

CITY OF EDMONTON ANNEXATION APPLICATION

APPENDIX 6

CITY OF EDMONTON GROWTH STUDY



2017
SEPTEMBER

Edmonton



City of Edmonton Growth Study

City of Edmonton
Sustainable Development

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Executive Summary

The City of Edmonton has experienced strong long-term growth as the dominant service, industrial, administrative, and institutional centre in the northern half of Alberta and in the Capital Region. The prominent role of the City of Edmonton in the broader region has, and will continue to have, a strong positive impact on the region. The Metro Mayors Alliance report recently identified three particularly important drivers of competitiveness for city regions such as the Edmonton Metropolitan Region. These include:

- regional collaboration on economic development;
- efficient regional public transit; and
- effective land use planning and infrastructure development.

With approximately 70% of the region's population and population growth, and a higher percentage of the region's jobs, the most comprehensive LRT and bus transit system in the region, and the largest array and highest level of social infrastructure and services – many of which serve the regional population – the City of Edmonton clearly has a major role to play in supporting and facilitating improvements in each of these critical areas. Moreover, the City of Edmonton has the experience and capacity to develop lands at a much higher density than surrounding communities, making a more efficient use of land and minimizing commuting distances of its residents.

The growth of the City has manifested itself in increasing requirements for land to accommodate the City's residential and non-residential development needs. The majority of the City's growth in the past ten years has been focused in the southern portion of the City and, as a result, a shortage of residential and industrial lands in the south part of the City is expected to materialize in approximately 16 and 6 years respectively. When the time required to plan and service land is taken into account, the City has effectively exhausted its supply of industrial land to the south.

The proposed annexation area of 8,857 hectares, excluding the Edmonton International Airport, will provide additional land supply to the City. Specifically, in south Edmonton, the annexation will contribute:

- lands for the development of low and medium density residential units through to 2053; and
- lands for industrial development through to 2044.

However, if growth materializes as anticipated, the annexation lands will not be sufficient to accommodate all growth needs of the City beyond 2039. Land shortages in the north are expected in 2039, at which time the prominent role of the City in the region will begin to erode as growth is captured by other municipalities in the region if additional lands are not secured.

1. Background

In 2013, the City of Edmonton submitted to the Municipal Government Board (MGB) and affected municipal authorities separate notices of intent to annex lands to the southeast and southwest of the City totaling approximately 15,700 hectares. The proposed annexation areas were defined on the basis of internal planning and growth analyses conducted by the City of Edmonton.

Early in 2014, a report: *The Case for Annexation* was prepared by Nichols Applied Management Inc. (Nichols) that summarized the City's growth rationale and needs for the proposed annexation. That summary report was followed in December 2014 by a full report: *City of Edmonton Growth Study*, which provided a more extensive review and quantification of the City's longer-term growth requirements for land.

These reports and supporting analyses focused primarily on the growth needs of the City to the south. The Edmonton International Airport lands lie to the south of the annexation area and are not considered within the analyses in terms of meeting the City's growth requirements.

In April 2015, the City amended its proposed annexation area in the southeast to include an additional four quarter sections of land in Leduc County lying adjacent to the northern boundary of the Town of Beaumont. This amendment increased the City's potential supply of primarily residential lands by about 260 hectares.

During much of the first half of 2015, the City of Edmonton and Leduc County pursued negotiations during which the City's 2014 Growth Study and its underlying assumptions and findings were reviewed extensively in discussions between the two parties. As the discussions moved to other matters, the City indicated that the initial Growth Study report would be periodically reviewed and updated to reflect new growth and development data and relevant changes in local and regional policies and plans.

Over the following months, Nichols assembled and reviewed new municipal census and development data as they became available, considered updated regional growth forecasts, and examined new local and regional development policies and other inputs of relevance to an updated growth study. Of particular note was a planned modification to the proposed annexation area and approved changes to regional density provisions. In August 2016, an interim summary report of the new growth study was prepared and shared with Leduc County on a confidential basis.

In November of 2016, the City of Edmonton and Leduc County reached an agreement with respect to a modified annexation area. The revised area implied the need for further changes to the City's growth study. As well, new population and other relevant data became available and were incorporated in this updated report.

The primary objective of this report is to examine the long-term growth requirements of the City of Edmonton and to review the implications of and support for the proposed annexation lands within the context of those needs.

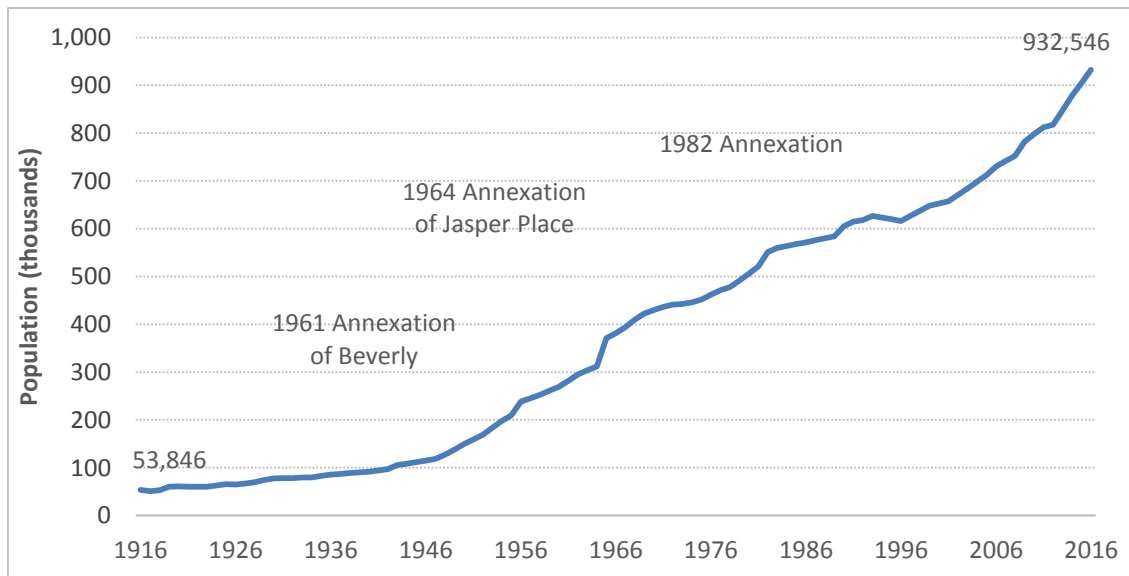
2. Edmonton's Growth Environment

The foundation for the City of Edmonton's long-term land requirements will rest on the City's future economic, employment, and population growth, which in turn will be strongly tied to growth in the wider region and the province itself. Edmonton has experienced strong long-term growth as the dominant service, industrial, administrative, and institutional centre in the northern half of Alberta, and that growth has manifested itself in increasing requirements for land to accommodate the City's residential and non-residential development needs.

2.1 Historical Growth Patterns

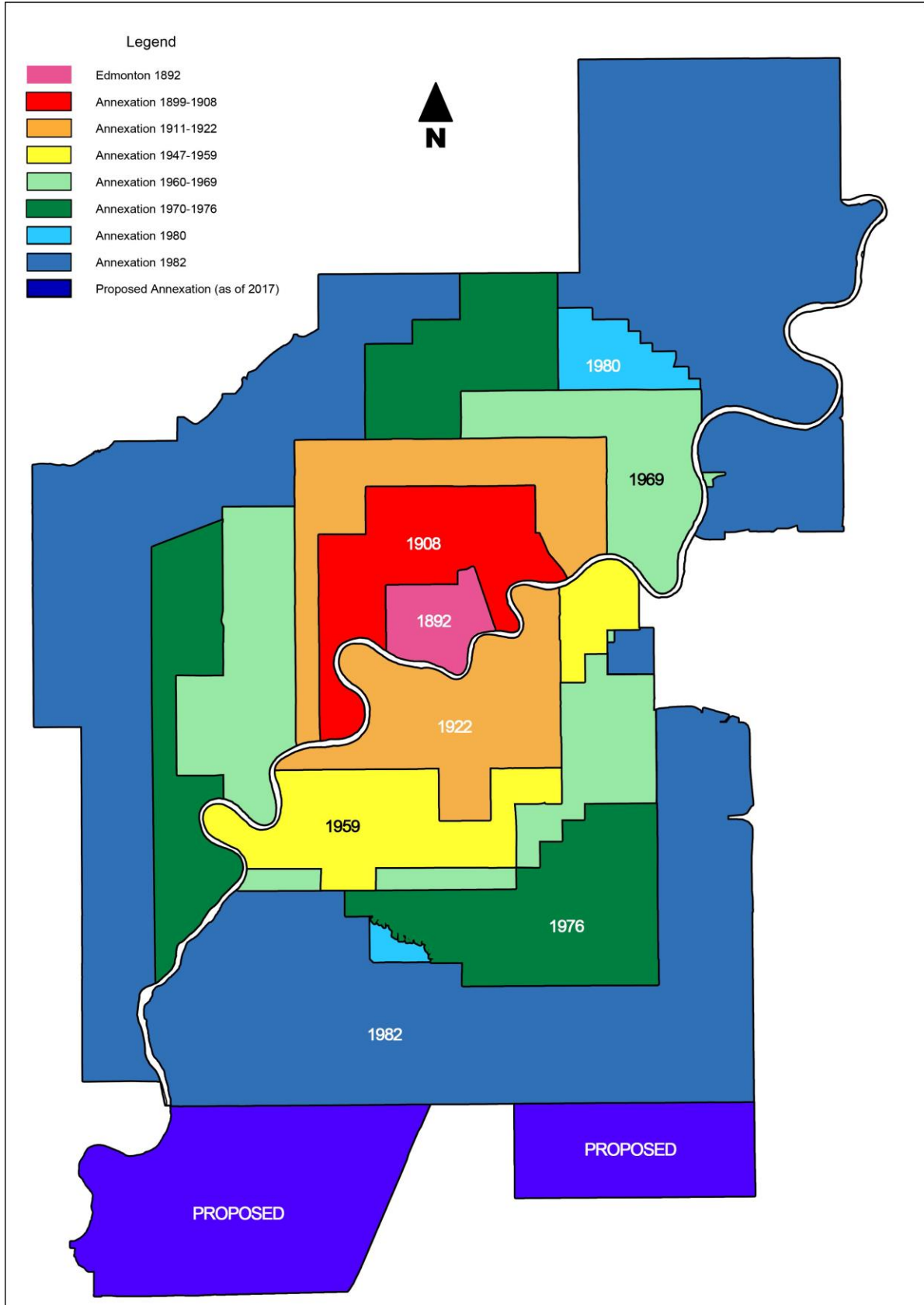
The City of Edmonton's long-term growth profile over the past 100 years is shown in Figure 2.1. The City's growth trajectory increased significantly in the second half of that period, in parallel with the expanding resource-based economic growth of the province.

Figure 2.1: City of Edmonton Population, 1916 to 2016



To accommodate that ongoing growth, Edmonton has expanded geographically through periodic annexations to accommodate new development, as shown in Figure 2.2. The City's most recent annexation took effect thirty-five years ago in 1982. The map also identifies the City's currently proposed annexation, within the context of historical boundary adjustments.

Figure 2.2: City of Edmonton Historical Geographic Growth



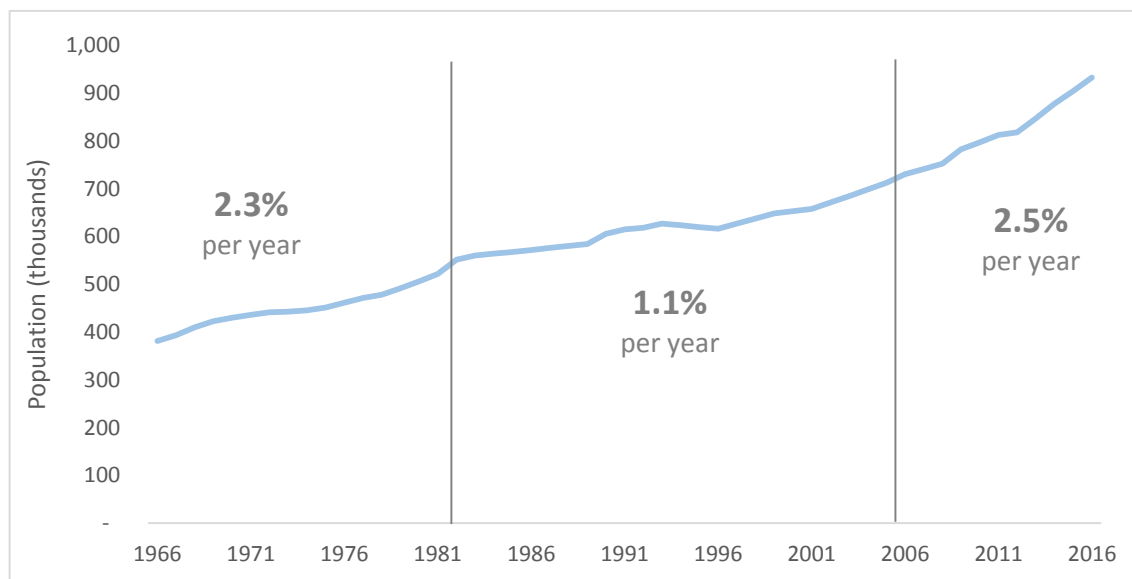
Over the years, the City has experienced periodic cycles of faster and slower growth that have reflected changing levels and fluctuations in global, national, and provincial economic activity. In recent decades, those cycles have been marked particularly by conditions in the province's energy sector, which has been an important pillar of the economy.

Figure 2.3 shows fluctuations in average population growth rates during three distinct periods over the past 50 years:

- The two decades beginning in the mid 1960s and ending in the early 1980s were characterized by strong population growth of 2.3% annually, slightly below the provincial rate of 2.9%.
- This period of strong growth was followed by nearly two decades of moderate growth – averaging 1.1% annually, less than the provincial rate of 1.5%.
- Beginning in 2006, the City returned to a period of rapid growth, averaging 2.5% annually – slightly above the provincial rate of 2.4%.

Over the entire timeframe illustrated, the City accommodated well over an additional one-half million people and grew by an average of 1.7% annually.

Figure 2.3: City of Edmonton Population 1965 to 2016



Data points taken from both municipal and federal censuses.

The strong growth of the City's population over many years has been driven by both natural population growth and net in-migration, as rising employment opportunities, particularly during buoyant economic periods, have drawn new residents from other parts of the country and from overseas. The City has a relatively young population with an especially large share (33%) of its population comprising young adults within the 20 to 39 year age cohorts, which is greater than the provincial average (30%).

2.2 Regional Setting

The City of Edmonton constitutes the primary centre and dominant urban core of a large metropolitan region totalling roughly 1.3 million people. The City, with 71% of the region's population, and more than three-quarters of the region's employment¹, accommodates the largest and most specialized core of regional commercial, administrative, education, health care, and housing and social services and facilities. The City serves also as the central hub for the transportation of people and goods within the region and with other parts of the province. The City and surrounding region serve as the dominant hub for the northern half of the province and constitute the northern anchor of the dynamic Edmonton-Calgary corridor economy.

