

# 2022

## ENVIRONMENTAL, SOCIAL & GOVERNANCE REPORT





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# OVERVIEW

Trans Mountain operates Canada's only pipeline system transporting oil products to the West Coast of Canada.



## NEAR EDMONTON, AB

The Trans Mountain Pipeline starts at our Edmonton Terminal in Strathcona County near Edmonton (pictured).



## MESSAGE FROM OUR BOARD CHAIR

On behalf of Trans Mountain, I am proud to share our third Environmental, Social and Governance (ESG) Report. I encourage you to read the pages ahead to learn more about Trans Mountain's practices and the progress we are making on our ESG commitments. As a Board, we continue to take an active role in overseeing the management of the company's ESG risks and opportunities.

In August 2022, the Board appointed Dawn Farrell to the position of President and Chief Executive Officer and member of the Board of Directors. We were confident that her broad-based knowledge, experience, and her background with governments and Indigenous communities would be a tremendous asset to Trans Mountain as it completed the Expansion Project and navigated the next stages of the company's future. This has proven to be true.

Each day, we are closer to completion of our Expansion Project and to realizing the benefits that the expanded pipeline and marine terminal will bring to the Canadian economy. After construction is completed, we expect approximately 700 new jobs will be created to support continuing operations, representing an increase of ~75 per cent of our workforce. More importantly, unlocking access to global markets will enable Canadian energy producers to achieve world prices for oil exported to the United States and Asia, forecasted to remain robust for decades to come. This will ultimately mean greater prosperity for all Canadians with higher tax revenues helping to fund essential programs and services.

Trans Mountain continues to steward best practices with respect to ESG issues. When it comes to building major infrastructure projects, Canada has among the world's highest standards for the protection of people, preservation of the environment, as well as consultation and engagement with Indigenous communities. These standards have been embedded into the Expansion Project design and construction methodologies and will continue to guide how the company operates when the expansion is complete.

The Trans Mountain Expansion Project has an important role to play in economic reconciliation with Indigenous communities. Trans Mountain's relationships with Indigenous communities are based on trust and respect. We continue to identify opportunities to create significant economic and employment opportunities for Indigenous, local, and regional workers across the pipeline corridor, during the expansion phase and into the future.

On behalf of the Board of Directors, I would like to offer my thanks to all Trans Mountain employees and contractors for their hard work and commitment. Your contributions are making it possible to continue to transport oil safely and responsibly to the West Coast, and your efforts have been essential to reaching important Expansion Project milestones. We have confidence that together we will continue to meet the ambitious objectives we set together.

**William Downe**  
Chair, Board of Directors





## MESSAGE FROM OUR PRESIDENT AND CHIEF EXECUTIVE OFFICER

As we near the completion of the Trans Mountain Expansion Project, I find myself reflecting on the legacy that the Project will leave for Canada. The environmental, social and governance practices employed during planning and construction are among the highest standards of practice in the world. Trans Mountain has truly set a standard that positions Canada as one of the most sustainable countries in which to develop energy projects globally.

The Expansion Project has been in planning and construction for the past 12 years; and, at the end of 2022, reached approximately 75 per cent completion. Our teams made that kind of progress while also protecting over 80,000 Indigenous artifacts found by the archaeologists and Indigenous monitors working on the pipeline. We achieved this while our environmental specialists protected migratory birds, relocated snakes and amphibians, and protected fish during river crossing projects. We also constructed many under-highway wildlife corridors to maintain habitat connections for animals.

We are highly focused on completing the Expansion Project without losing sight of safety. A construction project of this size is not without challenges. There are hundreds of contractors, millions of worker exposure hours, challenging weather conditions, and complex construction techniques to be managed. Through all of this, we remain steadfast in our focus on safety through activities like training new employees through our Green Hand program, encouraging positive behaviours through our Safety Recognition program, following the Canadian standard Life Saving Rules, as well as through strong and visible safety leadership. I remain personally committed to setting the expectation that it is not enough to advance the project on schedule alone. *We must* do so safely.

Many Indigenous leaders speak about reconciliation as a shared responsibility—by governments, businesses, communities, and individuals. I believe that Trans Mountain's intentions and efforts to build meaningful, long-term relationships contribute significantly to reconciliation. We have achieved an unprecedented level of Indigenous involvement in the Expansion Project—through job creation, procurement opportunities, partnerships, and the environmental process. As of December 31, 2022, more than 3,100 Indigenous workers were employed on the Expansion Project; and approximately 25 per cent of contracted spend on the Expansion Project has been awarded to Indigenous businesses and partnerships, totalling upwards of \$4.8 billion.

I want to thank our employees and contractors for their efforts both on the Expansion Project and in our daily operations, my fellow executive team members for their warm welcome, and the Board for their trust. I look forward to leading the organization to the completion of the Expansion Project, while steering the next phase of the company's future.

**Dawn Farrell**  
President and Chief Executive Officer



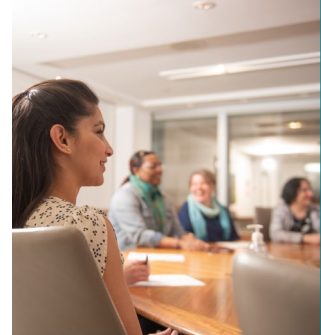




## LOOKING BACK: 2022 HIGHLIGHTS

# 2045

We tested the resiliency of our company to the year 2045 using quantitative climate-related scenario analysis.



# 2,147

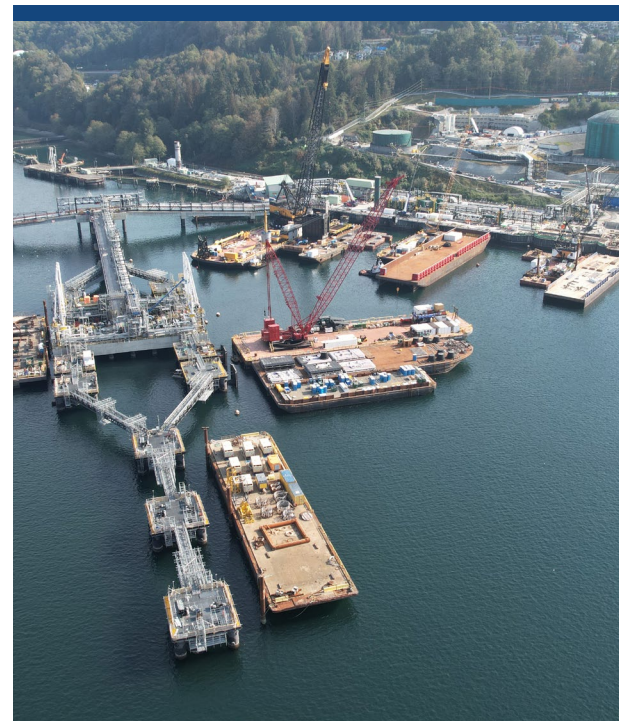
employees and contractors have taken our Indigenous cultural awareness training module.<sup>1</sup>

<sup>1</sup> As of March 31, 2023.



# NOVEMBER 17

Black Pines Line 1 Pump Station was placed into service early and is the first stand-alone Project-constructed asset to begin operations.



# 100%

of Expansion Project employees and contractors received training on the Environmental Protection Rules.<sup>2</sup>

<sup>2</sup> As of December 31, 2022.



# 9

Indigenous individuals hired into post-construction operations roles.



# 100,000 TONNES

We set a milestone target to reduce absolute greenhouse gas (GHG) emissions by 100,000 tonnes of CO<sub>2</sub>e by 2030.<sup>3</sup> Read more in our [2022 Emissions Reduction Plan](#).

<sup>3</sup> Compared to the first full year of operations of the expanded system.





# OUR ESG SCORECARD

Met    In progress    Did not meet

In 2022, we set several ESG commitments to demonstrate our commitment to continual advancement. To provide transparency around our ESG performance and activities, we have developed the below scorecard that aggregates our past and future targets and conveys our progress against them.

2022-2023 TARGETS	STATUS	2022 PROGRESS
ENVIRONMENT		
By the end of 2022, develop and publish a Scope 1 and Scope 2 emissions reduction plan.		We published our <a href="#">2022 Emissions Reduction Plan</a> in December 2022.
Develop an Expansion Project construction emission offset plan by the end of 2023.		We completed our draft plan identifying our process and principles for acquiring offsets.
Pursue and develop technologies that support GHG emissions reduction, climate change mitigation and that support Indigenous communities.		We have dedicated energy efficiency and innovation funding to support emissions reduction initiatives within our operations.
100% of employees receive training on the Environmental Protection Rules by the end of 2023, to promote company-wide environmental awareness.		100% of expansion project employees and contractors received training on the Environmental Protection Rules in 2022. Although initially developed for construction activities, we are adjusting the Rules to make them applicable to our routine operations.
Install leak detection fibre optic technology along the Expansion Project pipeline by the end of 2023.		To date, more than 890 km of conduit has been laid as part of the Expansion Project work. This will support the installation of leak detection fibre option cable.
Complete at least 3,500 person days of Indigenous Monitoring in 2022, providing oversight for proper execution of environmental mitigation and protection measures, and heritage resources.		We completed 6,430 person days of Indigenous Monitoring in 2022.
SOCIAL		
Complete 100 senior management safety visits across operations and on the Expansion Project.		We completed 278 senior management safety visits in 2022, more than doubling our target.
Establish an Indigenous Advisory Council in 2022 to provide advice to our leadership team and guide our reconciliation efforts.		While we did not establish an external advisory council in 2022, we prepared terms of reference, established an internal working group and are currently working to identify members to establish the external council in 2023.

2022-2023 TARGETS	STATUS	2022 PROGRESS
Develop an Indigenous Reconciliation Action Plan by the end of 2022 for publishing in 2023. The Plan will contain elements of Indigenous economic reconciliation.		We completed foundational elements of the Plan in 2022 and are on track to publish the Plan in 2023.
All employees and contractors complete a mandatory company-wide Indigenous cultural awareness training module by the end of 2022.		We developed and delivered an Indigenous cultural awareness training module to all employees and contractors in 2022.
More than 70% of leaders receive training to support effective leadership in a hybrid work environment in 2022.		We trained more than 70% of our leaders to support effective leadership in a hybrid work environment.
Continue supporting the Mount Royal University Project Management Certificate program for Indigenous women.		We continue to support the Project Management Certificate program. Thirty-one Indigenous women enrolled in the 2022 cohort and plans are underway to launch a third cohort in 2023.
Enhance our Inclusion and Diversity practices and policies to ensure employees from diverse backgrounds have access to programs supporting participation in the workplace and their psychological well-being at work.		We continued our focus on participation of underrepresented groups in the workplace and our creation of an accessible environment to enable participation, and added dedicated resources to our HR team focused on advancing diversity, equity and inclusion in the organization.
GOVERNANCE		
Expand our board education program in 2022 to include key ESG/sustainability issues and enable informed oversight and long-term planning.		Our Board did not receive formal ESG sessions in 2022, but plans to pursue education sessions on specific ESG topics, including climate briefings, in 2023.
Review our governance structure in 2022 to support improved governance over our most relevant ESG topics at the Board committee level.		To help improve governance over ESG topics, our Board Committee mandates were refreshed in 2022 and our ESG Executive Committee membership was adjusted. Read more on <a href="#">page 55</a> .
100% of employees complete IT security/cyber security training annually.		All employees completed IT security/cyber security training.
Enhance climate-related risk analysis within our Enterprise Risk Management program.		We enhanced our Enterprise Risk Management program by incorporating the top risks uncovered from our climate scenario analysis.
Enhance climate-related scenario analysis by conducting quantitative assessments.		We completed quantitative analysis for one transition scenario and for three physical scenarios. Read about our learnings on <a href="#">page 62</a> .



## ABOUT TRANS MOUNTAIN

Trans Mountain operates Canada's only pipeline system transporting oil products to the West Coast of Canada. We currently deliver approximately 300,000 barrels of crude oil and refined products every day. Our assets also include three terminals and a marine terminal. Our pipeline system, which runs from Edmonton, Alberta to Burnaby, British Columbia and Washington state, has been in operation for almost 70 years.

Trans Mountain Corporation was incorporated in 2018 as a federal Crown corporation. We are accountable to Parliament through the Canada Development Investment Corporation (CDEV). Trans Mountain is headquartered in Calgary, Alberta, and has regional offices along the pipeline system. In April 2022, the Governor General in Council issued a proclamation that changed Trans Mountain Corporation's status to a non-agent Crown corporation, allowing us to borrow from parties other than the Government of Canada.

### LAND ACKNOWLEDGEMENT

Trans Mountain acknowledges and respects the Indigenous Peoples on whose Traditional Territory we operate and construct our expanded pipeline system. We recognize the unique histories, cultures and traditions of all those Indigenous groups within whose Territory Trans Mountain operates and that their relationship to the land continues to this day.

**513**

EMPLOYEES

**1,760**

CONTRACTORS

**\$478**

MILLION IN REVENUE

**\$26**

BILLION IN ASSETS

### EXPANSION *(estimated figures)*

Our Expansion Project will create a twinned pipeline along our current system and provide Western Canadian oil producers with additional transportation capacity and tidewater access.

**+590,000**

 ADDITIONAL BARRELS  
PER DAY

**+12**

 ADDITIONAL PUMP  
STATIONS

**+980**

ADDITIONAL KILOMETRES

**+3**

BERTHS

### TERMINALS

Provides temporary storage for oil products for customers.

**3**

 TERMINALS  
(EDMONTON, SUMAS,  
BURNABY)

**11**

 MILLION BARRELS  
STORAGE CAPACITY

**55**

 TANKS AT  
TERMINALS

### WESTRIDGE MARINE TERMINAL

Handles export of crude oil and import of jet fuel on third-party marine vessels (barges and tankers).

**1**

 BERTH (SERVES AFRAMAX  
TANKERS AND BARGES)

BURNABY

SUMAS

### PIPELINE SYSTEM

Our pipeline system transports crude oil and refined products. We connect production areas with refineries in North America and with export capabilities to international markets.

**TRANS MOUNTAIN PIPELINE SYSTEM**  
Edmonton, AB to Burnaby, BC

**~300,000**

 BARRELS PER DAY  
(NOMINAL CAPACITY)

**1,150**

KILOMETRES

**23**

PUMP STATIONS

### PUGET SOUND PIPELINE SYSTEM

Abbotsford, BC to Washington state

**~240,000**

 BARRELS PER DAY  
(NOMINAL CAPACITY)

**111**

KILOMETRES

**1**

PUMP STATION

EXISTING PIPELINE  
EXPANSION



# APPROACH

Our approach to ESG management involves working on reducing our impacts and contributing to the United Nations Sustainable Development Goals.



## PYRAMID MOUNTAIN NEAR JASPER, AB

The first few segments of our pipeline are located near Jasper National Park (pictured).





# OUR APPROACH TO ESG

Managing environmental, social and governance (ESG) matters responsibly is not new at Trans Mountain. It is a part of our past, our present and an integral part of our future. This report is our third formal communication of our ESG practices and progress. Our approach to ESG management involves working on the topics highlighted on this page. As society evolves, we will reassess what specific ESG issues we focus on.

OUR COMMITMENT

RELEVANT TOPICS

ENVIRONMENT

Our transportation services have a comparatively low greenhouse gas (GHG) footprint and we can help our customers compete in markets that are increasingly focused on striving to meet decarbonization goals. Our pipeline crosses some of the most rugged, mountainous terrain in the world as well as wetlands, waterways, parkland, and urban areas. While we operate in a challenging environment, our pipeline has delivered safe and reliable energy transportation for almost 70 years. We take great care to respect the traditional use of the land and Indigenous heritage resources. During the Expansion Project activities, our goal is to minimize our impact on the environment and to offset remaining impacts on the climate, wetlands and biodiversity.

- Asset integrity and emergency preparedness
- Land and water stewardship
- GHG emissions
- Mitigation of climate-related risks
- Environmental stewardship in marine operations

SOCIAL

We respect the communities where we operate and work hard to build and maintain these relationships. We operate in a manner consistent with Canada’s commitment to advance reconciliation with Indigenous Peoples. Whether it is through the course of our daily operations or during construction, we are committed to operating safely and responsibly to protect our employees, contractors and the public. We also foster a positive, inclusive and diverse work environment.

- Employee and contractor safety
- Inclusion and diversity
- Relationships with people and communities
- Creating Indigenous opportunities
- Economic contribution to Canada

GOVERNANCE

Our Board of Directors and leadership team work to set a positive example for all employees and contractors by demonstrating our corporate values—Safety, Integrity, Respect and Excellence. Our policies and practices establish clear expectations and foster accountability at all levels of the organization. Our training gives employees the necessary tools to meet the commitments contained in our policies. Our decisions consider the long-term vision for our company and incorporate environmental and social factors. As societal expectations of corporations evolve, we remain attuned to shifts in risks and opportunities, and adjust our business practices accordingly.

- Corporate governance
- Governance for environmental and social matters
- Ethics
- Cyber security
- Responsible procurement



# SUSTAINABLE DEVELOPMENT GOALS

Considering the needs of future generations, Canada and 192 other countries and a large number of non-profit organizations and corporations support the UN Sustainable Development Goals (SDGs). The SDGs are 17 global goals, set by the United Nations General Assembly in 2015 to be achieved by 2030. These goals aim to protect the planet, reduce inequality and ensure prosperity for all.

Trans Mountain supports this global and Canadian commitment and wants to contribute towards the achievement of the SDGs. This chart describes some of the important ways that we work towards the SDGs in our operations.



TRANS MOUNTAIN ACTIVITIES	RELATED SDGS AND TARGETS	
Operating and expanding the Trans Mountain pipeline, a reliable and resilient infrastructure system that supports energy access	[9.1] Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	<div>9</div> <div>INDUSTRY, INNOVATION AND INFRASTRUCTURE</div>
Providing employment opportunities and contributing to Indigenous businesses and economic development	[8] Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all [8.5] Achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	<div>8</div> <div>DECENT WORK AND ECONOMIC GROWTH</div>
Offering education and training opportunities to help raise the standard of living in local and Indigenous communities	[4] Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all [4.4] Substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	<div>4</div> <div>QUALITY EDUCATION</div>
Investing in asset integrity, preventing spills and minimizing releases to air, land and water	[12.4] Achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	<div>12</div> <div>RESPONSIBLE CONSUMPTION AND PRODUCTION</div>
Protecting biodiversity during the Expansion Project and continuing to support the protection of marine life, including marine mammals, around the Westridge Marine Terminal	[15.5] Take urgent and significant action to reduce the degradation of natural habitats and halt the loss of biodiversity [14.1] Prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	<div>15</div> <div>LIFE ON LAND</div> <div>14</div> <div>LIFE BELOW WATER</div>
Monitoring, reporting and managing our greenhouse gas (GHG) emissions and providing funds to communities along the pipeline corridor to improve their resilience to extreme weather events	[13] Take urgent action to combat climate change and its impacts [13.1] Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	<div>13</div> <div>CLIMATE ACTION</div>



# ABOUT THIS REPORT

At Trans Mountain, we are committed to being transparent about our practices and performance. The goal of this ESG report is to communicate the environmental, social and governance initiatives and key metrics that demonstrate our progress to date and our commitment to continual improvement.

- Unless otherwise noted, this report covers quantitative and qualitative performance for the year ended December 31, 2022. When available, comparable and historical data is provided for 2019, 2020 and 2021.
- Our reported environmental and social performance covers pipelines and terminals operated by Trans Mountain and the Expansion Project.
- Unless noted, data does not include service providers.
- Financial data is in Canadian dollars and environmental data is in metric units.
- The accuracy of this report is important to our company. Senior management and relevant staff have reviewed all information and believe it is an accurate representation of our performance. Third-party assurance of this report was not conducted.
- The terms Trans Mountain, our, we, the company, and the corporation, refer to Trans Mountain Corporation. The Expansion Project, the Expansion, and the Project refer to the Trans Mountain Expansion Project.

## ALIGNING WITH ESG STANDARDS

Although this report does not meet all the requirements to be fully in accordance with a reporting standard, we cross-reference our disclosures to the following recognized standards:

TCFD \_\_\_\_\_ 53

SASB \_\_\_\_\_ 72

We also outline our contributions to the SDGs.

SDGs \_\_\_\_\_ 11

Read our caution regarding forward-looking statements on [page 73](#).



## DETERMINING WHAT TO REPORT

Although there is a wide range of ESG matters companies can consider, we want to focus our communications on the ESG topics that can have a significant impact on our business success, and those that represent the interests of:

- Our employees and contractors
- Our customers
- Indigenous and local communities
- Regulators

In 2020, our senior management team participated in an ESG prioritization workshop to determine which ESG-related issues were most relevant to our company. Prioritization was conducted by taking into account our understanding of the concerns and priorities of employees, customers, Indigenous and local communities and regulators;

and by discussing the potential financial or operational impact of the issues on Trans Mountain. The results of the workshop were reviewed and approved by our Board of Directors.

The process we use to determine ESG topics addressed in this report is different from how we determine materiality for financial reporting.

The initial list of ESG-related issues was extracted from guidelines from:

- The Sustainability Accounting Standards Board (SASB)
- The Task Force on Climate-related Financial Disclosures (TCFD)
- Reports from other midstream companies



# ENVIRONMENT

We are committed to conducting our operations in a safe and responsible manner that is respectful of the environment and minimizes our impact to water, land and air.

## MOUNT ROBSON, BC

We are reactivating a segment of pipeline that extends from Hinton, Alberta to Hargreaves, British Columbia and passes close to Mount Robson (pictured).



# ASSET INTEGRITY

For the protection of our employees, the public, and the environment, we are committed to operating all our assets as reliably and safely as possible. We maintain the integrity of our pipelines, terminals and pump stations through continual hazard identification, prevention, and monitoring.

## PIPELINES

Since our pipeline is underground, we rely on internal inspection technologies to conduct pipeline inspections at regular intervals. Our asset integrity program helps us detect small imperfections in the pipe before they pose a risk of failure. Being proactive allows us to monitor pipeline conditions over time and take action to make required repairs with proper planning to minimize environmental impacts. The range of inspections and preventative activities that are part of our asset integrity program are illustrated on the next page.

### PIPELINE INTEGRITY

	2019	2020	2021	2022
PIPELINE INTEGRITY				
Pipelines operated (km)	1,275	1,275	1,275	1,275
In-line inspections (total km of pipeline inspected)	1,576	865	1,191	1,135
Integrity digs (number)*	103	71	107	110
PIPELINE SPILLS				
Pipeline spills (number)	0	0	0	0

\* The number of integrity digs can vary year over year based on requirements, and preliminary findings from tool runs.

## Leading-Edge Leak Detection for the Expanded Pipeline

Common practices for detecting leaks include using a combination of sensor technology and mathematical calculations. For the expanded pipeline, we plan to install a fibre optic cable outside and along the pipe that measures vibration, temperature, and movement, continuously and accurately. The sensing cable can detect very small leaks and pinpoint the location of a suspected leak within metres. These measurements can also be used to detect activities in real time such as ground movement or encroachment of equipment digging on our pipeline.

We continue to advance the installation of conduit along the pipeline to support the future installation of the fibre optic cable. To date, more than 890 km of conduit has been installed along the Expansion Project route, which represents approximately 90 per cent of the length of the expansion.

We had zero pipeline-related spills in 2022



CONSTRUCTION-RELATED REPORTABLE SPILLS—EXPANSION PROJECT				
	2019	2020	2021	2022
Reportable spills (number)	9	50	34	29
Volume of reportable spills (m³)	0.009	125	41	59

Construction-related spills exclude spills from our pipeline.

Common liquids spilled from construction and maintenance activity are motor fuel, hydraulic and lubricating oil, and drilling mud. For our project, drilling mud from horizontal directional drilling is the largest contributor to the volume released.

Our construction-related spills volume increased in 2022 largely due to our increase in horizontal directional drilling construction activity.

