# Regional Strategic Transportation Plan
# Regional Municipality of Wood Buffalo

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**Abstract:**

The key economic engines in Alberta's Regional Municipality of Wood Buffalo are oil sands development, gas processing, forestry, and tourism activities. The Municipality's rapid growth in the past few decades has been mainly driven by large scale investments in oil sands projects; this growth has resulted in significant pressure on the Municipality's transportation network. Additionally, some rural communities surrounding Fort McMurray do not have access to an all-weather road network. Oil sands activity around the Municipality is increasing the need for more direct connections between these regions to ease the movement of goods, equipment, and people.

The Municipality is currently experiencing a variety of development pressures. The Municipality's 2008 population was approximately 103,000 people and is expected to nearly double to 204,000 people by 2028. This population forecast is based on construction and operation employment activities associated with future oil sands and other resource-based industry projects. Ongoing improvement and expansion of the Regional Municipality's transportation network is vital to sustaining this anticipated growth.

The Regional Strategic Transportation Plan addressed long-term transportation system requirements within the municipality. This study addressed required improvements to the existing regional transportation network and made recommendations for new connections that will allow the municipality to achieve its full potential as a major economic contributor in Canada. This study investigated the improvement of other transportation modes throughout the municipality, including transit, air, and water travel to resolve forecast congestion concerns.

In addition to upgrading the region's main highway through Fort McMurray, the study recommends a bypass highway to carry additional traffic around the Fort McMurray Urban Service Area. With rapid growth in oil sands development, the number of vehicle trips between the Urban Service Area and plant sites has increased dramatically; additional oil sands projects coupled with increased production rates at existing sites will require innovative solutions. The study recommends a mass public transportation system to reduce traffic congestion, road expansion, and green house gas emissions. To enhance northern rural communities' development and to increase social ties, the study recommends an all-weather road be constructed north, east, and west of Fort McMurray to service connectivity to surrounding areas.

## 1.0 Introduction

The Regional Municipality of Wood Buffalo is one of the fastest growing municipalities in Canada. The Municipality is facing a number of unique challenges with unprecedented growth in the oil sands development, gas processing, forestry, and tourism industries. The tremendous pace of growth in the oil sands over the past few years has provided economic growth to the Province of Alberta. At the same time, however, the growth has caused significant pressure on the municipality's transportation network.

The study was intended to identify the key transportation constraints to sustain unprecedented growth now and into the future. This study addressed required improvements to the existing regional transportation network and made recommendations for new connections that will allow the municipality to achieve its full potential as a major economic contributor in Canada. The study included the Urban Service Area (Fort McMurray) and the Rural Service Area. The smaller rural communities of Anzac, Conklin, Fort Chipewyan, Fort Fitzgerald, Fort MacKay, Gregoire Lake Estates, Janvier, Mariana Lake, Draper, and Saprae Creek Estates are known as the Rural Service Area. **Figure 1** illustrates the study boundary.

## 2.0 Existing Transportation Network

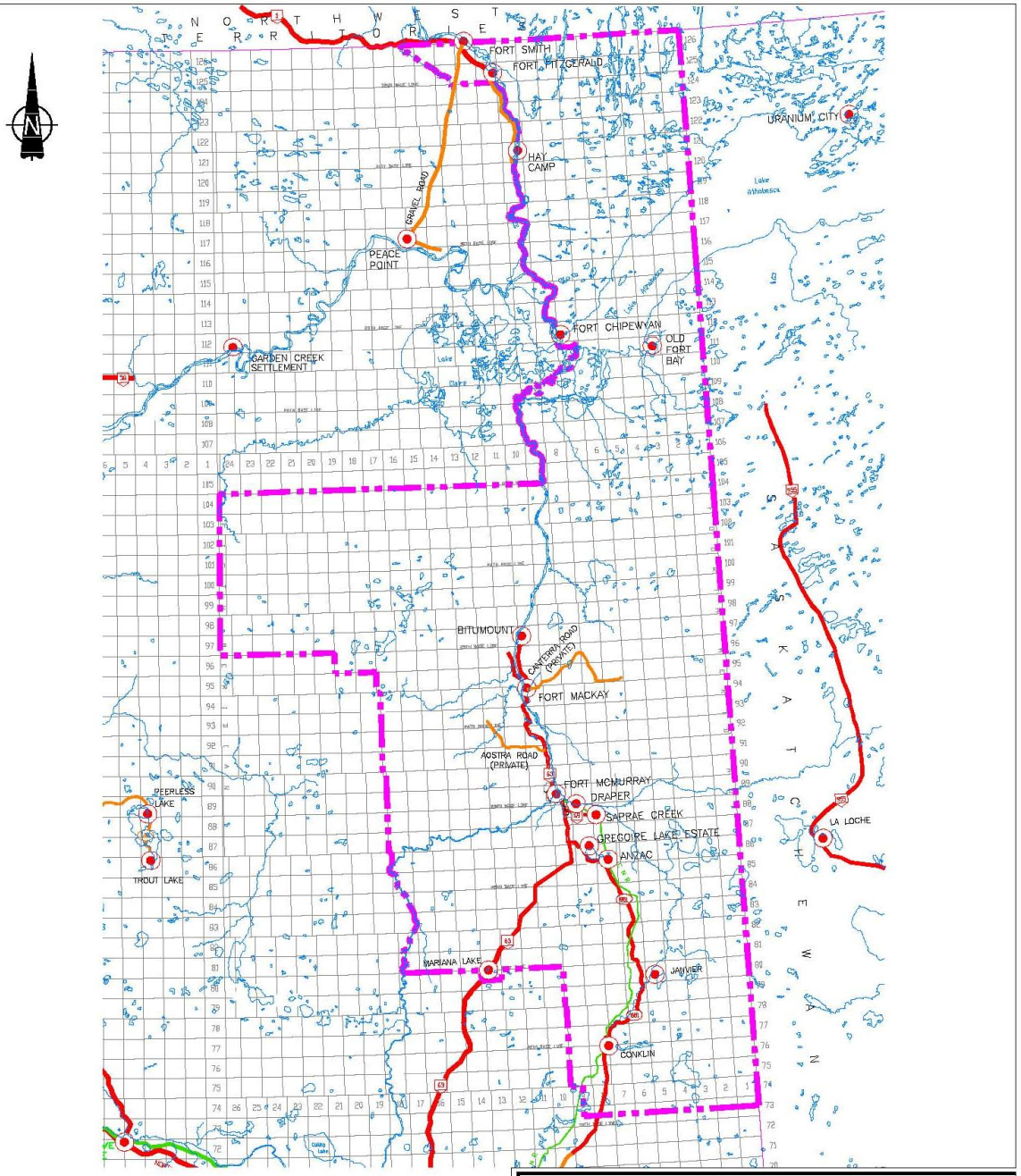
The availability of highways, railways, airports, and waterways in the municipality is critical to the development of Alberta's oil sands. Transportation is accommodated mainly by the road network throughout the municipality. Residents also utilize air travel through public and private airports as well as through the municipality's transit system. Rail transportation is also available into the region but is limited to freight only.

