

13 Project Implementation Plan

13.1 Introduction

This section describes the Joslyn North Mine Project implementation plan and includes:

- development and execution plan
- engineering and procurement
- temporary facilities
- project camp and transportation
- construction

13.2 Development and Execution Plan

13.2.1 Schedule

The key dates in the project schedule are as follows:

- | | |
|--|-----------------|
| • submission of 2010 Additional Information | Q1 2010 |
| • Design Basis Memorandum (DBM) | Q1 2009–Q4 2009 |
| • regulatory approvals | Q4 2011 |
| • basic engineering | Q1 2010–Q1 2011 |
| • initial site drainage | Q4 2011–Q1 2012 |
| • Joslyn Creek Realignment | Q1 2012–Q2 2014 |
| • detailed engineering, procurement and construction (EPC) | Q3 2011–Q3 2016 |
| • commissioning and start-up | Q4 2016 |
| • initial operation and ramp-up | Q1 2017–Q4 2017 |

Delays in proceeding with this schedule will affect seasonal construction opportunities, which would delay completion of key development steps and add costs to the project.

13.2.2 Capital Cost

The capital cost of the project is estimated to be \$7 to \$9 billion. For a summary of the project's expected capital cost by expenditure type and geographic region, see [Table 13.2-1](#).

Table 13.2-1 Capital Cost by Expenditure Type and Geographic Region (\$1000s)

Expenditure Type	Regional Municipality of Wood Buffalo	Other Alberta	Other Canada	Foreign	Total
Labour	193	1,338	643	27	2,200
Equipment and materials	146	1,570	828	2,464	5,008
Engineering	43	632	90	28	792
Total	381	3,540	1,561	2,518	8,000
% of Total	5%	44%	20%	31%	100%
NOTE: Totals might not add up to sum of individual values because of rounding.					

13.2.3 Other Infrastructure

A cogeneration (cogen) plant will be constructed on the extraction plant site and will provide electric power (170 MW) and steam to the project. The installed capital cost of the facility is estimated at \$350 million.

As mentioned in [Section 7.4](#), transportation of partially deasphalted diluted bitumen from the project to an offsite upgrader, and return of diluent from the upgrader to the project is expected to be contracted to a third-party pipeline operator.

13.3 Engineering and Procurement

13.3.1 Design Basis Memorandum Engineering

This Project Update is based on design work and process studies completed during DBM engineering.

The DBM phase deliverables include the following:

- a $\pm 25\%$ quality cost estimate
- a preliminary project schedule
- a design basis package with design, procured equipment inquiries and project planning deliverables
- a preliminary construction execution plan (CEP) that defines the execution, procurement and construction strategies for the project

13.3.2 Basic Engineering

The basic engineering phase will follow the DBM and will include the following:

- a $\pm 15\%$ quality cost estimate
- a detailed project schedule
- a basic design package with refined design, procured equipment quotations and project planning deliverables that will provide the basis for the detailed design phase
- a detailed CEP that defines the execution, procurement and construction strategies for the project

13.3.3 Detailed Engineering, Procurement and Construction

The detailed EPC phase will include detailed design, procurement of equipment and materials, issuance of construction contracts, and construction management and support through to facility start-up and commissioning.

The EPC phase will also include:

- a safe work environment for the workforce
- protection of the environment during construction and operations
- a reliable and economic operating facility
- project management and controls to achieve the project schedule
- a plan to optimize use of modules
- a contractor selection and construction approach that optimizes use of local and regional resources
- a plan to attain the maximum practical efficiencies in operations

The sources and amounts of goods and services purchased for the project will be tracked and maintained in summary statistics.

13.4 Temporary Facilities

Temporary facilities will be required during early site works and construction, including gas supply and electricity during site preparation. In addition, a temporary fuel system will be in place for diesel-powered equipment used for early construction activities.

13.5 Project Camp and Transportation

Space has been allocated for a project camp, equipment and material laydown, and construction staging. These areas will be located near the extraction plant site.

13.5.1 Project Camp

A project camp will be built to accommodate personnel during project construction and operations. The camp will be located south of the Ells River on the east side of the CNRL road (see [Figure 3.3-1](#)).

During construction, temporary camp facilities will be available to accommodate approximately 4100 personnel. During operations, permanent camp facilities will be available to accommodate approximately 1000 personnel. Commercial camps in the area will be used before completion of the project camp and to accommodate peaks in the construction workforce.

13.5.2 Transportation

Air transportation is planned to bring both construction and operations personnel to the region. The plan is to use the existing regional airport for this purpose. Personnel will be transported to the project by bus.

Current planning indicates the traffic volume for construction materials will be approximately 1000 high-load modules and 10,000 regular-load modules from 2013 to 2016. This volume is based on a continuing strategy to maximize modularization and offsite prefabrication. The transportation plan will be refined in subsequent engineering stages.

13.6 Construction

An estimated 26 million construction hours will be required between 2011 and 2016. The construction workforce is estimated to peak at 4100 in late 2014 and early 2015. The site construction labour force plan is based on a 14 days on/7 days off, two-shift, 10 h/d rotation.

Lessons learned from previous large project labour sourcing experiences will be applied to develop and maintain control strategies for efficient project execution. The project plans to use a managed open-site labour strategy. The project labour execution plan will include:

- access to the contractor community and skilled construction trades workforce
- providing local and Aboriginal employment and business opportunities
- providing training opportunities for unskilled workers, and skills training and upgrading for other workers
- providing opportunities for innovation and flexibility related to issues such as hours of work, use of project camp facilities, transportation of workers, and additional rewards to workers for safety and work performance
- identifying creative approaches to work execution that increase performance through optimum use of worker skill sets and knowledge, and reducing artificial barriers to productivity
- offering flexible and competitive wages, benefits and allowances that are appropriate for the type of work, job location and skill sets of workers
- ensuring the project is executed safely and on budget
- using modular components, if economic, to relocate field activities to controlled conditions in a shop or module yard (e.g., piperacks, pumphouses and structural components)