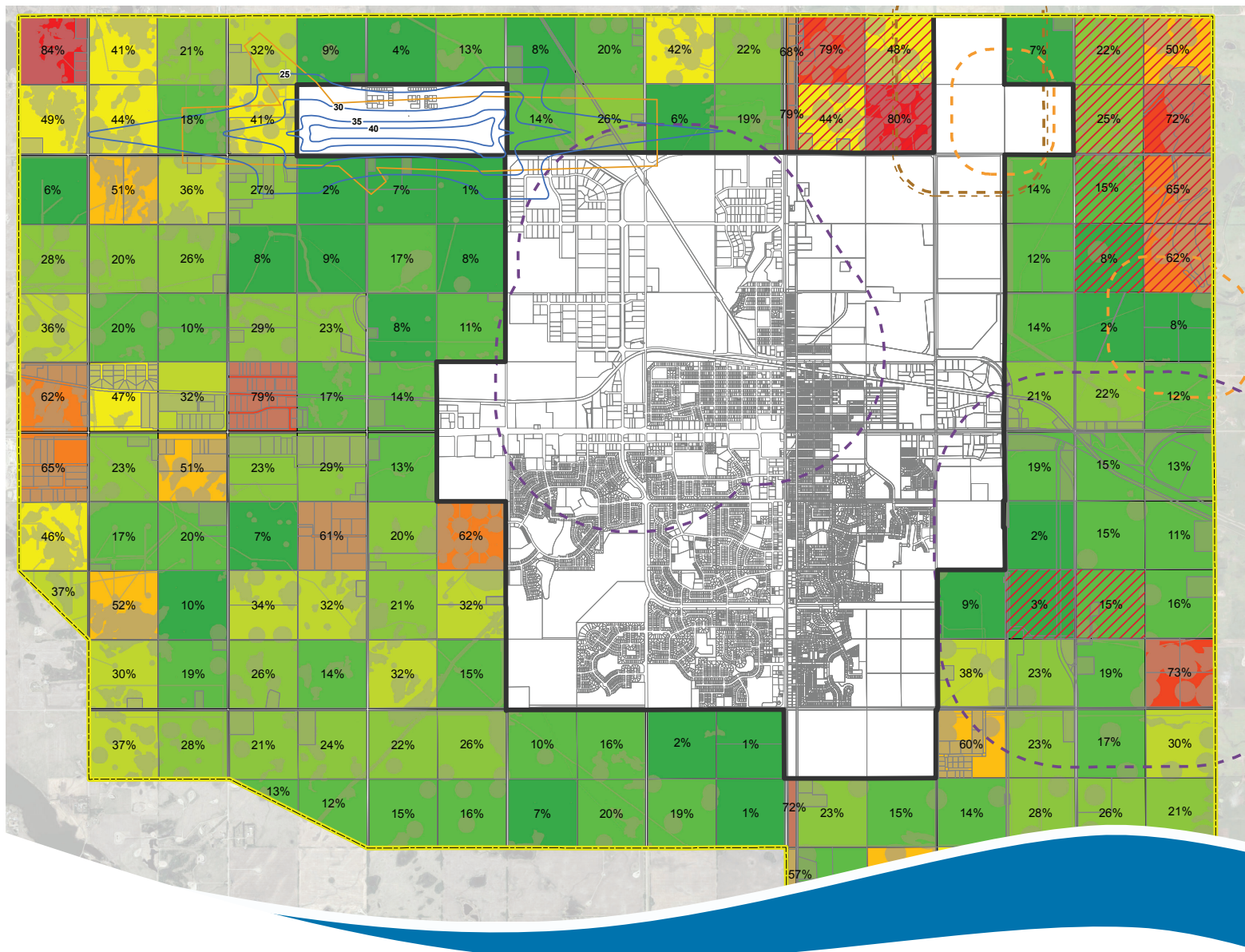




City of Lloydminster and County of Vermilion River Joint Regional Growth Study



SPENCER ENVIRONMENTAL
MANAGEMENT SERVICES LTD.



City of Lloydminster / County of Vermilion River Joint Regional Growth Study Acknowledgements

This Joint Regional Growth Study is the culmination of four years of intermunicipal collaboration and cooperation between the elected officials and municipal administrators representing the City of Lloydminster and the County of Vermilion River from April 2015 to June 2019. The Joint Regional Growth Study has established an unprecedented foundation for the further planning of future growth and development on lands of mutual interest to the City and the County for the benefit of the greater region as a whole. ISL Engineering and Land Services, B&A Planning Group, Applications Management Consulting Ltd., Spencer Environmental Management Services Ltd., and CIMA+ wish to thank the City and the County for their perseverance and dedication to the completion of the Joint Regional Growth Study and are excited to observe the successes that will arise from their collaboration and cooperation.



City Council, 2016-2019

- Mayor Gerald Aalbers
- Councillor Ken Baker
- Councillor Stephanie Brown Munro
- Councillor Aaron Buckingham
- Councillor Michael Diachuk
- Councillor Glenn Fagnan
- Councillor Jonathan Torresan

City Council, 2015-2016

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- Councillor Ken Baker
- Councillor Lachlan Cummine
- Councillor Linnea Goodhand
- Councillor Chris McQuid
- Councillor Larry Sauer
- Councillor Jason Whiting

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- Samuel Afolayan (since 2016)
- Don Stang
- Terry Burton
- Prettie Grewalson
- Wendy Leaman
- Rodney Cumby (2017-2019)
- Trisha Le (2015-2017)
- Raj Rajakumar (2016-2017)
- Alan Cayford (2015-2017)



County Council, 2017-present

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- Councillor Marty Baker
- Councillor Leslie Cusack
- Councillor Stacey Hryciuk
- Councillor Clinton Murray
- Councillor Jason Stelmaschuk
- Councillor Lonnie Wolgien

County Council, 2015-2017

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- Councillor Dave Gamracy (2015)
- Councillor Stacey Hryciuk
- Councillor Murray King
- Councillor Miles Latimer
- Councillor Noel McCormack
- Councillor Ed Parke
- Councillor Lonnie Wolgien (2016-2017)

Administration, 2015-2019

- Pat Vincent (since 2019)
- Roger Garnett
- Bernice Gonzalez (since 2015)
- Rhonda King (2015-2019)
- Marilyn Lavoie (2015)

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1.0 Introduction

1.1 History and Purpose

In 2006, the City of Lloydminster (the “City”) and the County of Vermilion River (the “County”) adopted its first intermunicipal development plan (IDP) after nearly two years of intermunicipal collaboration. Over the course of the following two years, the County and the City collaborated on the preparation of three area structure plans (ASPs) for the IDP’s three identified urban expansion areas. This was followed by the City commencing a City-led in-house growth study to support a future annexation of lands from the County. While the City-led growth study was under development, the County and the City worked together in preparing proposed amendments to the 2006 IDP as part of the IDP’s mandated plan review cycle.

The City’s 2009 Growth Study was finalized and issued to the County in 2012 with a request to annex the entirety of the three urban expansion areas identified in the County’s portion of the 2006 IDP. Upon review, the County requested that the City reset its annexation request and engage a consultant to undertake a growth study. The IDP review and pending amendments were placed on hold.

In 2013, the City retained a consultant team led by ISL Engineering and Land Services (ISL) and completed its Comprehensive Growth Strategy (CGS), comprising a 2013 Growth Study, a 2013 Environmental Inventory, and a 2013 Servicing Assessment to identify a 30-year annexation area. Concurrently with this initiative, the County commissioned its own Regional Growth Management Strategy (RGMS) to guide future development within the County. The 2013 CGS recommended an annexation of 24 quarter sections from the County, as well as just over one quarter section from the Rural Municipality (RM) of Britannia No. 502 (“Britannia” or “the RM of Britannia”) and just over two quarter sections from the RM of Wilton No. 472 (“Wilton” or “the RM of Wilton”).

After issuance of the CGS to the County and the two RMs for review, the City and the County commenced annexation negotiations in 2014, and the County engaged in a comprehensive review and comment on the CGS. In early 2015, through its Intermunicipal Annexation Negotiation Committee (IANC), the City and the County agreed to embark on the preparation of a joint regional growth study to support the annexation negotiations as well as intermunicipal planning between the two municipalities. The two municipalities opted to retain ISL to lead and B&A Planning Group (B&A) to co-lead the project with population and employment forecasting support from Applications Management Consulting Ltd. (Applications), environmental support from Spencer Environmental Management Services Ltd. (Spencer) and CIMA+ for rural serviceability engineering support.

This *2019 City of Lloydminster/County of Vermilion River Joint Regional Growth Study* (hereafter referred as the “JRGS”) fulfills the mandate prescribed by the IANC in 2015. The 2019 JRGS represents four years of intermunicipal collaboration between the City, the County, and their consultant team.

1.2 Goal and Objectives

The goal of the JRGS is to develop a mutually agreed upon and beneficial growth scenario, informed by a comprehensive planning and technical analysis, for the area in and around the City of Lloydminster. The objectives of the JRGS as supported by the IANC are:

- To develop a JRGS based on mutually agreed upon assumptions;
- To establish a future growth scenario that considers development in the study area;
- To inform revisions and updates to the County and City Intermunicipal Development Plan;
- To inform revisions and updates to the County and City Municipal Development Plan(s);
- To inform revision and updates to the County and City’s IDP Area Structure Plan(s); and
- To inform the annexation negotiation process.

1.3 Regional Context

For the purpose of the JRGS, the Lloydminster Region is defined as the outer extents of the County of Vermilion River, the RM of Britannia, and the RM of Wilton, which together straddle the provincial boundary between Alberta and Saskatchewan and surround the City of Lloydminster. It also includes the other urban municipalities surrounded by the County – the Town of Vermilion and the villages of Dewberry, Kitscoty, Marwayne, and Paradise Valley – and surrounded by the RM of Wilton – the villages of Lashburn and Marshall. Map 1 illustrates the extent of the Lloydminster Region and the locations of its constituent municipalities.

1.4 Study Area

As illustrated in Map 1, the joint regional growth study area (or “study area”) is the central core of the Lloydminster Region. The study area, presented at a larger scale in Map 2, includes:

- the entirety of the City of Lloydminster;
- in Alberta, all lands within the County and City IDP; and
- in Saskatchewan, all lands within the Lloydminster Planning District Official Community Plan except for the northern six quarter sections north of the section line between Township Road 502 (67 Street) and Township Road 504.

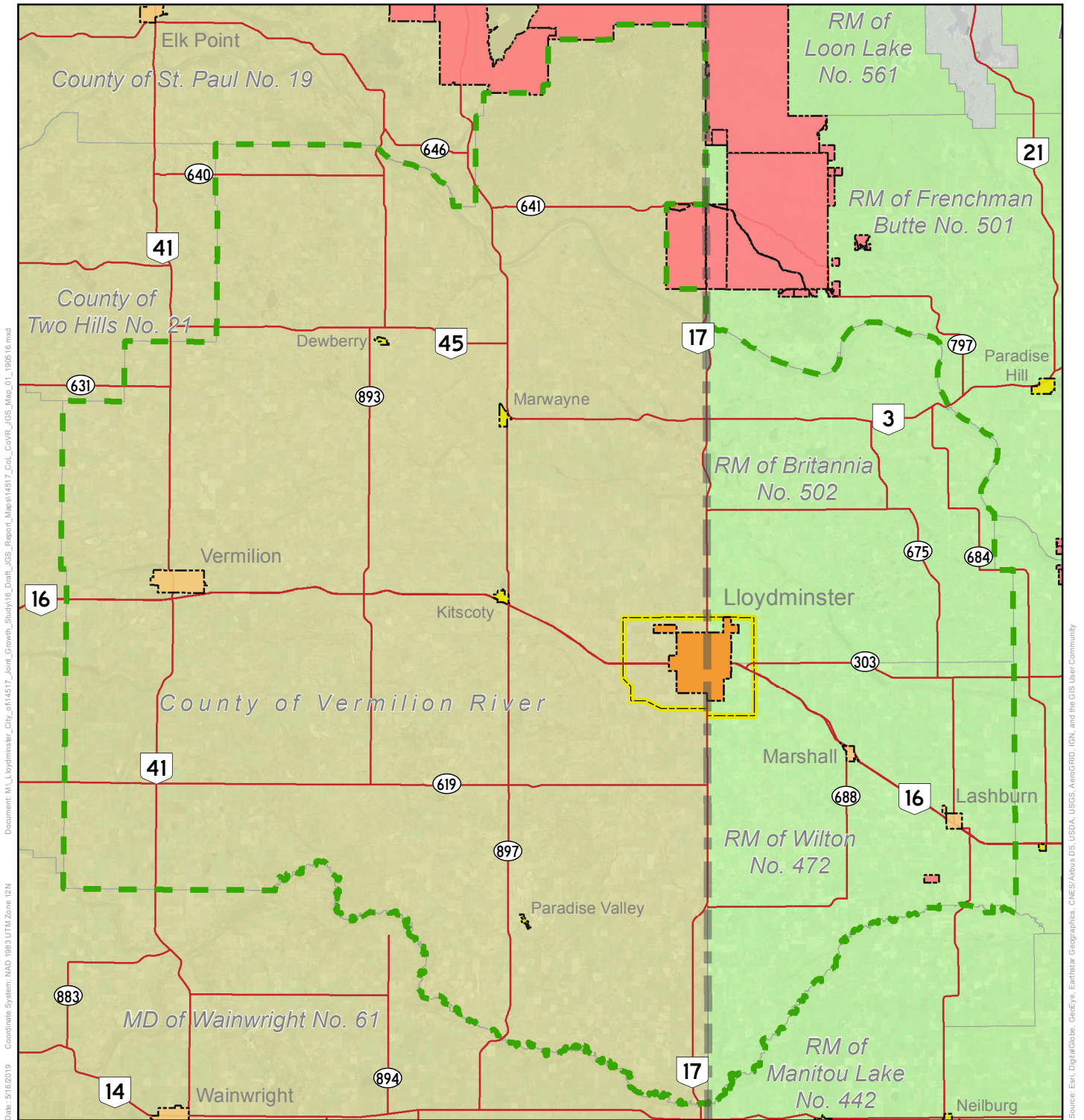
The joint study area is bisected east/west by Highway 16 (Yellowhead Highway) and a Canadian National rail line. It is also bisected north/south by Highway 17, which serves as the provincial boundary between Alberta and Saskatchewan. Future Highway 16X, a planned future bypass, generally skirts the southern edge of the study area, while Highway 303 enters the study area just east of the City. The Hamlet of Blackfoot, which is under the jurisdiction of the County, is located 1.6 km (1 mile) west of the study area, 800 m (0.5 miles) north of Highway 16.

1.5 Growth Principles

The following growth principles guided the consultants, the partnering municipalities (the City and the County) and the IANC in preparation of this JRGS. Endorsed by the IANC, these principles were prepared and endorsed by the IANC in order to provide a context for the investigation of future directions for the City's and County's future growth and options for how growth may best be accommodated within the study area.

Collaboration and Agreement

1. The Joint Regional Growth Study will establish and maintain a regional focus.
2. The relationship between the City and County will be one of mutual respect.
3. The City and the County will work collaboratively with each other and adjacent municipalities, regional service agencies and the provincial ministries throughout the Joint Regional Growth Study process to coordinate future directions for growth.
4. Key land requirement assumptions (variables for land supply, overheads, allowances, densities, etc.) and growth directions must be mutually agreed to by the City and the County.
5. The Joint Regional Growth Study process will inform the subsequent annexation negotiations and, if agreeable by both the City and the County, will inform the development of a new intermunicipal development plan (IDP) between the City and County and subsequent updates to their respective municipal developments plans (MDPs) and applicable area structure plans (ASPs).



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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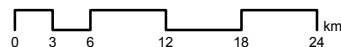
- Provincial Boundary
- Municipal District (AB)
- Rural Municipality (SK)
- Lloydminster Region
- Joint Growth Study Area
- Indian Reserve/Metis Settlement
- City
- Town
- Village
- Highway

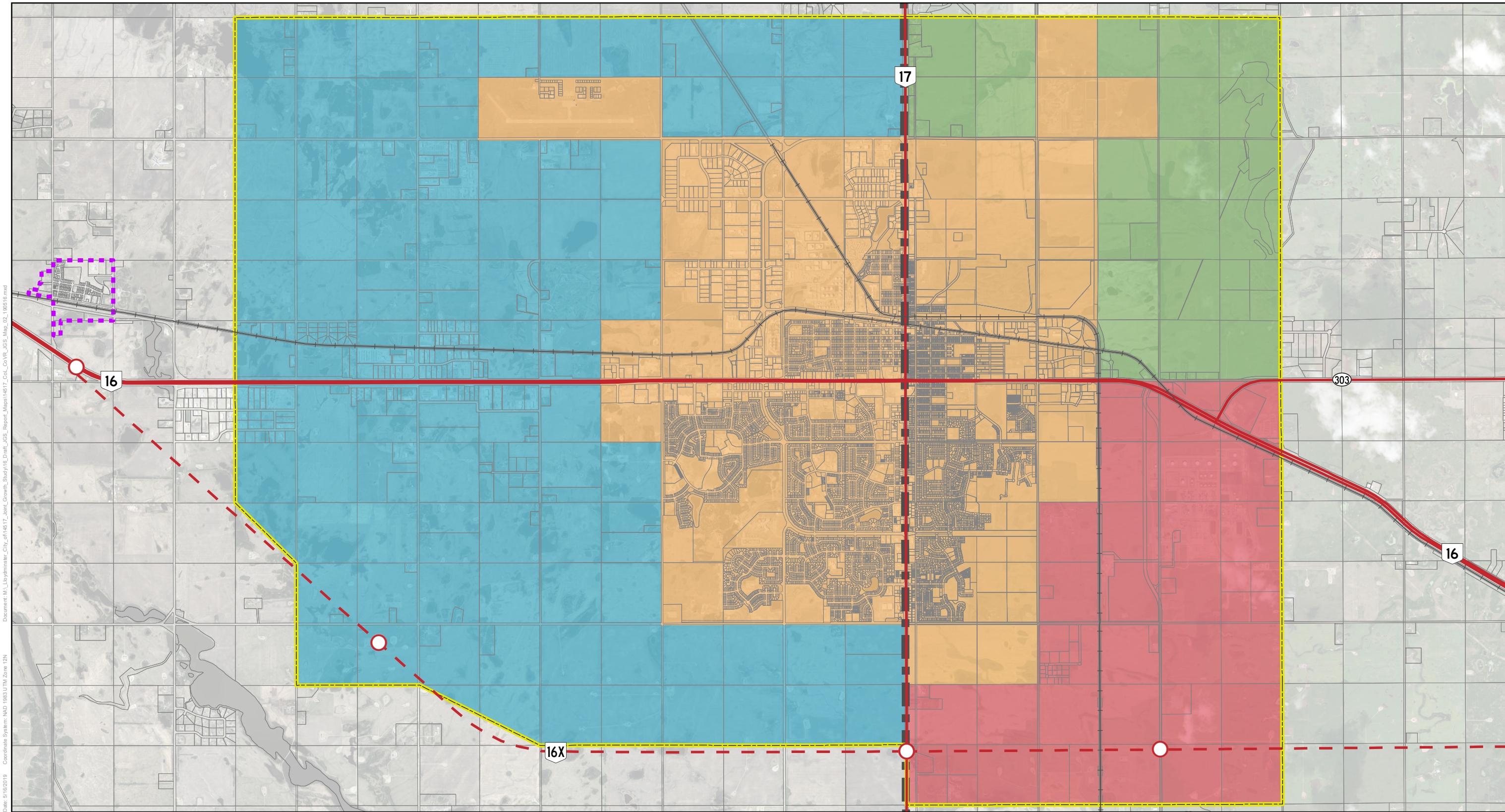


**JOINT REGIONAL
GROWTH STUDY**

**MAP 1:
REGIONAL CONTEXT**

Integrated Expertise. Locally Delivered.





Integrated Expertise. Locally Delivered.



0 0.5 1 2 3 km

1:50,000

Highway

Future Highway Bypass

Future Interchange

Rail Main Line

Provincial Boundary

Parcel

Hamlet of Blackfoot

Joint Growth Study Area

City of Lloydminster

County of Vermilion River

Rural Municipality of Britannia No. 502

Rural Municipality of Wilton No. 472



JOINT REGIONAL GROWTH STUDY

MAP 2: JOINT REGIONAL STUDY AREA BY MUNICIPALITY

Supporting Analysis

6. The Joint Regional Growth Study will establish the amount of expected residential and non-residential land requirements for the City and County within the study area over the next 35 years, from 2016 to 2051.
7. The development of land requirement calculations will be informed by historical growth trends and forecasted population, housing and employment growth.
8. Determination of realistic future growth directions will acknowledge known opportunities, natural and future man-made constraints to future development and historical development patterns. It will also consider the most efficient and economical extension of roadways and infrastructure.
9. Recommendations regarding future directions for growth must be supported by robust, quantitative analysis of future land uses, infrastructure and fiscal requirements to meet the City's and the County's needs.
10. Future growth scenarios will consider key guiding documents such as the Alberta Land-use Framework (specifically the Efficient Use of Land policy), the City's and the County's MDPs, the City's and County's IDP, and any ASPs within and adjacent to the study area. The scenarios may also align with other key guiding documents adopted or accepted by the City or the County, such as strategic plans, corporate plans, master plans, growth management strategies, or integrated community sustainability plans.

Environment and Agriculture

11. Future growth directions will recognize that agriculture is an economic driver in the region and minimize conversion of agricultural lands to the lands needed to accommodate future urban growth requirements.
12. Lands identified for future development should respect local character while supporting sustainable growth and be planned and developed in a manner that is consistent with best management practices that support environmental features such as wetlands. Environmentally significant and natural areas will also be protected where possible.

Urban and Rural Development

13. Future City and County growth must be balanced and provide a sustainable mix of residential and non-residential land uses in the study area to offer existing and future residents opportunities to live, work, play and invest in complete communities.
14. Future growth directions in the study area should enable an adequate supply of well-located commercial, industrial and residential lands to meet the future land use requirements.

Fiscal Sustainability and Infrastructure Planning

15. Future growth should strive for a balanced tax base of residential and non-residential growth in the City and the County.
16. Future growth and development in the study area should be planned to use lands in an orderly, economical and beneficial manner.
17. Future residential and employment growth should be in proximity to existing and planned transportation and utility infrastructure to maximize these capital investments.
18. Future growth in the study area must be supported by appropriate future hard and soft infrastructure and capital requirements that are financially self-sustaining and supportive of the short-term and long-term health and growth of the City and County.
19. The Lloydminster Airport is a regional asset that benefits both the City and the County. Development opportunities and operational constraints shall be investigated for both the City and the County.
20. Future directions for growth will comply with the intent of the annexation principles established by the Municipal Government Board and applicable federal and provincial legislation.

2.0 Growth Context

2.1 Historical Population Growth

2.1.1 City of Lloydminster

The Saskatchewan portion of Lloydminster incorporated on November 25, 1903 while the Alberta portion incorporated on July 6, 1906. Table 1 presents the City of Lloydminster's population history since 1906 according to federal census results, while Table 2 presents its population history since 2005 according to municipal censuses. Overall and average annual growth rates between federal censuses (every five years) and municipal censuses (varies from two to four years) are provided. The overall and average annual absolute growth is also provided, and growth levels are assigned based on the average annual growth rates observed.

Table 1: City of Lloydminster Federal Census Population History, 1906–2016

Year	Population	Adjusted Population	Percent Change (%)	Average Annual Growth Rate ¹ (%)	Absolute Growth	Average Annual Absolute Growth	Growth Level ²
1906	519	—	—	—	—	—	—
1911	663	—	27.7	5.0	144	29	High
1916	788	—	18.9	3.5	125	25	High
1921	755	—	-4.2	-0.9	-33	-7	Low
1926	1,247	—	65.2	10.6	492	98	High
1931	1,516	—	21.6	4.0	269	54	High
1936	1,420	—	-6.3	-1.3	-96	-19	Low
1941	1,624	—	14.4	2.7	204	41	High
1946	1,833	—	12.9	2.5	209	42	Moderate
1951	3,938	—	114.8	16.5	2,105	421	High
1956	5,077	—	28.9	5.2	1,139	228	High
1961	5,667	—	11.6	2.2	590	118	Moderate
1966	7,071	—	24.8	4.5	1,404	281	High
1971	8,691	—	22.9	4.2	1,620	324	High
1976	10,311	—	18.6	3.5	1,620	324	High
1981	15,031	15,045	45.8	7.8	4,720	944	High
1986	17,356	—	15.5	2.9	2,325	465	High
1991	17,283	—	-0.4	-0.1	-73	-15	Low
1996	18,953	—	9.7	1.9	1,670	334	Moderate
2001	20,988	—	10.7	2.1	2,035	407	Moderate
2006	24,028	—	14.5	2.7	3,040	608	High
2011	27,804	—	15.7	3.0	3,776	755	High
2016	31,410	—	13.0	2.5	3,606	721	High

Source: Statistics Canada, 1906–2016 federal censuses

¹ Compounded average annual growth rates.

² For the purpose of this analysis, a "low" growth level is an average annual growth rate of less than 1.0% and a "high" growth level is an average annual growth rate of greater than 2.5%. A "moderate" growth level is an average annual growth rate of between 1.0% and 2.5% inclusive.

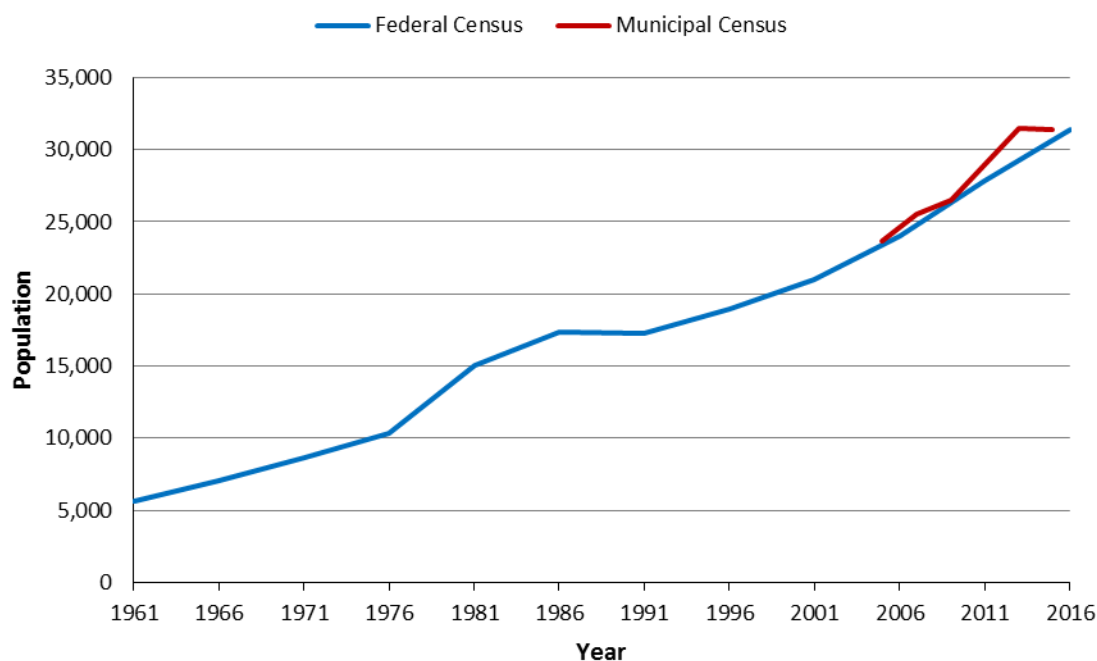
Table 2: City of Lloydminster Municipal Census Population History, 2005–2015

Year	Population	Percent Change (%)	Average Annual Growth Rate ³ (%)	Absolute Growth	Average Annual Absolute Growth	Growth Level ⁴
2005	23,643	—	—	—	—	—
2007	25,523	8.0	3.9	1,880	940	High
2009	26,502	3.8	1.9	979	490	Moderate
2013	31,483	18.8	4.4	4,981	1,245	High
2015 ⁵	31,377	-0.3	-0.2	-106	-53	Low

Source: City of Lloydminster, 2005–2015 municipal censuses

Figure 1 illustrates the historical population growth of the City of Lloydminster by census type from 1961 to 2016 as presented in Tables 1 and 2.

Figure 1: City of Lloydminster Population History, 1961–2016



Sources: Statistics Canada, 1961–2016 federal censuses and City of Lloydminster, 2005–2015 municipal censuses

³ Compounded average annual growth rates.

⁴ For the purpose of this analysis, a “low” growth level is an average annual growth rate of less than 1.0% and a “high” growth level is an average annual growth rate of greater than 2.5%. A “moderate” growth level is an average annual growth rate of between 1.0% and 2.5% inclusive.

⁵ Based on a 99% household response rate.

Key Observations from Tables 1 and 2 and Figure 1

- The City of Lloydminster has grown from a population of 519 in 1906 to 31,410 in 2016.
- At its 2016 population of 31,410, the City has more than doubled its population over the past 35 years since recording a population of 15,031 in 1981, and more recently has grown by 66% over the past 20 years since recording a population of 18,953 in 1996.
- Among the various federal census intervals between 1961 and 2016, the City's average annual growth rate has been less than 1.9% only once between 1986 and 1991 (-0.1%).
- With the exceptions of a five-year period between 1986 and 1991, and a two-year period between 2013 and 2016, the City of Lloydminster has experienced moderate to high population growth over the past 55 years since 1961. The two periods of stagnant growth are largely attributed lower oil prices at those times, which resulted in an economic slowdown that affected the City. The most recent two-year period of low growth has since extended to 2019.
- The City's average annual growth rate has steadily climbed from 1.9% to as high as 3.0% over the past five federal censuses since 1991, while in the five years between the last two federal censuses, Lloydminster has experienced an average annual growth rate of 2.5%.

Table 3 presents a breakdown of Lloydminster's historical population counts by province.

Table 3: City of Lloydminster Population History Breakdown by Province, 1906–2016

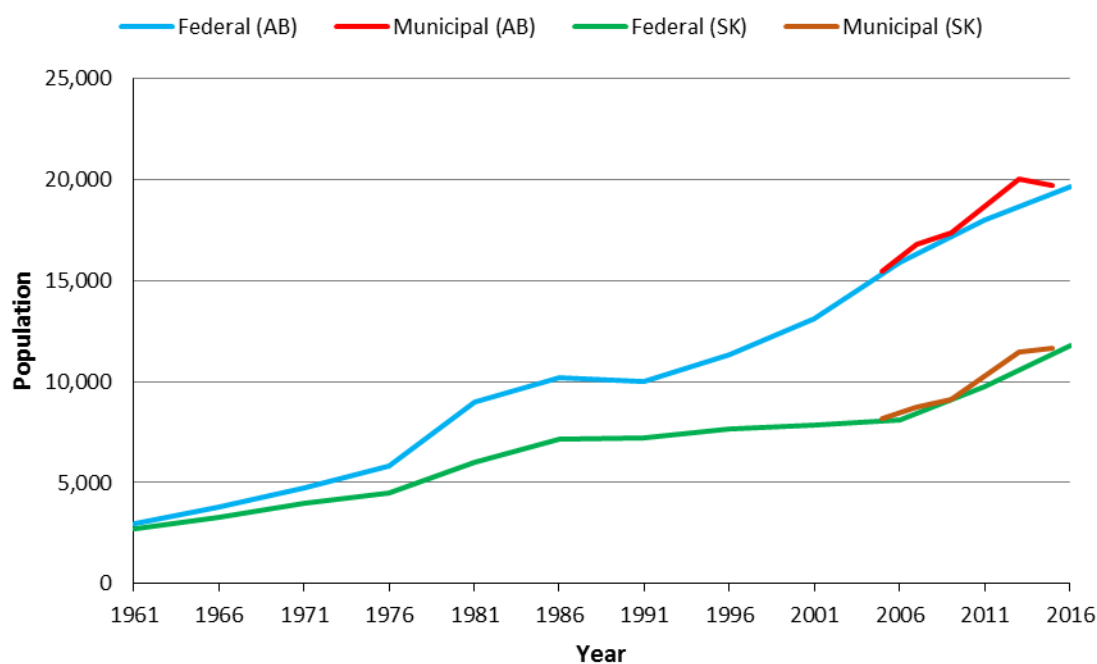
Year	Population by Province		Total Population	Proportion of Population	
	Alberta	Saskatchewan		Alberta (%)	Saskatchewan (%)
1906	130	389	519	25	75
1911	222	441	663	33	67
1916	294	494	788	37	63
1921	286	469	755	38	62
1926	400	847	1,247	32	68
1931	539	977	1,516	36	64
1936	498	922	1,420	35	65
1941	572	1,052	1,624	35	65
1946	698	1,135	1,833	38	62
1951	1,706	2,232	3,938	43	57
1956	2,506	2,571	5,077	49	51
1961	2,944	2,723	5,667	52	48
1966	3,767	3,304	7,071	53	47
1971	4,738	3,953	8,691	55	45
1976	5,818	4,493	10,311	56	44
1981	8,997	6,034	15,031	60	40
1986	10,201	7,155	17,356	59	41
1991	10,042	7,241	17,283	58	42
1996	11,317	7,636	18,953	60	40
2001	13,148	7,840	20,988	63	37
2005	15,487	8,156	23,643	66	34
2006	15,910	8,118	24,028	66	34
2007	16,786	8,737	25,523	66	34

Year	Population by Province		Total Population	Proportion of Population	
	Alberta	Saskatchewan		Alberta (%)	Saskatchewan (%)
2009	17,402	9,100	26,502	66	34
2011	18,032	9,772	27,804	65	35
2013	20,011	11,472	31,483	64	36
2015	19,740	11,637	31,377	63	37
2016	19,645	11,765	31,410	63	37

Sources: Statistics Canada, 1906–2016 federal censuses and City of Lloydminster, 2005–2015 municipal censuses

Figure 2 illustrates the historical population growth of the two portions of the City of Lloydminster by census type from 1961 to 2016 as presented in Table 3.

Figure 2: City of Lloydminster Population History by Provincial Component, 1961–2016



Sources: Statistics Canada, 1961–2011 federal censuses and City of Lloydminster, 2005–2015 municipal censuses

Key Observations from Table 3 and Figure 2

- For the 50-year period between 1906 and 1956, the majority of City of Lloydminster's population lived on the Saskatchewan side of the City.
- Since 1961, the majority of Lloydminster's population has lived on the Alberta side of the City.
- Originally representing 25% of Lloydminster's population in 1906, Alberta's share of the City's population steadily increased over 99 years to a high of 66% in 2005 through 2009. Since 2009, Saskatchewan's proportionate share of Lloydminster's population has steadily increased from 34% to 37% in 2016.
- Though no extensive study has been undertaken to confirm why the Alberta side has grown at a faster rate over the majority of Lloydminster's history, it may be due to a combination of factors could include: the availability of land (larger land base on the Alberta side); proximity to civic and commercial amenities (Bud Miller Park and big box developments); tax regimes; provincial politics; etc. Meanwhile, the modest shift in favour of the Saskatchewan side in recent years may be due in part to a dwindling residential land supply in Alberta and the need for downstream infrastructure investments on the Saskatchewan side to enable further build-out of the Alberta side. Ultimately, the City can play a role in influencing growth trends on either side of the provincial border through its future planning decisions.

In addition to these observations, the Lloydminster census agglomeration⁶ experienced the tenth-highest population growth between 2006 and 2011 among Canada's 114 census agglomerations according to the 2011 federal census. Its five-year growth rate over this period was 14.0%.⁷ The City retained its tenth-highest rank between 2011 and 2016 according to the 2016 federal census due to a five-year growth rate of 12.3%.⁸

Table 4 presents the City's growth rates over various intervals from 2016, ranging from the past 5 years to the past 50 years.

Table 4: City of Lloydminster Average Population Growth for Selected Timeframes, 1966–2016

Timeframe	Percent Change (%)	Average Annual Growth Rate ⁹ (%)	Absolute Growth	Average Annual Absolute Growth
1966–2016 (50 years)	344.2	3.0	24,339	487
1971–2016 (45 years)	261.4	2.9	22,719	505
1976–2016 (40 years)	204.6	2.8	21,099	527
1981–2016 (35 years)	108.8	2.1	16,365	468
1986–2016 (30 years)	81.0	2.0	14,054	468
1991–2016 (25 years)	81.7	2.4	14,127	565
1996–2016 (20 years)	65.7	2.6	12,457	623
2001–2016 (15 years)	49.7	2.7	10,422	695
2006–2016 (10 years)	30.7	2.7	7,382	738
2011–2016 (5 years)	13.0	2.5	3,606	721

Source: ISL Engineering and Land Services, derived from Statistics Canada, 1966–2016 federal censuses

⁶ A census agglomeration (CA), as defined by Statistics Canada, is an "area consisting of one or more neighbouring municipalities situated around a core." To become a CA, it "must have a core population of at least 10,000", and it may be promoted to census metropolitan area (CMA) when it has "a total population of at least 100,000 of which 50,000 or more live in the core." The Lloydminster CA includes the adjacent RM of Wilton No. 472 to the southeast within Saskatchewan as well as the villages of Lashburn and Marshall.

⁷ "The Canadian Population in 2011: Population Counts and Growth". Population and dwelling counts, 2011 Census. Table 3: Census agglomerations with the highest population growth between 2006 and 2011. Ottawa: Statistics Canada. February 2012. p. 16. Catalogue no. 98-310-X2011001. ISBN 978-1-100-19962-7.

⁸ "Population and dwelling counts, for census agglomerations, 2016 and 2011 censuses – 100% data". Population and Dwelling Count Highlight Tables, 2016 Census. Ottawa: Statistics Canada. February 2017.

⁹ Compounded average annual growth rates.

Key Observations from Table 4

- Over the 50-year interval (1966-2016), the City's population has increased an average of 3.0% annually.
- Between the last two federal censuses (2011-2016), the population has increased an average of 2.5% annually.
- The lowest average annual growth rate among the various intervals was 2.0% over the 30-year interval (1986-2016). This is largely due to the economic slowdown of the 1980s that resulted in a period of stagnant population growth in the latter half of that decade.

Lloydminster's sustained moderate-to-high historical population growth pattern is reflective of several factors, including the following:

- the significant impact of the surrounding region's oil and gas industry on the City;
- its role as a regional service centre for eastern Alberta and western Saskatchewan;
- its nearly equidistant location along the Yellowhead Highway between Edmonton and Saskatoon; and
- its quality of life and smaller city atmosphere that makes it attractive to families.

2.1.2 County of Vermilion River

The County of Vermilion River was originally established as the Municipal District of Vermilion River No. 450 on January 1, 1944 through the amalgamation of six smaller municipal districts.¹⁰ Its current outer municipal boundary's configuration was not established until April 1, 1977 however when two boundary adjustments involving its rural neighbours occurred concurrently. On that date, certain lands from the County of Minburn No. 27 to the west were added to the County of Vermilion River,¹¹ while other lands within the County of Vermilion River were deleted in favour of the Municipal District of Wainwright No. 61 to the south.¹²

Table 5 presents the County of Vermilion River's population history since 1976 according to federal census results, while Table 6 presents its population history from the County's last two municipal censuses. Overall and average annual growth rates between federal censuses (every five years) and municipal censuses (seven years) are provided. The overall and average annual absolute growth is also provided and growth levels are assigned based on the average annual growth rates observed.

¹⁰ [County of Vermilion River Location and History Profile](#). Alberta Municipal Affairs.

¹¹ [Order in Council \(O.C.\) 338/77](#). Government of Alberta.

¹² [Order in Council \(O.C.\) 339/77](#). Government of Alberta.

Table 5: County of Vermilion River Federal Census Population History, 1976–2016

Year	Population	Adjusted Population	Percent Change (%)	Average Annual Growth Rate ¹³ (%)	Absolute Growth	Average Annual Absolute Growth	Growth Level ¹⁴
1976	6,646	6,967 ¹⁵	—	—	—	—	—
1981	7,533	7,513 ¹⁶	8.1	1.6	566	113	Moderate
1986	8,112	—	8.0	1.5	599	120	Moderate
1991	7,722	—	-4.8	-1.0	-390	-78	Low
1996	7,553	—	-2.2	-0.4	-169	-34	Low
2001	7,524	—	-0.4	-0.1	-29	-6	Low
2006	7,467	—	-0.8	-0.2	-57	-11	Low
2011	7,905	—	5.9	1.1	438	88	Moderate
2016	8,267	—	4.6	0.9	362	72	Moderate

Source: Statistics Canada, 1976–2016 federal censuses

Table 6: County of Vermilion River Municipal Census Population History, 2008–2015

Year	Population	Percent Change (%)	Average Annual Growth Rate ¹⁷ (%)	Absolute Growth	Average Annual Absolute Growth	Growth Level ¹⁸
2008	7,900	—	—	—	—	—
2015 ¹⁹	8,116	2.7	0.4	216	31	Low

Source: County of Vermilion River, 2008 and 2015 municipal censuses

Figure 3 illustrates the historical population growth of the County of Vermilion River by census type from 1976 to 2016 as presented in Tables 5 and 6.

¹³ Compounded average annual growth rates.

¹⁴ For the purpose of this analysis, a “low” growth level is an average annual growth rate of less than 1.0% and a “high” growth level is an average annual growth rate of greater than 2.5%. A “moderate” growth level is an average annual growth rate of between 1.0% and 2.5% inclusive.

¹⁵ The County’s 1976 population was adjusted upward by Statistics Canada in 1981 due to boundary adjustments that occurred in the intercensal period between 1976 and 1981 inclusive. This included the concurrent addition of certain lands from the County of Minburn No. 27 and deletion of certain lands in favour of the Municipal District of Wainwright No. 61 on August 1, 1977.

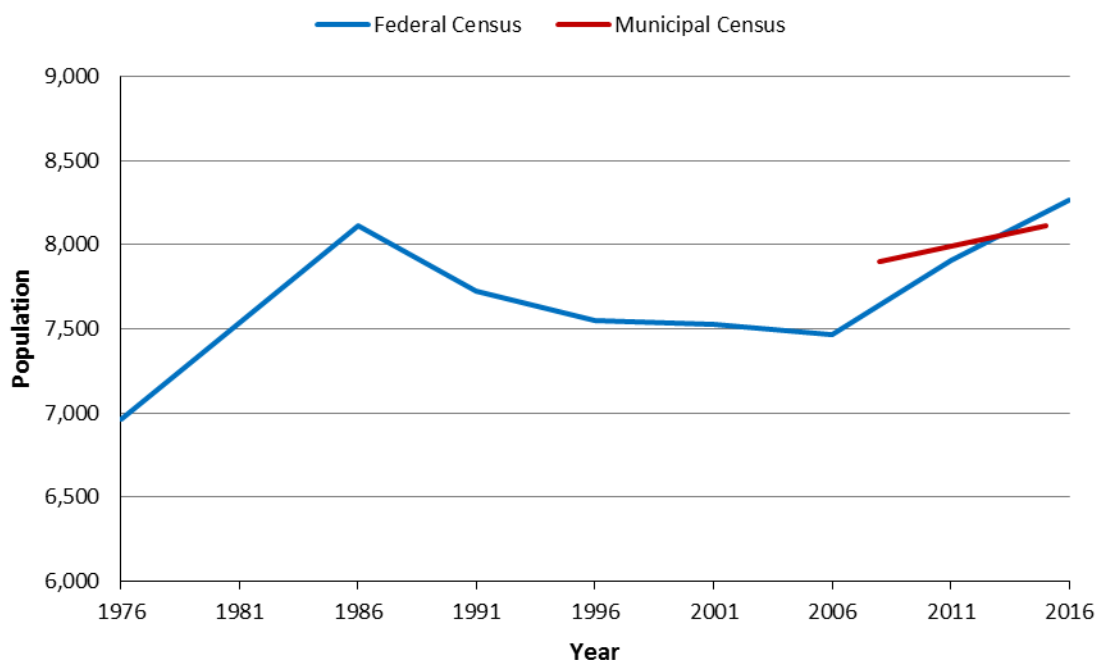
¹⁶ The County’s 1981 population was adjusted downward by Statistics Canada in 1981 due to a boundary adjustment that occurred in the intercensal period between 1981 and 1986 inclusive.

¹⁷ Compounded average annual growth rates.

¹⁸ For the purpose of this analysis, a “low” growth level is an average annual growth rate of less than 1.0% and a “high” growth level is an average annual growth rate of greater than 2.5%. A “moderate” growth level is an average annual growth rate of between 1.0% and 2.5% inclusive.

¹⁹ Based on a 99.7% household response rate.

Figure 3: County of Vermilion River Population History, 1976–2016



Sources: Statistics Canada, 1976–2016 federal censuses and County of Vermilion River, 2008–2015 municipal censuses

Key Observations from Tables 5 and 6 and Figure 3

- In its current configuration, the County of Vermilion River has grown from a population of 6,967 in 1976 to 8,267 in 2016 – an overall change of 18.7% over 40 years.
- Most recently, the County's population has increased by 4.6% or 362 people between 2011 and 2016.
- At its 2016 population of 8,267, the County has recovered and surpassed its previous peak population of 8,112 recorded in 1986.
- The County of Vermilion River has experienced low to moderate population growth over the past 40 years since 1976.
- The County's highest growth periods over the past 40 years occurred between 1976 and 1986, and between 2006 and 2016. This generally coincides with the highest growth periods experienced by the City of Lloydminster over the same 40-year period.

Table 7 presents the County's growth rates over various intervals from 2016, ranging from the past 5 years to the past 40 years.

Table 7: County of Vermilion River Average Population Growth for Selected Timeframes, 1976–2016

Timeframe	Percent Change (%)	Average Annual Growth Rate ²⁰ (%)	Absolute Growth	Average Annual Absolute Growth
1976–2016 (40 years)	18.7	0.4	1,300	33
1981–2016 (35 years)	10.0	0.0	754	22
1986–2016 (30 years)	1.9	0.1	155	5
1991–2016 (25 years)	7.1	0.3	545	22
1996–2016 (20 years)	9.5	0.5	714	36
2001–2016 (15 years)	9.9	0.6	743	50
2006–2016 (10 years)	10.7	1.0	800	80
2011–2016 (5 years)	4.6	0.9	362	72

Source: ISL Engineering and Land Services, derived from Statistics Canada, 1976–2016 federal censuses and County of Vermilion River, 2008–2015 municipal censuses

Key Observations from Table 7

- Over the 40-year interval (1976-2016), the County's population has increased an average of 0.4% annually.
- Over the most recent 10-year period (2006-2016), the County's population has increased an average of 1.0% annually.
- Between the last two federal censuses (2011-2016), the County's population has increased an average of 0.9% annually, which is the second-highest among all intervals after the 2006-2016 interval.
- The lowest average annual growth rate among the various intervals was 0.1% over the 30-year interval (1986-2016).

Many rural municipalities in Alberta that are outside of metropolitan areas are not experiencing growth. Despite benefitting from significant resource-based economic growth, many have experienced stagnant or even negative population growth over the last couple decades due in part to:

- long-term population redistribution trends towards urban areas;
- demographic shifts such as reduced average children per family and aging population that result in lower average household sizes; and
- lack of economic diversification in rural areas.

²⁰ Compounded average annual growth rates.

Like rural municipalities elsewhere, the County of Vermilion River has benefitted from strong economic growth. The County has also experienced increasing levels of population growth since 2006 as a result of this economic growth. This is indicative of the County's evolving role within the broader region of interdependent municipalities (see Map 1 in Chapter 1.0) beyond the study area (see Map 2 also in Chapter 1.0), and the impact of the oil and gas industry and affiliated industries on the broader region. That is, as the region has experienced economic growth, an increasing share of workers and their families attracted to the region have sought places to live other than Lloydminster that offer different lifestyles, housing prices, etc. Similarly, an increasing share of businesses have sought alternative places to operate with different levels of servicing, land prices, etc.

As a result, there has been increased demand for housing product in smaller urban communities within the broader region (e.g., the Hamlet of Blackfoot within the County, the villages of Kitscoty and Marwayne, and the Town of Lashburn) and within country residential and other rural environments. Also, there has been increased demand for rural industrial product along highways (e.g., between Blackfoot and Lloydminster) and near urban communities (e.g., adjacent to the Lloydminster airport). The County's successful attraction of population growth to Blackfoot, new country residential subdivisions and other rural areas, as well as its attraction of businesses to its rural industrial areas, are contributors to the County's recent population growth.

2.1.3 County of Vermilion River Population Breakdowns

Map 3 illustrates the locations of the electoral divisions and hamlets within the County of Vermilion River. Table 8 presents a breakdown of the County by its seven electoral divisions from its 2008 and 2015 municipal censuses. Table 9 presents the population histories of its seven hamlets between 1941 and 2015 based on federal and municipal census counts.

Map 4 illustrates the context of Division 5 while Table 10 presents a detailed population breakdown of Division 5 from the County's two recent municipal censuses. Division 5 surrounds the Alberta portion of Lloydminster to the north, west and south. Thus, it includes the County of Vermilion River's portion of the study area that is subject to this Growth Study. Division 5 also includes the hamlets of Blackfoot and Streamstown. Blackfoot is located 1.6 km (1.0 mi) to the west of the study area while Streamstown is located approximately 12 km (7.5 mi) to the north of the study area.

Table 8: County of Vermilion River Population Breakdown by Electoral Division, 2008–2015

Electoral Division	2008 Population	2015 Population	Absolute Change	Percent Change (%)	Average Annual Growth Rate ²¹ (%)
1	855	870	15	1.8	0.2
2	846	877	31	3.7	0.5
3	989	898	-91	-9.2	-1.4
4	1,307	1,246	-61	-4.7	-0.7
5	2,187	2,557	370	16.9	2.3
6	826	820	-6	-0.7	-0.1
7	890	848	-42	-4.7	-0.7
Total	7,900	8,116	216	2.7	0.4

Source: County of Vermilion River, 2008 and 2015 municipal censuses

²¹ Compounded average annual growth rates.

Table 9: County of Vermilion River Population Breakdown by Hamlet, 2008–2016

	Blackfoot		Clandonald		Islay		McLaughlin		Rivercourse		Streamstown		Tulliby Lake	
	Population	Change (%)	Population	Change (%)	Population	Change (%)	Population	Change (%)	Population	Change (%)	Population	Change (%)	Population	Change (%)
1941	51	–	142	–	132	–	103	–	n/a	n/a	n/a	n/a	n/a	n/a
1951	69	35.3	226	59.2	113	-14.4	84	-18.4	n/a	n/a	54	–	n/a	n/a
1956	88	27.5	238	5.3	113	0.0	73	-13.1	n/a	n/a	54	0.0	n/a	n/a
1961	91	3.4	211	-11.3	107	-5.3	52	-28.8	n/a	n/a	55	1.9	n/a	n/a
1966	130	42.9	185	-12.3	113	5.6	62	19.2	n/a	n/a	48	-12.7	n/a	n/a
1971	175	34.6	119	-35.7	94	-16.8	58	-6.5	n/a	n/a	32	-33.3	36	–
1976	208	18.9	136	14.3	119	26.6	31	-46.6	n/a	n/a	27	-15.6	27	-25.0
1981	220	5.8	111	-18.4	179	50.4	63	103.2	21	–	27	0.0	26	-3.7
1986	220	0.0	165	48.6	255	42.5	55	-12.7	26	23.8	31	14.8	24	-7.7
1991	183	-16.8	137	-17.0	207	-18.8	41	-25.5	14	-46.2	15	-51.6	18	-25.0
1996	178	-2.7	146	6.6	158	-23.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2001	195	9.6	110	-24.7	182	15.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	159	-18.5	124	12.7	189	3.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	253	59.1	134	8.1	219	15.9	40	-2.4	16	14.3	21	40.0	15	-16.7
2011	269	6.3	109	-18.7	208	-5.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2015	422	56.9	107	-1.8	211	1.4	42	5.0	16	0.0	20	-4.8	22	46.7
2016	392	-7.1	109	1.9	195	-7.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

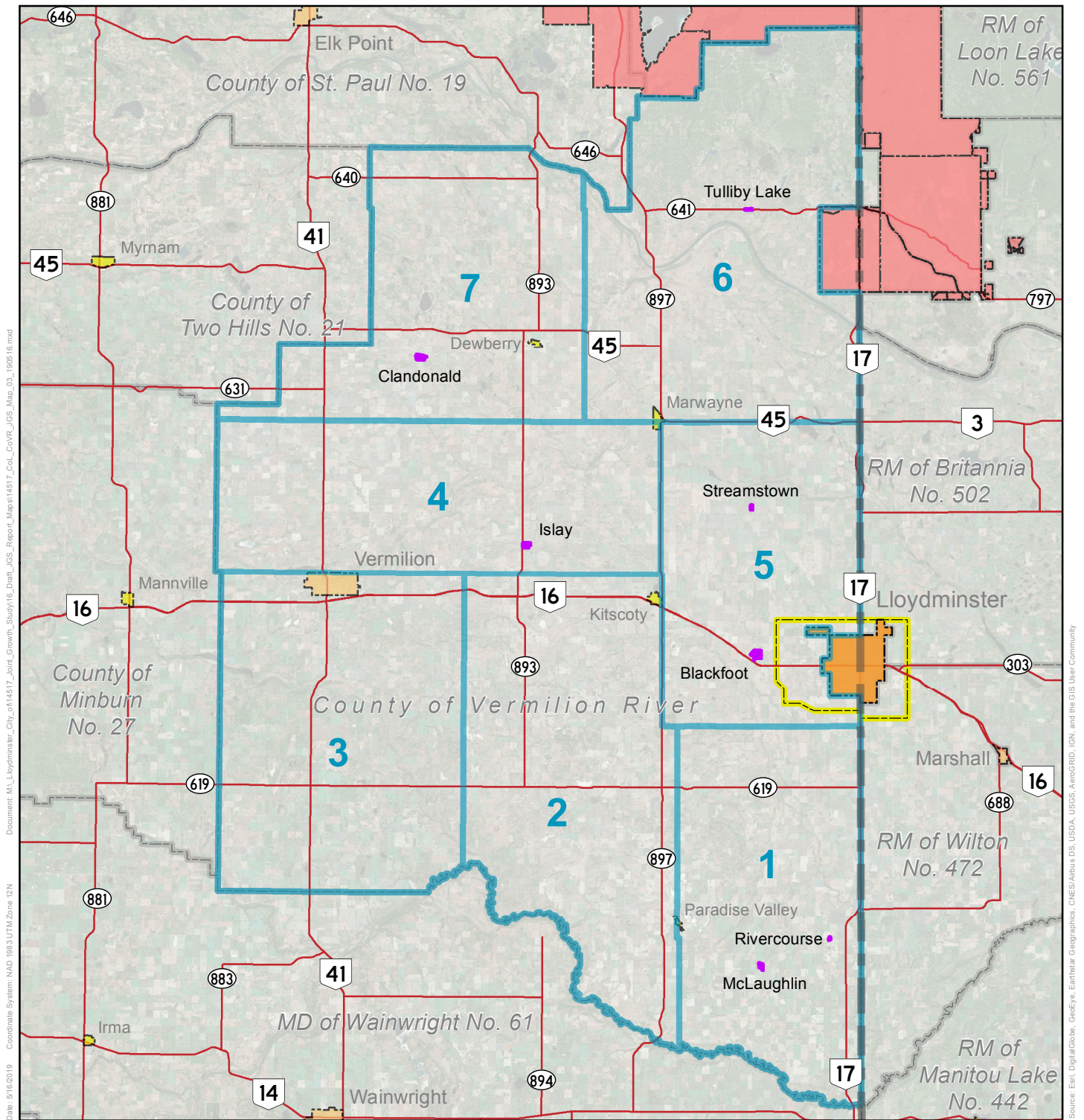
Sources: Statistics Canada, 1941–2016 federal censuses and County of Vermilion River, 2008 and 2015 municipal censuses

Table 10: County of Vermilion River Division 5 Population Breakdown, 2008–2015

Sub-Area	2008 Population	2015 Population	Absolute Change	Percent Change (%)	Average Annual Growth Rate ²² (%)
Study Area	308	294	-14	-4.5	-0.7
Hamlet of Blackfoot	253	422	169	66.8	7.6
Hamlet of Streamstown	21	20	-1	-4.8	-0.7
Balance of Division 5	1,605	1,821	216	13.5	1.8
Total Division 5	2,187	2,557	370	16.9	2.3

Source: County of Vermilion River, 2008 and 2015 municipal censuses

²² Compounded average annual growth rates.



Document: M3_Lloydminster_City.c114517_Joint_Growth_Study16_Draft_JGS_Report_Maps14517_Col_CovR_JGS_Map_03_190516.mxd

Date: 9/16/2019 Coordinate System: NAD 1983 UTM Zone 12N

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



1:600,000

- Provincial Boundary
- ▭ Municipal District/Rural Municipality
- ▭ Rural Municipality (SK)
- ▭ Joint Growth Study Area
- Highway
- ▭ County Electoral Division

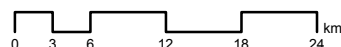
- ▭ Indian reserve/Metis settlement
- ▭ City
- ▭ Town
- ▭ Village
- ▭ Hamlet

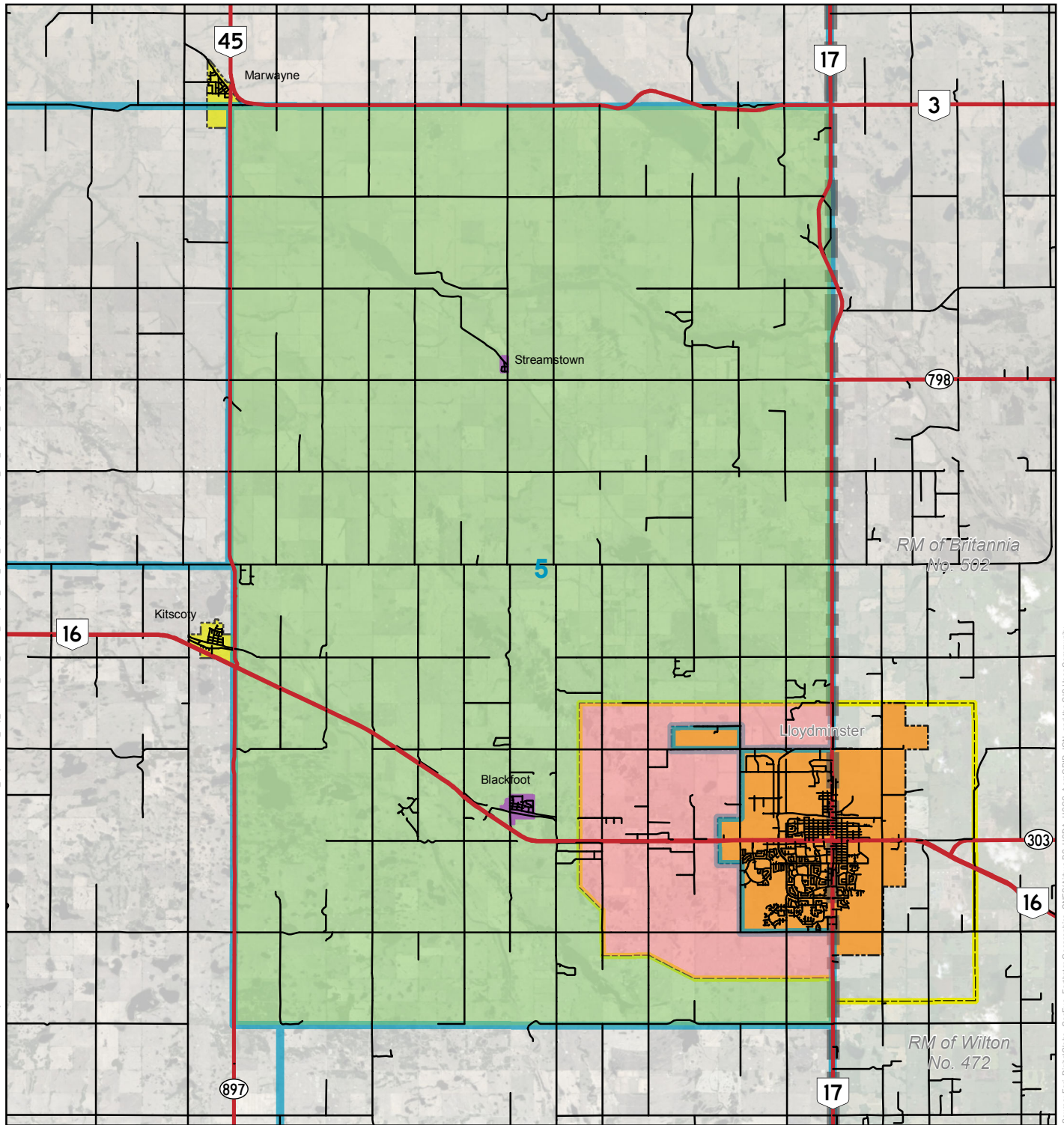


JOINT REGIONAL GROWTH STUDY

MAP 3: COUNTY OF VERMILION RIVER DIVISIONS AND HAMLETS

Integrated Expertise. Locally Delivered.





1:200,000

- Highway
- Road
- Provincial Boundary
- Joint Growth Study Area
- County Electoral Division
- City
- Village
- Hamlet
- Division 5 Portion of Joint Growth Study Area
- Balance of Division 5



LLOYDMINSTER



**County of
VERMILION RIVER**

**JOINT REGIONAL
GROWTH STUDY**

**MAP 4: COUNTY OF
VERMILION RIVER
DIVISION 5 CONTEXT**

Integrated Expertise. Locally Delivered.



Key Observations from Tables 8, 9 and 10

- The County's most populous electoral division is Division 5 with 2,557 residents, which represents 31.5% of the County's total population. Division 5 is the electoral division that surrounds the City of Lloydminster to the north, west and south.
- The population of Division 5 is twice the size of the County's second-most populous electoral division (Division 4) and is triple the size of all five other electoral divisions.
- Division 5 grew at an average annual growth rate of 2.3% between 2008 and 2015, while the other electoral divisions grew at average annual rates ranging from -1.4% to 0.5% over the same period.
- The population growth within Division 5 between 2008 and 2015 – an increase of 370 people – accounted for all of the County's absolute growth of 216 residents in this period and neutralized much of the population decline experienced by four electoral divisions elsewhere within the County.
- Of the County's seven hamlets, only Blackfoot and Islay have sustained population growth over the long-term.
- While Islay has grown over its long-term history, its current population (211 in 2015) is lower than its peak population (255 in 1986).
- The Hamlet of Blackfoot, located 8 km west of Lloydminster, has grown significantly over the last nine years. Its population has more than doubled, increasing by 165% from 159 in 2006 to 422 in 2015. This growth is a result of land development initiatives led by the County within Blackfoot allowing it to emerge as a bedroom community with close proximity to employment opportunities within and just outside Lloydminster. If the service levels and quantity of amenities within increase, it could potentially attract a higher volume of growth over time.
- The recent growth of Blackfoot by 169 people between 2008 and 2015 represents 46% of the overall population growth experienced within Division 5 over that period.
- Blackfoot's minor decline in population between 2015 and 2016 is likely due to a combination of the slow economy and the inability to accommodate further in-migration due to unavailable wastewater servicing capacity in the hamlet. Differing methodologies between federal and municipal censuses may also have been a factor.
- With negative growth experienced in the Hamlet of Streamstown and the County's portion of the study area, there has been significant population growth within the balance of Division 5, mostly within country residential subdivisions.
- The negative growth within the study area may be due in part to the restrictive land use policies in place within the statutory plans that apply to those urban expansion lands adjacent to the City of Lloydminster. Due to proximity to the City, these areas would have likely been under the greatest pressure for additional rural residential development. If the restrictive policies that are in affect for these areas were not in place, the study area could have theoretically experienced positive growth between 2008 and 2015. This theoretical positive population growth could have resulted in an internal redistribution of the County's growth between 2008 and 2015, a redistribution of some of the City's growth to the County over the same period, or a combination of both.

2.1.4 Rural Municipality of Britannia No. 502

The RM of Britannia was incorporated on December 13, 1909. The southwest corner of this RM is located in the northeast portion of the study area. Table 11 presents the population history of the RM of Britannia since 1986 according to federal censuses conducted by Statistics Canada.

Table 11: RM of Britannia No. 502 Population History, 1986–2016

Year	Population	Percent Change (%)	Average Annual Growth Rate ²³ (%)	Absolute Growth	Average Annual Absolute Growth	Growth Level ²⁴
1986	1,453	—	—	—	—	—
1991	1,332	-8.3	-1.7	-121	-24	Low
1996	1,358	2.0	0.4	26	5	Low
2001	1,382	1.8	0.4	24	5	Low
2006	1,501	8.6	1.7	119	24	Moderate
2011	1,734	15.5	2.9	233	47	High
2016	2,153	24.2	4.4	419	84	High

Source: Statistics Canada, 1986–2016 federal censuses

Key Observations from Table 11

- The RM of Britannia has grown from a population of 1,453 in 1986 to 2,153 in 2016 – an overall increase of 48.2% or 700 residents over 30 years.
- Most recently, the RM's population has increased by 24.2% or 419 people between 2011 and 2016.
- The RM's growth was relatively stagnant between 1986 and 2001 but has since experienced increase moderate to high levels of growth.
- The RM's recent levels of growth appear to coincide with the similar recent levels of growth experienced by both the City of Lloydminster and the County of Vermilion River, which indicates that strong economic activity in the oil and gas industry prior to 2014 has been benefitting both urban and rural areas on either side of the provincial border.
- The majority of the RM's population growth appears to be largely due to country residential subdivision activity.

2.1.5 Rural Municipality of Wilton No. 472

The RM of Wilton was also incorporated on December 13, 1909. The northwest corner of this RM is located in the southeast portion of the study area. The RM is home to the Husky Upgrader, which is less than a kilometer east of the City of Lloydminster. Table 12 presents the population history of the RM of Wilton since 1986 according to federal censuses conducted by Statistics Canada.

²³ Compounded average annual growth rates.

²⁴ For the purpose of this analysis, a "low" growth level is an average annual growth rate of less than 1.0% and a "high" growth level is an average annual growth rate of greater than 2.5%. A "moderate" growth level is an average annual growth rate of between 1.0% and 2.5% inclusive.

Table 12: RM of Wilton No. 472 Population History, 1986–2016

Year	Population	Percent Change (%)	Average Annual Growth Rate ²⁵ (%)	Absolute Growth	Average Annual Absolute Growth	Growth Level ²⁶
1986	1,910	—	—	—	—	—
1991	1,651	-13.6	-2.9	-259	-52	Low
1996	1,564	-5.3	-1.1	-87	-17	Low
2001	1,560	-0.3	-0.1	-4	-1	Low
2006	1,473	-5.6	-1.1	-87	-17	Low
2011	1,494	1.4	0.3	21	4	Low
2016	1,629	9.0	1.7	135	27	Moderate

Source: Statistics Canada, 1986–2016 federal censuses

Key Observations from Table 12

- The population of the RM of Wilton has declined from 1,910 in 1986 to 1,473 in 2006 – an overall decrease of 22.9% or 437 residents over 20 years.
- More recently, the RM's population has started to increase, growing by 1.4% or 21 people between 2006 and 2011 and by 9.0% or 135 people between 2011 and 2016.
- The RM's population appears to be rebounding after sustaining 20 years of decline.
- Unlike the County of Vermilion River and the RM of Britannia, there appeared to be, prior to 2011, little growth trend correlation between the RM of Wilton and City of Lloydminster despite their adjacency. However, the correlation since 2011 is now apparent.

2.1.6 Comparator Municipalities

The region's recent economic activity and growth has led to the City of Lloydminster's emergence as a mid-sized city within the Alberta context. As mentioned above, the region's recent growth has also contributed to increased demand for residential and industrial development in the area that surrounds the City. In turn, a strong interdependent relationship between the County of Vermilion River, the City of Lloydminster and adjacent rural areas within Saskatchewan has been established.

Those mid-sized cities in Alberta that share similar contexts to Lloydminster are Grande Prairie, Medicine Hat and Red Deer. Each have similar economies with the presence of both the agriculture and oil and gas industries. They also serve as regional service centres for large surrounding rural areas and are located considerable distances outside metropolitan areas. At 2016 population counts of 63,166, 63,260 and 100,418 respectively, Grande Prairie, Medicine Hat and Red Deer established themselves as mid-sized cities a considerable amount of time earlier than Lloydminster.

Like Lloydminster, each of these three larger mid-sized cities have interdependent relationships with their surrounding rural municipalities. The County of Grande Prairie No. 1 surrounds the City of Grande Prairie, while Cypress County surrounds the City of Medicine Hat and Red Deer County surrounds the City of Red Deer.

²⁵ Compounded average annual growth rates.

²⁶ For the purpose of this analysis, a "low" growth level is an average annual growth rate of less than 1.0% and a "high" growth level is an average annual growth rate of greater than 2.5%. A "moderate" growth level is an average annual growth rate of between 1.0% and 2.5% inclusive.

Given the three cities were established as mid-size cities before Lloydminster, it can be reasonably assumed that the interdependent relationships between them and their surrounding rural municipalities were established sooner than the one between Lloydminster and the County of Vermilion River.

Also, like the County of Vermilion River, which has its growing Hamlet of Blackfoot in close proximity to Lloydminster, these three rural municipalities are home to the larger growing hamlets of Clairmont, Dunmore and Springbrook respectively.²⁷

Table 13 compares historical population growth rates of Lloydminster over selected timeframes with those of Grande Prairie, Medicine Hat and Red Deer as well as the provinces of Alberta and Saskatchewan as a whole. Table 14 compares historical population growth rates of the County of Vermilion River over selected timeframes with those of the County of Grande Prairie No. 1, Cypress County and Red Deer County.

Table 13: Population Growth Rate Comparisons of Cities and Provinces, 1961–2016

City/Province	Federal Census Population Counts					Average Annual Growth Rates to 2016 ²⁸			
	1961	1981	2006	2011	2016	% Since 1961	% Since 1981	% Since 2006	% Since 2011
Grande Prairie	8,352	24,263	47,076	55,032	63,166	3.7	2.8	3.0	2.8
Lloydminster	5,667	15,031	24,028	27,804	31,410	3.2	2.1	2.7	2.5
Medicine Hat	24,484	40,380	56,997	60,005	63,260	1.7	1.3	1.0	1.1
Red Deer	19,612	46,393	82,772	90,564	100,418	3.0	2.2	2.0	2.1
Alberta	1,331,944	2,237,724	3,290,350	3,645,257	4,067,175	2.1	1.7	2.1	2.2
Saskatchewan	925,181	968,313	968,157	1,033,381	1,098,352	0.3	0.4	1.3	1.2

Source: Statistics Canada, 1961–2016 federal censuses

Table 14: Population Growth Rate Comparisons of Rural Municipalities, 1976–2016

Rural Municipality	Federal Census Population Counts				Average Annual Growth Rates to 2016 ²⁹		
	1976	2006	2011	2016	1976	2006	2016
County of Grande Prairie No. 1	9,147	17,929	20,347	22,502	2.3%	2.3%	2.0%
County of Vermilion River	6,967	7,467	7,905	8,267	0.4%	1.0%	0.9%
Cypress County	4,409	6,709	7,214	7,662	1.4%	1.3%	1.2%
Red Deer County	13,321	18,649	18,351	19,541	1.0%	0.5%	1.3%

Source: Statistics Canada, 1976–2016 federal censuses

²⁷ Clairmont, which is adjacent to the City of Grande Prairie to the north, has an approximate population of 3,000. Dunmore, which is adjacent to Medicine Hat to the southeast, had a population of 1,025 in 2011. Springbrook, which is 8 km to the southwest of Red Deer, had a population of 1,079 in 2011.

²⁸ Compounded average annual growth rates

²⁹ Compounded average annual growth rates

Key Observations from Tables 13 and 14

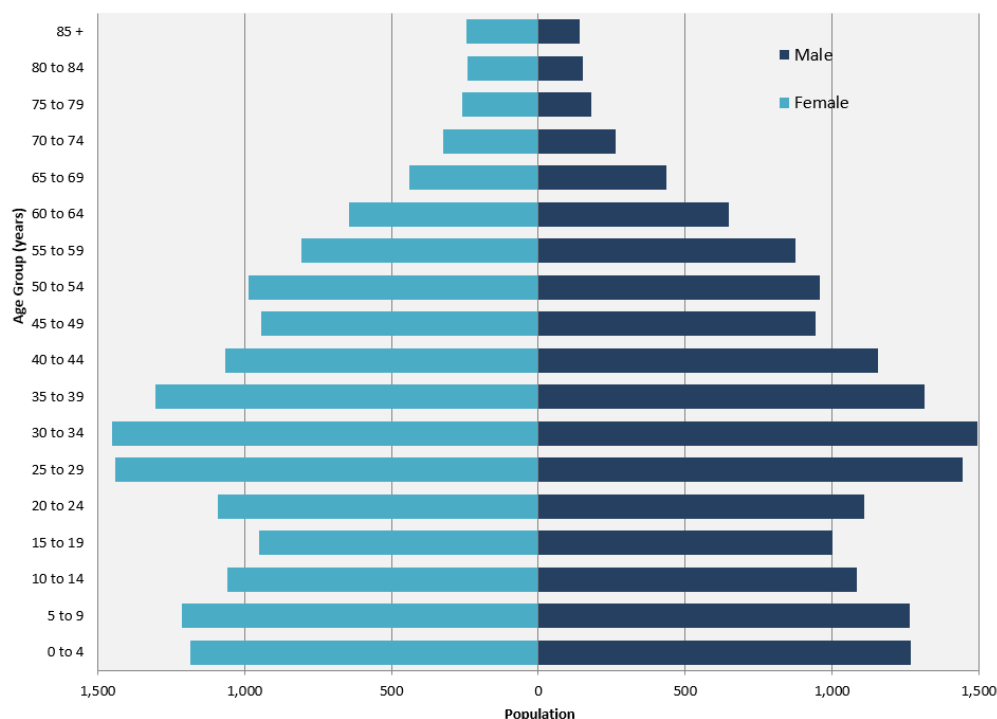
- Lloydminster's historical growth rates are most similar to those of Red Deer among the comparator cities over most of the history since 1961, but most recently similar to Grande Prairie since 2006.
- Of the two provinces, Lloydminster's historical growth rates are closer to those of Alberta.
- The County of Vermilion River's recent historical growth is most comparable to the same of Cypress County.
- Given both the recent emergence of Lloydminster as a mid-sized city and the historical growth rates of rural municipalities that surround larger mid-size cities, it is reasonable to anticipate increased levels of population growth for the County of Vermilion River in the near future under the right economic circumstances and if the County continues with its commitment to grow the Hamlet of Blackfoot.