## NEXT GENERATION IN-LINE INSPECTION TOOL TO IMPROVE CRACK DETECTION

In-line inspections use sophisticated tools that travel inside the pipeline to detect and measure potential defects or changes to the pipe using specialized technology. In October 2022, we trialed an advanced ultrasonic crack detection tool on our Edmonton to Edson pipeline segment. It works like sonar and creates sonic waves within the steel. If the wave hits a crack-like feature, the sound wave is reflected back and the technology records the location of the feature for further investigation. This tool is expected to improve crack detection and sizing, and can identify crack-like features *within* dents. It also provides higher resolution data capture than the previous generation of crack detection tools. To further evaluate the effectiveness of this tool, we are planning to conduct three additional tool runs in 2023 in the Hargreaves to Darfield, Kamloops to Sumas, and Sumas to Burnaby segments.





# PIPELINE ASSET INTEGRITY PROGRAM

We conduct the following inspections and preventative activities:

## INSPECTIONS



### AERIAL INSPECTIONS

We fly over the pipeline to conduct a visual inspection of the right-of-way and monitor human-related activities around the pipeline, inspect for any possible leaks, and look for new hazards that could affect the pipe such as ground movement or other geohazard events.

139  
aerial inspections in 2022

1,135

### IN-LINE INSPECTIONS

We use sophisticated tools (called pigs) that travel inside the pipe to detect and measure potential defects or changes. These in-line inspections are one of our most important tools because most of the pipeline is buried and cannot be visually inspected.

1,135  
km of pipeline inspected via in-line inspections in 2022



### INTEGRITY DIGS

When an in-line inspection detects something that requires further investigation, we conduct an integrity dig by excavating and examining the pipe at that location. We use non-destructive examination techniques and if necessary, repair, or replace the pipe and restore the excavated site to its prior condition.

110  
integrity digs conducted in 2022

3,975

### CATHODIC PROTECTION SURVEYS

We monitor the effectiveness of our cathodic protection system by taking annual readings at test stations located every two kilometres along the pipeline route to ensure a minimum voltage is maintained on the pipeline. We also complete periodic close interval surveys that provide us with voltage readings every three metres along the pipeline route.

3,975  
cathodic protection test lead surveys conducted in 2022



### NATURAL HAZARD INSPECTIONS

Our Geohazard Monitoring program documents inspections and maintenance work on natural hazards sites along the pipeline route, including watercourse crossings and slopes or other areas of potential ground movement. Within our program we:

- Maintain a natural hazard database that includes detailed information for each natural hazard site;
- Conduct detailed ground inspections and surveys to monitor the geohazard sites that are scheduled based on risk;
- Use real-time flow monitoring at watercourse crossings to assess any increased risk to the pipe during flood events;
- Use instrumentation and radar/satellite imagery to monitor for potential ground movement around the pipe; and
- Complete detailed assessments to prioritize mitigation where required.

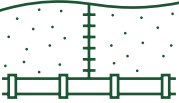
626  
natural hazard inspections and surveys conducted in 2022

## PREVENTATIVE ACTIVITIES



### CORROSION PREVENTION

The exterior of the pipe has a coating to protect it from contact with the soil. Because corrosion is an electrochemical process, we also use cathodic protection to protect the pipe from oxidization in areas where it is in contact with the soil. The interior of the pipe is protected from corrosion by running scraper tools on a regular basis to mobilize solids and water that has settled out in the pipe.



### PIPELINE DEPTH OF COVER

We regularly monitor our pipeline to ensure adequate soil cover remains over top of the pipe. Areas with deficient cover are prioritized for remediation.

24/7

### ONGOING MONITORING

In our Control Centre in Edmonton, Alberta, our operators monitor our pipelines and terminals 24 hours a day, seven days a week.

24/7  
real-time remote monitoring of the entire system



### RIGHT-OF-WAY MAINTENANCE

We maintain the strip of land above and around the pipeline so that large trees, shrubs, or other debris remain away from the pipe. This ongoing maintenance provides clear line of sight and access for surveys, inspections, and emergency situations.





Aerial view of Coquihalla River crossing in Hope, BC – August 10, 2022.

River Crossing Replacements

Our pipeline system crosses more than 1,500 bodies of water, including large waterways such as the North Saskatchewan River, Athabasca River, Thompson and North Thompson Rivers, Coquihalla River, Coldwater River and Fraser River. We inspect and monitor pipeline segments under bodies of water and conduct preventative replacements when needed. We carefully select appropriate construction methods given the sensitivity of the environment surrounding the pipe. In 2022, we completed two important river crossing replacements that had been identified due to low depth of cover. We replaced 305 metres (m) of pipeline at the Coquihalla River crossing approximately 10 km north of Hope, BC and 285 m of pipeline at the Coquihalla River crossing in Hope, BC. We replaced the existing pipeline segments with new segments of the same diameter but set deeper underneath the riverbed.

TERMINALS

Trans Mountain owns 55 tanks located across three terminals. As part of our regular maintenance program, our operators conduct daily inspections to confirm normal operation around tanks and visually inspect the exterior of our tanks monthly to check the tank foundation, shell, roof, leak detection and secondary containment systems. These inspections help identify early warnings of potential tank problems. In addition, we complete both external (in-service) inspections at least every five years, and a comprehensive internal (out-of-service) inspection at intervals not exceeding 20 years.

PUMP STATIONS

Pump stations, spaced approximately every 50 km along the pipeline, keep the oil flowing. To ensure the stations operate safely, they are continually monitored remotely and visited on-site regularly by operations personnel. Our pipeline must operate at varying pressures due to flow rate, product type, and elevation. Our systems (SCADA and other protective devices) maintain the pressures within safe operating limits and are monitored and controlled by our Control Centre operators in accordance with established procedures.

TERMINALS AND PUMP STATIONS—  
SPILLS AT FACILITIES

	2019	2020	2021	2022
Reportable spills (number)	2	1	1	0
Volume of reportable spills (m³)	76	190	7	0

Reportable spills include spills reportable to authorities in the jurisdictions where we operate. These spills include oil or other substances. Note that reportable volumes differ in each province.

In 2022, environmental remediation activities at the Sumas Pump Station continued (in response to a 2020 release). We completed ongoing groundwater and remediation assessments throughout 2022 and expanded our installed groundwater remediation system.



# EMERGENCY PREPAREDNESS AND RESPONSE

Our primary focus is to reduce and eliminate risks that could result in an incident, however, if an incident occurs, we rely on our detailed emergency procedures and trained professionals to respond quickly.

## EMERGENCY RESPONSE CAPABILITIES

We use the internationally recognized [Incident Command System \(ICS\)](#) to manage our emergency response. ICS is a standardized command and control system used to manage emergency incidents. We train our own personnel to be our first responders, an industry best practice, and we also engage communities affected by our operations (firefighters, emergency crews, suppliers and community organizations) in emergency preparedness.

## PLANNED EXERCISES

We aim to conduct at least one full-scale emergency deployment exercise each year to test the real-time effectiveness of our response. These exercises involve many agencies and the mobilization of emergency personnel, equipment, and resources, as if a real incident had occurred. Read about our 2022 full-scale exercise in the sidebar. Each year, we also complete 20-30 emergency field and tabletop exercises to learn the various components of our response plans, equipment, and response strategies in varying environmental conditions or to work through different emergency scenarios.

## UNANNOUNCED EXERCISES

As part of our fire preparedness, we conduct unannounced tank fire simulation exercises annually at our Burnaby and Edmonton terminals, and once every three years at either our Sumas or Westridge terminals. Unannounced exercises are planned and called by a select few authorized individuals and allow us to realistically test both our own response capabilities and the mobilization time of our third-party responders. In 2022, we completed three of these emergency exercises.

EMERGENCY RESPONSE EXERCISES				
	2019	2020	2021	2022
Drills	13	22	18	17
Tabletop exercises	5	11	5	8
Full-scale exercises	1	1	3*	1
TOTAL	19	34	26	26

\* Two exercises, plus our full-scale response to the BC floods



**REFLECTING ON OUR RESPONSE:** In this 2022 lookback video, learn how our [emergency response program helped our teams rapidly assess and respond to the 2021 flooding.](#)



The Incident Command Post at the Edmonton full-scale emergency exercise.

## EQUIPMENT INVENTORY

We prepare for a variety of incidents including spills and fires.

**FOR SPILLS** ■ We model releases along the pipeline to establish geographic response plans and requirements for equipment and personnel that are strategically maintained along the pipeline to allow a rapid response to any incident.

**FOR TANK FIRES** ■ Our terminals are equipped with specialized on-site firefighting equipment to enable a rapid response in the event of a fire. All equipment is well maintained and personnel participate in regular exercises to confirm they are familiar with all types of response equipment.

## BUILDING AGILITY DURING OUR FULL-SCALE EXERCISE

In November 2022, we conducted a full-scale exercise that simulated a pipeline spill into Wabamun Lake. Although intended to be a fall exercise, unseasonably cold temperatures coupled with heavy snowfall only days prior turned the event into a winter exercise. This provided the participants with an opportunity to practice managing the impacts of challenging and rapidly changing weather conditions during an emergency response.

This was the first full-scale in-person exercise with attendees from local agencies, stakeholders and first responders since the COVID-19 pandemic. The exercise included an off-site, fully staffed Incident Command Post (ICP) consisting of several agencies, Indigenous groups and first responders, including Parkland County, Alberta Emergency Management Agency, Alberta Health Services and the Canada Energy Regulator, which participated alongside Trans Mountain personnel.





# BIODIVERSITY, LAND AND WATER STEWARDSHIP

We see it as our responsibility to protect the land, water, and ecosystems where we operate. Water is a shared resource and an essential part of all ecosystems. Therefore, we take seriously our responsibility to be stewards of the land and water bodies near our operations.

## PROTECTING BIODIVERSITY DURING OPERATIONS

The pipeline crosses many protected areas, including recreational areas and parks such as Jasper National Park in Alberta and Mount Robson Provincial Park in British Columbia. Since the operating pipeline is buried, the impact to surface wildlife is minimal. However, we are committed to minimizing our impact to the land and to the biodiversity of these sensitive areas by implementing a strong asset integrity program that prevents spills and a rapid emergency response program that reduces impacts if a spill were to occur.

## TAKING SPECIAL CARE DURING RIVER CROSSING REPLACEMENTS

Our pipeline system crosses more than 1,500 bodies of water. During our day-to-day operations there is relatively little in-stream work required, however, in 2022, we completed two large river crossing replacements in the Coquihalla River.

In planning and implementing any river crossing project (the replacement of the section of pipe underneath the river), great care is taken to preserve the environmental features in and around the stream including the wildlife and aquatic habitat within the riparian zone. For each water crossing, we carried out extensive mitigation measures. Our Environmental Protection Plans detailed the actions required to ensure protection of land, plants, wildlife, fish, and aquatic environment for the replacement work.

## RESTORING THE LAND FOLLOWING FLOODING

Several areas of our pipeline system were impacted by the widespread flooding in British Columbia in late 2021. In early 2022, we completed restoration work at 21 emergency sites along the Coldwater and Coquihalla Rivers. We minimized our environmental impact during restoration activities by developing and implementing our Environmental Protection Plans, conducting fish salvages and environmental monitoring, implementing designs to avoid impacts on fish and habitat, incorporating habitat enhancements and working with regulatory agencies. Following restoration works in 2022, reclamation assessments and activities were carried out. Our environment team is currently assessing the overall impacts of the emergency restoration works to fish and fish habitat and further reclamation activities are planned for 2023.

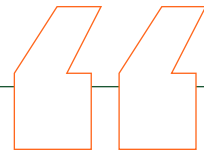




## PROTECTING ECOSYSTEMS AND BIODIVERSITY DURING CONSTRUCTION

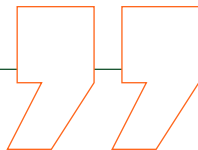
### Environmental Protection Rules

We have integrated ten Environmental Protection Rules into our approach on the Project, a first in the industry. The rules aim to do for environmental awareness what the Life Saving Rules have done for safety in the energy industry. Each of the Environmental Protection Rules is focused on an area that has the potential to result in a significant environmental event. The rules are in place to protect land, water and other resources, and to help avoid spills, noise, and other environmental impacts. The rules were selected based on incident data, Expansion Project risks and feedback from our stakeholders.



The Nicola Valley is being left in good shape as the process is moving along and no obvious scars to the landscape. I must comment on how well the small environmentally sensitive areas (bogs and riparian boundaries) are being protected as the project is progressing. These areas are essential to a healthy environment.

**GLENN GRANT,**  
EXECUTIVE DIRECTOR AND GENERAL MANAGER, BC  
WILDLIFE PARK; AND RESIDENT OF MERRITT, BC



To support the implementation of the rules, we incorporated the rules as part of the mandatory training received by all Project personnel. In 2021, we set a target to implement the rules across Trans Mountain by the end of 2023. We are currently revisiting the language in the rules to be more applicable to our ongoing operations activities and expect to implement them company-wide once the Expansion Project is complete. Additionally, more than 1,200 workers were recognized last year as part of our Environmental Protection Rules worker recognition program. This program acknowledges on-the-spot positive actions and sustained leadership in environmental compliance and stewardship.



Watch this video to learn more about our [Environmental Protection Rules](#).

### Environmental Protection and Management Plans

Since 2012, the environmental team for the Expansion Project has been out in the field studying a wide range of environmental features, including plants, fish, and wildlife. Baseline studies were used to develop detailed plans that must be implemented before, during and after construction along the pipeline right-of-way, at facilities, in related access areas, and at temporary infrastructure sites. These include more than 60 environmental protection and management plans that outline how potential effects of the Expansion Project on fish, vegetation and wildlife should be appropriately mitigated in accordance with relevant guidelines and regulatory requirements. We plan to mitigate impacts to vegetation by re-establishing natural ecosystems similar to what was present pre-disturbance, or by developing a vegetative cover compatible with surrounding landscapes.



### Trenchless Crossings

The Expansion Project includes approximately 980 km of new pipeline and travels across a variety of terrain. For the majority of the pipeline route, conventional construction methods are being used. Conventional methods involve the pipe being set down into a trench and buried, which is what many people think of when they imagine pipeline installation. Although significantly more expensive, trenchless methods are a key tool in the construction of major pipeline projects because they can minimize or eliminate surface disturbance in urban, environmentally and culturally sensitive areas. Since the Project began, we have safely and successfully executed 50 major trenchless crossings, 19 of which were completed in 2022. The crossings were constructed using horizontal directional drilling, micro tunnels and horizontal auger bores.

In 2022, as part of the Expansion Project our teams conducted:

**18,781**  
person days of  
environmental inspection

**40,165**  
person days of  
technical field studies  
and monitoring by  
third-party consultants



# EFFORTS TO PROTECT WATERCOURSES DURING CONSTRUCTION

We are committed to maintaining high standards of environmental protection for watercourses along the Expansion Project footprint and pipeline route. As part of the Project, a significant amount of time and care went into determining construction methodology and potential environmental impacts to inform the best mitigation methods to minimize or avoid these impacts and protect waterways.



## CARE IN PLANNING

Our Environment team collected data on fish and fish habitat potential, along with other environmental and technical assessments.

The information gathered, along with regulatory requirements and industry best practices, helped us choose appropriate construction methods, mitigation and timing of construction for each watercourse.



## APPROPRIATE CONSTRUCTION TECHNIQUES

To minimize disturbance to surface features, we use trenchless crossing methods where appropriate. These methods typically use trenchless techniques to cross underneath watercourses (read more on [page 19](#)).

When trenchless methods are not feasible, we construct through watercourses by first isolating the work area then installing the pipe, known as isolated trench crossings. We complete isolated trench crossings within specific timing windows to minimize disturbance to fish during key life stages.

We follow strict water quality monitoring requirements to protect downstream fish and fish habitat during construction.



## ACTIVE MITIGATION AND MONITORING

Qualified environmental professionals are on-site during construction to implement required mitigation efforts and monitor construction activity taking place at watercourses.

Mitigation efforts include the salvage and relocation of fish outside of the work area (if present), monitoring of water quality during construction, identification of site-specific habitat features for restoration, and to identify additional environmental mitigation efforts required during construction.



## EFFECTIVE RECLAMATION

Our Riparian Habitat Management Plan outlines how we will return the area to a condition similar to pre-construction, and promotes the protection of rare plant species, wildlife habitat and the re-establishment of native plant communities.

In-stream habitat features (pools, riffles, logs, rocks) are recorded prior to construction and replaced after pipe installation to ensure habitat function remains after reclamation.

Watercourse banks are stabilized to reduce sediment or erosion issues at the crossing location.

Post-construction monitoring ensures reclamation measures are effective and vegetation continues to establish. Riparian and in-stream habitat is assessed to ensure equivalent function is maintained for continued use by fish and wildlife.



## ASSESSMENT OF IMPACT ON SALMON

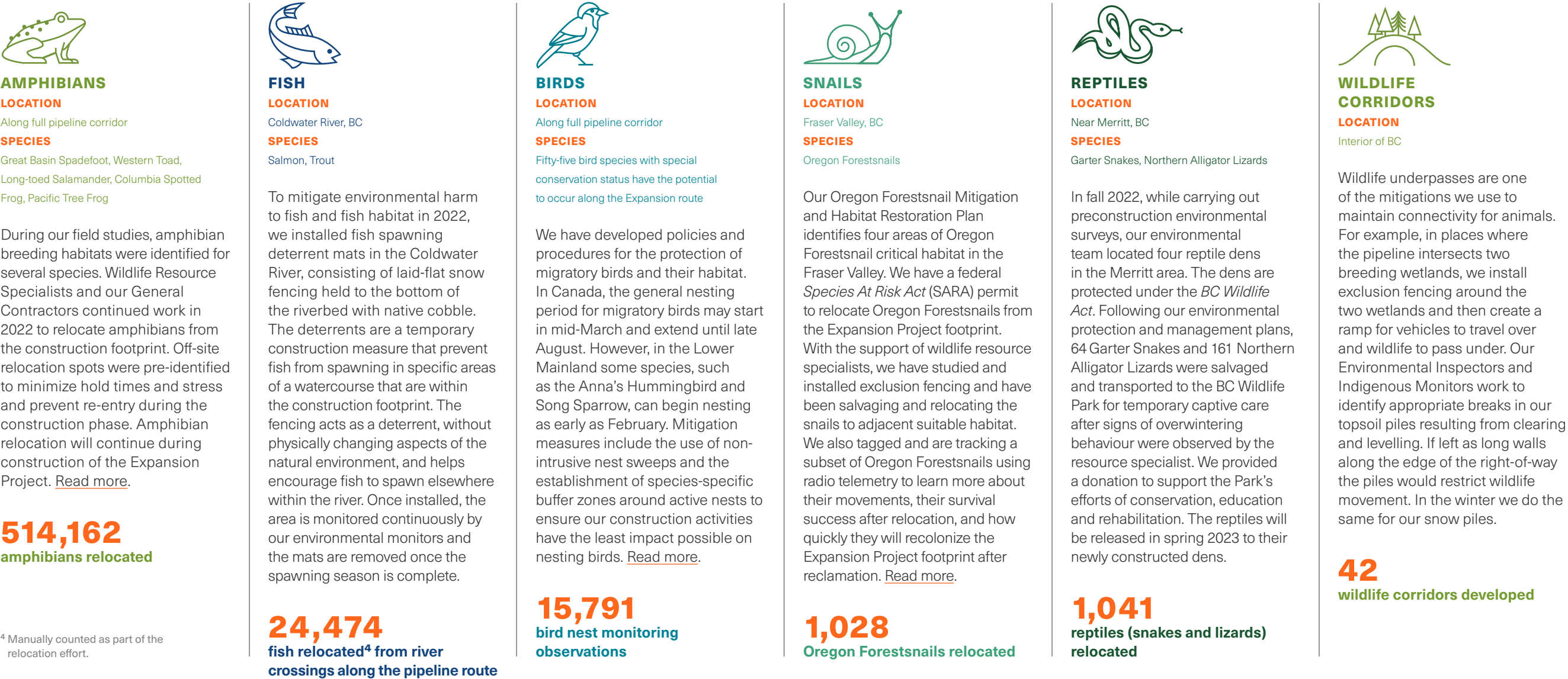
We have provided \$500,000 in funding to the Pacific Salmon Foundation (PSF) to provide a third-party assessment of Trans Mountain's construction activities across a selection of highly sensitive salmon-bearing watercourses in BC, in addition to other programs to conserve and protect wild Pacific salmon.

PSF will assess construction impacts and post-construction reclamation measures against commitments made to regulators, Indigenous groups and local stakeholders.



# EFFORTS TO PROTECT BIODIVERSITY DURING CONSTRUCTION IN 2022

As part of the Expansion Project, substantial work has gone into determining potential environmental impacts and implementing mitigation methods to reduce impacts to biodiversity. The below graphic highlights some of the mitigation measures we undertook to protect biodiversity along the pipeline corridor in 2022.



<sup>4</sup> Manually counted as part of the relocation effort.



# PROTECTING TRADITIONAL USE AND HERITAGE RESOURCES OF INDIGENOUS PEOPLES

Environmental stewardship is not solely about the physical aspects of land; it is also about respecting traditional use of the landscape and heritage resources. Traditional use includes the historical use of the land and water by Indigenous communities, while heritage resources refer to objects, sites, or locations that are of cultural, historical, or archaeological significance to Indigenous groups and Canada.

Our environmental practices also integrate traditional knowledge and approaches throughout project planning and into construction to protect important cultural resources. Traditional knowledge is generally understood as the beliefs, practices and skills passed down through generations that form part of the cultural or spiritual identity of an Indigenous community.

There are three ways in which we integrate traditional knowledge and demonstrate our respect of traditional use and heritage resources:

## 1. INDIGENOUS MONITORING PROGRAM

We work with Indigenous Monitors to ensure we incorporate traditional knowledge into construction oversight, and to help us minimize impacts to traditional land use sites and heritage resources. As of December 2022, the construction phase of the Indigenous Monitoring program continued with more than 40 Indigenous Monitors retained as part of the Expansion Project. Indigenous Monitors are essential and integrated members of our construction Environmental Inspection team. Integration enables efficient knowledge transfer between Indigenous Monitors, environmental inspection and construction crews. Integration also provides opportunities for Indigenous Monitors to develop experience and transferable skills related to environmental inspection and monitoring that they can use after the construction project is over.

As part of the Expansion Project, we have also developed a bridging program to support Indigenous Monitors who have an interest in and could become an Environmental Inspector. As of December 2022, three Indigenous Monitors successfully completed the bridging program and became Environmental Inspectors working on the Expansion Project.



Indigenous Monitor, Shawna Peters from Peters First Nation Band, is responsible for monitoring the Oregon Forestsnail plots in Bridal Falls.

Since 2016, we have conducted more than:

79,000 shovel tests in areas identified as having potential to support heritage resources

On the Expansion Project:

6,430 person days of Indigenous Monitoring during 2022

“

I believe that Trans Mountain is building a bridge right now between construction companies and Indigenous communities and I believe that is setting a high standard for the future.

LYNN COOK,  
INDIGENOUS MONITOR

”





2. TRADITIONAL LAND AND RESOURCE USE AND ARCHAEOLOGICAL STUDIES

Since 2012, more than 140 Indigenous groups have participated in archaeological fieldwork or have provided traditional use information and traditional knowledge as part of Trans Mountain-facilitated studies or independent third-party studies. During these studies, Indigenous groups collect or provide data to enhance our knowledge of the environment along the pipeline corridor. Since 2016, we have also invested more than \$40 million to support archaeological studies and conducted more than 79,000 shovel tests in areas identified as having potential to support heritage resources.

Many Indigenous groups have participated in environmental field programs to support traditional knowledge integration into our practices.

We complete baseline studies to pre-identify environmental features so work can be planned to avoid or minimize impact to these sites. In some cases, new archaeological features are observed during construction and are known as “chance finds”. The Expansion Project has contingency plans in place to respond to these events. We work closely with Indigenous communities in the implementation of our contingency plans related to traditional land and resource use and archaeological features. We use a three gate “stoplight” process to ensure Indigenous communities are notified and engaged and appropriate mitigation is developed prior to construction progressing at the location.

3. COLLABORATING WITH GOVERNMENT AGENCIES AND INDIGENOUS COMMUNITIES

Our regulator, the Canada Energy Regulator, formed an Indigenous Advisory and Monitoring Committee (IAMC) which brings together 13 Indigenous and six senior federal representatives to provide advice to regulators in their efforts to monitor the Expansion Project and the existing pipeline. The 13 Indigenous members represent the various 129 Indigenous communities and regions along the route. Members have shared goals of both the safety and protection of environmental and Indigenous interests regarding lands and waters. Trans Mountain is an invited guest in the group and has representatives which participate on several subcommittees.

