

Steelhead  
L N G

## Project Overview

January, 2019



# Who we are

Steelhead LNG is a B.C. based Canadian energy company focused on LNG development



B.C. based Canadian energy company with expertise that spans the natural gas and LNG value chain globally

Steelhead proposed projects:

1. Kwispaa LNG Facility with Huu-ay-aht First Nations, and
2. natural gas pipeline

Committed to building mutually beneficial relationships with communities and developing projects in an environmentally responsible manner



# Co-Management Relationship

Steelhead LNG and Huu-ay-aht First Nations worked for over 3 years to discuss a natural gas liquefaction and export facility located on Huu-ay-aht owned lands

- Established principles and processes for the development of an LNG project
- Approval of Project Agreement following endorsement through a community referendum

Steelhead LNG and Huu-ay-aht First Nations are co-managing the Kwispaa LNG Facility and in October 2018, submitted the Project Description to initiate the British Columbia Environmental Assessment Office (EAO) process



## THE MEANING BEHIND KWISPAA

Kwispaa is the proper Nuu-chah-nulth place name for the land adjacent to Nuumaqimiis Bay. It is a name that carries knowledge passed from generation to generation and is part of Huu-ay-aht's story map, which helped guide citizens from place to place.

Kwispaa means "on the other side" as the site is on the other side of the bay from Nuumaqimiis, Huu-ay-aht's traditional winter village located by the mouth of the Sarita River.

**KWISPAA** LNG

Co-managed by





# What is Kwispa LNG?

Kwispa LNG is a natural gas liquefaction and export facility proposed for Huu-ay-aht First Nations owned lands at Sarita Bay in the Alberni Inlet on Vancouver Island, BC. Kwispa LNG is being developed through a unique co-management relationship between Huu-ay-aht and Steelhead LNG's subsidiary, Kwispa LNG (CF) Limited Partnership.



Kwispa LNG will produce and export up to 24 million tonnes of liquified natural gas at its full build out. The facility will have an initial lifespan of approximately 25 years.

**KWISPA LNG**

Co-managed by





# Natural Gas

Natural gas has been used in homes and businesses across BC for decades, to heat, cook, and fuel appliances.

Natural gas is the cleanest burning fossil fuel and ideal transition fuel to reduce global GHG's and air emissions.

Natural gas is:



Colourless



Odorless



Non-toxic



Non-corrosive

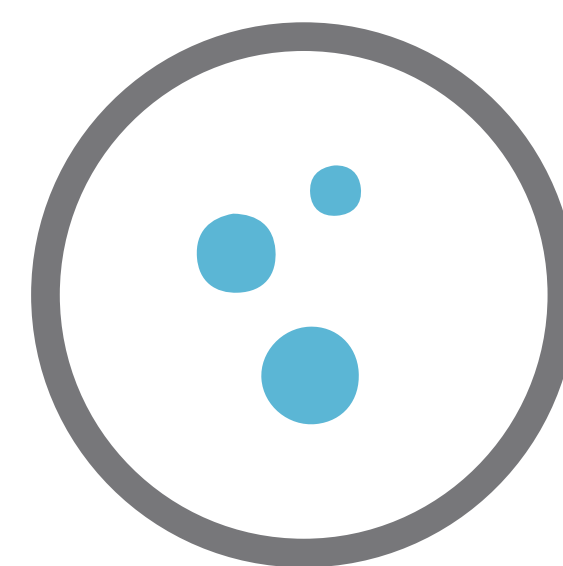
Natural gas is different from bitumen or oil:



Does not mix with water or soil



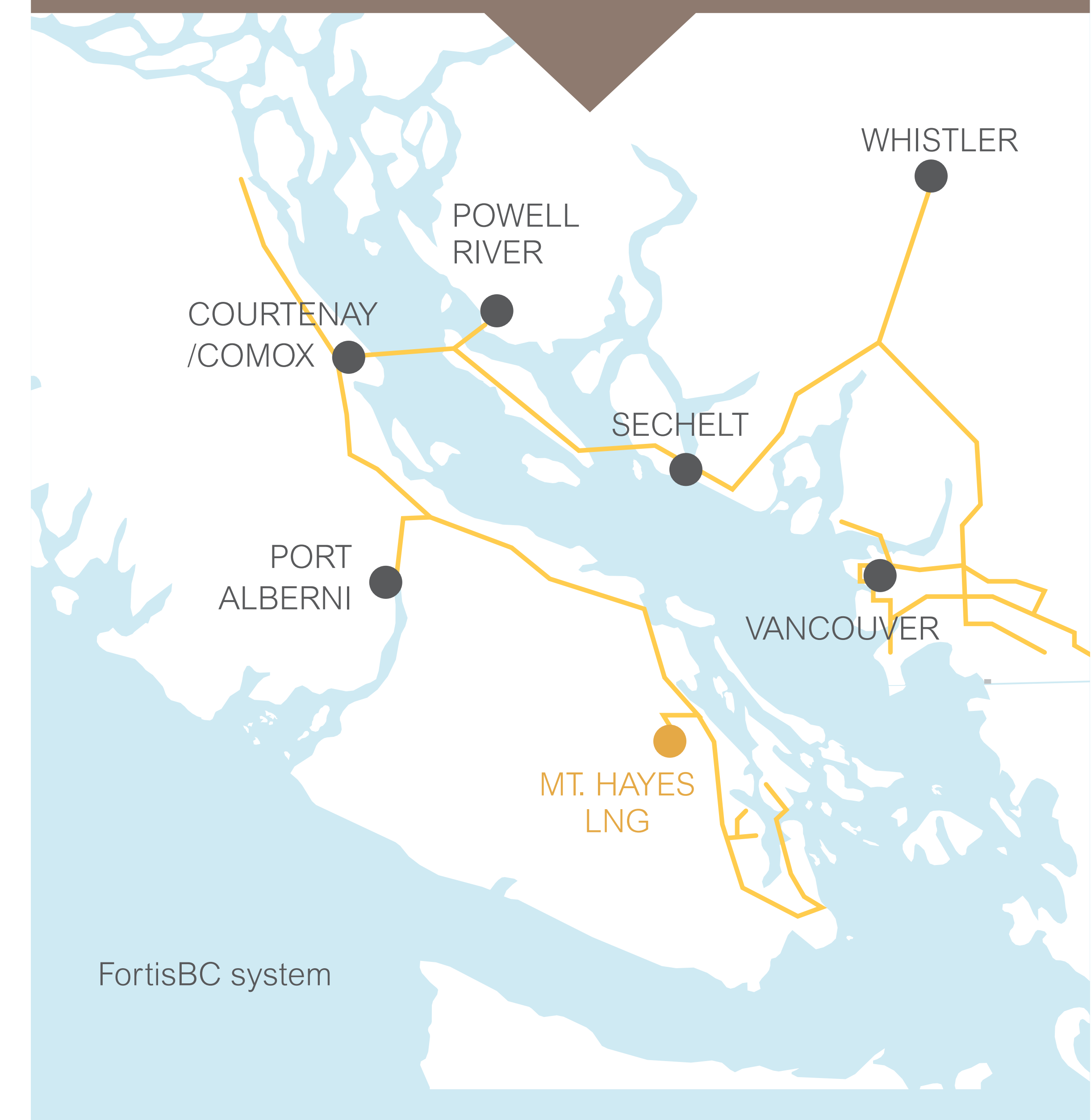
Does not leave a residue



Quickly dissipates into the air

## DID YOU KNOW?

Whistler switched from propane to natural gas in 2009, resulting in a substantial decrease in the community's greenhouse gas emissions. The Resort Municipality estimates that total corporate emissions in 2017 were 27 per cent below 2008 levels, while total residential emissions have dropped by 9 per cent compared with 2007 levels "primarily due to the shift to natural gas from propane, and the decrease in BC hydro green house gas intensity - collectively the use of cleaner fuels" -Whistler Energy Consumption and Performance Trends, 2017 Annual Report





# Steelhead Natural Gas Pipeline

Steelhead Natural Gas Pipelines Ltd., a subsidiary of Steelhead LNG Limited Partnership, is proposing to develop a new natural gas pipeline from near Chetwynd B.C. to connect plentiful natural gas resources in the Western Canadian Sedimentary Basin to Vancouver Island for customers, particularly Kwispa LNG.

The natural gas pipeline project will be regulated separately from Kwispa LNG and have its own environmental assessment.