### 2.1 History

Trader and explorer Peter Pond was one of the first Europeans to see the potential of Northern Alberta in the late 1770's. Explorer Alexander Mackenzie provided the first recorded description of the Athabasca oil sands back in 1790. By 1900, the community had become a well established transportation and trading centre. As early as the 1930s, the federal government and scientists were making efforts to commercialize the oil sands.

In 1944, A Montreal businessman, Lloyd R. Chapman, started producing 450 barrels of oil per day at the Bitumen plant in Fort McMurray. In 1948, the Province of Alberta took over the plant and investigated the process of extracting bitumen with large-scale equipment. Later in 1949, the Government of Alberta closed the operation because it didn't want to launch a commercial venture. However, the data gathered at the plant was used in major studies of the viability of commercial oil sands production. In 1950, the Government of Alberta indicated that production of oil sands could be profitable.

Work continued on developing the technology and the first large-scale commercial oil sands plant was built in 1963 north of Fort McMurray. Developments in the oil sands ramped up considerably in the late 1990s and continue to grow today. The oil sands are recognized as an important driver of Alberta's economy.




LEGEND:

- HIGHWAY TWO LANE
- HIGHWAY FOUR LANE
- GRAVEL ROAD
- STUDY BOUNDARY
- EXISTING RAILWAY
- RURAL/URBAN SERVICE AREA

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REGIONAL STRATEGIC TRANSPORTATION PLAN

STUDY BOUNDARY

FIGURE 1

## 2.2 Existing Road Conditions

The provincial highway network throughout the municipality is composed of Highway 63, Highway 881, and Highway 69. These highways are experiencing increasing traffic volumes mainly due to the development of resources within the municipality. This is causing serious traffic-related safety and delay issues. Trucks carrying large and oversize equipment often occupy two traffic lanes which cause other traffic on the highway to be delayed.

Highway 63 is the primary access to the municipality and serves as a commuter highway, truck route, dangerous goods route, and the only arterial route through Fort McMurray. Through Fort McMurray, Highway 63 experiences high morning and evening peak hour traffic generated by oil sands employees travelling to the plant sites. South of Fort McMurray, Highway 63 experiences significant southbound p.m. peak traffic on Thursday and significant northbound p.m. peak traffic on Sunday as a result of worker shift changes at the major oil sands plants.

Highway 881 links to Highway 63 approximately 17 kilometres south of Fort McMurray. This highway is a major secondary access into the municipality providing a connection from Lac La Biche to the south and is a major route that carries traffic serving the in situ oil sands projects in the southern part of the municipality. Highway 881 also provides an alternate route to Fort McMurray.

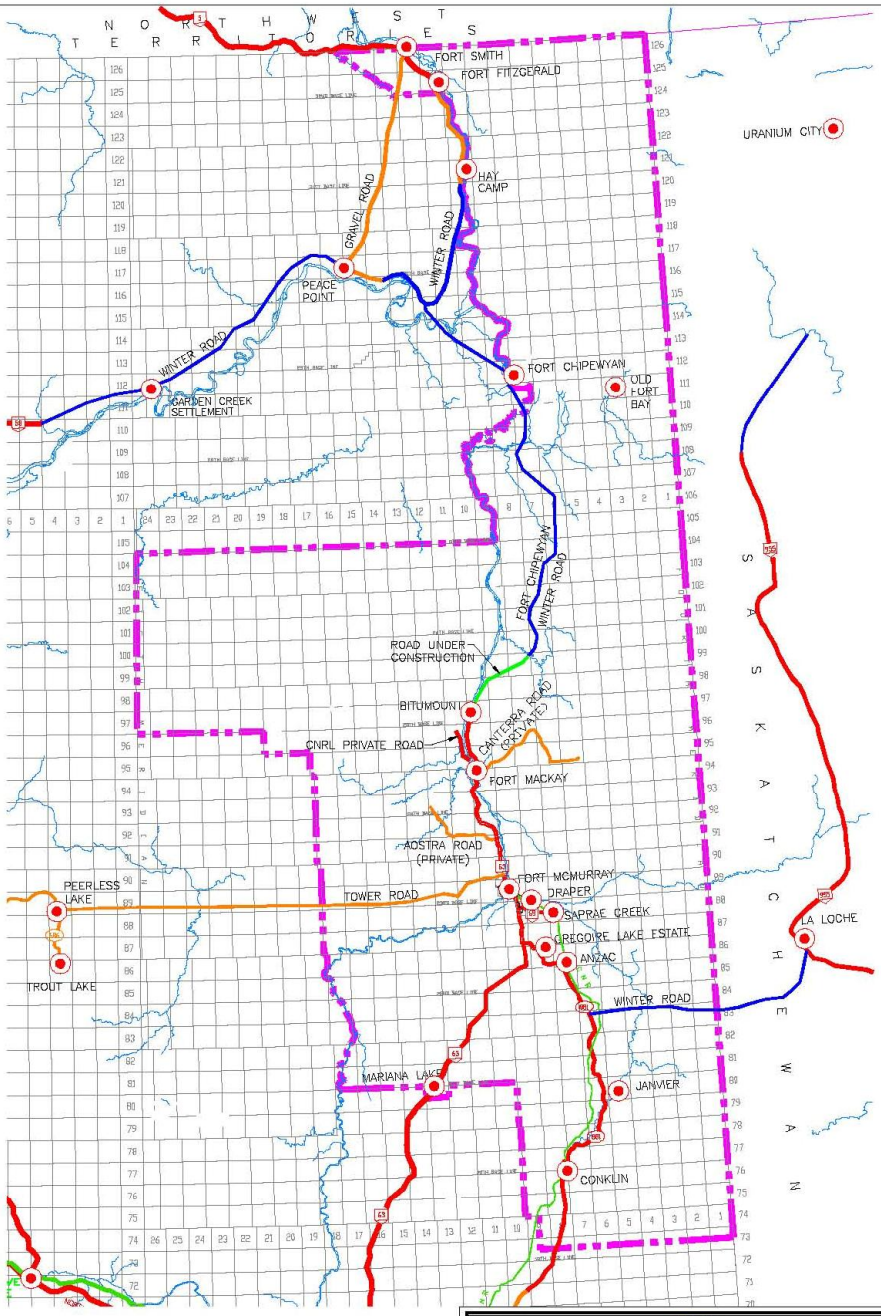
Highway 69 begins at the intersection of Highway 63 and proceeds through Fort McMurray in an easterly direction. Highway 69 provides access to the residential development of Saprae Creek, the Fort McMurray Airport, Mackenzie Industrial Park, and CN intermodal terminal at Lynton. **Figure 2** shows the existing road network within the municipality.

