

**FINAL REPORT**  
**Socio-Economic Impact Assessment**  
**Great Divide SAGD Expansion Project**

**Submitted to:**

Connacher Oil and Gas Limited

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## 1. PROJECT DESCRIPTION

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Connacher Oil and Gas Limited (Connacher) has been operating the Great Divide SAGD facility (Pod 1) that has a capacity of 10,000 bpd production since the fall of 2007. Connacher has also recently finished construction on the 10,000 bpd Algar SAGD facility (Pod 2) which is currently scheduled to be in operation in Q2, 2010. The proposed Project will expand the production of the entire area by adding an additional 24,000 bpd of productive capacity to Pod 2 (Algar) and constructing additional well pads. The total capacity will be approximately 44,000 bpd, split between the two central processing facility (CPF) sites of Great Divide and Algar. The design calls for 40 well pads that will be built in 3 phases over approximately 25 years.

The Project is located in the Regional Municipality of Wood Buffalo (RMWB), roughly 70 km south of Fort McMurray directly adjacent to Highway 63.

The capital costs of the Project are subject to uncertainty and will be refined as more detailed engineering takes place. For the purposes of this analysis and based on preliminary engineering estimates, the construction capital costs are estimated at \$701 million. This includes:

- expansion of the central processing facility;
- initial well pad, pipeline and road construction; and
- drilling of initial well-pairs.

On-site construction for the Project is expected to take place between Q1 2012 and Q2 2013. During construction, the Project is expected to generate approximately 700 person years of on-site employment. The Project will have dedicated an on-site camp for construction workers and may use open camps in the region if required.

Operations are expected to begin in late 2013. The Project is expected to increase the number of operations workers at the combined Great Divide and Algar sites by 80 workers. The Project will have a dedicated on-site camp for operations workers.

Construction and operations workforce will be flown in and out for shift rotations, using the Fort McMurray airport. Some construction workers

are expected to commute by bus or private vehicle to Edmonton and beyond during shift rotations.

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## **2. SCOPE OF THE SOCIO-ECONOMIC ASSESSMENT**

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### **2.1 INTRODUCTION**

The socio-economic impact assessment (SEIA) addresses the human environment with and without the Project. This section describes the scope of the SEIA and its methodology.

### **2.2 REGULATORY SETTING**

The SEIA addresses the information requirements described in Section 8 of the Proposed Terms of Reference (TOR) for the Environmental Assessment (EA) of the Project, as issued by Alberta Environment in March, 2009 (AENV 2009).

### **2.3 KEY ISSUES**

The SEIA draws on the following sources for identifying the key socio-economic issues:

- the TOR for the EA of which this SEIA forms one part;
- discussions with regional service providers;
- submissions and discussions as part of the regulatory review process of recent oil sands projects by the Energy Resources Conservation Board (and its predecessors), interveners and other stakeholders;
- socio-economic studies and reports prepared by government, industry or regional service providers, including work conducted by and on behalf of community-based groups on the socio-economic conditions in the outlying communities of the Regional Municipality of Wood Buffalo (RMWB); and
- analysis of recent SEIAs for other oil sands projects.

These sources indicate that the key socio-economic issues to be considered in this analysis fall into the following categories:

- employment effects;

- regional and provincial economic benefits, including:
  - personal and business income
  - government tax and royalty income
- population effects;
- effects on regional infrastructure and services, including:
  - policing and emergency services
  - health services
- traditional land use effects; and
- transportation effects.

## 2.4 KEY INDICATORS

The key indicators used to assess the effects of the Project on communities in the study area are:

- workforce;
- income:
  - Gross Domestic Product (GDP) and family income;
  - municipal taxes;
- population change;
- effects of population change on service providers;
- effects of population change on physical infrastructure; and
- traditional land use and culture.

The key indicators used to assess the Project's income and taxation consequences for governments are provincial corporate tax, resource royalty income, and federal corporate income tax.

Many of these key indicators are well suited for quantification and provide an easy-to-interpret measure for the potential effects. Effects on service providers are based, in part, on key respondent interviews and are treated mostly qualitatively.

## 2.5 STUDY AREA

The Regional Study Area (RSA) is defined as the Edmonton-Fort McMurray corridor. The definition of the RSA for the Project is informed by the proponent's past experience with the hiring of labour and procurement of supplies for the construction and operations of the Pod 1 and Algar sites.

The focus of the analysis of employment, income, population, and infrastructure effects is on the Edmonton Census Metropolitan Area (CMA) part of the RSA. Transportation issues are analyzed with special attention to the corridor along Highway 63 between the Project and the City of Edmonton and effects on police, emergency, and health services focus on the Urban Services Area of the Regional Municipality of Wood Buffalo (Fort McMurray). Some fiscal effects transcend the RSA boundary and accrue to Alberta and Canada.

### 2.5.1 Timeline of Construction and Operations

The key timelines of the Project are:

- on-site construction between Q1 2012 and Q2 2013; and
- operations starting in late 2013 and continuing for 25 years.

The SEIA will concentrate on the construction period when the socio-economic effects of the Project are expected to be at their maximum. The SEIA will address as well the long-term impacts during operations.

### 2.5.2 Closure

Effects of the Project closure are not examined in detail. There will likely be other oil sands related employment opportunities available in the region when the Project reaches the end of its economic life. Thus, those socio-economic effects related to employment and population will likely continue. Ongoing oil-sands activity is plausible, considering the extent of the oil sands resource, of which an estimated 315 billion barrels of crude bitumen might be ultimately recoverable (ERCB 2008).

## 2.6 ASSESSMENT CASES

The SEIA uses the same three assessment cases consistent with the rest of the EA. [Table 2-1](#) presents the projects assumed to proceed in the Base Case, Application Case, and Planned Development Case.

**Table 2-1 Assessment Cases**

<b>Developments Included in Assessment Cases</b>	
<b>Baseline Case (Existing + Approved Developments)</b>	<ul style="list-style-type: none"> <li>• <b>EnCana FCCL Ltd.:</b> Christina Lake Thermal Project, Foster Creek Pilot and Foster Creek Phases 1 and 2</li> <li>• <b>Albian Sands Energy Inc.:</b> Muskeg River Mine and Muskeg River Mine Expansion</li> <li>• <b>Canadian Natural Resources Limited:</b> Kirby Pilot Project, Horizon Oil Sands Project, Burnt Lake Project, Primrose and Wolf Lake In-Situ Project, Primrose East In-Situ Oil Sands Project</li> <li>• <b>Connacher Oil and Gas Limited:</b> Great Divide Oil Sands Project</li> <li>• <b>Connacher Oil and Gas Limited:</b> Algar Oil Sands Project</li> <li>• <b>ConocoPhillips Canada:</b> Surmont Commercial SAGD</li> <li>• <b>Devon Canada Corporation:</b> Jackfish SAGD Project, Jackfish 2 Project</li> <li>• <b>Husky Energy Inc.:</b> Tucker Thermal Project, Sunrise Thermal Project, Caribou Lake Thermal Project</li> <li>• <b>Imperial Oil Resources Limited:</b> Cold Lake In-Situ Project, Nabiye Expansion and Mahihkan North Expansion</li> <li>• <b>Imperial Oil Resources Ventures Limited:</b> Kearl Oil Sands Project</li> <li>• <b>Japan Canada Oil Sands Limited:</b> Hangingstone – In-Situ Pilot</li> <li>• <b>Laricina Energy Ltd.:</b> Saleski Pilot</li> <li>• <b>MEG Energy Corporation:</b> Christina Lake Regional Project – Pilot, Christina Lake Regional Project – Commercial (Phase 2 and 2B)</li> <li>• <b>OPTI Canada Inc./Nexen Canada Ltd.:</b> Long Lake Pilot and Commercial Project</li> <li>• <b>Northwest Industries:</b> Northwest Upgrader</li> <li>• <b>Petrobank Energy and Resources Ltd.:</b> Whitesands Pilot Project, Whitesands Project Expansion</li> <li>• <b>Petro-Canada:</b> Dover SAGD Pilot, VAPEX Pilot, MacKay River In-Situ, Meadow Creek In-Situ</li> <li>• <b>Petro-Canada Oil Sands Inc.:</b> Fort Hills Mining Project</li> <li>• <b>Petro Canada (now Suncor)</b> Fort Hills Upgrader</li> <li>• <b>Shell Canada Limited:</b> Orion EOR Project, Jackpine Mine – Phase 1</li> <li>• <b>Shell Canada:</b> Scotford Upgrader Expansion 1</li> <li>• <b>Suncor Energy Inc.:</b> South Tailings Pond, Lease 86/17, Steepbank Mine, Millennium Mine, Voyageur Upgrader, Upgrader Complex, North Steepbank Extension Mine, Millennium Coker Unit (MCU), Millennium Vacuum Unit (MVU), Firebag Enhanced Thermal Solvent (ETS) Pilot Project and Firebag SAGD Project</li> <li>• <b>Syncrude Canada Ltd.:</b> Mildred Lake Mining and Upgrading, Mildred Lake Upgrader Expansion and Emissions Reduction Program, Aurora South Mine, Aurora North Mine</li> <li>• <b>Total E&amp;P Joslyn Ltd.:</b> Joslyn Creek SAGD Project – Phase 1 and Commercial</li> <li>• <b>Aggregate Resources:</b> Birch Mountain Resources Ltd. Muskeg Valley Quarry</li> <li>•</li> </ul>

