ROBERTS BANK TERMINAL 2 PROJECT
Preliminary Environmental Mitigation Concepts
SEPTEMBER 15—OCTOBER 10, 2014
Consultation Discussion Guide and Feedback Form

A part of the CONTAINER CAPACITY IMPROVEMENT PROGRAM

FEEDBACK FORM INSIDE!
Online Feedback Form Available at portmetrovancouver.com/RBT2
ABOUT THE ROBERTS BANK TERMINAL 2 PROJECT

The Roberts Bank Terminal 2 Project is a proposed new three-berth container terminal at Roberts Bank in Delta, BC. The Project would provide 2.4 million TEUs (twenty-foot equivalent units) of container capacity per year, which will be required to meet forecasted demand in the early to mid-2020s. The proposed Project is undergoing a federal environmental assessment by an independent review panel and requires regulatory approval before it can proceed.

As part of the environmental assessment process, Port Metro Vancouver is currently developing an Environmental Impact Statement (EIS), which will summarise the results of several years of work identifying and assessing the potential effects of the construction and operation of the proposed Project on the environment, adjacent communities, the economy, heritage and health. The EIS will outline proposed measures to mitigate potential adverse effects, and will be the subject of a public comment period during the environmental assessment process. The EIS will be submitted to the Canadian Environmental Assessment Agency (CEA Agency) in early 2015.

MEETING SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Thursday, September 25</td>
<td>Small Group Meeting* 2:00 pm–4:00 pm</td>
<td>Coast Tsawwassen Inn 1665 56 Street, Delta</td>
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<tr>
<td>Thursday, September 25</td>
<td>Open House 5:00 pm–8:00 pm</td>
<td>Coast Tsawwassen Inn 1665 56 Street, Delta</td>
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<tr>
<td>Saturday, September 27</td>
<td>Open House 10:00 am–1:00 pm</td>
<td>Kin House 5050 47 Avenue, Delta</td>
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<tr>
<td>Monday, September 29</td>
<td>Small Group Meeting* 6:00 pm–8:00 pm</td>
<td>Delta Town &amp; Country Inn 6005 Highway 17A, Delta</td>
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* To register for a small group meeting, please email container.improvement@portmetrovancouver.com or call 604 665 9337. Registration is not required for open houses.

Please visit portmetrovancouver.com/RBT2 for any potential changes to this schedule.

ABOUT PORT METRO VANCOUVER

Port Metro Vancouver is a port authority created pursuant to the Canada Marine Act. The purpose of the Canada Marine Act is to, among other things:

- Promote the success of Canadian ports to contribute to the competitiveness, growth and prosperity of the Canadian economy
- Ensure that marine transportation services satisfy the needs of users at a reasonable cost
- Provide for a high level of safety and environmental protection
- Manage marine infrastructure in a commercial manner, taking into account input from users and the community

Port authorities are accountable to the federal Minister of Transport.

As the most diversified port in North America, Port Metro Vancouver operates across five business sectors: automobiles, breakbulk (forest products, steel products and large machinery), bulk (grain, sulphur, potash and coal), container (household goods, food and construction materials) and the cruise sector. The Port facilitates trade with more than 160 world economies, and handles $184 billion of cargo each year.

HAVE YOUR SAY

Between September 15 and October 10, 2014, Port Metro Vancouver is conducting consultation regarding Preliminary Environmental Mitigation Concepts for the proposed Roberts Bank Terminal 2 Project. This is the fourth round of Port Metro Vancouver-led public consultation since 2011 regarding the Project.

You can learn more and provide your input by:

- Reading this discussion guide
- Attending a small group meeting or open house
- Completing the feedback form online at portmetrovancouver.com/RBT2
- Joining the conversation online at porttalk.ca/RBT2
- Calling 604.665.9337
- Providing a feedback form or submission to:
  - container.improvement@portmetrovancouver.com
  - Port Metro Vancouver, Attention: Roberts Bank Terminal 2 Project
  - 100 The Pointe, 999 Canada Place, Vancouver, BC V6C 3T4
  - Fax: 1.866.284.4271, Attention: Roberts Bank Terminal 2 Project

Please provide your feedback by October 10, 2014.

Please visit portmetrovancouver.com/RBT2 for any potential changes to this schedule.
WHY WE WANT TO HEAR FROM YOU

Public input is an important part of project development and the environmental assessment process. Throughout the consultation process for the proposed Roberts Bank Terminal 2 Project, Port Metro Vancouver has asked for public input on different topics regarding the project design and environmental studies and mitigation. During this consultation round, Port Metro Vancouver is seeking feedback regarding proposed environmental mitigation for topics that were raised as areas of interest by participants in previous rounds of consultation. Specifically, Port Metro Vancouver is seeking feedback regarding proposed environmental mitigation for the following topics:

- Light
- Noise
- Air quality
- Onsite habitat concepts for marine vegetation, marine invertebrates, marine fish and coastal birds

The information in this discussion guide reflects current planning for the proposed Project for the purposes of consultation, and is subject to change as the Project is further defined. At the end of this round of consultation, a Consultation Summary Report will be produced, summarising the input received. The input gathered during this consultation will be considered, along with technical and economic information and information obtained from Aboriginal groups and from regulators, as Port Metro Vancouver prepares and finalises the Environmental Impact Statement for submission in early 2015.

