RSAS

Regional Structure Action Strategy Study

Fall 2014

Technical Paper 3 of 3

Growth Management

Acknowledgements

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Executive Summary

This paper focuses on the subject of managing growth through planning for land. Companion documents address transportation issues and present an updated growth forecast. All make use of work prepared for the Regional Structure Action Strategy Study (the 'RSAS Study') to inform the refinement of policies, implementation plans and strategies in order to support growth in the Regional Municipality of Wood Buffalo in a manner that is fiscally and environmentally sustainable.

The adequacy and suitability of land available for urban growth has been a focus of the RSAS Study effort. Significant actions were taken during the summer of 2013 when the Government of Alberta announced the identification and delineation of the Urban Development Sub-Region (UDSR), a long-term urban development boundary. Follow-through actions are needed by the Municipality to more accurately quantify the land needs related to future growth. This will in turn allow the Province to transfer lands within the UDSR to support the Municipality's needs.

Key Findings

- **Past policy documents prepared by the Municipality and the Government of Alberta use inconsistent growth-related assumptions and approaches.** All parties will benefit from using a single growth forecast and a shared set of assumptions and methods (such as land evaluation), as outlined in the RSAS study. This Study's growth forecast and assumptions are supported by a range of stakeholders, and have been arrived at using credible methodologies and up-to-date, accurate data.
- **Ample land is available in the near- and medium-term to accommodate forecasted population growth in Fort McMurray.** However, the location of future urban growth subsequent to the build-out of the Parsons Creek and Saline Creek neighbourhoods has not yet been determined. Going forward, clear identification of future growth areas, based on credible fiscal, infrastructure and planning analysis is needed to support orderly and cost-effective neighbourhood planning, infrastructure planning and investment.
- **In-depth supply-and-demand analysis is necessary to establish a basis for better understanding future land demands for commercial and industrial activities in Fort McMurray.** The RSAS Study provides the necessary data to further develop these.
- **Although Fort McMurray will remain the largest community in the Municipality, significant population increases are projected outside of its urban area by 2030 and beyond.** The population levels forecast for the rural areas, through the more detailed methodology used in the RSAS Study, are significantly higher than anticipated by the Municipal Development Plan (2011). Further collaboration, analysis and policy will be needed to plan for and direct this substantial growth in employment and accommodation needs outside of Fort McMurray. The RSAS Study provides the necessary data to further develop these.
- **Assessments of land needed for neighbourhood growth in Fort McMurray should be revised and estimated based on the RSAS Study Growth Forecast.** The RSAS Study provides the necessary data to further develop these. In doing so, the Municipality should consider requirements for complete neighbourhoods, such as community facilities, appropriate infrastructure and a range of

housing choices. Population density assumptions used should contribute towards building walkable, mixed use and fiscally sustainable neighbourhoods.

Technical Paper Contents

This paper contains four sections, as follows:

1. **Introduction**: an overview of factors considered in evaluating land adequacy and suitability, and aligning land planning with policy objectives.
2. **Land Policy Review:** a review of Municipal and Provincial documents and studies that have influenced land use and infrastructure planning.
3. **Growth Area Evaluation Criteria:** input to growth management activities, including assessing land suitability and prioritizing future growth areas.
4. **Housing Type and Density Assumptions:** input to estimating future neighbourhood land needs, providing data on neighbourhood components, including housing, community facilities and roadway infrastructure along with a basis for anticipating future population density.

Presentation material from meetings with RSAS Study stakeholders is included in Appendix A.

1 Introduction

This paper, one of three prepared for the RSAS Study, focuses on the subject of managing growth through planning for land. In the planning documents surveyed in Section 2, the Municipality and the Government of Alberta have established high-level policies relating to the use of land. Generally, these focus on providing an adequate and suitable supply of land for urban development, while also supporting development of the oil sands industry. The Municipality also concerns itself with planning for community facilities such as schools, recreation centres, houses of worship and health care facilities, along with space for expanded commercial activities. The Province has designated major conservation areas as among important land uses, through the Lower Athabasca Regional Plan (LARP).

In addition, the Municipality and Province must consider the rights and assertions of First Nation and Métis communities, including consideration of the need to preserve traditional practices and historic uses of the natural environment. These communities not only reflect an important dimension of the Municipality's history and cultural diversity, but also represent important constituencies in the land planning process.

In the Wood Buffalo context there are four primary inputs to determining the land needs for urban development:

A. Land to accommodate population and economic growth, e.g. for housing, businesses and the complementary uses that create complete neighbourhoods and successful business districts.
B. Land to accommodate roadways and other infrastructure.
C. Land in excess of the minimum needed, in order to create a competitive and open marketplace and to contribute to reduced costs for both neighbourhood and commercial land.
D. Physical constraints that limit land suitability.

Components of each of these are discussed further below.

1.1 Accommodating Population and Economic Growth

The Municipality's goal of building a community in which people live, work, play and stay is central to its neighbourhood-based land planning efforts. This means that growth should be considered broadly in terms of complete communities that include a range of housing, work opportunities, community facilities, infrastructure and green space, as well as safety from environmental nuisances and hazards. Neighbourhood land needs reflect the inclusion of a mix of desired uses as well as buffer land that may be needed to mitigate potential nuisance and hazards. Furthermore, Municipal and Provincial collaboration is necessary to determine any non-urban uses that will be allowed in the future within the Urban Development Sub-Region (UDSR), as well as to identify the servicing needs of different types of commercial and industrial activities.

The RSAS Study's forecast of population- and non-resource-based employment provide a basis for evaluating land needed to accommodate population and economic growth in urban and rural communities. While most of Fort McMurray's population increase to 2030 will be housed in the major new growth areas of Parsons Creek, Saline Creek and City Centre, additional new neighbourhoods may be needed for growth that occurs past 2030. Through Council's leadership, land needs should be analysed and assessed, and options should be

developed, consulted on, and incorporated into a revised Municipal Development Plan. In addition to new growth areas, some population growth may occur through infill development in established neighbourhoods.

Beyond considering just the activities contained within complete neighbourhoods, growth management must address neighbourhood locations to try to create convenient access to jobs, shopping, recreation, schools and health care. These and other criteria for evaluating potential locations for future growth are identified in Section 3 of this paper. Section 4 provides input into the assumptions relating to population growth. The growth forecast data are included in the Growth Forecast Technical Paper.

The RSAS Study forecasts lower growth in Fort McMurray relative to the 2011 Municipal Development Plan. While land needs have not been specifically quantified through this Study, generalized estimates indicate that the announced UDSR clearly provides adequate neighbourhood land for forecast growth well into the long-term future. There is less certainty about the amount of commercial land needed.

Not addressed in this document is the impact of future growth on land needs in the Municipality's rural areas and communities. The RSAS Study's Growth Forecast Technical Paper provides growth estimates for both within and outside of Fort McMurray. These were developed using a credible, peer-reviewed methodology, with thorough analysis and up-to-date data. The Study's projection of population growth that is beyond commuting distance from Fort McMurray is considerably higher than what was identified in the Municipal Development Plan. As with Fort McMurray's neighbourhoods, through Council's leadership, additional land needs in rural areas should be expeditiously analysed in collaboration with the Province and key stakeholders, and options should be developed, consulted on, and implemented through Municipal and Provincial policies, plans and actions.

2 Land Policy Review

2.1 Introduction

This section provides an overview of established land use policy in the Municipality and the Province of Alberta, followed by summaries of key relevant documents. The documents include land use plans and studies that provide background on demand for lands for residential, commercial, industrial and resource industry needs. In addition, there are related documents that focus on technical review of both supply and demand for these land uses.

Many of the documents surveyed for the RSAS Study are partially outdated and do not fully address the issues involved. Updates are needed reflect the RSAS Study's growth forecast, recent trends, and the evolution of policy. In particular, the Municipality's Fringe Area Development Assessment (the 'Fringe Study'), the Municipal Development Plan (MDP) and the Province's Comprehensive Regional Infrastructure Sustainability Plan (CRISP) are in need of further analysis, update and clarification so that they accurately reflect current objectives.

2.2 Land Use Policy

Land use policy for the Municipality is established at a high level in the MDP. The MDP addresses the entire geography of the Municipality. For some portions of the Municipality, Area Structure Plans provide further guidance. Finally, implementing bylaws such as the Land Use Bylaw provide the legal basis for this land planning. Prepared in 2011, the MDP identified the importance of encouraging development in the central area of Fort McMurray, which was among the reasons for preparation of the City Centre Area Redevelopment Plan (CCARP) in 2012.

In 2013, significant progress towards addressing future growth in Fort McMurray was achieved with the Government of Alberta's delineation of the UDSR. The UDSR is described by the province, in a Memorandum of Understanding between the Province and the Municipality signed on August 29, 2011, as "a provincially-designated area of Crown land surrounding the Fort McMurray Urban Service Area where future urban development will be the primary intended land use." The boundary defines the very long-term area within which the Municipality will be able to plan for additional land, in a phased manner, for urban growth in suitable locations based on factors including anticipated growth needs, existing land use patterns, suitability for development and existence of infrastructure. Action is needed to accurately identify land needs, and by working with the Province, advance the process of bringing such lands in the UDSR under Municipal jurisdiction. The RSAS study provides the necessary data to undertake the work needed to determine this. Discussion is also needed to clarify what non-urban uses may be permitted within the UDSR boundary. A cursory analysis of the UDSR indicates that it can accommodate several decades of future growth.

Provincial policy for Wood Buffalo is established through the Lower Athabasca Regional Plan (LARP). The CRISP identifies how supporting transportation, water, wastewater, education and health care infrastructure will be provided in the Athabasca Oil Sands Area (AOSA). The CRISP requires update in light of current conditions and the findings of the RSAS Study.

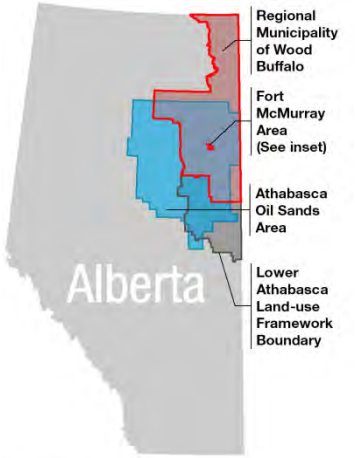
2.3 Key Policy Documents through 2013

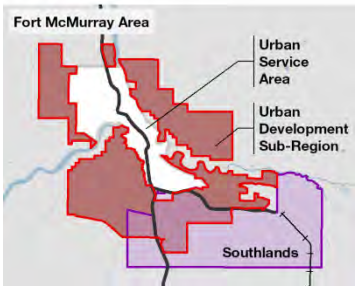
Six principal documents, completed between 2007 and 2013, address varying aspects of land and infrastructure planning for different geographic areas that include all or part of the Municipality. Each of these uses unique growth assumptions, for which the methodology and origins are not clear in all cases. Figure 1 illustrates the release dates of these documents. Figure 2 depicts the overlapping geographic areas covered by these numerous planning documents.

Figure 1: Past Study Timeline

Figure 2: The Complex Geography of Land Use Planning in the Regional Municipality of Wood Buffalo

- **Lower Athabasca Land-use Framework Region (LARP):** One of seven regions in the Alberta Land-use Framework, covering a portion of the Regional Municipality.
- **Athabasca Oil Sands Area (AOSA):** One of several oil sands development areas; this area was the focus of the Comprehensive Regional Infrastructure Sustainability Plan
- **Urban Development Sub-Region (UDSR), announced July 2013:** A boundary to facilitate long-term land use and infrastructure planning and timely release of land for urban development. As of November 2013, no land in the UDSR has been transferred from the Crown.
- **Urban Service Area (USA):** Represents the extent of urban land use in Fort McMurray in 2013, including the new neighbourhoods of Parsons Creek and Saline Creek.
- **Southlands:** An area south of the Fort McMurray airport that overlaps with the southwest portion of the proposed UDSR and extends further south and east. The bounds shown represent the extent of the UDSR Phase 1 'Southlands' study. A similar geography is referenced in multiple planning documents.





2.3.1 Lower Athabasca Regional Plan (LARP), 2012

The Government of Alberta's Lower Athabasca Regional Plan (LARP) adopted in 2012, serves as a guide for the growth of the Lower Athabasca Region, one of seven regions in Alberta's 2008 Land Use Framework. The LARP map is included here as Figure 3. The Plan includes regulatory components and outlines air and water quality management frameworks, including 'trigger' thresholds for relevant indicators. The plan area covers a substantial portion of the Municipality, as shown in Figure 2. It outlines strategic regional goals for 2012–2022.