Since 2017, Indigenous monitors for the IAMC have regularly participated in advisory roles to the Canada Energy Regulator (CER), Fisheries and Oceans Canada, and Parks Canada in their oversight of the Expansion Project and existing line. This includes working with the CER to participate in emergency management exercises, safety and environmental protection inspections, and socio-economic reviews. Through this collaboration, CER inspection officers learn about Indigenous values and world views with respect to risk, while Indigenous monitors learn about the CER’s inspection process.

In 2022, we shared our learnings about Indigenous involvement in pipeline oversight by participating with the IAMC and CER in the [2022 Pipeline Safety Trust Annual Conference](#) in a panel called “Involving Indigenous Communities in Pipeline Oversight: Can the U.S. Learn from Canada’s Experience.”



Still of photogrammetric 3D model of a fence feature.

PRESERVING TRADITIONAL LAND USE FEATURES USING 3D IMAGING

The Expansion Project has applied photogrammetry to record twelve features at four traditional land use sites to date, including wooden structures and rock features. Photogrammetry is a technique used to compile multiple 2D photographs to create accurate 3D models of objects. Not only are the 3D models incredibly detailed and accurate, the data is relatively quick and easy to collect, requiring only photos of the object that is being recorded.

Photogrammetry is an ideal tool to aid in the preservation of cultural heritage because it:

- Records many fine details that are often difficult to capture with traditional recording techniques.
- Allows viewing of all angles of a feature and enables accurate measurement.
- Allows us to accurately reassemble a feature on the landscape once the area has been reclaimed.



# GREENHOUSE GAS EMISSIONS

We track and manage the greenhouse gas (GHG) emissions generated by our daily operations. Most of our emissions are indirect (also known as Scope 2) since we use electrically driven pumps to move the fluid through the pipeline.

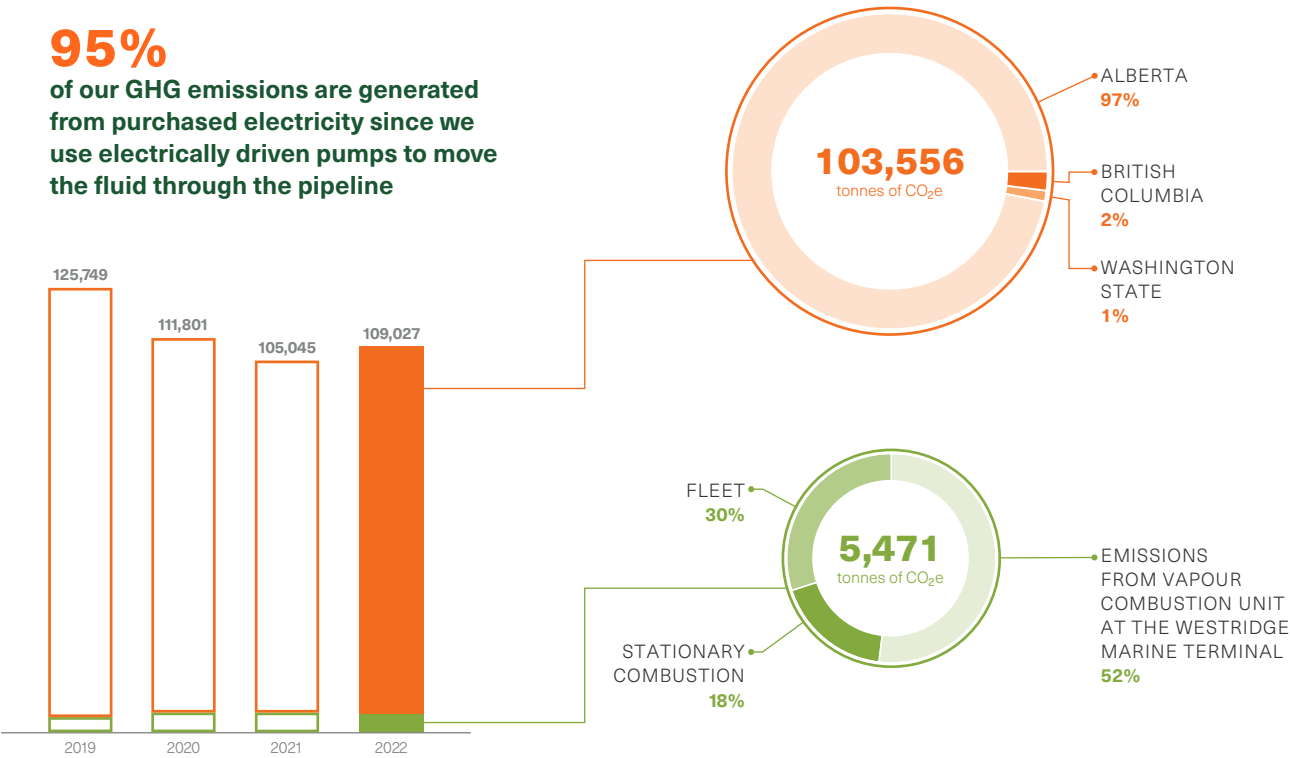
## GHG EMISSIONS REDUCTION PLAN

We support the Government of Canada’s stated goal to be net zero by 2050 and have set our own interim target to reduce 100,000 tonnes<sup>5</sup> of CO<sub>2</sub>e Scope 1 and Scope 2 emissions by 2030 to support this ambitious goal.

In order to meet this target, we plan to implement existing system efficiencies and innovations, decarbonize our energy consumption, and explore carbon credit and offset solutions. Read more on [page 66](#) of this report. In 2022, we published our [2022 Emissions Reduction Plan](#) to outline these targets, our approach and the key strategies we will implement to become net zero by 2050.

### GHG EMISSIONS FROM OPERATIONS AND SOURCES

tonnes of CO<sub>2</sub>e



## SCOPE 2 Emissions by Electricity Generation Location

The vast majority of our Scope 2 emissions are generated in Alberta. We source electricity from the grid. In Alberta, most electricity is generated from natural gas and coal\* while in British Columbia most electricity is generated from hydroelectric power.

## SCOPE 1 Emissions by Source

The main source of our Scope 1 emissions is from the vapour combustion unit at our Westridge Marine Terminal. These emissions are generated in the process of loading vessels, see [page 28](#).

The other significant sources of Scope 1 emissions are fleet vehicles and stationary combustion equipment (such as backup generators and fire pumps).

<sup>5</sup> From the first year that the expanded pipeline system is fully operational.

\* CER 2018 data. <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-alberta.html>





EMISSIONS FROM CONSTRUCTION AND SOURCES

Building a pipeline generates emissions. As part of our regulatory approvals, we have committed to offsetting the two main contributors to construction-related emissions: fuel consumed by light and medium trucks as well as heavy machinery during construction, and land clearing activities (specifically, areas permanently cleared along the pipeline easement). We estimate that the Expansion Project will generate a cumulative one million tonnes of CO<sub>2</sub>e during the complete construction period. The following activities help us measure, reduce and offset our emissions.

Fuel Consumption

We estimate our GHG emissions from fuel consumption using the methodology outlined in the National Inventory Report 1990-2017: Greenhouse Gas Sources and Sinks in Canada from ECCC (2019)<sup>6</sup>. GHG emissions from fuel consumption are assessed based on fuel type and class of vehicle or fuel purpose, both of which were used to select the appropriate emission factors for fuel combustion.

To help reduce emissions arising from fuel consumption, our contract for General Construction Contractors includes guidelines around anti-idling (which are reinforced by our Air and Noise environmental protection rule), and the use of worker camps and shuttle services to minimize transportation to and from work sites.



Land Clearing Activities

We estimate our GHG emissions from land clearing using the Canadian Forest Sector's *Carbon Budget Model*<sup>7</sup>, a forest carbon modeling framework used to simulate all forest carbon stocks required under the international GHG reporting standards set by United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto protocol.

To place the new pipeline under the ground, we must first remove grasses, trees, and shrubs. There are emissions associated with removing trees because they store carbon. Some of this vegetation will be reclaimed to its original nature and some will be replaced with grasses to leave an adequate right-of-way to access the pipeline. These activities will reduce the impact on the environment. Where possible, non-merchantable timber and/or vegetation was diverted to co-generation facilities for power generation.

Offset Plan

We are committed to offset the GHG emissions generated by the construction project in Alberta and British Columbia over several years after construction is completed. High quality offsets compensate for project emissions through measurable emissions reductions elsewhere that are verified by independent third parties. We are working to develop an Expansion Project construction emission offset plan by the end of 2023. The plan will identify our process, criteria and principles and will also include a timeline for acquiring offsets.

<sup>6</sup> [https://publications.gc.ca/collections/collection\\_2019/eccc/En81-4-2017-3-eng.pdf](https://publications.gc.ca/collections/collection_2019/eccc/En81-4-2017-3-eng.pdf)

<sup>7</sup> CBM-CFS3; Kull et al., 2016



# AIR QUALITY

The main sources of non-GHG emissions are tank venting, construction-related combustion equipment, road dust, and chemical use. Emissions metrics from our storage terminals can be found in the performance table (see [page 69](#)). To reduce construction impacts, we are implementing best management practices and mitigation measures as described in our air emission monitoring plans and fugitive emissions monitoring plans. Some of our practices include reducing equipment idling, applying dust control measures (e.g. water) to dry ground, covering soil piles, and conducting regular street sweeping.

## NEW AIR MONITORING SYSTEM

Ambient air quality monitoring programs monitor the combined effect of air quality emissions from the Expansion Project and existing emissions sources, including other pollutants of interest unrelated to our operations but common to the air shed.

In June 2022, we installed a new air monitoring system at our Westridge Marine Terminal followed by one at our Edmonton Terminal in November. We expect to complete similar systems at our Burnaby and Sumas terminals in 2023. Each station undergoes a period of required preliminary baseline data collection prior to introducing emissions from the expanded system. The monitoring program will continue after the expanded pipeline system becomes operational.

The four ambient air quality monitoring stations are best in class with respect to design, siting, reporting and technology. Each station is being specifically designed to suit environmental and seismic conditions at each location in Alberta and British Columbia as well as comply with current siting and exposure protocols from regulators. Using self-diagnostic technology, each station can measure its own performance and provide an alert if a component drifts outside of normal operating conditions.





# RESPONSIBILITY IN MARINE TERMINAL OPERATIONS

Our Westridge Marine Terminal in Burnaby, British Columbia, receives third-party vessels (tankers or barges) that either export petroleum products from our pipeline; or import jet fuel from offshore. While the number of vessels handled each month fluctuates depending on market conditions, our terminal typically averages up to five tankers and three barges loaded with oil, and one or two barges unloaded with jet fuel each month.

As part of the Expansion Project, the marine terminal will be expanded from a single berth to a three-berth complex, with associated onshore facilities. Following the completion of the Project, the pipeline’s full capacity is expected to be 890,000 barrels per day. Up to 70 per cent of the capacity of the expanded system may be delivered to the Westridge Marine Terminal for shipment. This volume is equivalent to loading up to 34 partially loaded Aframax class vessels per month. Although this traffic level is a small incremental contribution to the overall traffic in the region, we acknowledge the role that the Expansion will play in increasing overall vessel traffic and associated concerns. We are working proactively to mitigate risks with suitable management systems and working with others to enhance safety, and prevent and respond to incidents.

We see our role as two-fold. First, we must safely and responsibly operate the expanded terminal, and second, we have a responsibility to continue building relationships to promote accountability and continuous improvement for the safety, efficiency and environmental performance of the marine regime. The next few pages explain how we carry out these responsibilities.

**MAKING PROGRESS:** Witness the significant progress achieved on the Westridge Marine Terminal since the start of construction in 2018 in this [timelapse video](#).

- Responsibly Operating Our Marine Terminal
- Our Role in Supporting the Marine Community







RESPONSIBLY OPERATING OUR MARINE TERMINAL

The terminal has a long record of safe and reliable operations. We will work to maintain that record by operating the terminal with the highest standards of safety and environmental protection. The following activities help us manage the direct impacts of our terminal operations:

1. Terminal Safety

We operate the Westridge Marine Terminal in accordance with regulations established by the Canada Energy Regulator, Transport Canada, and other regulatory organizations. We have three tanks that store jet fuel at the facility. We meet applicable standards for maintenance, odour abatement, terminal lighting (light levels and directional lighting), and have a rigorous ongoing safety program. Firefighting capacity is in place which includes fire suppression and detection. All our employees are trained in operations, safety and emergency response procedures. We ensure regular field testing of our Westridge-specific emergency response plan, which includes response measures for spills on land or in the marine environment, and fire response plans.

PROVIDING UPDATES ON MARINE ACTIVITIES

We are committed to providing updates on marine spill response enhancements, commitments, conditions, and Indigenous participation. In 2022, we continued to offer our semi-annual [marine progress report](#) to provide updates on marine activities and key marine commitments and conditions related to the Expansion Project.

2. Vessel Safety

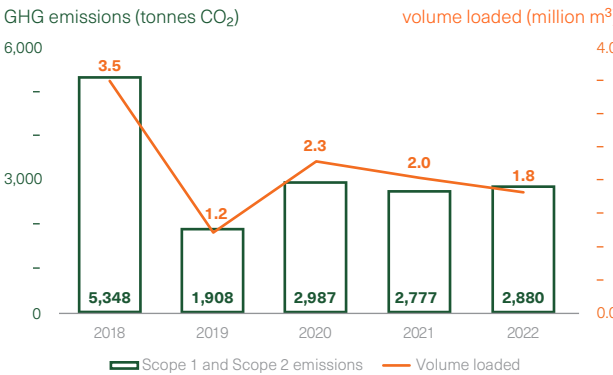
Vessels calling at the Westridge Marine Terminal must pass various inspections, and meet the strict regulations established by the International Maritime Organization. Any vessel proposed to come to Westridge is first pre-screened by a Trans Mountain Loading Master to ensure criteria such as age, design, crew, vessel certificates, and operating history are reviewed well in advance of a vessel's scheduled arrival. Prior to the transfer of cargo at the Westridge dock, our loading master conducts a physical inspection of the vessel and ensures the vessel and its crew are prepared for a safe loading. The Loading Master stays aboard the tanker throughout the loading process to monitor the vessel and its crew and to ensure efficient communication between the terminal and the vessel.

Safe navigation is critical to the prevention of incidents involving vessels calling at our marine terminal or in the commercial waterways of the Salish Sea. Navigation safety is particularly crucial during construction given the additional vessels and activity on water near the terminal. We placed a floating marine construction safety fence around the main construction area which is fundamental part of our navigation safety program at the Westridge Marine Terminal to maintain safe separation between active construction and the public waterway. In 2022, we adjusted the fence design to address feedback from the port authority and local marine pilots and to minimize the potential for interactions with birds.

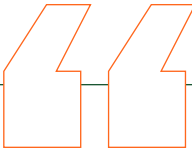
3. Managing Emissions from the Marine Terminal

The process of filling a marine vessel with oil leads to the generation and displacement of hydrocarbon vapours or gases from within the vessel's cargo tanks. As a direct release of those gases into the atmosphere would be detrimental, we capture and destroy them in a Vapour Combustion Unit (VCU). As part of the Expansion Project, we will install two new Vapour Recovery Units (VRUs) which should capture nearly all the vapours associated with ship loading and reinject them into the vessel. Increased traffic might result in increased overall emissions from the terminal. In 2022, we completed installation of the two VRUs as well as a backup VCU.

WESTRIDGE TERMINAL GHG EMISSIONS VS VOLUME LOADED (HISTORICAL DATA)

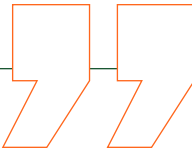


GHG emissions from the Westridge Marine Terminal fluctuate with the volume of product we load onto vessels each year.



The Trans Mountain Project, right from the beginning, started thinking about the impacts on the marine environment. They did a lot of listening. They reached out to a lot of networks of people including those in the industry, those in local communities, and those in First Nations along the route of the shipping channel. And you could tell that it was listening and then trying to find solutions that would be substantive. And it actually invested in developing the networks so that the solutions could be found. ...That effort to build those capabilities wasn't something that the Trans Mountain Expansion Project was required to do by regulation, but chose to go above and beyond the regulatory requirements that the Project was bound to implement.

ROBERT LEWIS-MANNING,  
PRESIDENT, CHAMBER OF SHIPPING





4. Preventing Spills During Loading

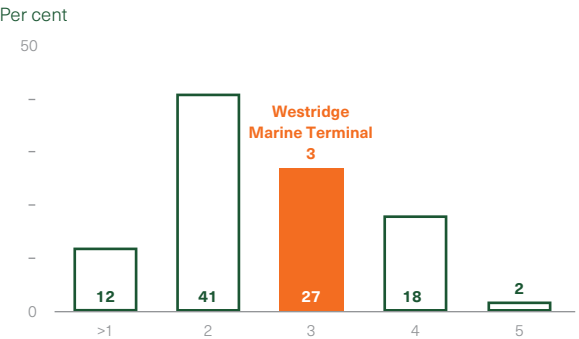
We have been safely loading third-party vessels with petroleum products at the Westridge Marine Terminal since 1956. Preventing marine spills is critical because they would have detrimental effects on the marine environment and require significant resources and effort to clean up.

- We have a strong oil pollution prevention plan, reviewed by Transport Canada, and deploy numerous resources as part of the plan.
- At any given time, there is only a small amount of oil in the terminal piping and the integrity of such piping is regularly checked as part of our pipeline asset integrity program.
- For oil transfers between the terminal and vessels, we plan and carefully manage this procedure applying international best practices, under close supervision of our operators, our Loading Master and the vessel officers and crew.
- We take special efforts to prevent any oil that might enter the water from spreading over a larger area by having pre-deployed an operational oil spill boom (i.e., a containment barrier) surrounding every tanker during loading.

5. Green Marine

Green Marine is a voluntary environmental certification program for the marine industry which encourages its participants to reduce their environmental footprint by taking concrete actions across 14 performance indicators. The 390 members and supporters include ship owners, ports, terminals, shipyards, and seaway corporations. As a terminal participant since 2013, the Westridge Marine Terminal undertakes a self-review of its performance with respect to environmental issues related to air, water, soil quality and community relations annually, and is subject to an external verification every two years by Green Marine. In March 2022, we undertook the self-review and maintained our certification at Level 3.

PERCENTAGE OF PARTICIPANTS WITH AN AVERAGE AT OR ABOVE LEVELS 1, 2, 3, 4 AND 5



Green Marine scoring captures performance in GHG, air pollutants, spill prevention, community impacts, environmental leadership, and waste management. A score of 3 means that we have integrated systems to manage and quantify those impacts. Note that 1 is the lowest level and 5 is the highest.

OUR ROLE IN SUPPORTING THE MARINE COMMUNITY

Our pipeline and terminal play a crucial role in connecting Canadian producers with customers around the world. We will continue to provide value by performing this role, as well as being an advocate of safety and enhanced stewardship in the marine community. Some of our activities that support safe marine traffic are:

6. Working Within the Established Marine Safety Regime

Our practices and procedures conform to the established regional marine safety regime, a robust set of risk controls for all traffic and for oil tankers. We work with the many significant stakeholders and rights-holders (both national and international) including Transport Canada, the Canadian Coast Guard, the Pacific Pilotage Authority, the United States Coast Guard, pilots, marine service providers, shipping organizations, other terminals, coastal communities, and Indigenous Peoples.





7. Supporting Spill Prevention During Vessel Transit

Spillage of oil from a tanker is the owner’s responsibility. Trans Mountain is responsible for all spills and releases from our pipelines or facilities. However, we recognize concerns about oil spills to marine waters and have taken active steps to contribute to marine safety and spill prevention and response.

**VESSEL ACCEPTANCE PROCESS** ■ Our vessel acceptance standard outlines the criteria vessels should meet before they can use our marine terminal. We carry out pre-screening of all vessels and reserve the right to deny vessels access to our marine terminal if standards are not met. To prepare for the commencement of service for the expanded pipeline system and increased vessel traffic calling at the Westridge Marine Terminal, we updated both the Vessel Acceptance Standard and our Westridge Marine Terminal Regulations and Operations Guide.

**EXPANDED TUG ESCORT ROUTE** ■ We have helped to improve tug use and escort procedures for tankers by financing studies and funding training programs for marine pilots and tug masters who will take each vessel through Canadian waters and to and from berths at Westridge. As a condition of vessel acceptance post-Expansion, we intend to require our shippers (customers) to use escort service for all crude oil loaded tankers for the expanded shipping route between our terminal in the Burrard Inlet and the Pacific Ocean, including the Strait of Juan de Fuca where no such escort of vessels happens today. The additional tugs necessary for this expanded service are possible because of the financial commitment of our shippers and will increase and further strengthen the marine safety regime to benefit all vessel traffic in the region.

**INCREASED RESPONSE CAPABILITIES** ■ Trans Mountain is a shareholder and founding member of Western Canada Marine Response Corporation (WCMRC). WCMRC is funded through fees charged on every barrel of oil transported across a dock on Canada’s West Coast, including oil transported at our marine terminal.

Our contributions have supported establishing and maintaining this highly capable oil spill response organization. In the event of a spill, fast and effective response enables rapid containment and prevents more widespread impacts.



KOTUG Canada also has an agreement with WCMRC to provide a dedicated offshore supply vessel equipped for 24/7 oil spill response services to support the protection of the Salish Sea including the Juan de Fuca Strait. The vessel is anticipated to be the largest tug vessel on Canada’s western coastline.

15 members of Beecher Bay First Nation are receiving training to work on the escort tugs

STRENGTHENING MARINE SAFETY WHILE SUPPORTING INDIGENOUS EMPLOYMENT

In a competitive process facilitated by Trans Mountain, KOTUG Canada was awarded the long-term agreement to provide and operate two dedicated escort tugs for tankers loaded at the Westridge Marine Terminal. To meet its commitments to Trans Mountain and our shippers regarding Indigenous involvement and procurement, KOTUG Canada is training 15 members of Sc’ianew First Nation in Beecher Bay to work on the vessels. Two women from Beecher Bay First Nation who completed their initial Bridge Watch training are now working for KOTUG Canada offshore in the North Sea as part of a program to obtain their sea time. Once their training is complete, they will return to their community and apply their experience on the tugs.



“

We started having a growing relationship, sort of a mutual understanding of what’s going on. The Trans Mountain people understood that we’re not oil advocates, we’re ocean protection advocates and we need each other to protect the ocean. And our conversations started getting better and better and better.

Now we’ve got a full toolbox with ships, trained people, the science around how to protect and I guess the education on how to deploy those booms and when to deploy those booms.

**CHIEF RUSS CHIPPS,**  
SC’IANEW FIRST NATION (BEECHER BAY)

”

**8. Spill Response and Preparedness**

Even though each vessel is responsible for their own cargoes and spills, we acknowledge the role that the terminal expansion plays in increasing tanker traffic and supported the investment of more than \$150 million in advance funding to increase the response capabilities of the WCMRC. WCMRC is the only Transport Canada-certified marine responder on Canada’s West Coast. By working with them to dramatically increase their capacity we are helping to improve spill response along the entire shipping route. In 2022, 40 of the 44 new response vessels were delivered, WCMRC hired 119 of the 123 new full-time positions, and significant progress was made on the construction of the six new marine spill response bases. [Read more.](#)

Westridge Marine Terminal is an important part of our emergency preparedness and response planning. We have taken precautions to be able to respond rapidly in the event of an emergency, such as comprehensive training for our employees and maintaining enough equipment to be self-sufficient to respond to emergencies for the first six hours (read more about Trans Mountain’s emergency response program on [page 17](#)).

**9. Protecting Marine Life and Biodiversity**

From the beginning, we recognized our responsibility to mitigate the effects of the Expansion Project on marine life, including marine mammals such as the [Southern Resident killer whale](#), and our contributing role of working with industry and stakeholders to apply mitigations to the greatest extent possible. In 2022, we formalized our Marine Mammal Protection program for engagement with Indigenous groups, shippers and marine stakeholders.