Thank you for your participation.

WHAT IS MITIGATION?

Mitigation includes measures to avoid, minimise, restore or offset the potential adverse effects of a project.

PAST CONSULTATION REGARDING THE PROPOSED ROBERTS BANK TERMINAL 2 PROJECT

Port Metro Vancouver-led consultation regarding the proposed Roberts Bank Terminal 2 Project began in 2011 and has included three previous rounds:

- Pre-Consultation (June 2011) asked the community, stakeholders and the public about how they wanted to participate in consultation and about what topics they wanted to discuss.
- Project Definition Consultation (October—November 2012) presented a conceptual design for the Project and sought input from the community, stakeholders and the public about key impacts, benefits and features of the proposed Project.
- Pre-Design Consultation (October—November 2013) provided additional details about the conceptual design of the proposed Roberts Bank Terminal 2 Project as it was submitted to provincial and federal regulators to initiate the environmental assessment process.

Consultation materials from these rounds, including Discussion Guides, Consultation Summary Reports and memos outlining Port Metro Vancouver’s Consideration of Consultation Input are available on the Project website at portmetrovancouver.com/RBT2.

A separate but parallel consultation process with Aboriginal groups is underway.

PORT METRO VANCOUVER-LED CONSULTATION*

Pre-Consultation (June 2011)

Provide opportunities for local communities, stakeholders and public to provide input into the design of the consultation program.

COMPLETE

Project Definition Consultation (October 22 to November 30, 2012)

Identify potential issues and impacts for the environmental assessment, and consultation on features of the proposed Roberts Bank Terminal 2 Project.

COMPLETE

Pre-Design Consultation (October 7 to November 12, 2013)

Present information regarding the conceptual project design, and seek input regarding elements of the project and the development of environmental mitigation plans.

COMPLETE

Preliminary Environmental Mitigation Concepts (September 15 to October 10, 2014)

Consultation regarding proposed environmental mitigation.

Detailed Design Consultation (TBC)

Consultation on fewer but more specific details of project design and construction management as project design is finalised.

*Port Metro Vancouver-led consultation with communities, stakeholders and the public, and Port Metro Vancouver-led consultation with Aboriginal groups will continue throughout Project development. Other communications and community engagement activities will be undertaken throughout Project review.
THE PROPOSED ROBERTS BANK TERMINAL 2 PROJECT

The Roberts Bank Terminal 2 Project is a proposed new three-berth container terminal at Roberts Bank in Delta, BC. If built, the Project would provide 2.4 million TEUs (twenty-foot equivalent units) of container capacity per year, which is required to meet forecasted demand in the early to mid-2020s.

The proposed Project consists of three components:

- A new marine terminal adjacent to the existing Roberts Bank terminals
- A widened causeway to accommodate additional road and rail infrastructure
- Expansion of the existing Roberts Bank tug basin

A video showing the Project components can be found in the About the Project section at portmetrovancouver.com/RBT2.

WHY CONTAINERS?

Containers are constructed of steel, which allows for repeated use and the safe transport of a diverse range of goods. Their standardised design means that they can be easily and quickly transferred between ships, trains and trucks.

Container trade benefits both Canadian producers and consumers. Export containers carry lumber, pulp, plywood, specialty grain, and local agricultural products such as blueberries, tomatoes and mushrooms. Import containers bring electronics, food items, household goods, clothing, shoes, health and medical products, sporting equipment, construction materials, and manufacturing inputs such as car parts.

WHAT IS A TEU?

A TEU or twenty-foot equivalent unit is a measure of volume for containers. A twenty-foot container is one TEU and a forty-foot container two TEUs.

THE CONTAINER SUPPLY CHAIN

The container supply chain in Metro Vancouver is made up of a highly integrated web of cargo owners, shipping lines, marine terminals, railways, trucking companies and off-dock facilities. Each supply chain participant makes independent decisions that reflect the dynamic and constantly shifting business environment in which they operate. For the supply chain to run smoothly, all of the participants must ensure that they maintain a strong level of service and focus on transport time, cost, service levels, capacity and reliability.