The LARP sets high-level goals for land use in the region. The plan calls for infrastructure to be planned concurrently with land development in order to ensure the efficient use of land. It also recognizes that the timely release of Crown land to the Municipality or others for urban development is critical to meeting demand, as growth occurs.

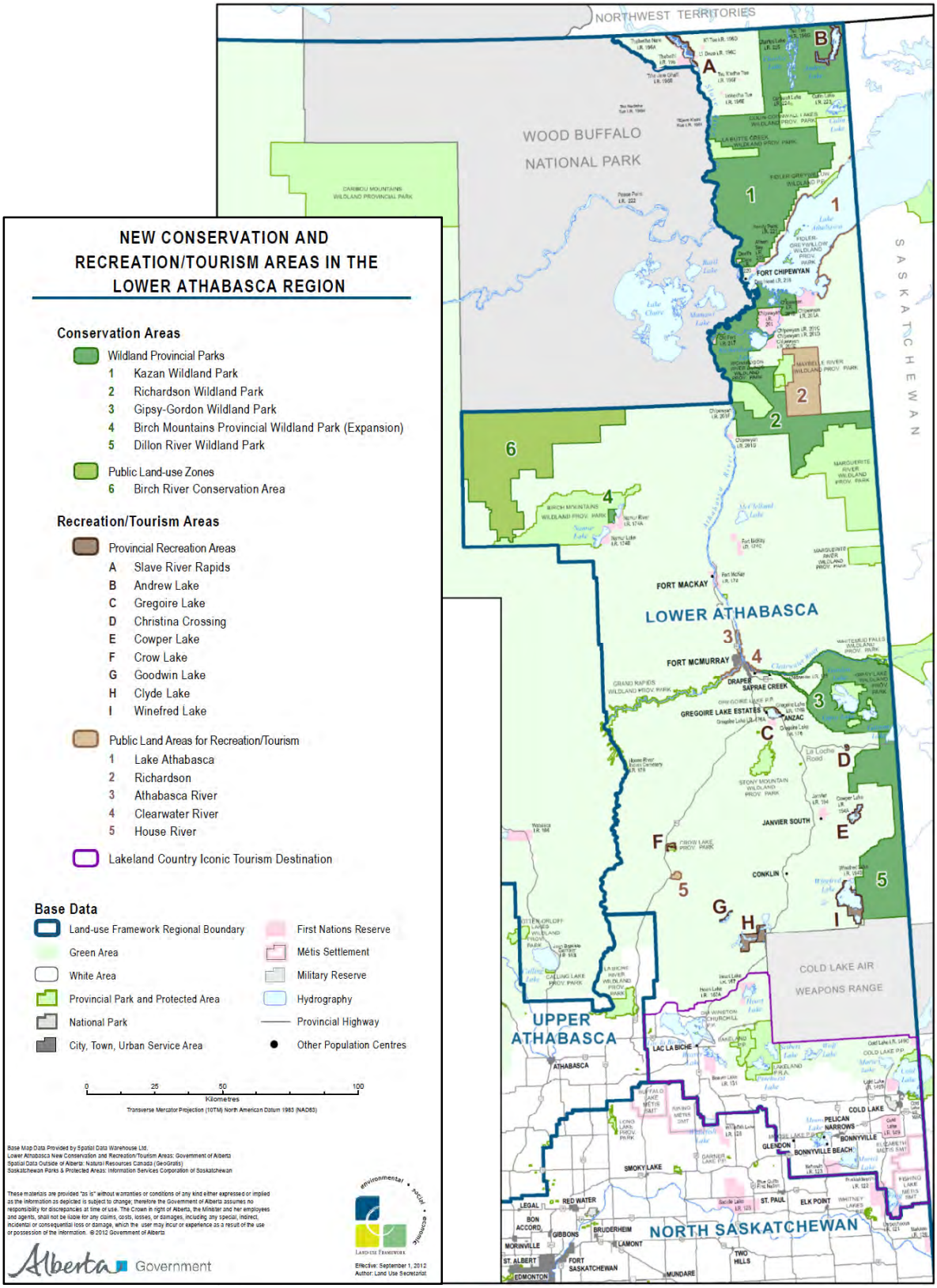
Although the LARP does not make land use recommendations or growth allocations for each community in the Municipality, it does call for a UDSR, which was ultimately announced in July 2013. It also identifies conservation and recreation areas, including areas in Fort McMurray, generally following waterways. Selected strategies from the LARP are included in Table 1.

Table 1: Lower Athabasca Regional Plan (LARP): Summary of Selected Strategies

Outcome 5 Infrastructure development supports economic and population growth	• Use the Comprehensive Regional Infrastructure Sustainability Plan (CRISP) to augment and facilitate planning in the region. • Plan for a Fort McMurray Urban Development Sub-Region to facilitate effective land use planning, efficient infrastructure construction and timely land release and land development. • Maintain opportunities for future routes and siting for pipeline gateways, transportation corridors and utility and electrical transmission corridors. • Utilize the minimum amount of land required for developments (new residential, commercial and industrial). • Plan, design and locate future development in manner that utilizes existing infrastructure and minimizes need for new/expanded infrastructure.

Source: Lower Athabasca Regional Plan, 2012

Figure 3: Lower Athabasca Regional Plan New Conservation and Recreation/Tourism Areas



Source: Lower Athabasca Regional Plan, 2012

2.3.2 Comprehensive Regional Infrastructure Sustainability Plan (CRISP), 2011

Recognizing the importance of projected growth in oil sands production in the Athabasca Oil Sands Area (AOSA), the Comprehensive Regional Infrastructure Sustainability Plan (CRISP) offers conceptual-level infrastructure development plans as a roadmap for regional growth. It establishes a high-level, long-term vision for transportation, water, wastewater, education and health care infrastructure in the area. The AOSA covers a significant portion of Alberta, including the major oil sands production area in the Regional Municipality of Wood Buffalo, as shown in Figure 2. The CRISP notes that the location and thickness of bitumen resource throughout AOSA is an important factor when planning for growth. These were important factors as the Province was determining the revised boundaries of the UDSR announced in July 2013.

The CRISP builds on two previous documents from the Government of Alberta: *Responsible Actions* and the *Alberta Land-use Framework*. Responsible Actions establishes goals for the AOSA to help build Alberta into a leader in oil sands development, for the development of healthy communities and good quality of life, and for a reduced environmental footprint. The *Alberta Land-use Framework* in part corresponds to the LARP, as discussed in Section 2.3.1 of this document, and establishes a basis for managing the province's land and natural resources through seven regional land use plans. The LARP was not yet complete when the CRISP was released.

Based on forecast bitumen production and population growth, the CRISP identifies the needed infrastructure in four 'phases' of growth, which are tied to oil sands production levels — estimated by it to reach 6.0 million barrels per day by 2045. The production levels are used to project population growth for existing communities, First Nations and Métis settlements, new growth areas and traditional work camps. The CRISP projects that Fort McMurray will accommodate 50% of the AOSA regional population, growing by approximately 46,000 residents. Table 2 provides an overview of the CRISP population projections. The RSAS Study provides an updated forecast for population and employment, based on the latest demographic and oil sands production information. See the Growth Forecast Technical Paper for more information.

Table 2: CRISP Population Growth Projections, 2008–2045 (total persons)

	Existing	Phase 1	Phase 2	Phase 3	Phase 4
Timeframe	2008	2010-2014	2015-2025	2026-2034	2035-2045
Fort McMurray	72,000	78,000	95,000	106,000	118,000
Other existing communities and settlements in the AOSA region	25,500	31,400	44,200	53,900	65,500
New growth areas	0	16,300	23,200	35,900	52,500
Work camps	12,000	3,600	3,000	3,400	4,500
AOSA regional total	110,000	129,000	165,000	199,000	241,000

Source: Comprehensive Regional Infrastructure Sustainability Plan, 2011

For each phase, the CRISP identifies where growth will generally occur and the key transportation, water and wastewater infrastructure that will be needed. It also identifies the need for new education and health care capacity. The CRISP shows a new urban growth node north of Fort McKay and project sites north of Fort McMurray, though at this time such a new community is not formally endorsed by the Province.

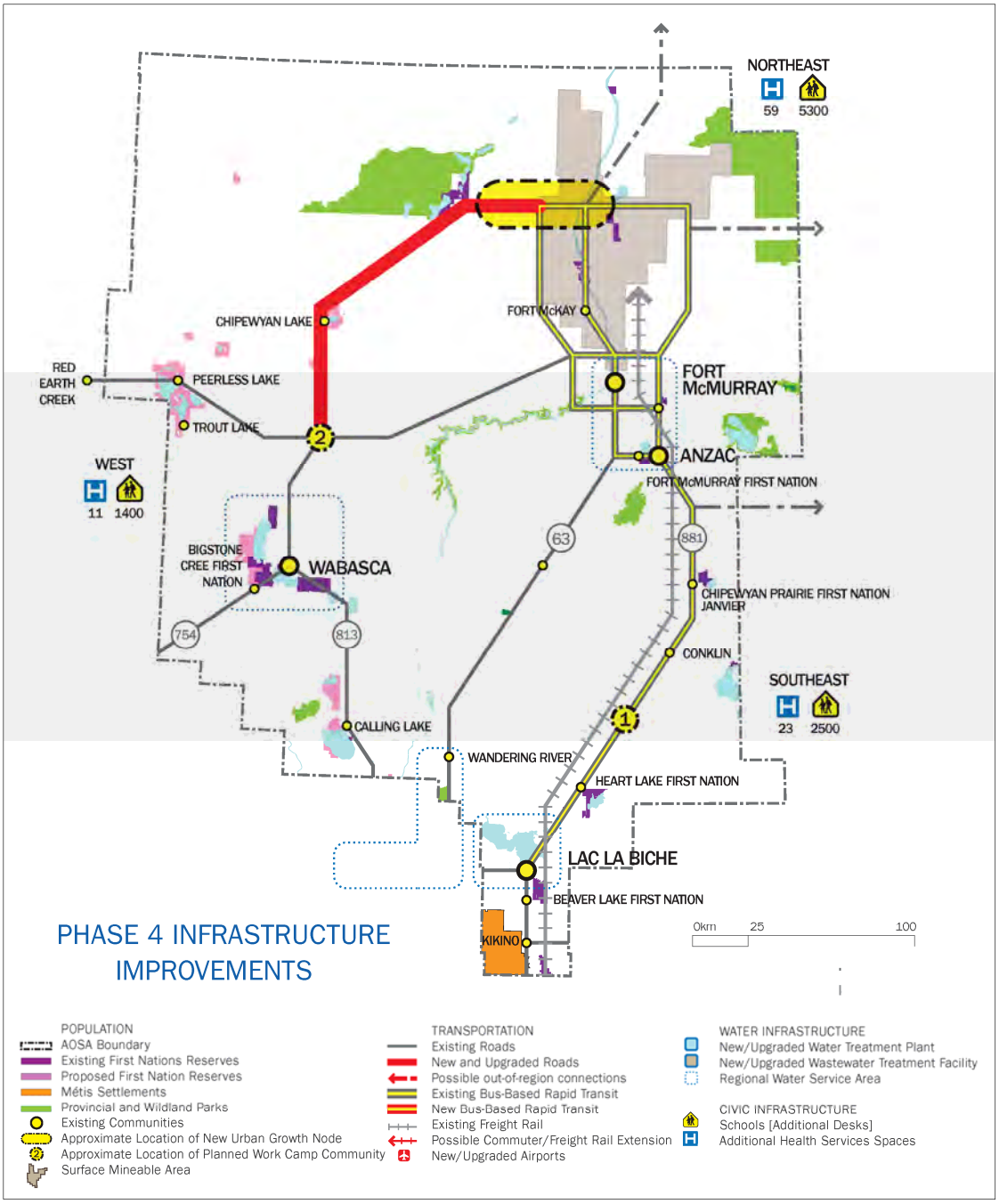
Major transportation projects include additional lane capacity on Highway 63, upgrades to Highway 881, a "ring road" bypass around both sides of Fort McMurray, new north-south highway routes both east and west of Highway 63 and new connections east and west to Fort Chipewyan, Wabasca and Saskatchewan. The CRISP also recommends extension of the railroad north for both freight and commuter service, as well as

upgrades to Fort McMurray's airport and a new airport at the new urban growth node. The future infrastructure identified in CRISP was however never prioritized or costed.

The Transportation Technical Paper that is part of the RSAS study, provides the results of a strategic analysis of the major corridors included in the CRISP, noting that the level and types of benefits they would provide to the Municipality vary and range dramatically.

Figure 4 shows the combined CRISP infrastructure improvements.

