



Trans Mountain Expansion Project Presentation to Port of Vancouver North Shore Waterfront Liaison Committee

January 19, 2017
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Agenda

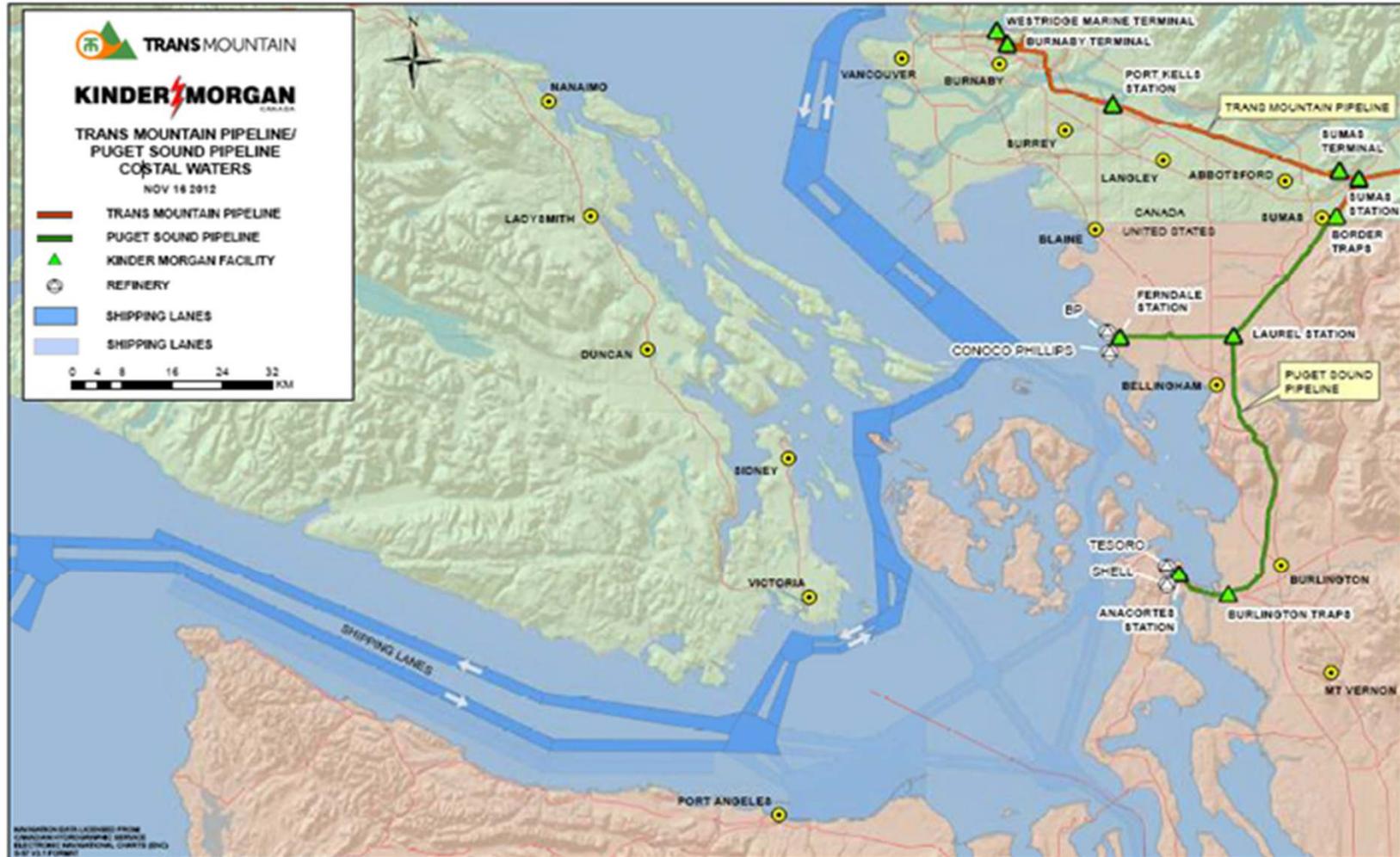
1. Introductions
2. Project Overview
 - Westridge Marine Terminal Expansion Construction and Timeline
3. Marine Transportation
4. Q&A - feedback

Proposed Expansion Project



- \$6.8-billion capital cost
- Expand capacity to 890,000 bpd
- Project scope
 - 980 km new pipe
 - 193 km of reactivated pipeline
 - 12 new pump stations
 - 19 new tanks
 - 3 new tanker berths
- Increase in tanker traffic – not tanker size
- Westridge and Burnaby Terminals construction
- Must meet 157 NEB conditions