For more information about container movement and the container supply chain, please see the Container Movement Information Sheet, available in the Information Centre at portmetrovancouver.com/RBT2.
In 2013, more than 3.3 million TEUs moved through terminals on the Canadian west coast, with more than 2.8 million TEUs moving through terminals within Port Metro Vancouver’s jurisdiction. Port Metro Vancouver is planning ahead to ensure that terminals have the capacity to meet growing demand for containerised goods, as well as to adapt to seasonal fluctuations in container volumes or disruptions in the supply chain that may affect import or export volumes.

This graph shows a 2014 third-party (Ocean Shipping Consultants) forecast for container traffic through Canada’s west coast to 2030. The stepped lines show projects, underway and planned, that will accommodate this increased demand.

Even with planned improvements at the Deltaport and Centerm terminals, as well as at the Fairview Terminal in Prince Rupert, demand forecasts indicate that the Canadian west coast will still require additional container capacity by the early 2020s. The proposed Roberts Bank Terminal 2 Project is the next viable option to provide necessary container capacity.

Large infrastructure projects like the proposed Roberts Bank Terminal 2 Project require a long lead time for regulatory approvals and construction, and that is why Port Metro Vancouver is planning now to make sure there is enough capacity to meet growing demand for containerised trade.

Based on the current Project schedule, and subject to regulatory approvals, the proposed Roberts Bank Terminal 2 Project could be in operation by the mid-2020s.

Port Metro Vancouver will continue to complete annual third-party container traffic forecasts throughout Project development.
To meet the anticipated growth in container traffic, Port Metro Vancouver has considered the following options to ensure that the required infrastructure is in place:

- **Increase the capacity and efficiency of existing container terminals:**  
  Two container terminals in the Inner Harbour of Burrard Inlet (Vanterm and Centerm) were expanded and upgraded in 2005 to increase their container capacity. Port Metro Vancouver is currently investigating design options to further expand the Centerm container terminal to provide additional container capacity. It is anticipated that the Centerm Expansion Project could provide between 600,000 and 900,000 TEUs of capacity by 2018.
  
  Deltaport was expanded in 2010 with the Deltaport Third Berth Project. The Deltaport Terminal, Road and Rail Improvement Project is currently underway and, once complete in 2017, will provide an additional 600,000 TEUs of container capacity. While improvements at Centerm and Deltaport will address near-term capacity constraints, they do not fulfill the requirement for additional container capacity by the early 2020s.
  
  Fraser Surrey Docks has existing container facilities and land available for expansion. However, large container vessels such as those currently visiting Deltaport cannot be accommodated in the Fraser River, as they are too long to turn around. In addition, although the navigational depth of the river can be increased, even with the George Massey Tunnel in place, the current size of container vessels prevents them from transiting the river at maximum operational depth. These restrictions limit Fraser Surrey Docks’ ability to accommodate larger container vessels.

- **Convert existing underutilised terminals to handle containers:**  
  Lynnterm, an existing breakbulk container terminal in North Vancouver, was considered for conversion to container handling; however, the adjacent road network does not have sufficient capacity to accommodate the increasing number of container trucks that would be required.
  
  Additional Inner Harbour capacity is unlikely to be available until the late 2020s, due to existing uses and leases on properties in the area.

- **Build a new terminal:**  
  Given these constraints, Port Metro Vancouver is proposing to build the Roberts Bank Terminal 2 Project.
THE ADVANTAGES OF ROBERTS BANK

Roberts Bank port facilities are well positioned to accommodate increasing demand for container trade. The area has several competitive advantages, including its proximity to major transportation corridors for both truck and train movement, and an efficient ship-to-rail design. Roberts Bank also offers direct access to numerous off-dock facilities that serve the container supply chain.

Significant investment has been made in anticipation of growth in trade at Roberts Bank. The South Fraser Perimeter Road (Highway 17) is a new $1.2 billion four-lane highway along the south side of the Fraser River. The South Fraser Perimeter Road (Highway 17) is part of the provincial government’s Pacific Gateway Transportation Strategy, and was designed to separate commercial traffic from residential areas, improve community safety, and reduce noise and congestion. Additionally, the $300 million Roberts Bank Rail Corridor Program, under the federal government’s Asia-Pacific Gateway and Corridor Initiative, is a series of projects developed to separate road and rail traffic, improve safety, ease community connections, minimise train whistling, enhance rail operations, and accommodate anticipated growth in rail and road traffic in the Lower Mainland.
CREATING JOBS AND ECONOMIC DEVELOPMENT BENEFITS

The proposed Roberts Bank Terminal 2 Project would drive economic growth and create employment opportunities, benefiting the region, the province and the country. The economic development benefits to British Columbia and the Metro Vancouver region from the proposed Project would include direct, indirect and induced employment and a contribution to the gross domestic product (GDP).

CONSTRUCTION PERIOD

Updated economic impact analysis completed in 2014 indicates that during the five-and-a-half-year construction period, the Project would support opportunities for approximately 4,100 person-years of direct construction employment worth almost $500 million in wages, and a total of 12,700 person-years of direct, indirect and induced employment, totalling almost $1 billion in wages. The construction period would result in a GDP contribution of approximately $1.34 billion and a total economic output of $3.65 billion.