Figure 4: CRISP Infrastructure Improvements (includes improvements from all four CRISP phases)



Source: Comprehensive Regional Infrastructure Sustainability Plan, 2011

The CRISP includes a chapter on implementation, with a monitoring framework that lists several indicators related to the oil sands industry and how changes in those indicators are to be interpreted. These indicators give a full view of current and potential future growth of the oil sands industry, ranging from production rates, to camp population, to the cost of oil. Through discussions related to the RSAS Study, Provincial staff advised that these indicators are in the process of being updated.

Selected policy directives from the Plan's implementation chapter are included in Table 3.

Table 3: Comprehensive Regional Infrastructure Sustainability Plan (CRISP): Summary of Selected Policy Directives

Action 1. Continued Planning	Develop a coordinated regional Rapid Transit Strategy and industry transportation action plans for road, air and rail. Identify and protect corridors and complete functional planning and design studies for future infrastructure needs.
Action 2. Exploration of Alternative Financing Mechanisms	Undertake discussions regarding creative funding and financing approaches to implement the CRISP.
Action 3. Coordinated Implementation	Complete the Urban Development Reserve project to create a process for the timely release of Crown Land to support the CRISP's implementation. Establish a formal mechanism to oversee the CRISP's implementation, and to ensure coordination with regional planning under the Land-use Framework.

Source: Comprehensive Regional Infrastructure Sustainability Plan, 2011

2.3.3 Municipal Development Plan (MDP), 2011

The Municipal Development Plan (MDP) is the Municipality's comprehensive plan, adopted in 2011 to guide development through to 2030. The plan addresses both the urban and rural portions of the Municipality, and reflects the Municipality's strategy to focus growth such that 85% of the municipality's population (approximately 196,000 residents) live in the Fort McMurray urban service area by 2030.

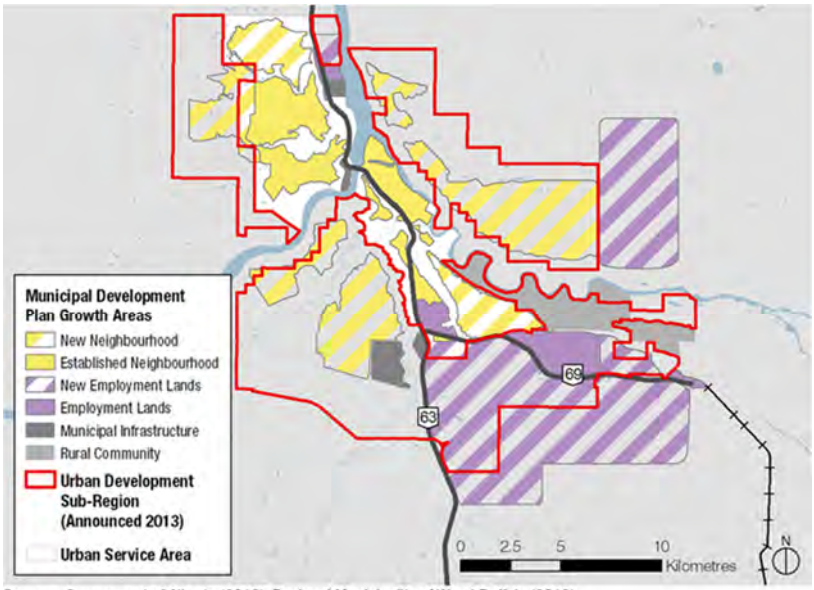
In contrast, based on more accurate data and analysis, the RSAS Study's medium growth forecast, in contrast, anticipates a population of 119,420 in Fort McMurray by 2030, which will likely be just under 65% of Wood Buffalo's population. As a result, the Municipal Development Plan will need to be updated in order to align with the updated growth forecast.

The MDP's Generalized Land Development Concept for Fort McMurray, shown in Figure 5 (following page), identifies future urban growth areas. The rationale for the very large sizes of these future growth areas is unclear. Moreover, the MDP does not assess the suitability of these areas or prioritize them for infrastructure investment or urban development. In addition to new development areas, the MDP emphasizes the importance of intensifying currently developed residential areas of Fort McMurray, with a particular focus on concentrating development in the City Centre.

The UDSR announced in July 2013 establishes the very long-term boundary of Fort McMurray's future urban growth. It is 2.5 times the size of the existing urban service area, totalling over 22,300 hectares. However, as is evident in Figure 5, a significant portion (approximately 67%) of the land targeted by the MDP for employment growth (i.e. commercial and industrial lands) falls outside the announced UDSR. These different intentions and realities will need to be expeditiously reconciled using the RSAS study's findings, if the Municipality is to be able to plan for the future in a fiscally sustainable and accurate manner.

Selected policy directives from the Plan are included in Table 4 (following page).

Figure 5: Generalized Land Development Concept for Fort McMurray and Urban Development Sub-Region



Sources: Government of Alberta (2013), Regional Municipality of Wood Buffalo (2013)

Table 4: Municipal Development Plan (MDP): Summary of Selected Policy Directives

Direction U.1 Strategic Urban Development	• Establish City Centre as focal point • Establish an urban reserve
Direction 1.1 Sufficient Land for Urban and Rural Development	• Establish an adequate supply of land for growth • Dispose of Municipal land for private development in a timely manner • Secure development reserves • Use land more efficiently via higher density development — both infill and new development
Direction 1.2 Comprehensive Development Practices	• Coordinate land development with transportation and infrastructure, making optimal use of existing infrastructure • Ensure provision of public lands
Direction 3.3 Responsible Natural Resource Development	• Expand natural resource development but minimize overall land disturbance and preserve natural aesthetics near communities • Balance oil sands industry development with landscape restoration and reclamation
Direction 4.1 Complete, Livable Communities	• Encourage a mix of land uses and walkable community design, with compact form, activity centres and a choice of mobility options • Include public social places and recreation in neighbourhood design • Design with sensitivity to climate and environment

Source: Regional Municipality of Wood Buffalo Municipal Development Plan 2011

The MDP's estimates of the land necessary for future development do not reflect the most current data. The assumption of population density incorporated into the MDP is also lower than what is currently being achieved. The Technical Papers of the RSAS Study provide updated production and population estimates, as well as a baseline neighbourhood population density based on existing urban neighbourhoods (see Section 4). The MDP estimates neighbourhood land at 45 persons per hectare, while the RSAS Study recommends maintaining a minimum gross density of approximately 114 persons per hectare in recognition of both current real estate product types and typical household size. Adjusted expectations will need to be considered with assessment of land suitability to provide an improved assessment of land needs for the coming decades.

2.3.4 City Centre Area Redevelopment Plan (CCARP), 2011

The City Centre Area Redevelopment Plan (City Centre Plan) was prepared in 2011, built upon the work completed in the MDP that identified City Centre revitalization as a key focus for growth in Fort McMurray. It envisions the evolution of the core areas of Fort McMurray into an urban environment where people live, work, play and study. The City Centre Plan anticipates a population of up to 48,100 people in the City Centre by 2030, supporting regional employment of 162,200 in the same year. It also anticipates demand for office space of up to 1 million square feet (4,400 new employees) by 2015 and 5.3 million square feet (23,300 new employees) by 2030. The basis for these projections are however unclear, and its higher-density housing projections do not seem to match the likely demand for more family-oriented units in Fort McMurray. The City Centre Plan's forecasts exceed the RSAS Study's growth forecast by a considerable margin with respect to both employment and population projected for Fort McMurray.

The City Centre Plan designates four spatial zones, as shown in Figure 6:

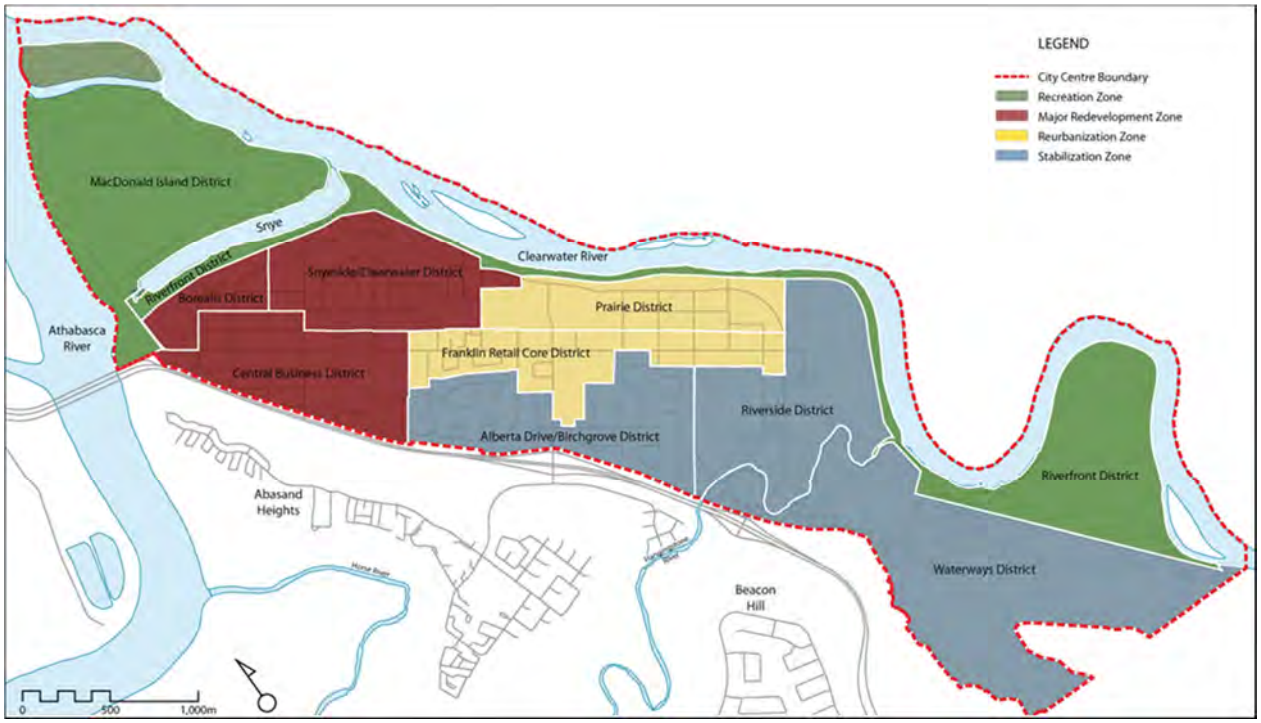
- The Downtown Major Redevelopment Zone is described as accommodating the majority of the non-oil sands employment and focusing on access via public transportation and on foot.
- The Franklin Avenue Re-urbanization Zone is envisioned as transforming from its current suburban, large-format retail character to one with multi-story buildings and less surface parking.
- The Neighbourhood Stabilization Zone encompasses those parts of the City Centre, such as Waterways, where limited change is expected and focuses on improving transportation and services.
- The Recreation Zone includes MacDonald Island and the riverfront parks.
- The Plan calls for building height limits of up to five stories in most of the Stabilization Zone (with some exceptions in the Riverside District going up to 12) and up to 12 stories in the Reurbanization Zone. The Major Redevelopment Zone is envisioned as having the greatest heights, with policies identifying sub areas where heights of 15, 25 and more stories are envisioned by the Plan. Selected policy directives from the Plan are included in Table 5.

Table 5: City Centre Area Redevelopment Plan: Summary of Selected Policy Directives

5.1 The Sustainability Plan	5.1.1.1 Promote a substantial reduction in dependence on private vehicles as a means of getting around the city. 5.1.1.2 Plan for the development of a dense, compact, mixed-use downtown core emphasizing access by public transportation.
5.2 The Connectivity Plan	5.2.1.1 Accommodate construction of required infrastructure to support connectivity.
5.3 The Transportation Plan	5.3.1.1 Promote active transportation within the City Centre. 5.3.2.1 Establish Franklin Avenue as a transit corridor accommodating all modes of transportation.

Source: Regional Municipality of Wood Buffalo City Centre Area Redevelopment Plan, 2012

Figure 6: City Centre Area Redevelopment Plan Zone Diagram



Source: Regional Municipality of Wood Buffalo City Centre Area Redevelopment Plan, 2012

2.3.5 Fringe Area Development Assessment — Urban Service Area, 2007

The Fringe Area Development Assessment, also often called the 'Fringe Study,' was completed almost seven years ago. It identified and prioritized areas for urban neighbourhood growth adjacent to the Fort McMurray Urban Service Area (USA). The study evaluated land suitability and recommended growth areas for development based on physical constraints and infrastructure costs. It also estimated land need based on population forecasts with a range of assumed population density averages. These areas are very similar to the growth areas evaluated in the later Municipal Development Plan (see section 2.3.3), with the exception of a substantially smaller Forest Heights area, as well as the omission of the Eastlands, Southlands and Highway 63 North areas.