The program outlines, (1) the mitigations and activities within our control which can address the various threats to marine mammals and, (2) the measures we are undertaking to support best practices and influence the conduct of vessel operations which may also minimize these threats and/or contribute to marine mammal conservation overall. We have committed to work with third-party marine vessels calling at our terminal in the program’s implementation.

**10. Engaging with Communities During the Expansion Project**

Our commitment to engaging with communities during the Expansion extends to the marine communities, local and Indigenous, as far as the West Coast of Vancouver Island. We acknowledge our influence as a responsible member of the shipping sector and we aim to foster mutually respectful relationships based on trust. One example of such relationships is WCMRC and KOTUG Canada’s partnerships with the Sc’ianew (Beecher Bay) First Nation, to provide support vessel services out of a new base located in Beecher Bay on Vancouver Island. All parties have shared values of protecting the marine environment, building capacity and growing local economies for many years. To learn more about this partnership watch this video:



**BEECHER BAY MARINE PARTNERSHIPS:**  
[Learn about the WCMRC spill response base and tug escorts located in Beecher Bay.](#)





# SUPPORTING BIODIVERSITY DURING MARINE TERMINAL CONSTRUCTION

Our goal is to keep all wildlife safe during construction of the Westridge Marine Terminal. Some of the mitigation measures we undertook to support biodiversity in 2022, include:



## FISH SPECIES

Rockfish, Salmon

The Westridge Marine Terminal is in the vicinity of a rockfish conservation area. To offset the alteration of fish habitat, Trans Mountain is establishing a rock reef complex in a designated area on the west side of the terminal.

Rock reefs are submerged rock outcrops with varying relief, that create refuges for smaller fish and surface area for algae to grow.

The rock reef complex will be constructed on the seafloor using heavy equipment to place crushed bedding rock, rock mattresses, and reef rock. The 10,400 m² complex includes 4-5 metre gaps between the square reefs to encourage water circulation and an expanded toe berm reef to provide stability, prevent slumping and form rocky habitats for fish and invertebrates. We engaged Indigenous groups and environmental stakeholders in the design of the complex.

After the project is completed, we plan to monitor for a five-year period to verify that the reefs were colonized, populated and productive.



## SEALS SPECIES

Harbour seals, Herring, Salmon, and other aquatic life

To reduce our impact on aquatic species, we have been using specialized underwater deterrent systems during construction of the Westridge Marine Terminal. The deterrents, known as Acoustic Fish Deflection (AFD), use a series of underwater light flashes and sounds to deter seals and fish from entering areas where active construction activities are taking place. There are different systems with specific sound frequencies for the type of wildlife to be deterred (one for fish, one for seals). The frequency levels of the AFD system are gentle on all marine life, including fragile fish.

To help protect fish and marine mammals near construction activities we also have a comprehensive marine mammal observation program that ensures construction activities are stopped if marine mammals are in the immediate area.



## BIRDS SPECIES

Marine birds such as Canada Geese, Glaucous-winged gull, Barrow's goldeneye, Pelagic cormorant, Great blue heron, Pacific loon, Western grebe, Belted kingfisher, and Bald eagle

Over the course of construction at the Westridge Marine Terminal, we have implemented several mitigation measures to prevent marine birds from becoming entangled in the floating marine construction safety fence that surrounds the marine work area. We have worked closely with the on-site Indigenous Monitor in the selection and implementation of these measures, some of which include: stainless steel disks that reflect light to increase the visibility of the safety boom to birds; spike strips to deter birds from landing on the safety boom; acoustic deterrents and bald eagle decoys to deter birds from flying close to the safety boom; and custom-fabricated landing posts that afford birds the opportunity to land in safe areas.

We also use coyote decoys that we regularly reposition along with a scent deterrent to help deter marine birds from landing and nesting on the barges used for construction.

We continue to take an adaptive management approach to mitigating potential effects to marine birds. We regularly evaluate the efficacy of installed mitigations, adapt mitigations to increase efficacy, and implement additional measures as required.

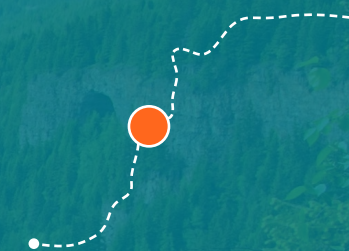


We use coyote decoys along with a scent deterrent to help deter marine birds from landing and nesting on the barges used for construction.



# SOCIAL

Indigenous communities, neighbours, governments and local communities play an important role in how we conduct our business. Our success depends on earning the trust, respect and cooperation of all community members.



#### NEAR CLEARWATER, BC

Our pipeline goes through Clearwater, British Columbia (pictured).



# EMPLOYEE AND CONTRACTOR SAFETY

Our first priority is to protect the health and safety of our employees, contractors, and the public. With more than 500 employees and 1,760 individual contractors working directly with, or on behalf of, Trans Mountain, this is a critical and ongoing mission. We care about the safety and well-being of our people, not only for their safety, but the safety of others in the community and for the environment. This is why we have stringent safety standards, high expectations of our contractors, and are always working to improve our safety practices.

## SAFETY ACTIVITIES

To continue improving our safety performance, we implement a variety of safety initiatives including:

### Green Hand Mentoring Program

Our new and young worker (Green Hand) program identifies and supports employees who are young or inexperienced. This includes workers of any age who are new to Trans Mountain, have limited or no experience in their new role, and workers who have been relocated where the hazards are different from their previous workplace. These workers are typically unfamiliar with processes, facilities, and job routines, and may be reluctant to ask questions. The program provides additional support and training, including a mentor, constant evaluations and feedback, and a final review before the worker can perform any non-routine work or high-risk activities. In 2022, we mentored 36 new hires, including five field-based summer students.

### Life Saving Rules

Across Trans Mountain we use Energy Safety Canada’s Life Saving Rules, which are concise, easy-to-remember rules aimed at preventing serious injuries and fatalities. They remind workers of the most hazardous work situations in our industry (heights, confined spaces, hot work, line of fire, energy isolation, and driving) and set mandatory expectations for having a work authorization, respecting safety controls, and being fit for duty. We also adopted an additional rule, Damage Prevention, to address activities that have the potential to cause pipeline damage. To help embed the rules into all our safety standards and processes, we provide corporate-wide online training on a three-year training cycle.

### Senior Leadership Field Safety Visits

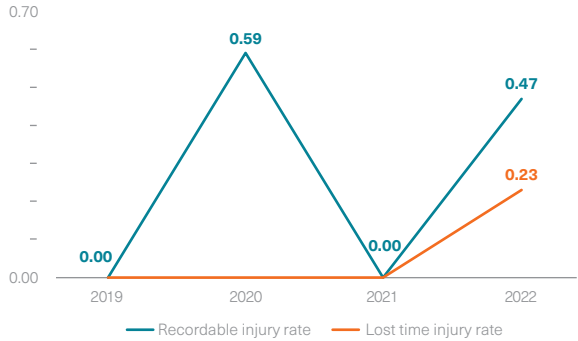
During these visits our senior leaders (directors and above) go out to the field to interact with coworkers, discuss safety (including through one-on-one meetings), and identify things that are working well and could be improved. Our senior leaders completed 42 safety visits in 2022. These visits have made a positive contribution to our strong safety culture.

## Safety Recognition Program

In 2022, we further expanded our Safety Recognition program to include all U.S. contractors for our Puget Sound pipeline system. The program now includes all employees and operational contractors across Trans Mountain. The program has been very well received and allows workers to be nominated for good performance related to our safety program, rules, and standards. Awards include gift cards and a quarterly draw for those who have submitted a hazard or near miss report.

## EMPLOYEE INJURY RATES

injuries per 200,000 hours worked



Our employee injury rates increased in 2022 due to a few low potential injuries and one lost time injury due to a slip and fall on icy terrain. Read about our safety activities on this page.

The vast majority of our employees work in our day-to-day operations.





EXPANSION PROJECT SAFETY

Some of our safety challenges on the Expansion Project include the complexity of construction logistics, steep slopes and mountainous terrain, amount and size of equipment, multiple general construction contractors, high number of individuals required on site and sheer numbers of hours worked. As such, we need to be exceptionally vigilant and rigorous in the application of our safety practices by the contractors.

Our Safety Strategy

We center our safety strategy on six focus areas:

1. MANAGE HAZARDS AND HIGH-RISK ACTIVITIES ■

To support this focus area, we established executive and contractor safety committees, asked our major contractors to complete a safety culture assessment, and developed leading indicator frequency key performance indicators (KPIs) and targets to support hazard identification. We also improved our inspection and compliance processes and implemented a risk assessment control validation process.

2. FOCUS ON SIGNIFICANT INJURIES AND FATALITY PREVENTION ■

We use Energy Safety Canada’s [Life Saving Rules](#), in conjunction with our own best practices. In 2022, we maintained high awareness of the rules and continued to perform trend analyses of positive and negative rules observations. When a Life Saving Rule is not conformed to, we track each non-conformance (or gap). In 2022, the Expansion Project tracked a ratio of 296 positive observations (times the Life Saving Rules are being followed) to one non-conforming one (a gap). Examining trends in these gaps allows us to direct our efforts and action plans where they are likely to have the most impact. We also conducted more than 12,500 focused inspections, these included our Life Saving Rules. We have damage prevention standards in place and deliver detailed damage prevention training.



3. ENCOURAGE POSITIVE SAFETY BEHAVIOURS ■ In 2022, we continued our Safety Recognition program for the Expansion Project. The program rewards both acts of great safety leadership and good safety calls made in difficult circumstances. More than 400 rewards were distributed to employees and contractors in 2022.

12,500  
focused inspections  
conducted in 2022 on  
the Expansion Project

PREPARING FOR COMMISSIONING

In 2022, to prepare for the Expansion Project coming into service, we formed a joint team between our Health and Safety group and the Expansion Project’s commissioning team. The joint team developed a guidebook outlining how our safety standards would be integrated into a new facility as each one came into service. In November 2022, the team successfully used the guidebook during the commissioning of the Black Pines pump station (read more on [page 6](#)).



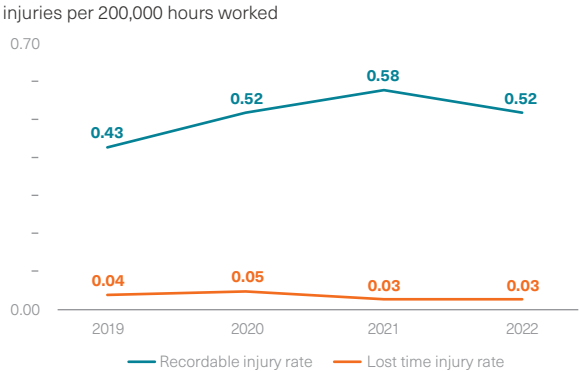


**4. BUILD A ‘SPEAK-UP’ CULTURE** ■ We completed several initiatives to provide a psychologically safe space for people to report safety concerns, issues and incidents, including improving our messaging in orientations and bulletins, and recognizing ‘stopping unsafe tasks’ in our Safety Recognition program. Over the past year, we have observed an increase in the number of incidents and near misses reported, suggesting a strong reporting safety culture where people feel comfortable bringing concerns forward.

**5. IMPROVE SAFETY COMMUNICATIONS INTERNALLY AND WITH CONTRACTORS** ■ We maintain a Health and Safety Hub electronic repository for safety information, provide a weekly health and safety email to all Trans Mountain and contractor staff, and focus on transparent, timely and accurate reporting of incidents and near misses. In 2022, we created a Safety Portal specifically for our individual field contractors, enabling them to more quickly and easily access our safety information while in the field. Another way we have improved discussion around safety is through our regular sponsorship meetings. During these monthly meetings, Expansion Project leadership gathers with our General Construction Contractors’ leadership to review safety statistics, discuss any areas of concern and formulate improvement plans.

**6. ENGAGE SENIOR LEADERSHIP** ■ We developed a Leadership Safety Engagement procedure and established a minimum of one activity per quarter for each senior leader covering all spreads and key facilities. Our senior leaders completed 236 safety activities on the Expansion Project in 2022. We also developed an inspection tool app and dashboard for senior leaders to document key field interactions. To encourage a similar level of leader engagement from our contractors, they are required to include a leadership field safety engagement procedure in their plans.

**CONTRACTOR INJURY RATES**



Our recordable injury rates decreased from 2021 to 2022, which shows a considerable improvement over 2021.

The vast majority of our contractors work on the Expansion Project.





# INCLUSION AND DIVERSITY

We strive for an inclusive and diverse workplace that is supportive of all employees and contractors. We believe that diverse viewpoints and cultural knowledge enrich our organization’s collective cultural understanding, build trust, reduce turnover, improve innovation, and create a positive environment where our people can thrive.

As a federally regulated company, we comply with the *Employment Equity Act*. The Act requires us to engage in proactive employment practices to increase the representation of four designated groups: women, people with disabilities, Indigenous people, and visible minorities. We survey our Canadian workforce to allow for self-identification, and develop an annual employment equity report detailing representation of the designated groups, rates of hiring, promotions, and terminations. The report also outlines our efforts around policy review, and training and awareness initiatives. In 2022, we also completed a preliminary strategy to comply with the federal *Pay Equity Act* and adjusted our internal systems to track pay gaps for the four designated groups in order to meet federal employment equity requirements.

DESIGNATED GROUPS	2019	2020	2021	2022
Indigenous people	1.8%	1.8%	2.7%	3.5%
People with disabilities	0.3%	0.3%	1.1%	0.8%
Visible minorities	13.1%	13.8%	15.3%	13.5%
Women	28%	29%	29%	30%

Employee-only data. Percentages are based on self-disclosed data.

To better understand our applicant pool, we have implemented an Applicant Tracking System which offers candidates the ability to voluntarily disclose their gender, if they are Indigenous, are a visible minority, or have a disability. We continue to work to increase the representation of designated groups in our workforce. Read more about our efforts related to:

- [People with disabilities](#)
- [Indigenous people](#)

## INCLUSION AND DIVERSITY INITIATIVES

We seek to develop and promote initiatives that raise awareness, identify and remove barriers, and create workforce learning opportunities that support diversity and inclusion. Some of our inclusion and diversity-related initiatives over the past year include:

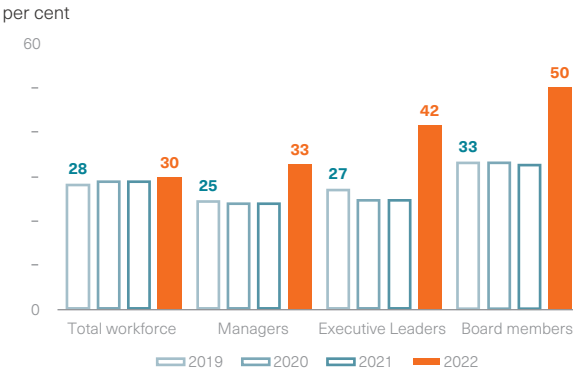
### Enabling More Flexible Work

In 2022, we achieved our target to train more than 70 per cent of our leaders to support effective leadership in a hybrid work environment. We also implemented “Where We Work” our flexible work policy that outlines three position-based work arrangement options (office-first, flexible, or remote-first) in order to better support business and individual needs.

### Improving Accessibility

We understand the importance of fostering an accessible and welcoming work environment. In 2022, we published our first [Accessibility Plan](#) to demonstrate our commitment to upholding the requirements outlined in the *Accessible Canada Act*. We are integrating this accessibility legislation into our company policies, procedures, and programs. The plan documents our current initiatives and outlines our future approach to improve opportunities for people with disabilities and become more inclusive.

## WOMEN AT VARIOUS LEVELS



Employee-only data.

To increase women in leadership roles, female candidates are represented in the selection process and female representation is included on the interview panel. Internally, we are also tracking women who have applied for supervisory roles to understand trends in this area.

50%  
of our Board members  
are women





**STANDING AGAINST BULLYING**

We supported Pink Shirt Day on February 23 by encouraging all colleagues to wear pink and through the purchase of 250 official pink shirts shared with employees and contractors.

We also provided information on how to stand against bullying and harassment and where to turn for help. Pink Shirt Day began in 2007 when a student in Nova Scotia was bullied for wearing a pink shirt to school. It has since been recognized annually worldwide as a day to stand against bullying.

**PROVIDING TRAINING AND INCREASING AWARENESS**

We provide opportunities for our employees to openly discuss harassment, discrimination, unconscious bias and mental wellness. Doing so raises awareness about these topics and how they impact the development of an inclusive workplace. Examples include:

**Harassment and Violence Prevention**

Our Harassment and Violence Prevention Policy reinforces our commitment to a work environment free from harassment, bullying, discrimination and violence for all our employees. Training is provided to all new employees within three months of starting employment as part of on-boarding training. All employees are required to receive this training at least once every three years. Additional training is also provided to employees new to leadership roles at least once every three years. We maintain a joint worker management health and safety committee that meets monthly and covers all requirements under the Canada Labour Code. We also maintain a subcommittee responsible for reviewing and addressing any harassment and violence issues, related actions or complaints on an ongoing basis.

**Unconscious Bias**

To expand awareness about biases and how they can influence leaders' decisions, we offer an unconscious bias module as part of our Foundations of Leadership training that we hold twice per year. We also include unconscious bias awareness training in our Operations Supervisor Training program.

**Mental Health and Wellness**

In 2022, we offered several education sessions to all employees. The sessions included "Building Resilience in Uncertain Times", "Introduction to Mindfulness", "Seasonal Affective Disorder (SAD)" to help explain this disorder and its impact on mental health, and "Joy, Grit and Resilience" to help people understand the impacts of COVID-19, coming back to the office and reconnection. We also maintain a wellness page on our intranet that is accessible by all employees where we highlight a different wellness topic each month. Our goal is to ensure employees from diverse backgrounds have access to programs that support their full participation in the workplace and their psychological well-being at work.



**BUILDING OUR AWARENESS OF INDIGENOUS CULTURE AND HISTORY**

We are committed to building and maintaining a workforce that embraces diversity, cultural awareness and inclusion. We seek to provide everyone at Trans Mountain the opportunity to enhance their understanding of Indigenous culture and history in order to start their own journey toward reconciliation. Our efforts included:

**Indigenous Awareness Training**

In November 2022, we launched our Indigenous cultural awareness training course—*The Journey from Competency to Cultural Safety*—and as of March 31, 2023, 2,147 individuals have completed the course. The 45-minute self-directed eLearning course is mandatory for all employees and contractors and was developed in collaboration with an Indigenous-owned communication and design agency, Nahanee Creative. The course contains four chapters covering the foundation of cultural awareness, the ability to commit to cultural safety, Canada's historical and changing relationship with Indigenous Peoples, and the calls to action and human rights as they relate to Canada's Truth and Reconciliation Commission (TRC) and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). The goals of the course are to:

- Create awareness and understanding of our own bias and beliefs and how we can better understand Indigenous culture and ensure a safe and non-discriminatory workforce.
- Have all employees and contractors familiarize themselves with Trans Mountain's Indigenous Relations Policy and our commitment to reconciliation.
- Provide the tools, training and resources to better educate our workforce.

**Celebrating Indigenous History**

In honour of National Indigenous History Month, we shared weekly articles with employees throughout the month of June to help expand our knowledge on the history of Indigenous Peoples in Canada.

**Reflecting on Reconciliation**

On June 21, in recognition of *National Indigenous Peoples Day*, we hosted a virtual session, “Business in the Age of Reconciliation” with guest speaker Keith Matthew, CEO Seklep Business Services and former Chief of Simpcw First Nation. During his presentation, Keith shared his thoughts and opportunities for business during the time of reconciliation. He recounted his recent trip to the Vatican and provided guidance on how individuals could embark on their own journey of reconciliation.

**Understanding Colonial Narratives and Impacts**

In recognition of the National Day for Truth and Reconciliation on September 30, we hosted a virtual session, “Sharing our Stories, Sharing our Futures” with guest speaker Ta7taliya Nahanee, CEO of Nahanee Creative. Ta7taliya is a creative advocate and educator who focuses on catalyzing social change to transform colonial narratives and impacts. During the session, she shared her thoughts on Truth and Reconciliation and explained her work developing cultural awareness. We also distributed moose hide pins and shared information on the [Moose Hide Campaign](#), a grassroots movement of Indigenous and non-Indigenous men and boys who are standing up against violence towards women and children.



Simpco Resources LLP, Trans Mountain, Ledcor, and Chinook Cove Contracting travelled the Expansion Project corridor through Simpcw Territory in support of their respective workforces, handing out high visibility orange safety shirts for Orange Shirt Day.

**Understanding and Expressing Land Acknowledgments**

The history of land acknowledgements can be found in Indigenous tradition and protocol, as a way for individuals to show their respect and express gratitude for a community or place. Acknowledging Indigenous Peoples and their traditional lands is an expression of respect and an act of reconciliation. It recognizes the past, present and future of a particular location, and our efforts to further understand our own place within that history. Land acknowledgements are a vital part of conducting our business in a culturally appropriate way. In 2022, Trans Mountain adopted its first Land Acknowledgement Policy and provided a training module to help our employees and contractors understand and implement the policy. We also offered supplemental training for teams or individuals who wanted to learn more about how to implement the policy.

**HONOURING RESIDENTIAL SCHOOL SURVIVORS**

To commemorate the history and legacy of residential schools in Canada and to honour the survivors and their communities, we participated in Orange Shirt Day across Trans Mountain. We provided stories, resources and distributed a template to develop a Personal Reconciliation Action Plan for all staff. Colleagues were encouraged to wear orange shirts purchased through the [Orange Shirt Society](#), a non-profit organization based in Williams Lake, BC, where Orange Shirt Day began in 2013.



# RELATIONSHIPS WITH INDIGENOUS COMMUNITIES

Through the course of our daily operations, we have formed relationships with numerous Indigenous communities and groups. In Alberta, the existing pipeline system spans the traditional territories of Treaty 6, Treaty 8, and the Métis Nation of Alberta (Zone 4). In British Columbia, the system crosses many traditional territories and 15 First Nation reserves. Trans Mountain respects the values, culture, and rights of Indigenous groups within whose territory we operate.

For the Expansion Project, we only cross reserve lands with the consent of the First Nation.

We endeavour to identify areas where we can provide opportunities for Indigenous Peoples. We also hope to leave a positive legacy that endures beyond the Expansion Project; that Indigenous communities are in a more sustainable position than when we first engaged with them. The following are some of the ways we strive to build strong relationships and provide long-term benefits for Indigenous communities.

## OUR ROLE IN RECONCILIATION

Reconciliation with Indigenous Peoples requires ongoing dialogue and collaboration among governments, businesses, communities, and individuals. Trans Mountain is playing a role by working to develop lasting and respectful relationships and improving economic opportunities for Indigenous communities. For more than 15 years we have been contributing to Indigenous business development, employment, education and training, capacity building, and creating legacies for Western Canadian Indigenous communities.

In acknowledging the long-term impacts of the residential school system, we aim to provide support to Indigenous communities in a meaningful way through donations to both the [Indian Residential School Survivors Society](#) and the [Kamloops Aboriginal Friendship Society](#). Our efforts to support the healing and recovery process with the communities along our pipeline and marine corridors continues. Learn about how we recognized and reflected on our shared history with Indigenous Peoples by honouring *National Indigenous Peoples Day* and the *National Day for Truth and Reconciliation* on [page 39](#).

At Trans Mountain, we will continue to do our part to advance reconciliation with Indigenous communities. As an important step in this process, we are working to establish an external Indigenous Advisory Council in 2023 to provide advice to our leadership team and guide our reconciliation efforts. In conjunction, we are developing our first Indigenous Reconciliation Action Plan that we expect to publish in 2023, which will contain elements of economic reconciliation. In 2022, we created a Reconciliation Task Force composed of 12 members (including alternates) who are both employees and contractors from across the company to provide feedback on the development of our Reconciliation Action Plan as well as other initiatives. We recognize that how we move forward will shape our collective experience and we remain committed to building a brighter shared future.

“

When I first started talking to them, I let them know to come walk with our people, to find out why we look after the things the way we do. They listened. They listened and they didn't move on anything until they understood what was going to need to be taken care of. The [Expansion Project] empowered our people to understand how they were going to take care of themselves.