The Edmonton region has doubled its population over 40 years and the Edmonton Metropolitan Region Growth Plan anticipates that the region will be home to 2.2 million people by 2044.² The City of Edmonton itself could reach 1.5 million people at that time, according to Capital Region Board (CRB) projections. The City is expected to accommodate a significant share of the region's growth in the coming decades.

Several geographic areas have been used by various levels of government to define the broader region surrounding and serviced by the City of Edmonton including: Census Division 11, the Edmonton Census Metropolitan Area (CMA), and the Alberta Capital Region/Edmonton Metropolitan Region. Although the actual geographic boundaries of those regions differ modestly, they all confirm the City's dominant regional role, as shown in Table 2.1.

Table 2.1: 2016 Regional Population and City Share

Region	Population	City of Edmonton's Share of Region
Census Division 11	1,366,050	68%
Census Metropolitan Area	1,321,426	71%
Capital Region	1,321,498	71%

Source: 2016 population (Statistics Canada 2016c)

The prominence of the City in the broader region is not a recent phenomenon but rather a well-established characteristic of the region. Census data dating back to 1981 show that the City has, on average, housed 71.3% of the Capital Region's population (Table 2.2).

¹ Schedule 1. Population and Employment Projections 2014-2044, Edmonton Metropolitan Region Growth Plan. Oct. 13, 2016.

² Ibid.

Table 2.2: Historic Regional Population and City Share

Year	Capital Region Population	City of Edmonton Population	City of Edmonton's Share of Region
1981	731,310	529,924	72.5%
1986	795,249	576,249	72.5%
1991	854,046	618,195	72.4%
1996	870,929	616,306	70.8%
2001	932,556	666,104	71.4%
2006	1,041,479	730,372	70.1%
2011	1,161,593	812,201	69.9%
2016	1,321,499	932,546	70.6%

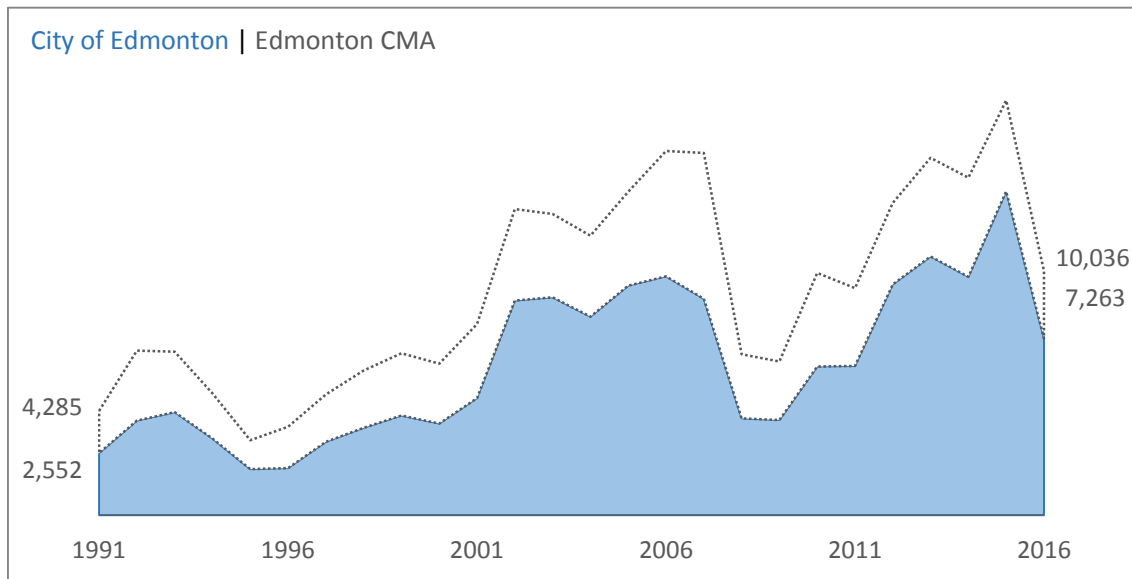
Source: Alberta Official Population lists, 2016 population (Statistics Canada 2016c)

The City of Edmonton's Municipal Development Plan: *The Way We Grow*³ affirms the City's policy goal to "identify, support and maintain Edmonton as the major growth centre in the Region" and to maintain the City's "share of regional population and business growth within its boundaries in support of the growth of regional employment centres".

The City's significant role in accommodating residential housing is consistent with the City's share of regional population growth. Figure 2.4 shows, for illustration purposes, Edmonton's annual housing starts relative to the regional total, for the twenty-five year period 1991 to 2016. Housing starts in the City of Edmonton as a proportion of the Edmonton CMA have increased over the past 25 years from 60% in 1991 to 72% in 2016 (CMHC 2016, Figure 2.4), a further indication that growth in the broader region has, and continues to be, dominated by the City of Edmonton. Additionally, the profile of Edmonton's housing stock itself departs materially from that for other communities in the region; the City accommodates a much greater share of rental versus owned housing, much more multi-family and higher-density housing, and a far greater level of affordable and social housing. For example, in 2016, only 2% of all apartment units and 8.5% of all attached dwellings in the Edmonton CMA were located in communities outside of the City of Edmonton (Statistics Canada 2016).

³ *The Way We Grow*, Edmonton Municipal Development Plan. Bylaw 1510, 2010, p.78.

Figure 2.4: Housing Starts in the City of Edmonton and Edmonton CMA, 1991 to 2016



Source: CMHC 2016

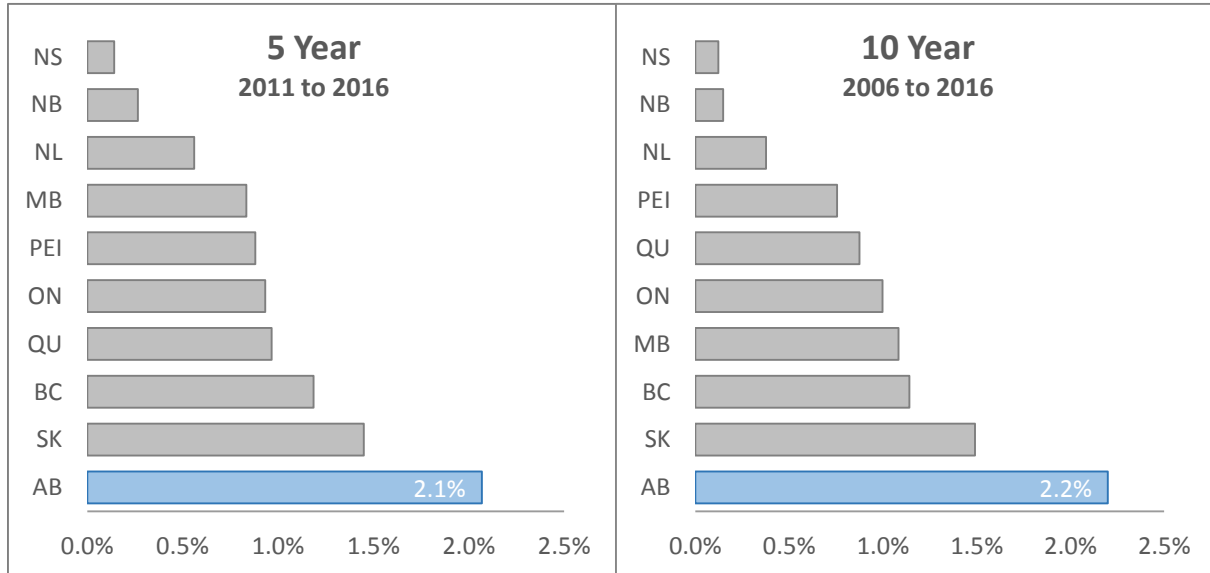
The City of Edmonton is also the hub for regional employment. In 2014, the City of Edmonton was home to approximately 78% of the jobs in the Capital Region (CRB 2015) as compared to 72% of the population. This comparatively large share of employment to population is a result of the growth of some communities in the region that meet residential growth needs but which offer fewer employment opportunities, resulting in a resident base that commutes to a workplace in the City and other parts of the region.

Edmonton's role in the region as the major employment hub is supported by its central core area, which accommodates business, governmental, health, and education services; by its large industrial zones in the south/southeast, northwest, and northeast peripheries; and by substantial commercial office and retail/services developments accessible to major transportation arteries in various parts of the City. Many of the City's commercial businesses and institutional services support a wide regional customer base.

2.3 Provincial Setting

The growth experienced by Edmonton and its encompassing region is linked, to a significant degree, to the province's energy sector. Alberta has historically sustained one of the highest population growth rates in the country, leading all provinces over the past 10 years (Figure 2.5). Despite reduced energy prices in recent years, the 2016 federal census confirms that the province's relatively strong growth has been sustained.

Figure 2.5: Provincial Average Annual Population Growth Rate

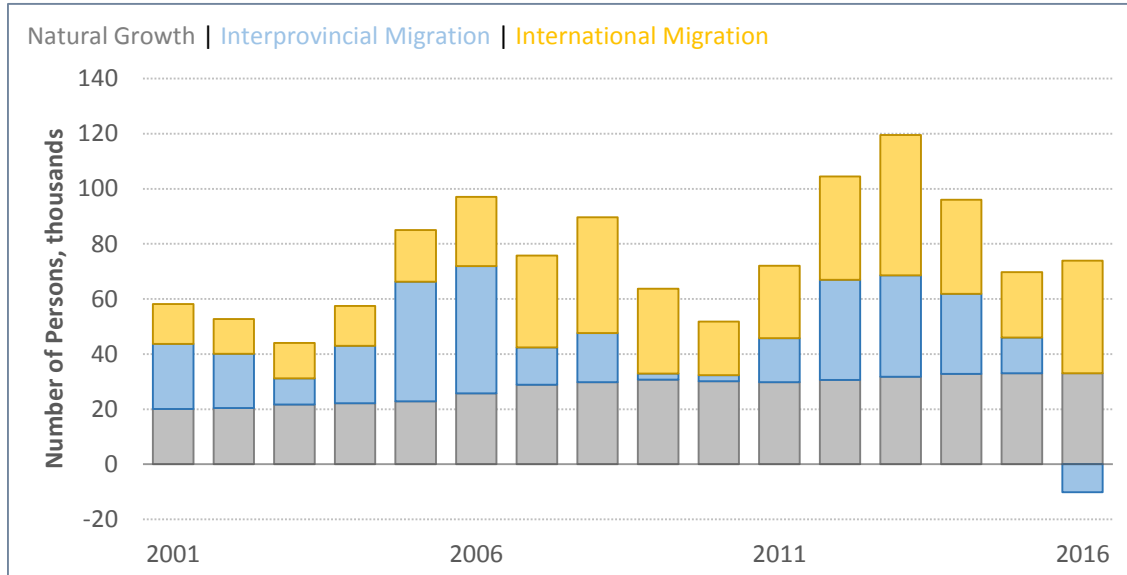


Source: Statistics Canada.

The population growth in the province, region, and City is comprised of two primary components, namely natural growth and migration. Specifically, natural growth is the product of the natural human lifecycle and shaped by the mortality and fertility rates of the population base whereas the migration component consists of the movement of people to and from the area, most particularly international and interprovincial migration. Migration is closely tied to the prevailing economic conditions and employment opportunities. In periods of substantial economic growth, in-migration is needed to meet local labour requirements.

In Alberta, the natural growth in the population has remained relatively constant since 2001, whereas international and interprovincial migration has contributed to much of the variability in population growth over time (Figure 2.6). This relationship between economic growth and in-migration at a provincial level also manifests itself at the regional and City level.

Figure 2.6: Components of Population Growth, Alberta

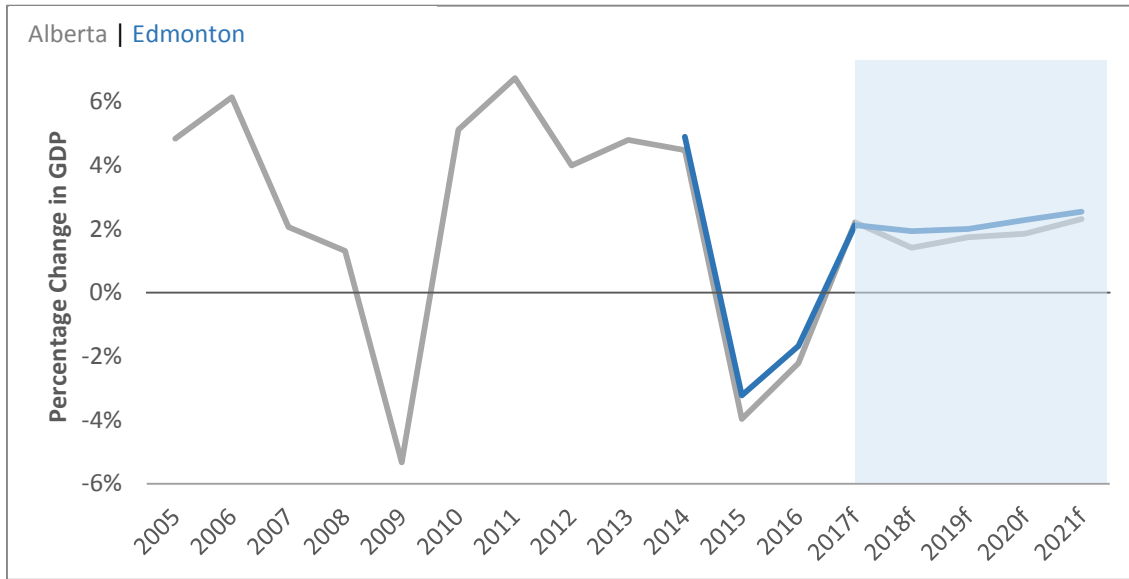


Source: Alberta Treasury Board and Finance 2016.

2.4 Future Growth Outlook

Both Alberta and the Edmonton region are subject to economic cycles that include periods of strong growth and occasional downturns accompanied by reduced population growth. The strong congruence between the City of Edmonton and the province as a whole can be seen in Figure 2.7 which depicts the GDP of both the City and province over time. Despite the current recessionary conditions that have been evident since 2015 in the province, and within the Edmonton region, the expectation is that provincial and regional growth will resume and in the longer term will remain generally consistent with historical growth experience. As illustrated in Figure 2.7, the Conference Board of Canada projects that positive growth will return to the province and the City in 2017.