OPERATIONS

When operating at practical capacity, the Project would support opportunities for 7,600 direct jobs, worth $550 million in wages each year, and a total of approximately 12,400 direct, indirect and induced jobs, totalling $813 million in wages each year. It would contribute $1.22 billion to GDP and a total economic output of $2.36 billion.

Economic information will be updated as the Project proceeds through further design, planning and procurement.
ENVIRONMENTAL ASSESSMENT PROCESS

The proposed Roberts Bank Terminal 2 Project is undergoing a federal environmental assessment by an independent review panel under the Canadian Environmental Assessment Act, 2012. It may also be subject to an environmental assessment process under the British Columbia Environmental Assessment Act. It is anticipated that any provincial environmental assessment would likely be coordinated with the federal panel review process.

As part of the environmental assessment, Port Metro Vancouver is studying the potential Project-related effects of construction and operation activities. The results of Port Metro Vancouver’s studies will be documented in the Environmental Impact Statement (EIS), which will be submitted to the CEA Agency in early 2015. Input received from public consultation, Aboriginal groups, and regulators will be considered and presented in the EIS. As part of the EIS, Port Metro Vancouver will propose measures to mitigate potential adverse effects.

OPPORTUNITIES FOR PUBLIC COMMENT

In addition to the multi-phase Port Metro Vancouver-led public consultation process, the federal environmental assessment process includes multiple opportunities for public comment.

Two CEA Agency-led public comment periods have occurred to date:

- In September 2013, the CEA Agency sought comments from the public, Aboriginal groups and other interested stakeholders regarding the Project Description and potential Project-related effects on the environment.
- In November 2013, the public was asked to review and provide comment on the Draft Guidelines for the Preparation of an Environmental Impact Statement. Public input was used to prepare the final Guidelines, which define the scope of assessment.

Current and future opportunities for public comment within the environmental assessment process include:

- From August 22 to September 22, 2014, the CEA Agency is inviting the public to provide comment on the Draft Review Panel Terms of Reference, which will establish the composition and mandate of the Independent Review Panel.
- The CEA Agency will invite the public to comment on the completeness of the Environmental Impact Statement submitted by Port Metro Vancouver to address the requirements outlined in the Guidelines.
- The Independent Review Panel will present an opportunity for the public to comment on the sufficiency of the EIS, provide their comments on the proposed Project and its potential to cause environmental effects, and will hold a public hearing.

For more information about the CEA Agency and the federal environmental assessment process, or to sign up for the CEA Agency’s mailing list regarding the environmental assessment process for the proposed Roberts Bank Terminal 2 Project, please visit: ceaa-acee.gc.ca (Reference Number: 80054).
FIELD STUDIES

Since 2011, Port Metro Vancouver has been conducting field studies at Roberts Bank and in the surrounding areas. These studies build upon a large body of information collected over the past few decades in the Fraser River estuary and have focused on characterising current conditions of the natural and social environment, a preliminary step in the development of the Environmental Impact Statement (EIS).

While the technical and methodological approach for each study varies, the studies all aim to understand and describe existing biophysical or socio-economic conditions to assess future conditions with the proposed Project.

ENVIRONMENTAL ASSESSMENT TOPICS

Port Metro Vancouver is currently studying the potential Project-related effects of construction and operations activities on the environment, adjacent communities, the economy, heritage and health.

ENVIRONMENTAL IMPACT STATEMENT

The Environmental Impact Statement will include a description of potential effects for 16 Valued Components and eight Intermediate Components and, where necessary, proposed mitigation measures. The EIS will also consider the effects of the Project on Aboriginal rights and interests, including the current use of land and resources for traditional purposes.

During this consultation, Port Metro Vancouver is presenting information and seeking input regarding proposed mitigation measures for a few topics that were identified as areas of interest by previous consultation participants.

VALUED COMPONENTS

Valued Components (VCs) are important attributes of the natural and human environment that may be affected by the proposed Project and are the focus of the environmental assessment. Valued Components have been identified based on past experience with development at Roberts Bank, input from technical experts, and consultation and engagement with regulators, Aboriginal groups, stakeholders and the public.

The following Valued Components have been identified for the proposed Roberts Bank Terminal 2 Project:

- Marine vegetation
- Marine invertebrates
- Marine fish
- Marine mammals
- Coastal birds
- Ongoing productivity of commercial, recreational and Aboriginal fisheries
- Labour market
- Economic development
- Marine commercial use
- Local government finances
- Services and infrastructure
- Outdoor recreation
- Visual resources
- Land and water use
- Archeological heritage
- Human health
WHAT IS MITIGATION?
Mitigation includes measures to avoid, minimise, restore or offset the potential adverse effects of a project.