2.2 Demographics

2.2.1 Age and Gender

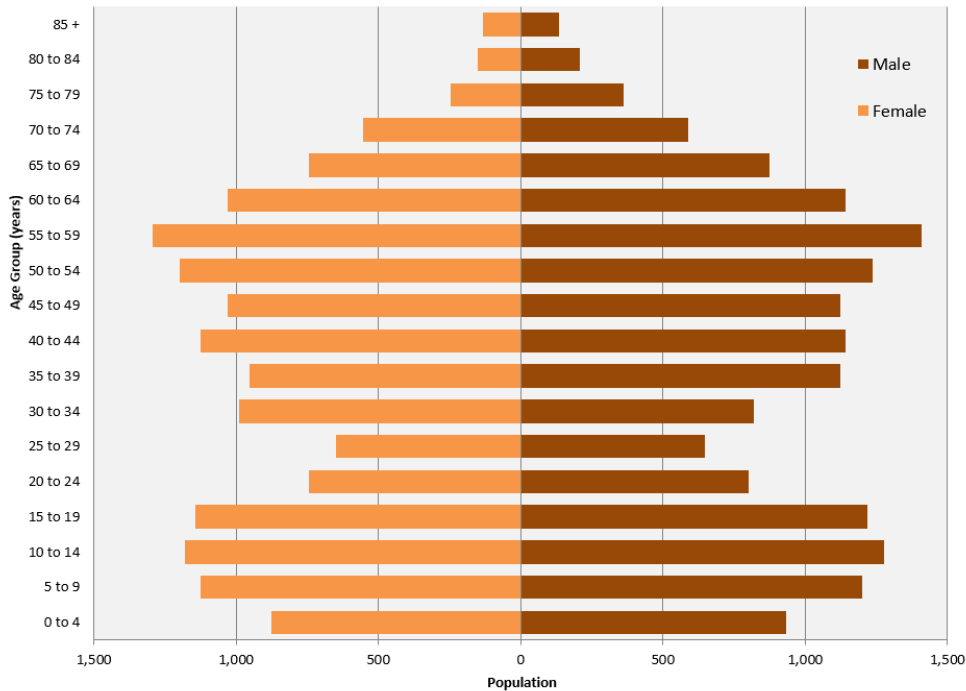
Figure 4 presents the age and gender breakdown of Lloydminster's population in five-year cohorts from the 2016 federal census, while Figure 5 presents the same for the County of Vermilion River indexed to Lloydminster's 2016 population of 31,410. Figures 6 and 7 present the same for the provinces of Alberta and Saskatchewan, which are also both indexed to Lloydminster's 2016 population.

Figure 4: 2016 Age and Gender by Five-Year Cohorts, City of Lloydminster



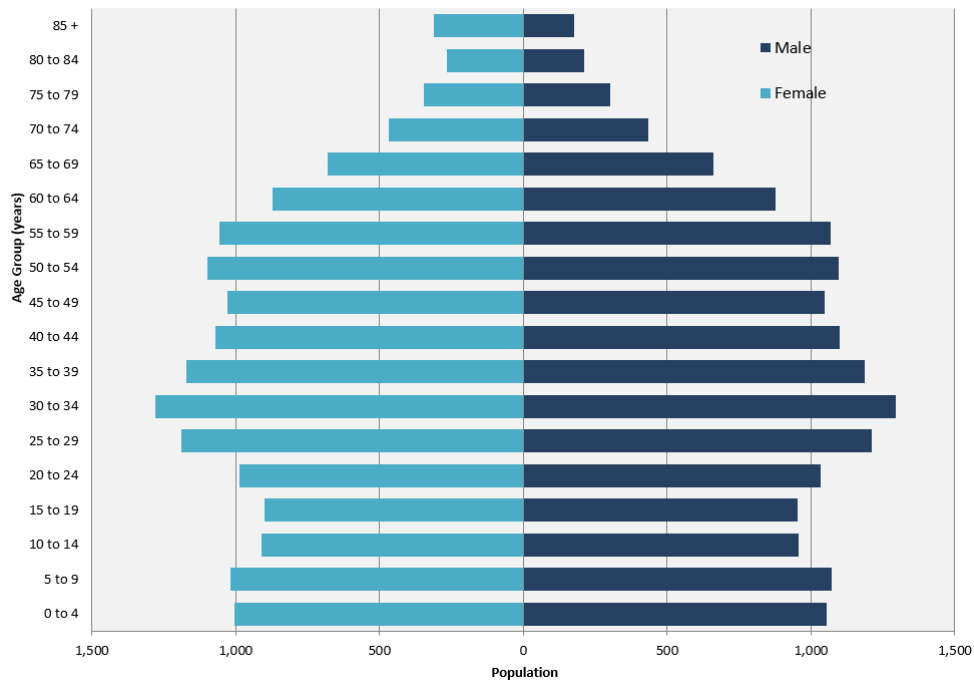
Source: Statistics Canada, 2016 federal census

Figure 5: 2016 Age and Gender by Five-Year Cohorts, County of Vermilion River



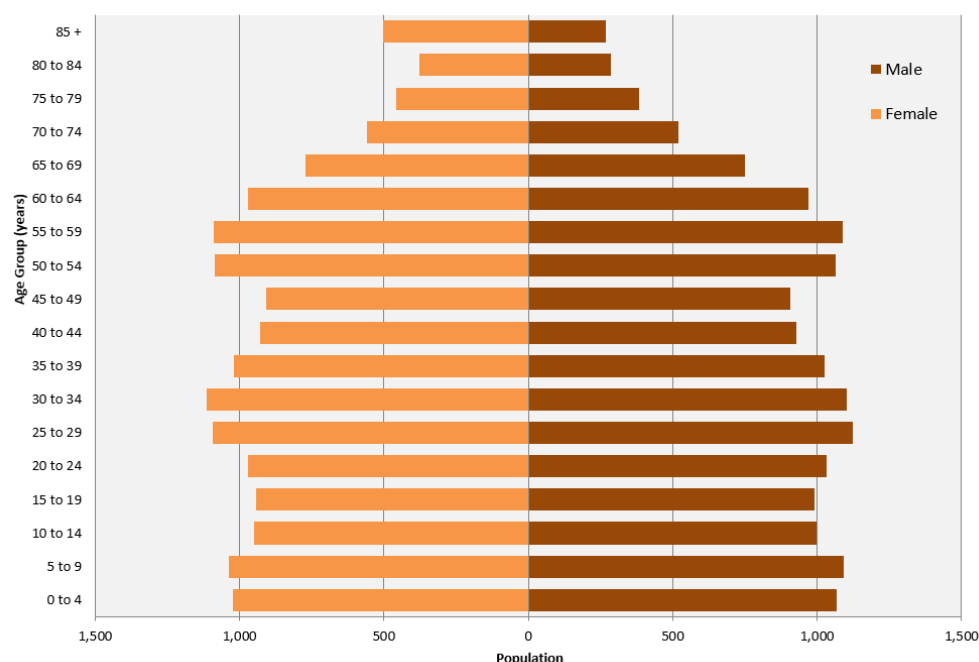
Source: Statistics Canada, 2016 federal census

Figure 6: 2016 Age and Gender by Five-Year Cohorts, Province of Alberta



Source: Statistics Canada, 2016 federal census

Figure 7: 2016 Age and Gender by Five-Year Cohorts, Province of Saskatchewan



Source: Statistics Canada, 2016 federal census

Key Observations from Figures 4 through 7

- Lloydminster has two significant population bubbles – the cohorts encompassing ages 25 through 39 and the 0 to 9 age cohort. The population within the 0 to 4 and 5 to 9 cohorts are each higher than the two cohorts between the ages of 10 and 19.
- Comparatively, Lloydminster has much greater proportion of populations within these bubbles than the two provinces, which reveals that Lloydminster has a young population. Its population is younger than both Alberta and Saskatchewan, and Alberta's population is younger than Saskatchewan's population.
- The County of Vermilion River has two significant population bubbles – the cohorts encompassing ages 50 through 59 and those encompassing ages 5 through 19. It has an older population compared to the City and Alberta.
- Alberta's two largest population bubbles are ages 50 to 59 (baby boomers) and 25 to 39, while Saskatchewan's are ages 50 to 59 (largely within the baby boomer demographic) and ages 25 to 34.
- Lloydminster leads the two provinces in population within ages 0 to 14 and 25 to 39.
- Saskatchewan leads the City and Alberta within ages 55 and over.
- Alberta leads the City and Saskatchewan within ages 45 to 54.
- Overall, Alberta's age distribution is more similar to Lloydminster's than Saskatchewan's.
- Males outnumber females in Lloydminster in the cohorts between the ages of 0 through 44 and 55 through 64, while males outnumber females in the County in the cohorts between the ages of 0 through 24 and 35 through 84.
- Females outnumber males in the City in the cohorts between the ages of 50 and 54 and over the age of 64, while females outnumber males in the County in the 30 to 34 age cohort.

2.2.2 Comparison of Demographic Characteristics

Table 15 compares various 2016 demographic characteristics of the City of Lloydminster with the same three comparator cities of Grande Prairie, Medicine Hat and Red Deer that were previously compared in Table 13 above. The demographic characteristics of Alberta and Saskatchewan are also compared.

Table 15: Comparison of 2016 Demographic Characteristics, City of Lloydminster

Demographic Characteristic	Grande Prairie	Lloydminster	Medicine Hat	Red Deer	Alberta	Saskatchewan
Median Age of Population	31.9	35.1	40.6	36.1	36.7	37.8
Average Family Size of Census Families	3.0	3.0	2.8	2.9	3.0	2.9
Average Persons in Private Households	2.6	2.6	2.3	2.5	2.6	2.5
Total Occupied Private Dwellings	23,675	7,440	26,650	39,985	1,527,675	432,620
Low Density Residential Dwellings	17,450	5,535	19,410	25,400	1,080,960	336,370
Higher Density Residential Dwellings	6,220	1,910	7,245	14,580	446,715	96,255
Percent Low Density Residential Dwellings	73.7%	74.4%	72.8%	63.5%	70.8%	77.8%
Percent Higher Density Residential Dwellings	26.3%	25.7%	27.2%	36.5%	29.2%	22.2%
Average Household Total Income in 2015 (\$)	118,775	125,094	94,556	110,394	125,522	93,942

Sources: Statistics Canada, 2016 federal census

Key Observations from Table 15

- Lloydminster has the second-lowest median age of the population (behind Grande Prairie among comparator cities).
- Lloydminster has the highest average family size of census families (tied with Grande Prairie among comparator cities).
- Lloydminster has the highest average persons in private households (tied with Grande Prairie among comparator cities).
- Lloydminster has the highest percentage of low density residential dwellings among comparator cities.
- Lloydminster has the highest average household income in 2015 of all census families among comparator cities.

These observations confirm that the City of Lloydminster is a community that offers a high income potential, which is attracting workers with young families. Further, these observations reveal that Lloydminster is most similar to Grande Prairie among the three comparator cities from a demographic perspective.

Like Table 15, Table 16 compares various 2016 demographic characteristics of the County of Vermilion River with its three comparator rural municipalities previously introduced in Table 14 above. The demographic characteristics of the RMs of Britannia and Wilton are also compared.

Table 16: Comparison of 2016 Demographic Characteristics, County of Vermilion River

Demographic Characteristic	County of Grande Prairie No. 1	County of Vermilion River	Cypress County	Red Deer County	RM of Britannia No. 502 (SK)	RM of Wilton No. 472 (SK)
Median Age of Population	36.7	40.1	39.5	43.0	35.3	39.4
Average Family Size of Census Families	3.1	3.0	3.0	2.9	3.2	3.0
Average Persons in Private Households	2.9	2.7	2.7	2.6	2.9	2.8
Total Occupied Private Dwellings	7,685	2,985	2,690	7,100	740	590
Low Density Residential Dwellings	7,590	2,970	2,675	6,930	735	590
Higher Density Residential Dwellings	90	5	15	170	5	0
Percent Low Density Residential Dwellings	98.8%	99.5%	99.4%	97.6%	99.3%	100.0%
Percent Higher Density Residential Dwellings	1.2%	0.2%	0.6%	2.4%	0.7%	0.0%
Average Household Total Income in 2015 (\$)	160,219	124,393	136,256	160,842	136,318	123,157
Land Area (km ²)	5,802	5,520	13,173	3,962	950	1,041

Sources: Statistics Canada, 2016 federal census

Key Observations from Table 16

- The County of Vermilion River has the second-highest median age of the population among the Alberta comparators (behind the Red Deer County).
- The County of Vermilion River has the second-highest average family size of census families among the Alberta comparators (tied with the Cypress County).
- The County of Vermilion River has the second-lowest average persons in private households among the Alberta comparators (tied with the Cypress County).
- The County of Vermilion River has the highest percentage of low density residential dwellings among the Alberta comparators.
- The County of Vermilion River has the lowest average household total income in 2016 of all census families among the Alberta comparators (behind Cypress County).
- By including the two RMs in the comparison, the RM of Britannia leads all comparators in three demographic characteristics – lowest median age of the population, highest average family size of census families, and highest average persons in private households (tied with the County of Grande Prairie No. 1).
- The land areas of the two RMs in Saskatchewan combined (1,991 km²) are 36% of the size of the County of Vermilion River.
- Though the County of Vermilion River's median age is 40.1, the Hamlet of Blackfoot's median age is 31.0.³⁰ This suggests that the County's Division 5 may be one of the younger electoral divisions and may have a demographic profile that is more similar to the RM of Britannia.

³⁰ Statistics Canada. 2017. [Blackfoot, UNP \[Designated place\], Alberta and Vermilion River County, MD \[Census subdivision\], Alberta \(table\)](#). Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.
<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E> (accessed May 22, 2019).

These observations reveal that the County of Vermilion River is most similar to Cypress County from a demographic perspective. However, based on the population breakdown of the County of Vermilion River by electoral division (refer to Table 8), the recent population growth trend of Division 5 suggests that, its demographic characteristics may be most similar to those of both of the neighbouring RMs. Thus, recent historical growth patterns in Division 5 may be similar to those of recently experienced in the RM of Britannia since 2001 and in the RM of Wilton since 2011, and the momentum of this growth and the proximity to Lloydminster may sustain these recent pressures within both Division 5 and the two RMs.

2.3 Plans and Policies

2.3.1 City of Lloydminster

The lands within the City are subject to its MDP while portions of the City are subject to the County of Vermilion River and City of Lloydminster IDP and five ASPs. The following summarizes the City's MDP and five ASPs. The IDP is addressed under Section 2.3.2 since the majority of lands subject to the IDP are located within the County.

City of Lloydminster Strategic Plan (2017-2021)

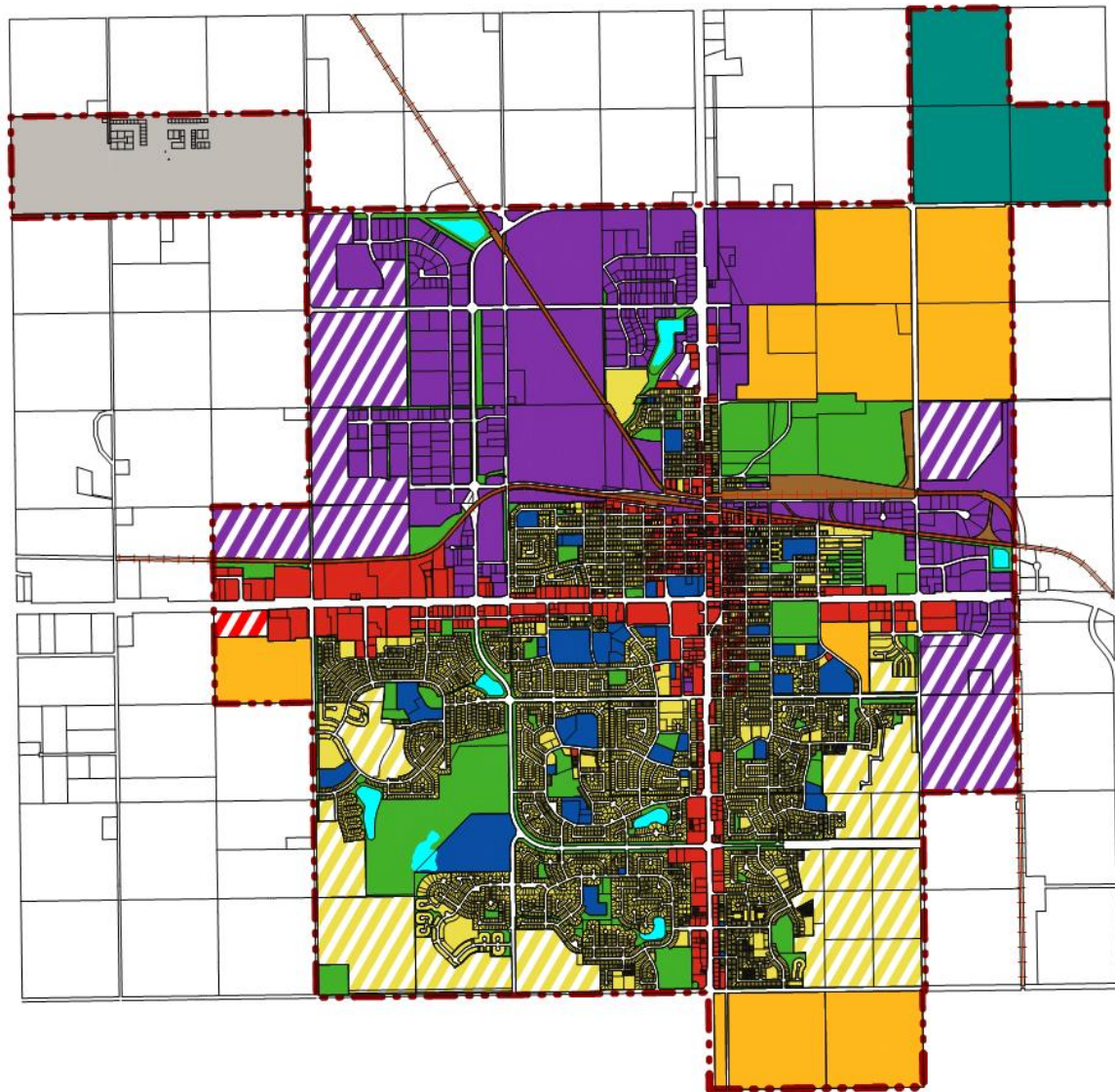
The City of Lloydminster Strategic Plan, 2017-2021, builds on the 2015-2017 Strategic Plan and sets a direction for Council based on the vision, mission and a set of values identified. The focus of the Strategic Plan is on the following areas: 1) governance, 2) culture, 3) social, 4) economy and 5) environment. Key priorities identified in relation to planning include:

- Determining a revenue-model for the sale of City-owned lands in alignment with the City's future plans;
- Determining a funding model for upgrades to the wastewater treatment plant; and
- Enhancing public engagement opportunities.

City of Lloydminster Municipal Development Plan

Approved in 2013, the Lloydminster Municipal Development Plan (MDP) establishes the land use planning framework for all matters relating to the long-term planning and development of the municipality. The City's future growth needs to be consistent with the strategic priorities and growth management policies of the MDP. The MDP's future land use concept and provisions of the MDP relevant to future growth and intermunicipal planning beyond the City's current boundaries are presented below.³¹

³¹ The MDP does not reference future growth areas/directions beyond the City's current boundary.



- | | |
|--|--|
| Airport | Parks, Trails, and Open Spaces |
| Residential | Institutional |
| Future Residential | Landfill |
| Commercial | Urban Expansion |
| Future Commercial | Railroads |
| Downtown Transition Zone | Storm Retention Pond |
| Industrial | ✱ Public Utility Lot or Municipal Utility Parcel |
| Future Industrial | |

3.1 A Vision for Lloydminster

“Committed to sustainable growth principles, managing land consumption in a manner that prioritizes and promotes redevelopment to existing areas.”

4.0 Growth Management and Urban Form

Goal “To manage growth and development in a manner that promotes sustainable planning practices and utilizes lands in an orderly, economical and beneficial manner.”

Objective 4.2 Directing Growth

“To ensure an appropriate supply of land and infrastructure within the City boundaries which will accommodate future growth.”

Policy 4.2.1 Orderly and Contiguous Development

“Should support the development of land to ensure balanced and equitable growth in all quadrants of the City.”

10.0 Industrial Development

Goal “To plan and provide for competitively priced industrial land to attract and facilitate a wide range of industrial development in the future.”

15.0 Working in Our Region

Policy 15.3.1 Need for Urban Expansion

“Shall maintain a long-term land supply to meet land requirements in all of its land use categories consistent with its growth strategy.”

Policy 15.3.2 Annexation

“Shall make application to annex lands in accordance with the Lloydminster Charter and relevant provincial legislation.”

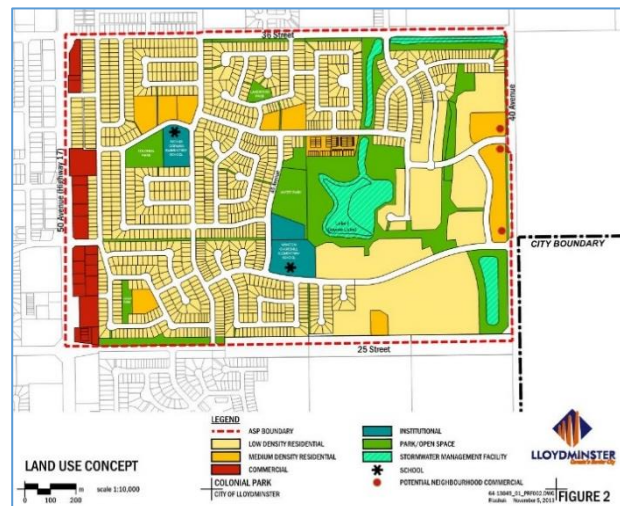
City of Lloydminster Area Structure Plans

The City of Lloydminster has adopted five area structure plans (ASPs) as of 2019 to guide future subdivision and development at the neighbourhood level. The locations of the five ASPs are illustrated in Map 5.

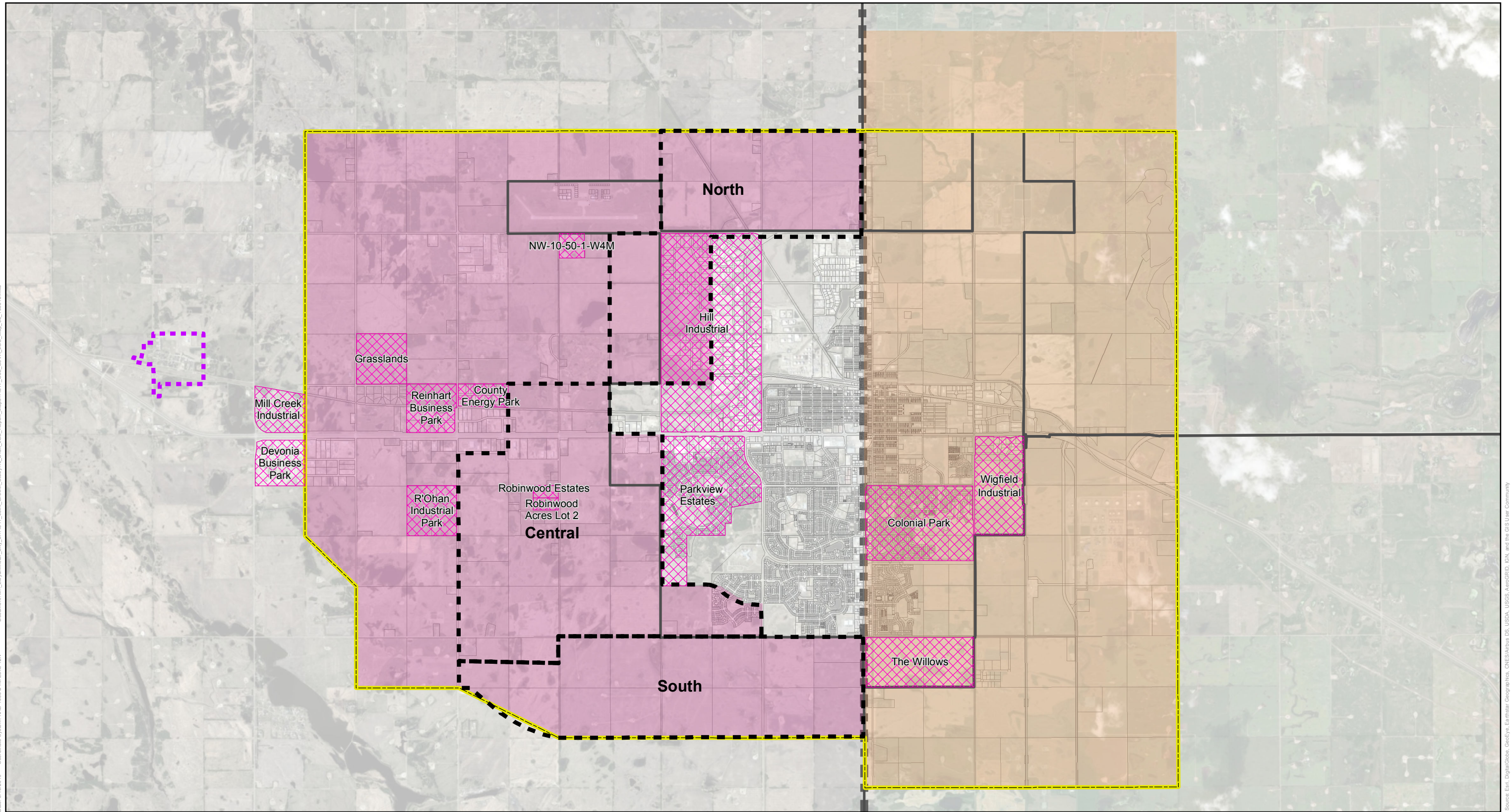
COLONIAL PARK AREA STRUCTURE PLAN (BYLAW NO. 3/2014)

The Colonial Park ASP applies to approximately 210 ha of land in the east-central portion of the City east of 50 Avenue (Highway 17) abutting the City boundary. The ASP was adopted in order to facilitate the completion the east half of an established residential neighbourhood.

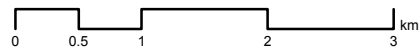
The ASP provides for low density residential development as the predominant land use, with medium density residential development located in defined nodes at strategic locations. Existing commercial development is situated on the west side of the plan area fronting on 50 Avenue. Open space is provided through the allocation of two existing school sites, neighbourhood parks, and a large, centrally located regional park (Jaycee Park) that also accommodates a large stormwater management facility.



Date: 5/16/2019 Coordinate System: NAD 1983 UTM Zone 12N Document: M:\Lloydminster_City_2014517_Joint_Growth_Study\16_Draft_JGS_Report_Maps\14617_Col_CoVR_JGS_Map_05_190516.mxd



Integrated Expertise. Locally Delivered.



1:60,000

- | | | | |
|-------------------------|--|-------------------------|---------------------|
| Provincial Boundary | Lloydminster Planning District Commission Official Community Plan Boundary | IDP Area Structure Plan | Hamlet of Blackfoot |
| Municipal Boundary | Intermunicipal Development Plan (IDP) Boundary | Area Structure Plan | Parcel |
| Joint Growth Study Area | | | |



LLOYDMINSTER County of VERMILION RIVER

JOINT REGIONAL GROWTH STUDY

MAP 5: PLANS IN EFFECT

WIGFIELD INDUSTRIAL AREA STRUCTURE PLAN (BYLAW NO. 4-2014)

The Wigfield Industrial ASP applies to a half-section of land (130 ha) on the easterly limit of the City, located south of 44 Street (Highway 16) and west of the CP rail line abutting the City boundary.

The ASP provides for light industrial development as the predominant land use for the area, supplemented by commercial and heavy industrial development at the north end of the plan area. The plan area will also accommodate two stormwater management facilities.



HILL INDUSTRIAL AREA STRUCTURE PLAN (BYLAW NO. 2-2014)

The Hill Industrial ASP applies to two sections (520 ha) of partially developed industrial land in the northwest quadrant of the City, located between 44 Street (Highway 16) and 67 Street, and 59 and 76 Avenues. The ASP abuts the City boundary to the north and west. The Lloydminster airport is located on adjacent lands to the northwest. The CN rail line bisects the southerly portion of the plan area.

The ASP provides for industrial development throughout the area, with commercial development located at the south end fronting on 44 Street. The plan area will also accommodate three stormwater management facilities.



PARKVIEW ESTATES AREA STRUCTURE PLAN (BYLAW NO. 5-2014)

The Parkview Estates ASP applies to 265 ha of land in the west-central portion of the City south of 44 Street (Highway 16) and east of 75 Avenue abutting the City boundary. The ASP was adopted in order to facilitate the completion the southwesterly portion of an established residential neighbourhood.

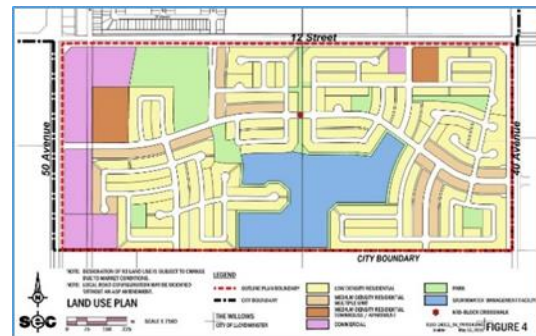
The ASP provides for low density residential development as the predominant land use, with medium density residential development located in defined nodes at strategic locations. Existing commercial development is situated on the north side of the plan area fronting on 44 Street. Open space is provided through the allocation of multiple school sites (two of which are developed), neighbourhood parks, and two stormwater management facilities, the most southerly of which is to be integrated into the adjacent Bud Miller All Seasons Park.



THE WILLOWS AREA STRUCTURE PLAN (BYLAW NO. 23-2016)

The Willows ASP applies to a half section of land on the southerly limit of the City, located south of 12 Street between 40 and 50 Avenues (Highway 17) abutting the City boundary.

The ASP provides for low density residential development as the predominant land use, with pockets of medium density residential development in townhouse and apartment form. Medium density multiple-unit (e.g. semi-detached) development is proposed along several internal collector roads. Commercial development is proposed on the west side of the plan area fronting on 50 Avenue. Open space is provided through a proposed school site and several neighbourhood parks, as well as a large, centrally located stormwater management facility.



2.3.2 County of Vermilion River

The following is a summary of policy context for the County of Vermilion River. Statutory plans include its MDP, the County of Vermilion River and City of Lloydminster IDP, three ASPs mandated by the IDP, and nine smaller scale ASPs within or adjacent to the study area. The locations of the IDP, three IDP ASPs, and nine smaller scale ASPs are illustrated in Map 5.

Three additional non-statutory and regulatory documents provide direction to land use and planning within the study area portion of the County. These include the non-statutory County of Vermilion River Regional Growth Management Strategy, the County's Land Use Bylaw (LUB), and the County's Strategic Plan. While the County of Vermilion River also has other development standards, policies and procedures, these documents all take direction from the County's Strategic Plan. These all need to be evaluated periodically to ensure consistency with higher order plans.

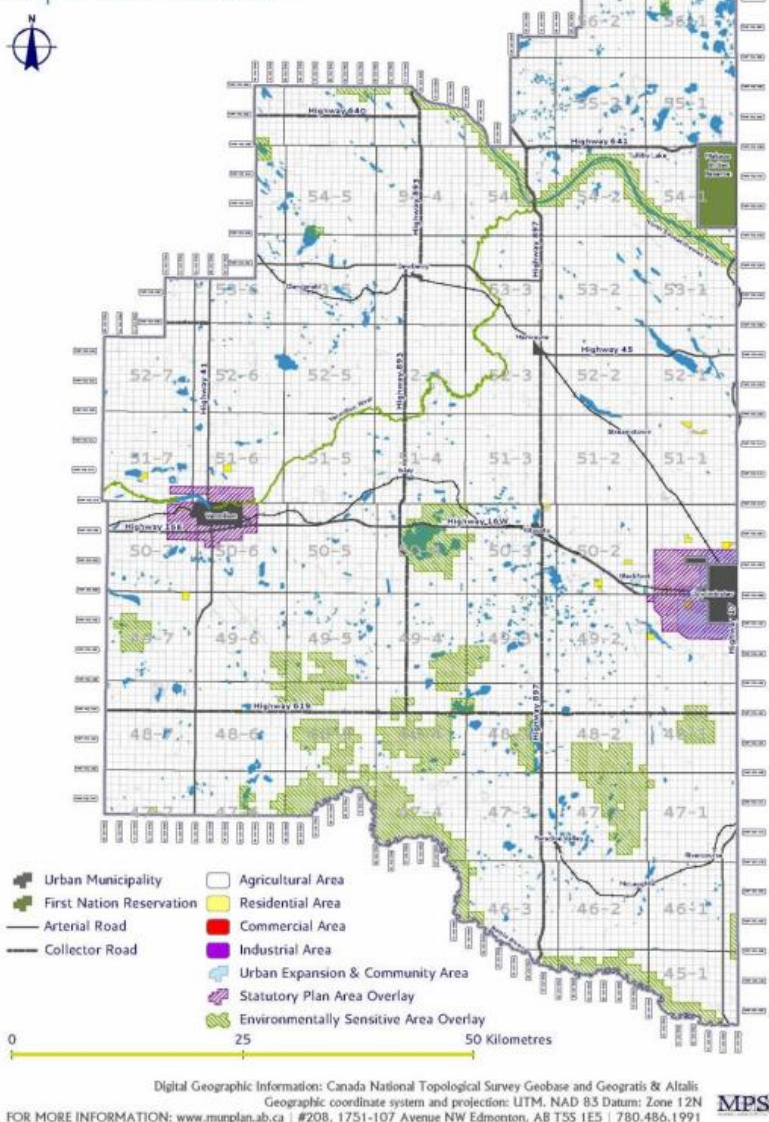
Municipal Development Plan (Bylaw No. 13-13)

The portion of the County of Vermilion River Municipal Development Plan (MDP) that is contained within the study area corresponds to the 'Statutory Plan Overlay' on MDP Map 2 (Future Land Use). The statutory plan referenced is the County of Vermilion River and City of Lloydminster IDP. The MDP states that all land use within this area must comply with the IDP.

Further, there are portions of the study area identified as 'Urban Expansion and Community Area.' Policies pertaining to this designation are contained in section 4.5 of the MDP. This is an area that is recognized as being adjacent to an urban area and that agricultural development must take place in a manner that will allow for potential urban expansion in the long-term. Specific areas are identified as 'Residential Areas' and are designated as such to allow for multi-lot residential development under criteria contained in section 4.2.

County of Vermilion River

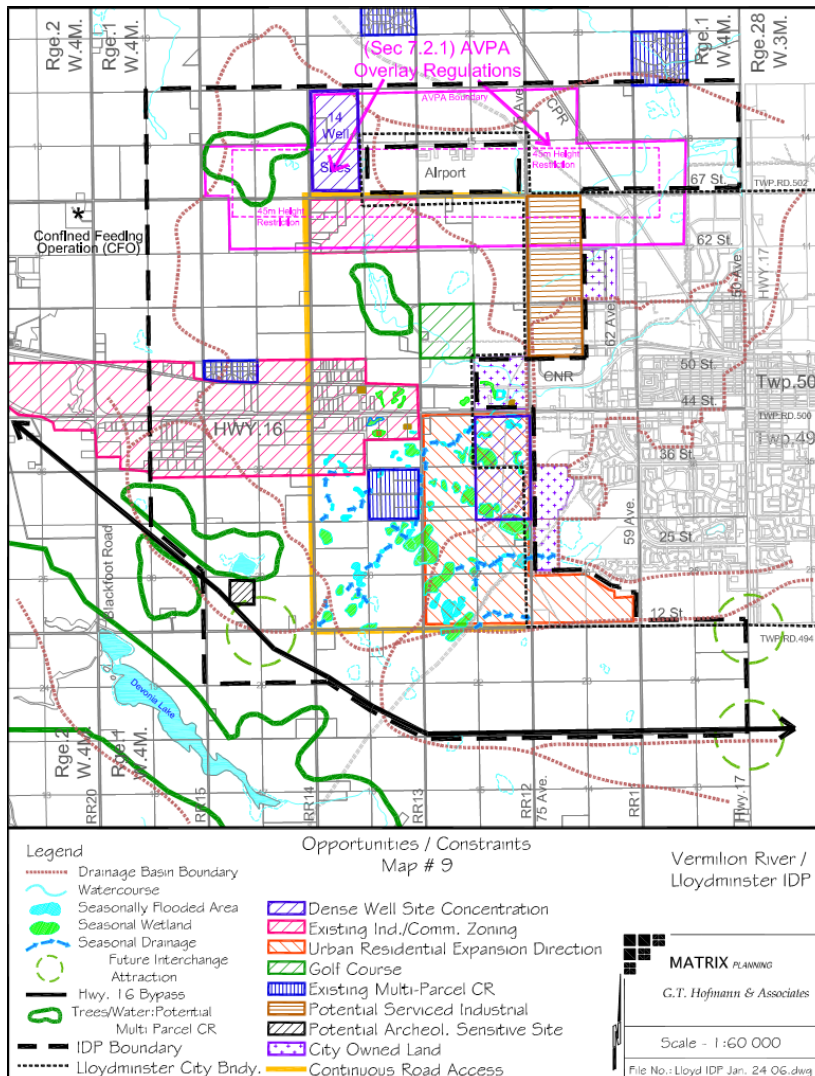
Map 2: Future Land Use



County of Vermilion River and City of Lloydminster Intermunicipal Development Plan

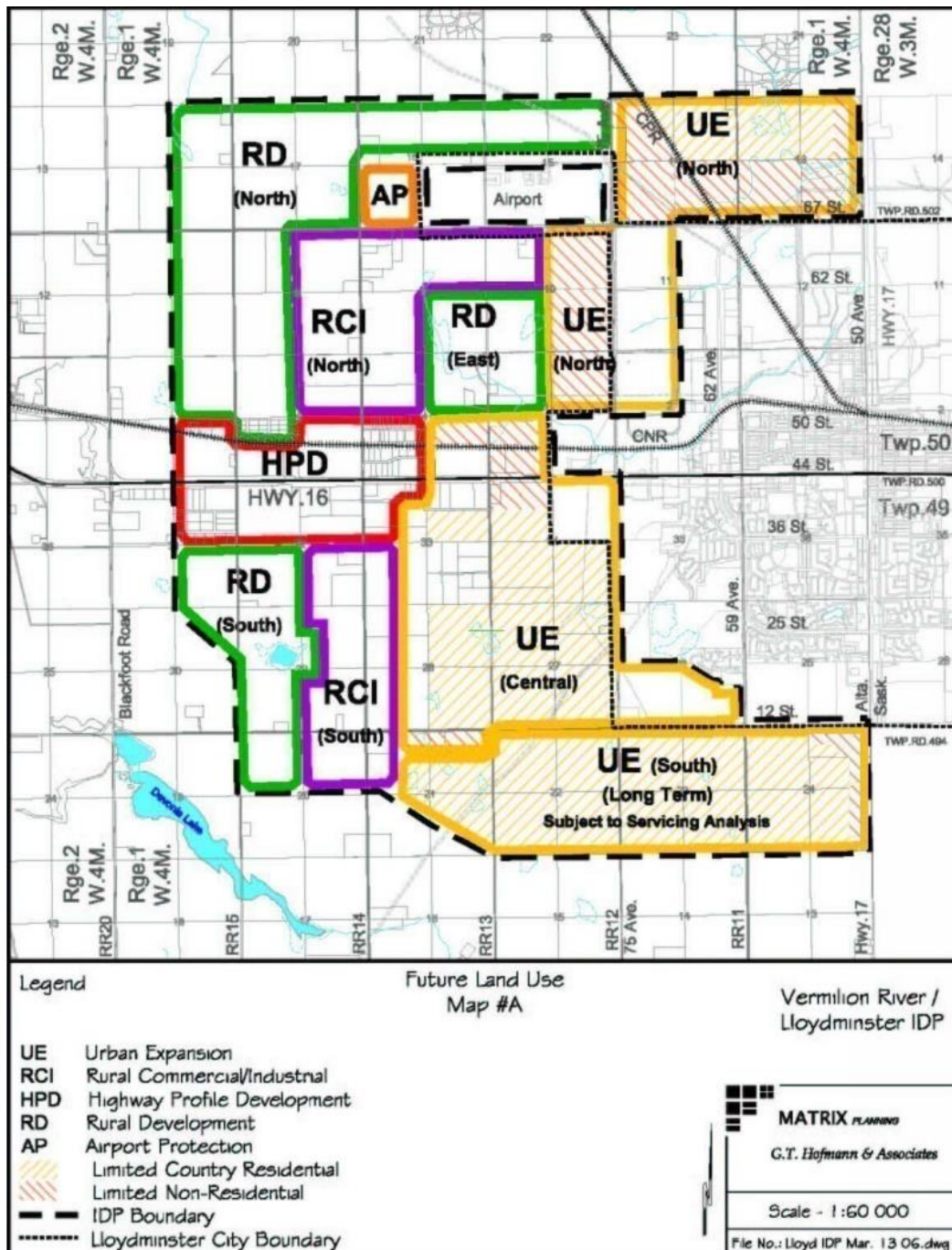
Adopted in 2006, the County of Vermilion River and City of Lloydminster IDP is a statutory document prepared and adopted jointly by the County and the City that provides a legislative framework for the planning and development of land that is of joint interest to the two municipalities. The IDP outlines an intermunicipal area of joint planning interest and provides policy direction for how development proposals in these areas will be considered by the two municipalities in terms of a referral process and a dispute resolution mechanism. The intent of the IDP is to ensure that development in the intermunicipal area respects the long-term urban growth interests of the City while allowing for appropriate rural development in the County. According to section 632 of the *Municipal Government Act*, the MDPs in each municipality and the IDP must be consistent with each other and in alignment.

Opportunities and constraints have been identified on IDP Map 9. These include industrial/commercial zoning along the Highway 16 corridor and urban residential expansion adjacent to the City's boundaries. Areas for potential multi-lot country residential are shown towards the western boundary of the IDP area. The future bypass and future interchange sites also present opportunities for future development. A potentially serviced industrial area is shown adjacent to the City's boundaries.



IDP Map A illustrates current land use designations within the plan area, and includes the following:

- Highway Profile Development along a portion of Highway 16;
- Rural Development (north, east and south);
- Rural Commercial/Industrial (north and south);
- Urban Expansion Areas adjacent to the City (north, central and south); and
- Airport Protection.



The intent of the *Rural Development* area is to allow for development that is compatible with existing land uses, does not require municipal servicing. This could include multi-lot country residential, agricultural operations, and home occupations. The *Highway Profile Development* area could accommodate a range of business and industrial types of uses. The *Rural Commercial/Industrial* area is intended for uses that require large areas of land but not necessarily piped servicing. Urban Expansion Areas all have ASPs prepared, which are described below. The *Airport Protection* area applies to a single quarter section to the west of the Lloydminster Airport in order to protect the subject lands for future runway extension.

Of note, the IDP contains policy in section 4.9 regarding the possibility of the County constructing piped water and sewer contingent upon capacity and demand. The City and County may also strike an agreement to supply water at a competitive price to attract commercial or industrial opportunities in the County.

Annexation

In addition to the above, the IDP establishes some key parameters relating to the annexation of lands into the City of Lloydminster. Section 5.4 of the IDP lays out a set of criteria to guide annexation applications as follows:

- a) There is recognition of the periodic need for urban expansion of the City of Lloydminster and the need to undertake an annexation in a positive, orderly, timely and agreed upon process where there is a clear and present need.
- b) Each municipality shall protect lands identified in the IDP suitable for municipal servicing and development from land use and developments, which might unduly interfere with and create conflict with future urbanization.
- c) Both municipalities shall follow the annexation process as outlined in the Municipal Government Act current at the time an annexation application is made.
- d) In the event of annexation where the City does not currently service land, the City may enter into an agreement to compensate the County for the existing municipal portion of property taxes on a descending scale.
- e) Should the City and County enter into an agreement to service land in the County, the agreement shall address the pros and cons of annexation.
- f) In determining the timing, size and location of an annexation area, the following will be considered:
 - i. **Justifiable and mutually agreeable current and future growth rates** – Growth rates are defined at the rate at which land is consumed for efficient residential, commercial and industrial purposes normally expressed in acres per year over a 30 year time horizon.
 - ii. **Availability and cost of servicing** – The physical and economic ability to extend City services to specific areas within the County should be logical, reasonable and cost-effective.
 - iii. **Adequacy of transportation systems to accommodate new development** – The annexation area should be either serviced with a road network or be able to be serviced with a logical extension of existing road networks as identified in the IDP or more detailed statutory documents.
 - iv. **Ownership patterns** – The annexation should follow legal boundaries or natural features to avoid creating a fragmented pattern of land ownership.
 - v. **Minimize premature consumption of better agricultural land** – The annexation should reflect land use policies that keep better agricultural land in production until needed for efficient urban expansion.

- vi. **Local support** – Annexation should as much as possible have the concurrence of the landowners involved.
- vii. **Consistent with local plans** – The annexation should be consistent with the policies of this IDP, the respective municipal development plans and any area structure plan or other study. Planning for annexations should consider a 30 year time horizon for land needs.
- viii. **Logical extension** – The annexation should be a logical expansion of the City of Lloydminster and may include previously developed areas.
- ix. **Agricultural mill rates** – The annexation should not dramatically alter the taxes collected from agricultural lands in the annexation area simply because of annexation. The two municipalities may look at harmonizing their agricultural mill rates.

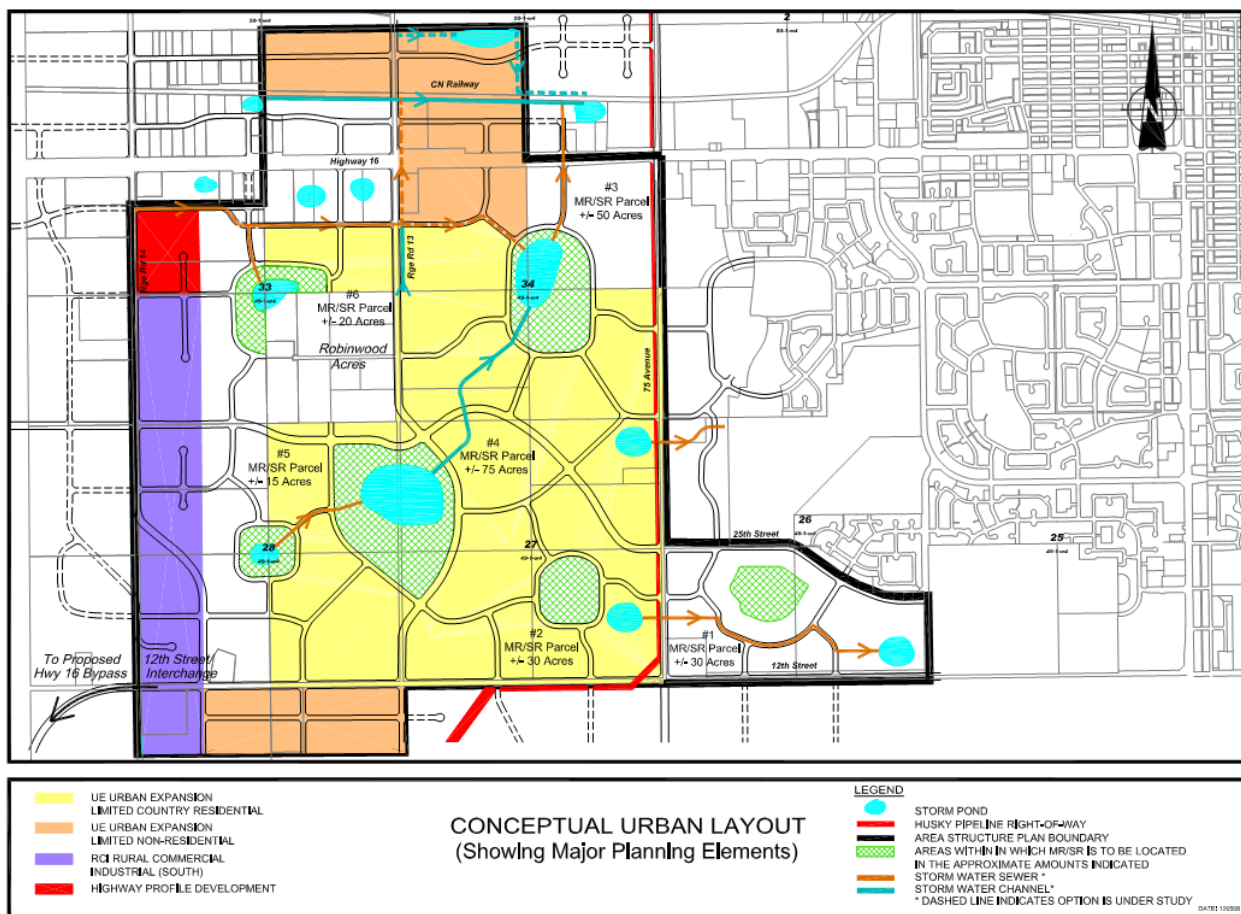
In addition to the above, IDP policies are in effect that are designed to preserve growth opportunities for both the City and County as follows:

- 4.4(c)** The RCI [Rural Commercial/Industrial] designation is considered to be exempt from future annexation by the City of Lloydminster for the life of the IDP. This policy shall be reviewed every 6 years.
- 4.5(c)** The HPD [Highway Profile Development] area designation is considered to be exempt from future annexation by the City of Lloydminster for the life of the IDP. This policy shall be reviewed every 6 years.
- 4.6(c)** The RD [Rural Development] designation is considered to be exempt from future annexation by the City of Lloydminster for the life of the IDP. This policy shall be reviewed every 6 years.
- 4.7(c)** The City will consider this [Airport Protection – AP] area for annexation into the City at such time the land is required for airport purposes.

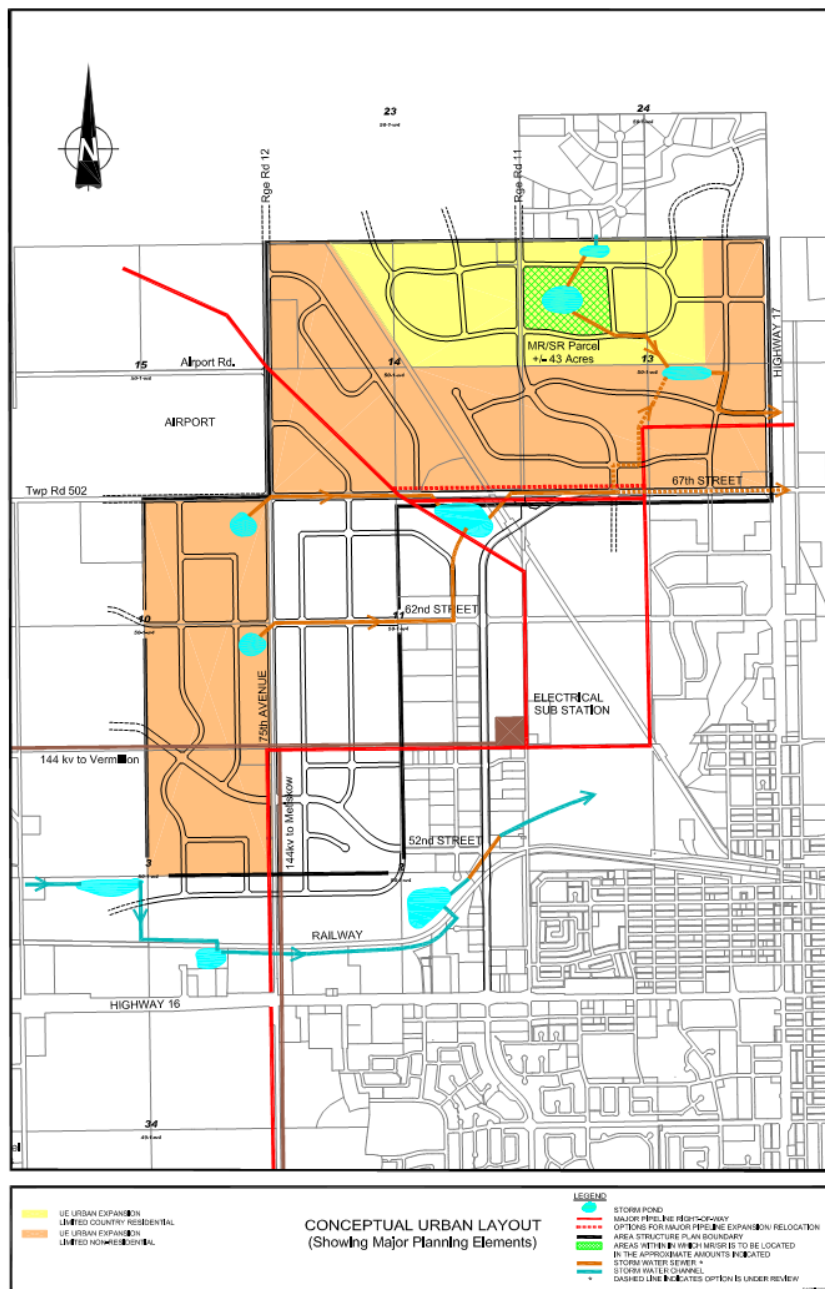
Urban Expansion Area Structure Plans

Three area structure plans (ASPs) were developed jointly to implement the IDP. The ASPs follow a similar format, with context and framework of each ASP discussed in the first three sections of each document, followed by an introduction to the Conceptual Urban Layout in Section 4, and a discussion of land uses and requirements in Section 5. A summary of each ASP is provided below, while their locations are illustrated in Map 5.

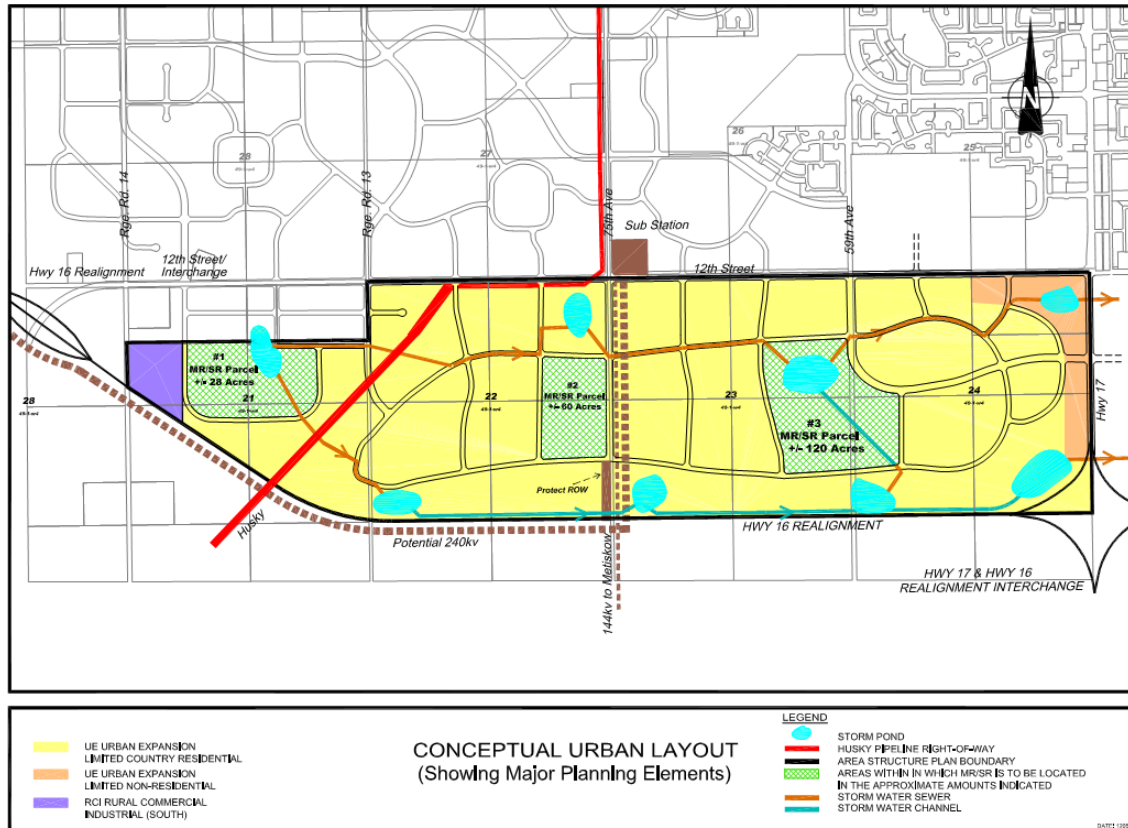
1. The **Central Urban Expansion ASP** was adopted by the County under Bylaw 07-028, as amended by Bylaw 08-16. According to the ASP, the Central Urban Expansion area will be the first urban expansion area developed, and applies to 1,160 ha (2,866 ac). Rural Commercial Industrial (RCI) uses along the east side of Range Road 4 and Highway Profile Development in the northwest corner of the ASP area provide a commercial-industrial commercial base (p. 24). Subdivision is restricted and limited to 10% of each quarter section in order to help ensure that future urban development may proceed relatively unencumbered.



- The **North Urban Expansion ASP** was adopted by the County under Bylaw 08-15. The North Urban Expansion ASP applies to three quarter sections located within the northwest corner of the City of Lloydminster, three quarter sections immediately west in the County, and another eight quarter sections within the County immediately north of Township Road 502/67 Street. It contains approximately 910 ha (2,250 ac). Only slightly over 3 quarter sections have potential for future residential use, while commercial and industrial uses are planned for the remainder. The Urban Expansion Limited Country Residential designation along the northern boundary of the plan area applies to approximately 174 ha (430 ac). The remaining land is designated as Urban Expansion Limited Non-Residential. As with the Central Urban Expansion ASP, subdivision is restricted and limited to 10% of each quarter section.

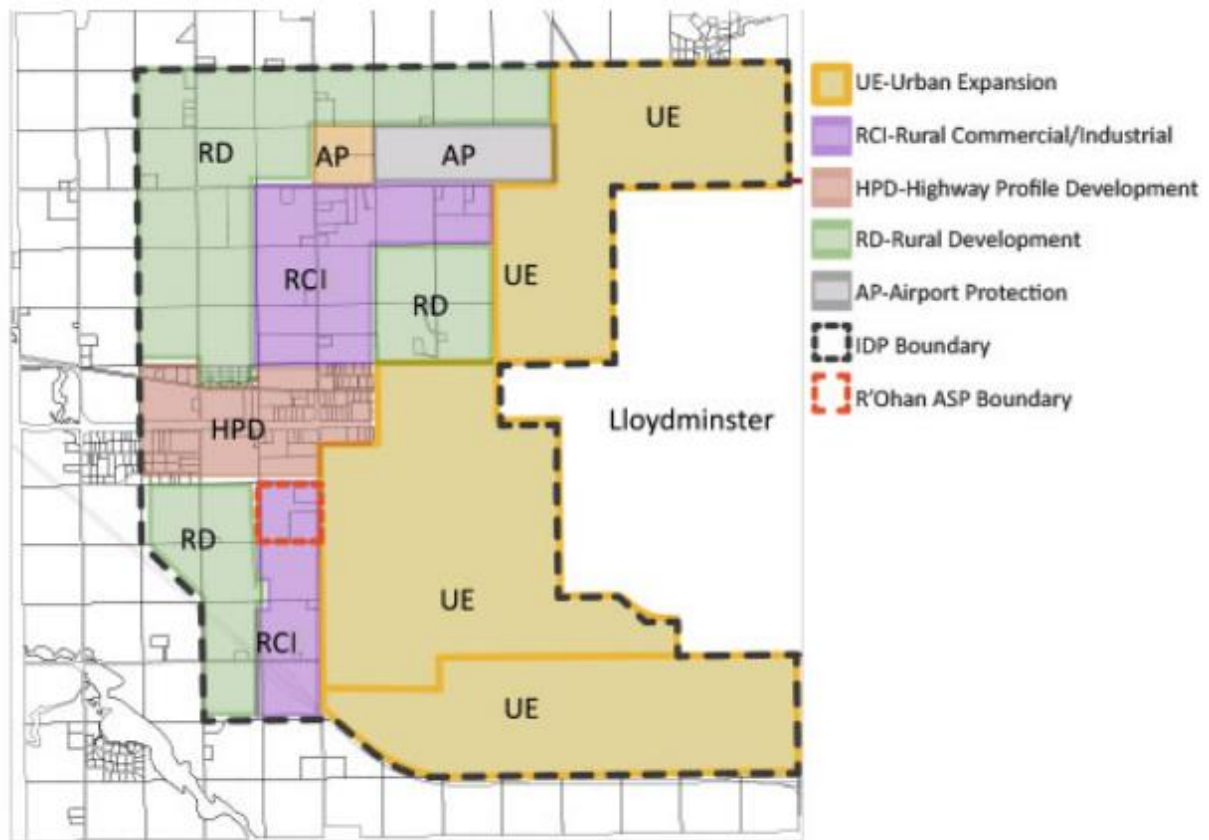


3. The **South Urban Expansion ASP** was adopted by the County under Bylaw 08-14. The South Urban Expansion ASP comprises approximately 902 hectares (2,194 ac) and contains major pipeline and utility rights-of-way. This ASP requires a servicing analysis. The South Urban Expansion ASP currently includes land designated as Rural Commercial Industrial Land (approximately 40 acres) bordering Range Road 14, with the remainder designated as Limited Country Residential. A small area of Non-Residential along the west side of Highway 17 and along 12 Street west of Highway 17 is intended to develop as the southern gateway to Lloydminster. As with the other ASPs, subdivision is restricted and limited to 10% of each quarter section.



R'Ohan Industrial Park Area Structure Plan (Bylaw 17-03)

The R'Ohan Industrial Park ASP, approved in 2017, provides a framework for future development on the SE-32-49-1-W4M. Detailed plans are anticipated specifically for the 18-acre parcel known as the R'Ohan parcel (Lot 1, Block 1, Plan 032 0702). The ASP is located half a mile south of Highway 16 and two miles west of the City. The plan area is located on the west side of Range Road 14, which also provides access. Within the IDP, it is designated as Rural Commercial/Industrial (RCI) South and is adjacent to the Central Urban Expansion ASP. The plan area is designated Business (B) District under the LUB. The R'Ohan parcel is anticipated to contain light industry use(s) and requires subdivision and development permit approvals prior to development. The remainder of the SE-32-49-1-W4M is anticipated to remain under agricultural use.



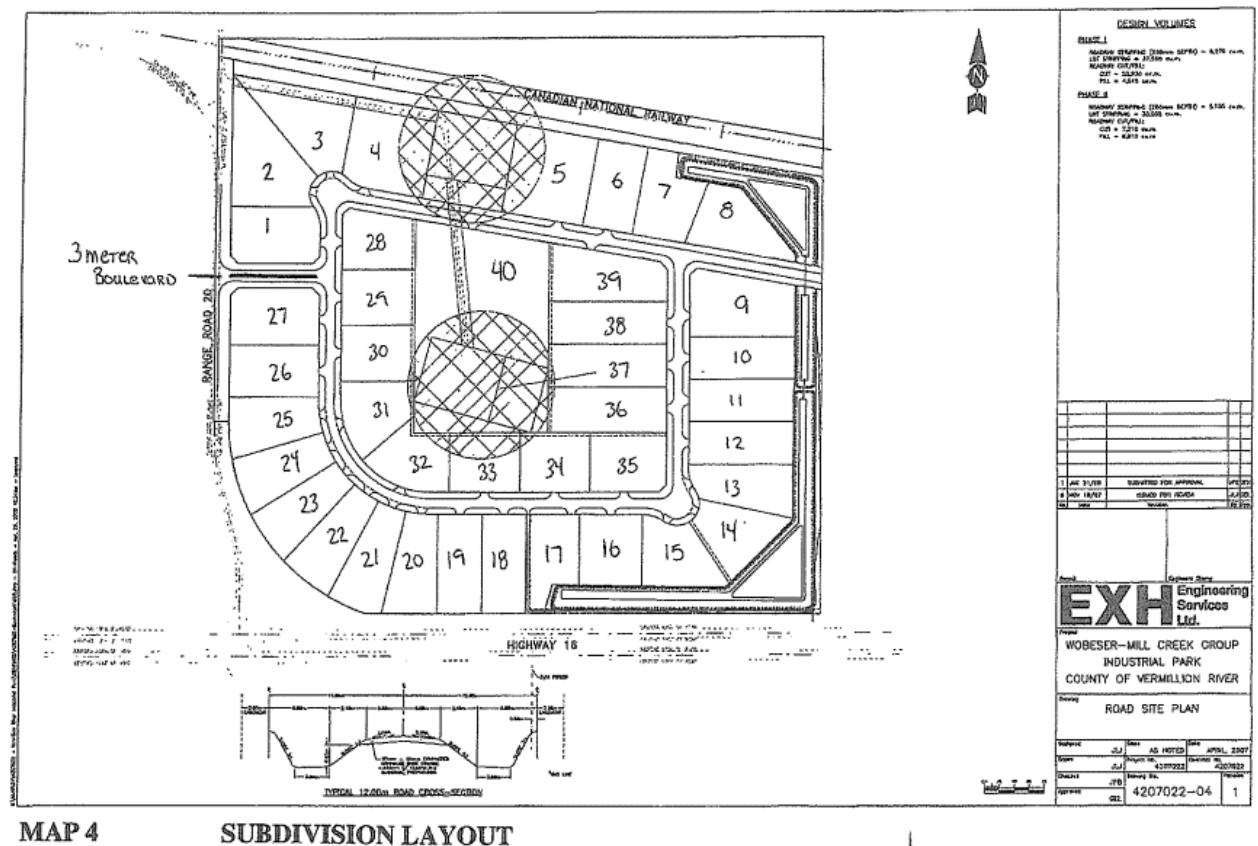
Grasslands Area Structure Plan (Bylaw 06-09, as amended by Bylaw 11-18)

The Grasslands ASP, approved in 2006 and amended in 2011, provides a framework for future development on the NW-5-50-1-W4M. The ASP is located half a mile north of Highway 16 and two and a half miles west of the City on the east side of Range Road 15 and north of Deerfoot Road. Within the IDP, it is designated as Rural Development (RD) North. The plan area is currently designated Country Residential One (CR1) District under the LUB. The Grasslands ASP, as amended, is anticipated to contain 59 units of large lot country residential development at a density of 0.37 units per gross acre. Development is subject to subdivision and development permit approvals.



Mill Creek Area Structure Plan (Bylaw 08-19)

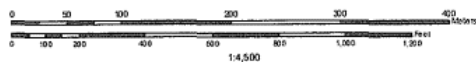
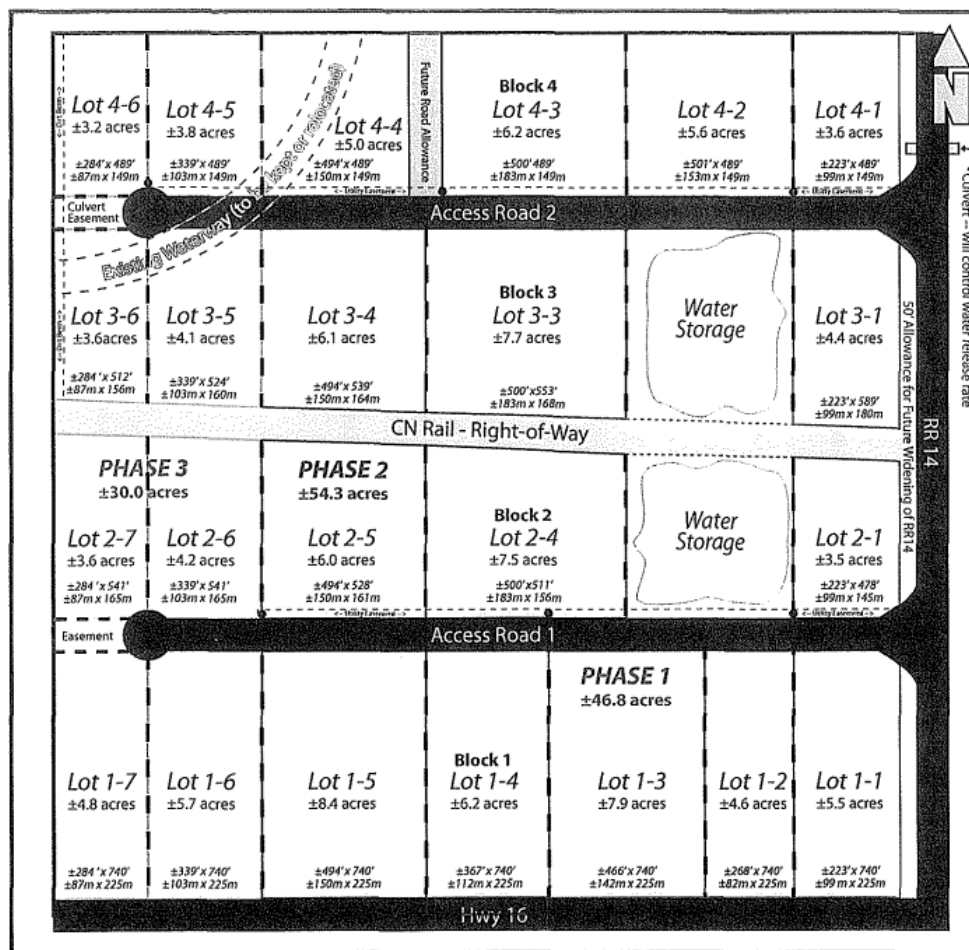
The Mill Creek Industrial Park ASP, approved in 2008, provides a framework for future development on the SW-6-50-1-W4M. The ASP is located three miles west of the City of Lloydminster and is bounded by Highway 16 to the south, Range Road 20 to the west, the Canadian National rail line to the north, and the western boundary of the study area to the east. The ASP is just outside the Highway Profile Development (HPD) portion of the IDP. The plan area is currently designated Business (B) District and Industrial (M) District under the County's LUB. The Mill Creek ASP is anticipated to contain an industrial park of 40 lots averaging 2 acres in size. Development is subject to subdivision and development permit approvals.



Industrial/Commercial (Reinhart Business Park) Area Structure Plan (Bylaw 10-02)

The Industrial/Commercial ASP for the Reinhart Business Park, approved in 2010, provides a framework for future development on the SE-5-50-1-W4M. The ASP is located adjacent on the north of Highway 16 and on the west side of Range Road 14, one and a half miles west of the City. The Canadian National rail line bisects the plan area west-east. Within the IDP, the plan area is designated as Highway Profile Development (HPD). The plan area is partially subdivided and developed on the south side of the rail line and is currently designated Business (B) District under the County's LUB. The Industrial/Commercial ASP for the Reinhart Business Park is anticipated to contain 26 commercial and light industrial lots. Development is subject to subdivision and development permit approvals.

REINHART DEVELOPMENTS



SE-5-50-1W4

Total land area: ±148.2 acres
 Total M.R.: ±0.0 acres
 Total Road Allow.: ±10.9 acres (Access Roads)
 ±2.3 acres (Easements & North Expansion Allowance)
 ±3.0 acres (Future RR14 Widening)

Listed dimension and area are estimates only. Actual values will be decided by surveying.

EASEMENTS



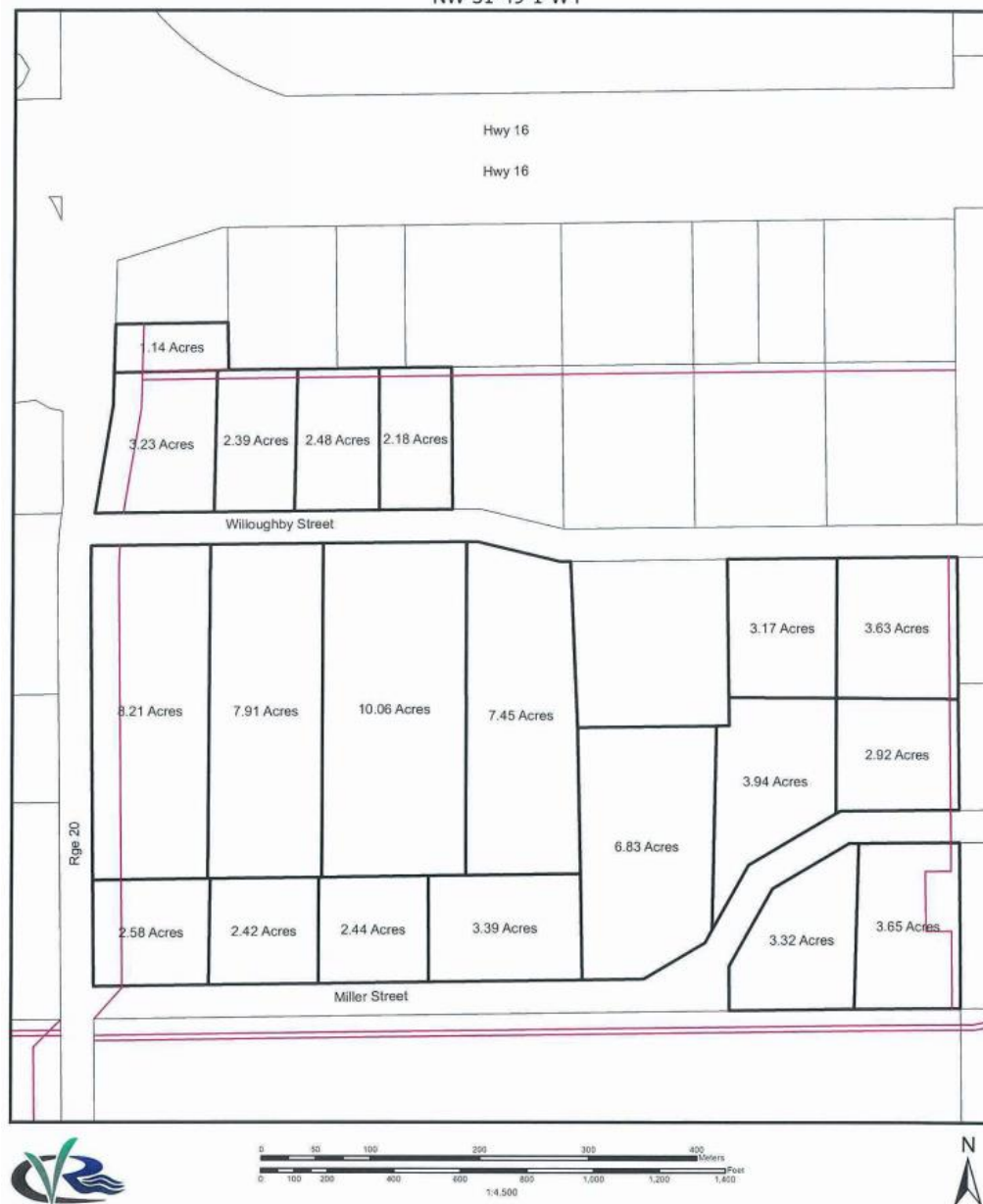
Box 12628 Lloydminster, AB T9V 0Y4
 780-808-2233 office

Devonia Business Park Area Structure Plan (Bylaw 11-22)

The Devonia Business Park ASP, approved in 2011, provides a framework for future development on the NW-31-49-1-W4M. The ASP is located north of Highway 16 and east of Range Road 20, one and a half miles west of the City. Adjacent to the western boundary of the IDP, the ASP is just outside the Highway Profile Development (HPD) portion of the IDP. The plan area is already subdivided and serviced with internal roads. The plan area is currently designated Industrial (M) District under the County's LUB. The Devonia Business Park ASP is anticipated to further subdivide the existing parcels into lots ranging from 1.14 acres to 8.21 acres in size. Based upon a review of the current aerial photo, the ASP has been subdivided since approval of the ASP. It appears there are two phases of subdivision.