Starting from a set of potential growth areas, the study assesses land available for development for each area based on physical constraints, estimates population capacity based on a density assumption of 95 persons per net hectare and finally estimates the cost for transportation infrastructure and servicing. Figure 7 provides an overview of the growth area assessment components.

Figure 7: Components of Fringe Study Growth Area Assessment

1 Land Available	2 Population Capacity	3 Cost of transportation, infrastructure, and servicing
Assess Area Available for Neighbourhood Uses	Calculate Population Capacity	Evaluate Costs of Transportation Infrastructure, Servicing Costs
Setback buffers from physical constraints (steep slopes. roadways. pipelines) Remove environmentally constrained areas (water, unfavourable land, muskeg land) Account for public uses (community facilities, parks) Account for transport, infrastructure, and servicing land	Set aside commercial land area based on growth area population Use assumed population density (95 persons per net hectare) to calculate total population	Assess off-site transportation costs (large scale improvements providing access to the area) Assess off-site servicing costs

After assessing the growth areas based on these components, each was ranked based on criteria including:

- Off-site transportation costs, i.e. large-scale improvements providing access to the area
- Off-site servicing costs
- Ease of implementation (i.e. size and timing of major investments)
- Environmental constraints (water, unfavorable land)
- Access to community services, balanced communities (nearness to employment opportunities)
- Contiguous development (ability to grow each sub area beyond the identified boundaries).

Figure 8 depicts the final ranking of growth areas considered in the Fringe Study.

Figure 8: Ranked Growth Areas from 2007 Fringe Study

Sources: Fringe Area Study (2007), Government of Alberta (2013), Regional Municipality of Wood Buffalo (2013)

Parsons Creek and Saline Creek were recommended for development first (shown as Phases 1a and 1b in Figure 8), and development has begun in these sub areas. The West Growth area was recommended for development second. The Forest Heights sub areas were recommended to be developed last.

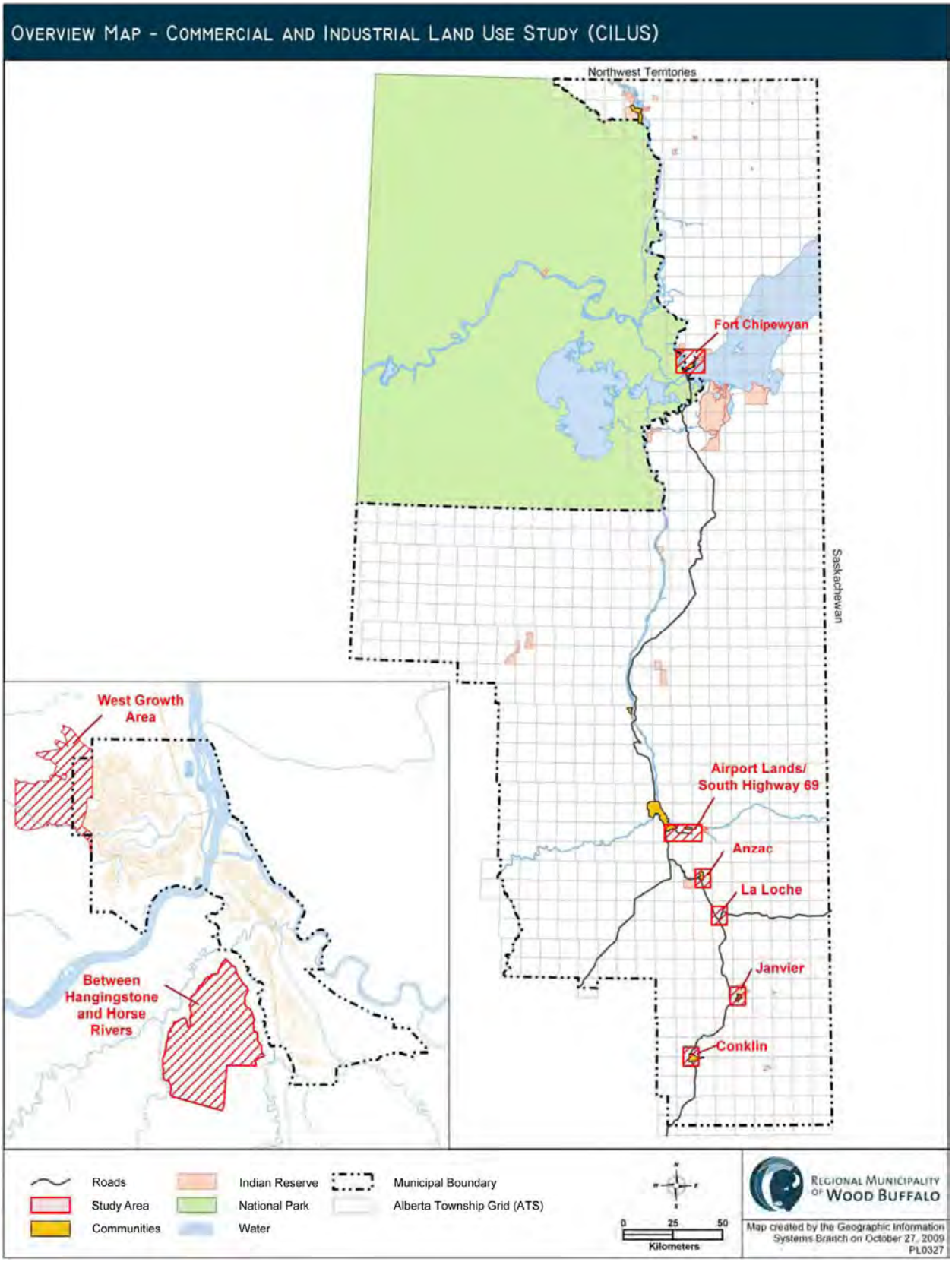
However, since the completion of the Fringe Study the RMWB has, in the Municipal Development Plan, identified a larger potential growth area in Forest Heights than was considered in the Fringe Study. The Fringe Study notes that a larger Forest Heights area might improve the cost-effectiveness of eastward growth, therefore providing a basis for a change in growth priorities. Another factor influencing the prioritization in the Fringe Study is the inconsistent treatment of the off-site transportation costs, e.g. the inclusion of costs in evaluation of the Forest Heights area but not in the westward growth areas. Future studies should consistently include transportation and other infrastructure costs as evaluation factors.

2.3.6 Commercial and Industrial Land Use Study (CILUS), 2010

The Commercial and Industrial Land Use Study (CILUS) was conducted to quantify shortages and future demand for commercial and industrial land in the Regional Municipality. It built on the Fringe Study, adding a more detailed assessment of commercial and industrial land demand. The CILUS also evaluated the supply of land for industrial and commercial development for eight areas of the Regional Municipality, including the Fort McMurray Urban Service Area. Like the Fringe Study, the CILUS offered stakeholders valuable information. However, both studies need to be updated in light of new data, changed conditions and priorities.

To assess supply, the CILUS analysis evaluated a short-list of characteristics of specific parcels (such as existing land uses, ownership, adjacent uses) and then specified additional criteria (site physical characteristics, existing infrastructure, and transportation access). Although the study provides general commentary on six sub-areas of the Urban Service Area, only the airport lands and area south of Highway 69 were evaluated for supply. The study concluded that the supply of land for commercial and industrial uses in both the Urban Service Area and the Municipality as a whole was insufficient and that the Fort McMurray Urban Service Area should be expanded to include new areas for these uses. It recommends the area south of the Urban Service Area as appropriate for this development, including the Between Hangingstone and Horse Rivers sub area, as well as the area south of the airport, as shown in Figure 9. It does not, however, factor into its analysis the increased impact of this new growth on congestion levels on Highway 63 or how it would relate to and support the expanded transportation network that has been proposed by the inter-governmental Transportation Coordinating Committee. It is of concern that Municipal staff are undertaking studies to plan to develop some of these lands without reviewing the assumptions and impacts, in light of the new information in the RSAS Study.

Figure 9: Commercial and Industrial Land Use Study Summary

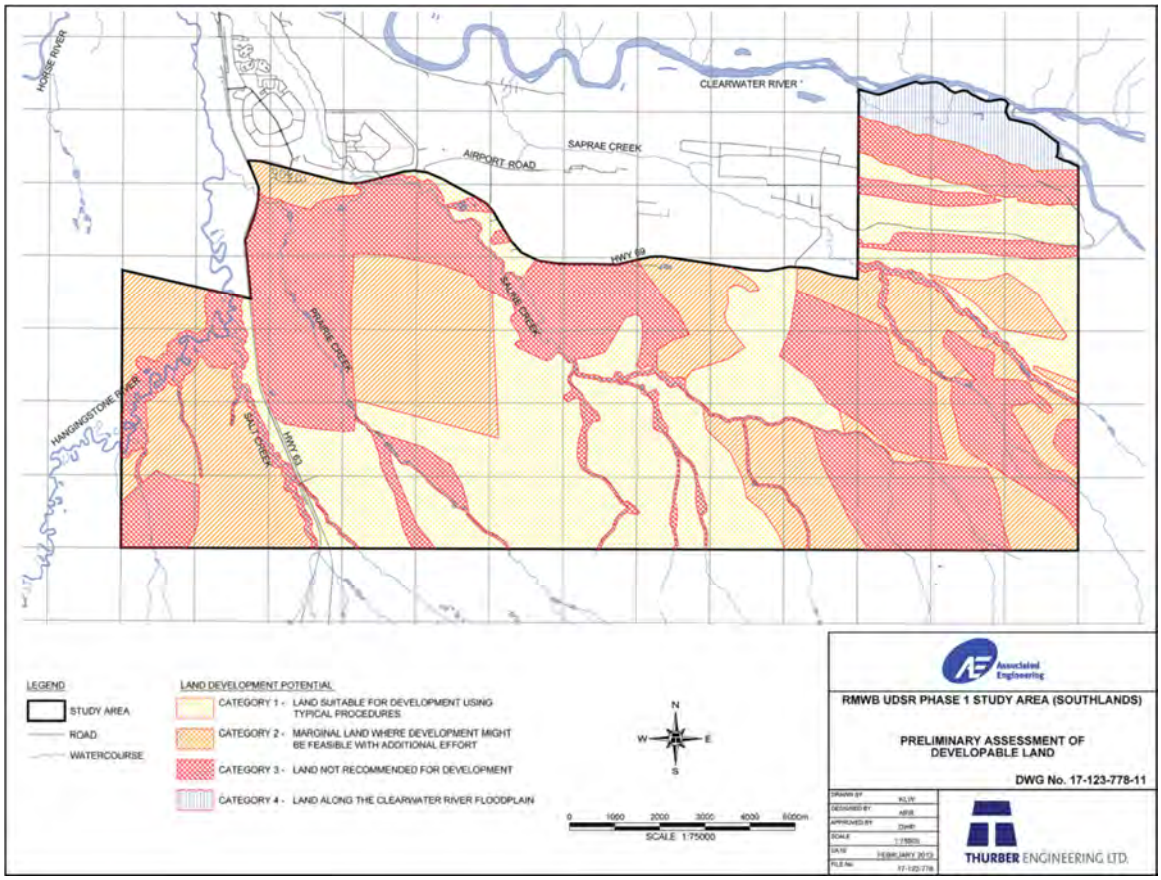


Source: Regional Municipality of Wood Buffalo Commercial and Industrial Land Use Study 2010

2.3.7 Urban Development Sub-Region Phase 1 Study Area (Southlands) Geotechnical Desktop Study, 2013

This study evaluated the development potential of an area south of the Fort McMurray airport. The study area falls substantially outside the bounds of the announced Urban Development Sub-Region (UDSR), extending further south and east (see Figure 2 on page 4). In addition, the area is almost entirely outside the Urban Service Area. The Study used available data to evaluate how suitable the land is for development, based on factors similar to those used in the Fringe Study, including slope, waterways and flood plains and wetland areas (muskeg). That suitability analysis formed the basis for preliminary hectare counts of land in four classification categories shown in Figure 10 and enumerated in Table 6. If the Southlands area is representative of the land surrounding the Urban Service Area, it illustrates the relatively low proportion of land suitable for urban development in urban expansion areas. The study did not address land demand.