ELDER CLEM SEYMOUR,  
FORMER CHIEF, SEABIRD ISLAND BAND

”







### INTENTIONAL AND RESPONSIVE ENGAGEMENT

We seek to meaningfully engage with Indigenous people and their communities, tailoring our engagement to respect each community's diverse needs, governance principles and protocols. Our approach to engagement is to come from a place of openness and respect, to share mutual benefits and work toward mutual understanding.

For the Expansion Project, we intentionally took an inclusive approach to engagement and welcomed input and discussion with all Indigenous communities, even those not necessarily recognized by the Crown for consultation purposes. Guided by our Indigenous Relations Policy, our engagement efforts have included more than 140 Indigenous communities and groups culminating in more than 14,000 points of engagement (which include meetings, open houses and informal conversations) in 2022.

## >140

Indigenous communities and groups in BC and Alberta (including marine) engaged in 2022

### MUTUAL BENEFIT AGREEMENTS

Mutual Benefit Agreements (MBAs) are intended to help build long-term relationships based on shared interests. They are important not only for formally acknowledging our commitments for which we are accountable, but also to share prosperity and to build capacity and opportunities. MBAs are tailored to community needs and provide different types of defined Project benefits. However, there are broad categories of benefits such as, but not limited to, financial compensation, community investment, business opportunities, environmental commitments, employment and training and emergency management and response.

### INDIGENOUS AWARENESS TRAINING

Over the past year, we have been working to enrich our understanding and awareness of Indigenous history and culture. In 2022, all employees and contractors completed a mandatory company-wide Indigenous cultural awareness training course—*The Journey from Competency to Cultural Safety*. Read more on [page 39](#).

## >14,000

points of engagement with Indigenous communities in 2022



EMPLOYMENT AND BUSINESS OPPORTUNITIES

We are working hard to support the sustainability of Indigenous, local, and regional communities along the pipeline corridor through the creation of employment and business opportunities during construction, post construction and in support of operations.

Employment Opportunities on the Expansion Project

Building the Expansion Project pipeline and associated facilities requires thousands of individuals, the majority being residents from British Columbia and Alberta. Most employment opportunities will be made available through construction-related contracts. As of December 31, 2022, Trans Mountain and our contractors have hired approximately 28,900 people, of whom 3,100 (11 per cent) self-identify as Indigenous.

Contracting Indigenous Businesses During the Expansion Project

We are also committed to providing business opportunities for Indigenous groups. As our contractors identify specific business opportunities along each section of the Project, we communicate these to Indigenous communities and identify potential partners through our vendor system. As of December 31, 2022, approximately 25 per cent of contracted spend on the Expansion Project has been awarded to Indigenous businesses and partnerships in support of construction execution.

Indigenous procurement also contributes to capacity building. As the business 'arm' of the community starts to develop their capacity, the community has another revenue stream that supports community development programs, community investment, and opportunities for smaller companies to work underneath the larger Indigenous company. An example of these relationships is Stqó:ya Construction, a heavy construction company that is majority-owned by Seabird Island Band. Through contracts they have worked on with Trans Mountain, both on the Expansion Project and through ongoing operations, Stqó:ya has reached an unprecedented level of Indigenous employment with 70 per cent of their workforce being Indigenous.

~25% of contracted spend on the Expansion Project has been awarded to Indigenous businesses and partnerships in support of construction execution



INDIGENOUS EMPLOYMENT OPPORTUNITIES BEYOND CONSTRUCTION

The Expansion Project is a large infrastructure development that has created employment for thousands of individuals, including 3,100 Indigenous individuals. After construction is completed, we want to continue providing employment in Indigenous communities.

In 2022, we developed a new recruitment strategy and training program to fill nine operator business-readiness positions at our Burnaby Terminal.

To support a more inclusive recruitment effort, we attended career fairs in Burnaby, communicated directly with community liaison individuals, facilitated information sessions for local communities, placed posters at Indigenous community offices, and provided example interview questions.

After receiving many applications, we hired three Indigenous individuals with operator experience and onboarded six successful applicants to the training program. We set out to create a training program that empowered applicants with a combination of:

- 1. **ESSENTIAL SKILLS TRAINING** ■ A 90-day training module through LinkedIn Learning which includes foundational training on “soft skills” such as communication, conflict resolution, problem solving, and more.
- 2. **TECHNICAL TRAINING** ■ includes 8-12 months of on-the-job training. This training is taken concurrently with the essential skills module.

The operator recruitment has been so successful that Trans Mountain is now planning to do the same thing at our Edmonton Terminal, to fill four operator positions.



# CAPACITY BUILDING

We strive to enhance Indigenous Peoples’ long-term prosperity through direct and meaningful participation in the Canadian economy and in our operation and construction activities. We build capacity by helping individuals develop or strengthen valuable skills or expertise. Our training programs aim to maximize Indigenous participation in available employment opportunities. Some examples include:

## TRANSFERABLE SKILLS FOR INDIGENOUS AND LOCAL RESIDENTS

In addition to the training programs offered by Trans Mountain, our general construction contractors provide training to Indigenous, local, and regional residents. Contractors provide mentorship, apprenticeship, construction readiness/close-to-qualified training, and on-the-job training. Several training sessions and courses were held in 2022 and included construction and fire safety certifications, confined space awareness, traffic control, security, defensive driving, ground disturbance, fall protection, and first aid. The training focuses on building transferrable skills that can be applied to any construction project or industry operations.

4,293  
Indigenous individuals have received training to date through our contractor training

31  
Indigenous women are enrolled in the 2022 cohort

“With the tools and skills I’ve gained, I’m able to enhance the work that I do at the Nation, which is about creating space for Indigenous people in industry. The Project Management Professional (PMP)® designation is very valuable and not easy to obtain. The knowledge is very applicable across the board in almost any work.

JORDANN HAZELWOOD,  
A MEMBER OF THE TK’EMLÚPS TE SECWÉPEMC BAND IN KAMLOOPS BC, WAS ONE OF 24 STUDENTS IN THE FIRST COHORT

## PROJECT MANAGEMENT CERTIFICATION FOR INDIGENOUS WOMEN

In 2022, we continued to sponsor the online Project Management Extension Certificate program for Indigenous women through Mount Royal University in Calgary, Alberta. The program is exclusively for Indigenous women, which allows for additional support and more open and inclusive dialogue. The participants have access to mentors to support their learning and extend their networking circles.

## HELPING INDIGENOUS YOUTH BUILD CONFIDENCE AND SKILLS

Our partnership with the Outland Youth Employment Program (OYEP) provides opportunities for Indigenous youth (ages 16-19). Participants are fully immersed in a six-week natural resource-based work environment that includes on-the-job safety training, time management, financial literacy, skill-building, remote work experience, and lessons on managing work-life balance. The program enables youth to build confidence, leadership skills, and earn high school credits. Our Employment and Training Team attended the camp to host a Mock Interview Day and helped develop resumes for the youth.

“I have a lot of experience but did not have a project management certification. I’m learning so much in terms of processes, methods and language. Using standard forms and processes to align with others in the project management industry is really beneficial. I’ll be able to use my new knowledge in future projects with First Nations or other organizations and I’ll have the credentials to show that I have higher learning.

TERI CLAYTON,  
FROM MERRITT, BC, ONE OF THE STUDENTS IN THE SECOND COHORT. HER FAMILY ON HER MOTHER’S SIDE IS FROM LYTTON FIRST NATION.

19  
Indigenous youth from 15 BC communities participated in the program in 2022



# RELATIONSHIPS WITH LANDOWNERS

We are committed to building and maintaining positive relationships with landowners based on mutual respect and trust. We have relationships with landowners on approximately 3,130 private land parcels along the existing pipeline route that has been in operation for almost 70 years. We value these continued interactions and know that every day the safe operation of our pipeline is dependent on these relationships. Our key objective is to treat each landowner fairly and equitably.



### OUR TEAM

Our land teams have been working directly with landowners for decades. Our Land and Right-of-Way team is dedicated to the existing pipeline operations and is primarily based in Burnaby, BC and Edmonton, AB. This team provides local knowledge and manages long-lasting relationships with our private and public landowners. To support the Expansion Project, we have a dedicated Project land department—with land representatives and land administrators for each area of the pipeline—in recognition of the importance of timely and effective communications and being responsive to landowners’ concerns related to project construction activities.

### OUR APPROACH

Questions and issues often arise during pipeline construction, so we work together with landowners to find jointly equitable solutions. We also recognize that the duration of this Project has been hard on landowners and has affected some of these relationships. We welcome feedback and encourage landowners to raise any concerns with us through their land agent or Senior Land Representative, via email or phone. Complaints may also be filed through the Canada Energy Regulator. We proactively communicate with all landowners on a regular basis through in-person visits, mailouts, emails, and/or Landowner Update newsletters.

### OUR ACTIVITIES

As a good neighbour, we are doing several things to enhance these relationships.

- **NEW LANDOWNER ENGAGEMENT PROCEDURE** ■ This newly implemented procedure details our processes for how we reach out to new landowners and provide pipeline safety information (including direct contact such as a scheduled face-to-face visit or door knock).
- **TRAINING** ■ We introduced two new training modules related to this procedure: (1) a base module to verify that Trans Mountain Representatives (employees and contractors who conduct New Landowner Engagement Procedure visits) understand their roles and responsibilities in relation to the procedure, and (2) a supplemental module to verify that Trans Mountain Representatives are qualified to provide damage prevention and public awareness education to landowners.
- **MEETINGS WITH LANDOWNERS** ■ We continue to host construction support meetings to capture real-time changes or issues and to continue to manage landowner requests. We also complete post-construction reclamation meetings to review any damages and conclude any commitments we made.
- **CONSULTATION DATA MANAGEMENT SYSTEM** ■ This new software integrates data from various Trans Mountain departments to increase efficiency and improve internal collaboration on landowner-related activities. As part of the implementation, we have started digitizing all operations land records.

### SAFETY IS A SHARED RESPONSIBILITY

Every day we work with landowners and others, to help protect the pipeline and the environment. We do this through a variety of programs.

**PUBLIC AWARENESS PROGRAM** ■ helps maintain the safety of the pipeline and the right-of-way by informing and educating people who live and work in the area. Through our New Landowner Engagement Procedure, we gather current landowner contact information and help new landowners understand what it means to have the pipeline on their property.

**DEPTH OF COVER PROGRAM** ■ ensures sufficient cover over the top of the underground pipe, which is especially important in agricultural areas where tilling is practiced. Each year different sites are assessed and remediated based on exposure and risk.

**VEGETATION MANAGEMENT PROGRAM** ■ ensures clear access and line-of-sight along the right-of-way through the ongoing management of vegetation and weeds.

**DAMAGE PREVENTION PROGRAM** ■ reduces the potential for unsafe digging that may cause pipeline damage. Examples include pipeline markers along the right-of-way and creating awareness about the need to “Click Before You Dig”. We also use surveillance and monitoring (including ground patrols and an aerial patrol program) to assess potentially threatening activities in a 30-metre zone from the centreline of the pipeline.



# RELATIONSHIPS WITH COMMUNITIES

Operating and building pipeline infrastructure affects approximately 55 communities along the route and marine corridor, many of which are in urban areas. To build respectful, transparent, and collaborative interactions, and to develop long-term, effective relationships, we continue to regularly engage with communities in a variety of ways. In 2022, our efforts included more than 600 points of engagement (including, but not limited to, meetings and events organized by Trans Mountain, meetings and events attended by Trans Mountain, notifications issued about projects which may impact community members, and inquiries through our public inquiry line).

## ENGAGING WITH COMMUNITIES

Building on almost 70 years of operations, we meet with our neighbours and those impacted by, and interested in, our business to provide factual and relevant information; and to provide opportunities for those impacted to share their concerns and interests with us. To honour our commitments, we host events, provide newsletters and updates, make safety and public awareness presentations, and participate in community events, regulatory processes, and informal meetings. Community members can expect a timely and accurate response to their interests and concerns, with their concerns considered and addressed to the extent practical and compliant with regulatory conditions and requirements.

As a result of these conversations, we continually improve and optimize our planning and mitigation measures to address concerns about our pipeline operations, emergency response, and safety. We are committed to earning trust and continuing to work with communities to gather feedback and support collaborative efforts to mitigate the impacts of our operations while enhancing safety and protecting the environment.

## COMMUNITY BENEFITS AGREEMENTS

We invest in the communities where we operate to foster economic and social well-being. In recognition of the effects of pipeline construction, we have worked with communities to develop Community Benefits Agreements, which provide a range of benefits to residents. Our aim is to leave positive legacy impacts in surrounding communities. Community Benefits Agreements designate funds for priority projects as unique as the communities themselves, from parks to bike paths and local education initiatives, to drinking water infrastructure. Trans Mountain has 21 agreements with local governments along the pipeline route that provide for more than \$16 million in funds to help with various locally determined projects. As part of Community Benefits Agreements in local communities, in 2022 we supported: the District of Hope, the Pacific Salmon Foundation, the City of Edmonton and Strathcona County, and provided additional funds towards the Ledgeview Clubhouse in the City of Abbotsford. Last year, the total value we contributed as part of our community benefits program was \$1.6 million.

## COMMUNITY INVESTMENT

We build goodwill with and support our local communities through our community investment program, and by supporting local speaking opportunities. Our community investment program focuses on areas that reflect what we value: Education, Community Well-Being, and Environmental Stewardship. Read more on the next page.

25  
Community Awareness  
and Emergency Response  
Sessions were held in 2022

\$1.6 million  
contributed in 2022,  
as part of our community  
benefits program

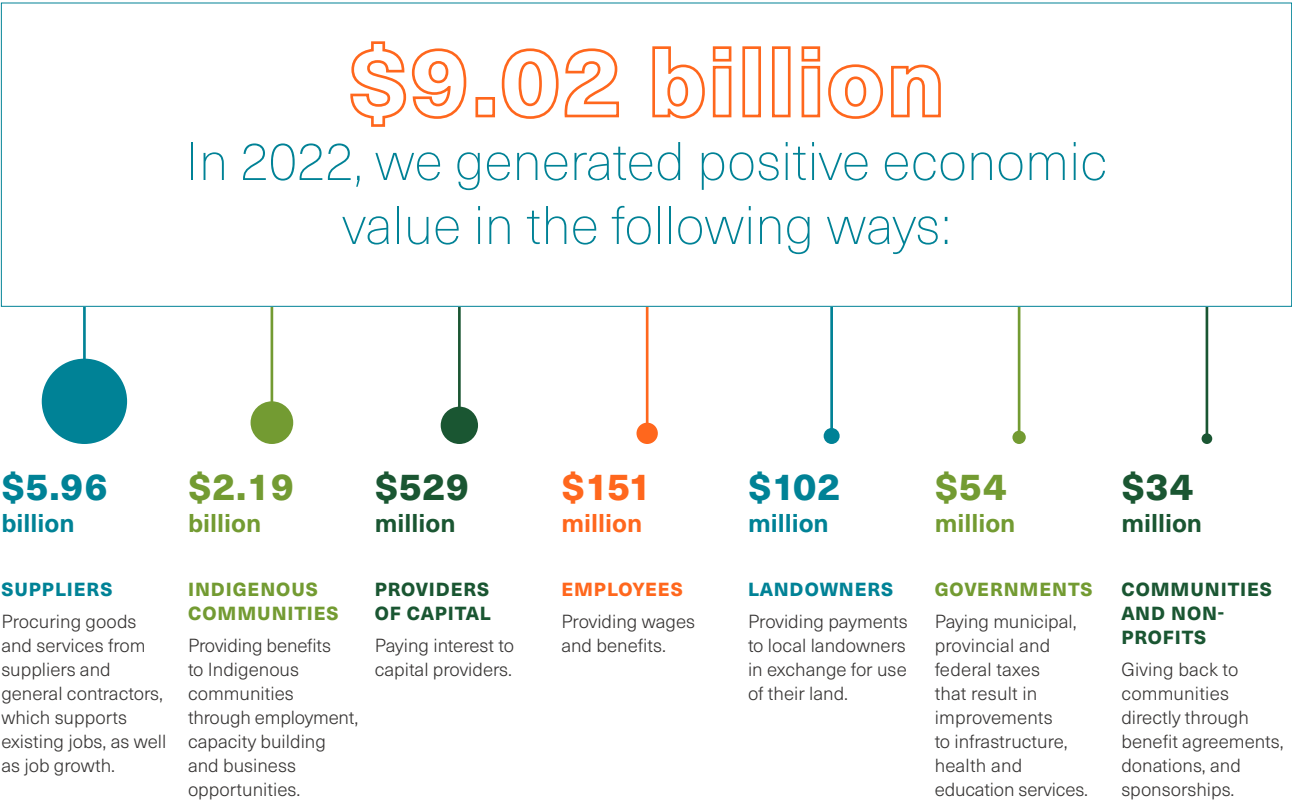
“  
Trans Mountain employees have come into our community and instinctively took on mentoring. The staff take the time to get to know our citizens, they have become involved on our hockey teams, soccer teams, and participate in our recreation programming fitting right in. These employees have really integrated themselves into our community and have worked alongside our people, as key stakeholders and partners.  
”

LESLIE GROULX,  
CAO, DISTRICT OF CLEARWATER



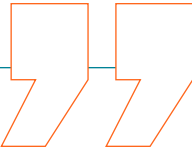
# ECONOMIC CONTRIBUTION TO CANADA

The financial success of our business allows us to contribute to the Canadian economy. Our contributions also help to build resiliency in the Indigenous and local communities along our pipeline route.



This expansion project has supported a multitude of important causes. Everything from food banks to child serving organizations and programs to those who were helping seniors, particularly during the pandemic who were living in isolation, building connectedness within community. Because of this expansion project, there have been hundreds of thousands of dollars invested in our local communities that would not have been here otherwise. It's because of the generosity of the people who have worked on this project that that's possible at all.

KATIE NEUSTATER,  
DIRECTOR OF COMMUNICATIONS,  
UNITED WAY BRITISH COLUMBIA



## COMMUNITY INVESTMENT

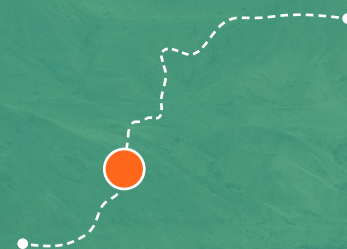
In 2022, Trans Mountain granted \$310,155 in financial and in-kind contributions in 41 communities along the pipeline and marine corridor as part of our community investment program. These contributions were made to support community events and initiatives designed to address the needs of the communities across our areas of focus.

In 2022, we raised more than \$105,000 for the United Way, which included the company's match of employee contributions. Employees participated by making a pledge, purchasing online 50/50 tickets, bidding on items in an online auction, and participating in a pizza fundraiser lunch and a pie throwing event. We also invited impact speakers from the Calgary Immigrant Women's Society and the SHARE Society, who presented on newcomer programs, food insecurity, and the value of United Way's partnership in running various programs and services. Our combined donations to the United Way support their chapters in Alberta and British Columbia to help solve social issues and improve lives in their local communities.



# GOVERNANCE

At Trans Mountain, we believe strong and effective governance is essential for creating a culture of integrity, proactively controlling risks, and achieving strong business performance.



## NEAR KAMLOOPS, BC

A segment of our pipeline borders the grasslands near Kamloops, British Columbia (pictured).





# CORPORATE GOVERNANCE

We see good corporate governance as critical to helping us achieve sustained success and creating lasting benefits for all our stakeholders: our customers, employees, business partners, regulators, and the communities where we live and work.

### CORPORATE STRUCTURE

Trans Mountain Corporation (TMC) was incorporated in 2018 as a federal Crown corporation for the purpose of purchasing and managing assets related to the pipeline and Expansion Project. Our Board of Directors is ultimately accountable to Parliament through Canada Development Investment Corporation (CDEV), a federal parent Crown corporation, and the Minister of Finance. As Crown corporations, TMC and CDEV operate at arm’s-length from the government and have a high degree of responsibility to maintain the public trust and account fully and openly for operations and decisions.

### BOARD FORM AND FUNCTION

Our Board of Directors is appointed by CDEV and in 2022, was composed of 12 members, 9 of whom were considered independent including the Chair. Dawn Farrell was appointed to the position of President and Chief Executive Officer and member of the Board of Directors effective August 15, 2022. The Board is responsible for the stewardship of our company with overall responsibility to oversee and supervise the management, businesses, and activities, while exercising their independent judgment to strengthen management and accountability.

The Board carries out its mandate through four standing committees: the Audit Committee; the Environmental, Health and Safety Committee; the Human Resources, Compensation, Nominating and Governance Committee; and the Expansion Project Oversight Committee.

### BOARD DIVERSITY

We have a Board with qualified, knowledgeable and committed individuals who understand our business and the context in which we operate. At Trans Mountain, we value diverse points of view and believe that diversity of thoughts, experiences and perspectives can lead to better decision making. In our current Board of Directors, we have six women (representing 50 per cent of the Board) and two Indigenous individuals (17 per cent). Indigenous Board members can play a role in ensuring we consider Indigenous perspectives and the Indigenous world view in our strategy and plans.

### BOARD COMPOSITION AND INDEPENDENCE

Size of Board	12
Number of Independent Directors	9
Separate Chair and CEO	Yes
Independent Chair (required)	Yes
Comprehensive Board Assessment Process	Yes
Board Meetings Held in 2022	6
Average Meeting Attendance	100%

### BOARD RENEWAL AND DIVERSITY

Mandatory Retirement Age	No
Average Director Tenure	3 years
Women Board Members	50%

### ETHICS

Code of Conduct for Directors, Officers and Employees	Yes
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All chart information as of December 31, 2022.





# GOVERNANCE FOR ENVIRONMENTAL AND SOCIAL MATTERS

## ROLE OF THE BOARD

The Board oversees the conduct of our business, directs management of the company, and considers all major issues affecting the company, some of which include environmental and social matters. At Trans Mountain, the Board as a whole is responsible for providing oversight over critical environmental and social risks, including climate-related risks (read more on [page 57](#)). Specifically, this includes reviewing our targets and programs, overseeing the management of our ESG opportunities and risks, monitoring our ESG performance and reporting and overseeing the allocation of resources needed to meet environment, health and safety, and other relevant requirements and regulations. The Board receives a quarterly update on corporate risks, which includes environmental and social risks.

## ROLE OF MANAGEMENT

Our executive team reports environmental and safety-related performance and issues quarterly to the Environmental, Health and Safety Committee of the Board. Reporting includes key performance indicators, security updates, marine activity, developing issues in operations, and any environmental or safety incidents or near misses. Our executive team sets our goals and strategy that are executed by our operations and subject matter expert teams.

## ESG TEAMS

We have two teams that maintain accountability for ESG and support the implementation of ESG practices across our company:

**ESG EXECUTIVE STEERING COMMITTEE** ■ This committee includes our Chief People and Technology Officer, Chief Operating Officer, Vice President Finance, Chief Legal Officer and Executive Vice President Indigenous Affairs, and Senior Director Business Development. This committee provides executive leadership on ESG and supports the Board as well as the rest of the executive team in the review and approval of our environmental and social goals to ensure their effective implementation in alignment with our business ambitions.