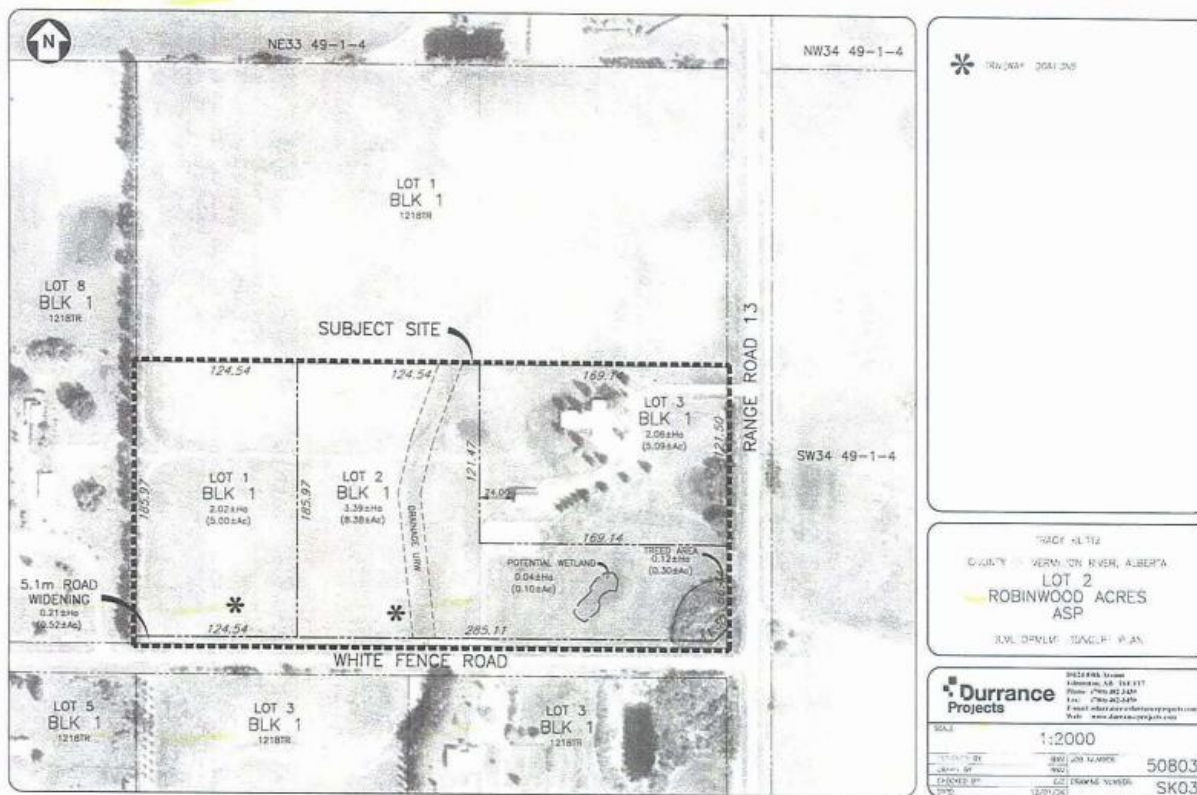
Figure 2A: Finalized Development Area

NW-31-49-1-W4



Robinwood Acres Lot 2 Area Structure Plan (Bylaw 11-33)

The Robinwood Acres Lot 2 ASP, approved in 2012, provides a framework for future development of a 19-acre parcel (Lot 2, Block 1, Plan 1218TR) in the SE-33-49-1-W4M. The ASP is located within the existing residential subdivision of Robinwood Acres on the west side of Range Road 13, a half-mile south of Highway 16 and one mile west of the City. Within the IDP, it is designated as Urban Expansion (UE) Central. The plan area is currently designated Country Residential One (CR1) District under the County's LUB. The Robinwood Acres Lot 2 ASP is anticipated to contain three country residential lots. Based upon a review of the current aerial photo, the ASP has been subdivided since approval of the ASP.

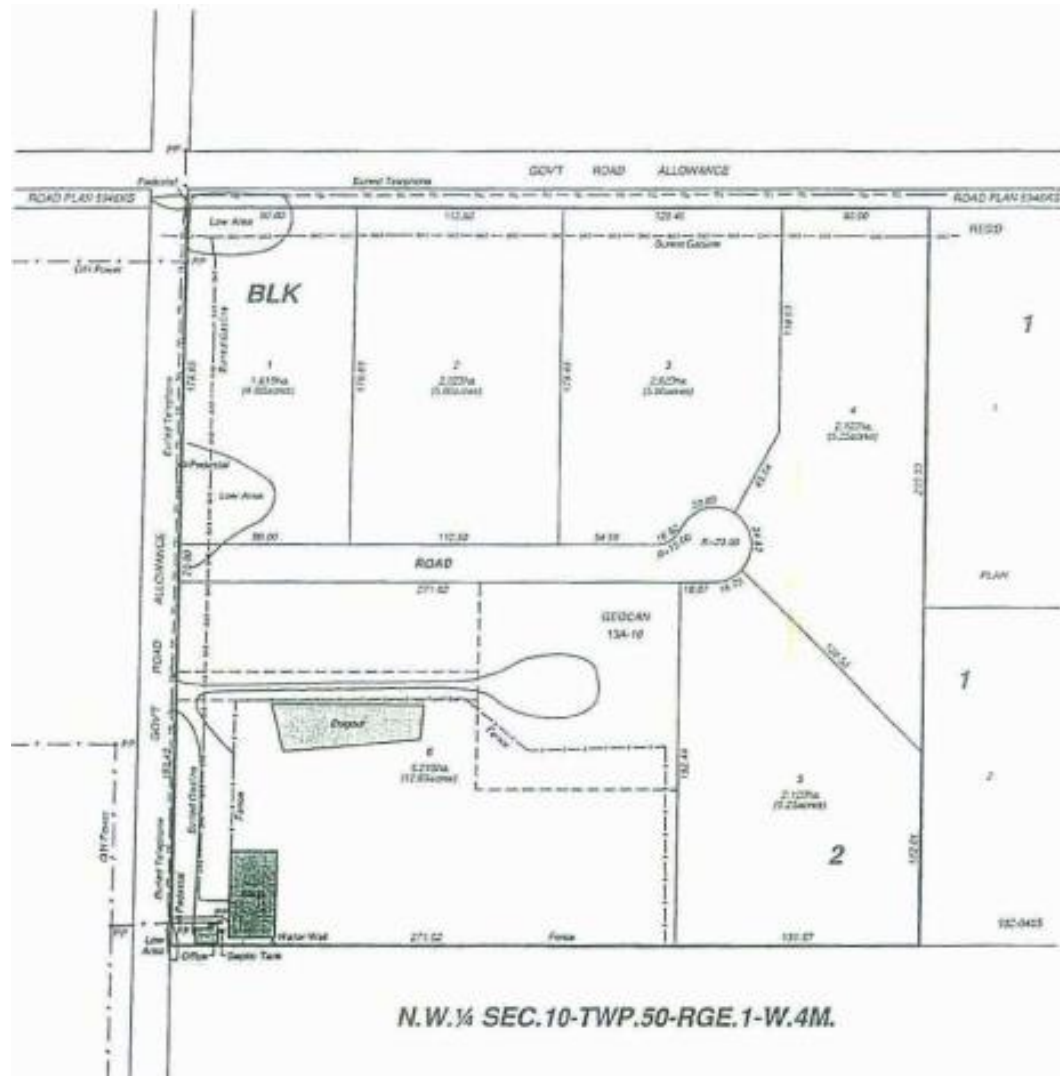


Robinwood Estates Area Structure Plan (Bylaw 14-32)

The Robinwood Estates ASP, approved in 2015, provides a framework for future development on a 20-acre parcel (Lot 1, Block 1, Plan 1218TR) in the SE-33-49-1-W4M. The ASP is located on the west side of Range Road 13, a half-mile south of Highway 16 and one mile west of the City. Within the IDP, it is designated as Urban Expansion (UE) Central. The ASP area is currently designated Country Residential One (CR1) District under the County’s LUB. The Robinwood Estates ASP is anticipated to contain 12 country residential lots (1.4 – 1.9 acres in size). Development is subject to subdivision and development permit approvals.



The NW-10-40-1-W4M ASP, approved in 2012, provides a framework for future development on 40 acres in the NW-10-50-1-W4M. The ASP is located on the south side of Township Road 502 across from the Lloydminster Airport, a half-mile west of the City. Within the IDP, it is designated as Rural Commercial/Industrial (RCI) North. The plan area is currently designated Industrial (M) District under the County's LUB. The NW-10-50-1-W4M ASP is anticipated to further subdivide existing lots for industrial use. Based upon a review of the current aerial photo, the ASP has not been fully subdivided yet.



The County Energy Park ASP, approved in 1981, provides a framework for future development on the N½ of SW-4-50-1-W4M. The ASP is located a quarter-mile north of Highway 16 on the east side of Range Road 14, one mile west of the City. The Canadian National rail line is adjacent to the plan area to the south. Within the IDP, it is designated as Highway Profile Development (HPD). The ASP area is currently designated Industrial (M) District under the County's LUB. The County Energy Park ASP was approved for light industrial development. Based upon a review of the current aerial photo, the ASP has been subdivided since approval of the ASP.

County of Vermilion River Strategic Plan (2018-2022)

The County has adopted a strategic plan based on a set of values and a vision. The strategy includes direction within the main service areas of the County. With respect to planning and development, the following priorities are identified:

- Building partnerships with neighbours;
- Industrial and commercial development; and
- Wetland management.

Regional Growth Management Strategy

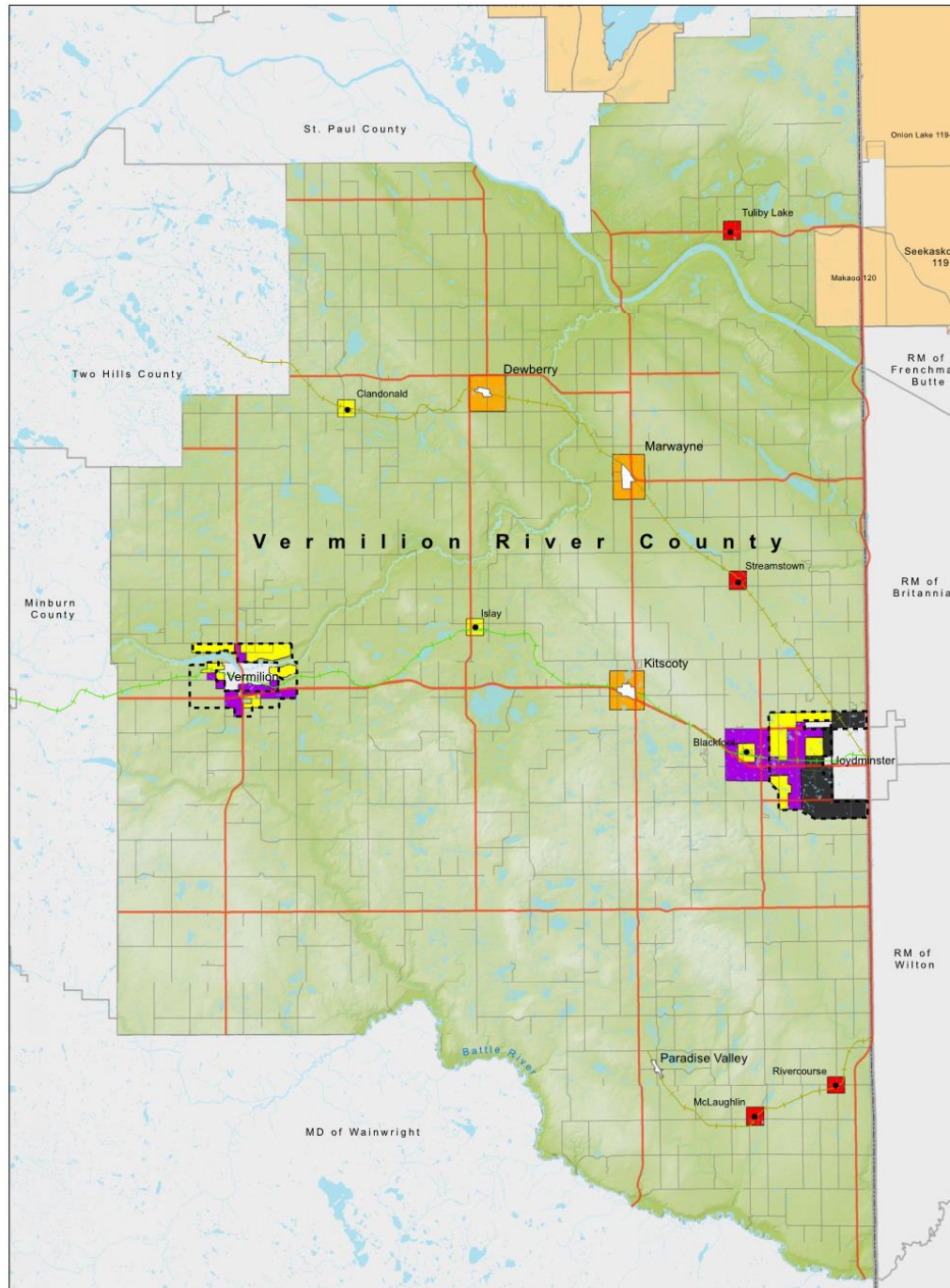
The Regional Growth Management Strategy (RGMS) is a non-statutory document that supports the implementation of the IDP, MDP, all ASPs, and the County's LUB. The Growth Vision of the RGMS (Section 4.1, p. 22) focuses on the following:

- Directing growth to existing hamlets and built-up areas;
- Working with adjacent municipalities to ensure mutually beneficial land use;
- Maintaining the County's fiscal position and balancing residential and non-residential growth; and
- Making efficient use of existing infrastructure and improving the level of service.

The RGMS envisions working with adjacent municipalities to ensure mutually beneficial land uses. Maintaining the County's fiscal position without detracting from balanced residential and non-residential growth and achieving efficiencies in the provision of municipal services are also important elements of the RGMS.

In terms of **employment growth**, the County does not want to direct growth away from the Urban Expansion area in developments such as Blackfoot. However, it does want to maintain its financial sustainability and balance of residential to non-residential growth, which in turn requires the enhancement of its employment tax base. Expanded highway commercial development and industrial development in the Hamlet of Blackfoot are identified in the Growth Concept as likely areas for these activities. All employment growth is proposed to be at urban densities and located in appropriate areas, including both Blackfoot and future IDP areas.

With respect to **residential growth**, a ratio of 2/3 urban residential development to 1/3 of rural (country) residential development is proposed by the Growth Concept to reduce potential rural land fragmentation.



County of Vermilion River
Regional Growth Management Strategy
Future Growth Concept
Map 1



- Residential Growth Nodes
- Employment Growth Nodes
- Rural Community Nodes
- Potential IDP Area
- Urban Expansion (Land to be Ceded to Annexation)
- Hamlet
- Major Roads
- Minor Roads
- Areas outside the County
- IDP Areas
- Abandoned Railway
- CN (Active) Railway



Map Data Provided By:
Vermilion River County, Statistics Canada, Dillon Created
Elevation model is an approximation based on 5m contours.
Map Created By: Eric Hartman
Map Checked By: Alex Taylor
Map Projection: NAD 1983 UTM Zone 19N
File Location: G:\2013\20000\Vermilion River\Final Map Sketch Up.mxd

0 5 10 20 km
SCALE 1:340,000
PROJECT: 12-6661 STATUS: DRAFT DATE: 4/4/2013

Future Growth Nodes are shown on the **Growth Concept Map** (RGMS Map 1) and are summarized as follows:

1. Residential Growth Nodes
 - a. Located close to existing service and infrastructure bases
 - b. Include areas in and adjacent to the Hamlets of Blackfoot, Islay and Clandonald, and some portions of the IDP areas of Lloydminster and Vermilion (Section 4.3.1, p. 31)
2. Employment Growth Nodes
 - a. Are located close to major transportation corridors
 - b. Have the current or planned infrastructure base to support future employment growth
 - c. Historically have been a focal point for employment development activity
 - d. Growth nodes include in and around the Hamlet of Blackfoot, and specific portions of the IDP areas of Lloydminster and Vermilion
3. Rural Community Nodes
 - a. Conservation design principles are to be reflected in new subdivision proposals to ensure a smaller development footprint.
 - b. Existing servicing levels will be maintained, but these areas will not be the focus of future development investment.
 - c. Nodes include the hamlets of McLaughlin, Rivercourse, Streamstown and Tulliby Lake.
4. Potential IDP Areas
 - a. The County currently has IDPs with the City of Lloydminster and Town of Vermillion.
 - b. Potential IDPs have been designated for areas around the communities of Kitscoty, Dewberry, Marwayne and Paradise Valley (each currently under development as of 2019).
5. Urban Expansion (Area to be ceded in future annexation)
 - a. The RGMS assumes that the Urban Expansion (UE) areas will no longer be available to the County in the mid to long-term (Section 3.6.1, p. 20).
 - b. Figures 18 and 19 of the report show the estimated amount of land for both residential and employment use is a fraction of the County's total land base (Section 3.6.3, p. 20).
 - c. The RGMS does not propose accommodating any future growth within the UE areas, since it must be developed at urban densities and will eventually be lost to the City (Section 4.3.5, p. 32).



County of Vermilion River Land Use Bylaw (Bylaw No 13-14, as amended)

The County of Vermilion River LUB contains administrative rules and procedures in sections 1 through 5. Section 6, General Provisions, pertain to all land use districts as does the overlay for environmentally sensitive areas in Section 9. As well, Section 7, Special Provisions, contains provisions that apply to specific land uses.

Section 8 contains Land Use District Regulations, including the Urban Expansion (UE) District. The Urban Expansion District delegates regulations and policies to the ASPs pertaining to the specific areas indicated in the County of Vermilion River and City of Lloydminster IDP. Section B(4)(g) also states that development conflicting with the IDP will not be allowed within the UE District.

All land use districts are shown in map form in Section 10. Maps of interest include the County Map (p. 236), and several "inset" maps which provide detailed information of the Lloydminster fringe area (inset 10.18). In addition, two areas subject to the UE District are located adjacent to the Town of Vermilion. These are not included in the current discussion although provisions are contained in the UE District description. Applicable land use districts in the study area include:

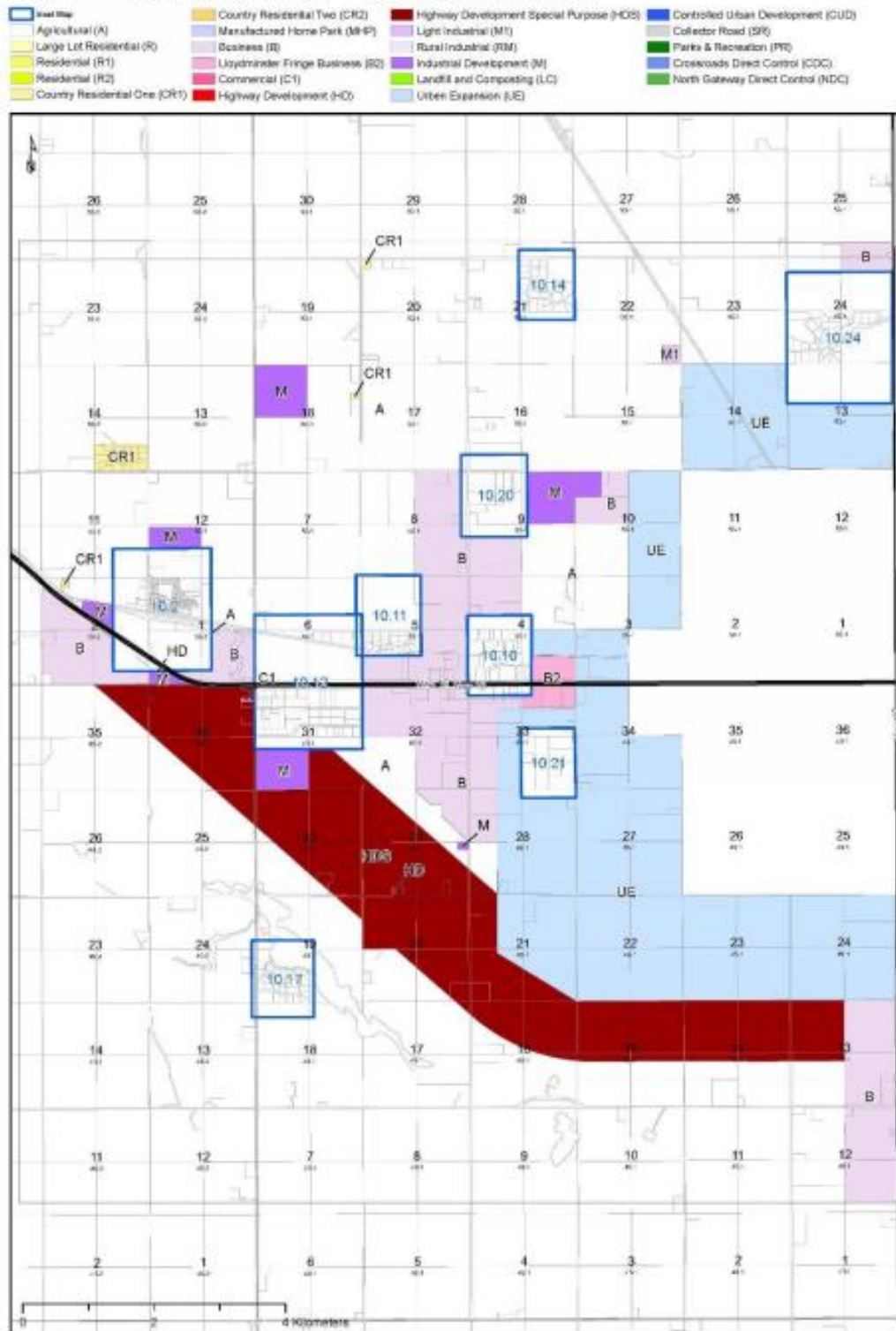
- Agricultural (A)
- Business (B)
- Lloydminster Fringe Business (B2)
- Country Residential One (CR1)
- Highway Development Special Purpose (HDS)
- Industrial Development (M)
- Urban Expansion (UE)





County of Vermilion River
Land Use Bylaw Map - Lloydminster Fringe Area

Inset Map 10.18



2.3.3 RM of Britannia No. 502

The RM of Britannia, the RM of Wilton and the City of Lloydminster operate under a common Lloydminster Planning District (LPD) Official Community Plan (OCP), the extent of which is illustrated in Map 5. The RM of Britannia also has its own overarching OCP, which is equivalent to an MDP in the Alberta planning framework. This section of the JRGS summarizes the two OCPs only as they pertain to the RM of Britannia. The only other applicable document is the LPD Zoning Bylaw for the RM of Britannia.

Lloydminster Planning District Official Community Plan (Bylaw No. 15-2014)

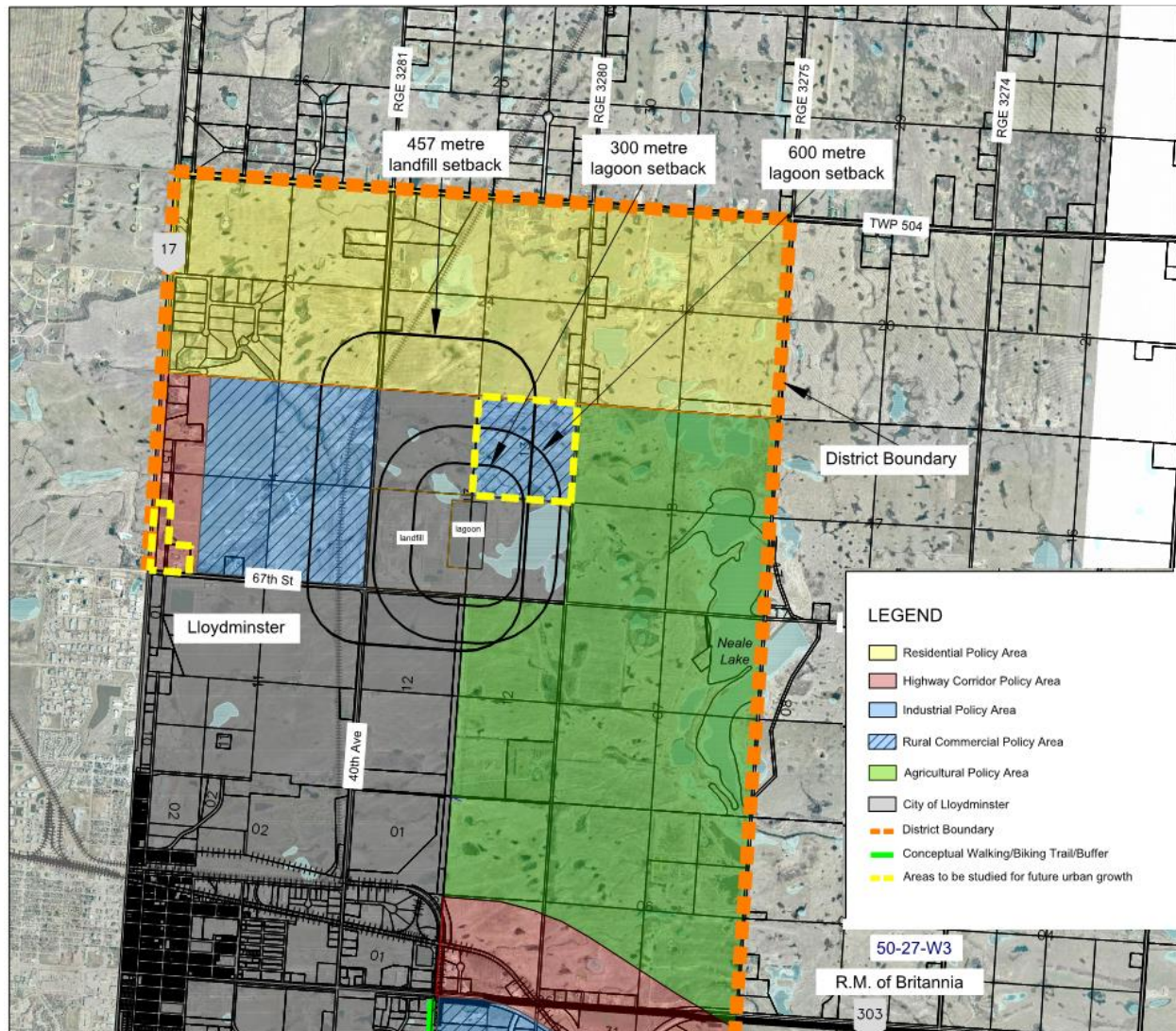
The LPD Commission is a collaborative authority established under Saskatchewan's *Planning and Development Act 2007* that facilitates intermunicipal planning initiatives between the RM of Britannia, the RM of Wilton and the City of Lloydminster. The LDP Commission prepared the LPD OCP as a tool for managing matters of mutual interest and growth in the greater Lloydminster area for the next 20 years. OCP implementation is achieved through the zoning bylaws of each municipality.

The current version of the OCP received ministerial approval in December 2015. The OCP establishes a fringe area that applies to a 1.5 mile-wide area surrounding the LPD's boundaries to protect development potential. It also establishes a policy framework for intermunicipal referral, servicing agreements, decision making and a dispute resolution mechanism to allow for mutually beneficial long-term growth and development.

With respect to land use, the LPD OCP applies four policy areas to the subject lands in the RM of Britannia as described below.

1. **Agricultural Policy Area:** intended to accommodate agriculture and agricultural related commercial and natural resource uses.
2. **Residential Policy Area:** intended to accommodate single and multiple parcel residential developments.
3. **Rural Commercial Policy Area:** intended to accommodate commercial and light industrial development in areas adjacent to the City subject to servicing; also provides opportunities for the negotiation of intermunicipal servicing agreements facilitating higher density and quality development in this area.
4. **Highway Corridor Policy Area:** located along Highway 16 and Highway 17 and primarily intended to accommodate commercial uses that cater to the traveling public, and service commercial and industrial uses that require large areas of land and minimal servicing.

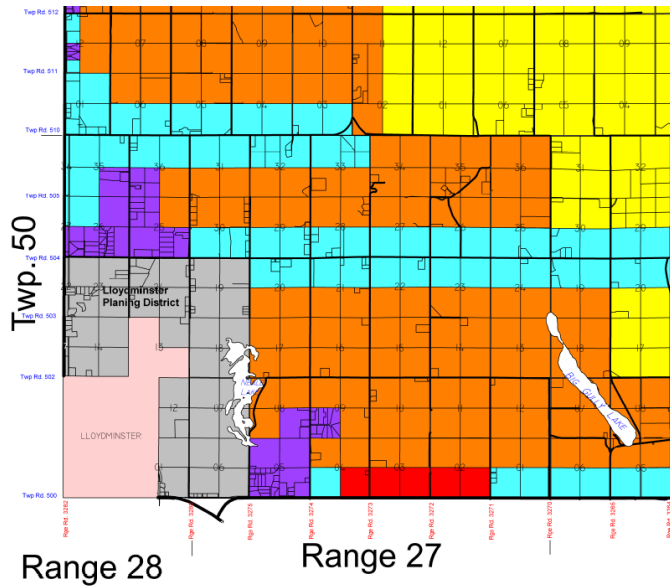
All policy areas are to be implemented through the appropriate zoning districts. Of note, there are certain areas to the north identified on LPD OCP Map 1 (Future Land Use Concept) as areas to be further studied for future urban growth. The northeast portions of the City also contain landfill and sewage treatment facilities which present setback restrictions on the abutting lands within the RM of Britannia. The Neale-Edmunds Complex located in the RM of Britannia is also identified as an area of joint interest.



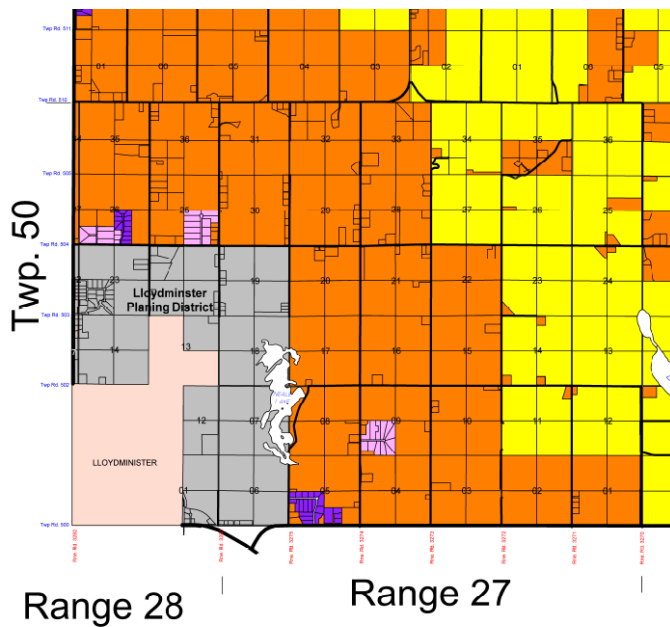
RM of Britannia Official Community Plan and Zoning Bylaw (Provincial Approval Pending)

The RM of Britannia also has its own overarching OCP and Zoning Bylaw. The OCP and Zoning Bylaw have recently been updated and were advanced to the Government of Saskatchewan Community Planning Division in late 2017. Formal approval by the Government of Saskatchewan remains pending.

The proposed OCP (Bylaw No. 11-2017) excludes those lands situated within the LPD and provides an overall land use strategy and policy direction to guide and inform land use and development matters within the balance of the RM. The OCP recognizes that the prevailing planning authority for lands contained within the study area are governed by the LPD Commission. Lands adjacent to the identified planning district have been identified as residential, agricultural and mixed use policy areas.



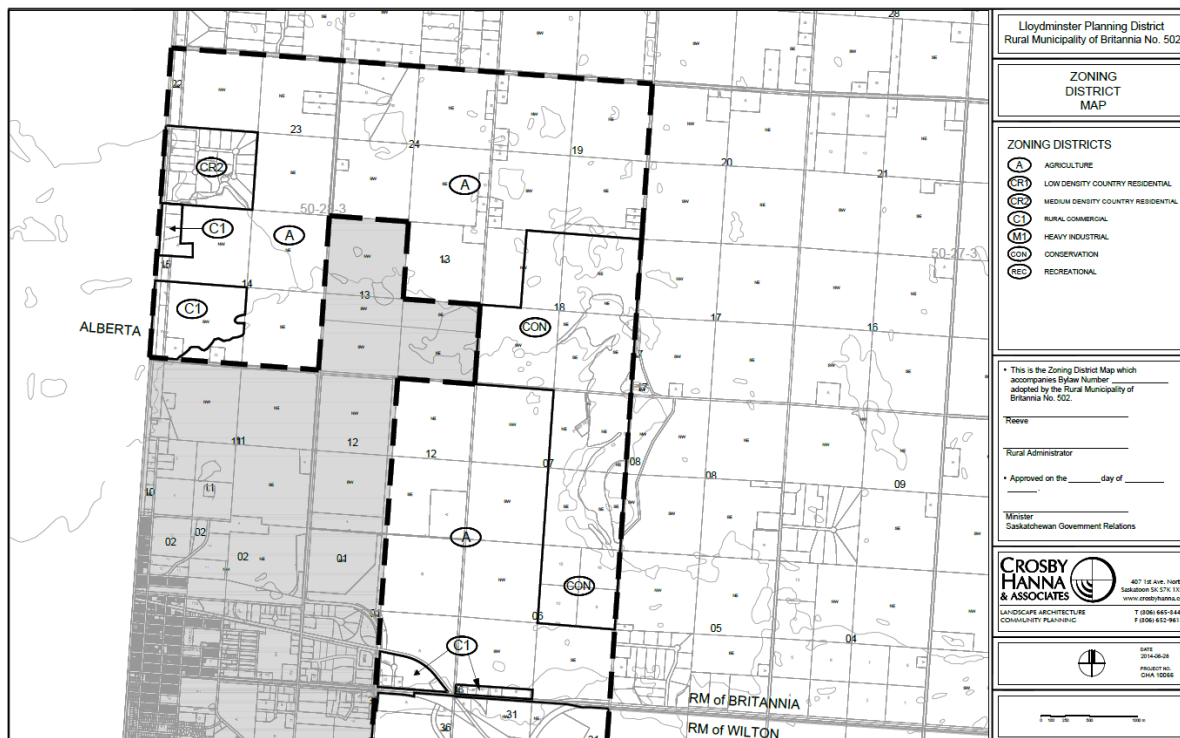
The proposed LPD Zoning Bylaw (Bylaw No. 12-2017) provides a regulatory framework to guide land use, subdivision and development permit decisions. Similar to the OCP, the Zoning Bylaw precludes those lands situated within the LPD. Adjacent to the LPD, lands are primarily zoned Agricultural District (AG), County Residential District (RD1), and Estate Residential District (RD2).



Lloydminster Planning District Zoning Bylaw (Bylaw No. 18-2014)

The LPD Zoning Bylaw implements the policy guidance in the LPD OCP through development regulations. The Zoning Bylaw outlines the various administrative procedures related to development permits, amendments and other development services as well as general standards for development. The Zoning Bylaw also divides the LPD area into land use districts containing individual development standards and regulations including setbacks, parcel sizes, site coverage, building heights, and parking. Each district also contains a set of permitted and/or discretionary uses. The Zoning Bylaw land use districts applicable to that portion of the RM of Britannia located in the study area are presented below.

- **Agriculture 'A' District:** Agricultural development, limited single parcel country residential development, and uses compatible with agricultural development can be considered in this district.
- **Medium Density Country Residential 'CR1' District:** Facilitates low to medium density, multiple-lot country residential development that is not considered compatible in agricultural areas (generally 4 hectares or 10 acres as the minimum site area).
- **High Density Country Residential 'CR2' District:** Facilitates medium to high density, multiple-lot country residential development that is not considered compatible in agricultural areas (generally 2 hectares or five acres as the minimum site area).
- **Rural Commercial 'C1' District:** Provides for a range of commercial and light industrial development as permitted uses.
- **Heavy Industrial 'M1' District:** Provides for industrial and heavy industrial uses with a minimum site size of 4,000 m² (0.4 hectares or 1 acre).
- **Conservation 'CON' District:** Allows for recreational and other public uses developed in a way that protects lands in accordance with the environmental management policies of the LPD OCP and restricts development on hazard lands.
- **Recreational 'REC' District:** Facilitates the development of recreational uses such as amusement parks, tourist campgrounds, sports grounds, trails, and parks.



2.3.4 RM of Wilton No. 472

The RM of Wilton, the RM of Britannia and the City of Lloydminster operate under a common Lloydminster Planning District (LPD) Official Community Plan (OCP), the extent of which is illustrated in Map 5. The RM of Wilton also has its own overarching OCP, which is equivalent to an MDP in the Alberta planning framework. This section of the JRGS summarizes the two OCPs only as they pertain to the RM of Wilton. The only other applicable document is the LPD Zoning Bylaw for the RM of Wilton.

Lloydminster Planning District Official Community Plan (Bylaw No. 15-2014)

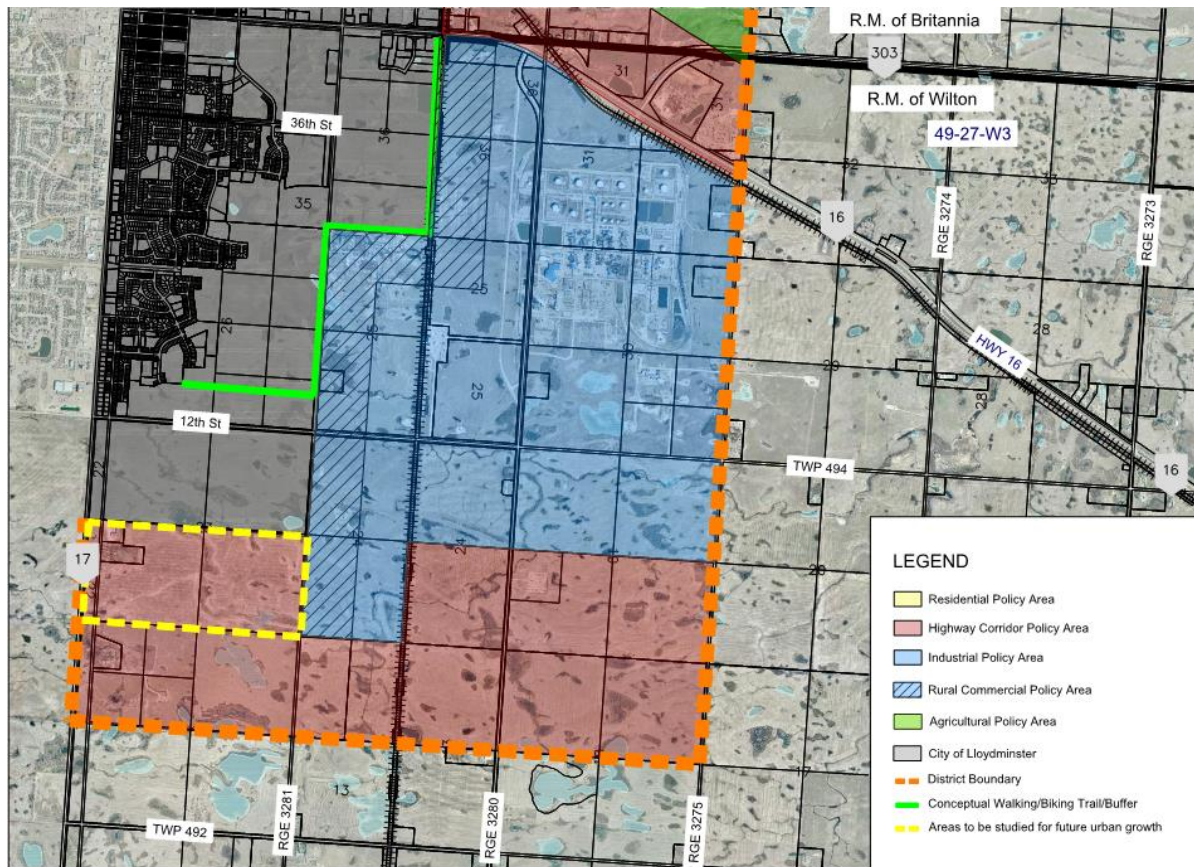
The LPD Commission is a collaborative authority established under Saskatchewan's *Planning and Development Act 2007* that facilitates intermunicipal planning initiatives between the RM of Wilton, the RM of Britannia and the City of Lloydminster. The LPD Commission prepared the LPD OCP as a tool for managing matters of mutual interest and growth in the greater Lloydminster area for the next 20 years. OCP implementation is achieved through the zoning bylaws of each municipality.

The current version of the OCP received ministerial approval in December 2015. The OCP establishes a fringe area that applies to a 1.5 mile-wide area surrounding the LPD's boundaries to protect development potential. It also establishes a policy framework for intermunicipal referrals, servicing agreements, decision making and a dispute resolution mechanism to allow for mutually beneficial long-term growth and development.

With respect to land use, the LPD OCP applies three policy areas to the subject lands in the RM of Wilton as described below.

1. **Industrial Policy Area:** intended to accommodate a diverse range of industrial uses requiring large areas of land and limited servicing.
2. **Rural Commercial Policy Area:** intended to accommodate commercial and light industrial development in areas adjacent to the City subject to servicing; also provides opportunities for the negotiation of intermunicipal servicing agreements facilitating higher density and quality development in this area.
3. **Highway Corridor Policy Area:** located along Highway 16 (including the proposed bypass alignment) and primarily intended to accommodate commercial uses that cater to the traveling public, and service commercial and industrial uses that require large areas of land and minimal servicing.

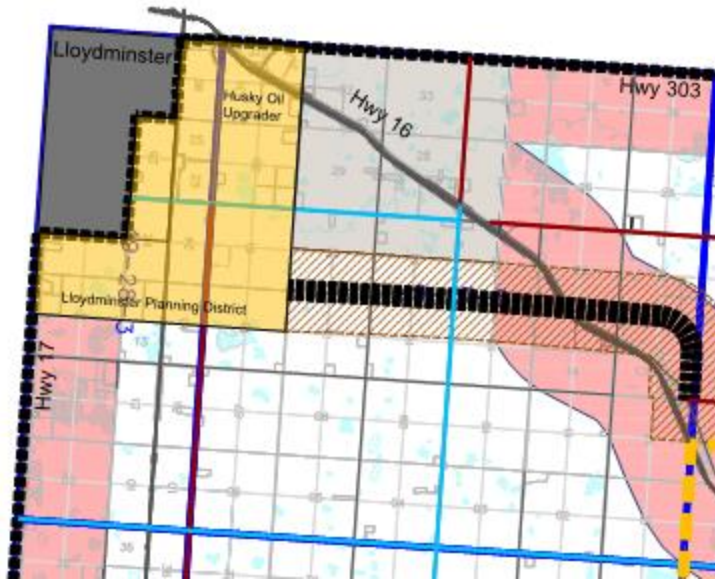
All policy areas are to be implemented through the appropriate zoning districts. Of note, there are certain areas to the west identified on LPD OCP Map 1 (Future Land Use Concept) as an area to be studied for future urban growth. The Heavy Oil Upgrader is identified as an area of joint interest.



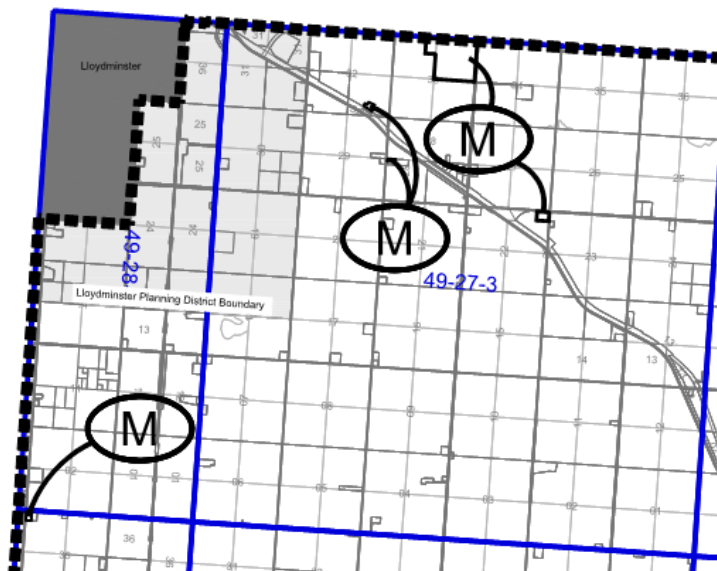
RM of Wilton Official Community Plan and Zoning Bylaw

The RM of Wilton also has its own overarching OCP and Zoning Bylaw. The OCP was last reviewed and updated in August 2012 whereas the Zoning Bylaw was approved in August 2013.

The RM of Wilton OCP (Bylaw No. 15-2013) excludes those lands situated within the LPD and provides an overall land use strategy and policy direction to guide and inform land use and development matters within the balance of the RM. The OCP recognizes that the prevailing planning authority for lands contained within the study area are governed by the LPD Commission. Under the OCP, the future land use concept recognizes lands adjacent to the identified planning district as highway corridor and industrial land use policy areas while also recognizing lands that may be impacted by the potential Highway 16 bypass. Based on this land use concept, the OCP provides overall policy directions with respect to the nature and intent of these areas.



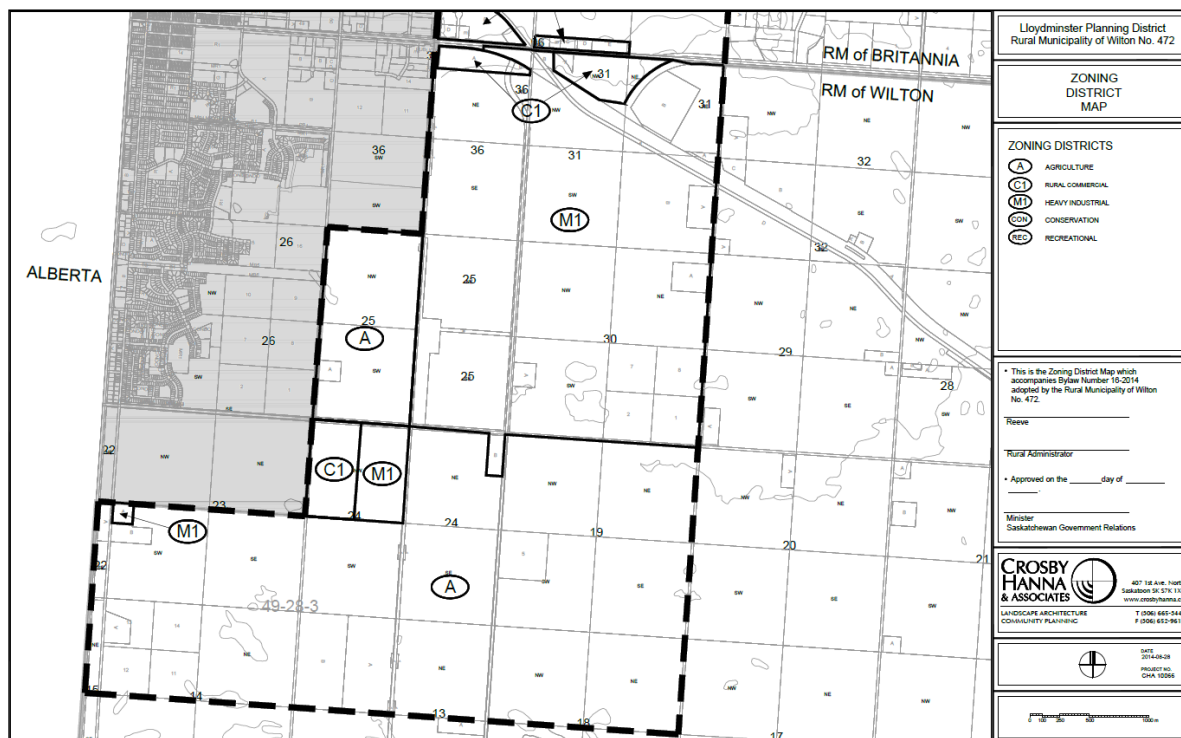
The LPD Zoning Bylaw (Bylaw No. 16-2013) provides a regulatory framework to guide land use, subdivision and development permit decisions. Similar to the OCP, the Zoning Bylaw precludes those lands situated within the LPD. Adjacent to the LPD, lands are primarily zoned Agricultural District (A). Further east and to the south, there are a few parcels of land that have been zoned Industrial District (M). The Zoning Bylaw establishes permitted and discretionary uses applicable to each of these districts and is accompanied by a range of general and specific development standards.



Lloydminster Planning District Zoning Bylaw (Bylaw No. 16-2014)

The LPD Zoning Bylaw implements the policy guidance in the LPD OCP through development regulations. The Zoning Bylaw outlines the various administrative procedures related to development permits, amendments and other development services as well as general standards for development. The Zoning Bylaw also divides the LPD area into land use districts containing individual development standards and regulations including setbacks, parcel sizes, site coverage, building heights, and parking. Each district also contains a set of permitted and/or discretionary uses. The Zoning Bylaw land use districts applicable to that portion of the RM of Wilton located in the study area are presented below.

- **Agriculture 'A' District:** Resource-based uses such as gravel pits, pipelines, and wells are permitted uses; intensive agricultural operations along with residential uses are largely discretionary.
- **Rural Commercial 'C1' District:** Provides for a range of commercial and light industrial development as permitted uses.
- **Heavy Industrial 'M1' District:** Provides for industrial and heavy industrial uses with a minimum site size of 4,000 m² (0.4 hectares or 1 acre).
- **Conservation 'CON' District:** Allows for recreational and other public uses developed in a way that protects lands in accordance with the environmental management policies of the LPD OCP and restricts development on hazard lands.
- **Recreational 'REC' District:** Facilitates the development of recreational uses such as amusement parks, tourist campgrounds, sports grounds, trails, and parks.



2.4 Land Supply Analysis

The study area has a gross area of 13,553.3 hectares (ha), which breaks down by municipality as presented in Table 17 below.

Table 17: Gross Area Breakdown of the Study Area

Municipality	Gross Area (ha)	Percent (%)
City of Lloydminster	4,343.3	32.0
- Alberta portion	2,453.6	18.1
- Saskatchewan portion	1,889.7	13.9
County of Vermilion River	5,802.7	42.8
RM of Britannia No. 502	1,408.3	10.4
RM of Wilton No. 472	1,999.0	14.7
Total Study Area	13,553.4	100.0

For analyzing the land supply within the study area by municipality, the City and the County considered two different analytical approaches.

1. **Land use planning approvals.** In general, "absorbed" land supply includes lands that have been both zoned and subdivided for development, and are therefore either already developed or shovel-ready. "Unabsorbed" land supply includes lands that are not yet both zoned and subdivided and therefore typically are not yet developed. This approach typically requires only registered parcel fabric and zoning as data sources to undertake, which is then vetted with municipal planning staff for confirmation and implementation of unique overrides or exceptions.
2. **Status of development approvals.** Under this approach, only those lands that have been significantly utilized or fully developed within zoned and subdivided areas are considered "absorbed". Therefore, recently registered lots that are not yet subject to development, as well as lots that are significantly underutilized, are considered "unabsorbed" in addition to lands that are not yet zoned and subdivided. Typically this approach requires sources of detailed data in addition to registered parcel fabric and zoning such as assessment data that confirms the development status of each registered lot, usage of aerial photography to confirm development on a lot-by-lot basis, and/or cross-reference with development permit approval records. Once completed, it is then vetted with municipal planning staff for confirmation and implementation of unique overrides or exceptions.

For this JRGS, a blend of the above two approaches was used for the City due to the presence of a number of recently registered subdivisions that were substantially undeveloped due to the sudden downturn in the economy at the outset of the JRGS project. It was therefore assumed that it would take a longer period of time, beyond a typical development lag in normal economic conditions, for the undeveloped lots to develop within these subdivisions.

To compensate for this factor, an aspect of the development approvals approach was applied, whereby recently registered subdivisions within the City were analyzed in detail using aerial photography and knowledge conveyed by City planning staff, and those subdivisions or individual lots that remained predominantly undeveloped were identified as a **transitioning** land supply. These transitioning lands, defined as absorbed under the land use planning approvals approach, were reassigned to unabsorbed akin to the methodology used in the development approvals approach.

The transitioning lands included:

- 28 industrial lots within Hill Industrial (Alberta);
- 1 commercial lot in West Commercial (Alberta);
- 62 residential lots in Parkview Estates (Alberta);
- 28 residential lots in College Park (Alberta);
- 20 residential lots in Wallacefield (Saskatchewan);
- 57 residential lots in Colonial Park (Saskatchewan);
- a portion of a commercial lot in Larson Grove (Saskatchewan);
- 2 commercial lots in Wigfield Industrial (Saskatchewan); and
- 3 industrial lots in Sask Industrial (Saskatchewan).

Within the rural portions of the study area, the development approvals approach was applied after first administering the land use approvals approach. The preliminary absorbed land supply was compared with aerial photography to identify those lots in registered subdivisions not yet developed or those that were significantly underutilized. Those lots that were observed as undeveloped or underutilized were deemed unabsorbed.

Land use assignments for absorbed lands, were first informed by registered lot designations (e.g. Lot 43PUL is deemed "public utility" and Lot 1MR is deemed "parks and open space") and existing zoning. Land uses for unabsorbed lands were based on approved outline plans and area structure plans. Where such plans are not yet in effect, land use designations in higher order planning documents, such as municipal development plans, official community plans, and intermunicipal planning documents, were applied. The land use of those remaining parcels where current land use designations were ambiguous or unknown was based on consultation with City and County planning staff, as well as the application of sound land use planning principles. Staff also suggested land use assumption overrides where necessary to reflect unique situations (e.g. zoning applied to a parcel does not actually match the use of the existing development on site). An example of a land use override involved Husky-controlled industrial land in northern Lloydminster and the RM of Wilton that were assumed absorbed as it will not be available to the general development market to capture growth. Rather, it will be held by Husky to accommodate its own future growth.

In terms of undevelopable lands, all Type IV/V Wetlands identified by Spencer in Section 4.1.3 were deemed to be environmental reserve (ER) and therefore undevelopable. ER buffers associated with these wetlands were excluded, as some are likely to be filled and developed subject to provincial approval and compensation at future planning and development approval stages. However, ER buffers of 6 metres were applied along six watercourses while a larger ER buffer of 30 metres was applied adjacent to Neale Lake.

In terms of lands constrained by oil and gas wells, land subject to setbacks can become available for the same land uses designated to the adjacent lands when the wells are abandoned and ultimately reclaimed. It is unknown, however, whether the timing of well abandonment and reclamation would occur within the horizon of this study.

For lands constrained by pipelines and other linear utilities, rights-of-way can be carried forward as encumbrances within private property at the subdivision registration stage, especially in non-residential subdivision contexts. In other situations, pipelines and other linear utilities can be removed in favour of realignment in anticipation of future subdivision, making once encumbered land available for subdivision and development. Pipelines and other linear utilities can also be decommissioned and removed, but it is uncertain at this time which if any will be decommissioned, and if so, whether it will occur within the horizon of this study. Ultimately, the developability of lands currently constrained by wells and pipelines depends on provincial legislation, operator requirements and participation, and other influences that are outside municipal control.

The results of the land supply analysis for the study area using the methodologies described above are illustrated in Map 6. Maps 7 through 10 are provided at larger scales in the following subsections, which focusing on each of the four municipalities within the study area in detail.

2.4.1 City of Lloydminster Land Supply Analysis

As mentioned above, the approach used to analyze the status of the City's land supply was a blend of the planning approvals approach and the status of development approvals approach. The City's current land base totals 4,343.3 hectares (ha) – 2,453.6 ha in Alberta and 1,889.7 ha in Saskatchewan. As presented in Table 18 and illustrated in Map 7, 576.0 ha (13.3%) of the City's total land base is unavailable or undevelopable, 249.1 ha (10.2%) of which is in Alberta and 326.9 ha (17.3%) in Saskatchewan.

Table 18: Lloydminster's Undevelopable, Unavailable and Constrained Land Supply

Land Use	Total City of Lloydminster		Alberta Portion of City		Saskatchewan Portion of City	
	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)
Gross Area	4,343.3	100.0	2,453.6	100.0	1,889.7	100.0
Environmental Reserve	3.1	0.1	3.1	0.1	0.0	0.0
Lakeland College	27.3	0.6	27.3	1.1	0.0	0.0
Lloydminster Agricultural Exhibition Association Grounds	27.6	0.6	0.0	0.0	27.6	1.5
Lloydminster Airport	195.0	4.5	195.0	7.9	0.0	0.0
Lloydminster Golf and Curling Centre	61.2	1.4	0.0	0.0	61.2	3.2
Lloydminster Sanitary Landfill	193.7	4.5	0.0	0.0	193.7	10.3
Rail	68.2	1.6	23.8	1.0	44.4	2.4
Total Undevelopable and Unavailable Lands	576.0	13.3	249.1	10.2	326.9	17.3
Gross Developable Land Supply	3,767.3	86.7	2,204.5	89.8	1,562.8	82.7
Utility Right-of-Way (Long-Term Potential Residential)	15.6	0.4	2.3	0.1	13.3	0.7
Utility Right-of-Way (Long-Term Potential Commercial)	7.4	0.2	6.8	0.3	0.6	0.0
Utility Right-of-Way (Long-Term Potential Industrial)	20.6	0.5	7.7	0.3	12.9	0.7
Well Setbacks (Long-Term Potential Residential)	74.3	1.7	2.1	0.1	72.2	3.8
Well Setbacks (Long-Term Potential Commercial)	12.7	0.3	4.9	0.2	7.8	0.4
Well Setbacks (Long-Term Potential Industrial)	22.4	0.5	10.6	0.4	11.8	0.6
Total Constrained Lands	153.0	3.5	34.5	1.4	118.5	6.3
Gross Developable and Unconstrained Land Supply	3,614.3	83.2	2,170.0	88.4	1,444.3	76.4
Gross Absorbed Land Supply (see Table 19)	2,479.7	57.1	1,750.1	71.3	729.6	38.6
Minimum Gross Unabsorbed Land Supply (see Table 19)	1,134.6	26.1	419.9	17.1	714.7	37.8
Maximum Gross Unabsorbed Land Supply (see Table 19)	1,287.6	—	454.4	—	833.2	—

After deducting these lands, the City's resulting gross developable land supply is 3,767.3 ha (2,204.5 ha in Alberta and 1,562.8 ha in Saskatchewan).

Within this gross developable land supply however, there are constrained lands resulting from utility rights-of-way (pipelines, power transmission lines, etc.), oil and gas wells, and their associated setbacks within areas that may or may not be developed for residential, commercial or industrial use. Overall, 153.0 ha of these lands within the City – 34.5 ha in Alberta and 118.5 ha in Saskatchewan – are identified as constrained.

If these lands are subtracted from the City's gross developable land supply based on an assumption that they would not be developed, the total gross developable and unconstrained land supply is reduced to 3,614.3 ha (2,170.0 ha in Alberta and 1,444.3 ha in Saskatchewan).

As presented in Table 19, 68.6% or 2,479.7 ha of the City's gross developable and unconstrained land supply is absorbed by core land uses (residential, commercial, industrial, and urban services) and associated overhead land uses (circulation, parks and open space, and public utilities). By deducting the absorbed lands, the City has a minimum unabsorbed land supply of 1,134.6 ha, which increases to 1,287.6 ha if it is assumed that all lands constrained by utility rights-of-way, wells, and their associated setbacks lands are assumed to be developable in the future.

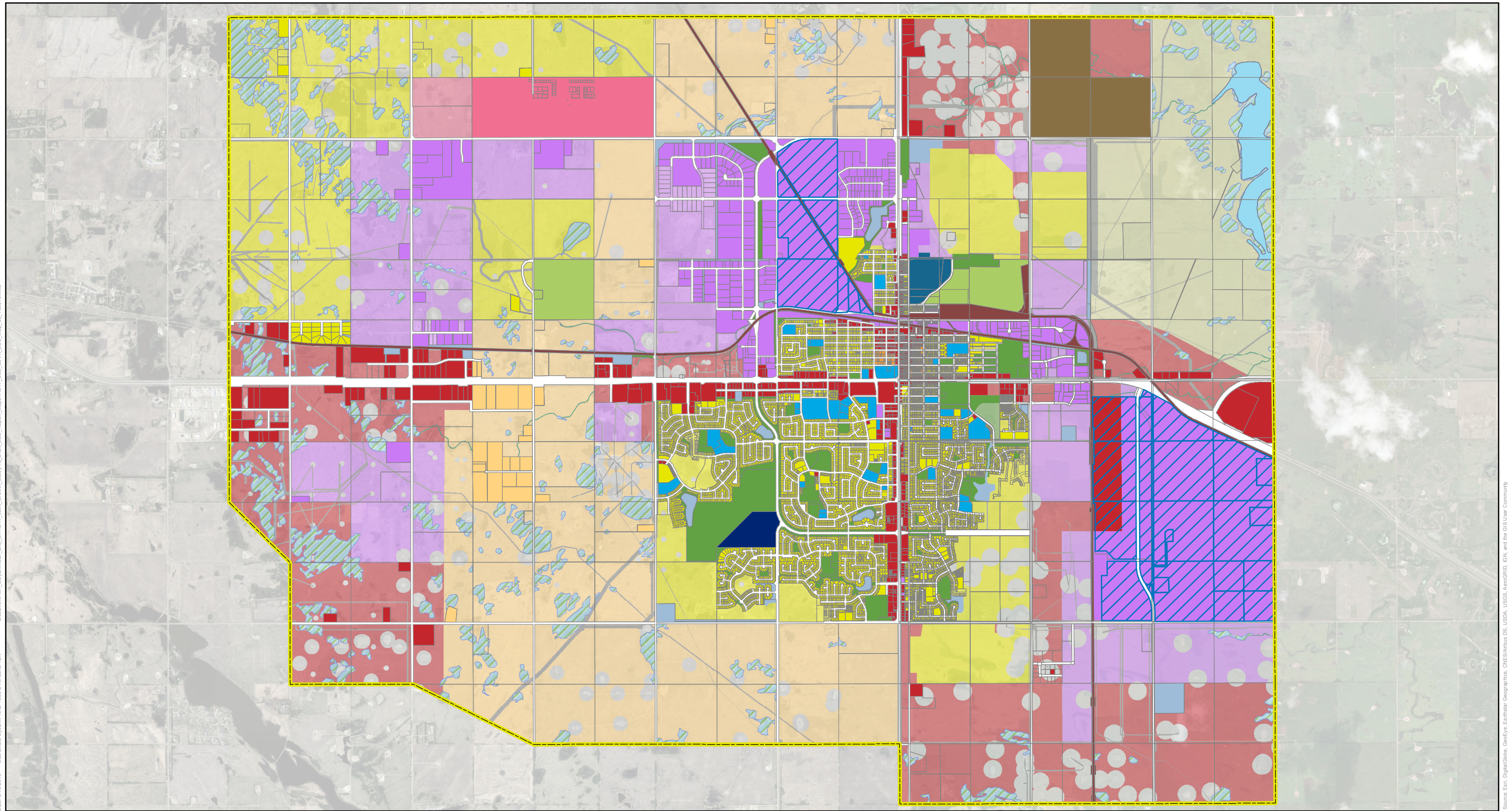
Table 19: Lloydminster's Breakdown of Gross Absorbed Land Supply

Land Use	Total City of Lloydminster		Alberta Portion of City		Saskatchewan Portion of City	
	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)
Gross Developable and Unconstrained Land Supply (see Table 18)	3,614.3	100.0	2,170.0	100.0	1,444.3	100.0
Residential	643.0	17.8	431.4	19.9	211.6	14.6
Commercial	196.2	5.4	142.8	6.6	53.4	3.7
Industrial	603.5	16.7	504.8	23.3	98.6	6.8
Urban Services	78.7	2.2	53.9	2.5	24.8	1.7
Total Net Developable Core Land Uses	1,521.3	42.1	1,133.0	52.2	388.3	26.9
Circulation	572.1	15.8	357.4	16.5	214.7	14.9
Parks and Open Space	289.3	8.0	195.7	9.0	93.6	6.5
Public Utilities	97.0	2.7	64.1	3.0	32.9	2.3
Total Net Developable Overhead Land Uses	958.3	26.5	617.1	28.4	341.2	23.6
Gross Absorbed Land Supply	2,479.7	68.6	1,750.1	80.7	729.6	50.5
Minimum Gross Unabsorbed Land Supply	1,134.6	31.4	419.9	19.3	714.7	49.5
Total Constrained Lands (see Table 18)	153.0	—	34.5	—	118.5	—
Maximum Gross Unabsorbed Land Supply	1,287.6	—	454.4	—	833.2	—

In the Alberta portion of the City, 80.7% or 1,750.1 ha of the land supply is absorbed by core and overhead land uses. The unabsorbed land supply therefore ranges from a minimum of 419.9 ha to a maximum of 454.4 ha.

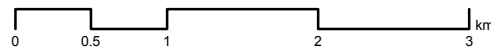
In Saskatchewan, 50.5% or 729.6 ha of the City's land supply is absorbed by core and overhead land uses. Its unabsorbed land supply ranges more significantly from a minimum of 714.7 ha to a maximum of 833.2 ha due to a higher occurrence of oil and gas wells.

Date: 5/16/2019 Coordinate System: NAD 1983 UTM Zone 12N Document: M:\Lloydminster_City_2014517_Joint_Growth_Study\16_Draft_JGS_Report_Maps\14617_Col_CoVR_JGS_Map_06_190516.mxd



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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1:50,000

- Joint Growth Study Area
- Parcel
- Unavailable Husky Lands †

Absorbed Land

- Residential
- Mixed Use
- Commercial
- Industrial
- Urban Services

- Public Utility
- Parks and Open Space
- Urban Expansion
- Airport
- Road
- Rail

- Exhibition Grounds
- Lakeland College
- Landfill
- Golf Course
- Neale Lake

Unabsorbed Land

- Agriculture
- Residential
- Commercial

- Industrial
- Public Utility
- Parks and Open Space
- Urban Expansion

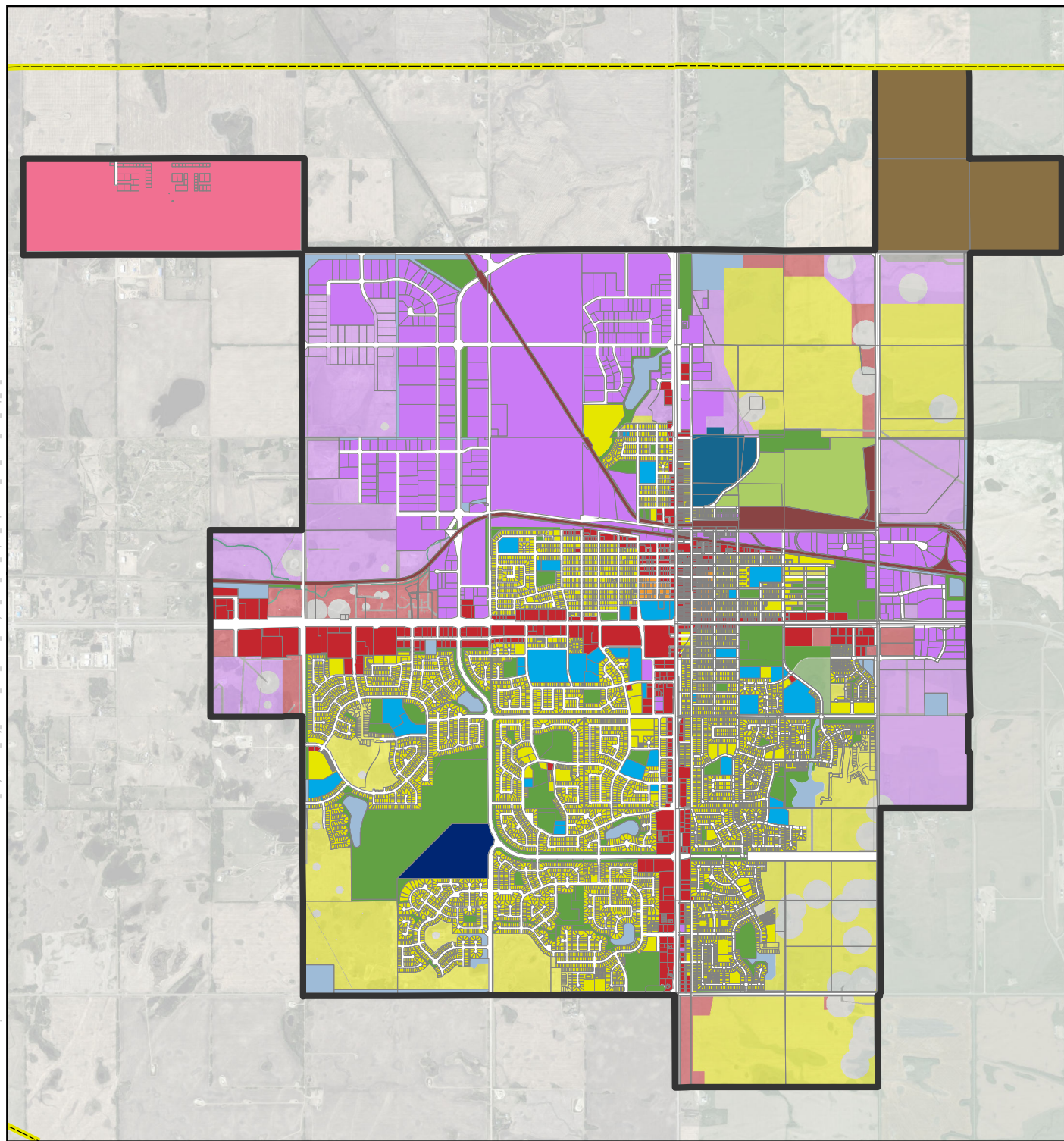
- Airport
- Utility Right-of-Way
- Well Setbacks
- Watercourse Buffer
- Wetland



LLOYDMINSTER County of VERMILION River

JOINT REGIONAL GROWTH STUDY

MAP 6: CONSOLIDATED LAND SUPPLY ANALYSIS



1:50,000

Joint Growth Study Area

City Boundary

Absorbed Land

- Residential
- Mixed Use
- Commercial
- Industrial
- Urban Services
- Public Utility

Parks and Open Space

- Airport
- Road
- Rail
- Exhibition Grounds
- Lakeland College
- Landfill
- Golf Course

Unabsorbed Land

- Residential
- Commercial
- Industrial
- Parks and Open Space
- Utility Right-of-Way
- Well Setbacks
- Watercourse Buffer

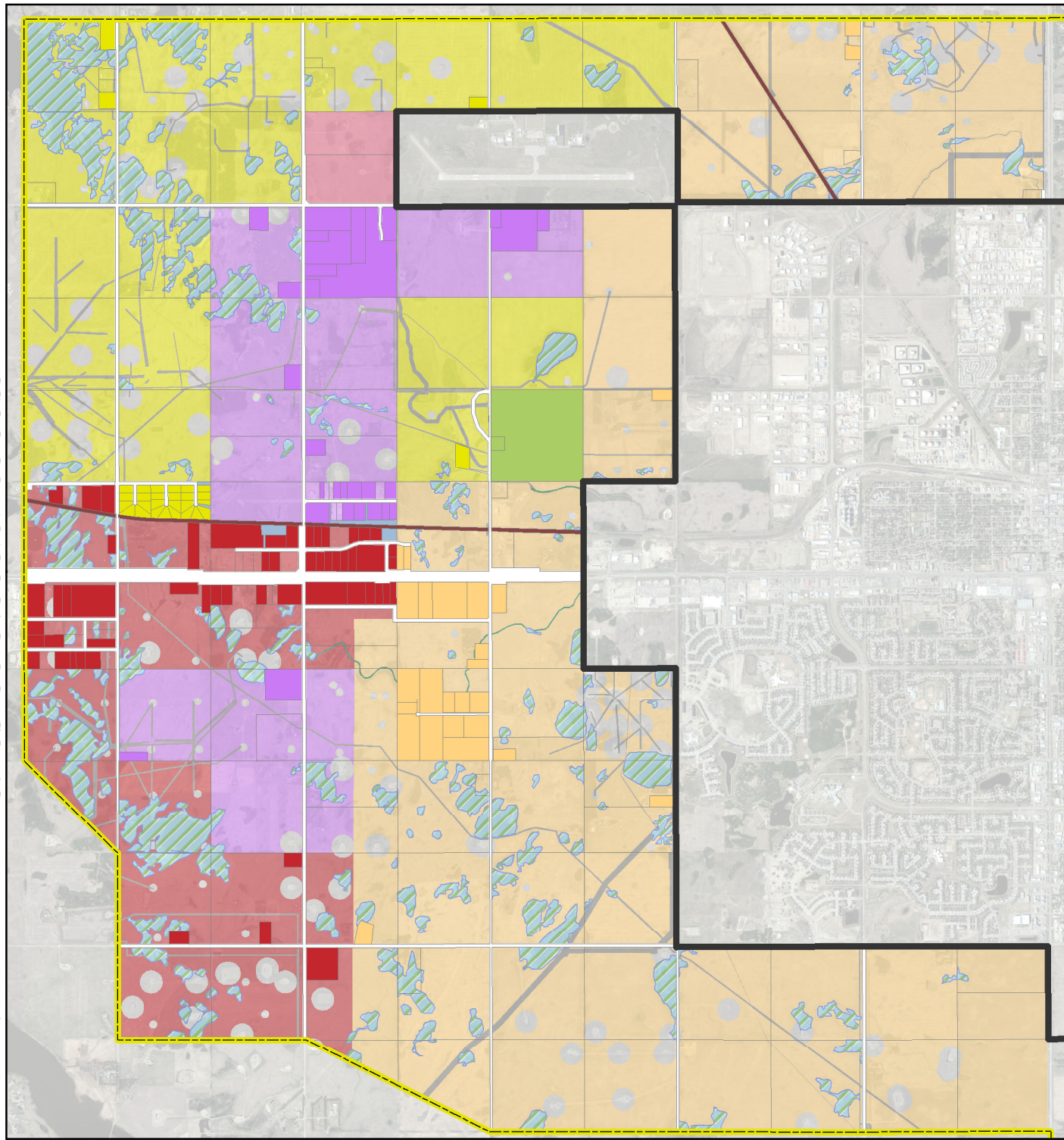


JOINT REGIONAL GROWTH STUDY

MAP 7: CITY LAND SUPPLY ANALYSIS

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1:50,000

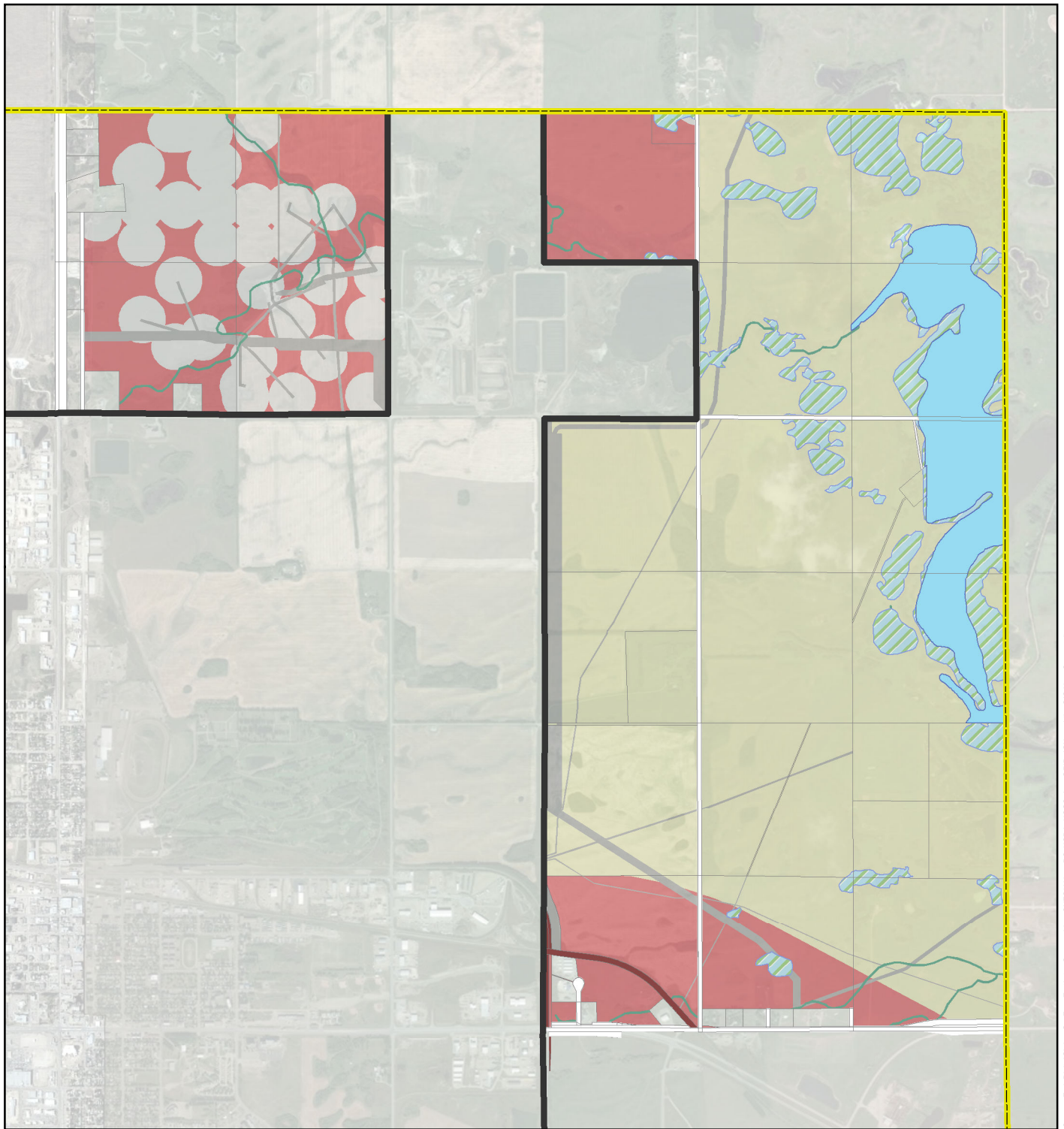
- Joint Growth Study Area
- City Boundary
- Absorbed Land**
 - Residential
 - Commercial
 - Industrial

- Public Utility
- Parks and Open Space
- Urban Expansion
- Road
- Rail
- Golf Course
- Airport
- Utility Right-of-Way
- Well Setbacks
- Watercourse Buffer
- Wetland
- Unabsorbed Land**
 - Residential
 - Commercial



JOINT REGIONAL GROWTH STUDY

MAP 8: COUNTY LAND SUPPLY ANALYSIS



1:30,000

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Joint Growth Study Area
 City Boundary

Absorbed Land

- Road
- Rail
- Neale Lake

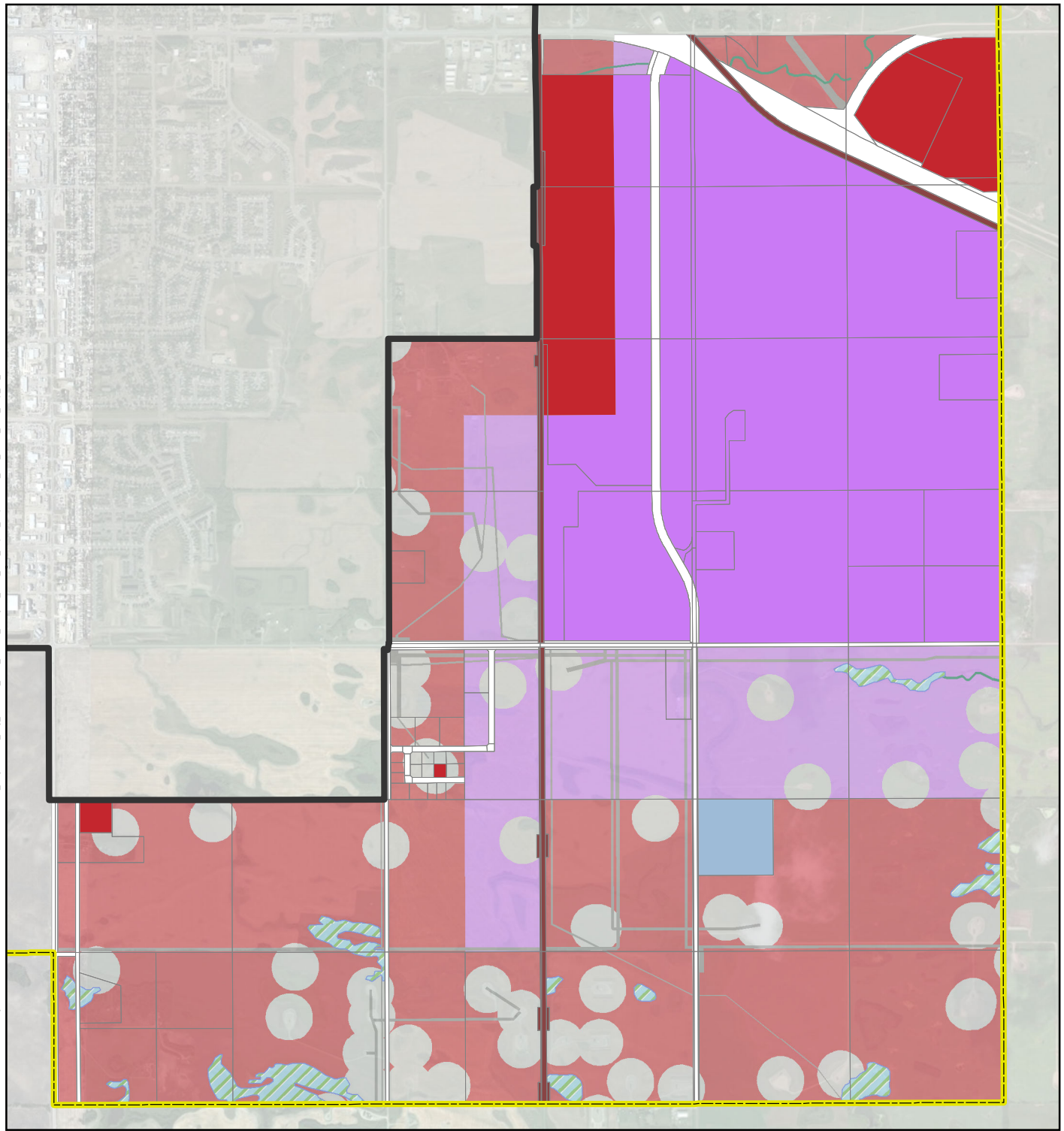
Unabsorbed Land

- Agriculture
- Commercial
- Utility Right-of-Way
- Well Setbacks
- Watercourse Buffer
- Wetland



JOINT REGIONAL GROWTH STUDY

MAP 9: RURAL MUNICIPALITY
OF BRITANNIA NO. 502
LAND SUPPLY ANALYSIS



1:30,000



Joint Growth Study Area



City Boundary

Absorbed Land

- Commercial
- Industrial
- Public Utility
- Road
- Rail

Unabsorbed Land

- Commercial
- Industrial
- Utility Right-of-Way
- Well Setbacks
- Watercourse Buffer
- Wetland



LLOYDMINSTER



**County of
VERMILION River**

JOINT REGIONAL GROWTH STUDY

**MAP 10: RURAL MUNICIPALITY
OF WILTON NO. 472
LAND SUPPLY ANALYSIS**



As presented in Table 20, the City's total gross unabsorbed residential land supply ranges from a minimum 603.4 ha to a maximum 693.3 ha. In the Alberta portion of the City, the gross unabsorbed residential land supply ranges from 151.4 ha to 155.9 ha, or approximately 2.5 quarter sections. In Saskatchewan, the City's gross unabsorbed residential land supply ranges from 451.9 ha to 537.3 ha or 7 to 8.5 quarter sections.