Developments Included in Assessment Cases	
<b>Application Case (Existing + Approved Development +)</b>	<ul style="list-style-type: none"> <li>• <b>Connacher Oil and Gas Limited</b> Great Divide Expansion project</li> </ul>
<b>Planned Development Case (Existing + Approved Developments + Planned Developments)</b>	<ul style="list-style-type: none"> <li>• <b>EnCana FCCL Ltd.:</b> EnCana Christina Lake Thermal Expansion Project, Phases 1E, 1F and 1G</li> <li>• <b>EnCana FCCL Ltd.:</b> Foster Creek Expansion, Narrows Lake</li> <li>• <b>EnCana FCCL Ltd.:</b> Borealis SAGD Project</li> <li>• <b>Athabasca Oil Sands Corporation:</b> Dover Pilot, Thickwood Pilot</li> <li>• <b>Canadian Natural Resources Limited:</b> Horizon In-Situ Project, Kirby In-Situ Oil Sands Project</li> <li>• <b>E-T Energy:</b> Field Test</li> <li>• <b>EnerPLUS:</b> Kirby Oil Sands Project</li> <li>• <b>Excelsior Energy Limited:</b> Hangingstone Pilot</li> <li>• <b>Grizzly Oil Sands:</b> Algar Lake Pilot</li> <li>• <b>Japan Canada Oil Sands Limited:</b> Hangingstone SAGD Project</li> <li>• <b>Korea National Oil Corporation:</b> Black Gold Project</li> <li>• <b>Laricina Energy Ltd.:</b> Germain Pilot</li> <li>• <b>MEG Energy Corporation:</b> Christina Lake Regional Project – Phase 3</li> <li>• <b>OPTI Canada Inc./Nexen Canada Ltd.:</b> Long Lake Commercial Project Phase 2</li> <li>• <b>Pengrowth Energy Trust:</b> Lindbergh SAGD Pilot Project</li> <li>• <b>Petrobank Energy and Resources:</b> May River Project</li> <li>• <b>Petro-Canada:</b> Lewis SAGD Project, Meadow Creek Expansion SAGD Project, MacKay River Expansion SAGD project</li> <li>• <b>Serrano Energy Ltd.:</b> Blackrod SAGD Pilot Project</li> <li>• <b>Shell Canada Limited:</b> Jackpine Mine Expansion, Pierre River Mine</li> <li>• <b>Shell Canada:</b> Scotford Upgrader 2 Project</li> <li>• <b>Southern Pacific Resources Corporation:</b> McKay Project</li> <li>• <b>Statoil Hydro:</b> Kai Kos Dehseh SAGD Project</li> <li>• <b>Suncor Energy Inc.:</b> Voyageur South Project, Millennium Mine Dump 9 Project, Firebag Stages 4 to 6</li> <li>• <b>Sunshine Oilsands Limited:</b> West Ells Pilot</li> <li>• <b>Syncrude Canada Ltd.:</b> South West Sand Storage Conversion Project</li> <li>• <b>Synenco Energy:</b> Northern Lights Project</li> <li>• <b>Total E&amp;P Canada Ltd.:</b> Joslyn Creek SAGD Expansion, Joslyn North Mine Project</li> <li>• <b>Total E&amp;P Canada.</b> Total Upgrader</li> <li>• <b>Value Creation Inc.:</b> Terre de Grace Pilot SAGD Project</li> <li>• <b>Aggregate Resources:</b> Birch Mountain Resources Ltd.: Hammerstone Project, Parsons Creek Resources Project</li> </ul>

Note: Planned Developments include projects publicly disclosed 6 months before the writing of this report.

## 2.7 ANALYTICAL APPROACH

### 2.7.1 Quantitative and Qualitative Approach

The differences between the base, application and cumulative effects assessment cases are determined using a variety of methods, ranging from extensive quantitative analysis to surveys and other qualitative approaches. The choice of assessment methodology depends on the issue and the availability of data.

### 2.7.2 Economic Effects – Input-Output Analysis

The anticipated geographic distribution of Project expenditures is addressed through an analysis of anticipated procurement patterns of

the Project and other similar oil sands projects and industry-specific supply relationships derived from the Alberta input-output model (Alberta Finance 2009). Input-output analysis is also used to estimate the total economic effect of the Project on the provincial economy.

An analysis of Connacher's economic data underpins the assessment of the total wealth creation associated with the Project.

### **2.7.3 Population Effects**

The population effects of the Project are based on the following variables:

- oil sands project-specific information on construction and operations employment;
- regional multipliers to capture the indirect and induced jobs created by the expansion of the oil sands industry;
- historical regional population growth rates, influenced by in- and out-migration, fertility and mortality rates; and
- the demographics and living arrangements of current construction and operations workers at Connacher Pod 1 and Algar respectively.

### **2.7.4 Service Provider Effects**

Key respondent interviews and analysis of historical performance were used to gauge the capacity of regional service providers to respond to worker and population fluctuations during construction and operations.

### **2.7.5 Transportation Effects**

Regional transportation issues and effects on Highway 63 are assessed based on historical traffic pattern data, file review and key respondent interviews.

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## 3. SOCIO-ECONOMIC SETTING

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### 3.1 INTRODUCTION

This section provides an overview of the socio-economic conditions in the RSA.

### 3.2 SOCIO-ECONOMIC SETTING

#### 3.2.1 Fort McMurray

##### Planned Oil Sands Developments

The oil sands industry was in a strong development phase in the period 1996 to mid 2008. Since then a number of other projects have been cancelled or delayed due to increasing capital costs, reduced product prices and general uncertainty associated with the economic downturn of 2008 and early 2009.

Capital budgets for 2010 and some company announcements in early 2010 indicate that investment in oil sands growth projects is resuming. Examples of the latter include ConocoPhillips sanctioning its Surmont Phase 2 project and Suncor restarting its Firebag Phase 3 project. Oil sands development is likely to proceed in a more measured fashion as compared to the period leading up to 2008, reflecting industry consolidation, operational challenges and reduced access to capital.

##### Population Growth

The population of Fort McMurray has increased in response to the development of the oil sands industry from 61,400 in 2006 to 72,400 in 2008. The corresponding numbers for the rural areas are 3,900 in 2006 and 4,680 in 2008 (RMWB 2009). The on-reserve populations have remained relatively steady over this period. The non-permanent population in the RMWB, comprised of mobile construction workers, increased from 10,440 in 2006 to 26,284 in 2008. Most of these camp-based workers are housed north of Fort McMurray.

Although population counts are not available for 2009, the downturn in the economy is reflected in a reduction of about 15% in the estimated number of mobile workers (OSDG 2009). Population modeling indicates lower population growth in Fort McMurray and the Wood Buffalo region in 2009 as compared to previous years.

### Socio-Economic Effects

The growth in the population of Fort McMurray and the RMWB has caused effects on infrastructure and service providers. The effects felt in the region can be summarized as follows:

- difficulty in recruiting and retaining personnel, although there appears to be some relief from this pressure in the economic slowdown of 2008-2009;
- high cost of doing business, reflecting both the difficulty in recruiting and retaining personnel and high cost inflation in contractor costs;
- response delays that most public service systems face in responding to the unique nature and high population growth pressures of the region. These include provincial land release for residential development, school and medical facility expansion, growth in municipal physical infrastructure, expansion of recreation facilities;
- effects on the region's transportation infrastructure, with increasing traffic levels driven by oil sands expansion compounded by infrastructure development projects taking place concurrently; and
- difficulty in finding volunteers and generally, a sense of impermanence related to high in- and out-migration of the region's permanent population, demanding work schedules, and the presence of a large group of people who live and work in the region, but maintain a residence and a family elsewhere.

### Responding to Regional Socio-Economic Effects

Since 2006 there have been significant developments in the socio-economic environment of the RMWB, including new public policy initiatives and additional public investment in regional infrastructure and services.

In response to growth effects, the Government of Alberta commissioned an assessment of the situation in the Regional Municipality of Wood Buffalo (Radke 2007) and based on the assessment recommendations, provided additional funding to the region. The government also created the Oil Sands Sustainable Development Secretariat (OSSDS), which has prepared *Responsible Actions, A Plan for Alberta's Oil Sands* (Responsible Actions) (Alberta Treasury Board 2009). The OSSDS has

commenced a number of detailed planning studies and initiatives, including:

- The Community Development Plan that will accelerate housing development in Fort McMurray, specifically in the Parson's Creek and Saline Creek Plateau areas;
- The Alberta Regional Social and Economic Infrastructure Model (ARSEIM); and
- The Comprehensive Regional Infrastructure Sustainability Plan (CRISP).

The Province of Alberta is also preparing the Lower Athabasca Regional Plan (LARP) under its Land Use Framework. All planning for the region will need to be consistent with the LARP, once completed.

The RMWB, with support from the Province, has been actively planning for growth in Fort McMurray and other communities. Key planning activities include:

- release of *The Fringe Area Development Assessment*, Urban Service Area report (Preiksatis 2007), aimed to guide land releases, neighbourhood and infrastructure development to support an urban population of 96,000;
- development of a housing needs analysis by type for the RMWB (AMA 2008);
- completion of the Lower Townsite Area Redevelopment Plan; and
- initial work on updating area structure plans for the rural communities in the RMWB, which once completed, are expected to indicate where population growth in the region may be accommodated.