Pipeline initial capacity is 2 bcf\* per day and full capacity is 4 bcf per day

\*bcf = billion cubic feet



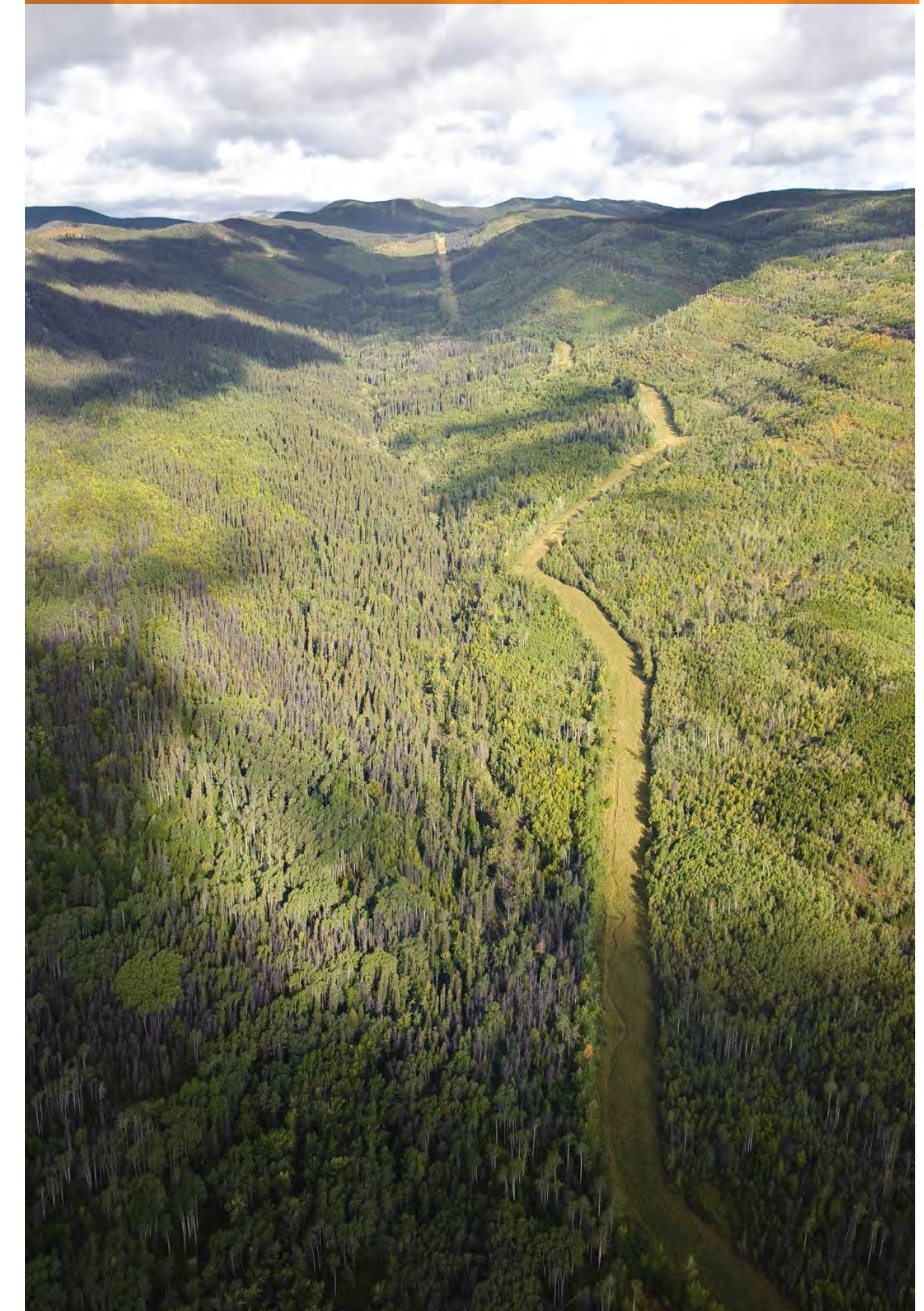
Construction of approximately 1000 kilometres of 48-inch diameter pipeline



Construction and operation of metering facilities at the locations where suppliers provide natural gas to the pipeline and where natural gas is delivered to customers



Construction and operation of compressor stations that control the movement of natural gas to its destination





# Conceptual Corridor

Early stages of investigating a route from Northeast BC to planned Kwispa LNG facility

Throughout our work to date to identify a conceptual corridor, and in our continuing work to refine and select the best possible corridor, we have and will continue to be guided by the following principles:



Parallel existing (linear) disturbances such as pipeline right-of-ways, roads/highways, cut blocks, seismic lines, transmission lines, etc. to minimize new linear disturbances and reduce the overall project footprint



Avoid or minimize interaction with concentrated areas of rural residences and urban developments, wherever possible



Avoid or minimize interaction with known areas of cultural importance to Indigenous groups



Avoid crossing parks, conservancies, and protected areas



Avoid or minimize interaction with environmentally sensitive areas such as riparian areas, watercourses, wildlife habitat areas, etc.



