

WHERE DO WE **GROW** FROM HERE?

Fort Saskatchewan **GROWTH STUDY** FINAL REPORT

Prepared by



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STRATEGIC
PROJECTIONS



CITY OF
FORT SASKATCHEWAN
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Executive Summary

The City of Fort Saskatchewan last adjusted its boundaries on January 1, 2002. In the time leading up to this adjustment, the City's population growth had been relatively slow but stable. Its average annual growth rate varied from -0.8% to 1.6% between 1986 and 2001. As such, the extent of the City's last adjustment was for 264 ha or just over four quarter sections of land, which was expected to be sufficient to accommodate the City's anticipated future residential and commercial growth.

As it turned out, the City's growth was significantly greater than anticipated. The City experienced an average annual growth rate of 2.7% between 2001 and 2006. That average annual growth rate nearly doubled to 5.0% between 2006 and 2011. It has since averaged 6.0% per annum between 2011 and 2015.

Commensurate with the increasing levels of population growth since 2002 was increasing levels of land consumption. Through the end of 2014, the City of Fort Saskatchewan consumed 654.7 ha of available land to accommodate its growth since January 1, 2002. This is 2.5 times more than the 264 ha of land the City acquired in its last boundary adjustment. In the last 10 years specifically, the City has consumed on average nearly 56 ha of land per year to accommodate growth. Thus, at nearly 560 ha of land, the City has consumed over double the amount of land it acquired in 2002 in just the last ten years.

The unanticipated population growth and land consumption experienced since 2002 has depleted much of the City's land supply sooner than expected, which has lead the City to ask a number of questions of itself. How much land supply remains within the City of Fort Saskatchewan? How much land supply does the City need to accommodate its future growth? Where does the City grow from here?

The Fort Saskatchewan Growth Study is a comprehensive look into the City of Fort Saskatchewan's past, present and future growth. Its main focus is to project the City's future residential, commercial, industrial, and institutional growth over the next 50 years, and to determine how much land will be required to accommodate growth (both inside and outside of the City's current boundaries).

To help set the context, the Growth Study profiles Fort Saskatchewan's boundary adjustment history, revealing 21 adjustments since originally incorporating in 1899. Three were large adjustments while eight were small adjustments. Seven were very minor adjustments while three were withdrawals of land.

The Growth Study also presents and analyzes historical population growth trends over the past 50 years from 1961 onward. In addition to some of the observations above, it reveals that Fort Saskatchewan has experienced an average annual growth rate of 3.7% over the past 50 years, but a higher growth rate of 4.7% over the past 10 years. The City has doubled its population in the past 24 years, with 75% of that growth occurring in the last nine years.

Informed by recent growth and provincial population forecasts, the Growth Study presents three alternative population growth scenarios for Fort Saskatchewan. These are in addition to the two most recent population growth scenarios for the City prepared for the Capital Region Board (CRB). The Growth Study recommends use of its Medium Case scenario, which projects the City to grow from its 2014 population of 22,808 to 51,371 in 2044 (horizon of the CRB projections) and then to 71,216 in 2066 (horizon of the Growth Study). The Medium scenario is appropriate and reasonable in comparison to both the CRB's two projection scenarios and the City's actual growth over the past 50 years.

The Fort Saskatchewan Growth Study undertakes evidence-based land supply and historical land consumption analyses to determine that it has nearly 940 ha of available remaining land to accommodate future growth, and to determine trends in land consumption. The Growth Study concludes that the City has 13 years of residential land supply and seven years of commercial land supply remaining in its current boundaries. It also finds that the City has effectively depleted its institutional and heavy industrial land supplies.

In all, based on the Growth Study's recommended Medium Case scenario, the City requires approximately 1,165 ha of gross developable land beyond its current boundaries to accommodate its future residential, commercial and institutional growth. The methodology to determine land requirements factors in growth assumptions relating to residential density, average household size, net developable overheads (parks, utilities and roads), and residential redevelopment and market allowances. Undevelopable and unavailable lands, such as environmental reserve, pipelines and existing country residential subdivisions, are excluded from the gross developable land requirement, but are factored in once appropriate expansion areas are identified.

The Growth Study considered three study areas to accommodate the land required by the City of Fort Saskatchewan beyond its current boundaries. The study areas included: a 2,482 ha study area to the northwest across the North Saskatchewan River to the northwest in Sturgeon County; a small 173 ha study area to the northeast of the City within Alberta's Industrial Heartland in Strathcona County; and a larger 6,040 ha study area to the east, southeast and south also within Strathcona County. The three study areas were analyzed at a high level from the perspectives of topography, watercourses, floodplains, wetlands, agricultural soils, municipal servicing (water, wastewater and stormwater), transportation (roads, river crossings, transit and connectivity/access), and various land use considerations (Capital Region Growth Plan, major pipeline corridors, airports, existing developments, ownership, fragmentation, etc.).

Informed by the study area analysis and guided by a set of 16 growth principles, the Fort Saskatchewan Growth Study recommends two expansion areas to accommodate the City's future growth – a northeast expansion area comprising nearly one quarter section of land and a south expansion area comprising approximately 30 quarter sections of land. The northeast expansion area is intended to address an ownership issue where a private corporation has adjacent undeveloped heavy industrial land holdings split by the municipal boundary between the City and Strathcona County. A boundary adjustment for this expansion area will result in logistical efficiencies in acquiring approvals from one rather than two municipalities when it comes time for the private corporation to develop all of its land holdings as one comprehensive site.

The south expansion area comprises approximately 30 quarter sections to the south of the City and is intended to accommodate the City's forecasted residential, commercial and institutional growth through 2066. It represents a logical extension of the City's existing urban footprint and keeps the footprint unified on one side of the North Saskatchewan River. It leverages the capacity of Highway 21, which is already a twinned regional road and can facilitate future intermunicipal transit, as well as the future potential river crossing between Highway 21 and Highway 15 into northeast Edmonton. It also enables eventual integration with urban development in Strathcona County that is advancing northward along Highway 21.

Lands to the northwest of the City in Sturgeon County are not included in any recommended expansion area at this time. This is largely due to the need to undertake costly twinning of Highway 21 including its current two-lane bridge crossing over the North Saskatchewan River. Expansion into this area could: create increased pressure on the current two-lane river crossing; potentially transfer the responsibility to twin the bridge and highway to the City; potentially trigger a second river crossing in that area; create less efficiency for the City in terms of service delivery and the extension of infrastructure; generate overall integration issues due to the North Saskatchewan River being a major geographic barrier; and create access and crossing constraints due to the presence of a rail line in this area. This area is also not within a PGA designated by the CRB, and future residential development in this area is not desirable from a land use compatibility perspective due to proximity to industrial employment areas in Edmonton to the southwest and Sturgeon County to the north and northeast.



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1.0 Introduction

1.1 Preamble

The *City of Fort Saskatchewan Growth Study* comprises one of two key documents for the City of Fort Saskatchewan's consideration in planning for the City's future growth. The second key document is the City of Fort Saskatchewan Financial Impact Analysis. The Growth Study has been prepared by ISL Engineering and Land Services (ISL) and Strategic Projections Inc. (SPI) with support from CORVUS Business Advisors (CORVUS). The Financial Impact Analysis has been prepared by CORVUS with support from ISL.

The main focus of this Growth Study is to project the City's future growth over the next 50 years, and to determine how much land will be required to accommodate growth (both inside and outside of the City's boundaries). The Growth Study looks at both short and long-term growth objectives, the type of growth contemplated (i.e. residential, commercial, industrial, and institutional), and provides rationale for that growth. The Growth Study also identifies density objectives and preliminary future land use.

To accomplish this, the Growth Study:

- Establishes a study area and a set of underlying growth principles;
- Analyzes historic population growth and demographics;
- Projects future population growth;
- Analyzes the status of the City's current land supply and historic land absorption;
- Analyzes the study area from various environmental, serviceability and land use perspectives to determine opportunities and constraints;
- Establishes density and other growth assumptions for the purpose of generating future land requirements;
- Generates future land requirements for residential, commercial, industrial and institutional uses;
- Recommends expansion areas to accommodate the City's projected growth beyond the City's current boundaries; and
- Presents preliminary future land use and staging concepts for both the remaining land within the City and the recommended expansion areas beyond the City's current boundaries.

1.2 Historical Municipal Context

Fort Saskatchewan was originally incorporated as a village on March 1, 1899. Its first recorded population was 306 according to the 1901 census. The village incorporated as the Town of Fort Saskatchewan on July 1, 1904. After a 30-year period of stagnant growth between 1916 and 1946, the town permanently surpassed the 1,000-population mark in 1951. It then experienced high growth through to 1982 due to the oil and gas industry, surpassing 10,000 people in 1978. The town subsequently incorporated as the City of Fort Saskatchewan on July 1, 1985. Since incorporating as a city, Fort Saskatchewan has doubled its population, growing from 12,078 in 1991 to 24,040 in 2015, with the majority of this growth occurring in recent years.

1.2.1 Boundary Adjustment History

As illustrated in Map 1, and as summarized in Appendix A, Fort Saskatchewan's boundary has been adjusted 21 times over its 116-year history. Of these, 16 were expansions through annexations while two were expansions done concurrently while incorporating as a town and as a city. The remaining three boundary adjustments were separations or withdrawals of land.

Of the expansions, seven were minor boundary adjustments involving:

- 0.7 ha of road right-of-way (portion of 101 Street) in 1899;
- 12.2 ha of land in 1954 that was temporarily withdrawn in 1939;
- 10.2 ha remnant of a settlement lot in 1956;
- 0.8 ha of road right-of-way (portion of 93 Avenue/former Highway 15) in 1964;
- 6.6 ha wedge of severed land between 93 Avenue and Highway 15 in 1973;
- 1.3 ha triangular remnant of a quarter section added concurrently while changing from town to city status in 1985; and
- 10.8 ha of road right-of-way (portion of Highway 21 at the intersection of Westpark Blvd/Southfort Blvd) in 1999.

Together, the above seven minor boundary adjustments amount to 42.6 ha or less than 0.7 quarter sections. The average size of these minor adjustments was 6.1 ha or one-tenth of a quarter section.

Of the remaining expansions, eight were small boundary adjustments of approximately one through four quarter sections in size. These included:

- 80 ha (1.3 quarters) added concurrently while changing from village to town status in 1904;
- 239 ha (3.7 quarters) in 1908;
- 122 ha (1.9 quarters) in 1965;
- 242 ha (3.8 quarters) in 1969;
- 128 ha (2.0 quarters) in 1976;
- 144 ha (2.3 quarters) in 1981;
- 62 ha (1.0 quarters) in 1987; and
- 264 ha (4.1 quarters) in 2002.

Together, the above eight small boundary adjustments amount to 1,281 ha or 20 quarter sections. The average size of these small adjustments was 160 ha or 2.5 quarter sections.

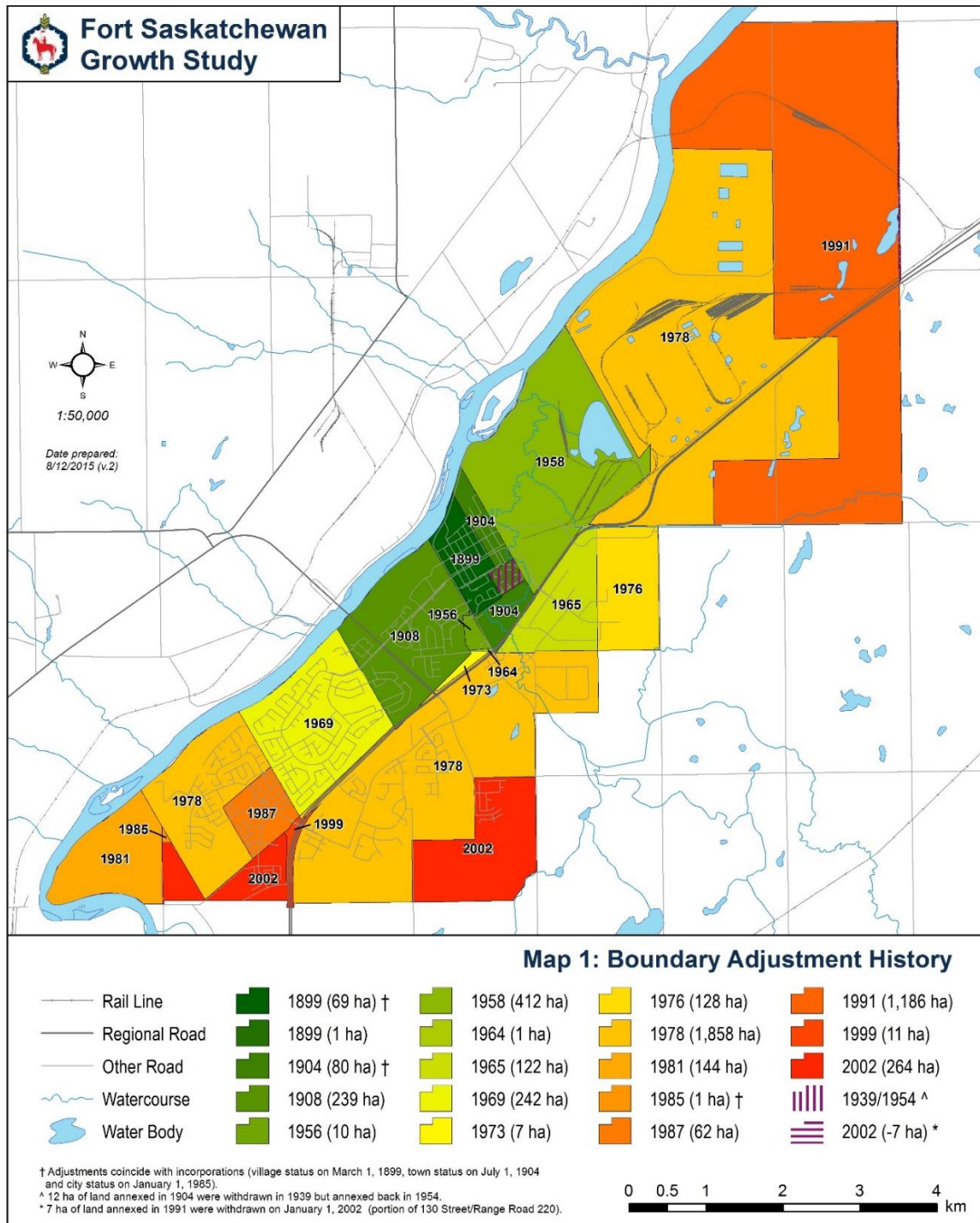
The final three expansions were larger boundary adjustments that were greater than five quarter sections in size. These included:

- 412 ha (6.5 quarters) in 1958;
- 1,858 ha (29 quarters) in 1978; and
- 1,186 ha (18.6 quarters) in 1991.

Together, the above three larger boundary adjustments amount to 3,456 ha or 54 quarter sections. The average size of these larger adjustments was 1,152 ha or 18 quarter sections.



Map 1: Boundary Adjustment History



1.2.2 Recent Boundary Adjustments

Fort Saskatchewan's most recent boundary expansion occurred on January 1, 2002 when it acquired 264 ha (652 ac) of land from Strathcona County for residential expansion purposes. Also on that date, a 7.2 ha (17.8 ac) portion of the 130 Street (Range Road 220) road allowance north of Highway 15 was withdrawn from the City and transferred to Strathcona County. The net effect of these concurrent boundary adjustments was a transfer of 257 ha (635 ac), or four quarter sections of land, from Strathcona County to the City of Fort Saskatchewan.

Prior to that, Fort Saskatchewan's most recent annexation for the purpose of residential expansion occurred on December 31, 1987. It involved the addition of 62 ha of land in the southwest portion of the City.

In the intervening time between 1987 and 2002, the City annexed land on December 31, 1991 and October 13, 1999. The 1991 annexation involved transfer of 1,186 ha of land in the City's northeast for industrial purposes. The 1999 annexation transferred 11 ha of Highway 21 road allowance.

1.3 Study Area

The study area analyzed within the *Growth Study* comprises lands in Sturgeon County and Strathcona County in three locations as presented in Map 2: Study Area.

1.3.1 Northwest Study Area

The northwest study area includes 2,482 ha (6,133 ac) across the North Saskatchewan River within Sturgeon County bounded by:

- the City of Edmonton (33 Street NE/Range Road 232) to the west;
- Highways 37 and 825 to the northwest; and
- the northeast extent of the Fort Saskatchewan Settlement near the Sturgeon River.

Highways 37 and 825 were selected as these provincial highways form logical boundaries for future urban development, and would provide critical access opportunities for urban development on the north side of the river. The northeast extent of the Fort Saskatchewan Settlement was selected as it generally aligns with the Sturgeon River, which likewise forms a logical boundary for urban development.

This area includes Sturgeon County's Hamlet of Lamoureux, two country residential subdivisions (Pilon Creek Estates and St. Augustus), and the southeast portion of the Sturgeon Industrial Park. Two area structure plans (ASPs) are in effect for lands adjacent to this study area to the west within the City of Edmonton. The *Edmonton Energy and Technology Park ASP* and the *Horse Hill ASP* includes those lands to the north and south of Highway 15 respectively.

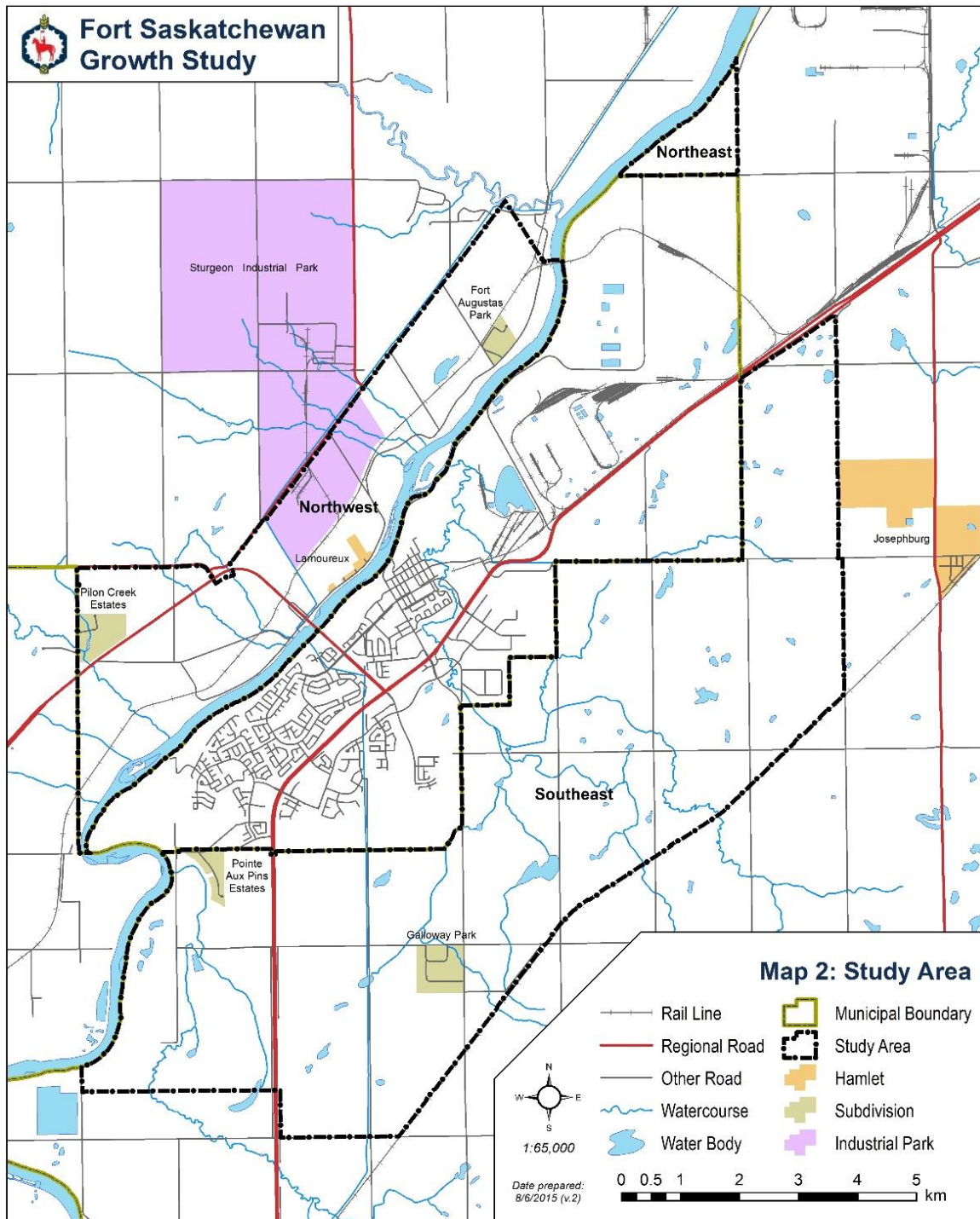
1.3.2 Northeast Study Area

The northeast study area includes 173 ha (427 ac) of land to the north of the northeast corner of the City within Strathcona County bounded by Range Road 220 (130 Street) to the east and the North Saskatchewan River to the northwest. Range Road 220 (130 Street) was selected as it represents a logical northward extension of the City's current eastern boundary.

This area includes one full quarter section and portions of five other quarters that are undeveloped and are subject to a combination of two study areas within Strathcona County's *Alberta's Industrial Heartland (AIH) ASP* – Environmental Policy Area and Heavy Industrial Policy Area.



Map 2: Study Area



1.3.3 Southeast Study Area

The southeast study area includes 6,040 ha (14,926 ac) of land to the east, southeast and south of the City within Strathcona County bounded by:

- Highway 15 to the northeast;
- Range Road 215 and Range Road 220 to the east (north and south of the Township Road 550/Josephburg Road correction line respectively);
- The Canadian Pacific (CP) rail line to the southeast;
- Township Road 540 on the east side of Highway 21 and the quarter section line north of Township Road 540 on the west side of Highway 21 to the south; and
- The North Saskatchewan River to the southwest.

The southern boundary of this study area was selected as it aligns with the northern edges of two policy areas within Strathcona County's Municipal Development Plan (MDP) that are designated for potential future urban development. The County's MDP designates lands to the east of Highway 21 as Urban Reserve and lands to the west of Highway 21 as Transition Urban Reserve Policy Area.¹ This southern boundary therefore enables potential contiguous urban development in the long-term, possibly beyond the horizon of this *Growth Study*.

The CP rail line to the southeast was selected as it represents a logical boundary for future urban development, forming a significant transportation barrier. Range Roads 215/220 to the east represent a logical one mile extension from Fort Saskatchewan to accommodate future industrial growth, should demand warrant, while maintaining a one mile buffer from the residential portion of the nearby Hamlet of Josephburg.

This study area includes two country residential subdivisions – Pointe Aux Pins Estates and Galloway Park. Two major pipeline corridors also bisect the southeast study area. Both travel in the northeast to southwest direction generally parallel to the CP rail line. This study area also abuts Strathcona County's study area for the *Bremner Growth Management Strategy* (east of Highway 21), the plan area for the proposed *West of Highway 21 Area Concept Plan*, and the airport portion of the *Hamlet of Josephburg ASP* to the east. Within this study area, the first 1.6 km (1 mi) southeast of Highway 15 in the far northeast portion of the study area is subject to the *AIH ASP*, which designates these lands for transitional land uses such as agri-business and light/medium industrial among others.

1.4 Growth Principles

To guide the preparation of the *Growth Study* and to develop a recommendation for the expansion areas, urban growth principles were established to provide a philosophical context. The rationale for the amount and locations of the recommended expansion areas, is based on the following urban growth principles:

1. City lands must be planned and developed in a logically staged fashion that optimizes (minimizes) municipal footprint and investment in supporting capital infrastructure and in future operating / service delivery costs.

¹ The Strathcona County MDP defines Transition Urban Reserve Policy Area as "an area that is intended to provide a transition between both heavy industrial activities and residential uses in the City of Edmonton and residential uses on those lands identified as Urban Reserve in Strathcona County."



2. Expansion of the City's boundaries must be determined in compliance with the intent of all provincial legislation and the Annexation Principles established by the Municipal Government Board.
3. Urban development decisions will reflect the land use principles, policies and density targets of the Capital Region Growth Plan.
4. Urban development should align with the City's Strategic Plan and the intent of all applicable statutory plans.
5. The relationship of the City with its municipal neighbours — Strathcona County, Sturgeon County and the City of Edmonton — the Capital Region Board, the Alberta's Industrial Heartland Association and other stakeholders should be one of mutual respect and cooperation.
6. The City will provide an opportunity to live, work and play in the community.
7. All growth rates used to help determine future City land requirements must be realistic, and based on the review of a range of scenarios.
8. An adequate and appropriate supply of land for residential, commercial, industrial and institutional uses must be available to accommodate and support anticipated future populations and economic growth.
9. As a member of the Alberta's Industrial Heartland Association, the City must have a sufficient land base to ensure that it has the capacity to accommodate industry.
10. The City's economic base must be stable and should be able to support the provision of municipal infrastructure and services over the long-term.
11. City lands must be developed in proximity to existing and future infrastructure/utility corridors in order to optimize opportunities to recover costs from the benefiting lands.
12. City lands must be planned and developed in a fashion that minimizes their impact on the natural environment, preserves critical environmental areas and improves the community's quality of life through the preservation of open spaces. Statutory development setbacks from environmental features, such as wetlands and their associated natural areas, must be respected.
13. Statutory and regulated development setbacks from landfills, airports and oil and gas facilities must be respected.
14. The City recognizes the presence of significant pipeline corridors to the southeast of the City and acknowledges the potential benefit of expanding these corridors to accommodate additional pipelines.
15. City taxes must be applied fairly, consistently and equitably to all taxpayers to balance the needs and wants of the community.
16. The impacts of boundary adjustments on other public stakeholders and service providers must be investigated.

2.0 Historic Growth and Demographics

2.1 Historic Population Growth

Table 1 illustrates the City of Fort Saskatchewan's historic population growth since 1961 according to federal and municipal census results. Overall changes, average annual growth rates and average difference in people per year between federal and municipal censuses are presented.

Table 1: Historical Population Growth, 1961 – 2014

Year	Federal Census History				Municipal Census History			
	Original Population	Change Over Period	Average Annual Growth ²	Average People per Year	Population	Change Over Period	Average Annual Growth ²	Average People per Year
1961	2,972	15.1%	2.9%	78	3,325	0.6%	0.6%	20
1962					3,497	5.2%	5.2%	172
1963					3,642	4.1%	4.1%	145
1964					3,766	3.4%	3.4%	124
1965					3,820	1.4%	1.4%	54
1966	4,152	39.7%	6.9%	236	4,031	5.5%	5.5%	211
1967					4,277	6.1%	6.1%	246
1968					4,430	3.6%	3.6%	153
1969					4,961	12.0%	12.0%	531
1970					5,302	6.9%	6.9%	341
1971	5,726	37.9%	6.6%	315	5,734	8.1%	8.1%	432
1972					6,328	10.4%	10.4%	594
1973					6,756	6.8%	6.8%	428
1974					7,312	8.2%	8.2%	556
1975					8,113	11.0%	11.0%	801
1976	8,304	45.0%	7.7%	516	8,744	7.8%	7.8%	631
1977					9,586	9.6%	9.6%	842
1978					10,104	5.4%	5.4%	518
1979					10,773	6.6%	6.6%	669
1980					11,482	6.6%	6.6%	709
1981	12,169	44.4%	7.6%	773	12,157	5.9%	5.9%	675
1982					12,455	2.5%	2.5%	298
1983					12,474	0.2%	0.2%	19
1986 ³	11,983	-1.5%	-0.3%	-37				
1990					11,753	-5.8%	-0.8%	-103
1991	12,078	0.8%	0.2%	19				
1993					12,313	4.8%	1.6%	187
1996 ²	12,408	2.6%	0.5%	66				
1998					13,109	6.5%	1.3%	159
2000					13,346	1.8%	0.9%	119
2001	13,121	5.7%	1.1%	143				
2003					13,824	3.6%	1.2%	159
2005					14,685	6.2%	3.1%	431
2006	14,957	14.0%	2.7%	367				
2007					16,146	9.9%	4.9%	731
2008					16,793	4.0%	4.0%	647
2009					17,469	4.0%	4.0%	676
2010					18,653	6.8%	6.8%	1,184
2011	19,051	27.4%	5.0%	819				

² Compounded average annual growth rates.