[Table 3-1](#) provides an overview of Government of Alberta (GoA) responses to the region's growth.

**Table 3-1 Government of Alberta Responses**

<b>Area</b>	<b>Government of Alberta Response</b>
<b>Housing</b>	<ul style="list-style-type: none"> <li>• Fort McMurray Allowance of \$1,040/month for all provincially funded organizations in Fort McMurray (Alberta Treasury Board 2007).</li> <li>• Land release and \$241 million in support of the Parson's Creek and Saline Creek Plateau developments. At full build-out these communities can house approximately 40,000 people, including a certain portion of affordable housing (AHUA 2009).</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>• In response to recommendations (Radke 2007), \$200 million in 2007-2009, to address health-related needs: <ul style="list-style-type: none"> <li>▫ providing a northern living allowance to health workers in the NLHR; and</li> <li>▫ construction of three health clinics, staff accommodations and a helipad.</li> </ul> </li> <li>• In February 2008, allocation of \$6 million for Northern Lights Regional Health Centre expansion (redevelopment of ambulatory care) and \$35 million for long-term care centre construction (on hold/under study).</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>• Construction of a number of additional schools in the region, including: <ul style="list-style-type: none"> <li>▫ St. Martha Elementary/Junior High School, which opened in fall 2006;</li> <li>▫ Anzac grade 5-12 school, to be completed in 2010;</li> <li>▫ Ecole McTavish Junior High School, to be completed in 2011; and</li> <li>▫ Catholic Junior/Senior High School, to be completed in 2011.</li> </ul> </li> <li>• Funds for other capital projects including additional modular classrooms and school modernization projects.</li> </ul>
<b>Municipal Infrastructure and Services</b>	<ul style="list-style-type: none"> <li>• The provincial government has provided to the municipality: <ul style="list-style-type: none"> <li>▫ \$3.6 million over three years to provide planning support to the RMWB (GoA 2007).</li> <li>▫ \$103 million in funding in addition to a \$136 million, four-year interest-free loan to build a replacement sewage treatment facility and an upgraded water treatment plant in Fort McMurray.</li> <li>▫ an additional \$30 million in support of the lower townsite wastewater collection system upgrade and \$15 million in support of regional landfill development (GoA 2008).</li> <li>▫ Municipal Sustainability Initiative (MSI) funding of roughly \$225 million expected over the next 10 years (AMAH 2007).</li> </ul> </li> </ul>
<b>Social/Community Services</b>	<ul style="list-style-type: none"> <li>• \$52.5 million for affordable housing, shelter operations and rent supplements (February 2007, GoA 2007).</li> <li>• Fort McMurray Allowance of \$1,040/month for all provincially funded organizations in Fort McMurray (Alberta Treasury Board 2007).</li> <li>• Planning and funding support for Parson's Creek and Saline Creek Plateau, which include affordable housing.</li> <li>• Additional funding for childcare in the region, including the commitment of \$2 million towards a new childcare facility in the region (ACYS 2007, 2008).</li> </ul>

Area	Government of Alberta Response
<b>Transportation</b>	<ul style="list-style-type: none"> <li>• Twinning of Highway 63 from its intersection with Highway 881 to the intersection with Highway 69 and between Suncor and Syncrude (completed).</li> <li>• Repaving, intersection and alignment work on the section between Beacon Hill and downtown Fort McMurray.</li> <li>• Construction of a five-lane bridge across the Athabasca River in Fort McMurray, at a cost of \$127 million and target date of 2011.</li> <li>• Construction of interchanges at the intersections of Thickwood Boulevard and Confederation Way with Highway 63, with an anticipated completion date of 2011 and estimated budget of \$300 million.</li> <li>• Twinning of a southern segment of Highway 63, with an eventual plan of twinning the entire length between Grassland and Fort McMurray.</li> <li>• Improvements to the Fort McKay turnoff, including twinning near the intersection and the construction of turning and acceleration lanes. Both industry and the Government of Alberta contributed funding to the project.</li> </ul>

In addition to the policy and investment initiatives noted above, the RMWB has also initiated numerous responses to growth. Examples include expansions of:

- water, sewer and solid waste and local road systems;
- RCMP force and Regional Emergency Services providers (some of the RCMP officers are part of the rural detachment and paid under the provincial policing contract and 6 officers are enhanced positions funded by industry);
- fire halls and RCMP detachment buildings; and
- recreational facilities, including a major redevelopment of MacDonald Island.

Oil sands companies have also responded to growth pressures by means of community investment programs to support regional service providers. Several companies also have or are considering operating mines and in situ facilities on a fly-in/fly-out basis, thus reducing the effect of their operations on the regional service providers.

### 3.2.2 Small RSA Communities

Economic growth in the Fort McMurray–Edmonton corridor has concentrated in the large urban centres. The rural communities along the corridor have seen limited growth in population. [Table 3-2](#) shows that the population of the small RSA communities grew by 636 people from 13,917 to 14,553 between 1996 and 2006. This growth implies an

average annual growth rate of 0.45%, which is below the provincial average annual growth rate of 2.01% during the period.

**Table 3-2 Population of Small RSA Communities**

	<b>Population 1996</b>	<b>Population 2003</b>	<b>Avg. Annual Growth rate</b>
Athabasca	2,313	2,575	1.08%
County of Athabasca	7,415	7,587	0.23%
Boyle	802	844	0.51%
Thorhild	486	505	0.38%
Thorhild County	2,901	3,042	0.48%
Total	13,917	14,553	0.45%
Source: Statistics Canada 2001, 2006.			

Traffic along Highway 63 between the Edmonton CMA and Fort McMurray, the main transportation corridor for goods to Fort McMurray and projects in the RMWB, has increased by 10 times the population growth in the small RSA communities. Plans are underway to twin Highway 63 between Fort McMurray and Edmonton.

**Table 3-3 Vehicle Counts on Highway 63**

	<b>Average Annual Daily Traffic 1999</b>	<b>Average Annual Daily Traffic 2008</b>	<b>Avg. Annual Growth rate</b>
Thorhild County (N of 18 & 656 E of Thorhild)	1,370	2,170	5.24%
Athabasca County (N of 831 at Boyle)	2,370	4,020	6.05%
Athabasca County (5.4 km W of 55 & 63 Grassland)	2,640	4,720	6.67%
Athabasca County (4.0 km N of Wandering River)	1,750	3,810	9.03%

Increased traffic volumes on Highway 63 has spurred some highway commercial development in, for example, Grassland. The Alberta Energy Corridor (AEC), an initiative of the County of Athabasca, the Town of Athabasca, the Village of Boyle, and the MD of Athabasca, is developing an area structure plan for selected parcels of land along Highway 63 and the Al-Pac Connector (Highway 55 to Al-Pac site),

including sites at Wandering River, Grassland, and the intersection of Highways 55 and 63. The AEC is also developing a land use framework and a marketing plan for the identified lands.

### **3.2.3 Edmonton CMA**

The Edmonton CMA, also known as Alberta's Capital Region, is comprised of 24 municipalities with a combined population of just over 1,000,000. The Region extends from the northern boundary of Sturgeon County in the north to the southern border of Strathcona and Leduc Counties in the south, and from the western limits of Parkland County to the eastern border of Lamont County.

#### **Economic Growth**

Alberta's Capital Region has been experiencing strong economic growth since the late 1990s, driven by exploration and development activity in Alberta's oil and gas sector and the rapid development of the oil sands in northeastern Alberta. The Region had one of the fastest growing economies in the world until the recession in 2008 and 2009. The area is a hub for the oil, gas and petrochemical industries. Supply and service industries in the Region are supporting energy extraction activity in northern Alberta while research is developing new technologies to support value-added processing of Alberta's massive oil, gas and oil sands reserves. Other growing industries in the Region include agri-food processing, forestry, the life sciences, and nanotechnology.

The Region's growing economy has led to a rapid expansion in employment opportunities in the Region across sectors. From 2000 to 2006, the number of people employed in the Capital Region grew by an estimated 14%. Employment growth has stalled in the recession of 2008 and 2009. Indications in early 2010 are of a slow economic and employment recovery with unemployment rates declining from their peak in Q3 2009. Generally, economic growth in the Edmonton CMA is expected to be positive but lower than experienced between 2001 and 2008 (Nichols 2009).

#### **Population Growth**

The Region includes both rural and urban municipalities that range considerably in geographic size and population. Approximately 70% of the Region's population lives in the City of Edmonton.

The population of the Edmonton CMA communities grew by almost 35,000 per year, from 863,000 to 1.35 million between 1996 and 2006. This growth implies an average annual growth rate of 1.84%, slightly below the provincial average annual growth rate of 2.01% for the same period.

### Socio-Economic Effects

Although the size of the Edmonton CMA positioned it better than RMWB, the rapid economic and population growth between 1996 and 2008 did create stresses on the region. Table 3-4 summarizes growth related issues experienced in the Edmonton CMA. Many of these issues reflect broad societal trends and ongoing discussion of how to best deliver services such as health care.

