

# Respecting all voices: Our journey to a decision

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# Our journey



The Mackenzie Gas Project proposal launched us on a journey. Like many travellers on the Dehcho—the Mackenzie River—we began this journey with open minds about where it would take us.

Our goal was to encourage public participation and listen to the people so they could help us determine the public interest of the project. We heard from many Northerners and other Canadians.

Our shared body of knowledge grew in much the same way that the Dehcho gains strength and volume as it flows north to the Beaufort Sea. We heard, again and again, that the Mackenzie Gas Project would have deep and lasting effects on the lives and environment of northern people. The project would bring new economic development to a largely untouched land and its people. We recognized the importance of this unique environment and its role in the well-being of individuals and communities. The environment and culture of the North helped determine our course as we moved towards our decision.



*Respecting all voices: Our journey to a decision* describes what we learned on our journey. This volume includes examples of the many voices we heard. By responding to the important questions asked during our hearing, we hope to show the reasoning that led to our decision. The other volume of our report, *Technical Considerations: Implementing the Decision*, describes how the project would be built, operated and regulated.

In Part 1 of *Our journey*, we discuss the project as a whole and some of the factors we assessed

in determining whether it would be in the public interest. Part 2 looks more closely at the natural gas fields, gathering pipelines and processing facilities in the Mackenzie Delta region. Part 3 addresses the 1196 kilometre long natural gas pipeline that would run along the Mackenzie Valley to Alberta and the 457 kilometre pipeline that would carry natural gas liquids to Norman Wells. Part 4 outlines the decision that we reached at the end of our journey.

We believe that this decision respects the many voices we heard along the way.

- National Energy Board
- K.W. Vollman  
Presiding Member
- G. Caron  
Member
- D. Hamilton  
Member



## Part 1

The project  
as a whole





# 1.1

## What is the Mackenzie Gas Project?

A group of companies has asked us to approve their proposal to develop three natural gas fields in and near the Mackenzie Delta. They would also build pipelines to ship the natural gas and natural gas liquids south to markets. Together these proposals are called the Mackenzie Gas Project. The project would be built over four years and cost about \$16 billion. An average of 5,700 people would work on it during the construction period.

The Mackenzie Gas Project is a proposal to develop three natural gas fields and to transport the natural gas and natural gas liquids to southern markets in pipelines buried 60 to 90 centimetres below the surface. The gas fields—Niglintgak, Taglu, and Parsons Lake—are in or near the Mackenzie Delta. The key parts of the project are:

- at least 28 natural gas wells, drilled from six well pads, and other production facilities in the three fields;
- the Mackenzie Gathering System consisting of 190 kilometres of pipelines that take the natural gas from the fields to the Inuvik Area Facility for processing;
- a 457 kilometre long, 250 millimetre (10 inch) diameter pipeline to carry natural gas liquids from the Inuvik Area Facility to the existing crude oil pipeline at Norman Wells; and
- the 1196 kilometre long, 750 millimetre (30 inch) diameter Mackenzie Valley Pipeline carrying natural gas from the Inuvik Area Facility to northwestern Alberta.



Figure 1-1  
Project overview  
The Mackenzie Valley Pipeline would transport natural gas 1196 kilometres from Inuvik to northern Alberta. The natural gas in the pipeline would be 93 percent methane, mixed with small amounts of carbon dioxide, nitrogen, and hydrocarbons such as ethane and propane. The natural gas liquids pipeline from Inuvik to Norman Wells, operated as part of the Mackenzie Gathering System, would carry a mixture of hydrocarbons similar to gasoline.



**Mackenzie Valley Pipeline  
natural gas volumes**

	Millions of cubic metres per day	Millions of cubic feet per day
One compressor station near Tulita	27.3	964
Three compressor stations	34.3	1210
Maximum capacity with 14 compressor stations (including 11 that have not been applied for)	49.8	1760

The Mackenzie Valley Pipeline would be designed so that with one compressor station near Tulita it could transport 27.3 million cubic metres (just under 1 billion cubic feet) of natural gas per day. If the companies build a total of three compressor stations, the pipeline could transport 34.3 million cubic metres (1.2 billion cubic feet) per day. For comparison, this would be enough to supply about two-thirds of the six million Canadian households that used natural gas to heat their homes in 2009.

The companies would have to apply to the National Energy Board to build more compressor stations than the three contained in the current application. The pipeline engineering design allows for up to 14 compressor stations in total. If these were built, the pipeline could carry 49.8 million cubic metres (1.8 billion cubic feet) of natural gas per day.

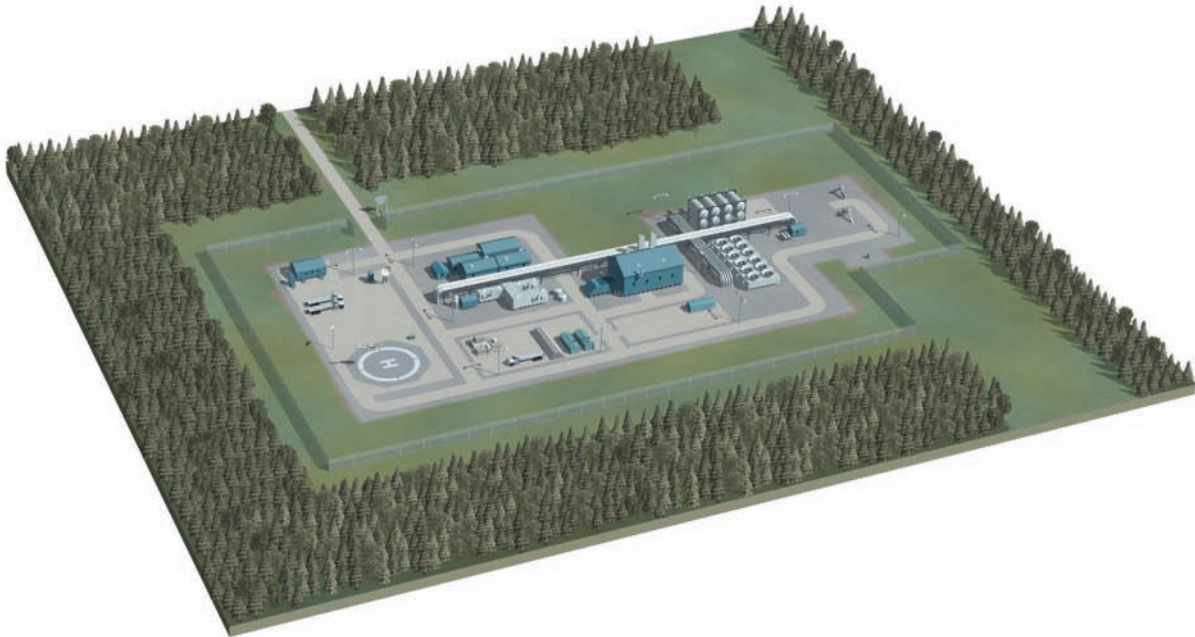
Affiliates of Imperial Oil, Shell, ConocoPhillips, and ExxonMobil would develop the three natural gas fields. They would also jointly

own the Mackenzie Gathering System, consisting of the upstream gathering pipeline, the Inuvik Area Facility, and the natural gas liquids pipeline. Along with the Mackenzie Valley Aboriginal Pipeline Partnership Limited (Aboriginal Pipeline Group) they would own the Mackenzie Valley Pipeline.

The entire Mackenzie Gas Project would cost an estimated \$16.2 billion and take four years to build. Construction of the project would create an average of 5,700 direct jobs annually.

Figure 1-2  
Typical  
compressor station

The compressors increase the pressure of the gas and push it down the pipeline. Compressors on a natural gas pipeline are typically powered by gas turbine engines similar to those used on jet airplanes.



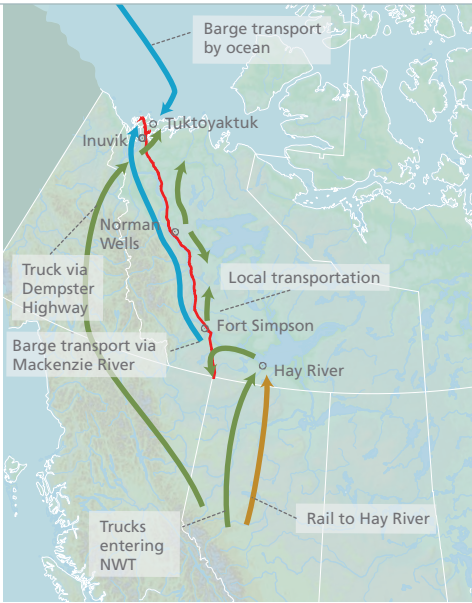
Twenty percent of these jobs, or more than 1,100 per year, would be created in the Northwest Territories. After construction an average of 312 direct jobs per year would be created over the first 20 years of operation, including drilling and operations personnel for the three producing fields and operations personnel for the pipelines. Sixty-six percent or 205 of the 312 direct jobs created annually during operation would be filled by Northwest Territory residents.

About 19,000 people—12,000 in the Northwest Territories and 7,000 in Alberta—live in the vast areas touched by the proposed development. Most of the people in the project areas are Aboriginal. Most of the areas are subject to Aboriginal land claims, agreements or treaties. From north to south, the Aboriginal regions are the Inuvialuit Settlement Region, the Gwich'in Settlement Area, the Sahtu Settlement Area, the Dehcho Region, and the Dene Tha' First Nation.

In October 2004 the National Energy Board received applications for:

- a Certificate of Public Convenience and Necessity authorizing the construction and operation of the Mackenzie Valley Pipeline under Section 52 of the *National Energy Board Act*;
- approval of toll and tariff principles for the Mackenzie Valley Pipeline under Part IV of the *National Energy Board Act*;

Figure 1-3  
Transportation  
logistics map



The project would use about 442 000 tonnes of steel pipe. Other major components include camp and facility modules, construction and drilling equipment, borrow material and fuel.

- The plan is to move pipe and fuel to Hay River by rail, then by barge to locations north of Fort Simpson, and by truck to locations south of Fort Simpson.
- Project personnel would be moved primarily by aircraft and then by bus.
- Borrow material (soil and gravel used for construction) would be moved by truck, mostly on project roads.
- Peak activities would occur:
  - in summer, with barges on the Mackenzie River from Hay River and Liard Ferry;
  - in winter, with trucks transporting material to project facility and infrastructure sites; and
  - at the start and end of the winter construction seasons, with aircraft transporting project personnel.



- authorization to carry on work and activity in respect of the Mackenzie Gathering System under paragraph 5(1)(b) of the *Canada Oil and Gas Operations Act*; and
- approval of development plans for the Niglintgak, Taglu and Parsons Lake fields under section 5.1 of the *Canada Oil and Gas Operations Act*.

These applications were all considered during our hearing and in this decision. We also

heard that further natural gas development could occur in the Northwest Territories and Yukon if this project goes ahead. For example, if companies find natural gas in new areas, more gathering pipelines might be built. Additional compressor stations might be added to the Mackenzie Valley Pipeline at some point. Future development is not part of the applications before us. Companies would have to submit separate applications to do these things.



**Richard Nerysoo**  
President  
Gwich'in Tribal Council  
Inuvik

April 20, 2010

*These transportation infrastructure projects will help establish a strong, ongoing base for a sustainable economy in the North, one that could see more people living here, more wealth generated, and a greater and fulfilling role for the Aboriginal peoples of the region and in their homeland; certainly, an opportunity for the Gwich'in to participate in a northern economy, which is an objective set out in the Gwich'in Comprehensive Land Claim Agreement. It represents a fundamental opportunity for Aboriginal peoples to determine, support and approve a project that is critical to self-determination and self-sufficiency. Surely, Mr. Chairman, this must be seen as being in the public interest.*



A scenic view of a lake with a rainbow in the sky, houses on the shore, and boats in the water. The rainbow is prominent in the upper left, arching over the water. In the foreground, there's a rocky shore with some vegetation. In the middle ground, there are several houses and buildings along the water's edge, some with docks and boats. The background shows a vast expanse of water and distant land.