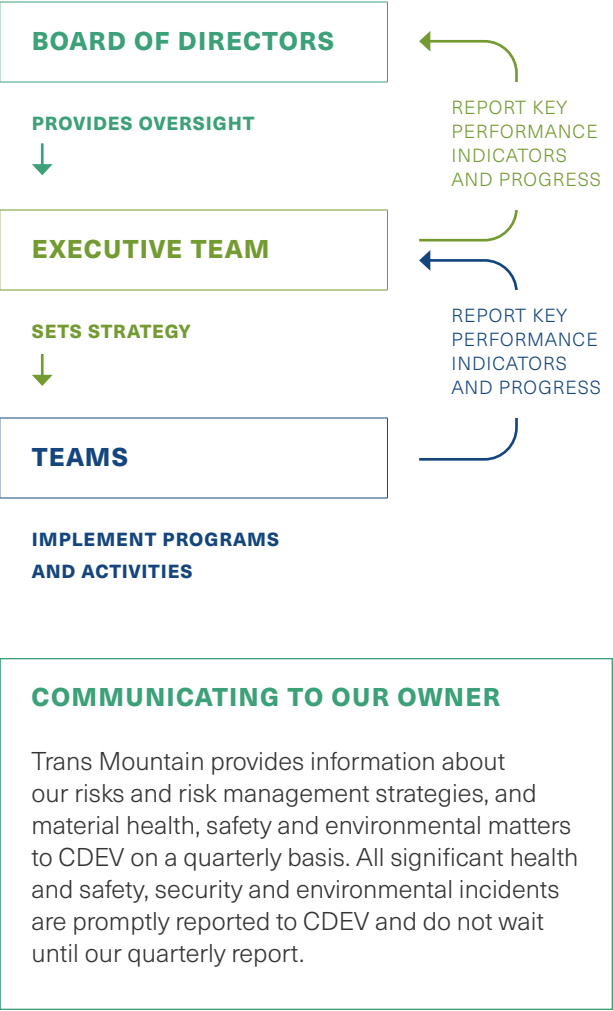
**SUSTAINABILITY WORKING GROUP** ■ This team is composed of subject-matter experts across relevant business and support functions. Through cross-functional collaboration, this team reviews sustainability priorities and supports the implementation of sustainability initiatives. We have assigned each sustainability priority to key owners, who are responsible for mobilizing and empowering our employees to continue to drive our sustainability efforts forward.

## OUR MANAGEMENT SYSTEMS

As required by the Canada Energy Regulator, we have an Integrated Safety and Loss Management System (ISLMS). Our ISLMS helps us support and protect the safety and security of the public, our employees and contractors, the environment and company assets. ISLMS covers the procedures, processes, and guidelines that our employees are required to follow in conducting our operations in a safe, environmentally responsible, and sustainable manner. The system is subject to routine audits to support continuous improvement. Learnings from these audits help drive continuous improvement throughout the pipeline's lifecycle.

We have two teams dedicated to improving our ESG practices and driving our sustainability efforts forward

### GOVERNANCE FOR ENVIRONMENTAL AND SOCIAL MATTERS







# CYBER SECURITY

The growing level of threat to cyber security is a risk affecting organizations of all sizes and in all industries. Resilience to cyber threats is exceptionally important for companies like ours that own and operate critical energy infrastructure. We maintain an advanced cyber security program that protects both our information and digital assets (Information Technology) and our physical assets and systems (Operational Technology).

### INFORMATION TECHNOLOGY

Our cyber security program aligns to the [National Institute of Standards and Technology \(NIST\) Cyber Security Framework](#). We proactively incorporate new threat intelligence sources and complete regular maturity and risk assessments to verify that our cyber security program meets industry standards and best practices. We include cyber security as part of our Enterprise Risk Management approach.

### OPERATIONAL TECHNOLOGY

We place high attention on maintaining the cyber security of our operational technology systems as they directly impact the safe operation of our pipeline system and the delivery of oil and gas to our customers. Our network is divided into multiple risk-based segments to ensure critical systems and assets are incrementally protected from malware and malicious actors. We align with [CSA Z246](#), a standard that applies to all petroleum and natural gas industry systems and focuses on the use of a security management program and risk management to address potential security threats.

### PROMOTING CONTINUED SECURITY AWARENESS

In 2022, we continued our company-wide efforts around cyber security awareness and training through:

**CYBER AWARENESS ROADSHOW** ■ Our cyber security team visited each of our sites in 2022 to improve cyber security awareness both inside and outside of the workplace. The team assessed wireless networks at each site and hosted in-person and virtual training sessions for employees and contractors on topics such as identity theft, password management, social engineering and phishing.

**MANDATORY CYBER SECURITY TRAINING** ■ Each team member is required to take our mandatory training when they join the company and to complete a refresher course annually.

**CYBER SECURITY AWARENESS PROGRAM** ■ Our company-wide program includes monthly awareness bulletins, departmental sessions and cyber security lunch and learn sessions such as safe and unsafe practices with respect to wireless network connectivity, phishing and spear phishing, and personal cyber security beyond the workplace. As new threats or types of attacks emerge, we offer specialized training to educate our people and strengthen our defense, focusing in particular on high-risk roles and business areas.

**CYBER SECURITY AWARENESS MONTH** ■ To observe [Cyber Security Awareness Month](#) each October, we distribute articles, provide a cyber awareness quiz to employees and host lunch and learn sessions. In 2022, we also offered personal cyber health awareness and education sessions which encouraged safe practices at home and work, such as Identifying Social Engineering, Learning Self Defense in a Cyber Security World, and Improving Personal Cyber Security.

**PHISHING TESTING** ■ We conduct regular phishing tests in which team members receive simulated phishing emails from a seemingly trustworthy source. We monitor click rates and the notification/reporting rates.

### ONGOING RISK MANAGEMENT

We regularly perform activities like risk assessments, penetration testing and incident simulations. As cyber incidents increase worldwide, we are continually improving the technology and tools available to our security operations centre, where events are analyzed, correlated and investigated to identify and prevent real security threats.

### PREPARING FOR CYBER EVENTS

In 2022, we completed two interrelated cyber security exercises, in concert with our Emergency Management Team and Crisis Management Team to simulate our preparedness for a cyber event. Regularly conducting these exercises tests our current processes, tools and knowledge for gaps and areas for improvement.

In 2022:

20 cyber awareness sessions offered

1,120 individuals attended cyber awareness sessions

770 hours of cyber awareness training completed



# ETHICS

## POLICIES AND ETHICS HOTLINE

We are dedicated to conducting our business ethically and responsibly, and to upholding our core values of safety, integrity, respect and excellence in all we do. Our Code of Business Conduct and Ethics outlines how our values translate into everyday behaviour, establishes high standards of ethical conduct, and incorporates company policies and the laws and regulations we follow. Our Whistleblower Policy states that there will be no retaliation (discipline, loss of job, or any other type of retaliation) against anyone who, in good faith, reports a compliance or ethics concern. We also maintain an Ethics Hotline through a third-party company, which provides a confidential and anonymous way to report potential unethical behaviour or wrongdoing that is not in compliance with the Code. All reports are dealt with expeditiously, investigated and resolved as appropriate. Ethics matters are presented to the Audit Committee quarterly.

## CODE OF CONDUCT TRAINING

All personnel must complete annual awareness training of the Code. The training module provides an overview of the Code, reviews key areas in plain language, and ends with a knowledge evaluation to ensure accountabilities are understood. 100 per cent of our employees completed ethics training in 2022.





# RESPONSIBLE PROCUREMENT

As an extension of Trans Mountain, it is important that all contracted companies embody our values of safety, integrity, respect, and excellence. We expect all contracted companies to work to the high standards of safety and environmental protection we set for ourselves, and to assist us in fulfilling our commitments to Indigenous communities. We use the following processes and programs to select and manage the service providers that work on our behalf.

**CHOOSING SAFE CONTRACTORS** ■ As part of the evaluation process, each general construction contractor must be registered with ISNetworld, the online contractor and supplier management platform we use for pre-qualifying and monitoring contractors for work. All contracted companies are required to meet our ISNetworld requirements including demonstrating technical capabilities, having adequate safety practices and appropriate insurance in place. We have teams of Trans Mountain safety inspectors that work alongside contractors (read more about contractor safety on [pages 35-36](#)). For individual contractors, we have a Contractor Competency Assurance program that provides additional rigour around training by detailing the competencies each contractor must have to complete a job and identifying the specific training required.

**APPLYING CONTRACTOR PRE-QUALIFICATION FOR HIGH-RISK ACTIVITIES** ■ Trans Mountain has implemented a Contractor Pre-Qualification Process for contractors performing or overseeing higher risk activities. These contractors include mobile equipment operators, inspectors, labourers, and those completing shoring handling and vapour barrier installation activities. The process includes pre-approving contractors at the proposal stage of projects, ensuring documentation and procedures around the training and implementation of these activities meet Trans Mountain's requirements.

Individuals are pre-approved for high-risk activities and tracked in a database that is easily accessible for hiring managers, ensuring only trained personnel are utilized for these activities. This streamlined process reduces the risk of contractors completing activities they are not qualified to do.

**MONITORING ENVIRONMENTAL PRACTICES** ■ All contracted companies are required to meet our environmental commitments, respect heritage resources, and report any environmental incident in the course of the work. To monitor adherence with our policies, we have a team of Trans Mountain employees and environmental inspectors who work alongside each contracted company.

**ENSURING CONTRACTORS HELP US MEET OUR SOCIAL COMMITMENTS** ■ We must rely on our contracted companies to help us meet our commitments to Indigenous communities. For the Project, each contracted company must sign our Owners' Requirements, a special contract which outlines contractor's responsibilities for the hiring of Indigenous people (read more about Indigenous employment on [page 42](#)).



**FOLLOWING OUR CONTRACT CLOSE OUT PROCESS** ■ Closing out contracts is an important part of the supply chain lifecycle. As part of our business readiness activities, our supply chain team is supporting the close out of existing Trans Mountain contracts as they come to an end. We developed a close out process to ensure all requirements are met.

## FOCUS ON INDIVIDUAL CONTRACTORS

In addition to working with large companies who complete construction work for the Expansion Project, Trans Mountain has employed more than 1,700 individual contractors. In 2022, our supply chain team issued an updated questionnaire to verify the internal processes our field contractors use to manage required qualifications and competencies in order to deliver their respective scopes of work. The questionnaire also included components related to environment, health and safety. The purpose of the initiative was to improve consistency in the expectations Trans Mountain has for our field contractors.



# TCFD

Climate change is an important issue requiring global action across countries and industries. We remain committed to working with governments and stakeholders to advance strategies to reduce emissions along the energy value chain now and in the future.



## BRIDAL VEIL FALLS NEAR CHILLIWACK, BC



As our pipeline approaches more urban settings, it traverses Chilliwack, British Columbia (pictured).



# ADVANCING CLIMATE DISCLOSURES

The Task Force on Climate-related Financial Disclosures (TCFD) framework seeks to improve and increase reporting of climate-related financial information. Since climate change presents financial risk to the global economy, capital providers want clear, comprehensive, high-quality information on the impacts of climate change on businesses. This requirement includes the risks and opportunities presented by changes in temperatures, climate-related policy, and emerging technologies. In Canada, the federal government announced that Canadian Crown corporations with assets of \$1 billion or more are required to adopt TCFD recommendations and publish their disclosures in 2023. The following section of the report outlines our responses to the TCFD recommendations.

At Trans Mountain, we are taking a phased approach to identifying and managing climate-related risks. We are focusing on understanding risks and opportunities, developing plans, building internal capacity, and contributing to climate resiliency in communities along our pipeline corridor. The table below illustrates our progress and plans around the four thematic areas contained in the TCFD framework—governance, risk management, strategy, and metrics and targets. In the next few pages, we provide information related to the four recommendations, including scenario analysis.

-  Ongoing activities
-  Activities to be completed 2023+

	PHASE 1 ■ 2020	PHASE 2 ■ 2021	PHASE 3 ■ 2022	GOING FORWARD ■ 2023+
GOVERNANCE	<div>✓</div> Disclose the role of the Board and management in overseeing risks, including climate-related risks	<div>✓</div> Disclose current governance structure for climate-related risks <div>✓</div> Create a sustainability working team and an ESG executive steering team	<div>✓</div> Review our governance structure in 2022 to support improved governance over our most relevant ESG topics at the Board committee level, including climate	<div>↔</div> Board reviews climate-related risks and opportunities
RISK MANAGEMENT	<div>✓</div> Identify and manage risks in alignment with our Enterprise Risk Management (ERM) program	<div>✓</div> Enhance and disclose risk management processes	<div>✓</div> Formally classify climate-related risks and opportunities and enhance our climate-related risk analysis within our ERM program	<div>↔</div> Monitor physical risks and adjust asset integrity program and emergency response plans, if needed
STRATEGY	<div>✓</div> Disclose key physical risks	<div>✓</div> Identify and disclose energy transition-related risks and opportunities <div>✓</div> Evaluate and disclose the qualitative impact of transition-related risks and opportunities, and associated timeframes <div>✓</div> Conduct qualitative scenario analysis using the IEA's Net Zero by 2050 scenario and the Announced Pledges Scenario	<div>✓</div> Conduct physical scenario analysis (RCP 2.6, 4.5 and 8.5) <div>✓</div> Conduct transition scenario analysis (Announced Pledges Scenario)	<div>↔</div> Monitor changes in policy and legal (laws, rules, regulations), market and technology trends related to the energy transition
METRICS AND TARGETS	<div>✓</div> Disclose Scope 1 and Scope 2 emissions	<div>✓</div> Engage third party to conduct pre-assurance of our Scope 1 and Scope 2 GHG emissions	<div>✓</div> Develop and publish a Scope 1 and Scope 2 emissions reduction plan by the end of 2022	<div>↔</div> Work towards our GHG emissions reduction targets <div>□</div> Develop an Expansion Project construction emission offset plan by the end of 2023 <div>□</div> Consider completion of Scope 3 readiness assessment



# I. GOVERNANCE

## BOARD OVERSIGHT OF CLIMATE-RELATED RISKS AND OPPORTUNITIES

The Board acknowledges that climate change and the energy transition are creating risks and opportunities for our business, our shippers (customers) and society as a whole. The Board oversees the conduct of our business, directs the management of the company, and considers all major issues affecting the company, which include environmental and social matters.

At Trans Mountain, the Board as a whole is responsible for providing oversight over critical environmental and social risks, including climate-related risks, as this reflects our company-wide approach to addressing these risks. The Board receives a quarterly update on corporate risks, which includes environmental and social risks, and separately identifies and assesses climate-related risks. In 2022, we refreshed our Board Committee charters to ensure alignment between Board committees on oversight of ESG matters such as reporting, disclosures, internal controls, risks and opportunities.

The Board's responsibilities related to ESG oversight include:

- Receiving reports on enterprise risks, including physical, market, policy, legal and technological risks.
- Considering the results of climate-related scenario analysis for energy transition risks and opportunities that may impact our strategy.
- Reviewing and approving the climate-related disclosures in our ESG report and other ESG plans that are issued publicly.
- Providing oversight and ongoing review of the GHG emissions reduction targets and plans.

## MANAGEMENT'S ROLE IN ASSESSING CLIMATE-RELATED ISSUES

Our executive management team reports environmental and safety-related performance quarterly to the Environment, Health and Safety Committee of the Board. Reporting includes key performance indicators, GHG emissions, management systems, security updates, marine activity, developing issues in operations, and any environmental or safety incidents. Our executive management team sets our goals and strategy that are executed by our teams.

Our executive management team is directly responsible for:

- Directing the development and implementation of ESG programs and activities, including climate-related actions.
- Oversight of progress, performance and reporting on ESG and climate-related matters.
- Leading external engagement and advocacy on climate-related matters.

Our ESG Executive Steering Committee provides executive leadership on ESG and climate-related issues. This committee supports the Board of Directors and coordinates efforts of our Sustainability Working Group which is a cross-company group of leaders with responsibilities to implement ESG objectives. (See our targets and progress in our ESG Scorecard on [page 7](#)).





## II. RISK MANAGEMENT

### RISK IDENTIFICATION

We have a formal Enterprise Risk Management (ERM) program to identify, evaluate, manage, and communicate our risk exposures in a manner consistent with our business objectives and risk tolerance. Our ERM program helps us monitor and evaluate financial, operational, strategic, and compliance risks. Some of these risks are environmental and social in nature. Management critically reviews and updates our risk registry every quarter. Material risks are reported to the Board of Directors quarterly.

### RISK ASSESSMENT AND MANAGEMENT

We use a common risk matrix across the company but evaluate risks to our operations and to the Expansion Project separately. Using the risk matrix, risk owners, management and the risk group determine the consequences and likelihood of the identified risk by examining the effect that the risk may have on our financial position, reputation, environmental impact, and/or the safety and health of employees, contractors, or communities. Once assessed, risks are then prioritized based on their likelihood, anticipated severity, anticipated time horizon, and the impact level on our strategy. Our ERM program helps us identify risks, allocate resources, track progress, monitor trends, and mitigate risks, including ESG and climate-related risks.

### CLIMATE-RELATED RISKS INTEGRATION INTO RISK MANAGEMENT

We provide a quarterly ERM update to our executive management team and Board of Directors with any new observations or issues related to any of our key risk areas and an overall assessment of each of those risks. Some of the areas in which we are incorporating climate-related risks into our business include:

- **RISK ASSESSMENT** ■ Climate-related risks are a component of our ERM program.
- **CAPITAL ALLOCATION** ■ We consider climate-related financial risks and the GHG impact of proposed projects.
- **STRATEGIC PLANNING** ■ We are enhancing our consideration of the impact of climate-related risks and opportunities in our long-term strategy.

In 2022, we enhanced our ERM program to separately identify and assess climate-related risks and to connect the results of our climate-related scenario analysis to our risk management activities.





# III. STRATEGY

## RISKS AND OPPORTUNITIES

The TCFD recommends that organizations examine climate through two lenses: the physical impacts of climate and the implications of the transition to a lower-carbon economy. Both lenses help us identify risks and opportunities for our company and assets.

### CLIMATE-RELATED PHYSICAL RISKS

To conduct a physical risk assessment, we engaged a third-party consultant to examine the physical impacts of climate change along our pipeline system and at our pumping stations, terminals, and Westridge Marine Terminal.

The physical risk assessment evaluated relevant climate-related hazards (see sidebar), that were each categorized as either an *acute* or a *chronic* hazard.

- *Acute hazards* are extreme weather events that unfold over short periods of time (days to weeks), such as tropical cyclones, floods or wildfires.
- *Chronic hazards* are longer-term shifts in climate patterns that take years to decades to manifest as physical hazards, such as sea level rise.

For Trans Mountain, climate-related physical risks would result from the interaction of hazard, exposure and vulnerability (see sidebar).

In the assessment, each facility location and pipeline segment received a risk "score" for each of the climate-related hazards on a 0 to 10 risk scale, with lower scores indicating greater exposure to the risk. Indices such as these encapsulate complex concepts in a simple score that allow us to compare risks across locations and time.

Figure 1 illustrates the average risk scores for various pipeline segments for three key climate-related hazards. This is a sample of the full assessment. The full set of risk scores can help inform decision-making and appropriate resource allocation for pipeline integrity activities and/or improvements.

### CLIMATE-RELATED HAZARDS EVALUATED

#### Acute

- Coastal Flood
- Drought
- Extra Tropical Cyclone
- Flood
- Severe Storm
- Tropical Storm and Cyclone
- Wildfire

#### Chronic

- Cooling Degree Days
- Heating Degree Days
- Heat Stress
- Sea Level Rise
- Water Stress

**FIGURE 1**  
Average risk scores for various pipeline segments for floods, wildfires and heat stress.



### CLIMATE HAZARDS VS. CLIMATE RISKS

According to the Intergovernmental Panel on Climate Change (IPCC):









- **“Hazard”** refers to the potential occurrence of climate-related physical events or trends that may cause damage and loss.
- **“Climate risk”** results from the interaction of hazard, exposure and vulnerability. Exposure indicates the presence of assets, services, resources and infrastructure that could be adversely affected.
- **“Vulnerability”** is the propensity or predisposition to be adversely affected. [Source](#)





CORPORATE PHYSICAL RISKS

Although our physical risk scores vary at different points along the pipeline, our overall risk profile for the pipeline system is low. The most pronounced acute risks are storms, flooding, and drought; and the key chronic risks are heat stress and water stress, which are heavily influenced by heating degree days (read more below). Although sea level rise has a very low risk score, it is relevant for areas near the Fraser River and at the Westridge Marine Terminal and is therefore described below. Unmitigated impacts from any of these risks could cause direct damage to the pipeline, temporary pipeline shutdowns, negative impacts on workers, and/or indirect business interruptions (e.g., impacts on critical infrastructure, such as power and communications, in the surrounding area).

	 SEVERE STORMS	 LAND FLOODING	 DROUGHT	 WILDFIRE	 SEA LEVEL RISE	 HEATING DEGREE DAYS	 HEAT STRESS	 WATER STRESS
POTENTIAL IMPLICATIONS	Extreme storms may cause localized impacts including power outages, large hail (causing damage to assets), localized flooding, increased risk of vehicle accidents, heavy snowfalls and increased avalanche risk.	As weather patterns change, flooding events may increase in frequency or severity. Heavier rainfall will elevate flood risk. Flooding can damage pipelines and associated infrastructure and potentially cause loss of product.	A prolonged drought event may limit access to water for construction or operations activities and may increase the related risk of wildfire.	Our pipeline is buried, therefore the potential impact to our assets from wildfires or forest fires is relatively low across the full route.	Sea level rise is only relevant at the Westridge Marine Terminal.	Longer heatwaves (albeit from a low number of days) may make outdoor work more difficult and may impact worker health and safety.	Rising heat and humidity can cause fatigue and heat exhaustion for those working in outdoor environments, while also impacting infrastructure.	Extreme pressure on water supplies can impact employees or potentially create challenges in relations with adjacent communities.
RISK LEVEL*	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>	<div><div></div><div></div><div></div></div> <div>LOWMEDHIGH</div>
RISK MITIGATION	We design and maintain our pipeline system to be resilient. Our Geohazard Monitoring program helps us monitor for ground movement or water-related hazards. We design our system to be able to withstand a 1 in 200-year flood. We maintain our pipeline through a regular inspection and maintenance program (read about our asset integrity program on <a href="#">page 14</a> ). To prepare and respond quickly in case of a flood event, we continually monitor the weather and the flow rates in the watercourses crossed by our pipeline and conduct additional aerial and ground inspections of the right-of-way when flow rates reach a certain level. These additional inspections verify that the integrity of the pipeline is not compromised in a flood event, and that any pooled water on the right-of-way does not threaten the continued safe operation of the pipeline system. Some flood events may result in a temporary pipeline shutdown which can be completed remotely for all segments.		Our ongoing operations do not require water and therefore the estimated long-term impact is low. The actions listed for wildfire (item below) cover any extreme impacts resulting from drought.	We protect our above-ground assets (storage terminals and pump stations) through procedures, training, detailed wildfire response planning, and by maintaining an inventory of response equipment. Our pump stations are within gravelled, fenced-in industrial sites, with no equipment against the fence line. As well, we have the ability to remotely turn off pump stations along the line, if required, due to an approaching fire. Read about our enhancements to improve water access on the <a href="#">next page</a> .	We have prepared for possible long-term impacts by accounting for the potential sea level rise in the detailed design of the terminal. In particular, the design is intended to ensure that the deck elevation of the structures is set high enough to avoid flooding or wave damage should the sea level rise occur. The planned elevation is higher than the rise levels projected for 2070 in the IPCC's rising emissions scenario (RCP8.5).	Because heating degree days and heat stress are interrelated, our actions are designed to address both.  To protect equipment and materials, we: <ul style="list-style-type: none"><li>– Consider maximum design temperatures expected for the life of the Expansion Project.</li><li>– Have adequate cooling systems for facilities to protect equipment.</li></ul> For the safety and well-being of our workers, we: <ul style="list-style-type: none"><li>– Have a standard to mitigate the potential impacts of heat stress on workers.</li><li>– Provide access to climate-controlled environments (permanent facilities or temporary facilities such as jobsite trailers) for project work and/or vehicles for workers to mitigate heat stress.</li><li>– Monitor wildfire hazard conditions and plan/execute work accordingly.</li></ul>	Our ongoing operations do not require water and therefore the estimated long-term impacts from water stress are low.	
	ACUTE				CHRONIC			





## IMPROVING OUR RESILIENCE TO CLIMATE CHANGE

At Trans Mountain, we want to increase our ability to anticipate, prepare for, and respond to climate-related events. In 2022, some of the ways we enhanced our climate resilience included:



### MONITORING AIR FOR PREPAREDNESS AND HUMAN HEALTH

We purchased five portable air monitors in 2022. The monitors detect oxygen, hydrogen sulfide (H<sub>2</sub>S), CO<sub>2</sub>, explosive gases, and sulfur dioxide (SO<sub>2</sub>). Sulfur dioxide levels rise in the air particulate during burning.

We can use these monitors:

- To protect the health and safety of our workers during wildfire season (we can monitor particulates in the air at any given site).
- For public protection during an accidental fire at one of our facilities.
- To closely monitor gases that might result in odour complaints.