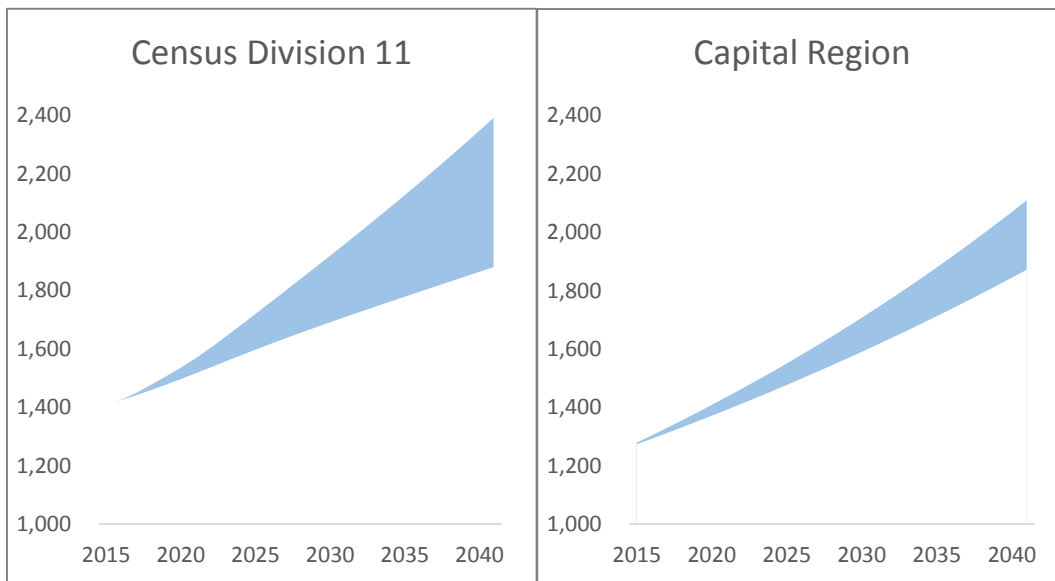
Figure 2.7: Real GDP Growth for Alberta and Edmonton CMA, Constant dollars



Source: Statistics Canada 2016d, Conference Board of Canada 2016

Population forecasts for the Edmonton region prepared by Alberta Treasury Board and Finance as well as the Capital Region Board suggest a resumption of growth ranging between 1.0% and 2.1% per year as shown in Figure 2.8.

Figure 2.8: Edmonton Region Population Forecast Ranges



Source: Alberta Treasury Board and Finance 2016b, Capital Region Board 2015.

2.4.1 Edmonton’s Regional Role and Importance

The long-term outlook for the Edmonton region is promising, and the City of Edmonton’s role as the central and dominant regional hub is expected to remain undiminished. Continued prominence in the

region is a goal of the City, as articulated in its Municipal Development Plan (8.1.2): "... [to] support and maintain Edmonton as the major growth centre in the Region" the City "will maintain its share of regional population and business growth within its boundaries". Important planning policies in support of those planning goals include the following:

- 3.2.1.1 Ensure a combination of single family and multi-family housing development potential is available for the next 30 years.
- 3.2.1.2 Ensure there is sufficient land available to sustain economic opportunities.
- 3.2.1.3 Achieve a balance between residential, industrial, commercial, institutional, natural and recreational land uses in the City through land development policies and decisions.

The Edmonton Metropolitan Region Growth Plan, prepared by the Capital Region Board in 2016, provides a 50-year vision and integrated policy framework for the Edmonton region. The plan incorporates a number of key strategies for managing the region's growth, increasing liveability in the region, and improving the region's global economic competitiveness. The City of Edmonton provides a number of critical underpinnings and supports toward the Plan's goals, including:

- The City's leadership in achieving responsible regional growth through compact and contiguous development, and improved efficiency in land use.
- Promoting job growth and competitiveness, in part by ensuring the City's ability to accommodate a variety of employment activities and to provide the land, services, and infrastructure required to support those activities.
- The City's role as the major services and infrastructure hub of the region and its efforts to improve the provision, integration and efficiency of critical regional facilities and services.
- The City's support for the achievement of complete communities through improved access to jobs, a wide range of commercial and supportive services, amenities, housing, and the development of multi-modal transportation systems.

The City's continued ability to support the region in these and other areas will assist the region in meeting its long-term strategic goals.

A number of the regional goals and needs identified in the Capital Region Board's 50-year strategic plan are echoed in a 2016 report commissioned by nine mayors that represent 95% of the population of the Edmonton Metropolitan Region: *Be Ready or Be Left Behind*⁴. The report's objective was to provide advice on how to make the Metro Region globally competitive. Among the "ingredients" cited by the report as necessary to build a globally competitive region was the importance of city concentrations:

Regions are strengthened by the concentrations of people, business and services that their municipalities offer. For instance, a city is often where one finds a wide range of

⁴ *Be Ready, or Be Left Behind*. Report of the Advisory Panel on Metro Edmonton's Future. May 31, 2016. Page 9.

private and non-profit business and services, specialized health professionals, post-secondary institutions and cultural opportunities. A city typically has good connectivity, with built-out transit and transportation networks. People and businesses in a region need their city to be strong and vibrant for two critical reasons: to provide thrust for the overall region's economy and to offer greater amenities.

The Metro Mayors Alliance report also identified three particularly important drivers of competitiveness for city-regions such as the Edmonton Metropolitan Region. These include regional collaboration on economic development, efficient regional public transit, and effective land use planning and infrastructure development. With approximately 70% of the region's population and population growth, and a higher percentage of the region's jobs, the most comprehensive LRT and bus transit system in the region, and the largest array and highest level of social infrastructure and services – many of which serve the regional population – the City of Edmonton clearly has a major role to play in supporting and facilitating improvements in each of these critical areas.

To sustain the City's ability to provide these supports and to add further to a strengthened "concentration of people, business and services", it is incumbent on the City to continue to accommodate a significant share of regional growth, and to grow in a balanced way residentially, commercially, industrially, and institutionally.

A recent study published in 2015 by the Organization for Economic Cooperation and Development (OECD), entitled "*The Metropolitan Century, Understanding Urbanisation and its Consequences*"⁵, provides an insightful analysis of global urbanization and the positive implications of larger cities and associated metropolitan areas in terms of enhanced economic growth and performance, and of the lessons gleaned regarding the elements of successful cities and regions. The report findings lend further confirmation of the potential local, regional, and provincial benefits of the continued growth and regional prominence of the City of Edmonton within its region.

In particular, the OECD report notes the following:

- *Larger cities are more productive, the result of deeper labour markets, greater opportunities for specialization and competition, increased clustering/agglomeration benefits, greater access to desirable amenities and services, and a diverse intellectual and entrepreneurial environment.*
- *The potential needs and economic benefits in larger centres for effective public transportation planning, provision and integration.* As the central transportation hub for the region and the locus for a large and inter-connected bus and LRT system, Edmonton is best positioned to play the major role in ensuring the continued development of a well-functioning public transport system in the region, with optimal routings, equipment, schedules, and fares. This in turn requires the City to grow, to achieve required population densities that will support the transit systems, and to have the financial capacity to develop and operate expanded transit systems.

⁵ OECD. 2015. *The Metropolitan Century: Understanding Urbanisation and its Consequences*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264228733-en>

While larger centres are best positioned to provide effective transportation systems, the OECD report indicates that better connected cities grow faster.

- *The potential negative implications associated with the containment of city growth and limitation on city land supply.* These include effects on city housing prices and the consequent encouragement of longer-distance commuting to outlying communities, and with that, a reduced access to jobs and to city amenities and services. This also can place added congestion pressures on regional transportation systems.

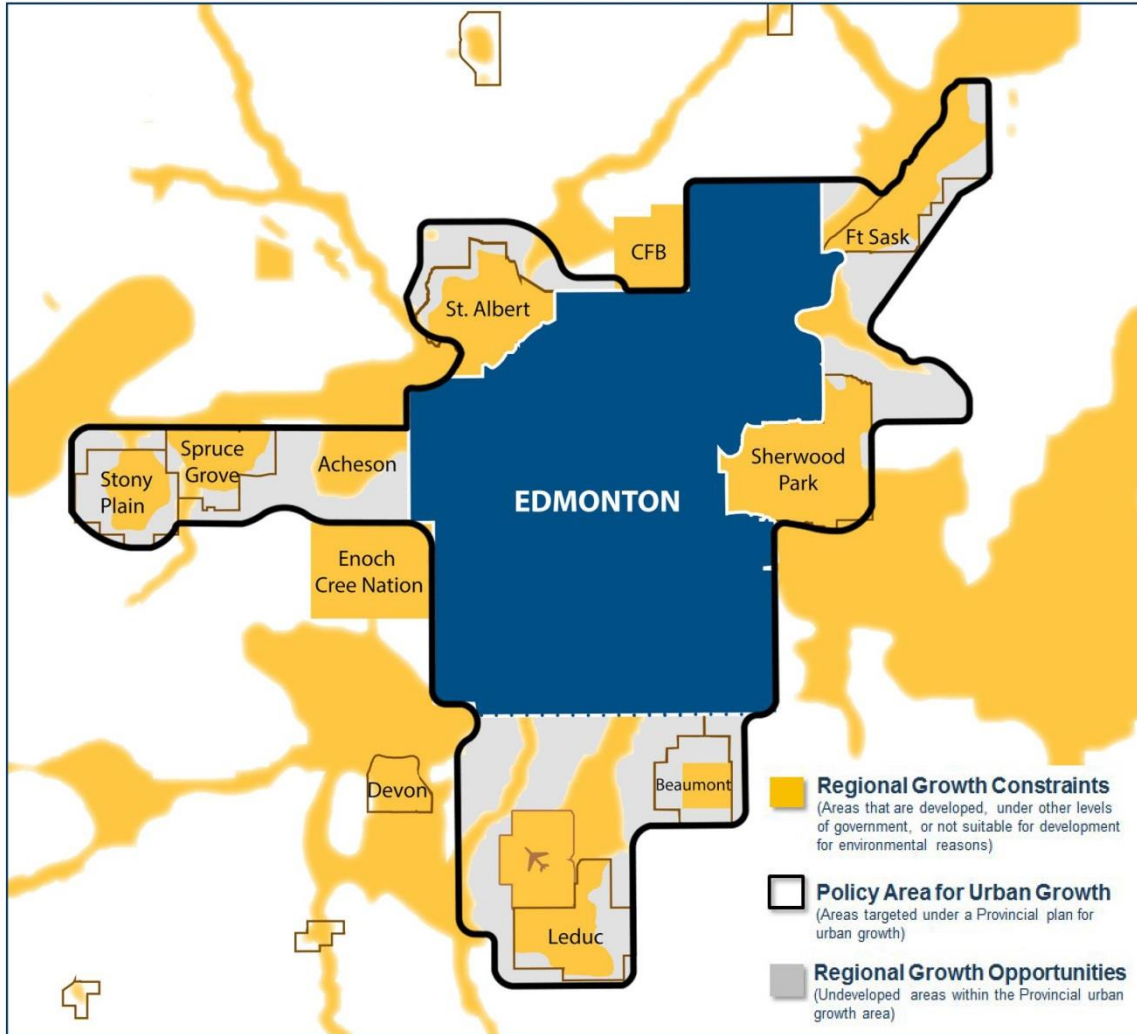
In sum, the City's and the surrounding region's long-term growth outlook appears strong, and that strength will be mutually enhanced to the extent that the City of Edmonton is able to grow and to maintain a dominant role in the region's continued development.

2.4.2 Direction of Growth

In its proposed update to the region's growth plan, the Capital Region Board reviewed the region's ambitions, growth constraints, and attitudes towards limiting urban sprawl, and has identified opportunities for urban growth in all areas surrounding the City of Edmonton. The Edmonton Metropolitan Region Growth Plan provides a comprehensive and integrated policy framework for responsible growth tailored to the regional context. The structure of the Plan's policy framework consists of three policy tiers (Rural, Metropolitan, and Metropolitan Core) which provide the foundation for managing employment and population growth in the Region. The City's proposed annexation is within the Metropolitan area - a policy tier identified to reflect the general direction of future urban growth that optimizes existing and planned infrastructure.

As illustrated in Figure 2.9, growth opportunities for the City are shaped by policy, existing development patterns and environmental considerations. Given the presence of existing constraints to the west (Acheson, and Enoch Cree Nation), north (St. Albert, CFB Edmonton, and Fort Saskatchewan), and east (Strathcona County), the most logical growth path for the City is to the south, where a land supply with the capacity to support a balance of residential and industrial development has been identified.

Figure 2.9: Regional Growth Constraints



3. Study Approach

Nichols has quantified the long-term land requirements of the City of Edmonton for residential, commercial, and industrial uses under a variety of growth scenarios. Those needs have been compared, in turn, to the remaining supply of land within the City and also with the additional supply that would accrue under the proposed annexation. The following sections provide a conceptual overview of the analysis carried out to determine the future residential and non-residential land needs of the City of Edmonton. The general modelling approach taken is consistent with that used in the 2014 study; however, this report reflects more recent data, a series of modified assumptions that incorporate additional analyses conducted by the study team, and intervening changes to a number of regional and municipal policies with respect to issues such as densities and housing mixes in the proposed annexation area.

3.1 Residential Land Analysis

The analysis of future residential growth needs in the City of Edmonton was carried out as follows:

- 1) regional population forecasts to 2044 approved by the Capital Region Board (CRB) in 2015 were used as a basis for the region's future growth;
- 2) a share of regional population growth was allocated to the City of Edmonton;
- 3) using historical data regarding average household sizes and preferred housing types, the population growth allocated to the city was translated into additional housing units of various types (i.e., low, medium, and high density units);
- 4) the total demand for new housing identified in step (3) was adjusted downwards to reflect infill development that is expected to meet a portion of new housing needs without requiring new lands; and
- 5) the balance of the demand for housing units was further apportioned to the north and south parts of the City in a manner consistent with past and current settlement patterns and preferences.

Having identified the demand for housing units expected to require the development of new lands within the City, the study team then estimated the remaining supply of land and potential additional housing units that would be available to accommodate future housing growth from within current City boundaries. In brief:

- 6) an estimate of planned housing units as identified in area (ASP) and neighborhood (NSP) structure plans for new growth areas was compiled;
- 7) an estimate of built housing units as identified in various data sources, including municipal taxation data, was compiled; and

- 8) the tabulation of built units in step (7) was subtracted from the estimates of potential units established in step (6) to arrive at an estimate of the undeveloped supply of potential housing units that remain in new growth areas within the City's current boundaries.

Having defined the potential supply of new housing units available in the city's remaining growth areas and the anticipated future demand for housing units, the study team then determined when the remaining supply capacity for the various types of housing (low, medium, and high density) would be exhausted in both the north and south sectors of the city.

The commercial land requirements associated with future residential development in the city's growth areas are encompassed within the study's residential land needs analyses.

