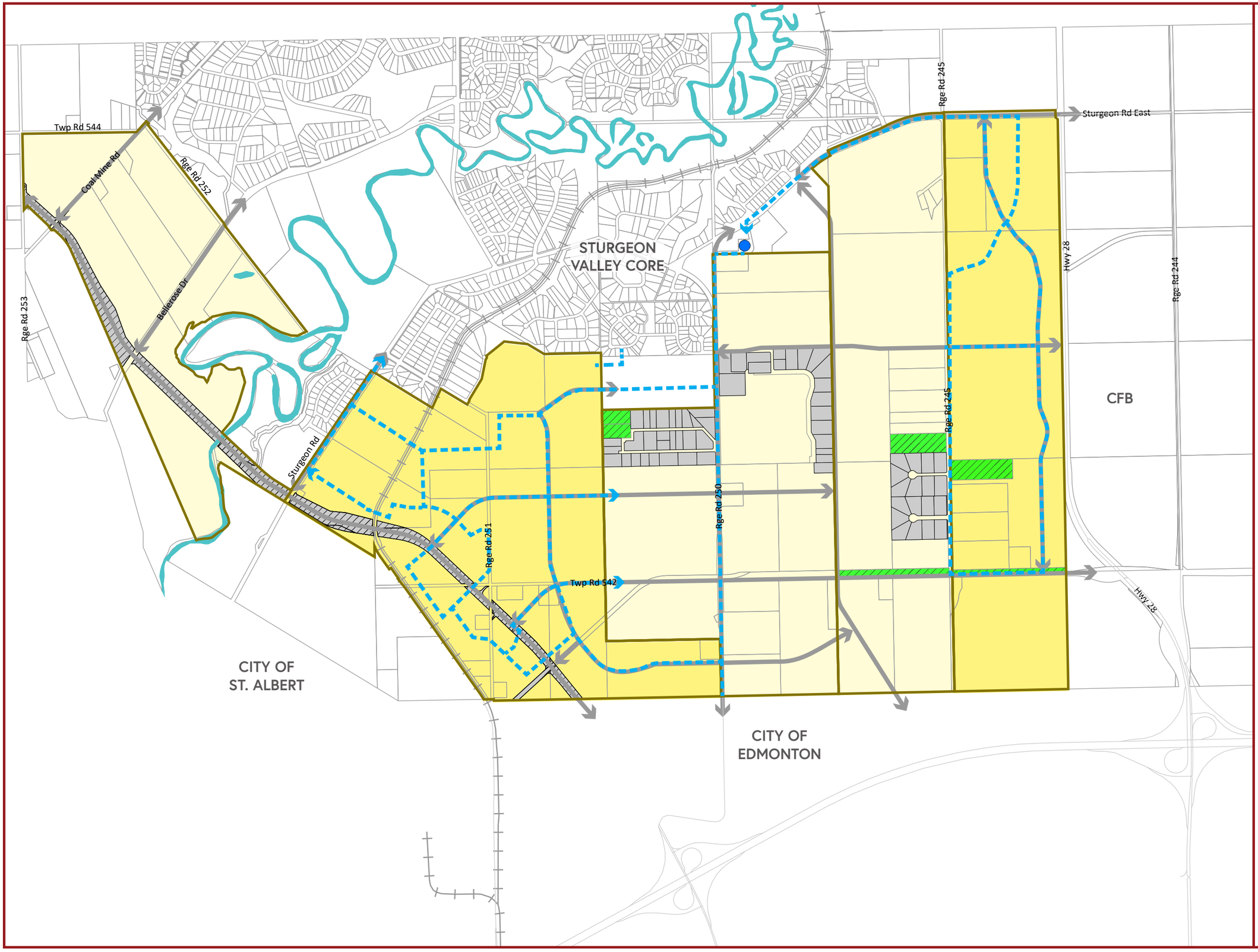

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- NASP Planning Area - Approved to Proceed
- Future NASP Planning Areas
- Existing Parcels
- Existing Developed Residential
- 127 Street Extension ROW (Arterial Roadway)
- Preliminary Road Network
- Existing Open Space
- Existing Railway Line
- Sturgeon River
- Potential Water Servicing Line
- Existing Pump House/Water Reservoir

DATA SOURCES:
Sturgeon County
Bunt & Associates
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: WATER SERVICING

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

SCALE: 1:25,000 (11"x17" Paper Size)