Minimize new access, particularly to remote areas, wherever possible



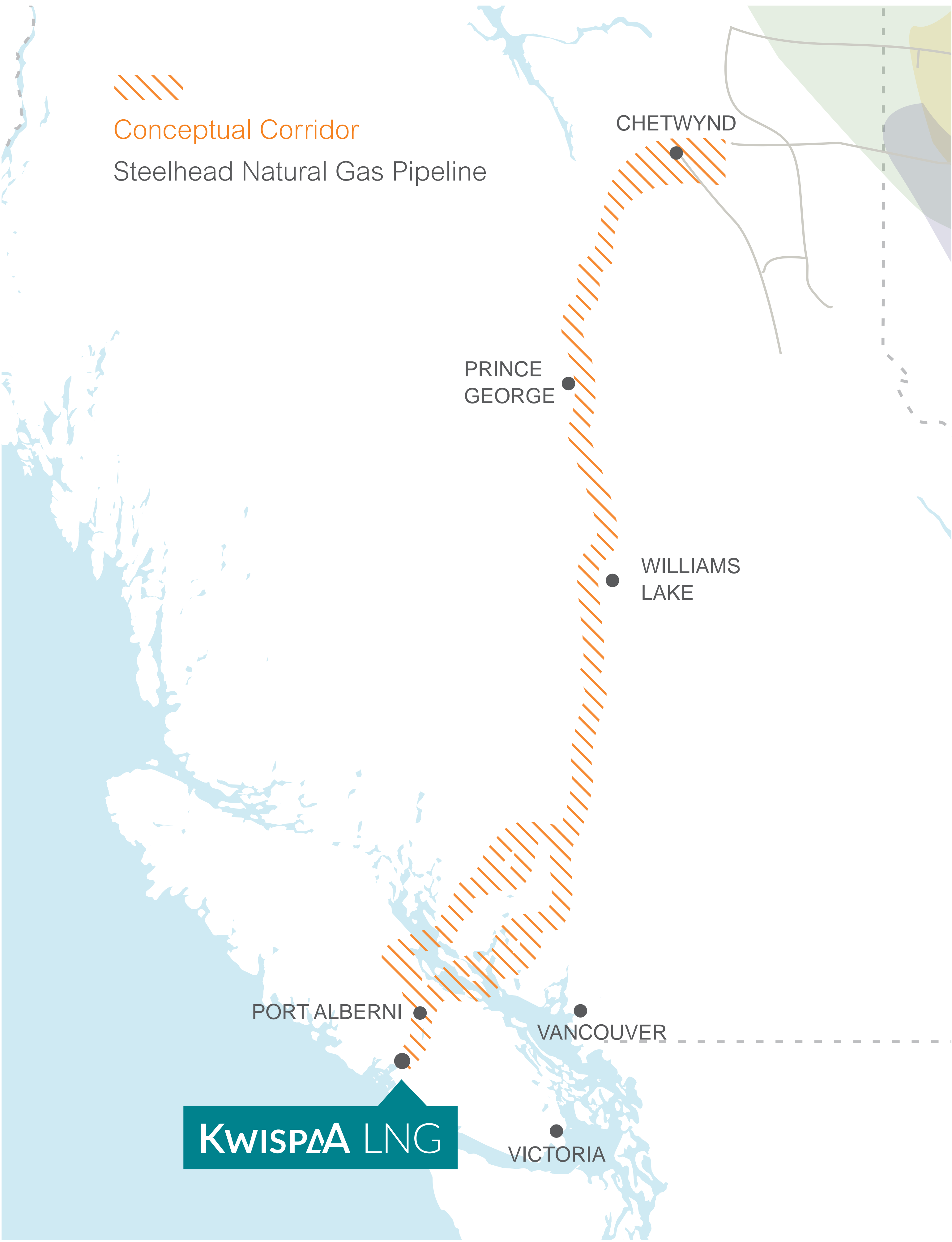
Endeavour to select the shortest final pipeline route in order to minimize the overall footprint



Achieve a constructible, technically feasible pipeline route that is safe for the workers and the public, stakeholders, and Indigenous groups



Incorporate input received from Indigenous groups, landowners, stakeholders, and regulators, wherever possible





# Pipeline Safety

Ensuring the safety of communities, workers, and the environment is the top priority for our team. We are committed to designing, constructing, operating, and maintaining the project safely throughout its life.

Throughout the operating life of the pipeline, various operations and maintenance activities will be in place to ensure the safe operation of the pipeline and facilities.

These activities include, but are not limited to:



## MONITORING

24 hours per day, 365 days per year at a control centre to monitor pipeline flows, pressures, temperatures, and equipment status on a continuous basis



## SURVEILLANCE

Regular monitoring and surveillance of the pipeline right-of-way using both ground-based and aerial patrols



## SMART PIGS

Use of electronic in-line inspection devices, known as smart pigs, to evaluate the pipeline's condition to determine if any repairs are required



## EMERGENCY RESPONSE PLANS

These plans will meet or exceed regulatory requirements to ensure that, in the highly unlikely event of an accident, we can respond quickly and effectively; we will develop these plans in coordination with local service providers and emergency responders along the proposed pipeline corridor