INTERMEDIATE COMPONENTS
Intermediate Components (ICs) are a means through which a potential effect of the Project may occur on a Valued Component. The graphic to the right is an example of how Project activity may interact with and change an Intermediate Component, which then has an effect on a Valued Component through the pathway of effects.

Identifying and evaluating changes to Intermediate Components is important to the assessment of effects on Valued Components.

The following Intermediate Components have been identified for the proposed Roberts Bank Terminal 2 Project:

- Air quality
- Noise
- Light
- Coastal geomorphology
- Surficial geology and marine sediment
- Marine water quality
- Underwater noise
- Population demographics

ENHANCING CETACEAN HABITAT AND OBSERVATION (ECHO) PROGRAM
The Enhancing Cetacean Habitat and Observation (ECHO) Program is a collaborative research and management initiative that coordinates the efforts and resources of multiple stakeholders. The purpose of the Program is to better understand and manage the potential threats to at-risk cetacean species (whales, porpoises and dolphins) that may arise from commercial vessel activities throughout the southern coast of British Columbia. Port Metro Vancouver is leading the Program and is committed to working collaboratively with advisory groups made up of regulatory agencies, marine industry users, non-governmental organisations, academic and technical experts, Aboriginal groups and other stakeholders to seek input, advice and recommendations on the development and direction of the ECHO Program.

Research projects currently underway or being considered for the ECHO Program include:

- The Orca-RADAR (underwater noise Real-time Adaptive Detection And Response) project
- Acoustic disturbance research and analyses
- Large whale strike risk assessment

Other areas of research may include priority pollutants and increasing prey availability.

The findings from the targeted research projects will inform potential prevention, mitigation and management actions, as well as incentive programs such as Port Metro Vancouver’s EcoAction Program or voluntary programs such as Green Marine. For further information about the ECHO Program, please contact Environmental Programs at EnvironmentalPrograms@portmetrovancouver.com.
POTENTIAL ENVIRONMENTAL MITIGATION CONCEPTS

The following sections describe potential changes to Intermediate Components, which may have an effect on Valued Components along with preliminary mitigation concepts. Port Metro Vancouver is interested in your feedback regarding the proposed mitigation concepts.

**LIGHT – CONSULTATION TOPIC**

The construction and operation of the proposed Roberts Bank Terminal 2 Project could increase lighting during construction or through lighting requirements for the new terminal or the expanded Roberts Bank causeway, or from container vessels at or near the terminal. The EIS will describe potential Project-related effects of light, an Intermediate Component, on marine fish, coastal birds and human health, and the visual quality from viewpoints near the Project.

Port Metro Vancouver’s Port Information Guide requires vessels berthed within Port Metro Vancouver’s jurisdiction to minimise the use of deck lights to that required to ensure safety and security, and to aim lights downward on the deck, not outward or toward the shore. These practices would apply to vessels calling at the Roberts Bank Terminal 2 Project.

Port Metro Vancouver’s existing Community Feedback Line provides a mechanism for residents to report disturbances from light. This feedback would be considered in designing or refining mitigation measures.

**PROPOSED MITIGATION CONCEPTS**

Proposed measures to mitigate Project-related effects on Valued Components that may result from changes in lighting associated with the Project will be outlined in the EIS.

Mitigation measures during construction could include:

- Shielding lights to minimise light spillage
- Where lighting equipment cannot be shielded, directing lighting to the north and west to avoid effects to residential areas that are typically located to the east and south of the Project

Mitigation measures during operations could include:

- Directing lighting downward at the wharf and container yard while still ensuring safety for workers
- Shielding lights to minimise light spillage
- Using LED lights, which makes it easier to control light spill, in the terminal and intermodal yard areas
- Using lighting control systems to reduce the amount of lighting during periods of low activity
- Incorporating an automatic light shutdown system on ship-to-shore gantry cranes so that lights turn off when the cranes are raised and inactive for more than 15 minutes
- Evaluating innovative mounting systems for lighting on ship-to-shore gantry cranes to minimise light during the raising and lowering of the cranes

1. After reviewing the proposed mitigation measures for light, please identify any considerations or issues that you think Port Metro Vancouver should be aware of, or provide any additional mitigation ideas that you may want Port Metro Vancouver to consider.
The proposed Roberts Bank Terminal 2 Project could result in an increase of noise during construction and through container handling activities on the marine terminal, and from trucks and trains on the terminal and along the Roberts Bank causeway during operations. The EIS will describe how potential changes in Project-related noise (e.g., engine, container handling and railcar noises), an Intermediate Component, may affect coastal birds, human health, marine commercial use, outdoor recreation, and current use of land and resources by Aboriginal groups for traditional purposes.