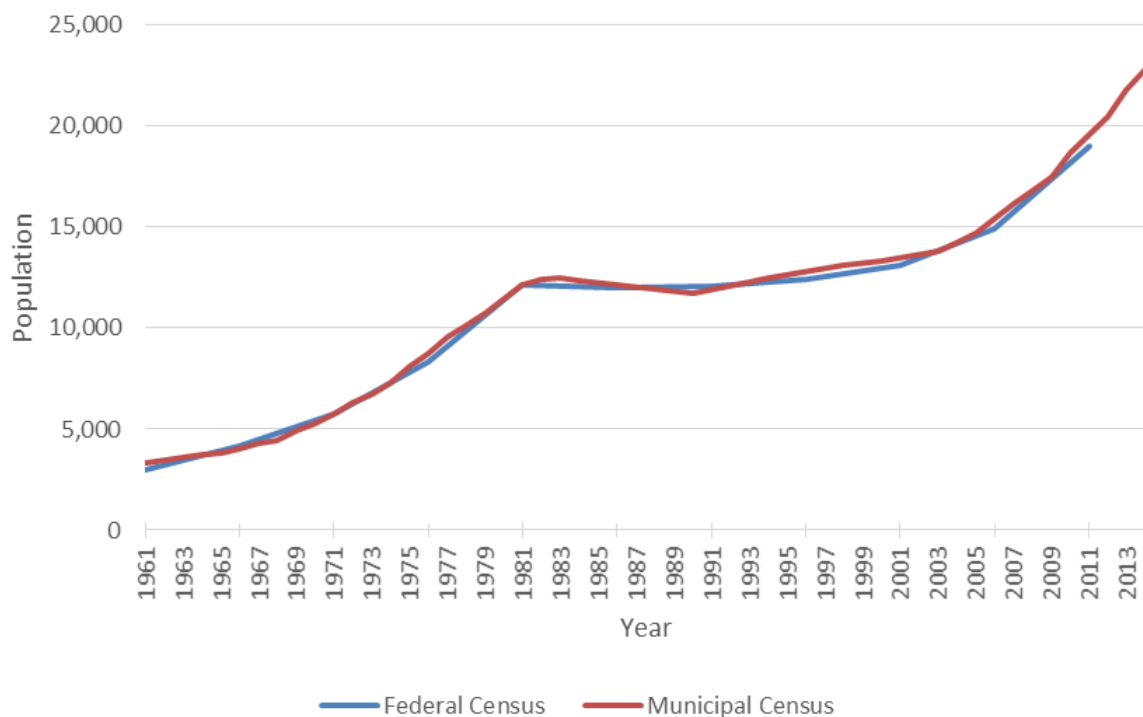
³ Change over period, average annual growth and average people per year values for 1981 and 1996 calculated based on City's revised 1976 and 1991 populations of 8,430 and 12,092 respectively due to annexations.



Year	Federal Census History				Municipal Census History			
	Original Population	Change Over Period	Average Annual Growth ²	Average People per Year	Population	Change Over Period	Average Annual Growth ²	Average People per Year
2012					20,475	9.8%	4.8%	911
2013					21,795	6.4%	6.4%	1,320
2014					22,808	4.6%	4.6%	1,013
2015					24,040	5.4%	5.4%	1,232

Figure 1 illustrates the historic population growth of the City of Fort Saskatchewan since 1961 presented in Table 1.

Figure 1: Historic Population Growth, 1961 – 2014



The following are key observations from Table 1 and Figure 1.

- The City of Fort Saskatchewan has grown from a population of 2,972 in 1961 to 24,040 in 2015.
- At its 2015 population of 24,040, the City has nearly doubled its population over the past 24 years since recording a population of 12,078 in the 1991 federal census.
- More than 50% of the City's growth since 1991 has occurred in the past six years and more than 75% has occurred in the past nine years.
- Among the various federal censuses between 1961 and 2011, the City's average annual growth rate has varied between -0.3% and 7.7%.
- Between 1986 and 2003 – the timeframe generally aligning with Fort Saskatchewan's last two residential boundary adjustments – the City's average annual growth rate varied between -0.8% and 1.6%. Since 2003, the City's average annual growth rate has varied between 2.7% and 6.8%.

In addition to these observations, the City:

- grew by 27.4% between 2006 and 2011 making it the fifth-fastest growing city in Alberta;⁴ and
- is one of eight urban communities within the Capital Region that are designated Priority Growth Areas (PGAs) in the Capital Region Growth Plan.⁵

Table 2 illustrates the City's growth rates over various intervals from 2014, ranging from the past 10 years to the past 50 years.

Table 2: Historical Population Growth Between Various Intervals, 1964 – 2014

Time Period	Change Over Period	Average Annual Growth ²	Average People per Year
50 (1964-2014)	506%	3.7%	381
40 (1974-2014)	212%	2.9%	387
30 (1984-2014) ⁶	84%	2.1%	348
20 (1994-2014) ³	83%	3.1%	517
10 (2004-2014) ³	60%	4.8%	856

The following are key observations from Table 2.

- Over the 50-year interval (1964-2014), the City's population has increased an average of 3.7% annually.
- Over the most recent 10-year interval (2004-2014), the population has increased an average of 4.7% annually, the highest average annual growth rate among all intervals.

Fort Saskatchewan's historic population growth pattern over the past 50 years is reflective of several factors, including the following:

- the City's significant role in the oil and gas industry;
- its proximity to employment opportunities within Alberta's Industrial Heartland;
- its proximity to a large population and employment base within the Capital Region that attracts global opportunities and advantages; and
- its high quality of life (parks, trails and green space; small city atmosphere; services and amenities; etc.)⁷ that makes it attractive to families.

In addition, Fort Saskatchewan's accelerated growth pattern over the past 10 years is reflective of several factors including:

- the emergence of additional employment opportunities in Alberta's Industrial Heartland;
- investments in social capital infrastructure such as the Dow Centennial Centre to complete the community;
- the lower cost of living benefits in the City compared to other high growth municipalities in the Capital Region; and
- overcoming the historical stigma of heavy industrial developments and the correctional facility.

⁴ Source: Statistics Canada ([Population and dwelling counts, for Canada and census subdivisions \(municipalities\) with 5,000-plus population, 2011 and 2006 censuses](#))

⁵ Source: Capital Region Board (Capital Region Growth Plan: October 2009 Addendum)

⁶ No municipal censuses were conducted by the City in 1984, 1994 and 2004, so figures for these time periods are based on extrapolations of the growth observed between most recent and subsequent municipal census results for each of these years.

⁷ Source: 2014 Resident Strategic Survey: Final Report.



2.2 Comparator Communities

Table 3 compares Fort Saskatchewan's historic population growth rates over selected timeframes with the seven communities that are urban in nature within the Capital Region's designated PGAs.

Table 3: Population Growth Rate Comparisons

Comparable Community	Population History					Average Annual Growth Rates over Selected Timeframes			
	1961	2001	2006	2011	2014	1961-2001	2001-2006	2006-2011	2011-2014
Beaumont	194	7,006	8,961	13,284	15,828	9.4%	5.0%	8.2%	6.0%
Edmonton	281,027	666,104	730,372	812,201	877,926	2.2%	1.9%	2.1%	2.6%
Fort Saskatchewan	2,972	13,121	14,957	19,051	22,808	3.8%	2.7%	5.0%	6.2%
Leduc	2,356	15,032	16,967	24,279	28,583	4.7%	2.5%	7.4%	5.6%
Sherwood Park	2,923	47,645	56,845	64,733	n/a	7.2%	3.6%	2.6%	n/a
Spruce Grove	456	15,983	19,496	26,171	29,526	9.3%	4.1%	6.1%	4.1%
St. Albert	4,059	53,081	57,719	61,466	63,255	6.6%	1.7%	1.3%	1.1%
Stony Plain	1,311	9,589	12,363	15,051	n/a	5.1%	5.2%	4.0%	n/a

The following are key observations from Table 3.

- Fort Saskatchewan, the fourth fastest growing urban community between 2006 and 2011, has since emerged as the fastest growing urban community within PGAs in the Capital Region.
- The City's average annual growth rate has trended upwards over the last three selected timeframes.

2.3 Demographics

2.3.1 Demographic Characteristics

Table 4 presents various demographic characteristics of the City of Fort Saskatchewan from 2011 and compares them with the same for selected municipalities in the Capital Region. The municipalities selected for comparison are those within designated PGAs that are mostly urban in nature.

The demographic comparison reveals that Fort Saskatchewan, among the other urban PGA municipalities in the Capital Region, has:

- the fourth lowest median age of the population;
- the second highest average children per census family (tied with five others);
- the fourth highest average persons in private households (tied with Leduc);
- the third lowest percentage of low density income residential dwellings (tied with Stony Plain); and
- the fourth highest average household total income in 2010 of all private households.

Table 4: Demographic Characteristics of Urban PGA Municipalities

Demographic Characteristic ⁸	Beaumont	Edmonton	Fort Saskatchewan	Leduc	Spruce Grove	St. Albert	Stony Plain	Strathcona County
Median Age of Population	32.3	36.0	35.4	34.0	33.7	40.2	37.7	39.1
Average Children per Census Family	1.3	1.1	1.1	1.1	1.1	1.1	1.0	1.1
Average Persons in Private Households	3.0	2.5	2.6	2.6	2.7	2.7	2.5	2.8
Percent Low Density Residential Dwellings	92%	57%	76%	75%	83%	81%	76%	90%
Total Occupied Private Dwellings	4,370	324,755	7,330	9,290	9,620	22,515	5,820	33,130
Low Density Residential Dwellings ⁹	4,010	184,625	5,575	6,975	8,010	18,170	4,395	29,860
Other Residential Dwellings ¹⁰	360	140,135	1,760	2,315	1,625	4,340	1,430	3,255
Average Household Total Income, 2010 (\$)	117,853	90,340	103,041	100,265	101,518	121,499	94,330	131,487

These observations confirm that the City of Fort Saskatchewan is a mature community that is attractive to young families but also has an established older population. These observations translate to a high demand for both low density and multi-family residential products in Fort Saskatchewan.

The City's demographic characteristics are most similar to those of Leduc and Spruce Grove, which are the only two of the compared municipalities that fall within the 20,000 to 30,000 population range. As both Leduc and Spruce Grove are slightly larger than Fort Saskatchewan, the demographic comparison suggests Fort Saskatchewan could experience growth in the short term that is similar to the growth experienced by Leduc and Spruce Grove in recent history.

2.3.2 Age and Gender

Figure 2 presents the age and gender of Fort Saskatchewan's population in five-year cohorts from the 2011 federal census. Figures 3 and 4 present the same for the Edmonton Census Metropolitan Area (CMA) and the Province of Alberta, pro-rated to Fort Saskatchewan's 2011 population of 19,051.

⁸ All demographic characteristics are from the 2011 federal census as published by Statistics Canada except for medium income of all census families, which is from the 2006 federal census.

⁹ Consists of single detached housing and semi-detached housing as defined by Statistics Canada in the 2011 federal census.

¹⁰ Consists of all other residential housing structure types as defined by Statistics Canada in the 2011 federal census.



Figure 2: Age and Gender by Five Year Cohorts, Fort Saskatchewan

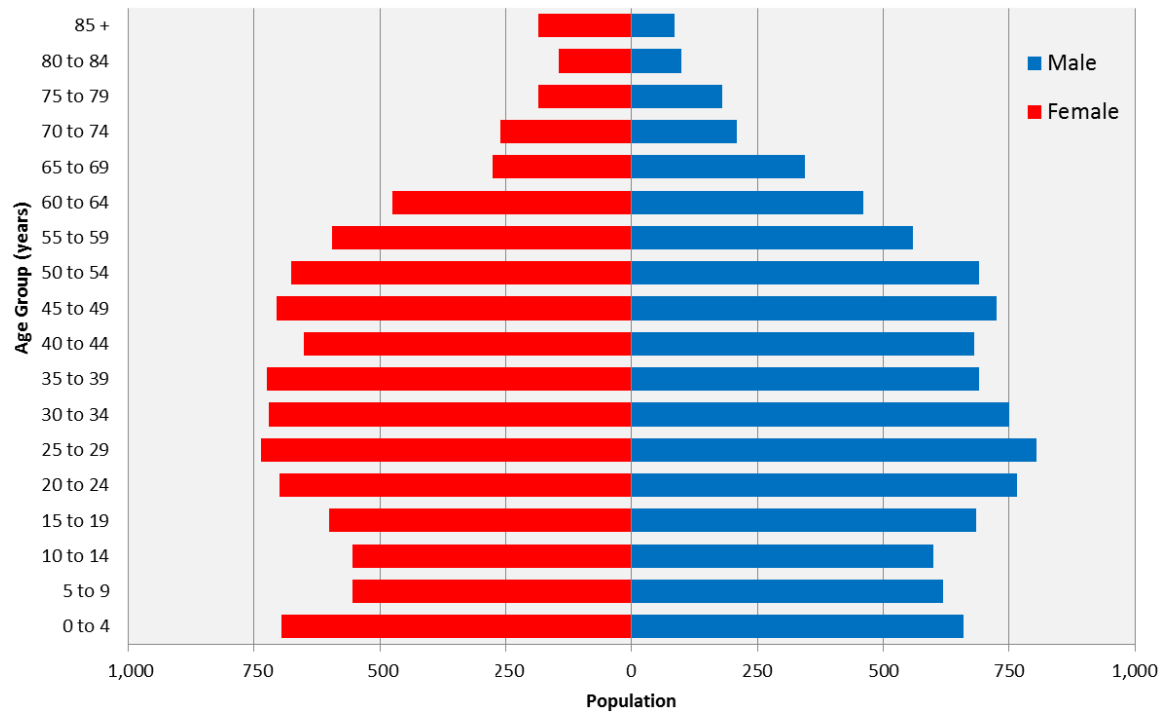


Figure 3: Age and Gender by Five Year Cohorts, Edmonton CMA

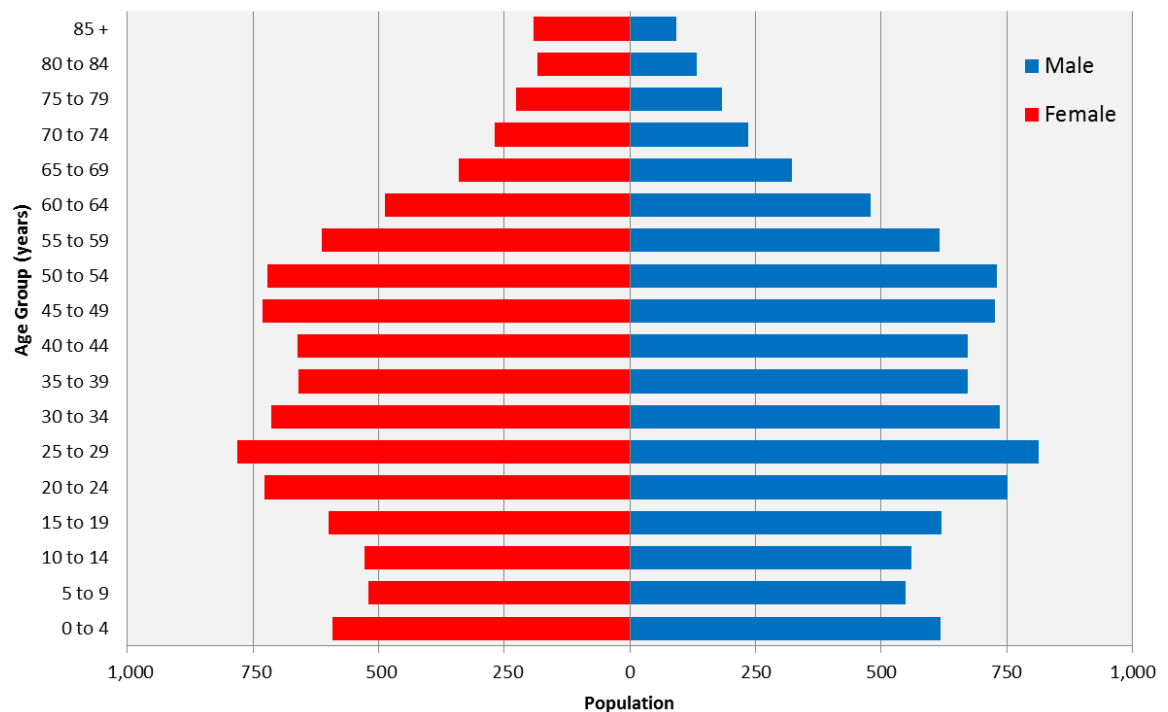
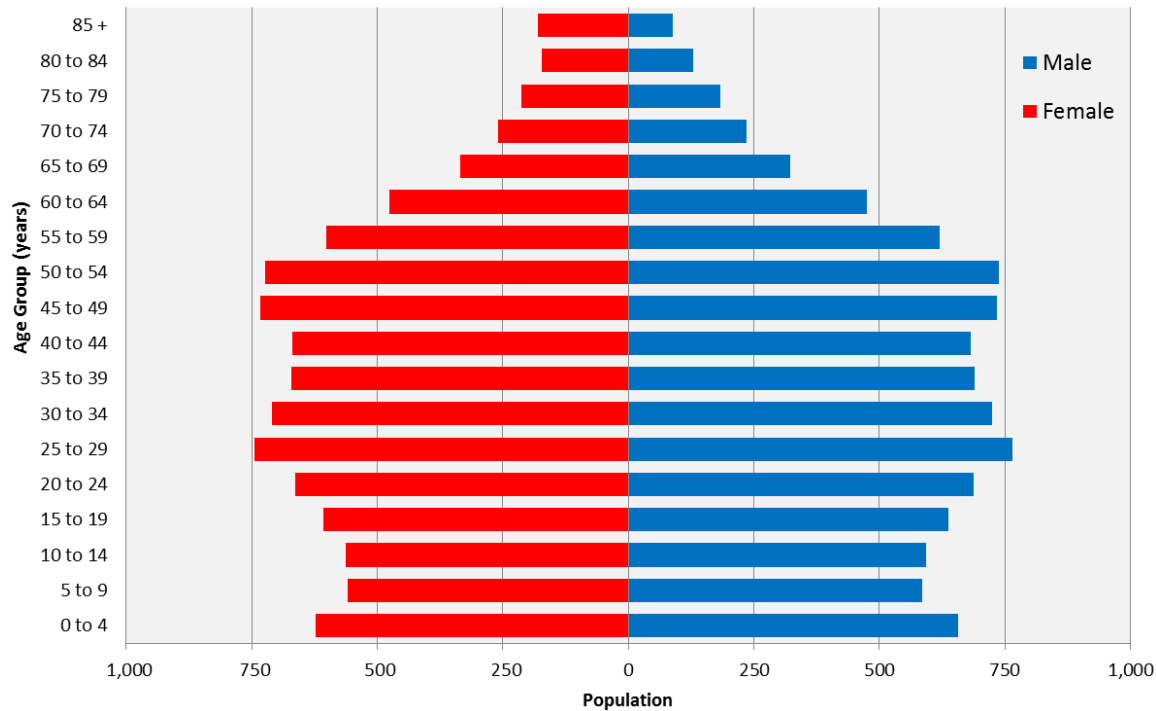


Figure 4: Age and Gender by Five Year Cohorts, Alberta



The following are key observations from Figures 2, 3 and 4.

- Fort Saskatchewan has three significant population bubbles – the cohorts encompassing ages 20 through 39, the cohorts encompassing 45 through 54 (young baby boomers), and the 0 to 4 age cohort.
- Comparatively, two of the Edmonton CMA's three significant population bubbles are the same as those of Fort Saskatchewan – the cohorts of 45 through 54 and 0 to 4. Its third population bubble comprises the cohort of 20 through 34, which largely overlaps with Fort Saskatchewan's third population bubble.
- Two of Alberta's three largest population bubbles also match those of both Fort Saskatchewan and the Edmonton CMA – the cohorts of 45 through 54 and 0 to 4. Its third population bubble comprises the cohort of 25 through 34, which largely overlaps with the Edmonton CMA's third population bubble.
- Overall, Fort Saskatchewan's age distribution most resembles that of the Edmonton CMA followed by that of Alberta.



3.0 Population Forecasts

3.1 Capital Region Board Population Projections

The Capital Region Board (CRB) accepted revised projections for the Capital Region by municipality in late 2013. These projections include “Low” and “High” scenarios that have a 30-year timeframe with 2014 as the base year and 2044 as the horizon year. Table 5 presents the CRB-accepted population projections for the City of Fort Saskatchewan, and adjustments to those projections based on the City’s 2014 municipal census population.

Table 5: CRB Population Projections for Fort Saskatchewan, 2014 – 2044

	CRB Low	CRB High	CRB Low Adjusted	CRB High Adjusted
Population in 2014 (Base Year)	21,100	21,100	22,808	22,808
Population in 2044 (Horizon Year)	40,300	58,700	43,562	63,452
Absolute Change (2014-2044)	19,200	37,600	20,754	40,644
Percent Change (2014-2044)	91%	178%	91%	178%
Average Annual Growth Rate (2014-2044)	2.2%	3.5%	2.2%	3.5%

The following are key observations from Table 5.

- The base year population of 21,100 for the City of Fort Saskatchewan is 7% less than its actual 2014 population of 22,808.
- Fort Saskatchewan fails to double its population within the 30-year timeframe of the “CRB Low” population projection scenario despite the City most recently doubling its population within the past 24 years (between 1990 and 2014).
- In the “CRB High” scenario, Fort Saskatchewan’s absolute growth is nearly double that of the “CRB Low” scenario.
- Adjustment of the base year population from 21,100 to 22,808 would result in higher populations in the horizon year of 2044 in both scenarios if their average annual growth rates were applied.
- The adjustment of the base year population results in an additional 3,262 residents in the “CRB Low” scenario and an additional 4,752 residents in the “CRB High” scenario by 2044 (populations of 43,562 and 63,452 respectively).
- Fort Saskatchewan’s 4.6% growth rate in 2014 and 5.4% growth rate in 2015 exceed the average annual growth rates applied to the City in the CRB’s 2013 Low and High Scenarios.

3.2 Alternative Population Projection Scenarios

Table 6 presents three sets of alternative population growth scenarios – a low case, a medium case and a high case – prepared for the City of Fort Saskatchewan Growth Study by Strategic Projections Inc. (SPI) and are summarized below.

Table 7 presents a comparative summary of the three alternative population growth scenarios. The total population changes, the overall rates of change, and the average annual growth rates are presented for all three scenarios over the 52-year period. The same is also presented for a 30-year period from 2014-2044 for direct comparison with the CRB-accepted population projections.

Table 6: Alternative Population Projection Scenarios, 2014 – 2066

Year	Low Case (2014-40)		Medium Case (2014-40)		High Case (2014-40)		Year	Low Case (2040-66)		Medium Case (2040-66)		High Case (2040-66)	
	Pop.	Rate	Pop.	Rate	Pop.	Rate		Pop.	Rate	Pop.	Rate	Pop.	Rate
2014	22,808	–	22,808	–	22,808	–	2040	38,834	1.4%	47,762	1.9%	59,969	1.9%
2015	23,423	2.7%	23,710	4.0%	24,090	5.6%	2041	39,366	1.4%	48,664	1.9%	61,394	2.4%
2016	24,032	2.6%	24,612	3.8%	25,385	5.4%	2042	39,894	1.3%	49,566	1.9%	62,823	2.3%
2017	25,041	4.2%	26,014	5.7%	27,306	7.6%	2043	40,420	1.3%	50,469	1.8%	64,252	2.3%
2018	26,035	4.0%	27,417	5.4%	29,233	7.1%	2044	40,942	1.3%	51,371	1.8%	65,686	2.2%
2019	27,029	3.8%	28,819	5.1%	31,179	6.7%	2045	41,468	1.3%	52,273	1.8%	67,124	2.2%
2020	27,622	2.2%	29,721	3.1%	32,494	4.2%	2046	41,987	1.3%	53,175	1.7%	68,566	2.1%
2021	28,215	2.1%	30,623	3.0%	33,814	4.1%	2047	42,506	1.2%	54,077	1.7%	70,013	2.1%
2022	28,802	2.1%	31,525	2.9%	35,142	3.9%	2048	43,021	1.2%	54,979	1.7%	71,467	2.1%
2023	29,386	2.0%	32,427	2.9%	36,479	3.8%	2049	43,533	1.2%	55,881	1.6%	72,928	2.0%
2024	29,966	2.0%	33,329	2.8%	37,821	3.7%	2050	44,042	1.2%	56,783	1.6%	74,397	2.0%
2025	30,546	1.9%	34,231	2.7%	39,167	3.6%	2051	44,547	1.1%	57,685	1.6%	75,873	2.0%
2026	31,119	1.9%	35,134	2.6%	40,518	3.4%	2052	45,049	1.1%	58,587	1.6%	77,357	2.0%
2027	31,692	1.8%	36,036	2.6%	41,878	3.4%	2053	45,547	1.1%	59,489	1.5%	78,849	1.9%
2028	32,259	1.8%	36,938	2.5%	43,238	3.2%	2054	46,042	1.1%	60,391	1.5%	80,348	1.9%
2029	32,822	1.7%	37,840	2.4%	44,607	3.2%	2055	46,533	1.1%	61,293	1.5%	81,855	1.9%
2030	33,385	1.7%	38,742	2.4%	45,978	3.1%	2056	47,021	1.0%	62,195	1.5%	83,370	1.9%
2031	33,941	1.7%	39,644	2.3%	47,352	3.0%	2057	47,506	1.0%	63,097	1.5%	84,892	1.8%
2032	34,497	1.6%	40,546	2.3%	48,740	2.9%	2058	47,987	1.0%	63,999	1.4%	86,422	1.8%
2033	35,049	1.6%	41,448	2.2%	50,129	2.8%	2059	48,465	1.0%	64,901	1.4%	87,960	1.8%
2034	35,598	1.6%	42,350	2.2%	51,518	2.8%	2060	48,940	1.0%	65,803	1.4%	89,506	1.8%
2035	36,144	1.5%	43,252	2.1%	52,915	2.7%	2061	49,411	1.0%	66,706	1.4%	91,060	1.7%
2036	36,689	1.5%	44,154	2.1%	54,318	2.7%	2062	49,879	0.9%	67,608	1.4%	92,621	1.7%
2037	37,231	1.5%	45,056	2.0%	55,725	2.6%	2063	50,344	0.9%	68,510	1.3%	94,190	1.7%
2038	37,766	1.4%	45,958	2.0%	57,136	2.5%	2064	50,806	0.9%	69,412	1.3%	95,768	1.7%
2039	38,302	1.4%	46,860	2.0%	58,552	2.5%	2065	51,264	0.9%	70,314	1.3%	97,353	1.7%
2040	38,834	1.4%	47,762	1.9%	59,969	1.9%	2066	51,719	0.9%	71,216	1.3%	98,946	1.6%

Table 7: Alternative Population Projection Scenarios Comparative Summary, 2014 – 2066

	Growth Study Low Case	Growth Study Medium Case	Growth Study High Case	CRB Low Adjusted	CRB High Adjusted
Absolute Change (2014-2066)	28,911	48,408	76,138	–	–
Percent Change (2014-2066)	127%	212%	334%	–	–
Average Annual Growth Rate (2014-2066) ¹¹	1.6%	2.2%	2.9%	–	–
Absolute Change (2014-2044)	18,134	28,563	42,878	20,754	40,644
Percent Change (2014-2044)	80%	125%	188%	91%	178%
Average Annual Growth Rate (2014-2044) ¹²	2.0%	2.7%	3.6%	2.2%	3.5%

¹¹ Compounded average annual growth rates.



3.2.1 Projection Scenario Assumptions

The projections for Fort Saskatchewan presented in Table 6 were based on the Alberta Treasury Board and Finance Census Division Population Projections for Alberta released July 9, 2014.

Fort Saskatchewan is one of 50 municipalities that together define Census Division (CD) No. 11 in Alberta. The City's share of CD No. 11's population has increased since 2001. In 2001, Fort Saskatchewan's population of 13,121 represented 1.345% of CD No. 11's population of 975,477. Its share then increased to 1.583% in 2011. With CD No. 11's absolute growth of 227,638 between 2001 and 2011, the City's absolute growth of 5,930 accounted for 2.61% of the CD No. 11's population growth over this period.

The Alberta Treasury projections for CD No. 11 – which extend only to 2041 – are based on post-censal estimates of the population.¹² The historical post-censal population estimates used by Alberta Treasury in developing their projections indicate that the population of CD No. 11 grew by 22% from 1,116,742 in 2007 to 1,360,235 in 2014, or by an average of 30,437 persons per year. Fort Saskatchewan's municipal census results indicate that the City's total population grew by 41% from 16,146 in 2007 to 22,808 in 2014, or by an annual average of 952 persons per year. Fort Saskatchewan accounted for an average share of 2.74% of CD No. 11's annual population growth over that span.

The Alberta Treasury projections foresee CD No. 11's total population increasing to 2,125,455 by 2041 at an average annual gain over that span of 28,342. In order to extend that projection to 2066, SPI assumed the 28,342 annual pace would continue through to the projection horizon thus taking CD No. 11's total population in 2066 to 2,833,993. This projection serves as the basis for the development of the "Medium Case" projection for Fort Saskatchewan illustrated in Figure 5.

SPI developed "High Case" and "Low Case" alternative projections for CD No. 11 assuming the annual percentage change in population each year from 2013 through 2066 of the "Medium Case" described above would be 0.3 percentage points faster ("High Case") or 0.3 percentage points lower ("Low Case") than the annual pace of the "Medium Case".

For the Fort Saskatchewan "Medium Case" population projection, SPI assumed the City would account for 3.18% of CD No. 11's population growth annually from 2014 to 2066, the average share the City achieved between 2006 and 2014.

For the Fort Saskatchewan "High Case", SPI assumed the City's share of CD No. 11's growth would be 3.68% each year, while SPI assumed the City's share for the "Low Case" would be 2.68% each year.

In addition to the above assumptions, SPI has taken into consideration energy projects slated for completion in the near term in order to refine three alternative population projections.

The Alberta's Industrial Heartland Association web site identifies two projects planned for Fort Saskatchewan, which together will result in \$375 million of investment in energy industry projects. These projects, once completed, are likely to employ an SPI-estimated total of 750 people. Each new employee is likely to lead to an increase in the population of the Edmonton area of about 1,500 people (the employee plus one dependent). About one-third of this additional population – or 500 people – is likely to take up residence in Fort Saskatchewan.