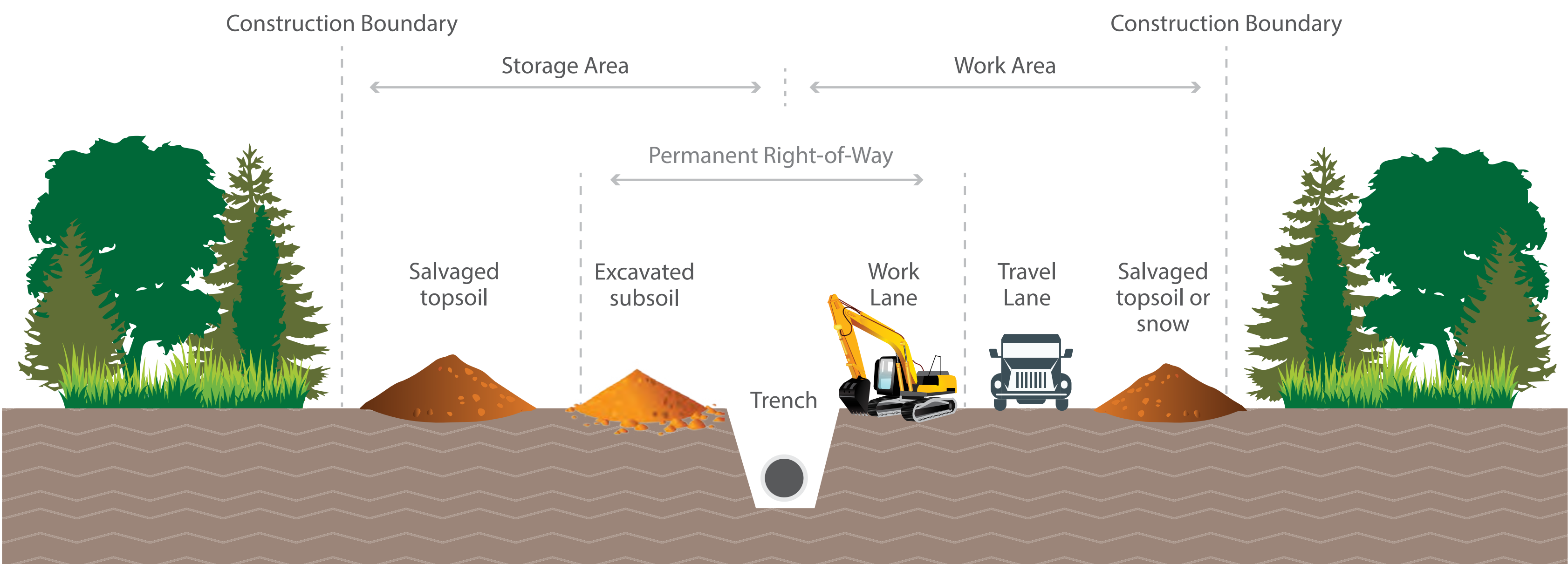


# Pipeline Right-of-Way

## TYPICAL RIGHT-OF-WAY

The construction and operation of pipelines are highly regulated and strictly monitored

Construction activities include: clearing the right-of-way, trenching, welding, backfilling, and testing



Pipelines are buried at a depth of about one metre (3 feet) underground



## RIGHT-OF-WAY RECLAMATION

The reclamation program is designed to re-establish natural ecosystems by returning the right-of-way to a condition similar to pre-construction conditions and adjacent lands

A 10-meter wide area over the pipe will be kept clear of large woody vegetation to allow for pipeline inspections