Port Metro Vancouver’s existing Community Feedback Line provides a mechanism for residents to report noise disturbances. This feedback would be considered in designing or refining mitigation measures.

PROPOSED MITIGATION CONCEPTS

Shore power connections have been incorporated into the Project design and would allow ships equipped with shore power capability to plug into electrical power while berthed, rather than running on generator power. This would eliminate noise from generators for ships that make use of shore power.

In addition to shore power, proposed measures to mitigate Project-related effects on Valued Components due to noise will be outlined in the EIS.

Mitigation measures during construction could include:

- Establishing a maximum allowable noise emission for machinery to ensure that contractors do not use excessively noisy equipment
- Providing training to ensure that construction workers are aware of the noise created during construction and are trained to minimise noise where possible

Mitigation measures during operations could include:

- Installing alarms on ship-to-shore cranes and rail-mounted gantry cranes that operate at a higher frequency, so that they are inaudible from shore while still meeting health and safety requirements
- Providing regular operator awareness and training to minimise noise during operations
- Regular maintenance of equipment, such as replacement of mufflers and lubrication of moving parts, to minimise noise from heavy equipment
- Using electric-powered equipment to move containers, which are quieter than diesel-powered or diesel/electric-powered equipment
- Using equipment with enhanced exhaust silencers, where possible
- Installing barriers adjacent to noise sources to reduce noise travel
- Facing sound sources away from residential areas

2. After reviewing the proposed mitigation measures for noise, please identify any considerations or issues that you think Port Metro Vancouver should be aware of, or provide any additional mitigation ideas that you may want Port Metro Vancouver to consider.

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NOISE - CONSULTATION TOPIC

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The construction and operation of the proposed Roberts Bank Terminal 2 Project would result in air emissions from construction equipment, ships, container handling equipment, container trucks, trains, and passenger cars and trucks. While regional air quality is expected to generally improve due to better emission technology, more stringent fuel standards, and infrastructure improvements, the construction and operation of the Project would add incremental air emissions. Anticipated Project-related changes in air quality will be used to inform the assessment of potential effects on human health.

PROPOSED MITIGATION CONCEPTS

Port Metro Vancouver is actively involved with a number of initiatives designed to reduce air emissions. These initiatives would be in place during operations and it is anticipated that they would contribute to further reduction of port-related air quality impacts. These initiatives include:

- Port Metro Vancouver’s EcoAction Program provides incentives for shipping lines to reduce their emissions
- The Landside Air Emissions Inventory documents any changes to common air contaminants and greenhouse gases to provide data for Port Metro Vancouver’s environmental planning and emissions reduction efforts
- Port Metro Vancouver’s Truck Licensing System manages a reduction in truck emissions by reducing idling and restricting the engine age and emissions standards of trucks allowed to enter terminals within Port Metro Vancouver’s jurisdiction
- Port Metro Vancouver collaborates with the Port of Seattle and the Port of Tacoma in the Northwest Ports Clean Air Strategy to reduce emissions from shipping and port operations within the Georgia Basin–Puget Sound airshed

The proposed Project has been designed to include shore power connections, which allows ships to plug into electrical grid power while berthed so that diesel generators can be turned off.

In addition to shore power and the Port Metro Vancouver-wide existing initiatives, which would be in place during operations, proposed measures to mitigate effects on the Valued Component of human health due to changes in air quality will be outlined in the EIS, and could include:

- Implementing a Dust Control Plan during construction to manage dust in construction areas

3. After reviewing the proposed mitigation measures for air quality, please identify any considerations or issues that you think Port Metro Vancouver should be aware of, or provide any additional mitigation ideas that you may want Port Metro Vancouver to consider.

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In addition to shore power and the Port Metro Vancouver-wide existing initiatives, which would be in place during operations, proposed measures to mitigate effects on the Valued Component of human health due to changes in air quality will be outlined in the EIS, and could include:

- Implementing a Dust Control Plan during construction to manage dust in construction areas

3. After reviewing the proposed mitigation measures for air quality, please identify any considerations or issues that you think Port Metro Vancouver should be aware of, or provide any additional mitigation ideas that you may want Port Metro Vancouver to consider.
ECOSYSTEM PRODUCTIVITY

The Roberts Bank ecosystem is part of the Fraser River Estuary and, like many estuaries of large rivers, is highly diverse and has a high rate of ecosystem productivity. As part of the environmental assessment of the proposed Project, Port Metro Vancouver is assessing potential Project-related changes to the productivity of individual species and their interdependencies on other species. This will allow Port Metro Vancouver to better understand the linkages across Valued Components within the Roberts Bank ecosystem and will complement the assessment of the effects on individual species. This approach of considering potential effects of the Project both at the species level and on ecosystem productivity is best practice and is consistent with regulatory policy for environmental impact assessments as outlined in the *Fisheries Act*.1

Ecosystem productivity measures the amount of plant and animal biological material, or biomass, produced within an ecosystem. Productivity is being measured for this Project in tonnes of biomass per year. This approach will assist Port Metro Vancouver in designing mitigation measures to maintain the productivity of the Roberts Bank ecosystem with the proposed Roberts Bank Terminal 2 Project.