**Table 3-4 Current Social Infrastructure Issues, Edmonton CMA**

<b>Social Infrastructure</b>	<b>Current Issues</b>
Housing	<p>Notwithstanding a levelling off of house price increases after 2007, affordability remains a concern.</p> <p>Rental rates are high and vacancy rates relatively low.</p> <p>Developing new rental stock is not attractive to developers.</p> <p>The demand exceeds available supply in all categories of social (non-market) housing.</p>
Health Care	<p>There is a shortage of health professionals. The extent of the shortage is uncertain and reflects different options for health services delivery.</p> <p>Wait times, particularly for emergency department services, remain a concern.</p> <p>Aging of the population will increase the demand for many age-related services, including health care.</p>
Education	<p>There is a low high school completion rate despite the increasing need for high school completion to access employment opportunities.</p> <p>Although capacity appears to exist in school facilities, the location of schools does not always align with where school-aged children live.</p>
Emergency Services	<p>There is difficulty in attracting and retaining appropriately skilled personnel, including volunteers.</p> <p>Aging of the population is leading to an increase in demand for ambulance services.</p>

<b>Social Infrastructure</b>	<b>Current Issues</b>
Social and Community Services	<p>There is an increasing demand for services because of population growth and increasing complexity of client needs.</p> <p>There are difficulties in attracting and retaining personnel and volunteers.</p> <p>Availability of affordable childcare is a concern. Childcare providers are finding it difficult to attract and retain the needed personnel.</p>
Policing	<p>Attraction and retention of personnel is an issue for policing services in the region.</p> <p>There is an increased demand for police services because of the population growth, along with demographic, societal and economic changes.</p>

The recession of 2008 and 2009 has decreased some of the pressures on the region and increased others. Housing prices decreased by roughly 10%, reducing but not eliminating the financial pressures on families. Unemployment rose, but in-migration has remained relatively high, reducing some of the workforce recruitment and retention issues.

### **Responding to Regional Socio-Economic Effects**

In response to the growth pressures up to the recession of 2008 and 2009, the Government of Alberta initiated the Capital Region Integrated Growth Management Plan. This plan and its supporting studies (ISL 2007, Nichols Applied Management 2007) led to the formation of the Capital Region Board in December 2007. Several regional planning initiatives have been executed under its auspices, culminating in the Capital Region Growth Plan (Capital Region Board 2009).

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## 4. ECONOMIC AND FISCAL ASSESSMENT

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This section will outline the effects of the Project, during both construction and operations phases, in income and employment terms and will provide an estimate of the revenues to government. The results presented here are informed by a survey of construction workers at the Algar site and interviews with key managers at the existing Connacher Pod 1 and Algar sites. Information from these sources indicates that:

- all construction workers at the Algar site and all but one of the operations workers at the Pod 1 site in February 2010 lived permanently outside the RMWB and 95% of construction workers stated that they do not have any plans to move to the region;
- the majority of supplies used for the construction of POD 1 and Algar were procured in the Edmonton CMA and elsewhere in Alberta.

Reasons behind the stronger economic ties between previous Connacher projects and the Edmonton CMA as compared to Fort McMurray include the focus of Fort McMurray based contractors on the large mining projects north of Fort McMurray, the relative small size of the Connacher projects relative to the mining projects, and the location of the project 70 km south of Fort McMurray along Highway 63.

The strong linkage between the Connacher projects and suppliers from the Edmonton CMA and beyond is expected to carry forward into the Project.

### 4.1 PROJECT INCOME EFFECTS

#### Capital Expenditures by Region

The Project construction capital expenditures are estimated at approximately \$600 million. Construction capital expenditures include wages and salaries paid to construction workers, professional engineering and environmental services and direct purchase of goods and services, such as equipment modules and structural steel elements.

[Table 4-1](#) provides a breakdown of the estimated construction expenditure by type and region. Estimates are based on published

supply ratios by industry (Alberta Finance 2009), as well as past project construction experience of Connacher gained through the construction and operation of its demonstration project and other industry sources.

**Table 4-1 Construction Expenditure by Region**

<b>Expenditures</b>	<b>RSA</b>	<b>Other Alberta</b>	<b>Other Canada</b>	<b>Foreign</b>	<b>Total</b>
	(\$ millions)				
Engineering and Project Management	16	36	13	5	<b>71</b>
Construction	86	173	38	28	<b>325</b>
Equipment and Materials	30	53	25	98	<b>205</b>
<b>Total</b>	<b>132</b>	<b>263</b>	<b>76</b>	<b>131</b>	<b>600</b>
Percent of Total	22%	44%	13%	22%	100%
NOTES: – = No significant expenditures. – = Values may not add due to rounding					

Approximately 66% of the total expenditure is estimated to accrue to suppliers and workers within Alberta. In addition, 13% is estimated to accrue to suppliers in the rest of Canada and 22% to foreign suppliers. The expenditure accruing to foreign suppliers is related primarily to the purchase of machinery and equipment. An estimated \$131 million (or about 22%) will accrue to the RSA, mainly in the form of wages for construction workers and income for contractors based in the Edmonton CMA.

#### **Sustaining Capital Expenditures by Region**

Once operational, the Project will incur sustaining capital expenditures associated with:

- central plant facilities;
- construction of a further 40 wellpads; and
- ongoing drilling.

Sustaining capital outlays will begin in 2013 and are estimated to total \$530 million between 2013 and 2038 (or an average of approximately \$21 million per year). More than 80% of the sustaining capital expenditure is expected to accrue to Alberta suppliers, reflecting the

supply capabilities of the Alberta drilling and pad and pipeline construction sectors.

### Operations Expenditures by Region

Annual operations costs of the Project (excluding gas and electrical costs) are estimated to average \$88 million. An estimated 65% of the expenditures accrue to Alberta, including the RSA, and an additional 12% to the rest of Canada. Table 4-2 provides the estimated breakdown of the operations costs by type of expenditures and geographic region, based on published supply ratios by industry (Alberta Finance 2007).

**Table 4-2 Operations Expenditure by Region**

Expenditures	RSA	Other Alberta	Other Canada	Foreign	Total
	(\$ millions)				
Labour	9	19	3		32
Materials and Equipment	10	19	7	20	56
Total	19	33	11	20	88
Percent of Total	22%	43%	12%	23%	100%
NOTES: – = No significant expenditures.					

An estimated \$19 million (or 22%) of annual operations spending will accrue to workers and contractors in the RSA, mostly in the form of wages and salaries.

### Total Income Effects

The construction expenditure associated with the Project constitutes income for contractors, suppliers and workers. These recipients, in turn, spend part of this income on supplies and services, thus capital expenditures are circulating in the economy, compounding the income effect of the Project.

Table 4-3 presents the Project's estimated direct, indirect, and induced impact in terms of Gross Domestic Product (GDP) and household income, based on published statistics (Alberta Finance 2009).

**Table 4-3 Project GDP and Income Effects**

	Construction Phase	Operations Phase	Sustaining Capital Expenditure
	(\$ millions)		
Gross Domestic Product	560	83	20
Household Income	362	23	6

**RSA Opportunities**

Through operations of its Pod 1 plant and the construction of its Algar plant, Connacher has developed a number of relationships with contractors in the RSA. Connacher intends to continue working with RSA-based contractors to increase the share of local contractors in Project work. The company has a number of procedures and policies to maximize procurement and employment in the RSA, including:

- giving preference, in order, to RSA, Alberta, Canadian and international suppliers, giving due account to costs, quality, delivery time and compatibility of existing operations; and
- making RSA-based businesses aware of goods and services supply opportunities related to the Project, through use of the RED Link program.

In line with the general economic linkage between the Project and suppliers in the Edmonton CMA and beyond, most the Project's income effects in the RSA are likely to accrue to workers and suppliers in the Edmonton CMA.

**4.2 PROJECT EMPLOYMENT EFFECTS**

This section will present the employment effects of the Project during both construction and operations phases. The effects will be discussed in terms of person-years of employment, recognizing that, especially

during construction, one job or position may be filled by more than one person over time.

### **On-site Construction Employment**

The Project will create on-site construction employment opportunities between Q1 2012 and Q2 2013. The expected on-site construction employment consists of:

- 310 person-years of work for trades to construct central plant facilities;
- 210 person-years for field facilities (well pads and associated pipelines and roads); and
- 180 person-years for initial drilling and completions work.

Taken together, the construction of the plant and field facilities and the drilling of the wells will create approximately 700 person-years of direct on-site employment.

The size of the on-site construction workforce, including drilling complements, is estimated to remain fairly constant in the range of 650 persons over the construction period.

### **Construction Employment by Type**

The Project will engage a broad range of construction trades in on-site plant, well pad and pipeline construction activities. Key trades include welders, pipefitters, ironworkers and electricians.

Drilling activities will require a full range of rig workers, including roughnecks, motormen and drillers. Off-site workers, employed in fabrication yards, will consist primarily of metal fabricators, pipefitters and welders.

### **Off-site Construction Employment**

Connacher's construction strategy includes the use of skid modules and overall construction modularization. This will create work an estimate 360 person-years of employment for construction workers in fabrication yards, primarily in the Edmonton and Calgary regions. The majority of this work will take place in the early part of the construction period.

### **Engineering Employment**

The Project is expected to create an estimated 280 person-years of employment for engineering contractors. Most of this work will accrue to engineering firms in Edmonton and Calgary.