In terms of non-residential:

- the City's total gross unabsorbed commercial land supply ranges from a minimum 89.3 ha to a maximum 109.4 ha, which breaks down as
 - 45.0 ha to 56.7 ha in Alberta (less than one quarter section), and
 - 44.3 ha to 52.7 ha in Saskatchewan (less than one quarter section); and
- the City's total gross unabsorbed industrial land supply ranges from a minimum 433.2 ha to a maximum 476.1 ha, which breaks down as
 - 223.5 ha to 241.8 ha in Alberta (3.5 to 3.8 quarter sections), and
 - 209.7 ha to 234.4 ha in Saskatchewan (3.4 to 3.7 quarter sections).

Table 20: Lloydminster's Breakdown of Gross Unabsorbed Land Supply

Land Use	Total City of Lloydminster		Alberta Portion of City		Saskatchewan Portion of City	
	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)
Minimum Gross Unabsorbed Land Supply (see Table 19)	1,134.6	100.0	419.9	100.0	714.7	100.0
Residential	603.4	53.2	151.5	36.1	451.9	63.2
Commercial	89.3	7.9	45.0	10.7	44.3	6.2
Industrial	433.2	38.2	223.5	53.2	209.7	29.3
Parks and Open Space	8.9	0.8	0.0	0.0	8.9	1.2
Total Constrained Lands (see Table 18)	153.0	—	34.5	—	118.5	—
Residential + Constrained Residential	693.3	—	155.9	—	537.3	—
Commercial + Constrained Commercial	109.4	—	56.7	—	52.7	—
Industrial + Constrained Industrial	476.1	—	241.8	—	234.4	—
Parks and Open Space	8.9	—	0.0	—	8.9	—
Maximum Gross Unabsorbed Land Supply (see Table 19)	1,287.6	—	454.4	—	833.2	—

Table 21 converts the gross unabsorbed land supply presented in Table 20 to net unabsorbed land supply. By subtracting 35%³² of the gross unabsorbed residential lands to account for developable overheads, the net amount of land available in the City for residential development ranges from 392.2 ha to 450.6 ha (98.5 ha to 101.4 ha in Alberta and 293.7 to 349.3 ha in Saskatchewan). By subtracting 30%³³ of the gross unabsorbed commercial and industrial lands for developable overheads, the net amount of available commercial and industrial land ranges from 62.5 ha to 76.6 ha and 303.2 ha to 333.3 ha respectively. On the Alberta side of the City, this results in a range of 31.5 ha and 39.7 ha of net commercial land, and a range of 156.4 ha and 169.2 ha of net industrial land. In Saskatchewan, this amounts to a range of 31.0 ha to 36.9 ha of net commercial land and a range of 146.8 ha to 164.1 ha of net industrial land.

Table 21: Lloydminster's Breakdown of Net Unabsorbed Land Supply

Land Use	Total City of Lloydminster		Alberta Portion of City		Saskatchewan Portion of City	
	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)	Area (ha)	Pct. (%)
Minimum Net Unabsorbed Land Supply	757.9	100.0	286.4	100.0	471.5	100.0
Residential	392.2	51.7	98.5	34.4	293.7	62.3
Commercial	62.5	8.2	31.5	11.0	31.0	6.6
Industrial	303.2	40.0	156.4	54.6	146.8	31.1
Total Net Constrained Lands	102.6	—	23.9	—	78.7	—
Residential + Constrained Residential	450.6	—	101.4	—	349.3	—
Commercial + Constrained Commercial	76.6	—	39.7	—	36.9	—
Industrial + Constrained Industrial	333.3	—	169.2	—	164.1	—
Maximum Net Unabsorbed Land Supply	860.5	—	310.3	—	550.2	—

The amount of land remaining for institutional, whether gross or net, is not provided in Table 20 or Table 21 as lands for institutional use are not often made available until the subdivision stage. As institutional land uses can be compatible with and located within all of the three other core land uses, the City's residential, commercial and industrial land supplies can be reasonably expected to accommodate any required institutional land over time for such uses as fire halls, community centres, schools and churches.

³² This 35% deduction from gross residential assumes 10% for parks and open space (municipal reserve), 5% for public utilities and 20% for circulation (local and collector roads).

³³ This 30% deduction from gross commercial and industrial assumes 10% for parks and open space, 5% for public utilities and 15% for circulation.

2.4.2 County of Vermilion River Land Supply Analysis

The County of Vermilion River's land base within its portion of the study area amounts to 5,802.7 hectares (ha). As presented in Table 22 and illustrated in Map 8, 640.5 ha (11.1%) of the County's total land base is unavailable or undevelopable. After deducting these lands, the resulting gross developable land supply for the entirety of the County's portion of the study area is 5,162.2 ha.

Within this gross developable land supply however, there are constrained lands resulting from utility rights-of-way (pipelines, power transmission lines, etc.), oil and gas wells, and their associated setbacks within areas that may or may not be developed for residential, commercial or industrial use. Overall, 462.1 ha of these lands are identified as constrained. If these lands are subtracted from the County's gross developable land supply based on an assumption that they would not be developed, the total gross developable and unconstrained land supply is reduced to 4,700.1 ha.

Table 22: Vermilion River's Undevelopable, Unavailable and Constrained Land Supply

Land Use	Total County of Vermilion River	
	Area (ha)	Pct. (%)
Gross Area	5,802.7	100.0
Environmental Reserve	491.6	8.5
Future Lloydminster Airport Expansion	63.8	1.1
Rolling Green Fairways Golf Course and RV Park	64.8	1.1
Rail	20.4	0.4
Total Undevelopable and Unavailable Lands	640.5	11.0
Gross Developable Land Supply	5,162.2	89.0
Utility Right-of-Way (Long-Term Potential Residential)	57.9	1.0
Utility Right-of-Way (Long-Term Potential Commercial)	22.1	0.4
Utility Right-of-Way (Long-Term Potential Industrial)	20.2	0.3
Utility Right-of-Way (Long-Term Potential Urban Expansion)	71.6	1.2
Well Setbacks (Long-Term Potential Residential)	81.8	1.4
Well Setbacks (Long-Term Potential Commercial)	54.4	0.9
Well Setbacks (Long-Term Potential Industrial)	32.6	0.6
Well Setbacks (Long-Term Potential Urban Expansion)	121.5	2.1
Total Constrained Lands	462.1	8.0
Gross Developable and Unconstrained Land Supply	4,700.1	81.0
Gross Absorbed Land Supply (see Table 23)	589.5	10.2
Minimum Gross Unabsorbed Land Supply (see Table 23)	4,110.6	70.8
Maximum Gross Unabsorbed Land Supply (see Table 23)	4,572.7	—

As presented in Table 23, 12.5% or 589.5 ha of the County's gross developable and unconstrained land supply is absorbed for its currently planned purposes. By deducting the absorbed lands, the County has a minimum unabsorbed land supply 4,110.6 ha, which increases to a maximum of 4,572.7 ha if it is assumed that all lands constrained by utility rights-of-way, wells, and their associated setbacks lands would be fully developable at some point in the future.

Table 23: Vermilion River's Breakdown of Gross Absorbed Land Supply

Land Use	Total County of Vermilion River	
	Area (ha)	Pct. (%)
Gross Developable and Unconstrained Land Supply (see Table 22)	4,700.1	100.0
Residential	30.8	0.7
Commercial	132.9	2.8
Industrial	121.5	2.6
Urban Expansion	102.1	2.2
Total Net Developable Core Land Uses	387.4	8.2
Circulation	195.4	4.2
Parks and Open Space	0.1	0.0
Public Utilities	6.6	0.1
Total Net Developable Overhead Land Uses	202.1	4.3
Gross Absorbed Land Supply	589.5	12.5
Minimum Gross Unabsorbed Land Supply	4,110.6	87.5
Total Constrained Lands (see Table 22)	462.1	—
Maximum Gross Unabsorbed Land Supply	4,572.7	—

As presented in Table 24, the County's total gross unabsorbed residential land supply ranges from a minimum 915.2 ha to a maximum 1,055.0 ha. In terms of non-residential:

- the County's total gross unabsorbed commercial land supply ranges from a minimum 507.3 ha to a maximum 583.8 ha; and
- the County's total gross unabsorbed industrial land supply ranges from a minimum 609.0 ha to a maximum 661.8 ha.

Within the urban expansion areas identified in the IDP, the additional gross unabsorbed land supply within the County's portion of the study area ranges from 2,079.1 ha to 2,272.1 ha, of which 69% is assumed to be residential and 31% is assumed to be non-residential.³⁴

³⁴ Assumption is based on the IDP designating an estimated 12.5 quarters of the 40.25 quarters of urban expansion for non-residential use (31%) and the remaining 27.75 quarters for residential use (69%).

Table 24: Vermilion River's Breakdown of Gross Unabsorbed Land Supply

Land Use	Total County of Vermilion River	
	Area (ha)	Pct. (%)
Minimum Gross Unabsorbed Land Supply (see Table 23)	4,110.6	100.0
Residential	915.2	22.3
Commercial	507.3	12.3
Industrial	609.0	14.8
Urban Expansion	2,079.1	50.6
Total Constrained Lands (see Table 22)	462.1	—
Residential + Constrained Residential	1,055.0	—
Commercial + Constrained Commercial	583.8	—
Industrial + Constrained Industrial	661.8	—
Urban Expansion + Constrained Urban Expansion	2,272.1	—
Maximum Gross Unabsorbed Land Supply (see Table 23)	4,572.7	—

Table 25 converts the gross unabsorbed land supply in Table 24 to net unabsorbed land supply. By subtracting an assumed 30%³⁵ of the gross unabsorbed lands for developable overheads, the net amounts of land available in the County's portion of the study area range from:

- 640.7 ha to 738.5 ha for residential development;
- 355.1 ha to 408.7 ha for commercial development; and
- 426.3 ha to 463.3 ha for industrial development.

By subtracting 35%³⁶ of the estimated 69% residential portion of the gross unabsorbed urban expansion lands for developable overheads and 30%³⁷ of the estimated 31% non-residential portion of the same for developable overheads, the net amount of unabsorbed land available for urban expansion within the County's portion of the study area ranges from 1,383.6 ha to 1,512.1 ha.

³⁵ This 30% deduction from gross residential, commercial and industrial assumes 10% for parks and open space (municipal reserve), 5% for public utilities and 15% for circulation (local and collector roads).

³⁶ This 35% deduction from the residential portion of gross urban expansion assumes 10% for parks and open space, 5% for public utilities and 20% for circulation.

³⁷ This 30% deduction from the non-residential portion of gross urban expansion assumes 10% for parks and open space, 5% for public utilities and 15% for circulation.

Table 25: Vermilion River's Breakdown of Net Unabsorbed Land Supply

Land Use	Total County of Vermilion River	
	Area (ha)	Pct. (%)
Minimum Net Unabsorbed Land Supply	2,805.7	100.0
Residential	640.7	22.8
Commercial	355.1	12.7
Industrial	426.3	15.2
Urban Expansion	1,383.6	49.3
Total Net Constrained Lands	317.7	—
Residential + Constrained Residential	738.5	—
Commercial + Constrained Commercial	408.7	—
Industrial + Constrained Industrial	463.3	—
Urban Expansion + Constrained Urban Expansion	1,512.1	—
Maximum Net Unabsorbed Land Supply	3,122.5	—

It should be noted that no future institutional land uses are anticipated within the County's portion of the study area. Rather, it is assumed that any institutional land use needs to support development within the County's portion of the study area will be located within the City.

2.4.3 Rural Municipality of Britannia's Land Supply Analysis

The RM of Britannia's land base within its portion of the study area amounts to 1,408.3 hectares (ha). As presented in Table 26 and illustrated in Map 9, 182.1 ha (12.9%) of Britannia's land base is unavailable or undevelopable. After deducting these lands, the resulting gross developable land supply for the entirety of Britannia's portion of the study area is 1,226.1 ha.

Within this gross developable land supply however, there are constrained lands resulting from utility rights-of-way (pipelines, power transmission lines, etc.), oil and gas wells, and their associated setbacks within areas that could otherwise be developed. Overall, 185.4 ha of lands within Britannia are identified as constrained. If these lands are subtracted from Britannia's gross developable land supply based on an assumption they would not be developed, its total gross developable and unconstrained land supply is reduced to 1,040.8 ha.

Table 26: RM of Britannia's Undevelopable, Unavailable and Constrained Land Supply

Land Use	Total RM of Britannia No. 502	
	Area (ha)	Pct. (%)
Gross Area	1,408.3	100.0
Environmental Reserve	91.6	6.5
Neale Lake	86.5	6.1
Rail	4.1	0.3
Total Undevelopable and Unavailable Lands	182.1	12.9
Gross Developable Land Supply	1,226.1	87.1
Utility Right-of-Way (Long-Term Potential Agriculture)	32.7	2.3
Utility Right-of-Way (Long-Term Potential Residential)	0.0	0.0
Utility Right-of-Way (Long-Term Potential Commercial)	26.5	1.9
Utility Right-of-Way (Long-Term Potential Industrial)	0.0	0.0
Well Setbacks (Long-Term Potential Agriculture)	0.0	0.0
Well Setbacks (Long-Term Potential Residential)	0.0	0.0
Well Setbacks (Long-Term Potential Commercial)	126.2	9.0
Well Setbacks (Long-Term Potential Industrial)	0.0	0.0
Total Constrained Lands	185.4	13.2
Gross Developable and Unconstrained Land Supply	1,040.8	73.9
Gross Absorbed Land Supply (see Table 27)	795.3	56.5
Minimum Gross Unabsorbed Land Supply (see Table 27)	245.4	17.4
Maximum Gross Unabsorbed Land Supply (see Table 27)	430.8	—

As presented in Table 27, 76.4% or 795.3 ha of Britannia's gross developable and unconstrained land supply is absorbed for its currently planned purposes.³⁸ By deducting the absorbed lands, Britannia has a minimum unabsorbed land supply 245.4 ha, which increases to 430.8 ha if it is assumed that all lands constrained by utility rights-of-way, wells, and their associated setbacks lands are fully developable at some point in the future.

³⁸ This is a much higher percentage in comparison with the County of Vermilion River as the RM of Britannia explicitly designates nearly 70% of its lands for agricultural use.

Table 27: RM of Britannia's Breakdown of Gross Absorbed Land Supply

Land Use	Total RM of Britannia No. 502	
	Area (ha)	Pct. (%)
Gross Developable and Unconstrained Land Supply (see Table 26)	1,040.8	100.0
Agriculture	717.0	68.9
Residential	0.0	0.0
Commercial	37.9	3.6
Industrial	0.0	0.0
Total Net Developable Core Land Uses	754.9	72.5
Circulation	40.4	3.9
Parks and Open Space	0.0	0.0
Public Utilities	0.0	0.0
Total Net Developable Overhead Land Uses	40.4	3.9
Gross Absorbed Land Supply	795.3	76.4
Minimum Gross Unabsorbed Land Supply	245.4	23.6
Total Constrained Lands (see Table 26)	185.4	—
Maximum Gross Unabsorbed Land Supply	430.8	—

As presented in Table 28, Britannia's total gross unabsorbed commercial land supply ranges from 245.4 ha to 398.1 ha. In terms of agriculture, Britannia has 32.7 ha of constrained lands within its portion of the study area.

Table 28: RM of Britannia's Breakdown of Gross Unabsorbed Land Supply

Land Use	Total RM of Britannia No. 502	
	Area (ha)	Pct. (%)
Minimum Gross Unabsorbed Land Supply (see Table 27)	245.4	100.0
Residential	0.0	0.0
Commercial	245.4	100.0
Industrial	0.0	0.0
Total Constrained Lands (see Table 26)	185.4	—
Constrained Agriculture	32.7	—
Residential + Constrained Residential	0.0	—
Commercial + Constrained Commercial	398.1	—
Industrial + Constrained Industrial	0.0	—
Maximum Gross Unabsorbed Land Supply (see Table 27)	430.8	—

Table 29 converts the gross unabsorbed land supply in Table 28 to net unabsorbed land supply. By subtracting an assumed 30%³⁹ of the gross unabsorbed lands for developable overheads, the net amount of commercial land available in Britannia's portion of the study area ranges from 171.8 ha to 278.7 ha.

Table 29: RM of Britannia's Breakdown of Net Unabsorbed Land Supply

Land Use	Total RM of Britannia No. 502	
	Area (ha)	Pct. (%)
Minimum Net Unabsorbed Land Supply	171.8	100.0
Commercial	0.0	0.0
Industrial	171.8	100.0
Residential	0.0	0.0
Total Net Constrained Lands	139.6	—
Constrained Agriculture	32.7	—
Residential + Constrained Residential	0.0	—
Commercial + Constrained Commercial	0.0	—
Industrial + Constrained Industrial	278.7	—
Maximum Net Unabsorbed Land Supply	311.4	—

It should be noted that no future institutional land uses are anticipated within Britannia's portion of the study area. Rather, it is assumed that any institutional land use needs to support development within Britannia's portion of the study area will be located within the City.

2.4.4 Rural Municipality of Wilton's Land Supply Analysis

The RM of Wilton's land base within its portion of the study area amounts to 1,999.0 hectares (ha). As presented in Table 30 and illustrated in Map 10, 58.9 ha (2.9%) of the RM of Wilton's land base is unavailable or undevelopable.

After deducting these lands, the resulting gross developable land supply for the entirety of Wilton's portion of the study area is 1,940.2 ha.

Within this gross developable land supply however, there are constrained lands resulting from utility rights-of-way (pipelines, power transmission lines, etc.), oil and gas wells, and their associated setbacks within areas that could otherwise be developed. Overall, 240.6 ha of lands within Wilton are identified as constrained. If these lands are subtracted from Wilton's gross developable land supply based on an assumption they would not be developed, its total gross developable and unconstrained land supply is reduced to 1,699.5 ha.

³⁹ This 30% deduction from gross residential, commercial and industrial assumes 10% for parks and open space (municipal reserve), 5% for public utilities and 15% for circulation (local and collector roads).

Table 30: RM of Wilton's Undevelopable, Unavailable and Constrained Land Supply

Land Use	Total RM of Wilton No. 472	
	Area (ha)	Pct. (%)
Gross Area	1,999.0	100.0
Environmental Reserve	33.4	1.7
Rail	25.4	1.3
Total Undevelopable and Unavailable Lands	58.9	2.9
Gross Developable Land Supply	1,940.2	97.1
Utility Right-of-Way (Long-Term Potential Residential)	0.0	0.0
Utility Right-of-Way (Long-Term Potential Commercial)	25.7	1.3
Utility Right-of-Way (Long-Term Potential Industrial)	13.4	0.7
Well Setbacks (Long-Term Potential Residential)	0.0	0.0
Well Setbacks (Long-Term Potential Commercial)	152.6	7.6
Well Setbacks (Long-Term Potential Industrial)	48.9	2.4
Total Constrained Lands	240.6	12.0
Gross Developable and Unconstrained Land Supply	1,699.5	85.0
Gross Absorbed Land Supply (see Table 31)	790.1	39.5
Minimum Gross Unabsorbed Land Supply (see Table 31)	909.4	45.5
Maximum Gross Unabsorbed Land Supply (see Table 31)	1,150.0	—

As presented in Table 31, 46.5% or 790.1 ha of Wilton's gross developable and unconstrained land supply is absorbed for its currently planned purposes. By deducting the absorbed lands, Wilton has a minimum unabsorbed land supply of 909.4 ha, which increases to 1,150.0 ha if it is assumed that all lands constrained by utility rights-of-way, wells, and their associated setbacks lands are fully developable at some point in the future.

Table 31: RM of Wilton's Breakdown of Gross Absorbed Land Supply

Land Use	Total RM of Wilton No. 472	
	Area (ha)	Pct. (%)
Gross Developable and Unconstrained Land Supply (see Table 30)	1,699.5	100.0
Residential	0.0	0.0
Commercial	115.5	6.8
Industrial	571.5	33.6
Total Net Developable Core Land Uses	687.0	40.4
Circulation	87.2	5.1
Parks and Open Space	0.0	0.0
Public Utilities	15.9	0.9
Total Net Developable Overhead Land Uses	103.2	6.1
Gross Absorbed Land Supply	790.1	46.5
Minimum Gross Unabsorbed Land Supply	909.4	53.5
Total Constrained Lands (see Table 30)	240.6	—
Maximum Gross Unabsorbed Land Supply	1,150.0	—

As presented in Table 32, Wilton's total gross unabsorbed commercial land supply ranges from 671.7 ha to 850.1 ha. In terms of industrial land, Wilton has between 237.7 ha and 299.9 ha of gross unabsorbed land supply in the study area.

Table 32: RM of Wilton's Breakdown of Gross Unabsorbed Land Supply

Land Use	Total RM of Wilton No. 472	
	Area (ha)	Pct. (%)
Minimum Gross Unabsorbed Land Supply (see Table 31)	909.4	100.0
Residential	0.0	0.0
Commercial	671.7	73.9
Industrial	237.7	26.1
Total Constrained Lands (see Table 30)	240.6	—
Residential + Constrained Residential	0.0	—
Commercial + Constrained Commercial	850.1	—
Industrial + Constrained Industrial	299.9	—
Maximum Gross Unabsorbed Land Supply (see Table 31)	1,150.0	—

Table 33 converts the gross unabsorbed land supply in Table 32 to net unabsorbed land supply. By subtracting an assumed 30%⁴⁰ of the gross unabsorbed lands for developable overheads, the net amount of commercial land available in Wilton's portion of the study area ranges from 470.2 ha to 595.1 ha, while the net amount of industrial land available is between 166.4 ha and 209.9 ha.

Table 33: RM of Wilton's Breakdown of Net Unabsorbed Land Supply

Land Use	Total RM of Wilton No. 472	
	Area (ha)	Pct. (%)
Minimum Net Unabsorbed Land Supply	636.6	100.0
Residential	0.0	0.0
Commercial	470.2	73.9
Industrial	166.4	26.1
Total Net Constrained Lands	168.4	—
Residential + Constrained Residential	0.0	—
Commercial + Constrained Commercial	595.1	—
Industrial + Constrained Industrial	209.9	—
Maximum Net Unabsorbed Land Supply	805.0	—

It should be noted that no future institutional land uses are anticipated within Wilton's portion of the study area. Rather, it is assumed that any institutional land use needs to support development within Wilton's portion of the study area will be located within the City.

⁴⁰ This 30% deduction from gross residential, commercial and industrial assumes 10% for parks and open space (municipal reserve), 5% for public utilities and 15% for circulation (local and collector roads).

3.0 Growth Forecasts

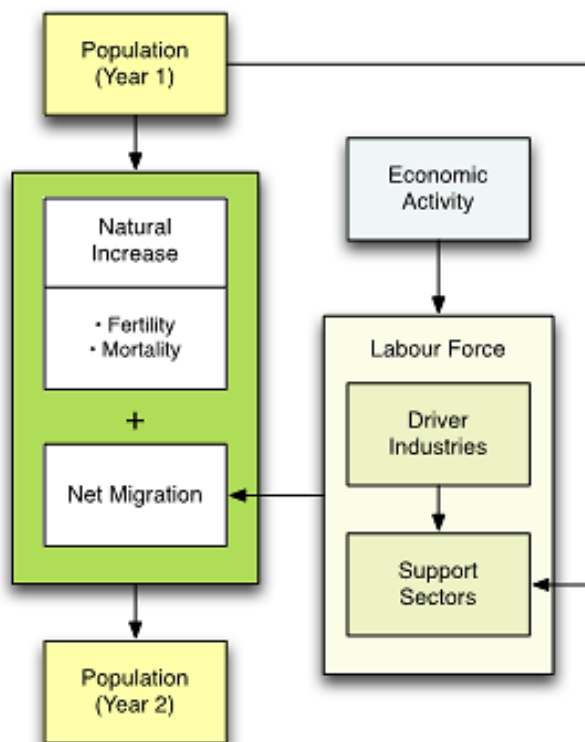
3.1 Projections Methodology and Assumptions

As part of the JRGS project, a comprehensive set of population and employment forecasts were generated. The purpose of this section is to provide an overview of the evolution of these forecasts, varying assumptions under the forecast scenarios, outcomes and the identification of a preferred growth forecast and the corresponding assumptions used as the starting point in establishing gross developable land requirements over the study horizon.

At the project outset, Applications Management Consulting Ltd. (Applications) was engaged to complete the modelling of population and employment projections over the initial 30-year study horizon of **2015 to 2045**. Population and employment projections were developed using Applications' population and employment forecasting model. The process for completing this initial growth scenario forecast (population and employment) for the study area involved the following:

- A short, medium and long-term economic forecast was developed for the study area. These forecasts projected gross domestic product (GDP) by two-digit North American Industry Classification System (NAICS) industry classifications allowing for comparison with available projections of the provincial economy.
- Industry groups were divided into 'driver' industries, or industries that lead economic growth (e.g. energy, agriculture, manufacturing, etc.) and support industries (those related to providing goods and services to the population in the trading area of the City).
- Employment projections were developed based on relative assumptions to these driver and support industries for each two-digit NAICS industry classification based on the number of jobs per unit of industry output (Statistics Canada).
- The population forecast was based on a cohort survival projection of population and advanced with net migration modelling based on employment projections. Using the employment forecasts defined above, the labour force and associated population growth required to support the economic forecast was determined. The cohort survival component of the population forecast included year over year estimates of births and deaths based on fertility and mortality rates as applied to each age cohort. The net migration to the study area was forecast based on the total labour demand required to meet the economic forecast.
- A review was conducted of available information on fertility and mortality rates at the municipal, regional and provincial level. This review included, where possible, historical data going back 10 years. Based on this review, a recommendation was made regarding the application of fertility and mortality rates to the cohort survival components of the population forecasting model for each municipality. The purpose of this component of the work plan was to use the most appropriate rates for projecting future natural increase in the population for each of the geographies included in the analysis.
- Net Migration: In each year of the forecast, the available labour supply as determined by natural increase was compared with the employment forecast to see if net migration was required to support the economic growth scenario. Where it was, migration rates were set to balance the economic growth requirement, including workers and additional family members.

An overview of the model components and relationship to the population and employment growth forecasts per annum over the study horizon is illustrated below.



In January 2016, the IANC endorsed the **medium growth scenario** of Applications' population and employment forecasts (2015–2045) which comprised 1.9% and 1.5% average annual growth rates respectively over the forecast horizon. According to Applications, the scenario represented the 'best guess' as to the growth which can be expected for the study area and assumes that energy prices recover to levels that will remain below levels that existed prior to the oil price declines of 2014. A summary of the medium growth scenario is provided in Table 34 below, while the detailed working paper presenting the initial population and employment forecasts endorsed by the IANC in January 2016 is attached as **Appendix A**.

Table 34: Summary of Medium Growth Scenario for Study Area

	2015	2045	Average Annual Growth Rate
Population (people)	31,727	56,390	1.9%
Employment (jobs)	19,124	30,323	1.5%

3.2 Population and Employment Growth Scenarios

Concurrent with the completion of an assessment of baseline conditions, Applications in conjunction with ISL and B&A worked on the development of a series of scenarios to disaggregate the forecasted population and employment growth amongst the partner municipalities. The examination explored various disaggregation scenarios amongst the four municipalities within the study area. After considerable discussion, the City and County selected Scenario 6A and Scenario 6B for the purposes of modelling and determination of gross developable land requirements. Both scenarios maximized the partner municipalities' population and

employment growth opportunities – one where the results slightly exceed the forecast and one adjusted to match the overall 2045 population and employment control totals of the initial medium growth scenario. A summary of the population and employment growth by municipality across all disaggregation scenarios, with emphasis on Scenario 6A and Scenario 6B, is attached as **Appendix B**.

Once Scenarios 6A and 6B were selected, five growth allocation options for the City were reviewed and discussed to arrive at agreeable assumptions for the distribution of population and employment growth within the City. After a discussion of historical and emerging growth trends, the parties initially agreed to allocate 60% of the City's future growth to Alberta side and 40% to Saskatchewan side. A summary of the provincial growth allocation in the City under the initial medium growth scenario, using the Scenarios 6A and 6B disaggregation and 60/40 provincial growth split, is presented in Table 35.

Table 35: City of Lloydminster Provincial Growth Allocation Options

Option	Percent Split		2015 City of Lloydminster			2045 City of Lloydminster			2015 Percent Share of Population			2045 Percent Share of Population		
	AB	SK	AB	SK	Total	AB	SK	Total	AB	SK	Total	AB	SK	Total
1	50	50	19,740	11,637	31,377	31,936	23,833	55,768	62.9	37.1	100	57.3	42.7	100
2	60	40	19,740	11,637	31,377	34,375	21,393	55,768	62.9	37.1	100	61.6	38.4	100
3	70	30	19,740	11,637	31,377	36,814	18,954	55,768	62.9	37.1	100	66.0	34.0	100
4	40	60	19,740	11,637	31,377	29,496	26,272	55,768	62.9	37.1	100	52.9	47.1	100
5	30	70	19,740	11,637	31,377	27,057	28,711	55,768	62.9	37.1	100	48.5	51.5	100

3.3 Joint Regional Growth Study Reset and Remodeling Considerations

In November 2017, the City of Lloydminster withdrew from the JRGS process. In August 2018, an IANC meeting was held and direction was given to resume the JRGS process with the understanding that several assumptions would be revisited including the previously endorsed medium growth scenario. In March and April 2019 the IANC's Technical Working Group (TWG) met and discussed the key assumptions the parties wished to have revisited as part of the updated analysis.

Firstly, it was agreed that the medium growth scenario population and employment forecasts be updated by Applications to reflect the results of the 2016 federal census. It was also agreed that the study horizon be extended from 30 to 35 years in recognition of the extended process and time that has passed since the JRGS was initially commenced in 2015.

Secondly, the TWG had extensive discussions regarding the original medium growth scenario as initially endorsed by IANC and its relation to the historical average annual growth rates as experienced by the City. Based on the discussions, the TWG agreed to explore the application of a **medium-high growth scenario** that would serve as a midpoint of the previous medium and high growth scenarios developed by Applications. This midpoint was desired to be an average annual growth rate of 2.1% to 2.2% over the revised forecast period for the City. The TWG also agreed to complete a sensitivity analysis and comparison of the medium/high modelling results and outcomes to the previously endorsed IANC medium growth scenario.

Based on the direction received from the TWG, Applications updated the population and employment forecast model to a 35-year study horizon ending in 2051, updated the model to reflect the 2016 census results, and applied midpoint assumption inputs to the model, which resulted in a growth rate of 2.2% per annum for the City and corresponding adjustments to the growth rates for the balance of the partnering municipalities and the study area as a whole based on model calibration and adjustments. An updated working paper prepared by Applications that incorporates these revised assumptions over the revised study horizon is attached as **Appendix C**.

It was agreed that the growth disaggregation scenarios between the County/RMs and the City would also be reviewed and considered based on the updated projections prepared by Applications. The parties agreed that a disaggregation scenario that allowed for a **wide range of employment growth opportunities to all municipalities** (i.e. both low and high intensity industrial development) and **enabled the City to realize its status quo share of population growth** (i.e. rather than redirect some of its proportionate share of population growth to the County) was the preferred scenario for updated modelling purposes. For simplicity, the existing disaggregation Scenario 6A, which satisfied this requirement, was carried forth in all updated modelling.

Summaries of the updated population and employment projections under disaggregation Scenario 6A by municipality and for the study area overall, and incorporating the above revised assumptions over the revised study horizon, are presented in Tables 36 and 37.

Table 36: Forecasted Population under Remodelled Medium-High Scenario 6A, 2015–2051

Geography	2015	2016	2021	2026	2031	2036	2041	2046	2051
City of Lloydminster	31,377	31,415	36,945	41,418	45,832	49,351	53,974	60,670	67,489
County of Vermilion River	294	299	369	454	559	688	847	1,001	1,006
RM of Wilton	11	11	13	15	16	17	19	21	24
RM of Britannia	45	46	55	65	78	92	110	130	155
Study Area	31,727	31,772	37,381	41,951	46,485	50,148	54,949	61,822	68,673

Table 37: Forecasted Employment under Remodelled Medium-High Scenario 6A, 2015–2051

Geography	2015	2016	2021	2026	2031	2036	2041	2046	2051
City of Lloydminster	18,192	8,256	0,606	3,139	5,591	27,870	30,410	34,039	37,882
County of Vermilion River	592	611	829	1,068	1,313	1,561	1,839	2,195	2,580
RM of Wilton	323	327	383	443	501	556	616	695	778
RM of Britannia	18	19	26	34	41	49	56	65	73
Study Area	19,124	19,213	1,845	4,683	7,446	30,036	32,920	6,994	41,314

It was finally agreed that once the overall growth disaggregation between the County/RMs and the City was resolved, that the provincial growth allocation in the City would be revisited. After considerable discussion, the parties agreed to a revised provincial growth allocation model that directed 70% of all residential and non-residential growth to the Alberta side within the City and the remaining 30% to the Saskatchewan side. This assumption was carried forward in all updated modelling. A breakdown of the City's updated population forecasts between Alberta and Saskatchewan based on the medium-high growth scenario, using the Scenario 6A disaggregation and the 70/30 provincial growth split for the City, is presented within Table 38.

Table 38: City of Lloydminster Revised Population Forecast with 70/30 Provincial Growth Allocation

Geography	2016 Actual Population	2016 Share	2051 Projected Population	2051 Share	35-Year Change	35-Year Share
Alberta	19,645	62.5%	44,900	67.5%	25,255	70.0%
Saskatchewan	11,765	37.5%	22,589	33.5%	10,824	30.0%
Total City of Lloydminster	31,410	100.0%	67,489	100.0%	36,079	100.0%

3.4 Land Requirements

The TWG worked collaboratively to establish various land supply and land demand generator assumptions that, combined with the growth forecasts, resulted in a comprehensive estimate of the gross developable land requirements to support future growth of the City, the County, and the RMs within the study area.

Coupled with the selection of a preferred medium-high growth scenario, **land demand generators** were developed and reviewed with the TWG, and upon agreement were translated and inputted into the land requirements model to ascertain total gross developable land requirements to accommodate forecast growth. Total gross developable land requirements were then related to available gross developable land supply factoring in constraints and transitioning lands to determine beyond boundary land need scenarios where warranted. A summary of the corresponding land demand generators and relative assumptions to each as applied to the land requirements model is attached as **Appendix D**.

3.4.1 Total Residential Land Requirements and Land Needs (Demand less Supply)

Based on the comprehensive evaluation of the study area, the completed land supply evaluation, and finalization of the land demand generators table, ISL translated all key inputs into the land requirements model in order to determine total gross developable residential land requirements inclusive of applicable overheads (e.g. circulation, public utilities, parks and open space, etc.). Total gross developable residential land requirements were then related back to available land supply and sensitivity factors were taken into consideration (i.e. constrained lands and transitioning lands) in order to ascertain residential land needs by jurisdiction. Summaries of the City and County residential land requirements over the study horizon based on the aforementioned assumptions are presented in Tables 39 and 40.

Table 39: City Residential Land Requirements

Side of City	Total Unabsorbed in Boundary (ha)	Gross Land Required + Contingency (ha)	35-Year Gross Land Difference (ha)	35-Year Gross Land Difference (quarters)	Ultimate Potential Additional (Wells/URWs)	Ultimate Gross Land Difference (ha)	Ultimate Gross Land Difference (quarters)
Alberta	151.5	795.7	644.2	10.1	3.4	640.9	10.1
Saskatchewan	451.9	341.0	-110.9	-1.7	49.4	-160.3	-2.5

Table 40: County Residential Land Requirements

Land Use	Total Unabsorbed in Boundary (ha)	Gross Land Required+ Contingency (ha)	Gross Land Required+ Contingency (quarters)	35-Year Gross Land Difference (ha)	35-Year Gross Land Difference (quarters)	Ultimate Potential Additional (Wells/URWs)	Ultimate Gross Land Difference (ha)	Ultimate Gross Land Difference (quarters)
Residential	915.2	531.5	8.4	-383.7	-6.0	98.8	-482.5	-7.6

3.4.2 Total Non-Residential Land Requirements and Land Needs (Demand less Supply)

A range of modelling methods and approaches were used to forecast and assess gross developable non-residential land requirements over the study horizon based on the medium-high growth scenario, and disaggregation and provincial growth share assumptions as previously presented. The various modelling methods applied, and corresponding outcomes are briefly described below.

Employment Density Approach

This approach examined existing employment density within the existing absorbed land supply. This method involved an aerial photo review of parcels within the commercial and industrial absorbed land supplies (excluding Husky Place and the Husky refinery lands in the City) and subtracting those parcels that were undeveloped to determine the amount of net developed land. From there, the 2015 baseline employment figures by development typology (excluding Husky's direct job growth) were applied to the net developed lands to determine existing employment density assumptions for commercial and industrial areas. Key inputs from the land demand generators deliverable were then applied to determine total non-residential gross developable land requirements inclusive of applicable overheads.

Reasonability Checks Approach

The land demand generators deliverable includes proposed **reasonability checks** for commercial and industrial land requirements for the City. The intent of this proposed check is to compare the land requirements generated by the above approach to the current state of absorbed net land supply relationships within the City. The proposed reasonability check for (1) commercial is a relationship of 0.25 net ha of commercial land for every 0.75 net ha of residential land, and (2) industrial is a relationship of 0.4 net ha of industrial and for every 0.6 net ha of residential land. This reasonability check was used as a method to evaluate and assess the outputs generated from the employment density approach.

Blended Approach

Based on the use of the employment density approach and the reasonability checks completed, the consultant team and the TWG agreed to model non-residential requirements using a **blend of the employment density approach and proposed reasonability checks** in order to determine the gross developable non-residential land requirements and to ascertain non-residential land needs. Recognizing the limitations within each of these modelling approaches, the parties agreed to **use the midpoint** between the employment density approach and the reasonability check method as the basis for determining non-residential land requirements and land needs. This modelling was completed for the medium-high growth forecast, Scenario 6A disaggregation and based on the previously noted 70/30 growth split in the City. Summaries of gross developable non-residential land requirements based on this method over the study horizon for the City and the County are presented in Tables 41 through 43.

Table 41: City Commercial Land Requirements

Side of City	Total Unabsorbed in Boundary (ha)	Gross Land Required + Contingency (ha)	35-Year Gross Land Difference (ha)	35-Year Gross Land Difference (quarters)	Ultimate Potential Additional (Wells/URWs)	Ultimate Gross Land Difference (ha)	Ultimate Gross Land Difference (quarters)
Alberta	45.0	213.0	168.0	2.6	11.7	156.3	2.5
Saskatchewan	44.3	91.3	47.0	0.7	8.4	38.6	0.6

Table 42: City Industrial Land Requirements

Side of City	Total Unabsorbed in Boundary (ha)	Gross Land Required + Contingency (ha)	35-Year Gross Land Difference (ha)	35-Year Gross Land Difference (quarters)	Ultimate Potential Additional (Wells/URWs)	Ultimate Gross Land Difference (ha)	Ultimate Gross Land Difference (quarters)
Alberta	223.5	479.2	255.7	4.0	18.3	237.4	3.7
Saskatchewan	209.7	205.4	-4.4	-0.1	24.7	-29.1	-0.5

Table 43: County Non-Residential Land Requirements

Land Use	Total Unabsorbed in Boundary (ha)	Gross Land Required + Contingency (ha)	Gross Land Required + Contingency (quarters)	35-Year Gross Land Difference (ha)	350-Year Gross Land Difference (quarters)	Ultimate Potential Additional (Wells/URWs)	Ultimate Gross Land Difference (ha)	Ultimate Gross Land Difference (quarters)
Commercial/Industrial	1,116.3	445.9	7.0	-670.3	-10.6	129.3	-799.6	-12.6

3.4.3 Institutional (Urban Service) Land Requirements and Land Needs

Using the **combined totals of the residential and non-residential land requirements** and the institutional assumption from the land demand generators deliverable, the **institutional land requirements** were generated using ISL's model. The resulting institutional land needs (land requirements less unabsorbed land supply), which are presented in Table 44, were generated only for the City as it was assumed the County and two RMs would not accommodate institutional growth over the forecast horizon.

Table 44: City Institutional Land Requirements

Side of City	Gross Residential (ha) excl. Contingency	Gross Commercial (ha) excl. Contingency	Gross Industrial (ha) excl. Contingency	Total Non-Institutional (ha)	Percent of Gross Developable Area Assumption	Overall Gross Inst. Land Required (ha)	Ultimate Gross Land Difference (quarters)
Alberta	710.5	190.2	427.8	1,328.5	4%	53.1	0.8
Saskatchewan	304.5	81.5	183.4	569.4	4%	22.8	0.4

3.4.4 Total Land Requirements and Land Needs (Demand less Supply)

Under the aforementioned assumptions, **total gross developable residential and non-residential land requirements** have been generated using ISL's model, and the resulting **land needs** (total gross developable land requirements less unabsorbed land supply) have been calculated for the City and the County's portion of the study area. A summary of total gross developable land requirements and land needs based on these modelling parameters and accompanied by sensitivity considerations (constrained and transitioning lands) is presented in Table 45.

Table 45: Summary of Gross Developable Land Needs by Land Use

Side of City	Residential (quarters)	Commercial (quarters)	Industrial (quarters)	Institutional (quarters)	Total (quarters)	Ultimate Total (quarters)
Alberta (beyond boundary)	10.1	2.6	4.0	0.8	17.7	17.1
Saskatchewan (beyond boundary)	-1.7	0.7	-0.1	0.4	-0.7	-2.0
County of Vermilion River	8.4	7.0		0.0	15.4	varies

In Alberta, as presented in Table 45, the City has a total beyond boundary land need of 17.1 to 17.7 gross developable quarter sections. This range excludes undevelopable land that may be interspersed within future growth directions to be identified in Alberta beyond the City's boundaries at a future date. In Saskatchewan, while it appears the City has an overall surplus of 0.7 to 2.0 gross developable quarter sections, it does have a 35-year deficiency of 0.7 gross developable quarter sections of commercial land supply.

Also as presented in Table 45, the County has a need for up to 15.4 gross developable quarter sections to accommodate projected future residential and non-residential growth by 2051. This breaks down into 8.4 and 7.0 gross developable quarter sections of residential and non-residential respectively.

The results of this summary were brought forward in conjunction with the evaluation of the study area to support the **April 12, 2019 IANC Meeting** where IANC endorsed the use of the medium-high growth scenario and revised modelling parameters as noted.

4.0 Opportunities and Constraints

Accompanying the aforementioned modelling, an opportunities and constraints analysis was undertaken to assist in evaluating growth directions options. Land use and infrastructure opportunities and constraints were determined and mapped. Further, the urban serviceability of the study area was assessed, while the rural serviceability of the County's portion of the study area was also assessed.

4.1 Land Use Opportunities and Constraints

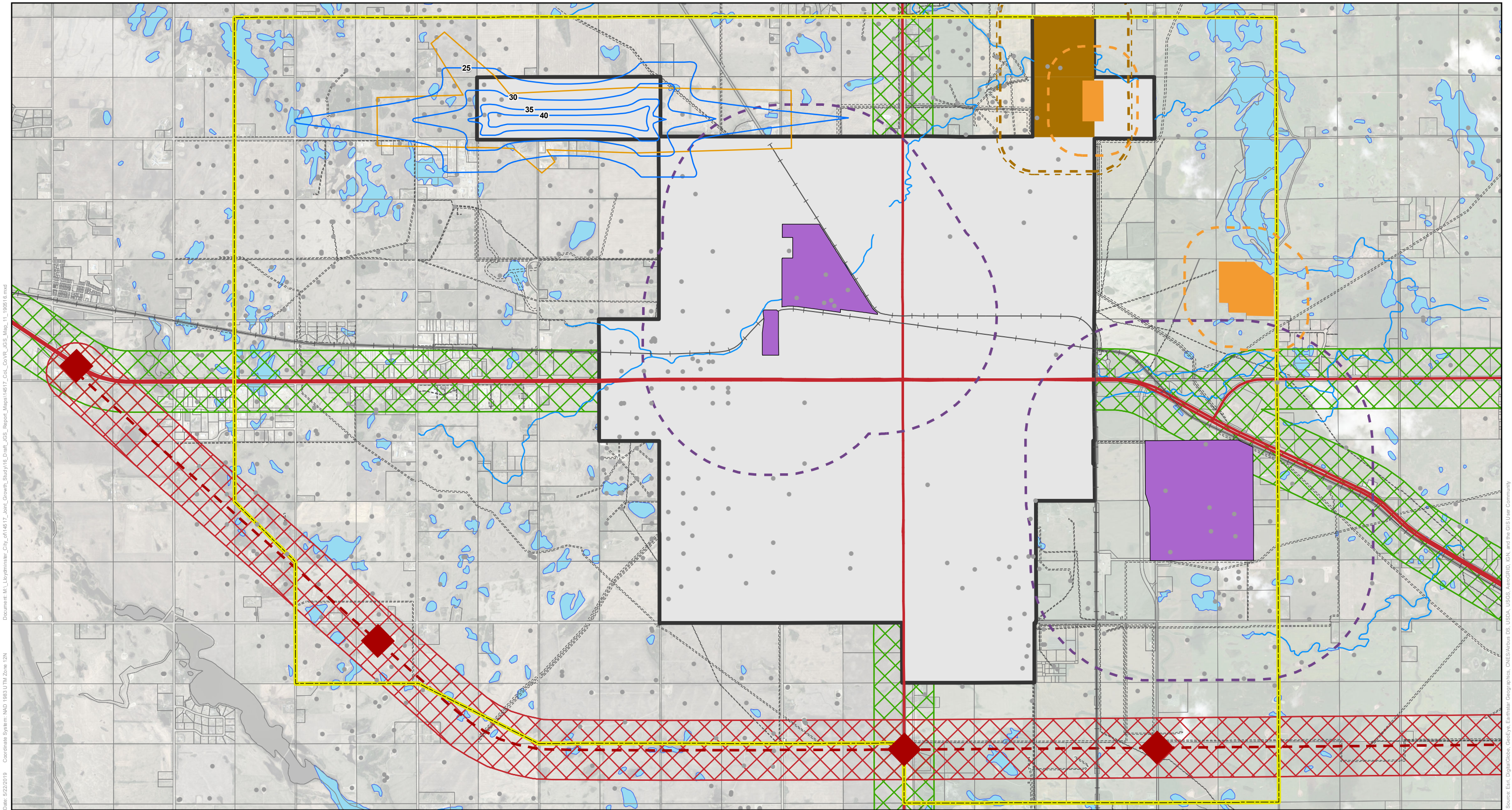
4.1.1 General Land Use

Map 11 illustrates the general land use opportunities and constraints that will influence determination of growth directions options within the study area. The degree that these various features will affect future development will vary, depending on whether the proposed land use under consideration is residential or non-residential. For example, residential development opportunities can be significantly constrained by airport, lagoon, landfill and Major Industrial Accidents Council of Canada (MIACC) setbacks but are not a great constraint to industrial or commercial development (with the exception of building heights in the case of the airport vicinity protection overlay). As a result, these setbacks are excluded from a forthcoming aggregated overall constraints analysis introduced in Section 4.1.5.

Additional considerations are as follows:

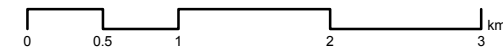
- Rail is a potential constraint to residential development but a potential opportunity for industrial development.
- Provincial legislation and best practices prohibit or limit the establishment of residential uses and developments accommodating public assembly (e.g. schools, recreation facilities, child care, health services, hotels, eating and drinking establishments) within transition zones from heavy industrial to minimize off-site risks in the event of a major industrial accident.
- Setback requirements of 457 m for lagoons and landfills are stipulated in Section 15(3) of the Saskatchewan Subdivision Regulations. An alternate landfill setback of 500 m is stipulated by section 8(2) of The Municipal Refuse Management Regulations. Note that Lloydminster's existing landfill and lagoon complex is located in the northeast corner of the City. A former City lagoon facility is located in the RM of Britannia to the south of the Neale Lake wetland complex. The reclamation and decommission status of the former lagoon facility is unknown, thus the legislated setbacks applicable to lagoons are applied to the former facility.
- With respect to the lands identified as Heritage Sensitivity Areas, the information shown is intended to guide developers in determining whether their developments will need to be reviewed for potential impacts to heritage resources. Quarter sections that are not identified as sensitive will not require review, while those developments that fall within sensitive quarter sections will require review by the Heritage Conservation Branch of Saskatchewan Parks, Culture and Sport. There are no equivalent sensitivity areas on the Alberta side of the provincial boundary.
- Map 11 illustrates Highway Visibility corridors along Highways 16 and 17 through the study area and Highway 303 to the east. These corridors afford the opportunity for commercial development due to visibility from highway traffic. This does not necessarily mean, however, that access to these major roads will be readily available for commercial development. If portions of the existing Highway 16 and Highway 17 corridors are annexed in the future, vehicular access could be improved through the City gaining jurisdiction and control over their function.
- Land use constraints that relate to the City's airport include the outer extent of its airport vicinity protection overlay (AVPO) and its noise exposure forecast (NEF) contours. Building height restrictions apply within the AVPO, becoming increasingly more restrictive toward the airstrip itself. Transport Canada states the following regarding NEF contours:

Document: M:\Lloydminster_City_CoV14517_Joint_Growth_Study\118_Draft_JGS_Report_Maps\14617_CoV_CoV14517_Map_11_190916.mxd
Date: 5/22/2019
Coordinate System: NAD 1983 UTM Zone 12N



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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1:50,000

- Joint Growth Study Area
- City Boundary
- Watercourse
- Water Body
- Rail Main Line

- Highway
- Future Interchange
- Future Bypass
- Good Visibility/Limited Access
- No Bypass Access Beyond Interchanges

- Airport Noise Exposure Forecast Contour
- Airport Vicinity Protection Overlay
- Utility Right-of-Way Boundary
- Heavy Industrial
- MIACC Recommended 1.6 km Setback

- Landfill
- Landfill Setback (457 m)
- Lagoon Setback (500 m)
- Lagoon
- Lagoon Setback (457 m)



LLOYDMINSTER County of VERMILION River

JOINT REGIONAL GROWTH STUDY
MAP 11: LAND USE
OPPORTUNITIES
AND CONSTRAINTS

“Transport Canada does not support or advocate incompatible land use (especially residential housing) in areas affected by aircraft noise. These areas may begin as low as NEF 25. At NEF 30, speech interference and annoyance caused by aircraft noise are, on average, established and growing. By NEF 35 these effects are very significant. New residential development is therefore not compatible with NEF 30 and above, and should not be undertaken.”⁴¹

4.1.2 Fragmentation

Land fragmentation is a constraint to future growth as highly fragmented quarter sections are difficult to integrate into the urban development fabric as they can be challenging to re-subdivide in order to achieve intensification. Map 12 illustrates the extent of land fragmentation that has occurred in the study area. For the purpose of this analysis, it is assumed that fragmented parcels under 4 ha in size carry greater weight in the aggregated overall constraints analysis (see Section 4.1.5), while parcels that range from 4 to 10 ha in size are assessed a 50% weighting. This acknowledges that slightly larger fragmented parcels are typically more responsive to advancing development pressures in the short-term. Parcels greater than 10 ha in size are not deemed as fragmented and therefore not considered constrained as opportunities for future intensification are less restricted.

4.1.3 Natural Environment

Map 13 illustrates various natural land use constraints arising out of a desktop review of wetlands within the study area conducted by Spencer Environmental Management Services Ltd. (Spencer). This desktop review serves as an update to the 2013 Environmental Inventory within the City's 2013 CGS.

For the purpose of this analysis, environmental reserve (ER) buffers have been applied to all Type IV and V wetlands⁴². The ER buffers assumed to be adjacent to these wetlands will be removed at the growth directions determination stage and assumed developable in response to the reality that not all Type IV and V wetlands will be preserved in their entirety. Ultimately some of the wetlands will be filled in and developed subject to provincial approvals and compensation. Additional consideration are as follows:

- Watercourses are assumed to be protected by a 6 m ER setback that would be identified, acquired and protected through the subdivision process. This ER setback will be deemed undevelopable at the growth directions determination stage.
- Type IV and V wetlands are delineated by Spencer for rural lands within the study area beyond the City. At the growth directions determination stage, it will be assumed that all of these wetlands are undevelopable.
- For constraints analysis purposes only, all Type IV and V wetlands are assumed to have a 6 m ER buffer, with the exception of a 30 m ER buffer applied to the Neale Lake wetland complex in the northeast corner of the study area. At the growth directions determination stage, however, these wetland ER buffers will be assumed to be developable lands as some of the Type IV and V wetlands will be filled and developed subject to provincial approval and compensation.

4.1.4 Utilities, Pipelines and Wells

Due to the presence of extensive oil and gas extraction activity in proximity to the City, the presence of pipelines and well sites can be a significant constraint to future urban and rural growth, along with other major utility infrastructure. Map 14 illustrates the presence of both registered and unregistered pipelines in the study area. Pipeline alignments are only available on the Alberta side of the study area. Pipeline alignments within Saskatchewan are not readily available.

⁴¹ Source: “*Aviation: Land Use in the Vicinity of Airports*”. Eighth edition. Section 4.2.1: Noise Exposure Forecast (NEF). Ottawa: Transport Canada. 2005. p. 26.

⁴² Type IV and V are classes applied to wetlands under the modified Stewart and Kantrud (1970) classification system for prairie pothole wetlands. They are semi-permanent and permanent wetlands that are generally persistent features on the landscape and typically show some standing water or robust emergent vegetation.

Those corridors identified as Registered Right-of-Way Plans on Map 14 include oil and gas pipelines, power transmission lines, drainage corridors, non-shallow utility lines and utility stations. In Saskatchewan, rights-of-way are assumed to contain similar forms of infrastructure, and all pipelines within Saskatchewan are assumed to be located within these rights-of-way.

The Alberta Energy Regulator has advised that all pipeline corridors without existing registered right-of-way plans are assumed to require 15 m rights-of-way to protect these facilities.

Setback areas for oil and gas wells are illustrated in Map 15 and are described as follows:

- A 5 m legislated setback applies to abandoned wells in Alberta (excluding sour gas) that either have reclamation certified status or reclamation exempt status;
- A 100 m legislated setback applies to all other wells in Alberta (excluding sour gas), including abandoned wells that do not yet have reclamation certified status or reclamation exempt status
- A 125 m legislated setback applies to all wells in Saskatchewan (excluding sour gas) regardless of their status, including abandoned wells.
- Notwithstanding the 5 m mandatory setback in place, a voluntary setback of 35 m has been implemented by Husky for abandoned wells that are reclamation certified or reclamation exempt.
- Notwithstanding the 125 m mandatory setback in place, Saskatchewan may reduce setbacks for abandoned wells to 40 m plus an 8 m for maintenance access purposes.
- The City recently approved a subdivision application with a 25 m setback from an abandoned well based on a negotiated outcome with the province of Saskatchewan. This is determined to be a unique case and is not considered to be a precedent for the determination of future well setbacks.

It should be noted that the ultimate developability of identified setback areas remains a function of the land development process and the type of use proposed. Setback areas may or may not impact development over the study horizon period and as such, the TWG and consultant team have undertaken sensitivity modelling that factors in the potential constraints and impacts posed by these facilities. This is done under a scenario whereby they are rendered completely undevelopable over the life of study horizon and an alternative scenario where setbacks are considered developable and integrated into compatible development where appropriate.

4.1.5 Aggregated Overall Land Use Constraints Analysis

Map 16 presents an aggregation of all of the above noted constraints relating to land use. That is, constrained land is the cumulative footprint of:

- fragmented parcels of 10 ha or less;
- Type IV and V wetlands;
- ER setbacks associated with Type IV and V wetlands (6 m for all except 30 m for the Neale Lake wetland complex);
- ER setbacks associated with watercourses (6 m);
- utility and pipeline rights-of-way; and
- oil and gas well setbacks.⁴³

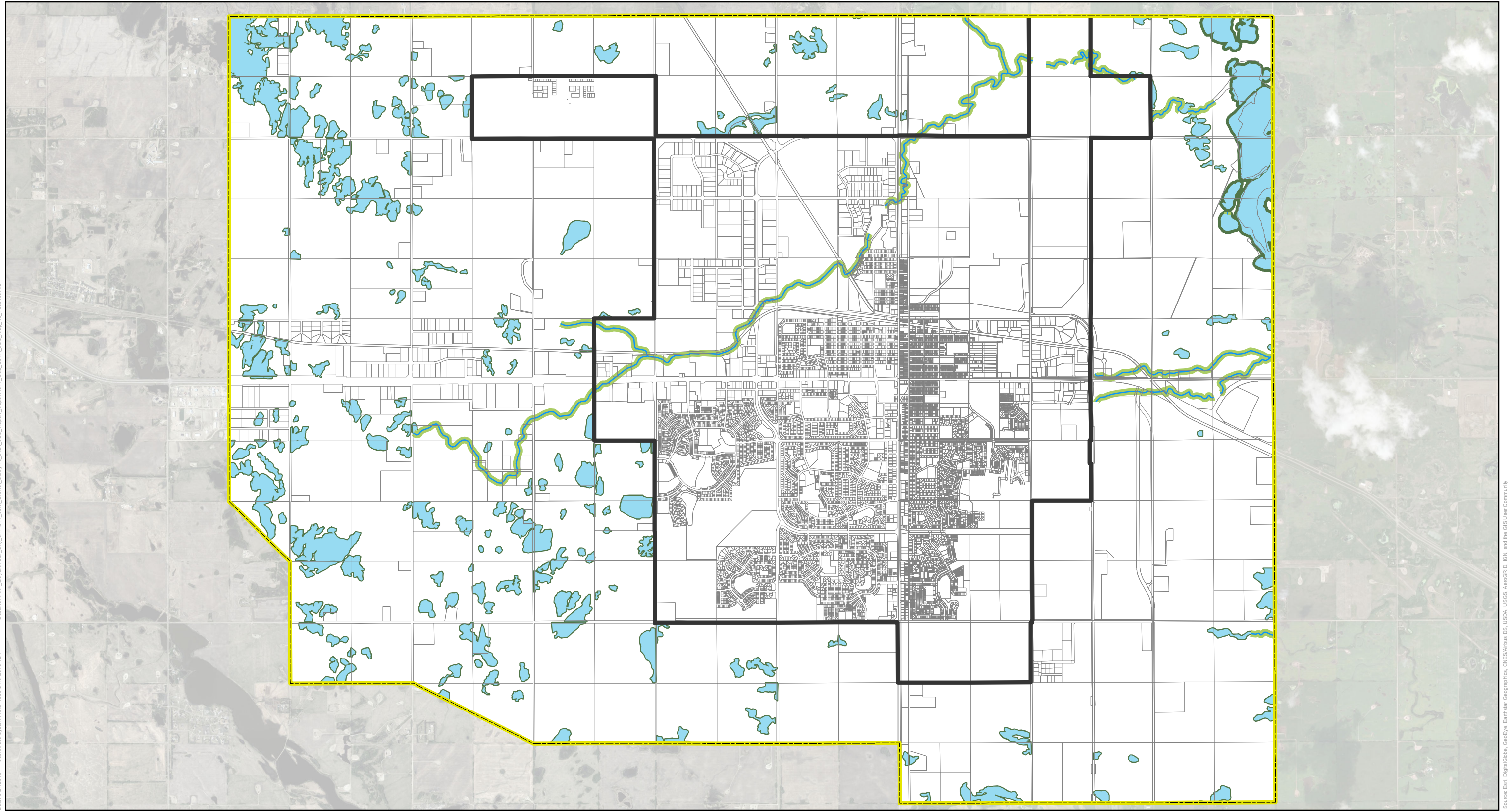
It is noted that the constraints illustrated on Map 16 and presented above may change over time as legislated restrictions and setbacks evolve.

⁴³ Some land use and development opportunities exist within these setbacks subject to provincial regulations.

**b&a**

Parcel $\leq$ 4 ha (Urban Area)
Parcel 4 to 10 ha (Urban Area)
Fragmented Parcels per Quarter Section

Date: 5/21/2019 Coordinate System: NAD 1983 UTM Zone 12N Document: M:\Lloydminster_City_2014517_Joint_Growth_Study\16_Draft_JGS_Report_Maps\14617_Col_CoVR_JGS_Map_13_190516.mxd



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0 0.5 1 2 3 km

1:50,000

- Joint Growth Study Area
- City Boundary
- Parcel

Watercourse

Watercourse Environmental Reserve

Type IV/V Wetland

Wetland Environmental Reserve



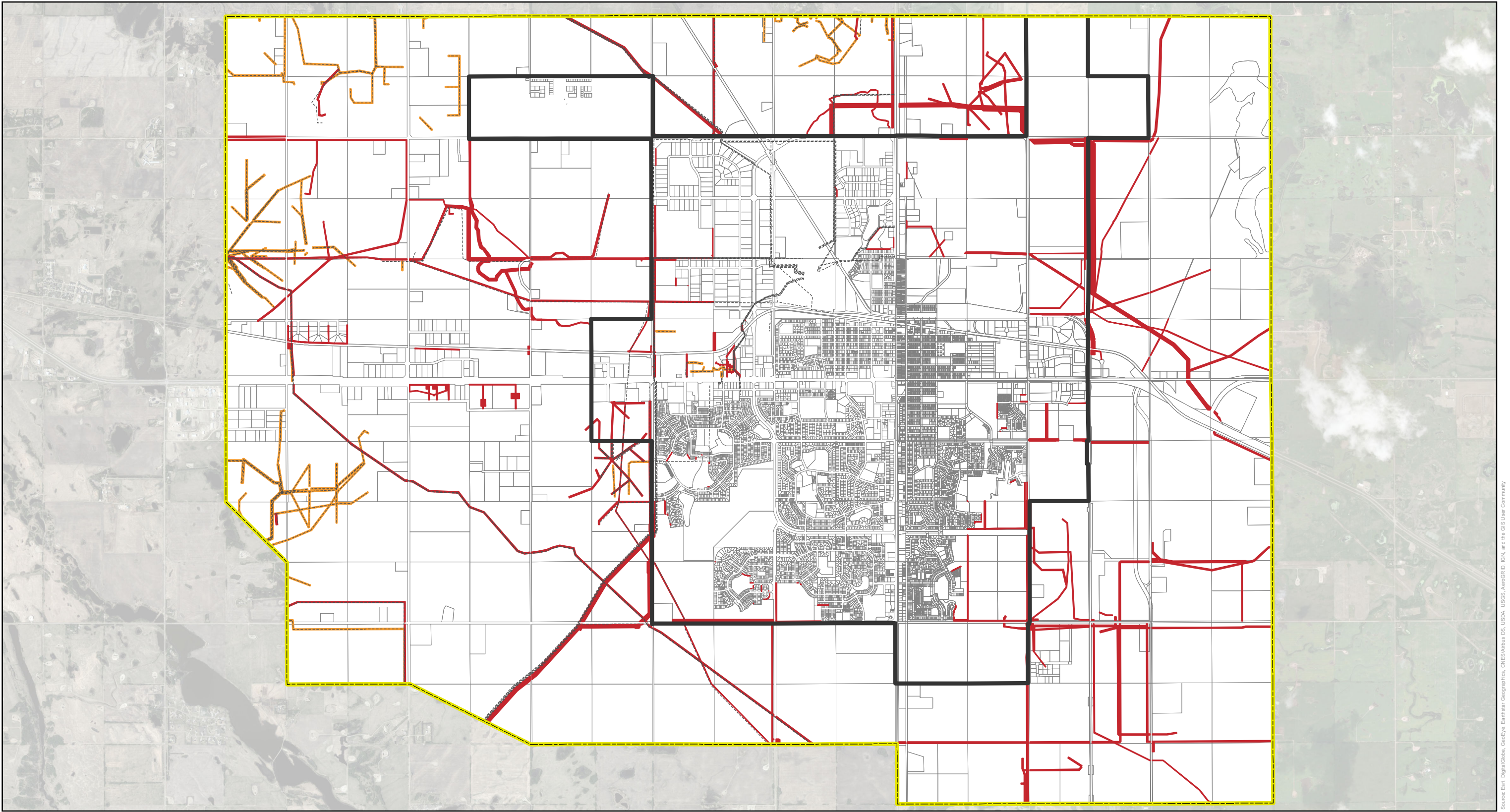
LLOYDMINSTER **County of VERMILION RIVER**

JOINT REGIONAL GROWTH STUDY

MAP 13: NATURAL CONSTRAINTS

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Date: 5/16/2019 Coordinate System: NAD 1983 UTM Zone 12N Document: M:\Lloydminster_City_2014517_Joint_Growth_Study\16_Draft_JGS_Report_Maps\14617_Col_CoVR_JGS_Map_14_190516.mxd



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0 0.5 1 2 3 km

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- Joint Growth Study Area
- City Boundary
- Parcel

- Pipeline
- Registered Right-of-Way Plan
- Pipeline Without Registered Right-of-Way



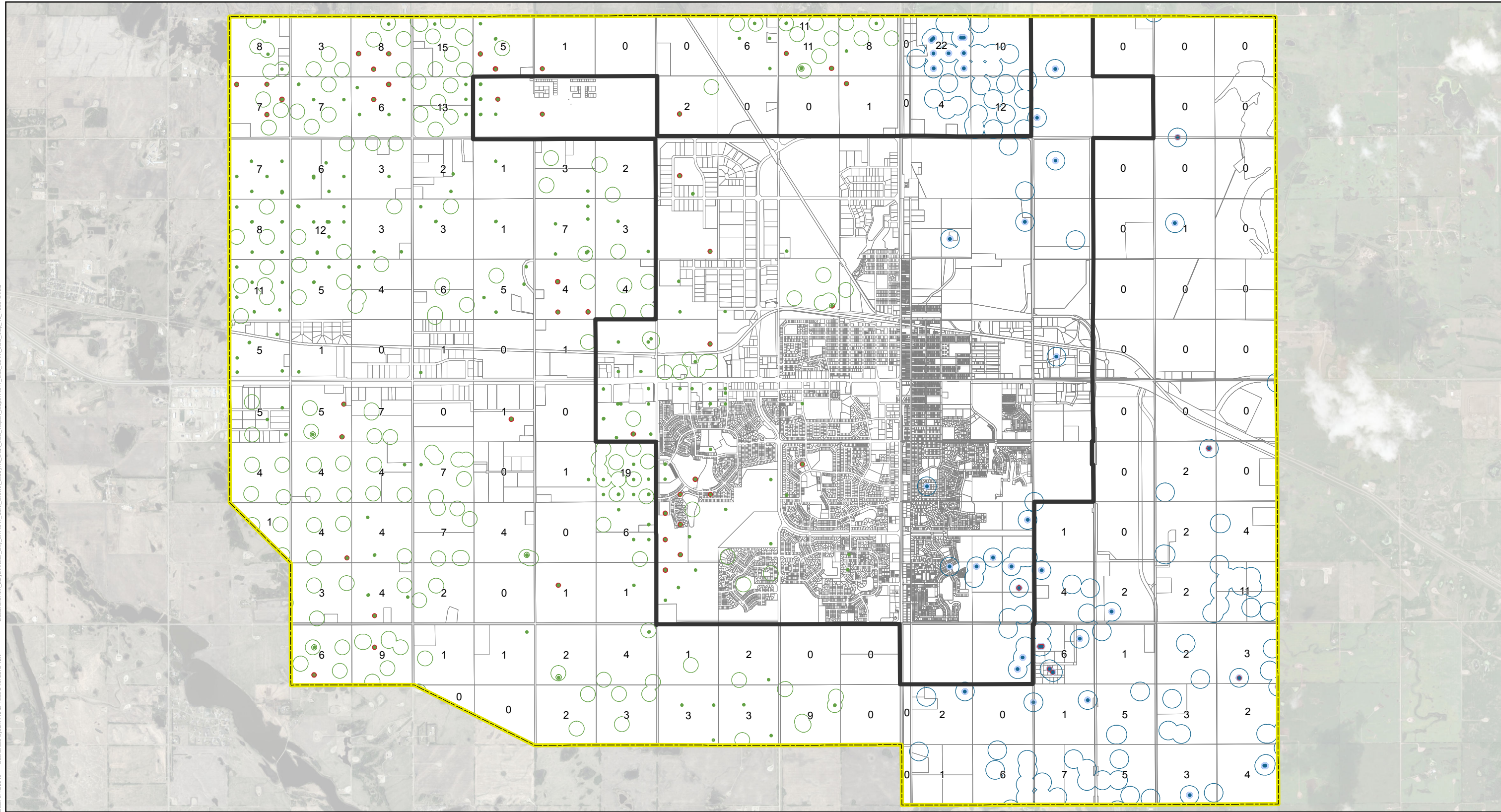
LLOYDMINSTER County of VERMILION River

JOINT REGIONAL GROWTH STUDY

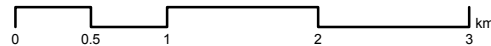
MAP 14: UTILITY AND PIPELINE CONSTRAINTS

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Date: 5/16/2019
Coordinate System: NAD 1983 UTM Zone 12N



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1:50,000

- Joint Growth Study Area
- City Boundary
- Parcel

- 5 m Legislated Setback (AB)
- 100 m Legislated Setback (AB)

- 25 m Potential Relaxed Setback (SK)
- 40 m Potential Relaxed Setback (SK)
- 125 m Legislated Setback (SK)

- 35 m Husky-Volunteered Setback
- # Wells per Quarter Section



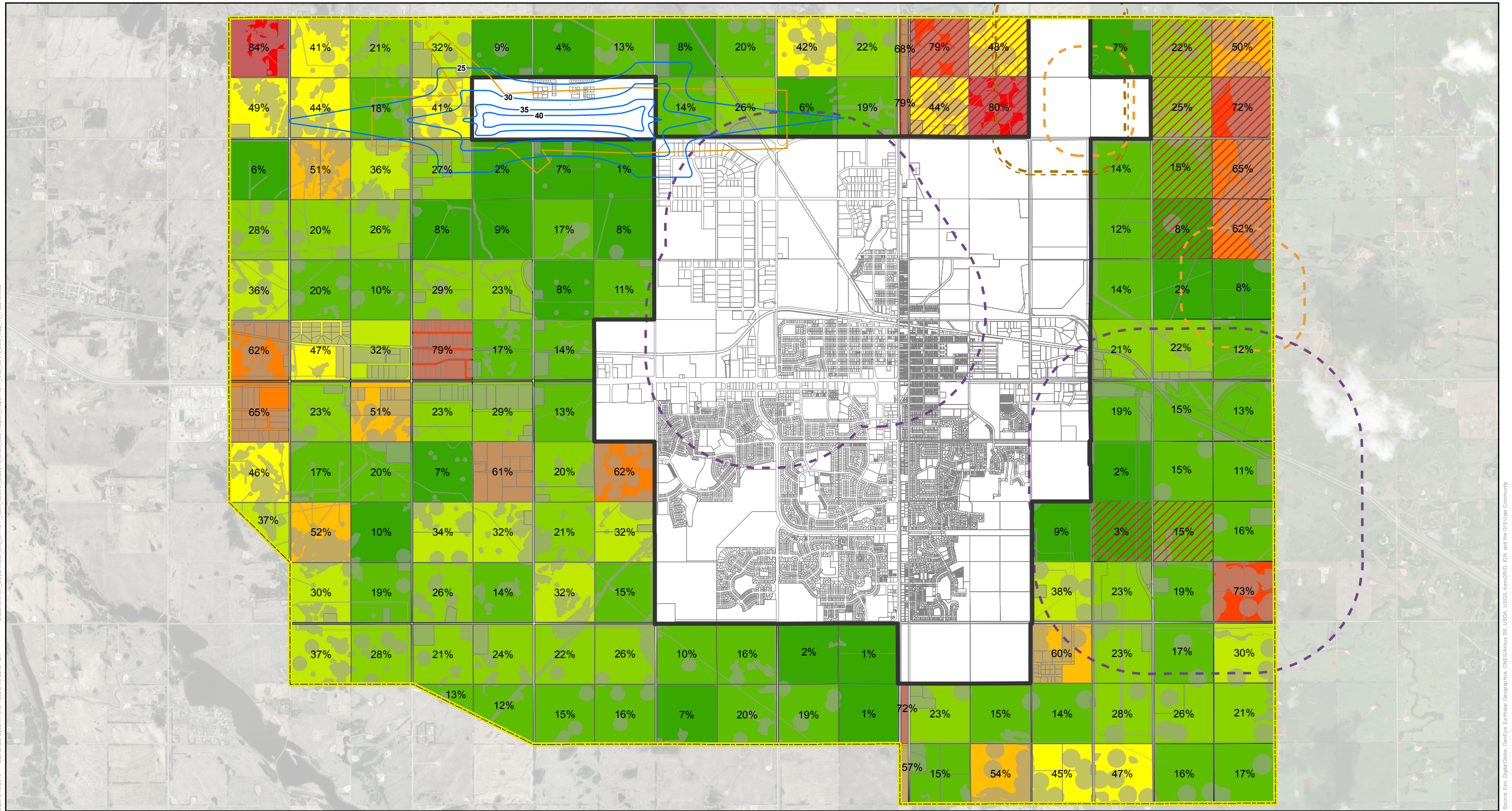
LLOYDMINSTER
County of
VERMILION RIVER

JOINT REGIONAL GROWTH STUDY

MAP 15: WELL SETBACK
CONSTRAINTS

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Date: 5/16/2019
Coordinate System: NAD 1983 UTM Zone 12N



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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0 0.5 1 2 3 km

1:50,000

- Joint Growth Study Area
- City Boundary
- Parcel

- 0% - 10% Constrained
- 10% - 20% Constrained
- 20% - 30% Constrained
- 30% - 40% Constrained
- 40% - 50% Constrained
- 50% - 60% Constrained
- 60% - 70% Constrained
- 70% - 80% Constrained
- >80% Constrained

- Airport NEF Contour
- Airport Protection Overlay
- MIACC 1.5 km Transition Zone
- Heritage Sensitivity Area

- Landfill Setback (457 m)
- Landfill Setback (500 m)
- Lagoon Setback (457 m)



LLOYDMINSTER **County of VERMILION RIVER**

JOINT REGIONAL GROWTH STUDY

MAP 16: OVERALL CONSTRAINTS ANALYSIS

The constrained land ratings (identified as percentages) shown in Map 16 are determined by overlaying the constrained land described in the previous sections onto the original quarter section fabric and dividing the sum of the constraints from the total area of the quarter section. All six constraints are weighted the same, with the exception of fragmented parcels where a graduated weighting has been employed as noted in Section 4.1.2.⁴⁴

Further, as noted in 4.1.1, constraints such as airport NEF contours and landfill setbacks have been excluded from this overall constraint analysis as they only limit some forms of development (e.g. residential), and do not represent a complete sterilization of development potential. As a result, Map 16 shows these constraints only for reference.