# 1.2

## What is the public interest?

On behalf of all Canadians, the National Energy Board must decide whether the project is in the public interest. Would Northerners and other Canadians be better or worse off if the project is approved? We consider the expected benefits of the project and the costs or negative impacts.

We are required to consider any public interest that may be affected, now and in the future, by granting or refusing the applications. Would Northerners and other Canadians be better or worse off if the project is approved? We consider the expected benefits of the project and the costs or negative impacts.

The project must meet high standards for safety, reliability and environmental protection. There must be enough natural gas, and enough demand for it, to ensure the pipelines will be used. Companies must have funds to build the project. Transportation fees charged by the pipeline owners must be reasonable. Other oil and gas companies must be allowed to use the pipelines.



**Grand Chief Sam Gargan**  
Dehcho First Nations  
Yellowknife

April 15, 2010



Impacts may be environmental, social, cultural or economic, and they cannot all be measured in dollars and cents. Benefits and burdens are not distributed equally among Canadian citizens. People living near the project may experience the effects of barge and truck traffic, construction camps, work sites and excavation. There could be job opportunities for them, and they might gain access to affordable natural gas supplies. For some people in the region, the project could be positive, for others negative. Meanwhile, most Canadians would see only indirect effects of the project, such as increases in the nation's economic activity and natural gas supply. When there are negative effects, we consider whether they are temporary or permanent, and if there are ways to reduce the impacts. We look at all the effects together, which enables us to determine if the project would be part of a sustainable energy future for the North and Canada.

*The Dehcho Territory will be the region most impacted by the Mackenzie Gas Project. The greatest length of pipeline, almost 44 percent, will be through our region. Due to the road system and our location in the southern part of the Mackenzie Valley, the transportation of material by barge and road, the influx of construction workers and camps, the development of borrow pits, the clearing of the land and the social disruption of the project will impact us more than any other region.*

*While some Dene leaders in the Mackenzie Valley today believe that we are ready to support this new pipeline, we believe that a fair evaluation of the social, spiritual, political, economic status of our communities would not agree. That is evident even in the impacts of the proposal itself which resulted in some conflict among our leaders.*




**Joe Bernard**  
Tulita

June 1, 2006

*I have almost 20 grandchildren, and I wonder what they will have to sustain them in future. And I want them to be capable to look after themselves in the future. And I hear a lot of people say that, too. And there are some people that will do well and some that will not. What will happen to those people?*

*It will be good if they did the careful planning in regards to this, and if we didn't do that, there would be not very many people that will benefit from this.*

*And it will be good if there's a lot of consideration put into this before any action is taken place. I'm talking for the grandchildren, and what we're talking about is something that is very significant and that we have to plan it carefully.*

A photograph of two people, a woman on the left and a man on the right, standing on a rocky shore. They are both holding a large, silver fish vertically between them. The woman is wearing a blue knit hat, glasses, a black jacket, and blue pants. The man is wearing a dark cap, a black jacket, and dark pants. In the background, there is a body of water and a clear blue sky. A portion of a boat with blue and red paint is visible on the left. The number '1.3' is overlaid in white text on the right side of the image.

# 1.3

## How were people consulted about the project?

We look at whether people who may be affected by the project have been adequately consulted. Companies must make sure that people are aware of the project and the application to the National Energy Board, and that their concerns have been addressed. The companies conducted more than 1,500 meetings with people in the North. Additionally, people were able to raise concerns directly with us during our hearing and that of the Joint Review Panel.



One of our important responsibilities is to make sure the companies consult thoroughly and properly with all affected parties. We heard directly from people in our 58 days of public hearings and also through the Joint Review Panel Report. The federal government addressed its obligations to Aboriginal people under Section 35 of the Constitution in a separate Crown consultation process.

The companies proposing the project committed to consult with people, communities, organizations, businesses and governments that would be affected. This consultation began during the planning stage and would continue throughout construction and operation if the project proceeds.

The companies began formally consulting with affected communities and other interested parties in early 2002. By that time, there had already been several studies and years of discussions regarding a possible project.

In the planning stage leading up to the application in 2004, project representatives provided information about the proposal. They met with individuals, communities and organizations to hear their concerns about potential social, economic and environmental effects.

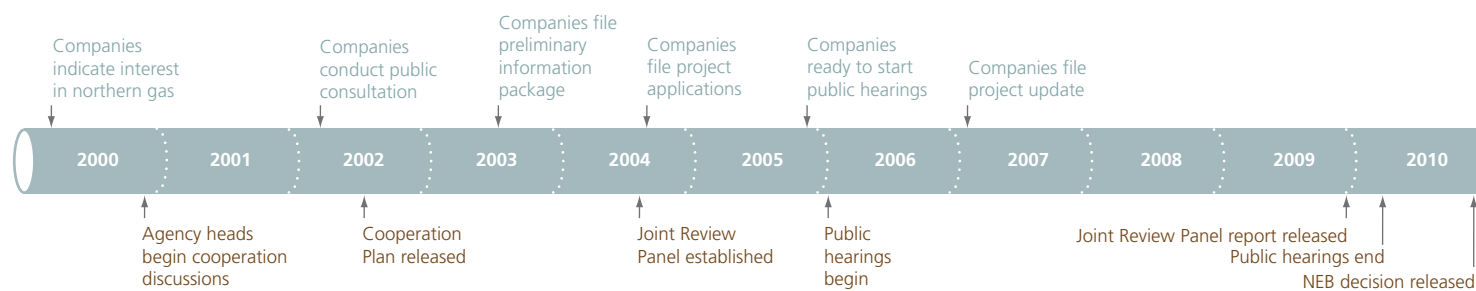
Local and regional concerns led to more than a dozen significant changes in the planned route. Smaller alterations in locations and plans were also made. Some of the changes were

made on the basis of Aboriginal people's traditional knowledge of the land. For example, the community of Tulita requested that the Great Bear River compressor station be located further away from the culturally significant Bear Rock. It was moved eight kilometres south, across the Great Bear River.

The companies said they could not make some of the requested changes due to cost, safety or technical reasons. In these situations, the companies said they looked for other ways to reduce the impacts. For example, where the route could not avoid crossing traditional camping or hunting areas, the construction schedule was changed to address some of the concerns.

Figure 1-4

#### Timeline of Mackenzie Gas Project regulatory review





The companies' consultations included more than 1,500 meetings with northern residents and organizations. A separate team led a public participation program. This was part of preparing the project's Environmental Impact Statement.

Because 14 federal and territorial agencies, departments and regulatory boards have a role in managing environmental aspects of the project, the Joint Review Panel was established in 2004 to conduct a single environmental review. The Joint Review Panel held sessions in 25 communities, and its report was completed in 2009. The Joint Review Panel considered the social, cultural, physical and biological environments. National Energy Board member Rowland J. Harrison, Q.C. was a member of the Joint Review Panel. We considered the Joint Review Panel Report in reaching our decision.



**Randy Ottenbreit**  
Mackenzie Gas Project  
Inuvik

January 25, 2006



**Charlie Tobac**  
Fort Good Hope

May 30, 2006



The National Energy Board and the Joint Review Panel heard directly from people in areas affected by the project along the Mackenzie River and in other communities such as Yellowknife and High Level. The National Energy Board public hearing began in Inuvik on January 25, 2006, and included sessions in 15 communities in the North. Our hearing ended in Inuvik on April 22, 2010.

The Government of Canada provided funding to Aboriginal groups. This made it possible for them to hire experts and legal counsel, pay travel expenses, and participate fully in consultation and regulatory processes. This funding was in addition to funding the Mackenzie Gas Project provided to communities and Aboriginal groups.

*Public participation was an essential component of our environment assessment process. Issue identification, impact assessment and the selection of environmental management measures utilize public input.*

*Public consultation provided an opportunity for external parties, including Northerners, to have their views heard early and through all planning stages to allow us to improve project decisions. The project consultation is not complete. Consultation will continue through the regulatory phase and throughout the life of the project.*

*This land is our home. It's like our mother. It feeds us, takes care of us, it makes us happy and teaches us about our responsibilities. If you do not know about the land, you will step on sacred grounds, and if you don't have this information, there's unknown risk, and so it is everybody's responsibility to make this right.*





An aerial photograph showing a coastal town with numerous buildings and roads, surrounded by dense green forests. In the background, a large body of water with several islands is visible under a blue sky with scattered clouds. The number '1.4' is overlaid in the upper right corner.

# 1.4

## Is the North ready for a project this big?

The Mackenzie Gas Project would be the largest industrial development in Canada's North. Many people said they would welcome the economic opportunities, especially for young people. But Northerners also expressed concerns about effects on their culture and the environment.

The natural gas resources of the Mackenzie Delta area were discovered almost four decades ago. Taglu natural gas field was discovered in 1971, Parsons Lake in 1972, and Niglintgak in 1973. Additional drilling and seismic surveys showed the size of the natural gas fields. This led to several proposals in the mid-1970s for a pipeline to carry the natural gas to southern markets.

The federal government established a royal commission headed by Justice Thomas Berger to study social and environmental aspects of a Mackenzie Valley pipeline in the mid-1970s. After extensive hearings, Mr. Berger proposed a 10-year postponement of a natural gas pipeline along the Mackenzie Valley.



**Nellie Cournoyea**  
Chair and Chief  
Executive Officer  
Inuvialuit Regional  
Corporation  
Inuvik

April 20, 2010



The National Energy Board also considered northern pipeline proposals in the 1970s. The National Energy Board approved the Foothills Pipe Line route for a natural gas pipeline from Alaska to Alberta along the Alaska Highway. The Foothills Pipe Line proposal also included a connecting pipeline following the Dempster Highway through Yukon from the Mackenzie Delta. After that, market conditions changed. More natural gas supplies were found in southern Canada and the United States, closer to consuming areas. Northern portions of the project were postponed indefinitely.

Some exploration continued in the Mackenzie Delta and the Beaufort Sea until the mid-1980s. The Norman Wells crude oil pipeline was completed in 1985. Following this, there was little oil and gas activity in the Northwest Territories. In the late 1990s, higher prices and rising demand for natural gas in southern markets again made it attractive to look for energy resources in the North.

The Mackenzie Gas Project would have much larger and more far-reaching effects than previous developments. It would bring a wave of construction activity on a scale never seen before in Canada north of the 60th parallel.

*We cannot use what is not here to feed and support our families. We cannot use what is not here to provide the residents of our communities with the desirable standard of living that is the norm across most of Canada. In the absence of such opportunity, many of us must turn to government for support. This is not how we want to live. A community dependent upon government is ultimately not a stable or healthy community.*

*We want Inuvialuit to be self-reliant, holding satisfying employment and able to provide for their families' needs through their own efforts. We want our communities to enjoy the many benefits that accrue from a thriving and sustainable economic base. The Mackenzie Gas Project and the ongoing exploration and development that follow will provide such economic opportunity to not only the Beaufort Delta communities but also to other regions with the geology to support the presence of significant hydrocarbon resources.*



**Chief Peter Ross**  
Gwich'ya Gwich'in Council  
Tsiigehtchic

December 6, 2006

*Along with a project of this scale came many challenges. Some tend to focus on negative social impacts that will be felt in the communities, but often overlook the huge opportunity that this project will bring to the people. Much needed employment, training and education will become more available in the future with the signed Impact and Benefits Agreement and a \$500-million Social Economic Fund to draw from.*

*We have a great deal to gain. The Gwich'in Nation wish to become self-governing as we were in the past. In order for this to become a reality, we need self-sufficiency. The only way we can achieve this, is with an economic base. Without a sound economic base to build from, we can never have a true self-government.*

Facilities for  
the Ikhil gas field

In 1999, a 50 kilometre pipeline was built from the Ikhil gas field northwest of Inuvik to supply the town with natural gas.

After construction, there would be continuing economic benefits from supplying the operation with goods and services. Cleaner-burning natural gas could replace diesel generators and oil heating in communities along the pipeline route. Pipeline and gas field operations would create some direct employment. However, project spending during operations would be much less than during construction.