The right-of-way will be allowed to naturally regenerate

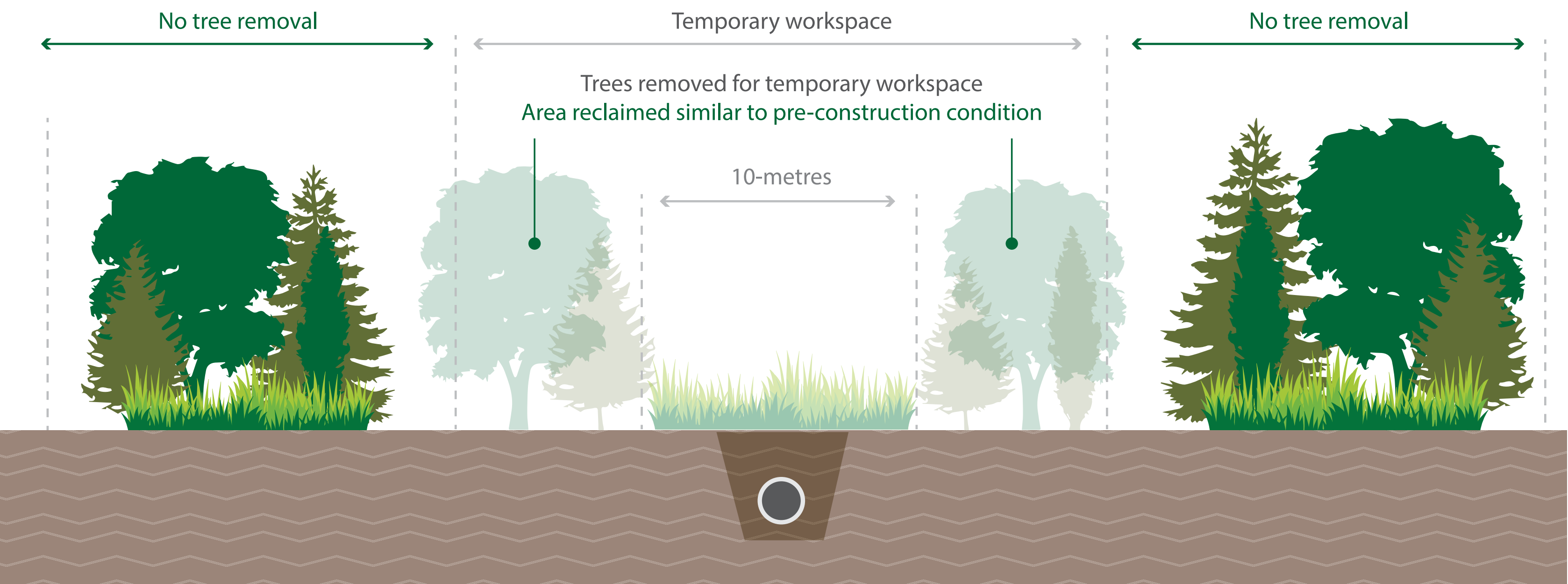


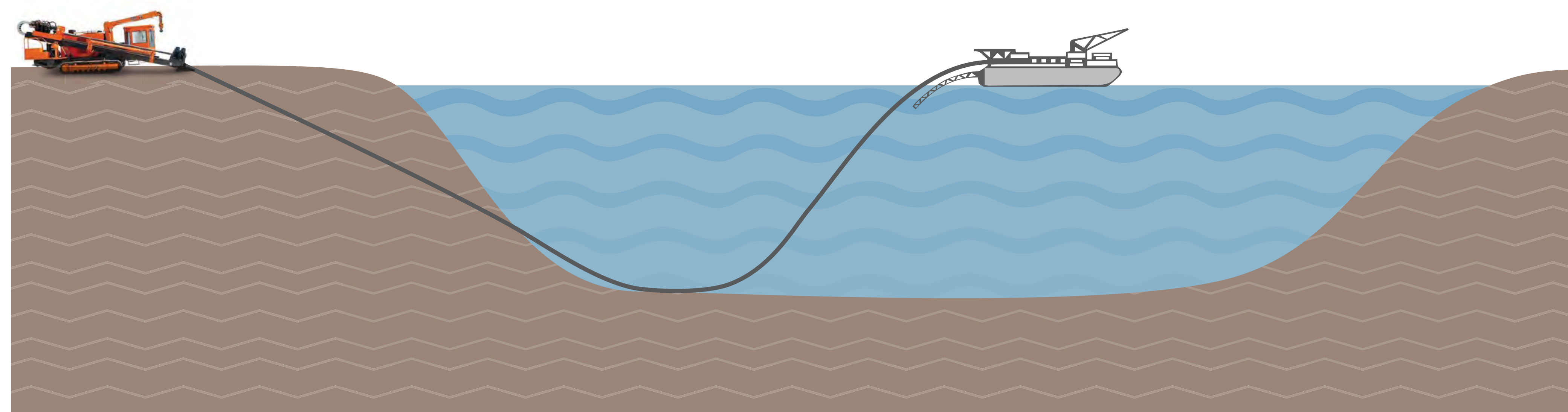
Image Source: TransCanada



# Subsea Crossing of the Salish Sea

Horizontal Directional Drill (HDD);  
Direct Pipe Installation (DPI); or  
Tunnel used for landfalls

Pipeline lay vessel  
and/or barge used  
to install crossing



The offshore portion of the pipeline would be constructed using a specially designed pipeline lay vessel where pipe is welded on the vessel and eased off the stern as the boat moves forward at a few kilometres per day. The pipe curves downward from the vessel through the water until it reaches the ocean floor.

Construction of pipelines in marine environments is done safely around the world and will comply with all regulatory requirements.

## DID YOU KNOW?

There is an existing subsea natural gas pipeline owned and operated by FortisBC that provides Vancouver Island's natural gas for homes and businesses. This subsea pipeline has been operating since 1991 and crosses the Salish Sea from Powell River to the Courtenay/Comox area.

There is also an existing LNG facility on Vancouver Island. FortisBC's Mt. Hayes LNG facility is located about 6 km northwest of Ladysmith and stores LNG to help meet the natural gas needs of Vancouver Island during peak periods of demand.





