

Trans Mountain Pipeline Submission to the Tanker Safety Expert Panel

June 21, 2013



TRANSMOUNTAIN



Trans Mountain Pipeline (Kinder Morgan Canada)

**Submission to the Tanker Safety Expert Panel
June 21, 2013**

Via email: tsep-cesnc@tc.gc.ca

For more information please contact:

info@transmountain.com

www.transmountain.com

Table of Contents

| | |
|---|----|
| Executive Summary | 4 |
| Background | 6 |
| Trans Mountain in the Local Maritime Community | 9 |
| Regulatory Process | 10 |
| Project Schedule | 11 |
| Engagement | 12 |
| Trans Mountain – Listening and Taking Action | 16 |
| Lines of Inquiry | 18 |
| Appendix 1 Journey of a Tanker | 24 |
| Appendix 2 Westridge Marine Terminal Description | 28 |
| Appendix 3 Westridge Marine Terminal Operation | 31 |
| Appendix 4 Emergency Preparedness and Response Program | 33 |
| Appendix 5 Traffic Analysis – Juan de Fuca and Haro Straits | 35 |
| Appendix 6 Discussion Topics (Marine) at Information Sessions | 36 |
| Appendix 7 Marine Aboriginal Engagement | 38 |



Inside the Westridge Marine Terminal – May 2013.

Executive Summary

Kinder Morgan Canada (KMC), operator of the Trans Mountain Pipeline (TMPL), is pleased to make this submission to the Tanker Safety Expert Panel.

As a company that safely and responsibly moves petroleum products every day – and has done so for the last six decades – we fully support the Panel’s review of Canada’s current tanker safety system and the Panel’s objective to propose further measures to strengthen the system. We see the Panel’s work and recent changes announced by the Government of Canada as important steps to the continued review and enhancement of tanker safety in Canadian waters.

Since we announced our proposal to expand the Trans Mountain Pipeline system more than a year ago (in April 2012), we’ve been engaging with communities along the pipeline route and marine shipping corridor.

Whether it’s on the land or on the water, overall safety has been a major topic of these conversations. We believe that the Panel’s review is an important step to ensure public confidence in the regulatory and public safety regime in place for tanker movements in Canadian coastal waters.

A 60-year record of crude oil tanker safety on the south coast doesn’t just happen. This has been achieved because the safety regime in which tankers operate has continuously improved and changed significantly over those six decades in response to advances in technology, training and learning from other jurisdictions and incidents. But the industry and the regulators cannot rest on past accomplishments and should continuously seek opportunities for improvement.

We believe a Canada-wide review of the existing spill response structure is timely.

Ensuring tanker safety is a goal shared by many companies, organizations and governments. As one of those participants and as part of our existing operations, Trans Mountain has consistently worked to bring parties to the table to advance opportunities to improve the safety and efficiency of tanker traffic. Our company brings to the table the expertise and approach necessary to build and safely operate a crude oil pipeline and we support the associated tanker safety review activities.

When the Government of Canada announced the creation of the Tanker Safety Expert Panel, the Honourable Denis Lebel, Minister of Transport, Infrastructure and Communities stated that the current tanker safety system has served the country well for many years, but it must be strengthened to meet Canada’s future needs. Kinder Morgan is looking forward to working with the government on implementing future safety measures

For Trans Mountain’s proposed expansion project, we have initiated contact with landowners, engagement with Aboriginal Peoples, public consultation and discussion with communities, and communications with regulatory authorities. These efforts will continue through all phases of our proposed project.

Our engagement activities have included public information sessions, workshops, meetings with community leaders and online discussions. Of all the feedback we've received so far, risk and safety – particularly pipeline safety and marine safety – have been the primary concerns. These include tanker safety, spill response capacity and the liability for spills.

This input will be used to guide the development of studies, plans and design for our proposed expansion project. While our strict obligation for tanker safety ends once the tankers leave the Westridge Marine Terminal in Burnaby, BC, we are very concerned that the tanker safety aspect of the transportation chain is well understood, managed and critically assessed. We are taking action by:

- Working closely with the maritime community
- Working to improve local mapping and preparedness
- Working with Western Canada Marine Response Corporation (WCMRC) to establish planning standards to address our proposed expansion

We are listening to people who have participated in our engagement process – and we are learning. Their feedback is helping make our proposed project better.

Background

The Trans Mountain Pipeline System (TMPL) was established almost 60 years ago and currently has a capacity of 300,000 barrels per day (bbl/d). The TMPL system transports a range of crude oil and petroleum products from western Canada to locations in central and southwestern British Columbia (BC), Washington and to offshore markets via its Westridge Marine Terminal.

The Westridge Marine Terminal is the only marine petroleum product or crude oil loading facility that is connected to a pipeline system on the West Coast of Canada. It is the only facility that provides access for Canadian oil production to markets in the Pacific Rim: California, Washington State and Asia.

In response to growing market demand and customer contractual commitments, Trans Mountain proposes to expand the existing TMPL system from 300,000 bbl/d to 890,000 bbl/d. If approved, the proposed expansion will complete the twinning of the pipeline in Alberta and BC with:

- 981 km of new buried pipeline
- New and modified facilities such as pump stations and tanks
- Additional tanker loading facilities at the Westridge Marine Terminal in Burnaby, BC

If approved, the project will result in an increase in tanker traffic from the Westridge Terminal. Figure 1 shows the location of the Westridge Marine Terminal within Vancouver Harbour.

Rules for allocation of the existing pipeline capacity are approved by the National Energy Board (NEB); of the 300,000 bbl/d available today 75,000 is allocated for the marine terminal.

Typically, five tankers per month are loaded with crude oil. Tanker traffic consists of a mix of Panamax and partially-laden Aframax vessels. The expanded system would be capable of serving up to 34 partially-laden Aframax vessels per month. The maximum size of vessels served at the terminal is not forecast to change as part of the project. Similarly, the primary cargo for future traffic will likely continue to be heavy crude oil, primarily diluted bitumen. We forecast that of the 890,000 bbl/d capacity of the expanded system, up to 630,000 bbl/d may be delivered to the Westridge Marine Terminal.

In addition to tanker traffic, the terminal also loads about two barges with crude oil per month and receives about one barge of jet fuel per month into a separate pipeline system that serves Vancouver International airport (YVR). Barge activity is not expected to change as a result of the expansion.

The project can be characterized as an expansion within the existing footprint for petroleum transportation. The pipeline will be twinned primarily within the existing corridor (or right-of-way) and the resulting increase of tanker traffic will transit via the same shipping lanes that are used today for tankers and other large vessels calling in Vancouver and Washington State. Figure 2

shows the established marine routes used by ships that call in the Salish Sea including tankers for the Westridge Marine Terminal.

Based on AIS (Automatic Identification System) data recorded by the Marine Exchange in Seattle, Washington, there are approximately 6,000 large commercial vessels that come to the Salish Sea headed to Vancouver or Washington State ports annually. Of these vessels, about 600 are tankers – 60 of which call at the Westridge Marine Terminal each year. If our proposed expansion project is approved, the number of tankers calling on the Westridge Marine Terminal would increase to about 350 per year. See Appendix 5 for 2011 data showing vessel movements in the Juan de Fuca and Haro Straits.