Marine Transportation



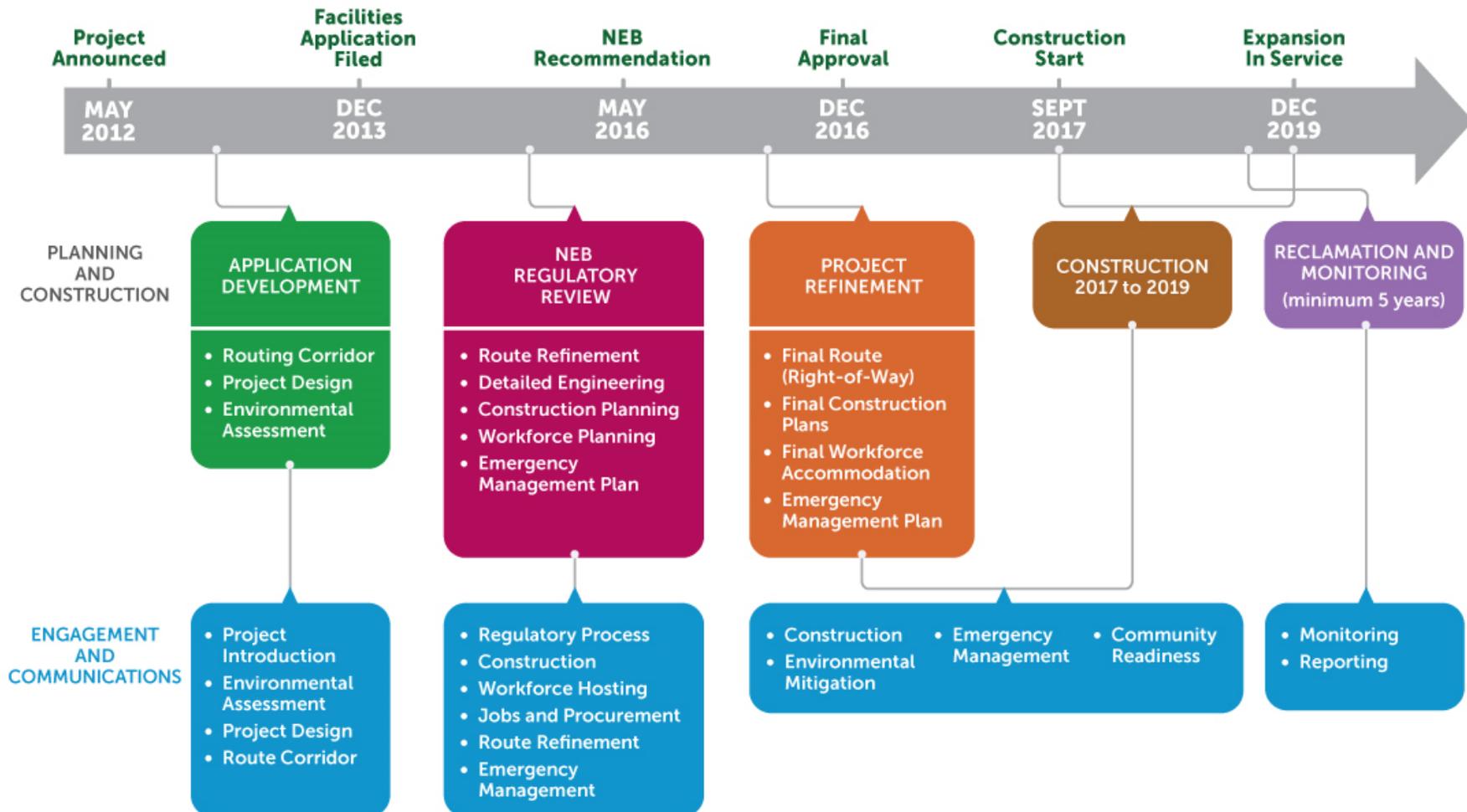
Shipping Lanes
Used by all vessels

TM Current Operations
About 5 tankers/month

TM Future Operations
Up to 34 partially laden
Aframax/month

Remains the Same
TM Route, Products,
Vessel Size

Trans Mountain Expansion Schedule



This schedule is subject to change based on detailed construction planning and regulatory timelines

Westridge Marine Terminal Concept

Proposed dock incorporates within its design:

- Highest level of navigational safety
- Compact footprint to minimize impact on other users
- Controls that minimize disturbances to nearby residents



- Three berths to load Aframax size vessels
- Each berth with its own spill containment boom
- One new berth for utility vessels

Shoreline Development



- Extent minimized during detailed design
- Will accommodate new modern control facilities that enhance safety, environmental protection and emergency response
- Marine habitat enhancements
 - E.g., Fish habitat enhancements
- Safety wall between terminal and train tracks