TECHNICAL ADVISORY GROUP ON ECOSYSTEM PRODUCTIVITY

Given the importance of understanding the Roberts Bank ecosystem, Port Metro Vancouver established a Technical Advisory Group (TAG)2 that included experts from government agencies, academic institutions, non-governmental organisations, and consultants retained by Port Metro Vancouver with specialised knowledge about ecosystem productivity. The members of this TAG recommended an ecosystem modelling approach and a modelling tool, called Ecopath with Ecosim (EwE)3, to assist with modelling potential changes to productivity of the Roberts Bank ecosystem that may be caused by the proposed Project.

The EwE model is one of several aquatic effects assessment tools used to assist in predicting potential changes to the marine Valued Components.

As there are more than 250 species likely present at Roberts Bank, the TAG suggested 25 focal species to help model the ecosystem. These focal species were selected because they act as indicators for how similar species may react to changes to the ecosystem. The focal species include marine mammals, birds, fish, invertebrates and marine vegetation. While the focal species served as indicators, many other species that use Roberts Bank were also incorporated into the model.

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1 The *Fisheries Act* directs project proponents to assess and mitigate for effects to habitat by using an ongoing productivity approach. For more information, please see dfo-mpo.gc.ca.

2 The Productive Capacity Technical Advisory Group was one of four Technical Advisory Groups that Port Metro Vancouver established to gather expert advice regarding key environmental components in the Roberts Bank ecosystem. For more information, including summary reports from each Technical Advisory Group, please visit the Information Centre at portmetrovancouver.com/RBT2.

3 The EwE modelling tool was developed at the University of British Columbia’s Fishery Centre, and more than 400 ecosystem models applying the software have been published. Thirteen of the published models describe marine areas in British Columbia, and three of these are from the Strait of Georgia. The methodology is thoroughly documented in scientific literature and the EwE is the world’s most used model for food web studies and ecosystem-based management. For more information, please visit ecopath.org.
ECOSYSTEM MODELLING

Ecosystem modelling allows Port Metro Vancouver to assess the ongoing productivity of the Roberts Bank ecosystem. The model graphically presents future scenarios of the Roberts Bank food webs – with and without the proposed Project – that can be compared to identify changes to productivity. With this information, measures can be designed to mitigate the effects of the proposed Project on ecosystem productivity.

For example, the following images highlight the food web linkages of chum salmon:

**Predator-Prey Food Web**

This image shows the predator-prey food web for chum salmon. It shows what species prey on chum, and what species chum eat.

The same chum food web can also be presented showing the biomass for each species, measured in tonnes. The size of each blue circle represents the biomass, or amount of tissue, of each species present in the ecosystem at Roberts Bank.

* For chum salmon, primarily consists of comb jellies.
By creating food web representations of the Roberts Bank ecosystem, Port Metro Vancouver can identify biomass changes that may result from the proposed Project. The results will contribute to understanding the extent and nature of potential effects associated with the proposed Roberts Bank Terminal 2 Project and assist in identifying appropriate mitigation measures.

The following image highlights the existing chum food web as it coexists alongside other species in the Roberts Bank ecosystem. The size of the blue circles represents the average annual biomass estimated in the ecosystem for each species.

1e.g., insects and worms
2µm refers to micrometres
3e.g., pink, coho, steelhead and sockeye
The proposed Roberts Bank Terminal 2 Project would be constructed on top of intertidal and subtidal habitats at Roberts Bank. Together with traditional field studies and environmental assessment methodologies, the results of the EwE modelling will assist Port Metro Vancouver in understanding what species may be affected by the proposed Project and what habitat mitigation may be required.

Port Metro Vancouver is exploring the feasibility of constructing onsite habitat mitigation adjacent to the terminal and causeway. These constructed habitats would soften the shoreline and provide habitats similar to those that exist today. Onsite habitat mitigation will be described in the EIS and could include some or all of the following:

- Tidal marsh
- Mudflat
- Subtidal reef
- Sand-gravel beach
- Eelgrass bed

Potential locations for onsite habitat mitigation at Roberts Bank are shown on the overview map to the right, and a description and conceptual illustration of each can be found on the next few pages.

In addition to onsite habitat mitigation, the EIS will describe proposed additional mitigation measures, including habitat values advanced under the Habitat Enhancement Program (see below).

### HABITAT ENHANCEMENT PROGRAM

The Habitat Enhancement Program is a Port Metro Vancouver initiative focused on creating and enhancing fish and wildlife habitat. This program is a proactive measure intended to provide a balance between a healthy environment and future development projects that may be required for port operations.