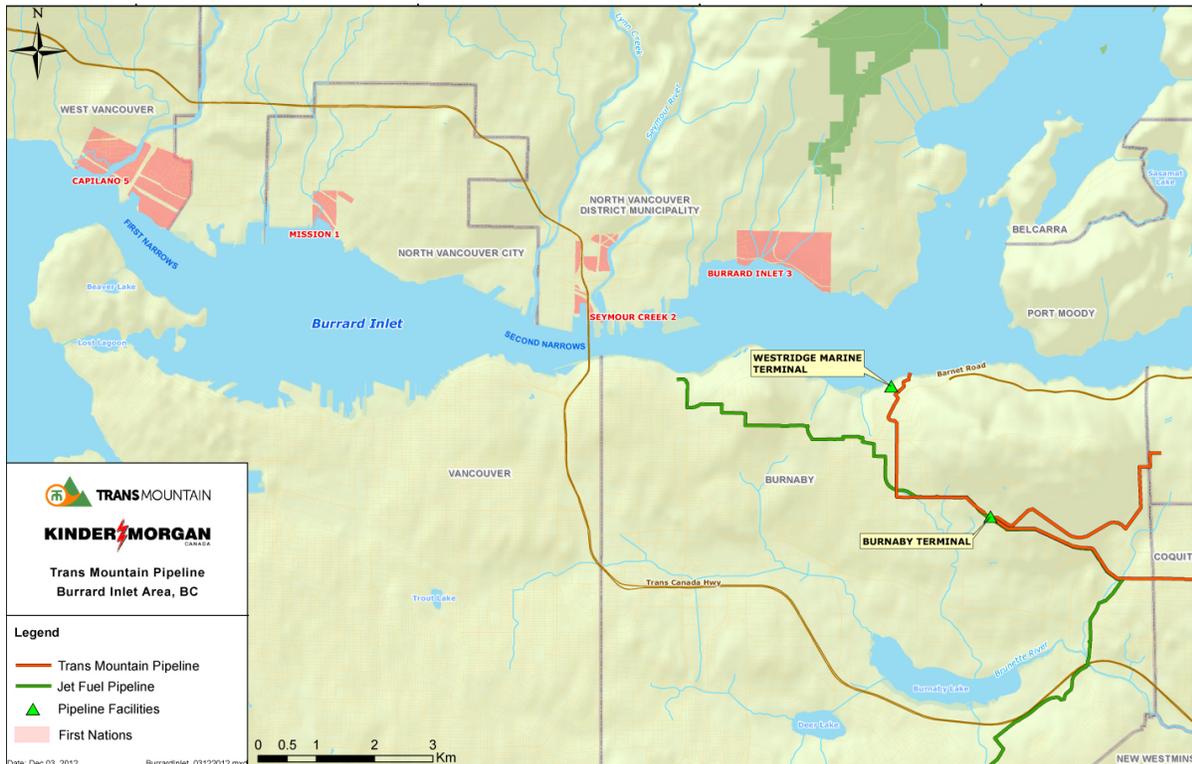


Figure 1: This map shows the location of the Westridge Marine Terminal in Burrard Inlet.

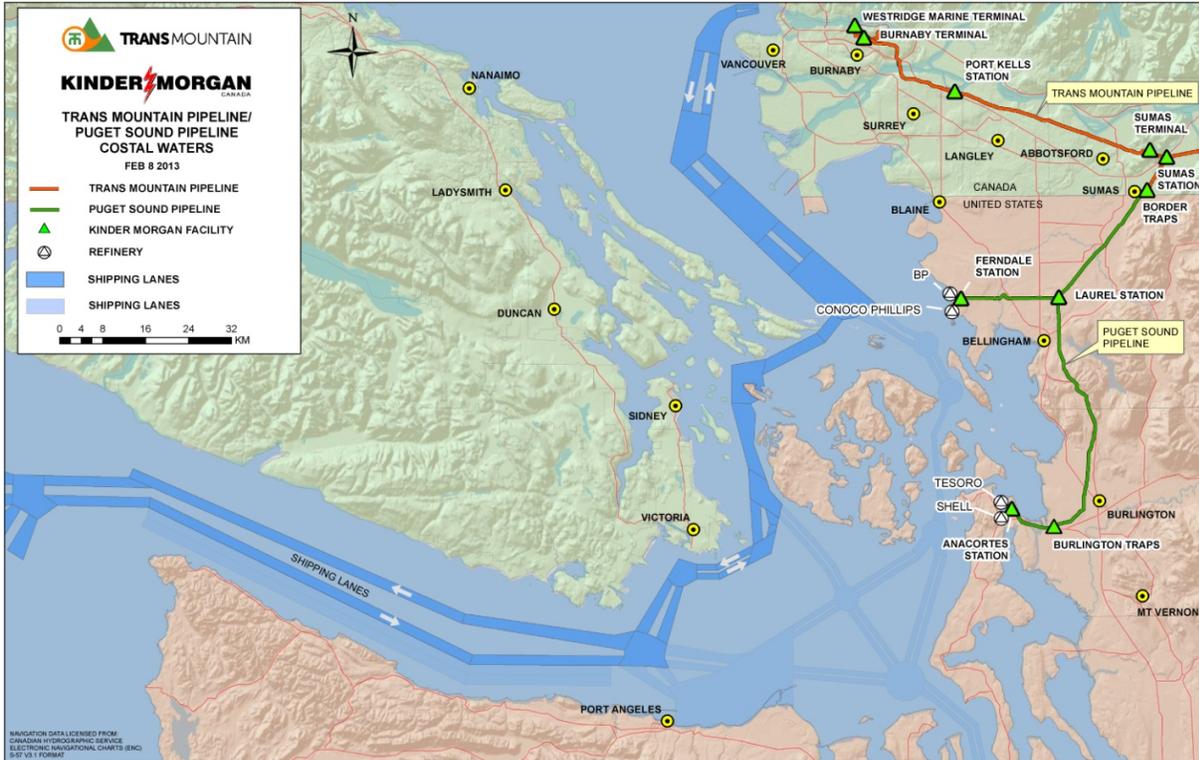


Figure 2: This map shows the shipping lanes used by tankers transiting Canadian waters, both inbound and outbound to the Westridge Marine Terminal.

More information about the management of tankers calling at our marine terminal and management of the terminal itself is included in this submission.

- Appendix 1, Journey of a Tanker, provides a summary of the oversight for tankers calling at the Westridge Marine Terminal.
- Appendix 2 provides a detailed description of the Westridge Marine Terminal.
- Appendix 3 provides an overview of the operations at Westridge Marine Terminal.
- Appendix 4 provides a detailed description of the emergency response system at Westridge Marine Terminal.

Trans Mountain in the Local Maritime Community

While our regulatory and operational obligations end at the Westridge Marine Terminal, we have a history of co-operative involvement in the maritime community working to ensure the safety and efficiency of Westridge-bound tanker traffic.

Trans Mountain was an early adopter of the Incident Command System (ICS) of emergency response management. Trans Mountain's employees are trained in ICS and this is reflected in our response plans including the plan for the Westridge Marine Terminal.

We were an early adopter of tug escorts for loaded tankers through Vancouver Harbour.

We are a founding member and part owner of Western Canada Marine Response Corporation (WCMRC)

We continue to work with the maritime community on various initiatives to improve safety, including the recent Port Metro Vancouver (PMV) led process to improve safety and efficiency of transit through the Second Narrows of Burrard Inlet. In addition, we have worked with local organizations on the following initiatives:

- Participated in PMV's review of the Second Narrows Movement Restriction Area Procedures (2004-2010)
- Contribution for expert review of escort techniques (2007)
- Contribution and logistics for live trial (2007)
- Contribution for improved pilotage equipment (2009)
- Support for joint Pilot and Tug Master training (2009)
- Support for improved Navigational Aids (2010)
- Contribution for British Columbia Institute of Technology Marine Simulator Upgrade (2011)

Regulatory Process

Trans Mountain is the holder of the National Energy Board (NEB) certificates for the Trans Mountain pipeline system. Trans Mountain Pipeline ULC (Trans Mountain) is a Canadian corporation with its head office located in Calgary, Alberta (AB). Trans Mountain is a general partner of Trans Mountain Pipeline L.P., which is operated by Kinder Morgan Canada Inc. (KMC), and fully owned by Kinder Morgan Energy Partners, L.P.

NEB Section 52 Application

The proposed Trans Mountain Expansion Project will require a certificate pursuant to Section 52 of the National Energy Board Act (NEB Act) to permit construction and operation of the pipeline expansion system. Trans Mountain expects to file its application for this certificate with the NEB in late 2013.