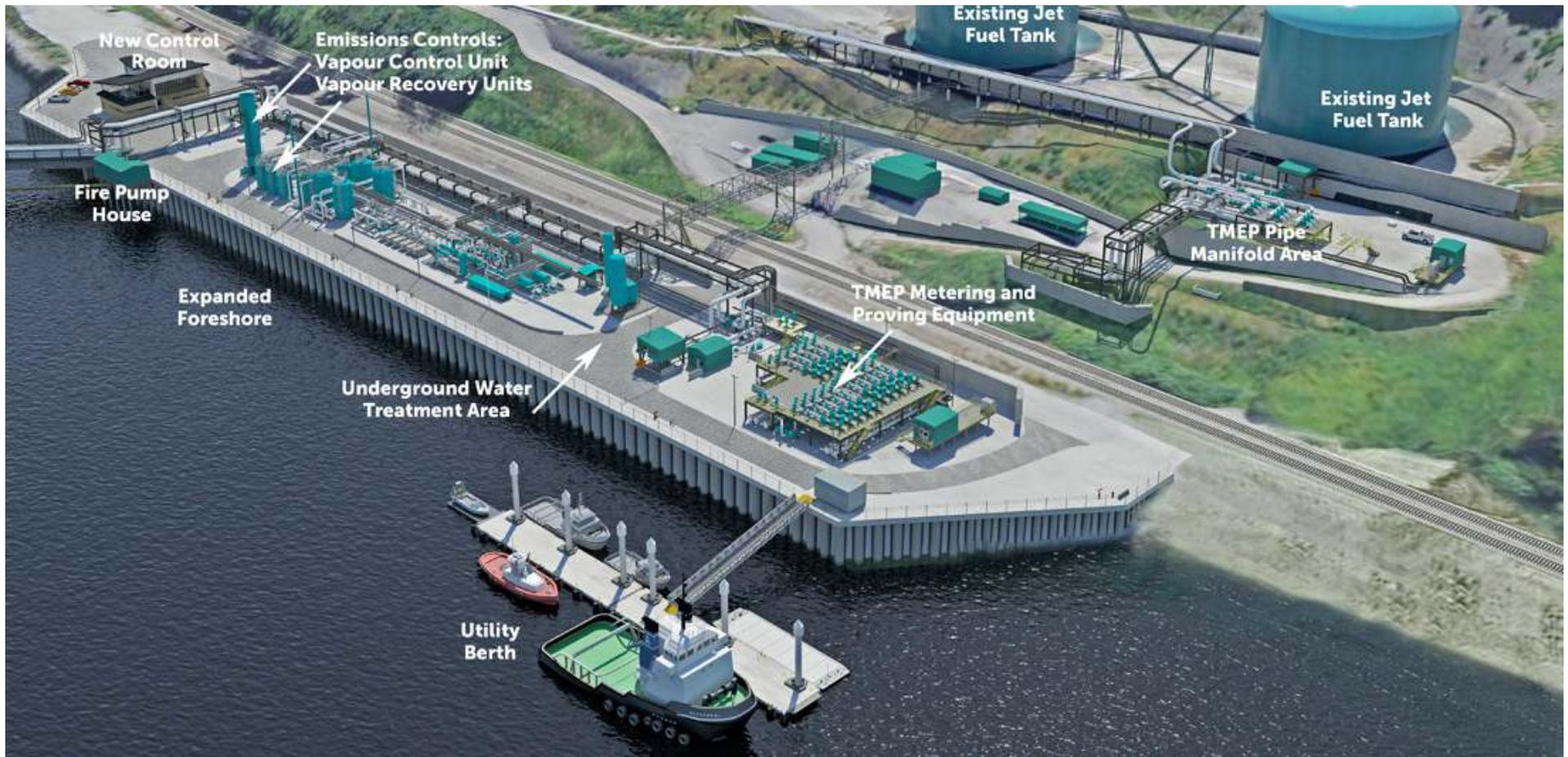
Marine Construction Overview



- Piles: Breasting Dolphin*
 - 48 piles (2.29 m – 7.5 ft)
- Piles: Mooring Dolphin*
 - 48 piles (1.83 m – 6 ft)
- Piles: Loading Platform & Trestle*
 - 80 piles (1.37 m – 4.5 ft)
- 500 m of roadway & pipe rack trestle
- Gangway towers and loading equipment on each berths
- Fender and mooring equipment

**Pile numbers approximate and subject to change with final design*

Foreshore Expansion Construction Overview



- Foreshore wall
- Rip rap removal & structural fill
- Metering and emissions control

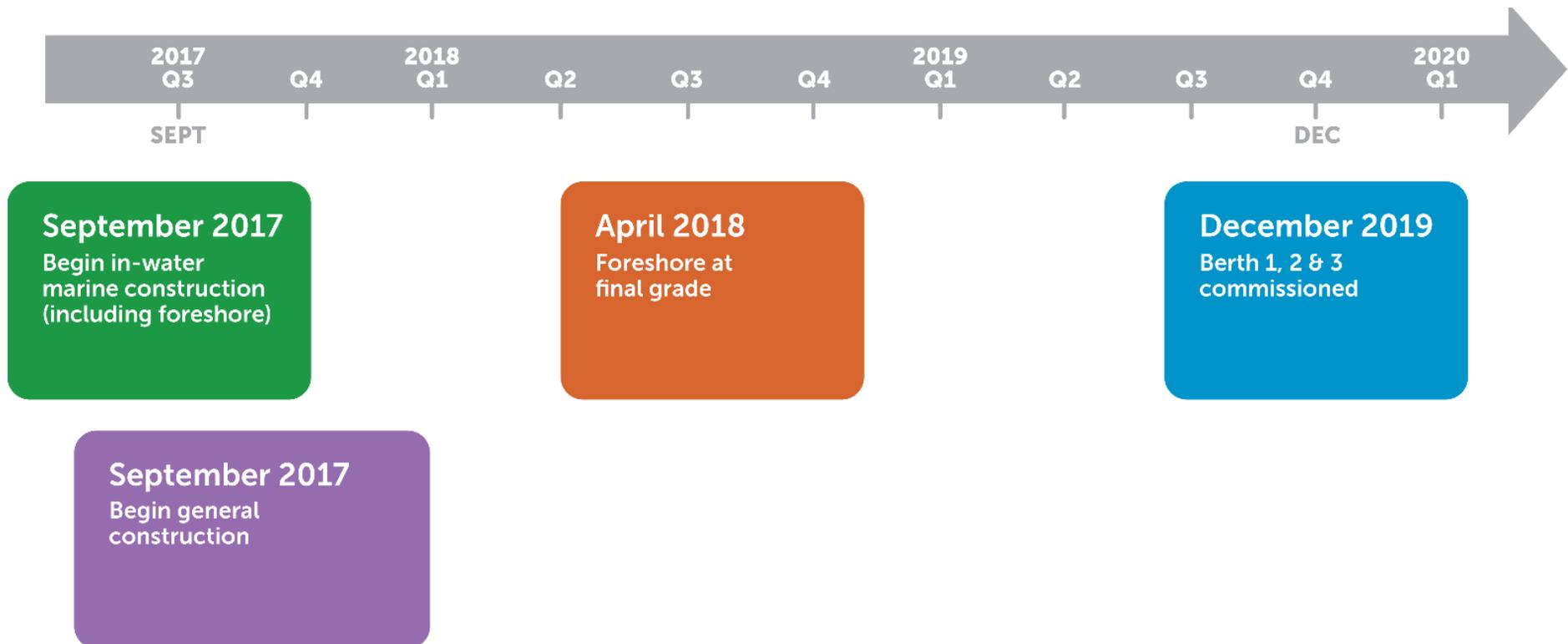
- Safety wall to separate terminal from trains
- Utility berth