Figure 10: Southlands Analysis Area



Source: Urban Development Sub-Region Phase 1 Study Area (Southlands) Geotechnical Desktop Study, 2013

Table 6: Southlands Land Suitability Categorization

Category	Area
Suitable	4,940 ha (31%)
Marginal	4,530 ha (28%)
Not Recommended	6,110 ha (38%)
Clearwater River floodplain	450 ha (3%)

Source: Urban Development Sub-Region Phase 1 Study Area (Southlands) Geotechnical Desktop Study, 2013

3 Growth Area Evaluation Criteria for Fort McMurray

3.1 Introduction

The updated growth forecast developed in the RSAS Study projects that the community of Fort McMurray will experience less overall growth, and will grow at a slower rate, than projected in the Municipal Development Plan. This is due predominantly to differing expectations for the increase in oil sands production over time. The RSAS Study growth forecast is based on up-to-date data that indicates production will reach 3.6 mbpd by 2030, sharply lower than the 6.9 mbpd expected by the MDP. Consequently, the planned communities of Saline Creek and Parsons Creek, if expedited, along with appropriate intensification-related development in Fort McMurray's City Centre and existing urban neighbourhoods, can provide adequate land for housing the city's residents in the near- and medium-term. If and when new lands are needed to be annexed into the Urban Service Area from the Crown's holdings in the UDSR, the Municipality must undertake significant work in collaboration with the Province and other stakeholders in order to understand the land needs and opportunities for different types of uses, both in and outside of Fort McMurray.

The RSAS Study provides the information needed for the municipality to quickly re-assess its growth needs for its largest, fast-growing community of Fort McMurray, and update its plans to incorporate a set of prioritized growth areas that align with integrated plans for transportation facilities and services. The results of that work will also serve as input into fiscal and capital-planning decisions.

A key part of managing growth in the Regional Municipality of Wood Buffalo is identifying when to develop land for different uses in distinct parts of the Municipality. This includes land in, adjacent to and outside the UDSR and rural communities. As discussed in Section 2 and summarized in Table 7 (following page), planning documents and studies produced since 2007 have addressed varying dimensions of Municipal growth and land need, but each has used different criteria to evaluate land suitability and different growth forecasts to estimate land need. A comprehensive growth area evaluation approach is needed, which should use a consistent growth forecast provided through the RSAS Study and consider the physical context, transport and infrastructure networks, health and safety and urban form of the community. Table 7 compares the factors considered in the RSAS Study to factors considered in earlier studies, as well as identifying the different purposes of the various studies.

Table 7: Comparison of Past Planning Documents and Related Studies

Study	Purpose	Factors Considered				
		Physical/ geology	Transport network	Infra-structure	Health & safety	Urban form
Regional Structure Action Strategy Study 2014	Establish a foundation for implementation actions to address community and industry needs, based on an accurate and consistent growth forecast and set of assumptions.	☑	☑	☑	☑	☑
Fringe Area Development Assessment 2007	Identifies and prioritizes sub areas for urban growth near Fort McMurray.	☑	☑	☑	☐	☐
Commercial and Industrial Land Use Study (CILUS) 2010	Quantifies commercial and industrial land shortages and future demand.	☑	☑	☑	☐	☐
Comprehensive Regional Infrastructure Sustainability Plan (CRISP) 2011	Establishes a long-term regional vision for transportation, water, wastewater, education and health care infrastructure.	☐	☑	☑	☐	☐
Municipal Development Plan (MDP) 2011	Establishes principles to guide the development of urban and rural areas in Municipality through 2030.	☐	☐	☐	☐	☐
Lower Athabasca Regional Plan (LARP) 2012	Serves as a high-level guide for regional growth and calls for integrated land use and infrastructure planning.	☐	☐	☑	☐	☐
City Centre Area Redevelopment Plan (CCARP) 2012	Establishes a vision for the evolution of the urban core, growing as the Municipality's commercial, entertainment and cultural centre.	☐	☑	☐	☐	☐

3.2 Urban Land Development Evaluation Criteria

In order to identify existing and future land needs in the UDSR of Fort McMurray, the Municipality must both translate growth projections into housing and land demand, and consistently apply a set of comprehensive criteria for use in evaluating the relative merits of proposed growth areas.

The criteria will:

A. Assess whether a growth area provides sufficient land based on a physical/geological assessment.
B. Serve as the basis for prioritizing candidate growth areas based on transportation network, infrastructure and ultimate urban form characteristics.

The following sections recommend evaluation criteria and guidance for application by the Municipality to identify options for neighbourhood and commercial/industrial growth areas.

3.2.1 Adequacy of Land Supply

Understanding the adequacy of land supply is fundamental to planning for any urban expansion in Fort McMurray. The more accurate, up-to-date and credible growth forecast (the 'medium' scenario) from the RSAS Study will be a key input to the process of quantifying land demand for future planning. We recommend a scoped update to the Fringe Study, which will provide the information needed to further consult on and update the City Centre Area Redevelopment Plan, Municipal Development Plan as well as the Municipality's infrastructure, transportation and capital plans.

Understanding Land Demand

Growth management activities include a set of technical steps that will "translate" the growth forecast to projections of land demand within Fort McMurray. Inputs to this process include:

1. Growth projections for population, employment and households, included in the RSAS Study's Growth Forecast Technical Paper. These form the basic assumption of the level of population and job growth to be accommodated. Further sector-based refinement of the employment forecasts will be needed to accurately predict employment land needs.
2. Identification of the full range of activities to be accommodated based on local needs and aspiration articulating, for example, the components of complete neighbourhoods and successful business districts. Section 4 illustrates the impact on land need of uses such as schools, parks and other community uses that complement housing to form complete neighbourhoods. These uses will include religious institutions, local-serving retail and services such as youth and adult day care, medical offices, banking and personal services.
3. Development characteristics
    i) Residential development characteristics, including the mix of housing unit types at different densities to provide choice and affordability, as discussed in Section 4.
    ii) Commercial development characteristics, including the mix of commercial activities (retail, office, industrial) and density.
4. Population and employment density characteristics
    i) Household characteristics (persons/dwelling unit): Essential input to determining population density, household characteristics such as average household size are included in the Growth Forecast Technical Paper. Updates to the Municipal Census may provide a basis for future updates to these characteristics.
    ii) Urban employment characteristics including essential input to determining employment density, data on persons employed in various sectors on a per-square-metre or per-hectare basis should be gathered during future market studies.

Economic factors also play a strong role in land demand. The extent to which demand is affected by changes in land cost is generally referred to as "price elasticity." This measure reflects whether high land and/or infrastructure costs may suppress demand for housing and commercial space. If demand is readily reduced by price increases, demand would be described as relatively inelastic.

Assessing Land Supply

The following sections identify criteria to be taken into account in evaluating the suitability for urban development of land that is already — or that might be designated in the future — for urban growth. The process of prioritizing growth areas requires technical analysis of the factors identified, weighting of the relative importance of the various factors based on policy considerations, environmental and fiscal sustainability and assessment of the fit between land needs and land demands under different assumptions. If multiple growth areas would be needed to accommodate forecasted growth, a comprehensive assessment would include the cost of infrastructure to serve the multiple areas.

3.2.2 Physical/Geology Criteria

The physical evaluation criteria (Table 8), properly applied, will yield an understanding of land suitability, allowing the Municipality to assess the net amount of land available for urban development in a specified area. In addition to total land availability, contiguity will be an important consideration in judging developability. For example, a growth area that is bisected by a steep-sided slope or valley may be more costly to develop than one that is not. Previous studies, including the Fringe Area Study, have addressed some, but not all, of these concerns.

Lands that are undevelopable due to physical constraints should be identified and assigned a market value of nil for the purposes of transfer from the Crown to the Municipality.

Table 8: Physical and Geological Criteria

Physical and Geological					
Topic	Applicability		Metric	Supporting Information	Criteria Source or Reference
	Neighbour-hood	*Commercial and industrial*			
A. Suitability for Development	☑	☑	% total land un suitable for development	Consider A1-A4 (below) together to determine total unsuitable area.	RSAS Study
A1. Muskeg	☑	☑	% muskeg coverage (with follow up field investigation of ability to reclaim)	Muskeg (or bog) land is best accounted for via field evaluation. An initial screen will be based on mapping data will estimate muskeg coverage and depth. If necessary, field work can assess the possibility of land reclamation via draining.	Fringe and CILUS
A2. Steep slopes	☑	☑	% steep sloped land and buffer	Per Land Use Bylaw (2010), no development is allowed within a 30-metre distance from top or bottom of 30% (or greater) slopes. Site conditions may require a greater buffer distance.	Land Use Bylaw, Fringe, and CILUS
A3. Flood zones	☑	☑	% flood zone land	Per Land Use Bylaw (2010), no land in a 100-year flood zone shall be developable. This generally includes land below the 250-metre contour for the Clearwater and Athabasca Rivers in the City Centre.	RSAS Study, Land Use Bylaw
A4. Buffer from bank	☑	☑	% land in watercourse buffer	Per Land Use Bylaw (2010), no development within a minimum of 30 metres from high water mark of named watercourses. Site conditions may require a greater buffer distance.	Land Use Bylaw, Fringe, and CILUS
B. Contiguous land	☑	☑	1–5 scale	Evaluation of the amount of contiguous, developable land available in the growth area. A '1' rating indicates high fragmentation, while a '5' rating indicates low fragmentation.	RSAS Study

3.2.3 Transport Network Criteria

The transport network criteria (see Table 9) have four critical dimensions relevant to evaluating growth areas: commute access to employment sites, traffic generation, cost of new road infrastructure and access to City Centre. Unlike previous studies, the RSAS Study emphasizes the importance of the commute trip, a connected road network, access to amenities and the comprehensive costs of new transport infrastructure.

Table 9: Transport Network Criteria

Transport network					
Topic	Applicability		Metric	Supporting Information	Criteria Source or Reference
	Neighbour-hood	*Commercial and industrial*			
A. Within 60 minutes of northern sites	☑	☐	% of jobs	Percentage of jobs north of the Urban Service Area accessible within a 60-minute commute from the area.	RSAS Study, Fringe (Balanced Community)
B. Within 60 minutes of southern sites	☑	☐	% of jobs	Percentage of jobs south of the Urban Service Area that are accessible within a 60-minute commute from the area.	RSAS Study, Fringe (Balanced Community)
C. Limited additional traffic on Highway 63	☑	☑	1–5 scale	Rating of the opportunities presented by the new growth area for primary road access points that do not direct additional traffic onto Highway 63. A '5' rating indicates low additional traffic.	RSAS Study
D. Connected streets	☑	☑	1–5 scale	Rating of the opportunities presented by the new growth area for direct access to major roadways, rather than requiring access through an existing growth area. A '5' rating indicates high street connectivity.	RSAS Study
E. Total cost of major roadways, bridges and freeway ramps	☑	☑	$	Total cost of major transportation infrastructure (in addition to local streets), inclusive of all costs, regardless of who bears cost or responsibility.	Fringe
F. Total cost of off-site roadways, bridges and freeway ramps per unit or hectare of new development	☑	☑	$ per housing unit $ per hectare	Cost of off-site transportation infrastructure per unit (neighbourhood) or hectare of development (commercial/industrial), inclusive of all costs, regardless of who bears cost or responsibility.	RSAS Study, Fringe
G. Distance to City Centre by existing and planned roadways	☑	☐	Distance in km	Measure of ease of access to the City Centre, home to the majority of office, civic, and entertainment uses. Growth areas that require more infrastructure than a simple roadway connection (such as a bridge) rank lowest.	RSAS Study
H. Enhanced access/ reduced distance to City Centre	☑	☐	Change in distance by road	Reduction in travel distance/time to City Centre resulting from a new/additional direct roadway connection.	RSAS Study
I. Growth area proximity to customers and suppliers	☐	☑	1–5 scale	Evaluation of proximity of commercial/industrial growth area to customers and suppliers. A '1' rating indicates a growth area far from customers and suppliers, while a '5' indicates close proximity.	RSAS Study
J. Accessible to prospective employees living in Fort McMurray	☐	☑	% of jobs	Percentage of new jobs to be created by the commercial/industrial growth area that can be accessed by potential employees living in Fort McMurray within a half-hour commute.	RSAS Study
K. Accessible to prospective employees living in rural communities	☐	☑	% of jobs	Percentage of new jobs to be created by the commercial/industrial growth area that can be accessed by potential employees living in rural communities within a half-hour commute.	RSAS Study

3.2.4 Infrastructure Criteria

The evaluation criteria for infrastructure (see Table 10) assess the ability to service a proposed growth area with utilities. The area's proximity to existing facilities, the existing excess capacity of those facilities and the ability to phase development all impact development feasibility and cost. The up-front and incremental costs are important considerations and are related to the size of the growth area. It is important to note that some types of industrial uses (such as laydown yards or storage facilities) may not require water or wastewater servicing, and may not need to be in or close to the Urban Service Area boundary. Current and future infrastructure capacity, as well as topographic constraints, should be added to the criteria used in previous studies.