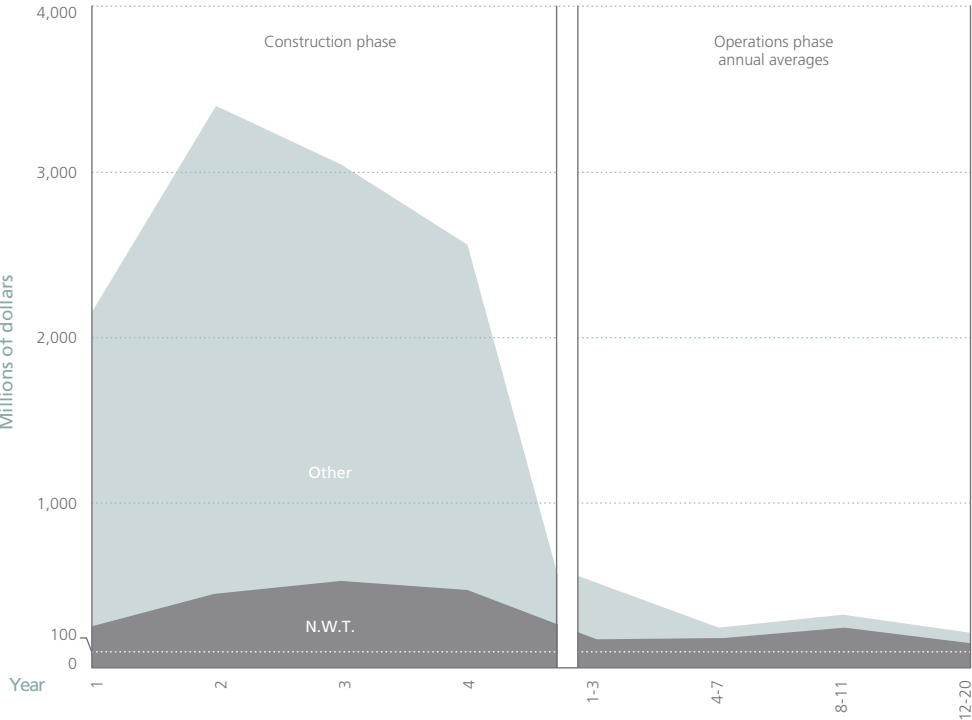
We heard there could be negative effects on the society, culture, environment and economy of the North. Some people were concerned about problems such as drugs, alcohol and gambling, and the potential demands on police, medical and social services. Some worried about the loss of Aboriginal culture. There were concerns about impacts on fishing, hunting and trapping, traditional land use, parks and protected areas, and other effects on land, water and air, including global climate change.

We also heard that much has changed in the decades since natural gas was discovered in the Mackenzie Delta. Some protected areas have been established and some land claims settled. Other claims are outstanding, and some land use plans are still being developed. Many Northerners told us that modern communications and transportation have exposed them to national and international culture, goods and services. They said an economic driver like the project could help residents to become more self-reliant, and they wanted to create opportunities for young people.

People told us that lifestyles are changing in the North. Three decades ago, many people supported themselves by hunting, fishing, trapping and gathering. Now almost everyone lives for most of the year in permanent communities. Fewer people rely on country food for most of their diet. People have greater access to television, telephone and internet services. More people have obtained education and occupational training, and more have worked, studied or travelled outside the region.

We heard repeatedly that it is very important Aboriginal rights be respected at every stage of the project. The Dehcho First Nations in particular indicated that their self-government,

Figure 1-5  
Project expenditures





**Alestine Andre**  
Tsiigehtchic

December 6, 2006



land claims and land use issues would need to be settled before they could support the project. These issues have been the subject of negotiation between the First Nations and the Government of Canada.

The federal government established the \$500-million Mackenzie Gas Project Impacts Fund (also known as the Social Economic Impacts Fund). The fund is to compensate for the indirect effects the project could have. It would be distributed to Aboriginal communities over a 10-year period if the project went ahead. The fund would be divided among the five affected regions: Dehcho (\$150 million), Gwich'in (\$82 million), Tulita/Deline (\$61 million), Inuvialuit (\$150 million), and Kasho Gotine/Colville (\$57 million). The Dene Tha' First Nation has also reached an agreement with the federal government that would provide \$25 million funding for social and economic impacts from the project.

The companies and the government of the Northwest Territories signed the Socio-Economic Agreement for the Mackenzie Gas Project in 2007. The agreement outlines commitments that are intended to maximize benefits and mitigate negative impacts arising from the Mackenzie Gas Project for Northwest Territories residents. The Socio-Economic Agreement

*We do not need a pipeline. It will create a lot of damage to the land and the people. Nobody can tell us that there will be no significant impacts on the land.*

*The first piece of Mackenzie Gas Project machinery that uproots and unearths the moss, tearing away the topsoil just above the permafrost, will cause irreversible damage that will change the landscape and the boreal forest forever, not to mention the birds, the animals, the fish, the water, the air, and the Gwich'in people.*

includes measures to address employment and training, social and cultural well-being, business, net effects on government, monitoring, reporting and adaptive management.

Under the *Canadian Oil and Gas Operations Act*, companies would submit benefits plans for the three development fields and the Mackenzie Gathering System. These would describe plans for the employment of Canadians and for providing Canadian manufacturers, consultants, contractors and service companies with a full and fair opportunity to participate on a competitive basis in the supply of goods and



**Mary Teya**  
Fort McPherson

December 5, 2006

*Our land is rich right now. We still have a lot of animals out there. We depend on the animals that live on the land. We depend on the fish in the river, the fish in the lakes, the caribou in the mountains, the berries on the land, the plants; everything is important to us. And can you tell me that all these things are going to continue to be there after all this work has been done? I understand it's going to be under water, under land, but how safe is that?*

services. These plans would include provisions to maximize benefits to Northerners. Companies would be required to submit an annual report describing the actual training, employment and business benefits they created.

The companies noted that they have concluded benefits and access agreements for the Inuvialuit Settlement Region and for the Gwich'in and Sahtu Settlement Areas. The companies noted that such agreements have not been concluded for the Dehcho region, and stated they are committed to concluding benefits and access agreements for the Dehcho.





# 1.5

## How would the project affect traditional ways of life on the land?

The cultural and spiritual life of Northerners depends on the health of the land, water, fish, birds and animals. Protecting the environment helps protect the traditional way of life. Strict conditions on the project would reduce impacts on the land and wildlife. Most construction would happen in winter far from northern communities. After construction, the project's activity would decrease. The pipelines would be buried, and the 40 or 50 metre wide right of way would be the biggest permanent presence on the landscape.



**Fred Carmichael**  
Chairman, Aboriginal  
Pipeline Group  
Inuvik

April 20, 2010



Snowmobiles, motor boats, air travel, and goods and services from outside the region have greatly changed traditional ways of life. Yet most Northerners have maintained a deep attachment to the unique environment in which they live. Their cultural and spiritual life centres on the land, water, plants, fish, birds and animals that have nurtured their ancestors for thousands of years.

Building the Mackenzie Gas Project would be a vast undertaking. Most of the activity would occur in winter far away from the places where people live. This would reduce the potential impacts. Most roads would be constructed with snow and ice on frozen soil. Construction workers would have little direct contact with local communities. Most activity would be confined to camps and construction work sites. Camps would be “closed”—that is, there would be no unplanned contact with local communities.

Once the pipeline system is in place, there would be relatively little activity except in the natural gas fields and at the gas processing plant and compressor stations. The 40 to 50 metre wide right of way for the buried pipelines would be the project’s biggest permanent presence on the landscape. Direct effects of the project would occur mainly on the

**Fred Carmichael** *I have witnessed in my lifetime great changes; some good, some bad. What has been most difficult for me to watch was our way of life and our people changing from being proud, independent, self-sufficient people with our own hunting-trapping economy.*

*I witnessed this loss in the late sixties and seventies and which was due mainly by southern influence such as the anti-fur movement. And today some of those activists are denying us the opportunity to become self-sufficient without offering us any viable alternatives.*

*As a result, we have become dependent on a southern industrial way of life, but with no industry or no long-term plan for economic stability for people of the North. Because of this, many of our people, through no fault of their own, are now dependent on the social welfare system.*

*For over 40 years we have been wandering in the wilderness, looking for a way once again to become economically self-sufficient and to regain self-respect and pride for our people today and for future generations.*

*We see the Mackenzie Valley Pipeline Project as the first step to regaining economic self-sufficiency. That’s the reason why our leadership decided to take ownership in this project through the Aboriginal Pipeline Group.*

**Chief Jim Antoine** *If you give the certificate to the proponents then what I’m hearing is that they’re going to not make any decisions for some period of time. And what we need*



**Chief Jim Antoine**  
Liidlii Kue First Nation  
Yellowknife

April 15, 2010

*is time on the negotiation side. I don’t know how much time. So negotiations are going on as we speak today, at Northern United Place, so there is some movement there.*

*So we have to balance that and, as the Chief of Liidlii Kue First Nation, I have members there that are very in support of this. They try and do something on the pipeline side and then we have also other people who are saying that, “Wait a minute, we have outstanding Treaty issues here.”*

*So my task would be to deal with that at the community level and I’m also part of the Dehcho First Nations so we discuss that at leadership meetings and give direction to the Grand Chief at that level.*

*Economic development for me and the communities is a key for the future and we have to also include that into the mix, and some meaningful economic development for First Nations, any development that comes into our own territory.*

*So whenever a project of this size is going to go into our territory, we have to benefit from it. So we have to get ourselves organized to—in any way possible to get organized. There is already work done with the Aboriginal Pipeline Group side, you know, so there is significant benefit in that arrangement, and there is also work being done on the construction side which, once construction is going to happen, it’s going to go really fast. It may be three years at the max and there’d be a spike of activity.*

**Arthur Tobac**  
Fort Good Hope

May 30, 2006



*The K'ahsho Got'ine people like most First Nations have a strong cultural attachment to the land. The land is the glue that binds our people. It defines our culture and it shapes our concept of community, and determines the basis of how we wish to govern ourselves.*

right of way and in the immediate area around the natural gas fields, the gas processing plant and the compressor stations.

Some people were concerned about how the project might affect their ability to continue traditional hunting and trapping. For example, they said the project might fragment sensitive caribou habitat or affect migration patterns of geese. Some people said that helicopter traffic was already affecting their quality of life and could affect wildlife. Some worried about the amount of barge traffic that would be

on the river and in the Delta region during the construction period.

One way to help sustain the traditional way of life is to prevent serious or permanent damage to the natural environment. The project would be required to meet strict conditions to avoid or reduce impacts on the land and wildlife. Special measures would be taken to protect wildlife, avoid sensitive habitat, and reduce disturbance to water bodies. Before construction, companies would develop Wildlife Protection and Management Plans and Environmental Protection Plans. The plans, once approved by the National Energy Board, would guide it in regulating the project throughout its lifespan. The National Energy Board and other agencies would conduct





**James Pokiak**  
Tuktoyaktuk

December 4, 2006



inspections, monitoring and audits to make sure the companies complied with the plans and all environmental commitments.

The employment and economic activity created by the project could affect traditional lifestyles. After construction, 66 percent or 205 of the 312 direct jobs per year would be filled from the local population. Also, there could be more people moving into the area from outside the region.

Some Northerners expressed concern that the project would open the area to future development and increase impacts on the land, wildlife and people. New applications and regulatory approvals would be required for future development.

