

## EXECUTIVE SUMMARY

### PURPOSE OF THIS REPORT

This report is designed to describe the Deltaport Container Terminal Third Berth Project (Project), assess its potential environmental, social, economic, health, heritage and First Nations effects, and identify the measures required to mitigate any adverse environmental effects of the Project.

This report constitutes an Assessment Report to satisfy the requirements of the British Columbia *Environmental Assessment Act* (Act), and is used as input to a Comprehensive Study Report (CSR) to satisfy the requirements of the *Canadian Environmental Assessment Act* (CEAA).

The Assessment Report has been prepared by the British Columbia Environmental Assessment Office (EAO) with support from Fisheries and Oceans Canada (DFO) and Environment Canada (EC), who are the federal responsible authorities (RAs) for this assessment.

### PROJECT DESCRIPTION

The Project has been proposed by the Vancouver Port Authority (Proponent) to expand the Deltaport Container Terminal (Deltaport) at Roberts Bank by adding a third berth and increasing its existing container storage yard<sup>1</sup>.

The Project consists of construction of a wharf to accommodate an additional berth, and approximately 20 hectares (50 acres) of newly created landfill using dredged spoils for an expanded container storage yard. The Project also includes dredging to deepen the existing ship channel and create a tug moorage area adjacent to the terminal. Rail improvements will be required within the existing right-of-ways. No widening of the causeway is foreseen. Road improvements on Highway 17 will be undertaken to minimize the Project impacts on existing traffic flow. The general location of the Project is depicted in **Figure 1**.

The estimated capital cost of the Project is approximately \$272 million. The Proponent estimates employment opportunities associated with the Project will include approximately 640 person years of direct jobs during construction and approximately 360 direct full-time-equivalent jobs per year during operation. The Proponent estimates that each container passing through Deltaport generates \$450 in wages, \$550 in Gross Domestic Product and \$1,200 in economic output.

Construction is expected to take about 32 months to complete. The Proponent would like to start construction in the fall 2006.

### PROJECT RATIONALE

The primary objective and purpose of the Project is to provide additional container terminal facilities to increase British Columbia and Canada competitiveness as a trading partner in the Pacific Northwest container market and to contribute to employment and economic growth. The Proponent expects that the North American container volumes will grow at a rate greater than the economy through 2020 and Pacific Northwest ports, including the Port of Vancouver, are expected to capture an increasing share of West Coast traffic. The Port of Vancouver container

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<sup>1</sup> At Roberts Bank the Tsawwassen Ferry Terminal was constructed between 1958 and 1960 and provided the first port infrastructure and causeway development. In the late 1960s Roberts Bank was selected by the National Harbours Board for the development of a coal terminal to facilitate coal shipments to Japan. This coal shipment facility was constructed between 1968 and 1970 and accessed by a second causeway. The Roberts Bank marine facilities were later targeted for expansions and the two-berth container port facility was completed in 1997.

business is well established as the fifth largest container port on the West Coast of North America.

The Proponent prepared a container expansion strategy in 2002 in response to potential container growth. The Proponent's overall expansion strategy consists of a three-pronged approach: increasing production at existing terminals; expanding existing facilities; and exploring options for new facilities.

**Figure 1 Localization of Project**



Credit: Vancouver Port Authority

The Proponent's strategic plan provides details on the proposed Vancouver container port expansions and the rationale for the specific third berth expansion at Roberts Bank. Within the context of environmental assessment (EA) reviews, federal and provincial government agencies accept the justification for and location of the Project, which also constitutes a significant part of the federal and provincial *Pacific Gateway Strategy*, announced in October 2005.

## PROVINCIAL AND FEDERAL ENVIRONMENTAL ASSESSMENTS

### Review Triggers and the Process:

The Project triggers a provincial environmental assessment (EA) under the Act. The Act trigger is a modification to Deltaport to add a third berth that will result in the dredging, filling and direct physical disturbance of more than 2 hectares of submerged land.

EAO, therefore, issued a Section 10 Order pursuant to the Act on March 18, 2003, ordering that the Project will require an EA certificate and that the Proponent may not proceed with the Project without an assessment under the Act.