3.2 Industrial Land Analysis

The approach taken for the industrial land analysis is similar in concept to that taken for the residential sector. In brief:

- 1) The current remaining supply of undeveloped industrial lands within the northwest, northeast and south/southeast areas of the City was determined, based on City source documents. The industrial lands were identified and categorized into either conventional industrial or petrochemical uses to reflect the unique plans for a portion of the new Edmonton Energy and Technology Park (EETP), located in the City's northeast.
- 2) Overall City industrial land absorption levels were projected into the future based on historical levels indexed in future years to the City's projected growth in population. The geographic distribution of demand for industrial land in various areas of the City was determined based on past geographic market share patterns and anticipated market dynamics. The petrochemical lands within EETP are examined separately from the conventional industry demand analyses and are assumed to be absorbed within the City's projected build-out period for those particular lands. It should be noted that, inherent in this approach to estimating future industrial land demand, is the maintenance of the historic ratio between population, employment, and land area required to support particular employment types.

Having defined the existing supply of industrial lands and the anticipated future demands, the study team determined that the City's current supply of industrial lands is insufficient to meet the City's long-term growth needs. The potential supply deficiency is particularly pressing and indeed imminent within the City's southern sector.

3.3 Annexation Area Land Supply

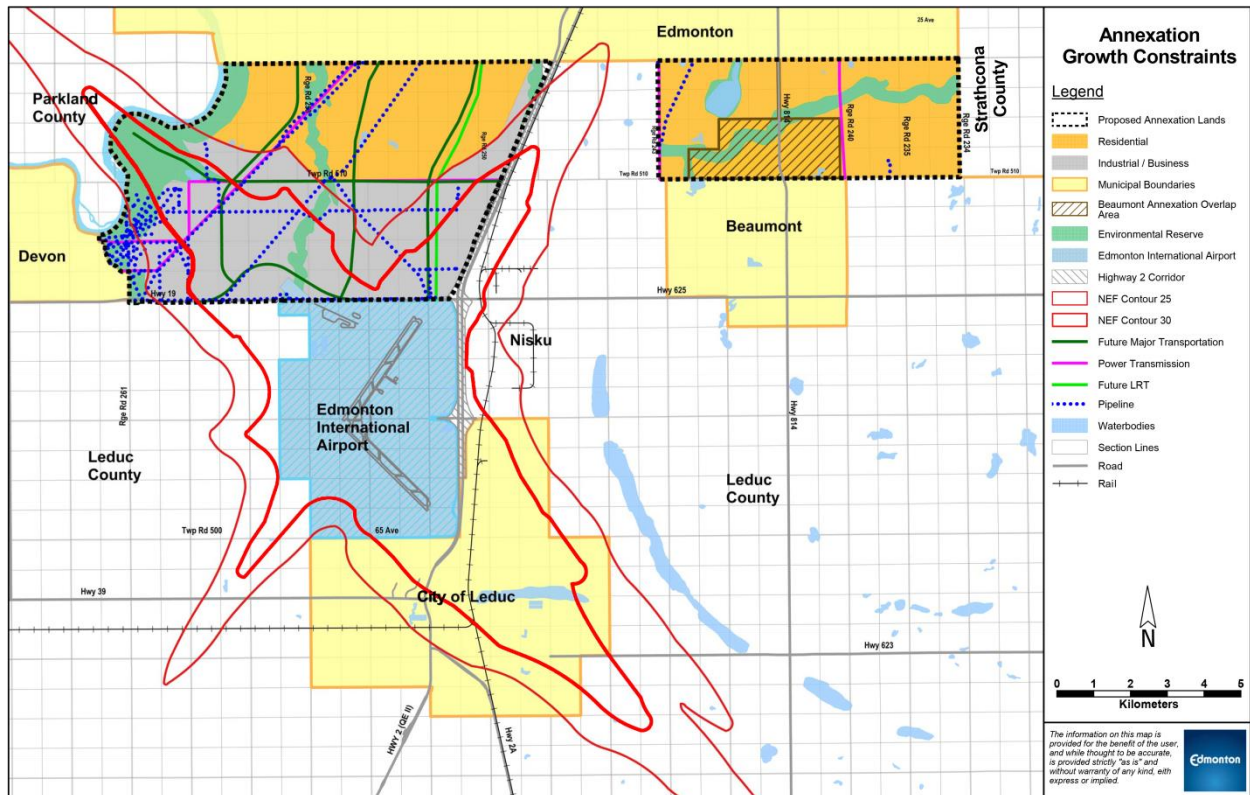
The City's projected shortage of lands for both residential (including associated commercial) and industrial purposes was examined within the context of the annexation lands proposed by the City to accommodate growth. The earlier 2014 study assumed an annexation area of 15,675 gross ha (including the Edmonton International Airport lands), as defined in the City's original 2013 Notice of Intent to Annex lands, and included growth areas to the southeast and southwest of the City. The City subsequently revised its Notice of Intent to Annex on April 15, 2015 to add approximately 260 hectares

to the original (2014) proposal. Those additional lands included four quarter sections located immediately north of the Town of Beaumont.

Over the period 2014-2016, as negotiations proceeded between the City of Edmonton and Leduc County, the proposed annexation area was further modified, as is now shown in Figure 3.1, with the net effect that the overall annexation area was reduced to 8,857 gross ha (from the 15,935 ha in the 2015 Notice of Intent). Of the revised annexation area, nine quarter sections are included that in 2013 were within Leduc County’s jurisdiction, but have been transferred to the Town of Beaumont in an annexation order effective January 1, 2017. Notably, the Edmonton International Airport was removed from the annexation during negotiations.

Figure 3.1 provides a detailed view of the proposed annexation area, identifying those lands under the jurisdiction of Leduc County and the Town of Beaumont, and identifying as well the location of the predominantly residential and non-residential land uses that will provide growth opportunities for the City.

Figure 3.1: Map of Proposed Annexation Lands



The proposed annexation area and its land development capacity and supply implications to the City have been reflected in the City’s growth needs modelling in the following manner:

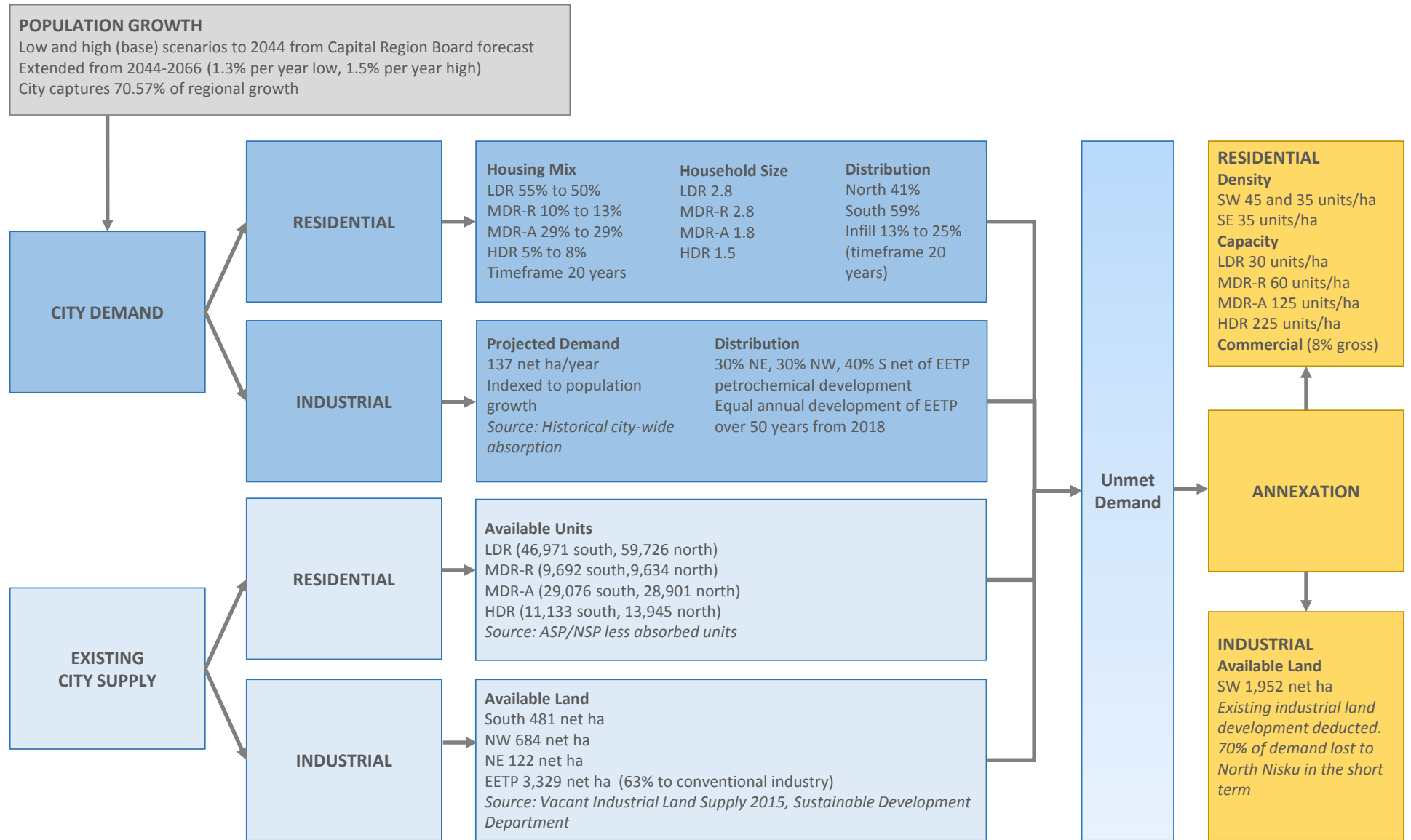
- 1) the annexation area was examined by the City in terms of environmental features, utilities rights-of-way, current land development, and other potential development constraints that may affect the ability of lands to meet future growth needs;

- 2) the net developable hectares estimated to be available for residential, as well as associated commercial development, were translated into the potential supply of housing units using a housing mix and target density consistent with proposed CRB densities for the subject lands;
- 3) the net developable hectares available for potential industrial development were quantified;
- 4) the potential supply of housing units identified in step (2) and the future demand for housing not satisfied by the existing land supply in the City's south sector were then compared to determine when the supply of specific housing units (low, medium, and high density) in the annexation area would be exhausted; and
- 5) the supply of industrial land identified in step (3) and the future demand for industrial land not satisfied by the existing supply in the City were then compared to determine when the supply of industrial land in the annexation area would be exhausted. Within this process, recognition was given to the competitive effects of adjacent County industrial lands on the expected phasing and take-up of the City's proposed annexation industrial lands.

The Edmonton International Airport (EIA) lands, which are no longer included in the proposed annexation area, are not considered in the residential, commercial, and industrial land supply or demand projections within the growth study modelling.

A visual representation of the modelling approach and key assumptions, as outlined in the preceding portion of the report can be seen in Figure 3.2.

Figure 3.2: Visual Representation of Growth Analysis



4. Key Data and Assumptions

This section of the report summarizes the key data and assumptions relied on in the Growth Study update.

4.1 City Population Growth

In May 2015, the CRB released updated population projections relating to its member municipalities and to the region overall. The projections were provided for two scenarios (low and high) and extend over a period of 30 years to 2044. The new CRB projections relied in part on previous CRB population forecasts prepared in 2013 and directed users to rely on both sets to calculate population values at five-year intervals. The CRB forecast period (2014 to 2044) is not sufficiently long to allow for an investigation of growth over 50 years and does not reflect the 2016 federal census results.

Accordingly, the study team made the following adjustments to the CRB forecasts, by:

- adjusting 2016 values to align with the 2016 federal census for all CRB communities;
- applied the growth rates inherent in the 2015 CRB study to the 2016 census values;
- extended the forecast beyond 2044 by using the average annual growth rate from the 2029 to 2044 period (1.29%) in the low growth case; and
- extended the forecast beyond 2044 by using an average annual growth rate of 1.5%, a reduction below the CRB rate of 1.7% for the 2029 to 2044 period, in the high growth case.

With regard to the City of Edmonton, the CRB forecasts incorporate one notable change between the low and high growth scenarios. In the low growth scenario, the CRB figures show the City of Edmonton nearly maintaining over time its present share of the regional population – approximately 70%. In the high growth scenario, Edmonton’s share of the region’s population is shown to decline to approximately 66% by 2044. In order to draw the City’s overall share of the region down to 66%, the actual share of new growth being captured by the City would need to be in the range of 61% to 62% over the forecast period – a significant departure from historic trends.

The Growth Study therefore modified the CRB work and assumed that, in the absence of land supply constraints, Edmonton will maintain its current share of regional population over the forecast horizon of 50 years as articulated in section 2.2. This assumption is consistent with historical data and government policy. The balance of this report addresses the future growth needs under the high-growth scenario. A series of Tables summarizing the implications of the low-growth scenario are contained in appendix A.

Table 4.1: Growth Study Population Forecasts, City of Edmonton

Year	-----Low-----		-----High ¹ -----	
	Population	AAGR ²	Population	AAGR
2016	932,500		932,500	
2017	949,800	1.88%	954,600	2.37%
2018	967,400	1.88%	977,300	2.38%
2019	985,300	1.88%	1,000,600	2.38%
2020	1,000,800	1.60%	1,020,800	2.02%
2021	1,016,600	1.60%	1,041,400	2.02%
2022	1,032,700	1.60%	1,062,400	2.02%
2023	1,048,900	1.60%	1,083,900	2.02%
2024	1,065,500	1.60%	1,105,900	2.03%
2025	1,082,300	1.60%	1,128,300	2.03%
2026	1,099,400	1.60%	1,151,300	2.03%
2027	1,116,700	1.60%	1,174,700	2.03%
2028	1,134,300	1.60%	1,198,600	2.04%
2029	1,152,200	1.60%	1,223,100	2.04%
2030	1,166,900	1.29%	1,243,100	1.65%
2031	1,181,900	1.29%	1,263,500	1.65%
2032	1,197,000	1.29%	1,284,200	1.65%
2033	1,212,300	1.29%	1,305,300	1.65%
2034	1,227,800	1.29%	1,326,700	1.65%
2035	1,243,500	1.29%	1,348,500	1.65%
2036	1,259,400	1.29%	1,370,700	1.65%
2037	1,275,500	1.30%	1,393,200	1.65%
2038	1,291,900	1.30%	1,416,100	1.65%
2039	1,308,400	1.30%	1,439,500	1.65%
2040	1,325,100	1.30%	1,463,200	1.65%
2041	1,342,100	1.30%	1,487,300	1.65%
2042	1,359,300	1.30%	1,511,800	1.65%
2043	1,376,600	1.30%	1,536,800	1.65%
2044	1,394,300	1.30%	1,562,200	1.65%
2045	1,412,100	1.30%	1,585,600	1.50%
2046	1,430,200	1.30%	1,609,400	1.50%
2047	1,448,500	1.30%	1,633,600	1.50%
2048	1,467,000	1.30%	1,658,100	1.50%
2049	1,485,800	1.30%	1,682,900	1.50%
2050	1,504,800	1.30%	1,708,200	1.50%
2051	1,524,000	1.30%	1,733,800	1.50%
2052	1,543,500	1.30%	1,759,800	1.50%
2053	1,563,300	1.30%	1,786,200	1.50%
2054	1,583,300	1.30%	1,813,000	1.50%
2055	1,603,500	1.30%	1,840,200	1.50%
2056	1,624,100	1.30%	1,867,800	1.50%
2057	1,644,800	1.30%	1,895,800	1.50%
2058	1,665,900	1.30%	1,924,200	1.50%
2059	1,687,200	1.30%	1,953,100	1.50%
2060	1,708,800	1.30%	1,982,400	1.50%
2061	1,730,700	1.30%	2,012,100	1.50%
2062	1,752,800	1.30%	2,042,300	1.50%
2063	1,775,200	1.30%	2,073,000	1.50%
2064	1,797,900	1.30%	2,104,100	1.50%
2065	1,820,900	1.30%	2,135,600	1.50%
2066	1,844,200	1.30%	2,167,700	1.50%

1 The high scenario has been used as the “base case”.

2 Average Annual Growth Rate

3 Numbers rounded for presentation purposes

4.2 Residential Development

4.2.1 Housing Demand by Unit Type

The City of Edmonton offers a number of different types of housing units that together meet the unique needs and preferences of its diverse population. These various housing types are summarized in Table 4.2.