### ENHANCING OUR SITUATIONAL AWARENESS

In 2022, our teams developed an online mapping portal. The portal is a digital map that draws data from many different Trans Mountain business areas and external organizations and overlays the data points with the pipeline route to provide clear situational awareness.

For example, during the 2021 floods we populated it with drone images of the flooding and high streamflow advisories; during wildfire season and spring flooding season it includes information on Environment Canada warnings, highway issues, evacuation orders, the locations of wildfire and their danger class ratings. All employees at Trans Mountain have access to this portal.



### IMPROVING WILDFIRE PROTECTION FOR REMOTE SITES

Some of our remote pump stations do not have easy access to water which can delay our ability to respond in case of wildfire. In 2022, Trans Mountain made capital investments and will be installing water storage tanks at some of these sites. If the fire risk increases at any given time, we can fill up the tanks and have onsite accessibility of water to protect the sites.

### “HARDENING” OUR INFRASTRUCTURE

In 2022, we completed work at 14 sites to make our infrastructure more resilient to future extreme weather events, with a total investment of \$48 million. Following the November 2021 floods in the Coldwater and Coquihalla River Valleys, we identified sites that required repair prior to the highwaters expected during the 2022 spring melt. An engineered design was developed for each site and large diameter angular boulders, called rip-rap, were placed to provide a hardened barrier between the flowing river water and the fill supporting the pipeline and access roads. The designs and repairs are considered permanent solutions and are sized to withstand a one in 200-year flood event.







TRANSITION-RELATED RISKS AND OPPORTUNITIES

Transition-related risks are regulatory, market, technological, and reputational risks arising from the energy transition. The table to the right outlines our current understanding of the most important transition-related risks that can impact Trans Mountain. Each year we will revisit this list and re-evaluate our risk assessment based on our evolving understanding of the energy transition, policy changes, and market dynamics.

The words “Low”, “Medium”, and “High” in the Estimated Impact column indicate *relative* impact, for example “Low” means lower relative to other risks.

TRANSITION-RELATED RISKS	ESTIMATED IMPACT	TIMEFRAME (YEARS)	RISK MITIGATION
<b>SUSTAINED LOWER OIL PRICES</b> The energy transition is anticipated to have an impact on oil prices. If lower prices materialize and remain low for an extended period of time, shippers may default on their contracts.	HIGH	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– Maintain cost advantage compared to other modes of transport.</li><li>– In the future, enhance access to world markets and potentially leverage commercial tools to deal with a price environment that challenges customers (shippers).</li></ul>
<b>CARBON COMPETITIVENESS OF CANADIAN OIL</b> The cost to further reduce the carbon intensity of Canadian oil to competitive levels might not be economic during low oil price periods.	HIGH	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– Analyze and communicate the relatively low Scope 1 and Scope 2 emissions of our pipeline transportation service in the Canadian oil supply chain.</li><li>– In the future, further decarbonize our operations and increase flexibility. Read more on <a href="#">page 63</a>.</li></ul>
<b>REDUCED DEMAND FOR OIL</b> Accelerated adoption of electric vehicles in advanced economies and increased use of biofuels may lead to faster declines in oil demand.	MEDIUM	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– Operational integrity and safety preserve access to Asia Pacific (and other) markets where market fundamentals support crude oil demand longer term.</li><li>– In the future, leverage commercial tools to compete in an environment with excess takeaway capacity.</li></ul>
<b>GHG REGULATION – LARGE EMITTERS</b> Regulations for large emitters might become more stringent to align with Canada’s commitment to net zero by 2050 and potentially include a cap on emissions from oil and gas production. This does not affect Trans Mountain but it does affect our customers.	MEDIUM	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– In the near-term, stay informed about GHG reduction efforts from our customers and industry.</li><li>– In the future, remain focused on the needs of shippers. We believe that access to world markets and prices can help maintain production in a potentially higher-cost environment.</li></ul>
<b>INCREASED DEMAND FOR ALTERNATIVE FUELS</b> The IEA expects demand for biofuels (ethanol, renewable diesel, green methanol, and others) to grow over the next few years. This demand might be further supported by the Clean Fuel Standard that came into effect in December 2022.	MEDIUM	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– In the near term, work with shippers to facilitate shipment of products that are aligned with demand.</li><li>– In the future, consider optimizing our operations and investing, where necessary, to increase flexibility to ship increased volumes of lower-carbon intensity fuels.</li></ul>
<b>REPUTATION AND PERCEPTIONS AROUND PIPELINES</b> Negative perceptions around pipelines, direct (environmental impacts of pipeline operations) or indirect (as enablers of fossil fuels) can impact our ability to complete the Expansion Project or continue to operate.	LOW	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– In the near term, continue current environmental and social performance.</li><li>– In the future, continue to engage with Indigenous and local communities regarding opportunities that align with our environmental and social priorities.</li></ul>
TRANSITION-RELATED OPPORTUNITIES	ESTIMATED IMPACT	TIMEFRAME (YEARS)	HOW CAN WE TAKE ADVANTAGE OF THIS OPPORTUNITY?
<b>STRATEGIC SUPPLY (NORTH AMERICA/GLOBAL)</b> Increased awareness and importance of energy security drives changes in global oil markets.	HIGH	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– In the near term, there are constraints in the ability of the Canadian energy sector to respond to geopolitical-driven changes in supply and demand.</li><li>– In the future, we can support and pursue changes to regulatory and economic drivers that enhance the ability of Canadian producers to respond to global events.</li></ul>
<b>VOLATILITY IN OIL MARKETS</b> Canadian oil production, especially oil sands, are more resilient to volatile prices, since less capital is required to maintain production levels.	MEDIUM	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– In the mid-term, support Canadian oil by enhancing access to world markets.</li><li>– In the future, maximize throughput, especially where Canadian oil can provide stability in periods of volatility and global supply disruptions.</li></ul>
<b>ADVANCEMENT IN CARBON-RELATED TECHNOLOGIES</b> Advancements in technology present great opportunities for us to further reduce the GHG emissions intensity of our operations.	MEDIUM	<div><div></div><div></div><div></div></div> <div>1-33-1010-30</div>	<ul style="list-style-type: none"><li>– In the near term, continue monitoring developments in technology.</li><li>– In the future, invest in technologies that help us meet our environmental and business goals.</li></ul>



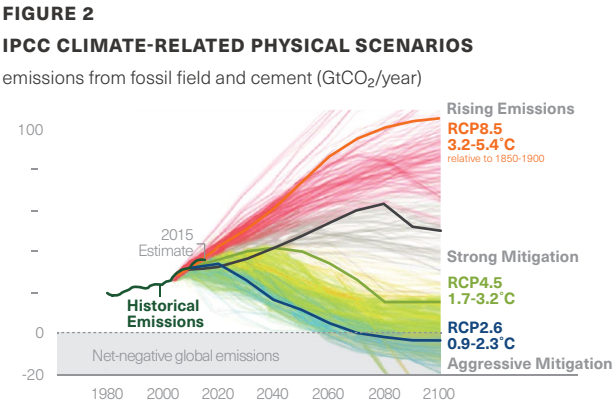
## SCENARIO ANALYSIS

We believe scenario analysis is a valuable tool to challenge our assumptions about the future, spark meaningful conversations about our long-term strategy and enable more informed decision-making. However, it is important to note that scenarios are hypothetical constructs that use assumptions and estimates to highlight key features of a possible future and are not a forecast or prediction.

In late 2022, we completed a quantitative climate scenario analysis in alignment with the TCFD recommendations. Climate scenarios refer to both climate-related physical scenarios (i.e., models of emissions concentrations that result in different chronic and acute changes to the climate) and climate-related transition scenarios (i.e., policy, market and macroeconomic conditions associated with different energy transition rates of progression).

### CLIMATE-RELATED PHYSICAL SCENARIOS

In addition to the physical risk profile (described on pages 57-58), we assessed projected changes in specific climate variables across our pipeline system for three different emissions scenarios for 2045 and 2070. Climate variables are the factors that exacerbate each of the climate hazards e.g., extreme rainfall increases flood hazard, heatwave duration increases heat stress. The three emissions scenarios we used were developed by the Intergovernmental Panel on Climate Change (IPCC) and cover a range of climate outcomes (Figure 2).



We analyzed three scenarios from the Intergovernmental Panel on Climate Change (IPCC) covering a range of outcomes.

Scenario analysis helps us understand how climate impacts already assessed may vary by severity and timing under different emissions scenarios. The findings indicate that:

- The vast majority of our pipeline assets are underground and, as a result, the overall exposure to physical climate-related risks is low.
- The climate-related risks vary across the length of the pipeline system and with this understanding we can target mitigation activities to where they will have the greatest impact.
- An area of focus for mitigation activities across our system over the long term should be key chronic risks that are influenced by changes in heating degree days typical of the Canadian climate.
- Even in the rising emissions scenario in which annual emissions double current levels by 2100 (RCP8.5, Figure 2), the elevation of the Westridge Marine Terminal is designed to protect our assets from the projected sea level rise.

	AGGRESSIVE MITIGATION	STRONG MITIGATION	RIISING EMISSIONS
IPCC SCENARIO	IPCC RCP2.6	IPCC RCP4.5	IPCC RCP8.5
PREMISE	Global annual GHG emissions peak between 2010-2020, with emissions declining substantially thereafter	Emissions peak around 2040, then decline	Emissions continue to rise throughout the 21st century and annual emissions double current levels by 2100
TEMPERATURE RISE BY 2100 <a href="#">Source</a>	1.8 degrees	2.7 degrees	4.4 degrees
GLOBAL MEAN SEA LEVEL RISE BY 2100 <a href="#">Source</a>	0.28-0.55 m	0.44-0.76 m	0.63-1.01 m





CLIMATE-RELATED TRANSITION SCENARIOS

With the support of a third-party consultant, we conducted a transition scenario modelling exercise using data from the International Energy Agency’s (IEA) Announced Pledges Scenario and the Canada Energy Regulator’s Canada’s Energy Futures 2021 report. The Announced Pledges Scenario was selected for analysis because it:

- Reflects current commitments by governments across the globe, including Canada.
- Is the most stringent transition scenario that contains the level of data granularity required to conduct an effective analysis. At present, the IEA’s Net Zero Emissions (“NZE”) by 2050 scenario does not include sufficient regional data to effectively conduct this type of analysis.
- Has been revised<sup>8</sup> to include new pledges that result in a warming of approximately 1.8°C in 2100 (making it one potential “2°C or lower” scenario).

The Announced Pledges Scenario is premised on full, on-time implementation of all country commitments and some of its key assumptions include:

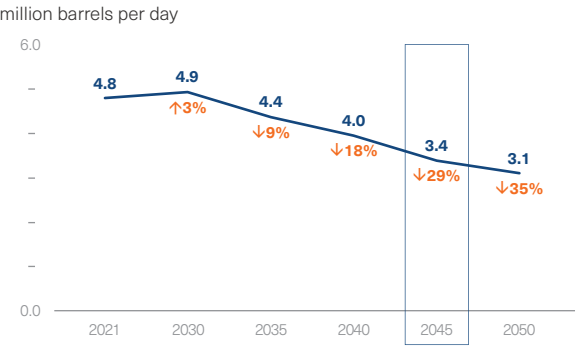
- Global oil production of 90.7 million barrels per day (mbd) in 2030 and 62.2 mbd in 2045.
- Oil demand in North America declines from 21.4 mbd in 2020 to 18.2 mbd in 2030 and 8.4 mbd by 2045.
- Oil demand in the Asia Pacific region grows from 31 mbd in 2020 to 35 mbd in 2030, before declining to 24 mbd by 2045.

The Expansion Project has 15- to 20-year contract commitments (take-or-pay contracts) with our shippers that cover 80 per cent of the planned capacity for the expanded system. While these contracts provide robust revenue support in the short- to medium-term, we modelled impacts to 2045 to explore the potential impacts in years beyond the term of the expansion contracts.

By 2045, the Announced Pledges Scenario describes circumstances in which Western Canadian supply is 29 per cent lower than 2021 levels and refinery demand in North America is 45 per cent lower than 2021 levels. While the Announced Pledges Scenario also provides data on oil and carbon prices<sup>9,10</sup>, we focused on modelling supply and demand because they are more directly linked to demand for pipeline transportation. In 2045, we anticipate we would leverage commercial tools to compete on price in an environment with excess takeaway capacity.

More specifically, we were able to consider potential impacts on pipeline throughput in 2045 by modelling constraints in supply from the Western Canadian Sedimentary Basin (Figure 3) and reductions in demand from North American refineries (Figure 5).

FIGURE 3  
WESTERN CANADIAN SEDIMENTARY BASIN SUPPLY  
WITH PROPORTIONAL DECLINES AS OBSERVED  
IN THE ANNOUNCED PLEDGES SCENARIO



Supply from the oil sands is expected to decline by 29 per cent by 2045, compared to 2021 levels.



<sup>8</sup> <https://iea.blob.core.windows.net/assets/aa17bd09-2ad0-4d0a-b5aa-ee418900c4af/Theimpactsnewemissionspledgesonlongtermtemperatures.pdf>

<sup>9</sup> The scenario uses an oil price of US\$64-\$67 per barrel, and US\$135 per tonne of CO<sub>2</sub>e by 2030.

<sup>10</sup> The IEA crude oil price is a weighted average import price among IEA member countries.



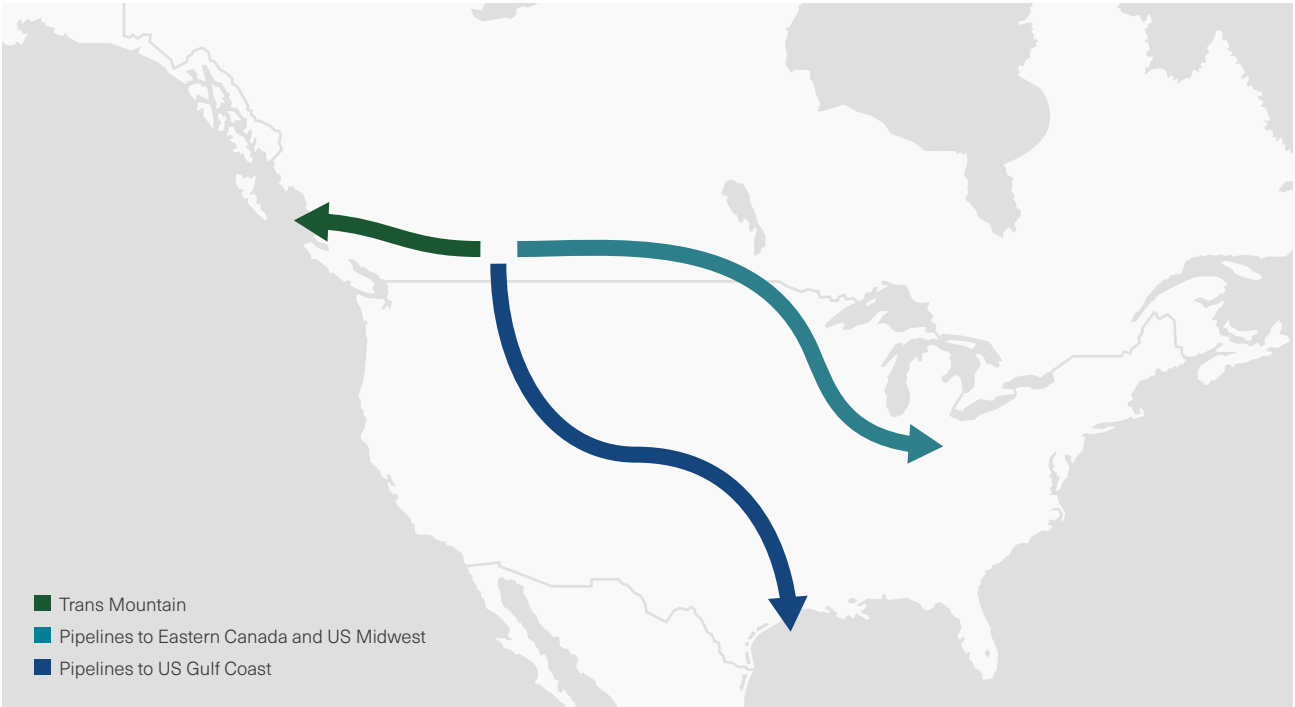
SOURCES OF RESILIENCE TO 2045

In the Announced Pledges Scenario, Trans Mountain remains resilient until 2045. In other words, the pipeline is expected to operate at or very near full capacity until the year 2045 under the specific modelled conditions. The following five characteristics contribute to the resiliency of our business:

**1. ACCESS TO WORLD MARKETS** ■ We operate Canada's only pipeline system transporting oil products to the West Coast with access to tidewater (Figure 4). The Expansion Project also includes a significant increase in the capacity of the Westridge Marine Terminal, which will allow Canadian energy to reach world markets, particularly the Asia Pacific. In the Announced Pledges Scenario, the Asia Pacific region remains a robust and growing source of oil demand through 2030, declining slowly thereafter and at a much slower pace than North America (Figure 5).

**2. OUR CARBON COMPETITIVENESS** ■ We already have relatively low Scope 1 and Scope 2 emissions due to the fact that we use electrically driven pumps to move products through the pipeline and a significant portion of our electricity load is generated in British Columbia with an extremely low-carbon electricity grid. To enhance our carbon competitiveness and help our customers compete in markets that are increasingly focused on carbon, we have developed a [2022 Emissions Reduction Plan](#) that outlines our approach and sets milestones for reaching net-zero (Scope 1 and Scope 2) emissions by 2050.

FIGURE 4  
NORTH AMERICA SIMPLIFIED PIPELINE SYSTEM

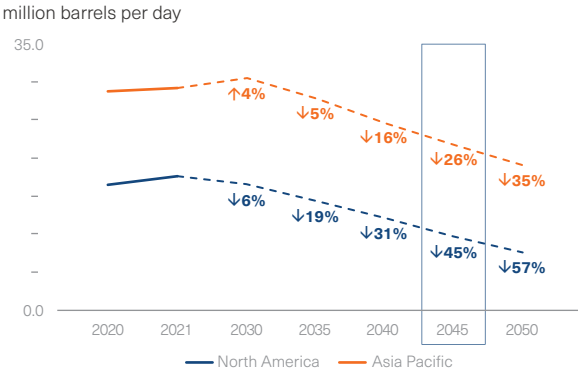


Trans Mountain operates Canada's only pipeline system transporting oil products to the West Coast with access to tidewater.

By 2030, we plan to reduce our emissions by 100,000 tonnes of CO<sub>2</sub> from the first full year of operations of the expanded system through the implementation of system efficiencies and innovations, decarbonization of our energy consumption, selective investments in the lower-carbon economy and by leveraging market-based carbon products. Canada's commitment to a net-zero grid by 2035 will further support our road to net-zero emissions.

**3. SYSTEM FLEXIBILITY** ■ At Trans Mountain, we have extensive experience transporting a broad range of products, from diluted heavy oil to synthetic, light, and refined products. As the world energy mix evolves, this expertise can be applied to other products such as liquid biofuels and other lower-carbon hydrocarbons. After contracts expire, we can optimize our operations to address changes in the type and/or proportion of commodities transported to meet shippers' needs and global demand without requiring significant changes to existing infrastructure.

FIGURE 5  
REFINERY DEMAND BY REGION



Refinery demand in Asia Pacific remains higher and declines at a slower pace than in North America.

Source: WEO 2022

2045  
The pipeline is expected to operate at or very near full capacity until the year 2045





**4. OUR ENVIRONMENTAL AND SOCIAL PERFORMANCE** ■

Canada has stringent regulatory requirements, a high degree of regulatory oversight and strong climate change policies. Companies involved in Canada’s energy system, like Trans Mountain, must have robust environmental, social and governance practices to continue operating in Canada. Additionally:

- Trans Mountain has made significant investments in environmental protection systems, asset integrity, leak monitoring, spill response, and biodiversity protection on land and water. Read more on [pages 14, 17 and 18](#). We have an impressive track record and have loaded petroleum on marine vessels in BC with no spill incidents from tankers in almost 70 years of operation.

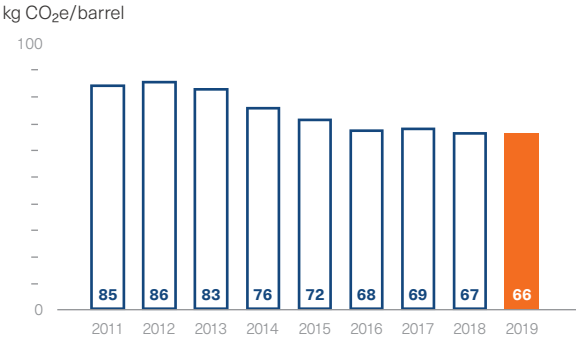
- Trans Mountain makes concerted efforts to build strong relationships with Indigenous communities along the pipeline corridor ([page 40](#)). We continue to strengthen those relationships and contribute to the prosperity of communities as the Expansion Project advances.

All these practices contribute to safe and reliable operations, and are critical to our resiliency to societal, political, and regulatory changes.

**5. INCREASINGLY LOWER INTENSITY OF CANADIAN OIL** ■

As the world transitions to different types of energy, national policies will increasingly give preference to responsibly sourced and lower-emissions oil. Canadian oil sands companies have decreased their carbon intensity by 22 per cent from 2011 to 2019 (Figure 6), with the potential for further reductions as new technologies emerge. Additionally, Canada’s six largest oil sands companies are part of the [Oil Sands Pathways to Net Zero](#) committing to achieve net-zero GHG emissions by 2050, in line with Canada’s climate change goals. Our Expansion Project will provide increased capacity that can support responsible Canadian oil production and bring oil to the markets where it is needed.

**FIGURE 6**  
**EMISSIONS INTENSITY FROM ALBERTA OIL SANDS**



Canadian oil sands companies have decreased their carbon intensity by 22 per cent from 2011 to 2019.

Source: Alberta Government





## NOTES ON A NET-ZERO EMISSIONS BY 2050 SCENARIO

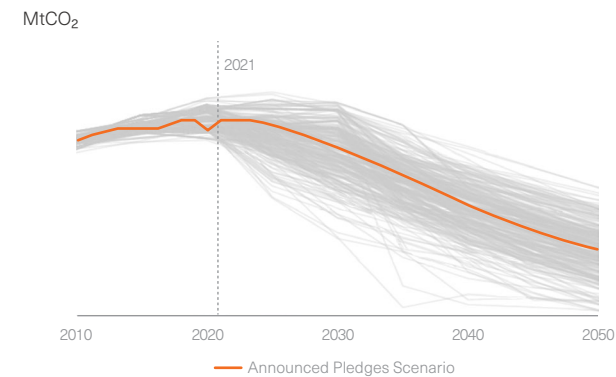
Climate change is an important issue requiring global action across countries and industries. We remain committed to working with governments and stakeholders to advance strategies that will reduce emissions along the energy value chain now and in the future. In the next few decades, society must find ways to meet the world's energy demand while striving to meet its decarbonization goals. We believe that Canada, with its third largest proven oil reserves in the world<sup>11</sup>, will continue to play a leading role in the global energy landscape.

The Announced Pledges Scenario contains the following important considerations as it relates to testing our business resilience in a potential net zero pathway:

- While the Announced Pledges Scenario is not a global net-zero scenario, it includes all recent major national announcements as of September 2022 and reflects a net zero by 2050 Canadian economy. The *Canadian Net-Zero Emissions Accountability Act* became law on June 29, 2021 and is therefore included.
- The Announced Pledges Scenario is within the range of outcomes that provide a 50 per cent chance of limiting the temperature rise to 2 °C in 2100. The IPCC Sixth Assessment Report on Mitigation of Climate Change, released in April 2022, assessed a large number of scenarios that led to at least a 50 per cent chance of limiting the temperature rise to 2 °C in 2100. As noted on Figure 7, the Announced Pledges Scenario trajectory<sup>12</sup> is within the envelope of these scenarios.

- In both the Announced Pledges Scenario and the NZE scenario, Asia Pacific demand shrinks at a slower pace than North America (38 per cent reduction from 2021 to 2050 in Asia Pacific while North America demand declines by 68 per cent). This difference in the pace of the transition supports Trans Mountains' resilience.

