



## Logistics and Infrastructure

**Logistics involves moving equipment, materials and supplies to where they will be used. This includes moving camp facilities, modules, waste, hazardous materials, food and fuel, and providing transportation for personnel.**

**Infrastructure refers to all of the things needed to support construction of the various parts of the proposed Mackenzie Gas Project. It includes camps, pipe and fuel storage facilities, roads, docks and airstrips. Some of the infrastructure will be left to support long-term operations, but much of it will be removed after construction is completed.**

The Mackenzie Gas Project team seeks to improve the design, construction and operation of the Project through public consultation as well as from information gained from environmental and Traditional Knowledge studies. This input assists in planning to minimize impacts to communities, wildlife and the environment.

### LOGISTICS

Edmonton, Hay River, Enterprise and Fort Simpson will be the ground transportation hubs for the proposed Mackenzie Gas Project. Equipment and supplies will be shipped to these hubs by rail or truck. They will then be moved north from Hay River or Fort Simpson by barge to construction locations down the Mackenzie River, or by truck via the Mackenzie Highway to Fort Simpson and Wrigley and beyond on winter roads, as required. The Dempster Highway may also be used.

The majority of construction activities will be conducted along the pipeline right-of-way, the strip of land where the pipeline will be installed. Temporary access will be required to move pipe, equipment and people to the right-of-way, and to move granular materials from borrow source material sites near the pipeline route.

### ALL-WEATHER ROADS

All weather roads are those that can support trucks moving the heaviest site-specific load during summer. They require a compacted roadbed of gravel or similar material that is thick enough to prevent thawing of the permafrost.

- **Existing** – Existing all-weather roads include the 800-kilometre Dempster Highway from Dawson City, Yukon, to Inuvik and the 550-kilometre Mackenzie Highway from Hay River to Fort Simpson and Wrigley. At two points on each highway, river crossings must be made by ferry in the summer and ice bridge in the winter.
- **New** – About 20 kilometres of new all-weather roads are needed to provide access to the Inuvik area facility and the Norman Wells area compressor station, as well as between barge landing sites, borrow source material sites, and camps and stockpile sites. In addition, a new 20-kilometre road is being considered for the Trail River area compressor station.

## WINTER ROADS

- **Existing** – The Government of the Northwest Territories operates several winter roads that will be used by the Project. These roads are open from about mid-January to early April. Winter roads are currently located:

- from the Mackenzie Highway south to Trout Lake
- from Wrigley north to Fort Good Hope
- from Tulita east to Déline
- from Inuvik north to Tuktoyaktuk

- **New** – In addition to the pipeline right-of-way travel lane, winter roads will be constructed and maintained. These roads will be required to transport workers, material and equipment to and from camps, stockpile sites and borrow sites.

About 430 kilometres of new roads will be required, with some needed for multiple winter seasons. The estimated annual winter road requirement is about:

- 70 kilometres in 2006
- 160 kilometres in 2007
- 310 kilometres in 2008
- 240 kilometres in 2009

These estimates are preliminary and will be the subject of further engineering and environmental studies and ongoing community input.

## BARGE LANDING SITES

Most equipment and materials will be moved from Hay River and Fort Simpson down the Mackenzie River when the river is free of ice from early June to late September. Approximately 19 barge landing sites will be needed:

- Existing Permanent Barge Landing Sites (5) – Tununuk Point (Bar-C), Inuvik, Norman Wells, Fort Simpson, Hay River
- New Permanent Barge Landing Sites (2) – Niglintgak Production Pad, Taglu Production Pad
- Existing Seasonal Spud Barge Sites (3) – Swimming Point, Lucas Point, Fort Good Hope
- New Temporary Spud Barge Sites (9) – Little Chicago, Tulita (west side of Great Bear River), Town of Tulita, Little Smith Creek, Blackwater River, Ochre River, Smith Creek, Camsell Bend and Liard River.

A spud barge site consist of a small (spud) barge grounded near the shore with gravel pushed out to the spud barge forming a temporary dock and access ramp. Many of the barge landing sites will require new construction such as access ramps and roads.