# Commitment to the Environment

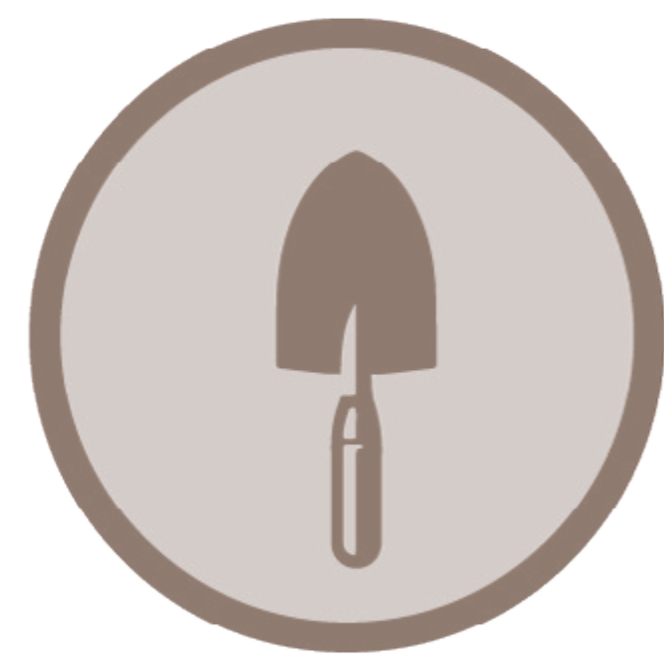
Construction of the natural gas pipeline and other facilities will not commence until a thorough environmental assessment has been completed pursuant to the *BC Environmental Assessment Act*, and an Environmental Assessment Certificate has been issued, as well as all other required permits.

The environmental assessment process provides numerous opportunities for Indigenous groups, stakeholders, and the public to provide input on the project, including the scope of the assessment to be undertaken, the findings of the assessment, and the conditions to be placed on the project, if approved.

Numerous studies will be undertaken to inform the assessment, including but not limited to:



Traditional use studies, led by Indigenous groups



Archaeology



Traditional knowledge



Aquatics



Soils



Hydrology and hydrogeology



Wildlife



Wetland and vegetation



Marine environment



Social and economic



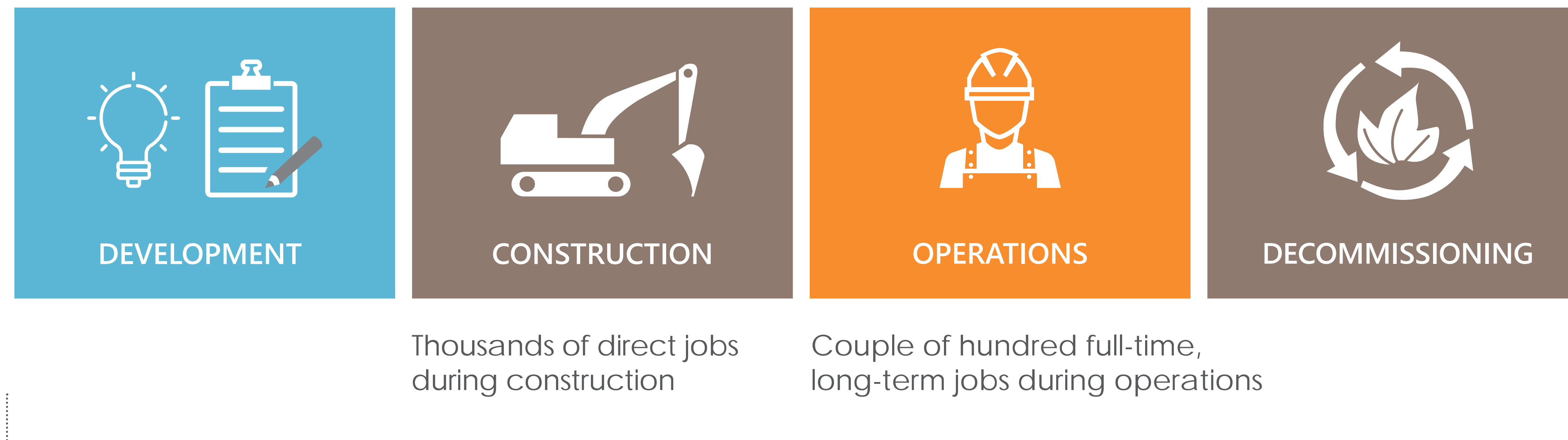
Atmospheric environment



Human and ecological health



# Project Benefits and Employment Opportunities



Where possible, the construction and operations workforce will be sourced locally from Indigenous groups and local communities

## PROJECT BENEFITS

- Long-term revenue generation for local, provincial, and Canadian economies to reinvest in health care, education, infrastructure, and other programs
- Steelhead is also interested in exploring potential opportunities to support community initiatives



## HOW WILL LOCAL COMMUNITIES BENEFIT?

During construction, the project will generate thousands of jobs across the province including equipment operators, tradespeople, environmental, health & safety professionals, and project managers. The project will also generate contracting opportunities for BC-based businesses across a range of sectors including, construction, hospitality & accommodation, transportation, and other services.

Local communities will benefit from property taxes to support delivery of services and infrastructure such as schools, community centers, and roads.

The project will also create education and skills training opportunities for BC residents to help prepare the local workforce for in-demand roles during pipeline construction and operations.