Fort Saskatchewan, in turn, is likely to benefit from the creation of jobs in related sectors. Furthermore, the additional population in Fort Saskatchewan stemming from the new projects in the municipality will result in

¹² Post-censal estimates adjust the census estimates for the estimated undercount of the census and shift the date of estimation from mid-May to July 1 in 2011.

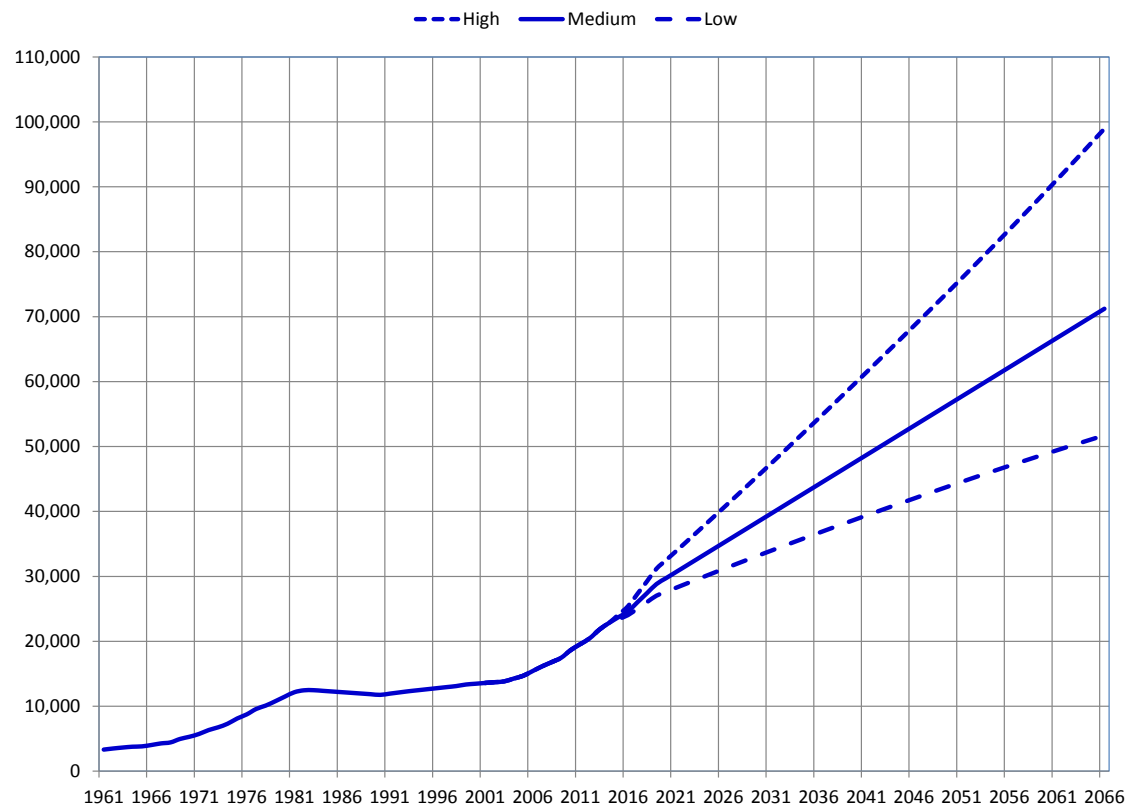
the need for additional population serving jobs. SPI estimates these additional jobs will total 750 leading to an additional population increase in the Edmonton area of 1,500 and to an additional population for Fort Saskatchewan of 500.

Many other energy projects are slated for near term development in the balance of Alberta's Industrial Heartland and nearby communities. It can be expected some of the people taking those jobs will choose to live in Fort Saskatchewan. This will lead to additional population serving jobs in Fort Saskatchewan. SPI estimates this could boost the near term population of Fort Saskatchewan by a total of 500.

From these three sources, SPI estimates the near term projects in and near Fort Saskatchewan could increase its population by a total of 1,500 people.

SPI has therefore added 1,500 people to its population projections for Fort Saskatchewan. This is applied as an additional 500 people per year in each of 2017, 2018 and 2019.

Figure 5: Fort Saskatchewan Historical and Projected Population, 1961 – 2066



3.2.2 Low Case Scenario

In the “Low Case” scenario, Fort Saskatchewan:

- experiences an average annual growth rate of 1.6% over the 52-year period (see Table 7);
- experiences a total population increase of 28,911 for an overall change of 127% between 2014 and 2066 (see Table 7); and
- doubles its 2014 population in 40 years by 2054 (see Table 6).



3.2.3 Medium Case Scenario

In the “Medium Case” scenario, Fort Saskatchewan:

- experiences an average annual growth rate of 2.2% over the 52-year period (see Table 7);
- experiences a total population increase of 48,408 for an overall change of 212% between 2014 and 2066 (see Table 7);
- doubles its 2014 population in 24 years by 2038 (see Table 6); and
- triples its 2014 population in 49 years by 2063 (see Table 6).

3.2.4 High Case Scenario

In the “High Case”, Fort Saskatchewan:

- experiences an average annual growth rate of 2.9% over the 52-year period (see Table 7);
- experiences a total population increase of 76,138 for an overall change of 334% between 2014 and 2066 (see Table 7);
- doubles its 2014 population in 16 years by 2030 (see Table 6);
- triples its 2014 population in 32 years by 2046 (see Table 6); and
- quadruples its 2014 population in 48 years by 2062 (see Table 6).

3.2.5 Projection Scenario Recommendations

The “Low Case” is not recommended as it is highly unlikely that Fort Saskatchewan will take 40 years (between 2014 and 2054) to double its population after most recently doubling its population within the past 24 years (between 1990 and 2014). Further, its average annual growth rate of 1.6% is considerably lower than the City’s average annual growth rate of 3.7% between 1964 and 2014.

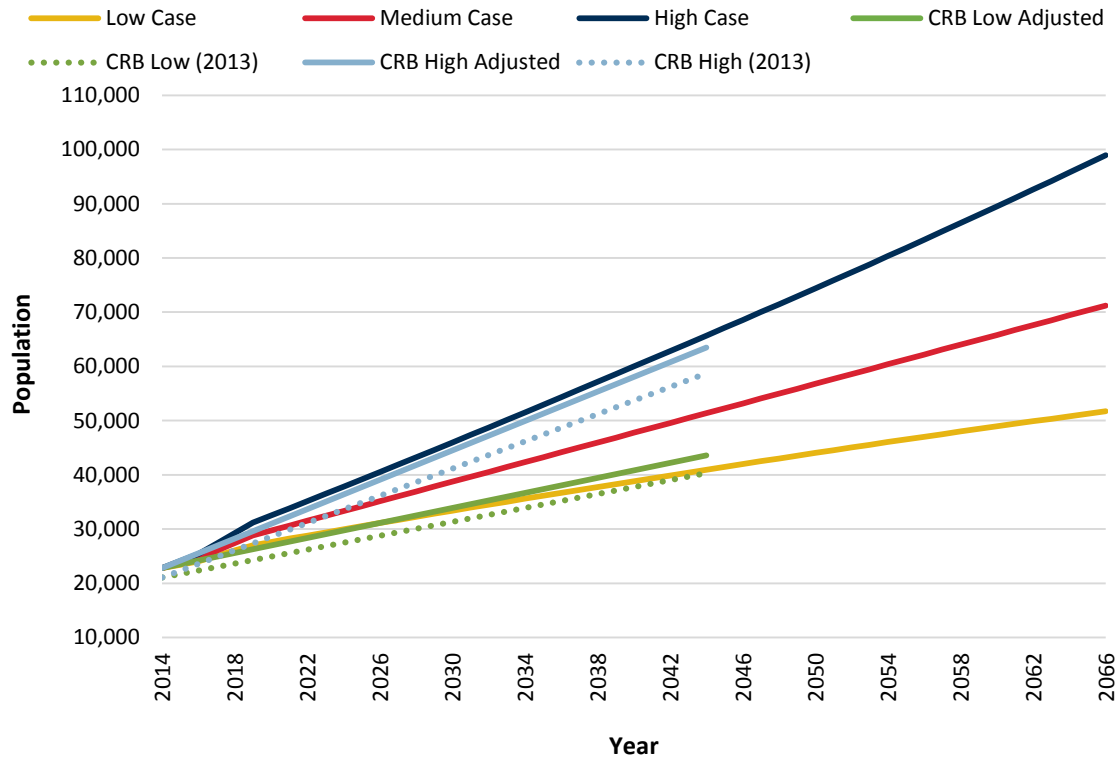
While possible, the “High Case” is not recommended as it outpaces the “CRB High” population projections for Fort Saskatchewan by nearly 7,000 people by 2044. The “High Case” might be more appropriate if there were little to no downturns in the economy throughout the projection timeframe.

The “Medium Case” is the recommended growth scenario for the City of Fort Saskatchewan Growth Study. The “Medium Case” adopts a more conservative approach than the “High Case”. It provides for realistic, reasonable and probable future population growth in that it utilizes an appropriate average annual growth rate of 2.2% over 52 years, which is lower than the 3.7% that the City experienced over the past 50 years.

Further, the “Medium Case” provides for a population of 51,371 in 2044, which is slightly higher than the midpoint between the unadjusted “CRB Low” and “CRB High” population projections for Fort Saskatchewan. By adjusting the CRB-accepted projections with the City’s actual 2014 base year population, the “Medium Case” 2044 population of 51,371 provides for a population slightly lower than the adjusted “CRB Low” and “CRB High” projections.

Figure 6 illustrates a comparison of the three alternative population projection scenarios to 2066. The two CRB-accepted population projection scenarios are also illustrated to 2044.

Figure 6: Comparison of Population Projection Scenarios





4.0 Status of City Lands

4.1 Current Land Supply

The City of Fort Saskatchewan's current land base amounts to 4,829.6 hectares (ha), of which 3,803.1 ha (78.7%) were absorbed as of mid-2014¹³ as summarized in Table 8 and illustrated in Map 3. The total amount of gross available lands¹⁴ for residential and non-residential purposes within the current City limits available for future development totals 939.6 ha (19.5%). An additional 86.9 ha of land within the City's available lands are set aside for gross undevelopable overheads such as future arterial roads, existing power line right-of-ways, existing pipeline right-of-ways and future pipeline expansion (1.8%).

Table 8: Absorbed and Available Lands

Land Use	Absorbed Lands (ha)	Percent (%)	Available Lands (gross ha)	Percent (%)	Available Lands (net ha)	Percent (%)
Low Density Residential ¹⁵	494.6	37.3	269.7	28.7	175.3	18.7
Medium/High Density Residential ¹⁶	48.3	3.6	39.2	4.2	25.5	2.7
Total Residential Land	543.0	40.9	308.9	32.9	200.8	21.4
Commercial	87.7	6.6	31.3	3.3	20.3	2.2
Industrial (Light & Medium)	135.2	10.2	599.4	63.8	389.6	41.5
Institutional	83.7	6.3	—	—	—	—
Total Non-Residential Land	306.6	23.1	630.7	67.1	410.0	43.6
Total Net Developable Land	849.5	64.1	—	—	610.7	65.0
Parks and Open Space	117.9	8.9	—	—	94.0	10.0
Public Utilities	59.8	4.5	—	—	47.0	5.0
Circulation (Locals & Collectors)	299.0	22.5	—	—	187.9	20.0
Total Gross Developable Overheads	476.8	35.9	—	—	328.9	35.0
Total Gross Developable Lands	1,326.3	100.0	939.6	100.0	939.6	100.0
Circulation (Arterials)	161.8	—	23.1	—	23.1	—
Industrial (Heavy)	1,621.3	—	—	—	—	—
Environmental Reserve	437.5	—	—	—	—	—
Golf Course	27.0	—	—	—	—	—
Correctional Institution	76.5	—	—	—	—	—
Industrial Buffer	94.3	—	—	—	—	—
Rail	58.3	—	—	—	—	—
Power Line Right-of-Way	—	—	5.8	—	5.8	—
Pipeline Right of Way	—	—	33.6	—	33.6	—
Pipeline Expansion	—	—	24.4	—	24.4	—
Total Gross Undevelopable Overheads	2,476.8	—	86.9	—	86.9	—
Total	3,803.1	—	1,026.5	—	1,026.5	—

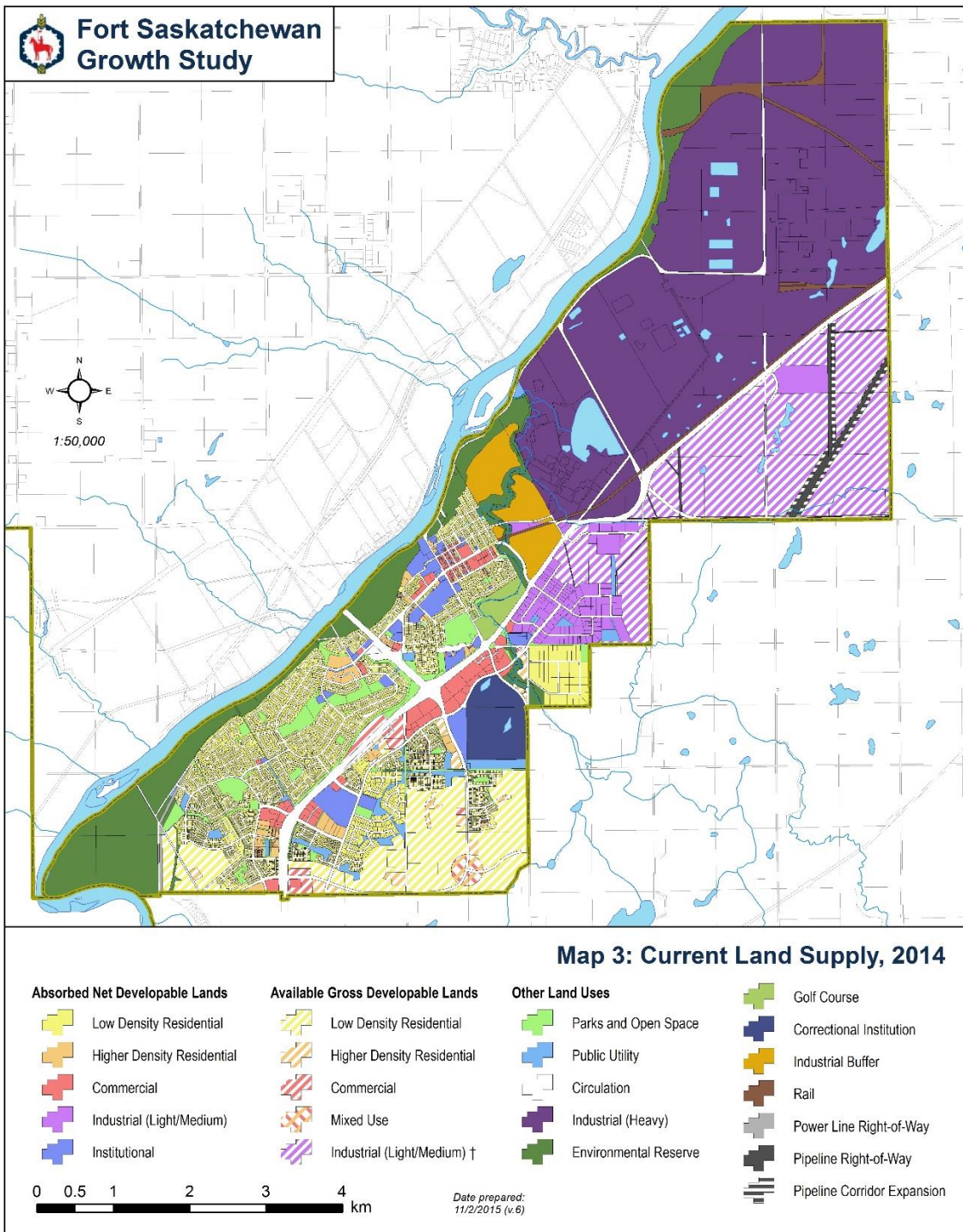
¹³ Absorbed lands include those lands zoned under the Land Use Bylaw (LUB) and subdivided for development.

¹⁴ Available lands include those lands not yet zoned and/or subdivided for development. Land uses are based on the LUB, outline plans and area structure plans in effect, the Municipal Development Plan, etc.

¹⁵ Low Density Residential includes single detached, semi-detached and duplex dwellings.

¹⁶ Medium/High Density Residential includes triplexes, fourplexes, row housing, stacked row housing and apartments.

Map 3: Current Land Supply, 2014





By subtracting an assumed 35%¹⁷ of the gross available lands for gross developable overheads, the net amount of land available for residential and non-residential development within the current City limits totals 563.8 ha. This is the equivalent of 11.7% of the City's total land base.

4.2 Absorption Forecast of Available Land Supply

Table 9 presents the estimated amount of years to land supply absorption under the “Medium Case” scenario.

Table 9: Years to Land Supply Absorption

Land Supply	Medium Case Scenario	
	Year Depleted	Years to Depletion
Residential ¹⁸	2027	13
Commercial	2021	7
Industrial (Light & Medium)	2074	58

As presented in Table 9, it will take 13 years (2027) for the City's Residential land supply to be absorbed under the recommended “Medium Case” scenario based on the available land supply estimates from Table 8. In terms of non-residential development, it will take 7 years (2021) and 58 years (2074) for the City's Commercial and Industrial (Light & Medium) land supplies respectively to be absorbed under the “Medium Case” scenario.

4.3 Historic Land Absorption

An historic land absorption analysis enables an understanding of how land has been consumed through the subdivision registration process over a certain period of time. Extrapolation of the results allows the estimation of the earliest time in which all available lands could be absorbed under two key assumptions – that there will be flexibility of land use among the City's remaining available lands (unlike the situation in Section 4.2 above), and that all owners of the available lands will participate in development. For the purpose of this *Growth Study*, Fort Saskatchewan's historical land absorption analysis was undertaken by calculating the total area of all subdivision plans registered over the past 40 years in 10-year intervals.

As illustrated in Map 4 and presented in Table 10, the total amount of lands absorbed between 2005 and 2014 inclusive was 558.7 ha, resulting in an average annual absorption rate of 55.9 ha per year. With a gross developable land supply of 939.6 ha (Table 8), it will take 17 years to absorb these lands through subdivision registration based on this rate of 55.9 ha per year remaining constant. ***This assumes flexibility in land use over the City's available land supply.*** To realize this, the City would have to redesignate large tracts of its available Light/Medium Industrial land supply for residential, commercial and institutional purposes. This is not possible however. The lands north of Highway 15, across from the City's “Light/Medium Industrial” land supply, are within close proximity to lands subject to the City's Heavy Industrial District. As per the Major Industrial Accidents Council of Canada (MIACC) risk acceptability criteria, this proximity prevents development of residential, institutional and some commercial uses within these lands.

¹⁷ This 35% deduction assumes 10% for parks and open space (municipal and school reserves), 5% for public utilities and 20% for circulation (local and collector roads). The maximum amount a municipality could require for these deductions at the subdivision stage under the Municipal Government Act is 40%.

¹⁸ Though there is no Institutional land supply currently available within the City according to Table 8, it is assumed such lands will become available over the course of residential subdivision approvals to accommodate the demand. Therefore, average annual Institutional land supply needs will erode the City's current available Residential land supply.

Map 4: Historic Land Absorption by Registered Plan, 2014

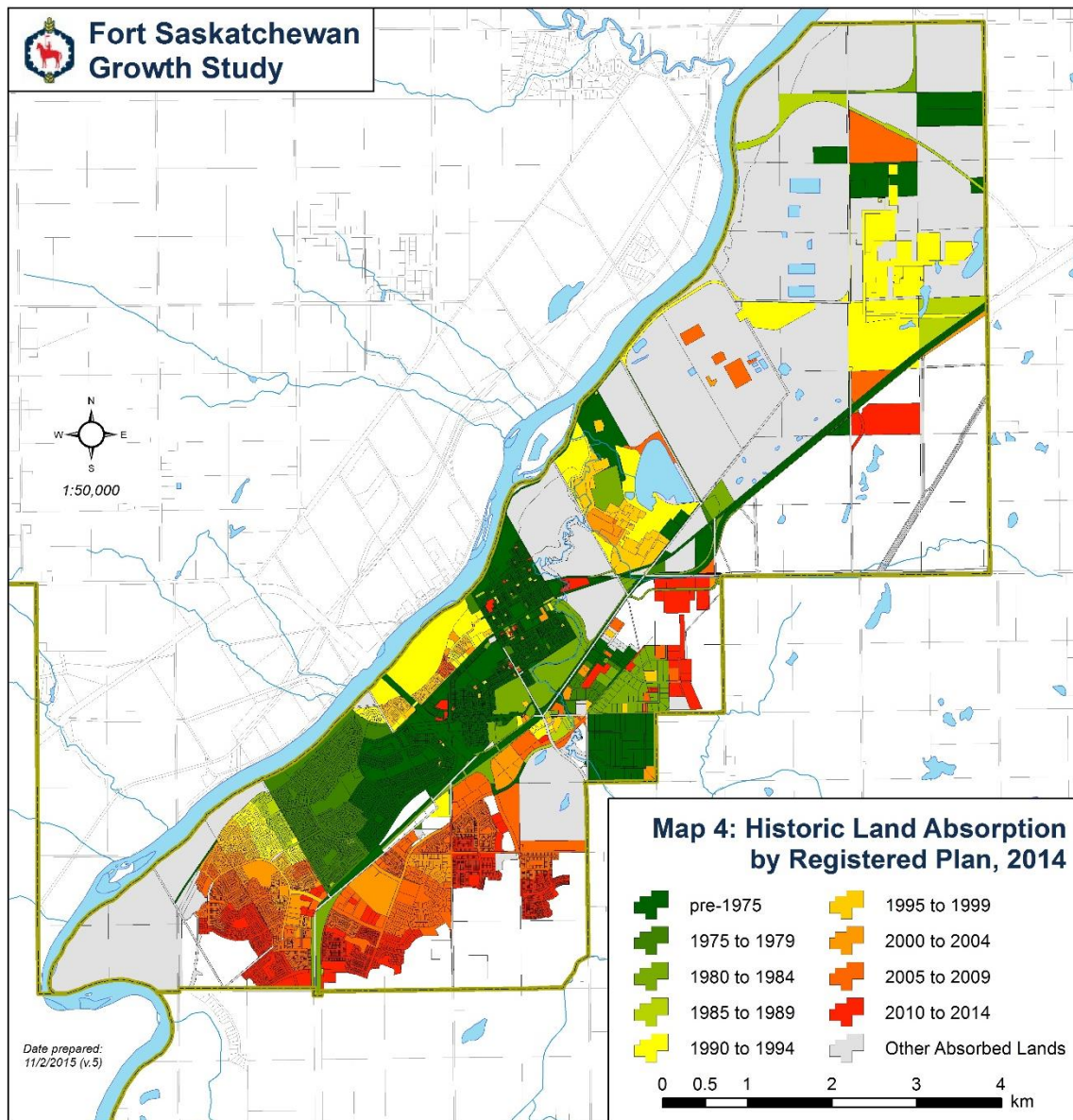




Table 10: Historical Land Absorption

Time Period	Total Land Absorbed (ha)	Average Annual Absorption (ha)
1975 to 1984	350.4	35.0
1985 to 1994	415.0	41.5
1995 to 2004	219.7	22.0
2005 to 2014	558.7	55.9
Total Absorbed Lands	1,543.8	38.6

Key observations

- Based on the current annual absorption rate of 55.9 ha per year, and assuming flexibility in land use over the City's available land supply, all of the City's remaining developable lands (939.6 ha) will be absorbed before the end of 2031 (17 years).
- The amount of lands consumed in the last 10 years amounts to 558.7 ha, which is 2.1 times the amount of land annexed by the City of Fort Saskatchewan on January 1, 2002. In the 13 years since that annexation, the City has consumed 654.7 ha or 2.5 times the amount of the last annexation. These observations underscore the magnitude of how higher than expected growth rates have triggered unprecedented land consumption.

Further to the above observations, the City has advised that only four residential developers control the remaining available residential land supply within the City. Of these four developers, the developers with the smaller amounts of remaining available residential land have indicated to the City they will consume all of their remaining holdings within six to eight years. It is not desirable to have only one active residential developer within a high growth community such as Fort Saskatchewan as such a scenario gives the sole developer significant control over the market. This in turn can compromise the affordability of the new residential housing market for the end user and thereby affect the community's ability to capture its growth potential.

4.4 Residential Lands

The City has a net residential land supply of 185.3 ha to accommodate population growth as noted in Table 8. Under the "Medium Case" scenario, these lands will be consumed within 13 years (2027) assuming all landowners within the City will participate in development (see Table 9).

It is prudent that a boundary adjustment be initiated at this time to maintain a 50-year residential land supply in the City. Furthermore, it is best practice for an urban municipality to maintain more than 20-year residential land supply. The City needs to provide sufficient residential land supply to develop housing to accommodate the population growth forecasted in the "Medium Case" scenario.

4.5 Commercial Lands

At present, the City's commercial land base available for subdivision is limited to 18.8 net ha as noted in Table 8. Under the "Medium Case" scenario, the commercial lands will be subdivided for consumption by the end of 2021.

It is prudent that a boundary adjustment be initiated at this time to expedite expansion of Fort Saskatchewan's commercial land supply for the short-term. Otherwise, the City will have no ability to subdivide land for future commercial growth at appropriate locations beyond 2021. It is contrary to best practice for an urban municipality to maintain less than a 10-year commercial land supply.

4.6 Industrial Lands

At present, the City of Fort Saskatchewan has 359.7 net ha of light and medium industrial land available for subdivision as noted in Table 8. Under the “Medium Case” scenario, the light and medium industrial lands will be absorbed by 2076.

Fort Saskatchewan also has no lands available to accommodate corporations actively seeking land to develop future heavy industrial operations. Though the City has some heavy industrial lands that are currently undeveloped, they are held as land banks by other corporations for the purpose of accommodating their long-term future development or expansion plans. In most situations there are no firm timelines for implementation of these future development or expansion plans and there is no guarantee that all plans will come to fruition.

Though Fort Saskatchewan currently has a long-term light and medium industrial land supply, it has no available heavy industrial land supply. As 42% of the City’s 2013 municipal assessment is non-residential (commercial/industrial), down from 65% in 2002, it is prudent that the City acquire additional lands to facilitate industrial growth or the ability to maintain its current municipal assessment split will be compromised. This can be done by:

- Acquiring additional heavy industrial lands from the Strathcona County portion of Alberta’s Industrial Heartland to the northeast;
- Acquiring additional light and medium industrial lands from either Strathcona County or Sturgeon County to allow the City flexibility to redesignate portions of its current light and medium industrial lands for heavy industrial purposes;
- Acquiring additional light and medium industrial lands to embark on an aggressive economic development strategy to attract higher than traditional volumes of light and medium industrial development to compensate for the lack of additional heavy industrial development; or
- Any combination of two or more of these solutions

Pursuing a significant amount of heavy industrial lands under the first option presented above could prove harmful to Strathcona County. Pursuing the second option is undesirable as it would introduce heavy industrial to the south of Highway 15 and bring associated MIACC development buffers with it. As such, it could generate land use conflicts within the City’s existing residential development to the southwest (e.g., Clover Park), as well as residential development in the Hamlet of Josephburg and other areas in Strathcona County to the east and south. It could also compromise the safe operation of the Warren Thomas (Josephburg) Aerodrome. Pursuing the third option unwarranted given the volume of remaining available light and medium industrial lands currently within the City.

4.7 Institutional

Though Table 8 does not specifically allocate available lands for institutional uses, it is assumed that portions of the gross developable overheads will accommodate some of these uses (e.g., schools on municipal reserve sites). The remaining institutional land requirements are anticipated to be interspersed throughout future growth areas at future subdivision approval stages as facilities such as churches, fire stations, post-secondary institutions, libraries, civic buildings, etc. For the short-term, the analysis undertaken within Table 9 in Section 4.2 assumes institutional land requirements will erode the City’s current available residential land supply.



5.0 Study Area Analysis

5.1 Topography

The topography of the three study areas and the City of Fort Saskatchewan is illustrated in Map 5.

Northwest Study Area

Lands within the northwest study area slope from the northwest to the North Saskatchewan River to the southeast. The highest point in the northwest study area is 660 m above sea level (ASL) at the intersection of Highway 37 and 33 Street NE/Range Road 232, while the lowest point is 598 m ASL along the river at the northeast end of this study area. The undevelopable river valley escarpment rises abruptly next to the river throughout most of this study area, extending northwest in numerous locations for ravines carved out by watercourses.