4.2 Infrastructure Opportunities and Constraints

To complement the land use opportunities and constraints analysis presented above, a similar analysis was undertaken from an infrastructure perspective. Map 17 presents the infrastructure opportunities and constraints within the study area, largely informed by the City's 2013 Servicing Assessment and those infrastructure master plans that were in effect in 2015.

4.3 Serviceability

In support of this JRGS, an associated Urban Servicing Assessment was undertaken by ISL to determine the serviceability of the study area with respect to the logical extension of municipal stormwater, wastewater, and water infrastructure systems as well as urban transportation infrastructure. The Urban Servicing Assessment involved a review of the City's four applicable master plans, a serviceability analysis and a summary assessment. Also, in support of the JRGS, an associated Rural Servicing Assessment was undertaken by CIMA+ for the County's portion of the study area from the rural stormwater, wastewater, water and transportation infrastructure perspectives.

The following two sections summarize the results of the two servicing assessments, while the assessments themselves are attached as **Appendices I and J**. The results of the two servicing assessments informed the determination of the growth directions options presented in Section 5.0.

4.3.1 Urban Servicing Assessment

As a key input into examining potential growth directions and alternatives for the study area, a comprehensive series of serviceability assessments were completed to examine servicing conditions, servicing capacity and potential implications relating to urban servicing expansion. To this end, ISL prepared an **Urban Servicing Assessment** (see **Appendix E**) as an update to and elaboration upon the City's 2013 Servicing Assessment. The four factors considered to be important from a servicing perspective were water, wastewater, stormwater and transportation.

Based on a comprehensive evaluation of servicing factors and considerations specific to the City, the serviceability of lands within the study area were scored by servicing consideration. These scores were then weighted and aggregated for each quarter section to arrive at final conclusions for urban serviceability in the study area. Some areas have been assessed as easier to service because of fewer topographical constraints, proximity to existing services and anticipated lower servicing costs. A summary of the urban serviceability index for lands within the study area is illustrated in Map 18. The individual scoring by infrastructure that contributed to Map 18 is included within the complete Urban Servicing Assessment attached as **Appendix E**.

⁴⁴ For example, in a quarter section with two fragmented parcels where one is 3 ha in size and the other is 6 ha in size, a 50% weighting is applied to the larger parcel as it exceeds 4 ha. The combined fragmentation constraint is therefore 6 ha rather than 9 ha. Assuming a quarter section of 64 ha, the weighting identifies the quarter section as 9% constrained (6 ha) as opposed to 14% (9 ha).

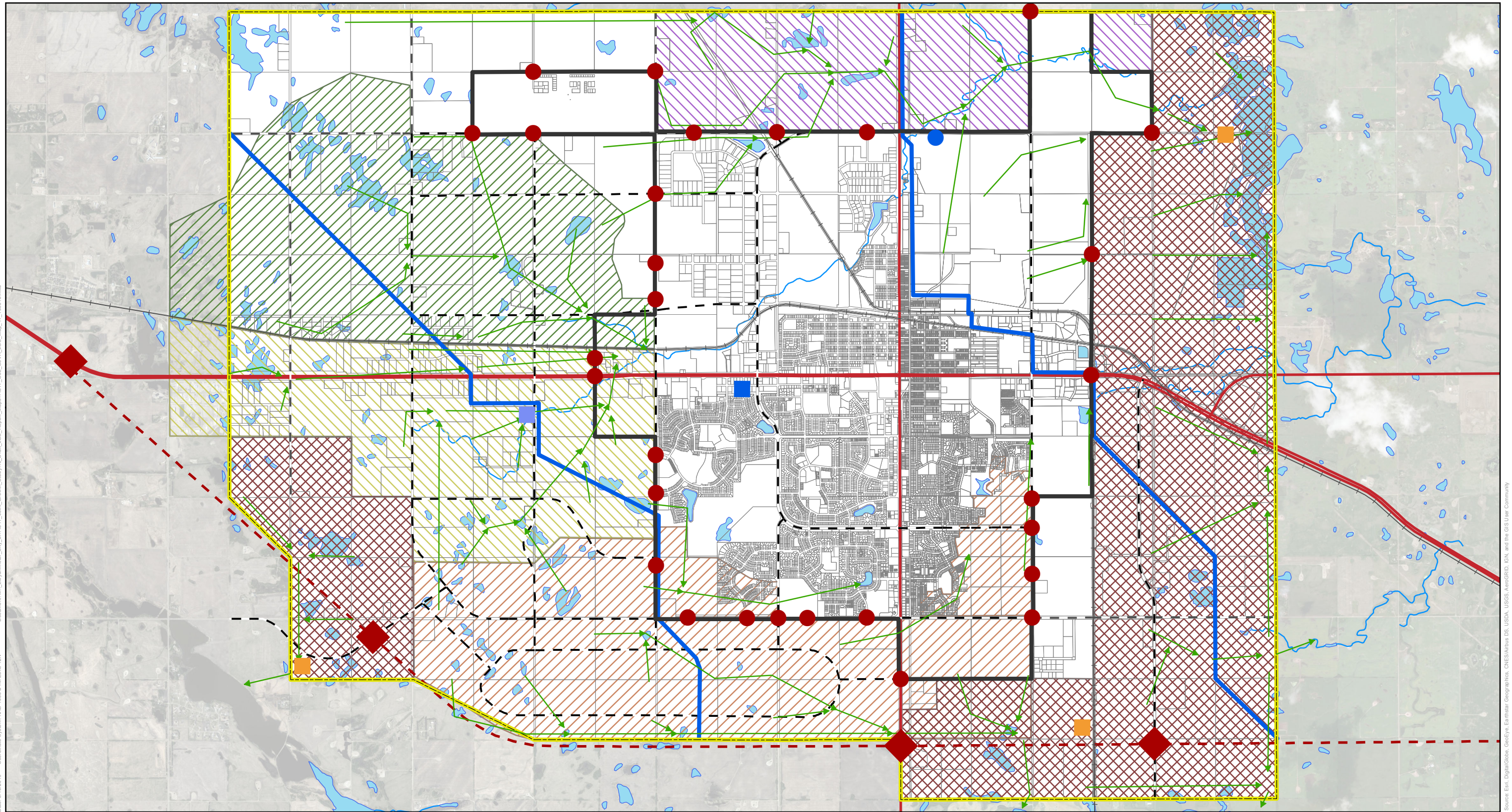
4.3.2 Rural Servicing Assessment

Similar to the Urban Servicing Assessment, it was deemed important to assess the **serviceability of the County's portion** of the study area from a rural perspective. A **Rural Servicing Assessment** (see **Appendix F**) was undertaken by CIMA+ to provide additional information relating to the serviceability of the study area from a rural perspective. The same four factors from the urban assessment were considered in the rural assessment under the premise of a rural servicing standard. The scope of this analysis was not to provide a detailed analysis but assume lower intensity development and a rural servicing as the average in development demands. Rural servicing for low intensity development is generally influenced by availability of private on-site servicing and in some cases communal water and sewer systems.

Quarter sections were ranked according to criteria, and the four scores were weighted and aggregated to arrive at final conclusions for rural serviceability in the County's portion of the study area from a rural perspective. The purpose of this assessment was to supplement the urban serviceability assessment and to help determine which areas may be better suited to rural servicing.

A summary of the rural serviceability index for lands within the study area is illustrated in Map 19. The individual scoring by infrastructure that contributed to Map 14 are included within the complete Rural Servicing Assessment attached as **Appendix F**.

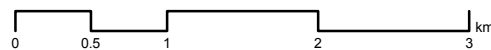
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1:50,000



- Joint Growth Study Area
- City Boundary
- Parcel
- Water Body
- Watercourse
- Rail Main Line
- Highway

- Future Bypass
- Future Arterial Roadway
- Future Collector Roadway
- Future Interchange
- Intersection Opportunity

- Water Treatment Plant #2
- Reservoir
- Possible Future Reservoir
- Water Pressure Limit Boundary
- Northeast Sanitary Basin

- Northwest Sanitary Basin
- Southwest Sanitary Basin
- South Sanitary Basin
- Lift Station Required
- Approximate Lift Station Location
- Stormwater Drainage Direction



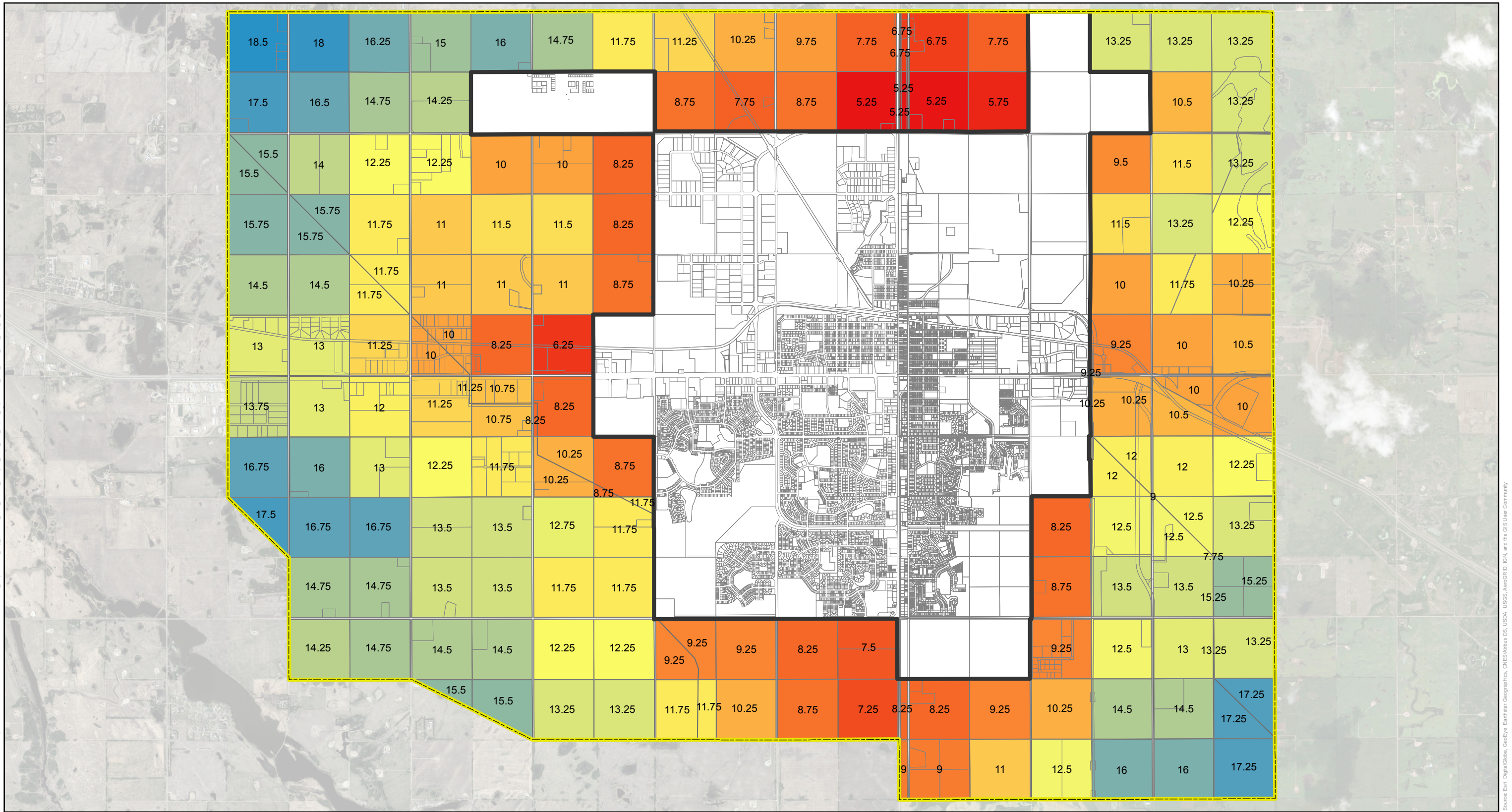
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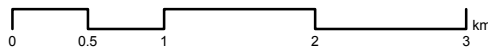
JOINT REGIONAL GROWTH STUDY
MAP 17: INFRASTRUCTURE
OPPORTUNITIES
AND CONSTRAINTS

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document: M:\Lloydminster_City_2014517_Joint_Growth_Study\18_Draft_JGS_Report_Maps\1817_Col_CoVR_JGS_Map_18_180516.mxd
Date: 5/16/2019
Coordinate System: NAD 1983 UTM Zone 12N



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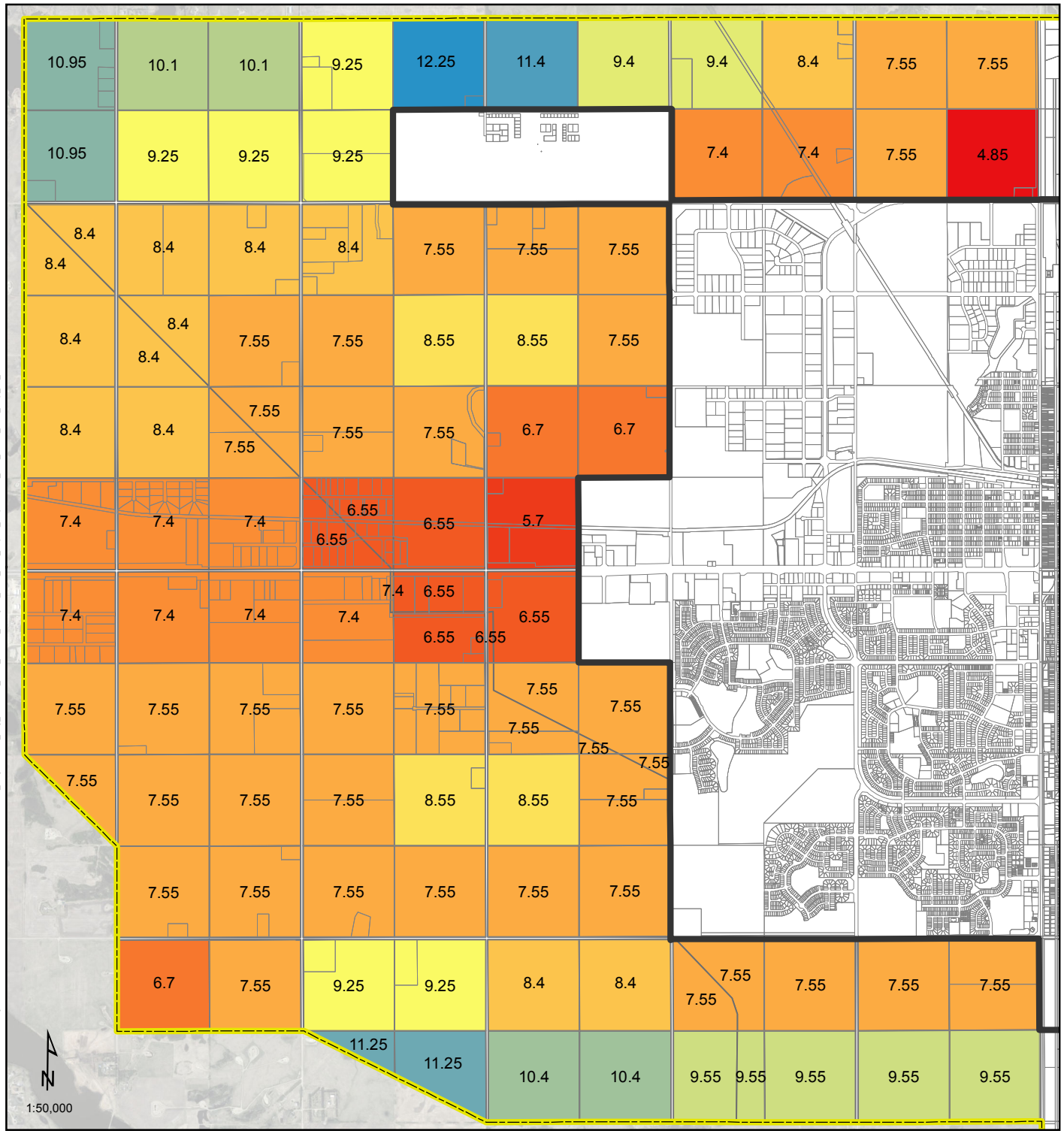
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- Joint Growth Study Area
- City Boundary
- Parcel

Aggregated and Weighted Rankings

5.25	7.5	9.25	10.5	11.75	13	14.25	15.5	16.75
5.75	7.75	9.5	10.75	12	13.25	14.5	15.75	17.25
6.25	8.25	9.75	11	12.25	13.5	14.75	16	17.5
6.75	8.75	10	11.25	12.5	13.75	15	16.25	18
7.25	9	10.25	11.5	12.75	14	15.25	16.5	18.5

JOINT REGIONAL GROWTH STUDY
MAP 18: AGGREGATED AND WEIGHTED URBAN SERVICEABILITY ANALYSIS



- Joint Growth Study Area
- City Boundary
- Parcel

Aggregated and Weighted Rankings

4.85	8.4	10.4
5.7	8.55	10.95
6.55	9.25	11.25
6.7	9.4	11.4
7.4	9.55	12.25
7.55	10.1	



**JOINT REGIONAL
GROWTH STUDY
MAP 19: AGGREGATED
AND WEIGHTED RURAL
SERVICEABILITY
ANALYSIS**

5.0 Land Needs and Developable Lands

Stemming from a series of collaborative discussions amongst the consultant team and the TWG, an area consisting of **24 quarter sections** adjacent to the City within the County was subject to a more detailed examination to evaluate the potential of this area to accommodate the City's beyond boundary gross developable land needs in Alberta, consisting of **1,087.8 hectares**. In addition, **another 1.5 quarter sections** are identified adjacent to the Lloydminster Airport, which are owned by the City and held for future airport expansion purposes. The **25.5 quarter sections** evaluated are identified on Map 20. The detailed examination process consisted of quantification of the amounts of undevelopable and constrained lands within the 25.5-quarter section area to support and inform future discussions between the County and the City relative to potential annexation to accommodate forecasted gross developable land needs over the study horizon.

5.1 Land Supply and Developability Evaluation

The examination of the 25.5-quarter section area's ability to accommodate the City's beyond boundary gross developable land needs in Alberta consisted of a detailed evaluation of each quarter section to account for undevelopable lands⁴⁵ (including previously absorbed lands) and constrained lands.⁴⁶ The result is the minimum and maximum amount of unabsorbed lands available to accommodate growth in gross developable hectares. Table 46 presents the results of the evaluation, providing a corresponding breakdown by quarter section that presents the minimum and maximum for each quarter section and the sum of all quarter sections combined.

Under the minimum unabsorbed land supply scenario, lands that are undevelopable and constrained have been removed from the land supply and are considered not available to accommodate the City's forecasted Alberta beyond boundary land needs within the horizon of the JRGS. Under the maximum unabsorbed land supply scenario, lands that are undevelopable have been removed from the land supply, but constrained lands have been included and therefore assumed to be able to accommodate the City's forecasted Alberta beyond boundary land needs within the horizon of JRGS.

This detailed evaluation, and presentation of a minimum and maximum unabsorbed land supply scenarios by quarter section and overall is intended to support forthcoming discussions between the City and the County in forthcoming annexation discussions that are anticipated to follow the ratification of the JRGS.

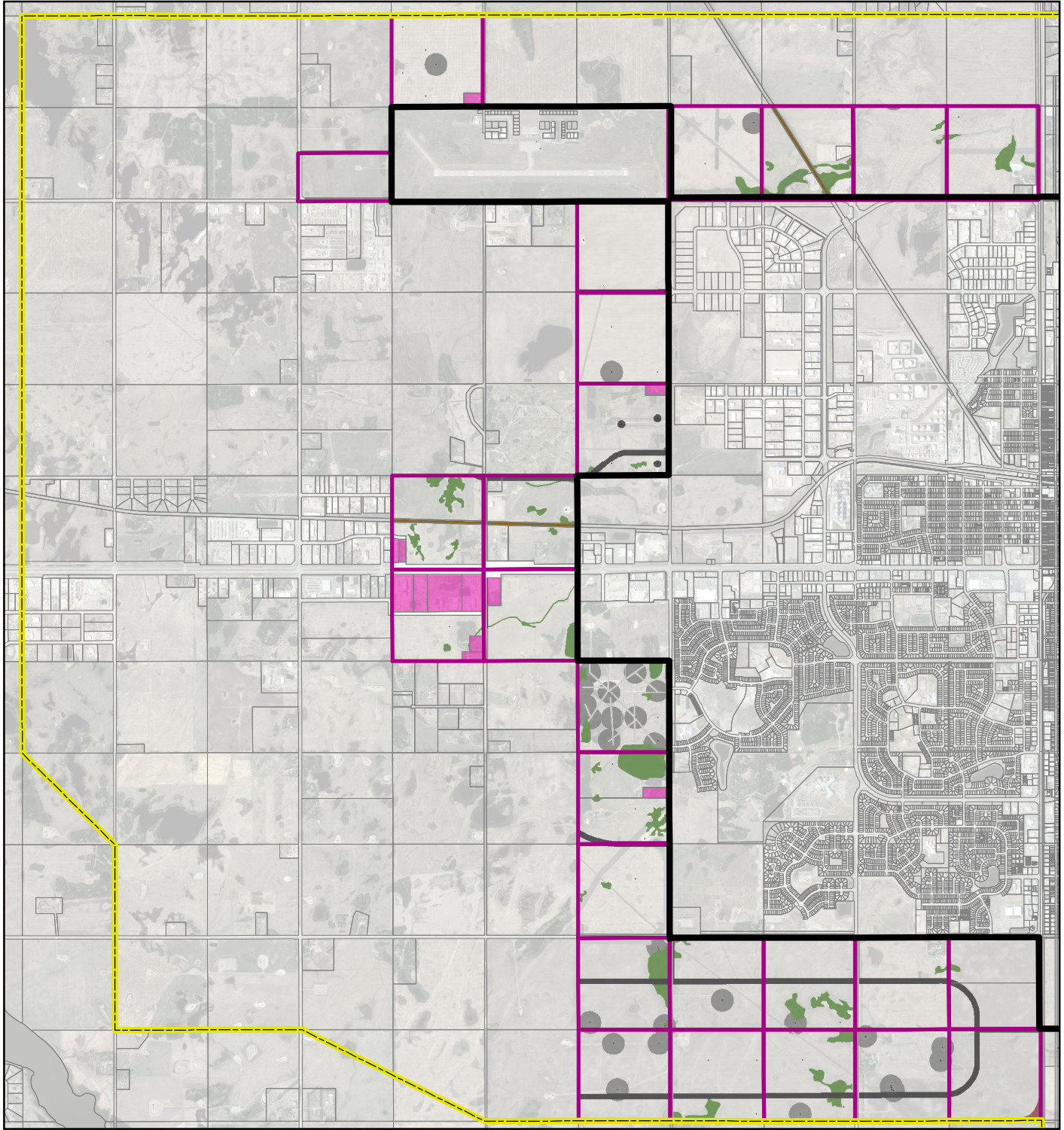
It is noted that the 25.5-quarter section area illustrated in Map 20 has an unabsorbed land supply ranging from a minimum 1,217.5 to a maximum 1,330.1 gross developable hectares according to Table 46. This range exceeds the City's beyond boundary land needs for 1,087.8 hectares in Alberta. Thus, the City's beyond boundary land needs in Alberta can be accommodated in a variety of configurations of the 25.5 quarter sections identified to date. However, this does not preclude the City and County from evaluating additional quarter sections to arrive at a greater quantity of potential configurations during forthcoming annexation negotiations.

⁴⁵ **Undevelopable lands** include those lands not available to capture new residential, commercial, industrial and institutional growth. These deductions include: 1) previously **absorbed lands** (those lands considered absorbed as detailed in Section 2.4 of this JRGS report and are not available to accommodate future residential and non-residential development); 2) environmental reserve; 3) transportation corridors (existing road allowances, future arterial roads, future arterial road widening, future Highway 16X interchange right-of-way, and existing rail right-of-way); and 4) future airport-related expansion.

⁴⁶ **Constrained lands** include those lands encumbered by utility/pipeline rights-of-way, oil and gas wells, and their associated setbacks. The presence of such may or may not inhibit future development, or accommodate only certain types of future development. Depending on municipal policy of the day, such constrained lands could be integrated with certain types of land uses, could be sterilized from integration until such time as pipelines and wells are removed, or somewhere in between.

Table 46: Detailed Land Supply and Developability Evaluation of Lands Adjacent to Lloydminster

Quarter No.	Gross Area of Quarter Section (ha)	Undevelopable Lands (ha)				MAXIMUM Unabsorbed Land Supply Including Constrained Lands In Gross Developable Hectares (ha)	Constrained Lands (ha)		MINIMUM Unabsorbed Land Supply Excluding Constrained Lands In Gross Developable Hectares (ha)
		Previously Absorbed Lands	Environmental Reserve	Transportation Corridors	Airport-Related Expansion		Utility Rights-of-Way	Well Setbacks	
1	67.8	0.0	2.5	4.3	0.0	61.0	3.0	2.9	55.1
2	66.2	0.0	8.0	5.5	0.0	52.7	1.3	0.1	51.2
3	67.9	0.0	0.8	3.7	0.0	63.4	2.6	0.3	60.5
4	66.2	0.0	3.9	4.0	0.0	58.4	5.0	0.0	53.4
5	64.5	0.0	0.0	4.3	0.0	60.1	0.1	0.0	60.0
6	64.7	0.0	0.0	3.2	0.0	61.5	2.2	3.1	56.2
7	64.7	1.9	0.8	6.1	0.0	55.9	1.8	0.0	54.0
8	66.2	2.5	6.6	8.1	0.0	49.1	0.0	0.0	49.1
9	67.9	0.0	2.2	14.0	0.0	51.6	0.1	0.0	51.5
10	64.7	28.7	0.5	7.2	0.0	28.2	0.0	0.0	28.2
11	66.2	2.9	4.6	6.7	0.0	52.1	0.0	0.0	52.1
12	64.5	0.0	7.3	1.2	0.0	56.0	7.2	24.5	24.4
13	64.7	2.0	12.0	3.9	0.0	46.8	3.1	0.0	43.6
14	66.4	0.0	0.7	5.4	0.0	60.3	8.1	0.0	52.2
15	64.8	0.0	6.5	5.7	0.0	52.6	2.7	5.9	44.0
16	66.6	0.0	0.7	7.4	0.0	58.5	1.7	3.4	53.5
17	64.9	0.0	5.7	5.9	0.0	53.2	1.2	2.0	50.1
18	66.6	0.0	0.5	7.6	0.0	58.6	0.0	0.5	58.0
19	64.8	0.0	0.6	6.6	0.0	57.7	0.0	0.0	57.7
20	64.5	0.0	0.0	4.0	0.0	60.4	0.0	9.4	51.1
21	66.1	0.0	3.5	5.6	0.0	56.9	0.0	0.1	56.8
22	64.6	0.0	5.6	4.4	0.0	54.6	2.1	3.1	49.3
23	66.4	0.0	0.0	6.0	0.0	60.3	1.2	10.1	49.1
24	64.7	0.0	0.0	7.7	0.0	57.0	0.0	0.6	56.4
25	64.5	2.0	0.0	0.0	59.3	3.2	0.0	3.2	0.0
26	34.7	0.0	0.0	4.2	30.6	0.0	0.0	0.0	0.0
TOTAL	1,675.8	40.1	73.0	142.7	89.9	1,330.1	43.3	69.3	1,217.5



1:50,000

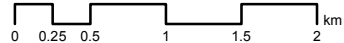
- Joint Growth Study Area
- City Boundary
- Parcel
- Analysis Area
- Previously Absorbed Land
- Future Bypass Interchange
- Future Arterial

- Road
- Rail
- Environmental Reserve
- Utility Right-of-Way
- Well Setback (100 m)
- Well Setback (5 m)



**JOINT REGIONAL
GROWTH STUDY
MAP 20: UNDEVELOPABLE
AND CONSTRAINED LAND
QUANTIFICATION BY
QUARTER SECTION**

Integrated Expertise. Locally Delivered.



6.0 Recommendations

This Joint Regional Growth Study documents the results of a collaborative process between the City and County to forecast population and employment growth and associated sharing and allocation of this growth over the study horizon (2016-2051). The process has enabled a common understanding of respective total gross developable land requirements and land needs based on an in-depth evaluation of land supply and developability conditions. The recommendations generated from this process are intended to inform annexation negotiations and ultimately guide and support an update to the IDP between the City and County and other subsequent intermunicipal planning initiatives. Based on the medium-high growth scenario and the assumptions used to generate total gross developable land requirements and corresponding land needs, the following recommendations are offered by the TWG:

1. It is recommended that the City and the County consider those options that allow for adequate land for urban growth under the medium-high scenario to inform the allocation of lands in the City's annexation proposal.
2. Rural growth areas and a corresponding land use and policy framework should be refined during the IDP update process.
3. Discussions around regional servicing and joint development opportunities may take place during the update to the IDP and preparation of the Intermunicipal Collaboration Framework to benefit the region.
4. That the re-initiation of a boundary adjustment/annexation process and accompanied IDP review and update is undertaken in fulsome consideration of all materials and inputs generated throughout the entirety of the JRGS process and is undertaken in accordance with the relevant provisions of the Municipal Government Act.



APPENDIX A

Population & Employment Forecasts (2015-2045):
Working Paper Draft 5



City of Lloydminster and
County of Vermilion River
Joint Growth Study
Population & Employment
Forecasts
(2015-2045)

WORKING PAPER
DRAFT 5



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Introduction

In order to successfully plan for future land and infrastructure needs, an expectation of future growth is required. Population projections are particularly important in long-term infrastructure planning as all key planning decisions, including those involving public facilities and services, depend on how many people will be living in the area. The potential for non-residential development is also important as from a fiscal point of view, non-residential development along with residential growth, provides a community with 'balanced growth'.

Purpose of the Study

The purpose of this study is to provide a 30 year population and employment forecast, 2015 to 2045, for a Study Area that includes the City of Lloydminster, and portions of the County of Vermilion River, R.M. of Britannia and R.M. of Wilton.

FORTHCOMING DELIVERABLES

Once the population and employment forecasts have been approved the next steps will be to disaggregate the Study Area projections to the 4 communities within the Study Area, including City of Lloydminster, and portions of the County of Vermilion River, R.M. of Britannia, and R.M. of Wilton. The geographical disaggregation will include an analysis of the potential for residential and non-residential development based on land use and development patterns in these communities.

Housing projections for the Study Area will also be prepared based on the population projections. The housing projections will be provided for the entire Study Area, and also disaggregated by community once the geographical distribution has been completed.

Study Area

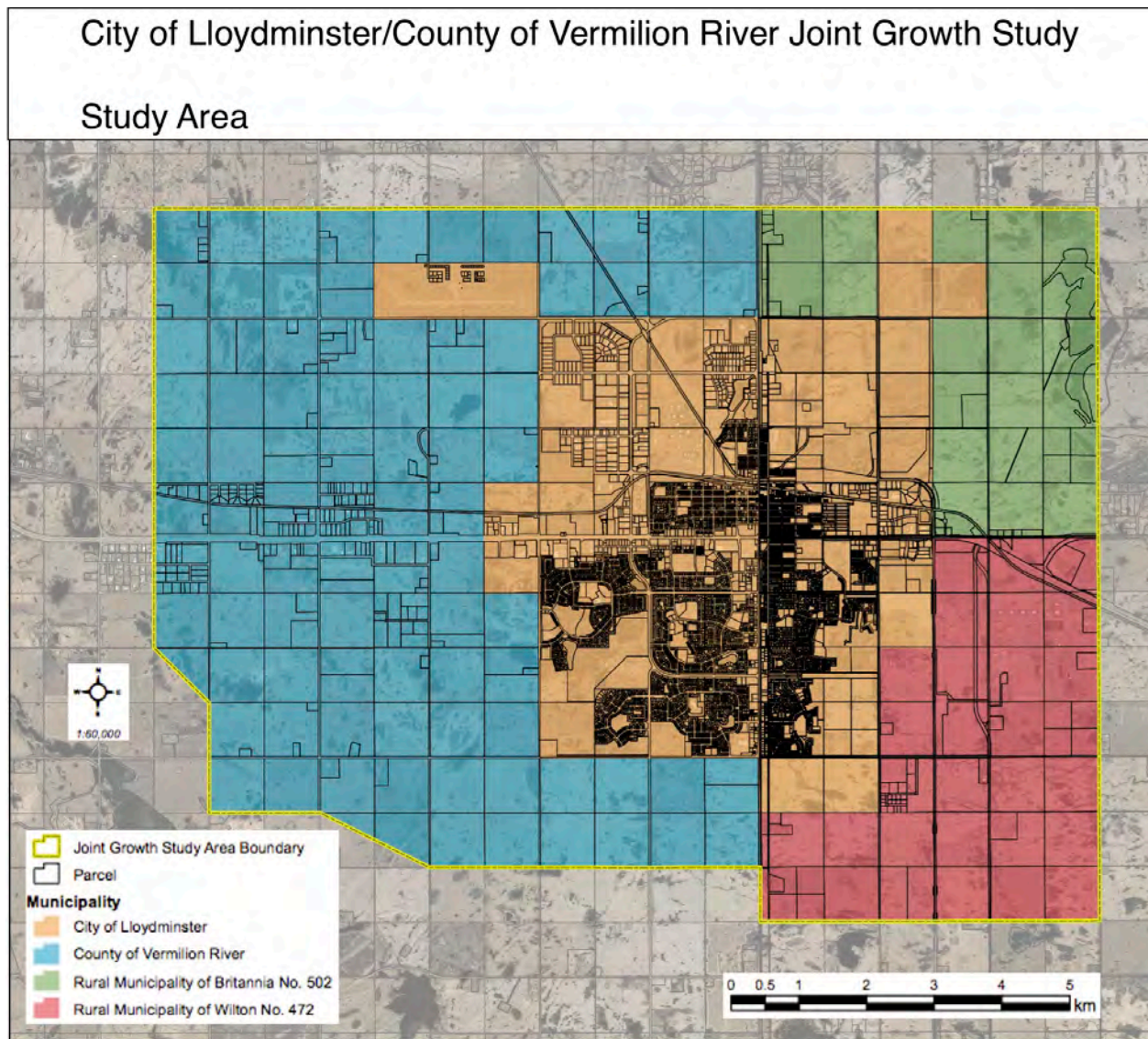
The population and employment projections have been developed using Applications Management Consulting Ltd's population and employment forecasting model. The geographic area covered by these projections is the Joint Growth Study Area. This area includes all, or portions of the following municipalities:

- ▶ City of Lloydminster (all)
- ▶ County of Vermilion River (partial including a portion of Division 5 of the County)
- ▶ R.M. of Britannia (partial)
- ▶ R.M. of Wilton (partial)

A map of the Joint Growth Study Area is shown below. All references to the '**region**' (unless noted otherwise) refer to the defined Study Area as depicted in the attached map.¹

¹ Where a geographic reference to 'region' does NOT refer to the Study Area, it has been **bolded**.

Figure 1: Study Area



Growth Scenarios

A population and employment forecasting model was used to project growth for each of three scenarios.

- **Low Scenario:** This scenario represents a continuation of the current slowdown in the economic growth in the Study Area, including lower growth in the oil industry, which does not recover to pre-oil price declines of 2014.
- **Medium Scenario:** This scenario represents the 'best guess' as to the growth which can be expected for the Study Area and assumes that energy prices recover to levels which will remain below levels that existed prior to the oil price declines of 2014.

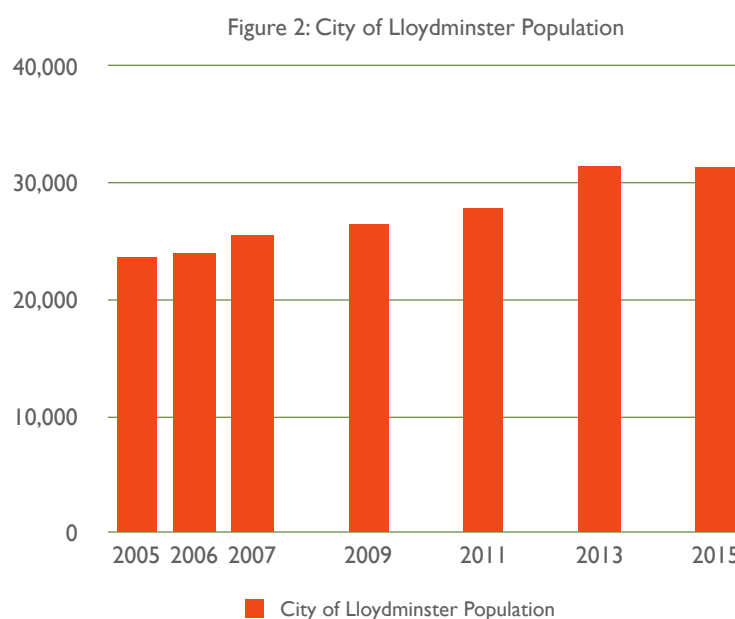
- **High Scenario:** This scenario represents an 'optimistic' picture of future growth that can be expected for the region including a return of oil prices to levels at or above those that existed prior to the oil price declines of 2014.

Study Area Base Year Profile

Base year information for each geographic area included in the Study Area has been assembled. The data used in the analysis described below.

CITY OF LLOYDMINSTER

Between 2006 and 2011 the City of Lloydminster population increased by over 3,700 at an average annual rate of over 3.0%. The 2011 federal census reported the City of Lloydminster as having a population of 27,804. In 2013 the City's municipal census reported a total population of 31,483, representing a 6.6% increase over the 2011 population. Since 2013, the population growth of the City has slowed. From 2013 to 2015, the municipal census reports the population has been essentially constant, showing a small decline from 31,483 to 31,377.



The City's population has a median age of just 31.5 with 57% being under 35 years of age. The population is skilled and educated as a result of local access to education and skills training in the City of Lloydminster. It is estimated that over 50% of residents age 25-64 have completed a trade certificate or higher. The local labour force participation rate is 80.5%, making the community an attractive location for young families and businesses to reside.

OTHER STUDY AREA BASE YEAR POPULATION ESTIMATES

The population for the areas within the Study Area, outside of the City of Lloydminster, include portions of the County of Vermilion River, R.M. of Wilton, and R.M. of Britannia. These areas are not wholly included in the Study Area and an estimate of the population within the Study Area was prepared.

The proportion of the population that resides in the Study Area within the County of Vermilion River is 294 and is based on the County's 2015 municipal census. The proportion of the population that resides within the R.M. of Wilton and R.M. of Britannia was estimated by reviewing Google maps for the area within the Study Area and identifying residences, farm operations and businesses. Based on this analysis, the population in the Study Area for Wilton is estimated to be 11, and Britannia 45 for a total population in the Study Area, outside the City of Lloydminster, of 350.

BASE YEAR EMPLOYMENT CALCULATION

Employment for the base year is not available from a public source. As a result, it has been estimated for the Study Area using the base year population and the labour force and employment rates as they are available for the Lloydminster CMA from Statistics Canada. Based on this analysis it is estimated that the employment for the Study Area is 19,124.²

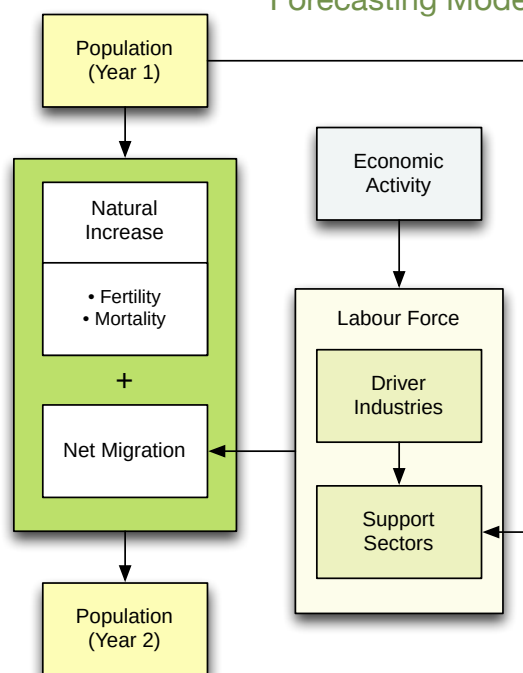
Population & Employment Forecasting Model

This section provides information on the methodology and assumptions used in generating the population projections. The methodology used in the model to project population includes an employment based method to project net migration along with the 'standard component method' of projecting population growth. The standard component method takes into consideration fertility, mortality and net migration rates, which are the key factors that affect population change.

The model calculates the number of births and advances the age of the population in each of the projection years. Surviving members in each age cohort or age group proceed into successive age groups in each year of the projection. For the 5-year age categories between 20-84 years, it is assumed that one-fifth of the surviving members of the age group is moved up to the next age category each year.

Age-specific fertility rates, expressed as per 1,000 population, were available from Alberta Health Interactive Health Data Application Team³. Fertility rates by age of mother were available in 5 year cohorts from 15 to 49 years of age. The fertility rates used in the analysis are for **Region 5 (R5)** of the previous **Alberta Health Services regions**, which includes the Alberta side of the Study Area.⁴ Table A.1 in the Appendix provides the birth rates per 1,000 females for R5 from 2004 to 2014. For comparison purposes, Table A.2 in the Appendix provides the birth rates per 1,000 females for Alberta from 2004 to 2014. While there are slight variations in the age specific fertility rates, the overall births per capita are fairly similar for R5 in comparison to Alberta.

Figure 3: Population & Employment Forecasting Model



² This employment total has not been disaggregated to areas within the Study Area.

³ Alberta Health Interactive Health Data Application Team, Demographic Indicator - Age-Specific Fertility Rates - Sub-Provincial. 2015

⁴ Using fertility rates for Region 5 will help to reduce any anomalies that may exist in the data by using a more restricted geographic area (e.g. City of Lloydminster).

The mortality data was available by age and gender for **Camrose-Drumheller Economic Region** from Statistics Canada⁵. This **region** includes the Alberta portion of the Study Area. Mortality rates by age and gender were calculated by dividing the 2013 total deaths by age and gender into the 2013 permanent population by **Camrose-Drumheller Economic Region**. Tables A.3 and A.4 in the Appendix show the mortality rates per 1,000 people for the **Camrose-Drumheller Economic Region** by age cohort and gender for the period 2004 to 2014. For comparison, Tables A.5 and A.6 in the appendix provide the mortality rates per 1,000 people for Alberta by age cohort and gender for the period 2004 to 2014.

The employment projections for the Study Area are based on expected growth in several key driver industries that have been identified and discussed below. This section of the report describes the development of the base year labour force data and the methodology used to project future labour force levels. Where employment growth exceeds the natural increase in the labour force for the Study Area, net migration is assumed to provide the required workers match the demand for employment. Appendix C provides the projected number of net migrants to the Study Year for each year of the forecast.

Driver Industries

For each scenario, a series of growth rates were developed for the industries that are expected to lead growth in the region – referred to as ‘Driver Industries’. For the Study Area, five Driver Industries have been identified as follows:

- ▶ Oil and Gas
- ▶ Agriculture
- ▶ Manufacturing
- ▶ Education
- ▶ Tourism

Other possible industrial sectors were investigated as potential driver industries for the Study Area. Of those other industrial sectors investigated, none were determined to be of sufficient significance in terms of direct employment in the Study Area to be included as a Driver Industry for this study.⁶

Each of these industries included in the analysis has been determined to have a particular level of influence on employment in the Study Area. Growth of these industries has been determined to have an affect on the net migration of workers and their families to the region. The importance of each industry for the Study Area are summarized in the following section. The information presented for each industry category has been based on research of publicly available information and the sources are provided as they are referenced

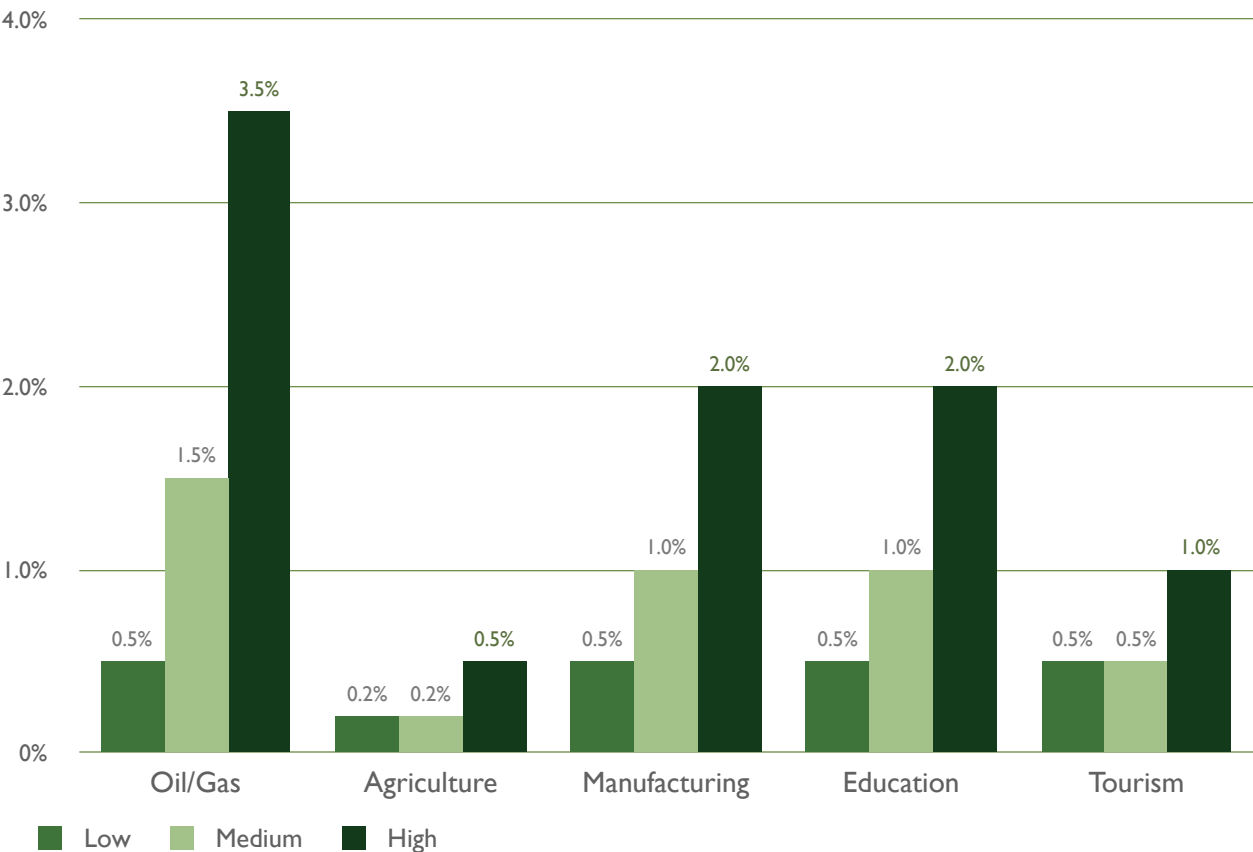
⁵ Table 051-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011.

⁶ Others sectors that were considered as driver industries and not included in the analysis as driver industries include forestry and potash. As well, consideration of the role of the airport as an economic driver was reviewed. Based on our review, airport activity is expected to support other business activities in the region and not be a driver of economic growth.

below. The employment projected for the Driver Industries relates to the direct employment associated with each industry.

The projected growth rates for each of these industries is discussed following the industry description in the next section of this document. The Gross Domestic Product (GDP) or economic output projections for each scenario are provided in Appendix B.

Figure 4: Scenario Driver Industry Growth Rates



The growth rates for each driver industry in each scenario have been based on a review of the historical growth patterns for these industries in the context of the expected growth for the Study Area in the future.⁷ For example, historical growth of employment in the Oil/Gas sector in relation to the historic price of oil has been used to estimate the future rate of growth for this sector given expected future energy prices.

OIL/GAS

Oil exploration and production have played a significant part in the economic growth of the **greater Lloydminster region**. For 2015, it has been estimated that 17% of employment in the Study Area is directly associated with the oil and gas industry.⁸

⁷ Note that the growth rates for the Low and Medium scenarios for Agriculture and Tourism are the same. This is intentional.

⁸ Statistics Canada Industry by National Occupation Classification, 2011.

Petroleum is recovered mostly through enhanced oil recovery techniques in the Study Area. This activity creates employment in the energy sector as well as various support sectors that provide goods and services to the energy sector. Exploration and recovery activity may also generate income for local land owners. Consequently, many farmers in the **broader region** in and around the Study Area have been financially compensated through lease payments resulting from oil wells being drilled on their land. While this development has some benefits to local land owners and generates tax revenues for the County, it also results in the County incurring costs associated with road maintenance and other municipal costs.

Based upon the latest production projection from the Canadian Association of Petroleum Producers (CAPP), the Alberta oil sands (bitumen and upgrading) is projected to continue to experience growth over the next 15 years. The June 2015 CAPP Crude Oil Production Forecast estimates Alberta oil sands to grow from approximately 2.2 million bpd to almost 4.0 million bpd by 2030. Of this in-situ oil production, which is most relevant to the oil reserves serviced by the Lloydminster area, is projected to grow from 1.24 million bpd to 1.55 million bpd.⁹ This represents a 74% increase in oil sands production and a 25% increase in in-situ production. While CAPP does not specify geographically where this production will take place, it can be expected that some of it will come from the producing area supported by activity in the Study Area. It is also worth noting that this current forecast represents a significant decline from the projection produced by CAPP a year earlier, before the significant decline in oil prices in 2014.¹⁰

Critical to this projection of oil sands production is the expected price of oil. CAPP does not include a projection of price as part of its production forecasts, but oil price projections are available from other sources. For example, the Conference Board of Canada is projecting real (2013 dollars) oil prices to increase to \$85-\$90 / bl West Texas Intermediate(WTI) by 2035.¹¹ In nominal terms, this forecast projects the WTI price for oil to reach \$140 / bl by 2035. Based on this projection, it has been assumed that a Medium, or most likely, scenario for the energy sector would be based on a WTI price for oil of \$80-\$100 / bl.¹²

Consistent with the long term Conference Board Forecast for oil, in the short term, oil prices are projected to increase moderately. In the Low scenario, it has been assumed that oil would remain in this \$60-\$80 range over the entire 30 year forecast period. The most recent Provincial Budget, projects WTI oil prices to increase to \$57 in 2016, \$67 in 2017 and \$72 in 2018.¹³ These projections form the basis of the provincial budget projection and fall within the range of oil forecasts collected from various sources. Based on nine

⁹ Canadian Association of Petroleum Producers Crude Oil Production Forecast June 2015 <http://capp.ca/publications-and-statistics/publications/264673>.

¹⁰ Ibid, page 8.

¹¹ Canadian Outlook 2015 - Long Term Economic Forecast, Conference Board of Canada, page 43.

¹² It should be noted that prices are expected to vary with the ups and downs of the cyclical nature of this sector. As a result, the range represents an average of these ups and downs.

¹³ Budget 2015, Economic Outlook, page 70.

projections of oil prices provided in the provincial budget, WTI oil prices are forecast to fall between a low of \$60 to a high of \$82 / bl by 2018.¹⁴

It is noted that producers of heavy oil don't receive the WTI price. Heavy oil prices are discounted for extra costs that are required for upgrading the product. Further, the rate of discount will depend on the quality of crude oil. One benchmark oil price used to reflect a typical price received by heavy crude oil producers in Alberta is the Western Canadian Select (WCS) price. The relationship between WTI and WCS can vary over time for various reasons, but in the long term this relationship is assumed to fall within the range over recent history. The historical relationship between these prices has varied from approximately \$15 to \$40 / bl.¹⁵

It has been assumed that the average historical relationship between WTI prices and those received by producers in the area serviced by the Study Area will remain in place over the forecast period. That is, if WTI prices are projected to increase, the price received by area producers will increase accordingly. Within the WTI price ranges identified for each scenario, it is expected there will be cycles of both ups and downs as we know will happen. The average of these ups and downs is reflected in the price range noted for each scenario. All oil price ranges quoted in the scenarios refer to WTI prices.



Investment in the energy sector in the **broader region** served by the Study Area is substantial. Development of new technologies has played a major role in the Study Area's evolving involvement in the oil industry. Horizontal well drilling and cavity pumps are examples of innovative technologies refined in the **broader**

¹⁴ Ibid.

¹⁵ Source: <http://economicdashboard.albertacanada.com/EnergyPrice>

region served by businesses in the Study Area. These technologies are examples of the potential for further innovation in the sector.¹⁶

Currently some of the large scale investments include:

- ▶ Husky operates three large-scale refinery plants in the **broader region** serviced by the Study Area, including the bi-provincial upgrader which can produce approximately 80,000 barrels per day.
- ▶ Husky also operates an asphalt refinery which produces about 28,000 barrels per day as well as an ethanol facility.
- ▶ TransAlta and Husky Oil operate a co generation station at the Lloydminster heavy oil upgrader.

In the three scenarios that have been developed the Oil and Gas sector has been projected to grow at the following average annual growth rates:

- ▶ **Low:** In the Low Scenario the oil and gas sector is projected to experience moderate growth over the forecast period, with an average annual growth rate of 0.5%. In this scenario lower oil prices are expected to fall between \$60 and \$80 / bl (WTI). This is the range which oil prices are currently projected for 2018 in the most recent provincial budget, and this range has been assumed to continue over the 30 year forecast period in this scenario. Oil prices at this level will lead to lower oil production and decreased drilling activity in the **broader region** serviced by the Study Area. This will result in lower local employment growth. Some employment growth could be attributed to some organizations looking at innovative methods to lower recovery costs in order to continue to be sustainable.
- ▶ **Medium:** In the Medium Scenario, the oil and gas sector is projected to grow at an average annual growth rate of 1.5%. It is expected that the oil and gas sector will experience positive growth as a result of increased development of the Alberta oil sands through recovery of oil prices to the \$80-\$100 range over the forecast period. It is expected that the current CAPP production forecast of heavy oil, and in particular, in situ production, would reflect the long term development of oil resources relevant to the Study Area. In this scenario, increased employment growth is expected largely due to increased demand for upgrading services, drilling activity and value added products from the oil sector, but at a more moderate rate than experienced in the past decade.
- ▶ **High:** In the High Scenario, the Oil and Gas sector is projected to grow at an average annual growth rate of 3.5%. This rate of growth assumes higher energy prices (greater than \$100/bl WTI) as projected by the Conference Board. It is expected that this scenario would be roughly equivalent to the CAPP production forecast produced in June 2014 prior to the sharp decline in oil prices in 2014. Further, it assumes that advances in technology would increase the viability of what are marginal resources in the **Study Area trading region**. An increase in oil production and strong energy prices will drive the demand for upgrading including production of high value diesel sold to retail and wholesale markets, and other value added products, including further diversification of this sector in the Study Area. In addition, the Lloydminster asphalt processing may further contribute in adding value to its heavy crude

¹⁶ Source: www.saskatchewanoilreport.com/lloydminster

oil production. Continued high energy prices may result in further large scale investment in **the region served by the Study Area**.

AGRICULTURE

In the agriculture sector, the Study Area supports primary agricultural production in and around the City of Lloydminster, including investment in supporting industries and some value-added production of agricultural products. In 2015, the agriculture sector comprises an estimated 2% of direct employment in the Study Area.¹⁷

The agriculture trading around Lloydminster is a major livestock producing area in the Province. In addition, it is an important area for the production of several major crops, including: canola, barley, oats, spring wheat, alfalfa, and hay.¹⁸ According to the Census of Agriculture, there are over 1,000 farms acres in the County of Vermillion River which generated over \$250 million in gross revenues in 2011.¹⁹

Expansion into value-added agriculture processing such as ethanol and bio-diesel production could strengthen local markets and build new ones for producers. Archer Daniels Midland (ADM) has recently opened Canada's largest bio-diesel production facility in Lloydminster. Continued growth is also expected with ADM just completing major expansions, which add new rail and transportation capacity. Being on the TransCanada Yellowhead Highway and also the Highway 17 north-south corridor makes Lloydminster a hub for agri-food commodities being transferred in all directions throughout Canada and internationally.

In the three scenarios that have been developed the agriculture industry has been projected to grow at the following average annual growth rates described below.²⁰

- **Low/Medium:** In both the Low and Medium Scenarios, employment growth in the agriculture sector is projected to be very modest, with an annual average growth rate of 0.2%. This is consistent with overall employment trends in the agriculture sector across the province. In these scenarios, it is expected that there would be limited growth in expansion of the value added agriculture processing and organic food production.
- **High:** In the High Scenario, it is expected that there will be a continued diversification of the crop and livestock production base in the **broader region** serviced by the Study Area and supporting demand for organic foods. The agriculture sector is projected to grow at an annual average growth rate of 0.5%. It is expected that there will be further expansion of agri-value and agri-food industries in this **broader region** served by the Study Area, including ethanol and bio-diesel production.

¹⁷ Statistics Canada Industry by National Occupation Classification, 2011.

¹⁸ Lloydminster Economic Development <http://www.lloydminstereconomy.ca/key-sectors/agriculture>.

¹⁹ 2011 Census of Agriculture for Alberta, Alberta Agriculture and Rural Development www.agriculture.alberta.ca/publications

²⁰ No distinction is necessary for the growth of this sector between the Low and Medium scenarios. Effectively there appears to be a high and low range of potential activity for the Agriculture sector. It has been assumed that the Low and Medium scenarios as defined for this analysis would embody the low end of the projection range for this sector.

MANUFACTURING

Lloydminster has almost 1,000 local jobs in the Manufacturing sector. In 2015, it is estimated that the manufacturing sector comprises an estimated 6% of total employment in the Study Area.²¹ Since 2010, the manufacturing sector has experienced almost 20% growth in employment.²² The Study Area is home to a variety of manufacturing businesses including Great Western Containers, Foremost, Grit Industries, Nelson Lumber, Husky and ADM. Proximity to transportation corridors and access to both rail and road provide a good connectivity for exports.

Future expansion in the manufacturing sector will include welding, structural fabrication, oil and gas field equipment, pipe spooling, pressure vessels, metal processing and field services, plastics and agri-production, pipeline and oilfield services, wood working, textiles and materials manufacturing, as well as many areas business owners or operators might not traditionally associate with manufacturing.

In the three scenarios that have been developed, manufacturing has been projected to grow at the following average annual growth rates:

- ▶ **Low:** In the Low Scenario, manufacturing is projected to grow at an annual average growth rate of 0.5%. It is expected that limited growth in the manufacturing sector will follow slower growth in the oil and gas sector and agriculture sector in this scenario.
- ▶ **Medium:** Manufacturing is projected to grow at an annual average growth rate of 1.0%. Growth in the manufacturing sector will largely follow increased employment in the oil and gas sector in this scenario. It is expected that increased employment in the oil and gas sector will drive some expansion of oil and gas related manufacturing in the Study Area.
- ▶ **High:** In the High Scenario, the manufacturing sector is projected to grow at an annual average growth rate of 2.0%. In this scenario, it is expected that strong growth in the oil and gas sector across the province will lead to expansion of the manufacturing sector. This includes increased employment in metal fabrication, machinery and equipment manufacturing and other areas to support the oil and gas sector across the province. Manufacturing will also benefit from higher growth in agriculture and other sectors of the local economy.

EDUCATION

Education is a sector that attracts students and families into the community to pursue post secondary education. In 2015, it is estimated that education makes up 3% of total employment in the Study Area.²³

Lakeland College provides employment, training and skill development to both experienced and new workers to the Study Area. An important aspect of the college is that it makes it possible for a local child to receive pre-kindergarten through post-secondary training without having to leave the community. The local

²¹ Statistics Canada Industry by National Occupation Classification, 2011.

²² Lloydminster Economic Development <http://www.lloydminstereconomy.ca/manufacturing>.

²³ Statistics Canada Industry by National Occupation Classification, 2011.

education and skills training, along with growth in other driver industries, provide an option for residents to continue to live and work in their local community.

Lakeland College offers two regional campuses in Vermilion and Lloydminster serving approximately 7,500 students. The post secondary institution offers a long list of programs available to students, including the trades, such as carpentry, welding, drafting, design and others. There are also university transfer classes, a large business faculty and nurses training just to name a few. The college has had success by catering to the job requirements that are needed from the business community, so they deliver the programs that are needed for the labour base and skill base that is needed for the business community.

An example of the strong linkages between industry and education in the Study Area include Lakeland College's Heavy Oil Operations Technician Program (HOOT) which has received significant contribution from the oil sector to expand training facilities. Collaboration among oil companies and training providers can help to ensure that the local companies are able to find and employ people with the skills they need to support the local employment.

In the three scenarios that have been developed, the Education sector has been projected to grow at the following average annual growth rates:

- ▶ **Low:** In the Low Scenario, the Education sector is projected to grow at an annual average growth rate of 0.5%. In this scenario, it is expected that the education sector will continue to grow at a moderate pace to accommodate the stable growth in all industries in the **broader region** served by the Study Area.
- ▶ **Medium:** The Education sector is projected to grow at an annual average growth rate of 1.0%. In this scenario, the education sector is projected to experience positive growth. Increased employment in the oil and gas sector and manufacturing sector will drive the need for additional training and skills development of the local labour force.
- ▶ **High:** In the High Scenario the Education sector is projected to grow at an annual average growth rate of 2.0%. In this scenario, it is expected that the education sector will experience increased employment to accommodate diversification in the oil and gas sector, agriculture sector, and manufacturing sector in the Study Area. Expanded training programs will be developed to support the increased employment in the **broader region** served by the Study Area, and the expansion of the types of local jobs. It is assumed that Lakeland College will continue to work with local businesses to provide appropriate skills and training to the local labour force to meet the needs of the growing local economy.

TOURISM

Many attractions focus on the beautiful rural setting of the Study Area, and the vast resources that surround it. In 2015, it is estimated that the Tourism sector makes up less than 3% of total employment in the Study Area.²⁴

²⁴ Statistics Canada Industry by National Occupation Classification, 2011.

Families can enjoy various farm attractions that showcase the local resources and products that contribute to the local economy. This includes the Nothing Barred Ranch a 200 acre working cattle ranch with grazing cattle. The ranch offers open range riding (not always head to tail) and will also cater to individual riding abilities. Sandy Beach is a Saskatchewan Regional Park and has many amenities, including a 9 hole sand green golf course and a campground. It is a popular summer destination for Lloydminster residents and visitors.

In the three scenarios that have been developed, Tourism has been projected to grow at the following average annual growth rates:²⁵

- **Low/Medium:** In both the Low and Medium Scenarios, the Tourism sector is projected to experience moderate grow, with an annual average growth rate of 0.5%. Some expansion of the tourism sector will be the result of the demand for attractions by the young growing population and people visiting the **broader region** serviced by the Study Area.
- **High:** In the High Scenario, the Tourism sector is projected to grow at an annual average growth rate of 1.0%. In this scenario, it is expected that tourism will experience a higher level of growth as a result of a growing local economy and an inflow of families into the Study Area. Expansion of the agriculture sector may also provide additional **regional attractions**, both within and outside the Study Area, within the Tourism sector related to value added processing and organic food markets.

Support Industries

The Study Area supports a diverse range of economic activity providing a range of support services to businesses within the **broader regional** services and trading area. In this analysis, the Support Industries include all non-driver industry economic sectors in the **broader regional** economy serviced by the Study Area. This includes major employment sectors including Construction, Retail Trade, Health Care and Social Assistance and Education, and other smaller sectors. Construction, Retail Trade, Health Care and Social Assistance and Education²⁶ sectors alone comprise almost 40% of the employment in the City, resulting in over 8,500 jobs. The remaining support industries collectively comprise 29% of the total employment in the Study Area.

Increased growth in the Study Area resulting from economic activity and employment in the driver industries will lead to increased demand for businesses that provide support services to these industries. In addition, if the growth in the driver industries increases incomes and results in net migration, the Support Industries will grow to provide the goods and services associated with these impacts.

In the analysis, growth in the Support Industries is based on the local demand for goods and services from the Driver Industries as well as the increase in demand for commercial and non-commercial goods and services that will result from growth of the population in the **broader region** served by the Study Area.

²⁵ No distinction is necessary for the growth of this sector between the Low and Medium scenarios. Effectively there appears to be a high and low range of potential activity for the Tourism sector. It has been assumed that the Low and Medium scenarios as defined for this analysis would embody the low end of the projection range for this sector.

²⁶ Note that the portion of the Education sector classified as a Support Industry includes primary and secondary education services.

These sectors are projected to grow at a rate that supports the economic growth of the Driver Industries as well as the general population growth of the Study Area.²⁷

²⁷ Growth in the support industries is based on the change in population over the previous period. As a result, there is a lag in Support Industry employment growth.

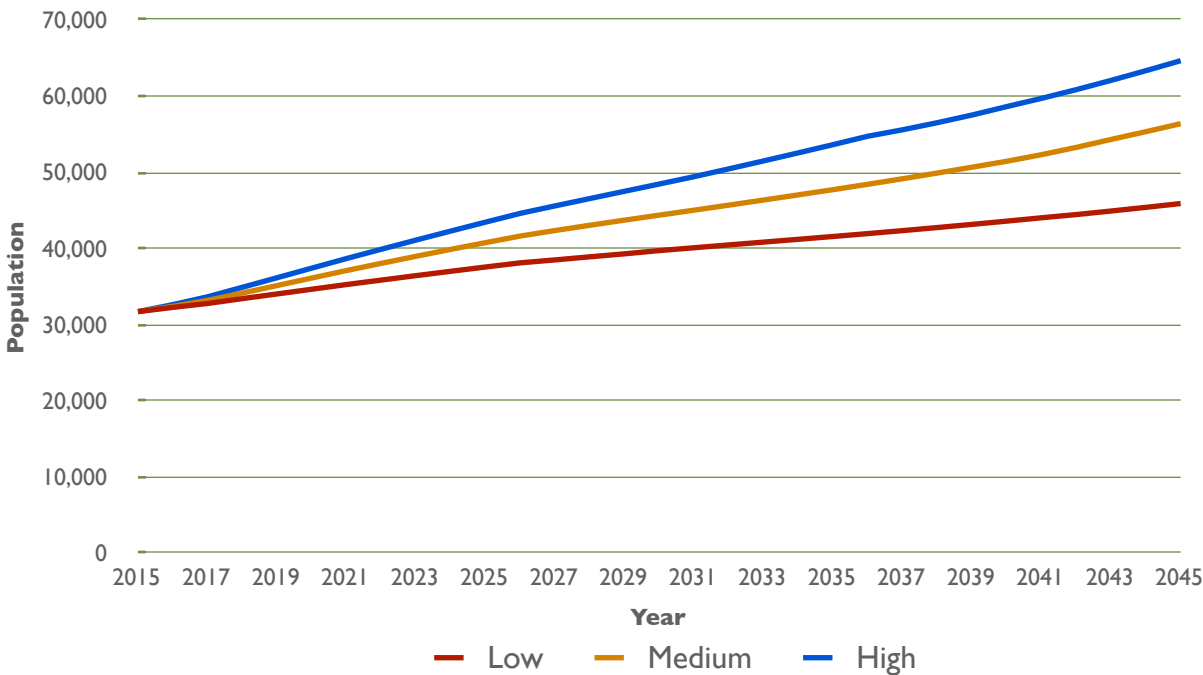
Population and Employment Forecast Results

The following section provides a graphical summary of the population and employment for the Study Area.

Population Forecast to 2045

The following graphs depict the Study Area population forecasts for 2015 to 2045. The population in the Study Area is projected to grow from 31,727 in 2015 to 45,911 by 2045 in the Low Scenario. This represents an annual average rate of population growth of 1.2%. In the Medium Scenario, the Study Area population is projected to grow from 31,727 in 2015 to 56,390 in 2045. This represents an annual average rate of population growth of 1.9%. In the High Scenario, the Study Area population is projected to grow from 31,727 in 2015 to 64,659 in 2045. This represents an annual average rate of population growth of 2.4%.