Although regulation and authorization of marine transportation is not specifically within the jurisdiction of the NEB, its review will consider the effects of the project on the environment. Therefore, Trans Mountain will include, in its Facilities Application, an assessment of the environmental and socio-economic effects of expanded marine transportation for normal operations as well as for accidents and malfunctions.

TERMPOL

We have requested a TERMPOL (Technical Review Process of Marine Terminal Systems and Transshipment Sites) review of the marine aspects of the project. This review will consider the ship's berth, the marine terminal infrastructure as well as the defined tanker transit route.

TERMPOL is an operational review process led by a federal interdepartmental committee that is tasked with reviewing the navigational risks associated with the location and operation of the marine terminals for oil tankers and other cargoes identified by Transport Canada. The intent of the TERMPOL is to ameliorate elements of a project proposal that could threaten the integrity of a ship's hull and its cargo containment system and, consequently, the environment near the ship while it is navigating waters under Canadian jurisdiction.

The following studies are being prepared by Trans Mountain for the TERMPOL review committee and submitted with our application to the NEB:

- Ship design and operation
- Navigational and physical characteristics of the approaches to the terminal
- Terminal design and infrastructure
- Environmental impact
- Risk and accident analysis along the transit route and at the terminal and the related mitigating measures
- Pollution prevention program
- Contingency plans

Project Schedule

Trans Mountain will submit its studies to the TERMPOL committee in late 2013. A report from the committee is expected in early 2014.

We will submit our application to the NEB in late 2013, which will be followed by a review process through 2014 and into 2015.

If the NEB grants a certificate for the project in late 2015, construction activities would be scheduled to start as early as possible in 2016 and end by fall 2017.

The expanded Trans Mountain Pipeline system could start service in December 2017.

Figure 3 shows the project schedule.

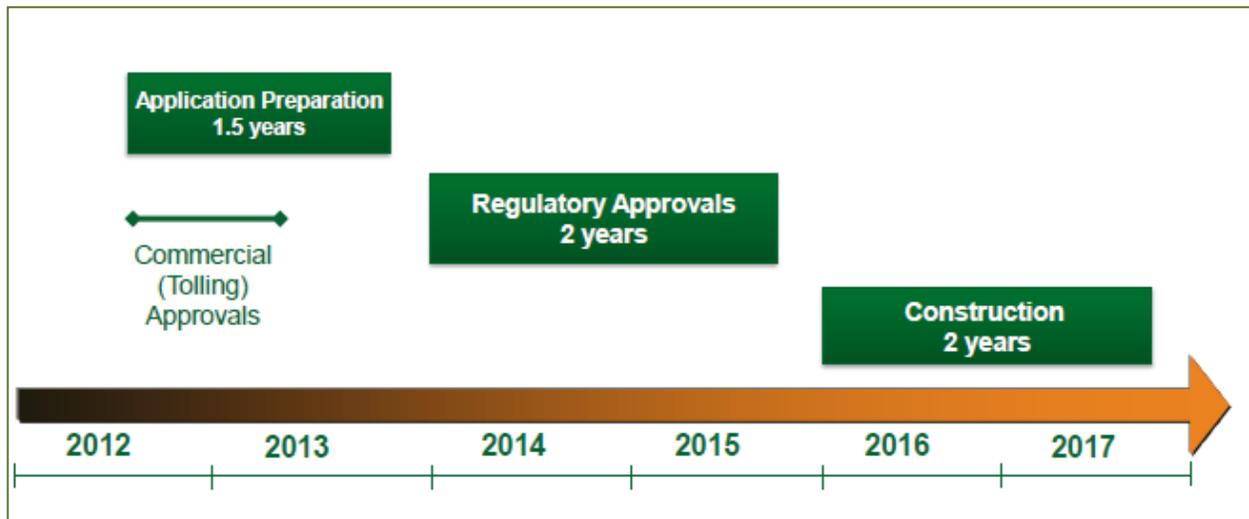


Figure 3: The proposed project schedule for the Trans Mountain Expansion Project.

Engagement

Trans Mountain has embarked on an open and extensive engagement process on all aspects of the proposed Trans Mountain Expansion Project along the route between Strathcona County, Alberta (near Edmonton) and Burnaby, BC and the marine corridor.

For our project, we have initiated contact with landowners, engagement with Aboriginal Peoples, public consultation and discussion with communities, and communications with regulatory authorities. These efforts will continue through all phases of the project.

Since the proposed project was announced, our engagement program included a series of 37 public information sessions held between October 2012 and January 2013 in 30 communities along the pipeline corridor and marine corridor.

In addition to the public information sessions, our engagement efforts include ongoing meetings with various organizations, governments at all levels and community groups. We have a robust digital engagement tool where people can have their say at www.transmountain.com/talk.

Feedback – Marine

Of all the feedback we've received from our discussions so far, risk and safety — particularly pipeline safety and marine safety — have been the primary concerns.

In terms of tanker movements in the waters off BC's coast, public feedback gathered in our engagement process indicates the tanker safety regime in Canada is not well understood or appreciated. In particular, we have found that people ask questions about the relative roles of Transport Canada, the Canadian Coast Guard (CGC) Port Metro Vancouver (PMV), Pacific Pilotage Authority (PPA), Environment Canada, the Government of British Columbia and industry.

Through our engagement activities, we have heard concerns about:

- Tanker safety
- Spill response capacity
- The liability for spills

Throughout our ongoing engagement process, we will continue to address these concerns and provide relevant, timely and accurate information about tanker safety and spill response.

See Appendix 6 for a summary of some of the specific tanker and marine transportation comments and concerns we received from our public information sessions.



Between October 2012 and January 2013, Trans Mountain held 37 public information sessions in 30 communities along the pipeline and marine corridors to introduce the proposed project and gather feedback. More than 2,200 people attended these sessions. They had an opportunity to meet with project staff and ask questions on all aspects of the proposed project.

Environmental and Socio-Economic Assessment Workshops

Workshops about the Environmental and Socio-economic Assessment (ESA) for the Trans Mountain Expansion project were held in spring 2013. The focus of these ESA Workshops was to present a proposed approach to the completion of the project ESA and to seek input from stakeholders regarding the study approach, methodology and regions.

The engagement team held regional ESA workshops in early March in Edmonton, Alberta, Kamloops, BC and Surrey, BC. The workshops targeted local and regional subject matter experts from municipal, federal and provincial governments, local ENGOs (environmental non-governmental organizations) and other interest groups. The project team provided attendees with a proposed overview of the ESA approach for the project and sought the feedback of attendees on particular modules of the ESA, including air, land and water. Input was solicited online for two weeks after each workshop.

Feedback received at these sessions was shared with the relevant project team environmental disciplines and will be considered in setting the scope and methodologies for the project ESA.

Marine Workshops

On May 22 and 23, 2013, we hosted two marine workshops in Vancouver and Victoria with regional stakeholders and First Nations representatives from Burrard Inlet, Vancouver Island and the Gulf Islands.

More than 50 people attended the workshops to review project details and the expansion project's approach to the marine studies for the risk assessment and the Environmental and Socio-economic Assessment. Stakeholders in attendance included stewardship groups, regional emergency planners, municipal environmental officers, local chambers of commerce, tourism and recreational user groups, commercial fisheries, marine industries and local First Nations.

Aboriginal Engagement

The Aboriginal engagement program for the project is focused on discussions with more than 100 Aboriginal groups that might have an interest in the project or have Aboriginal interests potentially affected by the project. Engagement activities started with these groups in April 2012. See Appendix 7 for a list of Aboriginal groups that fall within the BC coastal region of the proposed pipeline expansion project.

Since April 2012, Trans Mountain's Aboriginal Engagement Team has conducted more than 3,100 engagement activities using a variety of communication tools, including face-to-face meetings, phone conversations, letters and emails.