Table 10: Infrastructure Criteria

Infrastructure					
Topic	Applicability		Metric	Supporting Information	Criteria Source or Reference
	Neighbour-hood	*Commercial and industrial*			
A. Treatment capacity	☑	☑	Yes/No	Evaluation of whether existing water and wastewater treatment plants have capacity to serve the new growth area.	RSAS Study
B. Topographic constraints	☑	☑	1–5 scale	Evaluation of extent to which significant topographic constraints to supplying the proposed development with water and wastewater infrastructure exist. Steep slopes, large elevation changes and physical features (e.g. rivers, canyons and muskeg) may require construction of additional utility infrastructure such as pumps and reservoirs. A '5' indicates low constraints.	RSAS Study
C. Phased development potential	☑	☑	Yes/No	Evaluation of whether the growth area can be connected to the existing utility distribution network, enabling market-based project phasing.	Fringe (Ease of Implementation)
D. Cost of up-front, off-site utility distribution network	☑	☑	$	Cost of up-front, off-site distribution (such as pipelines, reservoirs, pumps). Does not include internal distribution network within the growth area.	Fringe
E. Total cost of per unit or hectare of development of off-site utility distribution network	☑	☑	$ per unit $ per hectare	Cost per unit (neighbourhood) or hectare of development (commercial/industrial) for off-site servicing (e.g. pipelines, reservoirs, pumps). Does not include internal distribution network within the growth area. Normalizing by the number of units or hectares allows comparison across growth areas.	Fringe and RSAS Study
F. Ability to use existing or planned distribution network	☑	☑	Yes/No	Evaluation of the ability to take advantage of current or planned utilities that serve or will serve nearby neighbourhoods or commercial/industrial development.	RSAS Study

3.2.5 Health and Safety Criteria

Neighbourhood and non-resource industry land uses must be protected from the impacts of oil sands resource development. Specific health and safety criteria for evaluating site suitability have not yet been established, as noted in Table 11 below. This is because the most appropriate way to protect neighbourhoods and other community uses is not well studied, nor are there appropriate standards or thresholds. For example, one commonly used way to protect non-industry land uses is to provide physical separation in the form of a buffer, but the necessary size of the buffer and which uses should be disallowed require further research and analysis. Some uses, possibly including recreation areas, may not be sensitive to nearby industrial activity, and hence might be suitable for inclusion in buffer areas.

Regardless of the standards and metrics selected in the future, the Province will need to pay careful attention to community health and safety when approving industrial projects and activities.

Table 11: Health and Safety Criteria

Health and safety					
Topic	Growth Area Type		Metric	Supporting Information	Criteria Source or Reference
	Neighbour-hood	*Commercial and industrial*			
A. Health, safety, and nuisance protection	☑	☑	To be determined	More research to identify appropriate method and standards is necessary.	RSAS Study

3.2.6 Urban Form Criteria

Enhancing quality of life in Fort McMurray will be an important consideration in evaluating potential growth areas, and is translated into urban form evaluation criteria (see Table 12). Convenient access to destinations such as neighbourhood and City Centre shopping and dining and unique community assets like MacDonald Island, the hospital and Keyano College is key to making Fort McMurray an appealing place to settle.

Previous studies have not considered issues like these that relate to overall urban structure and form — how different parts of the community relate to each other and to their surroundings. When selecting from among several potential growth areas, the Municipality should follow a logical order — such as growing adjacent to existing areas as infrastructure and the transportation network allow — and should consider compatibility with neighbouring land uses. Finally, for industrial and commercial areas, the Municipality should consider the adequacy of assembled land and appropriate adjacencies that avoid adverse impacts on neighbouring activities.

Table 12: Urban Form Criteria

Urban form					
Topic	Applicability		Metric	Supporting Information	Criteria Source or Reference
	Neighbour-hood	*Commercial and industrial*			
A. Logical order of development	☑	☐	1–5 scale	Evaluation of proximity to existing development (at a point, along one full side, or on more than one side). Separation by a water body is acceptable, and can still be considered to be abutting the growth area. A '5' rating indicates close proximity.	RSAS Study
B. City Centre as geographic centre	☑	☑	1–5 scale	Rating of how new growth area does or does not change the geographic centre of the urban area. A '5' represents little change in the geographic centre, while a '1' represents a significant shift.	RSAS Study
C. Overall mix of housing types	☑	☐	1–5 scale	A '1' represents a predominantly single family neighbourhood, while a '5' represents a largely multifamily neighbourhood. Performance on this criterion depends on goals for growth area.	RSAS Study
D. Adjacent uses	☐	☑	Yes/No	Evaluation of whether current and planned adjacent uses are compatible with industrial use, based on Land Use Bylaw, any relevant Area Structure Plans and Municipal Development Plan. Consider planned uses based on Neighbourhood Growth Areas.	CILUS and RSAS Study
E. Proximity to trails and other recreational facilities	☑	☐	% of land within 0.5 km of trails or other major recreational resources	Percentage of growth area land in close proximity to access to trails or other major recreational resources (protected natural areas, recreation centres, citywide parks, etc., but not neighbourhood parks).	RSAS Study
F. Views	☑	☐	1–5 scale	Evaluation of natural area or skyline (i.e. Fort McMurray) views from the growth area. Views are a way to measure of quality of life. A '5' rating indicates excellent views.	RSAS Study

3.3 Growth outside Fort McMurray

Although Fort McMurray will remain the largest community in the Municipality, based on up-to-date data and a more credible commute-based methodology, the RSAS Study growth forecast projects that over one-third of the Municipality's population (69,400 residents) will live outside of Fort McMurray's urban area by 2030. This is both a much higher share and total population increment than was projected by the 2011 Municipal Development Plan. The RSAS Study identifies the need for a larger effort to plan for and manage growth in the Municipality's rural areas.

There are several options for where rural growth may occur, including existing rural communities, project accommodations and open camps. The Province and Municipality do not consider new towns in the rural area to be a viable option as of this time (Fall 2014). The Municipality, working with the Government of Alberta, must lead in undertaking the needed analysis and develop policy to allocate and plan for growth in the rural area, as well as assess the implications for land and infrastructure demand. In addition to criteria noted above, considerations in these decisions include:

1. Minimizing impact on existing rural communities, while ensuring their sustainable population growth.
2. Minimizing environmental and social impact.
3. Maximizing economic productivity and sustainability for communities and industry.
4. Consideration for employment-only service areas for clusters of support services.
5. Optimizing cost and feasibility to provide water, wastewater, transportation and other services to rural communities and activities (e.g. cost per kilometre, total cost).
6. Avoidance of impacts on rural residential areas from nearby industrial areas (e.g. physical buffer or other protection).

4 Housing Type and Density Assumptions

4.1 Introduction

To best enable future growth, the Municipality should identify and prioritize existing and future growth areas, as noted in Section 3. To assess the adequacy of land supply, the Municipality needs both an up-to-date growth forecast and realistic assumptions regarding housing and population density on a per hectare basis. The RSAS study provides this necessary information and data.

This section provides a basis for the assumptions needed to forecast future housing needs. Work going forward should tailor these assumptions based on market demands for different mixes of unit types and the local development industry's ability to deliver them.

The RSAS Study included an analysis of urban housing in order to help provide a clearer picture of the land and infrastructure that will be needed to support future community and industrial growth. The analysis consisted of an assessment of neighbourhood density in Fort McMurray based on 2012 Municipal Census data. As noted in Section 2, past studies sponsored by both the Government of Alberta and the Municipality used inconsistent assumptions regarding both housing and population, making estimates of land demand difficult to compare reliably.

The urban housing and population density material in this section should serve as a basis for consistent, fact-based assumptions in upcoming planning activities. The analysis presented here uses the 2012 Municipal Census housing mix, household characteristics and the physical form of existing neighbourhoods to characterize the typical housing types and unit mix of Fort McMurray's neighbourhoods. Based on this information, the analysis calculates an average existing population density for urban neighbourhoods and for the Lower Townsite (which includes the City Centre). The analysis estimates the existing gross population density of the urban neighbourhoods (excluding the Lower Townsite) to be approximately 114 persons per hectare. It estimates the existing gross population density of the Lower Townsite to be 255 persons per hectare. These figures account for the land needed for local infrastructure and reserves for municipal and community facilities.

These densities can be used as minimum, or "baseline," densities for new neighbourhoods, unless the Municipality determines that a greater ratio of land is needed for infrastructure and community facilities. The Lower Townsite data may be of particular interest in relation to intensification associated with implementation of the City Centre Area Redevelopment Plan. In either case, in order to better reflect existing development intensities, future planning should assume significantly higher densities are necessary than the low densities stated in the 2011 Municipal Development Plan, particularly for neighbourhood growth areas.

The following sub-sections introduce the Municipality's dominant housing types, existing housing mix and existing densities by housing type, and they conclude with neighbourhood density estimates.

4.2 Development Density

The urban housing analysis assesses five types of housing units that are likely to form the Municipality's future housing stock. Each type differs in lot size, building stories, average household size and density. The types include:

1. **Single Family (detached):** These are the lowest density unit type and typically have the largest lot sizes. They also correspond to the largest average household size of any type.
2. **Single Family (semi-detached/row house):** While these housing units are higher density than their detached counterparts, they are lower than non-single family unit types.
3. **Townhome (multi-story):** Townhomes are attached housing units with multiple stories (typically three). On average, they are the second-highest density housing type after Apartments.
4. **Manufactured home:** These homes are typically built on very small lots and are more dense than other single-family housing types, but less dense than multi-family and apartment units.
5. **Apartments:** These are the densest housing type, averaging approximately six stories and having the smallest floor area per unit.

Figure 11: Fort McMurray's Neighbourhoods

In assessing development density, this analysis distinguishes between Fort McMurray's Lower Townsite and the predominantly residential 'urban neighbourhoods' that form the remainder of the urban area. As the center of commercial activity in Fort McMurray — host to services, shopping, restaurants, entertainment and public uses — the Lower Townsite has a higher-density housing stock with a distinct mix of dwelling unit types. In contrast, the urban neighbourhoods are predominantly residential in character and have lower development densities. Although the Lower Townsite is the center of civic and commercial life, the urban neighbourhoods are host to a variety of uses such as public facilities, commercial (retail and office), community uses such as schools and houses of worship and transportation uses such as roads.

4.3 Existing Housing Type Mix

Table 13 presents the housing type mix in each of Fort McMurray's neighbourhoods in 2012. It details the number of units by type, as well the share of each neighbourhood that type represents.

Table 13: 2012 Fort McMurray Neighbourhood Housing Type Mix

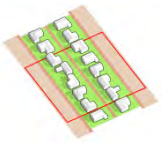
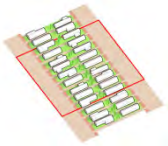
Neighbourhood	Single Family		Semi-detached		Manufactured		Townhome		Apartment		Total
	Units	%	Units	%	Units	%	Units	%	Units	%	Units
Lower Townsite	851	24%	119	3%	11	0%	123	3%	2,446	69%	3,550
Abasand Heights	367	28%	282	21%	11	1%	347	26%	309	23%	1,316
Beacon Hill	484	72%	31	5%	47	7%	45	7%	64	10%	671
Gregoire	125	9%	11	1%	984	73%	131	10%	102	8%	1,353
Thickwood	3,182	62%	457	9%	48	1%	538	10%	936	18%	5,161
Timberlea	5,460	54%	460	5%	952	9%	885	9%	2,348	23%	10,105
Waterways	135	59%	5	2%	88	38%	1	0%	1	0%	230
Total Units	10,604	47%	1,365	6%	2,141	10%	2,070	9%	6,206	28%	22,386

Source: Regional Municipality of Wood Buffalo Municipal Census, 2012

4.4 Existing Densities

Table 14 provides additional data on population and housing density in urban neighbourhoods and the Lower Townsite, based on 2012 Municipal Census data.