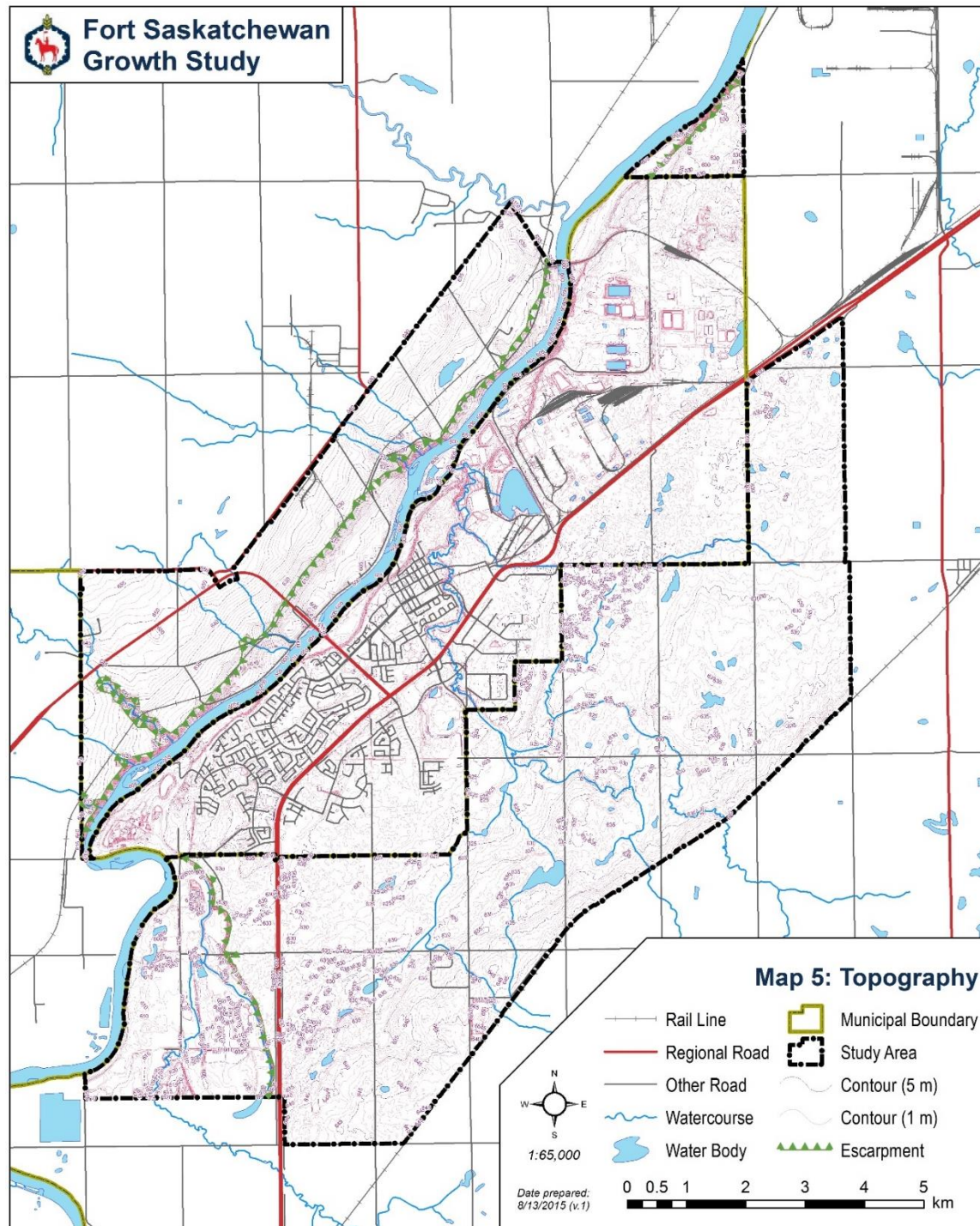
Northeast Study Area

Lands within the northeast study area slope from the east to the river to the northwest. The highest point in this study area is 632 m ASL along Range Road 220 (130 Street) while the lowest point is 598 m ASL along the river. The undevelopable river valley escarpment rises abruptly next to the river throughout this study area.

Southeast Study Area

Lands within the southeast study area generally slope from the east and southeast toward the City and the river to the northwest and west. The highest point in the southeast study area is 650 m ASL to the southeast of the Galloway Park subdivision, while the lowest point is 605 m ASL along the river to the west of the Pointe-Aux-Pins subdivision. In general, the elevations at the City's current municipal boundary range between 625 and 630 m ASL. In the portion of this study area west of Highway 21, the distance between the river and the top of the undevelopable river valley escarpment ranges increases from approximately 300 m at the City's current municipal boundary to approximately 2,700 m at the southern edge of the study area.

Map 5: Topography





5.2 Watercourses and Floodplains

Map 6 illustrates the watercourses and floodplains that are present within the study areas. Watercourse delineations are from GeoBase's National Hydro Network. Floodplains, including both flood fringes and floodways, are from Alberta Environment and Sustainable Resource Development (AESRD).

A floodplain is area adjacent to a water body that is subject to flooding. This area can serve to store floodwater and comprises both a floodway and flood fringe. Floodways are the main channel and the adjacent overbank areas. In floodways, the water moves fastest and is the most destructive. Conversely, a flood fringe is the flood hazard area adjacent to the floodway, where water is shallow and moves slower than in the floodway.

Northwest Study Area

At least eight watercourses bisect the northwest study area and drain into the North Saskatchewan River. Three run in close proximity to each other to the north of Fort Saskatchewan's downtown. Another two watercourses run in close proximity to each other to the southwest of the Highway 15 bridge. Within the river valley, very little lands are encumbered by the river's floodway and flood fringe.

Northeast Study Area

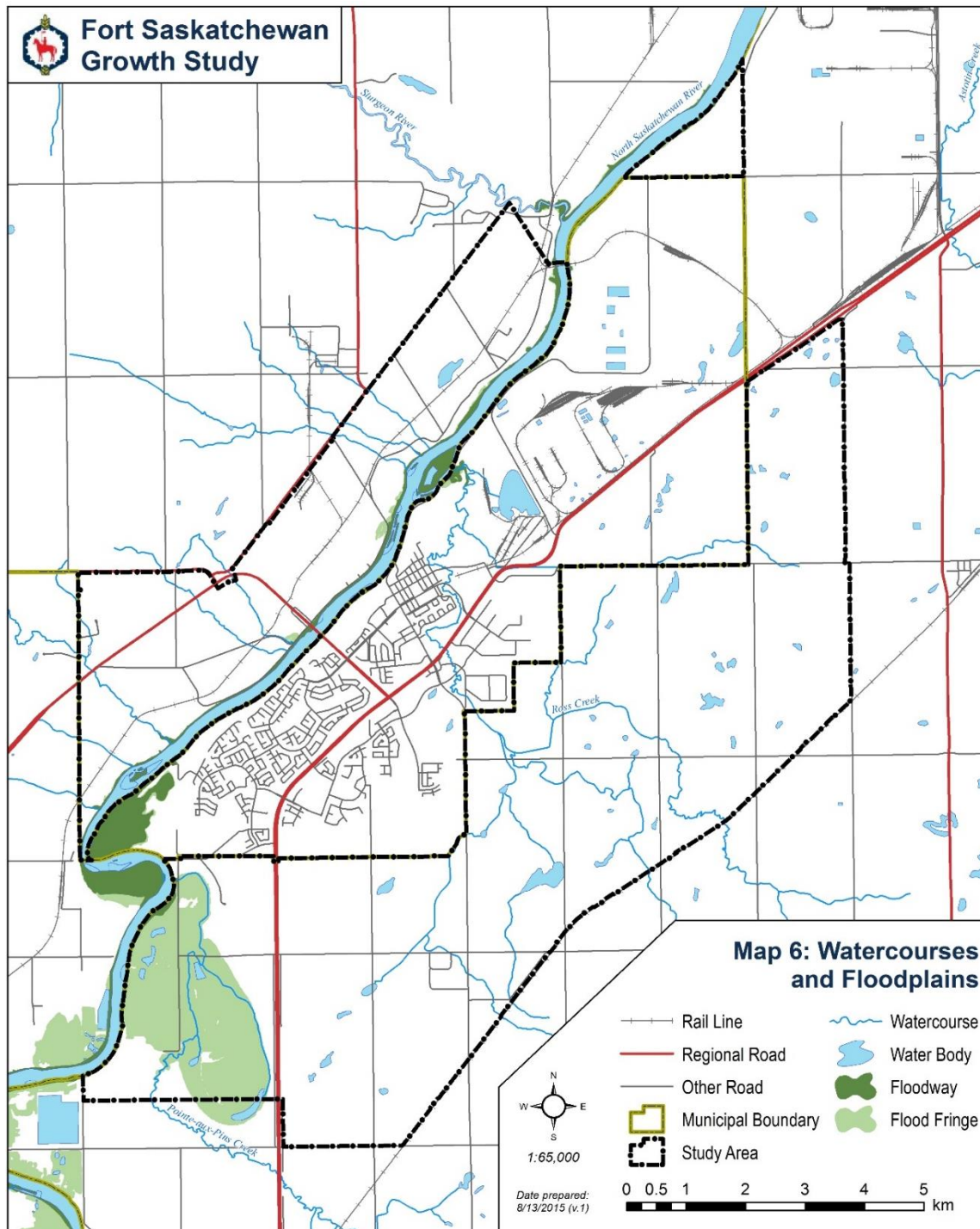
No watercourses bisect the northeast study area. Due to the abrupt rise of the river valley escarpment, these lands are essentially unencumbered by the river's floodway and flood fringe.

Southeast Study Area

Two major watercourses meander through the southeast study area. Pointe-Aux-Pins Creek enters the river valley west of Highway 21 and runs north before emptying into the North Saskatchewan River just south of the City. Ross Creek runs through the central portion of the southeast study area and enters the City between 101 Street (Range Road 224) and the Clover Park subdivision. At least four tributaries feed Ross Creek within this study area. Ross Creek and its tributaries together drain most of this study area between Highway 21 to the southwest and Highway 15 to the northeast.

See Appendix B: Environmental Overview for more information about the watercourses and floodplains within the study areas.

Map 6: Watercourses and Floodplains





5.3 Wetlands

Map 7 illustrates four types of wetlands within the City and the study areas according to AESRD's Alberta Merged Wetland Inventory (AMWI). The types include swamps, fens, marshes and open water.

Northwest Study Area

The AMWI identifies few wetlands in the northwest study area compared to the two other study areas. These wetlands are mostly fens and marshes, and while there are few, those that are present are sizeable compared to the average sizes of wetlands in the other study areas.

Northeast Study Area

The northeast study area has a cluster of very small wetlands according to the AMWI. These wetlands include swamps, fens and marshes and are mostly located beyond the river valley.

Southeast Study Area

The AMWI identifies a significant amount of wetlands within the southeast study area. The vast majority of these wetlands are marshes, but a number of swamps and open water bodies are present as well. The most sizeable open water bodies are located within the river valley west of Highway 21.

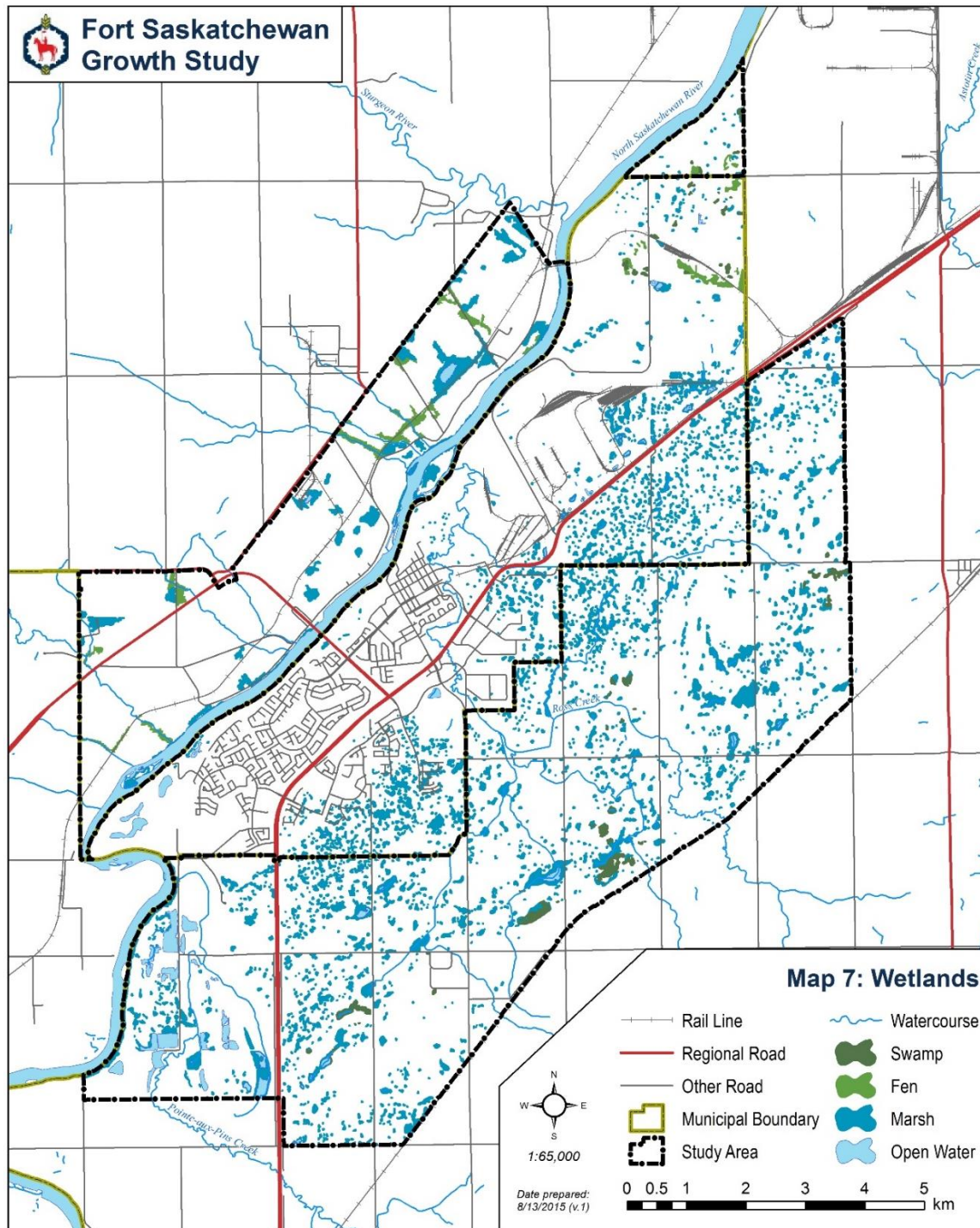
AMWI Disclaimer

Note that the AMWI was stitched together from multiple sources by AESRD. As such, the methodologies and levels of detail may vary from source to source. This may contribute to why there:

- appears to be fewer wetlands within the northwest study area compared to the other two study areas;
- appears to be no swamps in the northwest study area;
- appears to be no fens in the southeast study area.

The wetlands from the AMWI should therefore only be considered a high level desktop overview of potential wetlands within the study area. A more detailed desktop overview of wetlands present within the recommended expansion areas is presented in Appendix B.

Map 7: Wetlands





5.4 Agricultural Soils

Map 8 illustrates the soil capability for agriculture from the Canadian Land Inventory (CLI) for the City of Fort Saskatchewan, the three study areas and beyond. Types of soils present within Map 7 include Classes 1 through 6 and Class 8. Table 11 provides definitions and descriptions of each soil class from Agriculture and Agri-Food Canada where available.

Table 11: Land Capability Classes for Agriculture

Class	Definition	Description
1	No significant limitations	Soils in this class have no significant limitations in use for crops.
2	Moderate limitations; moderate conservation practices required	Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.
3	Moderately severe limitations; range of crops restricted or special conservation practices required	Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.
4	Severe limitations	Soils in this class have severe limitations that restrict the range of crops or require special conservation practices.
5	Forage crops – improvement practices feasible	Soils in this class have very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.
6	Forage crops – improvement practices are not feasible	Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.
7	No capability for arable culture or permanent pasture	Soils in this class have no capacity for arable culture or permanent pasture.
8	Unclassified areas	Unclassified
O	Organic soils	Organic Soils (not placed in capability classes).
W	Water	

Source: Agriculture and Agri-Food Canada¹⁹

As illustrated in Map 8, the City of Fort Saskatchewan's current boundaries are effectively surrounded by lands with Class 1 and 2 soils with three exceptions. Class 4 and 5 soils are present to the northeast within the Strathcona County portion of the Alberta's Industrial Heartland. A narrow seam of Class 4 soils runs between Fort Saskatchewan and Josephburg to the east. Narrow ribbons of Class 6 soils are present on either side of the North Saskatchewan River along the river valley escarpments.

¹⁹ [ISO 19131 Canadian Land Inventory \(CLI\) – Data Product Specification](#) and [Overview Of Classification Methodology for Determining Land Capability For Agriculture](#)

Map 8: Agricultural Soils

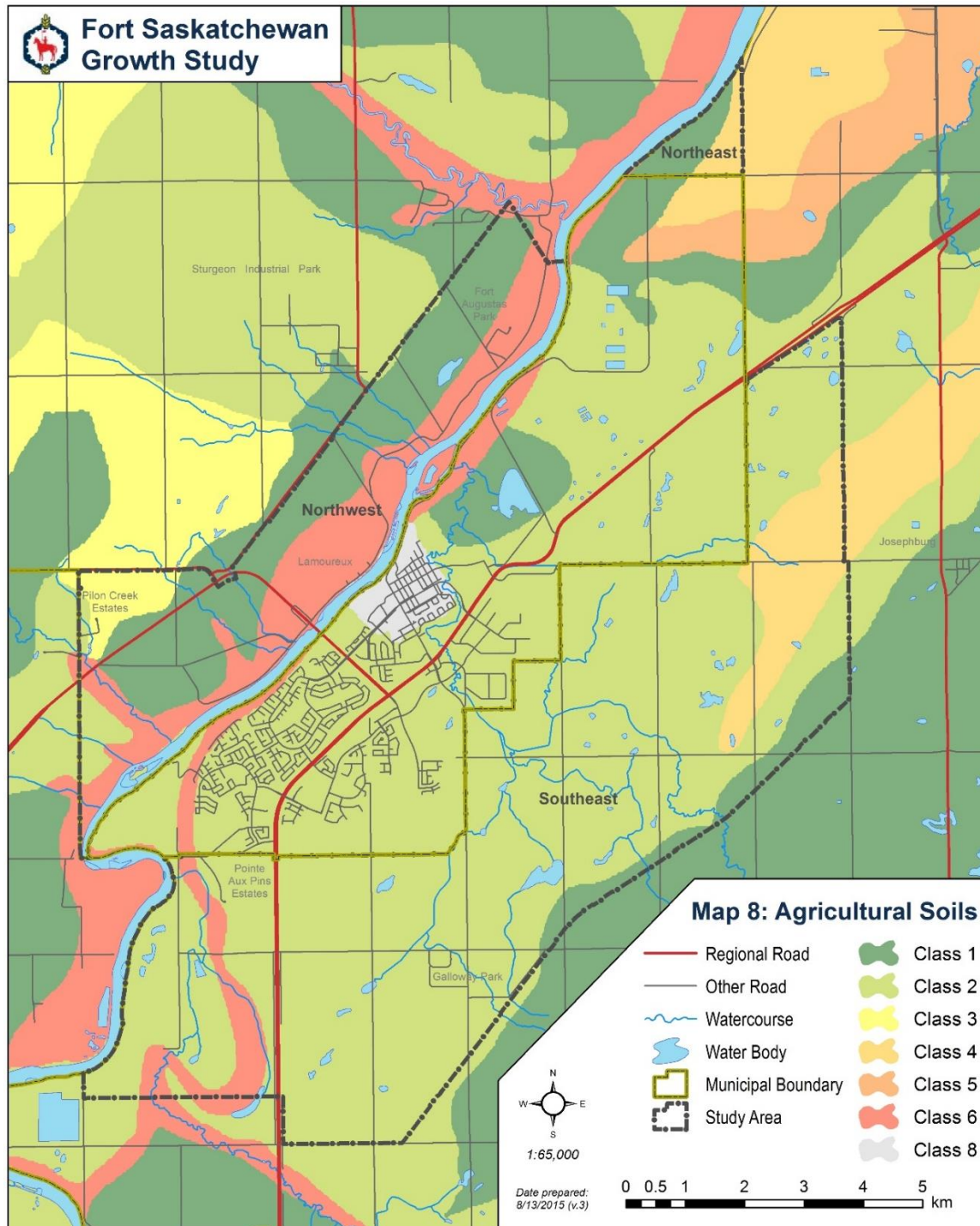




Table 12 presents a summary of the agricultural soils within the three study areas, while observations arising out of the table are provided below.

Table 12: Land Capability Classes for Agriculture Breakdown by Study Area

CLI Class	Northwest		Northeast		Southeast		Total	
	ha	%	Ha	%	Ha	%	ha	%
1	1,045.3	42.1%	100.2	58.0%	249.9	4.1%	1,395.4	16.0%
2	173.0	7.0%			5,121.7	84.8%	5,294.8	60.9%
3	141.3	5.7%					141.3	1.6%
4			67.7	39.2%	444.0	7.4%	511.7	5.9%
6	1,084.5	43.7%	4.8	2.8%	224.7	3.7%	1,314.0	15.1%
8	37.9	1.5%					37.9	0.4%
Total	2,482.1	100.0%	172.7	100.0%	6,040.4	100.0%	8,695.1	100.0%

The following are key observations from Map 6 and Table 12.

- Of the total study area, 16% is Class 1 and 61% is Class 2, while 23% lower class soils (Classes 3, 4 and 6) or unclassified (Class 8).
- Among the study areas, the majority of the Class 1 soils (75% or 1,045 ha) are across the North Saskatchewan River within the Northwest Study Area.
- Also among the study areas, the majority of the lower class soils (63% or 1,264 ha) are also across the river to the northwest.
- The vast majority of the Southeast Study Area (85%) comprise Class 2 soils, while 4% is Class 1 soils and 11% is lower class soils.
- The only lower class soils in the Southeast Study Area are the Class 4 soils within the narrow seam on either side of Josephburg Road between the City and Josephburg.
- The only other lower class soils in the Southeast Study Area are on the undevelopable river valley escarpment.
- The only Class 1 soils in the Southeast Study Area are on the southeast perimeter along the CP rail line.

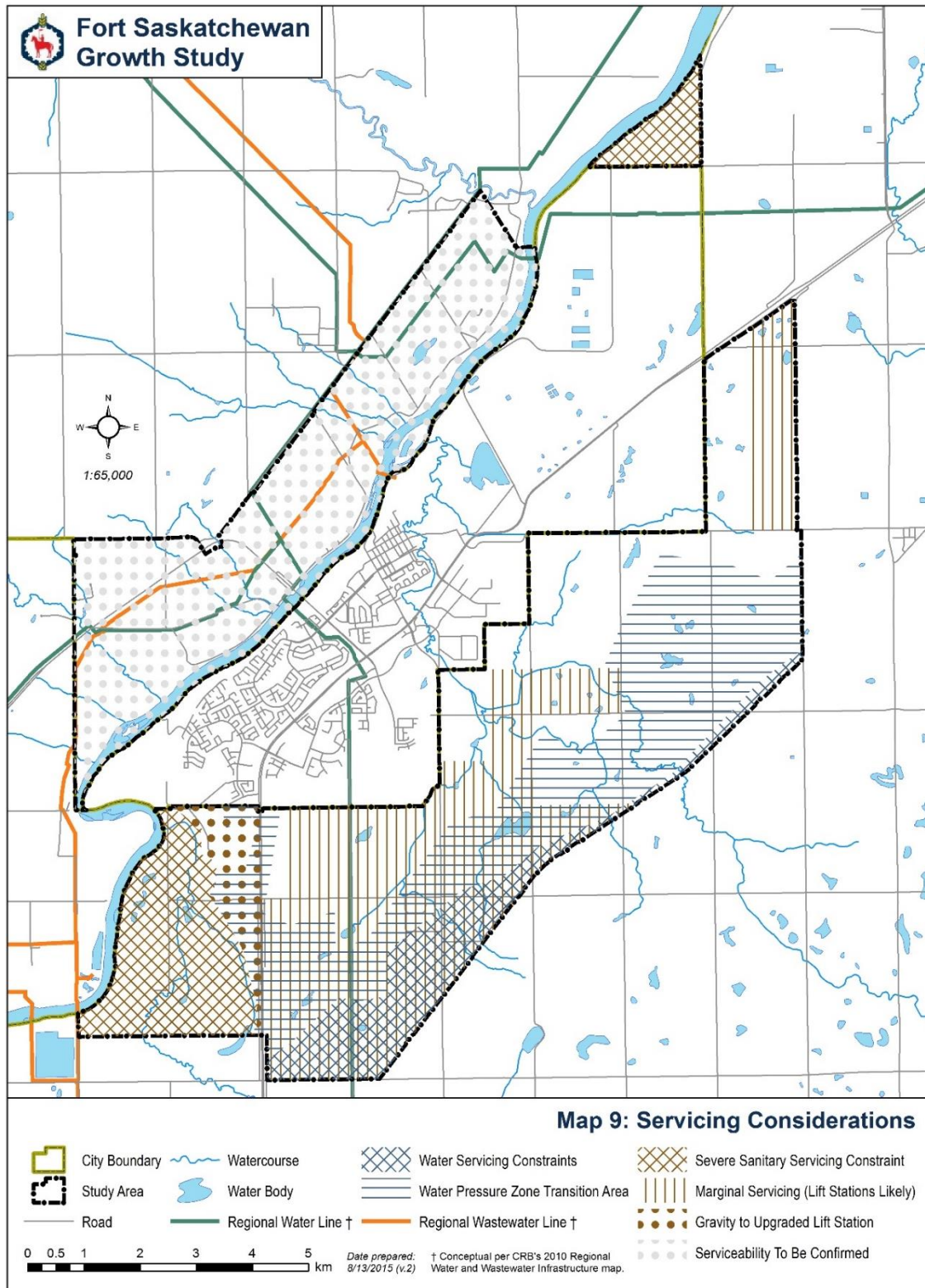
5.5 Servicing Considerations

Both the Capital Region Northeast Water Service Commission (CRNWSC) and the Alberta Capital Region Wastewater Commission (ACRWC) have existing regional lines that provide servicing to Fort Saskatchewan. The locations of these existing regional lines within the study area are illustrated on Map 9. Upgrades to the regional infrastructure may be required to accommodate growth regardless of the location of development unless alternative connections to the regional system are made.

The regional water lines fill the Westpark and Main Reservoirs located within the City, and the City's water distribution system is supplied through a single pressure zone that operates from both pumped and gravity (elevated tank) sources.

The City's wastewater collection system consists of both gravity and forcemain systems which discharge to the regional forcemain on the west side of the North Saskatchewan River via a syphon river crossing.

Map 9: Servicing Considerations





Existing streams and watercourses to accommodate stormwater discharge were also identified within the study area. These include:

- North Saskatchewan River, which forms the current northwest boundary of the City;
- various small creeks in Sturgeon County discharging on the northwest bank of the North Saskatchewan River;
- Ross Creek and its tributaries, which traverses much of the southeast study area and enters the City from the southeast;
- Yorkville Ditch, which discharges to Ross Creek; and
- Pointe-aux-Pins Creek, which discharges to the North Saskatchewan River immediately south of the current City boundary.

A desktop analysis utilizing 1 m contours was undertaken to determine an approximate gravity utility servicing area for wastewater and stormwater purposes. Wastewater discharge to the existing City system was assumed when determining the serviceability of the lands, while adjacent watercourses were assumed for stormwater servicing discharge.

Those areas where sanitary serviceability may be marginal and lift stations may be required (depending on the depths of downstream trunk sewers) are highlighted on Map 9. Severe sanitary servicing constraints were noted for the northernmost triangle due to lack of nearby sanitary infrastructure for connection, and in the southwest due to the requirement for a lift station to discharge to the existing City system. Servicing of the northernmost triangle can alternately be undertaken using on-site solutions, which is common for heavy industrial developments in this area. Servicing of the southwest area could also be accomplished via a lift station and new forcemain to the west under the North Saskatchewan River, where it would connect to the regional forcemain. The remaining lands within the study area are likely serviceable by gravity to the City's existing system or the regional wastewater forcemain to the west. The serviceability of the study area northwest of the North Saskatchewan River has not been confirmed though an ACRWC line is present in this area.

Stormwater servicing for all of the land should be possible to the various creeks and canals within the study area. However, the low area adjacent to the Ross Creek tributaries and Yorkville Ditch may have some stormwater drainage design challenges as ground slopes are gradual. There is therefore little vertical relief available for a stormwater facility discharging by gravity to the watercourses. Outlet pipes from stormwater management facilities may need to be extended downstream at minimum slopes to a lower elevation point on the water course for discharge.

Based on the current City water distribution system pressure zone hydraulic grade lines, and utilizing the 1 m contours, the locations in the study area with water servicing constraints are highlighted on Map 5. Generally located in the southeast furthest from the existing City boundary, these locations are at high ground elevations (greater than 640 m), and servicing from the existing system without additional booster stations or reservoirs would result in inadequate service pressures and fire flows. Servicing in the water pressure zone transition area may or may not be feasible without existing system upgrades. Depending on whether servicing directly from the regional water line is a possibility, a new reservoir may be required for the study area west of the North Saskatchewan River.

5.6 Transportation Considerations

As illustrated on Map 10, a number of highways are present in or are adjacent to the study area. Highway 21 travels in a north-south direction through the southeast study area. It serves as the primary commuter corridor between Fort Saskatchewan and employment areas in west-central Strathcona County (Sherwood Park and Refinery Row) and east Edmonton. It is constructed to a four-lane divided standard.