## 2.3 Existing Public Transit System

Public transit is defined passenger transportation services which are available for use by the general public as opposed to modes for private uses such as automobiles or vehicles for hire. Currently, the municipality operates a public transit service within Fort McMurray. This public transit provides regular scheduled service on predetermined routes within Fort McMurray. Currently a private company, Diversified Transportation Ltd., provides employee transportation service from Fort McMurray to the major plant sites. At this stage, about 25% of oil sands employees are using the bus service to get into the major plant sites.

## 2.4 Existing Air Travel

The Fort McMurray Airport is located 13 kilometres southeast of Fort McMurray. The airport provides scheduled, charted, and general aviation flight services. The rural community of Conklin, located 140 kilometres southeast of Fort McMurray, is served by both a local grass airstrip and the Leismer Airstrip. A landing strip is available in the rural community of Janvier which is used for emergency medical airlifts and private aircraft. There is no scheduled air traffic for either the Conklin or Janvier airstrips. Fort Chipewyan is a northwestern rural community and is located 300 kilometres north of Fort McMurray. The community is heavily dependent on air transportation. In addition to these airports, there are eight significant private airstrips in the municipality operated by oil companies to support oil sands operations. These airstrips are generally used to fly workers in and out of their sites from locations across Canada.




LEGEND:

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- RURAL/URBAN SERVICE AREA
- WINTER ROAD

Associated Engineering

REGIONAL STRATEGIC TRANSPORTATION PLAN

EXISTING ROADS

FIGURE 2

## 2.5 Existing Railway

The only railway that serves the municipality is the Canadian National Railway. This is a 320 kilometre railway that runs from Lynton, near Fort McMurray to Boyle, where it continues south to Edmonton to connect with CN's mainline. Currently, rail transportation only serves the oil sands and timber industry. A report published in Oil Sands Review in December 2006 stated that the railway currently takes about 25,000 logging truck trips off Highways 63 and 881 each year. Currently, Fort McMurray is not directly connected with rail transportation. However, rail freight service is available for the rural communities of Anzac, Janvier, and Conklin.

## 2.6 Existing Waterways

Barges have been operating on the major waterways such as the Athabasca River, and Slave River within the municipality for decades. These barges transport mostly goods such as food and fuel to communities which are accessible to the river system. However, due to the climate conditions, barge service is restricted to the late spring, summer, and early fall seasons.

## 2.7 Challenges with the Existing Transportation Network

The Municipality's rapid growth in the past few decades has been mainly driven by large scale investment in oil sands projects. This growth has resulted in significant pressure on the municipality's transportation network. Transportation issues are a growing concern in the municipality. With rapid growth in oil sands development and production activities, the number of personal vehicle and commercial travel has increased dramatically on the highways. This has resulted in increased traffic incidents and delays that increase travel time for workers. Currently, Highway 63 is the only highway that carries commuter traffic to the oil sands plants. Because of this, any roadway incidents cause significant delays to the highway traffic.

The oil sands industries require over-dimensional and super-module equipment for the oil sands plants. The equipment is currently being transported in smaller components from Central Alberta via Highway 63. This heavy load transportation disrupts normal road traffic, decreases vehicular safety, and limits certain weight on the Athabasca River Bridge. The process of transporting individual components and assembling those on site is also costly and highly labour extensive. As an alternative, a large over-dimensional and super-module could be made off-shore and brought to the plant sites via the Mackenzie River System. Currently, a water transportation system is not available to support the oil sands development.

The heavy rail transportation system in the municipality has been serving the lumber industry. Recently, rail transportation extended its service to the oil sands industry to transfer petroleum by-products from the oil sands plants to other markets. This alternative mode of transportation is not well developed to facilitate the oil sands industry and to reduce heavy load traffic on highways.

The northern rural community of Fort Chipewyan is located on the shores of Lake Athabasca. The primary mode of transportation to and from the community is by air travel. During winter, a winter road is constructed from north of Fort Mackay to service this community. The winter road is critical for the community to stockpile goods for the remainder of the year.

## 3.0 Population Growth

The Municipality has been settled since the fur trading days of the 1700s. Population in the region has been driven mainly by migration due to resource development. Oil and gas industries have played the most dramatic role in local demographics by creating thousands of jobs and attracting people to the municipality from across the country and around the world.

## 3.1 Historical

The census, taken in 1906, showed the population to be 236 in Fort McMurray. In 1911, it had increased to 312. By 1963, Fort McMurray was a typical small northern town with a population of 1,100. In 1973, within a ten year span, the population had jumped to 8,000. Within this time period, Suncore had started oil sands production and Syncrude had started its construction for oil sands plants. By the mid 1980s, the population had more than tripled to 37,000. Population growth shows that Fort McMurray is the centre of this dynamic regional municipality. Fort McMurray has been growing in response to the demand for the oil sands industry.

The Municipality was established on April 1, 1995 when the City of Fort McMurray and Improvement District No. 143 amalgamated to form the largest regional municipality in North America. Fort McMurray is the largest community in the municipality. Other rural communities are Anzac, Conklin, Draper, Fort Mackay, Fort Chipewyan, Fort Fitzgerald, Gregoire Lake Estates, Janvier, Mariana Lake, and Saprae Creek.

## 3.2 Current Population

The Municipality has experienced sustained economic growth for the last several years as a result of abundant oil sands deposits in the region. With increased investment in oil sands projects, the population of the region is growing rapidly. The connection between population growth and oil sands activity is evident by the fact that the regional growth was stagnant between 1986 and 1996 before major investment in the oil sands. **Figure 3** shows the population in the municipality from 1986 to 2008.

Based on the 2008 Municipal Census, the population of the municipality is about 103,000. Amplified interest in oil sands investment over the past nine-year period has resulted in a population increase of 140% from 1999 (43,000) to 2008 (103,000). During this period, the largest proportion of growth occurred in the Project Accommodation sector. Project Accommodations are built within plant sites to accommodate mobile workers employed by the oil companies. Project Accommodation population grew by 650% from 1999 (3,500) to 2008 (26,500). Between 2007 and 2008, Project Accommodation population grew by 7,500 people or 43% compared to Fort McMurray, which grew by 7,000 or 10%.