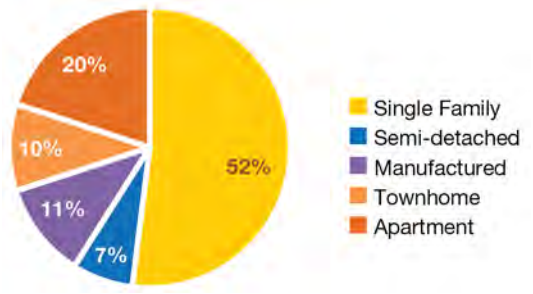
Table 14: 2012 Typical Existing Density by Housing Type by Neighbourhood Type

Type	Image	Typical Units/ ha (net)	Typical People/ ha (net)	Units/ha (gross**)		Percentage of dwelling type (%)		Density by dwelling type (unit/ha)	
				Urban neighbour-hoods*	Lower Townsite	Urban neighbour-hoods*	Lower Townsite	Urban neighbour-hoods*	Lower Townsite
Single Detached		16	54	12	15	52	24	6	4
Semi-Detached		25	78	19	24	7	3	1	1
Manufactured home		33	93	25	31	11	0	3	0
Townhome		46	138	35	44	10	3	4	4
Apartment		155	354	119	148	20	69	24	102
					Gross Average Dwelling Unit Density**			38	111

Note: * Urban Neighbourhoods includes total dwellings in all urban neighbourhoods except Lower Townsite in Census 2012
** Gross includes land for roads and public institutions (estimated at 30% for Urban Areas, 5% for Lower Townsite)
Source: Regional Municipality of Wood Buffalo Municipal Census 2012

As seen in Figure 12, the predominant housing type in the urban neighbourhoods is the single-family detached home, representing just over half the housing units. Typical single-family urban neighbourhoods are built to house about 54 people per hectare. Meanwhile, apartments represent 20% of the housing stock in urban neighbourhoods and house about 354 people per hectare. In the Lower Townsite, 69% of units are apartments, and these are built at greater density. The RSAS Study growth forecast anticipates a similar mix of housing unit types in 2030.

Figure 12: 2012 Urban Neighbourhood Housing Mix



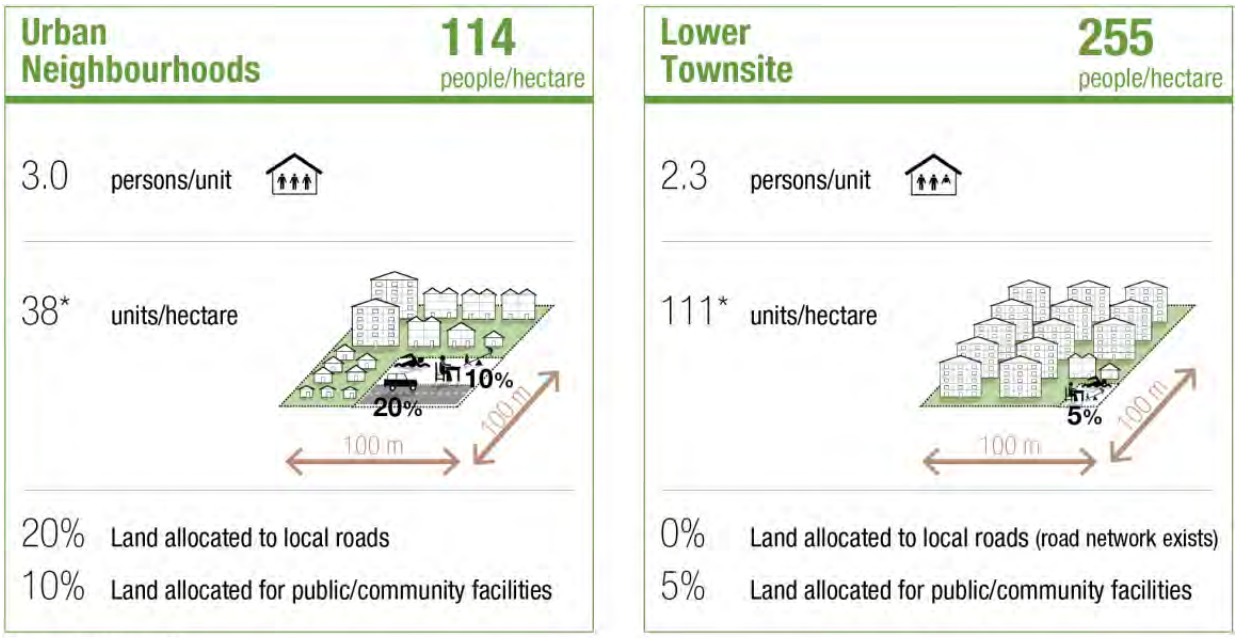
Does not include the Lower Townsite

4.5 Density Estimates: Planning for Land

Based on typical gross average dwelling unit densities, as well as lands set aside for community and transportation uses, this analysis estimates gross population density for urban neighbourhoods and the Lower Townsite. The results, summarized in Figure 13, depend on the assumptions used for household size and land allocated to non-residential uses such as roads and community facilities.

The densities provide a starting point and should be used as minimums, or baselines, for planning, unless the assumptions used as inputs are changed. For instance, depending on the housing mix of a particular proposed growth area, the units per hectare and household size may vary. Some stakeholders have suggested that there may be unmet demand for larger lot housing catering to larger families. The data in the Growth Forecast Technical Paper can be used to determine how many such larger family households may require such larger format housing in the future. Following this, a decision to alter a portion of the lands and the dwelling unit mix in the Parsons or Saline Creek neighbourhoods can be taken, in order to accommodate them. Alternatively, in the case of infill development, the amount of land set aside for roads or some public/community facilities may be decreased. The planned density of proposed growth areas should only vary based on changing these assumptions.

Figure 13: 2012 Typical Fort McMurray Housing and Population Density



Based on 2012 Housing Mix

* Gross density includes land for roads and public institutions

** As reported by the 2012 Municipal Census, average household size for Urban Neighbourhoods (excluding Lower Townsite) is 3.0 people per unit. Lower Townsite average household size is 2.3 people per unit.

Appendix A: May/June 2013 Stakeholder Presentation

The information in this appendix was presented as part of the RSAS study at two meetings: one in May and one in June 2013. It is provided here because it contains useful information for growth management and land planning.

May 24, 2013 Stakeholder Session Presentation Material on **Land Budget**

Municipal Development Plan: Key Directions relating to Land Budget

Direction 1.1 Sufficient Land for Urban and Rural Development

- *1.1.1. Make efficient use of available land*
- *1.1.2. Establish Development Reserves*
- *1.1.3. Make land available for development*

Direction 3.3 Responsible Natural Resource Development

- *3.3.1 Support the responsible development of the oil sands industry*
- *3.3.2 Expand responsible natural resource development*

Direction 4.1 Complete Livable Communities

Land Budget

Land Demand

Accommodate Growth

+

Accommodate Infrastructure

+

Contribute to reduced housing costs

Land Available

Land Potentially Available in UDSR

+

Land Available in USA

Understanding Land Demand

Land Demand

Accommodate Growth

+

Accommodate Infrastructure

+

Contribute to reduced housing costs

Accommodate all Activities

- Projected in MDP:
  - Residential
  - Commercial
  - Industrial
  - Green (inc. undevelopable)
- Added in RSAS:
  - Community Facilities
  - Transportation corridors and facilities
  - Other infrastructure

Understanding Land Demand

Land Demand

- ✔ Accommodate Growth
- \+
- ✔ Accommodate Infrastructure
- \+

Contribute to reduced housing costs

Supply in excess of the minimum needed to meet demand in order to contribute to a normalizing of housing prices

7 Land Budget

Land Budget

✔ Land Demand

Accommodate Growth

\+

Accommodate Infrastructure

\+

Contribute to reduced housing costs

Land Available

Land Potentially Available in UDSR

\+

Land Available in USA

8 Land Budget

Understanding Land Available – UDSR

Initial Considerations

- Development constraints (watercourses, slope, muskeg)
- Safety, health or nuisance concerns
- Urban service plans
- Location relative to USA
- Location relative to work sites
- Bitumen Resource value
- Natural Resource values

Land Available

Land Potentially Available in UDSR

+

Land Available in USA

Understanding Land Available – USA

Considerations

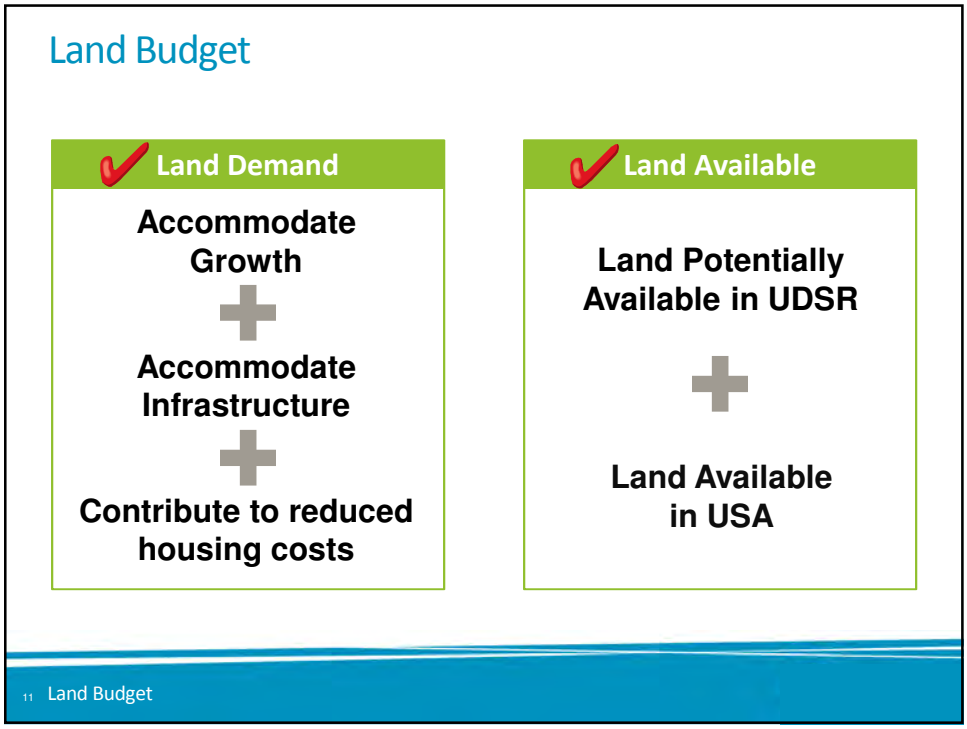
- Anticipated new/expanded neighborhoods
  - Parsons Creek
  - Saline Creek Plateau
- City Centre McMurray
  - Vacant sites
  - Potential redevelopment and intensification sites

Land Available

✔ Land Potentially Available in UDSR

+

Land Available in USA

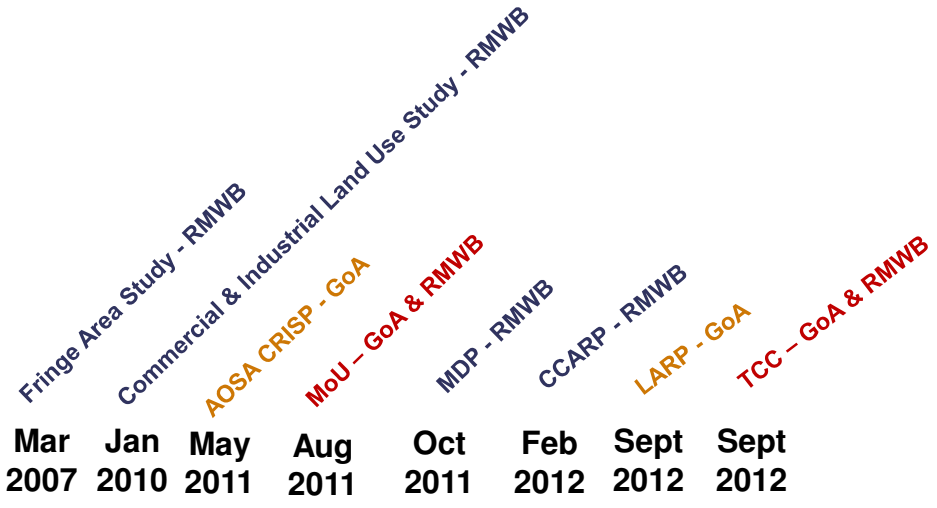

Land Budget
Land Demand
Accommodate Growth
+
Accommodate Infrastructure
+
Contribute to reduced housing costs
Land Available
Land Potentially Available in UDSR
+
Land Available in USA
11 Land Budget


June 6, 2013 Stakeholder Session
Presentation Material on
Planning for Land
2a. Foundations

"Translating" Growth Projections to Land Demand

0. Re-Cap Provincial and Municipal Information
1. Growth Projections: Full range of activities to be accommodated
2. Household characteristics (persons/dwelling unit)
3. Urban Employment characteristics (square meters/employee)
4. Development characteristics (density, land coverage, height, etc.)
5. Need for health, safety, and environmental protection
6. Urban form (mix of areas with different character)

Relevant Policy documents since Radke Report (2006)



RMWB Fringe Area Study (preliminary review)

- Evaluated land needs based on population density of 65, 80 and 95 ppha
- Estimated cost of key infrastructure
- Evaluated land suitability
- Ranked future growth areas for phasing
  - Excluded west ring road costs in evaluating West Growth Area
  - Recognized possible shift in evaluation based on future changes in area boundaries

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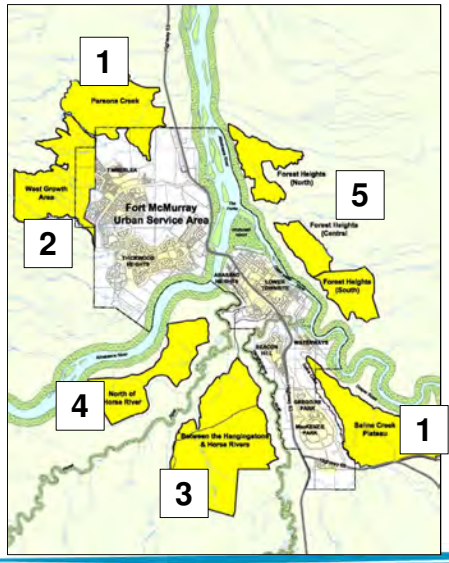
Fringe Area Development Study: Urban Service Area

Future neighbourhood growth areas from Fringe Study, with recommended phasing.