Highway 15, which is an extension of Manning Freeway from the City of Edmonton, enters Fort Saskatchewan from the northwest via a single two-lane bridge crossing of the North Saskatchewan River. Upon intersecting with Highway 21, Highway 15 serves as an extension of Highway 21, traversing and exiting the City in a northeast direction.

Highway 15 serves as a commuter route to employment within the Strathcona County and Lamont County portions of Alberta's Industrial Heartland to the northeast and as a commuter route from Bruderheim and Lamont to the east. To the west, Highway 15 is a major commuter route for residents to employment opportunities in Edmonton, including northern Edmonton, downtown, and other areas via connection with Anthony Henday Drive and Edmonton's light rail transit (LRT) system.

Highway 37 intersects with Highway 15 approximately 2 km northwest of the North Saskatchewan River crossing. Approximately 150 m beyond this intersection, Highway 825 intersects with Highway 37. Highway 37 is a major east-west route that provides connection to Highways 28A, 28 and 2 that provide connections to Gibbons, CFB Edmonton, St. Albert, Morinville and Edmonton. Highway 825 travels north to provide access to the Sturgeon Industrial Park, the Sturgeon County portion of Alberta's Industrial Heartland and Redwater.

A future crossing of the North Saskatchewan River has been discussed as a priority in the Capital Region by Alberta Transportation (AT), the Capital Region Board (CRB), the City of Edmonton, the City of Fort Saskatchewan and other municipalities in the area. Although the City of Edmonton's *Horse Hill ASP* delineates an approximate alignment approaching the North Saskatchewan River from the northwest, the functional planning study initiated in mid-2015 to confirm the location of the river crossing and the alignments of its approaches on either side of the river has not yet been completed. Based on a conceptual illustration in the CRB's Integrated Regional Transportation Master Plan (IRTMP), the river crossing is anticipated to be southwest of Fort Saskatchewan and to provide a direct connection between Highway 21 to the southeast and the intersection of Highways 15 and 28A to the northwest. Both the City of Edmonton's approximate alignment from the *Horse Hill ASP* and the CRB's conceptual alignment from the IRTMP are presented in Map 10.

The CRB's IRTMP also identifies Range Road 222 and Township Road 540 as regionally significant roadways. They are classified as an expressway and arterial respectively in the IRTMP.

From a transit perspective, the IRTMP also identifies Highway 15 from Edmonton into Fort Saskatchewan as a Transit Priority Corridor and Regional Bus route. It already serves as an intermunicipal bus route between Fort Saskatchewan and the Clareview LRT Station in Edmonton.



Map 10: Transportation Considerations

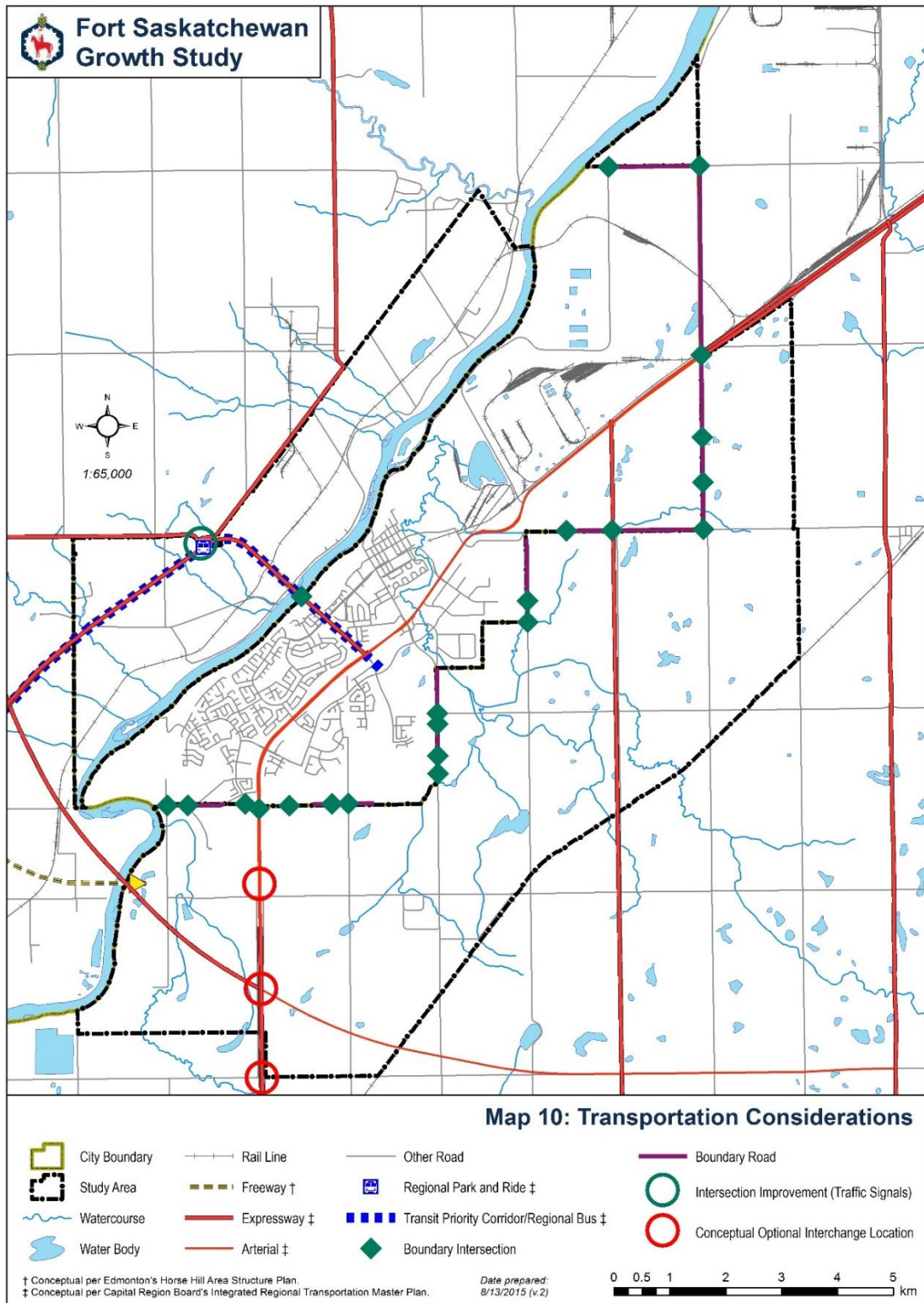


Table 13 presents the preliminary intersection spacing for major roadways entering or adjacent the City and the study area.

Table 13: Preliminary Intersection Spacing of Major Roadways

Major Roadway	Potential Classification	Jurisdiction	Minimum Access Spacing
Highway 21, north of Township (Twp) Road 540	Future Expressway according to AT Future Arterial according to IRTMP	AT ²⁰	1,600 m
Future river crossing, from Highway 21/Twp Road 540 to Highways 15/28A	Future Freeway according to AT Future Expressway according to IRTMP	AT	3,200 m at interchanges only
Highway 15, from east of Fort Saskatchewan to north of the North Saskatchewan River	Future Expressway according to both AT and IRTMP	AT	1,600 m
Highway 825	Future Expressway according to both AT and IRTMP	AT	1,600 m
Highway 37	Future Expressway according to both AT and IRTMP	AT	1,600 m
Range Road 222	Future Expressway according to IRTMP	Municipal	800 m to 1,600 m
Township Road 540	Future Arterial according to IRTMP	Municipal	400 m desired

Table 13 identifies the typical minimum intersection spacing that can be expected based on the existing jurisdiction. However, the IRTMP identifies lower proposed spacing distances based on the proximity to urban centres. AT may allow reduced spacing depending on specific situations, but this should not be taken as a given. For the purpose of this assessment, the conservative spacing requirements provided in Table 13 have been assumed going forward.

Below is a summary of specific additional transportation considerations for each of the three parts of the study area.

Northwest Study Area

The North Saskatchewan River serves as a major physical constraint for connection to the northwest study area, which is limited to the existing two-lane Highway 15 river crossing. Despite their high visibility opportunities, access to Highways 15, 37 and 825 will be more limited as they are under AT's jurisdiction.

Also, should the City decide to pursue lands to the northwest of the North Saskatchewan River, there is the potential that it may be partly or wholly responsible for twinning the existing bridge crossing if:

- the City takes over jurisdiction of Highway 15 within its new limits, or
- the increased traffic generated by the City necessitates earlier twinning than what AT has projected or has the priority/funding to undertake.

Once land development on the northwest side of the river gets to a critical mass, a second crossing location of the river would need to be constructed.

Also, railways in the northwest study area may pose some additional constraint to road crossings and to the type of nearby development.

²⁰ Highway 21 is currently under AT jurisdiction. Should the City's boundary advance southward on either side of Highway 21 via annexation, the ownership of and responsibility for maintaining Highway 21 could be transferred from AT to Fort Saskatchewan as it is an incorporated city. However, it could remain under the jurisdiction of AT, and this jurisdiction may even continue whether or not a new river crossing is constructed. In this case, spacing should be consider AT's standards as a worst case scenario for the City.



Northeast Study Area

The northeast study area is bordered by Township Road 554 to the east and Range Road 220 to the south, offering sufficient opportunities for vehicular access. Annexing this area would result in transferring jurisdiction over Township Road 554 from Strathcona County to the City. Range Road 220 might remain in Strathcona County's jurisdiction however as the segment of this road adjacent to the City's eastern boundary remains in the County's jurisdiction.

Southeast Study Area

This is the largest of the three parts of the study area, which also offers the most access opportunities via various local grid roads and Highway 21. In particular, Range Roads 220 through 225 offer north-south travel opportunities while Township Roads 542, 544, 550 and 552 offer east-west travel opportunities. Numerous connections to the local road network have already been planned within development concepts for the Alsten Lands, Southfort, Westpark and Josephburg Road North Industrial, which could be extended into the southeast study area.

Range Road 222, being identified as a future regionally significant roadway could garner higher visibility for adjacent developments. However, a planning conflict occurs between the alignment of Range Road 222 shown in the IRTMP and the proposed *Josephburg Road North Industrial ASP*, which does not identify Range Road 222 extended through the area. The City is planning a larger intersection with Highway 15 near the west edge of this development, which provides opportunity for potentially realigning Range Road 222 as it approaches the area to connect with that highway location. The City also advises an opportunity is available to swing this north-south road to the east to follow either Range Road 220 or 215.

The potential Bremner growth node within Strathcona County, located east of Highway 21 between Township Road 540 to the north and Highway 16 to the south, is adjacent to the southeast study area. The Bremner growth node is anticipated to house upwards of 30,000 people. Though the transportation network has not been set to accommodate the additional traffic from this large urban growth node, the adjacent Highways 21 and 16 will operate and look very different from how they exist today. If development of Bremner proceeds, there is the risk of additional congestion. Further, if Fort Saskatchewan growth continues to the south, this may impact travel south to Highway 16 to get to Sherwood Park or Edmonton. However, the construction of the new river crossing between Highways 21 and 15 would assist in accommodating traffic along a different route into Edmonton. Expansion into the southeast study area does not preclude provision of regional/intermunicipal transit serving both Fort Saskatchewan and Bremner along Highway 21 and the future river crossing into Edmonton.

Summary

Notwithstanding the inconsistent intersection spacing between the IRTMP and AT standards, there will be numerous access opportunities to service new urban development to the southeast, with a higher frequency of access opportunities available from range and township roads within that area. Also, the northeast study area is bordered by municipal roadways that will serve well for access. However, transportation opportunities are more limited in the northwest study area due to the river separation, higher reliance on highway connections, the increased need for river crossings and constraint of the rail line bisecting the area.

5.7 Land Use Considerations

5.7.1 Capital Region Growth Plan

The Capital Region Board (CRB) approved the Capital Region Growth Plan (CRGP) and two of its addenda in 2009, which were subsequently approved by the Province of Alberta in 2010. The CRGP delineates the conceptual boundaries of priority growth areas (PGAs) within the Capital Region where growth should be directed. The CRGP also applies density targets to PGAs.

As illustrated in Map 11, the City of Fort Saskatchewan is located within PGA 'G', which has an assigned density target range of 25 to 30 dwelling units per net residential hectare (du/nrha). In addition to Fort Saskatchewan, PGA 'G' conceptually includes lands to the south and southeast of the current city limits. No lands across the North Saskatchewan River are located within the conceptual boundaries of PGA 'G'.

The CRB is currently updating the CRGP. The boundaries of PGAs are therefore under review and the successor PGA 'G' or equivalent policy area may differ once the updated CRGP is approved in 2016.

5.7.2 Major Pipeline Corridor

Two major pipeline corridors are located to the southeast of the City of Fort Saskatchewan. Both convey various contents between Alberta's Industrial Heartland to the northeast and Refinery Row to the southwest.

The first pipeline corridor nears Fort Saskatchewan's current city limits in two locations before entering the City and bisecting the east portion of the *Josephburg Road North Industrial (JRNI) ASP*. As of 2014, according to Abadata, the amount of parallel pipelines within this corridor varies from 12 in the northeast to 15 in the southwest.

The second pipeline corridor generally parallels the Canadian Pacific (CP) rail line. At the nearest location, it is approximately 2.2 km southeast of the current city limits. As of 2014, according to Abadata, this corridor consisted of 10 parallel pipelines.

The CRB is currently undertaking a Regional Energy Corridors Master Plan (RECMP) that is intended to establish policies and criteria for accommodating regional pipeline and power transmission corridors within the Capital Region in a manner that is consistent and compatible with the principles and policies of the CRGP. The RECMF is scheduled for completion in the fall of 2015.

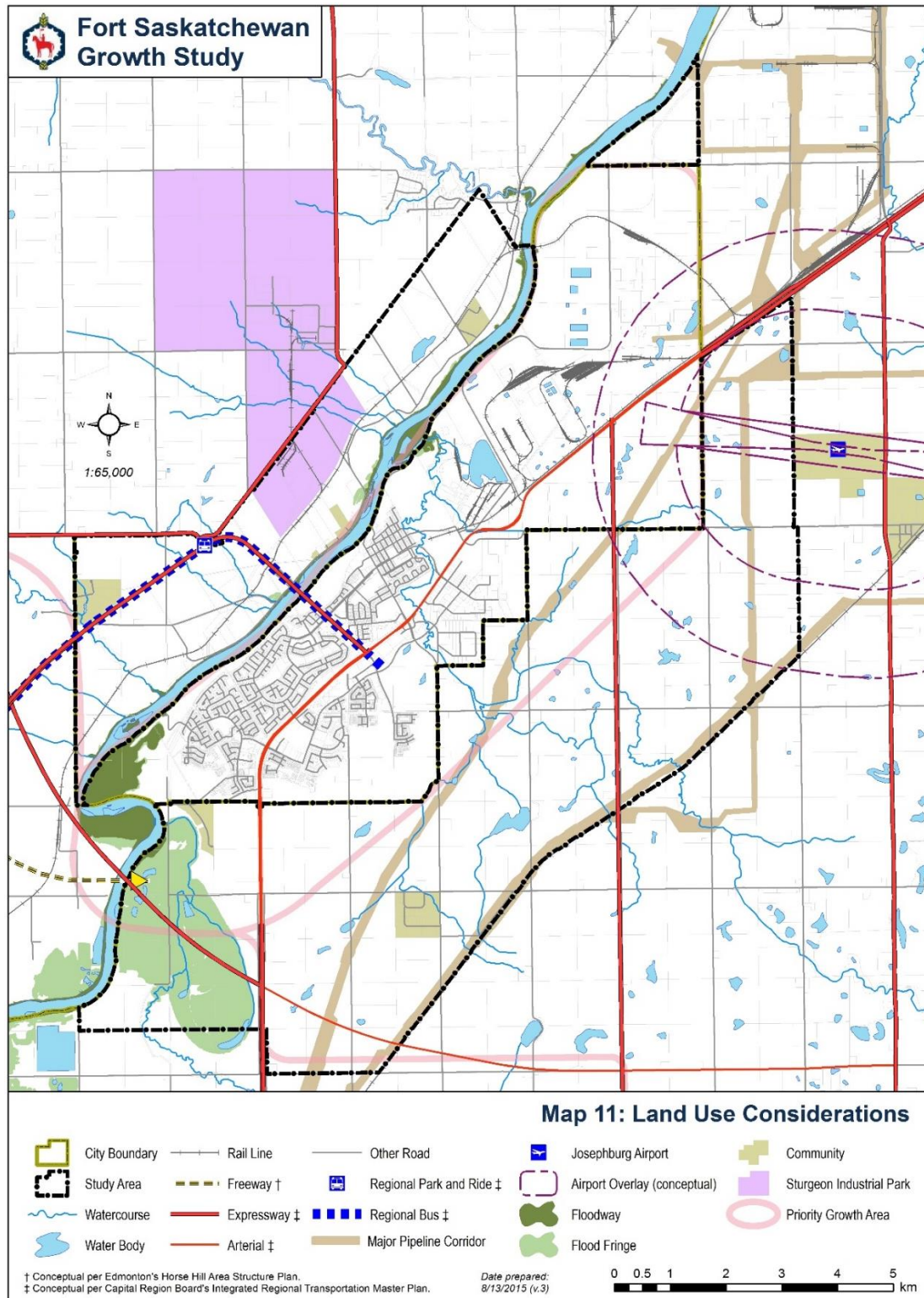
5.7.3 Warren Thomas (Josephburg) Aerodrome

The Warren Thomas (Josephburg) Aerodrome, operated by Strathcona County, is 1.6 km east of the City of Fort Saskatchewan. The aerodrome's take-off/approach and transitional surfaces penetrate the northeast portion of the City's *JRNI ASP*. The aerodrome's inner horizontal surface impacts the far east portion of the *JRNI ASP* while the conical surface impacts the majority of the *JRNI ASP*. These four surfaces therefore impact intervening lands within the southeast study area to the east and southeast of the *JRNI ASP*.

To protect the integrity and operation of the aerodrome, the Strathcona County Land Use Bylaw (LUB) applies an Airport Vicinity Protection Overlay (AVPO) to lands surrounding the aerodrome. It advises that certain types of uses are not allowed within the AVPO area regardless of what permitted and discretionary uses are available in the LUB's underlying land use district. It also applies height restrictions as they relate to the four types of surfaces described above. The greatest restrictions apply within the take-off/approach and transitional surfaces, becoming less restrictive the further away from the aerodrome.



Map 11: Land Use Considerations



5.7.4 Existing Developments

The Hamlet of Lamoureux, a portion of the Sturgeon Industrial Park and two country residential subdivisions – Pilon Creek Estates and St. Augustus – are located within the northwest study area in Sturgeon County. Both Lamoureux and St. Augustus are located within the North Saskatchewan River valley.

In the northeast study area, Williams Energy (Canada) Inc. has announced a project to construct a heavy industrial facility on the northwest corner of Township Road 554 (150 Avenue) and Range Road 220 (130 Street). Though this is not yet an existing development, construction is currently scheduled to occur in 2016 through 2018.

Two country residential subdivisions are located within the southeast study. Pointe Aux Pins Estates is adjacent to Fort Saskatchewan's southernmost city limits overlooking the North Saskatchewan River valley. Galloway Park, comprising an entire quarter section, is 1.6 km south of the City's southeast corner. It is located on the southwest corner of Township Road 542 and Range Road 224. The Hamlet of Josephburg is located 1.6 km east of the southeast study area at the corner of Josephburg Road (Township Road 550) and Highway 830 (Range Road 214).

Based on aerial photo interpretation, there are sand and/or gravel operations within the North Saskatchewan River valley portion of the southeast study area. The balance of all three study areas are predominantly open with numerous farmsteads and small pockets of areas remaining in a natural state.

5.7.5 Ownership and Fragmentation

Map 12 illustrates the status of parcels by ownership type within the three study areas. Two of the three major ownership types – municipal and Crown/untitled – are depicted, while the balance of the parcels are privately held.

Map 12 also illustrates those parcels within the study areas that are fragmented due to past subdivision activity. Those parcels that are less than 4 ha (10 ac) in size, and those parcels between 4 ha (10 ac) and 10 ha (25 ac) are identified.

Ownership

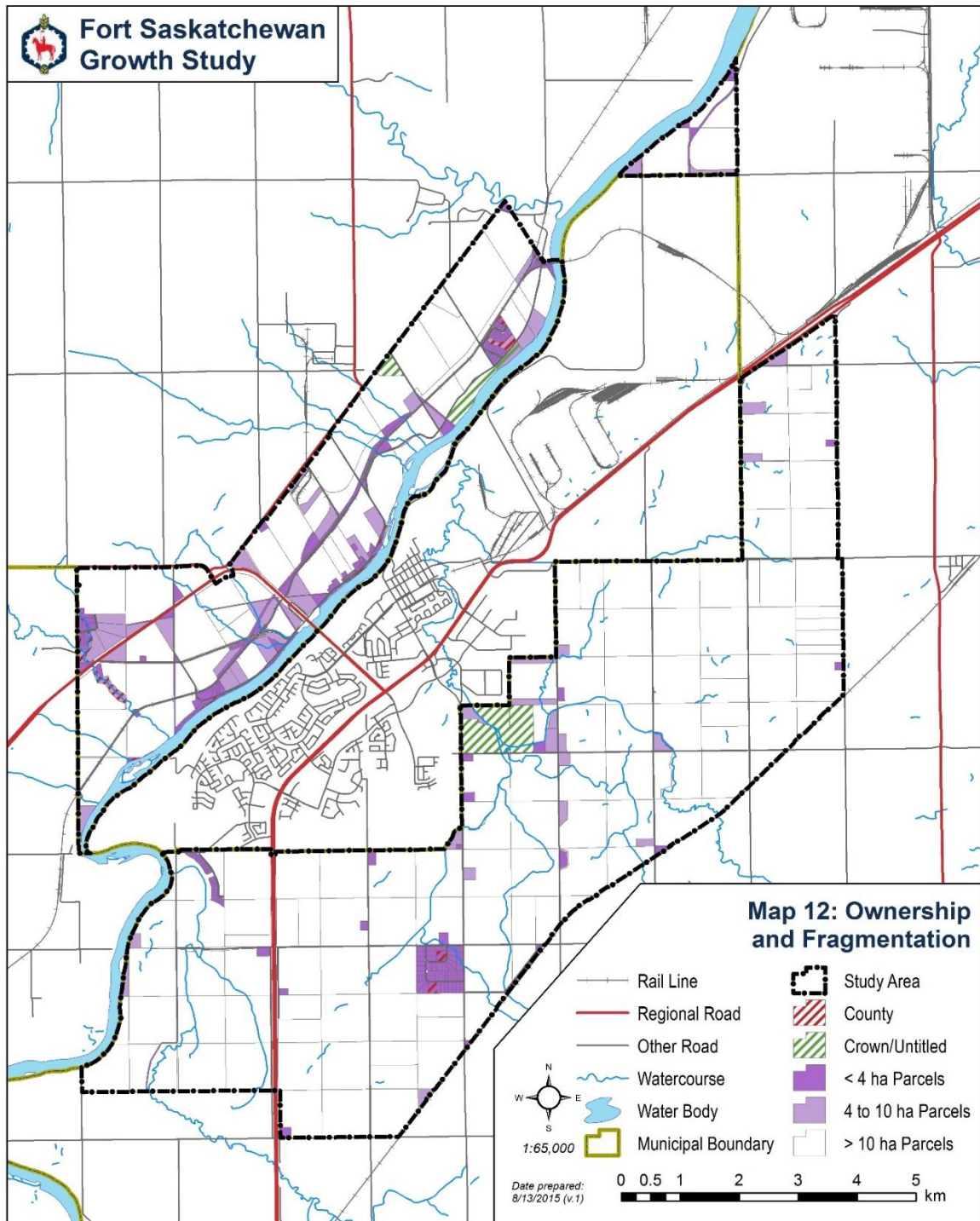
In the northwest study area, some lands along the North Saskatchewan River and a parcel on Boysdale Road are either owned by the Crown or are untitled. Sturgeon County appears to own some lands within the two country residential subdivisions, along Pilon Creek and along the river, particularly in the vicinity of Lamoureux. These appear to be municipal reserve and environmental reserve parcels.

All lands within the northeast study area are privately held with the exception of a closed road allowance north of the intersection of 125 Street and 150 Avenue (Township Road 554). The road allowance appears to be owned by Strathcona County.

In the southeast study area, the Crown owns the majority of one quarter section and half of an adjacent quarter section on the City of Fort Saskatchewan's doorstep. The Clover Park subdivision is located within the City to the north, while the correctional centre is located within the City to the west across 101 Street (Range Road 224). Ross Creek meanders through the two parcels, which can be accessed by Township Road 544 to the south within Strathcona County. As for municipal ownership, it appears Strathcona County owns two municipal reserve parcels located within the Galloway Park subdivision.



Map 12: Ownership and Fragmentation



Fragmentation

Lands within the northwest study area are significantly fragmented. The presence of roadways, rail lines, the river valley escarpment, the Hamlet of Lamoureux, two country residential subdivisions and industrial subdivisions within Sturgeon Industrial Park have carved out numerous parcels that are below either 4 ha or 10 ha in size. Parcels of these sizes are often avoided when introducing urban development as they are often difficult to assemble for interested developers. Further, if urban development is introduced around these parcels, it often takes a significant amount of time to acquire and integrate these lands into the urban fabric.

In the northeast study area, there is some fragmentation of lands between the river and the river valley escarpment. An undeveloped rail right-of-way bisects developable lands above the top-of-bank.

With the exception of the Pointe-Aux-Pins Estates and Galloway Park country residential subdivisions, the lands within the southeast study area are largely intact with little fragmentation. Beyond the two subdivisions, fragmentation is largely first and second parcels out of quarter sections, with the highest frequency along Range Road 223 and the second-highest frequency along Range Road 224 (101 Street).

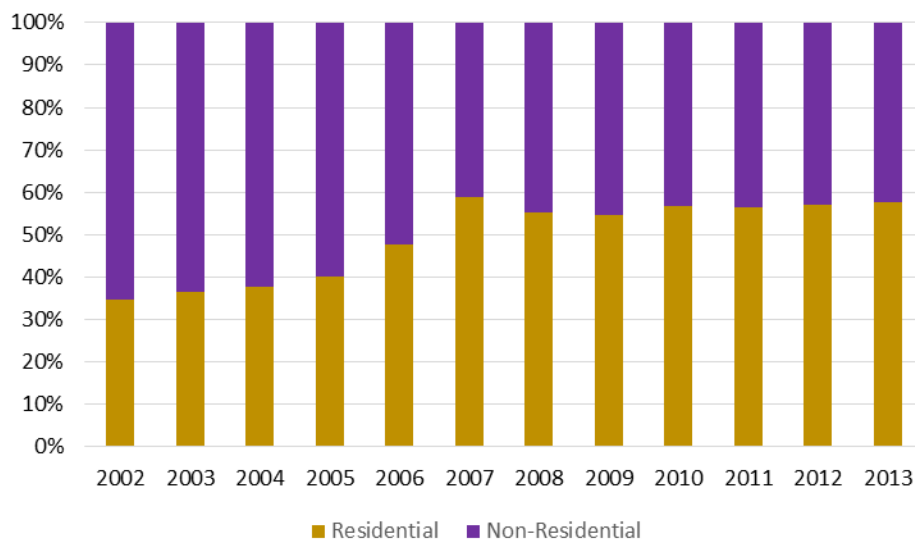


6.0 Growth Assumptions

6.1 Municipal Assessment Split

As presented in Figure 7, the City of Fort Saskatchewan's municipal assessment split as of the end of 2013 was 58% residential to 42% non-residential.²¹ In contrast, Figure 7 shows the City's municipal assessment split in 2002 was 35% residential to 65% non-residential.²² It is the City's desire to maintain its current municipal assessment split moving forward to stabilize and reverse the trend of transferring the ratepayer tax burden from non-residential operations to residential landowners.

Figure 7: Municipal Assessment Split History, 2002 – 2013



An option to help reverse this trend can include seeking additional land to accommodate new heavy industrial development²³ and/or lands that are already developed with heavy industrial uses. Another option is to pursue an economic development strategy to attract higher than the City's current proportion of light and medium industrial developments to offset the City's limited opportunities to grow its machinery and equipment assessment base. That is, there are few opportunities to develop new and expand/intensify existing heavy industrial developments within the current City limits.

For the purpose of this Growth Study, the City has chosen to pursue the second option. An industrial land strategy is currently underway and the City's focus is to accommodate a higher than traditional volume of light/medium industrial uses to absorb its current available land supply. One exception is the City's choice to target a modest amount of additional undeveloped lands to provide a private industrial corporation with a comprehensive site within one municipality and not place the entire burden on an aggressive economic development strategy to attract a higher amount of light and medium industrial businesses.

²¹ Non-residential in 2013 included commercial at 7%, industrial at 6%, process and manufacturing buildings (P&MB) at 5% and machinery and equipment (M&E) at 24%.

²² Non-residential in 2002 included commercial at 3%, industrial at 2%, P&MB at 9% and M&E at 51%.

²³ Heavy industrial development is largely assessed as M&E.

6.2 Residential Density

The October 2009 Addendum to the Capital Region Growth Plan (CRGP) assigns a density target range of 25-30 dwelling units per net residential hectare (du/nrha) to Priority Growth Area (PGA) 'G'. The conceptual boundaries of this PGA includes the City of Fort Saskatchewan and portions of the southeast study area.