On September 17, 2004, EAO issued a Section 11 Order pursuant to the Act, defining the scope of the required assessment and the procedures and methods for conducting the assessment. On January 31, 2005, the Proponent submitted an application for an EA certificate for the Project

(Application). Following a compliance reference check against the Application terms of reference issued by EAO on October 8, 2004, the Application was accepted for formal review under the Act on February 9, 2005.

The Project also triggers a federal EA under CEAA because Fisheries and Oceans Canada (DFO) and Environment Canada (EC) will be required to issue statutory or regulatory approvals for various aspects of the Project. Specifically, approvals are required pursuant to section 35(2) of the *Fisheries Act* and section 127(1) of the *Canadian Environmental Protection Act* relating to EC's statutory responsibilities for disposal at sea. Thus, DFO and EC are the federal responsible authorities (RAs) for the purposes of the federal EA.

The federal RAs determined that the Project requires a Comprehensive Study Review under CEAA. This was confirmed by the federal Minister of Environment after public review of a federal Scoping Document early in the review process. Natural Resources Canada, Transport Canada and Health Canada have provided specialist advice to the assessment in their role as federal authorities.

#### **Review Suspension:**

On June 23, 2005, the Proponent wrote EAO and requested a review timeline extension to: complete further discussions and development of a conceptual habitat compensation plan; develop a framework for an environmental adaptive management program for Roberts Bank; amend two Application chapters; and prepare further responses to agency, First Nations and public comments on the Application.

EAO considered this request and agreed to a temporary time limit suspension pursuant to section 24(2) of the Act. The review time limit was resumed on February 13, 2006 when EAO received the additional and agreed review material and having solicited agency, First Nations and public input on the additional and amended review material.

To allow more time for regulatory issues and consultation with First Nations on the conclusion of the Project's EA, on March 29, 2005 EAO ordered a Time Limit Extension up to May 31, 2006, which was subsequently amended and extended to June 30, 2006.

#### **Provincial Referral:**

During the final stage of the Project's EA, EAO prepared this Assessment Report, with recommendations and reasons for recommendations for the Minister of Environment and the Minister of Transportation for their decision pursuant to section 17(3) of the Act.

### **SCOPE OF THE COOPERATIVE ASSESSMENT**

The provincial and federal assessment processes have been harmonized in accordance with the "Canada/British Columbia Agreement for Environmental Assessment Cooperation" (March 2004).

The scope of the cooperative assessment included the consideration of the potential environmental, economic, social, heritage and health effects and potential effects on aboriginal interests, taking into account practical means to prevent or reduce to an acceptable level any potential adverse effects of the Project.

The scope of the assessment under CEAA defined additional factors to be considered. These factors included: alternative means of carrying out the Project; environmental effects of accidents and malfunctions; potential cumulative environmental effects; effects of the environment on the Project; the significance of the environmental effects; measures that would mitigate significant adverse environmental effects; how the Project may impact sustainability; and a follow-up program.

Specifically, the cooperative assessment considered coastal geomorphology, water quality, sediment quality and dredging, marine environment, waterfowl and coastal seabirds, terrestrial wildlife and vegetation, air quality, noise, visual, lighting, socio-community, and heritage values.

## **PUBLIC CONSULTATION AND ISSUES**

The Proponent's public consultation process and the public notification of the consultation process included in the Project Application complied with EAO's Section 11 Order. The Proponent's consultation program also met the outline defined in the Proponent's "Consultation and Communications Plan" issued in June 2003 and formally endorsed by EAO. During the EA review, EAO ordered additional formal public comment periods.

In total, the Project has had three formal public comment periods since the Application EA review commenced. The first formal public comment period ran for 75 days, ending May 9, 2005. A second, seven-day formal public comment period that ended on May 18, 2005, was ordered to allow additional submissions from Langley residents. The third 41-day formal public comment period was ordered to allow for comments specific to amended and new review material submitted by the Proponent in December 2004. The third comment period ended January 25, 2005.

EAO received a total of 607 comments by letters, faxes or emails on the review documents during the first two public comment periods. Comments were provided by 236 individual and signed letters and emails, and a total of 371 form letters and form-emails.