### 3.2.1 Mobile Workers

Mobile workers are those who reside temporarily in Project Accommodations and have their permanent residences elsewhere. They are mostly involved in oil sands related construction activities, but may also be involved in oil sands operations activities. Mobile workers contribute to the economic well-being of the municipality by building and maintaining the oil sands activities and by spending money on local goods and services. These mobile workers significantly impact the overall transportation network within the municipality.

In 2007, the Municipality completed a report on Mobile Workers to determine the general characteristics and the impacts of the presence of mobile workers in terms of service, traffic, and money spent. That report shows that private vehicles remain the most popular way to get in and out of the region and to travel within the municipality. An estimated 46% of workers tend to arrive in the municipality by private cars, 30% by airplane, and 24% by bus. Trips within the municipality are mostly made by passenger vehicles; 75% of trips are made by private cars and 25% of trips are made by bus.

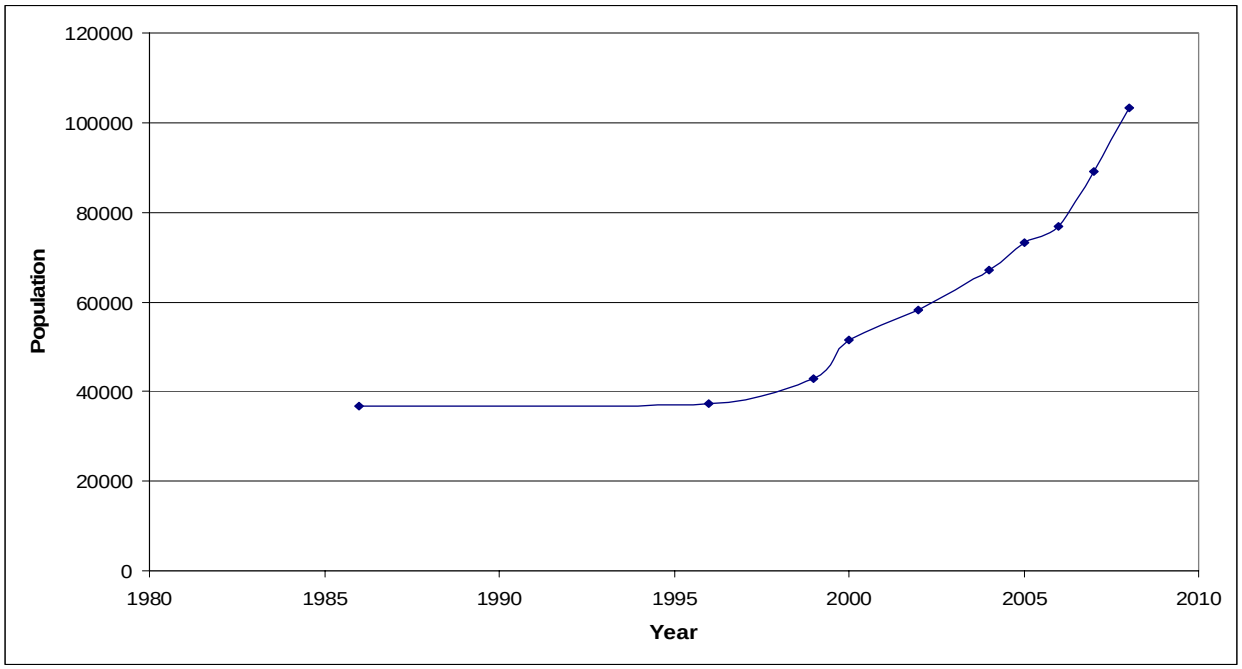



Figure 3 Population in the Municipality from 1986-2008.

### 3.3 Issues with Official Census

For the last few years, the Municipality has been conducting a civic census to provide timely statistical data about its region and residents. Through these count, the municipality makes informed decisions about land use and development, regional service delivery, and future planning in response to forecast growth scenarios.

The Municipal census methodology included in-person interviews at resident's homes, providing information by phone to the census office, and filling out an online census survey via the municipality's website. Population categories such as project accommodations, hotels/motels, homeless, and campground are collected by statistical data provided by a secondary source.

The Municipality has used an extrapolation methodology for several years in order to generate an accurate population count. However, the Department of Municipal Affairs and the Government of Alberta only support door to door enumeration, and view extrapolation as a deviation from this practice.

It is recognized that the Municipality has been experiencing a number of challenges enumerating population because of shift workers, the high number of unreported boarders living in private residences,

and shadow workers. Therefore, the Municipality used an extrapolation method to generate actual population.

## 4.0 Future Growth

The tremendous growth in the oil sands over the past few years has caused various development pressures within the municipality. Unprecedented population growth, a housing shortage, and a fluctuating mobile workforce have presented unique planning challenges for the municipality. The economy and population of the municipality have grown in the past decade with the development of the oil sands. The following sections detail the future planned growth within the municipality.

## 4.1 Residential Growth

Heavy investment in oil sands and gas industries has contributed to the unprecedented population growth in the municipality. This population growth has made it difficult to keep up with residential development. As a result, housing and rental prices have increased dramatically and a residential backlog has been created. In addition to this, the Municipality has anticipated population growth to 204,000 by 2028. To respond to this population growth, the Municipality has identified several new urban growth areas for residential developments within the municipality, most notably in Fort McMurray.

The Municipality has determined that new growth areas will develop in Parsons Creek, Saline Creek, the West Growth Areas, and between the Hangingstone and Horse Rivers; density intensification will occur in the Lower Townsite. In rural areas, lands are available to meet the additional population target by 2028. However, these new residential development areas will have significant impacts on the overall transportation network within the municipality.

## 4.2 Commercial and Industrial Growth

Continued development and expansion of oil sands has created demand on industrial and commercial developments. A significant amount of employment is tied directly to major oil sands projects located outside of Fort McMurray. To support this employment, there is an urgent need for commercial and industrial lands within Fort McMurray that have access to highways, and can accommodate numerous business uses.

Due to rapid economic and population growth, the Municipality has determined additional commercial and industrial lands are required to support balanced growth. The Municipality has determined that approximately 550 gross hectares of industrial lands are warranted in the close proximity of Fort McMurray and approximately 100 gross hectares of industrial lands are warranted in the rural communities. In addition, the Municipality will require 170 gross hectares of commercial lands to support growth in the municipality.