### **Operations Employment**

The Project is expected to be integrated with the Algar plant and in respect to product shipments with the Pod 1 plant. Once fully operational, the Project is expected to increase the total operations workforce for the Algar and Pod 1 projects by 80 positions, from 125 to 215 persons. An estimated two-thirds of these full-time positions are expected to be direct employees of Connacher, with the balance consisting of contractors.

Ongoing drilling activity and associated replacement pad construction is estimated to require an average of between 20 and 25 workers per year during the operations phase of the Project. The work is expected to be done largely by RSA contractors.

The operations employment created by the Project will mirror that of the current operations. An estimated 50 full-time equivalent positions will be plant operators and maintenance workers. In addition, ongoing well pad and pipeline construction will require equipment operators and metal trades, while drilling of replacement wells will require the relevant crew complement.

### **RSA-based Opportunities**

Connacher's experience operating the Pod 1 plant reflects the challenge of the limited capacity in Fort McMurray in light of high demand for workers and services there. In line with this experience, most opportunities are expected to accrue to workers and contractors from communities in the southern part of the RSA and elsewhere in Alberta.

The company will continue to promote employment, contractor and supply opportunities for local and especially aboriginal contractors through efforts such as:

- procurement policies that consider degree of aboriginal participation;
- breakdown of the contract size for selected procurement items to reflect the size and capabilities of RMWB-based contractors; and

- use of the procurement promotion systems within RED Link and NAABA, as well as other RSA-based advertisements.

### **Total Employment Effects**

The Project's construction is estimated to generate 1,340 person-years of employment during the construction period. In addition to direct employment effects during construction, the Project will have indirect effects (Project-supplier effects) as well as induced effects (affected workers spending income on general goods and services in the economy). An order-of-magnitude estimate of these indirect and induced employment effects in Alberta over the construction period is 2,300 person-years (Alberta Treasury 2009).

## **4.3 PROJECT FISCAL EFFECTS**

The Project contributes property taxes to the RMWB, oil sands royalties to the provincial government, and corporate taxes to the provincial and federal government. Project tax and royalty payments expand the ability of the different levels of government to fund programs and initiatives in the RSA and elsewhere.

### **4.3.1 Municipal Fiscal Effects**

Once operational, the Project will add approximately \$205 million to the assessment base of the RMWB. The estimated total Project assessment represents roughly 1% of the current \$19.6 billion assessment base of the RMWB (RMWB 2009b).

The municipal taxation that the Project may pay is subject to much uncertainty, as both the actual assessment of the facility and the tax rates in effect when it becomes operational are unknown. A preliminary estimate of the Project's municipal tax payment upon reaching full operation, using current tax rates as a proxy, is \$3.5 million annually.

The municipal costs directly associated with the Project are expected to be few because most of the water, sewer and access road maintenance services are supplied by the Project. The Project will have effects on service providers, including policing and emergency services, and roadways.

### 4.3.2 Provincial Fiscal Effect

#### Royalties

The Project will contribute to the royalty income of the Alberta government. The royalty payment estimate presented here is subject to uncertainty regarding future values of key variables in the Provincial calculation formula. Assumptions used in this analysis are:

- Capital and operating costs as outlined in [Section 4.1](#);
- the Project will be considered for royalty calculation purposes as fully integrated with the existing demonstration plant;
- a long-term bitumen price of \$80 USD per barrel West Texas Intermediate (WTI); and
- the 2008 Alberta government royalty framework applies over the life of the Project.

Under these assumptions, Connacher estimates that the Project will pay a total of \$978 million (\$2009) over the 30 year operations phase. On a present value basis, assuming 2009 constant dollars and an 8% real discount rate, the value of the Project's royalty payments is estimated at \$370 million.

#### Corporate Tax

Under the same assumptions and on the basis of a stand-alone equity finance project, approximately \$175 million in corporate taxes accrue to Alberta and \$350 million to Canada.

However, unlike royalties which are paid on a project basis, corporate taxes apply to company-wide earnings and are sensitive to accumulated interest payments expenses of the project owner. Connacher Oil and Gas Ltd. is a highly leveraged firm with accumulated interest payment expenses. These will reduce the actual tax payments to zero over the life of the project.

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## 5. POPULATION EFFECTS

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### 5.1 SCOPE OF THIS SECTION

This section will present the population effects associated with the Project. The Project population effects will be examined in the context of other planned, approved or under construction projects in the RSA.

### 5.2 BASE CASE

#### Fort McMurray

The RMWB anticipates its population to grow as the oil sands industry develops (RMWB 2010). The estimates of the RMWB forecasting initiative indicate a population in Fort McMurray of 72,470 in 2008, 90,140 in 2018, 106,380 in 2023 and 133,000 by 2028. Most of this population growth in the 2010-2018 period is linked to projects assumed in the Base Case. Population increases beyond 90,000 -95,000 persons imply oil sands projects that currently do not have regulatory approval.

The RMWB model has been augmented through subsequent work in the context of the Oil Sands Sustainable Development Secretariat's Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area (AOSA CRISP). The AOSA CRISP work brings forward similar order-of-magnitude population numbers, although it uses a longer timeframe and more gradual expansion of bitumen production. The RMWB estimates are of also of similar order-of-magnitude to the results of the Urban Population Model developed and maintained by the Oil Sands Developers Group (OSDG) model, after differences in bitumen production growth paths are taken into account.

The average annual growth rate of the population in the Wood Buffalo region is expected to decline over time and average 3% to 45% over the next 15 years. This is lower than the growth experienced in recent years. The anticipated lower annual growth rate is, in part, due to the growth of the population, which is the basis for the growth rate calculation. There are, however, other reasons to anticipate lower growth rates in the future. These include:

- economies of scale by means of expansion which, compared to greenfield projects, reduce the number of workers required per barrel of output;

- the emergence of in-situ bitumen production facilities that require fewer workers per barrel of bitumen output than mining methods;
- the emergence of operations camps as part of project execution, especially for those facilities that are in excess of 1-1.5 hours of daily commute from Fort McMurray; and
- technological advances, such as slurry-at-face mining, which require fewer operators than the technologies that they replace.

### **Small RSA Communities**

The growth in the small RSA communities under Base Case assumptions is expected to reflect the last five to 10 years of experience. Using the 5-year average annual growth rate, the population of the small RSA communities is expected to increase from 14,553 in 2006 to 15,374 in 2018, and 16,111 in 2028. Additional growth may be attracted to the small RSA communities if the Alberta Energy Corridor initiative succeeds in expanding the industrial and commercial base along Highway 63.

Planning initiatives, especially the AOSA CRISP, may lead to additional infrastructure investment in existing or new communities close to the bitumen resource along Highway 63. If new residential opportunities or additional infrastructure investment to materialize, additional population would be attracted to the RSA.

### **Edmonton CMA**

The Growth Plan released by the Capital Region Board anticipates that the Edmonton CMA population will increase with an average annual growth rate of about 2% from 1,094,105 in 2008 to 1,305,593 in 2018 and 1,498,322 in 2028 (CRB 2009). Population in the Edmonton CMA has a myriad of growth drivers, many related to its status of capital of Alberta and service centre for the conventional oil and gas and oil sands industries. The construction of one or more large-scale upgraders also plays a role in the anticipated growth for the Edmonton CMA.

## **5.3 APPLICATION CASE**

The Project's population effect and the associated effect on service providers in the RSA is expected to be small. Many of the construction and operations workers that are expected to add marginally to the population in the northern part of the RSA are already resident in the RSA, especially in the Edmonton CMA.

### **Fort McMurray**

The Project will use on-site operations and construction camps and institute worker commute systems, using private vehicles, busses, and a fly-in/fly-out program utilizing the Fort McMurray airport. The camp will be built to industry standards and house only employees or contractors associated with the Project.

The temporary population increase of approximately 300 camp-based mobile workers during the construction phase and the roughly 80 camp-based operations workers for the life of the project will add to the demand for emergency, policing, and health services. This effect is expected to be small in view of the fact that the construction and operations workforces will not exceed 1.5% and 0.3%, respectively, of the estimated 20,000 camp-based workers counted in the RMWB in early 2009.

### **Small RSA Communities**

The Project is not expected to have a measurable effect on the population of and service providers in the small RSA communities.

### **Edmonton CMA**

Most of the construction and operations workers required for the Project are expected to be recruited from the Edmonton CMA and beyond. In addition, indirect and induced jobs created in the Edmonton CMA as a result of Project-related work being done off-site may encourage some in-migration. Under the very conservative case that all construction and operations workers for the Project are new to the Edmonton CMA, the population impact is expected to be less than 0.1% of the total population of the Edmonton CMA. The Project-related population growth is fully subsumed in the anticipated growth in the CMA.

In reality many of the Project construction and operations workers are likely to be residents of the Edmonton CMA, thus making the Project's population effect essentially zero.

## **5.4 PLANNED DEVELOPMENT CASE**

Under the cumulative effects scenario the near and medium growth forecast discussed under the Application Case extends further into the future. The discussion under the Base Case remains relevant. As noted, population growth in Fort McMurray beyond 90,000 -95,000

persons imply oil sands projects that currently do not have regulatory approval.

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## 6. SOCIAL INFRASTRUCTURE EFFECTS

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### 6.1 SCOPE OF THIS SECTION

This section will:

- discuss the social infrastructure issues facing RSA residents and service providers;
- assess the Project and cumulative effects of Project in the RSA on selected social infrastructure areas, and
- present Connacher's measures for helping to mitigate those effects.