*I'll gladly support this pipeline if the environment and our wildlife is going to be there for our future generation. You know, being able to bring my children up out on the land made them realize also how important it is to them, to a lot of us. A lot of families still make use of that land in the springtime, summer, fall. We have four seasons that we do different activities, and I'm just hoping that this whole project doesn't destroy it for our future generation, you know, grandchildren. I would some day like to see my son and daughters take their children out, and their grandchildren, berry picking or fishing and enjoying time out there.*

**Alvin Yallee**  
Wrigley

October 3, 2006



*We care about our people, the effects the [Mackenzie Gas Project] will have with the disruption and what appears to be the eventual loss of our traditional way of life through assimilation into an industrialized world.*

*No, wait. The effects of the MGP on our community have already started. For example, this summer we have had countless helicopters flying over our community and territory doing countless studies. Our membership asks: Who, what and to what end? Granted, [Pehdzeh Ki First Nation] Band and council staff may know the specific mission of that specific helicopter, but let me assure you that nobody has a clear grasp on the cumulative effects of that endless chain of traffic. Our Elders only know that these helicopters make a lot of noise and are scaring the animals away.*

*This is only the tip of a very large iceberg. It is only the beginning.*





A close-up photograph of a yellow and black butterfly, likely a Papilio glaucus, resting on a sandy surface. The butterfly's wings are spread, showing distinct black stripes and spots on a yellow background. The sand is light-colored and textured. The image is used as a background for the text on the left side of the page.

# 1.6

## How would the project affect climate change?

The project would directly increase Canada's greenhouse gas emissions by about 0.2 percent. A larger effect on climate change depends on how and where the natural gas is finally used. Total emissions in North America could increase, or they could decrease if the natural gas replaces more polluting energy sources.

Warming temperatures in the Arctic are directly related to greenhouse gases in the atmosphere. We heard many concerns about the project's potential effect on climate change.

The companies proposing the project estimated that up to 488 000 tonnes of carbon-dioxide-equivalent greenhouse gases would be released to the atmosphere each year during the three peak years of the construction period. Operations with three compressor stations



**Don Davies**

Counsel for Imperial Oil  
Resources Ventures Limited  
Yellowknife

April 12, 2010

**Tony Grandjambe**

Norman Wells

April 26, 2006



would result in average emissions of up to 1.4 million tonnes per year, or about 0.2 percent of Canada's total emissions in 2008. This would include emission sources from the production area, the pipeline corridor, construction activities, compressors, power generation for pipeline operation and process equipment, well testing, fugitive emissions, venting, and changes in land use. The peak emissions from operation with three compressor stations could be as high as about 1.9 million tonnes per year. To manage emissions the companies would use the oil and gas industry's best practices and the best available technology that is economical.

People were concerned about emissions from the Mackenzie Delta gas when it is burned. If that gas replaces coal or oil, total emissions might decrease. On the other hand, some witnesses argued that the gas could be used to produce fuels from the Alberta oil sands and that could increase total emissions. The companies said the gas would be destined for the overall North American market, not any particular use or gas-burning facility.

*In the case of the Mackenzie Valley Pipeline, there is no direct connection between the MVP and any particular gas-burning facility. Mackenzie gas will be sold into markets throughout North America. On any given day, it could end up at commercial, residential, industrial or public facilities in many different locations in Canada or in the United States. There is no end-use facility that is contingent on the MVP.*

*I am neither for nor against the construction and production of natural gas and sweet natural gas fluids. This is a project that is needed not only here, but all over the world. One area of great concern to me is the increasing climactic changes to the environment, and it's escalating yearly and not by any means decreasing. I only pray that all precautions and considerations are taken seriously towards making a final decision.*





1.7

Would the project  
be economic?

Before going ahead, the companies would have to decide whether the project is a good investment. This would be based on natural gas prices, markets for the gas, the amount of natural gas available, expected costs of transportation on the pipelines, and fiscal arrangements.





**Kevin O'Reilly**  
Alternatives North  
Yellowknife

April 13, 2010

The developers of the three gas fields have agreed to supply 23.5 million cubic metres (830 million cubic feet) per day of natural gas for the first 15 years of pipeline operation. This would fill 86 percent of the Mackenzie Valley Pipeline's capacity with one compressor station, or 69 percent of the capacity with three compressor stations. These companies have also agreed to contract for 4.7 million cubic metres (166 million cubic feet) per day of pipeline capacity in the following five years of operation.

The companies proposing the project said they expected oil and gas companies to begin developing other natural gas fields. They believed this would happen in the Mackenzie Delta and the Colville Hills region within three years of the pipeline starting operations. The second and third compressor stations would be added to increase pipeline capacity when needed.

One other company said it expected to contract for an additional 5.6 million cubic metres (200 million cubic feet) of pipeline capacity.

*Given the large increase in natural gas supply in North America and Canada due to shale gas and liquefied natural gas, we're of a view that those sources could likely deliver the same or more gas than the Mackenzie Gas Project, more quickly and at a fraction of the cost. It is not good enough to say that the decision on economic viability lies with the Applicants alone, as the costs and impacts will be borne by taxpayers through the fiscal package or subsidies and by Northerners, who will bear the burden of the environmental and socio-economic costs.*

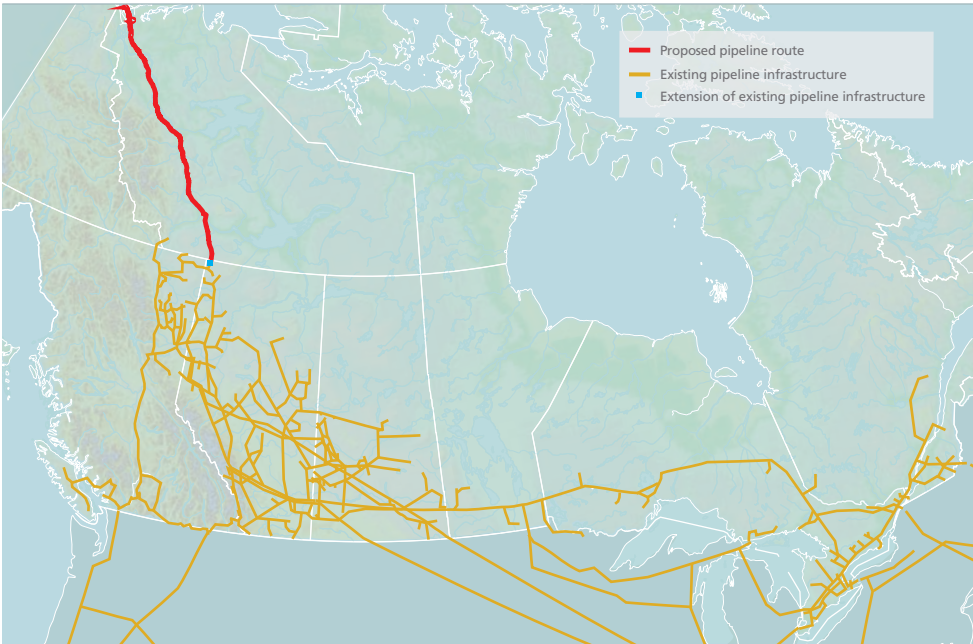


Figure 1-6

Map showing connections to North American natural gas pipeline network

The companies proposing the project said there would be adequate demand for the natural gas because the pipeline would link to North American markets.

New facilities would be needed to move the gas from the end of the Mackenzie Valley Pipeline into the TransCanada Alberta System. The TransCanada Alberta System could accommodate 34.3 million cubic metres (1.2 billion cubic feet) per day, which is the maximum volume with three compressor stations. Higher volumes could require some additional pipeline capacity on the TransCanada Alberta System.

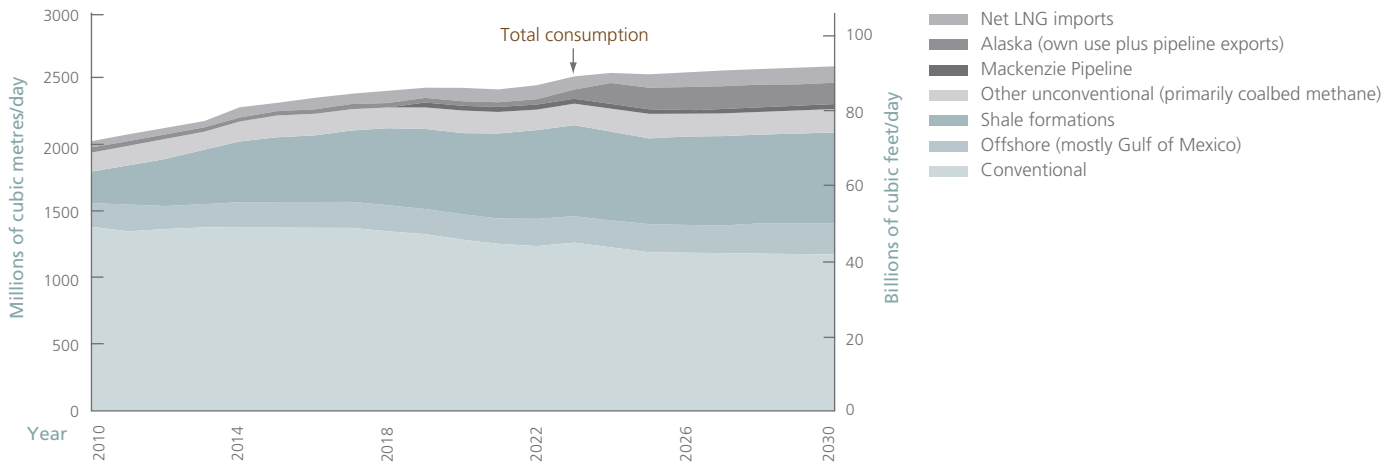
The National Energy Board would regulate tolls (transportation charges) on the gathering

system and pipeline. Tolls would be based on operating costs, recovering the costs of construction, taxes, and a return on investment.

The companies have not decided whether the project makes economic sense to them. They would decide that at the end of 2013 based on many factors including natural gas prices, markets for the gas, the amount of natural gas available, the expected costs of transportation on the pipeline, financial conditions and the cost of complying with all regulatory requirements.



Figure 1-7  
Projected North American natural gas supply and consumption





**Dr. Gerald Angevine**  
Economist  
Yellowknife

March 29, 2010



*What this market study demonstrates is that there is room for gas from the northern frontiers in spite of increasing shale production and LNG being made available, being utilized as well. It does not indicate whether Mackenzie gas or Alaska gas for that matter would be competitive. That would be up to the producers at the time to determine.*

**Heather Marreck**  
Imperial Oil Resources  
Ventures Limited  
Yellowknife

July 29, 2006



*Ultimately, after these proceedings are concluded and we understand all the terms and conditions that are attached with the certificate—if we're issued one—as well as the updated information at that time around markets and our costs and schedules, we will make a decision whether we are going to proceed...*

*The volume of gas that's going to flow on the pipeline is one of the key factors in the setting of the tolls, and so it will have an impact on the economic viability of the field development.*

*We continue to be hopeful that we will have additional gas development prior to making the decision to construct, and that certainly would be a positive factor in our decision. But I couldn't tell you today whether or not we'd be able to go forward with the project if we don't have any additional gas.*







1.8

## Would the project lead to more gas development in the North?

This application deals only with the three natural gas fields and the related pipelines and facilities. Any additional development may or may not be approved after new consultation, environmental assessment and regulatory review.

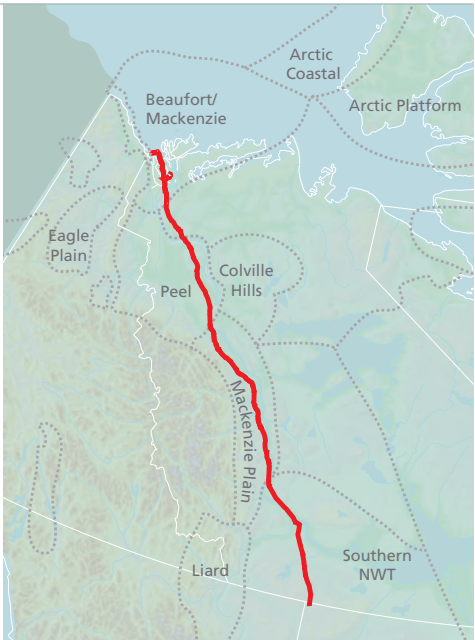
The contracted amounts from the three anchor fields would not fill the pipeline to its capacity. Many parties said they expect further natural gas development if the Mackenzie Gas Project is built. An outlet to southern markets could encourage oil and gas companies to explore and develop natural gas fields in the Mackenzie Delta, the Beaufort Sea, the central Mackenzie Valley, and possibly in Yukon. Consultation, environmental assessment and regulatory reviews would be required before additional fields could be developed.