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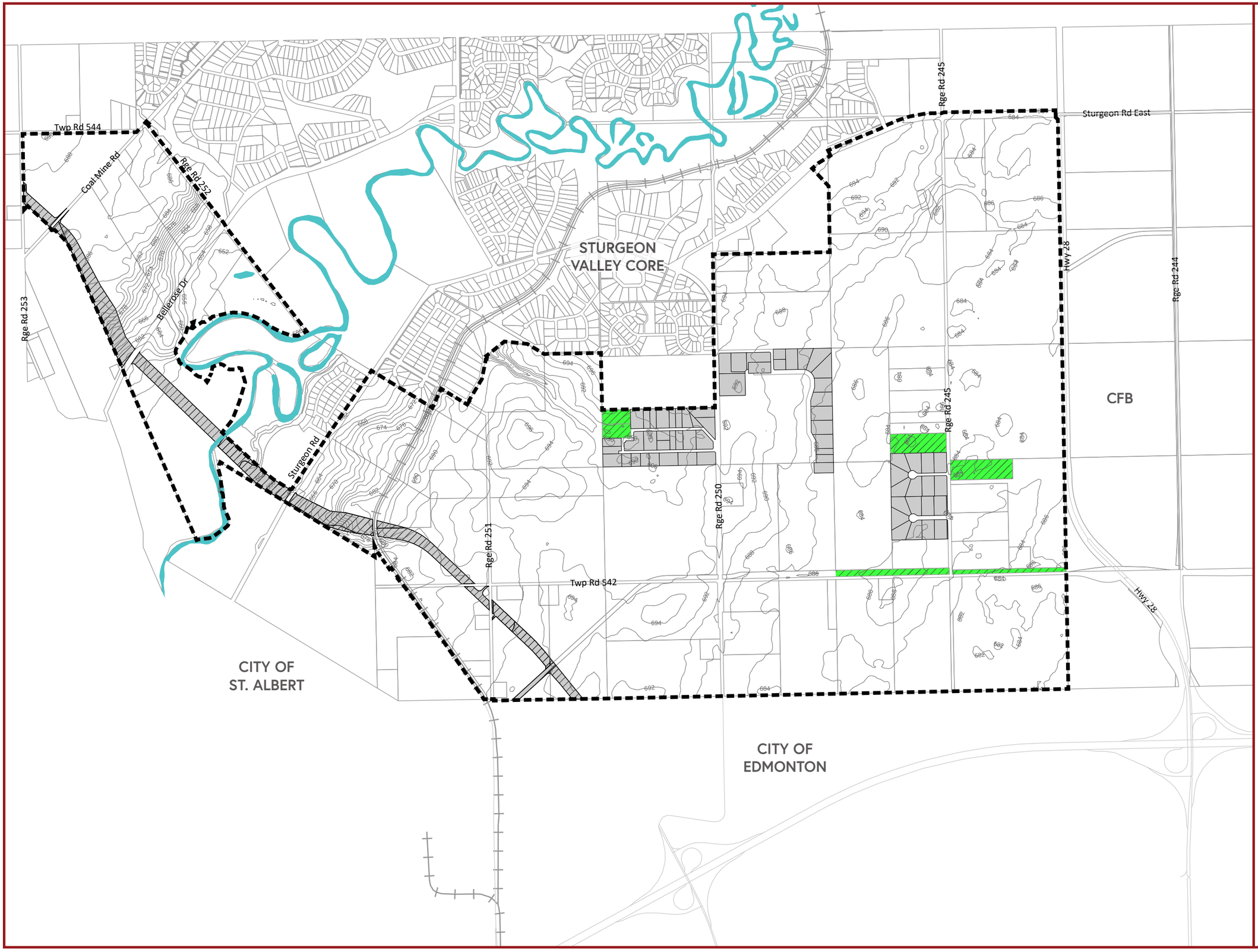

KEY PLAN:

Sturgeon County - Sturgeon Valley Area Structure Plan

LEGEND:

- ASP Boundary
- Existing Parcels
- Contours (2m Interval)
- Existing Developed Residential
- 127 Street Extension ROW (Arterial Roadway)
- Existing Open Space
- Existing Railway Line
- Sturgeon River

DATA SOURCES:

Sturgeon County
City of Edmonton - Open Data
Government of Canada - Open Data
Edmonton Metropolitan Region Board - Open Data

CLIENT: STURGEON COUNTY

TITLE: EXISTING CONTOURS MAP

PROJECT: C19-048 DATE: 23/04/2021

DESIGNED: Aman Jhawer

CHECKED: Nick Pryce

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SCALE: 1:25,000 (11"x17" Paper Size)

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Appendix K: Maps

July 2021

Our Future Valley

Sturgeon Valley South Area Structure Plan

To find out more, visit:
sturgeoncounty.ca

Sturgeon County