Over half of the submissions received from the public (330 in total) pertain to railway crossing issues in Langley. In response to concerns expressed by Langley residents, EAO organized a special public meeting in Langley even though their rail concerns were outside the scope of the EA review. Public submissions referenced above also included a number of comprehensive comments offered by interest groups such as:

- Boundary Bay Conservation Committee;
- Federation of BC Naturalists;
- B.C. Great Blue Heron Society;
- West Panorama Ridge Ratepayers Association; and
- Delta Farmer's Institute.

Their submissions are posted on EAO's website and are also reflected in this Assessment Report.

In addition, comprehensive review comments were provided by the City of Surrey, City of Langley, Township of Langley, and the Greater Vancouver Transportation Authority (TransLink). The Corporation of Delta also provided extensive review comments as part of an EAO-organized Working Group.

The public did not raise any additional substantive issues within the scope of this review that are not otherwise covered in this Assessment Report and raised by review agencies and local governments. However, EAO acknowledges the public concerns over the impacts of three daily additional container trains on level crossings and connectivity in Langley. The Langley rail crossing issues are being discussed by a multi-lateral Task Force and are also the subject of multi-agency initiatives under the federal and provincial *Pacific Gateway Strategy*.

Apart from two public written submissions in general support of the Project, all other submissions expressed concerns over and/or objections to the Project. The key concerns and objections voiced by the public focussed on<sup>2</sup>:

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<sup>2</sup> Not listed in any order of importance or degree of public input.

- Need for the Roberts Bank container port expansion;
- Scoping of the Project and the assessment under federal and provincial legislation;
- Environmental assessment by agencies rather than a federal panel;
- Inadequacy of assessment documentation and dissemination of such information;
- Too few public meetings and absence of useful consultation;
- Inadequate time to prepare public comments;
- Negative impacts on and loss of wildlife habitat in the Fraser River estuary;
- Project's adverse impacts on COSEWIC listed species;
- Flaws in the cumulative effects assessment and need to include the contemplated second terminal (T2) in the assessment;
- Long-term status of geomorphology stability and degradation of inter-tidal habitat in the Roberts Bank causeway areas;
- Adverse impacts on marine habitats and inadequate habitat compensation plans;
- Adverse visual and lighting impacts at Roberts Bank and in Tsawwassen;
- Transportation and construction noise;
- Negative impacts on regional and local air quality;
- Road crossings of emergency and farm vehicles, connectivity and inconvenience;
- Negative impacts of rail/road crossings in Surrey and Langley and public safety;
- Traffic congestions due to increase in container truck traffic; and
- Increased risk of accidents and malfunctions.

During the Application review, federal agencies requested the Proponent to produce amendments to the proposed conceptual habitat compensation plan included in the Application. The Proponent was also requested to develop, in co-operation with federal agencies, an inter-causeway adaptive management strategy, meeting stewardship objectives for Roberts Bank. In addition, new air quality data and a revision of the cumulative effects assessment were prepared by the Proponent and submitted to EAO for discussion and public comments.

EAO ordered a third formal public comment period specifically for review of these four documents. This formal public comment period resulted in 50 public submissions responding to information contained in these four documents. EAO also received comments from the public which were beyond the scope of the third formal public comment period.

Some of the same public stakeholder groups identified above also submitted comments on the four referenced documents. The newly formed Against Port Expansion group (APE) also provided comments. Collectively, concerns continue to be raised on:

- The review process and opportunities for meaningful public participation;
- Inadequate coverage of future projects, such as the T2, in the cumulative effects assessment;
- Inadequate traffic and noise mitigations;
- Air quality, emission prediction and public health impacts;
- The usefulness and adequacy of the proposed adaptive management strategy; and
- The proposed marine habitat compensation plan and the lack of reference to marine mammals.

All issues raised by the public during the review and within the scope of the Project's EA have been considered in the Application review process and the documents generated as part of the review.

The public is also being provided with a formal federal public review opportunity to address the federal Comprehensive Study Report (CSR) under CEAA. All comments submitted will be

compiled by the RAs and included their recommendation to the federal Minister of Environment for a Project decision under CEAA.

## **GOVERNMENT CONSULTATION AND ISSUES**

The Proponent's consultation on the Project with federal, provincial and local government agencies occurred primarily through use of two Project Working Groups, the Technical/Biophysical Working Group and a Socio-economic/Community Working Group, which were organized early in the pre-application stage of review. The two initial Working Groups merged into one group as the Project review proceeded. The Working Group was used to identify, document and resolve Project-related issues.