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Commercial and Industrial Land Use Study - RMWB

- Addresses "critical" need for commercial and industrial land in RMWB
- Makes recommendations on the optimal future location and mix of industrial in both urban and rural areas.
- Recommends establishing industrial area in USA west growth area with western ring road
- Assesses biophysical suitability of the identified areas for future development

AOSA CRISP – Government of Alberta

- Fort McMurray continuing as region's primary centre
- Prevalence of camps to be reduced
- Transit a major feature of the transportation system
- Phased infrastructure planning linked to oil projection levels and population growth.
- Monitoring framework to track indicators and provide a fact-based approach for changes to the pace of infrastructure development
- Covers period to 2045

AOSA CRISP Objectives and Guiding Principles– GoA

A1a. Reduce the development footprint associated with population growth and infrastructure development.

A1b. Direct growth pressures away from environmentally sensitive areas.

A2a. Maximize potential for oil sands workers and other residents to commute by transit.

AOSA CRISP Objectives and Guiding Principles– GoA

B1a. Respect local visions and aspirations as expressed through local meetings, local plans such as MDPs & Traditional Use Studies

B1b./B2a Direct growth to areas that currently offer, or have the potential to offer, a diverse choice of housing options and a wide range of services and amenities.

B2c. Ensure availability of land to support growth and provide for affordable housing options.

RMWB – Municipal Development Plan

- Assumes most of region's growth in Fort McMurray – 85% by 2030
- Estimates land needed for range of urban purposes
- Assumes residential density of 45 pph
- Includes Generalized Land Development Concept for Fort McMurray with urban expansion areas (next slide)
- City Center assumed to add 36,000 residents
- New neighbourhoods assumed to add 72,000 residents
- Existing neighbourhoods assumed to add 12,000 residents
- Calls for establishment of urban reserve

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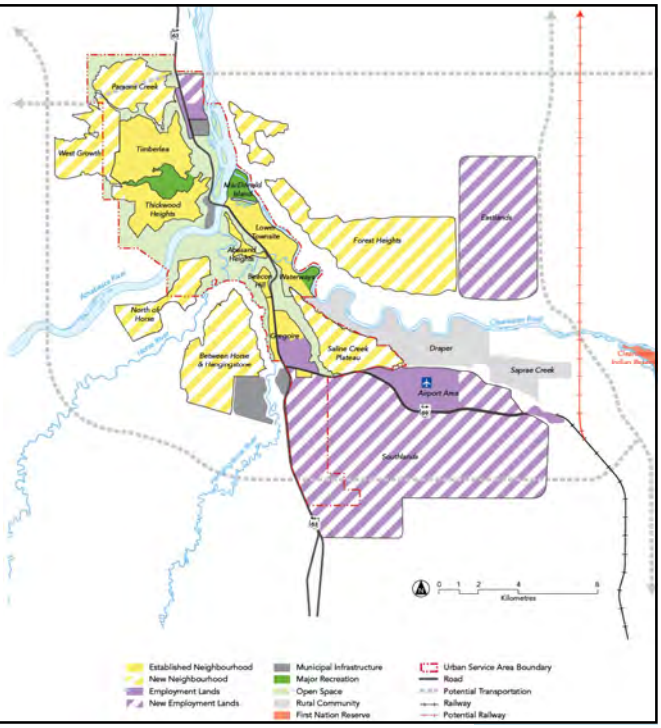
Fort McMurray Generalized Land Development Concept (MDP)



LARP - GoA

- Use the CRISP (Comprehensive Regional Infrastructure Sustainability Plan) to augment and facilitate planning in the region
- Plan for a Fort McMurray Urban Development Sub-region
  - facilitate effective land-use planning, efficient infrastructure construction and timely land release and land developments as Fort McMurray continues to grow
- Utilize the minimum amount of land required for developments (new residential, commercial and industrial)
- Plan, design and locate future development in a manner that utilizes existing infrastructure and minimizes the need for new or expanded infrastructure.
- Air and Water Quality frameworks

RMWB CCARP & Bylaw

- CCARP envisions significant intensification of Centre City, with buildings up to 25 storeys in specified locations
- Emphasis on creating a lively urban centre with high quality public realm and range of activities including significant office and retail activities
- Bylaw enables wide range of densities and building types
  - Parking requirements one impediment to realization of plan

Arup Team Observations

- Prior efforts reflect different perspectives and responsibilities of provincial and municipal agencies
- Technical basis for key factors has changed (constraints assessments, baseline population distribution)
- Assumptions about urban development have changed
- Trends since 2010 different than anticipated
- Staffing changes and limited documentation associated with some materials make it difficult to rely on some parts of earlier work
- Present efforts – TCC and RSAS – offer new opportunities reflecting collaborative sponsorship

June 6, 2013 Stakeholder Session Presentation Material on **Planning for Land** 2b. Analysis

RSAS Forecasting and Land Supply Analysis

- Hemson Consulting – leading work on detailed examination of forecasts and recommendations for use in RSAS. Hemson work will be available for review in advance of July meeting
- Arup team continuing work on built environment factors, especially average density assumptions
- RSAS preliminary analysis presented today

RSAS Preliminary Analysis

- Reviewed multiple RMWB / USA growth projections
- Based USA land demand on high end of growth projections and low end of average density
- Considered generalized sub-area capacity within proposed UDSR *(note: proposed UDSR was superseded by July UDSR announcement by Government of Alberta)*
- Assessed access and connectivity issues
- Identified emerging policy issues based on preliminary analysis

Comparison of Growth Forecasts

	Build-out Year	RMWB	Fort McMurray USA	FMM % of RMWB – forecast yr	Timing	Bitumen levels forecast (mbd)
CRISP	2045	240,500	117600	49%	4 phases	6.0
Fringe Area Study	2016		115,404 to 200,144		Forecasts to 2010 and 2016	
CILUS	2031	158,700 – 233,300				
MDP	2030	231,000	196,300	85%	4 time periods	6.9

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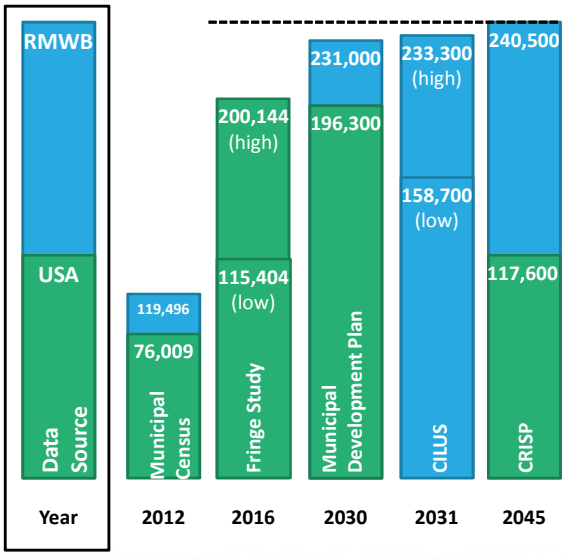
Comparison of Population Forecasts



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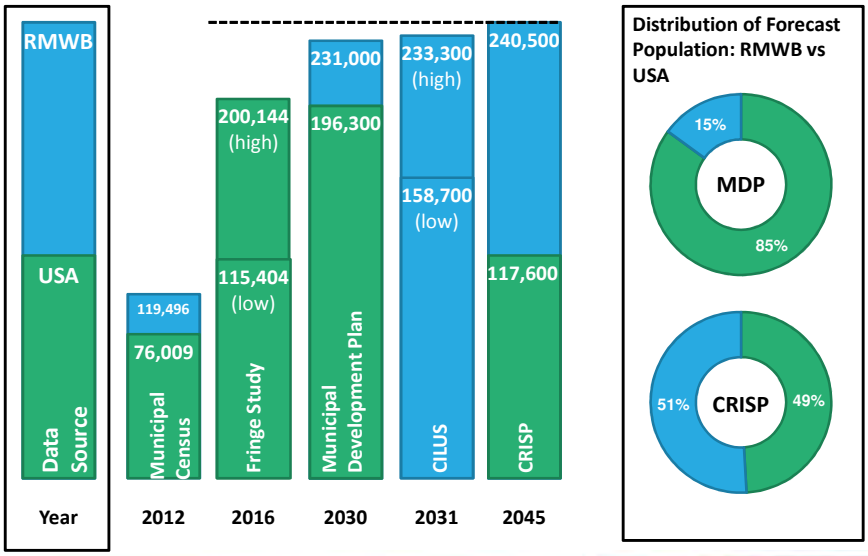
Comparison of Population Forecasts



RSAS **Preliminary** Analysis of UDSR

- **Provisionally** concludes that UDSR as proposed has capacity for long term growth
- Finalizing requires:
  - Verifying land suitability for development *(not included in RSAS scope)*
  - Re-examining growth forecasts and land needs with further team analysis as input *(included in RSAS scope)*

RSAS: Possible Topics

Provided that the provisional conclusion regarding UDSR land supply is retained, the RSAS might* establish a basis for:

1. Prioritization of growth areas
2. Alignment of infrastructure and land use planning
3. Land release to enable RMWB to increase its control over planning for urbanization
4. Establishment of monitoring systems
5. Reservation of land for urban uses subject to monitoring that might release land for industrial use

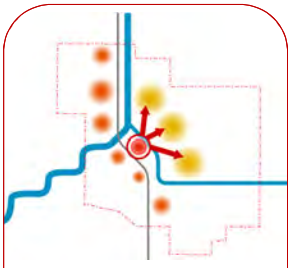
*depending on Task Force direction

Prioritization of Growth Areas – Preliminary Factors

1. Commute time to industrial sites
   - Influences:
     - ability to attract permanent population
     - Quality of life
     - Transit opportunities and roadway congestion
2. Cost and timing of essential transportation and civil infrastructure
3. Urban form factors, esp. support for City Centre
4. Logic of longer-term plan for growth or maturity
5. Impact on industrial activities

Opportunities for Neighbourhood Growth

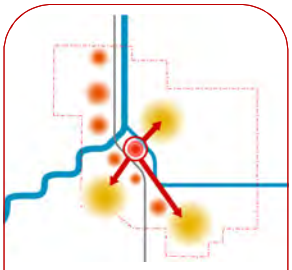
EASTERN EXPANSION



New urban growth to the east of the City Centre area.

New transport infrastructure required

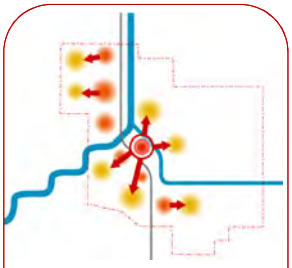
RADIAL GROWTH



Urbanization retains city core in geographical centre.

New transport infrastructure

DISPERSED DEVELOPMENT



New residential areas to north and south extend existing settlements.

New transport infrastructure required

35

Monitoring Indicators

CRISP Indicators

a) Industry indicators: 3
b) Population: OASA, camp population
c) Traffic Counts
d) West Texas Intermediate/ Western Canada Select
e) Cost of construction
f) Cost of Carbon

RSAS – further work on indicators

a) Land supply adequacy
b) Infrastructure
c) Industrial trends
d) Actions to implement RSAS including land transfer

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RSAS

Regional Structure
Action Strategy Study

Fall 2014