There could be many natural gas fields in the Mackenzie Valley region. Gas has been found in the Colville Lake area and other parts of the Northwest Territories. Several significant gas discoveries have been made onshore close to the anchor fields. There was also a significant gas discovery in shallow waters (less than 100 metres deep) in the Beaufort Sea. A Yukon government study indicated that gas production from the Eagle Plain region could also be possible with high enough natural gas prices and pipeline access to markets.



Figure 1-8  
Map of  
sedimentary basins



Joseph Kochon  
Colville Lake

November 27, 2006

*About five years ago, our Elders advised our leadership to create some opportunities for our young people; most importantly, to do everything ourselves.*

*One thing our Elders didn't say is how we should create these opportunities; therefore, it has given the leadership the mandate to explore ways of creating opportunities. And one of those opportunities became exploration for oil and gas in the Colville Lake area, which has been a successful one considering we picked a good business partner.*

*This project has opened many opportunities for our community and the surrounding communities; therefore, we see ourselves involved in some very interesting future potential projects, such as either transporting the successful wells to the proposed Mackenzie Gas Pipeline or find another economic potential for our interests in the current discoveries in the Colville Lake area.*



1.9

## Would other natural gas developers have access to the project?

Other companies are exploring for natural gas in the region. They would want to ship the gas they find on the Mackenzie Valley Pipeline. They would have a right to use the gathering and transmission pipelines, but they were concerned about conditions for using them and the possible transportation costs. They also expressed concern about the capacity of the gathering system north of Inuvik.

If the Mackenzie Gas Project is built, it would be the first link from the Mackenzie Delta to southern markets. It could be the only means to move natural gas out of the region.

We heard many concerns about how other gas companies would get access to the system. They were concerned about the amount of capacity that would be available on the pipeline. Exploration companies told us that the Mackenzie Valley Pipeline would be large



enough to carry the natural gas they expect to find. However, they were concerned that the upstream gathering system might not have enough capacity for additional natural gas.

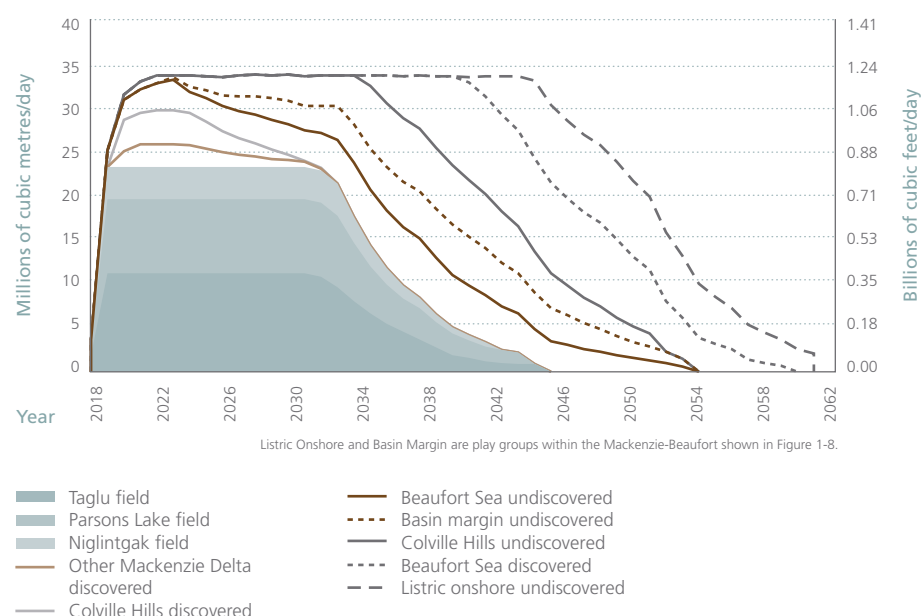
Other oil and gas companies were also concerned about the fairness of shipping terms and conditions. The proposed method of tolling for the gathering system was criticized for its lack of transparency. Some parties believed it was biased in favour of the system owners.

For the Mackenzie Valley Pipeline, there were concerns about the number of toll zones and how the tolls would reflect the cost of any future additions to the pipeline.

The project proposal calls for two toll zones. Shippers of gas from Inuvik would pay the full toll. For gas that comes into the system south of Little Chicago, such as from Colville Hills, shippers would pay 72.4 percent of the full rate.

Figure 1-9

Production from anchor fields and potential future developments



Listic Onshore and Basin Margin are play groups within the Mackenzie-Beaufort shown in Figure 1-8.



**Brendan Bell**  
Minister of Industry,  
Tourism and Investment,  
Government of the  
Northwest Territories  
Inuvik

December 11, 2006

*Our support is conditional on the factors that we've laid out here before you a number of times today; that it be basin-opening; that it be done in an environmentally and economically sustainable manner... [W]e view any development through the lens of our sustainable development policy. So there are a number of conditions that we place on this development...*

*We consider each development, each project on a case-by-case basis. We put a lot of faith in our regulatory process and in the Northerners who have a vested interest in how this unfolds who make up those boards. So each of these induced developments, as you say, will be considered on that basis, case by case.*



Figure 1-10

Proposed toll zones for the Mackenzie Valley Pipeline

Small-volume natural gas users in the Northwest Territories would benefit from rebates. The rebates would effectively reduce the toll by 50 percent of the full rate for shippers selling to these users.

The background image shows a vast, snowy mountain landscape under a cloudy sky. In the foreground, two workers wearing high-visibility vests and hard hats stand on a snow-covered field, looking towards the mountains. The scene is dimly lit, suggesting dusk or dawn.

# 1.10

## How would companies' commitments be monitored and regulated?

The National Energy Board and other authorities would regulate every stage of the project. This starts at the time of planning, covers construction and operations, and ends after the pipeline is no longer useful. The National Energy Board would conduct audits and inspections to ensure that the companies honour their commitments. It would also investigate incidents and respond to complaints.



**Monte Hummel**  
World Wildlife Fund – Canada  
Inuvik

April 20, 2010



**Danny Bayha**  
Deline

October 2, 2006

Some people at our hearing wanted to ensure that plans for monitoring and regulating the Mackenzie Gas Project would be honoured. This was a particular concern because much of this project's design was conceptual, and detailed engineering plans would only be developed if the project is approved.

All detailed designs would be reviewed by the National Energy Board and other federal and territorial regulators. Each stage of construction, operation and abandonment would be subject to regulation and enforcement.

*From the very beginning, WWF has not been opposed to the Mackenzie Gas Project. It is not our goal to impede, obstruct, or to stop economic development in the North.*

*Rather, we respect the decisions of Northerners as to whether they ultimately want such projects. After all, they are the ones and the people most directly affected. It is the people who live in the North who will live with the project consequences, both positive and negative.*

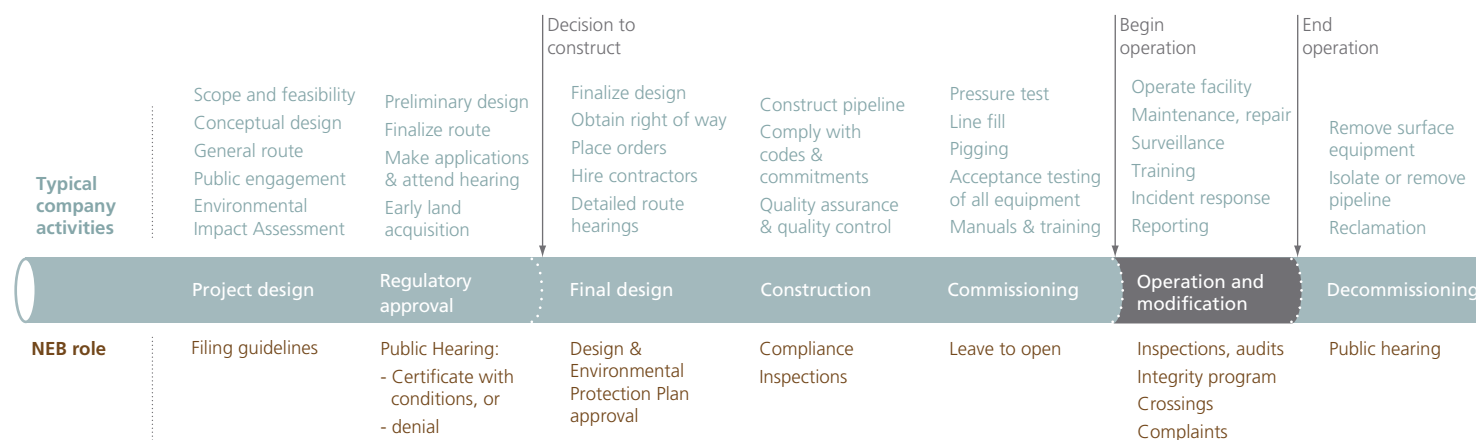
*Further, WWF fully appreciates Fred Carmichael's point that many northern leaders would prefer the challenges associated with new economic development rather than the challenges they face without it—but not at any price.*

*How are the concerns of the community going to be put into the project in the end? How can they be assured somebody is listening to what they're saying?*

*Who is going to look after the pipeline when it's built? How are they going to do that? Who is the police? Who is going to be looking after to make sure some of this stuff doesn't happen?*

Figure 1-11

Timeline of  
"cradle to grave"  
lifespan regulation



The companies have committed to frequent inspection and monitoring to ensure safe and reliable operation. Special attention would be needed because of the sensitive environment and the permafrost along the route. Ongoing monitoring would identify potential problems.

In addition, the National Energy Board would conduct audits and inspections. We would make sure the pipeline companies comply with regulations, their commitments and the conditions of approval. The National Energy Board investigates incidents and complaints and has processes to resolve complaints and disputes.

When pipelines and related facilities are no longer needed, they must be retired. This is called abandonment. It usually involves removing surface facilities, plugging wells, and reclaiming land that has been disturbed. Buried pipes may be removed or left in place depending on the best way to address safety, land use and environmental concerns. The operators must apply to the National Energy Board and other agencies for authorization to abandon their facilities. These applications are subject to public consultation, hearings and environmental assessment at that time.