Proponent consultation was also carried out with sub-groups that formed to address specific issues associated with habitat compensation, the adaptive management strategy and air quality. Specifically, the Proponent worked with:

- DFO and EC on the development of a draft habitat compensation plan;
- EC, DFO and Canadian Environmental Assessment Agency on the development of the draft Schedule B of the Adaptive Management Strategy agreement between the Proponent and EC; and
- EC and the Greater Vancouver Regional District (GVRD) on addressing air quality issues.

before documents relating to these issues were presented to the Working Group for review.

The membership on the Working Group was comprised of representatives of federal, provincial and local government agencies and First Nations. The Working Group was chaired by EAO.

During the course of the EA review, the Corporation of Delta (Delta) actively participated on the Working Groups and provided valuable comments on the potential impact of the Project, as seen through the lenses of the local municipality. During the latter part of the review, Delta expressed concerns about the transparency of the review under the Act and the lack of public participation during the preparation of Ministerial referral documents, such as this Assessment Report. Delta subsequently withdrew from the Working Group. Delta also expressed concerns about the perceived closed discussions on mitigation measures between agencies and the Proponent to finalize Proponent commitments.

All technical issues raised by federal, provincial and local government agencies during the review of the Project have been considered in the Application review process and the documents generated as part of the review.

## **FIRST NATIONS CONSULTATION AND ISSUES**

EAO consultation with First Nations is guided by the *Provincial Policy for Consultation with First Nations* (October 2002), and current case law.

The Proponent's First Nations consultation process met the terms of the Section 11 Order issued by EAO for the Project. The consultation program also adhered to the proposal outlined in the Proponent's *First Nations Consultation and Communications Plan* issued in June 2003 and formally endorsed by EAO.

The Project falls within or close to the asserted traditional territories of the following First Nations groups:

Lower Mainland:

- Tsawwassen First Nation;

- Musqueam Indian Band;
- Katzie First Nations;
- Sto:lo Nation;
- Sto:lo Tribal Council (separated from the Sto:lo Nation);
- Semiahmoo Nation;

Vancouver Island:

- Sencot'en Alliance; and
- Hul'qumi'num Treaty Group.

Throughout the Application review, EAO made all relevant review documents available to the identified First Nations.

Early in the Project review (April 2003), EAO sent letters to the Lower Mainland based First Nations referenced above (not the Sto:lo Tribal Council), advising them of the Project and the EA review, and requesting confirmation of their interest in the Project. EAO invited these First Nations' to participate in the EA review and to provide information about the Project's likely impacts on asserted aboriginal rights and title and traditional uses. EAO also met with the same First Nations to discuss the Project and the EA review.

Towards the end of summer of 2004, the Semiahmoo Nation advised EAO that further consultation with them on the Project should be directed to the Sencot'en Alliance, as they were a member nation. The Sencot'en Alliance, comprising the Semiahmoo, the Tsartlip, the Tsawout and the Pauquachin First Nations, is not in the British Columbia Treaty Process. Acknowledging the Semiahmoo's asserted past use of Roberts Bank land and resources, the Proponent, EAO and federal agencies initiated consultation with the Sencot'en Alliance in November 2004.

The Hul'qumi'num Treaty Group is also a Vancouver Island based alliance and is in Stage 4 of the British Columbia Treaty Process. Although initially the Hul'qumi'num were not identified as having a potential interest in the Project, a review of the Hul'qumi'num treaty interests in the fall of 2004 prompted the Proponent, EAO and federal agencies to contact the Hul'qumi'num Treaty Group regarding their interest in the Project, involvement in the EA review of the Application and to initiate a consultation process on potential adverse Project impacts.

EAO, federal agencies, and the Proponent continued their efforts to engage all the identified First Nations during the EA review and in the Working Group meetings. The First Nations were sent the meeting notes and agendas for future meetings. The Tsawwassen First Nation, the Sencot'en Alliance and the Hul'qumi'num Treaty Group attended a number of Working Group meetings and contributed input used in the Assessment Report.

The Tsawwassen First Nation, the Sencot'en Alliance and the Hul'qumi'num Treaty Group provided comments on the Application and also on the four documents subject to the third formal public comment period. A summary of key issues raised by First Nations and key potential effects of the Project on their asserted aboriginal rights is outlined in this Executive Summary and elaborated on later in this Assessment Report.