Table 4.2: Housing Types

Unit Type	Acronym	Description
Low Density	LDR	Single detached homes, semi-detached homes, duplex units.
Medium Density Row	MDR-R	Row housing, triplex units, collective residences.
Medium Density Apartment	MDR-A	Apartment-style housing with less than five stories.
High Density	HDR	Apartment-style housing with five or more stories.

The mix of housing types has a direct bearing on the amount of land required to accommodate the City's residential growth. In order to understand how the population growth outlined in Section 4.1 relates to the future demand for particular housing types, the study team translated the population forecast into demand for various housing unit types by reviewing previous development trends, average household sizes, and adjusting for anticipated changes in housing preferences.

Building permits data for the 2006 to 2015 period collected by the City of Edmonton indicate that the demand for housing types in the City is dominated by a preference for LDR units (55%) followed by low-rise apartments (29%), row houses (11%), and high-rise apartments (5%), as shown in Table 4.3. A similar profile of the current demand for housing types in the City can be seen in a number of other data sources, including municipal and federal censuses and housing data.

Table 4.3: Current Housing Demands by Housing Type, City of Edmonton

Unit Type	Proportion of Building Permits 2006-2015
LDR	55%
MDR-R	11%
MDR-A	29%
HDR	5%

Source: City of Edmonton

Note: Figures have been rounded for presentation purposes

Statistics Canada research demonstrates that housing preferences in Canada's largest cities are shifting over time, revealing that demand is indeed shifting from single detached dwellings to attached forms of housing development. While lifestyle changes may account for some of the

shift, the changing demand is also the result of affordability considerations, increased immigration to mid-sized cities, aging population profiles, shrinking household sizes, and increasing land costs related to growth and local policies.

In recognition of shifting trends in housing and of municipal and regional policies that emphasize increased density, the study team adjusted the profile of housing demand when calculating future growth needs. Specifically, it was assumed that, over a 20-year time period, consumer preferences with respect to dwelling types will evolve from the current profile (Table 4.3) to one which demonstrates an increased desire for medium and high density units. The future demand profile can be seen in Table 4.4.

Table 4.4: Future Demand by Housing Type

Unit Type	Future Proportion of Housing Demand (% units)
LDR	50%
MDR-R	13%
MDR-A	29%
HDR	8%

In combination with the foregoing housing profiles, average household sizes as defined in Edmonton's *Terms of Reference for the Preparation and Amendment of Neighbourhood Structure Plans* (Table 4.5) were applied to distribute the City's future growth among the specific dwelling unit types.

Table 4.5: Average Household Size

Unit Type	Household Size
LDR	2.8
MDR-R	2.8
MDR-A	1.8
HDR	1.5

Source: City of Edmonton Terms of Reference for the Preparation and Amendment of Neighbourhood Structure Plans 2014.

It should be noted that the assumption of an increased housing share for medium- and high-density units has the effect of reducing the overall amount of land required to accommodate future growth. If consumer preferences do not change to the extent assumed, the City may require additional lands beyond those estimated in the study.

4.2.2 City Infill Development

The need for new land to accommodate residential growth is related, in part, to the degree of redevelopment occurring within established and mature areas of the City. Lot subdivision, high density redevelopment and repurposing, and other forms of residential intensification allow for the accommodation of population growth without the consumption of new lands. The City of

Edmonton has a target to meet 25% of housing demand through infill development in the future (City of Edmonton 2010).

Between 2006 and 2015, infill development in the city as a proportion of all new residential development varied between a high of 19.8% in 2008 to a low of 4.9% in 2009, averaging approximately 14% over the ten year period. In 2016, the City achieved its policy target of seeing 25% of new development occurring in mature neighbourhood. However, the success in 2016 is not believed to be indicative of a new sustained level of infill and the variance seen over the 2006 to 2015 period is expected to continue. For the purposes of estimating the residual future demand for housing units on currently undeveloped land in the outlying growth areas, the study team has assumed that infill development will increase over a 20-year period from the long term average level of 14% of the total new housing market to the policy target of 25%.

Increasing the proportion of housing demand met by infill has the effect of reducing the rate at which the City's current supply of undeveloped land is consumed and limiting the demand for additional lands outside the City. If the City does not achieve the full 25% infill target as rapidly as assumed by the study team, the needs for additional lands outside the City will be enlarged and advanced.

For the purposes of estimating how infill development will affect the demand for housing units on undeveloped lands, the study team examined building permits data for mature neighbourhoods, and estimated the demand profile for infill units to be as defined in Table 4.6. These estimates were applied to the infill housing estimates and the results netted by type of housing from the aggregate City housing projections in order to yield the housing demand estimates for developing growth areas.

Table 4.6: Composition of Infill Demand

Unit Type	Future Proportion of Housing Demand (% units)
LDR	23%
MDR-R	8%
MDR-A	53%
HDR	16%

Source: City of Edmonton

4.2.3 Geographic Distribution of Growth

In addition to a preference for particular housing types (Section 4.2.1), households have also displayed clear geographic preferences within the City. A review of building permits data for the 2006 to 2015 period revealed that approximately 59% of housing units in Edmonton's new growth areas were developed south of the North Saskatchewan River, the remainder to the north⁶. Accordingly, the future demand for housing units in the City not met by infill

⁶ Within the southern portion of the City, growth has historically occurred 62% in the west and 38% in the east quadrants of the City.

development has been allocated 59% and 41% to the south and the north of the river, respectively.

This geographic distribution of City growth is assumed to persist over the forecast period, and if a shortage of housing supply materializes in either of the City's north or south sectors, it has been assumed that the unsatisfied demand will not transfer to the opposite sector within the City but rather will accrue to other residential locations in the region within the same geographic sector.

In summary, the future demand for City housing has been refined to reflect a desire for various housing types, reduced to allow for a portion of demand to be met by infill development, and subsequently allocated geographically north and south of the river, within the limits permitted by potential City housing supply in each of those areas.

4.2.4 Market Dynamics

In practice, it is unlikely that the supply of residential land within the City's existing south sector would become fully exhausted prior to development extending into the proposed annexation area if annexation occurs. Development economies in terms of planning, design, servicing, and construction as well as the need to offer an adequate choice of housing products to the market will likely induce developers to begin developing and marketing within the annexed area as the available supply begins to dwindle in the City. Accordingly, a portion of the future demand for housing in the south sector is assumed to begin occurring in the annexation area five years prior to the complete exhaustion of potential supply within the City's existing south sector lands. Specifically, 5% rising to 25% of anticipated demand for new homes in the south is assumed progressively to transfer to the annexation area in the five years prior to full south sector exhaustion. This analytical nuance has the effect of extending the life of the current supply of land in the existing City and moving forward the date at which the annexation lands are required. In the absence of annexation, the growth model assumes simply that demand for a particular type of housing unit will remain unimpeded until the sector supply for that type is fully depleted (i.e., a so-called nook and cranny approach).

4.2.5 Remaining Supply of Housing Units

As discussed in Section 3.1, the remaining supply of potential new residential housing units within the City of Edmonton has been estimated by subtracting the number of built units, as calculated using municipal taxation and other data, from the number of potential units as defined in NSPs and ASPs. A summary of the estimated remaining supply of potential residential housing units in the City of Edmonton as of 2015 year-end is shown in Table 4.7.

Table 4.7: City of Edmonton Remaining Supply of Potential Housing Units (2015)

Unit Type	South	North	Total
LDR	44,620	56,740	101,360
MDR-R	9,210	9,150	18,360
MDR-A	27,620	27,460	55,080
HDR	10,580	13,250	23,830
Total	92,030	106,600	198,630

Source: City of Edmonton, Nichols Applied Management

Note: Figures rounded for presentation purposes

Research conducted by the City of Edmonton and in other communities, such as the City of Calgary, suggests that some lands currently identified as available for development may not be suitable for development or available to the market over an extended period of time (City of Edmonton 2015b). For example, servicing difficulties, land ownership constraints, or preferences may discourage certain lands from being made available to the housing market within the forecast period. Therefore, a conservative 5% market allowance reduction has been applied to the City's initial housing supply estimates to arrive at estimates of net effective supply shown in Table 4.7.

4.3 Industrial Development

In keeping with the general approach applied to residential lands, the study team projected the future City demand for industrial lands and applied those future requirements against the remaining undeveloped land supply – within the City, and then with the addition of the annexation area – using research reports, and data gathered by the City. The balance of this Section provides more detail regarding the industrial land analysis encompassed within the growth study.

4.3.1 Demand for Industrial Lands

The analysis of future industrial land demand in the City is based on historic levels of absorption as measured using development permits. The annual absorption rate of industrial lands in Edmonton over the 2006 to 2015 period has varied widely from a low of 44 net hectares per year (net ha/yr) in 2008 to a high of 291 net ha/yr in 2013 (Figure 4.1). The historic variation in absorption of industrial lands is largely related to periodic cycles in provincial and regional economic activity.

In order to develop a forecast of the demand for industrial lands that reflects variations in absorption within the historic data, the study team applied the City's average absorption rate over the 2006 to 2015 period, 137 net ha/yr, and indexed that average to the City's projected population growth over time. These demand estimates include the conventional types of light,

medium, and heavy industrial lands⁷. Roughly 90% of the City’s industrial land absorption over the past decade has related to light and medium industrial development.

There is evidence that more recent industrial land absorption by the City may understate the City’s potential demand “capture” because of developing shortages in the City’s land supply availability, particularly within the south industrial sector. The City’s reports on industrial land supply⁸ have expressed concerns regarding the emerging shortage of developable, serviced, and industrially zoned vacant land and of the particularly acute shortage in relation to the south/southeast industrial area and in respect of available shovel-ready and fully-serviced sites in various size categories. This situation has been affirmed by industry representatives that have noted the increasing attractiveness of, and relocation of businesses from the City to industrial sites south of the City, in part because of the unavailability of appropriate lands in the City’s remaining industrial areas. An Investment Competitiveness Study prepared for the City in early 2016⁹, while recognizing the strengths of the City’s south industrial districts, also cited the particular land supply deficiencies in that area and, at the same time, the increasing competition of “prestige industrial/business parks in Leduc County”, which are expected to take industrial market share from the City. The City’s annual industrial land supply reports measure actual absorption – they necessarily do not measure absorption foregone because of City supply shortfalls.

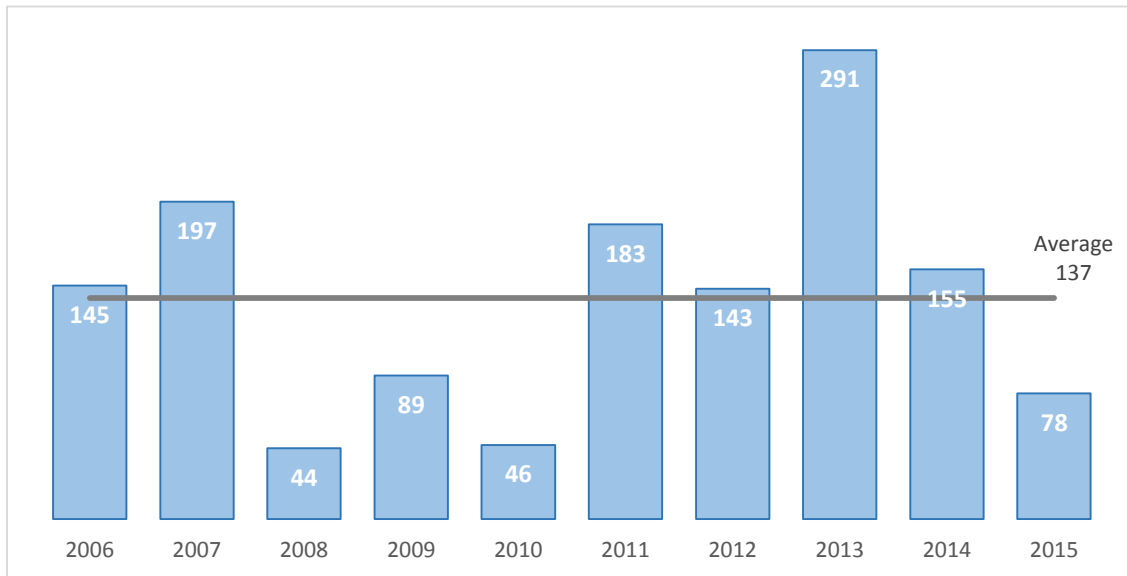
It is important to note also that the absorption data displayed in Figure 4.1 measure industrial development on industrially zoned lands. Commercial, institutional, urban services and other forms of development that occur on previously designated industrial lands are not included in the data. In terms of the overall absorption of the City’s defined industrial areas, the available absorption data understate the City’s consumption of industrial lands, albeit due to non-industrial usage.

⁷ The development of petrochemical-related lands in the new Edmonton Energy and Technology Park (EETP) is deemed to represent a different industrial market niche than for conventional industrial lands.

⁸ See 2014 and 2015 reports: *Vacant Industrial Land Supply*. Sustainable Development, City of Edmonton.

⁹ City of Edmonton Investment Competitiveness Study, Watson & Associates, Feb. 2016.