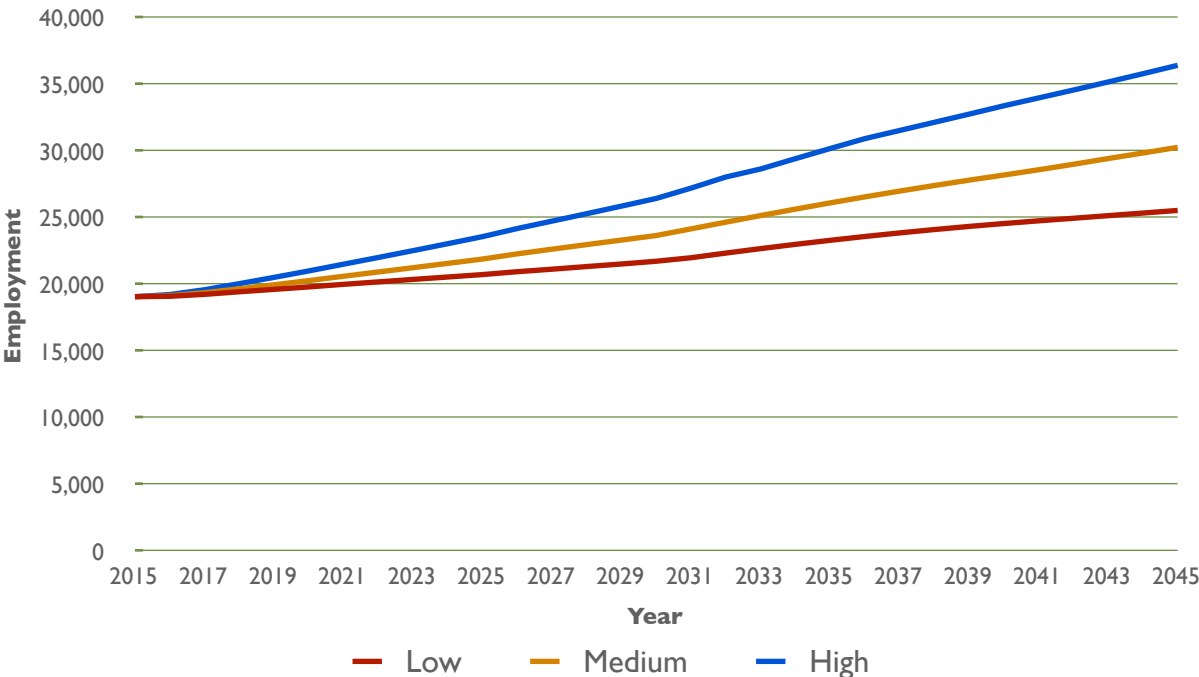
Figure 5: Population Forecast to 2045



Employment Forecast to 2045

The following graphs depict the Study Area employment forecasts for 2015 to 2045. The employment in the Study Area is projected to grow from 19,124 in 2015 to 25,592 by 2045 in the Low Scenario. This represents an annual average rate of employment growth of 1.0%. In the Medium Scenario, the Study Area employment is projected to grow from 19,124 in 2015 to 30,323 in 2045. This represents an annual average rate of employment growth of 1.5%. In the High Scenario, the Study Area employment is projected to grow from 19,124 in 2015 to 36,476 in 2045. This represents an annual average rate of employment growth of 2.2%.

Figure 6: Employment Forecast to 2045



Appendix A: Fertility / Mortality Rates

Table A.1: Historical Age specific fertility rates for Region 5²⁸

	Fertility Rate/1,000 Population										
Mother's Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
15to19	1.6%	1.4%	2.1%	1.6%	1.5%	1.9%	1.7%	1.5%	1.4%	1.4%	1.2%
20to24	8.1%	8.1%	7.4%	9.2%	8.5%	8.2%	6.9%	6.5%	6.3%	6.3%	6.0%
25to29	15.8%	14.8%	15.5%	16.3%	17.2%	16.8%	15.1%	14.4%	14.2%	13.4%	13.5%
30to34	9.7%	10.0%	10.0%	10.5%	10.8%	10.9%	9.3%	11.1%	9.5%	10.8%	11.0%
35to39	3.0%	3.1%	4.1%	3.0%	2.8%	3.6%	3.3%	4.3%	4.0%	3.7%	4.3%
40to44	0.6%	0.4%	0.4%	0.6%	0.5%	0.5%	0.6%	0.7%	0.7%	0.5%	0.9%
45to49	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table A.2: Historical Age specific fertility rates for Alberta²⁹

	Fertility Rate/1,000 Population										
Mother's Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
15to19	1.8%	1.8%	1.9%	2.0%	2.0%	1.9%	1.8%	1.7%	1.6%	1.5%	1.4%
20to24	6.6%	6.5%	6.7%	6.8%	6.7%	6.4%	6.0%	5.8%	5.7%	5.5%	5.3%
25to29	11.0%	10.9%	11.2%	11.7%	11.5%	11.2%	10.7%	10.5%	10.4%	10.1%	10.2%
30to34	10.2%	10.3%	10.7%	11.2%	11.5%	11.3%	10.9%	11.0%	10.9%	10.8%	11.0%
35to39	4.2%	4.4%	4.7%	5.1%	5.2%	5.3%	5.4%	5.3%	5.5%	5.4%	5.7%
40to44	0.7%	0.7%	0.7%	0.9%	0.9%	1.0%	1.1%	1.1%	1.1%	1.1%	1.1%
45to49	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%

²⁸ Alberta Health Interactive Health Data Application Team, Demographic Indicator - Age-Specific Fertility Rates - Sub-Provincial. 2015

²⁹ Alberta Health Interactive Health Data Application Team, Demographic Indicator - Age-Specific Fertility Rates - Alberta. 2015

Table A.3: Male age specific mortality rates for Camrose-Drumheller Economic Region³⁰

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.3%	0.3%	0.4%	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
5 to 9 years	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
10 to 14 years	0.3%	0.3%	0.3%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
15 to 19 years	0.7%	0.6%	0.6%	0.4%	0.1%	0.3%	0.3%	0.8%	0.7%	0.8%	0.8%
20 to 24 years	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.1%
25 to 29 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%
30 to 34 years	0.1%	0.2%	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
35 to 39 years	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
40 to 44 years	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	0.2%	0.2%	0.2%	0.2%
45 to 49 years	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%
50 to 54 years	0.5%	0.5%	0.5%	0.5%	0.3%	0.5%	0.3%	0.5%	0.4%	0.5%	0.5%
55 to 59 years	0.8%	0.7%	0.7%	0.8%	0.8%	0.6%	0.7%	0.7%	0.7%	0.7%	0.8%
60 to 64 years	0.9%	1.2%	1.2%	1.1%	1.2%	1.2%	1.0%	1.2%	1.2%	1.2%	1.2%
65 to 69 years	2.2%	2.0%	1.9%	1.9%	1.9%	1.6%	2.0%	1.6%	1.6%	1.7%	1.7%
70 to 74 years	3.2%	3.3%	3.2%	2.8%	3.2%	3.4%	2.7%	3.2%	3.1%	3.0%	3.2%
75 to 79 years	4.8%	5.0%	5.2%	5.3%	5.0%	4.7%	4.4%	4.4%	4.4%	4.5%	4.7%
80 to 84 years	8.6%	10.0%	9.8%	7.7%	7.9%	6.7%	7.6%	7.3%	7.4%	7.4%	7.6%
85+	16.1%	17.0%	17.8%	16.1%	17.2%	15.6%	15.7%	15.1%	14.3%	14.7%	15.1%

³⁰ Data on deaths was gathered from Table 05I-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 05I-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Table A.4: Female age specific mortality rates for Camrose-Drumheller Economic Region³¹

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.3%	0.2%	0.2%	0.3%	0.2%	0.0%	0.5%	0.1%	0.1%	0.1%	0.1%
5 to 9 years	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
10 to 14 years	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
15 to 19 years	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%
20 to 24 years	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
25 to 29 years	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30 to 34 years	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
35 to 39 years	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
40 to 44 years	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
45 to 49 years	0.2%	0.2%	0.2%	0.1%	0.2%	0.4%	0.3%	0.2%	0.2%	0.2%	0.2%
50 to 54 years	0.2%	0.3%	0.3%	0.3%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
55 to 59 years	0.5%	0.4%	0.4%	0.4%	0.6%	0.6%	0.3%	0.5%	0.5%	0.5%	0.5%
60 to 64 years	0.4%	0.6%	0.5%	0.7%	0.7%	1.0%	0.5%	0.8%	0.8%	0.8%	0.8%
65 to 69 years	1.1%	1.1%	1.2%	0.9%	1.4%	1.0%	1.4%	1.3%	1.2%	1.3%	1.3%
70 to 74 years	1.9%	1.8%	1.8%	2.1%	1.8%	1.6%	1.7%	2.1%	2.0%	2.1%	2.1%
75 to 79 years	3.3%	3.1%	3.3%	3.0%	2.9%	3.3%	2.8%	2.9%	3.0%	2.9%	2.9%
80 to 84 years	5.9%	6.0%	5.9%	5.1%	5.3%	4.9%	5.0%	4.5%	4.5%	4.7%	4.8%
85+	12.3%	11.9%	13.1%	13.0%	12.7%	11.3%	12.7%	12.8%	12.9%	13.4%	13.9%

³¹ Data on deaths was gathered from Table 051-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 051-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Table A.5: Male age specific mortality rates for Alberta³²

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
5 to 9 years	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
10 to 14 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
15 to 19 years	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
20 to 24 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
25 to 29 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
30 to 34 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
35 to 39 years	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
40 to 44 years	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
45 to 49 years	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	0.3%	0.3%
50 to 54 years	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
55 to 59 years	0.7%	0.7%	0.6%	0.6%	0.7%	0.6%	0.6%	0.7%	0.6%	0.6%	0.6%
60 to 64 years	1.0%	1.0%	1.0%	0.9%	0.9%	1.0%	0.9%	1.0%	1.0%	0.9%	0.9%
65 to 69 years	1.8%	1.7%	1.7%	1.7%	1.6%	1.5%	1.6%	1.4%	1.4%	1.4%	1.4%
70 to 74 years	2.8%	2.8%	2.7%	2.7%	2.6%	2.7%	2.5%	2.5%	2.4%	2.4%	2.4%
75 to 79 years	4.3%	4.5%	4.4%	4.2%	4.3%	4.3%	4.2%	3.9%	3.9%	3.9%	3.9%
80 to 84 years	7.2%	7.7%	7.3%	7.0%	7.0%	6.9%	6.8%	6.7%	6.6%	6.7%	6.8%
85+	15.7%	15.1%	14.5%	14.2%	14.5%	14.5%	13.8%	14.2%	12.9%	12.9%	13.1%

³² Data on deaths was gathered from Table 051-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 051-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Table A.6: Female age specific mortality rates for Alberta³³

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
5 to 9 years	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
10 to 14 years	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%
15 to 19 years	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
20 to 24 years	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
25 to 29 years	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30 to 34 years	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
35 to 39 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
40 to 44 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
45 to 49 years	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
50 to 54 years	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	0.3%	0.3%	0.3%
55 to 59 years	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%
60 to 64 years	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
65 to 69 years	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%
70 to 74 years	1.8%	1.7%	1.8%	1.7%	1.7%	1.6%	1.6%	1.7%	1.6%	1.6%	1.6%
75 to 79 years	3.0%	2.8%	2.8%	2.7%	2.8%	2.8%	2.7%	2.5%	2.5%	2.5%	2.5%
80 to 84 years	5.1%	4.9%	4.8%	4.8%	4.8%	4.7%	4.5%	4.6%	4.5%	4.5%	4.6%
85+	12.8%	11.8%	11.6%	11.7%	11.9%	11.7%	11.6%	11.3%	11.3%	11.3%	11.5%

³³ Data on deaths was gathered from Table 051-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 051-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Appendix B: Study Area GDP

Table B.1: Study Area GDP (millions of chained 2007 dollars)³⁴

2 Digit NAICS Industry	2014	2049		
		Low	Medium	High
11 Agriculture, forestry, fishing and hunting	66	324	324	355
21 Mining, quarrying, and oil and gas extraction	1,575	2,100	2,827	5,076
22 Utilities	36	40	47	49
23 Construction	259	592	690	724
31-33 Manufacturing	192	208	242	325
41 Wholesale trade	116	323	376	394
44-45 Retail trade	146	399	465	488
48-49 Transportation and warehousing	97	113	132	139
51 Information and cultural industries	35	57	66	70
52 Finance and insurance	133	390	455	477
53 Real estate and rental and leasing	136	591	688	722
54 Professional, scientific and technical services	124	320	373	391
55 Management of companies and enterprises	4	12	14	14
56 Administrative and support, waste management and remediation services	30	49	57	60
61 Educational services	90	157	183	216
62 Health care and social assistance	91	176	205	215
71 Arts, entertainment and recreation	6	15	17	18
72 Accommodation and food services	35	72	78	86
81 Other services (except public administration)	83	148	172	180
91 Public administration	48	93	108	113
Total	3,301	6,181	7,519	10,110

³⁴ All GDP figures are an estimate based upon provincial output per worker incorporating assumptions regarding labour productivity gains over the forecast period.

Appendix C: Net Migration by Scenario

Year	Low	Medium	High
2016	59	192	414
2017	27	282	520
2018	159	471	737
2019	144	497	748
2020	160	501	750
2021	167	499	746
2022	151	469	708
2023	159	456	695
2024	160	443	681
2025	160	428	663
2026	158	411	645
2027	87	279	473
2028	40	249	456
2029	34	233	447
2030	78	221	440
2031	27	211	437
2032	27	216	486
2033	27	216	486
2034	27	216	486
2035	27	216	486
2036	27	216	486
2037	27	216	198
2038	27	216	262
2039	27	216	305
2040	27	202	380
2041	27	272	322
2042	30	341	367
2043	33	407	412
2044	43	368	445
2045	56	382	472
2046	62	394	494
2047	63	389	506
2048	57	374	510
2049	48	353	515



APPENDIX B

Population & Employment Medium Scenario:
Municipal Disaggregation Scenarios and Definitions



Population and Employment Forecasts (2015-2045): Municipal Disaggregation Scenarios for City of Lloydminster

Scenario	Population					Employment				
	2015	2045	Absolute Change	Percent Change	Average Annual Change	2015	2045	Absolute Change	Percent Change	Average Annual Change
1	31,377	55,768	24,391	78%	1.94%	18,192	28,899	10,707	159%	1.55%
2	31,377	55,768	24,391	78%	1.94%	18,192	28,845	10,653	159%	1.55%
2a	31,377	55,768	24,391	78%	1.94%	18,192	28,845	10,653	159%	1.55%
3	31,377	55,290	23,913	76%	1.91%	18,192	28,226	10,035	155%	1.48%
3a	31,377	55,768	24,391	78%	1.94%	18,192	28,365	10,173	156%	1.49%
4	31,377	55,290	23,913	76%	1.91%	18,192	28,374	10,183	156%	1.49%
4a	31,377	55,768	24,391	78%	1.94%	18,192	28,538	10,346	157%	1.51%
5a	31,377	55,768	24,391	78%	1.94%	18,192	28,899	10,707	159%	1.55%
5b (match)*	31,377	55,299	23,922	76%	1.91%	18,192	28,272	10,080	155%	1.48%
6a	31,377	55,768	24,391	78%	1.94%	18,192	28,899	10,707	159%	1.55%
6b (match)*	31,377	55,254	23,877	76%	1.90%	18,192	28,084	9,893	154%	1.46%

Population and Employment Forecasts (2015-2045): Municipal Disaggregation Scenarios for County of Vermilion River

Scenario	Population					Employment				
	2015	2045	Absolute Change	Percent Change	Average Annual Change	2015	2045	Absolute Change	Percent Change	Average Annual Change
1	294	523	229	78%	1.94%	592	884	292	149%	1.35%
2	294	523	229	78%	1.94%	592	938	346	159%	1.55%
2a	294	523	229	78%	1.94%	592	938	346	159%	1.55%
3	294	1,000	706	240%	4.16%	592	1,556	965	263%	3.28%
3a	294	523	229	78%	1.94%	592	1,418	826	240%	2.96%
4	294	1,000	706	240%	4.16%	592	1,409	817	238%	2.93%
4a	294	523	229	78%	1.94%	592	1,245	654	211%	2.51%
5a	294	1,000	706	240%	4.16%	592	1,556	965	263%	3.28%
5b (match)*	294	992	698	237%	4.14%	592	1,523	931	257%	3.20%
6a	294	1,000	706	240%	4.16%	592	1,556	965	263%	3.28%
6b (match)*	294	991	697	237%	4.13%	592	1,512	921	256%	3.18%

Population and Employment Forecasts (2015-2045): Municipal Disaggregation Scenarios for RM of Wilton No. 472

Scenario	Population					Employment				
	2015	2045	Absolute Change	Percent Change	Average Annual Change	2015	2045	Absolute Change	Percent Change	Average Annual Change
1	11	20	9	78%	1.94%	323	511	189	159%	1.55%
2	11	20	9	78%	1.94%	323	511	189	159%	1.55%
2a	11	20	9	78%	1.94%	323	511	189	159%	1.55%
3	11	20	9	78%	1.94%	323	511	189	159%	1.55%
3a	11	20	9	78%	1.94%	323	511	189	159%	1.55%
4	11	20	9	78%	1.94%	323	511	189	159%	1.55%
4a	11	20	9	78%	1.94%	323	511	189	159%	1.55%
5a	11	20	9	78%	1.94%	323	511	189	159%	1.55%
5b (match)*	11	20	9	76%	1.91%	323	500	178	155%	1.47%
6a	11	20	9	78%	1.94%	323	667	344	207%	2.45%
6b (match)*	11	20	9	76%	1.90%	323	648	325	201%	2.35%

Population and Employment Forecasts (2015-2045): Municipal Disaggregation Scenarios for RM of Britannia No. 502

Scenario	Population					Employment				
	2015	2045	Absolute Change	Percent Change	Average Annual Change	2015	2045	Absolute Change	Percent Change	Average Annual Change
1	45	80	35	78%	1.94%	18	29	11	159%	1.55%
2	45	80	35	78%	1.94%	18	29	11	159%	1.55%
2a	45	80	35	78%	1.94%	18	29	11	159%	1.55%
3	45	80	35	78%	1.94%	18	29	11	159%	1.55%
3a	45	80	35	78%	1.94%	18	29	11	159%	1.55%
4	45	80	35	78%	1.94%	18	29	11	159%	1.55%
4a	45	80	35	78%	1.94%	18	29	11	159%	1.55%
5a	45	80	35	78%	1.94%	18	29	11	159%	1.55%
5b (match)*	45	79	34	76%	1.91%	18	28	10	155%	1.47%
6a	45	126	81	181%	3.50%	18	80	62	446%	5.11%
6b (match)*	45	125	80	178%	3.47%	18	78	60	433%	5.01%

* Proportionally adjusted downwards to match control totals of forecasts published in Draft 5 of Working Paper prepared by Applications.

Population Forecasts (2015-2045): Municipal Disaggregation Scenarios by Municipality

Year - Scenario	Population				Average Annual Growth Rate			
	City of Lloydminster	County of Vermilion River	RM of Wilton No. 472	RM of Britannia No. 502	City of Lloydminster	County of Vermilion River	RM of Wilton No. 472	RM of Britannia No. 502
2015	31,377	294	11	45	—	—	—	—
2045 - 1	55,768	523	20	80	1.94%	1.94%	1.94%	1.94%
2045 - 2	55,768	523	20	80	1.94%	1.94%	1.94%	1.94%
2045 - 2a	55,768	523	20	80	1.94%	1.94%	1.94%	1.94%
2045 - 3	55,290	1,000	20	80	1.91%	4.16%	1.94%	1.94%
2045 - 3a	55,768	523	20	80	1.94%	1.94%	1.94%	1.94%
2045 - 4	55,290	1,000	20	80	1.91%	4.16%	1.94%	1.94%
2045 - 4a	55,768	523	20	80	1.94%	1.94%	1.94%	1.94%
2045 - 5a	55,768	1,000	20	80	1.94%	4.16%	1.94%	1.94%
2045 - 5b (match)*	55,299	992	20	79	1.91%	4.14%	1.91%	1.91%
2045 - 6a	55,768	1,000	20	126	1.94%	4.16%	1.94%	3.50%
2045 - 6b (match)*	55,254	991	20	125	1.90%	4.13%	1.90%	3.47%

Employment Forecasts (2015-2045): Municipal Disaggregation Scenarios by Municipality

Year - Scenario	Employment (Jobs)				Average Annual Growth Rate			
	City of Lloydminster	County of Vermilion River	RM of Wilton No. 472	RM of Britannia No. 502	City of Lloydminster	County of Vermilion River	RM of Wilton No. 472	RM of Britannia No. 502
2015	18,192	592	323	18	—	—	—	—
2045 - 1	28,899	884	511	29	1.55%	1.35%	1.55%	1.55%
2045 - 2	28,845	938	511	29	1.55%	1.55%	1.55%	1.55%
2045 - 2a	28,845	938	511	29	1.55%	1.55%	1.55%	1.55%
2045 - 3	28,226	1,556	511	29	1.48%	3.28%	1.55%	1.55%
2045 - 3a	28,365	1,418	511	29	1.49%	2.96%	1.55%	1.55%
2045 - 4	28,374	1,409	511	29	1.49%	2.93%	1.55%	1.55%
2045 - 4a	28,538	1,245	511	29	1.51%	2.51%	1.55%	1.55%
2045 - 5a	28,899	1,556	511	29	1.55%	3.28%	1.55%	1.55%
2045 - 5b (match)*	28,272	1,523	500	28	1.48%	3.20%	1.47%	1.47%
2045 - 6a	28,899	1,556	667	80	1.55%	3.28%	2.45%	5.11%
2045 - 6b (match)*	28,084	1,512	648	78	1.46%	3.18%	2.35%	5.01%

* Proportionally adjusted downwards to match control totals of forecasts published in Draft 5 of Working Paper prepared by Applications.

Employment Forecasts (2015-2045): Jobs in City of Lloydminster by Industry by Scenario

Two-Digit NAICS Code Industries	2015	Scenario										
		1	2	2A	3	3A	4	4A	5A	5B (match)*	6a	6B (match)*
11 Agriculture, forestry, fishing and hunting	336	337	337	337	337	337	337	337	337	329	337	327
21 Mining and oil and gas extraction	2,744	4,314	4,260	4,260	4,005	4,005	4,109	4,109	4,314	4,220	4,314	4,192
22 Utilities	107	177	177	177	177	177	177	177	177	173	177	172
23 Construction	1,609	2,667	2,667	2,667	2,667	2,667	2,635	2,635	2,667	2,609	2,667	2,592
31-33 Manufacturing	935	1,249	1,249	1,186	1,186	1,186	1,217	1,217	1,249	1,222	1,249	1,214
41 Wholesale trade	700	1,150	1,150	1,105	1,128	1,105	1,096	1,141	1,150	1,125	1,150	1,118
44-45 Retail trade	2,814	4,641	4,641	4,550	4,641	4,550	4,550	4,641	4,641	4,540	4,641	4,510
48-49 Transportation and warehousing	863	1,435	1,435	1,321	1,321	1,321	1,389	1,389	1,435	1,404	1,435	1,395
51 Information and cultural industries	183	304	304	304	304	304	304	304	304	297	304	295
52 Finance and insurance	698	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,133	1,158	1,125
53 Real estate and rental and leasing	214	354	354	354	354	354	354	354	347	354	344	
54 Professional, scientific and technical services	1,195	1,965	1,965	1,965	1,965	1,965	1,950	1,950	1,965	1,923	1,965	1,910
55 Management of companies and enterprises	1	4	3	4	4	4	3	3	4	4	4	4
56 Administrative and support, waste management and remediation services	423	701	701	701	701	701	701	701	701	686	701	681
61 Educational services	1,222	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,797	1,837	1,785
62 Healthcare and social assistance	1,426	2,364	2,364	2,364	2,364	2,364	2,364	2,364	2,364	2,313	2,364	2,297
71 Arts, entertainment and recreation	160	240	240	232	236	236	232	238	240	235	240	233
72 Accommodation and food services	1,001	1,414	1,414	1,373	1,394	1,394	1,373	1,394	1,414	1,384	1,414	1,374
81 Other services (except public administration)	1,181	1,959	1,959	1,959	1,959	1,959	1,959	1,959	1,959	1,916	1,959	1,903
91 Public administration	380	630	630	630	630	630	630	630	630	616	630	612
Total	18,192	28,899	28,845	28,226	28,365	28,374	28,538	28,899	28,272	28,899	28,899	28,084

Employment Forecasts (2015-2045): Jobs in County of Vermilion River by Industry by Scenario

Two-Digit NAICS Code Industries	2015	Scenario										
		1	2	2A	3	3A	4	4A	5A	5B (match)*	6a	6B (match)*
11 Agriculture, forestry, fishing and hunting	26	40	40	40	41	41	40	40	41	40	41	39
21 Mining and oil and gas extraction	202	267	320	320	576	576	472	472	576	564	576	560
22 Utilities	0	0	0	0	0	0	0	0	0	0	0	0
23 Construction	5	8	8	8	8	8	40	40	8	8	8	8
31-33 Manufacturing	20	32	32	32	94	94	63	63	94	92	94	92
41 Wholesale trade	172	273	273	318	295	295	327	282	318	311	318	309
44-45 Retail trade	8	13	13	104	13	13	104	13	104	102	104	101
48-49 Transportation and warehousing	63	100	100	214	214	214	146	146	214	210	214	208
51 Information and cultural industries	0	0	0	0	0	0	0	0	0	0	0	0
52 Finance and insurance	10	16	16	16	16	16	16	16	16	16	16	15
53 Real estate and rental and leasing	0	0	0	0	0	0	0	0	0	0	0	0
54 Professional, scientific and technical services	0	0	0	0	0	0	15	15	0	0	0	0
55 Management of companies and enterprises	30	47	48	48	47	47	48	48	47	46	47	46
56 Administrative and support, waste management and remediation services	0	0	0	0	0	0	0	0	0	0	0	0
61 Educational services	0	0	0	0	0	0	0	0	0	0	0	0
62 Healthcare and social assistance	0	0	0	0	0	0	0	0	0	0	0	0
71 Arts, entertainment and recreation	25	40	40	48	44	44	48	41	48	47	48	46
72 Accommodation and food services	10	16	16	57	37	37	57	37	57	56	57	56
81 Other services (except public administration)	21	33	33	33	33	33	33	33	33	33	33	32
91 Public administration	0	0	0	0	0	0	0	0	0	0	0	0
Total	592	884	938	938	1,556	1,418	1,409	1,245	1,556	1,523	1,556	1,512

* Proportionally adjusted downwards to match control totals of forecasts published in Draft 5 of Working Paper prepared by Applications.

Employment Forecasts (2015-2045): Jobs in Rural Municipality of Wilton No. 472 by Industry by Scenario

Two-Digit NAICS Code Industries	2015	Scenario									
		1	2	2A	3	3A	4	4A	5A	5B (match)*	6B (match)*
11 Agriculture, forestry, fishing and hunting	4	6	6	6	6	6	6	6	6	5	5
21 Mining and oil and gas extraction	0	0	0	0	0	0	0	0	0	0	0
22 Utilities	0	0	0	0	0	0	0	0	0	0	0
23 Construction	0	0	0	0	0	0	0	0	0	0	0
31-33 Manufacturing	307	487	487	487	487	487	487	487	487	476	473
41 Wholesale trade	12	19	19	19	19	19	19	19	19	19	18
44-45 Retail trade	0	0	0	0	0	0	0	0	0	0	38
48-49 Transportation and warehousing	0	0	0	0	0	0	0	0	0	0	15
51 Information and cultural industries	0	0	0	0	0	0	0	0	0	0	0
52 Finance and insurance	0	0	0	0	0	0	0	0	0	0	8
53 Real estate and rental and leasing	0	0	0	0	0	0	0	0	0	0	0
54 Professional, scientific and technical services	0	0	0	0	0	0	0	0	0	0	0
55 Management of companies and enterprises	0	0	0	0	0	0	0	0	0	0	0
56 Administrative and support, waste management and remediation services	0	0	0	0	0	0	0	0	0	0	0
61 Educational services	0	0	0	0	0	0	0	0	0	0	0
62 Healthcare and social assistance	0	0	0	0	0	0	0	0	0	0	0
71 Arts, entertainment and recreation	0	0	0	0	0	0	0	0	0	0	16
72 Accommodation and food services	0	0	0	0	0	0	0	0	0	0	75
81 Other services (except public administration)	0	0	0	0	0	0	0	0	0	0	0
91 Public administration	0	0	0	0	0	0	0	0	0	0	0
Total	323	511	511	511	511	511	511	511	511	500	667

Employment Forecasts (2015-2045): Jobs in Rural Municipality of Britannia No. 502 by Industry by Scenario

Two-Digit NAICS Code Industries	2015	Scenario									
		1	2	2A	3	3A	4	4A	5A	5B (match)*	6B (match)*
11 Agriculture, forestry, fishing and hunting	9	14	14	14	14	14	14	14	14	14	14
21 Mining and oil and gas extraction	0	0	0	0	0	0	0	0	0	0	0
22 Utilities	0	0	0	0	0	0	0	0	0	0	0
23 Construction	0	0	0	0	0	0	0	0	0	0	0
31-33 Manufacturing	0	0	0	0	0	0	0	0	0	0	3
41 Wholesale trade	2	3	3	3	3	3	3	3	3	3	3
44-45 Retail trade	0	0	0	0	0	0	0	0	0	0	15
48-49 Transportation and warehousing	5	8	8	8	8	8	8	8	8	8	8
51 Information and cultural industries	0	0	0	0	0	0	0	0	0	0	0
52 Finance and insurance	0	0	0	0	0	0	0	0	0	0	3
53 Real estate and rental and leasing	0	0	0	0	0	0	0	0	0	0	0
54 Professional, scientific and technical services	0	0	0	0	0	0	0	0	0	0	0
55 Management of companies and enterprises	0	0	0	0	0	0	0	0	0	0	0
56 Administrative and support, waste management and remediation services	0	0	0	0	0	0	0	0	0	0	0
61 Educational services	0	0	0	0	0	0	0	0	0	0	0
62 Healthcare and social assistance	0	0	0	0	0	0	0	0	0	0	0
71 Arts, entertainment and recreation	0	0	0	0	0	0	0	0	0	0	5
72 Accommodation and food services	0	0	0	0	0	0	0	0	0	0	26
81 Other services (except public administration)	0	0	0	0	0	0	0	0	0	0	0
91 Public administration	2	3	3	3	3	3	3	3	3	3	3
Total	18	29	29	29	29	29	29	29	29	28	78

* Proportionally adjusted downwards to match control totals of forecasts published in Draft 5 of Working Paper prepared by Applications.

County of Vermilion River/City of Lloydminster Growth Scenarios

		Scenario Options										
		SQ with change in employment	SQ	SQ with County concentrated growth	Aspirational County population and employment concentrated growth	County employment concentrated growth	Aspirational County population growth with range of industrial in City and County	County employment concentrated growth with full range of employment in City and County	Maximize City and County pop/emp growth. Status quo growth for RMs.	Maximize County pop/emp growth. Status quo growth for RMs. Align to control totals	Maximize City and County pop/emp growth. Additional growth for RMs	Maximize County pop/emp growth. Additional growth for RMs. Align to control totals
		1	2	2a	3	3a	4	4a	5a	5b	6a	6b
Population Growth												
Maintain status quo share of population growth		City County RMs	x	x	x			x				
			x	x	x			x				
			x	x	x	x	x	x	x	x		
County encourages more residential development (up to a maximum of 1,000 people)					x		x		x	x	x	x
Employment Growth												
City												
<i>Maintain similar types of development as currently exists (mix high and low intensity)</i>			x	x			x	x				
<i>City attracts higher intensity industrial development</i>			x		x	x			x	x	x	x
County												
<i>Maintain similar types of development as currently exists (primarily low intensity industrial dev't)</i>			x	x	x							
<i>County attracts both low and high intensity industrial development.</i>			x		x	x	x	x	x	x	x	x
RMs												
<i>RM of Wilton: Growth above the status quo share.</i>											x	x
<i>RM of Britannia: Growth above the status quo share</i>											x	x
Location of Growth												
City			x		x		x		x	x	x	x
County												
<i>County growth is primarily concentrated in area between Blackfoot and airport (municipally serviced)</i>					x	x	x	x	x	x	x	x
<i>County growth is situated throughout County portion of study area, as per land use designations</i>			x									
Align to Approved Control Totals			x	x	x	x	x	x		x		x



APPENDIX C

Population & Employment Forecasts:
Working Paper, May 2019



City of Lloydminster and
County of Vermilion River
Joint Growth Study
Population & Employment
Forecasts

WORKING PAPER
MAY 2019



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Introduction

In order to successfully plan for future land and infrastructure needs, an expectation of future growth is required. Population projections are particularly important in long-term infrastructure planning as all key planning decisions, including those involving public facilities and services, depend on how many people will be living in the area. The potential for non-residential development is also important as from a fiscal point of view, non-residential development along with residential growth, provides a community with 'balanced growth'.

Purpose of the Study

The purpose of this study is to provide a 35 year population and employment forecast, for a Study Area that includes the City of Lloydminster, and portions of the County of Vermilion River, R.M. of Britannia and R.M. of Wilton. This analysis includes population and employment results for the original analysis 2015 to 2045, and the updated analysis timeframe of 2016 to 2051.

FORTHCOMING DELIVERABLES

Once the population and employment forecasts have been approved the next steps will be to disaggregate the Study Area projections to the 4 communities within the Study Area, including City of Lloydminster, and portions of the County of Vermilion River, R.M. of Britannia, and R.M. of Wilton. The geographical disaggregation will include an analysis of the potential for residential and non-residential development based on land use and development patterns in these communities.

Housing projections for the Study Area will also be prepared based on the population projections. The housing projections will be provided for the entire Study Area, and also disaggregated by community once the geographical distribution has been completed.

Study Area

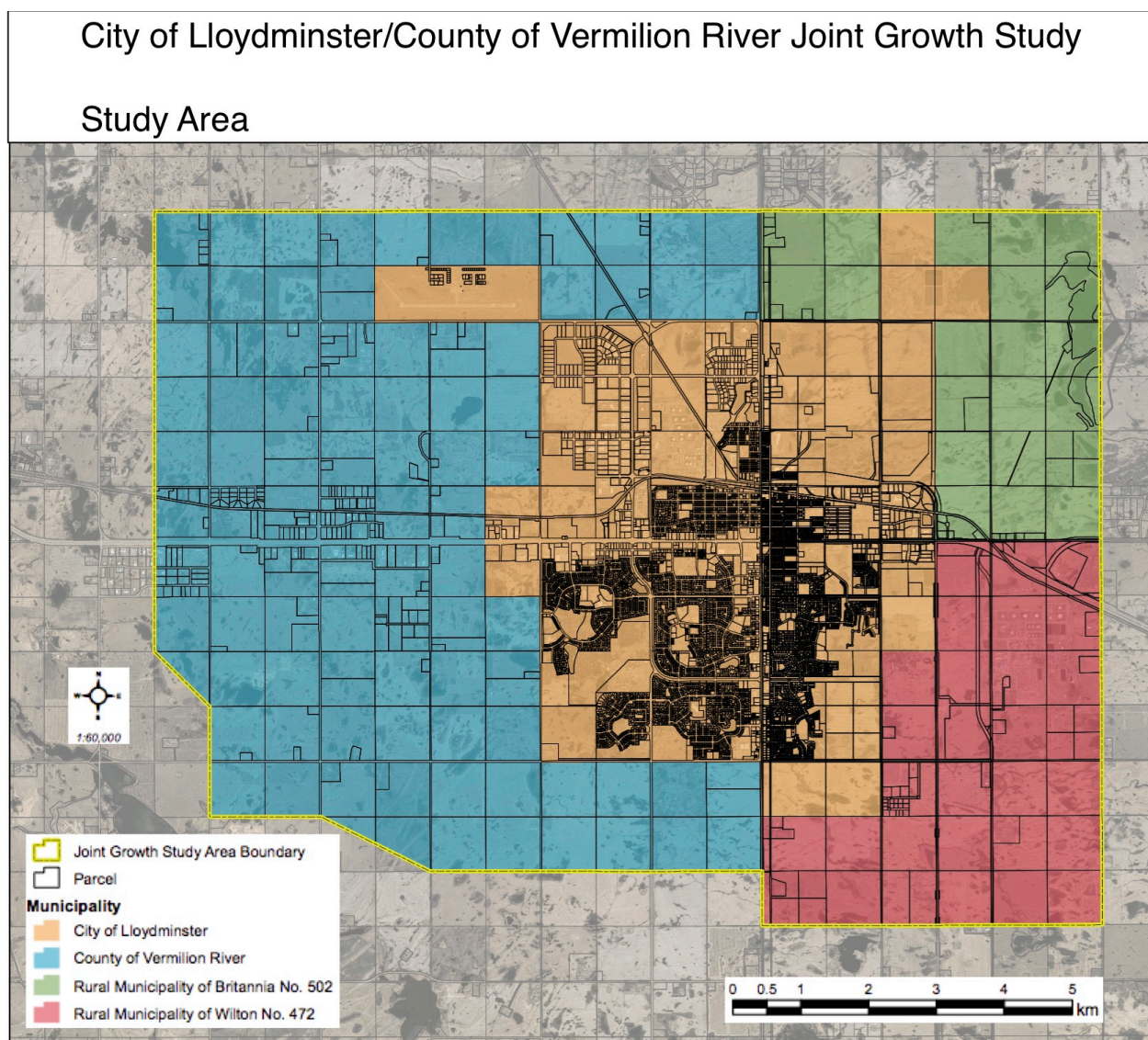
The population and employment projections have been developed using Applications Management Consulting Ltd's population and employment forecasting model. The geographic area covered by these projections is the Joint Growth Study Area. This area includes all, or portions of the following municipalities:

- ▶ City of Lloydminster (all)
- ▶ County of Vermilion River (partial including a portion of Division 5 of the County)
- ▶ R.M. of Britannia (partial)
- ▶ R.M. of Wilton (partial)

A map of the Joint Growth Study Area is shown below. All references to the '**region**' (unless noted otherwise) refer to the defined Study Area as depicted in the attached map.¹

¹ Where a geographic reference to 'region' does NOT refer to the Study Area, it has been **bolded**.

Figure 1: Study Area



Growth Scenarios

A population and employment forecasting model was used to project growth for each of three scenarios.

- **Low Scenario:** This scenario represents a continuation of the current slowdown in the economic growth in the Study Area, including lower growth in the oil industry, which does not recover to pre-oil price declines of 2014.
- **Medium Scenario:** This scenario represents the 'best guess' as to the growth which can be expected for the Study Area and assumes that energy prices recover to levels which will remain below levels that existed prior to the oil price declines of 2014.

- **Medium-High Scenario:** This scenario was prepared to represent a midpoint between the medium and high scenarios. This assumes a midpoint in the driver industry growth rates between the medium and high scenarios.
- **High Scenario:** This scenario represents an 'optimistic' picture of future growth that can be expected for the region including a return of oil prices to levels at or above those that existed prior to the oil price declines of 2014.

Study Area Base Year Profile

Base year information for each geographic area included in the Study Area has been assembled. The data used in the analysis described below.

CITY OF LLOYDMINSTER

Between 2006 and 2011 the City of Lloydminster population increased by over 3,700 at an average annual rate of over 3.0%. The 2011 federal census reported the City of Lloydminster as having a population of 27,804. In 2013 the City's municipal census reported a total population of 31,483, representing a 6.6% increase over the 2011 population. Between 2011 and 2016, the population grew by approximately 3,600 to 31,415, an average annual growth rate of 2.5%.

The City's population has a median age of just 31.5 with 57% being under 35 years of age. The population is skilled and educated as a result of local access to education and skills training in the City of Lloydminster. It is estimated that over 50% of residents age 25-64 have completed a trade certificate or higher. The local labour force participation rate is 80.5%, making the community an attractive location for young families and businesses to reside.

OTHER STUDY AREA BASE YEAR POPULATION ESTIMATES

The population for the areas within the Study Area, outside of the City of Lloydminster, include portions of the County of Vermilion River, R.M. of Wilton, and R.M. of Britannia. These areas are not wholly included in the Study Area and an estimate of the population within the Study Area was prepared.

The proportion of the population that resides in the Study Area within the County of Vermilion River is estimated at 299 and is based on the distribution of the County's population from the 2015 municipal census and the County population growth based on the 2016 Federal Census. The proportion of the population that resides within the R.M. of Wilton and R.M. of Britannia was estimated by reviewing Google

Figure 2: City of Lloydminster Population



maps for the area within the Study Area and identifying residences, farm operations and businesses. Based on this analysis, the population in the Study Area for Wilton is estimated to be 11, and Britannia 46 for a total population in the Study Area, outside the City of Lloydminster, of 357.

BASE YEAR EMPLOYMENT CALCULATION

Employment for the base year is not available from a public source. As a result, it has been estimated for the Study Area using the base year population and the labour force and employment rates as they are available for the Lloydminster CMA from Statistics Canada. Based on this analysis it is estimated that the employment for the Study Area is 19,191.²

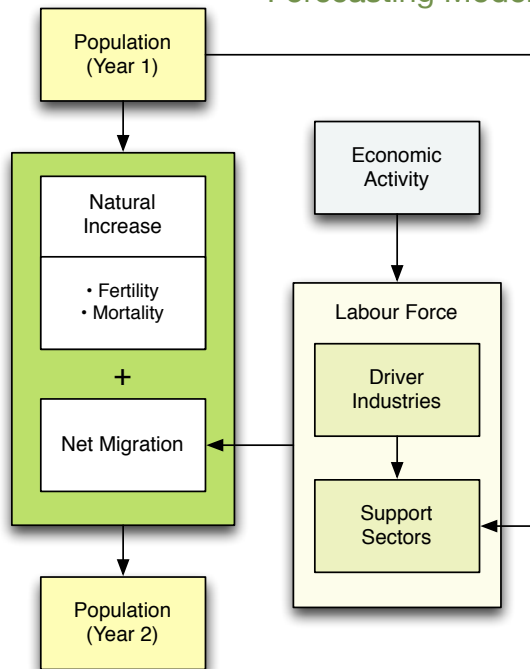
Population & Employment Forecasting Model

This section provides information on the methodology and assumptions used in generating the population projections. The methodology used in the model to project population includes an employment based method to project net migration along with the 'standard component method' of projecting population growth. The standard component method takes into consideration fertility, mortality and net migration rates, which are the key factors that affect population change.

The model calculates the number of births and advances the age of the population in each of the projection years. Surviving members in each age cohort or age group proceed into successive age groups in each year of the projection. For the 5-year age categories between 20-84 years, it is assumed that one-fifth of the surviving members of the age group is moved up to the next age category each year.

Age-specific fertility rates, expressed as per 1,000 population, were available from Alberta Health Interactive Health Data Application Team³. Fertility rates by age of mother were available in 5 year cohorts from 15 to 49 years of age. The fertility rates used in the analysis are for **Region 5 (R5)** of the previous **Alberta Health Services regions**, which includes the Alberta side of the Study Area.⁴ Table A.1 in the Appendix provides the birth rates per 1,000 females for R5 from

Figure 3: Population & Employment Forecasting Model



² This employment total has not been disaggregated to areas within the Study Area.

³ Alberta Health Interactive Health Data Application Team, Demographic Indicator - Age-Specific Fertility Rates - Sub-Provincial. 2015

⁴ Using fertility rates for Region 5 will help to reduce any anomalies that may exist in the data by using a more restricted geographic area (e.g. City of Lloydminster).

2004 to 2014. For comparison purposes, Table A.2 in the Appendix provides the birth rates per 1,000 females for Alberta from 2004 to 2014. While there are slight variations in the age specific fertility rates, the overall births per capita are fairly similar for R5 in comparison to Alberta.

The mortality data was available by age and gender for **Camrose-Drumheller Economic Region** from Statistics Canada⁵. This **region** includes the Alberta portion of the Study Area. Mortality rates by age and gender were calculated by dividing the 2013 total deaths by age and gender into the 2013 permanent population by **Camrose-Drumheller Economic Region**. Tables A.3 and A.4 in the Appendix show the mortality rates per 1,000 people for the **Camrose-Drumheller Economic Region** by age cohort and gender for the period 2004 to 2014. For comparison, Tables A.5 and A.6 in the appendix provide the mortality rates per 1,000 people for Alberta by age cohort and gender for the period 2004 to 2014.

The employment projections for the Study Area are based on expected growth in several key driver industries that have been identified and discussed below. This section of the report describes the development of the base year labour force data and the methodology used to project future labour force levels. Where employment growth exceeds the natural increase in the labour force for the Study Area, net migration is assumed to provide the required workers match the demand for employment. Appendix C provides the projected number of net migrants to the Study Area for each year of the forecast.

Driver Industries

For each scenario, a series of growth rates were developed for the industries that are expected to lead growth in the region – referred to as 'Driver Industries'. For the Study Area, five Driver Industries have been identified as follows:

- ▶ Oil and Gas
- ▶ Agriculture
- ▶ Manufacturing
- ▶ Education
- ▶ Tourism

Other possible industrial sectors were investigated as potential driver industries for the Study Area. Of those other industrial sectors investigated, none were determined to be of sufficient significance in terms of direct employment in the Study Area to be included as a Driver Industry for this study.⁶

Each of these industries included in the analysis has been determined to have a particular level of influence on employment in the Study Area. Growth of these industries has been determined to have an affect on the

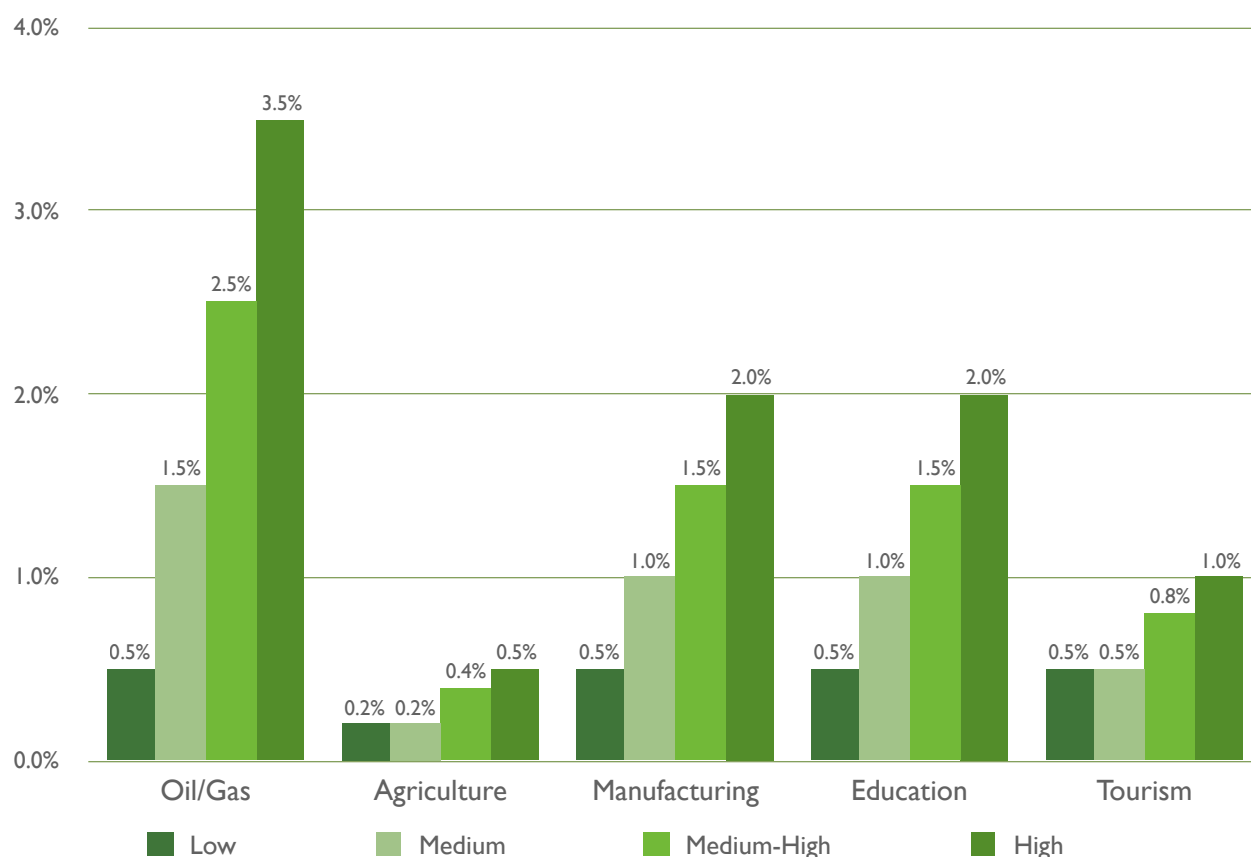
⁵ Table 051-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011.

⁶ Other sectors that were considered as driver industries and not included in the analysis as driver industries include forestry and potash. As well, consideration of the role of the airport as an economic driver was reviewed. Based on our review, airport activity is expected to support other business activities in the region and not be a driver of economic growth.

net migration of workers and their families to the region. The importance of each industry for the Study Area are summarized in the following section. The information presented for each industry category has been based on research of publicly available information and the sources are provided as they are referenced below. The employment projected for the Driver Industries relates to the direct employment associated with each industry.

The projected growth rates for each of these industries is discussed following the industry description in the next section of this document. The Gross Domestic Product (GDP) or economic output projections for each scenario are provided in Appendix B.

Figure 4: Scenario Driver Industry Growth Rates



The growth rates for each driver industry in each scenario have been based on a review of the historical growth patterns for these industries in the context of the expected growth for the Study Area in the future.⁷ For example, historical growth of employment in the Oil/Gas sector in relation to the historic price of oil has been used to estimate the future rate of growth for this sector given expected future energy prices.

⁷ Note that the growth rates for the Low and Medium scenarios for Agriculture and Tourism are the same. This is intentional.

OIL/GAS

Oil exploration and production have played a significant part in the economic growth of the **greater Lloydminster region**. For 2015, it has been estimated that 17% of employment in the Study Area is directly associated with the oil and gas industry.⁸

Petroleum is recovered mostly through enhanced oil recovery techniques in the Study Area. This activity creates employment in the energy sector as well as various support sectors that provide goods and services to the energy sector. Exploration and recovery activity may also generate income for local land owners. Consequently, many farmers in the **broader region** in and around the Study Area have been financially compensated through lease payments resulting from oil wells being drilled on their land. While this development has some benefits to local land owners and generates tax revenues for the County, it also results in the County incurring costs associated with road maintenance and other municipal costs.

Based upon the latest production projection from the Canadian Association of Petroleum Producers (CAPP), the Alberta oil sands (bitumen and upgrading) is projected to continue to experience growth over the next 15 years. The June 2015 CAPP Crude Oil Production Forecast estimates Alberta oil sands to grow from approximately 2.2 million bpd to almost 4.0 million bpd by 2030. Of this in-situ oil production, which is most relevant to the oil reserves serviced by the Lloydminster area, is projected to grow from 1.24 million bpd to 1.55 million bpd.⁹ This represents a 74% increase in oil sands production and a 25% increase in in-situ production. While CAPP does not specify geographically where this production will take place, it can be expected that some of it will come from the producing area supported by activity in the Study Area. It is also worth noting that this current forecast represents a significant decline from the projection produced by CAPP a year earlier, before the significant decline in oil prices in 2014.¹⁰

Critical to this projection of oil sands production is the expected price of oil. CAPP does not include a projection of price as part of its production forecasts, but oil price projections are available from other sources. For example, the Conference Board of Canada is projecting real (2013 dollars) oil prices to increase to \$85-\$90 / bl West Texas Intermediate(WTI) by 2035.¹¹ In nominal terms, this forecast projects the WTI price for oil to reach \$140 / bl by 2035. Based on this projection, it has been assumed that a Medium, or most likely, scenario for the energy sector would be based on a WTI price for oil of \$80-\$100 / bl.¹²

⁸ Statistics Canada Industry by National Occupation Classification, 2011.

⁹ Canadian Association of Petroleum Producers Crude Oil Production Forecast June 2015 <http://capp.ca/publications-and-statistics/publications/264673>.

¹⁰ Ibid, page 8.

¹¹ Canadian Outlook 2015 - Long Term Economic Forecast, Conference Board of Canada, page 43.

¹² It should be noted that prices are expected to vary with the ups and downs of the cyclical nature of this sector. As a result, the range represents an average of these ups and downs.

Consistent with the long term Conference Board Forecast for oil, in the short term, oil prices are projected to increase moderately. In the Low scenario, it has been assumed that oil would remain in this \$60-\$80 range over the entire 30 year forecast period. The most recent Provincial Budget, projects WTI oil prices to increase to \$57 in 2016, \$67 in 2017 and \$72 in 2018.¹³ These projections form the basis of the provincial budget projection and fall within the range of oil forecasts collected from various sources. Based on nine projections of oil prices provided in the provincial budget, WTI oil prices are forecast to fall between a low of \$60 to a high of \$82 / bl by 2018.¹⁴

It is noted that producers of heavy oil don't receive the WTI price. Heavy oil prices are discounted for extra costs that are required for upgrading the product. Further, the rate of discount will depend on the quality of crude oil. One benchmark oil price used to reflect a typical price received by heavy crude oil producers in Alberta is the Western Canadian Select (WCS) price. The relationship between WTI and WCS can vary over time for various reasons, but in the long term this relationship is assumed to fall within the range over recent history. The historical relationship between these prices has varied from approximately \$15 to \$40 / bl.¹⁵

It has been assumed that the average historical relationship between WTI prices and those received by producers in the area serviced by the Study Area will remain in place over the forecast period. That is, if WTI prices are projected to increase, the price received by area produces will increase accordingly. Within the WTI price ranges identified for each scenario, it is expected there will be cycles of both ups and downs as we know will happen. The average of these ups and downs is reflected in the price range noted for each scenario. All oil price ranges quoted in the scenarios refer to WTI prices.

¹³ Budget 2015, Economic Outlook, page 70.

¹⁴ Ibid.

¹⁵ Source: <http://economicdashboard.albertacanada.com/EnergyPrice>



Investment in the energy sector in the **broader region** served by the Study Area is substantial. Development of new technologies has played a major role in the Study Area's evolving involvement in the oil industry. Horizontal well drilling and cavity pumps are examples of innovative technologies refined in the **broader region** served by businesses in the Study Area. These technologies are examples of the potential for further innovation in the sector.¹⁶

Currently some of the large scale investments include:

- ▶ Husky operates three large-scale refinery plants in the **broader region** serviced by the Study Area, including the bi-provincial upgrader which can produce approximately 80,000 barrels per day.
- ▶ Husky also operates an asphalt refinery which produces about 28,000 barrels per day as well as an ethanol facility.
- ▶ TransAlta and Husky Oil operate a co generation station at the Lloydminster heavy oil upgrader.

In the four scenarios that have been developed the Oil and Gas sector has been projected to grow at the following average annual growth rates:

- ▶ **Low:** In the Low Scenario the oil and gas sector is projected to experience moderate growth over the forecast period, with an average annual growth rate of 0.5%. In this scenario lower oil prices are expected to fall between \$60 and \$80 / bl (WTI). This is the range which oil prices are currently projected for 2018 in the most recent provincial budget, and this range has been assumed to continue over the 30 year forecast period in this scenario. Oil prices at this level will lead to lower oil production and decreased drilling activity in the **broader region** serviced by the Study Area. This will result in lower

¹⁶ Source: www.saskatchewanoilreport.com/lloydminster

local employment growth. Some employment growth could be attributed to some organizations looking at innovative methods to lower recovery costs in order to continue to be sustainable.

- **Medium:** In the Medium Scenario, the oil and gas sector is projected to grow at an average annual growth rate of 1.5%. It is expected that the oil and gas sector will experience positive growth as a result of increased development of the Alberta oil sands through recovery of oil prices to the \$80-\$100 range over the forecast period. It is expected that the current CAPP production forecast of heavy oil, and in particular, in situ production, would reflect the long term development of oil resources relevant to the Study Area. In this scenario, increased employment growth is expected largely due to increased demand for upgrading services, drilling activity and value added products from the oil sector, but at a more moderate rate than experienced in the past decade.
- **Medium-High:** In the Medium-High Scenario, the oil and gas sector is projected to grow at an average annual growth rate of 2.5%. It is expected that the oil and gas sector will experience positive growth as a result of increased development of the Alberta oil sands through recovery of oil prices in the higher end of the \$80-\$100 range over the forecast period. This scenario is a midpoint between the Medium and High scenarios.
- **High:** In the High Scenario, the Oil and Gas sector is projected to grow at an average annual growth rate of 3.5%. This rate of growth assumes higher energy prices (greater than \$100/bl WTI) as projected by the Conference Board. It is expected that this scenario would be roughly equivalent to the CAPP production forecast produced in June 2014 prior to the sharp decline in oil prices in 2014. Further, it assumes that advances in technology would increase the viability of what are marginal resources in the **Study Area trading region**. An increase in oil production and strong energy prices will drive the demand for upgrading including production of high value diesel sold to retail and wholesale markets, and other value added products, including further diversification of this sector in the Study Area. In addition, the Lloydminster asphalt processing may further contribute in adding value to its heavy crude oil production. Continued high energy prices may result in further large scale investment in **the region served by the Study Area**.

AGRICULTURE

In the agriculture sector, the Study Area supports primary agricultural production in and around the City of Lloydminster, including investment in supporting industries and some value-added production of agricultural products. In 2015, the agriculture sector comprises an estimated 2% of direct employment in the Study Area.¹⁷

The agriculture trading around Lloydminster is a major livestock producing area in the Province. In addition, it is an important area for the production of several major crops, including: canola, barley, oats, spring wheat,

¹⁷ Statistics Canada Industry by National Occupation Classification, 2011.

alfalfa, and hay.¹⁸ According to the Census of Agriculture, there are over 1,000 farms acres in the County of Vermillion River which generated over \$250 million in gross revenues in 2011.¹⁹

Expansion into value-added agriculture processing such as ethanol and bio-diesel production could strengthen local markets and build new ones for producers. Archer Daniels Midland (ADM) has recently opened Canada's largest bio-diesel production facility in Lloydminster. Continued growth is also expected with ADM just completing major expansions, which add new rail and transportation capacity. Being on the TransCanada Yellowhead Highway and also the Highway 17 north-south corridor makes Lloydminster a hub for agri-food commodities being transferred in all directions throughout Canada and internationally.

In the four scenarios that have been developed the agriculture industry has been projected to grow at the following average annual growth rates described below.²⁰

- ▶ **Low/Medium:** In both the Low and Medium Scenarios, employment growth in the agriculture sector is projected to be very modest, with an annual average growth rate of 0.2%. This is consistent with overall employment trends in the agriculture sector across the province. In these scenarios, it is expected that there would be limited growth in expansion of the value added agriculture processing and organic food production.
- ▶ **Medium-High:** In the Medium-High scenario the agriculture is expected to growth at an annual average growth rate of 0.4%. This assumes further expansion of the agri-value and agri-food industries in this **broader region** served by the Study Area, including ethanol and bio-diesel production.
- ▶ **High:** In the High Scenario, it is expected that there will be a continued diversification of the crop and livestock production base in the **broader region** serviced by the Study Area and supporting demand for organic foods. The agriculture sector is projected to grow at an annual average growth rate of 0.5%. It is expected that there will be further expansion of agri-value and agri-food industries in this **broader region** served by the Study Area, including ethanol and bio-diesel production.

MANUFACTURING

Lloydminster has almost 1,000 local jobs in the Manufacturing sector. In 2015, it is estimated that the manufacturing sector comprises an estimated 6% of total employment in the Study Area.²¹ Since 2010, the manufacturing sector has experienced almost 20% growth in employment.²² The Study Area is home to a variety of manufacturing businesses including Great Western Containers, Foremost, Grit Industries, Nelson

¹⁸ Lloydminster Economic Development <http://www.lloydminstereconomy.ca/key-sectors/agriculture>.

¹⁹ 2011 Census of Agriculture for Alberta, Alberta Agriculture and Rural Development www.agriculture.alberta.ca/publications

²⁰ No distinction is necessary for the growth of this sector between the Low and Medium scenarios. Effectively there appears to be a high and low range of potential activity for the Agriculture sector. It has been assumed that the Low and Medium scenarios as defined for this analysis would embody the low end of the projection range for this sector.

²¹ Statistics Canada Industry by National Occupation Classification, 2011.

²² Lloydminster Economic Development <http://www.lloydminstereconomy.ca/manufacturing>.

Lumber, Husky and ADM. Proximity to transportation corridors and access to both rail and road provide a good connectivity for exports.

Future expansion in the manufacturing sector will include welding, structural fabrication, oil and gas field equipment, pipe spooling, pressure vessels, metal processing and field services, plastics and agri-production, pipeline and oilfield services, wood working, textiles and materials manufacturing, as well as many areas business owners or operators might not traditionally associate with manufacturing.

In the four scenarios that have been developed, manufacturing has been projected to grow at the following average annual growth rates:

- **Low:** In the Low Scenario, manufacturing is projected to grow at an annual average growth rate of 0.5%. It is expected that limited growth in the manufacturing sector will follow slower growth in the oil and gas sector and agriculture sector in this scenario.
- **Medium:** Manufacturing is projected to grow at an annual average growth rate of 1.0%. Growth in the manufacturing sector will largely follow increased employment in the oil and gas sector in this scenario. It is expected that increased employment in the oil and gas sector will drive some expansion of oil and gas related manufacturing in the Study Area.
- **Medium-High:** In the Medium-High Scenario, the manufacturing sector is projected to grow at an annual average growth rate of 1.5%. This assumes relatively strong growth in the oil and gas sector which will lead to expansion in the manufacturing sector.
- **High:** In the High Scenario, the manufacturing sector is projected to grow at an annual average growth rate of 2.0%. In this scenario, it is expected that strong growth in the oil and gas sector across the province will lead to expansion of the manufacturing sector. This includes increased employment in metal fabrication, machinery and equipment manufacturing and other areas to support the oil and gas sector across the province. Manufacturing will also benefit from higher growth in agriculture and other sectors of the local economy.

EDUCATION

Education is a sector that attracts students and families into the community to pursue post secondary education. In 2015, it is estimated that education makes up 3% of total employment in the Study Area.²³

Lakeland College provides employment, training and skill development to both experienced and new workers to the Study Area. An important aspect of the college is that it makes it possible for a local child to receive pre-kindergarten through post-secondary training without having to leave the community. The local education and skills training, along with growth in other driver industries, provide an option for residents to continue to live and work in their local community.

Lakeland College offers two regional campuses in Vermilion and Lloydminster serving approximately 7,500 students. The post secondary institution offers a long list of programs available to students, including the

²³ Statistics Canada Industry by National Occupation Classification, 2011.

trades, such as carpentry, welding, drafting, design and others. There are also university transfer classes, a large business faculty and nurses training just to name a few. The college has had success by catering to the job requirements that are needed from the business community, so they deliver the programs that are needed for the labour base and skill base that is needed for the business community.

An example of the strong linkages between industry and education in the Study Area include Lakeland College's Heavy Oil Operations Technician Program (HOOT) which has received significant contribution from the oil sector to expand training facilities. Collaboration among oil companies and training providers can help to ensure that the local companies are able to find and employ people with the skills they need to support the local employment.

In the four scenarios that have been developed, the Education sector has been projected to grow at the following average annual growth rates:

- ▶ **Low:** In the Low Scenario, the Education sector is projected to grow at an annual average growth rate of 0.5%. In this scenario, it is expected that the education sector will continue to grow at a moderate pace to accommodate the stable growth in all industries in the **broader region** served by the Study Area.
- ▶ **Medium:** The Education sector is projected to grow at an annual average growth rate of 1.0%. In this scenario, the education sector is projected to experience positive growth. Increased employment in the oil and gas sector and manufacturing sector will drive the need for additional training and skills development of the local labour force.
- ▶ **Medium-High:** In this Scenario, the Education sector is projected to grow at an annual average growth rate of 1.5%. This employment growth is largely driven by increased employment to accommodate the diversification in the oil and gas sector, agriculture sector, and the manufacturing sector in the Study Area.
- ▶ **High:** In the High Scenario the Education sector is projected to grow at an annual average growth rate of 2.0%. In this scenario, it is expected that the education sector will experience increased employment to accommodate diversification in the oil and gas sector, agriculture sector, and manufacturing sector in the Study Area. Expanded training programs will be developed to support the increased employment in the **broader region** served by the Study Area, and the expansion of the types of local jobs. It is assumed that Lakeland College will continue to work with local businesses to provide appropriate skills and training to the local labour force to meet the needs of the growing local economy.

TOURISM

Many attractions focus on the beautiful rural setting of the Study Area, and the vast resources that surround it. In 2015, it is estimated that the Tourism sector makes up less than 3% of total employment in the Study Area.²⁴

²⁴ Statistics Canada Industry by National Occupation Classification, 2011.

Families can enjoy various farm attractions that showcase the local resources and products that contribute to the local economy. This includes the Nothing Barred Ranch a 200 acre working cattle ranch with grazing cattle. The ranch offers open range riding (not always head to tail) and will also cater to individual riding abilities. Sandy Beach is a Saskatchewan Regional Park and has many amenities, including a 9 hole sand green golf course and a campground. It is a popular summer destination for Lloydminster residents and visitors.

In the four scenarios that have been developed, Tourism has been projected to grow at the following average annual growth rates: ²⁵

- **Low/Medium:** In both the Low and Medium Scenarios, the Tourism sector is projected to experience moderate grow, with an annual average growth rate of 0.5%. Some expansion of the tourism sector will be the result of the demand for attractions by the young growing population and people visiting the **broader region** serviced by the Study Area.
- **Medium-High:** In this scenario, the Tourism sector is projected to grow at an annual average growth rate of 0.8%. This assumes further expansion of the tourism sector in the Study Area.
- **High:** In the High Scenario, the Tourism sector is projected to grow at an annual average growth rate of 1.0%. In this scenario, it is expected that tourism will experience a higher level of growth as a result of a growing local economy and an inflow of families into the Study Area. Expansion of the agriculture sector may also provide additional **regional attractions**, both within and outside the Study Area, within the Tourism sector related to value added processing and organic food markets.

Support Industries

The Study Area supports a diverse range of economic activity providing a range of support services to businesses within the **broader regional** services and trading area. In this analysis, the Support Industries include all non-driver industry economic sectors in the **broader regional** economy serviced by the Study Area. This includes major employment sectors including Construction, Retail Trade, Health Care and Social Assistance and Education, and other smaller sectors. Construction, Retail Trade, Health Care and Social Assistance and Education²⁶ sectors alone comprise almost 40% of the employment in the City, resulting in over 8,500 jobs. The remaining support industries collectively comprise 29% of the total employment in the Study Area.

Increased growth in the Study Area resulting from economic activity and employment in the driver industries will lead to increased demand for businesses that provide support services to these industries. In addition, if the growth in the driver industries increases incomes and results in net migration, the Support Industries will grow to provide the goods and services associated with these impacts.

²⁵ No distinction is necessary for the growth of this sector between the Low and Medium scenarios. Effectively there appears to be a high and low range of potential activity for the Tourism sector. It has been assumed that the Low and Medium scenarios as defined for this analysis would embody the low end of the projection range for this sector.

²⁶ Note that the portion of the Education sector classified as a Support Industry includes primary and secondary education services.

In the analysis, growth in the Support Industries is based on the local demand for goods and services from the Driver Industries as well as the increase in demand for commercial and non-commercial goods and services that will result from growth of the population in the **broader region** served by the Study Area. These sectors are projected to grow at a rate that supports the economic growth of the Driver Industries as well as the general population growth of the Study Area.²⁷

²⁷ Growth in the support industries is based on the change in population over the previous period. As a result, there is a lag in Support Industry employment growth.

Population and Employment Forecast Results

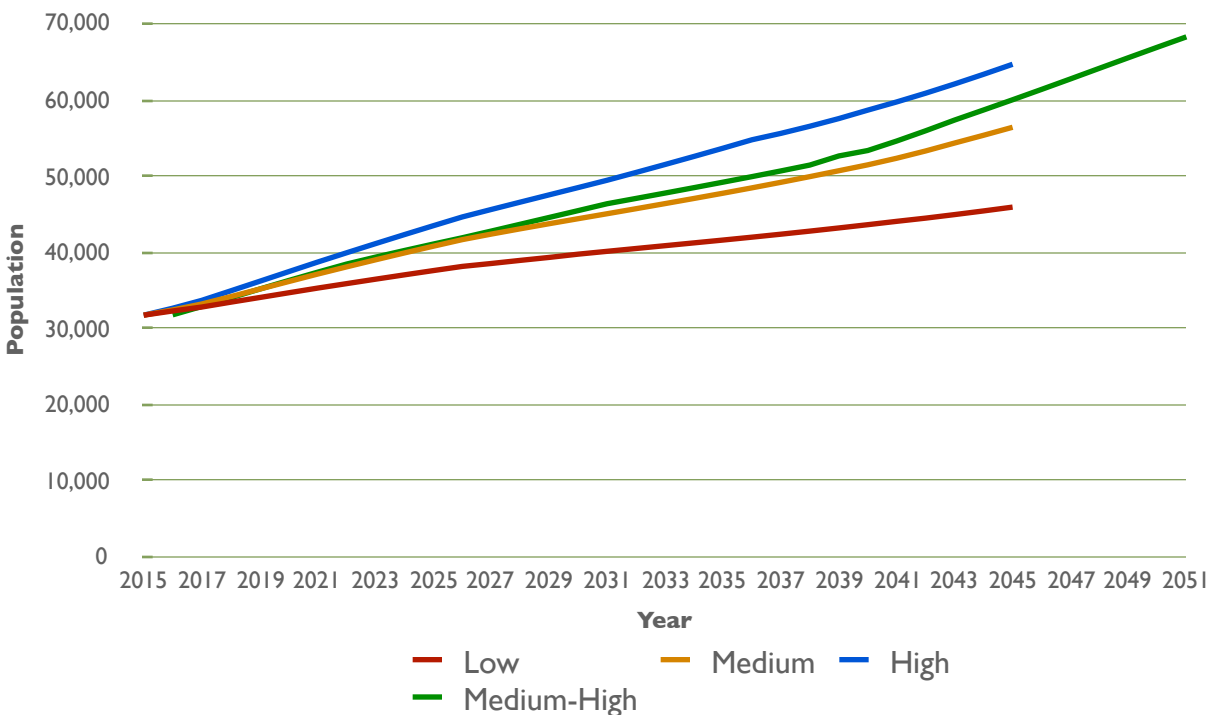
The following section provides a graphical summary of the population and employment for the Study Area. This analysis presents 4 scenarios of growth. In the original analysis the timeframe for the analysis was 2015 to 2045, which is presented for scenarios Low, Medium, and High. An update to the analysis includes the timeframe 2016 to 2051, which was completed for a Medium-High Scenario.

Population Forecast to 2045

The following graphs depict the Study Area population forecasts. The population in the Study Area is projected to grow from 31,727 in 2015 to 45,911 by 2045 in the Low Scenario. This represents an annual average rate of population growth of 1.2%. In the Medium Scenario, the Study Area population is projected to grow from 31,727 in 2015 to 56,390 in 2045. This represents an annual average rate of population growth of 1.9%. In the High Scenario, the Study Area population is projected to grow from 31,727 in 2015 to 64,659 in 2045. This represents an annual average rate of population growth of 2.4%.

The Medium-High Scenario was prepared for the time period 2016 to 2051. In this scenario, the Study Area population is projected to growth from 31,772 in 2016 to 68,257 by 2051. This represents an annual average population growth rate of 2.2%.

Figure 5: Population Forecast to 2045

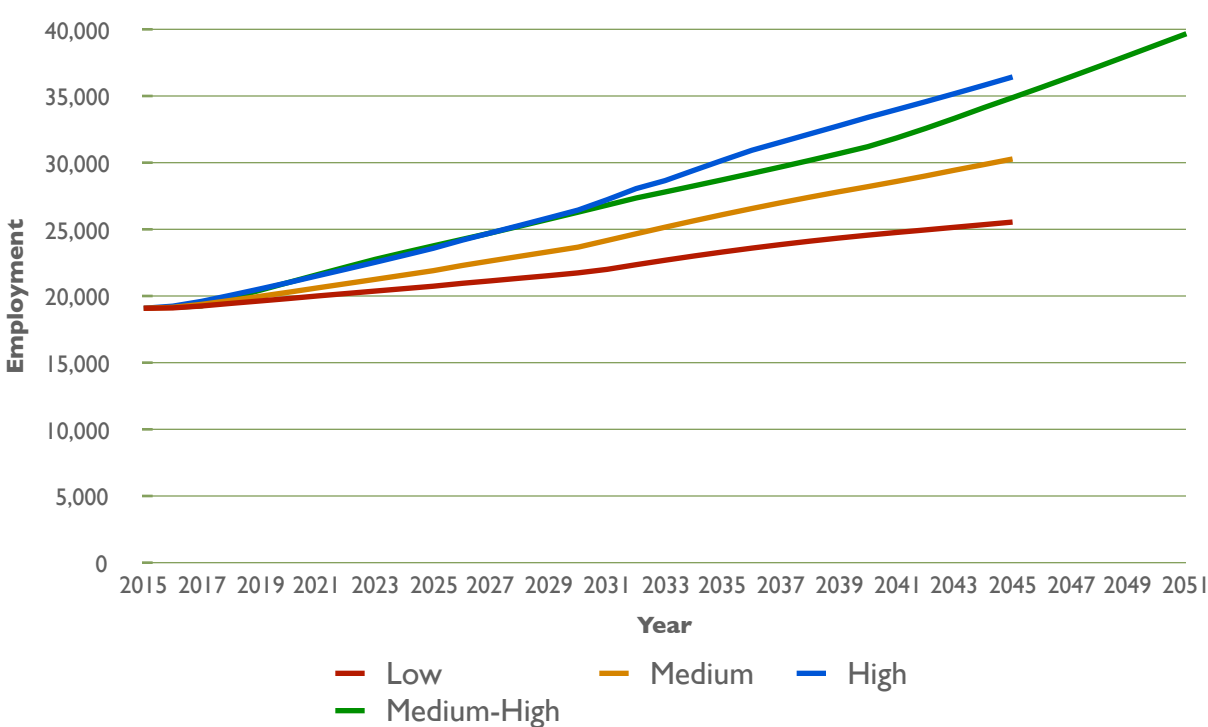


Employment Forecast to 2045

The following graphs depict the Study Area employment forecasts for 2015 to 2045. The employment in the Study Area is projected to grow from 19,124 in 2015 to 25,592 by 2045 in the Low Scenario. This represents an annual average rate of employment growth of 1.0%. In the Medium Scenario, the Study Area employment is projected to grow from 19,124 in 2015 to 30,323 in 2045. This represents an annual average rate of employment growth of 1.5%. In the High Scenario, the Study Area employment is projected to grow from 19,124 in 2015 to 36,476 in 2045. This represents an annual average rate of employment growth of 2.2%.

The Medium-High Scenario was prepared for the time period 2016 to 2051. In this scenario, the Study Area employment is projected to growth from 19,191 in 2016 to 39,718 by 2051. This represents an annual average employment growth rate of 2.1%.