**Gabe Hardisty**  
Dehcho Elder  
Yellowknife

April 15, 2010



*And every time when we talk about things, we're not talking of ourselves. We're talking about the future of our children and we need to make sure that things are going to be better for our children in the long future and we don't want anything sitting wrong for our children in the future. Those are the reasons why we talk and we need to look into the future for our children and just so things will be better for us after we're gone and when our children are left behind.*

**Danny Gaudet**  
Deline

October 2, 2006



*There needs to be a way to get people involved in monitoring these projects alongside with the scientists from the businesses or the governments.*

*There needs to be a way of measuring impacts. And if there's impacts, negative or positive, measure them. If they're negative, slow down the project or even stop it until it's rectified, and then continue to go forward.*

*People are tired of the old way where resources were exploited from the area, and we have messes to deal with now, and we're the ones that have to contend with those messes.*







## Part 2

Production,  
gathering  
and  
processing  
systems

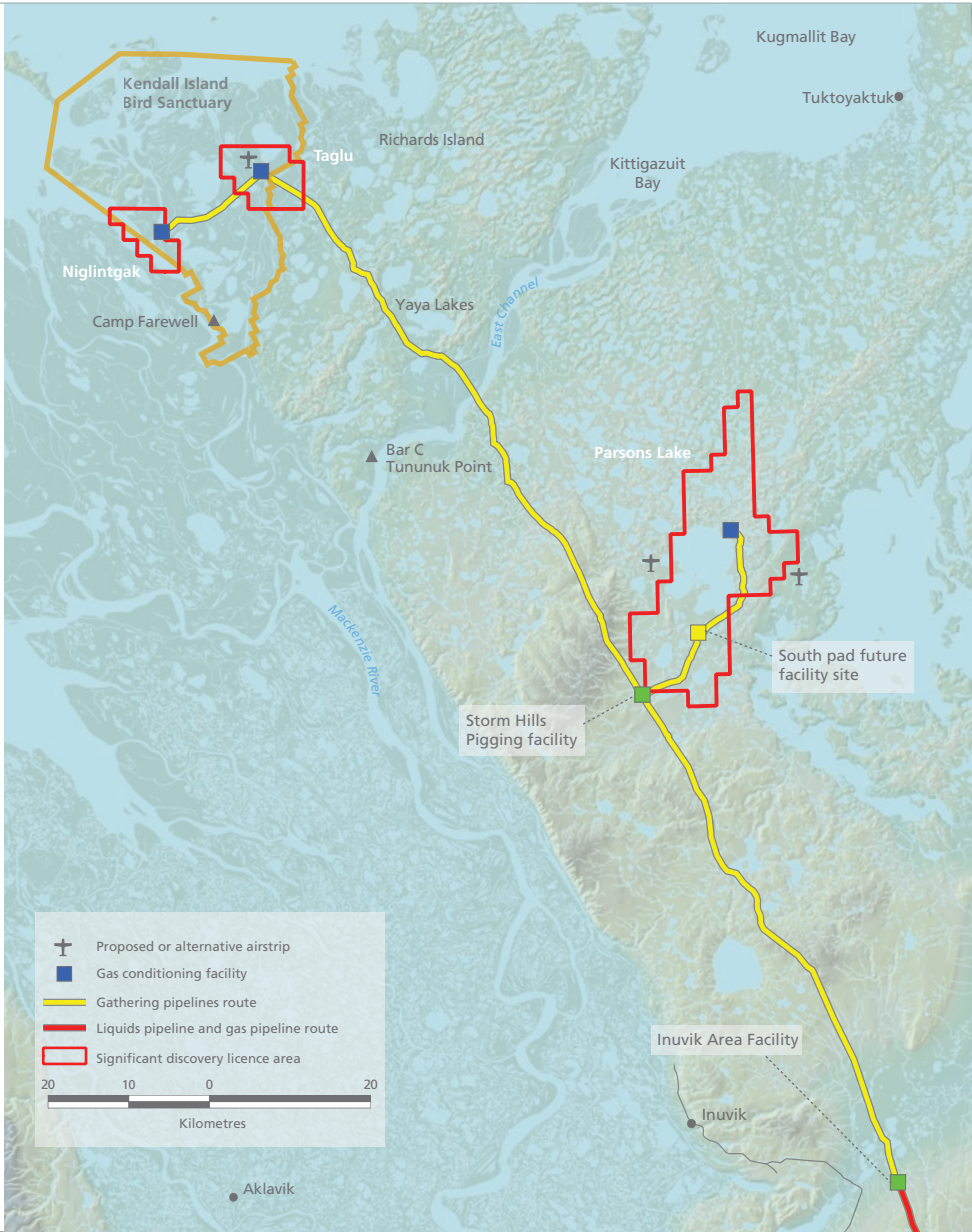


## 2.1

# Where will the gas come from?

The Niglintgak and Taglu natural gas fields are located in the Mackenzie Delta. The Parsons Lake field is on the Tuktoyaktuk Peninsula. The natural gas would be shipped through gathering pipelines to the Inuvik Area Facility for processing. This facility would separate natural gas liquids from the gas that goes into the Mackenzie Valley Pipeline.

Figure 2-1  
Map of the  
producing fields



### The gas fields

Three separate natural gas fields would provide the initial natural gas supply for the Mackenzie Gas Project. The Niglintgak and Taglu fields are in the Mackenzie Delta near the Beaufort Sea. Parsons Lake is just east of the Delta on the Tuktoyaktuk Peninsula.

Facilities in the fields would remove water from the raw natural gas. Chilled gas would be shipped through the gathering system to the Inuvik Area Facility for processing. The gathering system and gas processing facility near Inuvik would be owned by a joint venture of the producing companies, with Imperial operating the facility.



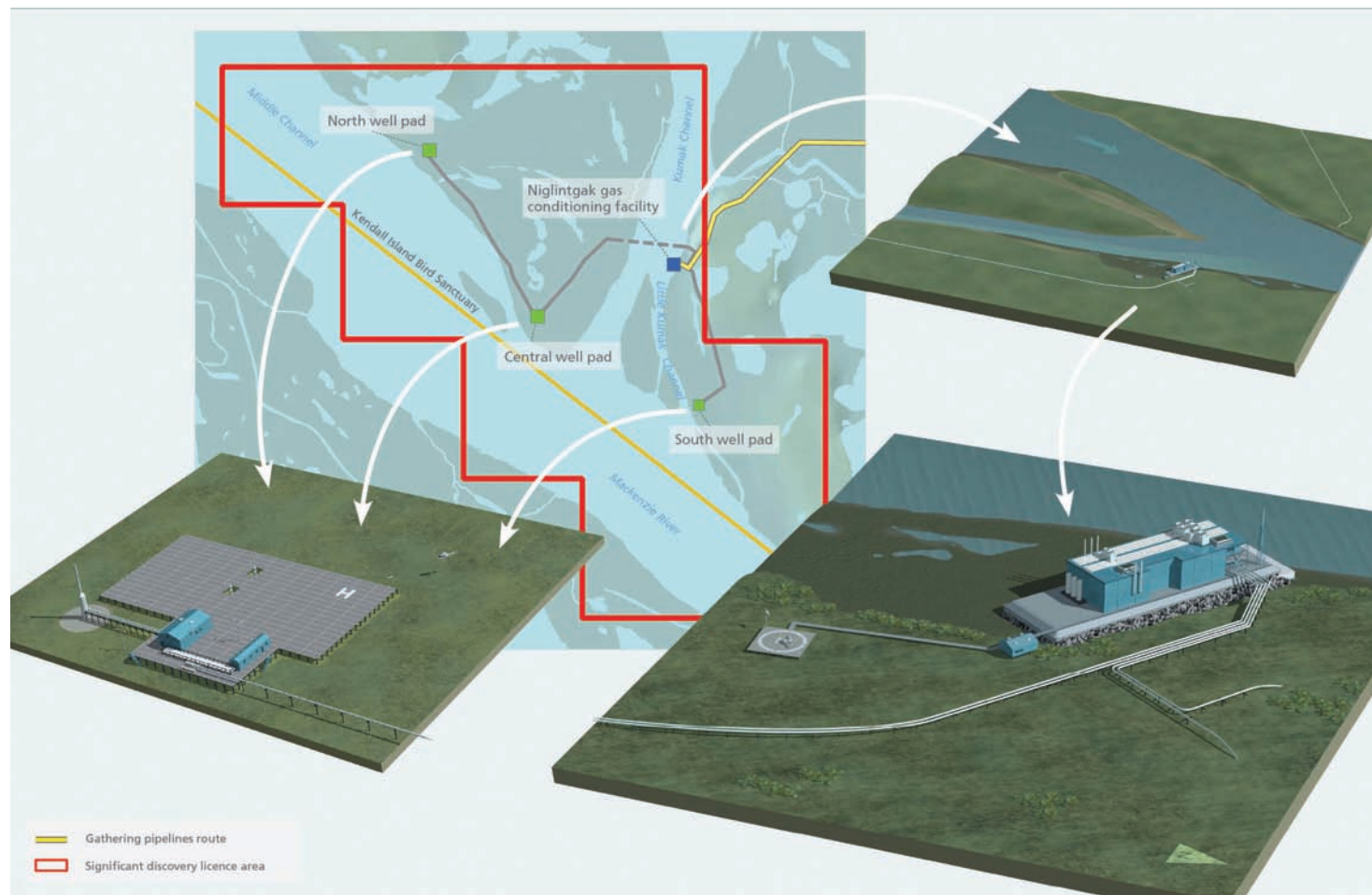


Figure 2-2

#### Niglintgak production facilities

Shell Canada's Niglintgak field is about 120 kilometres northwest of Inuvik. Here Shell plans to build:

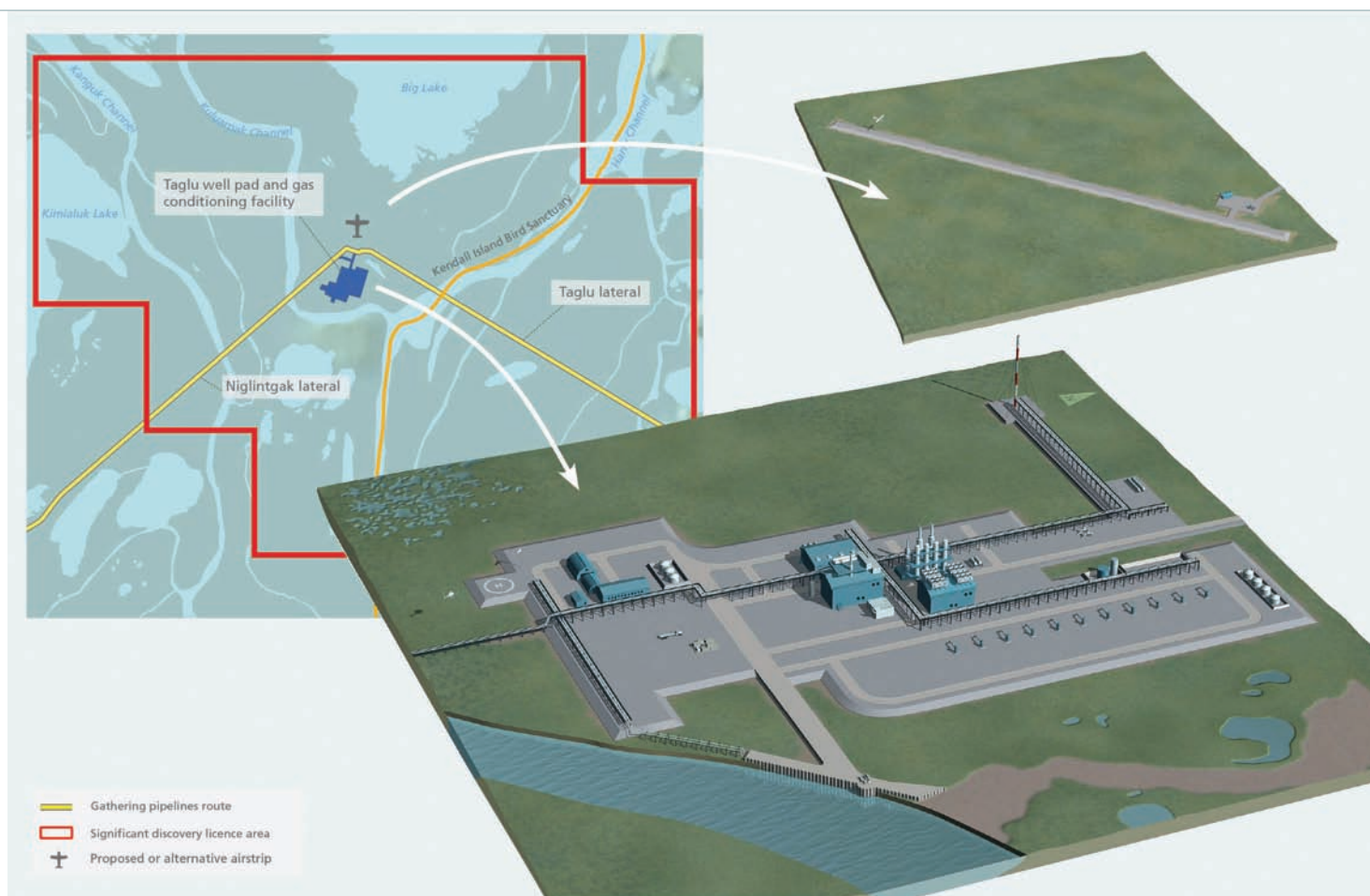
- 6 to 12 production wells located on three pads;
- a system of above-ground flow lines;
- a gas conditioning facility in the Little Kumak Channel;
- a disposal well;
- an emergency shelter; and
- helipads.