Onshore Construction Overview



- Pipe rack
- Valve manifold station
- Inline inspection receiving trap
- Transmission line
- Electrical substation
- Interface with tunnel entrance
- Trenchless underground electrical and pipe to foreshore

Westridge Construction Schedule*



*Subject to receipt of all approvals

Logistics

- Storage barges
 - Office trailers, lunch rooms and washrooms on barges
 - Tool trailers, warehouse and pile storage on barges
- Berth material will be supplied by tugs and supply barges
- Staff, craft and subcontract personnel will park off-site in designated areas
 - Transportation of construction workers to site by shuttle bus
- Only vehicles required to work will be permitted on-site
- Anticipated work hours
 - Monday to Friday, 7 am – 6 pm
 - Saturday work possible, 9 am – 6 pm
 - Night work limited to reduced noise operations
 - No pile driving at night



Navigation and Navigation Safety

Navigation and Navigation Safety Plan



- What:
 - The Navigation and Navigation Safety Plan (NNSP) provides a list of navigable waterways affected by the Project and mitigation measures to address navigation and navigation safety
 - The navigable waterway that interacts with the Westridge Marine Terminal is Burrard Inlet
 - The NNSP does not apply to navigation effects of moving tankers; only presence of expanded marine terminal
- When:
 - Project construction and operations
- Additional Information:
 - NEB Condition 48
 - <https://www.transmountain.com/navigation-safety-plan>

Navigation/Navigation Safety Mitigation



- Planned Mitigation, Marine Terminal:
 - Dock design and siting will not impede boating traffic
 - Continue to work with Vancouver Fraser Port Authority (VFPA) on permitting, design requirements
 - Seek input on strategies to communicate construction schedule and work areas to residents and others
 - Notify marine commercial and recreational operators of hazards associated with construction; place warning signs offshore and onshore near construction activities
 - Ensure barges for heavy equipment access are placed in appropriate areas; Project vessels operated at low speeds
 - Provide detailed design information to Canadian Coast Guard to evaluate need for additional navigational aids

Navigation Safety During Construction



- Navigation and Navigation Safety Plan for the Westridge area will be shared with marine waterway users and implemented after engaging with appropriate authorities and stakeholders
- During construction of Westridge Marine Terminal:
 - VFPA intends to implement a channel design to ensure vessels can safely navigate in the vicinity of Westridge and all the other deep sea terminals in the area
 - The working zone will be demarcated by navigation buoys and other means in consultation with the Canadian Coast Guard and VFPA
 - On-water safety vessels will provide guidance and assistance as required

Complaints Management Process: Principles



- The goals of the process are to:
 - Address stakeholder concerns in a timely manner
 - Meet regulatory obligations
- Objectives and principles:
 - Provide multiple communication channels to address stakeholder communication needs
 - Promote process and communication channels through signage, print, online and social media as well as paid and unpaid media
 - Email, phone and voicemail access
 - Maintain a clear and discrete process for all emergency concerns and complaints
 - Provide contractors with process information
 - Ensure all inquiries and complaints receive timely responses
 - Track and report on all inquiries and complaints
 - Emergency contact availability at all times

Engagement & Communications

- Trans Mountain will regularly communicate and update all marine waterway users, including boaters, commercial fishers and Aboriginal groups on construction activities in the construction area through a variety of methods, including:
 - meetings or workshops with key user groups
 - neighbourhood resident mail-outs
 - local advertising and public service announcements
 - on-water and onshore signage
 - website postings, email notifications, and social media
 - access to email and phone-line contacts

Boating Safety



A ship's blind spot can extend **several hundred metres** ahead of the vessel.

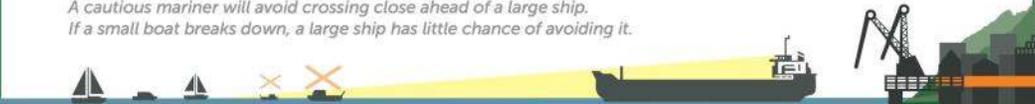
If you cannot see the bridge windows of the large ship they cannot see you. If in doubt, stay clear.



Safety

on the Water

A cautious mariner will avoid crossing close ahead of a large ship. If a small boat breaks down, a large ship has little chance of avoiding it.



SHIPS CAN'T STOP IMMEDIATELY – large ships require more space

Collision Regulations take priority at all times – be completely familiar with these Rules of the Road and any local regulations

SAFETY TIPS



- Maintain a lookout by sight and sound. Sounding five short and rapid blasts is a warning signal



- Make sure the required navigational lights are displayed



- Consider fitting your small craft with AIS (Automatic Identification System) or a radar reflector to be more visible to large vessels



- When in a shipping lane or designated traffic separation scheme, be aware of large ships; cross shipping lanes at a 90-degree angle and keep clear of large ships



- If fishing is allowed in a shipping lane or designated traffic separation scheme, keep as near to the outer edge as possible and leave the centre of the channel open for large ship traffic



- Keep a listening watch on the appropriate VHF channel and set your AIS (if fitted) for information on other ship movements in the area



Marine Transportation

TMEP – Marine Risk



TMEP does not introduce new consequences.