# Anticipated Project Timeline

## EARLY ENGAGEMENT

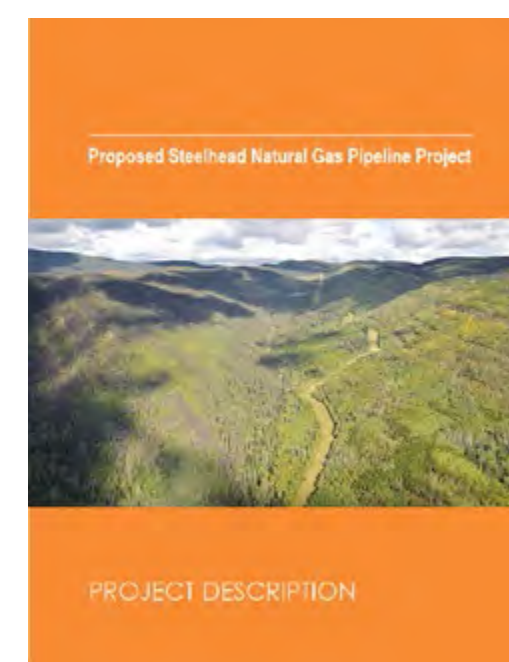
Huu-ay-aht First Nations led traditional early engagement with Indigenous groups along the conceptual corridor for the pipeline on a Nation to Nation basis to share their experiences with Steelhead on Kwispa LNG and introduce the proposed pipeline project.

Steelhead will continue to engage Indigenous groups and local communities to build relationships and is committed to ongoing and meaningful engagement and consultation to develop the proposed pipeline project in a way that avoids or minimizes potential environmental, cultural and socio-economic effects, and provides long-term benefits for current and future generations throughout the life of the project.



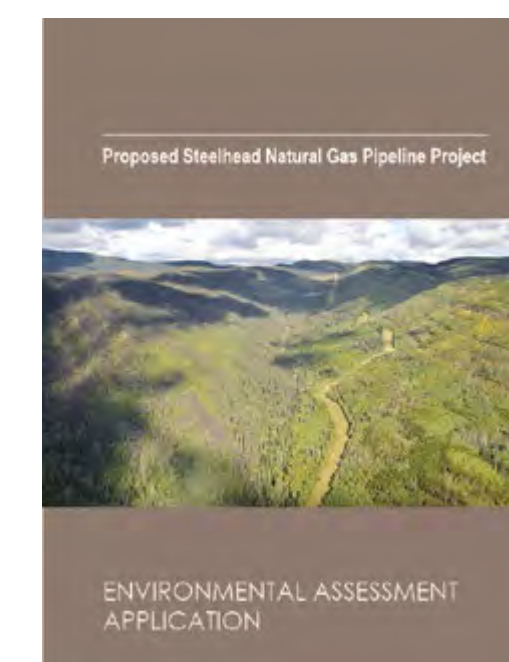
2018

Began early engagement with communities along the conceptual corridor



2019

Initiate Environmental Assessment (EA)



2020

Submit EA Application



2021

EA Decision  
Final Investment Decision

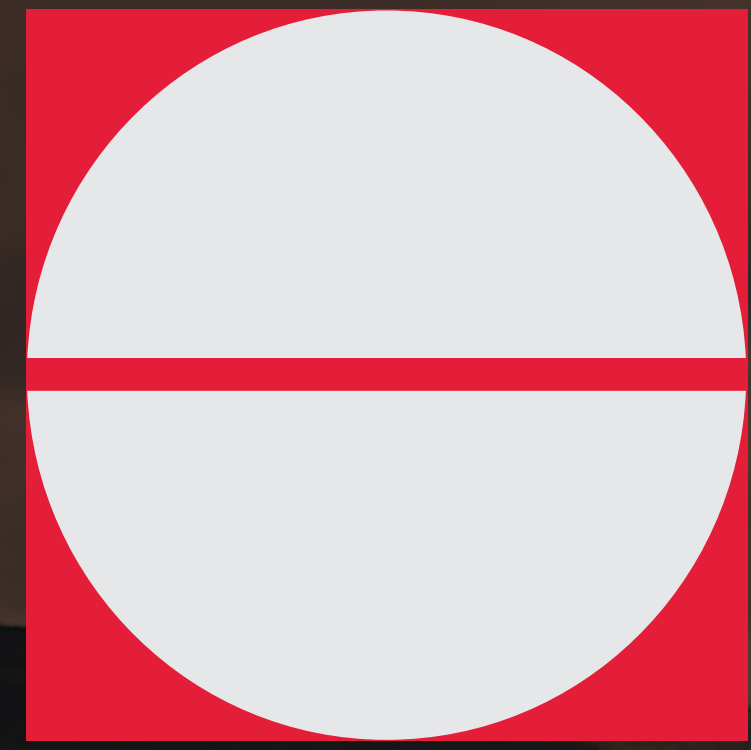


2025

Commissioning and operations

2021 - 2025  
Construction





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*Thank you!*

✉ [info@steelheadpipeline.com](mailto:info@steelheadpipeline.com)

🌐 [www.SteelheadLNG.com/pipeline](http://www.SteelheadLNG.com/pipeline)

☎ 1 (855) 860 8744 (toll free)