Figure 6: Employment Forecast to 2045



Appendix A: Fertility / Mortality Rates

Table A.1: Historical Age specific fertility rates for Region 5²⁸

	Fertility Rate/1,000 Population										
Mother's Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
15to19	1.6%	1.4%	2.1%	1.6%	1.5%	1.9%	1.7%	1.5%	1.4%	1.4%	1.2%
20to24	8.1%	8.1%	7.4%	9.2%	8.5%	8.2%	6.9%	6.5%	6.3%	6.3%	6%
25to29	15.8%	14.8%	15.5%	16.3%	17.2%	16.8%	15.1%	14.4%	14.2%	13.4%	13.5%
30to34	9.7%	10%	10%	10.5%	10.8%	10.9%	9.3%	11.1%	9.5%	10.8%	11%
35to39	3%	3.1%	4.1%	3%	2.8%	3.6%	3.3%	4.3%	4%	3.7%	4.3%
40to44	0.6%	0.4%	0.4%	0.6%	0.5%	0.5%	0.6%	0.7%	0.7%	0.5%	0.9%
45to49	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table A.2: Historical Age specific fertility rates for Alberta²⁹

	Fertility Rate/1,000 Population										
Mother's Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
15to19	1.8%	1.8%	1.9%	2%	2%	1.9%	1.8%	1.7%	1.6%	1.5%	1.4%
20to24	6.6%	6.5%	6.7%	6.8%	6.7%	6.4%	6%	5.8%	5.7%	5.5%	5.3%
25to29	11%	10.9%	11.2%	11.7%	11.5%	11.2%	10.7%	10.5%	10.4%	10.1%	10.2%
30to34	10.2%	10.3%	10.7%	11.2%	11.5%	11.3%	10.9%	11%	10.9%	10.8%	11%
35to39	4.2%	4.4%	4.7%	5.1%	5.2%	5.3%	5.4%	5.3%	5.5%	5.4%	5.7%
40to44	0.7%	0.7%	0.7%	0.9%	0.9%	1%	1.1%	1.1%	1.1%	1.1%	1.1%
45to49	0%	0%	0%	0%	0%	0.1%	0%	0.1%	0.1%	0.1%	0.1%

²⁸ Alberta Health Interactive Health Data Application Team, Demographic Indicator - Age-Specific Fertility Rates - Sub-Provincial. 2015

²⁹ Alberta Health Interactive Health Data Application Team, Demographic Indicator - Age-Specific Fertility Rates - Alberta. 2015

Table A.3: Male age specific mortality rates for Camrose-Drumheller Economic Region³⁰

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.3%	0.3%	0.4%	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
5 to 9 years	0.1%	0%	0%	0.1%	0.1%	0.1%	0%	0%	0%	0%	0%
10 to 14 years	0.3%	0.3%	0.3%	0%	0%	0%	0.1%	0.1%	0.1%	0.1%	0.1%
15 to 19 years	0.7%	0.6%	0.6%	0.4%	0.1%	0.3%	0.3%	0.8%	0.7%	0.8%	0.8%
20 to 24 years	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.1%
25 to 29 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0%	0.1%	0.1%	0.1%	0.1%
30 to 34 years	0.1%	0.2%	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
35 to 39 years	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
40 to 44 years	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	0.2%	0.2%	0.2%	0.2%
45 to 49 years	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%
50 to 54 years	0.5%	0.5%	0.5%	0.5%	0.3%	0.5%	0.3%	0.5%	0.4%	0.5%	0.5%
55 to 59 years	0.8%	0.7%	0.7%	0.8%	0.8%	0.6%	0.7%	0.7%	0.7%	0.7%	0.8%
60 to 64 years	0.9%	1.2%	1.2%	1.1%	1.2%	1.2%	1%	1.2%	1.2%	1.2%	1.2%
65 to 69 years	2.2%	2%	1.9%	1.9%	1.9%	1.6%	2%	1.6%	1.6%	1.7%	1.7%
70 to 74 years	3.2%	3.3%	3.2%	2.8%	3.2%	3.4%	2.7%	3.2%	3.1%	3%	3.2%
75 to 79 years	4.8%	5%	5.2%	5.3%	5%	4.7%	4.4%	4.4%	4.4%	4.5%	4.7%
80 to 84 years	8.6%	10%	9.8%	7.7%	7.9%	6.7%	7.6%	7.3%	7.4%	7.4%	7.6%
85+	16.1%	17%	17.8%	16.1%	17.2%	15.6%	15.7%	15.1%	14.3%	14.7%	15.1%

³⁰ Data on deaths was gathered from Table 05 I-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 05 I-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Table A.4: Female age specific mortality rates for Camrose-Drumheller Economic Region³¹

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.3%	0.2%	0.2%	0.3%	0.2%	0%	0.5%	0.1%	0.1%	0.1%	0.1%
5 to 9 years	0%	0%	0%	0%	0.1%	0%	0.1%	0%	0%	0%	0%
10 to 14 years	0.1%	0%	0%	0.1%	0%	0%	0.1%	0%	0%	0%	0%
15 to 19 years	0.2%	0%	0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%
20 to 24 years	0%	0%	0%	0.1%	0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
25 to 29 years	0%	0%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%
30 to 34 years	0%	0%	0%	0.1%	0.1%	0.1%	0.1%	0%	0%	0%	0%
35 to 39 years	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0%	0%	0%	0%
40 to 44 years	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
45 to 49 years	0.2%	0.2%	0.2%	0.1%	0.2%	0.4%	0.3%	0.2%	0.2%	0.2%	0.2%
50 to 54 years	0.2%	0.3%	0.3%	0.3%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
55 to 59 years	0.5%	0.4%	0.4%	0.4%	0.6%	0.6%	0.3%	0.5%	0.5%	0.5%	0.5%
60 to 64 years	0.4%	0.6%	0.5%	0.7%	0.7%	1%	0.5%	0.8%	0.8%	0.8%	0.8%
65 to 69 years	1.1%	1.1%	1.2%	0.9%	1.4%	1%	1.4%	1.3%	1.2%	1.3%	1.3%
70 to 74 years	1.9%	1.8%	1.8%	2.1%	1.8%	1.6%	1.7%	2.1%	2%	2.1%	2.1%
75 to 79 years	3.3%	3.1%	3.3%	3%	2.9%	3.3%	2.8%	2.9%	3%	2.9%	2.9%
80 to 84 years	5.9%	6%	5.9%	5.1%	5.3%	4.9%	5%	4.5%	4.5%	4.7%	4.8%
85+	12.3%	11.9%	13.1%	13%	12.7%	11.3%	12.7%	12.8%	12.9%	13.4%	13.9%

³¹ Data on deaths was gathered from Table 05 I-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 05 I-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Table A.5: Male age specific mortality rates for Alberta³²

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
5 to 9 years	0.1%	0.1%	0.1%	0.1%	0%	0.1%	0%	0%	0%	0%	0%
10 to 14 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
15 to 19 years	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
20 to 24 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
25 to 29 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
30 to 34 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
35 to 39 years	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
40 to 44 years	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
45 to 49 years	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	0.3%	0.3%
50 to 54 years	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
55 to 59 years	0.7%	0.7%	0.6%	0.6%	0.7%	0.6%	0.6%	0.7%	0.6%	0.6%	0.6%
60 to 64 years	1%	1%	1%	0.9%	0.9%	1%	0.9%	1%	1%	0.9%	0.9%
65 to 69 years	1.8%	1.7%	1.7%	1.7%	1.6%	1.5%	1.6%	1.4%	1.4%	1.4%	1.4%
70 to 74 years	2.8%	2.8%	2.7%	2.7%	2.6%	2.7%	2.5%	2.5%	2.4%	2.4%	2.4%
75 to 79 years	4.3%	4.5%	4.4%	4.2%	4.3%	4.3%	4.2%	3.9%	3.9%	3.9%	3.9%
80 to 84 years	7.2%	7.7%	7.3%	7%	7%	6.9%	6.8%	6.7%	6.6%	6.7%	6.8%
85+	15.7%	15.1%	14.5%	14.2%	14.5%	14.5%	13.8%	14.2%	12.9%	12.9%	13.1%

³² Data on deaths was gathered from Table 05 I-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 05 I-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Table A.6: Female age specific mortality rates for Alberta³³

Age	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
0 to 4 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
5 to 9 years	0%	0.1%	0.1%	0%	0.1%	0%	0.1%	0.1%	0.1%	0.1%	0.1%
10 to 14 years	0%	0.1%	0.1%	0.1%	0.1%	0.1%	0%	0.1%	0.1%	0.1%	0.1%
15 to 19 years	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
20 to 24 years	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
25 to 29 years	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30 to 34 years	0.1%	0.1%	0.1%	0%	0.1%	0.1%	0%	0.1%	0%	0%	0%
35 to 39 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
40 to 44 years	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
45 to 49 years	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
50 to 54 years	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	0.3%	0.3%	0.3%
55 to 59 years	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%
60 to 64 years	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
65 to 69 years	1.1%	1.1%	1.1%	1%	1%	1%	1%	1%	0.9%	0.9%	0.9%
70 to 74 years	1.8%	1.7%	1.8%	1.7%	1.7%	1.6%	1.6%	1.7%	1.6%	1.6%	1.6%
75 to 79 years	3%	2.8%	2.8%	2.7%	2.8%	2.8%	2.7%	2.5%	2.5%	2.5%	2.5%
80 to 84 years	5.1%	4.9%	4.8%	4.8%	4.8%	4.7%	4.5%	4.6%	4.5%	4.5%	4.6%
85+	12.8%	11.8%	11.6%	11.7%	11.9%	11.7%	11.6%	11.3%	11.3%	11.3%	11.5%

³³ Data on deaths was gathered from Table 05 I-0060 Components of population growth by economic region, sex and age group for the period from July 1 to June 30, based on the Standard Geographical Classification (SGC) 2011. The mortality rates were calculated using the death data and the associated population data for the same geography from Table 05 I-0059 Estimates of population by economic region, sex and age group for July 1, based on the Standard Geographical Classification (SGC) 2011.

Appendix B: Study Area GDP

Table B.1: Study Area GDP (millions of chained 2007 dollars)³⁴

		2049		
2 Digit NAICS Industry	2014	Low	Medium	High
11 Agriculture, forestry, fishing and hunting	66	324	324	355
21 Mining, quarrying, and oil and gas extraction	1,575	2,100	2,827	5,076
22 Utilities	36	40	47	49
23 Construction	259	592	690	724
31-33 Manufacturing	192	208	242	325
41 Wholesale trade	116	323	376	394
44-45 Retail trade	146	399	465	488
48-49 Transportation and warehousing	97	113	132	139
51 Information and cultural industries	35	57	66	70
52 Finance and insurance	133	390	455	477
53 Real estate and rental and leasing	136	591	688	722
54 Professional, scientific and technical services	124	320	373	391
55 Management of companies and enterprises	4	12	14	14
56 Administrative and support, waste management and remediation services	30	49	57	60
61 Educational services	90	157	183	216
62 Health care and social assistance	91	176	205	215
71 Arts, entertainment and recreation	6	15	17	18
72 Accommodation and food services	35	72	78	86
81 Other services (except public administration)	83	148	172	180
91 Public administration	48	93	108	113
Total	3,301	6,181	7,519	10,110

³⁴ All GDP figures are an estimate based upon provincial output per worker incorporating assumptions regarding labour productivity gains over the forecast period.

Appendix C: Net Migration by Scenario

Year	Low	Medium	High
2016	59	192	414
2017	27	282	520
2018	159	471	737
2019	144	497	748
2020	160	501	750
2021	167	499	746
2022	151	469	708
2023	159	456	695
2024	160	443	681
2025	160	428	663
2026	158	411	645
2027	87	279	473
2028	40	249	456
2029	34	233	447
2030	78	221	440
2031	27	211	437
2032	27	216	486
2033	27	216	486
2034	27	216	486
2035	27	216	486
2036	27	216	486
2037	27	216	198
2038	27	216	262
2039	27	216	305
2040	27	202	380
2041	27	272	322
2042	30	341	367
2043	33	407	412
2044	43	368	445
2045	56	382	472
2046	62	394	494
2047	63	389	506
2048	57	374	510
2049	48	353	515



APPENDIX D

Draft Land Demand Generators Summary – October 25, 2016



City of Lloydminster/County of Vermilion River JGS Draft Land Demand Generators Summary – October 25, 2016

Land Demand Generation Factor	City	County and RMs	Comments
Husky Employment	Deduct direct Husky employment growth within City from City's overall forecasted employment growth before applying employment growth generators	Deduct direct Husky employment growth within County of Vermilion River, RM of Wilton and RM of Britannia from overall forecasted employment growth before applying employment growth generators	Husky has advised any of its direct employee growth will be accommodated on its own current land holdings and not within other available land supply. As this growth will be accommodated on land identified as "absorbed" the netting out of Husky employment from base employment should appropriately address this matter.
Residential intensification	5%	5%	The accommodation of intensification will allocate a portion of disaggregated residential growth to absorbed lands. Intensification may take many forms including the use of underutilized land (i.e. large parcels) or the replacement and redevelopment of older commercial properties or housing stock into denser residential built-forms to accommodate growth.
Employment intensification	Up to 5%	Up to 5%	Further discussion on intensification of employment growth required. Intensification factors may change based on concurrent discussions relative to land supply analysis and definition of absorbed land. For employment intensification, expand this allowance concept to account for a broader range of employment redevelopment scenarios such as relocation of centrally located commercial uses to larger sites on periphery of City to accommodate business expansion. The basic principal moving forward is that some degree of intensification for employment growth must be accounted for.

Land Demand Generation Factor	City	County and RMs	Comments
Household Size in horizon year	2.6	2.8	City and County numbers are as per the 2011 Federal census.
Net Residential Density Assumption in Hectares	20 du/nrha as per City MDP policy	1.4 ha (3.5 ac) average parcel size derived from County's advisement that these types of residential lots most often range between 0.8 ha (2.0 ac) to 2.0 ha (5.0 ac) in size	City density is as per MDP. County residential density is based on assumed 2 – 4 acre country residential development translated into average dwelling units per net residential hectare. It should be noted that a change in servicing conditions throughout the forecast period may have an impact on County rural residential densities as the availability of services could support denser country residential development.
Non-residential floor space generators: building footprint area (ft ²) per job	Request placed with Applications for input	Request placed with Applications for input	To be informed through disaggregation of employment information and greater understanding of the various sectors included in the job projections – we may arrive at a ratio by employment sector to support the projected land demand.
Generators for commercial land requirements	0.25 FAR	0.2 FAR	FAR numbers based on observations from recent trends observed within City assessment data that aligns with current experience with large commercial developments in urban areas.
	Reasonability check: Current state of City absorbed land supply is 0.25 ha (net) commercial for every 0.75 ha (net) of residential.		Use the reasonability check to determine if the gradual increases in FAR result in significant deviation from the current land supply relationship over time. The increases will appear appropriate if there is little deviation (efficiency in FAR hopefully parallels efficiency in net residential density assumption introduced further above).

Land Demand Generation Factor	City	County and RMs	Comments
Generators for industrial land requirements	0.25 FAR (if selected scenario directs lower intensity industrial development to the County)	0.15 FAR	County FAR reflects the low service nature of CVR developments with significant outdoor storage. FAR assumption of 0.2 FAR based on observations from recent trends observed within City assessment data that is inclusive of both lower and higher intensity industrial developments). If lower intensity is directed to locate in the County in future, the City's FAR will increase as higher intensity industrial development is more building intensive (e.g., warehouses, offices, etc.) rather than land intensive (e.g., outdoor storage, outdoor activities, etc.)
	0.2 FAR (if selected scenario assumes continued lower and higher intensity industrial development in the City)		
Institutional (churches, rec centres, etc.)	Reasonability check: Current state of City absorbed land supply is 0.4 ha (net) light/medium ind. for every 0.6 ha (net) of residential.		Use the reasonability check to determine if the gradual increases in FAR result in significant deviation from the current land supply relationship over time. The increases will appear appropriate if there is little deviation (efficiency in FAR hopefully parallels efficiency in net residential density assumption introduced further above).
	4% of gross developable lands	0%	4% was previously applied in the 2013 Growth Study (includes Lakeland College)

Land Demand Generation Factor	City	County and RMs	Comments
Net developable overheads as a % of gross developable lands (to account for parks/open space, public utilities and roads)	35% Residential ¹ 30% Industrial ² <i>Note: the existing state of the City overall is 41% according to land supply analysis³</i>	30% Residential ¹ 30% Industrial ²	City numbers based on consultant development and land use analysis experience. County numbers based on consultant development experience (reduced total road area due to larger parcels needing less roads).
Airport Protection Lands	Area of AP lands	Area of AP lands	Development in Airport lands to be airport-related. Limited opportunity for industrial development that is not associated with flight operations or which requires groundside access.
Lagoon	300 m to 550 m per Table 4.2 included on page 8 OR 457 m to residential per 15(3) of <i>The Subdivision Regulations</i>	County and RM of Wilton: N/A RM of Britannia: 300 m to 550 m per Table 4.2 included on page 8 OR 457 m to residential per 15(3) of <i>The Subdivision Regulations</i>	See Table 4.2 from the Water Security Agency's <i>Sewage Works Design Standard</i> (November 15, 2012) included on page 8. Further to that, no setbacks apply to reclaimed lagoons; however it has been confirmed that the old lagoons in RM of Britannia have not yet received reclamation certification, so the setbacks within Table 4.2 should still apply. Also see "Landfill and Lagoons (from Raj Rajakumar)" on pages 8 and 9.

¹ Urban Residential: 10% for MR and school, 5% for public utilities & 20% for roads and circulation; Rural Residential: 10% for MR, 10% for public utilities & 10% for roads and circulation.

² Non-residential (commercial & industrial): 10% for MR and school, 5% for public utilities & 15% circulation.

³ Existing state of 41% comprises 12.3% for parks/open space, 4% for public utilities and 24.7% for circulation.

Land Demand Generation Factor	City	County and RMs	Comments
Landfill	457 m to residential per 15(3) of <i>The Subdivision Regulations</i> OR 500 m to residential and other sensitive land uses per 8(2) of <i>The Municipal Refuse Management Regulations</i>	County and RM of Wilton: N/A RM of Britannia: 457 m to residential per 15(3) of <i>The Subdivision Regulations</i> OR 500 m to residential and other sensitive land uses per 8(2) of <i>The Municipal Refuse Management Regulations</i>	See information provided by Raj Rajakumar following Table 4.2.
Wetland setbacks (Class 4-5) ⁴	6 m for Class 4/5 wetlands has been identified for ER	6 m for Class 4/5 wetlands has been identified for ER except for 30 m adjacent to the Neale Lake wetland complex in the NE corner of the study area	These buffers will be used for constraints analysis purposes but excluded for land availability purposes. This is in response to an assumption that all class 4/5 wetlands will be retained regardless of their size. Ultimately, not all class 4/5 wetlands will be retained at the subdivision and development stages, so considering ER buffers as available to accommodate growth theoretically compensates for the likelihood that some wetlands will not be retained.

⁴ At this point, class 1-3 wetlands are assumed developable (subject to wetland compensation), while class 4-5 wetlands are assumed to be retained as wetlands (Crown-claimed). This may be subject to change upon receiving forthcoming recommendations from Spencer.

Land Demand Generation Factor	City	County and RMs	Comments
Pipelines	15 m	15 m	In accordance with AER consultations for average right-of-way widths in this region. There are no sour gas pipeline facilities that warrant larger setbacks beyond the rights-of-way themselves in the study area. A review of the existing development approach with respect to pipelines corridors within the City will be undertaken. There are instances where pipelines may be integrated within public utility lots or development lands through carrying forward existing encumbrances on to new parcels.
Well setbacks	AB side: 5 m (abandoned wells that have reclamation exempt or reclamation certified) 100 m (active and not-yet-reclaimed abandoned wells) SK side: 125 m (all wells including abandoned) [subject to further discussion; see comments column]	County: 5 m (abandoned wells that have reclamation exempt or reclamation certified) 100 m (active and not-yet-reclaimed abandoned wells) Two RMs: 125 m (all wells including abandoned)	These are requirements legislated by the two provinces for non-sour wells. There does not appear to be any sour wells anywhere within the study area. According to B&A research, the Province of Saskatchewan may reduce setbacks for abandoned wells to 40 m plus an 8 m access for maintenance equipment operation purposes. The City has recently approved a subdivision application with a 25 m setback from an abandoned well based on a negotiated outcome with the Province of Saskatchewan. The City advises the outcome is not precedent setting and cannot be a final determinant of well setback assumptions for the purpose of the Joint Growth Study.
Voluntary well setbacks beyond AER requirements			Refers to Husky voluntarily provided ~35 m setbacks from its abandoned wells that are reclaimed within Alberta. There are 32 in CoVR, 17 in CoL (16 in AB and one in SK), 8 in RMoW and two in RMoB. See possible contingency allowance input factors below.

Land Demand Generation Factor	City	County and RMs	Comments
Market Allowance/ Flexibility/Competition for each of the four core land uses (includes unmotivated landowners unlikely to develop within 30 years [beyond Husky])			This includes unmotivated landowners unlikely to develop within 30 years (beyond Husky). See possible contingency allowance input factors below.
Fragmented and previously developed and constrained lands			See possible contingency allowance input factors below.
Land supply development lag			See possible contingency allowance input factors below, though may be addressed in discussion on land supply methodology approaches).
Others?			

Lagoons (Table 4.2 from the Water Security Agency's Sewage Works Design Standard (November 15, 2012))

Table 4.2 Facultative Lagoon and Mechanical Treatment Facility Buffer Zone Table

	Facultative Lagoon Buffer Zone (Metres)	Mechanical Sewage Works Buffer Zone (Metres)
Single Isolated Residence	300	300 ⁽¹⁾
Built-up Residential Area	550 ⁽²⁾	300 ⁽¹⁾
Institutional	550 ⁽²⁾	300 ⁽¹⁾
Commercial (with no built-up residential area)	300	300 ⁽¹⁾

⁽¹⁾ Minimum buffer zone is 150 metres with advanced odour control facilities.

⁽²⁾ A 50 metre buffer zone reduction if any of the following is met, to a minimum buffer zone of 450 metres;

- a) history of no odour complaints;
- b) favourable prevailing spring winds; or
- c) significant wind block

Landfill and Lagoons (from Raj Rajakumar)

Two departments in the Government of Saskatchewan - SK Community Planning & the Ministry of Environment - follow different **landfill** buffers. The buffers work on a case-by-case basis (between Community Planning and Ministry of Environment), the 457m rests only for residential development. It's possible for the 457m to be waived with the creation of a co-existence agreement to title. This would be used for the continuance of use and future notification to developers and landowners.

Relevant legislation stating buffers are below:

Section 15(3) of The Subdivision Regulations, 2014 – (SK Community Planning follows this)

(3) An approving authority shall not approve an application for **residential purposes** if the land that is the subject of the application is situated within:

- (a) **457 metres** of land that is used or authorized for use as a **landfill** for the disposal of garbage or refuse;
- (b) **457 metres** of land that is used or authorized for use as a sewage treatment plant or a **sewage lagoon**; or

- (c) 300 metres of land that is used or authorized for use as an intensive livestock operation within the meaning of The Agricultural Operations Act that involves the rearing, confinement or feeding of more than 100 animal units in an area that is smaller than 370 square metres per animal unit.

Section 8 of The Municipal Refuse Management Regulations – (Ministry of Environment follows this)

Location of waste disposal grounds:

8(1) In this section, “highway” means a road, parkway, driveway, square or place designed and intended for or used by the general public for the passage of vehicles, but does not include any area, whether privately or publicly owned, that is primarily intended to be used for the parking of vehicles and the necessary passageways on that area.

(2) Unless the permit states otherwise, a **waste disposal ground** is not to be located:

- (a) within **500 metres** of:
 - (i) a **restaurant, canteen, cafeteria or any other place where food is cooked or prepared for human consumption or is consumed**;
 - (ii) **motel, hotel, domestic residence or any other building occupied as a residence**; or
 - (iii) **a school, church, community centre or recreation facility or similar public building**; or
- (b) within 100 metres of a highway or a cemetery within the meaning of The Cemeteries Act

City of Lloydminster/County of Vermilion River JGS Draft Contingency Allowance Inputs – October 25, 2016

Possible Contingency Allowance Input Factor	City	County and RMIs	Comments
Additional Parks & Open Space (or Regional Parks) <i>Note: this is beyond the separate institutional land requirements</i>	To be quantified (likely a top-up of 2% to bring the 10% MR to 12%)	To be quantified	Urban municipalities often acquire park space through means other than MR dedication, such as by purchase or donation from private landowners. As introduced in the last footnote on page 4, the latest outputs from the City's land supply analysis reveal 12.3% of its existing gross developed lands is parks and open space (this excludes the golf course and exhibition grounds), yet we have assumed only 10% municipal reserve (MR) for net developable overheads in the previous table above. This could inform land requirements for regional-level parks and open spaces.
Market Allowance/Flexibility/Competition (includes unmotivated landowners unlikely to develop within 30 years [beyond Husky])	10% beyond gross developable land requirements + potential equivalent amount of Husky highway commercial lands that are not immediately available for 10+ years due to ongoing remediation of contamination within subject lands	___% beyond gross developable land requirements	Per other growth studies for urban expansion, the use of market allowance is common, whether they are 30-year or 50-year studies. During the workshop, Applications Management offered that the use of 10% for market flexibility is appropriate. Given this is a joint growth study, we should also to look at market allowance within the rural context. The County and two RMs have previously designated a significant amount of land supply within their portions of the study area. Their land supplies are well beyond 30-year supplies. As a result, with so much land supply available, the market of each municipality is afforded a lot of options to capture their allocated residential and non-residential growth over the next 30 years. Therefore, it would also be appropriate to apply a market allowance to the rural areas within the study area, but what is an appropriate assumption? It is suggested that it should be a greater market allowance than applied to the City as often owners of raw land in a rural context are less motivated to develop than owners of raw land in an urban context (typically a higher market demand to develop in an urban setting than in a rural setting).

Possible Contingency Allowance Input Factor	City	County and RMs	Comments
Fragmented and previously developed and constrained lands	To be quantified (determine a percentage to start then ground-truth dependent on selected growth directions)	To be quantified (determine a percentage to start then ground-truth dependent on selected growth directions)	Dependent on growth directions (to be quantified after growth directions established). Severely fragmented lands are typically difficult to bring into urban development due to the greater coordination between landowners required.
Voluntary well setbacks?			How many abandoned wells within the suburban residential context have not been incorporated into the urban design of neighbourhoods? E.g., have they and their 35 m setbacks been wholly embedded within parks/open spaces, public utility lots for SWMFs, etc., or has developable land actually been sterilized? ISL to investigate difference between 5 m and 35 m setbacks in residential settings for Husky's abandoned and reclaimed wells, and potentially the same for other licensees and report back.
Land supply development lag?			Need to consider alternate approach to absorbed land definition to include an accounting for the lag between lands that are zoned/subdivided (i.e. "developed and available") and lands for which DP/BP has been issued or sold and awaiting DP/BP (i.e. "developed and unavailable"). Methodological approach to be further explored with clients on Thursday, July 14 to explain the merits of this approach. If accepted, would be followed by further analysis to determine an appropriate value to assign to the contingency allowance.
Others?			



APPENDIX E

2017 Urban Servicing Assessment Update





City of Lloydminster and County of Vermilion River 2017 Urban Servicing Assessment Update

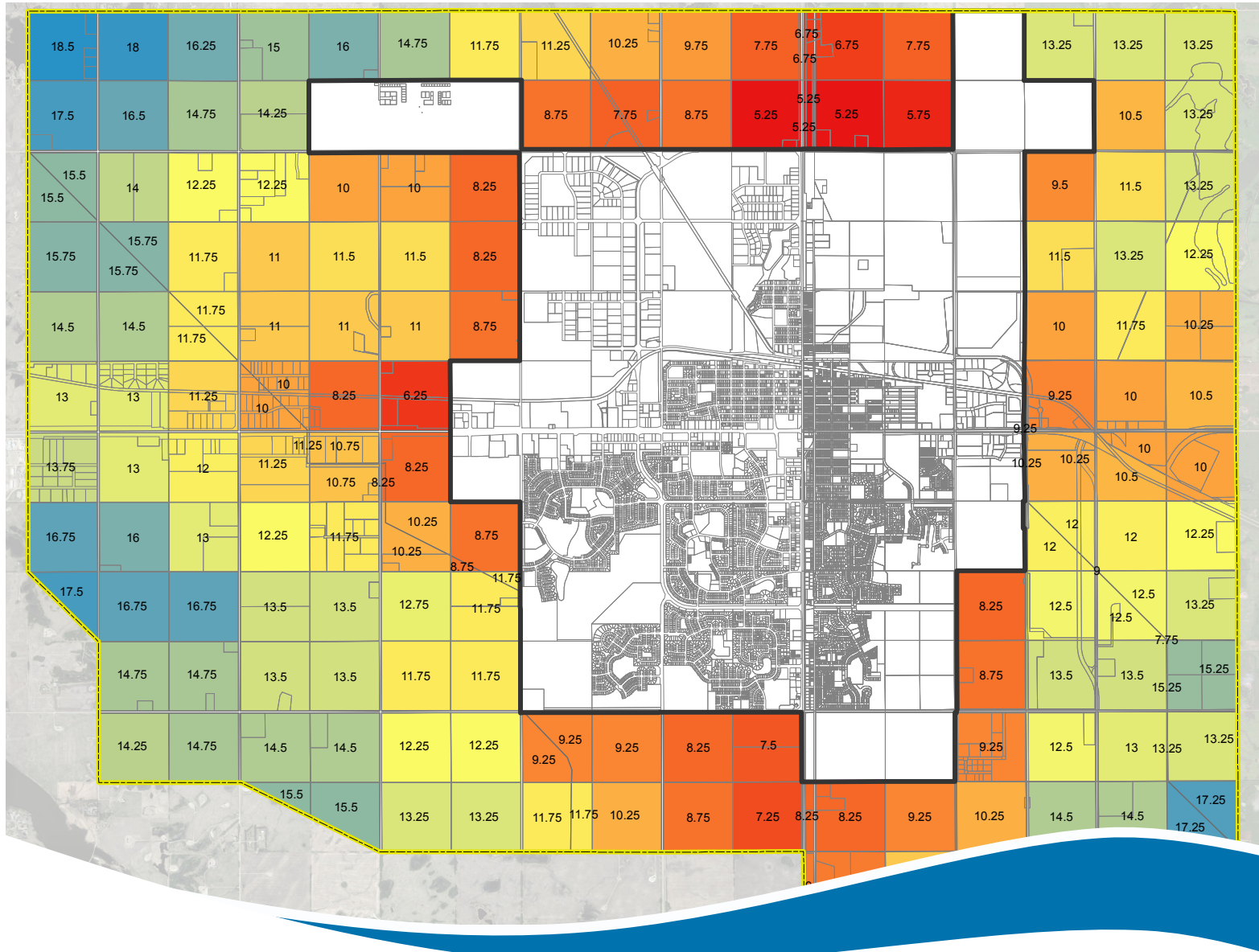


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DISCLAIMER

The information presented in this Urban Servicing Assessment Update is for growth planning purposes only and is not intended to alter market conditions. Developers, landowners and prospective landowners are responsible for undertaking their own due diligence.

1.0 Introduction

The City of Lloydminster's *2013 Comprehensive Growth Strategy* included a *2013 Servicing Assessment*, which assessed and ranked the urban serviceability of quarter sections for urban development from the perspectives of transportation, water, wastewater and stormwater. The assessment was undertaken for a smaller study area than that established for the present *City of Lloydminster/County of Vermilion River Joint Growth Study (JGS)*. For the current work, ISL has carried forward the 2013 methodology to the extended study area within the JGS with some amendments to the approach of aggregating the separate rankings of the four sets of infrastructure into a single overall urban serviceability ranking.

The purpose of this *Urban Servicing Assessment Update* is to identify long-term infrastructure requirements for the extended study area in support of determining medium-term growth directions in the JGS. This information provides insight into the ease of contiguous expansion into the extended study area, and suggests an orderly sequence of development based on servicing constraints. The scope of this update includes:

1. extending the generalized servicing concepts for transportation, stormwater management, wastewater and water servicing from the *2013 Servicing Assessment* to service full build-out of the extended study area in the ultimate long-term; and
2. determining the optimal lands for contiguous urban expansion in the medium-term based on urban servicing constraints.

This *Urban Servicing Assessment Update* summarizes the results of this serviceability review, and is considered an addendum to the *2013 Servicing Assessment*. It is also considered an appendix to the *City of Lloydminster/County of Vermilion River JGS*.

1.1 Study Area

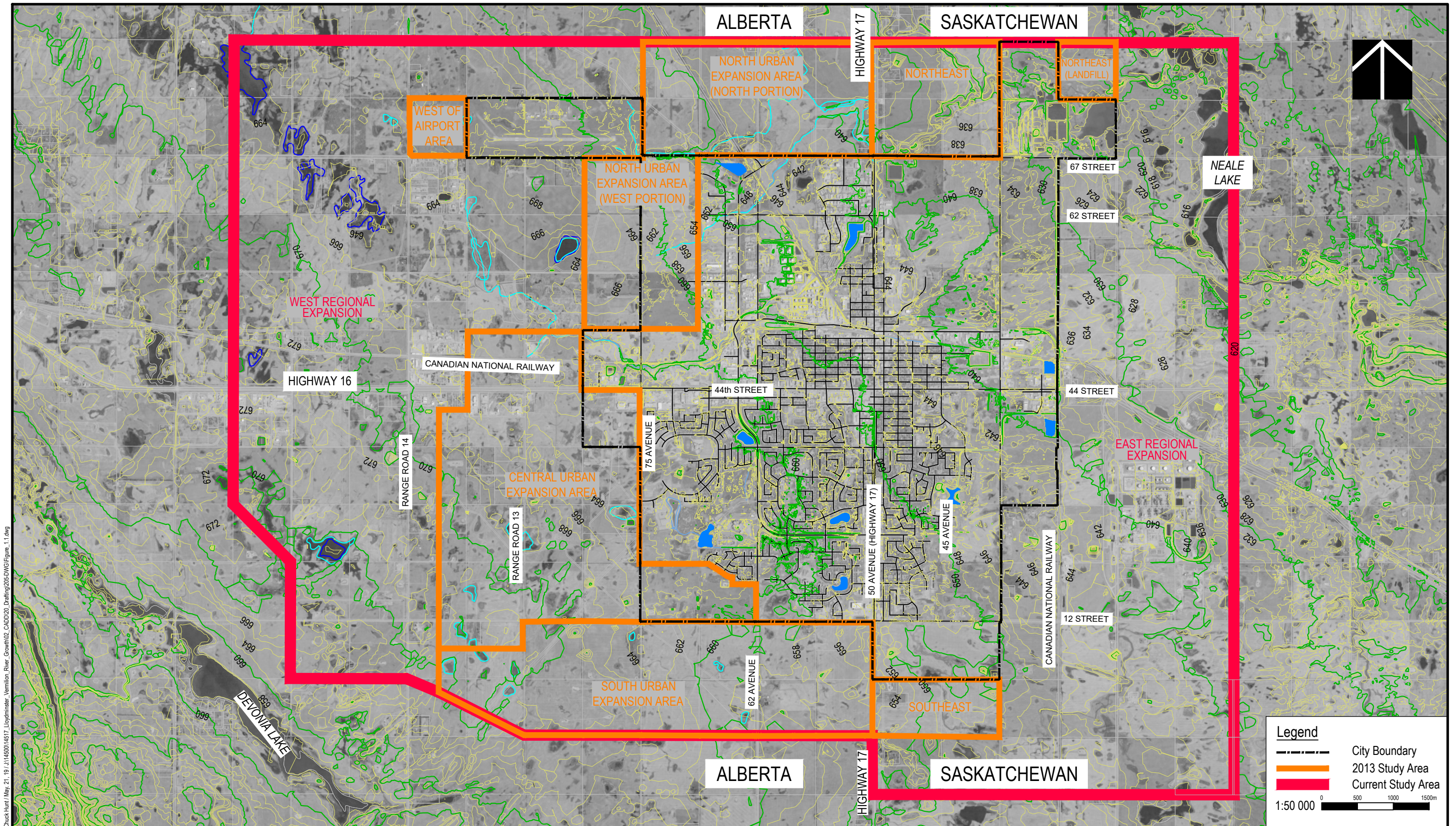
The extended study area is shown on Figure 1.1. It has grown from approximately 3,472 hectares to approximately 9,312 hectares of land straddling either side of the Alberta (AB) and Saskatchewan (SK) boundary. The extended study area includes portions of:

- the County of Vermilion River (AB);
- the Rural Municipality (RM) of Britannia No. 502 (SK);
- the RM of Wilton No. 472 (SK); and
- the City of Lloydminster (AB/SK).

The parts of the extended study area that were considered in the *2013 Servicing Assessment* are highlighted as seven named blocks of land on Figure 1 (e.g. North Urban Expansion Area). The extended study area includes these blocks, and the remaining areas beyond Lloydminster's current city limits to the extended study area boundary shown on Figure 1.1 (West Regional Expansion and East Regional Expansion).



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2.0 Utility Servicing

2.1 Background

This report is considered an addendum to the *2013 Servicing Assessment* and as such, information contained in the *2013 Servicing Assessment* pertaining to specific existing system upgrades required for future development is not repeated here, although any upgrades for the different utilities remain highlighted on the updated servicing concept figures to be presented in the following sections. The reader is directed to the *2013 Servicing Assessment* for further detail and background information.

It should also be noted that to maintain continuity with the *2013 Servicing Assessment*, the servicing concepts reflect the City's 2009 water, wastewater and stormwater master plans where possible. At the start of this effort in support of the JGS project, the City was in the process of updating those three master plans. However those master plan updates were not expected to have a significant impact on the outcome of this servicing review, particularly because the updates only consider a 20-year growth horizon for development of servicing schemes, while the 2009 master plans considered an "ultimate" growth horizon that extended well into the Intermunicipal Development Plan (IDP) area. The study area of the JGS extends even further beyond the extents of the 2009 master plan servicing area, and as a result new servicing concepts for those have been developed as part of this study.

2.2 Utility Serviceability Ranking

The conclusion of the *2013 Servicing Assessment* was that urban water, wastewater and stormwater servicing could be provided to all portions of its smaller study area. However, the cost of servicing any particular quarter section could have varied as servicing of a quarter section may or may not have required off-site costs including:

- upgrades to existing municipal infrastructure; and/or
- new infrastructure to connect the quarter section to the existing municipal system.

Similarly, a conclusion of this report remains that urban water, wastewater and stormwater servicing can be provided to all portions of the extended study area if and when full build-out is achieved in the ultimate long-term future. Also, another conclusion that remains is the cost of servicing any particular quarter section will continue to vary due to the reasons described above.

For purposes of summarizing the ease to which any given quarter section can be provided municipal servicing, the coding system developed in 2013 was updated to accommodate the extended study area. The coding system summarizes the serviceability of each quarter section in the extended study area with respect to stormwater management, wastewater collection and water servicing. It ranks the serviceability of each quarter section by utility from 1 (very serviceable, adjacent to existing servicing) to 10 (extremely long-term development), with 5 generally being the transition point from "medium-term" to "long-term" development, potentially with major constraints such as requiring a new reservoir/pumphouse, or being located far from existing servicing. From these individual rankings, an unweighted overall serviceability factor (range 3 to 30) is generated by adding each component score. Specifically, the coding criteria described in Table 2.1 are employed for each utility.

Overall, the coding system described in Table 2.1 uses a quantitative method to summarize a qualitative approach to the urban serviceability assessment assignment. As specific dollar values are not available for this project, nor would be expected for this type of project, the assignment is approached at this necessary higher order of magnitude level. Instead of specific dollar values, quarter sections are analyzed to determine if development within would cost "a lot" (major) or "not a lot" (minor), relative to the financial capability of a developer or the City. In the case of cost being "not a lot", development costs can be absorbed either by the developer at the time of development or by the City within its usual budget cycles and/or levy systems with no or minimal rate increases.



Table 2.1: Updated Utility Serviceability Coding Criteria

Rank	Description	Adjacent to Serviced Existing Development?	Servicing Requires:	
			Existing System Upgrades?	Offsite Infrastructure?
1	Immediate servicing possible, no existing system upgrades required	✓		
2	Immediate servicing possible, minor existing system upgrades required	✓	✓	
3	Servicing possible once adjacent quarter-sections are serviced, minor (or no) existing system upgrades and/or offsite infrastructure required (likely already completed to enable servicing of the adjacent area) OR Immediate servicing possible, but requires higher cost servicing (e.g. trenchless rail crossing, lift station)		~	~
4	Servicing possible once adjacent quarter-sections are serviced, substantial offsite infrastructure or existing system upgrades required in advance (to be completed as part of servicing of the adjacent/downstream areas)		✓	✓
5	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 1st mile of long-term development	~	✓	✓
6	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 2nd mile of long-term development	~	✓	✓
7	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 3rd mile of long-term development	~	✓	✓
8	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 4th mile of long-term development	~	✓	✓
9	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 5th mile of long-term development	~	✓	✓
10	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 6th mile of long-term development	~	✓	✓

Note:

- ~ Denotes "may or may not be required depending on the area or other factors"
- ✓ Denotes "required for the area"

Figure 2.1 updates the preferred lands for development with respect to utility servicing, based on the overall serviceability factors. The green shaded lands are most readily serviceable, followed by the orange shaded lands. The pink shaded lands are still serviceable, but will incur the greatest costs or time to do so.

Discussion of the updated storm, sanitary and water servicing requirements are presented in the following sections. Individual serviceability figures for each utility (storm, sanitary and water) are also included.

2.3 Water Servicing

The extended water servicing concept (Figure 2.2) consists of looped water mains throughout extending out from existing service areas. Three pressure zones will be required to service future developments within the extended study area due to variation in topography, with a new reservoir/pumphouse required for the West Zone. Servicing of the East Zone is simpler, with only pressure reducing valves required at zone boundaries.

Where areas are near or adjacent to existing development, enough detail is known from the 2009 master plan such that proposed upgrading requirements can differentiate the serviceability of areas (from a score of 1 to 5). For quarter sections further from existing development, the upgrading requirements become more generalized and so these areas fall within the “long-term” development categories (score of 6 to 10), which vary mainly by their distance away from the existing and nearer-term development areas within the pressure zone. Previously proposed pipe upgrades (from the 2009 master plan) may require upsizing to accommodate full build-out of the extended study area in the ultimate long-term. Additional pipe upgrades not yet identified also may be required, and further water treatment plant, reservoir and pumping upgrades will be required as growth occurs. Figure 2.3 illustrates the water serviceability rankings.

2.4 Wastewater Servicing

Expanded wastewater servicing for the extended study area is shown on Figure 2.4.

New areas in the east and southeast will require servicing by lift stations and forcemains as the topography falls away from the existing development areas, and the inlet elevation to the wastewater treatment plant is set at about 622 m. A small portion of the east area could be serviced to the existing East Trunk, which is proposed to be twinned. The elevation of this twinned pipe could be adjusted such that three quarter sections within the Rural Municipality of Wilton No. 472 between the existing City boundary and the railroad tracks can be serviced by gravity.

The remainder of the area east of the railway would require servicing by lift station. A single downstream lift station located near Neale Lake could be used to service this area, with a gravity trunk extending upstream to the south. This would minimize operation and maintenance, rather than having multiple lift stations. The area to the southeast could have a separate lift station and forcemain connecting to the proposed South Trunk, or it could be included at the upstream end of the east lift station service area. Given the proximity of this area to Highway 17 and the proposed Highway 16 bypass, it is more likely that the first option would occur so that development of this area is not delayed, and so the servicing concept reflects this.

The new area in the southwest will also require a lift station, as the ground falls towards Devonian Lake. The forcemain could discharge to one of the branches of the South Trunk in the southwest. As in the east, a series of lift stations could be constructed instead of a single facility, although that will have impacts on on-going operation and maintenance costs.

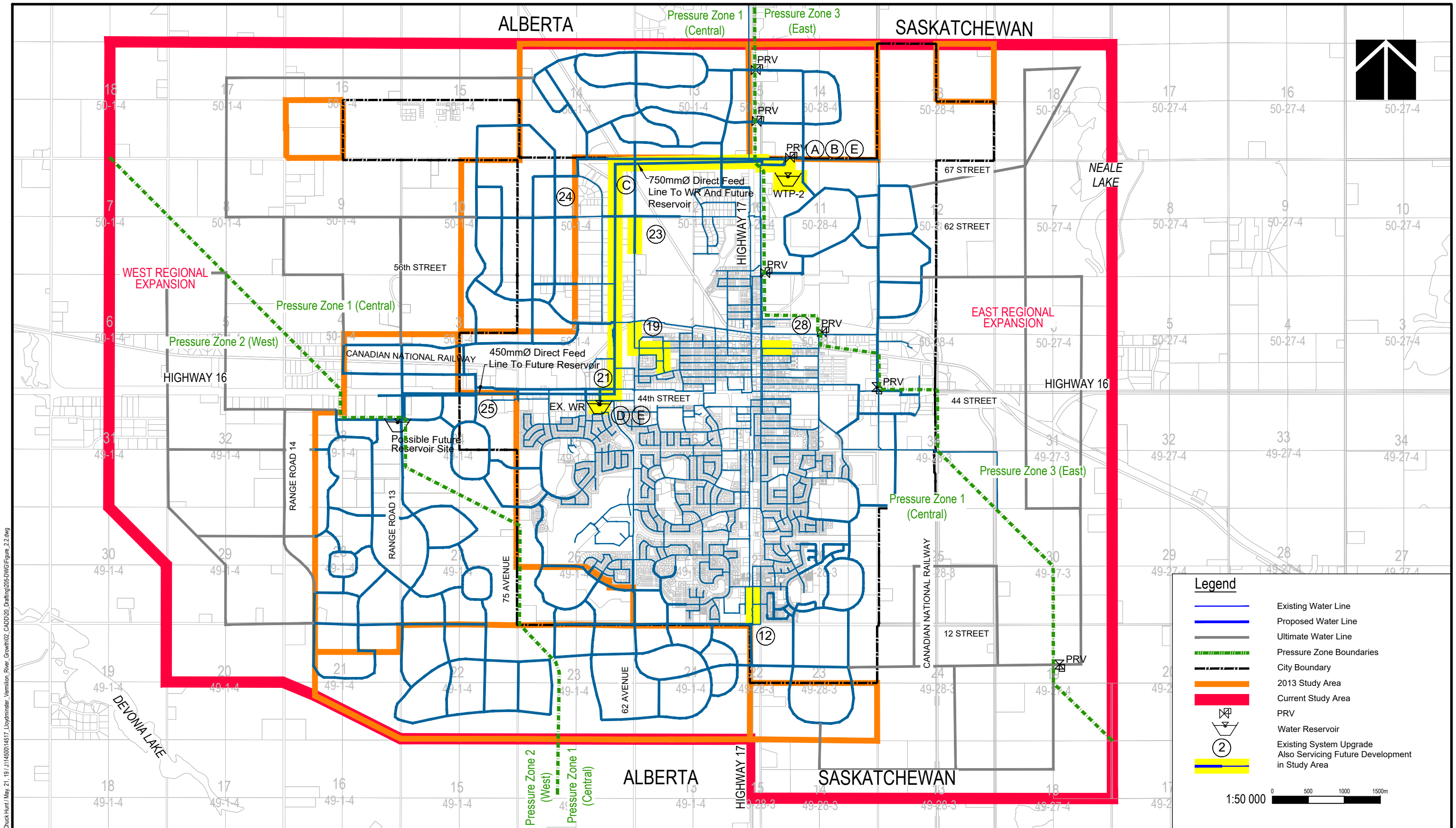
Finally, the new area in the northwest can be serviced by gravity to the proposed Northeast Trunk.

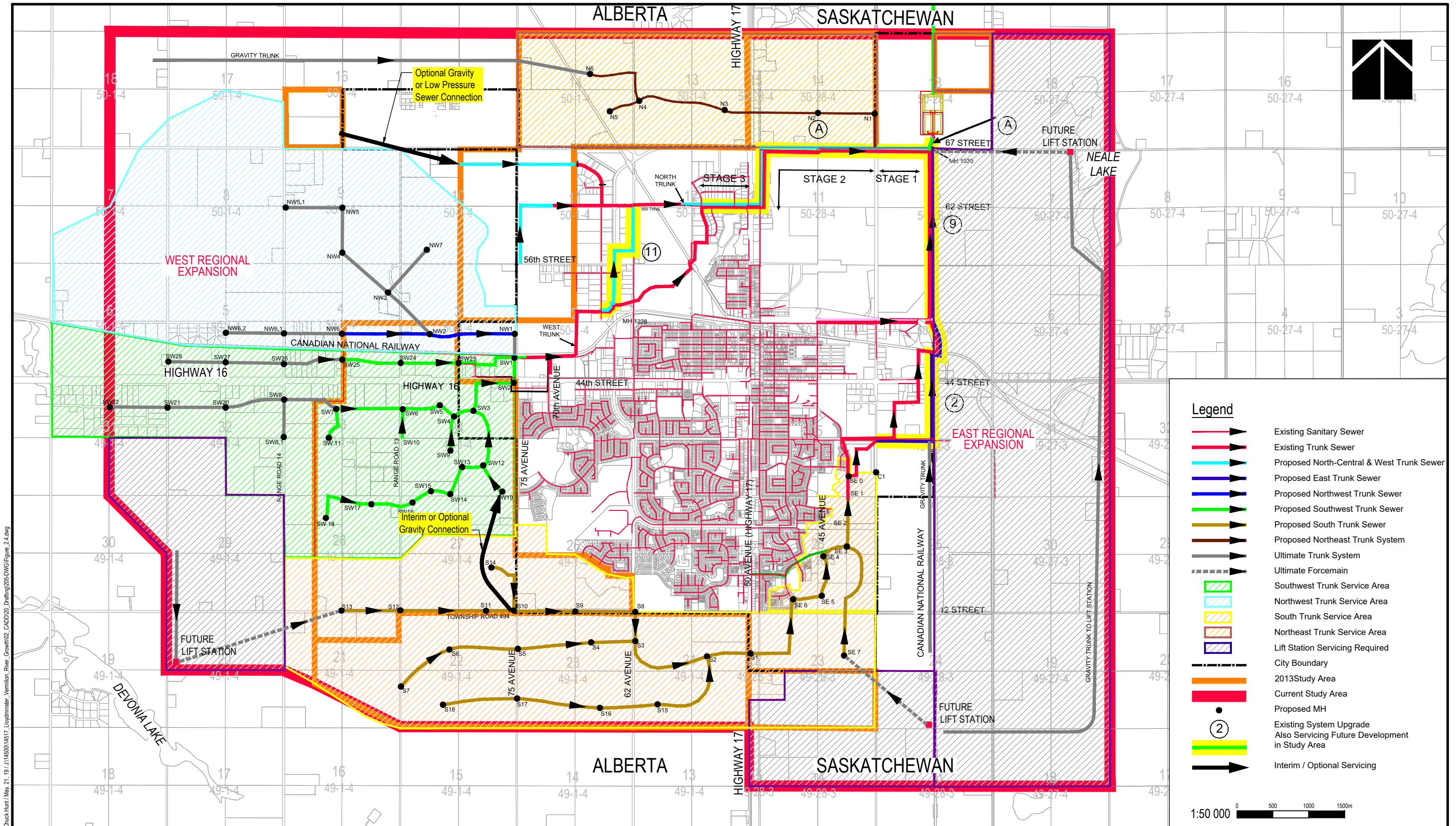


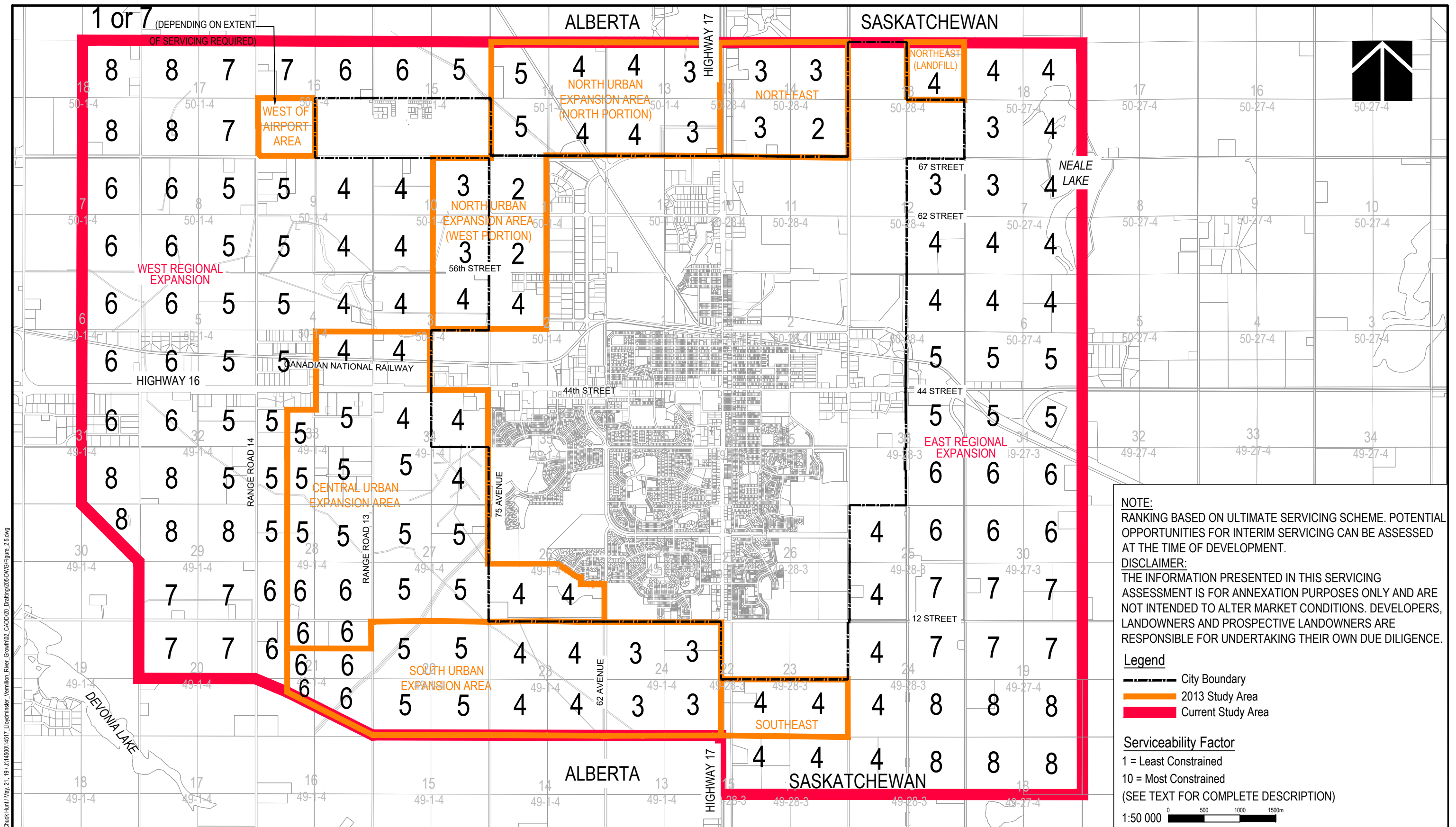
Where areas are near or adjacent to existing development, enough detail is known from the master plan such that proposed upgrading requirements can differentiate the serviceability of areas (from a score of 1 to 5). For quarter sections further from existing development, the upgrading requirements become more generalized and so these areas fall within the “long-term” development categories (score of 6 to 10), which vary mainly by their distance away from the existing and nearer-term development areas within the sewersheds/service areas. Previously proposed pipe upgrades (from the master plan) may require upsizing to accommodate full build-out of the extended study area in the ultimate long-term. Additional pipe upgrades not yet identified also may be required, and further wastewater treatment plant upgrades will be required as growth occurs. Figure 2.5 illustrates the wastewater serviceability rankings.

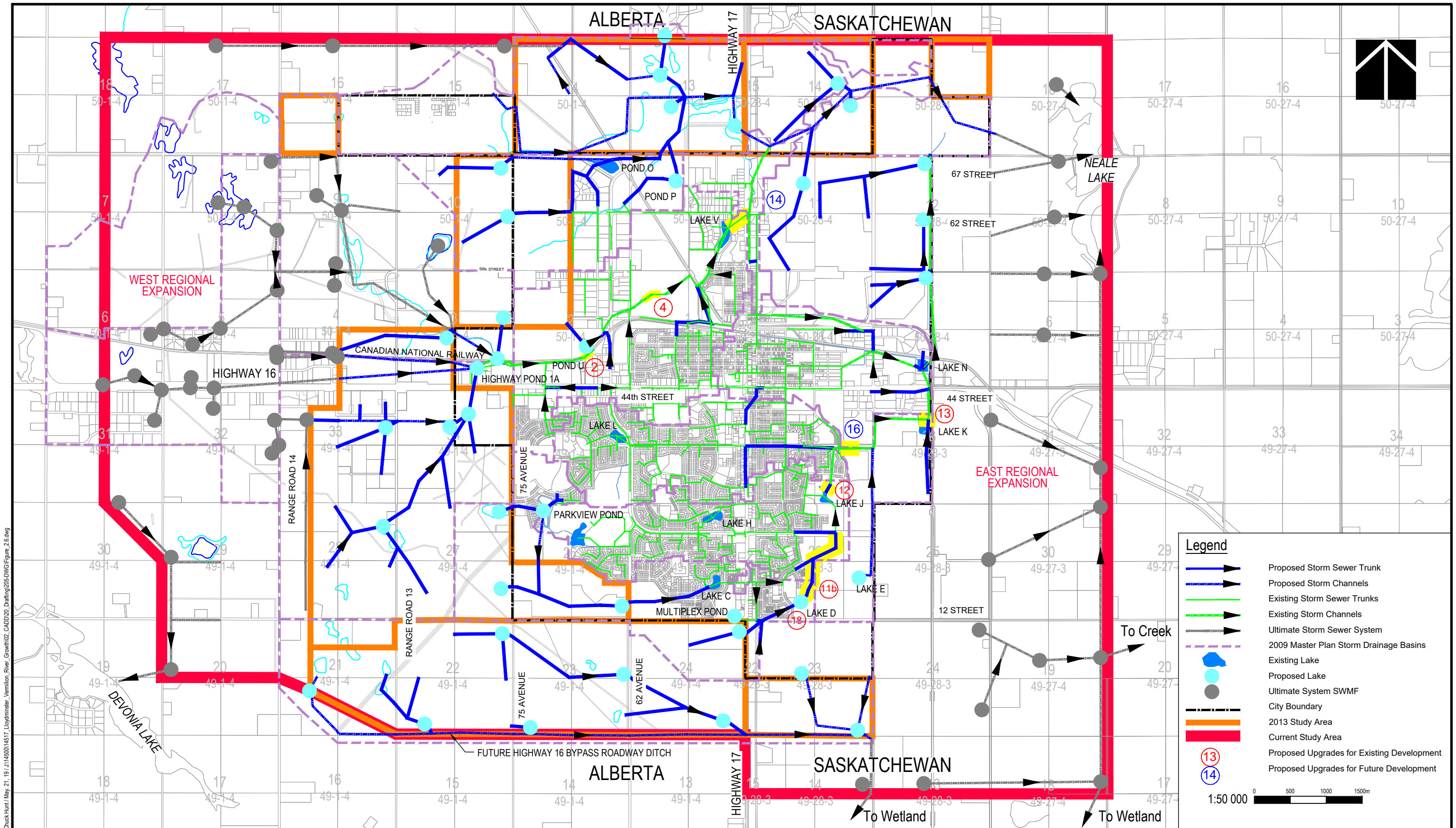
2.5 Stormwater Servicing

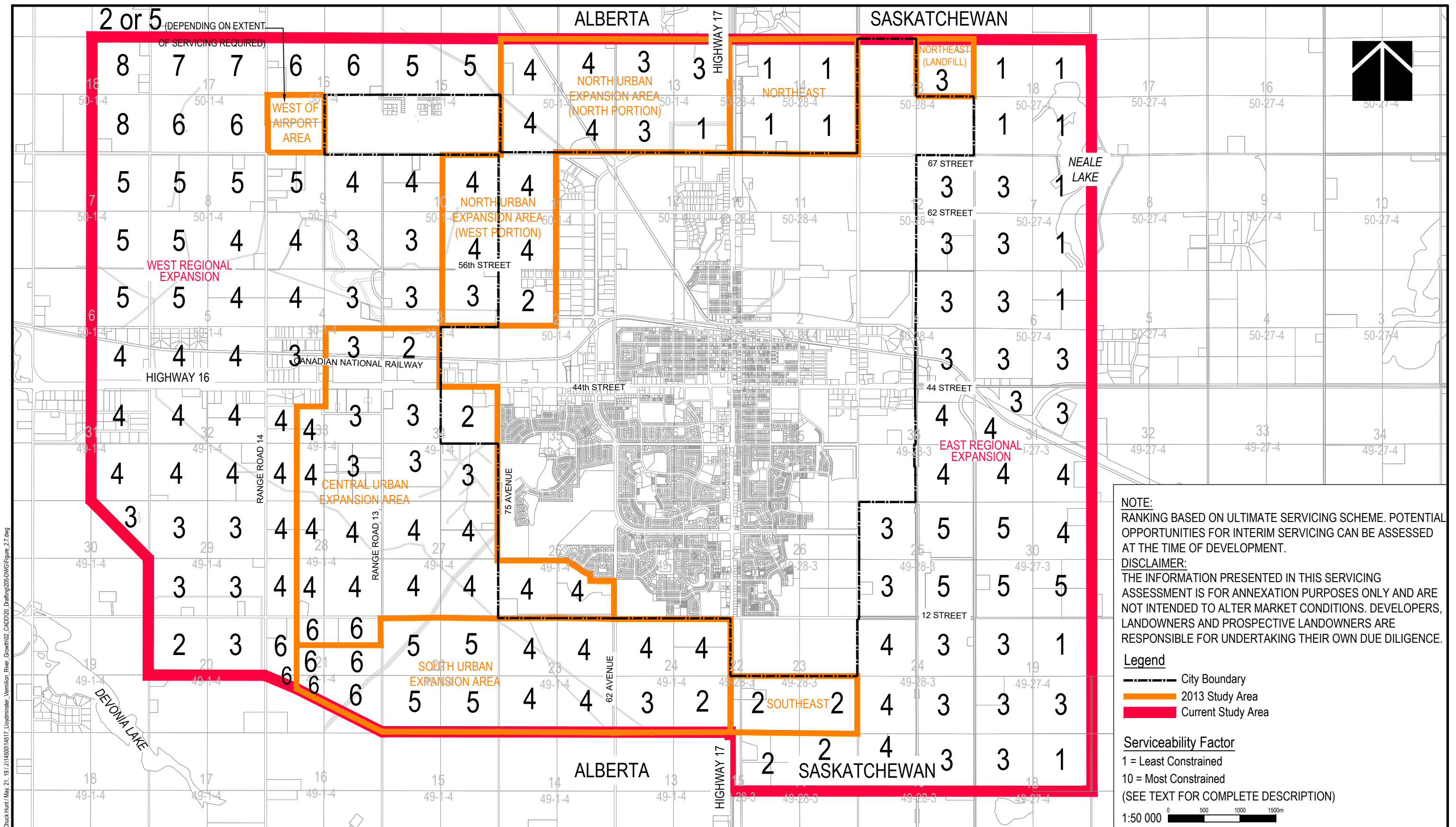
Expanded stormwater servicing concepts for the extended study area are shown on Figure 2.6. Future stormwater servicing may consist of piped systems or overland channels, depending on topographical constraints. The areas will drain by gravity to stormwater management facilities, which will discharge to nearby water bodies and watercourses, subject to approval by provincial regulators. The stormwater management facilities will provide stormwater quantity and quality control to mitigate negative impacts to the downstream systems. As several lakes, wetlands and watercourses are found in the Lloydminster area, stormwater systems can be localized; for example, the southwest area can drain to Devonia Lake rather than having to tie into existing municipal systems. This can improve the serviceability of distant areas, as illustrated on Figure 2.7.











■ 3.0 Transportation Servicing

3.1 Background

The serviceability of the lands within the extended study area is dependent upon the existing roadway network (provincial highways and the entire existing municipal roadway network) and the planned future transportation system. The future transportation system aspect of the serviceability analysis is based on the following planning documents:

- City of Lloydminster Transportation Master Plan – 2010
- County of Vermilion River Transportation Master Plan – 2009
- Alberta Transportation/Saskatchewan Highways and Infrastructure Highway 16 Bypass Functional Study – 2000
- Alberta Transportation Highway 16/12 Street Interchange Functional Study – 2010
- Alberta Transportation/Saskatchewan Highways and Infrastructure Highway 17 Functional Planning Study – 2010
- City of Lloydminster 40 Avenue and 75 Avenue Functional Studies

Resources used to confirm the status of existing provincial highways and the existing municipal roadway network included:

- City of Lloydminster Geomatics, 2014 Orthographic Map
- Google Street View

3.2 Existing and Future Roadway Network

The existing and future transportation network is described below, which is based on the review of the above documents and resources. The existing and future roadway network is highlighted in Figure 3.1.

- **44 Street (Highway 16):** Part of the Trans-Canada Highway, 44 Street (Highway 16) bisects the City of Lloydminster, separating the north and south sections of the City. It is anticipated that adjacent lands within the extended study area will continue to develop utilizing the existing connections to 44 Street (Highway 16). As this roadway becomes congested over time, there will be greater need for roadway improvements and/or the construction of the future Highway 16 bypass.
- **Highway 16 Bypass:** In 2000, a joint functional study project between the Provinces of Alberta and Saskatchewan was completed for the future Highway 16 bypass. The plan identified a bypass alignment to the south of the City of Lloydminster. Access to the bypass is limited to service interchanges at 12 Street (southwest within Alberta), Highway 17 (south at provincial boundary) and at Range Road 3280 (southeast within Saskatchewan). Alberta Transportation has indicated that there are no current plans to construct the bypass as it is not in their current three-year capital plan. While the functional study identified a 15 – 20 year timeline for construction (2015 – 2020), this is no longer expected to come to fruition.
- **50 Avenue (Highway 17):** This is a major north/south arterial roadway located on the provincial boundary. It is an existing two-lane rural paved roadway through the extended study area, with sections of widening at intersections within the City of Lloydminster. Other than some minor intersection and shoulder widening improvement as identified in the Highway 17 Functional Study, there are no plans for widening to increase the number of lanes outside of the City by Alberta Transportation. The City of Lloydminster Transportation Master Plan (TMP) identified the section of this roadway between 34 Street and 62 Street as being upgraded to a one-way road with the construction of the couplet. A future access to the arterial loop road within the southwest section of the extended study area, west of 50 Avenue, is anticipated to be located between 12 Street and the Highway 16 bypass.
- **75 Avenue:** Forming much of the western municipal boundary between the City of Lloydminster and the County of Vermilion River, 75 Avenue is currently a two-lane paved rural roadway between Township Road 502A and 12 Street. In the long-term, 75 Avenue will be a four-lane arterial from the City's current northern limit to the arterial loop roadway system, south of 12 Street.
- **62 Avenue:** Located within the built-up areas of the City of Lloydminster, 62 Avenue has both four-lane and two-lane sections and will ultimately function as a four-lane arterial roadway. The operations of this roadway will further near capacity as neighbourhoods throughout the City continue to develop. As development extends beyond the City and as this roadway reaches capacity, new roadways (i.e., 75 Avenue and 12 Street) will be needed.
- **40 Avenue:** Forming 2.4 km of the eastern municipal boundary between the City of Lloydminster and the Rural Municipality (RM) of Wilton No. 472, 40 Avenue is currently a two-lane paved rural roadway between the northern boundary of the extended study area and 12 Street. South of 12 Street, the roadway exists as an unimproved gravel rural roadway. In long-term horizon, this roadway will be a four-lane arterial from the City's current northern limit to 12 Street based on the City's TMP. There are no current plans for improving this roadway within the RM of Wilton No. 472.
- **67 Street/Township Road 502:** Currently, 67 Street is a two-lane paved rural roadway, from 40 Avenue to the west boundary of the extended study area. Ultimately, this roadway will be improved to a four-lane arterial between 40 Avenue and Range Road 14. To the west of Range Road 14, the roadway will be maintained as two-lane rural collector roadway. Improving this roadway to a four-lane standard is identified in both the City of Lloydminster's and County of Vermilion River's TMPs. Lands adjacent to this roadway are highly serviceable given this roadway is well connected to the City of Lloydminster's roadway network (50 Avenue) as well as other regional connectors (Range Road 15) and Highway 16.
- **62 Street:** This roadway currently only travels between 62 Avenue and 50 Avenue as a two-lane paved rural roadway. Ultimately, this roadway is planned to extend from 62 Avenue to Range Road 14 as a four-lane arterial roadway, with the existing segment east of 62 Avenue to be improved to four lanes.

- **52 Street:** This roadway currently travels between 40 Avenue and 62 Avenue as a two-lane paved rural roadway. The ultimate plans for this roadway are to improve the existing alignment to four lanes and extend the roadway to Range Road 14 to the east, similar to 62 Street.
- **18 Street:** This roadway will extend to the west from the existing neighbourhoods of Parkview Estates and Lakeside in the City of Lloydminster. It will ultimately function as a four-lane arterial connection between 75 Avenue and Range Road 14.
- **12 Street/Township Road 494:** Forming the southern municipal boundary between the City of Lloydminster and County of Vermilion River and extending east into the RM of Wilton No. 472, 12 Street within Lloydminster exists as a two-lane rural paved connection between the City's eastern and western boundaries. Outside of the City to the west, this roadway exists to a similar standard as it is in the City. Outside of the City to the east, the roadway exists as a paved rural roadway with a potentially lower surface condition. The future function of this roadway is as a major four-lane arterial road within the extended study area, connecting to the future Highway 16 bypass to the west. Once the Highway 16/12 Street interchange is constructed, lands adjacent to this arterial road will be highly attractive for development. There are no plans for improving the 12 Street connection east of the City of Lloydminster within the RM of Wilton No. 472.
- **Range Road 15:** This is currently an unimproved gravel road within the extended study area. There are currently no plans to improve this roadway. However, it represents the next logical north/south arterial roadway, to the west of Range Road 14, within the extended study area.
- **Range Road 14:** This roadway is currently a two-lane paved rural roadway, between 12 Street/Township Road 494 and 67 Street/Township Road 502. South of Township Road 494 and north of Township Road 502, Range Road 14 exists as an unimproved gravel rural roadway. Ultimately, the section of road between Township Road 494 and Township Road 502 will be improved to a four-lane rural arterial roadway. The section north of Township Road 502 to Township 504, beyond the extended study area, will be improved to a two-lane paved rural collector. Improving this roadway to a four-lane standard is identified in both the City of Lloydminster's and County of Vermilion River's TMPs. Existing lands adjacent to this roadway are highly serviceable given its connection to the City of Lloydminster and Highway 16.



Range Road 14

- **Range Road 13:** Currently there are only a few sections of Range Road 13 that are constructed. South of Highway 16, the roadway has not yet been extended to 12 Street/Township Road 494 due the presence of a significant water body. North of Highway 16, Range Road 13 terminates at the Rolling Green Fairways Golf Course and RV Park. Ultimately, this roadway will function as a four-lane arterial roadway, between 67 Street and 12 Street, and be realigned around the water body.
- **Range 3280:** This roadway exists as a two-lane paved rural roadway within Saskatchewan, connecting Highway 16 to 12 Street/Township Road 494. South of 12 Street/Township Road 494, this roadway exists as an unimproved two-lane gravel roadway. There are no future plans for improving this roadway within the RM of Wilton No. 472 at this time. However, it is assumed to be improved to a four-lane arterial standard in the long-term as it will be a major connector to the future Highway 16 bypass. Lands adjacent to this roadway are highly serviceable given the roadway connects to 12 Street/Township Road 494 and Highway 16, and will be a future major connector to the Highway 16 bypass service interchange.



Range Road 3280

3.2.1 Roadway Network Summary

There are a number of roadways which are currently developed to a reasonable standard to service future urban development. These include:

- Range Road 14, paved two-lane roadway, from 67 Street – 44 Street (Highway 16);
- 75 Avenue, paved two-lane roadway, from 67 Street – 12 Street;
- 50 Avenue (Highway 17) within the entire extended study area;
- 40 Avenue, paved two-lane roadway, from 67 Street – 12 Street;
- Range Road 3280 from Highway 16 – 12 Street (adjacent to the Husky site);
- 67 Street, paved two-lane roadway, from 40 Avenue – western limit of the extended study area;
- 44 Street (Highway 16); and
- 12 Street within the entire extended study area.

Early stages of urban development for lands surrounding these roadways can occur from a transportation serviceability perspective with little improvements needed to the transportation network.

The ultimate roadway network consists of a system of arterial roads spaced one mile apart within the extended study area, from 40 Avenue in the east to Range Road 14 in the west. East of 40 Avenue and west of Range Road 14, there are currently no plans for adding more arterial roadways. Range Road 3280 to the east is the next logical arterial as it will connect to the future Highway 16 bypass. Range Road 15 to the west, near the west study limits is the next logical arterial roadway.

In general, the ultimate roadway network is well planned within the west portion of the extended study area between TMPs and studies completed by the City of Lloydminster and County of Vermilion River. The timing of the ultimate roadway improvements as described will be dependent on the amount of development that occurs. Once constructed, the Highway 16 bypass will be a major service anchor for developing lands within the south and southwest sections the extended study area. Its eventual construction will likely trigger the need to upgrade other roadways in the area.

3.3 Transportation Serviceability

Transportation serviceability to accommodate future urban development was evaluated based on the immediate to long-term serviceability of lands within the extended study area. Lands that are adjacent to an existing paved roadway are considered more easily serviceable compared to those located on a gravel road. For the purposes of this exercise, the timing of the Highway 16 bypass is assumed to be constructed before full build-out of the lands within the extended study area in the ultimate long-term.

Figure 3.2 assigns a transportation serviceability ranking of 1 – 10 for each of the quarter section within the study area. A ranking of 1 means there is transportation infrastructure immediately available to accommodate urban development, while a ranking of 10 means the greatest amount of improvements is required to the transportation system to accommodate urban development.

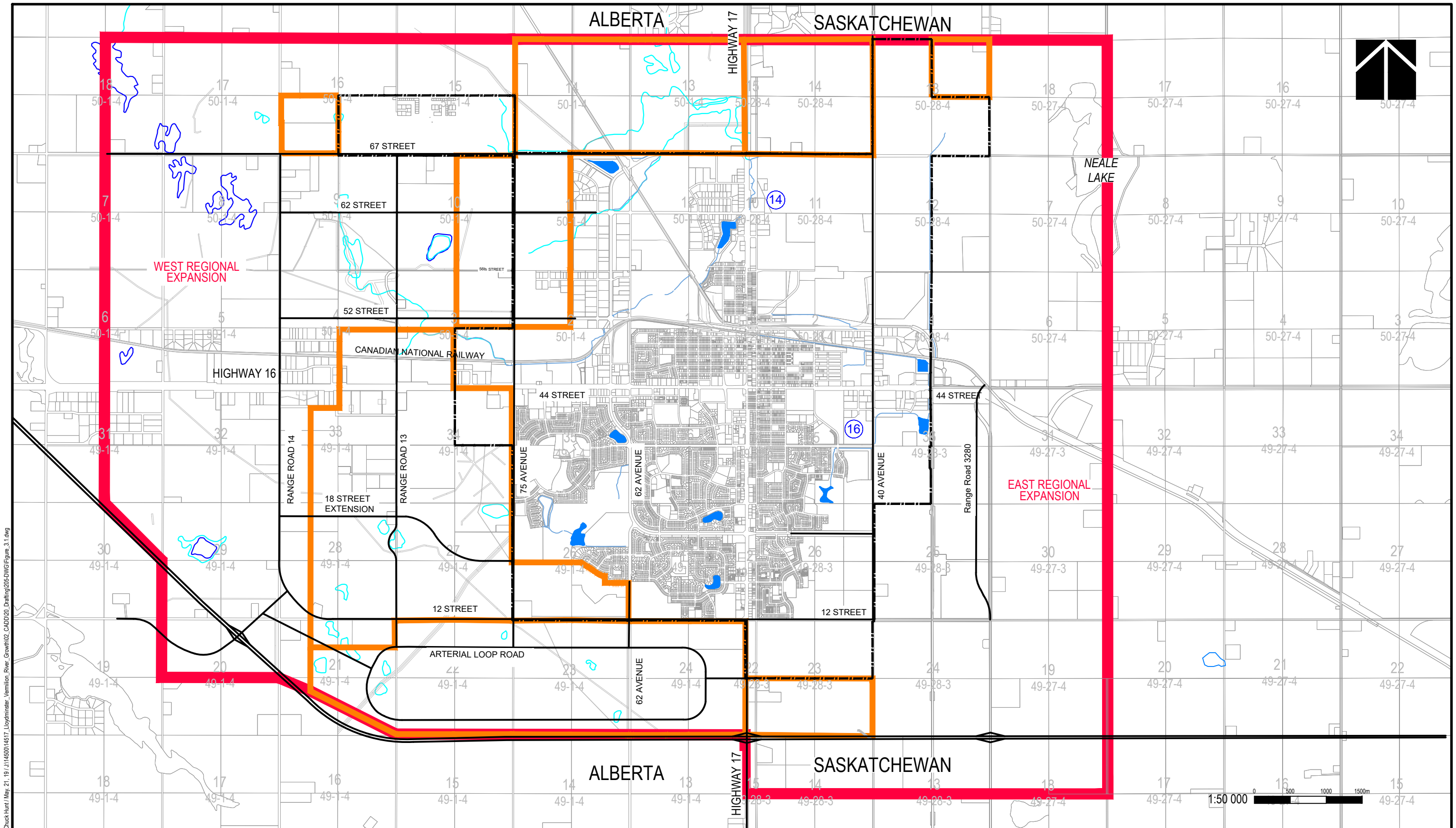
Table 3.1 below describes the individual ranks within the ranking system in greater detail.