Although the First Nations, apart from the Tsawwassen First Nation, engaged late in the Project review, EAO is satisfied that the consultations carried out by the Proponent and/or EAO and federal representatives meet applicable policy and legal requirements, and that the Proponent and the Crown have made a series of good-faith efforts to consult with those First Nations who have not engaged in the review.

## **ROBERTS BANK INTERCAUSEWAY, GEOMORPHOLOGY AND EUTROPHICATION**

Historical evidence and results from the studies and computer modelling included in the Application indicate that sediment transport rates on most of Roberts Bank are relatively low, and

most long-term changes are associated with tidal channel formation in the inter-causeway area. Future geomorphologic changes are expected to be minor, but the network of drainage channels that formed after the earlier terminal and causeway developments has not yet reached equilibrium and tidal flat stability.

Project impacts on tidal currents and waves are expected to be small and confined to the immediate area around the Project and the dredged approach channel and vessel turning basin. The risk of new tidal drainage channels forming after dredging is assessed to be very low. The proposed excavation would occur in relatively deep water and is not expected to induce significant head-cutting on the tidal flats.

However, due to geomorphology and drainage channel stability uncertainties and potential marine eutrophication, EC, DFO, Ministry of Environment, the Corporation of Delta and a number of public interest groups questioned the Project's impacts on marine and bird habitats in the Roberts Bank intercauseway area. These concerns prompted requests for developing a Roberts Bank Adaptive Management Strategy (AMS) as a federal condition for proceeding with the Project pursuant to CEEA.

The four components of the AMS include planning, monitoring, evaluation, and action. The monitoring component is included in a five-year plan and the five key areas identified for consideration in the AMS include Geomorphology/Oceanography, Surface Water Quality, Sediment Quality, Eelgrass and Other Biota.

Key issues considered during the Project review are summarized below. Relevant mitigation and compensation to address potential adverse effects are summarized, for each sector summary below, at the end of this Executive Summary.

***Coastal Geomorphology:***

- Past developments at Roberts Bank and altered geomorphologic processes and their impacts on increased eelgrass beds.
- Continuing development of tidal drainage channels on the mudflats in the inter-causeway area.
- A request for a longer-term coastal geomorphology monitoring program to assess ongoing coastal zone processes.
- Concerns pertaining to altering of the existing and functional crest protection structure in the tug basin and the triggering of new dendritic channels.

***Water Quality:***

- Potential for degradation of the Fraser River delta, and estuarine water quality.
- Assessment of background temporal and spatial variability in water quality, specifically concerning the proliferation of eelgrass beds in the inter-causeway area and the potential for a marine eutrophication event to occur.
- Rationale for sample site selection and methodology for water quality data collection.

***Sediment Quality and Dredging:***

- Potential contamination of reference sites being used by GVRD in its Iona Island discharge study.
- Need for broad studies of sediment quality on Roberts Bank to assess changes over time, and to compare sediment quality with established effects thresholds.

**MARINE ENVIRONMENT**

The Project is expected to result in an initial loss of eelgrass and salt marsh areas under the Project footprint and a total of approximately 22 ha of productive marine habitat. Compensation in the form of eelgrass/mudflat habitat surrounded by rip-rap and new gravel beds in the inter-causeway area, and further salt marsh in a rip-rap protection works was proposed in the

Application. However, this brief outline was subject to critical comments by review agencies, the Corporation of Delta and a number of public stakeholder groups.

Public interest groups, First Nations and DFO questioned the Project's impacts on killer whales and the Proponent provided supplementary documentations during the EA to support proposed avoidance and mitigation measures. Given the endangered status of Southern Resident Killer Whales under SARA Schedule 1, the uncertainties of their hearing capabilities and the difficulty in monitoring multiple and various potentially synergistic sound sources, a more precautionary mitigative measure is proposed by the Proponent.

During the Project review, the Proponent developed a "Proposed Habitat Compensation Report" (Habitat Plan), to the satisfaction of DFO and meeting EA-level documentation under the Act. This Habitat Plan will lead to the federal authorization under section 35(2) of the *Fisheries Act*.