## AIRSTRIPS AND HELIPADS

Airstrips and helipads may be needed at each of the main construction camps for moving workers and supplies, and for emergency medical evacuation. All airstrips and helipads will be built to comply with government legislation and aircraft manufacturers' requirements for runway length, width and surface coating, based on the largest aircraft or helicopter expected to support a given location.

Existing aviation facilities at Inuvik, Fort Good Hope, Norman Wells, Fort Simpson, Hay River and Yellowknife will be used for the Project.

## INFRASTRUCTURE

Infrastructure work will begin shortly after a decision is made to construct, and appropriate regulatory approvals are given. It may begin as early as two years before the main pipeline and facilities construction program.

## **CAMPS**

More than 40 camps will be needed to house the thousands of construction and support personnel required for Project construction. Camp sizes will depend on the construction activity they are supporting. Two types of camps will be needed:

- Stationary Camps – About 20 camps will be required for drilling, pipeline and facility construction. Preliminary estimates of sizes include:
    - Pipeline – 10 camps, ranging from 900 to 1,350 beds per camp
    - Facilities – six camps, ranging from 60 to 250 beds per camp
  - Hay River Camp – 300 beds
  - Mobile Camps – Moveable (or “pioneer”) camps will be needed to house up to 70 people involved in early work such as clearing and grading, developing borrow source material sites, constructing stationary camps, access roads, airstrips, storage, staging and barge landing sites, and installing river crossings. These camps are sleigh or barge mounted for ease of movement.
- See “Camps” information sheet.

## **STORAGE SITES – PIPE STOCKPILE, FUEL STORAGE, STAGING AND MARSHALING**

Storage sites must be built before pipeline construction can begin. Together, the sites will hold about 2,000 kilometres of pipe weighing more than 420,000 tonnes and 300 fuel storage tanks with more than 60 million litres capacity. Where possible, pipe and fuel sites will be combined to minimize disturbance to the land and reduce costs.

Pipe storage sites will be constructed to protect permafrost, provide stable pipe storage and ensure safe truck movement and crane operations. There will be about 17 pipe storage sites.

About 20 fuel storage sites will be designed and developed following applicable regulations and guidelines. Diesel, gasoline and aviation fuel will be stored in double-walled, 200,000-litre tanks that can be moved by truck or barge. Propane will be stored in low-pressure tanks. Fuel sites will have liners to contain drips or spills.

Staging and marshaling sites will be used to store equipment and to reassemble equipment that has been taken apart for shipment. Sites will be about 10 acres (four hectares) in area. To reduce the impact on the environment, staging and marshaling sites will be combined with other infrastructure sites where possible. Up to 19 of these sites will be needed.

## **BORROW SOURCE MATERIAL SITES**

Natural construction materials such as gravel and sand will be needed to build field production and pipeline facilities pads, camp and storage sites, airstrips, all-weather roads and barge landings. These materials are often called borrow sources.

Potential borrow sites along the pipeline route are being considered. These sites are estimated to contain more than 600 million cubic metres of suitable borrow material in about 120 locations. The Project will require four to five million cubic metres of borrow material, which will be supplied from 60 to 70 of these sites. A development plan will be prepared for each required site. About one million cubic metres is required for the production facilities at the three natural gas fields.

Access to these sites might be by winter road, all-weather road, the pipeline right-of-way or some combination.



Inuvik Regional Office  
Bag Service 14  
151 Mackenzie Road  
Inuvik, NT X0E 0T0  
Telephone: (867) 678-6104  
Fax: (867) 678-6107

Norman Wells Regional Office  
PO Box 146  
#1 Town Square  
Norman Wells, NT X0E 0V0  
Telephone: (867) 587-3130  
Fax: (867) 587-4109

Fort Simpson Regional Office  
PO Box 530  
9925 - 102 Avenue  
Fort Simpson, NT X0E 0N0  
Telephone: (867) 695-2624  
Fax: (867) 695-2651

Calgary Office  
Consultation and  
Community Affairs  
PO Box 2480, Station M  
Calgary, Alberta, Canada  
T2P 3M9