According to Table 2 within Appendix B of the October 2009 Addendum, the “planned” future residential density²⁴ in Fort Saskatchewan as of 2009 was 23.0 du/nrha. However, this same table indicates that the City’s existing or “as-built” residential density in 2009 was 17.1 du/nrha. The difference between the “as-built” and “planned” densities in 2009 was 5.9 du/nrha. Based on recent analysis undertaken by the City, the “as-built” residential density across the entire City is now 20.1 du/nrha.

The City of Fort Saskatchewan’s two residential ASPs – the *Southfort ASP* and the *Westpark ASP* – were updated in 2013. Based on recent analysis undertaken by the City, the “as-built” residential densities for Southfort and Westpark are 25 du/nrha and 23.7 du/nrha respectively. In both ASPs, a “planned” residential density range of 25-30 du/nrha was applied to all remaining net undeveloped residential lands.²⁵

For the purpose of this *Growth Study*, the residential density to be achieved at the “as-built” stage is 28 du/nrha, both within the City’s remaining available residential lands and within the recommended residential expansion areas. This represents a 10.9 du/nrha or a 64% increase over its 2009 “as-built” residential density. Compared to the recent analysis undertaken by the City, this represents a 9 du/nrha or a 47% increase over its current “as-built” residential density.

6.3 Average Household Size

For the purpose of estimating the amounts of lands required for future residential development, a combined average household size of 2.55 persons per occupied dwelling was assumed. This represents the average household size of the City in 2066 under the Medium Case of the alternative population projection scenarios presented in Chapter 3.

6.4 Net Developable Overheads

Net developable overheads are land uses required to support or service residential, commercial, industrial and institutional development. They are inclusive of parks (including municipal reserve), public utilities (stormwater management facilities, lift stations, etc.) and circulation (local roads, collector roads and walkways). The Municipal Government Act allows for the maximum dedication of developable lands for these overheads to be 40% – comprising 10% municipal reserve and 30% public utilities and circulation.

For the purpose of this *Growth Study*, it is assumed that 35% of the City’s gross developable land requirements for future residential, commercial, industrial and institutional growth will accommodate the necessary net developable overheads.

6.5 Residential Redevelopment Allowance

As the City of Fort Saskatchewan is a mature community, it has some housing stock and underutilized sites that could be redeveloped over time into residential land uses at higher than traditional densities. Areas that are especially primed for residential redevelopment include the City’s well-established downtown, the Fort Mall site and the former hospital site. To facilitate this, the City has undertaken a number of actions in

²⁴ Density prescribed by approved statutory plans.

²⁵ Refer to Appendix A in both the *Southfort ASP* and the *Westpark ASP*.



recent years including, among other things, adopting the Downtown Area Redevelopment Plan, undertaking the Old Health Centre Site Redevelopment Brief, and amending its land use bylaw to accommodate residential towers up to 20 storeys.

For the purpose of this *Growth Study*, it is assumed that 10% of the City's gross residential land requirements will be accommodated through redevelopment. It should be noted however that redevelopment activities will displace existing lower intensity land uses. That is, a family renting an older house will be displaced elsewhere within the City in order for the landowner to redevelop the property with a semi-detached dwelling. Similarly, the businesses leasing space in an underutilized commercial building will be displaced elsewhere within the City in order for the landowner to redevelop the property with an apartment building.

6.6 Market Allowance

When determining land requirements to accommodate projected residential, commercial and industrial growth, ultimately there will be lands within recommended expansion areas in which development will not occur within the horizon of a forecast period. In recognition of this, it is appropriate to apply a market allowance as an overhead that:

- recognizes that some land within recommended expansion areas will not develop within the horizon of the *Growth Study* (e.g., landowners either will not develop or sell to developers, whether they own full quarter sections or just small farmstead lots); and
- encourages fair market competition among developers that are participating in development.

In turn, market allowance enables affordability for the end user (residents buying houses and businesses buying lots or leasing space).

For the purpose of this *Growth Study*, a market allowance of 10% is applied to gross residential land requirements. Although a 50-year horizon should facilitate one ownership change for each parcel of land within the recommended expansion areas, there is no guarantee the new buyer will be motivated to develop. Further, ownership changes occurring in the early years of lands not expected to be developed until the later years of the *Growth Study* may result in some lands requiring two changes in ownership prior to development.

6.7 Quarter Section Size

A quarter section is 160 acres in size based on the dimensions of 0.5 miles by 0.5 miles. This area translates to 64.75 ha. Over time, municipalities acquire road allowance widening from quarter sections at the subdivision stage or through road plan registrations, which in turn reduces the developable area of the original quarter sections.

For the purpose of this Growth Study, the City has assumed an average quarter section size of 63.75 ha in recognition of titled area already lost to road widening. This value was derived by the average titled area of quarter sections within the recommended expansion areas presented in Chapter 8.

7.0 Land Requirements

As illustrated in Table 14, the estimated total amount of gross developable lands required to meet City's long-term growth needs beyond its current municipal limits is 1,164.83 ha under the recommended Medium Case scenario, and based on the assumptions presented in Chapter 6.0 above. This corresponds to 18.3 quarter sections of gross developable land.

Table 14: Future Land Requirements

Land Use	Total Area Required to Accommodate Future Growth (ha)	Available Lands Within City Limits (ha)	Total Amount of Expansion Lands Required (ha)	Total Amount of Expansion Lands Required (quarters) ²⁶	Total Required Lands (%)
Residential	1,111.45	308.90	802.55	12.6	68.9
Commercial	222.29	31.28	191.01	3.0	16.4
Light/Medium Industrial	590.29	599.40	–	–	–
Institutional	171.27	0.00	171.27	2.7	14.7
Gross Developable Lands	2,095.30	939.58	1,164.83	18.3	100.0

The 18.3 quarter sections of gross developable land presented above does not, however, include deductions for gross undevelopable overheads; that is portions of lands surrounding Fort Saskatchewan that are inevitably undevelopable. Examples of gross undevelopable overheads include, among other things:

- pipeline, power transmission line and utility right-of-ways;
- buffers along major pipeline corridors to allow for pipeline corridor expansion and appropriate setbacks from residential, commercial and institutional development;
- approximated environmental reserve including the North Saskatchewan River valley, watercourse ravine systems and wetlands; and
- previously developed properties (e.g., country residential subdivisions).

To accommodate gross undevelopable overheads, a preliminary determination of expansion areas is undertaken based on the gross developable land requirements. Then, an investigation of the preliminary expansion areas is undertaken to determine the amount of gross undevelopable overheads within them. If there is insufficient gross developable lands within the preliminary expansion lands after deducting the gross developable overheads, additional lands are added to preliminary expansion areas. This iterative process is repeated until such time as the gross area of the expansion areas results in a minimum of gross developable lands that meets the requirements presented in Table 14.

²⁶ Based on the average titled area per quarter section of 63.75 ha within the recommended expansion areas. Refer to Section 8.6.



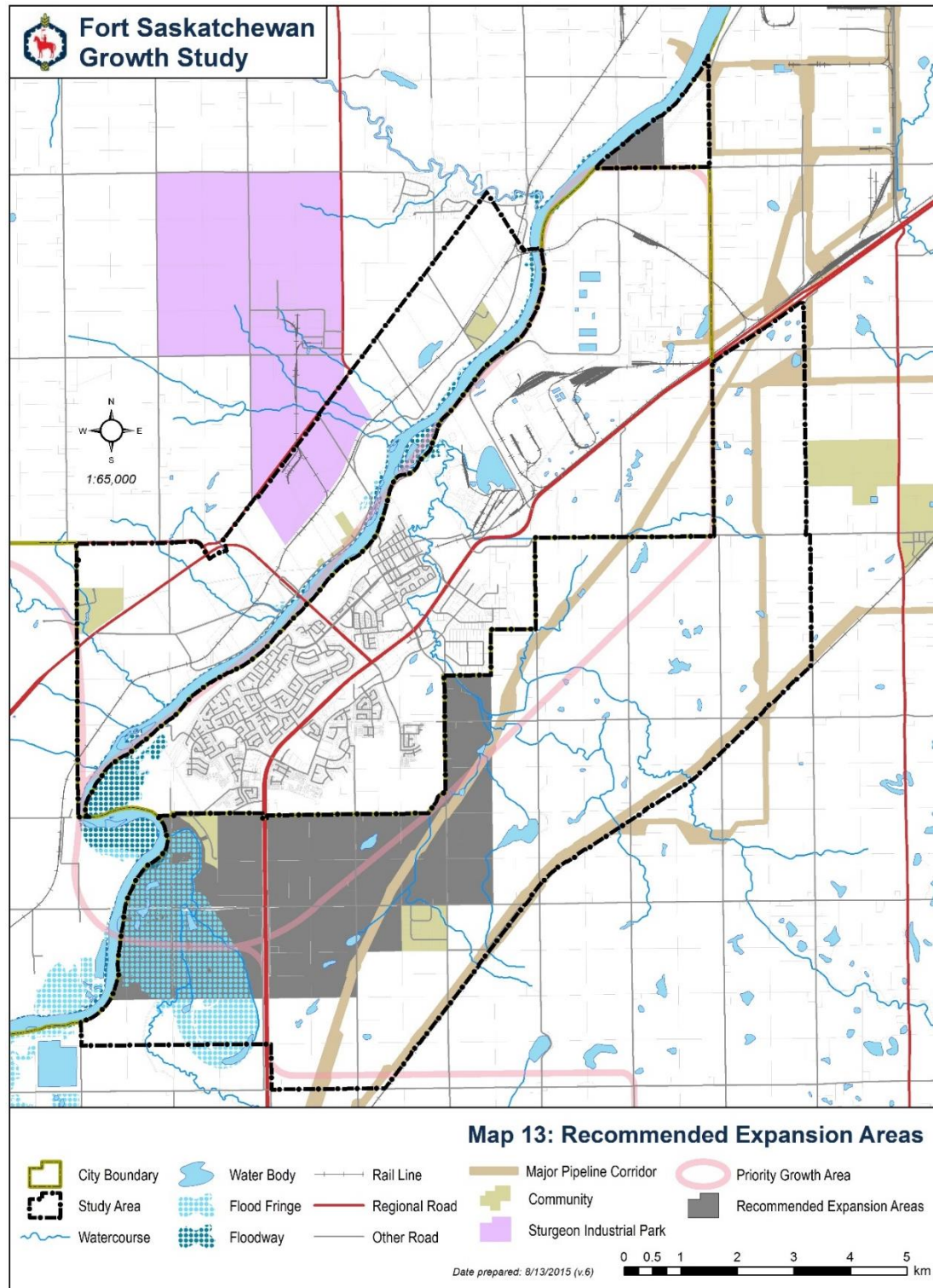
8.0 Recommended Expansion Areas

8.1 South Expansion Area

Utilizing a total gross developable land requirement of 18.3 quarter sections to accommodate its long-term residential, commercial and institutional growth needs, the City of Fort Saskatchewan has identified a proposed south expansion area as illustrated in Map 13. The proposed south expansion area, comprising 1,468 ha, is recommended based on the following criteria listed below.

1. It represents a logical extension of the existing urban residential and commercial footprint to the southwest, south and southeast.
2. It keeps the City unified on one side of the North Saskatchewan River, resulting in a more compact urban footprint and efficiencies in terms of service delivery and the extension of infrastructure.
3. A southerly extension along Highway 21 is proposed as this facility is already twinned to a four-lane divided standard, which can facilitate additional commuter flow and intermunicipal transit to major employment areas in Edmonton and Sherwood Park, as well as a future river crossing from Highway 21 to Highway 15 in northeast Edmonton. In addition, this southerly extension allows for future commercial development, particularly large format retail, highway corridor and transit-oriented mixed use opportunities, along the highly visible Highway 21 corridor, which will help contribute to maintaining the City's current assessment split of 58% residential to 42% non-residential.
4. It allows for urban extension towards and eventual integration with Strathcona County's West of Highway 21 Area Concept Plan and proposed Bremner urban growth node further to the south.
5. Urban expansion to the southwest, south and southeast can be more easily integrated into the City's existing and planned transportation network.
6. Urban expansion to the southwest, south and southeast allows for extensions of the City's existing water distribution system, either with or without system upgrades, and optimization of the existing regional water line running between Fort Saskatchewan and Sherwood Park.
7. Urban expansion to the south and southeast allows for extension the City's existing wastewater collection system, either by gravity or lift stations. Expansion to the southwest can be facilitated through the construction of a lift station and forcemain to the regional wastewater line on the west side of the North Saskatchewan River, which the City had previously identified as a solution to accommodate future southward growth of Fort Saskatchewan.
8. Subject to environmental review, urban expansion to the southwest, south and southeast allows for possible utilization of canals (e.g., Yorkville Ditch) and watercourses (e.g., Ross Creek, Pointe-Aux-Pins Creek and their tributaries) to accommodate stormwater drainage, thereby minimizing the amount of new artificial wetlands required to accommodate run-off from future developments.
9. The south expansion area is informed by the conceptual boundaries of Priority Growth Area 'G' in the Capital Region Growth Plan and complies with the density target applied to this area.
10. The south expansion area allows for future urban development in a manner that will comply with the principles and policies of the Capital Region Growth Plan.

Map 13: Recommended Expansion Areas





8.2 Northeast Expansion Area

Within the northeast study area, there is a private corporation that has banked 61 ha of undeveloped heavy industrial lands adjacent to the City's current limits for its future use. This same private corporation has banked 123 ha of undeveloped heavy industrial lands on the adjacent lands to the south within the City. Its banked lands within the City therefore comprise the majority of its 183 ha of overall holdings.

When it is ready to proceed with development, this private corporation wishes to develop all of its holdings as one comprehensive site and realizes that logistical efficiencies would be achieved by doing so within a single municipality.

8.3 Preliminary Land Use Breakdown

A preliminary land use breakdown for the two recommended expansion areas are illustrated in Map 14. Table 15 summarizes the gross area (1,922.54 ha or 30.2 quarter sections), the gross undevelopable deductions and then the preliminary land use breakdowns within the expansion areas, resulting in a gross developable area of 1,218.57 ha or 19.1 quarter sections.

The 29.2 quarter sections in the south expansion area essentially provides 1,193.96 ha of gross developable land (18.7 quarter sections) to accommodate future residential, commercial and institutional growth. This is sufficient to meet the gross developable land requirements of 1,164.83 ha (18.3 quarter sections) presented in Table 14 under the recommended Medium Case scenario. The overage in Table 15 compared to Table 14 amounts to 29.13 ha or 0.46 quarter sections.

As explained in Section 8.2 above, the northeast expansion area is earmarked for heavy industrial purposes to unify a private corporation's land holdings.

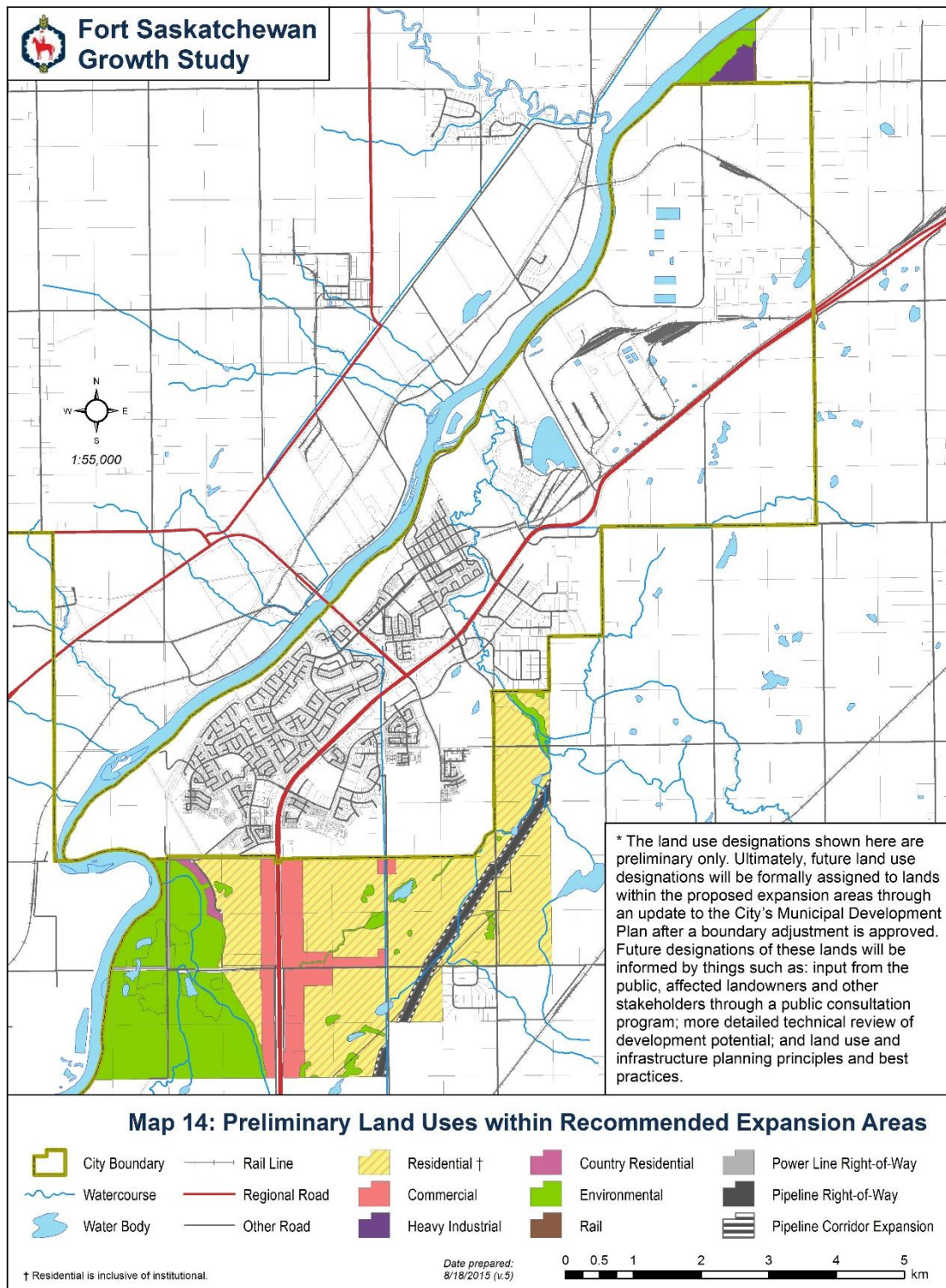
Table 15: Preliminary Land Use Breakdown of Recommended Expansion Area

Land Use	South Area		Northeast Area		Total	
	ha	Qtrs	ha	Qtrs	ha	Qtrs
Gross Area	1,946.33	30.5	61.41	1.0	2,007.75	31.5
Less Environmental Reserve	549.09	8.6	34.56	0.5	583.65	9.2
Less Existing Pipeline/Power Line/Utility Right-of-Ways	70.46	1.1	0.56	0.0	71.02	1.1
Less Future Pipeline Corridor Expansion	36.52	0.6			36.52	0.6
Less Existing Road Right-of-Way	85.20	1.3			85.20	1.3
Less Rail Right-of-Way			1.68	0.0	1.68	0.0
Less Previously Absorbed Lands	11.11	0.2			11.11	0.2
Total Gross Undevelopable Overheads	752.38	11.8	36.8	0.6	789.18	12.4
Gross Developable Area	1,193.96	18.7	24.61	0.4	1,218.57	19.1
Residential	994.64	15.6			994.64	15.6
Commercial	199.32	3.1			199.32	3.1
Institutional	²⁷				²⁸	
Heavy Industrial			24.61	0.4	24.61	0.4

²⁷ South expansion area's institutional embedded within residential.

²⁸ Total institutional embedded within residential.

Map 14: Preliminary Land Uses within Recommended Expansion Areas





8.4 Northwest Expansion

Recommended expansion areas have not been identified within Sturgeon County to the northwest for the following reasons:

1. Access between Fort Saskatchewan and this area is limited to a single two-lane bridge crossing over the North Saskatchewan River (Highway 15).
2. Highway 15 on the northwest side of the river is a two-lane roadway, unlike the four-lane divided Highway 21 to the south of the City.
3. Expansion into lands on the northwest side of the river may trigger the transfer of ownership and maintenance of Highway 15 from Alberta Transportation to Fort Saskatchewan due to its status as an incorporated city.
4. Urban development to the northwest within the City's jurisdiction will accelerate the need to twin Highway 15 and its river crossing, which will likely be the financial responsibility of the City of Fort Saskatchewan and trigger a significant impact on its ratepayers.
5. Urban development to the northwest will divide the City, creating:
 - a. increased pressure on the current river crossing;
 - b. a potential need for a second river crossing to the northeast or southwest of the existing river crossing, which may not be achievable due to the current extent of development within the City;
 - c. less efficiency in terms of service delivery and the extension of infrastructure; and
 - d. overall community and infrastructure integration issues due to the major geographic barrier.
6. Future urban development to the northwest will itself be bisected by the Canadian National rail line that generally runs parallel to the North Saskatchewan River, resulting in rail crossing constraints within this area.
7. These lands to the northwest are not currently located within the conceptual boundaries of a designated Priority Growth Area in the Capital Region Growth Plan.
8. Due to the absence of being within a Priority Growth Area, it cannot be assured that future urban development on lands to the northwest will comply with the principles and policies of the Capital Region Growth Plan.
9. Fort Saskatchewan currently needs additional lands to accommodate a 50-year supply of residential and commercial development. With the Edmonton Energy and Technology Park to the southwest, the Sturgeon Industrial Park to the north and Sturgeon County's portion of Alberta's Industrial Heartland further to the north and northeast, it is not desirable from a land use compatibility perspective to accommodate future residential development in this area.
10. These lands do not have the same efficiencies and benefits to Fort Saskatchewan as previously presented above for the recommended south and northeast expansion areas described above.

8.5 Implications on Agricultural Lands

Map 15 illustrates the soil capability for agriculture from the Canadian Land Inventory (CLI) for the recommended expansion areas, while Table 16 presents a summary of the soils by area.

Table 16: Land Capability Classes for Agricultural Breakdown by Expansion Area

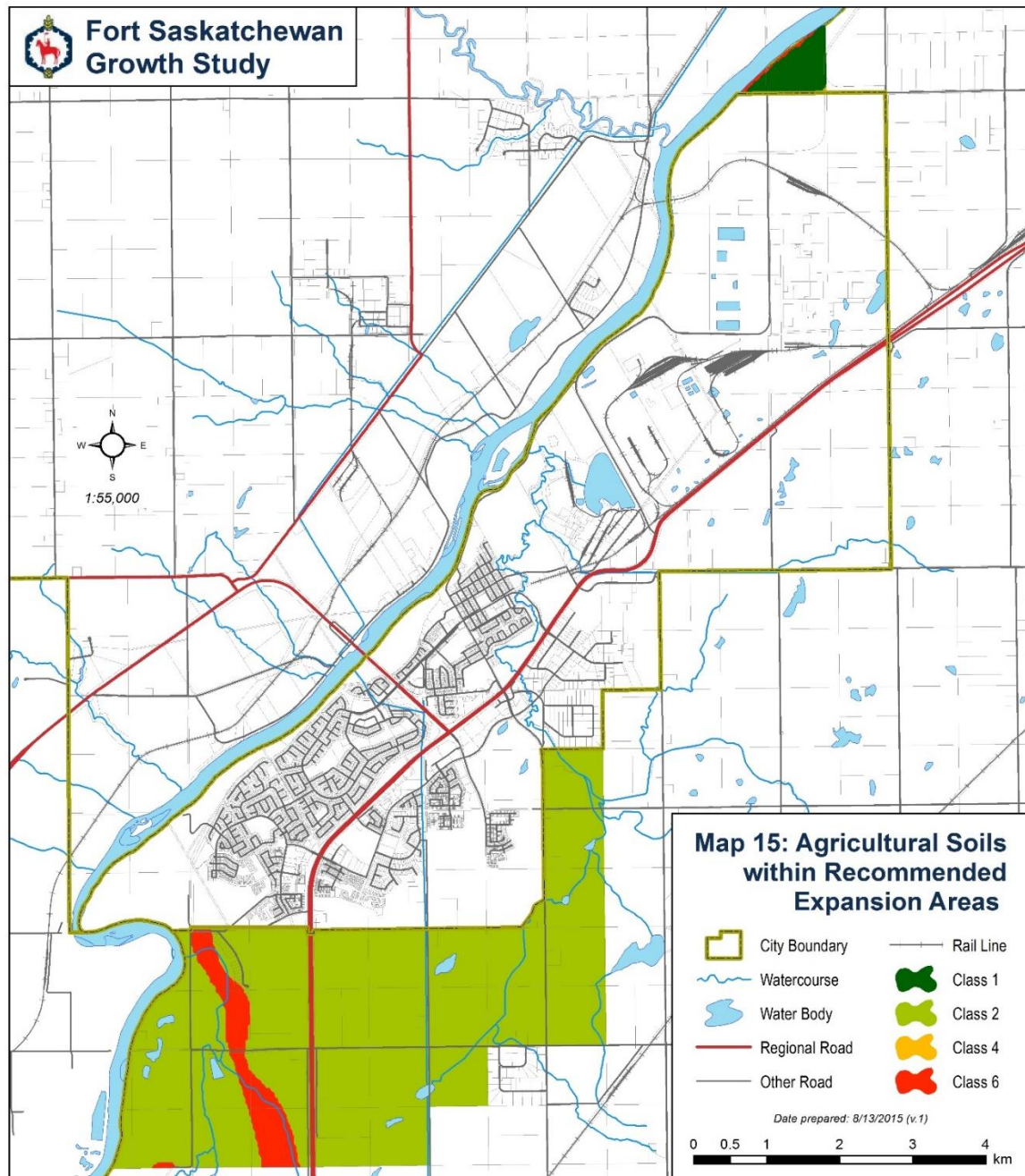
CLI Class	Northeast		Southeast		Total	
	Ha	%	Ha	%	ha	%
1	56.1	91.4%			56.1	2.8%
2			1,826.2	93.8%	1,826.2	91.0%
4	0.4	0.7%			0.4	0.0%
6	4.8	7.9%	120.1	6.2%	125.0	6.2%
Total	61.4	100.0%	1,946.3	100.0%	2,007.7	100.0%

The following are key observations from Map 15 and Table 16.

- The Southeast Expansion Area comprises 94% Class 2 soils, of which 74% are designated for future urban growth while 20% are within the river valley and are designated for future parks and open space or retention in their current state.
- Combined, the Northeast and Southeast Expansion Areas comprise only 4% (56 ha) of the entire Class 1 soils within the entirety of the three study areas (1,395 ha).



Map 15: Agricultural Soils within Recommended Expansion Areas



9.0 Development Staging

Tables 17 through 20 illustrate the amounts of residential, commercial, light/medium industrial and institutional lands consumed by year under the recommended Medium Case scenario. The amount of land consumed is based on the scenario's growth rates presented in Table 6 and the assumptions presented in Chapter 6.0.

The consumption of lands in Tables 17 through 20 include the assumption that 100% of the City's future growth by land use will be accommodated within its current limits for the first five years (2015-2019), or until its available land supply is consumed, whichever occurs first. The latter is the case for the institutional land supply. The assumption is applied as it is anticipated to take five years to complete the following:

- The boundary adjustment application process through to an approval by the Province of Alberta; and
- Prerequisite land use planning approvals for the recommended expansion areas prior to approval and registration of the first subdivision within these areas (e.g., a municipal development plan update and preparation and approval of one or more area structure plans).

Starting in 2020, the assumption is that 75% of Fort Saskatchewan's growth will be absorbed by the land supply within the City's current limits, with the balance being absorbed by land supply within the recommended expansion areas. This occurs until the land supply within the City's current limits are fully subdivided, after which 100% of the growth occurs within the recommended expansion areas.

To establish a foundation for the Financial Impact Assessment prepared by CORVUS Business Advisors, a staging plan was prepared to conceptually illustrate how the remaining available lands within the City and the lands within recommended expansion areas may be consumed over time. As illustrated in Map 16, the conceptual staging plan shows land consumed in five-year intervals based on the estimated amount of lands consumed by year by land use as illustrated in Tables 17 through 20. The first interval is seven years however to be inclusive of the two stub years.

The key land use planning principle used to develop the staging plan was that development within each five-year interval would be contiguous with previously developed lands. This would enable the optimization of investment in supporting capital infrastructure and future operating and service delivery costs. It would also expand the municipal footprint in a responsible manner.

Other influences to the staging plan were:

- The short-term need for additional commercial lands along Highway 21 to the south;
- Proximity and access to existing major transportation infrastructure (Highway 21 to the south and Highway 15 to the northeast); and
- Proximity to existing and future water and wastewater infrastructure.

It is important to note that the staging plan illustrated in Map 16 is a conceptual estimate generally based on the principle and influences mentioned above. Ultimately, municipal policy, approved land use plans and market forces will dictate the actual staging of development once a boundary adjustment occurs. In the meantime, the staging plan illustrated is realistic and sufficient for establishing the foundation for the Fiscal Impact Assessment.