Marine safety enhancements developed from comprehensive risk assessment:

- Analysis of existing traffic and pathways
- Forecast traffic growth to in-service and beyond
- Hazard ID sessions with maritime community
- Oil property testing
- Risk model to calculate accident frequency and credible worst case spill volume
- Oil spill trajectory modeling at 5 locations along route
- ESA considers socio-economic effect of spills

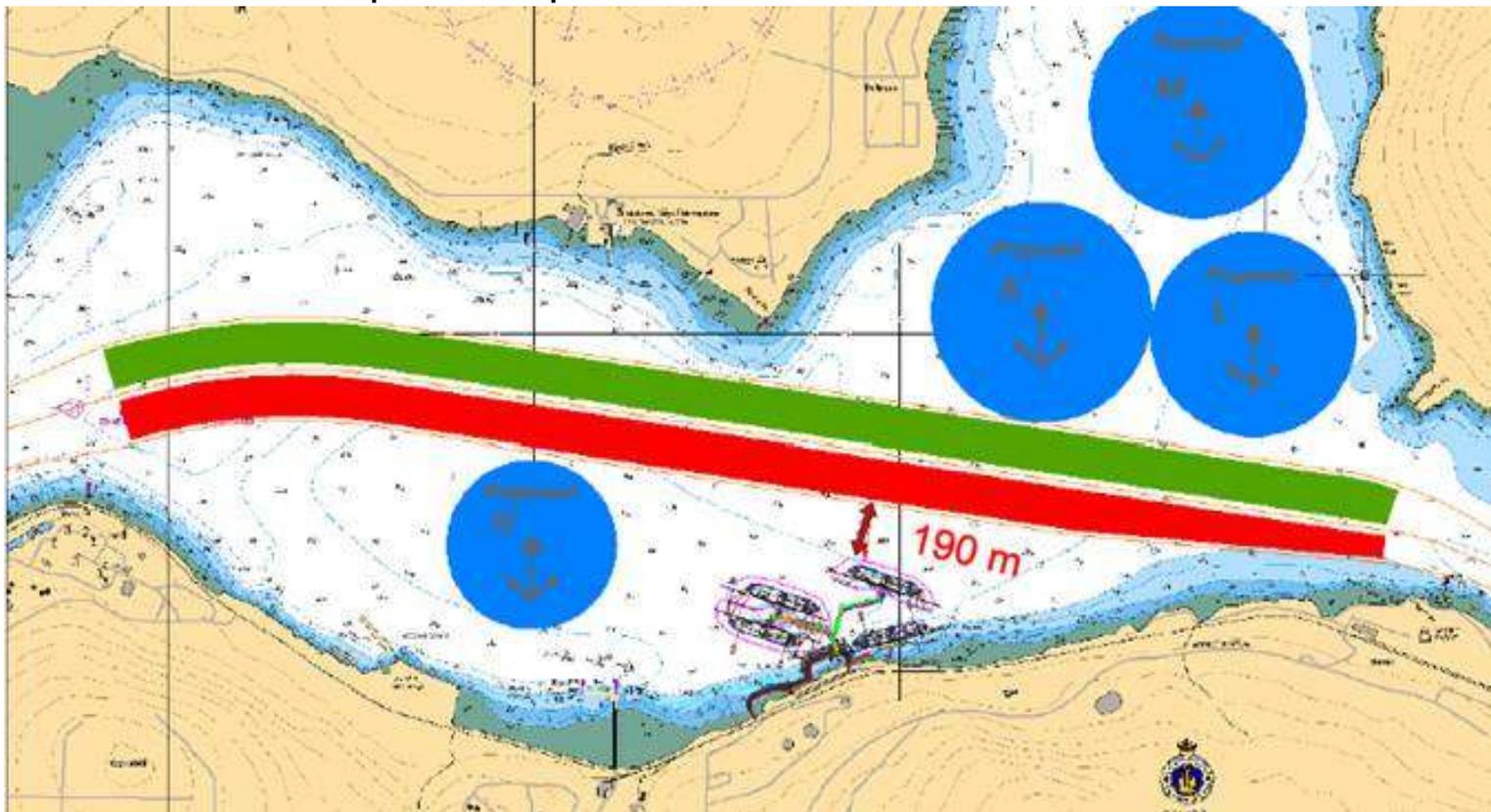
TMEP Marine Overview



- Trans Mountain approach to marine issues has been informed by three principles:
 - Expand within the existing regime
 - Geographically specific and risk based
 - Benefit effected communities
- Risk assessment concluded navigation risk in the region are well-managed; however, increase in oil tanker traffic creates additional risks, including oil spill risk
- Trans Mountain has committed to:
 - **Enhanced tug escorts** and other changes that maintain oil spill probability comparable to current levels despite increased traffic
 - **Enhanced oil spill response** regime for South BC coast that brings significant improvement in capacity and response time – benefits all users
- NEB Conditions require TMEP marine commitments to be fulfilled

Navigation in Burrard Inlet

- Vessel follow MRA-2 rules (VFPA Port Information Guide)
- Passing Ship Channel
 - VFPA to implement prior to construction