The section will focus on policing, emergency services, and health services, which are expected to see a small effect from the Project. Education and social services are not expected to see an effect from the Project due to its small and dispersed population effect. They are not discussed further here. Housing, especially non-market housing, is also not discussed here as the effect of the Project on housing is expected to be very small. It is also expected to accrue mostly to the Edmonton CMA, where it will be accommodated with ease.

### 6.2 SITUATIONAL ANALYSIS

#### 6.2.1 Fort McMurray

The growth in the population of Fort McMurray and the RMWB has caused effects on infrastructure and service providers, including:

- difficulty in recruiting and retaining personnel;
- high cost of doing business;
- response delays for most public service systems;
- increasing traffic levels; and
- difficulty in finding volunteers and generally, a sense of community impermanence.

See [Section 3.2.1](#) for more detail and for an overview of provincial, municipal, and private sector responses to the growth issues in Fort

McMurray. The balance of this section provides a more detailed analysis of the situation by selected service provider.

### **6.2.1.1 Policing and Emergency Services**

Residents of the Fort McMurray area have expressed concerns about a number of issues pertaining to emergency services, including crime (especially alcohol- and drug-related offences), traffic and traffic safety, growing demands on emergency response services by both resident and camp workers, and the increased likelihood of a major industrial accident as a result of intensified industrial activity in the region.

#### **Policing**

Police services in the southern portion of the RMWB are provided by the Fort McMurray detachment of the RCMP, which has 38 out of 160 officers dedicated to patrolling rural areas of the municipality. The rural complement is funded in part under the provincial RCMP contract. It includes as well nine municipally funded rural support positions, four First Nations policing positions and six enhanced policing positions funded by industry. Traffic enforcement is handled by a dedicated traffic unit comprised of 11 officers (Bane 2009, personal communication). The RMWB created a dedicated position for Emergency Management in 2009. This position will provide a coordinated response to emergencies that require multi-agency involvement.

The Fort McMurray RCMP faces recruitment and retention challenges that mirror those existing elsewhere in Canada. In Fort McMurray they are intensified by the high cost of housing. For example, an estimated 87% of funded positions were filled in 2009. (Stats Can 2009). The RCMP employees receive a cost-of-living allowance, which was introduced in 2007.

Criminal code offences per 100,000 population tend to be well above the provincial average as reported by Statistics Canada, which uses the 2006 Statistics Canada census population estimate for the RMWB. Once the number of non-permanent population in Fort McMurray and the mobile workforces in rural project accommodation is included in the count, the total criminal code offences per 100,000 people are in line with the provincial average.

#### **Emergency Services**

Regional Emergency Services in Fort McMurray is responsible for all emergency response calls within the southern portion of the RMWB. In

the urban service area, the Department consists of 132 emergency personnel and 38 support and administration positions, located in three operational stations and a dispatch and training facility (Makey 2008, pers. comm.). Ambulance services are being transferred to Alberta Health Services as part of the province-wide consolidation of ambulance services.

Similar to other social infrastructure areas, the Regional Emergency Services is experiencing recruitment and retention challenges, despite the employee cost-of-living and wellness allowance provided to municipal employees.

### **6.2.1.2 Health Services**

Hospital services in the Wood Buffalo area are delivered by Alberta Health Services. It operates the Northern Lights Health Centre in Fort McMurray, which is the closest medical facility to the Project. It is the destination of workers requiring emergency medical attention beyond what is available at on-site facilities.

Most health service providers in the RMWB are concentrated in the urban service area of Fort McMurray. The Northern Lights Regional Health Centre offers both acute care and continuing care. Services provided include 24-hour emergency, general surgery, ambulatory care, rehabilitation, home care, and community health. Residents in rural and remote communities are routinely referred to Fort McMurray or to Edmonton for health care services beyond those limited services available in their communities.

Rapid population growth in the region has led to increased demands on health services in the region, including in small outlying communities. Residents and medical staff have raised concerns about the ability of the system to meet the increased need for health services. Some of the challenges include:

- difficulty in recruiting and retaining health care professionals and support staff – a national challenge that is intensified by difficulties in attracting staff due to the high cost of living in Fort McMurray; and
- ongoing infrastructure needs, including the absence of a dedicated long-term care facility.

There were 65 physicians in Fort McMurray in 2009, up from 63 in 2008. The Northern Lights region, which covers part of northwestern Alberta in addition to the RMWB accounted for 0.5% and 1.5% of all specialists

and non-specialists in the province, respectively (ACPS 2009). In comparison, the RMWB accounts for about 2.5% of the province's population.

Residents have also expressed dissatisfaction with the level of health services available. A 2008 emergency service survey placed satisfaction with the Northern Lights Regional Health Centre services among the lowest in the province. Patient concerns included long wait times, crowded emergency departments, low confidence in physician/nurse qualifications, and lack of sufficient explanation about patient's condition (HQCA 2008).

### **Camp-Based Worker Effects**

Workers in construction and operations camps have effects on the health system in Fort McMurray. The use of medical services by mobile workers has been part of the discussion of the effects of oil sands industry development in Fort McMurray for some time. A recent study of mobile workers in the RMWB showed that about 1.5% of trips to Fort McMurray were for hospital services use and less than 1% for non-hospital medical services. Of the hospital services used, emergency services accounted for 82%. Temporary ailment was the most common reason for a visit to the Emergency Room, followed by (work-related) injuries. Non-hospital medical services were primarily visits to a physician, dentist, or optometrist (Nichols 2007).

## **6.2.2 Small RSA Communities**

### **6.2.2.1 Policing**

Police coverage for the small RSA communities is provided by the RCMP K Division Eastern Alberta Region with detachments, among others in Athabasca, Boyle, Lac La Biche, and Smokey Lake.

### **6.2.2.2 Emergency Services**

The County of Athabasca provides volunteer fire protection and rescue services and has equipment stationed in Grassland and Wandering River. The County has service agreements with the Town of Athabasca and the Village of Boyle. There is a regional emergency response plan in place (Athabasca 2008). There are concerns about the volume of emergency response calls related to increasing traffic on Highway 63 and the associated stress on volunteers (personal communication, G. Buchanan 2010).

Prior to Alberta Health Services taking over ground ambulance services in April 2009, the County of Athabasca managed a regional ambulance service in partnership with Alberta Health Services, Aspen Health Region. It has ambulance bases in Athabasca, and Boyle.

### **6.2.2.3 Health Services**

Alberta Health Services operates the Athabasca Healthcare Centre, the Boyle Healthcare Centre, and the Barrhead Healthcare Centre. These centres offer, among other services, 24-hour emergency services.

## **6.2.3 Edmonton CMA**

The Edmonton CMA is a large metropolitan area with a diversified economic base and well-established services. This section highlights some of these services.

### **6.2.3.1 Policing**

Policing services in the Edmonton CMA are provided by the Edmonton Police Service (EPS) and the Provincial Capital District of the RCMP K Division. The Provincial Capital District of the RCMP K Division has 10 detachments, including Fort Saskatchewan, Morinville and Strathcona County. The RCMP detachment in Redwater reports to the Eastern Alberta District of K Division RCMP. (Nichols 2007b). Combined, the EPS and the Provincial Capital District of the RCMP K Division have 1,750 police officers (Statistics Canada 2009).

### **6.2.3.2 Emergency Services**

There are a total of 62 fire stations (including those jointly occupied by ambulance services) located throughout the Capital Region. In addition there is a fire service located at the Edmonton International Airport and seven industrial fire stations attached to major industries.

Ambulance services consists of 35 ambulances (exclusive of backup units) operating out of 21 ambulance stations in the region surrounding Edmonton and 32 ambulances operating out of 13 stations in the City of Edmonton. In addition, Edmonton utilizes four roaming paramedic response units (Nichols 2007).

### **6.2.3.3 Health Services**

Alberta Health Services operates in Edmonton one of the largest integrated health regions in Canada, providing health services for one million residents in the Edmonton CMA. Prior to the amalgamation of

health regions in 2009, Capital Health had an annual budget of approximately \$2.3 billion. Health services provided by Alberta Health Services in the Edmonton CMA include emergency and acute care services, home care, continuing care, public health, outreach programs, and numerous rehabilitation and prevention programs. There are approximately 15 hospitals and primary care facilities, and 24 public health centres in the region. As well, there are approximately 2,700 acute care beds and 5,800 long term care beds and designated assisted living spaces (Nichols 2007b).

Edmonton is a centre for medical research, linked to the University of Alberta and the University of Alberta Hospital.

### **6.3 BASE CASE**

Generally, demand for services will increase in line with the growth in resident and non-resident population.

#### **Fort McMurray**

As discussed in [Section 5.2](#), population growth in Fort McMurray is expected to continue. It is expected to reach 90,000 to 95,000 people under Base Case assumptions. The Government of Alberta and the RMWB have put in place planning and funding initiatives to meet the housing, municipal infrastructure, and social, health, policing, emergency response and other services for this population level and more. Oil sands companies have community investment programs in place to provide assistance where appropriate. See [Section 3.2.1](#) for details.