Figure 2-3

### Taglu production facilities

The Taglu field, to be developed by Imperial Oil Resources Limited, is about 15 kilometres east of the Niglintgak field. Here Imperial plans to build:

- 10 to 15 production wells drilled from a single well pad;
- one or two disposal wells;
- a gas conditioning facility;
- a barge landing site;
- an airstrip;
- a helipad;
- several buildings; and
- a water treatment system.





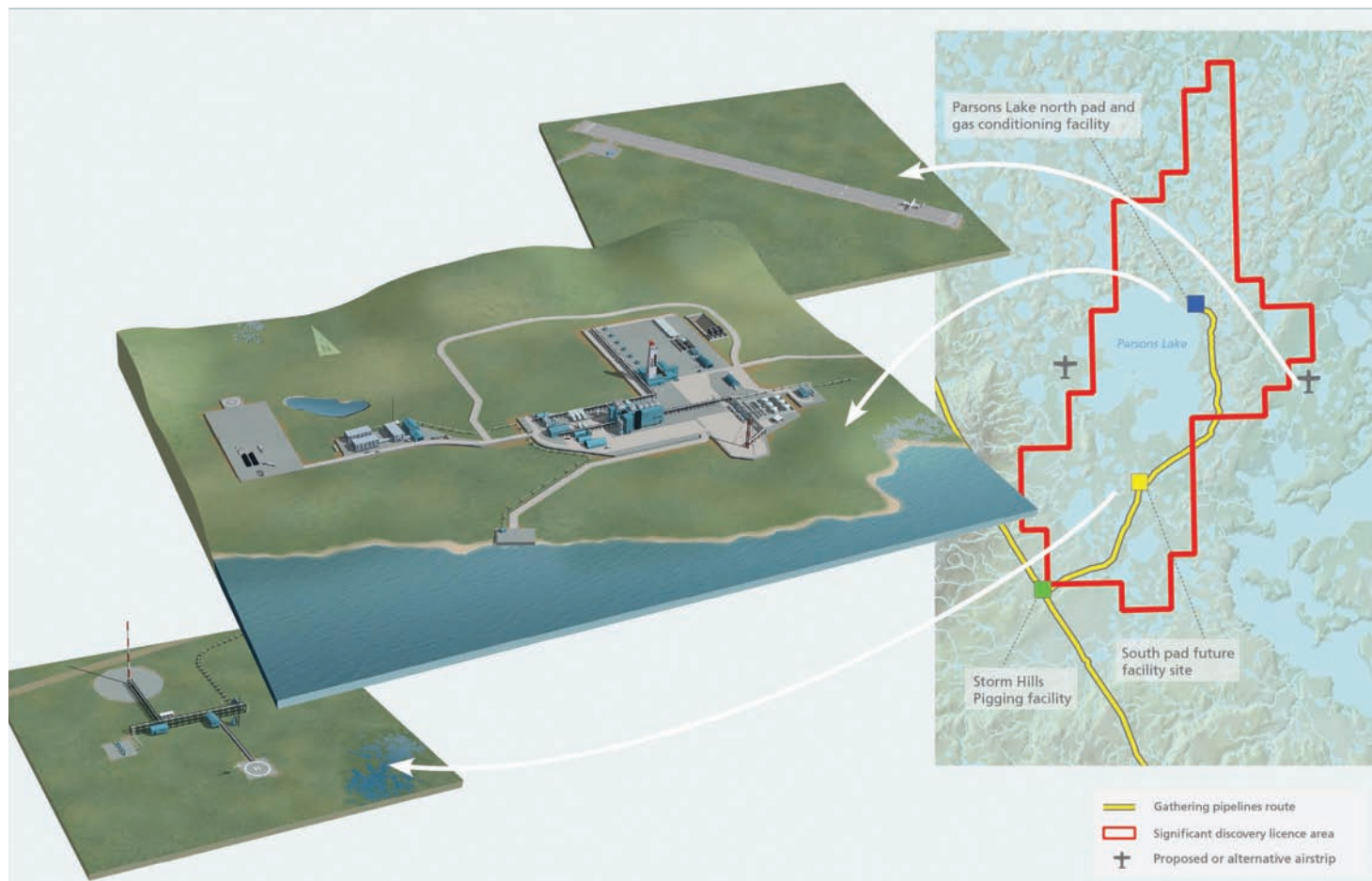


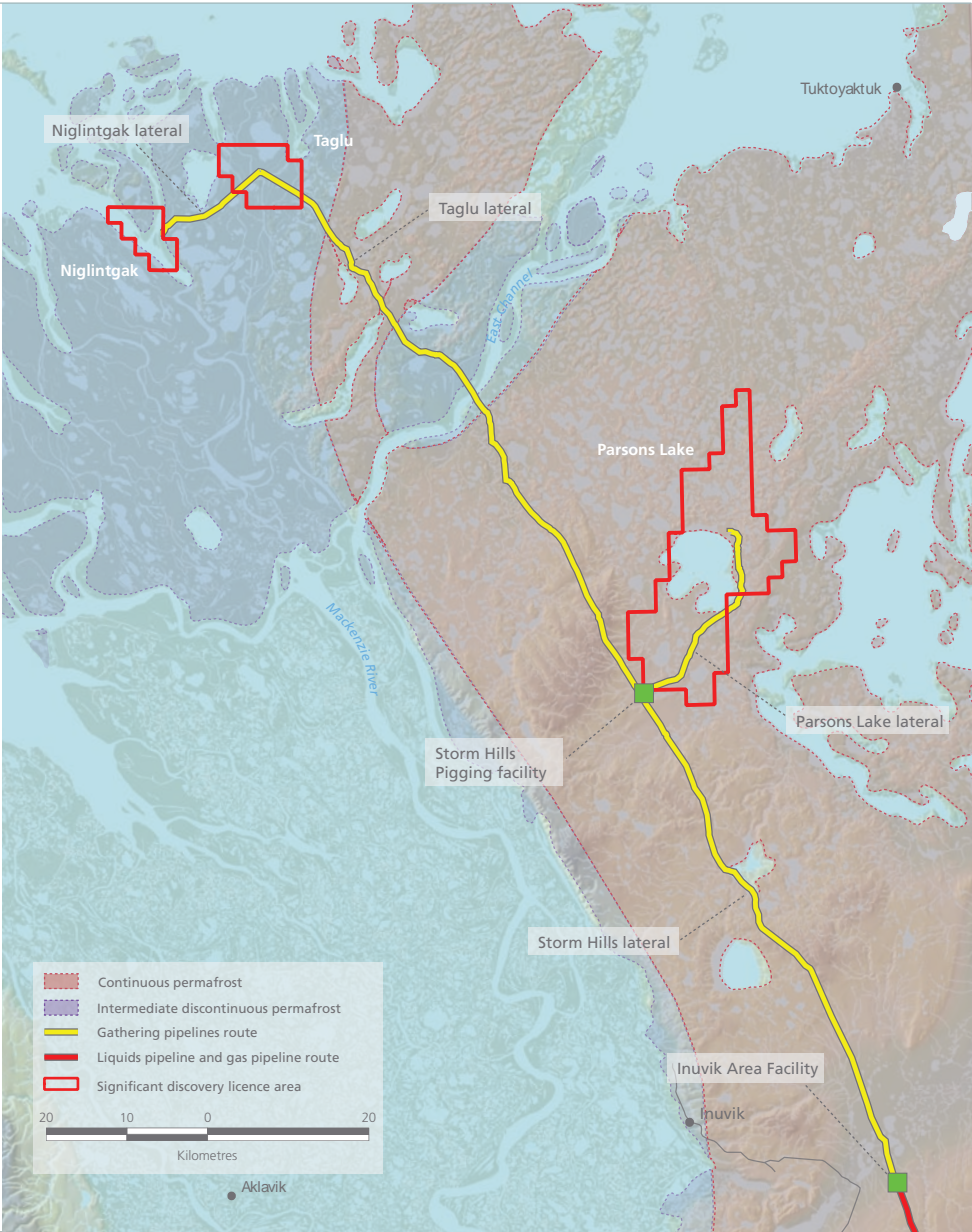
Figure 2-4

#### Parsons Lake production facilities

The Parsons Lake field, about 70 kilometres north of Inuvik and 55 kilometres southwest of Tuktoyaktuk, would be developed by ConocoPhillips Canada (North) Limited and ExxonMobil Canada Properties. ConocoPhillips is the operator of the field. They plan to build:

- a north pad with nine to 19 production wells;
- a south pad with three to seven production wells;
- disposal wells;
- flow lines;
- a gas conditioning facility; and
- related facilities including an all-weather airstrip.

Figure 2-5  
Map of the gathering and processing system showing permafrost distribution



### Gathering system and gas processing facility

The gathering system would include four sections of buried pipeline:

- Niglintgak to Taglu—14.7 kilometres of 400 millimetre (16 inch) diameter pipeline in a 30 metre right of way;
- Taglu to Storm Hills—80.9 kilometres of 650 millimetre (26 inch) diameter pipeline in a 40 metre right of way;
- Parsons Lake to Storm Hills—26.4 kilometres of 450 millimetre (18 inch) diameter pipeline in a 30 metre right of way; and
- Storm Hills to Inuvik Area Facility—67.2 kilometres of 800 millimetre (32 inch) diameter pipeline in a 40 metre right of way.

At Storm Hills, about 50 kilometres north of Inuvik, the pipeline from Parsons Lake would join the pipeline from the Niglintgak and Taglu gas fields. The Storm Hills Pigging Facility would have pig receivers and pig launchers for removing and inserting “pigs” into the pipeline. These devices are sent through the pipeline to perform functions such as cleaning the pipeline or inspecting its condition.



The Inuvik Area Facility would be located about 20 kilometres east of Inuvik.

At the Inuvik Area Facility, the raw natural gas would be separated into marketable natural gas and natural gas liquids. Marketable natural gas is mainly methane, with some ethane and propane. It would be temperature-controlled and compressed before being injected into the Mackenzie Valley Pipeline. Natural gas liquids, also known as condensate, are mainly pentane and heavier hydrocarbons. They are refined to make products such as gasoline and petrochemicals. They would be temperature-controlled and then pumped into the natural gas liquids pipeline that goes to Norman Wells.

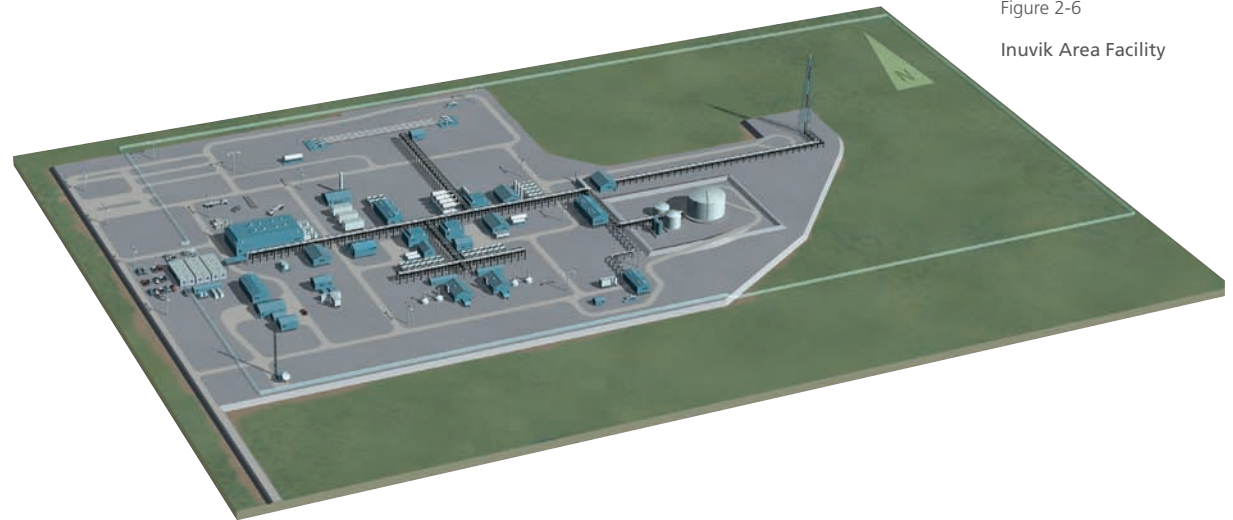


Figure 2-6

Inuvik Area Facility

## 2.2

# How would communities be affected by developing the gas fields?

The project would increase economic activity in the Mackenzie Delta communities, especially during the construction period. At the same time, unwanted effects such as increased traffic and demands on social services would occur.