The conceptual Habitat Plan was discussed at Working Group meetings and shared with the public and was finalized on March 12, 2006. Five Project on-site compensation options, totalling 18.9 ha, are included in the Proponent's Habitat Plan in addition to 7.5 ha of offsite fish and wildlife habitat. These habitat areas are committed to, targeting salmonids, waterfowl, shorebirds and wading birds. To facilitate the off-site compensation, the Proponent is entering into a habitat creation agreement with Duck Unlimited Canada, the Pacific Salmon Foundation, DFO and the Canadian Wildlife Service to ensure that the off-site compensation is delivered in a timely and efficient manner. The off-site compensation program is fully funded by the Proponent.

Key marine environment issues considered during the Project review were:

- Permanent loss of approximately 22 hectares of marine habitats;
- Potential impacts of dredging and placement of fill on fish, invertebrates, and marine mammals and their food sources such as Chinook salmon;
- Potential impacts of marine construction and dredging (underwater noise) on marine mammals;
- Marine vessel traffic impacts (underwater noise and collision) on marine mammals.
- Terminal and construction illumination affecting juvenile salmon;
- Introduction of non-native species from ballast and bilge water discharge; and
- Adequacy of the proposed habitat compensation plan.

#### **WATERFOWL AND COASTAL SEABIRDS**

The abundance and presence of waterfowl and coastal seabirds on Roberts Bank is a key concern and was investigated for the Project, including any adverse effects of construction and operation on the species present. Roberts Bank has a high seabird and waterfowl diversity; mostly as a result of the location on the Pacific Flyway and the abundance of habitat and food resources.

The Application provided a number of review conclusions that attracted considerable discussion and assessment of appropriate mitigation measures.

The Canadian Wildlife Service and a number of public interest groups such as the Boundary Bay Conservation Committee, the BC Great Blue Heron Society and the Federation of BC Naturalists, challenged the impact conclusions in detailed Application comments. Considerable discussions ensued on the potential impacts of the Project on waterfowl and coastal seabird habitats. This discussion resulted in EC proposing an adaptive management approach and a specific strategy, the AMS, to habitat impact assessment and monitoring.

Additional and future bird studies are part of AMS commitments, but public interest groups continue to argue that EC should not provide a determination under CEAA as the significance of Project impacts have not been determined. However, federal agencies have accepted the AMS

approach as acceptable conclusions to EA under the current federal legislation. It should be noted that the Ministry of Environment list of protected species, announced on June 6, 2006, does not require amendments to the assessments included in this Assessment Report.

Key waterfowl and marine seabird issues considered during the Project review were:

- Duration of field study time frame to adequately assess the effects of a proposed Project on wintering bird populations and changes in habitat use by spring and fall migrants;
- Adequacy of Proponent's assessment of bright overhead illumination on migratory bird species;
- Potential eutrophication of bird habitats within the intercauseway based on potential impact contributions to geomorphology, water quality, sediment quality and eelgrass; and
- Application's coverage of habitat compensation plan as addressing habitat impacts to migratory bird populations.

### **TERRESTRIAL, WILDLIFE AND VEGETATION**

Natural vegetation in the Project area has been modified into a mostly agricultural landscape over the past 100 years through dyke installation, farming and infrastructure development. There is little remaining naturally occurring vegetation and the Project area contains mostly non-indigenous species.

Surveys described in the Application confirmed the highly significant use of farm fields by water associated birds and raptors. The survey also characterized insect populations in the study area which had not been studied previously. According to the Proponent, wildlife in the Project's study area appears tolerant of, or acclimated to, disturbance from Deltaport operations, farming activities and urban development.

Key wildlife and vegetation issues considered during the Project review were:

- Extent of species selected for impact discussions;
- Robustness of field surveys;
- Potential Project impacts on the Pacific water shrew; and
- The spatial definition of the study area with respect to invasive plant species.

### **AIR QUALITY EFFECTS**

The Project's assessed effects on the air quality in the local as well as regional environment were the subject of extensive studies and comments by review agencies, First Nations and the public. The modelling, assessment of effects and mitigation discussions also prompted the Proponent to amend the Application's air quality chapter.