Although the Aboriginal engagement program is in its early stages, preliminary discussions with Aboriginal groups have identified some areas of interest and potential concern. On marine transportation and environment topics, the following areas of interest have surfaced in discussions with Aboriginal groups:

- Environmental impact of spills on the marine environment
- Clarification on dredging in proximity to the Westridge Marine Terminal
- Impact of increased tanker traffic through Burrard Inlet
- Clarification on the size of tankers

We will continue our engagement with Aboriginal groups following the submission of our application to the NEB, and will continue engagement through the regulatory process and into project development and operations. Trans Mountain will also continue its liaison with the Crown through the full project and provide updates regarding Trans Mountain's engagement activities with Aboriginal groups.

BC Government's Five Conditions

On July 23, 2012, the Government of British Columbia outlined five minimum requirements that must be met for the province to endorse the construction and operation of new heavy oil pipelines within its borders. One of BC's conditions calls for a world-leading system of marine oil spill preparedness and response.

We acknowledge the link between our pipeline operations on land and the marine issues associated with oil tankers on the south coast of British Columbia.

We are a company that safely and responsibly moves petroleum products every day – and has done so for the last six decades. This record is thanks to a culture of safety within Trans Mountain, the network of safety and response organizations in the marine community and the regulations and requirements established to ensure safe transit of oil tankers in the local waters.

When it comes to marine safety, Kinder Morgan Canada (KMC) also stands with BC in advocating for the necessary level of federal funding and response capabilities. At the same time, we believe companies must also pay their fair share, as it is companies that are liable for potential spills – not communities.

Trans Mountain – Listening and Taking Action

Along the project's marine corridor, the Trans Mountain team is conducting studies for its environmental assessment. This part of the assessment will consider the potential environmental impacts on the marine corridor of the proposed expansion of the Westridge Marine Terminal from increased marine tanker traffic, as well as ways to reduce or avoid these impacts. Feedback received is helping to determine the scope of the marine studies, as well as the evaluation of potential impacts to local marine users and communities.

We continue to work closely with the maritime community

While Trans Mountain's strict obligation for tanker safety ends once the tankers leave the Westridge Marine Terminal, we are very concerned that this aspect of the transportation chain is well managed. As such, we continue to work with agencies in the maritime community to advance opportunities to improve the safety and efficiency of tanker traffic.

In this regard, we have had the opportunity to review and comment on the submissions to the Tanker Safety Expert Panel from the British Columbia Chamber of Shipping and the Western Canada Marine Response Corporation (WCMRC). Rather than repeat the information provided to the panel by these organizations, we wish to provide our general endorsement of the WCMRC positions.

Similarly, to address the apparent lack of public awareness of the tanker safety regime and to support continued improvement, we are working with Port Metro Vancouver to support its effort to establish a central collaborative body to become the leading source of information on best practices for marine transportation of liquid bulk commodities on Canada's Pacific Coast. The mandate of this body would be to promote and facilitate research and regulatory frameworks that deliver the highest standards in the safe and sustainable shipment of Canada's energy and liquid bulk commodities

We are conducting studies to better understand the risk of current and proposed operations

For our NEB application and TERMPOLE studies, we are conducting a Quantitative Risk Assessment. Based on an assessment of marine traffic and hazards and mitigation in the Salish Sea, this study will estimate the probability that an incident may result in a spill. Based on an assessment of incident types and tanker construction, the study will also provide a probabilistic estimate of the volume that might be released from an incident. This will be used to determine a probable worst-case scenario for spill trajectory modelling.

The spill trajectory modelling will, in turn, rely on the results of recently-completed fate and behaviour tests Trans Mountain has conducted to document the behaviour of diluted bitumen on brackish water comparable to Vancouver Harbour and the Salish Sea.

The risk assessment will focus on the incremental change in risk that could result from the NEB's approval of our project. Since the project does not involve a change in vessel size nor the cargo, the incremental change in risk arises from a higher probability of an incident due to increased residence time and transit frequency.

While this information is required for our NEB and TERMPOL reviews, it will also be used in our work with the WCMRC.

We are working to improve local mapping and preparedness

Trans Mountain is working with WCMRC to create a demonstration project for a coastal marine response GIS system. We have undertaken a project to collect, update and store information about the shoreline and backshore environment in the vicinity of the Westridge Marine Terminal.

The type of data collected, and the way it is organized, is specifically designed to meet the needs of the SCAT (Shoreline Cleanup Assessment Technique) process and the shoreline protection and cleanup response functions in the unlikely event of a future oil spill. This is information about the shoreline that is needed to support best-practice shoreline response decision making. In this case, Kinder Morgan Canada has decided to be proactive and to collect such information in advance. This will both improve preparedness planning and will also ensure we have the knowledge of the environment to make sound decisions from the very beginning of any potential environmental emergency.

This SCAT information will be provided to WCMRC as part of a demonstration project for a coastal response mapping system. This project will compile response information and geographic response plans for the Westridge area into a GIS structure that could be expanded to cover the tanker transit route through the Salish Sea and other areas.

We are working with WCMRC to establish planning standards to address our proposed expansion

In an effort to address public concern for the adequacy of the existing spill response regime, we are working with WCMRC to establish planning standards to accommodate our proposed expansion. We believe these planning standards should be based on the following principles:

- **Augment capacity within the existing regime.** Where the need exists for additional response capacity, it should be met through an expansion of WCMRC's resources.
- **Response capacity should reflect the risks.** Response capacity should be established based on consideration of probability and consequence with particular consideration to predicted spill volumes, material fate and behavior, and geographic setting including sensitive areas.
- **Investments should benefit affected communities.** Where new investment in response capacity is required, Kinder Morgan Canada will seek to maximize the benefit to First Nations and other communities along the transit route. Benefits may consist of capacity building, capital investment, training and provision of ongoing services.

Using these principles, Trans Mountain and WCMRC will develop planning standards to accommodate the proposed expansion. These standards will then be used to develop an operational plan that will describe the type and extent of response resources necessary along the transit route in the Salish Sea

Lines of Inquiry

In this section, we address the themes contained in the Panel's *Consultation Guidance Document*.

World Class

The term "world class" is used throughout the Tanker Safety Expert Panel's guidance document and is also used by the BC Government in its heavy oil policy paper: *Requirements for British Columbia to Consider Support for Heavy Oil Pipelines*.

This term is an effective means to express a worthy objective which we support. However, it must be recognized that because of differences in geographic, commercial, technical and political settings around the world, there is no single formula or example of "world class" that can be copied from another regime and directly applied to the Canadian context.

We believe Canada should seek to establish a leading regime for spill response. However, if it is to be successful, it cannot be a formulaic exercise without considerations to unique conditions in Canada and its maritime regions. We can be guided by the best of other regimes to establish principles appropriate for a Canadian setting.

General

Today's Needs and Future Requirements

We believe that, aside from specific concerns identified by the Auditor General, the existing regime is working reasonably well. We believe that the Canadian regime contains the elements of a world-class system. We believe that oil spill preparedness for large commercial vessels, including tankers, has evolved on the West Coast to meet – and in many ways – exceed the regulatory requirements of the existing regime.

It has been nearly three decades since the current regime was created. We are not aware of any comprehensive review since its inception.

We think periodic reviews are appropriate and the current effort is timely, especially given changes in the volume of West Coast energy exports currently under consideration.

As described earlier in this submission, we have heard concern about the adequacy of the existing regime and we are working with WCMRC to identify enhancements to accommodate the increased traffic that would result from our proposed pipeline expansion project. While industry is willing to invest in enhanced West Coast response capacity, doing so in the absence of well-considered regulation may diminish the perceived adequacy of this investment. Industry is willing to invest in improvements but if the regime is to be accepted by the public, government must set the bar.

Canada's coastline is monumental in both its extent and its diversity. While the current regulation is effective in ensuring a basic tiered response to protect all waters south of 60° N latitude, only response time is varied to address areas at higher risks. Higher risks may be due to higher-than-average probability, consequence, or both. For example, probability may vary because of the volume of shipping and consequence may vary due to cultural or environmental sensitivities.