The slowdown or even cessation of population growth in 2009 has provided additional time to plan for further growth. Ongoing initiatives, such as the development of Parsons Creek and Saline Creek Plateau, water and wastewater plant expansions, and changes to the Northern Lights Health Centre will provide much of the required infrastructure. Ongoing and completed Government of Alberta and RMWB planning work will allow for a more coordinated and timely development of infrastructure and services. Challenges will remain, including high housing costs, high costs of doing business, and recruitment and retention of staff and volunteers.

### **Small RSA Communities**

Demand for health and other services in the small RSA communities is expected to increase marginally with population. Demand for emergency response services along Highway 63 is expected to increase over time as traffic volumes increase. The demand for emergency services will be affected by the twinning of Highway 63, as divided highways have lower collision rates than two-lane secondary highways.

### **Edmonton CMA**

Demand for health and other services in the Edmonton CMA is expected to increase marginally with population. Most of this demand is driven by general economic growth, which is expected to be positive but lower than experienced between 2001 and 2008.

The experience of the recent period of growth indicates that economic growth has outpaced social investment in the Edmonton CMA and the province. Social housing is in short supply and many people with lower skill levels have only been able to find lower-paying jobs. Housing affordability remains an issue despite some retrenchment of prices from their heights of early 2007. Many of the growth-related pressures are expected to reflect the experience of the years prior to the onset of the 2008 recession. See [Section 3.2.3](#) for more detail.

## **6.4 APPLICATION CASE**

### **Fort McMurray**

Connacher is committed to hiring locally whenever possible and to fully use available local and provincial workforce. The residency patterns of the current Connacher workforce and the inclusion of a permanent on-site operations camp suggests that the majority of operations workers will live outside the Wood Buffalo region. The same holds for the temporary construction workforce.

The construction execution and approach to operations staffing will minimize any effects of the Project on the regional social infrastructure. In particular, the Project is expected to have minimal impacts on the regional population growth and thus, on housing, education, recreation, social, and municipal services and infrastructure. There will be some effects on policing, emergency services, and health services related to the construction and operations camps. These impacts are expected to be small relative to the overall impact of construction and operations camps in the region, which house 20,000 people or more.

### **Small RSA Communities**

Demand for health and other services in the small RSA communities is not expected to increase due to the Project. Demand for emergency response services along Highway 63 is expected to increase linked to Project related traffic. See [Section 8](#) for more detail.

### **Edmonton CMA**

Demand for health and other services in the Edmonton CMA is not expected to increase due to the Project. Most of the Project's construction and operations workers are already resident in the Edmonton CMA. The size of the police, emergency services, health and other social services systems in the Edmonton CMA is such that an increase in demand if all required construction and operations workforce were to be new to the region would be very small.

## **6.5 PLANNED DEVELOPMENT CASE**

### **Fort McMurray**

The main difference between the Application Case and the Planned Development Case is the inclusion in the analysis of projects without regulatory approval. Most of these projects are slated for construction in 2015 or beyond and contribute to population growth in 2018 and beyond.

In terms of service provider impacts, Planned Development Case implies a continued growth in service demands beyond 2018. This continued growth, in turn, will require a continued emphasis on planning and social infrastructure development for a more extended period than under the Base Case or Application Case assumptions. Most planning work already contemplates population levels beyond the 90,000 to 95,000 population level for Fort McMurray.

### **Small RSA Communities**

Demand for health and other services in the small RSA communities is expected to increase marginally with population. Demand for emergency response services along Highway 63 is expected to increase over time as traffic volumes increase. The demand for emergency services will be affected by the twinning of Highway 63, as divided highways have lower collision rates than two-lane secondary highways.

### **Edmonton CMA**

Demand for health and other services in the Edmonton CMA is expected to increase with population. Most of this demand is driven by general economic growth, which is expected to be positive but lower than experienced between 2001 and 2008. Growth-related pressures are expected to reflect the experience of the years prior to the onset of the 2008 recession. See [Section 3.2.3](#) for more detail.

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## 7. TRADITIONAL LAND AND CULTURE

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### 7.1 SCOPE OF THIS SECTION

This section will discuss issues pertaining to the traditional lands and culture of First Nations and Métis peoples in the RSA.

### 7.2 SITUATION ANALYSIS

There are two First Nations in the RSA. They have a population of about 473 people. The First Nations are:

- The Fort McMurray First Nation near Anzac; and
- The Chipewyan Prairie Dene First Nation in Janvier.

The Heart Lake First Nation, located in Lakeland County, also has traditional land use territory in the study area and has a population of 165 people.

The governments of the First Nations in the RMWB, supported by the Athabasca Tribal Council (ATC), administer services required by their members, including housing, social services and infrastructure development. They have pledged to work together to promote and protect their respective traditional lands and cultures and nurture the well-being of their peoples.

Along with First Nations, the Wood Buffalo region is home to seven Métis locals of Region 1 of the Métis Nation of Alberta. The Métis Nation of Alberta has a variety of affiliated institutions and structures engaged in offering socio-economic and cultural support to Métis people and communities in a variety of sectors, including labour market development, education, economic development, child and family services, housing, health and wellness, justice and youth.

#### 7.2.1 Changes in Traditional Land Use and Culture

Aboriginal peoples have lived in northeastern Alberta for 10,000 years or more, engaging in hunting, trapping, fishing, and gathering of food and medicinal plants. Carrying out these traditional activities continues to this day and is intimately related to the culture, spirituality and identity of Aboriginal peoples.

Exposure to external cultural influences and the wage economy has eroded the ability of Aboriginal peoples to pursue traditional activities, and hence their ability to retain and pass on their culture. Development in the region has impacted traditional culture by:

- disturbing the land and waterways, thus decreasing the places where aboriginal people can pursue traditional activities;
- reducing the time that aboriginal people have to pursue traditional activities by:
  - increasing the travel time to undisturbed habitats; and
  - increasing the need for and availability of wage employment.
- reducing the time and place to pursue traditional activities affects the transmission of traditional culture, which tends to rely on cross-generation contact while on the land.

Development has also brought along with it increases in the regional population which, in turn, increases the exposure of youths and older community members to non-aboriginal culture. As well, infusions of wage income to Aboriginal communities may fuel dysfunction, including drug and alcohol use and abuse, in people with limited exposure to wage economy realities.

These processes weigh heavily on small communities due to the speed at which they occur. They are often experienced as inexorable and seen as contributors to social dysfunction. They weigh heavily as well because general developments, such as (residential) schooling and increased road, air, and telecommunication access, have already changed traditional culture and cultural resilience.

## **7.2.2 Response to Growth Pressures**

Aboriginal communities in the region have responded in a number of ways to development pressures, including engaging with the oil sands industry by developing employment and contracting capacity. Examples of ongoing business relationships with First Nation and Métis businesses include contracts in the area of surveying, construction, fuel hauling, environmental services, and catering. In 2008, there were approximately 1,500 Aboriginal employees in permanent jobs in the oil sands industry and over \$575 million in contract work performed by Wood Buffalo Aboriginal companies (OSDG 2009). Employment and business opportunities for Aboriginal people and businesses offer

prospects for improvements in income as well as investments in harvesting equipment and activities.

The cultural changes and community stresses resulting from development mean that many Aboriginal community members need, and will likely continue to need, assistance in managing the changes brought on by oil sands expansion. In the past oil sands developers and other companies in the region have supported the development of First Nations in the area through the ATC/Athabasca Resource Developers All Parties Core Agreement. During the 2002 to 2010 period, the agreement provided base funding of \$230,000 to five ATC First Nations for Industry Relations Corporations (IRC). The IRCs assist each community to consult with industry and identify issues relating to industrial development.

A number of companies in the region support cultural retention and other initiatives aimed at helping Aboriginal communities maintain their social cohesion and unique characteristics.

In response to growth pressures, the preservation of traditional cultural and environmental knowledge is also changing, moving from a mostly oral and activity-based tradition of preservation to greater emphasis on systematic documentation. This is done primarily through traditional land use studies, traditional ecological knowledge initiatives, oral history projects and other initiatives. Traditional resource use is also addressed through the Sustainable Ecosystems Working Group (SEWG), a working group of the Cumulative Environmental Management Association (CEMA) that has a mandate to address issues on sustainable ecosystems, wildlife and biodiversity.

### **7.3 BASE, APPLICATION AND CUMULATIVE CASES**

Additional land will be disturbed as approved and proposed oil sands projects are constructed in the region. The project will further intensify oil sands activities in the southern portion of the RMWB.

Further development will diminish the opportunities for traditional resource use in the Wood Buffalo region but increase wage employment opportunities for Aboriginal people, as well as commerce opportunities for Aboriginal-owned businesses.

The extent to which Aboriginal people in the area are able to take advantage of these opportunities depends on many factors, including:

- education level and job readiness; and
- interest in pursuing wage economy opportunities as compared to traditional pursuits.

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## 8. TRANSPORTATION EFFECTS

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### 8.1 SCOPE OF THIS SECTION

This section will:

- discuss transportation issues in the RSA;
- assess the effects of current and planned oil sands industry development; and
- present Connacher's transportation mitigation initiatives.

### 8.2 SITUATION ANALYSIS

#### Regional Road Network

The majority of labour and supplies during the construction phase of the project are transported from the Edmonton CMA north to the Project by way of Primary Highway 63. It is a two-lane highway that serves as the main access road to the urban service area of Fort McMurray and the mining and in situ projects north of Fort McMurray. Highway 63 is also part of the high load corridor for in situ projects along Highway 881. Highway 63 is the only access to the Project.