**Figure 4.1: City Industrial Land Absorption, 2006-2015
(net ha/year)**

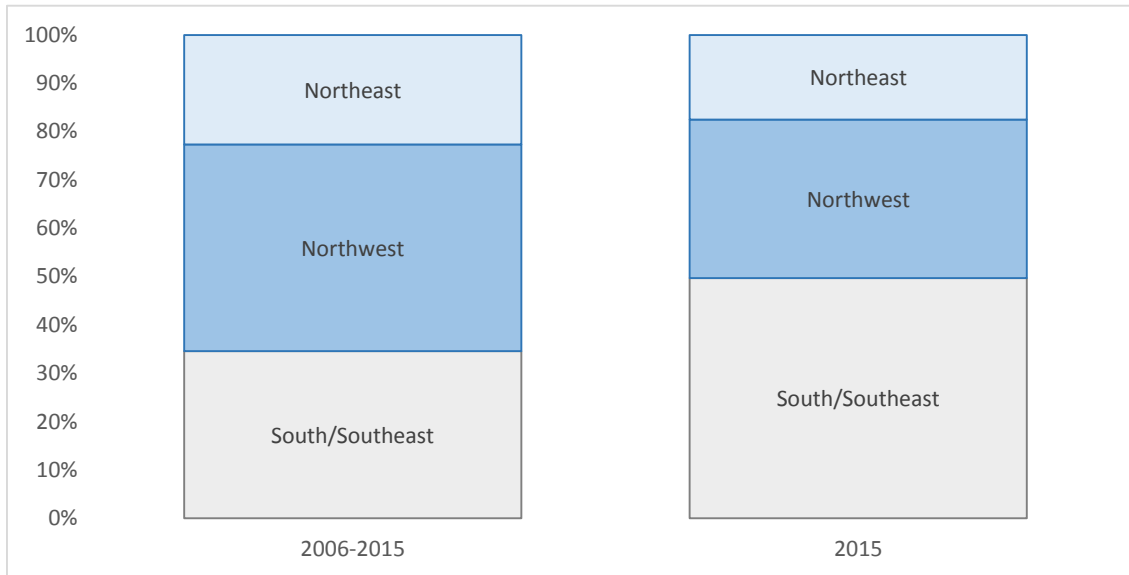


Source: Table 3, *Vacant Industrial Land Supply*, City of Edmonton, December 2015.

4.3.2 Geographic Distribution of Growth

The City of Edmonton has three prominent industrial areas, with a fourth – the Edmonton Energy and Technology Park (EETP) – currently under early development. The three established areas, in the northwest, south/southeast, and northeast of the City, have accounted for much of the City’s industrial development in recent decades, and of the three, the northwest and southern zones have dominated in terms of size and absorption (Figure 4.2).

Figure 4.2: Geographic Distribution of Growth¹⁰



Source: City of Edmonton, *Vacant Industrial Land Supply*, Dec. 2015

Currently, the City's three major industrial areas serve, with some overlaps, largely different market segments:

- the northwest: logistics, distribution, and construction;
- the south/southeast: oil and gas and mixed commercial/industrial uses; and
- the northeast: medium/heavy construction and processing.

This general market differentiation, and other geographic factors, serve to limit the substitutability of industrial demand from one City area to another and affirm also that the City's industrial market is not a single, homogeneous unit. Land shortages in one industrial area are unlikely to simply shift demand to another industrial area elsewhere in the City.

The coming introduction to the market of the EETP industrial area will bolster the City's industrial development in the northeast quadrant and will serve both the conventional light and medium industrial market and also provide opportunities for petrochemical and other heavy industries.

The City's south industrial sector is particularly attractive to industrial businesses because of its proximity to:

- the Anthony Henday ring road;
- the QEII highway, rail lines, and the Edmonton International Airport (EIA);

¹⁰ City of Edmonton. *Vacant Industrial Land Supply*. December 2015.

- the large south Edmonton labour force and marketplace; and
- regional commercial amenities such as South Edmonton Common.

It is also appealing to more intensive and high-valued office-commercial uses, including technical, professional, and research and development functions. However, the south industrial area is facing an increasing industrial land shortage and concurrent competitive pressures from areas south of the City, most particularly from within the north Nisku area and to a lesser degree from the established Nisku area and the Leduc Business Park in the north-eastern part of the City of Leduc.

With consideration given to both historic trends and recent developments in the industrial land market including the pending introduction to the market of the EETP and the improvements in geographic interconnectivity with the completion of the City's ring road system and other transportation improvements, the study team has assumed that future demands for conventional industrial lands in the City will accrue in the form of 40% to the south sector, with the remaining 60% to the northwest and the northeast including the EETP area. It has been further assumed that if prospective industrial users are unable to find suitable lands in the City's north, those demands will be satisfied within industrial areas outside the City in the region's north sector. Similarly, unsatisfied demands for industrial lands in the City's south sector are assumed to accrue to other industrial lands currently outside the City in the region to the south.

4.3.3 Market Dynamics

The growth study assesses the remaining supply life of the City's south sector industrial lands by assuming that the indicated demand proceeds in an undiminished form until the available supply is fully absorbed.

In practice, it is unlikely that the supply of industrial lands within the City's existing south sector will become fully exhausted before prospective development begins shifting into existing and newly designated industrial lands to the south of the City's current boundaries. Industrial land users have very specific needs with respect to parcel or building size, access, services, pricing, and other attributes which together necessitate a market supply with a large and diverse choice set. It is likely that potential City land demand will flow increasingly into nearby and available lands to the south of 41 Avenue (the City's current southern boundary) as supply continues to dwindle within the City's existing south industrial lands. The industrial land market dynamics used in the growth analysis are elaborated upon in section 4.4.2.2.

4.3.4 Remaining Supply of Industrial Lands

The remaining supply of industrial lands within the City of Edmonton was established using the 2015 *Vacant Industrial Land Supply* report published by the City, and with input as well from the industrial planning unit of the City, in respect particularly to plans relating to the EETP. The City has determined that an estimated 63% of the EETP lands will be designated for conventional industrial development, with the remainder earmarked for specialized petrochemical industries.

Accordingly, approximately two-thirds of the EETP area is assumed to be available to meet the needs of the conventional industrial land market. A summary of the remaining supply of industrial lands in the City of Edmonton as of December 2015 is shown in Table 4.8.

Table 4.8: Existing Supply of Industrial Lands, City of Edmonton

Area of the City	Supply at Year End 2015 (net hectares)
Conventional Industry	
South/Southeast	481
Northwest	687
Northeast	122
EETP	<u>2,097</u>
Total Conventional	3,387
Petrochemical	
EETP	<u>1,232</u>
Total Petrochemical	1,232

Source: City of Edmonton, *Vacant Industrial Land Supply*, December 2015 and City EETP data.

Supply estimates expressed in the City's 2015 report in gross hectares are assumed to yield a net developable area equivalent to 70% of the gross area.

Nichols subsequently reduced total supply figures shown above by 5% to recognize market and servicing factors that are likely to reduce the availability and development of some lands over the long term.

As with residential lands, some industrial lands currently identified as vacant and available for future development are unlikely to become available to the market for an indefinite period. For example, access or servicing difficulties or land owner disposition or development preferences may restrain certain lands from being developed. Therefore, a conservative 5% reduction to reflect market allowances was applied to arrive at the supply estimates in Table 4.8.

The supply figures summarized in Table 4.8 have not been adjusted to reflect the non-industrial development of industrial lands, which subtracts from the land supply available for industrial use. In the past, lands within the City earmarked for industrial use have been developed for commercial or institutional and other purposes, either through re-zoning or re-designation, effectively reducing the supply of lands for purely industrial development. Illustrative examples within the City include:

- South Edmonton Common, a major commercial/retail complex totalling more than 100 ha, was developed on lands that previously were slated for industrial use;
- 49 ha in the Gorman Industrial area were re-designated from industrial uses to medium density residential uses; and
- 23 ha in the Cashman subdivision were developed for commercial (office) purposes, in an area originally intended for industrial use.
- The Ellerslie Industrial area, located adjacent to Gateway Boulevard north of the City's southern boundary with Leduc County, has experienced considerable non-industrial

development that takes advantage of the considerable traffic volumes and roadway access and visibility of the area. Those non-industrial uses include shopping centres, highway commercial developments, and general business and commercial mixed business developments.

Other municipalities also have experienced a similar utilization of generally designated industrial lands for non-industrial use. For example, a report prepared by the City of Calgary acknowledged that within a four-year period that was analyzed, “non-industrial uses of the industrial land inventory totalled [...] 29% of all industrial land absorption” and of that, eleven percentage points pertained to commercial development, with the remainder to institutional and environmental uses.¹¹

A number of industrial land use studies (for example, Parkland County Employment and Industrial Land Strategy; Strathcona County Industrial Lands Strategy Technical Report) also have recognized this pattern and have included a 10 to 15% provision for land uses other than industrial. This acknowledges that the supply of industrial lands is often reallocated in some part to the needs of non-industrial uses and that the effective supply for industrial use may be reduced, and exhausted in terms of industrial development at an earlier date than otherwise anticipated.

The Growth Study assumes conservatively that 10% of the estimated industrial land supply remaining in the City’s south sector and also within the annexation area will be used ultimately for non-industrial uses including commercial development.

4.4 Annexation Area

The proposed annexation area (Figure 4.3) extends immediately south of the City both east and west of QEII. The lands to the west of QEII lie exclusively in Leduc County; those to the east lie predominantly in Leduc County, with the exception of nine quarters and the Highway 814/50 Street right-of-way, which now lie within the Town of Beaumont. The nine quarters were contained within the City’s amended 2015 Intent to Annex area but were subsequently annexed by the Town of Beaumont effective January 1, 2017. As referenced in section 1 and 3.3, the southwest annexation area no longer includes the Edmonton International Airport (EIA) property.

The added land supply that will accrue to the City from the proposed annexation was estimated by determining the total lands available for development, deducting estimates of non-developable areas, defining the anticipated land uses, and in the case of the proposed residential lands, determining anticipated housing mixes consistent with planned density targets, and estimating the number of potential housing units by type of housing that would be accommodated. For the industrial lands areas, net land supply has been estimated from gross developable land areas, and as discussed earlier, adjusted to reflect market allowances and non-industrial use provisions.

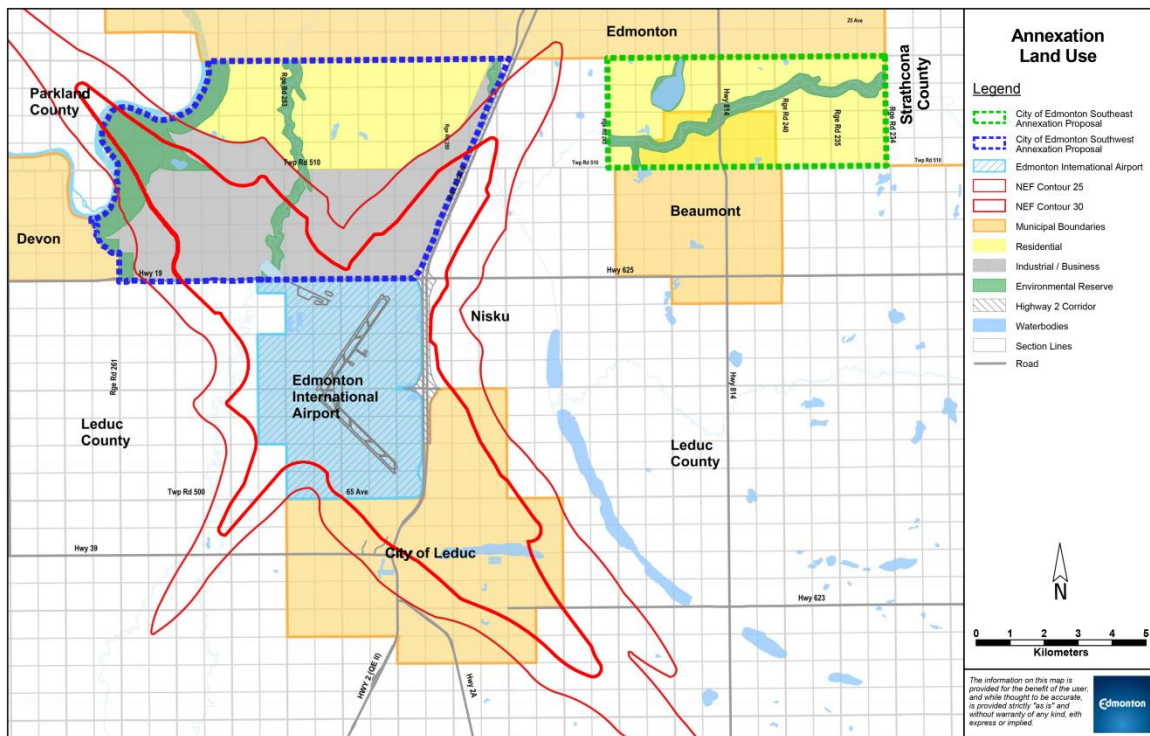
¹¹ Employment Areas Growth and Change 2013, City of Calgary. Land Use Planning & Policy.

The balance of this section provides additional detail regarding the annexation land supply analysis.

4.4.1 Gross Annexation Lands

The proposed annexation area (Figure 4.3) encompasses 8,857 gross ha of land in total. The City envisions the annexation area planned for both industrial (41%) and residential (59%) uses, denoted by the orange and grey shaded areas respectively.

Figure 4.3: Proposed Annexation Area and Land Use



4.4.2 Developable Area and Land Uses

The City of Edmonton identified the net lands available for development after reviewing detailed Geographic Information Systems (GIS) information for the annexation area and removing major environmental areas, utilities corridors, existing developments and other features that will confine new development. Following these adjustments, the potential annexation area was found to provide approximately:

- 2,360 net ha of lands available for residential as well as 470 net ha of associated commercial development; and
- 1,910 net ha of lands available for industrial development.

A detailed breakdown of the lands available for development in the annexation area is provided in Table 4.9.

Table 4.9: Breakdown of Developable Lands in the Proposed Annexation Area

Land Description	Southwest ¹	Southeast ²	Total
Total Gross Area	6,235	2,625	8,855
Residential			
Gross Area	2,605	2,625	5,230
Non-Developable Area ³	345	435	780
Non-Residential Area ⁴	795	830	1,625
Commercial Area	225	240	465
Net Residential Area	1,240	1,120	2,360
Industrial			
Gross Area	3,625		3,625
Non-Developable Area	855		855
Occupied Area	40		40
Non-Industrial Area ⁵	860		860
Net Industrial Area	1,910		1,910

Source: City of Edmonton, figures rounded for presentation purposes.

Notes:

1: Potential annexation area west of Highway 2, not including the Edmonton International Airport

2: Potential annexation area east of Highway 2

3: Non-developable lands include natural areas, pipelines, powerlines, arterial roadways and other existing uses not meant for redevelopment.

4: Non-residential lands are lands currently used for parks, schools, storm water management, facilities and transportation networks.

5: Non-industrial lands are lands currently used for storm water management, facilities and transportation networks.

4.4.2.1 Residential Supply

The potential supply of housing units in the proposed annexation area was calculated by developing *pro forma* housing mixes (combinations of LDR, MDR and HDR units) designed to meet the anticipated densities required in the southwest and southeast areas and by applying those mixes to the estimated net residential lands in each area.