The fixed requirements that define the 10,000 tonne capacity are somewhat generic and may not always be sufficient to address local sensitivities. While maintaining a basic level of coverage for all waters within each Geographic Area of Response, the regulations should provide a means of identifying areas needing enhanced response capacity and establish a process for deriving risk-based planning standards for these enhanced response areas. WCMRC's current capacity is generally in excess of the regulated planning standards.

Public-Private Response Model

Canada's regime for large vessels and tankers reflects the polluter pay principle and the public-private partnership model both of which are fundamental components of other world-class regimes.

We believe this is a sensible model for Canada as capacity is funded and maintained by those that create the risk. We believe the role of the industry-funded response organization on the West Coast is clear and that it is functioning effectively.

Recent reports by the Auditor General suggest that the Canadian Coast Guard (CCG) is unable to demonstrate the ability to fully achieve its role under the existing regime. Of particular concern is the need for CCG to adopt the Incident Command System (ICS) of emergency management and provide training to those who would be involved in fulfilling the role of the Coast Guard as the federal monitoring agency and potentially as incident commander under some circumstances.

Through our public consultation efforts, we have learned that the existing regime is not well understood by the public, particularly the multi-agency nature of responsibilities assigned to CCG, Environment Canada, ports, responsible organizations and vessel and terminal operators. We have found that the distributed nature of roles within the regime leads to a perception that it is not well co-ordinated and may be ineffective. While we do not share this view, we find it is compounded by the lack of a co-ordinated and comprehensive explanation of the role of governments. We believe there is a need for public awareness of tanker management practices. We hope that initiatives such as the centre of excellence proposed by Port Metro Vancouver will help fulfill the need for a central and active source of information about the regime, separate from the proponents of West Coast pipeline access projects.

Future Trends

The single most important emerging trend is the changing global demands for Canadian energy production. While Canada has among the highest reserves of petroleum in the world, we do not have the material capacity to trade with any nation other than the United States.

While the US will continue to be our most important trade partner, current global market and geo-political conditions demonstrate why Canada needs to seek access to world markets. Canadian production is being sold at a discount relative to world markets and increased US production is forecast to diminish that country's demand for imported energy. When compared to other countries with significant energy reserves, Canada is unique in its inability to access global markets.

Ensuring maximum value for Canadian energy exports requires access to tidewater markets in the Pacific Rim. To do this responsibly requires a robust regime for environmental protection including marine spill response.

Regional Advisory Councils (RAC)

We believe the concept of citizen input on the performance and adequacy of response capability is part of a world-class regime and that this function as embodied by the RAC should be maintained or enhanced in any future regime. In addition to the role currently provided by the RAC, we believe that the centre of excellence concept proposed by Port Metro Vancouver offers a means to enhance public and Aboriginal involvement on the West Coast.

Standardization

While standardization is an important aspect of the regime and is necessary to ensure there is a basic level of protection for all coastal areas, the regime should also provide a means to establish enhanced regulatory requirements where concern for specific risks warrant. Similarly, the fee structure for funding the response organizations should allow flexibility to ensure that costs are fairly allocated across the services provided by response organizations.

Preparedness

Adequacy

Since the regime was established in the 1990s, the capacity of WCRM has continued to evolve. Today, it significantly exceeds that of the regulated planning standards. Looking forward, we believe it is necessary for the regulated planning standards to provide a standardized level of protection for all Canadian waters south of 60° N while providing a means to sanction enhanced response capacity for areas where specific risks exist.

For response to vessels and oil-handling facilities, we believe the current WCRM is functioning well. Where the need exists for additional response capacity, it should be met through an expansion of WCRM's resources.

For areas where enhanced response capacity is needed, this should be established based on consideration of probability and consequence, with particular consideration to predicted spill volumes, material fate and behavior and geographic setting, including sensitive areas. The regime should be modified to provide means for identification and sanction of risk-based response planning standards for enhanced response areas.

Whether through the private response organizations such as WCMRC, or through the public efforts where new investment in response capacity is required, opportunities to maximize the benefit to First Nations and other communities affected by the possible risks with marine traffic should be sought.

Co-ordination between Governments

As an operator of an oil-handling facility, we recognize the value of clear and consistent regulation. We are committed to meeting or exceeding standards established by the agencies that regulate our operations. Both the Government of Canada and the Government of BC are currently conducting reviews of the marine spill response regime. The effectiveness of these reviews and any resulting recommendations will be enhanced to the degree that they lead to harmonization of regulation and co-ordination of the regulatory agencies involved.

When exercising our response plans, we find it beneficial to include the regulators, First Nations, local governments and other key stakeholders that might form a unified command under ICS in a real event. Established relationships and efficient communication are critical aspects of an efficient response that are best achieved through regular interaction.

While these opportunities exist under the current regime, there may be opportunities to further entrench this type of co-ordination through:

- Establishing a pool of ICS-trained resources from the entities provided memberships by the response organization. In some regimes, members are required to contribute resources in addition to a fee for response arrangements.
- Day-to-day co-location of those with maritime emergency management responsibilities in a single, multi-agency centre with space for emergency response and training.

Risk Information

In addition to risk-based planning standards for areas of enhanced response described above, risk information can be used to inform plans for specific geographic areas. We are currently working with WCMRC to create a GIS system to house such plans and other response information such as:

- Identification of local I resources and infrastructure pertinent to response operations
- Identification of environmental and cultural sensitivities
- Pre-plans to address these issues including Shoreline Assessment Cleanup Techniques (SCAT) for the area that could be effected by a spill from our Westridge Marine Terminal

In addition to a contribution towards the GIS setup, we are conducting the SCAT assessment and providing the data for inclusion into the GIS system. In addition to providing a working system for response in the vicinity of our terminal, this system is intended to be a demonstration project – a working prototype that could be scaled up by WCMRC to provide mapping for other areas of the coast where enhanced response capability is required.

While WCMRC is capable of developing a working GIS system for West Coast response information, sanction for the sensitivities and priorities incorporated within the system should be provided by government.

Response

Diluted Bitumen

We have been transporting diluted bitumen in the Trans Mountain Pipeline and loading it at the Westridge Marine Terminal since the late 1980s when the NEB approved a previous system expansion, in part, for this purpose. Diluted bitumen transported in the Trans Mountain system must meet the quality standards of the NEB-approved pipeline tariff, which includes a limit on maximum density of 940 kg/m³ and a maximum viscosity of 350 cst. Our experience with diluted bitumen suggests that it behaves like other heavy crude oils with these fluid properties.

Due to public concern over the fate and behaviour of diluted bitumen in the marine environment and as part of the work to prepare our expansion application to the NEB, we have recently conducted large-scale tests of two typical diluted bitumen products. These tests were open by invitation to a wide range of regulatory bodies and stakeholders identified through our consultation efforts.

Attendees included Transport Canada, the Canadian Coast Guard, Environment Canada and the US Coast Guard. These tests included scientific assessment of weathering mechanism and toxicity as well as practical tests to determine the effectiveness of conventional skimming equipment, in-situ burning, dispersants and beach-cleaning agents. Results of these tests will be included as part of our application to the NEB. The results will also be available to WCMRC, which participated in the program.

Although these tests were intended as comprehensive opportunities to better understand the fate and behaviour of dilbit, petroleum in general, and other products not included in the MARPOL listing, will remain. Through our experience planning and executing these tests, we found there is a lack of dedicated testing facilities. We believe there's an opportunity to create a testing facility that could be maintained and operated by WCMRC.

Role of Canadian Coast Guard

For response to oil spills from commercial vessels or tankers, the Canadian Coast Guard's role as the federal monitoring agency is appropriate. However, since this service provided by the response organization and other co-ordinating agencies will be structured based on ICS, it is necessary for Coast Guard staff to be capable of taking leadership of a significant spill in case the responsible party is not performing or abdicates its responsibility.