Table 17: Estimated Annual Residential Land Consumption

Year	Total Land Required (ha)	Total Land to City (%)	Total Land to Annex. Area (%)	Opening City Lands Avail. (ha)	City Lands Consumed (ha)	Closing City Lands Avail. (ha)	Opening Annex. Lands Avail. (ha)	Annex. Lands Consumed (ha)	Closing Annex. Lands Available (ha)
2015	19.87	100	0	308.90	19.87	289.03	676.66	-	676.66
2016	18.34	100	0	289.03	18.34	270.69	676.66	-	676.66
2017	28.51	100	0	270.69	28.51	242.18	676.66	-	676.66
2018	28.51	100	0	242.18	28.51	213.68	676.66	-	676.66
2019	28.51	100	0	213.68	28.51	185.17	676.66	-	676.66
2020	18.34	75	25	185.17	13.75	171.42	676.66	4.58	672.08
2021	18.34	75	25	171.42	13.75	157.67	672.08	4.58	667.49
2022	18.34	75	25	157.67	13.75	143.91	667.49	4.58	662.91
2023	18.34	75	25	143.91	13.75	130.16	662.91	4.58	658.32
2024	18.34	75	25	130.16	13.75	116.41	658.32	4.58	653.74
2025	18.34	75	25	116.41	13.75	102.65	653.74	4.58	649.16
2026	18.34	75	25	102.65	13.75	88.90	649.16	4.58	644.57
2027	18.34	75	25	88.90	13.75	75.15	644.57	4.58	639.99
2028	18.34	75	25	75.15	13.75	61.40	639.99	4.58	635.40
2029	18.34	75	25	61.40	13.75	47.64	635.40	4.58	630.82
2030	18.34	75	25	47.64	13.75	33.89	630.82	4.58	626.23
2031	18.34	75	25	33.89	13.75	20.14	626.23	4.58	621.65
2032	18.34	75	25	20.14	13.75	6.39	621.65	4.58	617.07
2033	18.34	75	25	6.39	6.39	-	617.07	11.95	605.12
2034	18.34	75	25	-	-	-	605.12	18.34	586.78
2035	18.34	75	25	-	-	-	586.78	18.34	568.44
2036	18.34	75	25	-	-	-	568.44	18.34	550.11
2037	18.34	75	25	-	-	-	550.11	18.34	531.77
2038	18.34	75	25	-	-	-	531.77	18.34	513.43
2039	18.34	75	25	-	-	-	513.43	18.34	495.09
2040	18.34	75	25	-	-	-	495.09	18.34	476.76
2041	18.34	75	25	-	-	-	476.76	18.34	458.42
2042	18.34	75	25	-	-	-	458.42	18.34	440.08
2043	18.34	75	25	-	-	-	440.08	18.34	421.75
2044	18.34	75	25	-	-	-	421.75	18.34	403.41
2045	18.34	75	25	-	-	-	403.41	18.34	385.07
2046	18.34	75	25	-	-	-	385.07	18.34	366.74
2047	18.34	75	25	-	-	-	366.74	18.34	348.40
2048	18.34	75	25	-	-	-	348.40	18.34	330.06
2049	18.34	75	25	-	-	-	330.06	18.34	311.73
2050	18.34	75	25	-	-	-	311.73	18.34	293.39
2051	18.34	75	25	-	-	-	293.39	18.34	275.05
2052	18.34	75	25	-	-	-	275.05	18.34	256.72
2053	18.34	75	25	-	-	-	256.72	18.34	238.38
2054	18.34	75	25	-	-	-	238.38	18.34	220.04
2055	18.34	75	25	-	-	-	220.04	18.34	201.71
2056	18.34	75	25	-	-	-	201.71	18.34	183.37
2057	18.34	75	25	-	-	-	183.37	18.34	165.03
2058	18.34	75	25	-	-	-	165.03	18.34	146.69
2059	18.34	75	25	-	-	-	146.69	18.34	128.36
2060	18.34	75	25	-	-	-	128.36	18.34	110.02
2061	18.34	75	25	-	-	-	110.02	18.34	91.68
2062	18.34	75	25	-	-	-	91.68	18.34	73.35
2063	18.34	75	25	-	-	-	73.35	18.34	55.01
2064	18.34	75	25	-	-	-	55.01	18.34	36.67
2065	18.34	75	25	-	-	-	36.67	18.34	18.34
2066	18.34	75	25	-	-	-	18.34	18.34	-0.00
Totals	985.56	-	-	-	308.90	-	-	676.66	-

Table 18: Estimated Annual Commercial Land Consumption

Year	Total Land Required (ha)	Total Land to City (%)	Total Land to Annex. Area (%)	Opening City Lands Avail. (ha)	City Lands Consumed (ha)	Closing City Lands Avail. (ha)	Opening Annex. Lands Avail. (ha)	Annex. Lands Consumed (ha)	Closing Annex. Lands Available (ha)
2015	3.97	100	0	31.28	3.97	27.31	165.83	-	165.83
2016	3.67	100	0	27.31	3.67	23.64	165.83	-	165.83
2017	5.70	100	0	23.64	5.70	17.94	165.83	-	165.83
2018	5.70	100	0	17.94	5.70	12.24	165.83	-	165.83
2019	5.70	100	0	12.24	5.70	6.54	165.83	-	165.83
2020	3.67	75	25	6.54	2.75	3.78	165.83	0.92	164.91
2021	3.67	75	25	3.78	2.75	1.03	164.91	0.92	164.00
2022	3.67	75	25	1.03	1.03	-	164.00	2.63	161.36
2023	3.67	75	25	-	-	-	161.36	3.67	157.70
2024	3.67	75	25	-	-	-	157.70	3.67	154.03
2025	3.67	75	25	-	-	-	154.03	3.67	150.36
2026	3.67	75	25	-	-	-	150.36	3.67	146.69
2027	3.67	75	25	-	-	-	146.69	3.67	143.03
2028	3.67	75	25	-	-	-	143.03	3.67	139.36
2029	3.67	75	25	-	-	-	139.36	3.67	135.69
2030	3.67	75	25	-	-	-	135.69	3.67	132.03
2031	3.67	75	25	-	-	-	132.03	3.67	128.36
2032	3.67	75	25	-	-	-	128.36	3.67	124.69
2033	3.67	75	25	-	-	-	124.69	3.67	121.02
2034	3.67	75	25	-	-	-	121.02	3.67	117.36
2035	3.67	75	25	-	-	-	117.36	3.67	113.69
2036	3.67	75	25	-	-	-	113.69	3.67	110.02
2037	3.67	75	25	-	-	-	110.02	3.67	106.35
2038	3.67	75	25	-	-	-	106.35	3.67	102.69
2039	3.67	75	25	-	-	-	102.69	3.67	99.02
2040	3.67	75	25	-	-	-	99.02	3.67	95.35
2041	3.67	75	25	-	-	-	95.35	3.67	91.68
2042	3.67	75	25	-	-	-	91.68	3.67	88.02
2043	3.67	75	25	-	-	-	88.02	3.67	84.35
2044	3.67	75	25	-	-	-	84.35	3.67	80.68
2045	3.67	75	25	-	-	-	80.68	3.67	77.01
2046	3.67	75	25	-	-	-	77.01	3.67	73.35
2047	3.67	75	25	-	-	-	73.35	3.67	69.68
2048	3.67	75	25	-	-	-	69.68	3.67	66.01
2049	3.67	75	25	-	-	-	66.01	3.67	62.35
2050	3.67	75	25	-	-	-	62.35	3.67	58.68
2051	3.67	75	25	-	-	-	58.68	3.67	55.01
2052	3.67	75	25	-	-	-	55.01	3.67	51.34
2053	3.67	75	25	-	-	-	51.34	3.67	47.68
2054	3.67	75	25	-	-	-	47.68	3.67	44.01
2055	3.67	75	25	-	-	-	44.01	3.67	40.34
2056	3.67	75	25	-	-	-	40.34	3.67	36.67
2057	3.67	75	25	-	-	-	36.67	3.67	33.01
2058	3.67	75	25	-	-	-	33.01	3.67	29.34
2059	3.67	75	25	-	-	-	29.34	3.67	25.67
2060	3.67	75	25	-	-	-	25.67	3.67	22.00
2061	3.67	75	25	-	-	-	22.00	3.67	18.34
2062	3.67	75	25	-	-	-	18.34	3.67	14.67
2063	3.67	75	25	-	-	-	14.67	3.67	11.00
2064	3.67	75	25	-	-	-	11.00	3.67	7.33
2065	3.67	75	25	-	-	-	7.33	3.67	3.67
2066	3.67	75	25	-	-	-	3.67	3.67	0.00
Totals	197.11	-	-	-	31.28	-	-	165.83	-


Table 19: Estimated Annual Light/Medium Industrial Land Consumption

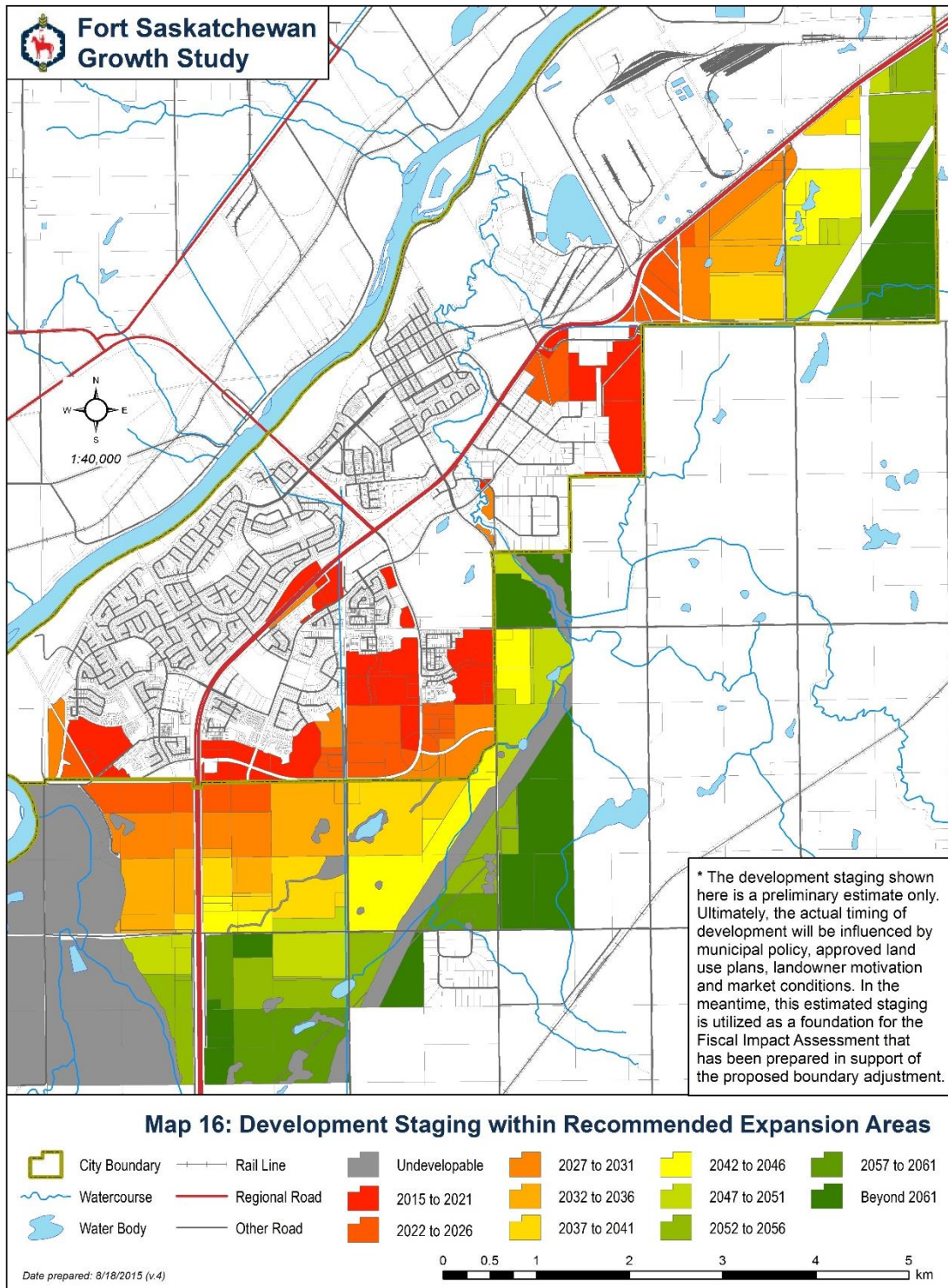
Year	Total Land Required (ha)	Total Land to City (%)	Total Land to Annex. Area (%)	Opening City Lands Avail. (ha)	City Lands Consumed (ha)	Closing City Lands Avail. (ha)	Opening Annex. Lands Avail. (ha)	Annex. Lands Consumed (ha)	Closing Annex. Lands Available (ha)
2015	10.55	100	0	599.4	10.55	588.85	-	-	-
2016	9.74	100	0	588.85	9.74	579.11	-	-	-
2017	15.14	100	0	579.11	15.14	563.97	-	-	-
2018	15.14	100	0	563.97	15.14	548.83	-	-	-
2019	15.14	100	0	548.83	15.14	533.69	-	-	-
2020	9.74	100	0	533.69	9.74	523.95	-	-	-
2021	9.74	100	0	523.95	9.74	514.21	-	-	-
2022	9.74	100	0	514.21	9.74	504.47	-	-	-
2023	9.74	100	0	504.47	9.74	494.73	-	-	-
2024	9.74	100	0	494.73	9.74	484.99	-	-	-
2025	9.74	100	0	484.99	9.74	475.25	-	-	-
2026	9.74	100	0	475.25	9.74	465.51	-	-	-
2027	9.74	100	0	465.51	9.74	455.77	-	-	-
2028	9.74	100	0	455.77	9.74	446.03	-	-	-
2029	9.74	100	0	446.03	9.74	436.29	-	-	-
2030	9.74	100	0	436.29	9.74	426.55	-	-	-
2031	9.74	100	0	426.55	9.74	416.81	-	-	-
2032	9.74	100	0	416.81	9.74	407.07	-	-	-
2033	9.74	100	0	407.07	9.74	397.33	-	-	-
2034	9.74	100	0	397.33	9.74	387.59	-	-	-
2035	9.74	100	0	387.59	9.74	377.85	-	-	-
2036	9.74	100	0	377.85	9.74	368.11	-	-	-
2037	9.74	100	0	368.11	9.74	358.37	-	-	-
2038	9.74	100	0	358.37	9.74	348.63	-	-	-
2039	9.74	100	0	348.63	9.74	338.89	-	-	-
2040	9.74	100	0	338.89	9.74	329.15	-	-	-
2041	9.74	100	0	329.15	9.74	319.41	-	-	-
2042	9.74	100	0	319.41	9.74	309.67	-	-	-
2043	9.74	100	0	309.67	9.74	299.93	-	-	-
2044	9.74	100	0	299.93	9.74	290.19	-	-	-
2045	9.74	100	0	290.19	9.74	280.45	-	-	-
2046	9.74	100	0	280.45	9.74	270.71	-	-	-
2047	9.74	100	0	270.71	9.74	260.97	-	-	-
2048	9.74	100	0	260.97	9.74	251.23	-	-	-
2049	9.74	100	0	251.23	9.74	241.49	-	-	-
2050	9.74	100	0	241.49	9.74	231.75	-	-	-
2051	9.74	100	0	231.75	9.74	222.01	-	-	-
2052	9.74	100	0	222.01	9.74	212.27	-	-	-
2053	9.74	100	0	212.27	9.74	202.53	-	-	-
2054	9.74	100	0	202.53	9.74	192.79	-	-	-
2055	9.74	100	0	192.79	9.74	183.05	-	-	-
2056	9.74	100	0	183.05	9.74	173.31	-	-	-
2057	9.74	100	0	173.31	9.74	163.57	-	-	-
2058	9.74	100	0	163.57	9.74	153.83	-	-	-
2059	9.74	100	0	153.83	9.74	144.09	-	-	-
2060	9.74	100	0	144.09	9.74	134.35	-	-	-
2061	9.74	100	0	134.35	9.74	124.61	-	-	-
2062	9.74	100	0	124.61	9.74	114.87	-	-	-
2063	9.74	100	0	114.87	9.74	105.13	-	-	-
2064	9.74	100	0	105.13	9.74	95.39	-	-	-
2065	9.74	100	0	95.39	9.74	85.65	-	-	-
2066	9.74	100	0	85.65	9.74	75.91	-	-	-
Totals	523.43	-	-	-	523.43	-	-	0.00	-

Table 20: Estimated Annual Institutional Land Consumption

Year	Total Land Required (ha)	Total Land to City (%)	Total Land to Annex. Area (%)	Opening City Lands Avail. (ha)	City Lands Consumed (ha)	Closing City Lands Avail. (ha)	Opening Annex. Lands Avail. (ha)	Annex. Lands Consumed (ha)	Closing Annex. Lands Available (ha)
2015	2.83	0	100	-	-	-	140.16	2.83	137.33
2016	2.61	0	100	-	-	-	137.33	2.61	134.72
2017	4.05	0	100	-	-	-	134.72	4.05	130.67
2018	4.05	0	100	-	-	-	130.67	4.05	126.61
2019	4.05	0	100	-	-	-	126.61	4.05	122.56
2020	2.61	0	100	-	-	-	122.56	2.61	119.95
2021	2.61	0	100	-	-	-	119.95	2.61	117.34
2022	2.61	0	100	-	-	-	117.34	2.61	114.74
2023	2.61	0	100	-	-	-	114.74	2.61	112.13
2024	2.61	0	100	-	-	-	112.13	2.61	109.52
2025	2.61	0	100	-	-	-	109.52	2.61	106.91
2026	2.61	0	100	-	-	-	106.91	2.61	104.31
2027	2.61	0	100	-	-	-	104.31	2.61	101.70
2028	2.61	0	100	-	-	-	101.70	2.61	99.09
2029	2.61	0	100	-	-	-	99.09	2.61	96.48
2030	2.61	0	100	-	-	-	96.48	2.61	93.88
2031	2.61	0	100	-	-	-	93.88	2.61	91.27
2032	2.61	0	100	-	-	-	91.27	2.61	88.66
2033	2.61	0	100	-	-	-	88.66	2.61	86.05
2034	2.61	0	100	-	-	-	86.05	2.61	83.45
2035	2.61	0	100	-	-	-	83.45	2.61	80.84
2036	2.61	0	100	-	-	-	80.84	2.61	78.23
2037	2.61	0	100	-	-	-	78.23	2.61	75.62
2038	2.61	0	100	-	-	-	75.62	2.61	73.01
2039	2.61	0	100	-	-	-	73.01	2.61	70.41
2040	2.61	0	100	-	-	-	70.41	2.61	67.80
2041	2.61	0	100	-	-	-	67.80	2.61	65.19
2042	2.61	0	100	-	-	-	65.19	2.61	62.58
2043	2.61	0	100	-	-	-	62.58	2.61	59.98
2044	2.61	0	100	-	-	-	59.98	2.61	57.37
2045	2.61	0	100	-	-	-	57.37	2.61	54.76
2046	2.61	0	100	-	-	-	54.76	2.61	52.15
2047	2.61	0	100	-	-	-	52.15	2.61	49.55
2048	2.61	0	100	-	-	-	49.55	2.61	46.94
2049	2.61	0	100	-	-	-	46.94	2.61	44.33
2050	2.61	0	100	-	-	-	44.33	2.61	41.72
2051	2.61	0	100	-	-	-	41.72	2.61	39.11
2052	2.61	0	100	-	-	-	39.11	2.61	36.51
2053	2.61	0	100	-	-	-	36.51	2.61	33.90
2054	2.61	0	100	-	-	-	33.90	2.61	31.29
2055	2.61	0	100	-	-	-	31.29	2.61	28.68
2056	2.61	0	100	-	-	-	28.68	2.61	26.08
2057	2.61	0	100	-	-	-	26.08	2.61	23.47
2058	2.61	0	100	-	-	-	23.47	2.61	20.86
2059	2.61	0	100	-	-	-	20.86	2.61	18.25
2060	2.61	0	100	-	-	-	18.25	2.61	15.65
2061	2.61	0	100	-	-	-	15.65	2.61	13.04
2062	2.61	0	100	-	-	-	13.04	2.61	10.43
2063	2.61	0	100	-	-	-	10.43	2.61	7.82
2064	2.61	0	100	-	-	-	7.82	2.61	5.22
2065	2.61	0	100	-	-	-	5.22	2.61	2.61
2066	2.61	0	100	-	-	-	2.61	2.61	0.00
Totals	140.16	-	-	-	0.00	-	-	140.16	-



Map 16: Development Staging



10.0

Summary and Conclusions

1. Between 1964 and 2014, the City of Fort Saskatchewan's population has increased at an average annual rate of 3.7%, from 3,766 in 1964 to 22,808 in 2014.
2. At its 2015 population of 24,040, the City has nearly doubled its population over the past 24 years since recording a population of 12,078 in the 1991 federal census.
3. More than 50% of the City's growth since 1991 has occurred in the past six years since 2009 and more than 75% has occurred in the past nine years since 2006.
4. Fort Saskatchewan's last boundary adjustment for residential and commercial purposes occurred in 2002. It was small in size, involving an addition of 264 ha of land (4.1 quarter sections). Prior to that, the City's second-last boundary adjustment for residential and commercial purposes occurred in 1987.
5. Between 1986 and 2003 – the timeframe generally aligning with the City's last two residential boundary adjustments – the City's average annual growth rate varied between -0.8% and 1.6%. Since 2003, the City's average annual growth rate has varied between 2.7% and 6.8%.
6. Between 2006 and 2011, Fort Saskatchewan was the fifth-fastest growing city in Alberta, behind Leduc and Spruce Grove within the Capital Region. Since 2011, Fort Saskatchewan has emerged as the fastest growing of all urban communities in the Capital Region that are located within Priority Growth Areas (PGAs).
7. Fort Saskatchewan's historic population growth pattern over the past 50 years is reflective of the City's role in the oil and gas industry, proximity to Alberta's Industrial Heartland, proximity to a large population and employment base within the Capital Region, and its high quality of life that makes it attractive to families.
8. Fort Saskatchewan's accelerated growth pattern over the past 10 years is reflective of the emergence of additional employment opportunities in Alberta's Industrial Heartland, investments in social capital infrastructure, the lower cost of living benefits in the City compared to other high growth municipalities in the Capital Region, and overcoming the historical stigma of heavy industrial developments and the correctional facility within the City.
9. In 2013, the Capital Region Board (CRB) published two population growth scenarios for the City of Fort Saskatchewan, which were adjusted in 2014. In the CRB Low Adjusted Scenario, the City was estimated to grow at an average annual growth rate of 2.2% to 43,562 in 2044 – a change of 91%. In the CRB High Adjusted Scenario, the City was estimated to grow at an average annual growth rate of 3.5% to 63,452 in 2044 – a change of 178%.
10. Independent of the CRB's population growth scenarios, the Growth Study presents three sets of alternative scenarios – Low, Medium and High Cases – which are based on Alberta Treasury Board and Finance Census Division Population Projections for Alberta and considers energy projects slated for completion in the near term within the surrounding area.
11. The Growth Study's Medium Case has been utilized for calculating future land requirements for the City. In this scenario, Fort Saskatchewan experiences an average annual growth rate of 2.7% to 51,371 in 2044 – a change of 125%. This growth rate of 2.7% per annum is conservative and appropriate as it is below the 2.85% midpoint of the 2.2% and 3.5% per annum growth rates of the CRB's Low and High Adjusted Scenarios respectively.
12. To the 50-year horizon in the Growth Study, the Medium Case projects the City will experience an average annual growth rate of 2.2% to 71,216 in 2066 – a change of 212%. This growth rate of 2.2% is conservative and appropriate as it is below the 3.7% per annum growth rate Fort Saskatchewan



experienced in the previous 50 years, and less than half of the 4.7% per annum growth rate experienced in the last 10 years.

13. In the 10-year period between 2005 and 2014 inclusive, the total amount of lands consumed through the subdivision registration process in the City of Fort Saskatchewan amounts to 558.7 ha. This total of 558.7 ha is 2.1 times the amount of land added to the City of Fort Saskatchewan on January 1, 2002. In the 13 years since that boundary adjustment, the City has consumed 654.7 ha or 2.5 times the amount of the last boundary adjustment.
14. With an average annual absorption of 55.9 ha of land over the past 10 years, and with 939.6 ha of lands available to accommodate future growth, it will take 17 years to absorb these lands through subdivision registration if this annual absorption rate were to remain constant and if there was flexibility in land use over the City's available land supply. Unfortunately, this flexibility is not possible due to risk acceptability criteria setbacks from heavy industrial developments in the City that prevent residential, institutional and some commercial uses.
15. The changes in the City's average annual growth rates from before to after the last boundary adjustment, and the magnitude of land absorbed over the last 13 years since the last boundary adjustment underscore that higher than expected growth in Fort Saskatchewan has triggered unprecedented land consumption.
16. As of mid-2014, the City of Fort Saskatchewan had 309 ha of gross residential land supply and 31 ha of gross commercial land supply available for future subdivision. It is estimated that these land supplies will be absorbed in 13 years (by the end of 2027) and 7 years (by end of 2021) respectively.
17. Residential and commercial land supplies of 13 and 7 years are significantly lower than the best practice of other urban municipalities to maintain minimum residential land supplies in the range of 20 to 25 years. These land supplies are insufficient for competition and for fostering comprehensive planning over the long-term.
18. In terms of competition, the City's remaining residential land supply is held by only four developers. Three of these developers have indicated they will consume all of their remaining holdings within six to eight years. It is not desirable to have only one active residential developer within a high growth urban community such as Fort Saskatchewan.
19. As of mid-2014, the City has effectively depleted its supply of institutional and heavy industrial lands.
20. Expansion areas in the amount of 30 quarter sections have been recommended to accommodate the City of Fort Saskatchewan's future growth to 2066, and to address an ownership issue where a private corporation has its undeveloped heavy industrial land holdings split by the City's boundary. The 30 quarter sections includes an allowance for market attractiveness and competition among developers and to recognize that some landowners within the recommended expansion areas may not participate in urban development by the end of 2066.
21. After deducting 11 quarter sections of adjacent undevelopable or unavailable lands (e.g., environmental reserve/river valley, existing/future energy corridors, roads, rail and Pointe-Aux-Pins Estates), the recommended expansion areas will provide approximately 19 quarter sections (or 1,219 ha) of gross developable lands to accommodate the 18.3 quarter sections (1,165 ha) of land required to accommodate the City's future residential, commercial and institutional growth to 2066. The expansion areas also include about 0.4 quarter sections (25 ha) of developable heavy industrial land.
22. The recommended expansion areas include a northeast expansion area comprising nearly one quarter section (61 ha) of land to the northeast of the City. Approximately 60% of this northeast expansion area is undevelopable mostly due to the North Saskatchewan River valley, while the balance is developable for heavy industrial purposes. These lands are held by a private corporation that has an additional 1.9 quarter sections (123 ha) of adjacent undeveloped heavy industrial land already within the City. If acquired, this expansion area will result in logistical efficiencies in acquiring approvals from one

municipality when it comes time for the private corporation to develop all of these land holdings as one comprehensive site.

23. The recommended expansion areas also include a south expansion area comprising approximately 29 quarter sections (1,861 ha) to the south of the City. The south expansion area accommodates the City's forecasted residential, commercial and institutional growth. It represents a logical extension of the City's existing urban footprint and keeps the footprint unified on one side of the North Saskatchewan River. It leverages the capacity of Highway 21, which is already a twinned regional road and can facilitate future intermunicipal transit, as well as the future potential river crossing between Highway 21 and Highway 15 into northeast Edmonton. It also enables eventual integration with urban development in Strathcona County that is advancing northward along Highway 21.
24. Both the northeast and the south expansion areas are accessible by the existing and future transportation network and are serviceable to standards that are appropriate to their respective intended land uses.
25. Lands to the northwest of the City of Fort Saskatchewan, across the North Saskatchewan River within Sturgeon County, are not recommended for future expansion at this time. Urban development to the northwest will:
 - create increased pressure on the current two-lane river crossing;
 - accelerate the need to undertake costly twinning of Highway 21 including the current two-lane crossing;
 - potentially trigger the need for a second river crossing to the northeast or southwest of the existing crossing, which may not be achievable due to the current extent of the City's existing urban footprint;
 - create less efficiency in terms of service delivery and the extension of infrastructure; and
 - generate overall integration issues due to the North Saskatchewan River being a major geographic barrier.
26. Further, this area is bisected by a rail line resulting in crossing and access constraints and is not within a PGA designated by the CRB. Also, future residential development in this area is not desirable from a land use compatibility perspective due to proximity to industrial employment areas in surrounding area including the Edmonton Energy and Technology Park to the southwest, the Sturgeon Industrial Park to the north, and Alberta's Industrial Heartland to the north and northeast.
27. It is prudent that the City of Fort Saskatchewan proceed with a boundary adjustment in the short-term to obtain sufficient residential, commercial and institutional land supplies to accommodate long-term growth over the next 50 years.
28. Overall, a 50-year annexation is reasonable and appropriate as Fort Saskatchewan is one of the fastest growing communities in Alberta and its major growth factors – its role within and close proximity to Alberta's Industrial Heartland to the north and northeast, the City of Edmonton to the southwest, and existing and future employment within Strathcona County to the south – will continue to spur growth.