## 4.3 Oil Sands Growth

Alberta’s oil sands are a growing contributor to the world oil supply and a stable, secure energy source for local and international markets. Alberta’s oil sands are contained in the Athabasca (80%), Cold Lake

(12%), and Peace Regions (8%) and cover an area of 141,000 square kilometres. The Athabasca oil sands are located in the municipality. It is estimated that 178 billion barrels of oil can be extracted using existing technology. This is enough oil to meet Canada's current demand for almost 400 years.

From 1999-2009, an estimated $91 billion was invested in oil sands projects in Alberta. There is more than $170 billion in oil sands related projects either underway or proposed. In 2008, Alberta's oil production was about 1.3 million barrels per day of crude oil from oil sands. Recently, the Municipality has forecast 4-5 million barrels per day by 2028 based on announced projects; however in June 2009, Canadian Association of Petroleum Producers (CAPP) has forecast production of oil sands to be about 3.5 million barrels per day by 2028.

The heavy investment in oil sands projects will offer more dynamic economic development and jobs in Alberta as well as in Canada. With this, many construction jobs will be created as the oil sands plants are built. These plants will ultimately provide permanent operations jobs; therefore, oil sands operations jobs will have an impact on long term population growth in the municipality.

### 4.4 Population and Employment Model

The population target was one of the primary inputs to the transportation demand analysis. Recently the Municipality has adopted a target population of 204,000 people in the municipality by 2028 based on the Municipality's Population and Employment Projection Model. The Model uses an employment based methodology to project population. The model is driven by oil sands activity based on construction and operations employment associated with oil sands projects. The model also calculates spinoff activity that can be expected to result from direct oil sands activity that is captured locally.

The Municipality anticipates a total population of 133,000 people in Fort McMurray and 71,000 people outside of Fort McMurray by 2028 including 58,000 people in the Project Accommodations sector. **Table 1** shows a break down of the population target for the municipality.

| **Locations** | **2013** | **2018** | **2023** | **2028** |
|---|---|---|---|---|
| Fort McMurray | 80,000 | 90,000 | 106,000 | 133,000 |
| Rural Communities | 11,000 | 10,500 | 11,500 | 13,000 |
| Project Accommodations | 26,000 | 31,500 | 39,500 | 58,000 |
| **Total** | **117,000** | **132,000** | **157,000** | **204,000** |

Table 1 Population Target Break Down for the Municipality (2008-2028).

The employment projections for the Municipality are primarily based on direct, indirect, and induced oil sands activity. The timing, production, and capacity of oil sands projects are the key factors that affect the total employment generated by those projects. The oil sands related employment projections are based on the assumption regarding the volume of total oil sands activity in the municipality.

**Table 2** shows the forecast total employment and resources based employment in the municipality between 2013 and 2028 based on the Municipality's Employment Projection Model.

| Year | 2013 | 2018 | 2023 | 2028 |
|---|---|---|---|---|
| Resource Based | 50,000 | 57,000 | 70,000 | 98,000 |
| Total | 82,000 | 91,000 | 107,000 | 142,000 |

Table 2 Forecast Employment in the Municipality (2013-2028).

## 5.0 Forecast Travel Demand

Future travel demand is based on the land uses which are anticipated as the Municipality's population and employment grow. The residential development, commercial and industrial development, and oil sands productions that are planned within the municipality have been considered in the forecast travel demand. The future transportation network is based on future growth and travel demand.

### 5.1 Residential Travel Demand

Under the population forecast, much of the new residential growth could be supported entirely in four key planning areas: Saline Creek, Parsons Creek, and West Growth Area in addition to growth intensification in the Lower Town Site (LTS) area. For the purpose of this study, housing mix and residential development densities were taken based on the Regional Growth Management Study by the Municipality. With this, future travel demand was calculated from the forecast residential development.

### 5.2 Commercial and Industrial Travel Demand

A significant amount of commercial and industrial lands are identified to support the growth in the municipality; four areas have been indentified in Fort McMurray. These are located in the Airport Lands /South of Highway 69, between the Hangingstone and the Horse Rivers, Highway 881/63 Crossroads, and West Growth Areas. In the rural areas, Anzac, Conklin, Janvier, and Fort Chipewyan will have significant amount of lands that are identified for future development. These developments will attract substantial transportation demand. This additional traffic will create significant pressure on the transportation network.

### 5.3 Oil Sands Travel Demand

The Municipality has forecast 4-5 million barrels per day of crude oil by 2028 from the oil sands developments. The oil sands production will create additional construction and operation employment in the municipality. With this, oil sands plants will attract more traffic and thereby will create significant impacts on the transportation network. The Municipality has estimated that about 58,000 project accommodation employees will reside in plant sites. These people generally make occasional trips to the nearest urban centres according to the Mobile Workers (2007) study.

## 5.4 Travel Demand Procedure

Travel demand forecasting is used to estimate the future trips in the transportation network. Travel demand forecasting is typically referred to as the four step process. The steps are: trip generation, trip distribution, mode choice, and trip assignment. However, mode choice was not calculated as this travel demand forecasting has considered passenger vehicles only. The following sections describe the simplified process that was used in this study to calculate travel demand on the municipality's transportation network.

### 5.4.1 Trip Generation

The purpose of trip generation estimation was to determine the number of vehicle trips to and from areas within the municipality. The trip generation assumptions are based on the trip rates given in the Institute of Transportation Engineers ITE Trip Generation Guide, 8th Edition. The trips are calculated based on the residential development, commercial and industrial development, and oil sands production forecast in the municipality for 2028.

### 5.4.2 Trip Distribution

After estimating the total trips generated by the proposed developments in 2028, the next step was to determine the distribution of the trips. The study team has adopted employment based trip distribution from the new growth areas. The production rate of oil sands bitumen was obtained in the north and south oil sand plants from "Oil Sand Industry Update" 2007 by Alberta Employment, Immigration, and Industry. Trip distribution information was also collected from stakeholders during stakeholder discussions. In addition, geographical locations of the development are also considered for trip distribution purposes.

### 5.4.3 Trip Assignment

Trip assignment was completed by determining which highways and roads the traffic from the above-mentioned origins would take to travel to and from the different population and employment sectors. In general transportation planning terminology, this procedure is referred to as traffic assignment.

## 6.0 Regional Transportation Network Deficiency

The resource development and social/cultural sustainability depends on the development of a reliable transportation network. The Municipality requires a well connected regional transportation network; this will increase significant investments in oil sands development. Currently, the Municipality requires a safe and efficient transportation network for the oil sands developments and for the people who live in the municipality.