Tanker Safety Panel

Alternate Response Techniques

While the existing planning standards focus on mechanical recovery, other response measures including the use of dispersants and in-situ burning exist and have proven effective in minimizing environmental harm in the event of a spill. However, the effectiveness of these measures can diminish as weathering of the oil progresses. While these methods are not appropriate in all cases, having conditional pre-approval for their use would avoid delays that diminish their effectiveness in situations when they offer a desirable means of diminishing environmental harm. Response organizations should be empowered with conditional pre-approvals for in-situ burning, the use of dispersants and beach-cleaning agents.

Appendices

Appendix 1 Journey of a Tanker

Marine transportation in Canadian waters is authorized and regulated through the *Canada Shipping Act* and related legislation and regulations administered by Transport Canada and the Canadian Coast Guard (CCG).

Before coming to Canada, tankers are required to meet high standards of design and construction:

- Tankers are built according to regulations established by the International Maritime Organization and adopted by their flag state.
- Ship construction and repairs are inspected and documented by a classification society to ensure construction meets these regulations and specifications.
- Tankers are built with double hulls and segregated cargo holds to reduce the possibility of cargo spills and to minimize any potential spill volume, if an accident were to occur.

On an ongoing basis throughout operations, tankers are:

- Inspected by their flag state and by classification societies.
- Vetted by charterer and insurers.
- Inspected in other ports of call by other nations, including those that are signatories to the conventions on port state control (a ship inspection program) to which Canada is also a member.

Upon coming to Canada, tankers are scrutinized to ensure they are compliant with Canadian and Trans Mountain requirements. These requirements include:

- Vessels proposed by a pipeline shipper to receive a cargo at the Westridge Marine Terminal are pre-screened by the Trans Mountain loading master using industry databases and the company's own records before being accepted for scheduling purposes.
- Section 168 of the *Canada Shipping Act* requires that the ship must have an arrangement with a Transport Canada certified response organization (e.g. WCMRC) for spill response service before entering Canadian waters.
- A vessel must contact the CCG for permission to enter Canadian waters before entry.

Upon arrival in Canadian waters, tankers must follow strict communications and guidance protocols:

- The CCG and US Coast Guard (USCG) monitor ship traffic through the Juan de Fuca Strait and the Salish Sea. Four traffic zones are monitored:

- Tofino traffic (entrance to Juan de Fuca Strait, CCG)
 - Seattle traffic (Juan de Fuca Strait, USCG)
 - Victoria traffic (Salish Sea, CCG)
 - Vancouver traffic (Vancouver Harbour, CCG)
- The ship remains in communication with Marine Communications and Traffic Services (MCTS) and the ship's position is monitored throughout the transit. It is handed off between traffic zones as it moves from one to the other. A combination of radar, automatic information system and direct radio communication is used to co-ordinate safe conduct of the vessel with other masters and pilots. Currently, there is no US or Canadian pilotage requirement for transit through the Juan de Fuca Strait.
 - The PPA is the federal organization responsible for the administration of the Pilotage Act on the West Coast. The BC Coast Pilots Association is the organization that provides service under the Pilotage Act and Transport Canada (Canada Shipping Act, 2001). All large foreign vessels are required to have a licensed pilot when in local waters. When loaded, tankers are required to have two pilots. The pilot advises the vessel master on safe navigation and is responsible for safe conduct of the vessel while in pilotage waters.
 - Empty tankers headed for the Westridge Marine Terminal pick up a pilot at the Victoria pilot station near Brotchie Ledge.
 - Under the pilot's guidance, and with supervision from MCTS, the ship navigates through established shipping lanes to the PMV. Ships to and from the Westridge Marine Terminal transit the Juan de Fuca Strait, Haro Strait and Boundary Pass.
 - Empty tankers inbound to the Westridge Marine Terminal do not require tug escort. Laden tankers do require tethered tug escort.

When a ship enters into the PMV's jurisdictional area (within line between Point Atkinson and the US border), a series of established operating rules and protocols apply:

- The PMV rules for conduct of shipping within its jurisdictional area, as documented in the Harbour Operations Manual.
- The PMV operations assign an anchorage for the vessel based on availability and operational requirements. A vessel may anchor at designated locations in English Bay or designated locations off the Westridge Marine Terminal, depending on timing of tides, the Westridge Marine Terminal loading schedule and the ship's own requirements for provisioning or maintenance. In some cases, the ship might proceed directly to the berth.
- When in port, the cargo owner arranges for an agent to assist the vessel with local logistical requirements and interaction with local authorities.
- Pilots leave the ship when it is at anchor, but are aboard anytime it moves, even if just from anchor to dock or back.

- The ship is inspected by Transport Canada on its first arrival in Canada and once per year after that. This might occur at anchor or alongside the Westridge Marine Terminal. Canada is a signatory to both the Paris and Tokyo memorandums of understanding (MOU), conventions on international coordination of inspection requirements. Canada has adopted the MOU requirements into the Canada Shipping Act. Under these MOUs, Transport Canada has access to inspection records from inspections by other signatory jurisdictions and shares Canadian results. Convention entities publish annual reports ranking performance of flag states, which are used as a basis to accept or deny entry of vessels.

When a tanker berths at the Westridge Marine Terminal:

- The ship is assisted by docking tugs and made fast at the Westridge Marine Terminal dock.
- The Trans Mountain loading master boards the vessel to conduct a physical inspection and to conduct a ship-shore safety meeting with the master and terminal operators.
- The loading facility is operated in accordance with regulations established by NEB, Transport Canada and others, as required.
- A boom is deployed to enclose the ship and terminal. A second boom is on hand as a backup in case of emergency. WCMRC moors a skimming vessel at Trans Mountain's utility dock west of the loading dock.
- Loading arms and vapour recovery lines are connected to the tanker. The Westridge vapour destruction system is started and loading commences. Loading typically takes 24 to 36 hours depending on the size of the vessel.
- The Trans Mountain loading master is on board throughout the process, monitoring the condition of ship and crew. The loading master has the authority to stop the loading process if any concerns arise.
- The loading master also provides shipside contact for communication with the terminal.
- Terminal operating procedures include an ERP. Terminal staff are trained in emergency response and regular exercises are held to practice these procedures.
- As required by Transport Canada, Trans Mountain has an arrangement with WCMRC for marine spill response services. WCMRC has spill response equipment staged on the water in Vancouver Harbour and a main base of operations nearby in Burnaby. Similarly, WCMRC maintains equipment caches on Vancouver Island for response in the Salish Sea.

When loading is complete and the vessel departs:

- The loading master stays on board until pilots come to move the vessel away from the dock.
- The ship is cast off and typically goes to anchorage to wait for tide for the Second Narrows transit, as required by the PMV's *Harbour Operations Manual*.
- Two PPA pilots come aboard to assist the tanker in safely navigating out of Canadian waters.
- The PPA requires loaded tankers to have two BC Coast Pilots on board, one to ensure safe conduct of the vessel and one to monitor the bridge crew and ship's systems.
- The PMV's *Harbour Operations Manual* defines the Second Narrows movement restricted area (MRA) and the rules for MRA transits, including tanker size restrictions and tug escort requirements, and speed restrictions. Only one vessel at a time is allowed in the Second Narrows MRA and First Narrows. The MCTS monitors the tanker's progress and other vessel traffic in the harbour.
- Before the transit begins, MCTS declares a clear narrows and the Canadian National Railway is contacted to raise their rail bridge.
- The PMV rules require that two large tugs are tethered to the stern and at least one smaller tug on the bow for the Second Narrows MRA transit. Only the two large tugs tethered to the stern are required for the transit through the remainder of the harbour.
- After clearing the First Narrows, the escort tugs fall away and the ship transits without escort until it approaches East Point on Saturna Island.
- The PPA has established escort requirements for the Salish Sea (Boundary Pass and Haro Strait). The PPA requires a single large tug tethered 1.5 nautical miles before East Point until Race Rocks off Victoria.
- The two onboard BC Pilots disembark at the Victoria Pilot Station (Brotchie Ledge).
- The tugs leave the vessel at Race Rocks as the vessel enters the Juan de Fuca Strait.
- No pilotage or escort is required through the Juan de Fuca Strait. However, as with inbound transits, the tanker and all other traffic are monitored by the MCTS.
- US industry funds a rescue tug at Neah Bay to assist any ships in distress in the Juan de Fuca Strait.
- Upon clearing the Juan de Fuca Strait, the ship continues to its destination.