Target Densities

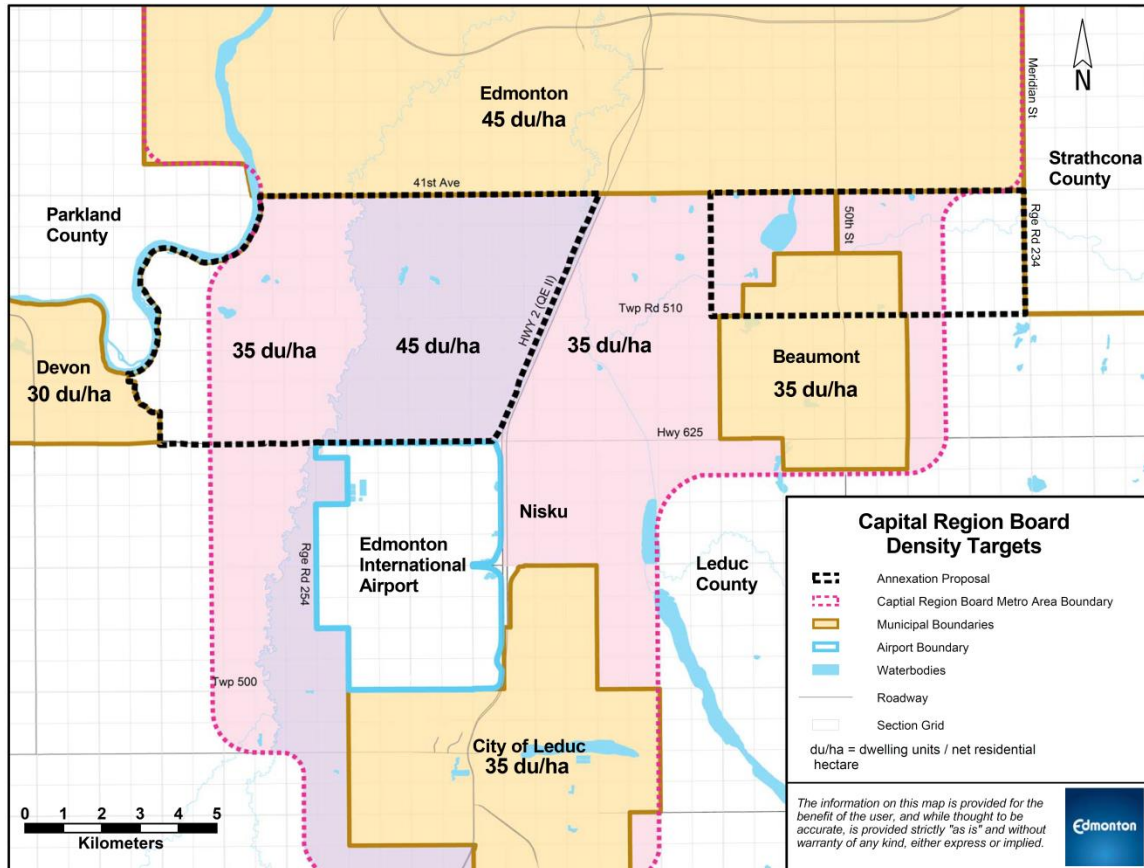
In mid-2016, the CRB and its member municipalities began working toward increasing residential densities in the region with a view to reduce the total lands required to accommodate future growth. At the time of this writing, the target densities for lands within the potential annexation area are:

- 35 dwelling units per net hectare (du/net ha) in the southeast portion of the potential annexation area;
- 35 du/net ha in the southwest portion of the potential annexation area west of Whitemud Creek; and
- 45 du/net ha in the southwest portion of the potential annexation area between Highway 2 and Whitemud Creek.

These densities are above the 34.4 du/net ha contemplated in the 2014 study and are consistent with the City working toward developing a sustainable urban footprint with consideration given to land preservation.

Figure 4.4 shows the regional density targets approved by the CRB, including those for the annexation areas.

Figure 4.4: Capital Region Board Density Targets



Approved densities as of October 13, 2016.

Annexation Area Housing Mixes and Potential Supply

The City of Edmonton has developed dwelling unit densities and housing mixes that achieve the target densities prescribed by the CRB. The specific unit densities and housing mixes necessary to achieve the 35 and 45 du/ha densities planned for the southeast and southwest annexation areas, respectively, and the resulting potential housing supply estimates are outlined in Table 4.10 through Table 4.12.

Table 4.10: Southeast Area Housing Supply

Unit Type	Unit Density (du/net ha)	Proportion of Housing Units (Housing Mix)	Number of Dwelling Units	Proportion of Net Residential Land
LDR	30	74%	28,130	88%
MDR-R	60	15%	5,755	9%
MDR-A	125	11%	3,995	3%
HDR	<u>225</u>	<u>0%</u>	0	<u>0%</u>
Total	35	100%	37,880	100%

Figures rounded for presentation purposes. Figures after provision for 5% market allowance.

With plans to achieve a target density of 35 du/net ha and relying on the specific unit densities shown in Table 4.10, the southeast portion of the annexation area has the potential to supply 37,880 units of residential housing. The housing mix in that area comprises predominantly low density units (88% of the area with 74% of the units) followed by medium density row-style units (9% of the area with 15% of the units) and low-rise apartments (3% of the area with 11% of the units).

Table 4.11: Southwest Area East of Whitemud Creek Housing Supply

Unit Type	Unit Density (du/net ha)	Proportion of Housing Units (Housing Mix)	Number of Dwelling Units	Proportion of Net Residential Land
LDR	30	50%	18,325	74%
MDR-R	60	23%	8,420	17%
MDR-A	125	22%	8,255	8%
HDR	<u>225</u>	<u>5%</u>	<u>1,855</u>	<u>1%</u>
Total	45	100%	36,855	100%

Figures rounded for presentation purposes. Figures after provision for 5% market allowance.

With a targeted density of 45du/net ha, the southwest portion of the annexation area east of Whitemud Creek has the potential to supply an estimated 36,855 units of residential housing, as shown in Table 4.11. The housing mix is predominantly low density units (74% of the area with 50% of the units) followed by medium density row-style units (23% of the units), low-rise apartments (22% of the units), and high-rise apartments (5% of the units).

Table 4.12: Southwest Area West of Whitemud Creek Housing Supply

Unit Type	Unit Density (du/net ha)	Proportion of Housing Units (Housing Mix)	Number of Dwelling Units	Proportion of Net Residential Land
LDR	30	74%	9,425	88%
MDR-R	60	15%	1,925	9%
MDR-A	125	11%	1,340	3%
HDR	225	0%	0	0%
Total	35	100%	12,690	100%

Figures rounded for presentation purposes. Figures after provision for 5% market allowance.

With plans to achieve a target density of 35 du/net ha and relying on the specific unit densities shown in Table 4.12, the southwest portion of the annexation area west of Whitemud Creek has the potential to supply 12,690 units of residential housing. In total, the annexation area has the potential to accommodate 87,425 housing units of residential housing.

4.4.2.2 Industrial Land Supply and Market Dynamics

Under an agreed revision to the proposed annexation area negotiated jointly by the City of Edmonton and Leduc County in late 2016, lands to the north of the Nisku Business Park (henceforth north Nisku) that lie immediately adjacent to the City's current 41st Avenue boundary no longer form part of the City's proposed annexation area. This area constitutes an industrial zone, now partially developed, that:

- provides full servicing standards and accommodates prestige industrial and commercial businesses;
- is similar in terms of visibility, accessibility (QEII, Nisku Spine Road, 41 Avenue overpass, etc.), and servicing, to the south industrial lands within the City; and
- although located marginally farther from the region's core, offers other benefits in terms of tax levels and land pricing.

These lands are the most likely to benefit from new industrial development whose needs cannot be met in the City's south sector as available land supply in that area diminishes further over the coming years. Indeed, there is strong evidence that some potential City demand is already being accommodated within the north Nisku lands and other industrial areas farther to the south. The likelihood is that this redirection of potential demand will accelerate over time as the north Nisku area gains further market presence and momentum and as the breadth and depth of supply choice in the City's south sector declines further.

Over time, the proposed industrial lands that lie within the annexation area north of the EIA to the west of QEII will develop, driven in large part by:

- their proximity to the EIA;
- the accessibility to QEII and Highway 19;
- the proximity to the City's growing southward population and associated labour force;
- the area's adjacency to the large industrial zone extending southward from the City of Edmonton to Nisku and the City of Leduc on the east side of QEII; and
- the momentum and cumulative agglomeration strengths that come with new industrial areas over time.

Initial industrial development is currently underway in the area and will form the early foundation for further long-term development within the surrounding designated non-residential area. This area will, in time, capture industrial market share – as the existing south Edmonton industrial zone approaches full development and the north Nisku lands become more fully absorbed.

The interplay between the comparatively more attractive industrial lands in north Nisku relative to those in the annexation area is an important factor in determining the absorption of future City-held industrial lands.

In general, the Study Team anticipates that in the short to medium term:

- industrial land absorption within the City's south sector will decline as supply in that geographic sector becomes more fully absorbed; and
- a prominent and growing share of the City's potential south sector industrial demand will accrue to the County's north Nisku and Nisku lands and, to a more limited degree, to the City of Leduc's north industrial area.

In the medium to long term:

- the proposed industrial lands in the southwest annexation area will accelerate in terms of development as the industrial areas to the east of QEII reach more fulsome development and as the market attraction of the southwest industrial area becomes more fully realized.

On this basis, and for analytical purposes, the study team has made the following simplifying assumptions:

- the north Nisku industrial area currently houses approximately 427 net hectares available for development;

- once the existing supply of industrial land in the City is exhausted the needs of the Edmonton industrial land market will be met 70% by lands in north Nisku and 30% by those in the annexation area; and
- once north Nisku is fully developed, the demand for industrial lands in Edmonton will be satisfied by lands in the annexation area.

In keeping with the approach outlined in Section 4.3.3, the potential industrial supply available to the City in the proposed annexation area has been adjusted downward to reflect a market allowance for longer-term non-development and a further allowance for potential non-industrial uses.

5. Findings

This section of the report summarizes the anticipated growth needs of the City relative to the existing supply of land within its boundaries as well as the potential supply of land in the proposed annexation area.

5.1 Residential

The afore-described analysis shows that the City's current residential land supply is inadequate to meet the City's expected growth needs over a desired 50-year time frame. Table 5.1 summarizes the study findings in terms of the estimated time of full absorption of existing City residential lands, by geographic sector and housing type. The analysis indicates that both the north and south areas of the City will experience supply shortfalls well within a 50-year horizon, with the south sector facing the earliest and most significant shortages. The supply shortfall within both sectors is most prominent with regard to low and medium-density housing, which account for a large share of total housing units and a yet larger share of land requirements.

Edmonton's housing market is large, diverse, and geographically segmented. Housing shortfalls in one area of the City may not necessarily be accommodated in another but rather, because of household locational preferences, in other outlying jurisdictions within the region and within a similar geographic sector. The City's proposed annexation area to the south is most relevant in terms of accommodating supply deficiencies in the City's existing south sector market. To the extent that a shortfall in land supply occurs in the City's north prior to full development in the south, some portion of unfulfilled north sector demand may divert to the south part of the City. These potential effects are not reflected in the growth study but to the degree this geographic substitution occurs, this would have the effect of advancing the absorption of City lands in the south and increasing the need for lands in that sector.

As shown in Table 5.1, Edmonton's existing land supply for low and medium-row density units in the south is expected to be fully exhausted by 2033 followed by apartment housing units in 2044 and high-density units in 2062. This implies available City supply to accommodate growth needs for approximately 16 years within the south sector, a very short horizon given the planning and servicing time required to bring new development areas to the market, and also given the added market dynamic that as the City's effective supply and supply choice and competition diminishes, absorption levels are likely to decline.

Table 5.1: Full Absorption of Existing City Residential Land Supply (year)^{1,2}

Unit Type	South	North
LDR	2033	2047
MDR-R	2033	2039
MDR-A	2044	2055
HDR	2062	2086

1. Based on CRP high growth population scenarios for the region.
2. The findings assume that City housing demand and absorption are unaffected by limited choice and competition as supply approaches exhaustion within the City. A 5% market allowance for long-term undeveloped supply is reflected in the City's current supply estimates.

Edmonton's proposed annexation of lands to the south of the City will provide additional residential housing capacity and population growth potential for the City, particularly with respect to low and medium density units. The Study Team has quantified the expected annexation implications in terms of south sector residential land supply and the results are summarized in Table 5.2, expressed in terms of the year when the annexation lands would be fully absorbed, for each type of housing.

The net effect of the additional lands is to extend the City's residential growth capacity in the south to between the years 2053 and 2066, varying by particular housing type, and allow for the accommodation of approximately 230,000 people – most of which will be housed in low and medium density units. The proposed annexation is not assumed to affect the City's housing supply-demand profile in the north sector, as discussed earlier in Section 5.1.

Table 5.2: Projected Absorption of Annexation Area Residential Land Supply

Unit Type	Annexation Residential Supply Exhausted (Year)
LDR	2053
MDR-R	2056
MDR-A	2056
HDR	2066

The manifestation of growth across the landscape within the annexation area is expected to be shaped, in part, by the timing of key services and infrastructure development. Accordingly:

- growth in the southwest annexation area is expected to emanate south from 41st avenue and outwards (west) from the highway towards the North Saskatchewan River.
- Growth in the southeast portion of the annexation area, is expected to move south from 41st avenue and east from Range Road 243 towards the eastern boundary of the annexation area. This manifestation of growth will allow for the absorption of the lands formerly in Leduc County and now within the Town of Beaumont beginning in

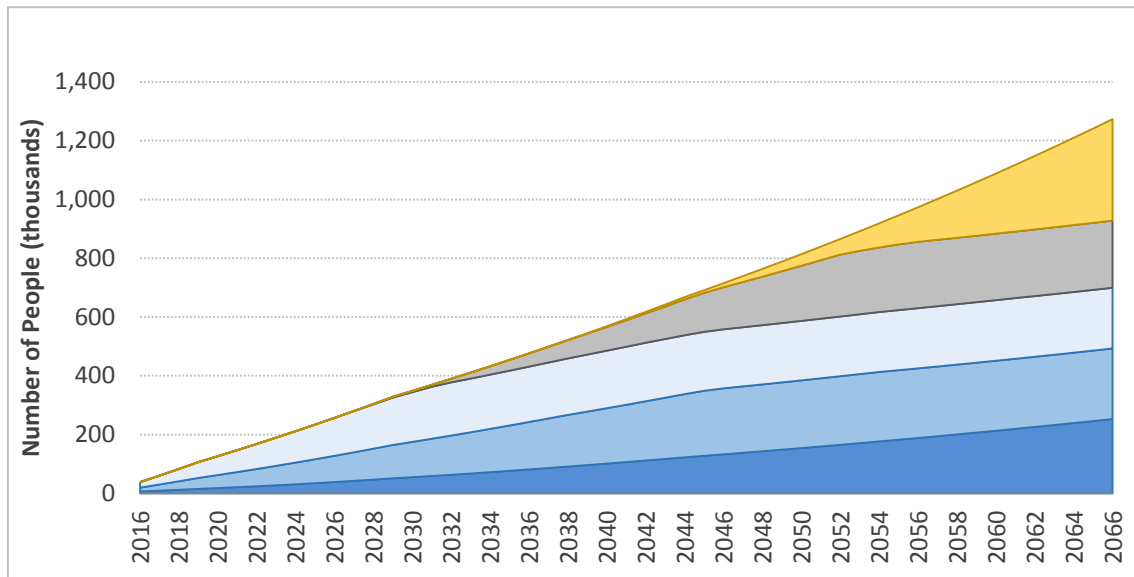
approximately 2037 and completed by as early as 2042 or 2048 if a slight preference for lands west of the highway persist.