In November 2008, the Government of Alberta completed the first leg of twinning of Highway 63 south of Fort McMurray. Construction on the remaining 224 kilometres of twinning south of Highway 881 to the junction of Highway 55 near Grassland will begin as designs are completed and federal environmental permits are obtained. Alberta Transportation is planning to begin 40 kilometres of tree clearing north of Wandering River and 55 kilometres of tree clearing near Mariana Lake in 2009, following aboriginal consultations (AT 2008a).

#### Increased Traffic Volumes

Oil sands expansion in the RMWB has led to increased traffic on Highway 63. [Table 3-3](#) provides an overview of the traffic increases on Highway 63 at points between the Edmonton CMA and the Project since 1999. The average annual rate of growth varies between 5.2% and 9.0%.

## Regional Traffic Issues

Residents in the Fort McMurray–Edmonton corridor region have specific concerns regarding traffic in the region, including:

**Traffic Safety:** As traffic has increased, traffic collisions and fatalities on Highway 63 have also risen. For example, the 2008 collision rate (the latest year available) for Highway 63 was 99 collisions per 100,000 vehicle kilometres – an increase of more than 54% over five years. Even so, collision rates in the region remain below the average provincial rate for two-lane highways of 113 collisions per 100,000 vehicle kilometres (AT 2008c). [Table 8-1](#) below summarizes traffic collision statistics.

**Table 8-1 Collision Statistics on Regional Highways**

Highway / Segment	2003	2004	2005	2006	2007	2008	2008 Prov. Rate	2008 as Percent of Prov. Rate
	(Collision rate per 100 million vehicle km)							(%)
Highway 63 (from Hwy 55 to Hwy 881)	64	76	83	91	98	99	113	87%
NOTE: Collision rates for highway segments based on five-year rolling averages (e.g. 2003=average collisions during 1999–2003 period). SOURCE: Alberta Transportation and Nichols Applied Management 1999-2009.								

**Traffic Congestion:** Residents are concerned about congestion and high traffic volumes during peak hours, which impacts road safety and emergency service response rates. The published average vehicle movement number does not convey the daily variation in traffic, which can range from lower traffic volumes in off-peak hours and days to higher traffic volumes in the afternoons and early evenings. Several stretches of Highway 63 resemble an urban commuter freeway more than a rural highway with high traffic volumes during peak hours primarily related to shift changes at oil sands facilities in the region.

**Transportation of Hazardous Material:** Traffic increases have also led to increases in the transportation of hazardous materials through the urban service area of Fort McMurray, creating safety concerns among residents.

## 8.3 BASE CASE

Ongoing construction of oil sands facilities will contribute to traffic increase in the Base Case. Traffic volumes on Highway 63 near

Thorhild are estimated at 3,100 AADT in 2015. Traffic near the intersection of Highway 63 and the Project access road, near Wandering River, is estimated at 6,978 daily vehicle movements in 2015. These baseline volumes reflect an assumed annual growth rate of 5.2% and 9.0% on these highway segments respectively, which are the average annual growth rates experienced along these segments of Highway 63 in the last nine years. It is expected that this rate of baseline growth will continue until 2020 as well.

Currently, Connacher trucks in condensate and trucks out the bitumen recovered at the Pod 1. This trucking program accounts for 114 vehicle movements per day or roughly 3% of the 2008 traffic volume near the Project site. The intersection of the Pod 1 access road and Highway 63 has been improved with a southbound acceleration lane to accommodate this traffic.

## **8.4 APPLICATION CASE**

### **Construction**

The Project will contribute to increased traffic along the Fort McMurray–Edmonton corridor. The effects are expected to be greatest during the peak construction phase of the Project, scheduled to occur between Q1 2012 and Q2 2013. During that time, an estimated 51 additional daily vehicle movements are expected. The total estimated 3,861 vehicle movements constitutes a 1.3% increase over Base Case traffic volumes near the project access road (Highway 63 4.0 km N of Wandering River). This estimate reflects the findings that 84% of the Algar construction workforce commutes by private vehicle and the balance by bus. It furthermore assumes that the construction workforce will stay in on-site camp accommodations for the duration of their 21 day shifts, and will travel in and out of the region on shift turnaround periods.

The estimated traffic volume, including Project activity, of 3,861 vehicle movements on Highway 63 near, the Project, including Project activity, of is below the peak volume of 5,400 average annual daily traffic (AADT) movements experienced in 2008 on two-lane segment of Highway 63 between the Edmonton CMA and the Project.

### **Operations**

All but one of Connacher's current operations workers at Pod 1 make use of the fly-in/fly-out program and stay in camp for the duration of their

shift. This pattern is expected to continue for operational employees of the Project.

The Project will expand the productive capacity of Algar and thus the number of trucks required to haul out the bitumen. Labour and supply movements to and from the Project are expected to generate an additional seven vehicle movements per day. In addition, the Project is expected to generate 342 vehicle movements per day for diluted bitumen to a sales hub in the Edmonton CMA, bringing the total operational traffic impact to approximately 349 vehicle movements. This represents a 9.0% increase in the vehicle movements near the intersection of Highway 63 and the Project access road.

There is planning ongoing regarding the feasibility of a bitumen pipeline from the Pod I plant to Conklin. A bitumen pipeline would eliminate all of the bitumen truck related traffic from not only the Project, but also Pod 1 and Algar.

## **8.5 PLANNED DEVELOPMENT CASE**

Based on all the projects included in the Cumulative Effects Assessment, traffic volumes on Highway 63 are expected to continue rising at the rate of 7% annually. Volumes south of the intersection with Secondary Highway 881 could reach an average of 8,500 vehicle movements by 2018. This average daily traffic volume would still be within the carrying capacity of the highway at its current level of service, but daily and weekly commuting would see higher volume peaks. As volumes increase on Highway 63, continued cooperation between oil sands developers on coordinating shift and over-dimensional load movements will be required. The twinning of Highway 63 will increase the roadway's capacity to handle the expected growth in traffic volumes.

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## 9. PROJECT MITIGATION AND MONITORING

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### 9.1 PROJECT MITIGATION

The Connacher Great Divide Expansion project is located 70 km south of Fort McMurray along Highway 63. It is located away from the main mining area north of Fort McMurray and in situ bitumen production nodes near Conklin. It is an expansion project that will be a small piece of the overall oil sands expansion in the Wood Buffalo region.

The Project's location and size orient its construction and operation towards the Edmonton CMA. Connacher plans to operate an on-site camp for both construction and operations workers and a fly-in/fly-out program. The experience with Pod 1 and Algar projects indicates that this execution strategy provides the Project with access to a skilled workforce and aids in the attraction and retention of operations workers.

#### **Camp-based Construction and Operations**

Camp-based construction and operations also provide an effective mitigation for population and associated service provider impacts in Fort McMurray, the closest urban centre. Fort McMurray has experienced high growth in recent years and additional growth is expected as oil sands industry investment re-emerges after a sharp retraction during the recession of 2008 and 2009. Connacher's execution strategy in effect transfers the population and associated service providers effect to Edmonton and surrounding communities. The Edmonton CMA is a very large and sophisticated metropolitan centre and well positioned to accommodate the growth linked to the Project.

Currently, the Pod 1 project trucks in condensate and trucks out bitumen. Algar is expected to double this product trucking program. As currently conceived, the Project will further increase the number of condensate and bitumen trucks on Highway 63. Planning is underway to link Pod 1, Algar, and the Project by pipeline to the Edmonton-area. If built, the pipeline would fully offset all product trucking.

### **Traditional Land and Culture**

Connacher recognizes that traditional land use and culture are essential to a sense of identity and community cohesion for Aboriginal peoples. Connacher has previously communicated with local Aboriginal communities in the region regarding the impact of the Great Divide and Algar projects, including:

- employment and business opportunities for Aboriginal contractors and workers; and
- project impacts on local traditional land uses.

With regards to local traditional land uses, Connacher will:

- support the collection of traditional ecological knowledge on medicinal plants, wildlife and spiritual and cultural sites on Connacher leases prior to their development;
- work with the First Nations to support cultural retention and other initiatives, where appropriate; and
- implement a policy not allowing employees and contractors working on the Great Divide Expansion site to access adjacent land or bring recreational vehicles with them to the camp.

With regards to employment and contracting opportunities, the Great Divide Expansion project will:

- continue to build upon the practices and relationship developed for the Great Divide and Algar projects. Connacher is currently a member of both the Fort McMurray First Nation and Chipewyan Prairie Dene First Nation IRCs. Formal agreements have also been secured with the Willow Lake Metis Local 780, Fort McMurray Metis Local 1935, and the Chard Metis Local 214.
- negotiate and consult with Aboriginal communities in the region and, where possible, use Aboriginal contractors that qualify on merit and are cost competitive for some products and services related to both the construction and operations of the Project. Local Aboriginal contractors have also been utilized in the construction of both the Great Divide and Algar projects.

## 9.2 PROJECT MONITORING

The project is a relatively small part of the oil sands industry expansion. Its impact (if any) accrues to the Edmonton CMA, which is a large metropolitan area with anticipated annual population growth well in excess of any effect of the Project.

Connacher will continue with periodic consultations with its main stakeholders. These consultations will include discussions about Project impacts. No formal monitoring program beyond these periodic stakeholder engagements is proposed.

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