Appendix 2 Westridge Marine Terminal Description

The Westridge Marine Terminal is located on the south shore of Burrard Inlet, east of the Second Narrows in the City of Burnaby, within the jurisdiction of the Port Metro Vancouver (PMV). See Figure 1 on page 7 which shows the location of the terminal within Vancouver Harbour. The Westridge Marine Terminal is used for:

- Loading synthetic or crude oil onto Aframax or Panamax class tankers and barges
- Off-loading jet fuel from tankers and barges

Jet fuel received at the terminal is delivered to Vancouver International Airport by Trans Mountain's affiliate, Trans Mountain (Jet Fuel) Inc. In addition to the dock, the Westridge Marine Terminal also has three tanks, containing a total volume of 45,950 m³ (289,000 bbl), currently being used for staging jet fuel.

The PMV manages vessel traffic in accordance with its *Harbour Operations Manual* available at:

<http://www.portmetrovancover.com/en/users/marineoperations/navigation.aspx>

The immersed depth (i.e., draft) of loaded vessels transiting the Second Narrows is limited to 13.5 m, under the current operating rules. Furthermore, the PMV's *Harbour Operations Manual* also limits laden tanker transits to near slack water during daylight hours, and requires a minimum of 10 per cent under-keel clearance over a channel width of 2.85 times the beam of the vessel.

The requirement to maintain underkeel clearance at the edges of the channel (channel width) is typically the limiting factor in determining the allowable draft of the vessel. An assessment of available tidal windows over the 19-year tidal cycle shows that a draft of 11.75 m on a 44 m beam Aframax tanker is sufficient to ensure sustainable takeaway capacity from the Westridge Marine Terminal. For a 44-m beam Aframax tanker, the 11.75 m draft corresponds to a heavy oil capacity of 87,400 m³ (550,000 bbl) and a light oil capacity of about 92,200 m³ (580,000 bbl).

These capacities have been used to determine the post-expansion estimate of 34 Aframax tanker loadings per month. Depending on the available tides, the actual draft of laden tankers will be up to 13.5 m.

While loadings at the Westridge Marine Terminal fluctuate based on market conditions, currently five tankers and three barges are typically handled each month (i.e., two barges outbound with crude oil shipments and one inbound with jet fuel). It is expected that this will increase up to the equivalent of 34 partially loaded Aframax tankers (with an 11.75-m draft) and three barges, an increase of about 30 vessels per month. Crude oil and jet fuel barge traffic is not expected to increase because of the project. Jet fuel receipts will not change because of the project.

Vessels bound for the Westridge Marine Terminal currently account for about three per cent of the total traffic in the PMV's jurisdiction. Because of the expanded TMPL system, vessel movement and loading facilities are expected to account for 14 per cent of the total traffic in the

PMV based on current activity, which represents an increase of about 11 per cent over current traffic levels.

Preliminary design of the additional facilities at the Westridge Marine Terminal is currently underway. These plans include constructing two new docks:

- One dock with two berths for Aframax and Panamax tankers and oil barges
- One dock with one operational berth for Panamax tankers and barges (oil and jet fuel)

In addition, the plans include construction of a utility dock with multiple berths for pilot launches, tugs, spill response vessels and equipment.

The dock facilities at the Westridge Marine Terminal were constructed in 1957 and will require significant upgrades or reconstruction before 2020. If cost-effective upgrading can be done to the existing dock while it is operational, this will replace the need for a single berth face dock. Otherwise, the existing dock will be removed and replaced.

The exact configuration of the new docks has yet to be determined, and depending on their location some nearshore dredging might be necessary to accommodate construction of the new docks.

The Westridge Marine Terminal docks will be equipped with:

- Fender and mooring structures
- Vessel access towers
- Delivery and receipt pipeline systems
- Loading and unloading arms
- Vapour recovery systems and fire-suppression systems, similar to those that currently exist at the terminal

Additional tanker support systems that are being considered include refueling from barges and using shore power to limit generator use. Currently, only five per cent of the international tanker fleet is equipped to take shore power, so it might not be feasible to enforce the use of shore power at this time.



Photo of the Westridge Marine Terminal in the 1950s.

Appendix 3 Westridge Marine Terminal Operation

All vessels visiting the Westridge Marine Terminal are vetted by KMC to ensure they meet Trans Mountain's vessel quality criteria. In addition to Trans Mountain's own vessel screening and inspection program, tankers docking at the Westridge Marine Terminal will meet all applicable local and international rules and regulations, and will be inspected by Transport Canada for compliance. The PMV manages vessel traffic within the harbour in accordance with their *Harbour Operations Manual*.

The Canadian Coast Guard (CCG) (a Special Operating Agency of the Department of Fisheries and Oceans Canada [DFO]) monitors vessel movements within Canadian waters, including PPA mandated areas. The PPA ensures safe conduct of vessels in mandated pilotage areas, which includes the shipping corridor between Westridge and Vancouver Island. Where designated vessel traffic lanes exist, the vessels will normally follow those lanes.

In addition to inspections conducted by Transport Canada and other agencies, Trans Mountain conducts a physical inspection of each vessel before it is allowed to berth at the Westridge Marine Terminal. At the Westridge Marine Terminal, all vessel screening and loading operations have been and will continue to be supervised by Trans Mountain's loading master, who has tanker command experience and is on board during all vessel loadings. The loading master's key responsibilities are:

- Screening, inspection and acceptance of tankers
- Continuously monitoring the condition of each vessel and its crew while berthed at the terminal
- Supervising loading operations to ensure safety and conduct, in accordance with Trans Mountain's procedures and applicable regulations
- Taking actions necessary to ensure the safety and protection of the environment, including refusal to berth, interrupting loading or casting-off of the vessel
- Monitoring the performance of the ship and its crew and to ensure effective communication between terminal staff and the vessel's officers and crew



Westridge Marine Terminal – Current.

Appendix 4 Emergency Preparedness and Response Program

Trans Mountain has in place a comprehensive emergency preparedness and response program in accordance with the EHS policy and Section 32 of the NEB *Onshore Pipeline Regulations, 1999*. The emergency preparedness and response program (ERP) consists of:

- A response management system
- Training and spill response exercises
- Spill response resources for the pipeline and for the Westridge Marine Terminal

Emergency Response Plan

Trans Mountain maintains a geographically based ERP that includes:

- Information pertaining to notification requirements
- Emergency checklists and contacts
- Response team organization
- Facilities and pipeline information
- Material safety data sheets
- Health and safety plans
- Route maps depicting control points and environmentally sensitive areas

The ERP, including field guides containing route maps and critical initial response procedures, has been provided to key field operations and maintenance personnel. A project-specific ERP will be prepared for construction and commissioning activities. The existing operations ERP will be revised to reflect the response requirements of the expanded system in advance of starting operations.

Response Management System

Since 1990, Trans Mountain has been delivering its community awareness and emergency response program to emergency services organizations and government agencies along the TMPL system corridor.

The objectives of the program are to familiarize first responders with the pipeline location, explain the properties of the pipeline's contents and promote information exchange and co-ordination of response efforts in the event of an incident. As part of the response management system, Trans Mountain staff members are trained in the emergency response procedures and conduct regular emergency exercises, some of which include local first responders. Trans Mountain also has standing agreements for contract resources to provide response equipment and labour, air and human health monitoring, environmental assessment and emergency management.

Trans Mountain has adopted the incident command system (ICS) as the basic response structure for its emergency response teams. The ICS, developed in the US almost 30 years

ago, is now the system preferred by emergency response organizations around the world to handle a wide variety of emergency situations, including oil spills.