Appendix A

Summary of Boundary Adjustment History



No.	Type	Effective Date	Area (ha)		Reason for Boundary Adjustment †	Population ‡
			Change	Total		
0	Incorporation (village)	March 1, 1899	68.5	68.5	Incorporate as a village	n/a
1	Annexation	April 28, 1899	0.7	69.2	Include adjacent road allowance (101 Street between 96 Avenue and 98 Avenue)	n/a
2	Incorporation (town)	June 4, 1904	79.8	149.0	Incorporate as a town and develop residential and commercial uses	451
3	Annexation	May 19, 1908	239.0	388.0	Develop residential and commercial uses	657
4	Withdrawal	October 7, 1921	unknown	unknown	unknown	982
5	Withdrawal	January 31, 1939	-12.2	375.9	unknown	901
6	Annexation	December 30, 1954	12.2	388.0	Develop residential uses	1,831
7	Annexation	December 30, 1956	10.2	398.2	Develop parks, open space and recreation facilities	2,582
8	Annexation	December 30, 1958	412.2	810.5	Develop heavy industrial uses	3,185
9	Annexation	April 1, 1964	0.9	811.4	Include adjacent road allowance (former Highway 15 alignment)	3,766
10	Annexation	January 1, 1965	122.2	933.6	Develop light/medium industrial uses	3,820
11	Annexation	January 1, 1969	241.5	1,175.1	Develop residential and commercial uses	4,961
12	Annexation	January 1, 1973	6.7	1,181.8	Develop residential uses	6,756
13	Annexation	January 1, 1976	128.4	1,310.2	Develop light/medium industrial uses	8,744
14	Annexation	January 1, 1978	1,857.8	3,168.0	Develop residential, industrial and commercial uses	10,104
5	Annexation	January 1, 1981	144.2	3,312.2	Transfer of Crown-owned lands between two municipalities	12,157
16	Incorporation (city)	July 1, 1985	1.3	3,313.5	Incorporate as a city with housekeeping boundary adjustment for parks and open space uses	12,264
17	Annexation	December 31, 1987	62.1	3,375.6	Develop residential uses	12,057
18	Annexation	December 31, 1991	1,186.3	4,561.9	Develop heavy and light/medium industrial uses	12,078
19	Annexation	October 31, 1999	10.8	4,572.7	Include adjacent road allowance (Highway 21)	13,227
20	Withdrawal	January 1, 2002	-7.2	4,565.5	Detach adjacent road allowance (130 Street/Range Road 220)	13,663
21	Annexation		264.1	4,829.5	Develop residential and commercial uses and provide certainty for long-term future	

Boundary Adjustment History Sources: Government of the North-West Territories courtesy of the Saskatchewan Archives Board (1899 to 1904); The Alberta Gazette courtesy of OurFutureOurPast.ca, the Provincial Archives of Alberta and Alberta Municipal Affairs (1908 to 2002)

† Reason for Boundary Adjustment based on either documentation provided in support of the boundary adjustment or what was ultimately developed on the subject lands.

‡ Population counts are based on census counts from that year from Statistics Canada or Alberta Municipal Affairs except for 1904, 1908, 1939, 1985, 1987, 1999 and 2002, which are interpolations from nearest census counts.



Appendix B

Environmental Overview





Appendix B: Environmental Overview

1.0 Purpose

Although the Alberta Merged Wetland Inventory (AMWI) mapping exercise in the Fort Saskatchewan Growth Study has identified potential wetland features, the purpose of this Environmental Overview in support of the Growth Study is to identify existing features on the landscape that should be conserved, preserved, or reclaimed as environmental reserve. Due to the differences in methodology, the AMWI and wetlands identified in this Environmental Overview may not be congruent. The absence of a wetland feature in the Environmental Overview that was identified by AMWI does not preclude that feature being assessed under the Alberta Wetland Policy should the wetland's function be altered or disturbed with development activities.

2.0 Wetland Classification

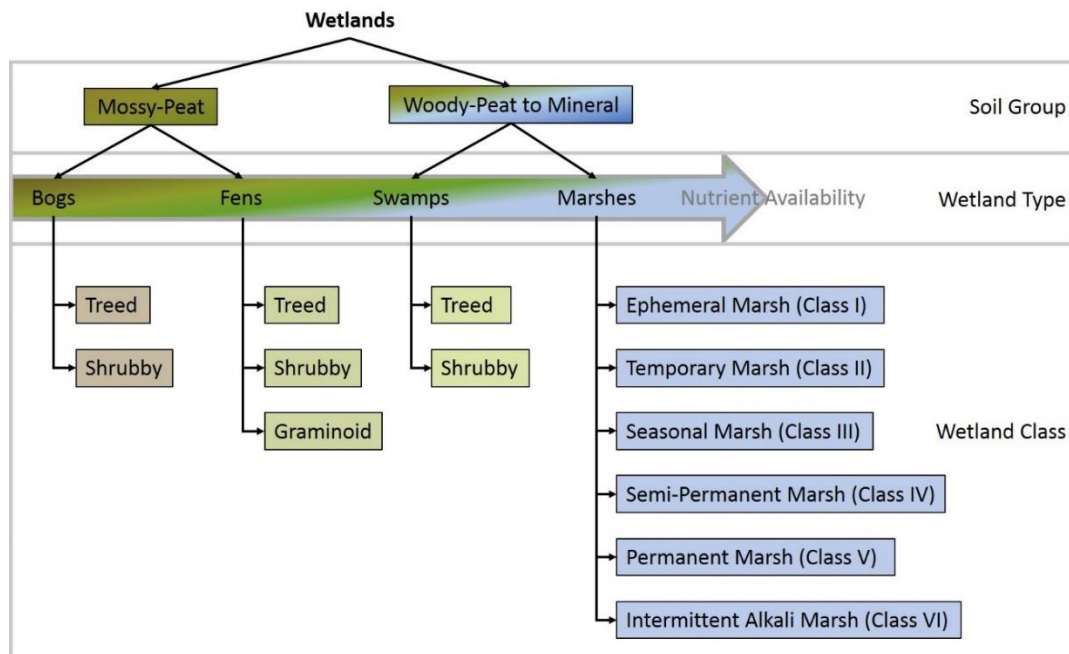
Wetlands are areas where the soil is inundated with water at an ephemeral to permanent time scale, such that the soils become reduced (i.e., hydric) and hydrophytic vegetation is dominant. Based on hydrologic, ecological, and soil (i.e., biogeochemical) properties, wetlands can be further classified. The methodology used to classify wetlands within priority areas for the Fort Saskatchewan Growth Study (the Project) was based on the Alberta Wetland Classification System, which is based on Stewart and Kantrud (1971) for marsh type wetlands and the Canadian Wetland Classification System (CWCS) for swamps, bogs, and fens (National Wetland Working Group [NWWG] 1997). Wetlands can be further classified based on soil properties, such as organic soil (i.e., peat) and mineral soil, as well as into soil nutrient regime.

The soil group is based on the presence of peat, partially decayed organic matter. Peat may occur as moss-dominated (i.e., bog and fen) or wood-dominated (i.e., swamps). For a wetland to be a peatland (i.e., bog or fen), it must accumulate more than 40 cm of peat. Although peatlands are found in the Project region (Government of Canada 1986), they are not expected to occur within the Project's three study areas due to the abundance of agriculture. Swamps, however, are anticipated to occur in forested portions within the Project's study areas, and may contain peat up to 40 cm deep.

The nutrient regime is the availability of soil nutrients to plants over several years (Pojar et al. 1987 in MacKenzie and Moran 2004). Typically, peatlands have the lowest nutrient availability, while marshes have the most readily available nutrients for plant uptake.

See Figure 1 below for a schematic and details on the Stewart and Kantrud classification system (1971) for marshes and the Canadian Wetland Classification System (NWWG 1997) for peatlands and swamps.

Figure 1: Hybrid Wetland



2.1 Stewart and Kantrud Classification System

The Stewart and Kantrud (1971) classification system for mineral prairie marsh wetlands is based on water permanency and salinity. Both water permanency and salinity influence the presence of plants and animals. Prairie wetlands are hydrologically dynamic and vertical water table fluctuations can vary temporally (e.g., seasonally, inter-annually, etc.). There are six wetland classes in Stewart and Kantrud that may occur in the Project's study areas. Each wetland Class is distinguished by a vegetation zone occurring the central or deeper part of the wetland and occupying 5% or more of the total wetland being classified (Stewart and Kantrud 1971). Table 1 defines each wetland class.

Table 1: Stewart and Kantrud Wetland Classification for Marshes and Shallow Open Water Wetlands

Wetland Class	Description
Ephemeral Marsh (Class I)	A low-prairie zone dominates the deepest portion of the wetland. In ephemeral marsh wetlands, the water table experiences very strong vertical water table fluctuations. This Class is typically dry by mid-spring. This wetland is briefly rewetted during precipitation events. The central portion is dominated by prairie vegetation.
Temporary Marsh (Class II)	A wet-meadow zone dominates the deepest portion of the wetland. In temporary marsh wetlands, the water table experiences strong vertical water table fluctuations. This Class is typically dry by summer. This wetland is temporarily rewetted during precipitation events. The central portion is dominated by graminoids.
Seasonal Marsh (Class III)	A seasonal zone dominates the deepest portion of the wetland. In seasonal marsh wetlands, water table varies throughout the season and this wetland Class is typically dry by mid-summer. The central portion is dominated by emergent vegetation, such as sedges.
Semi-permanent Marsh (Class IV)	A deep marsh zone dominates the deepest portion of the wetland. In semi-permanent marsh wetlands, water occurs throughout most of the year (i.e., fall). However, inter-annually, this wetland may contain water throughout the year in wet years and be dry by fall in drought years. The central portion may contain aquatic plants and emergent vegetation, such as rushes, are dominant in this wetland Class.



Wetland Class	Description
Permanent Marsh (Class V)	A permanent open water zone dominates the deepest part of the wetland. In permanent marsh wetlands, water occurrence is permanent with weak vertical water table fluctuations in the central portion. The central portion is typically open water, though submergent vegetation may occur.
Intermittent Alkali Marsh (Class IV)	An alkali zone dominates the deepest part of the wetland. It is characterized by high-salinity. In alkali marsh wetlands, water permanency is variable and the substrate may appear as white alkali salt flats in the water draw down phase. Vegetation is salt-tolerant.

2.2 Canadian Wetland Classification System (CWCS)

The CWCS (1997) classification for bogs, fens, and swamps is based on the hydrology, soil properties and vegetation. Bogs are ombrotrophic and receive nutrient and water inputs exclusively from precipitation, while fens and swamps are minerotrophic and receive precipitation, surface runoff, and/or ground water recharge from mineral-soil sources. Bogs and fens are typically dominated by moss species, though very nutrient rich fens may be dominated by graminoid species (i.e., graminoid fens). Swamps, are typically dominated by woody vegetation (i.e., trees and/or shrubs). The difference in vegetation community and hydrology result in different soil properties between bogs, fens, and swamps: bogs and fens contain moss-dominated peat, while swamps may contain woody-dominant peat. The hybrid wetland classification system has been modified from the CWCS (1997) to best describe wetlands in Alberta. The classes within the hybrid wetland classification system further describe the vegetation community. Table 2 defines each wetland type in the CWCS (1997).

Table 2: CWCS Wetland Classification

Class	Description
Bog	Bogs are wetlands that have accumulated more than 40 cm of peat and receive nutrient and water inputs from precipitation only. The water table in bogs is typically at or slightly below the peat surface. Peat in bogs is composed of decomposed Sphagnum moss with some woody material. The vegetation community is predominantly Sphagnum moss, black spruce and ericaceous shrubs.
Fen	Fens are wetlands that have accumulated more than 40 cm of peat and can receive nutrient and water inputs from precipitation, groundwater recharge, or overland flow, such as small watercourses. The water table in fens can be variable from above the peat surface to a below the peat surface. Peat in bogs is composed of decomposed sedge or brown moss. The vegetation community is predominantly brown mosses, graminoids and shrubs, though Sphagnum moss and trees can be common in nutrient poor fens.
Swamp	Swamps are mineral wetlands, though they may accumulate some peat above the mineral soil (i.e. organic veneer). Swamps can receive nutrient and water inputs from precipitation, groundwater recharge, or overland flow, such as watercourses. The water table in swamps is typically at or below the surface, though flooded swamp areas may occur as a result of land use change or beaver modification. If peat occurs in swamps, it is dominated by woody vegetation. The vegetation community is dominated by coniferous or deciduous trees or shrubs.
Marsh	Marshes are mineral wetlands and do not typically accumulate peat. Marshes can receive nutrient and water inputs from precipitation, groundwater recharge, or overland flow, such as watercourses. The water table in marshes may have dynamic vertical water table fluctuations based on the time of year and precipitation inputs. The vegetation community is dominated by emergent graminoid type species, such as rushes, reeds, grasses and sedges, as well as submergent or floating macrophytes in deep water.

3.0 Satellite Image Interpretation

A desktop review of satellite imagery was used to identify wetlands located within priority areas of the Project's three study areas. Priority areas within the study areas included:

- lands in the northwest study area across the North Saskatchewan River in Sturgeon County;
- lands in the northeast study area in Strathcona County; and
- lands in the southwest and northeast portions of the southeast study area that are proximate to the City of Fort Saskatchewan in Strathcona County.

Wetlands were identified using key indicators such as geomorphology, surficial hydrology, as well as vegetation type and cover. Delineated wetland features attempt to identify the transition zone as accurately as feasible. Wetland complexes are features that may contain more than one wetland type (e.g., swamp and marsh), may be surficially connected to other wetlands (e.g., through drainages), or may be associated with watercourses. Marsh wetlands and wetland complexes that contained marsh components were classed to the deepest portion of the basin as per Stewart and Kantrud (1971).

3.1 Non-Wetland Features

Artificial wetlands were also delineated during satellite imagery interpretation. Artificial wetlands likely contain surface water and may contain wetland vegetation and hydric soils. However, these features have been anthropogenically created. Dugouts are common artificial features on the cultivated landscape, and are intended for agricultural use. They may occur as isolated basins and cutoff from surficial water (e.g., wetlands, watercourses or drainages), however, dugout features are often created within the boundaries of wetlands as these locations are known sources of water. During the satellite imagery interpretation, dugouts within the boundaries of a wetland were included in the wetland delineation, but dugouts that appeared to be hydrologically isolated from surficial water were delineated as artificial wetlands. Wetland features with partial anthropogenic disturbance to the boundary were identified as a natural wetland features.

Features where surface hydrology indicated a wetland feature, but had been historically cultivated were not delineated as a wetland. These features preclude hydrophytic vegetation and are typically seeded with agronomic species. Additionally, the soils of these features are likely aerated, a common practice in agriculture through tilling and harvesting, thereby creating soils that are no longer be considered hydric

3.2 Satellite Imagery Limitations

Satellite imagery interpretation is an effective way to identify likely wetland features during project planning stages. However, the inconspicuous physical characteristics of some wetlands may have potentially hindered their identification during interpretation due to their small size or often ephemeral and temporary occurrence on agricultural land. Additionally, it should be noted that swamp type wetlands are particularly difficult to differentiate from wet forest during satellite interpretation. Due to the limitations of satellite imagery, wetland locations should be used as a guideline for planning only. Prior to any construction activity, field surveys may be required for various federal (e.g., Migratory Birds Convention Act, Species at Risk Act, Fisheries Act) and provincial (e.g., Historical Resource Act, Water Act, Wildlife Act, etc.) regulatory and permitting requirements.



4.0 Watercourses and Floodplains

Watercourse delineations were identified in the hydrolayer (Natural Resource Canada's National Hydro Network) and confirmed using satellite imagery interpretation.

A floodplain is an area adjacent to a water body that is subject to flooding. This area can serve to store floodwater and is composed of both a floodway and flood fringe. Floodways are the main channel and the adjacent overbank areas. In floodways, the water moves fastest and is the most destructive. Conversely, a flood fringe is the flood hazard area adjacent to the floodway, where water is shallow and moves slower than in the floodway. Floodplains (including both flood fringes and floodways) were identified through mapping available from Alberta Environment and Sustainable Resource Development (AESRD).

5.0 Setbacks

Wetland and watercourse delineations within this Environmental Overview did not include setbacks. Early in the Project, it was determined that Fort Saskatchewan's expansion across the North Saskatchewan River into Sturgeon County was not a viable option to accommodate the City's future growth at this time. Therefore, the priority areas considered to accommodate future growth are within Strathcona County. The Strathcona County Land Use Bylaw 8-2001 requires a minimum setback of 50 m from the top of the North Saskatchewan River Valley bank. Also in the Land Use Bylaw 8-2001, a minimum set back of 30 m is required for the top of the bank for any other watercourse, unless an environmental and geotechnical assessment can show a need for a lesser setback. A setback of less than 30 m requires approval by a Development Officer.

No official setbacks exist for wetlands. The government recommends 20 m for glacial till or 50 m for coarse textured sands and gravels adjacent wetlands that are Class III and higher as well as lakes, rivers, streams, seeps and springs (Government of Alberta 2012). Class I and II wetlands have a recommended 10 m setback (Government of Alberta 2012).

6.0 Environmental Reserve

Recommendations for potential environmental reserve (ER) areas were based on surrounding land use, wetland Class, local hydrology, and/or watercourses presence. Generally, Class IV and V wetlands were identified as potential ER or are recommended to be retained as they provide shallow water habitat for waterfowl, shorebirds, amphibians and other wildlife for most of the year (i.e., have semi-permanent to permanent water). These basins typically hold more water than seasonal, temporary, or ephemeral marsh wetlands and may help with catchment hydrology. To infill them during development would not only displace this water, but also likely impact the overland flow dynamics, which could lead to flooding and/or spring melt and stormwater management issues. Relatively large Class III marshes and wetland complexes were also considered for ER due to the potential landscape effect of infilling.

7.0 Results of the Desktop Overview

7.1 Natural Region

The Project is located in the Central Parkland Subregion of the Parkland Natural Region (Natural Regions Committee [NRC] 2006). The Parkland Natural Region is approximately 9% of the province at 60,747 km² and the Central Parkland Subregion is the largest of the subregions at 53,706 km² (NRC 2006).

The Central Parkland Subregion occurs within the Eastern Alberta Plains (NRC 2006). Tertiary sandstone and mudstone underlie the Project's study areas (NRC 2006). Within this Subregion, undulating glacial till plains and hummocky uplands are common (NRC 2006). Surface materials are medium to fine textured moderately calcareous glacial till (NRC 2006). Orthic Black Chernozems are common in grasslands and woodlands in this Subregion. Though, in addition to Orthic Dark Gray Chernozemic soils, Dark Gray Luvisolic soils are also common (NRC 2006). Humic and Orthic Gleysolic soils are typical in wetlands (NRC 2006).

Approximately 5% of the Central Parkland Natural Subregion occurs as native vegetation (NRC 2006). Grassland species include plains rough fescue, which is threatened by the invasion of smooth brome (NRC 2006). Forested areas are typically aspen dominated. Wetlands occur at roughly 10% of the Subregion area, while water bodies account for approximately 2% of the Subregion area (NRC 2006). Water bodies include the Red Deer, Battle, and North Saskatchewan Rivers (NRC 2006). Typical wetland types include marshes, willow swamps, or treed fens (NRC 2006). Wetland communities are dominated by emergent marsh vegetation, such as common cattail, sedges, or bulrushes (NRC 2006).

The majority of the Central Parkland Subregion is cultivated, due to the adequate precipitation, sufficiently warm and long growing seasons, and productive soils (NRC 2006). In addition to vast expanses of agricultural land, this Subregion is the most densely populated Subregion in Alberta, containing Edmonton, Red Deer, and part of Calgary (NRC 2006).

7.2 Wetlands

Map 1 shows the distribution of wetlands within the priority areas of the three study areas. In total, 178 wetlands (162.37 ha) were identified. These include one ephemeral marsh (Class I) wetland, 45 temporary marsh (Class II) wetlands, 85 seasonal marsh (Class III) wetlands, 22 semi-permanent marsh (Class IV) wetlands, 10 permanent marsh (Class V) wetlands and 15 artificial wetlands. No intermittent alkali marsh (Class VI) wetlands, swamps or peatlands (i.e., bogs or fens) were identified in the priority areas.

Of the 178 wetlands, 56 were located within the two expansion areas that were ultimately recommended in the Growth Study. These include four Class II wetlands, 34 Class III wetlands, 12 Class IV wetlands and six Class V wetlands. No Class I wetlands, Class VI wetlands, artificial wetlands, swamps or peatlands (i.e., bogs or fens) were identified in the recommended expansion areas. Table 3 presents a detailed list of these 56 wetlands, while a summary of these wetlands by class is presented in Table 4.



Flood Fringe 1

Potential Environments



Permanent marsh (Class V)

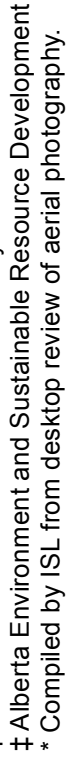




Table 3: List of Wetlands within the Northeast and South Expansion Areas

Wetland ID	Wetland Class	Area (ha) ¹	Comment
113	Semi-permanent marsh (Class IV)	1.916	Wetland recommended for retention.
114	Seasonal marsh (Class III)	1.871	
115	Permanent marsh (Class V)	4.586	Wetland recommended for retention. Wetland boundaries suggest anthropogenic alteration.
116	Permanent marsh (Class V)	1.945	Wetland recommended for retention. Wetland boundaries suggest anthropogenic alteration.
117	Permanent marsh (Class V)	31.850	Wetland recommended for retention. Wetland boundaries suggest anthropogenic alteration.
118	Permanent marsh (Class V)	13.796	Wetland recommended for retention. Wetland boundaries suggest anthropogenic alteration.
119	Permanent marsh (Class V)	1.751	Wetland recommended for retention. Wetland boundaries suggest anthropogenic alteration.
120	Seasonal marsh (Class III)	1.283	Wetland recommended for retention.
121	Seasonal marsh (Class III)	0.405	
122	Seasonal marsh (Class III)	0.057	
123	Seasonal marsh (Class III)	0.980	
124	Semi-permanent marsh (Class IV)	3.681	Wetland recommended for retention. Wetland contains dugout and drainage feature
125	Seasonal marsh (Class III)	2.076	
126	Seasonal marsh (Class III)	0.149	
127	Seasonal marsh (Class III)	0.087	
128	Seasonal marsh (Class III)	1.003	
129	Seasonal marsh (Class III)	0.321	
130	Semi-permanent marsh (Class IV)	1.684	Wetland recommended for retention.
131	Seasonal marsh (Class III)	0.205	
132	Seasonal marsh (Class III)	0.318	
133	Semi-permanent marsh (Class IV)	6.060	Wetland recommended for retention.
134	Semi-permanent marsh (Class IV)	0.204	Wetland recommended for retention.
135	Semi-permanent marsh (Class IV)	0.185	Wetland recommended for retention.
136	Seasonal marsh (Class III)	0.024	
137	Seasonal marsh (Class III)	1.044	
138	Seasonal marsh (Class III)	0.679	
139	Semi-permanent marsh (Class IV)	0.244	Wetland recommended for retention.
140	Seasonal marsh (Class III)	1.295	Wetland recommended for retention.
141	Seasonal marsh (Class III)	0.439	Wetland recommended for retention.
142	Temporary marsh (Class II)	0.068	
143	Seasonal marsh (Class III)	0.256	
144	Seasonal marsh (Class III)	0.437	Wetland recommended for retention.
145	Seasonal marsh (Class III)	0.896	
146	Seasonal marsh (Class III)	0.115	
147	Seasonal marsh (Class III)	0.151	

¹ Marsh wetlands and wetland complexes that contained marsh components were classed to the deepest portion of the basin *as per* Stewart and Kantrud (1971). Consequently, the total area of the wetland may not accurately represent the deepest portion of the basin.

Wetland ID	Wetland Class	Area (ha) ¹	Comment
148	Seasonal marsh (Class III)	0.137	
149	Seasonal marsh (Class III)	0.052	
150	Seasonal marsh (Class III)	0.564	
151	Seasonal marsh (Class III)	0.170	
152	Seasonal marsh (Class III)	0.181	
153	Semi-permanent marsh (Class IV)	0.148	Wetland recommended for retention.
154	Temporary marsh (Class II)	0.196	
155	Seasonal marsh (Class III)	0.178	
156	Temporary marsh (Class II)	0.564	
157	Semi-permanent marsh (Class IV)	1.235	Wetland recommended for retention.
158	Seasonal marsh (Class III)	0.116	
159	Semi-permanent marsh (Class IV)	0.403	Wetland recommended for retention.
160	Permanent marsh (Class V)	10.868	Wetland recommended for retention.
161	Seasonal marsh (Class III)	0.609	
162	Seasonal marsh (Class III)	0.373	
163	Temporary marsh (Class II)	0.201	
164	Seasonal marsh (Class III)	0.347	
165	Semi-permanent marsh (Class IV)	2.378	Wetland recommended for retention.
166	Seasonal marsh (Class III)	0.127	
168	Semi-permanent marsh (Class IV)	0.387	Wetland recommended for retention.
178	Seasonal marsh (Class III)	1.496	Wetland complex – contains shrubby swamp portion in addition to marsh

Table 4: Summary of Wetlands within the Northeast and South Expansion Areas

Wetland Class	No. of Wetlands	Area (ha) ²
Marsh	56	102.79
<i>Ephemeral marsh (Class I)</i>	0	--
<i>Temporary marsh (Class II)</i>	4	1.03
<i>Seasonal marsh (Class III)</i>	34	18.44
<i>Semi-permanent marsh (Class IV)</i>	12	18.83
<i>Permanent marsh (Class V)</i>	6	54.13
<i>Intermittent alkali marsh (Class VI)</i>	0	--
Swamp	0	--
Fen	0	--
Bog	0	--
Artificial wetland	0	--

7.3 Watercourses and Floodplains

The Project's three study areas are located within the North Saskatchewan River Basin and the Beaverhill subwatershed. The largest tributaries to the North Saskatchewan River include the Battle, Clearwater, Brazeau and Vermilion Rivers. The river basin begins in the Rocky Mountains (i.e., the Columbia Icefield of Banff and Jasper National Parks) and flows east through the prairies to Saskatchewan. The North Saskatchewan River Basin is approximately 80,000 km² within Alberta (Alberta Environment and Sustainable Resource Development [AESRD] 2014a), but drains areas throughout Alberta and

² Marsh wetlands and wetland complexes that contained marsh components were classed to the deepest portion of the basin *as per* Stewart and Kantrud (1971). Consequently, the total area of the wetland may not accurately represent the deepest portion of the basin.



Saskatchewan. The mean annual discharge from Alberta to Saskatchewan is over seven billion cubic metres.

As presented in Map 1, the northwest study area include several unnamed tributaries draining to the North Saskatchewan River on the north side of the river. Pointe-aux-Pins Creek, Ross Creek and its tributaries occur to the south of the North Saskatchewan River and traverse the southeast study area.

Floodways and flood fringes associated with the North Saskatchewan River also occur within the study areas. Floodways and flood fringes both occur within the southwest portion of the southeast study area, primarily in the areas adjacent to Pointe-aux-Pins Creek (i.e., E½ 14-54-23 W4M, W½ 13-54-23 W4M, N½ 12-54-23 W4M, and NE 11-54-23 W4M). Map 1 illustrates the floodplain areas within the three study areas.

7.4 Environmental Reserves

Retention of all semi-permanent marsh (Class IV) and permanent marsh (Class V) wetlands is recommended due to potential landscape hydrologic impact. In addition, five larger locations within the priority areas have been identified as potential ER. There are four locations in the northwest study area to the north of the North Saskatchewan River: two within unnamed tributaries to the North Saskatchewan River, one permanent wetland and one forested area containing a marsh wetland. Elsewhere, the area surrounding Ross Creek, within the central portion of the southeast study area, has also been recommended as ER. The area around Pointe-Aux-Pins Creek is very wet due to the floodplain topography, though heavily disturbed by anthropogenic activities (e.g., agriculture, and the likely artificial alteration of natural boundaries due to cultivation). Due to the degree of anthropogenic disturbance, it normally would not recommended as ER under the current conditions. However, it is recognized that these lands could potentially be designated ER at the subdivision stage as they are below the North Saskatchewan River valley's top of the bank. All lands within the North Saskatchewan River valley are recommended to be retained as ER, or be protected by other means, due to floodplain encumbrance and to protect the river valley escarpment.

8.0 References

Alberta Environment and Sustainable Resource Development. 2014a. Alberta's River Basins. Website: <http://www.environment.alberta.ca/apps/basins/default.aspx?Basin=7>. Accessed: December 2014.

Government of Alberta. 2012. Stepping back from the Water: A Beneficial Management Practices Guide for New Development near Water Bodies in Alberta's Settled Region. 88 pp.

Government of Canada. 1986. Canada: Wetland Regions. National Atlas of Canada 5th Edition. Map.
Mackenzie, W.H. and J.R. Moran. 2004. Wetlands of British Columbia: a Guide to Identification. British Columbia Ministry of Forests. Land Management Handbook 52.

National Wetland Working Group. 1997. The Canadian Wetland Classification System. Edited by B.G. Warner and C.D.A. Rubec. Wetlands Research Centre, University of Waterloo. Waterloo, Ontario.

Natural Regions Committee. 2006 Natural Regions and Subregions of Alberta. Compiled by D.J. Downing and W.W. Pettapiece. Government of Alberta. Pub. No. T/852. 254 pp.

Stewart, Robert E., and Harold A. Kantrud. 1971. Classification of natural ponds and lakes in the glaciated prairie region. Resource Publication 92, Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/wetlands/pondlake/index.htm> (Version 16APR1998).