**FIGURE 7**  
**IEA SCENARIOS COMPARED TO IPCC SCENARIOS**  
**WITH A TEMPERATURE RISE OF 2.0°C IN 2100**



The Announced Pledges Scenario is within the range of outcomes that provide a 50 per cent chance of limiting the temperature rise to 2°C in 2100.

Source: IEA.

One element that received the most public attention after the publication of the NZE scenario was the idea that no further investment in oil gas development would be needed. It is important to note that the IEA stated "Beyond projects already committed as of 2021, there are no new oil and gas fields approved for development in our pathway, and no new coal mines or mine extensions are required." Projects committed in 2021, like the Expansion Project, are assumed to be completed.

In the NZE scenario, oil demand decreases to 24 mbd in 2050 and West Texas Intermediate oil prices falls to around \$25 per barrel in 2050. Although this scenario is not a forecast, we believe that in order to compete in a world experiencing this low oil price environment and severe oil demand contraction, we would need to make substantial changes to how we operate our business. Some of the factors we could leverage in a NZE scenario are:

- LEVERAGE COMMERCIAL TOOLS** ■ Although we rely on long-term contracts with our shippers, we can use a variety of commercial tools to align our offering with evolving upstream and downstream drivers. We would need to use these tools in a way that is commensurate with the regulatory and market changes we were observing and which may include changes to tolls, risk allocation, return expectations, incentives and other mechanisms related to carbon.

- INVEST IN INCREASED FLEXIBILITY** ■ In a NZE scenario, demand for liquid fuels for transportation would be severely contracted and the remaining demand would be driven by non-combusted uses. We would evaluate taking a portion of the pipeline out of service or repurposing a portion of the line to transport alternatives such as ammonia, natural gas liquids, or others. To increase our resiliency, we would need to invest in technology to further increase the flexibility of our pipeline system and enable the continued transportation of new or different products. If we see signposts of a NZE scenario, we would start by implementing technical and administrative changes to facilitate shipment of other products.
- FURTHER DECARBONIZE OUR OPERATIONS** ■ We already have a low GHG intensity but in a NZE scenario we would need to maintain our leadership and outcompete our peers on the basis of carbon. We plan to continue to make investments to further decarbonize our operations. This would help differentiate our offering in a world increasingly focused on carbon and contribute overall to the reduced lifecycle carbon intensity of Canadian crude oil.

<sup>11</sup> [https://www.canadianenergycentre.ca/worldwide-oil-reserves-and-investments-key-facts/#:~:text=Canada%20has%20the%20world's%20third,Venezuela%20\(304%20billion%20barrels\).](https://www.canadianenergycentre.ca/worldwide-oil-reserves-and-investments-key-facts/#:~:text=Canada%20has%20the%20world's%20third,Venezuela%20(304%20billion%20barrels).)

<sup>12</sup> IEA. 2022. <https://www.iea.org/reports/global-energy-and-climate-model/understanding-gec-model-scenarios>



# IV. METRICS AND TARGETS

We track the greenhouse gas (GHG) emissions generated by our daily operations. Most of our emissions are Scope 2 since we use electrically driven pumps to move products through the pipeline (see [page 24](#)).

GHG EMISSIONS (TONNES CO <sub>2</sub> E)				
	2019	2020	2021	2022
Scope 1 GHG emissions	4,552	5,567	5,685	5,471
Scope 2 GHG emissions	121,197	106,234	99,360	103,556
TOTAL GHG EMISSIONS	125,749	111,801	105,045	109,027

Numbers have been restated since the publication of our 2021 report.

## SCOPE 3 EMISSIONS

Scope 3 GHG emissions are those generated upstream (including when the oil we transport is extracted) and downstream (including when the oil is used) of our business. In the next few years, we plan to conduct a readiness assessment of our Scope 3 emissions to begin understanding which categories of the GHG Protocol's 15 categories of Scope 3 emissions are the most material to our business. Building the Expansion Project also generates GHG emissions. As part of our regulatory approvals, we have committed to offsetting the two main contributors to construction-related emissions: fuel consumed by light and medium trucks as well as heavy machinery during construction, and land clearing activities (specifically, areas permanently cleared along the pipeline easement).

## TARGETS

Trans Mountain's climate-related targets include:

- Developing Expansion Project construction emission offset plan by the end of 2023.
- Reducing absolute GHG emissions by 100,000 tonnes of CO<sub>2</sub>e by 2030 (from the first full year of operations of the expanded system), as an interim milestone target.
- Reaching net zero (Scope 1 and Scope 2) emissions by 2050.

Our 2022 Emissions Reduction Plan outlines our targets, our approach and the key strategies we will take to be net zero by 2050. Our approach to setting targets strongly reflects our values and is guided by the following principles:

- Our targets will result in material, absolute and sustained reduction of our emissions.
- Our targets must consider the commercial and economic implications and be aligned with our customers.
- Our targets should be sufficiently flexible such that we may implement a variety of solutions to achieve our targets.
- Pursuit of our targets should prioritize actions that support Indigenous communities and advance Indigenous reconciliation.
- Achieving our targets will help Canadian energy compete in a global market where energy security and lower emissions are both important.

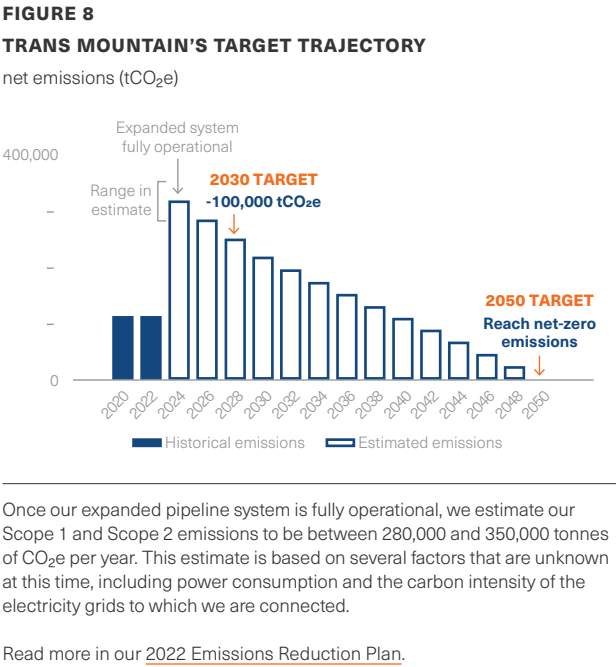
In order to meet our targets, we plan to:

- 1. IMPLEMENT EXISTING SYSTEM EFFICIENCIES AND INNOVATIONS** ■ We will conduct a detailed review and analysis of our Scope 1 emissions, which will help us to better understand the cost and magnitude of different emissions reduction options, including process efficiencies and alternative fuel sources.
- 2. DECARBONIZE OUR ENERGY CONSUMPTION** ■ To reduce our Scope 2 emissions in Alberta, we plan to procure renewable power from sources such as wind and solar facilities using virtual power purchase agreements, and explore the feasibility of self-generation at select facilities in Alberta.
- 3. EXPLORE CARBON CREDIT AND OFFSET SOLUTIONS** ■ Although our priority is to reduce our Scope 1 and 2 emissions through our direct actions and investments, we will consider the purchase of offsets to help meet our targets.

100,000

We are targeting to reduce 100,000 tonnes of CO<sub>2</sub>e by 2030

(from the first full year of operations of the expanded system).



100,000

We are targeting to reduce 100,000 tonnes of CO<sub>2</sub>e by 2030

(from the first full year of operations of the expanded system).



# APPENDICES

We report our performance for the last four years and cross reference our metrics to the SASB standards.



## BURNABY, BC

To reach the Westridge Marine Terminal, our pipeline passes through a portion of Burnaby, British Columbia (pictured).



# OTHER ESG-RELATED QUESTIONS

We sometimes receive questions about ESG topics which are not covered previously in this report. The following provides additional information on these topics:

## What do you do with the waste from construction activities?

All employees, contractors and consultants are required to comply with applicable environmental regulations and Trans Mountain policies for the handling, storage, transportation, and disposal of waste. Waste is characterized, classified, and labelled so that it may be properly recycled or disposed of at approved facilities. Waste is recycled when possible and waste minimization is encouraged.

## What do you use water for? Where does it go after it was used?

Our regular operations of the pipeline do not require large volumes of water. We primarily use water for hydrostatic testing which is a type of pressure test that fills the pipe with water after a repair or before new installation to make sure it is working properly. Utilized water is tested, and if it meets applicable discharge criteria then it is returned to the environment. If it does not meet criteria, it is treated until criteria is met, or taken to a third-party facility for disposal.

During the Expansion Project, our main uses of water are for hydrostatic testing, dust suppression, horizontal directional drilling, cleaning, and at worker camps. In determining the potential water sources required for use during the Expansion Project and the volumes and rates of withdrawal, many key environmental factors are considered including: fish and other aquatic species; source water quality, quantity, location and other characteristics; and duration, rates and total volumes of withdrawal. We obtain applicable water use permits from the appropriate government authorities prior to any water withdrawal activities. In addition, water discharge or wastewater disposal is conducted in accordance with required approvals.

## What is your process for deactivating pipelines or facilities which are end-of-life?

Once a pipeline is no longer operational, we follow all regulatory requirements around draining and cleaning the pipeline of any hydrocarbons, filling the pipe with an inert filler material such as nitrogen gas, and maintaining cathodic protection on the pipe to ensure it does not corrode. Although our main pipeline is not near its end of life, we are required by the Canada Energy Regulator (CER) to set aside funds that are protected in a trust to cover costs associated with abandonment. Trans Mountain intends to collect these funds over 40 years from our customers who transport petroleum products through our pipeline system. We file annual updates with the CER regarding the status of the fund. At the end of 2022, the fair value of the investments in the Trans Mountain Pipeline Reclamation Trust was approximately \$92 million. Read more about the trust on our [website](#).





PERFORMANCE TABLE

CONTEXT	UNITS	2019	2020	2021	2022
PRODUCT THROUGHPUT					
Trans Mountain Pipeline	barrels/day	314,000	312,000	299,000	323,000
Puget Sound Pipeline	barrels/day	203,000	196,000	189,000	209,000
Westridge Marine Terminal	barrels/day	21,000	39,000	35,000	31,000
ENVIRONMENT	UNITS	2019	2020	2021	2022
ASSET INTEGRITY					
Pipelines operated	km	1,275	1,275	1,275	1,275
Total inspections conducted	count	3,716	4,429	4,742	4,678
Kms of liquid pipeline inspected (all types of inspections not just in-line inspections)	km inspected	1,989	1,154	1,477	1,437
Percentage of liquid pipelines inspected	per cent	156%	91%	73%	113%
SPILLS FROM PIPELINES					
Number of pipeline incidents	count	0	0	0	0
SPILLS AT FACILITIES <sup>1,R</sup>					
Total number of reportable spills	count	2	1	1	0
Volume of reportable spills	m <sup>3</sup>	76	190	7	0
CONSTRUCTION-RELATED SPILLS					
Total number of reportable spills	count	9	50	34	29
Volume of reportable spills	m <sup>3</sup>	0.009	125	41	59

<sup>R</sup> Numbers have been restated since the publication of our 2021 report.

<sup>1</sup> Reportable spills include commodities and other hazardous materials.

ENVIRONMENT CONTINUED	UNITS	2019	2020	2021	2022
LAND					
Total land owned, leased, and/or operated <sup>R</sup>	acres	20,348	21,110	21,506	21,556
Land owned, leased, and/or operated within sensitive areas <sup>R</sup>	per cent	37%	36%	35%	35%
Land owned, leased, and/or operated within sensitive areas	acres	7,438	7,604	7,605	7,620
Total surface disturbance	acres	739	2,121	5,970	15,010
Impacted area reclaimed or restored <sup>2,R</sup>	acres	37	10	424	998
CLIMATE CHANGE AND GHG EMISSIONS					
Scope 1 GHG emissions (direct)	tonnes CO <sub>2</sub>	4,552	5,567	5,685	5,471
Scope 2 GHG emissions (indirect)	tonnes CO <sub>2</sub>	121,197	106,234	99,360	103,556
Total GHG emissions	tonnes CO <sub>2</sub>	125,749	111,801	105,045	109,027
Construction-related emissions <sup>3,R</sup>	tonnes CO <sub>2</sub>	5,319	92,211	148,991	236,764
DIRECT EMISSIONS BY SOURCE					
Stationary combustion emissions	tonnes CO <sub>2</sub>	660	696	680	988
Emissions from Westridge VCU/flaring	tonnes CO <sub>2</sub>	1,887	2,952	2,746	2,829
Fugitive emissions <sup>4</sup>	tonnes CO <sub>2</sub>	77	76	77	–
Venting/tank vapours <sup>4</sup>	tonnes CO <sub>2</sub>	682	666	620	–
Fleet	tonnes CO <sub>2</sub>	1,246	1,178	1,561	1,634

<sup>2</sup> Land is considered reclaimed once the pre-disturbance assessment (PDA) is completed.

<sup>3</sup> Includes fuel consumption from contracted companies' vehicles.

<sup>4</sup> Upon further analysis, these numbers have been deemed negligible.





ENVIRONMENT CONTINUED	UNITS	2019	2020	2021	2022
AIR EMISSIONS					
VOCs	tonnes	120	125	90	225
PM <sub>10</sub>	tonnes	130	101	78	82
NOx	tonnes	66	265	149	152
SOx	tonnes	5	17	10	10
ENVIRONMENTAL AND INDIGENOUS MONITORING (EXPANSION)					
Technical field studies and monitoring by third-party consultants	person days	2,557	13,771	20,443	40,165
Indigenous monitoring	person days	389	2,801	5,038	6,430
Environmental inspection	person days	2,443	9,978	15,474	18,781
SOCIAL	UNITS	2019	2020	2021	2022
SAFETY (OPERATIONS AND EXPANSION)					
Recordable Injury Rate – employees	count per 200,000 exposure hours	0.00	0.59	0.00	0.47
Recordable Injury Rate – contractors		0.43	0.52	0.58	0.52
Recordable Injury Rate – combined		0.38	0.53	0.58	0.52
Lost-time Injury Rate – employees	count per 200,000 exposure hours	0.00	0.00	0.00	0.23
Lost-time Injury Rate – contractors		0.04	0.05	0.03	0.03
Lost-time Injury Rate – combined		0.04	0.05	0.03	0.03
Fatalities	count	0	1	0	0
Motor vehicle accidents <sup>5</sup>	count	6	119	150	403

<sup>5</sup> Vehicle accidents increased significantly due to the increase in construction activities and the associated increase in kilometres driven.

SOCIAL CONTINUED	UNITS	2019	2020	2021	2022
LEADING INDICATORS					
Near misses <sup>6</sup>	count	193	312	416	584
Inspections conducted	count	283	3,613	8,543	12,561
WORKFORCE NUMBERS AND RETENTION					
Total number of employees	count	383	390	439	513
Total number of contractors	count	1,238	1,217	1,582	1,760
Turnover rate, voluntary and involuntary	per cent	8%	4%	6%	10%
Turnover rate, voluntary	per cent	7%	3%	5%	8%
DIVERSITY AND INCLUSION					
Women, total workforce	per cent	28%	29%	29%	30%
Women, managers	per cent	25%	24%	24%	33%
Women, executive leaders	per cent	27%	25%	25%	42%
Women, Board members	per cent	33%	33%	33%	50%
OTHER DESIGNATED GROUPS					
Indigenous people	per cent	1.8%	1.8%	2.7%	3.5%
Visible minorities	per cent	13.1%	13.8%	15.3%	13.5%
People with disabilities	per cent	0.3%	0.3%	1.1%	0.8%

<sup>6</sup> Near misses and inspections conducted are considered leading indicators, for which benchmarks are in place and reporting is encouraged. These numbers are not normalized and reflect improved safety culture and increased exposure hours.





SOCIAL CONTINUED	UNITS	2019	2020	2021	2022
EMPLOYEE AGE CATEGORIES					
30 years and under	per cent	8%	8%	5%	8%
30 to 50	per cent	59%	59%	62%	62%
50 plus	per cent	33%	33%	33%	30%
ECONOMIC CONTRIBUTION					
Value generated <sup>7</sup>	\$ million	1,618	3,311	5,425	9,017
Value distributed to:					
Suppliers and contractors	\$ million	844	2,792	4,248	5,956
Indigenous communities <sup>8</sup>	\$ million	236	268	506	2,187
Providers of capital (Government of Canada) <sup>9</sup>	\$ million	143	192	304	529
Employees (wages and benefits)	\$ million	78	89	122	151
Landowners	\$ million	53	59	75	102
Governments <sup>10</sup>	\$ million	48	47	52	54
Communities and non-profits	\$ million	17	21	22	34

<sup>7</sup> Value generated includes revenue, realized gains and losses and liquidity provided by capital contributions from Trans Mountain's owner and Trans Mountain's credit facilities.

<sup>8</sup> Payments to Indigenous communities includes direct purchases and royalties paid to Indigenous communities.

<sup>9</sup> Payments to providers of capital include dividends paid to our shareholders and interest paid.

<sup>10</sup> Payments to governments include corporate taxes, property taxes, local and federal taxes, as well as Crown leases, rentals and land acquisitions.

GOVERNANCE	UNITS	2019	2020	2021	2022
ETHICS					
Employees/contractors who completed Code of Conduct training	per cent	94%	98%	100%	100%
CYBER SECURITY					
Individuals attended cyber awareness sessions	count	NR	250	537	1,120
Number of system-wide phishing tests <sup>11</sup>	count	NR	4	3	5

NR = not reported

<sup>11</sup> Our goal is to conduct a system-wide phishing test each quarter. However, the fourth test scheduled for Q4 2021 was delayed due to the BC flood response and was conducted in January 2022.





SASB INDEX

REFERENCE	SASB INDICATOR	2022 DATA OR PAGE
GHG EMISSIONS		
EM-MD-110a.1	Gross global Scope 1 emissions	5,471 tonnes CO <sub>2</sub> e
EM-MD-110a.1	Percentage methane	0%
EM-MD-110a.1	Percentage covered under emissions-limiting regulations	Not applicable
EM-MD-110a.2	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	<a href="#">Pages 7, 24-25, 66</a>
AIR QUALITY		
EM-MD-120a.1	NOx (excluding N <sub>2</sub> O)	152 tonnes
EM-MD-120a.1	SOx	10 tonnes
EM-MD-120a.1	Volatile organic compounds (VOCs)	225 tonnes
EM-MD-120a.1	Particulate matter (PM <sub>10</sub> )	82 tonnes
ECOLOGICAL IMPACTS		
EM-MD-160a.1	Description of environmental management policies and practices for active operations	<a href="#">Pages 13-32</a>
EM-MD-160a.2	Percentage of land owned, leased, and/or operated within areas of protected conservation status or endangered species habitat	35%
EM-MD-160a.3	Terrestrial acreage disturbed	15,010 acres
EM-MD-160a.3	Percentage of impacted area reclaimed	7%
EM-MD-160a.4	Number of hydrocarbon spills	0 reportable spills
EM-MD-160a.4	Volume of hydrocarbon spills	0 m <sup>3</sup>
EM-MD-160a.4	Volume in the Arctic	Not applicable, we do not operate in the Arctic
EM-MD-160a.4	Volume in unusually sensitive areas (USAs)	Not reported
EM-MD-160a.4	Volume of spills recovered	Not reported

REFERENCE	SASB INDICATOR	2022 DATA OR PAGE
COMPETITIVE BEHAVIOUR		
EM-MD-520a.1	Total amount of monetary losses as a result of legal proceedings associated with federal pipeline and storage regulations	Not reported
OPERATIONAL SAFETY, EMERGENCY PREPAREDNESS AND RESPONSE		
EM-MD-540a.1	Number of reportable pipeline incidents	0
EM-MD-540a.1	Number of reportable pipeline incidents that are significant	0
EM-MD-540a.2	Percentage of natural gas inspected	Not applicable, we do not have natural gas pipelines
EM-MD-540a.2	Percentage of liquid pipelines inspected	113%
EM-MD-540a.3	Number of accident releases from rail transportation	Not applicable, we do not use rail transportation
EM-MD-540a.3	Number of non-accident releases (NARs) from rail transportation	Not applicable, we do not use rail transportation
EM-MD-540a.4	Discussion of management systems used to integrate a culture of safety and project lifecycles	<a href="#">Pages 34-36, 49</a>





# FORWARD-LOOKING STATEMENTS

This report contains certain forward-looking information and statements (“forward-looking statements”). Forward-looking statements relate to future results or events, are based upon internal plans, intentions, expectations, and beliefs, and are subject to risks and uncertainties that may cause actual results or events to differ materially from those indicated or suggested therein. All statements other than statements of current or historical fact constitute forward-looking statements. Forward-looking statements are typically, but not always, identified by words such as “anticipate”, “estimate”, “expect”, “intend”, “forecast”, “continue”, “propose”, “may”, “will”, “should”, “believe”, “plan”, “target”, “objective”, “project”, “potential” and similar or other expressions indicating or suggesting future results or events. The forward-looking statements reflect Trans Mountain’s beliefs and assumptions with respect to such things as the outlook for general economic and market trends and conditions, industry and ESG trends, the integrity and reliability of Trans Mountain’s assets, and the governmental, regulatory and legal environment.

Forward-looking statements are not promises of future outcomes. There is no assurance that the results or events indicated or suggested by the forward-looking statements, or the plans, intentions, expectations or beliefs contained therein or upon which they are based, are correct or will in fact occur or be realized (or if they do, what benefits may be derived therefrom).

In particular, this report contains forward-looking statements pertaining to, without limitation: plans, targets, and strategies with respect to reducing greenhouse gas and other emissions and anticipated reductions in emissions levels; future risk mitigation activities; impacts based on scenario analysis; benefits which will result from the Expansion Project including reaching new markets, increasing customer options and increasing profitability; expected costs of the Expansion Project and expected employment that will result; expected generation of emissions; increased pipeline capacity; expansion and enhancement of the marine terminal; monitoring capability; reclamation activities and funding commitments; and future response capacity.

Undue reliance should not be placed on these forward-looking statements and information as they are based on assumptions made by Trans Mountain as of the date hereof regarding, among other things: oil and gas industry exploration and development activity levels; commodity prices; the availability and efficacy of various technologies; the success of our operations; that future results of our operations and related activities will be consistent with past performance and/ or anticipated performance and management expectations related thereto; availability of individuals with skills required to execute on our business objectives and strategy; general compliance with Trans Mountain’s plans, strategies, programs and goals across its reporting and monitoring systems among our employees, stakeholders and service providers; our ability to successfully engage Indigenous and other stakeholders; the success of growth projects; and existing regulatory, tax, environmental and other laws and regulations.

While Trans Mountain believes the expectations and assumptions reflected in these forward-looking statements are reasonable as of the date hereof, there can be no assurance that they will prove to be correct. Forward-looking statements are subject to known and unknown risks and uncertainties which may cause actual performance and financial results to differ materially from the results expressed or implied, including but not limited to: our ability to implement our strategic priorities and business plan and achieve the expected benefits; the strength and operations of the oil and natural gas industry and related commodity prices and market conditions; our relationships with external stakeholders, including Indigenous stakeholders; reliance on key personnel and third parties; shortages or disruptions in the availability of labour, human capital and/or materials; actions by governmental and regulatory authorities, including changes in regulatory processes or increased environmental regulation; fluctuations in operating results; adverse general economic and market conditions in Canada, North America and elsewhere; risks related to the current and potential impacts of the COVID-19 pandemic and depressed commodity prices; constraints on, or the unavailability of, adequate infrastructure and technology; changes in the political environment in Canada; the ability to access sources of financing; the effectiveness of our risk management and other programs; ability to expand, update and adapt our infrastructure on a timely and effective basis; technology and security risks including cyber-security risks; reputational risks; potential litigation and disputes; extreme weather events and natural catastrophes.

Readers are cautioned that this list of risk factors should not be construed as exhaustive.

The forward-looking statements contained in this document speak only as of the date of this document. Unless required by law, Trans Mountain assumes no obligation to update forward-looking statements and information should circumstances or management's expectations, estimates, projections or assumptions change. The forward-looking statements contained in this document are expressly qualified by this cautionary statement.



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