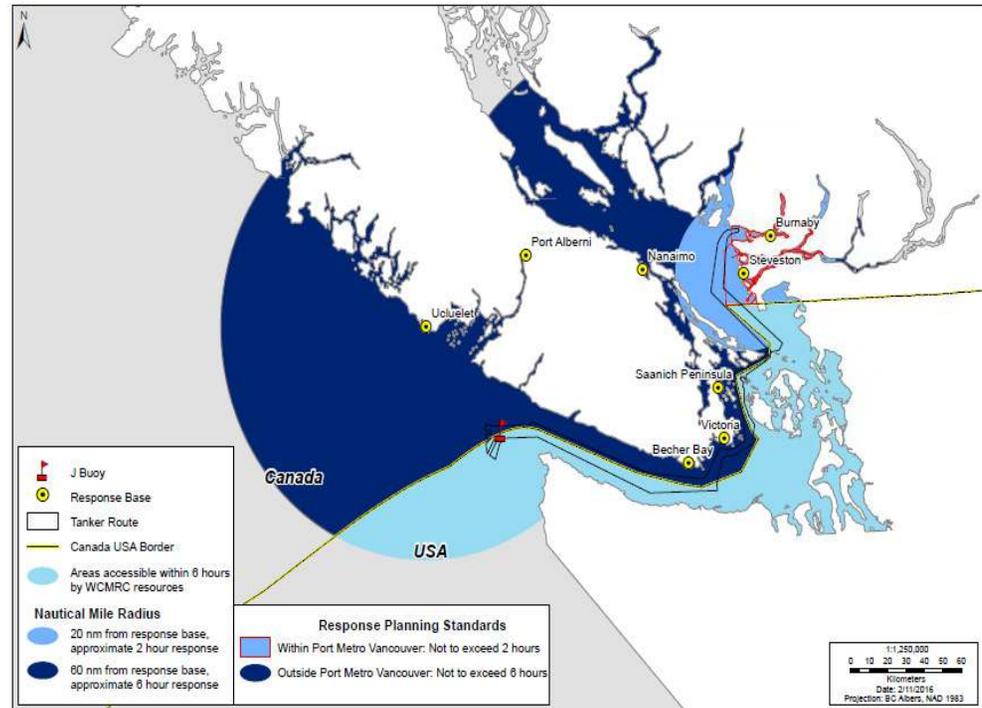


Ref: Passing Ship analysis

Enhanced Oil Spill Response



- >\$150 million investment in WCMRC
- Doubling of mandated capacity (20,000 tonnes) – more than CWC
- Half response time for large spills (36 hour)
- 2,500 tonnes x 6 hour initial response in entire shipping route
- 5 new bases, 100 jobs
- Strong FN support (e.g. Beecher Bay)
- WCMRC resident capacity in Salish Sea will be comparable to WA State requirement for WCD



- WCMRC’s enhanced response plans shall comprehensively address all aspects of oil spill response in accordance with TMEP Proposal (Vol 8A, Table 5.5.3)

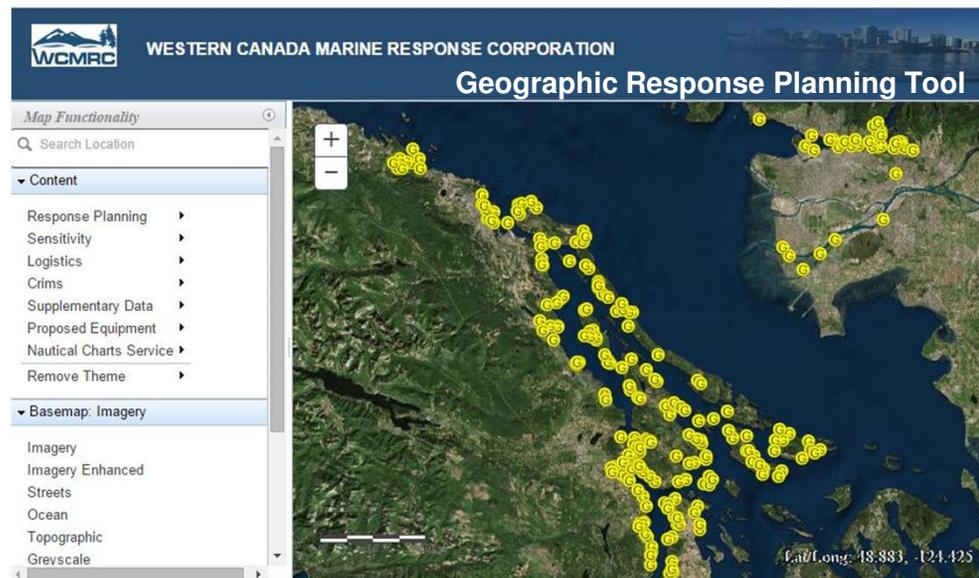
- Will be verified by Lloyds Register Shipping