Communities would experience different effects depending how close they are to the gas fields, the transportation corridor and related facilities. There could be positive impacts such as employment and business activity. There could be negative impacts from demand on medical, police and social services, and the effects of road, air and barge traffic.

The largest community in the Mackenzie Delta region is the town of Inuvik (2009 population 3,586). Other communities in the region include Tuktoyaktuk (2009 population 929), Fort McPherson (2009 population 791), Aklavik (2009 population 645) and Tsiigehtchic (2009 population 136).



One effect on Inuvik from the project would be increased economic activity during the construction period. This could create training, employment and contracting opportunities. There could also be negative effects such as increased traffic in town and on the haul road to the Inuvik Area Facility. After completion, there could be continuing effects from future development. Operating the project would create relatively few permanent jobs. There would be opportunities in maintenance, monitoring and providing goods and services.

Since the facilities would be 20 kilometres or more from Inuvik, there would be little or no impact from noise and emissions. All emissions would be subject to monitoring and regulation. The companies have submitted plans for safe disposal of solid and liquid wastes such as drilling fluids and cuttings (debris from the drill bit cutting through rock). The National Energy Board and other regulators would make sure the companies follow these plans.



**Roger Gruben**  
Tuktoyaktuk

December 4, 2006

*Tuktoyaktuk is still a very traditional community and still very dependent on the environment and the wildlife resources for our lifestyle. We believe that there could be negative impacts from air traffic around the Parsons Lake area on the animals. This in turn will provide negative impacts on the people of this area, on harvesting.*

*We encourage industry to consult with members of Tuktoyaktuk on addressing and identifying the proper preventative measures for any activity around Parsons Lake and on the wildlife in the area.*

A large flock of birds, possibly waterfowl, is captured in flight over a body of water. The water is dark blue with many small, bright white reflections. In the background, a dense line of green trees or shrubs stretches across the horizon. The sky is a pale, clear blue. The overall scene is dynamic and naturalistic.

## 2.3

# How would Kendall Island Bird Sanctuary be affected?

The Kendall Island Bird Sanctuary is a federally protected area. It is a staging and breeding ground for birds. The Niglintgak and Taglu fields are located within it. The companies would have to comply with Environment Canada's regulations in the sanctuary.

The Niglintgak and Taglu fields are located in the 623-square-kilometre Kendall Island Bird Sanctuary. This federally protected area of low-lying islands serves as a staging and breeding ground for more than 90 species of songbirds, waterfowl and shorebirds. The species include the lesser snow geese, the tundra swan and other migratory birds. Environment Canada regulates surface development in the sanctuary. No more than one percent (six square kilometres) is allowed to be disturbed by oil and gas activity. Development of the two fields would comply with Environment Canada's land use limits.



Timing of construction and other activities in the sanctuary would be important to avoid effects on birds and habitat. Birds are generally present from May to October. At Niglintgak, the proposed construction and drilling programs would occur during winter months. The initial Taglu drilling program would occur uninterrupted for about 16 months, with well completions to follow. Imperial said its development plan is flexible enough to accommodate contingencies that could arise during detailed design, construction and

operation of the Taglu field. Before construction and operation, the National Energy Board and other authorities would have to approve wildlife protection and management plans for all three development fields.

Environment Canada and the National Energy Board would both regulate noise levels in the Kendall Island Bird Sanctuary.

Most of the facilities for Niglintgak and Taglu would be built off-site in modules. They would be moved to the field by barge or on winter roads.



**Terri-Lee Kuptana**  
Tuktoyaktuk

December 4, 2006

*Springtime, fall, winter, and summer, we get a lot of our harvesting. In the springtime, it's the geese, and should the pipeline go through, my worry is that the migration will change and, therefore, we'll have to go further.*

*My father's camp is north of Tuk, and I know the way there and my children are learning the way there. Should the pipeline go through, should anything—operations, whatever, then we have to find a new way, and that just concerns me because that's been passed down from my parents to me and my family members. And also my nephews that are 11, 13, they know this land.*

*And also, summertime, beluga whale harvest is really important throughout this region. Again, that's a worry for me. I'm asking the Panel, once you make your decisions, to think of not just the present Inuvialuit generation, but future generations to come that it be closely monitored.*



## 2.4

# How would warming climate affect the producing fields and facilities?

Climate change could cause sea levels to rise during the life of the project. If this happens, facilities would be located high enough above sea level to protect them from storm surges and flooding.

Warming of the global and regional climate could raise sea levels and affect weather patterns. The Niglintgak and Taglu fields are located in the low-lying Mackenzie Delta near the Beaufort Sea. We heard concerns that seasonal flooding and storm surges could affect these facilities during the life of the project. The Taglu airstrip could also be subject to flooding, but in that event workers and equipment would be brought to the site by helicopter. The companies provided evidence that the facilities would be high enough to protect them from storm surges and flooding even if sea levels rise.





Lois Little  
Yellowknife

August 1, 2006

*We know from experience of others elsewhere in the northern world that climate change is already having a destabilizing effect on fragile Arctic and sub-Arctic ecosystems. Add the MGP to this equation, then the wave of hydrocarbon and other industrial development that will follow in its wake, and we can only expect to incur significant upheaval, stresses and uncertainty both in the natural and human environments.*

The Niglintgak and Taglu fields would produce natural gas from relatively shallow underground formations. As the natural gas is removed, the ground could settle by up to almost half a metre due to the removal of natural gas. This possibility was taken into account in the design of the facilities (see Figure 2-7). Parsons Lake is located on higher ground and further from the sea, so its facilities would be less exposed to possible effects of climate change.

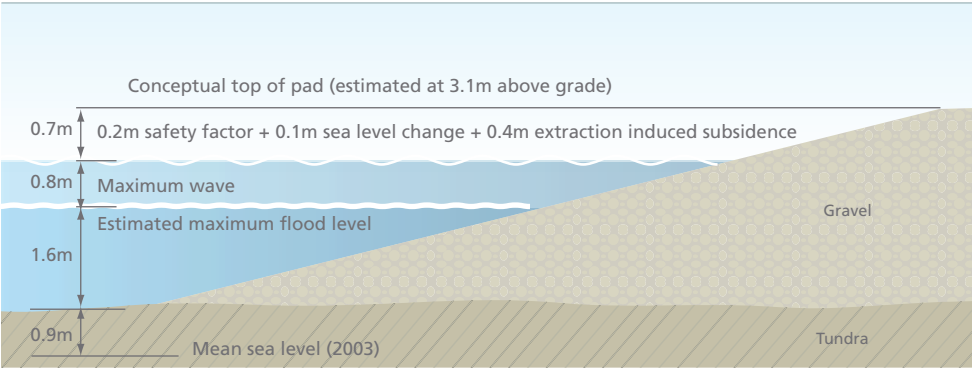


Figure 2-7  
Taglu conceptual  
pad elevation



# 2.5

## How would public safety be protected?

Pipelines and facilities would be located away from where people live. They would be regulated throughout their lifespan to ensure safety and reliability. Gathering pipelines would be buried 60 to 90 centimetres underground. Three layers of coating would protect the steel pipe from corrosion.

The National Energy Board inspects, audits and monitors pipelines and facilities throughout their lifespan, from construction to abandonment. The goal is to ensure safe, reliable operation and to prevent uncontrolled releases of liquids or gases that could endanger workers or the public. Numerous standards and procedures have been established. These are based on a half century of experience with high-pressure natural gas and liquids pipelines. Pipeline failure rates are very low.

The high-pressure pipelines and facilities for the project would be located away from communities. The natural gas discovered in the Mackenzie Delta region does not contain



poisonous hydrogen sulphide. This reduces the potential risks to workers and surrounding populations from any accidental gas releases. Because natural gas is lighter than air, it disperses rapidly into the atmosphere. However, sparks or static electricity can ignite released gas.

The gathering pipelines would be buried 60 to 90 centimetres underground. Three layers of coating would help protect the steel pipe from corrosion. Pressure-monitoring instruments could detect any large releases of natural gas. Remote-control valves would stop the flow of gas to the affected area in the event of a release. Aircraft would fly the pipeline route regularly to look for disturbance or thawing that might indicate potential problems. Computerized inspection tools, known as smart pigs, would be sent through the pipelines periodically to detect corrosion, dents, bending or buckling.

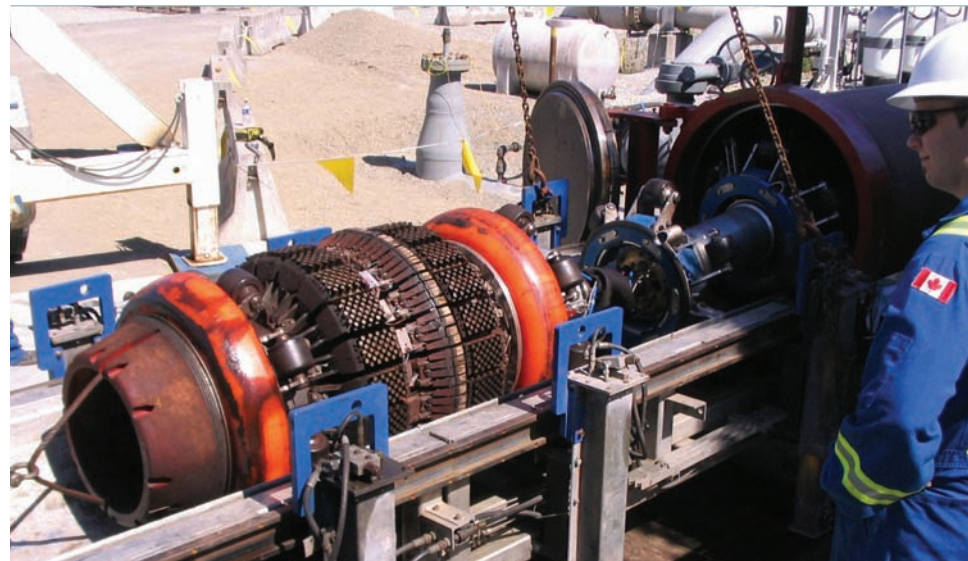
Building and operating pipelines and facilities on the permafrost of the Mackenzie Delta region poses challenges. Facilities would be supported by pilings or gravel pads so they would not melt the permafrost and sink. Disturbing the surface vegetation could result in permanent scars on the landscape and cause continued thawing of permafrost.

Therefore, much of the surface transportation off the right of way would be on winter roads. If the permafrost thaws, the ground can settle. If ice forms in previously unfrozen ground, frost heave can lift the pipe. Both thaw settlement and frost heave can damage the pipeline. The operating companies would monitor and inspect the pipelines and make repairs or replacements as needed.

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December 6, 2006

*We are in the permafrost. So looking at that, would you promise that—no, I shouldn't say promise. Would you make sure that the people that are going to make this pipeline or build this pipeline, that they do it safely? From all your research, you should know what safety is, the measure of how safe the pipeline would be.*



**In-line inspection tools**  
Special tools known as in-line inspection tools or smart pigs are sent through pipelines to inspect the pipe for damage or corrosion that could lead to leaks. Pictured is a VECTRA MFL (magnetic flux leakage) tool exiting a receiver trap.