When the Project operation is compared to a Projected 2011 Baseline, the Proponent concluded that the maximum predicted concentrations for all emissions, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub> and CO occurring on land in close proximity to the Project are all less than the most recent GVRD ambient air quality objectives and standards. The Proponent concluded that no significant impacts to air quality are predicted to occur, nor are any risks to human and wildlife health identified, from construction or operation of the Project.

GVRD's and EC's review of the Application raised disagreements with some of the Application's conclusions, such as the potential adverse effects of marine vessels, effects of container road and rail transportation on the regional air quality (within the defined Regional Study Area) and residual air quality effects that required a cumulative effects assessment including the proposed, but not yet planned, second container terminal at Roberts Bank (Terminal 2).

Further Proponent documentation on regional air quality issues, impacted by container trucks and trains, and re-assessment of Project emissions and public health effects did not materially change the conclusions and recommendations included in the Application. A revised cumulative effects assessment, also including the contemplated second Roberts Bank container terminal, to the extend details can be established, was also prepared by the Proponent and endorsed by the GVRD and federal agencies pursuant to CEAA.

Key air quality issues considered during the Project review were:

- Comparison of emissions for the Local Study Area with total emissions in the Regional Study Area and the inclusion of estimated emissions from rail and truck transportation in the Application's Local Study Area only;
- Emissions inventory modelling and the need to include the rail/truck emissions in the Regional Study Area or alternatively compare the emissions contribution of the proposed Project to all other emission sources in the Local Study Area only;
- Concern that the baseline study of container vessel calls may not accurately predict the actual vessel calls, thus the forecasted emissions inventory may not be representative;
- Concern that the Local Study Area (30 km x 30 km) was centred to the northeast of Roberts Bank thus capturing more land than water;
- Need for the establishment of a continuous air monitoring station in the vicinity of the Deltaport to measure actual emission levels during construction and operation;
- Concern that air quality modelling emissions were only compared to ambient air quality objectives for the purposes of impact assessment;
- Effects of vessel power emissions while docking and opportunities for shore power;
- Compliance with the federal requirements for continuous improvement in air quality;
- Air quality model being representative worst-case modelling scenario;
- Validity of the risk characterization, and the interpretation of exposure/concentration ratios and on the chronic exposure limit for diesel PM on human health;
- Expansion of human health assessment to consider other Health Events discussed in the Bates et al. (2003) study; and
- Concern that the ground-level ozone formation that was semi-quantitatively determined in the Air Quality Assessment, was not included as a "chemical of potential concern" in the Human Health Risk Assessment.

## **NOISE ASSESSMENT**

Noise emissions and impacts from construction and operation of the Project were assessed at the Roberts Bank port facility and causeway, at residential communities adjacent to the BC Rail line (within the study area) and at residential areas on the shoreline from the Roberts Bank causeway south to Tsawwassen Beach.

The public raised concerns over additional truck and train noise during the operation of the Deltaport expansion. Construction noise levels expected from both night time and daytime construction activities are assessed to have no significant impact on residents in the study area. Rail noise is the only source of operational noise expected to increase by a detectable amount (between 1 dBA and 2 dBA).

The Proponent recognizes the importance of minimizing noise impacts on residential areas in the vicinity of the Deltaport. The Proponent is committed to work with the local community and the Deltaport coal and container terminal operators to address the issue of train noise.

Key noise issues considered during the Project review were:

- Rail induced noise concerns such as noise generated by diesel engines, train shunting, and whistles;
- Noise associated with vibrations caused by moving trains;

- Use of cumulative sound levels over given periods when measuring very loud noises of short duration as it minimizes the impact of that noise;
- Increased noise in Delta from additional truck traffic on Highway 17;
- Effectiveness of existing roadside noise barriers along Highway 17 in attenuating the noise from increased numbers of large trucks; and
- Increased container terminal operations 24 hours a day.

### **LIGHTING AND VISUAL EFFECTS**

Some members of the public residing in the Tsawwassen area and TFN were concerned about the lighting and visual impacts of the Project. The Hul'qumi'num Treaty Group also commented on the adverse impacts of new lighting on their spiritual links to the night sky and stars.

Key visual and lighting issues considered during the Project review were:

#### ***Visual Impacts:***

- Extension of study to include the area west of the current facility;
- Negative aesthetic impacts perceived by local residents;
- Criteria related to the visual impact assessment, such as refinement of relative impact measures and number of viewpoints used; and
- Discussion of how the view and night lights actually impact residents and visitors.