Port Metro Vancouver has been proactively building habitat since 1991. Examples of functioning habitat enhancement projects include saltwater marshes, intertidal marshes and eelgrass beds.

Port Metro Vancouver engages with all levels of government, regulators, Aboriginal groups and adjacent communities, as appropriate, during project definition, design and construction.

For more information, visit porttalk.ca/habitanenhancement.
**TIDAL MARSH AND MUDFLAT**

Tidal marshes are highly productive habitats that provide food and shelter for invertebrates, fish, birds and other wildlife. Tidal marshes provide critical feeding and breeding habitat for migratory birds and rearing habitat for juvenile salmon, and also serve other important functions such as shoreline stabilisation, nutrient cycling, filtering of contaminants, and increasing biological diversity. At high tide, marshes provide feeding and cover habitat for juvenile chum and chinook salmon and for foraging wading birds. At low tide, they provide benefits to other species, including shorebirds and waterfowl.

Species that would benefit from the construction of tidal marsh at Roberts Bank include juvenile chum and chinook salmon, hawks and owls, snow geese, American widgeon, and shorebirds.

Mudflats are coastal wetlands that form when fine sediments are deposited by tides or rivers. They are found in sheltered areas such as estuaries. Most of the sediment within a mudflat is within the intertidal zone, which is submerged and exposed approximately twice daily. They support large wildlife populations, and are key habitat for shorebirds staging on north-south migrations. They are of vital importance to juvenile fish, crabs, and bivalves such as clams.

Mudflats could be constructed adjacent to tidal marshes. Species that would benefit from the construction of mudflat at Roberts Bank include amphipods, clams, juvenile Dungeness crab, great blue heron, dabbling ducks, western sandpiper and shorebirds such as western sandpiper. Pioneering tidal marshes could be constructed to provide sheltered areas of mudflat that would promote the growth of biofilm.
4. Tidal Marsh and Mudflat – please identify any considerations or issues that you think Port Metro Vancouver should be aware of.

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SUBTIDAL REEF

Creating rocky reefs is a well-established way of enhancing diversity and productivity and promotes the development of kelp. Reefs have been used successfully for subtidal habitat at Roberts Bank, first in 1983, and with expansions in 1993 and 2005.

Species that would benefit from the construction of subtidal reef at Roberts Bank include Dungeness crab, ling cod, rockfish and diving birds such as scoters, loons and grebes.

5. Subtidal Reef – please identify any considerations or issues that you think Port Metro Vancouver should be aware of.

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SAND-GRAVEL BEACH AND EELGRASS BED

Sand-gravel beaches are an important spawning area for forage fish, such as surf smelt, sand lance and herring, and provide habitat for bivalves, such as clams. Species that would benefit from the construction of sand-gravel beach at Roberts Bank include clams, forage fish, and shorebirds such as dunlin.

Eelgrass beds are productive areas that provide food and shelter to invertebrates, fish and birds. Enhancement of eelgrass could include transplanting and expanding existing eelgrass beds away from construction areas. Species that would benefit include juvenile Dungeness crab, herring, and brant and snow geese.

6. Sand-Gravel Beach and Eelgrass Bed – please identify any considerations or issues that you think Port Metro Vancouver should be aware of.
7. Please provide any additional onsite habitat mitigation ideas that you may want Port Metro Vancouver to consider.

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8. Please provide any additional comments you may have regarding any aspect of the proposed Roberts Bank Terminal 2 Project.
HOW INPUT WILL BE USED:
The input gathered during this consultation will be considered, along with technical and economic information and information obtained from Aboriginal groups and regulators, as Port Metro Vancouver prepares and finalises an Environmental Impact Statement for submission to the Canadian Environmental Assessment Agency (CEA Agency) in early 2015.

PLEASE PROVIDE YOUR CONTACT INFORMATION (optional):

Name:

Organisation (if applicable):

Address:

Postal Code:

Email:

Phone:

☐ Please sign me up for email updates from Port Metro Vancouver regarding the proposed Roberts Bank Terminal 2 Project.

PLEASE PROVIDE FEEDBACK BY OCTOBER 10, 2014.
You can return completed feedback forms by:

• Mail: Port Metro Vancouver
  Attention: Roberts Bank Terminal 2 Project
  100 The Pointe, 999 Canada Place
  Vancouver, BC V6C 3T4
• Email: container.improvement@portmetrovancouver.com
• Web: portmetrovancouver.com/RBT2

Any personal contact information you provide to Port Metro Vancouver on this form is collected and protected in accordance with the Access to Information Act and the Privacy Act.

If you have any questions regarding the Container Capacity Improvement Program or the Roberts Bank Terminal 2 Project and/or the information collection undertaken on this form, please contact Port Metro Vancouver at container.improvement@portmetrovancouver.com.