## 6.1 Connectivity within Region

Communities such as Fort Chipewyan and Embarras Portage which are located along the Highway 63 winter road are disadvantaged by the limitations imposed by the winter road. Besides the supply chain

restriction, family members are restricted in maintaining their social ties due to the limited access conditions. There is no all-weather road access to Fort Chipewyan. Depending on conditions, a winter road is opened for approximately three months during the winter. This road connects Fort Smith with Fort Chipewyan and Fort McMurray. Because of the long distances and potentially dangerous conditions, special precautions are needed for safe travel on the winter road.

To further develop these communities, an all-weather road is needed. This road would provide a potential means for further forestry industrial development, providing jobs for Albertans and enabling the efficient movement of goods and people within the province.

### 6.2 Connectivity to other Regions

Oil sands activity in the Peace Region is increasing. Currently, there are no existing links between the Athabasca oil sands and Peace Region oil sands activities. As such, there is a need to establish a reliable link from the major oil sands region to the Peace Region to facilitate the movements of equipment and goods. This link will provide an important connection between the Peace Region and the Athabasca oil sands developments to facilitate commercial growth. This link will also enhance social ties within the municipality and the adjacent municipalities.

Saskatchewan Highway 955 is located in the west portion of the Province of Saskatchewan and runs from Highway 155 near La Loche to Cluff Lake Mine to the north. The highway is approximately 245 kilometres long and mostly unpaved. This highway provides an important link to the uranium mines located in the northern Saskatchewan. A potential east-west road from north of Highway 63 to north of Highway 955 will connect the oil sands industry with the uranium mine.

The La Loche Winter Road, located approximately 65 kilometres south of Fort McMurray, connects Highway 881 in Alberta and Highway 956 in Saskatchewan with the Town of La Loche, located immediately across the Saskatchewan border. The winter road is approximately 66 kilometres long, runs in an east-west direction, and is only open during winter. This road also has commercial benefit to Fort McMurray by providing improved access for potential employees from Saskatchewan. As a result of heavy oil sands project growth in the municipality, traffic will increase considerably along this corridor. This road will aid in connecting the residents of Saskatchewan to this industrial hub in the municipality.

### 6.3 Growth Pressure on Existing Network

Highway 63 carries high traffic volumes and serves as a high load corridor for over-dimensional equipment travelling through Fort McMurray. Traffic volumes have increased substantially during recent years causing traffic congestion and safety issues. The continued high level of investment in the oil sands coupled with substantial population growth in the municipality has created excessive pressures on the existing transportation network.

There are trends towards the development of major private airstrips that are built to high standards that are able to accept large commercial aircrafts in support of the oil sands industry. The potential increase of private airstrips in the municipality may begin to have undesirable impacts on the control of airspace surrounding the municipal airports. The increase in air traffic at the Fort McMurray Airport and in the entire Athabasca oil sands region presents a concern for aviation safety.

## 7.0 Study Recommendations

The study addresses long-term transportation system requirements within the municipality to accommodate growth in terms of population, oil sands development, and business-industrial land development. This study addresses required improvements to the existing regional transportation network and makes recommendations for new connections that will allow the municipality to achieve its full potential as a major economic contributor in Canada. Transportation infrastructure recommendations have been made based on travel demand to an appropriate level of service to the municipality.

## 7.1 Road Network

To meet the demand, Highway 63 is recommended to be improved to a six-lane divided cross section with a two-lane collector distributor road in each direction through Fort McMurray. North of Fort McMurray, Highway 63 is recommended to be improved to a six-lane divided highway up to Bitumount where oil sands plants are located on the both sides of Highway 63. South of Fort McMurray, a six-lane divided cross-section will be needed on Highway 63 to Highway 881. Beyond this, a four-lane divided cross-section is recommended.

It is also anticipated that Highway 881 will attract more traffic as this is a newly paved road. Highway 881 will be used as an alternative access to the oil sands industry from the Cold Lake Region, Saskatchewan, and the eastern Alberta region. Residential, commercial, and business-industrial developments are planned in Anzac, Conklin, and Janvier to support oil sands operations located in the southern part of the municipality. These developments will increase traffic on Highway 881. Therefore Highway 881 recommended to be upgraded to a four-lane divided highway.

To support the oil sands industry, a major business industrial park has been proposed south of Highway 69 in the vicinity of the Fort McMurray Airport. As the municipality grows, the airport will play a central role in the economy and a growing number of businesses will want to be strategically located near the airport to take advantage of the improved transportation mobility. As these developments are proposed in the vicinity of the airport, Highway 69 will capture additional traffic and will require upgrading. Highway 69 should be considered for upgrading to a four-lane divided cross-section when the population reaches about 120,000 within the municipality. However, a six-lane divided cross-section is warranted when the population reaches about 160,000 within the municipality.

The Municipality has planned residential developments to the west of Fort McMurray to support growth in the municipality. With these developments, levels of congestion on Highway 63 are expected to be unacceptable. To relieve congestion on Highway 63, a bypass road is recommended to be located west of Fort McMurray. The bypass road will provide direct access to the oil sands sites as well as reduce traffic congestion on Highway 63 through Fort McMurray. The bypass road will function as a provincial freeway thereby providing primary capacity to through traffic. The bypass road will also provide some relief to Highway 63 through Fort McMurray for dangerous goods movements as well as overweight and over dimensional transport.

Fort Chipewyan and Fort Fitzgerald, located north of Fort McMurray, do not have access to an all-weather road. Residents of Fort Chipewyan have to rely on approximately 225 kilometres of winter road to transport goods and people. Therefore, an all-weather road has been recommended from the north end of Highway 63 to Fort Chipewayn. This road will bring social benefits to the people residing in the north

portion of the municipality. This road will provide jobs for Albertans and will enable the efficient movement of goods and people within the province.

Oil sands activity in the Peace Region is increasing. Currently, there are no existing links between the Athabasca oil sands and Peace Region oil sands activities. As such, an all-weather road link is recommended from the major oil sands region to the Peace Region to ease the movements of goods, equipment, and people.

The La Loche Winter Road, which runs in an east-west direction, is recommended to be improved to an all-weather road. This road also has commercial benefit to the municipality by providing improved access for potential labour markets, and will aid in connecting the residents of Saskatchewan to this industrial hub in the municipality.

**Figure 4** shows the recommended transportation network within the municipality and **Figure 5** shows the recommended transportation network near Fort McMurray.