5.1.1 City Population Growth Implications

The City's projected population growth was discussed earlier in Section 4.1 and summarized in Table 4.1. The forecasts are predicated on the assumption that there will be sufficient land capacity to accommodate the anticipated growth. However, the growth study analyses show that in combination with existing land supply in the City, the proposed annexation will not accommodate the entirety of the City's projected needs, and a gap between land requirements and supply will occur in both the north and south sectors of the City over the 50-year forecast period.

Figure 5.1 illustrates the expected geographic distribution of population growth in the City over the forecast timeframe and the relative roles of infill housing, the City's north and south sectors (within current boundaries), and the proposed annexation area in terms of accommodating future growth. The graphic also shows the foregone potential population growth of the City due to a projected land supply deficiency in the latter parts of the forecast period, despite the annexation.

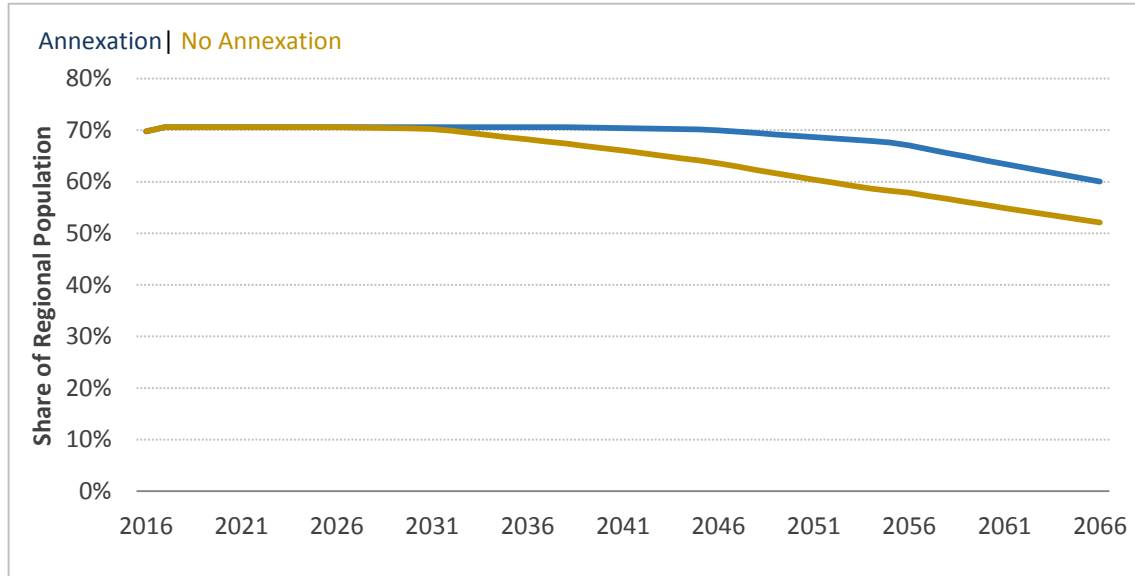
Figure 5.1: City Potential Population Growth and Capacity with Annexation (Base Case)



By the end of the projection period, 2066, that foregone growth would total an estimated 345,000 people. It also would imply that the City's goal of accommodating approximately 70% of regional population growth, would not be fully achievable even with the inclusion of the proposed annexation lands. The City's realizable share of the region's population in 2066 would be an estimated 60% with annexation and 52% if the currently proposed annexation does not

occur. Figure 5.2 shows the City's share of the regional population under both eventualities and compares those with the current and targeted level of about 70%.

Figure 5.2: City Share of Regional Population



The City's projected residential land supply shortfall in both the south and north sectors – with annexation – translates into a portion of the City's potential population requiring accommodation elsewhere in the region. The annexation will reduce significantly the required population redistribution to the remainder of the region – by approximately 230,000 people – and with that, substantially reduced commuting requirements and transportation demands. It also will assist in maintaining the prominence of the City within the Capital Region and its ability to support the infrastructure and services needs that serve the entire region.

5.2 Industrial

As shown in Table 5.3, the supply of industrial land in south Edmonton is expected to be fully exhausted by 2023 and prospective industrial users are already experiencing constraints in terms of land supply and market choice in the South. Edmonton will be in a position where it cannot meet the needs of its industrial base in less than eight years.

As previously discussed in section 4.3, the segmentation of Edmonton's industrial land market into relatively unique niches is such that it is unlikely that industrial users seeking land in the south will find appealing options in other areas of the City. Although transportation improvements, such as the Anthony Henday ring road, may cause some transference of demand from the south to the north, there is an imminent need for industrial land in south Edmonton. This need is further reinforced if the use of industrial lands for non-industrial purposes occurs on a scale previously experienced in this area of the City.

Table 5.3: Exhaustion of Existing Industrial Supply

Area of the City	Supply Exhausted
Conventional	
South/Southeast	2023
Northwest	2030
Northeast	2031
EETP	2052
Petrochemical	
EETP	2068

If growth manifests as anticipated, industrial development will move into the annexation area and fully consume the additional supply of industrial lands units by 2044 or 27 years from the date of this study. Additionally, the proposed annexation of industrial lands will provide fiscal balance and support for the considerable residential development projected on the adjacent annexation lands.

As discussed in section 4.4.2.2, a marketing nuance has been introduced to the annexation analysis to recognize that the City's unaccommodated industrial requirements in the existing south sector when that industrial zone approaches and reaches full absorption may not be satisfied immediately within the annexed industrial lands. This is due to the intervening industrial lands in Leduc County, particularly in the north Nisku area, that are:

- under active development and have available supply;
- are locationally competitive and accessible;
- are similar in terms of their prestige nature and servicing levels; and
- are competitive also in terms of land prices and tax levels.

These lands are likely to accommodate a substantial share of the land demands that might otherwise locate in the City annexation lands – and they will do so until the north Nisku area more closely approaches capacity and the City’s proposed industrial lands in the annexation area west of QEII gain market traction. The implication of this may be to reduce and delay the City’s level of industrial development on its annexed industrial lands for some time. This assumption was factored into the growth study projections of City industrial land absorption in the south.

6. Conclusions

With respect to residential land needs:

- the years of supply varies by housing type and geographic sector, and the need is most pressing for LDR and MDR-R units in the south sector of the City where approximately 16 years of supply is estimated to remain for low density units – well below the 30 to 50 year supply normally targeted by growing urban municipalities in the province; and
- the proposed annexation will not address the supply inadequacies in the north sector of the City but will extend the residential supply in the south to between 2053 and 2066 for all housing unit types – approximately 38 and 46 years from the date of this study.

With respect to industrial land needs:

- the current supply in the south and northwest is between 6 and 13 years, much less than the 30 to 50 year supply normally targeted by urban municipalities in the province; and
- the proposed annexation will address growth needs in the south through to approximately 2044, or 27 years from the date of this study.

As outlined in Section 5, the study team relied on a number of assumptions to estimate the future growth needs of Edmonton. When faced with alternative assumptions, the study team endeavoured to apply the conservative option in an effort to minimize the anticipated future land needs of the City of Edmonton. In particular:

- Shifting the demand profile of housing to favour higher density units has the effect of reducing the rate at which LDR units are consumed and thus the total amount of residential land required for future growth.
- The assumption that a portion of infill development will accommodate low-density units has the effect of reducing the rate at which LDR units are consumed elsewhere and thus the total amount of land required for future growth.
- Increasing the planned densities in the proposed annexation area which has the effect of reducing the total amount of land required for future growth.
- Assuming that unmet demand for housing and industrial lands north of the river does not transfer to the south or into the proposed annexation area which has the effect of reducing the rate at which land is consumed.

- Excluding any adjustments with respect to industrial lands being developed for non-industrial purposes has the effect of overstating the supply currently available in the City and also within the annexation area.
- Assuming that demand for industrial land will begin moving into the North Nisku lands owned by the County as early as 2019 which reduces the demand flowing both to the existing City lands and to the potential annexation lands.

Given the aforementioned assumptions, this report may underestimate the lands needed to accommodate future growth in the City of Edmonton.

In summary, the proposed annexation lands will provide a medium term supply of residential and industrial lands in the City's south region but will not be sufficient to accommodate all growth needs of the City beyond 2039, at which time the supply of land in the northern portion of the City will be exhausted and prominent role of the City in the region's growth will begin to erode if additional lands are not secured.

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APPENDIX A – Low Growth Summary

Table A.1: Full Absorption of Existing City Residential Land Supply (year)^{1,2}

Unit Type	South	North
LDR	2038	2056
MDR-R	2038	2046
MDR-A	2053	N/A
HDR	N/A	N/A

1. Based on CRP low growth population scenarios for the region.

2. The findings assume that City housing demand and absorption are unaffected by limited choice and competition as supply approaches exhaustion within the City. A 5% market allowance for long-term undeveloped supply is reflected in the City's current supply estimates.

N/A Denotes exhaustion occurs beyond forecast horizon of 2066

Table A.2: Projected Absorption of Annexation Area Residential Land Supply

Unit Type	Annexation Residential Supply Exhausted (Year)	Years of Residential Supply Added to City South Sector
LDR	2066	28
MDR-R	2065	27
MDR-A	2047	12
HDR	N/A	N/A

N/A Denotes exhaustion occurs beyond forecast horizon of 2066

Table A.3: Exhaustion of Existing Industrial Supply

Area of the City	Supply Exhausted
Conventional	
South/Southeast	2023
Northwest	2030
Northeast	2031
EETP	2052
Petrochemical	
EETP	2068

If growth manifests as anticipated, industrial development will move into the annexation area and fully consume the additional supply of industrial lands units by 2047

APPENDIX B – Key Changes from 2014 Report

This report is predicated on data and assumptions that have been updated since the 2014 study was published. The key differences between this update and the 2014 study are summarized in Table B.1.

Table B.1: Key Changes from 2014 Study

Population Factors	2014 Assumptions	2017 Assumptions
Regional population	2013 CRB high, base (medium) and low growth scenarios reviewed. High and medium scenarios accepted for study, with high used as base case	2015 Updated CRB high and low growth scenarios reviewed, CRB high used as base case
City's share of region	70%	Unchanged from 70%
Land Needs Factors		
Residential and Commercial		
Profile of demand for housing	LDR 60% to 50% (over 20 years) MDR row 8% to 10% MDR apt 25% to 30% HDR 7% to 10%	LDR 55% to 50% (over 20 years) MDR row 11% to 13% MDR apt remains at 29% HDR 5% to 8%
Proportion of infill development	14%, reaching 25% over 10 years	13%, reaching 25% over 20 years
Composition of infill development	LDR 0% MDR row 23% MDR apt 59% HDR 18%	LDR 23% MDR row 8% MDR apt 53% HDR 16%
Density in annexation area	34.4 units per net ha in the annexation area	35 units per net ha in SE 45 units per net ha in SW
Specific unit density in annexation area	LDR 25 du/net ha MDR row 45 du/net ha MDR apt 90 du/net ha HDR 225 du/net ha	LDR 30 du/net ha MDR row 60 du/net ha MDR apt 125 du/net ha HDR 225 du/net ha
Housing Mix in Annexation Area	LDR 60% MDR row 9% MDR apt 23.5% HDR 7.2%	See Table 4.10, 4.11, and 4.12..
Remaining housing supply in City Growth Areas (units)	200,200	198,630 ¹²
Housing supply in annexation area (units)	93,662	94,850
Geographic distribution across City growth areas	South of river share increases from 57% to 65% in 10 years.	South of river share remains constant at 59%.

¹² Net of market provision of 5%.

Population Factors	2014 Assumptions	2017 Assumptions
Market provision	Not included.	5% allowance.
Substitutability between north and south sector	All unmet residential demand in City goes to proposed annexation area.	Unmet demands south of the river flow to the proposed annexation area.
Residential market dynamics	“Without” annexation: “nook and cranny” absorption of City supply “With” annexation: as above	“Without” annexation: similar to 2014 study “With” annexation: partial demand to annexation lands 5 years before “without annexation” City exhaustion
Industrial		
Land inventory in the City (supply in net ha)	S 629 ha NW 777 ha NE 195 ha EETP 3,329 ha (incl. 50% petrochem) 50% conventional	Before market provisions (see below) S 481 ha NW 687 ha NE 122 ha EETP 3,329 ha (incl. petrochem). 63% conventional (2,097 ha)
Land supply in the annexation area (net ha)	SW 2,535 ha SE 598 ha	Before market and non-industrial use provisions (see below) 2,735 SE industrial area no longer within annexation area.
Market unavailability provision	Not included.	5% allowance.
Non-industrial use of industrial lands	Not included.	15% (after market allowance) of remaining City south sector supply and proposed annexation area industrial lands
EETP lands	On-stream 2018; 50% petrochemical not indexed by population but assumed developed over 40 years; 50% conventional industry indexed by population and demand taken proportionally from NW and NE demand.	On-stream 2018, 37% petrochemical (development assumed over 50 years), 63% traditional demand taken proportionally (based on supply) from allocated NE share of City’s indexed demand.
Base rate of City land absorption (demand)	Average 124.1 net ha/yr (2003 to 2012).	Average 137 net ha/yr (2006 to 2015).
City industrial demand growth	Growth indexed by projected population	Growth indexed by (updated) population projections
Transfer of industrial demand between north and south lands	Unmet industrial demand in City north and south accrues to annexation area.	Only the City’s unmet demand south of the river is redirected to south of the City. The “overflow” is distributed between County north Nisku lands and progressively to annexation lands north of EIA.

Population Factors	2014 Assumptions	2017 Assumptions
City industrial demand distribution	EETP lands (conventional and petro) absorbed evenly over 40 years. South sector captures 42% of City demand. NW and NE capture the remainder, with NW share reduced to reflect new EETP absorption from 2018. Ultimate supply shortfalls in north sector are met by south annexation areas.	Indexed City demands apportioned 40% to south; 30% to NW; 30% to NE (including EETP conventional). As north sector supply is exhausted, demand is not assumed to transfer to the south.
Industrial market dynamics	“Without” annexation: “nook and cranny” absorption of City supply “With” annexation: as above	“Without” annexation: similar to 2014 study “With” annexation: partial demand flow to north Nisku lands and progressively to annexation lands 5 years before “without annexation” City exhaustion.
Other		
Edmonton International Airport	Included in annexation area but excluded from growth analysis.	Excluded from annexation area and analysis.