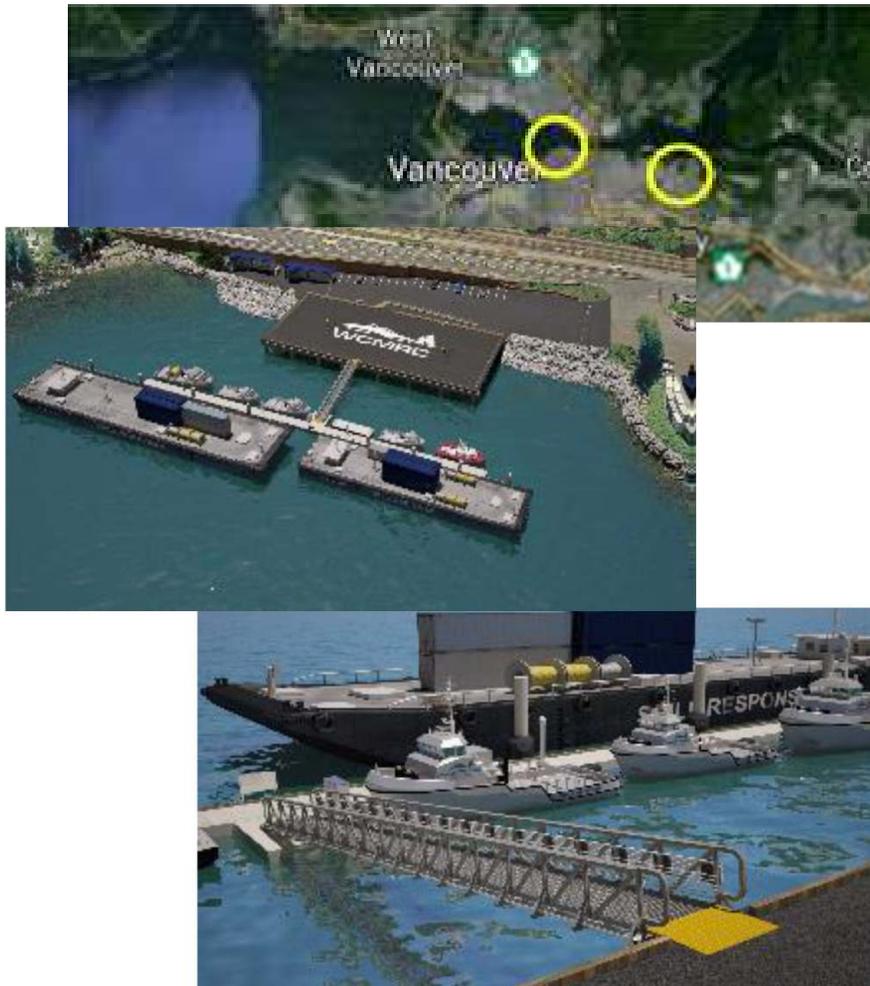
Enhanced Oil Spill Response



- Various new vessels, e.g.:
 - Skimming vessels
 - Boom vessels
 - Landing craft
 - Boom skiffs
 - Work boats
 - Storage barges
 - Mini barges
 - Supply vessel
- Fresh response equipment, e.g.:
 - Current busters
 - Firebooms
 - Unsheltered booms
 - Shoreseal booms
 - GP booms
 - Portable skimmers
 - Shoreline flushing kits
 - Communication equipment
 - Other items



WCMRC Vancouver Harbour Response Strategy



Locations:

- 2800 Commissioner St. - Vancouver (24/7 Satellite Base)
- Shellburn Facility
- Fraser River (24/7 Satellite Base)
- Satellite Base
- Initial rapid response for Vancouver Harbour
- New Personnel required = 35
- Completion anticipated in Q2 2018

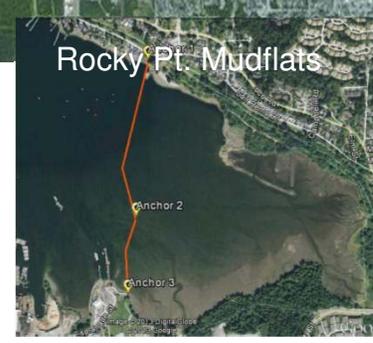
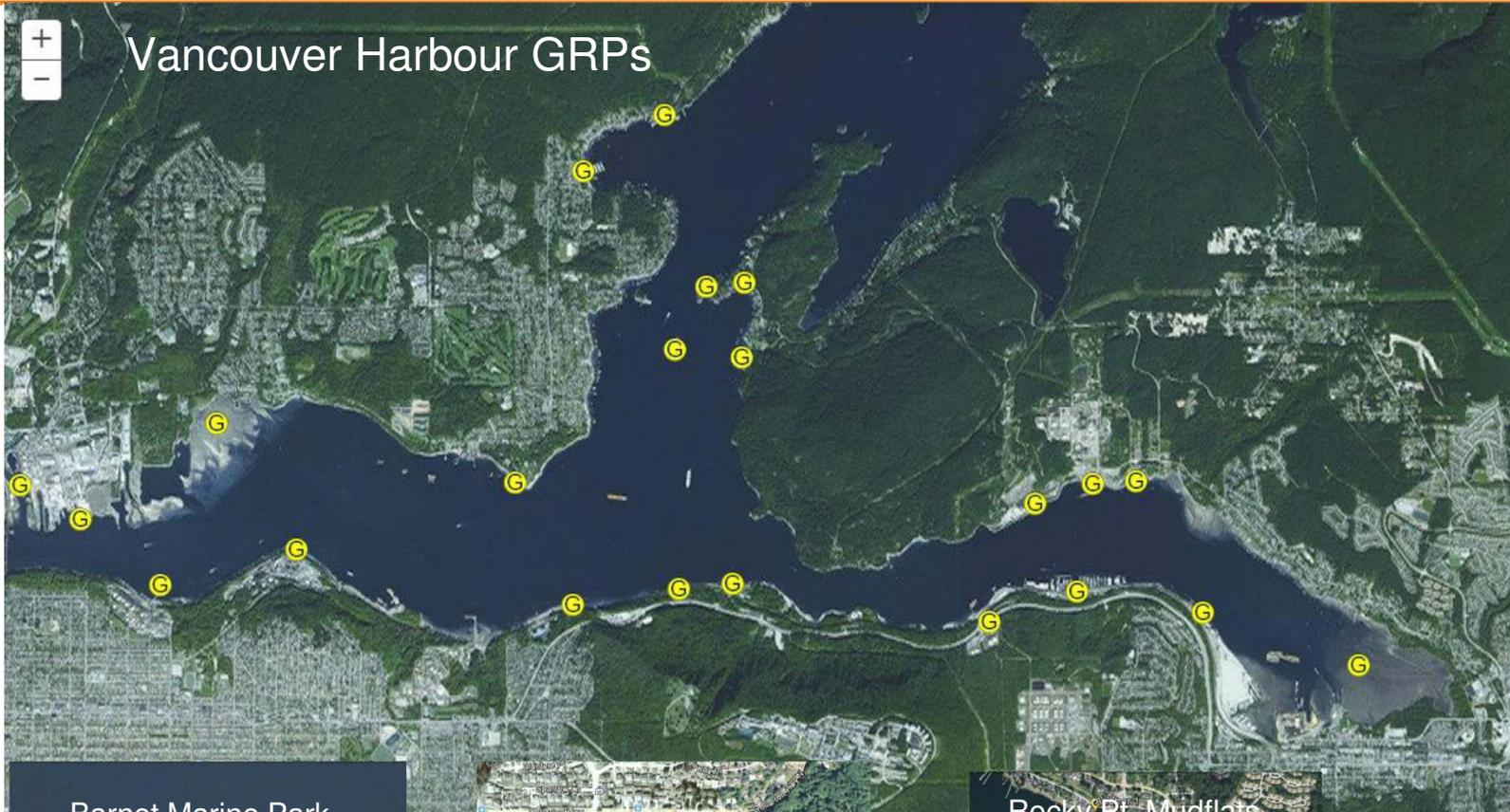
Key Response Vessels:

- Skimming Vessel
- Boom Vessel
- Barges
- Landing Craft & Workboats

Geographic Response Plans:

- Site specific

WCMRC Vancouver Harbour Response Strategy



WCMRC



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Additional Slides

NEB Conditions (Marine)

- **91 – Plan for implementing marine shipping-related commitments**
 - at least 2 months prior to commencing construction, a plan describing how it will implement, monitor, and ensure compliance with its marine shipping-related commitments identified in Condition 133.

- **131 – Marine Public Outreach Program**
 - at least 3 months prior to commencing operations, a report describing completed activities and observed outcomes of Trans Mountain’s Marine Public Outreach Program, and any further planned activities for this program

- **132 – Marine Mammal Protection Program**
 - at least 3 months prior to commencing operations, a Marine Mammal Protection Program that focuses on effects from the operations of Project- related marine vessels.

- **133 – Marine shipping-related commitments**
 - 3 months prior to loading the first tanker confirmation that it has implemented:
 - a) Enhanced tug escort through developing a tug matrix and including it as part of Trans Mountain’s Tanker Acceptance Standard. The tug matrix would prescribe minimum tug capabilities required to escort outbound laden tankers between the Westridge Marine Terminal and Buoy Juliet,
 - b) Enhanced marine oil spill response regime capable of delivering 20,000 tonnes of capacity within 36 hours of notification, with dedicated resources staged within the study area,

- **134 – Updated Tanker Acceptance Standard**
 - at least 3 months prior to loading the first tanker, and thereafter on or before 31 January of each of the first five years after commencing operations, an updated Tanker Acceptance Standard and a summary of any revisions.

- **144 – Ongoing implementation of marine shipping-related commitments**
 - on or before 31 January of each year after commencing operations, a report, signed by an officer of the company, documenting the continued implementation of Trans Mountain’s marine shipping-related commitments

Marine Leadership



- Trans Mountain is a leading member of the Salish Sea marine community
- Decade-long record of contributions to marine safety and efficiency:
 - Funding for VFPA tug escort improvements
 - Application of tug escort improvements to Salish Sea transits
 - Studies and support for nav-aid improvements
 - Funding of BCIT marine training simulator
 - Funding of modern pilotage equipment – PPU's
 - Funding and support for joint tug-master and pilot training
 - Funding of pilot helicopter deployment
 - Funding southern resident orca program – ECHO
 - TMEP marine commitments
- All marine communities benefit



Other Project Benefits to Salish Sea Communities

- Member of Green Marine program since 2013, with a commitment to continuous improvement
- KMC has a tanker acceptance standard – will continue to encourage vessel operators to participate in local environmental initiatives such as reductions in pollution and underwater noise
- \$50K donation to the Pacific Salmon Foundation in 2015 for Burrard Inlet salmon habitat enhancement. The Project is also working with PSF on a 3rd party verification of stream crossings
- Support for the Pacific Wildlife Foundation and Bird Studies Canada to complete marine bird mapping of Burrard Inlet and will continue to support marine bird monitoring
- Support for the Fraser Basin Council with \$30,000 toward the Lower Mainland Flood Management Strategy, in addition to current practices of mitigating flood and seismic risks
- Long-term host of Westridge Elementary School fish release program, DFO fish pen located at Westridge dock which will persist after construction
- Kinder Morgan Foundation invests in school programs, community groups and environmental organizations. For example over \$200,000 has been invested in Burnaby since 2007 and over, \$42,000 to the North Shore since 2012
- Of the anticipated \$1.15 billion in construction spending in the Metro Vancouver region, with workers spending about \$160 million on things such as accommodation, meals and clothing. The Project will spend \$750 million upgrading Burnaby Terminal and Westridge Marine Terminal and hire about 700 construction workers for these two projects alone
- Each tanker that docks at our terminal spends an average of \$366,000 in the region - that means our expansion will generate an additional \$127 million of spending each year on services