### 7.2 Public Transportation

With the rapid growth in oil sands development, the number of auto vehicle trips as well as commercial vehicle trips between Fort McMurray and the plant sites has increased dramatically. This has resulted in traffic congestion on Highway 63 which consequently causes an increase of green house gas emissions into the atmosphere. To reduce traffic congestion and emissions into the atmosphere, the study team has recommended several innovative solutions.

The study team has recommended that consideration be given for a designated bus right-of-way to be established parallel to Highway 63 to transport employees to and from their place of employment. The Bus Rapid Transit (BRT) could eventually lead to Light Rail Transit to accommodate increased ridership. Another alternative to the designated transit lanes would be to have designated High Occupancy Vehicle (HOV) lanes. Vehicles with more than one person would be permitted to use the designated HOV lanes, thus encouraging greater use of ride-sharing and reducing the number of single occupancy vehicles to further reduce congestion and emissions.

### 7.3 Air Travel

The existing Fort McMurray Airport infrastructure is aging. As the oil sands industry expands, the need to transport employees by air increases. This makes the construction of air facilities to service these plant sites more attractive. The Municipality looses landing fees and air traffic control from this expansion. The proliferation of air traffic movements has an impact on the environment by the increase in noise levels, jet fuel emissions, hazardous material spills, and the consumption of valuable lands.

To address the aging Municipality's airport, the study team recommended that the airport authority undertake a methodical review and evaluation of its long-term needs to develop an upgrading capital program. This Airport Master Plan will guide the expansion and upgrading of its airside and groundside infrastructure.

As the number of private airstrips increases throughout the municipality to service increasing oil sands employee passenger trips, it is important that the Municipality manage this expansion for its own benefit. Firstly the residual value of these airstrips in the future may be a substantial benefit that could continue to be used as airstrips by the municipality. Secondly, once the airstrips are no longer required, the oil sands industry should be responsible for the complete reclamation of the lands occupied by the private airstrips.

The proliferation of air transportation in the municipality has significant potential impacts on the environment. These impacts can be mitigated by a thorough and diligent management process to limit the possibility of impacts on the natural and human environment. It is recommended that a management strategy be developed to mitigate these potential impacts. However, interim policies are required while the management strategy is being developed.

### 7.4 Rail Transportation

Currently, the Canadian National Railway provides service to timber industry customers in the municipality. Rail transportation also provides service to the oil sands industry to transfer petroleum by-products such as coke and sulphur. This alternative mode of transportation will not only facilitate the oil sands industry but will also reduce heavy load traffic on the highways. Rail transportation is also a much more efficient way to move freight traffic compared to using trucks. Rail transportation has less environmental impact compared to other modes of transportation such as heavy trucks and marine and will reduce a significant amount of greenhouse gases.

The study team recommended that CN be encouraged to expand its current service into the municipality and into the oil sands industry. Expanding services to include the rail transportation of oil products and oil service commodities will reduce road related congestion and will increase public safety on the municipality's transportation network.

### 7.5 Water Transportation

The oil sands industry requires large equipment and plant modules for bitumen exploration. Currently, most of the large equipment and modules are transported to the oil sands industry via Highway 63. The heavy loads and equipment transportation to the oil sands industry would often increase highway traffic, congestion, and safety concerns.

Recently, a private company has put forward a proposal to transport over-dimensional oil sands equipment via the North Mackenzie River System to the mine sites north of Fort McMurray. This equipment is expected to be manufactured off-shore and access the Mackenzie River from Tuktoyaktuk. Therefore, the study team is recommending that the Municipality encourage this water transportation initiative for the interest of the municipality. This water transportation system will reduce the significant amount of large vehicle traffic volume on the highways and will greatly reduce greenhouse gas emissions.