Table 3.1: Transportation Serviceability Coding Criteria

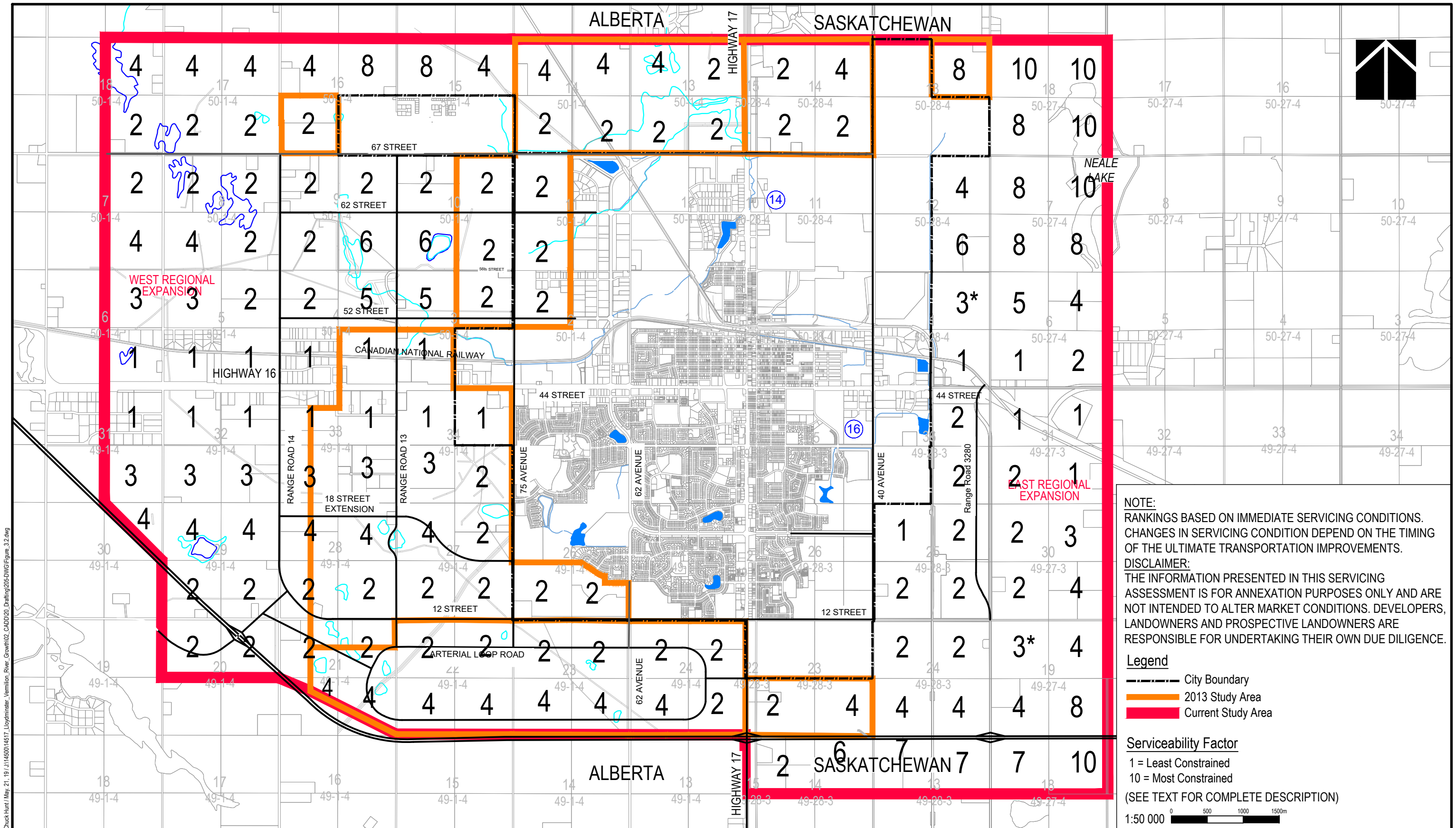
Rank	Adjacent Roadway Attributes		Upgrade Type
	Number of Lanes	Surface Condition Quality	
1	4	Excellent – Paved	—
2	2	Excellent – Paved	—
3	within 800 – 1,600 m of Rank #1		Improve Existing
4	within 800 – 1,600 m of Rank #2		Improve Existing
5	within 800 – 1,600 m of Rank #1		New Connection
6	within 800 – 1,600 m of Rank #2		New Connection
7	1,600 – 2,400 m of Rank #1 or #2		Improve Existing
8	1,600 – 2,400 m of Rank #1 or #2		New Connection
9	2,400 – 3,200 m of Rank #1 or #2		Improve Existing
10	2,400 – 3,200 m of Rank #1 or #2		New Connection

Overall, while lands adjacent to the existing highways are given the best serviceability ranking of 1, lands adjacent to existing improved roadways (e.g., Township Road 494/12 Street, Township Road 502/67 Street, 75 Avenue/Range Road 12, etc.) are still very highly serviceable, achieving a ranking of 2. The low rankings (<4) are reserved for lands adjacent and in close proximity to an existing improved roadway. The higher serviceability rankings (>8) are reserved for lands where there is inadequate/disconnected roadway infrastructure.

Note that the future Highway 16 bypass will provide more connectivity within the extended study area in the long-term, however the utilization of the bypass as an alternative to other roadways will depend on whether it is the shortest route. For example, the bypass will not be a shorter route from the majority of the south study area to the existing industrial lands located within the north portions of the City as the other internal roadways within the City (75 Avenue, 62 Avenue, 50 Avenue and 40 Avenue) will be utilized and improvements will likely be required to accommodate the increased demand. The bypass will have more of an impact on reducing/alleviating roadway congestion for some parallel roads (Township Road 494/12 Street and Highway 16/44 Street), as well as Range Road 14 and Range Road 3280 where, depending on the origin/destination, travelling via the bypass may be faster than using the two range roads.



Chuck Hunt / May 21, 19 / J:\14501\14517_Lloydminster_Vermilion_River_Growth\02_CADD\00_Drafting\2016\DWG\Figure_3.1.dwg



4.0 Aggregated Serviceability

To best inform a high level determination of future urban growth directions from purely the serviceability perspective, an aggregation of the four individual serviceability rankings presented earlier in this report is necessary. While Figure 2.1: Overall Utility Serviceability represents an aggregation of the water, wastewater and stormwater rankings presented in Figures 2.3, 2.5 and 2.7 respectively, it does not layer in the transportation serviceability rankings presented in Figure 3.2.

Figure 4.1 presents an aggregation of all four individual serviceability rankings presented earlier within this *Urban Servicing Assessment Update* report. It assumes that each of the four sets of infrastructure serviceability are equally important in the high level determination of future urban growth directions.

During the preparation of the *Joint Growth Study*, the working group comprising the consultant team and members of the administrations of the County of Vermilion River and the City of Lloydminster expressed a desire to implement a weighted approach to the aggregation of four sets of serviceability rankings. Based on typical capital and construction costs associated with the different sets of infrastructure required to service urban development, the City of Lloydminster recommended that the priorities presented in Table 4.1 be applied. Percentage weightings were then applied to the priorities based on discussions within the working group, which are also presented in Table 4.1

Table 4.1: Serviceability Priorities and Weightings

Infrastructure	Serviceability Priority	Weight Applied To Rankings (%)
Wastewater	1	100
Water	2	75
Transportation	3	50
Stormwater	3	50

As presented above, the recommended weightings were 100% for wastewater, 75% for water and 50% for both stormwater and transportation. As efficient and cost-effective wastewater and water servicing in an urban context is dependent upon elevation changes and contiguous growth to a greater extent than transportation and stormwater, it is appropriate they are the two priorities with the greatest weightings. Among the two, greater weight is applied to wastewater as the costs associated with extending wastewater servicing is greater than water, especially when development is non-contiguous resulting in the need to upfront off-site trunk costs, or development at lower elevations requires lift stations to pump flows uphill. Water's greater weighting compared to stormwater and transportation is due to the costs associated with boosters and reservoirs required to establish new pressure zones at elevations higher than existing pressure zones. Elevation changes are less relevant to stormwater servicing compared to wastewater and water as stormwater can discharge to multiple basins in a cost-effective manner.

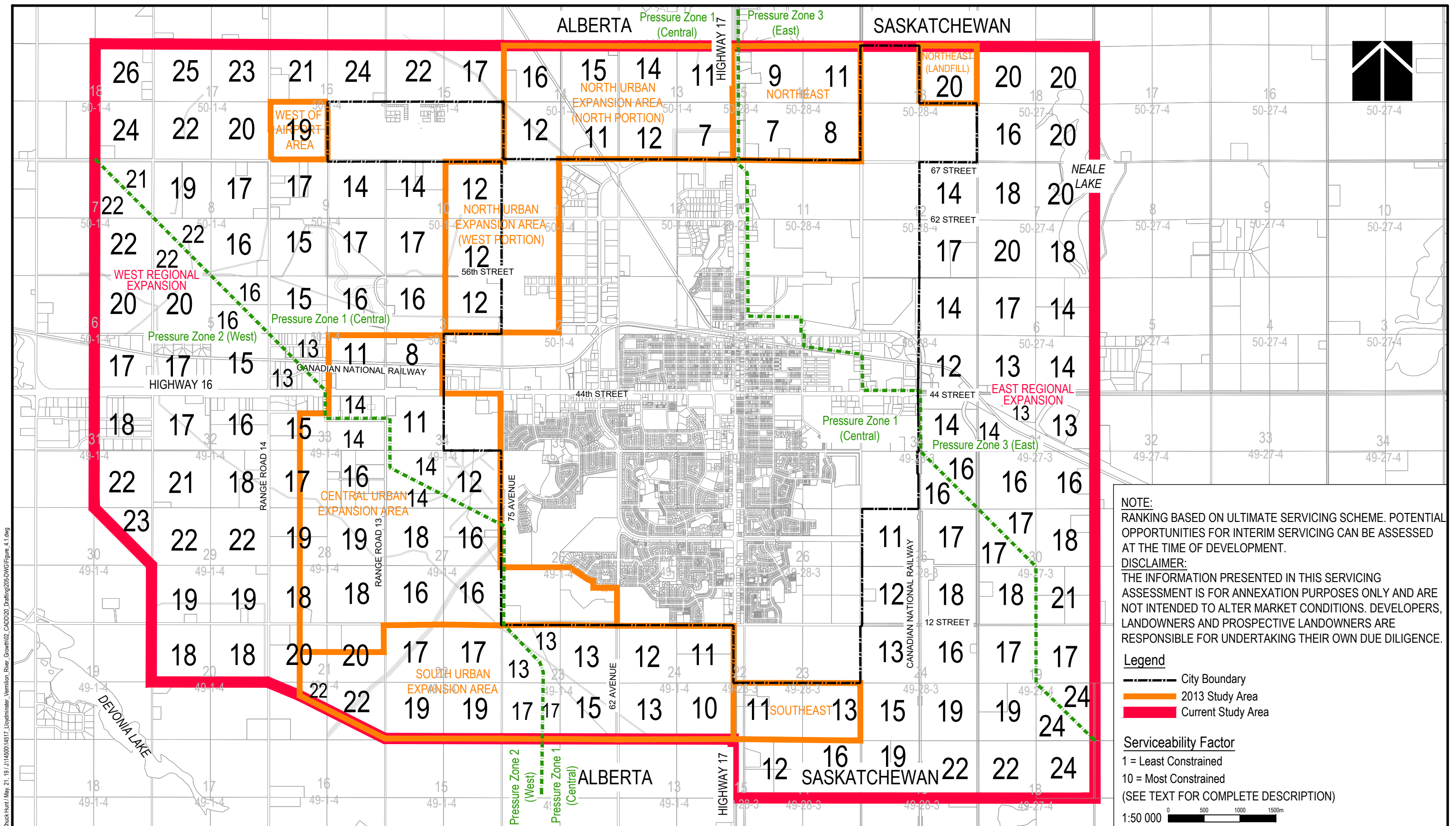
Although stormwater and transportation are third priorities sharing equal weighting, it is advised that transportation does become a bigger constraint over time as existing rural roadways are built to an urban standard and become more congested. At a certain point, roadway design capacities are exceeded and there is reduced flexibility to increase capacity. This is seen however as more of an issue with the current internal transportation system within the existing urban community. Therefore, this was not accounted for in the original transportation serviceability rankings, or the subsequent weightings presented above, as impacts on the internal transportation system are not usually considered at this level of planning for expansion of an urban area. Rather, the impacts on the internal transportation system are generally addressed through the master planning process (i.e., a TMP), and the capital plan budgeting process to undertake future roadway construction projects.



Figure 4.2 presents a second aggregation of all four individual serviceability rankings based on the weightings presented in Table 4.1. From purely an urban serviceability perspective, which excludes other influences such as opportunities, constraints, different markets and demands on either side of the provincial boundary, etc., Figure 4.2 suggests the most favourable urban growth directions, within rankings of ≤ 10 , are:

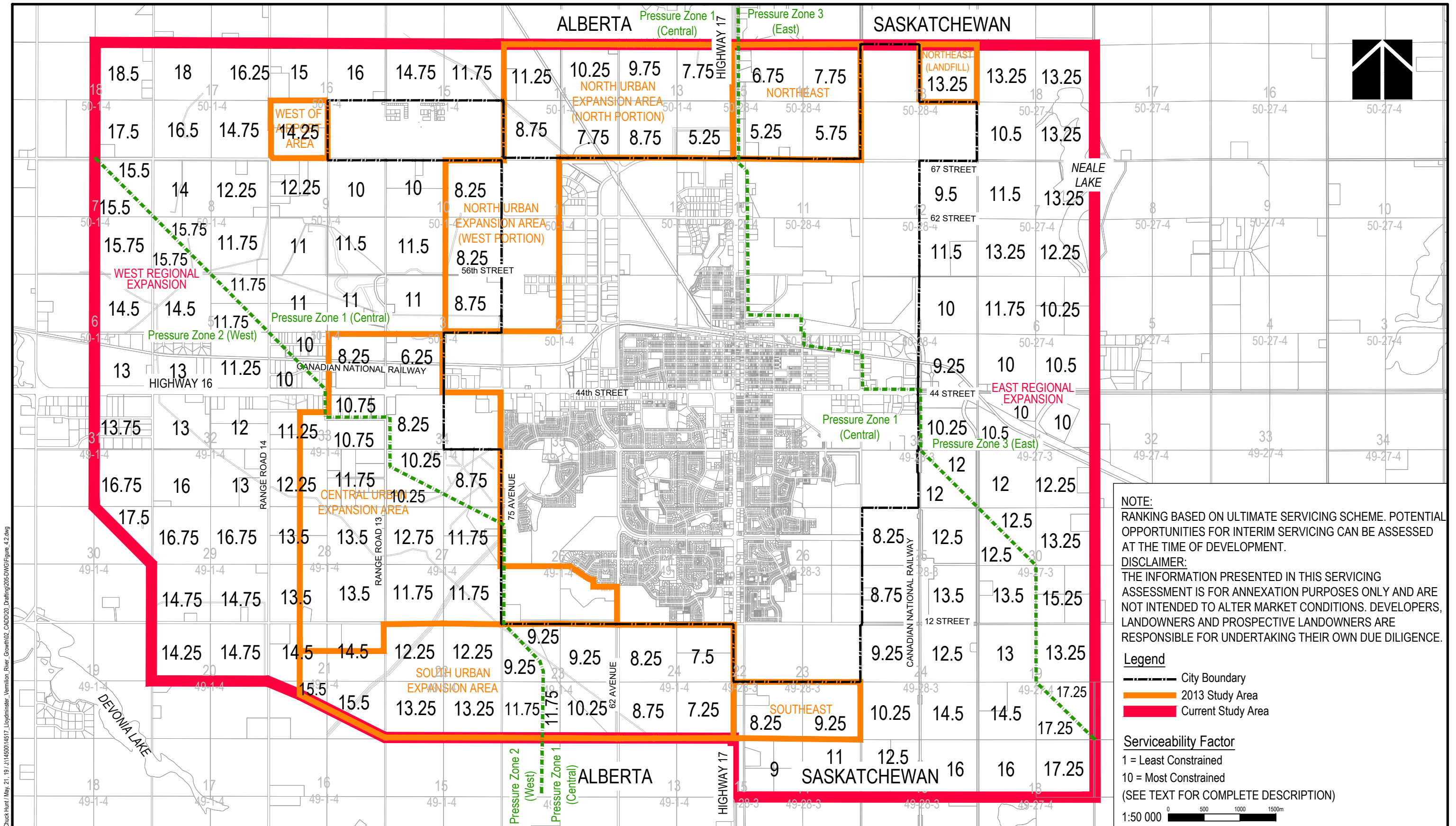
- Along the north side of 67 Street from the west edge of the existing airport lands to the landfill (40 Avenue) and further northward along Highway 17 (in both AB and SK);
- Along the west side of 75 Avenue from one mile south of Highway 16 to the airport (67 Street) and further westward along Highway 16 (in AB);
- Wrapping around the south and southeast sides of Lloydminster from 75 Avenue in the west to the Canadian Pacific rail line and further southward along Highway 17 in the east (in AB and SK); and
- Pockets to the northeast between Highway 16 and 40 Avenue, a half-mile east of 40 Avenue (in SK).

Of the lands adjacent to the City of Lloydminster, those that scored the poorest in the weighted ranking aggregation were those to the southwest on the west side of 75 Avenue from one mile south of Highway 16 to 12 Street and beyond to the south and west. This is largely due to these lands being located within a different pressure zone for water servicing, which requires construction of boosters and potentially a new reservoir.



City of Lloydminster/County of Vermilion River
2017 Urban Servicing Assessment Update
Aggregated Core Infrastructure Serviceability

Figure 4.1



5.0 Conclusions

This *Urban Servicing Assessment Update* concludes the following:

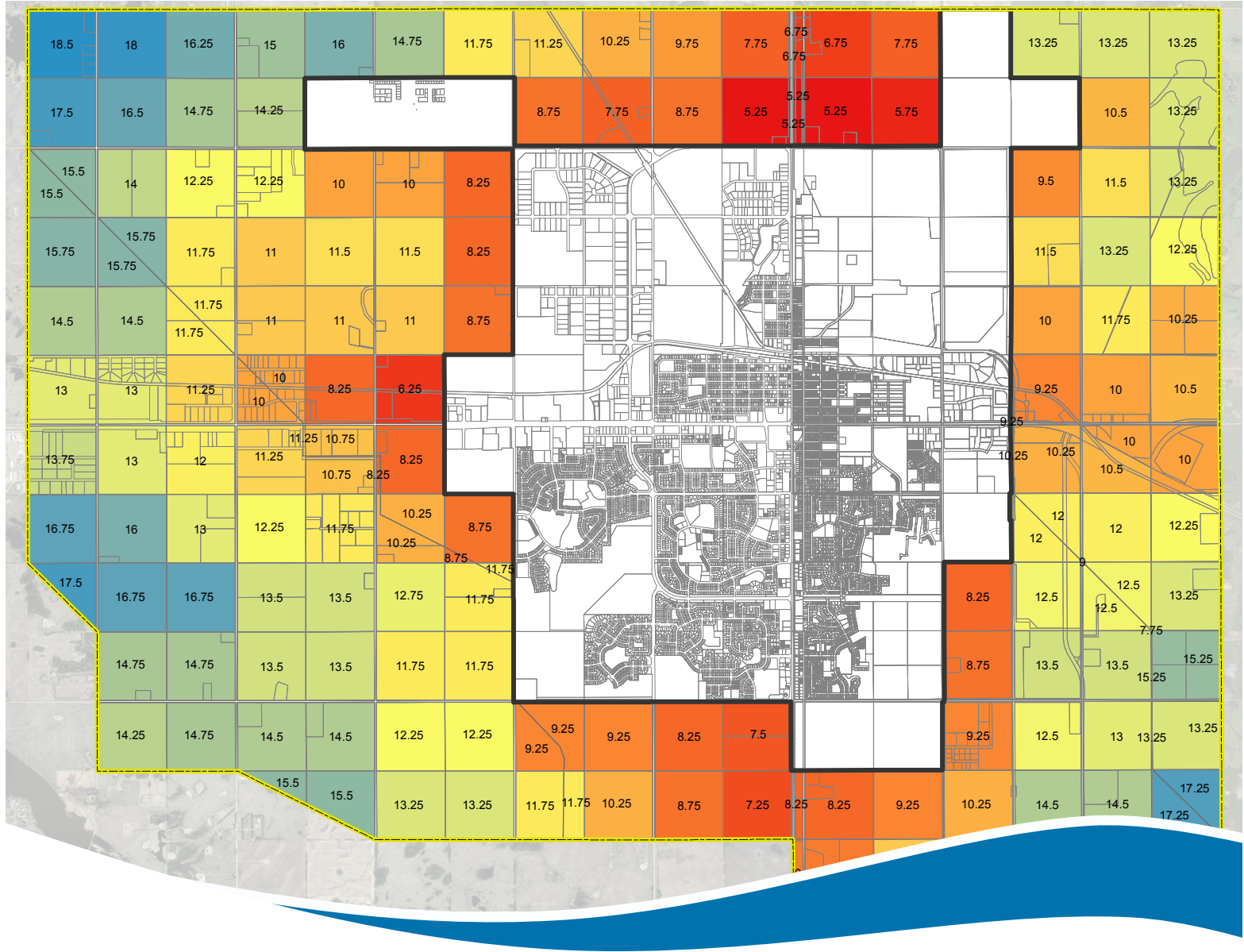
1. urban water, wastewater, stormwater and transportation servicing can be provided to all portions of the extended study area if and when full build-out is achieved in the ultimate long-term future;
2. the cost of servicing any particular quarter section within the extended study area will vary as servicing of a quarter section may or may not require off-site costs such as upgrades to existing municipal infrastructure and/or new infrastructure to connect the quarter section to the existing municipal system;
3. from purely an urban serviceability perspective only, the most appropriate locations to accommodate contiguous expansion of the City of Lloydminster's urban footprint is to the north, west/northwest, south and southeast and some pockets to the northeast; and
4. expansion of the urban footprint in a southwest direction from the City of Lloydminster is not recommended in the medium-term as crossing into a new water pressure zone would generate the greatest expense in infrastructure investments to accommodate the City's projected medium-term growth.



LLOYDMINSTER



County of
VERMILION River

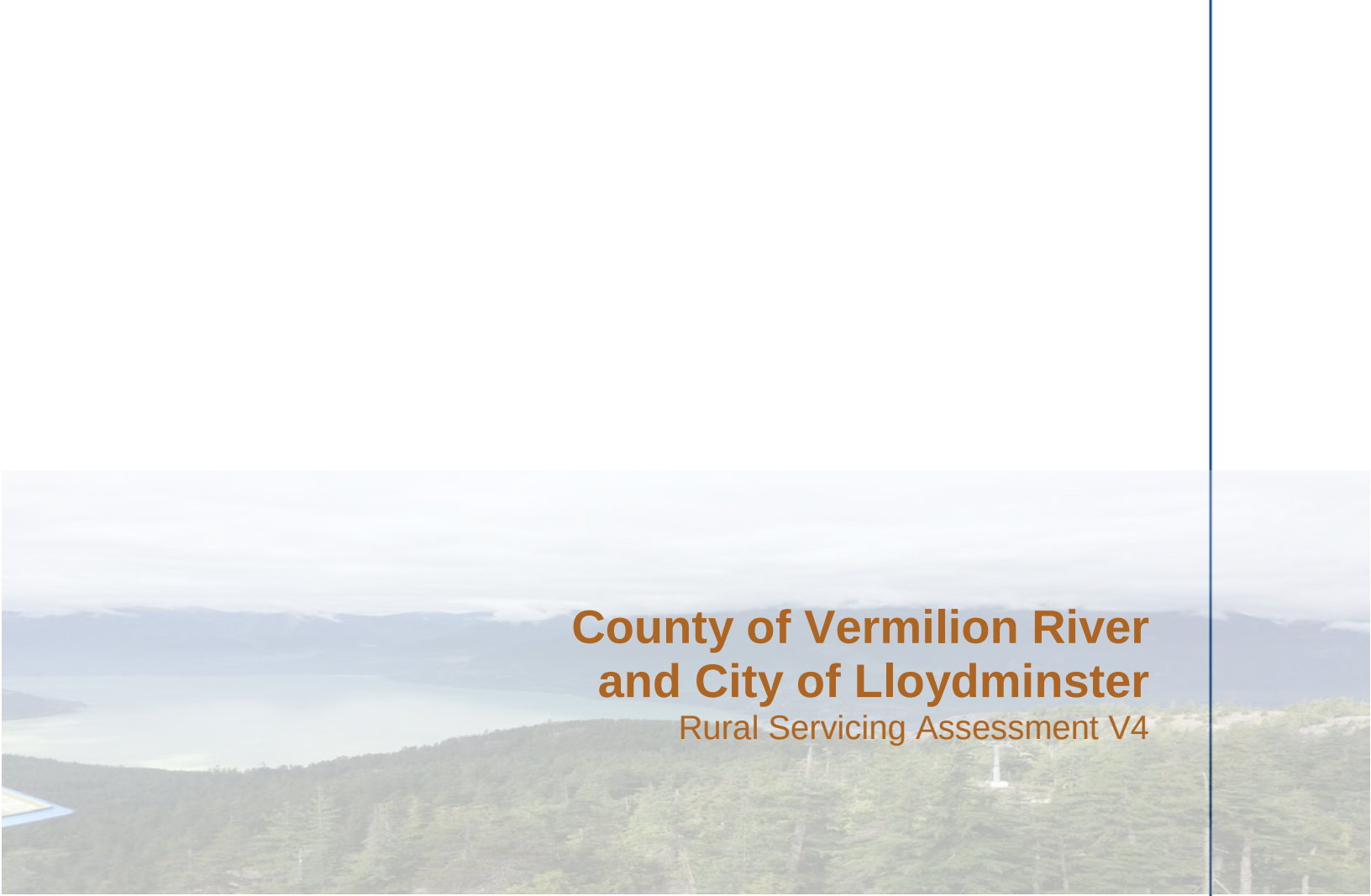




APPENDIX F

Preliminary 2017 Rural Servicing Assessment





County of Vermilion River and City of Lloydminster

Rural Servicing Assessment V4

W657-018.02

February, 2017



Formerly BSEI Municipal Consulting Engineers

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1. Introduction

The purpose of this report is to provide a preliminary rural servicing assessment for the County portion of lands within the study area for the County of Vermilion River/City of Lloydminster Joint Growth Study (JGS). The report supports the Urban Servicing Assessments previously completed by ISL Engineering and Land Services. The combined reports will support the JGS process by informing the determination of both rural and urban servicing opportunities for the County and City. The importance of considering both is to demonstrate which lands are better serviced by urban servicing and which by rural servicing in the short, medium and long term. The intention would be that when the JGS is updated over time the servicing assessments would also be updated to reflect changes in growth and servicing.

1.1 Study Area

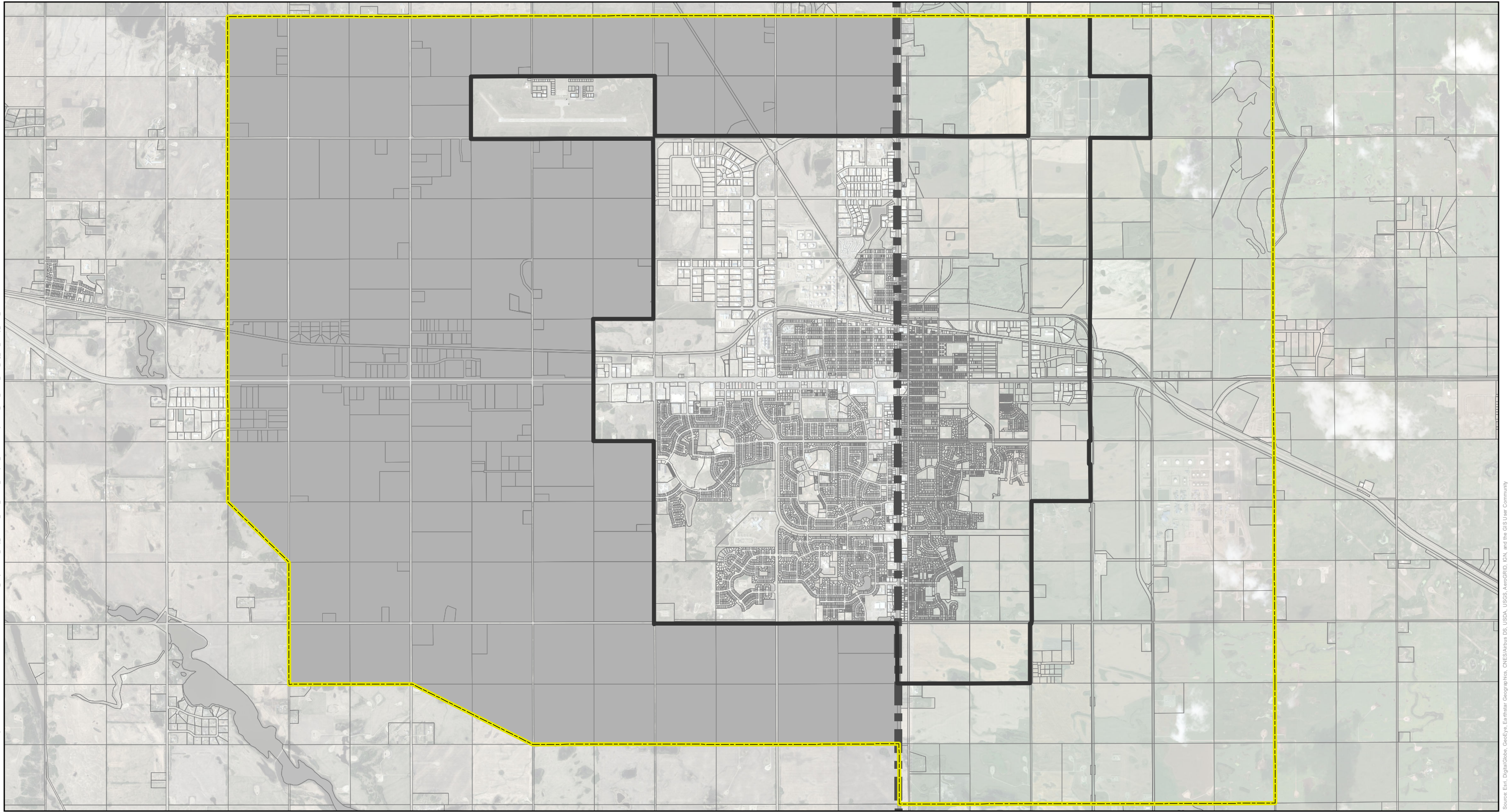
The County of Vermilion River and the City of Lloydminster established a study area for the JGS in mid-2015. As part of the JGS project, ISL was retained to provide an Urban Servicing Assessment for all lands within the study area for consideration of future growth of the City of Lloydminster. ISL completed a Servicing Assessment report in August 2013 which considered a smaller area of approximately 41 quarter sections (10.25 sections) of land currently residing within the County of Vermilion River's jurisdiction. In 2016 ISL updated the previous study to consider new information and expanded it to encompass the JGS's larger study area including an additional approximate 48 quarter sections (12 sections) of land within the County of Vermilion River's jurisdiction, for a total area within the County of 89 quarter sections (22.25 sections) of land. These lands, which are the basis for this report, are illustrated on Figure 1.0.

1.2 Ranking

Though this report attempts to compare apples to apples with the previous urban servicing assessment, including utilizing the same ranking numbers, the two are not directly comparable for the following main reasons:

- + The land use and density considered in an urban setting versus a rural setting inherently precludes considering the same servicing based on costs including life cycle costs/asset management principles.
- + Growth in a rural setting versus an urban setting is much different and therefore to accurately compare the two would require comparisons of tangible and non-tangible differences which is beyond the scope of this report.

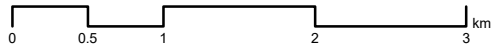
Date: 2019-05-22 Coordinate System: NAD 1983 UTM Zone 12N Document: M:\Lloydminster_City_201817_Joint_Growth_Study\05_Servicability\14517_Col_CovR_JGS_Fig_1.0_Study_Area_190321.mxd



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



1:50,000



- Provincial Boundary
- Joint Growth Study Area
- Rural Servicing Assessment Study Area
- City Boundary
- Parcels



**JOINT REGIONAL GROWTH STUDY
PRELIMINARY RURAL SERVICING
ASSESSMENT**

FIGURE 1.0 - STUDY AREA

- + When considering appropriate servicing methods in rural areas, the distance of development from urban centers or community infrastructure systems can be less important, and in some cases irrelevant, as connection to community systems is not always feasible. In comparison, when considering urban servicing the distance from developed urban centers and existing services is one of the core characteristics that define the serviceability.

The urban ranking relates distance directly to time as growth would naturally progress outwards from the existing services. As stated above rural servicing is different than urban and does not always have the same relationship.

This report compares serviceability not direct costs. In other words, the cost to service the same lot is not directly compared between urban and rural systems. To consider that direct comparison a much more detailed assessment would be required.

1.3 Limitations of Report

It is important to note that in considering logical steps and budget this report is preliminary and is only intended to provide a brief introduction to rural servicing including recommendations on next steps should a more detailed assessment be warranted.

The report considers the Intermunicipal Development Plan and related Area Structure Plans, however a detailed assessment of land use, developable lands and possible conceptual plans is not within the scope of this report. As a result of this level of assessment the report assumes the entire area will develop as country residential land use (CR-1) with lots ranging between 2 and 5 acres (avg. 3.5 ac). This level of development would reflect a gross average density over the various land uses being considered by the ASPs and IDP. This assumption is warranted at this level of assessment as a more detailed analysis at this time would have diminishing returns providing greater detail without significantly changing the assessment and having little or no effect on the conclusions.

As an insight into the servicing of higher density developments the report reviews commercial, industrial and higher density residential in the summary and outlines how a future detailed assessment may consider those land uses when ranking serviceability.

2. Utility Servicing

2.1 Background

This report focuses on rural servicing and must be considered as a supplement to the 2013 Servicing Assessment and 2016 Servicing Assessment Update completed by ISL. This report relies on many of the details and analysis provided by those two reports and is not intended to duplicate those reports. The reader is therefore asked to read all three reports when considering serviceability.

To ensure consistency in analysis and assumptions this report utilizes the same supporting materials as the previous Assessment reports.

In considering wastewater and water servicing, this report assumes onsite systems with consideration of community systems where existing services exist such as Lloydminster and Blackfoot that could potentially be expanded to service a larger area. Based on the background information it is assumed that onsite servicing is appropriate for all developable lands in the servicing area.

2.2 Ranking

The 2016 Servicing Assessment Update provided a ranking of 1 to 10 for each utility (water, wastewater, stormwater). The individual ranks are then weighted as a percentage based on typical capital and construction costs. The weighting provided by the County is as follows:

Infrastructure	Weight Applied to Ranking (%)
Wastewater	50
Water	50
Stormwater	85
Transportation	100

The ranking represents a range from 1 (very serviceable, least constrained) to 10 (extremely long-term development, most constrained) which is then weighted and combined with the other services for an overall ranking. This report maintains that same numbering system as mentioned in Section 1.2 for simplicity, but by nature of different constraints requires different descriptions. As such the ranking descriptions provided for in the 2016 Update are maintained in Table 1.0 with additions for rural servicing italicized.

Table 1.0 – Urban and Rural Serviceability Coding

Rank	Description	Adjacent to Served Existing Development?	Servicing Requires	
			Existing System Upgrades?	Offsite Works?
1	Immediate Servicing possible, no existing system upgrades required (Community or centralized system)	✓		
2	Immediate Servicing possible, minor existing system upgrades required (Community or centralized system)	✓	✓	
3	Servicing possible once adjacent quarter-sections are serviced, minor (or no) existing system upgrades and/or offsite infrastructure required (likely already completed to enable servicing of the adjacent areas) OR Immediate servicing possible, but requires higher cost servicing (e.g. trenchless rail crossing, lift station) (Community or centralized system) Onsite Servicing - good soils, shallow groundwater not under the influence of surface water, adjacent ditching/storm system		~	~
4	Servicing possible once adjacent quarter-sections are serviced, substantial offsite infrastructure or existing system upgrades required in advance (to be completed as part of servicing of the adjacent/downstream areas) (Community or centralized system) Onsite Servicing - medium soils, medium depth groundwater not under the influence of surface water, some offsite ditching/storm system upgrades required		~	~
5	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 1 st mile of long-term development (Community or centralized system) Onsite Servicing - challenging soils, deep groundwater, extensive ditching/storm system upgrades required	~	~	~
6	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 2 nd mile of long-term development (Community or centralized system) Onsite Servicing – soils do not permit onsite wastewater disposal, depth and amount of groundwater makes onsite wells prohibitive, extensive ditching/storm system upgrades required adjacent and downstream	~	~	~
7	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 3 rd mile of long-term development (Community or centralized system) Onsite Servicing – not supported, improvements to downstream storm for min. 3 miles	~	✓	✓

8	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 4 th mile of long-term development (<i>Community or centralized system</i>) <i>Onsite Servicing - not supported, improvements to downstream storm for min. 4 miles</i>	~	✓	✓
9	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 5 th mile of long-term development (<i>Community or centralized system</i>) <i>Onsite Servicing - not supported, improvements to downstream storm for min. 5 miles</i>	~	✓	✓
10	Long-term development potential; Major existing system upgrades required before servicing / major constraints AND/OR 6 th mile of long-term development (<i>Community or centralized system</i>) <i>Onsite Servicing - not supported, improvements to downstream storm for min. 6 miles</i>	~	✓	✓

Note:

~ Denotes “may nor may not be required, depending on the area or other factors”

✓ Denotes “required for the area”

2.3 Water Servicing

Rural water servicing in this report assumes three servicing options. These options are:

- + Availability of adjacent community water;
- + Cisterns filled by hauling; and
- + Wells drilled to access groundwater (either individual on lot or community).

In the interest of maintaining consistency with the intent of rural servicing this report only considers community water if it is directly adjacent to the quarter section in question and is a feasible option as defined in the urban servicing report. Feasibility is contingent on the quarter section being developed to its highest and best use as defined by the MDP, IDP and related ASP.

When considering either cisterns or wells it is assumed wells will be used in most instances due to on-going social, economic and environmental concerns related to hauling water. The preparation of this report included a review of the related ASP's in the area which included water well drilling reports. The drilling reports indicate that wells are typically 15 to 70m deep and may not be potable when compared to water quality requirements so may require treatment. The reference materials indicate that there is an adequate amount of water available for rural development and water quality concerns can be mitigated by minor treatment.

When considering urban servicing the available raw water, topography (pressure zones) and distance to existing communal systems (pipes, reservoirs and pumps) is paramount. When considering a rural system utilizing wells, the depth, flow capacity and water quality of the groundwater source are the paramount consideration. The major difference between the two is that the cost to construct, operate and maintain (including life cycle costs) a communal system with low density residential is typically not feasible due to the few users and cost of such an extensive network. Without density or clients who require large volumes of water community systems in rural areas typically require subsidy.

Based on the available data this report has ranked most quarter sections as a 3 out of 10 as the depth and water quality appear to be fairly uniform and supportive of rural development.

2.4 Wastewater Servicing

Wastewater servicing in a rural setting considers the following on lot options:

- + Pump out
- + Lagoon
- + Septic Fields

+ Mounding

Pump outs are common in the area being considered, likely due to low installation cost, simplicity and close proximity of the City keeping hauling fees low. Lagoons are not common, likely due to the land required and necessity to either over size for evaporation or have the ability to release the contents downstream. Septic fields are supported in the area due to acceptable soils, though where high water tables are encountered mounding has been recommended to keep the field above the water table.

Communal systems may be feasible for individual developments where land can be dedicated for either a lagoon or septic field but regional low density wastewater systems are typically not feasible due to the high cost of construction, operation and maintenance (including life cycle costs) of the system. In circumstances similar to the North, Central and South ASP areas some municipal governments have required communal systems be installed at the time of rural development such that future densification can be supported as soon as the adjacent urban system is immediately available for connection to that developments communal system. Subsequent decommissioning of the onsite lagoon or septic field permits redevelopment of those lands.

When ranking onsite wastewater systems most quarter sections were considered a 3 out of 10 where septic fields were assumed to be appropriate. Areas where there is a high ground water table a 4 out of 10 should be considered due to the additional costs involved. Should individual developments choose to utilize pump outs or lagoons they should be supported where feasible, the rank has not been revised for these options as the choice is likely financially based.

2.5 Stormwater Servicing

Stormwater servicing of rural and urban areas have very similar requirements with the exception that low density rural development creates lower peak flows and less overall runoff than urban development. For instance the Northwest storm system in the City of Lloydminster requires release rates from future upstream development be maintained at 2.5 l/s/ha south of the CN rail and 0.75 l/s/ha north of the railway. These release rates compare predevelopment flow rates to post development rates and are directly related to the increase in impermeable area as the land develops from farmland/grass to roofs and roads. As rural development does not represent the same density the change in impermeability is much less. Rural development also facilitates onsite Best Management Practices (BMP's) and Low Impact Development (LID) measures such as stormwater re-use, rain gardens, bioswales, ponds, etc. as they typically have a greater area to work with. These onsite practices promote infiltration into the groundwater thereby reducing overland flows and more closely mimics the natural water cycle.

As both urban and rural development require downstream (communal or public) systems to support stormwater release the ranking is similar but slightly less constrained for rural development due to the reduction in constraints enabled by onsite BMP's and the lower impermeability provided by lower density.

Significant improvements to downstream public drainage systems are assumed to be completed through the levy program. It is also assumed that development and flows will be monitored such that levy projects can be prioritized and implemented based on growth rates and pressures in a proactive manner.

3. Transportation Servicing

Urban and Rural transportation networks are based upon safety and the analysis of traffic demands due to number of trips. As rural servicing has a much lower density and lower traffic volumes the transportation servicing requirements are much less.

This study assumes the existing network is adequate for servicing low density rural (2 to 5 acre) development. This is especially true when considering development constraints such as wetlands, pipelines, wells, etc that reduce overall density and therefore reduce traffic volumes. Any immediate offsite improvements related to development are assumed to be an access road or paving of an existing gravel road.

Major improvements related to growth such as road widening and intersection upgrades are assumed to be included in the levy program. It is assumed that as growth occurs and transportation plans are updated that the levy projects can be prioritized and implemented based on growth rates and pressures in a proactive manner.

The 2016 Servicing Assessment Update provided a ranking of 1 to 10 for transportation servicing described in Table 3.1 in that document. The ranking represents a range from 1 (immediate transportation services available, least constrained) to 10 (requires the most improvements to the transportation system to accommodate development, most constrained). The individual transportation rank is then weighted as a percentage based on typical capital and construction costs before being combined with the other 3 services. The weighting provided by the County for transportation is 100%. In other words when water, wastewater, stormwater and transportation are combined the overall ranking will range from 2.85 being the lowest possible combined rank to 28.5 being the highest possible combined rank.

This report maintains that same numbering system for simplicity. Due to the lower density and demands the ranking system of the rural transportation servicing is significantly better than the urban ranking. It is assumed all developments can be serviced by a rank 2 (2 lane paved) road.

4. Summary

The aggregate or combined (wastewater, water, storm, transportation) rural ranking is summarized in Figure 1.1. The individual ranking for each service (water, wastewater, storm, and transportation) is 1 to 10 and is summarised in Figures A1 – A4 in the Appendix. The combined weighted aggregate ranking of all 4 rural services has a possible range of 2.85 to 28.5 and is summarised in Figure 1.2.

The rural servicing assumes Country Residential (CR-1) development with minimum lot sizes of 2 to 5 acres.

The scope of this project was not to include a detailed analysis of servicing different land uses but instead assumed low density residential development as the base line or average in development demands for rural servicing. In considering commercial, industrial and higher density residential the specific demands of each should be considered, if a more detailed assessment is to occur. For instance a pipe lay down yard requires very little servicing and therefore does not directly benefit from the provision of urban servicing (assuming access is adequate). They can therefore be located throughout the area. However an industry with high water use / wastewater creation would benefit greatly from urban servicing.

When considering land uses that would benefit from urban servicing the urban servicing report is of paramount consideration. A further consideration of the assessments, not included in this report, should be planned extensions of urban servicing from Lloydminster such as the ACE water line which would greatly benefit adjacent properties considering land uses that require urban servicing and therefore lower existing service ranking along the alignment.

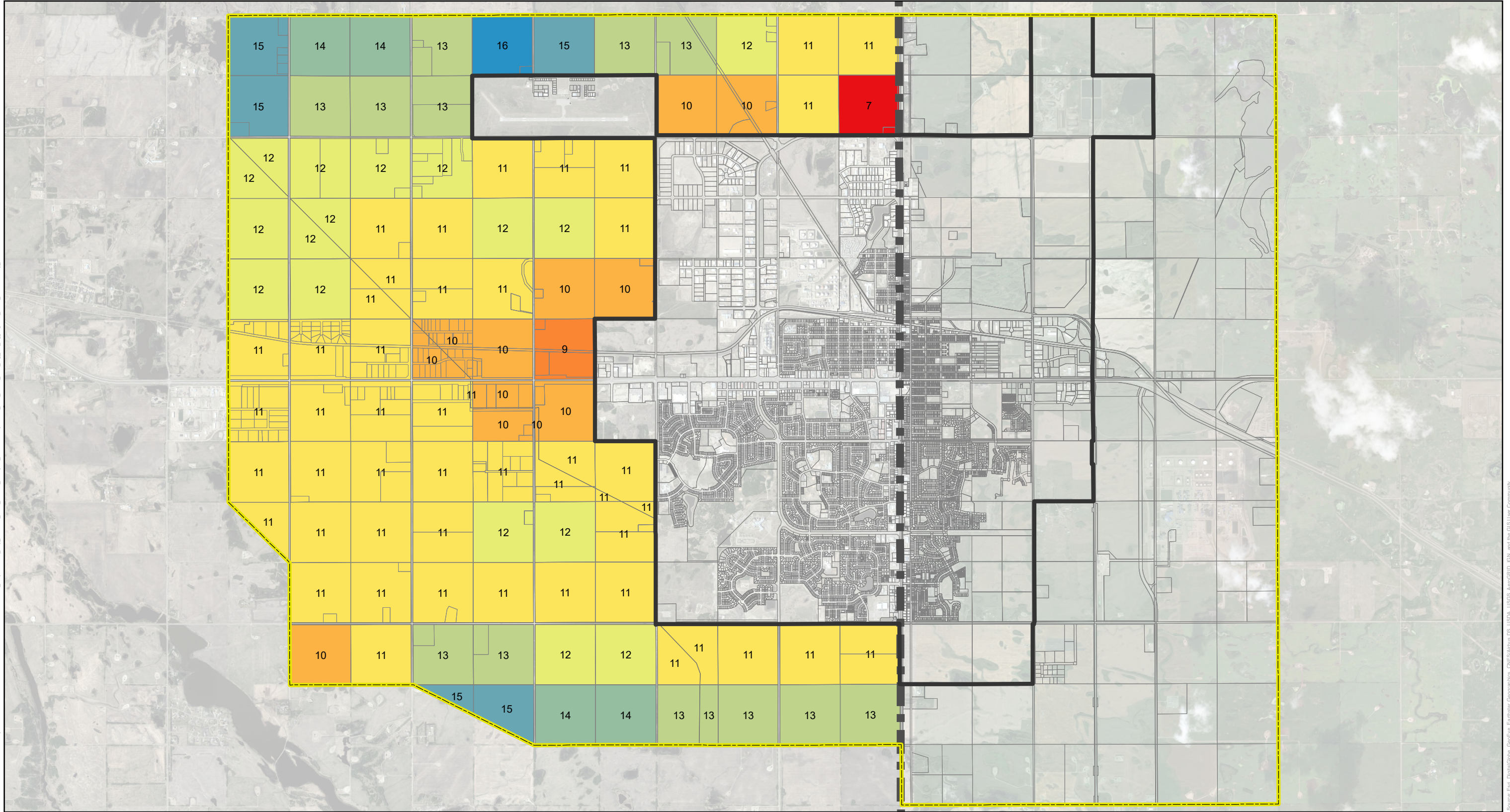
The aggregate ranking provided in the urban servicing assessments summarizes the servicing into short term potential, medium- and long-term potential. This is based on extension of urban servicing, which does not necessarily apply to rural development where the majority of lands can develop at any time in isolation of the adjacent lands. The exceptions being where a 2-lane paved road or adequate public drainage system (ditches) are not adjacent to the proposed development.

The aggregate weighted ranking for all 4 services ranges between 4.85 and 12.25 (summarised in Figure 1.2) with most sections of land ranked around 8. This represents a small range of the possible rank of 2.85 to 28.5. This is indicative of rural servicing with consistent soils and ground water serviced by section roads.

Specific trending of the ranks are described as follows:

The higher rank (more constrained) indicated for the sections in the northwest is mostly due to constraints related to stormwater infrastructure, with the higher ranks north of the airport due to transportation and stormwater. The rank for the lands along the south boundary are higher due to the limited access that will

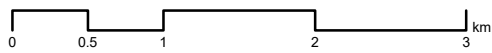
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Date: 2019-05-22
Coordinate System: NAD 1983 UTM Zone 12N



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Provincial Boundary

Joint Growth Study Area

City Boundary

Parcels

7

8

9

10

11

12

13

14

15

16



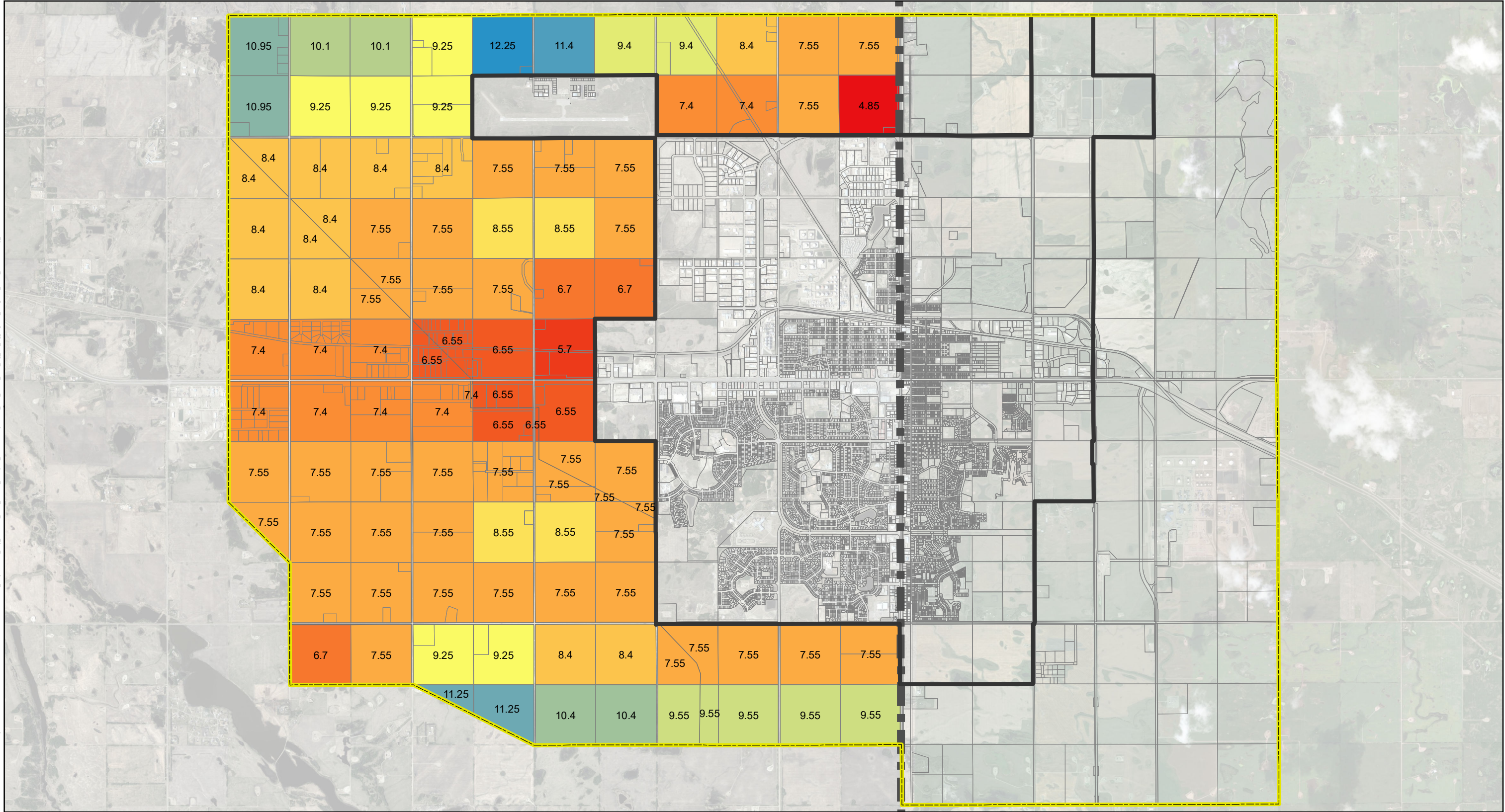
LLOYDMINSTER



County of
VERMILION River

JOINT REGIONAL GROWTH STUDY
PRELIMINARY RURAL SERVICING
ASSESSMENT
FIGURE 1.1 - AGGREGATED RURAL
SERVICEABILITY ANALYSIS

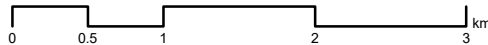
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Coordinate System: NAD 1983 UTM Zone 12N



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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- Provincial Boundary
- Joint Growth Study Area
- City Boundary
- Parcels

Aggregated and Weighted Rankings

- | | | |
|--------|--------|---------|
| ■ 4.85 | ■ 8.4 | ■ 10.4 |
| ■ 5.7 | ■ 8.55 | ■ 10.95 |
| ■ 6.55 | ■ 9.25 | ■ 11.25 |
| ■ 6.7 | ■ 9.4 | ■ 11.4 |
| ■ 7.4 | ■ 9.55 | ■ 12.25 |
| ■ 7.55 | ■ 10.1 | |



**JOINT REGIONAL GROWTH STUDY
PRELIMINARY RURAL SERVICING
ASSESSMENT FIGURE 1.2 -
AGGREGATED AND WEIGHTED
RURAL SERVICEABILITY ANALYSIS**

be afforded the lands with re-alignment of Highway 16. The lower rank directly north of the City is due to proximity of urban services.

When considering the three servicing assessments (2 urban and 1 rural) in the context of the MDP, IDP and more specifically the North, Central and South ASP areas, it is feasible to support rural growth recognising the lands in the JGS area have the potential for future densification as urban services develop.

In other words, in key areas where rural development is occurring as an “interim measure” the form and servicing of the rural development should consider future redevelopment into urban density and servicing. Such considerations may include subdivisions that support further subdivision in the future to smaller lots with improvements located such that demolition or relocation of the improvements in the future are minimized. Another consideration may be installing dry pipes for future community services or promotion of communal services that can easily be converted and connected to the community system in the future when urban servicing is available.

Recognising the initial additional constraints and costs that is placed on the rural development, it is imperative that there be some certainty as to which lands will develop into urban density and when. Therefore, if additional constraints are placed on rural development to consider future redevelopment into urban density and servicing it is imperative that this process provide accurate growth projections to avoid placing needless constraints on rural development in the short and medium term.

5. Next Step(s)

This preliminary rural servicing assessment builds upon the preceding urban serving assessment(s). If the intention is to guide development and determine what lands are best serviced through rural or urban servicing the next step may be to complete a detailed combined assessment of both rural and urban servicing requirements/opportunities. Such a report can consider higher density development, different land uses and which lands are best serviced through rural servicing standards and which through urban.

As this assessment was preliminary if detailed discussions on serviceability are to occur a full report is recommended that would incorporate greater details of the Municipal Development Plan, IDP, ASP's and supporting studies rather than a high-level overview.

A full rural servicing assessment should consider the following:

- + Water - Full analysis and spatial determination of water well drilling data and water quality to more accurately map rural serviceability
- + Wastewater - Full analysis and spatial determination of available water table and soil data to more accurately map rural serviceability

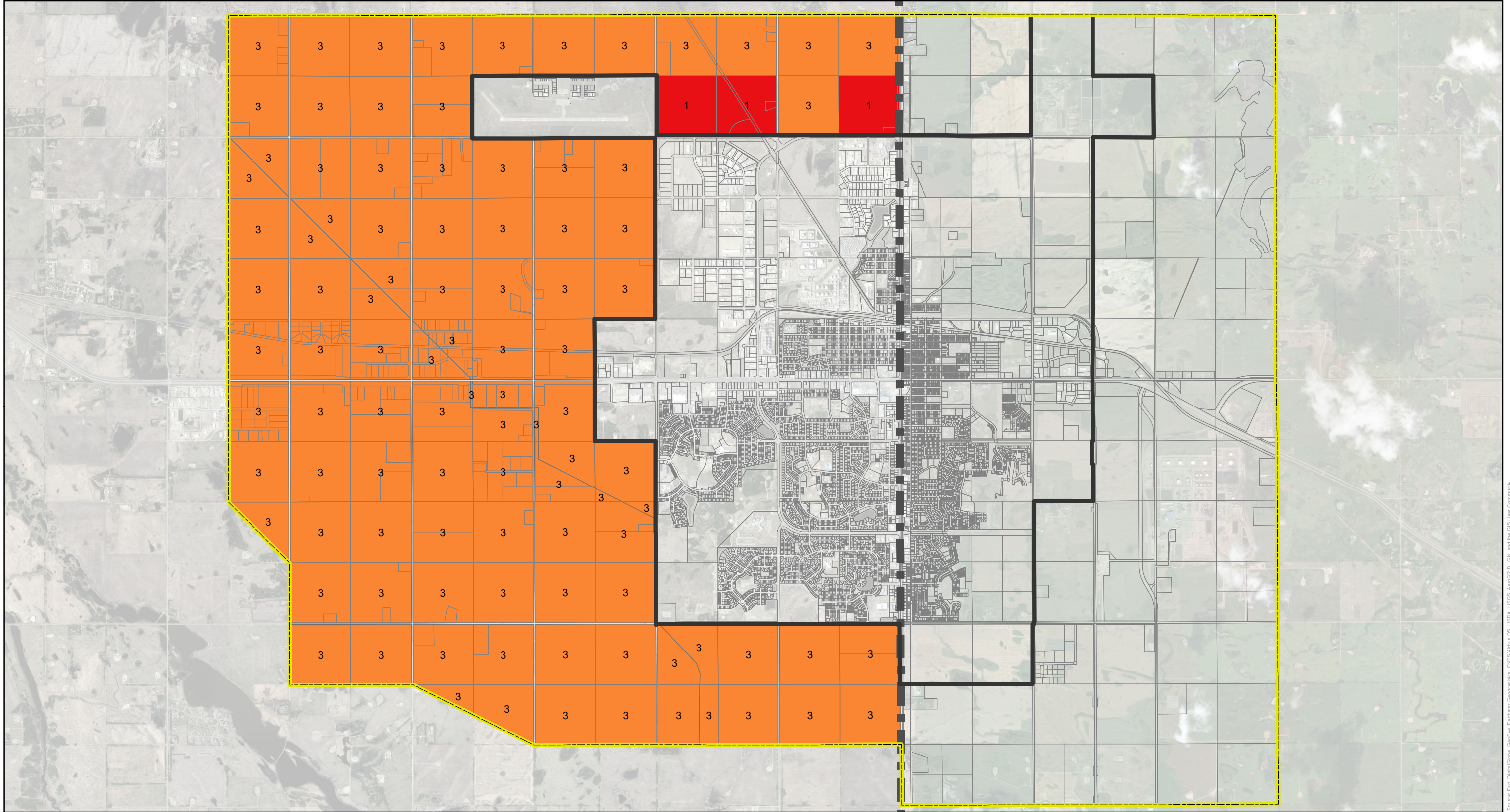
- + Stormwater – detailed analysis of lands and available existing public waterways (wetlands, creeks, rivers, lakes, ditches, culverts, etc.) to more accurately represent the rural serviceability considering the feasibility of onsite water detention and retention in maintaining acceptable release rates
- + Transportation – detailed analysis of existing road conditions, materials, aspects and effect of rural development on existing roads and intersections defining servicing requirements

Appendix A: Individual Serviceability Analysis

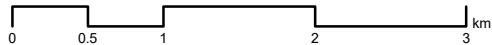
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Date: 2019-05-22 Coordinate System: NAD 1983 UTM Zone 12N

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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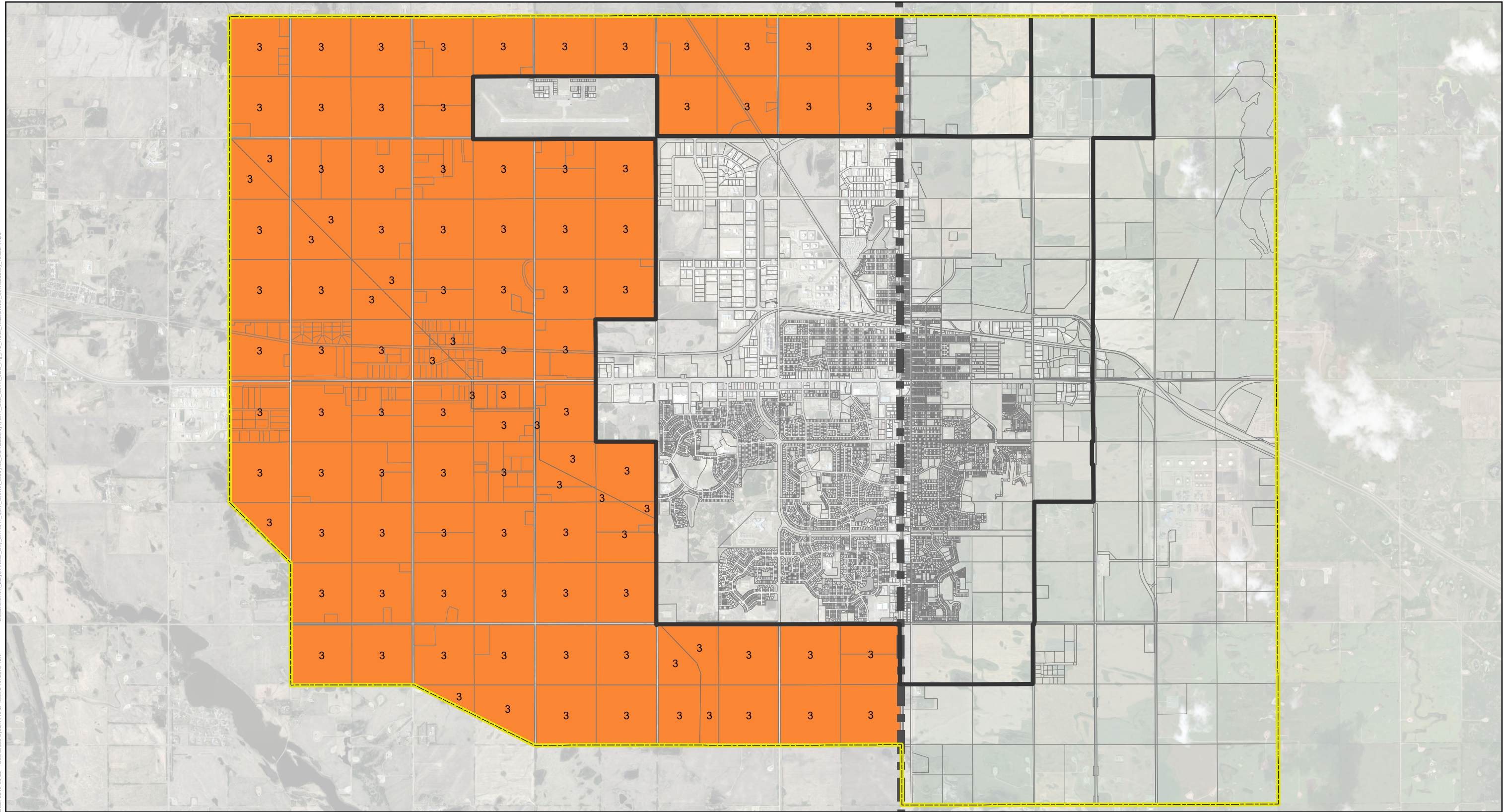
- Provincial Boundary
- Joint Growth Study Area
- City Boundary
- Parcels

Water Rankings	
1	6
2	7
3	8
4	9
5	10



JOINT REGIONAL GROWTH STUDY
PRELIMINARY RURAL SERVICING
ASSESSMENT
FIGURE A-1 - RURAL WATER
SERVICEABILITY ANALYSIS

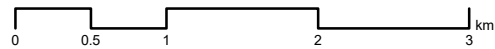
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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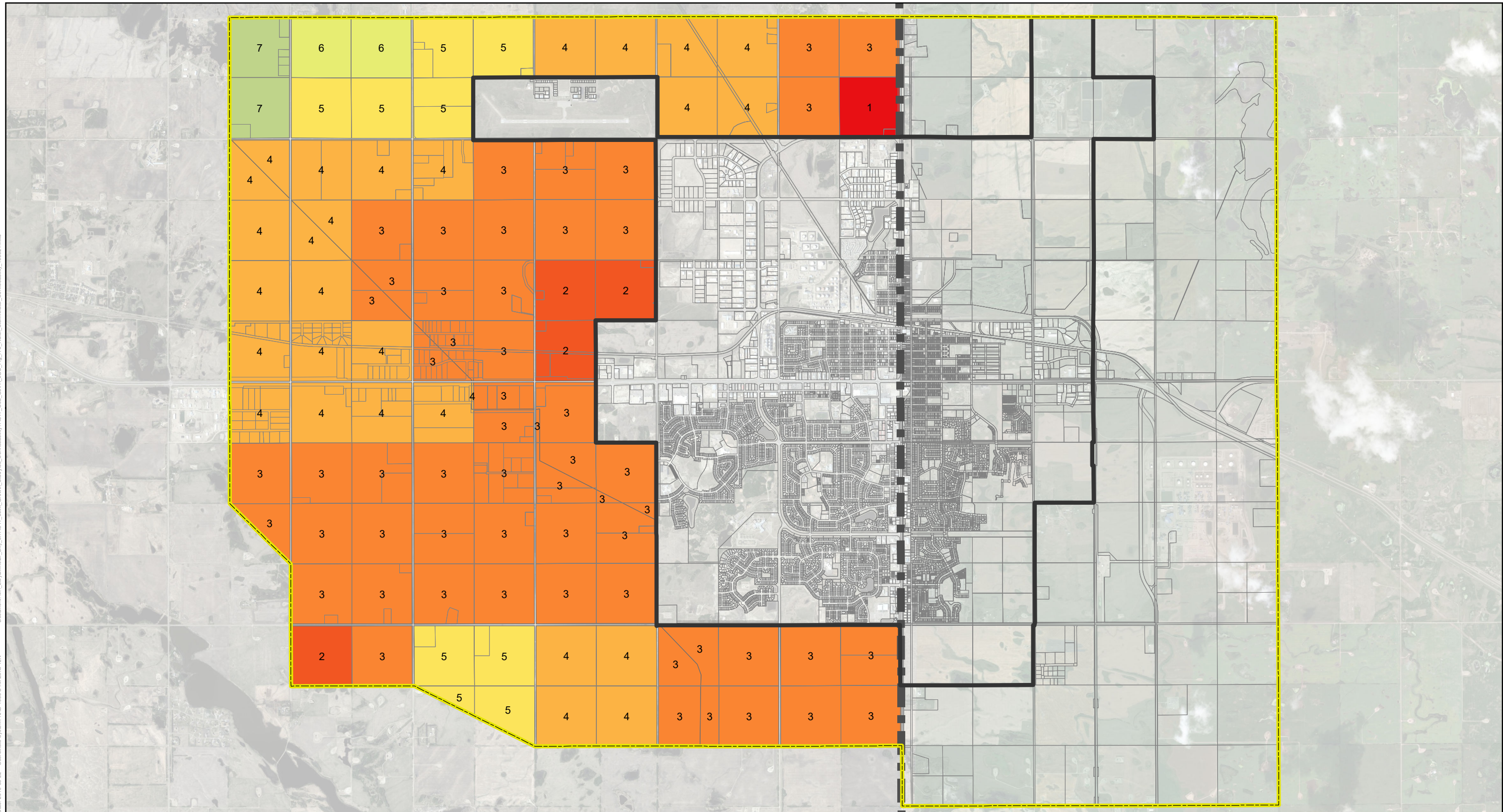
- Provincial Boundary
- Joint Growth Study Area
- City Boundary
- Parcels

Wastewater Rankings			
1	2	3	4
5	6	7	8
9	10		



JOINT REGIONAL GROWTH STUDY
PRELIMINARY RURAL SERVICING
ASSESSMENT
FIGURE A-2 - RURAL WASTEWATER
SERVICEABILITY ANALYSIS

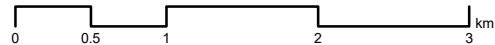
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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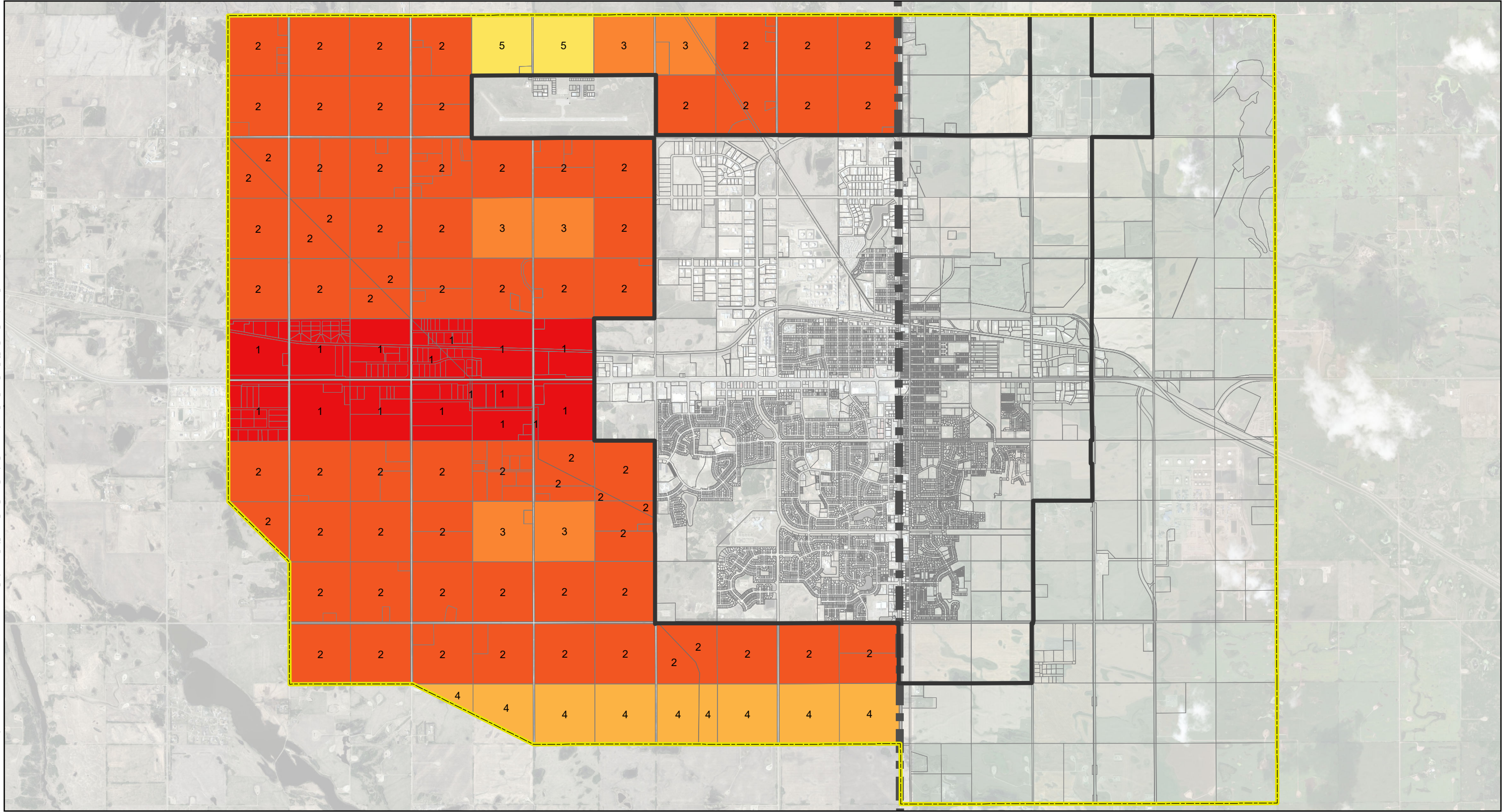
- Provincial Boundary
- Joint Growth Study Area
- City Boundary
- Parcels

Stormwater Rankings	
1	6
2	7
3	8
4	9
5	10



JOINT REGIONAL GROWTH STUDY
PRELIMINARY RURAL SERVICING
ASSESSMENT
FIGURE A-3 - RURAL STORMWATER
SERVICEABILITY ANALYSIS

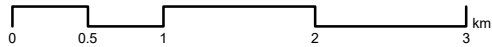
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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- Provincial Boundary
- Joint Growth Study Area
- City Boundary
- Parcels

Transportation Rankings

1	6
2	7
3	8
4	9
5	10



JOINT REGIONAL GROWTH STUDY
PRELIMINARY RURAL SERVICING
ASSESSMENT FIGURE A-4 -
RURAL TRANSPORTATION
SERVICEABILITY ANALYSIS