Training and Spill Response Exercises

Emergency response training is provided to head office and field personnel to promote readiness in the event of a spill. The training includes classroom instruction on the ICS, with general knowledge of the system and procedures, and more specific training for individuals with specific roles in the event of an emergency. Regularly scheduled ICS training is used to ensure that Trans Mountain employees, government personnel and first responders (e.g., local fire departments and police detachments) are trained to fulfill the key ICS roles. A combination of tabletop and field deployment exercises are used to simulate an emergency and to ensure that employees are fully trained in activation of the emergency response plans and are familiar with the deployment and capability of the equipment used. Trans Mountain will revise its ICS for the expanded operation before the start of pipeline commissioning.

Spill Response Resources

If an incident occurs at the Westridge Marine Terminal, the presence of the Trans Mountain loading master on board the vessel ensures an immediate co-ordinated response. The loading master has command experience and remains on board the tanker throughout the loading operation to monitor the performance of the vessel and its crew and to ensure effective communication between the terminal staff and the vessel's officers and crew.

Once a vessel is secured alongside the dock it is encircled by a containment boom. This is as a precautionary measure to confine potential spills to the immediate area of the terminal and to facilitate rapid response and recovery. Trans Mountain also maintains a secondary boom and a boat at the terminal for immediate deployment in the event of an incident.

In addition to its own equipment, and as required by the *Canada Shipping Act*, Trans Mountain is a member of Western Canada Marine Response Corporation (WCMRC) and is contracted with the corporation to provide spill response services for the Westridge Marine Terminal. WCMRC's main operating base is located in Burnaby near the Westridge Marine Terminal and it maintain several response vessels on the water in Vancouver Harbour to ensure a prompt response, including a skimming vessel kept at the Westridge Marine Terminal.

Trans Mountain maintains an Emergency Preparedness and Response Plan for the Westridge Marine Terminal that would be used to manage the response to a spill. This plan will be evaluated for its suitability to the expanded operation and will be revised as necessary to ensure the safety of people and the environment. This plan forms the basis for regular emergency response training and exercises that are conducted with terminal staff and other agencies. Trans Mountain works closely with the PMV, Transport Canada, the Pacific Pilotage Authority (PPA) and other agencies to ensure the safety and efficiency of vessels calling at the Westridge Marine Terminal. In 1976, Trans Mountain was a founding member of the spill response cooperative that has become WCMRC and continues to be a part owner of the organization.

Appendix 5 Traffic Analysis – Juan de Fuca and Haro Straits



This diagram is based on AIS (Automatic Identification System) 2011 data recorded by the Marine Exchange in Seattle, Washington.

Appendix 6 Discussion Topics (Marine) at Information Sessions

In the BC Lower Mainland, we held six public information sessions in communities along the project's marine corridor. A combined total of 482 people attended these sessions (November 2012) in Vancouver (three sessions), North Vancouver, West Vancouver and on Bowen Island.

This table summarizes the most common questions and discussion topics raised at the BC Lower Mainland sessions related to marine transportation of oil.

| Key Topics of Interest or Concern | Comment Summary |
|-----------------------------------|--|
| Marine Spills | <ul style="list-style-type: none"> • Potential impact of spill on biodiversity of Fraser Delta ecosystem and Burrard Inlet • Increased risk of spill with increased tanker traffic • Providing perspective through the evaluation of spill risk in context of other risks • Methods of reducing the risk of a spill • Implications of the closure of the Kitsilano Coast Guard worst-case spill scenario • Impacts of a spill of bitumen versus refined products • Proportion of product that can be cleaned up following a spill • Environmental impact of a spill in Vancouver Harbour • Exxon Valdez as an example of the longevity of environmental effects • Impacts of a spill on human health and quality of life in coastal areas • Carcinogenic effects of products • Threat to the regenerated herring fishery and newly returned resident whale populations • Work with the community to address concerns about oil spill impacts • Liability for marine spills • Ability to recover costs from responsible parties • Cleanup costs that will be paid by taxpayers • Increase in spill response capacity to cover increase in tanker traffic |
| Marine Tankers | <ul style="list-style-type: none"> • Tanker size and volume • Storage of oil onboard tankers • Safety features such as double hull • Tanker navigation in harbour and through narrows • Tanker navigation in shipping lanes through the Gulf Islands • BCIT training facility for tanker pilots • Process for loading tankers and potential for small spills • Ability of Vancouver Harbour to safely accommodate more tankers • Increased risk of spill due to increased number of tankers • Improvements to tanker design, construction and operation • Investment in clean technology and research and development to improve tankers • Sonar to detect whales and deter them from coming near vessels • Inspections of tankers prior to loading • Records to show each tanker's safety history • Kinder Morgan Canada's involvement in tanker safety and spill prevention • Tugboat escorts in Burrard Inlet and at Saturna Island • Need to alleviate concerns about the impacts of tanker traffic on pleasure craft use |

| | |
|---------|--|
| | <ul style="list-style-type: none"> • Comparison of the number of tankers travelling south to Puget Sound and the number going to Burrard Inlet after the proposed expansion • Comparison of Canadian and US tanker management • Dredging of Burrard Inlet (i.e., is it necessary and whose decision would it be?) • Possibility for tanker size to increase if dredging occurs in the future, and the ability of Kinder Morgan Canada to influence this • Impacts of dredging on tides and on West Vancouver's shoreline near Ambleside |
| Bitumen | <ul style="list-style-type: none"> • Properties of bitumen and dilbit, including corrosiveness • Possibility that bitumen will sink in the event of a marine spill • Ability to clean up spilled bitumen and dilbit • Human health impacts related to spilled bitumen and dilbit • Possibility to refine more products in Alberta so that dilbit and bitumen don't need to be transported by tankers • Possibility for a bitumen research facility at BCIT |

In the BC coastal regions, we held six public information sessions in communities along the project's marine corridor (December 2012 and January 2013). A combined total of 695 people attended these sessions which took place in Nanaimo, Victoria, West Shore, Saanichton, Sooke and on Salt Spring Island.

This table summarizes the most common questions and discussion topics raised at the BC coastal sessions related to marine transportation of oil.

| Key Topics of Interest or Concern | Comment Summary |
|-----------------------------------|---|
| Marine Spills | <ul style="list-style-type: none"> • Risk of a spill • Increased risk with increased volumes of oil • Spill response times • WCMRC equipment locations and response capacity • Proportion of product that could be cleaned up in the event of a spill • Liability regime in Canada in the event of a spill • Cross-border responsibilities • Adequacy of \$1.3 billion to cover the costs of a spill • Ability to collect insurance from responsible parties • Impacts to coastline in the event of a spill • Protection of fragile marine environment • Fate and effects of spilled products |
| Marine Tankers | <ul style="list-style-type: none"> • Tanker volumes and numbers • Safety of tanker design and operation • Double hull construction • Adequacy of existing shipping lanes to accommodate increase in tanker traffic • Potential for unsafe conditions in harbour as a result of increased tanker traffic • Pilotage of tankers and escort tugboats • Impact of increased tanker traffic on orca populations |

Appendix 7 Marine Aboriginal Engagement

Trans Mountain's Aboriginal Engagement team is talking with Aboriginal groups that have traditional rights in coastal and marine areas. The list may evolve as the engagement proceeds. The list includes:

- Cowichan Tribes
- Esquimalt Nation
- Halalt First Nation
- Hwlitsum First Nation
- Lyackson First Nation
- Malahat First Nation
- Musqueam
- Pacheedaht First Nation
- Pauquaching First Nation
- Penelakut First Nation
- Scia'new Indian Band (Beecher Bay)
- Semiahmoo
- Snaw-Naw-As (Nanoose)
- Snuneymuxw First Nation
- Songhees Nation
- Squamish
- Stz'uminus First Nation (Chemainus)
- T'Sou-ke First Nation
- Tsartlip First Nation
- Tsawwassen
- Tsleil-Waututh
- Twawout First Nation
- Tseycum First Nation