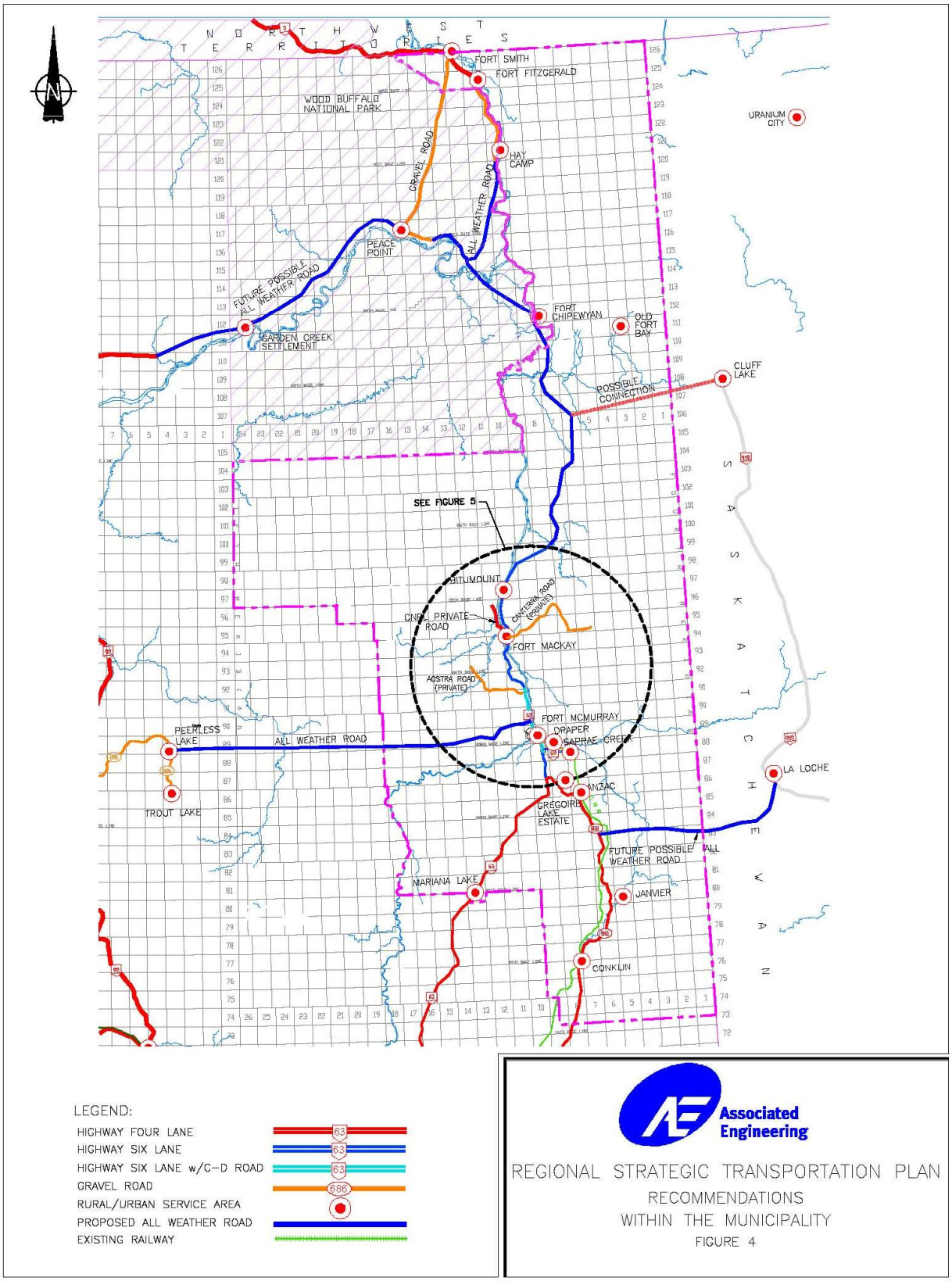
## 8.0 Conclusions

The study outlined the need for an effective transportation network to support the current and future population growth driven by continued oil sands industry development in the region. The recommendations made in this study are an indication to the Municipality, Government of Alberta, and

other key stakeholders the requirement of a well connected transportation network to accommodate planned growth in the municipality. The transportation network will increase social ties and resource development and will establish connections with the Peace Region and the Province of Saskatchewan.

## 9.0 References:


1. Commercial & Industrial Land Use Study January 2010 - Regional Municipality of Wood Buffalo.
2. Population Projection Model 2010- Regional Municipality of Wood Buffalo.
3. Regional Growth Management Study, Draft 2009 - Regional Municipality of Wood Buffalo.
4. Municipal Census 2008 - Regional Municipality of Wood Buffalo.
5. Report on Mobile Workers in the Wood Buffalo Region of Alberta, December 2007.
6. Government of Alberta - Alberta Oil Sands http://oilsands.alberta.ca/documents/The_resource.pdf.
7. Trip Generation, 8th Edition, Institute of Transportation Engineers.




LEGEND:

- HIGHWAY FOUR LANE (63)
- HIGHWAY SIX LANE (63)
- HIGHWAY SIX LANE w/C–D ROAD (63)
- GRAVEL ROAD (686)
- RURAL/URBAN SERVICE AREA
- PROPOSED ALL WEATHER ROAD
- EXISTING RAILWAY

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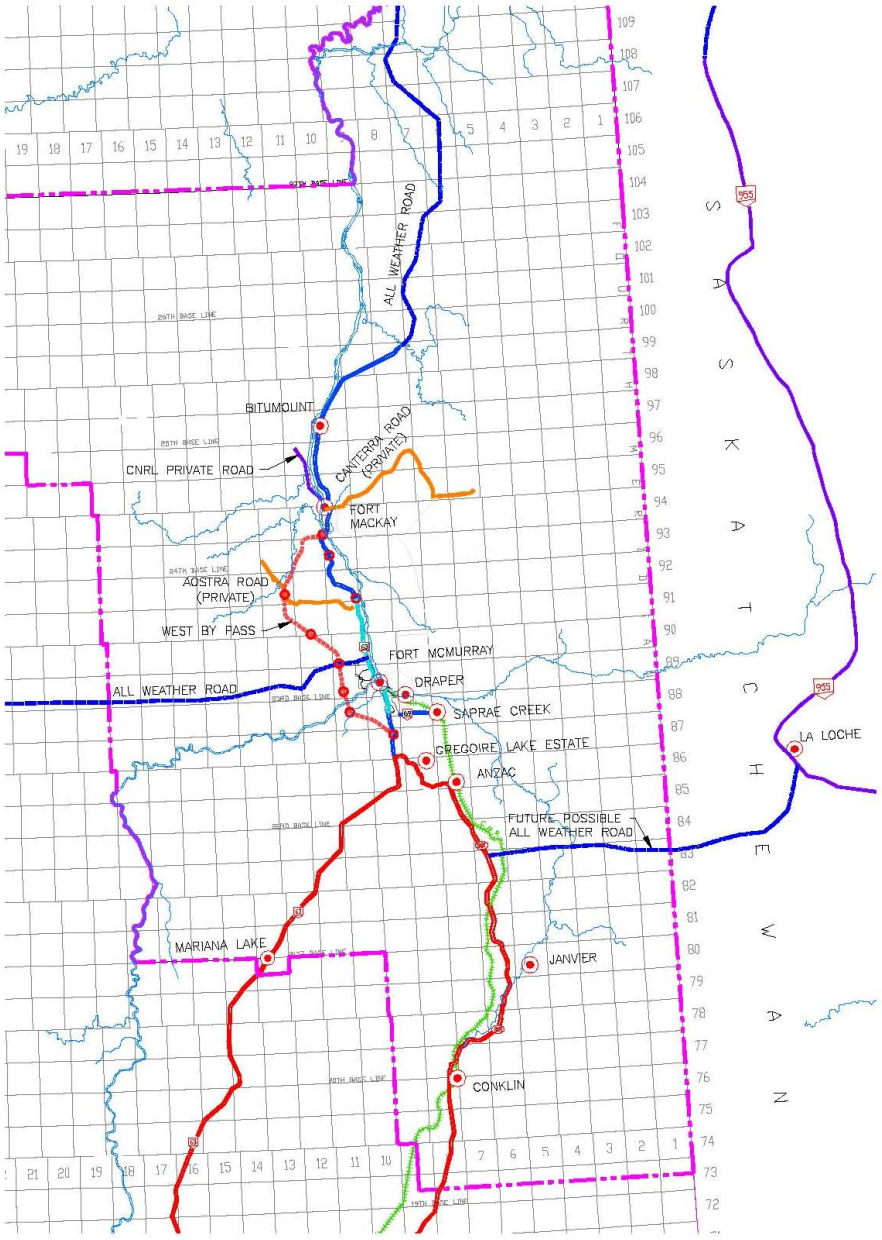
REGIONAL STRATEGIC TRANSPORTATION PLAN
RECOMMENDATIONS
WITHIN THE MUNICIPALITY
FIGURE 4




NOTE:

○ – INTERCHANGE LOCATIONS

LEGEND:

- HIGHWAY FOUR LANE
- HIGHWAY SIX LANE
- HIGHWAY SIX LANE w/C–D ROAD
- GRAVEL ROAD
- RURAL/URBAN SERVICE AREA
- PROPOSED ALL WEATHER ROAD
- EXISTING RAILWAY

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REGIONAL STRATEGIC TRANSPORTATION PLAN
RECOMMENDATIONS
NEAR FORT MCMURRAY
FIGURE 5