#### ***Lighting Effects:***

- The potential effects on marine life, migratory birds and wildlife at Roberts Bank;
- Degree of nuisance glare; and
- Lighting on the underside on boom arms (may create extreme dazzle and brightness which will be aimed directly at English Bluff residences, when the arms are raised).

### **ARCHAEOLOGICAL IMPACTS**

An overview of archaeological resource potential within the Project's study area and an assessment of any impacts of the Project on these resources were undertaken in accordance with the British Columbia Archaeology and Registry Services Branch guidelines.

No archaeological resources were encountered in any of the 51 auger tests along the Gulf Siding, and no remains of sturgeon fish traps were observed during the tidal flats survey. The likelihood of finding substantial archaeological deposits is low, except in the vicinity of Cohilukthan Slough (unaffected by the Project). Nevertheless, the possibility of recovering isolated discarded artefacts should not be discounted. If any archaeological sites are discovered during construction, these will be reported to the BC Archaeology Branch and the TFN. Works would stop until the site is assessed for significance and, if required, protection measures are introduced.

A key review issue was linked to:

- The archaeological research being construed as definite identification of traditional aboriginal use sites in the Project area and that the results of these archaeological studies should not be interpreted to represent the extent of any First Nations' relationship with these lands.

### **KEY SOCIO-ECONOMIC EFFECTS ISSUES RAISED DURING THE ASSESSMENT**

Socio-community impacts affect community and resident services, facilities, life-style, land use and general well being. These were assessed by comparing the existing socio-community characteristics (demographics and land use) service and facility levels with the requirements during and after construction of the Project.

The Application concludes that the Project is not anticipated to have any significant adverse socio-community effects, as there are adequate existing municipal or community resources to service the requirements of the Project. However, any potential bio-physical effects of the Project on the local communities, largely submitted by the public and the Corporation of Delta, are described in various sections of this Assessment Report. Local residents and farmers questioned future emergency accesses and farm vehicle movements with the proposed rail crossing closures in the Project area. These issues will be further discussed and resolved in a Community Liaison Committee to be organized by the Proponent.

Key socio-economic issues considered during the Project review were:

- Quality of life concerns around air quality, light, noise, transportation and land use impacts;
- Concern with congestion and further traffic delays that the increase in truck traffic volume will cause in the Project area and the view that the existing road network cannot handle the increase thereby creating road safety issues;
- Need for overpasses at the at-grade road/rail crossings in Ladner, Tsawwassen and Surrey (e.g. Cloverdale) to alleviate congestion on roads caused by longer and more frequent trains;
- Concern that increased Deltaport truck traffic will significantly impact the Massey Tunnel traffic;
- Proponent's potential involvement in long-term transportation planning and to ensure that local community needs are addressed; and
- Transportation and infrastructure costs of the Project to taxpayers.

#### **KEY FIRST NATIONS INTERESTS RAISED DURING THE ASSESSMENT**

The Proponent, federal agencies and EAO consulted with a number of First Nations having been identified as having a potential interest in the Project's EA. The Proponent commenced these consultation initiatives in 2002 and EAO invited First Nations to the joint harmonized federal/provincial review by letters issued in April 2003. Consultations with First Nations are summarized above in this Executive Summary and extensively covered in section 3.3.5 of PART A and in chapter 21 of PART B of the Assessment Report

The Tsawwassen First Nation, the Sencot'en Alliance and the Hul'qumi'num Treaty Group provided comments on the Application and additional Project review material.

EAO concludes that while there may be potential impacts from the proposed Project on the asserted aboriginal rights of the identified First Nations, these impacts are mitigated through commitments of the Proponent and First Nations should reasonably be able to continue to exercise asserted aboriginal rights around the Project's impact area. Other appropriate processes are available to continue the process of further reconciling these interests.

Key First Nation interests considered during the Project review were:

- Accessibility to water area for aboriginal use of the inter-causeway marine environment;
- Impacts on bio-physical effects such as water quality and dendritic channel expansions;
- Increased sedimentation and potential for eutrophication in the inter-causeway area;
- Cumulative effects impacts on aboriginal marine resources; and
- Cumulative effects impacts on noise, traffic and air quality.

## **ENVIRONMENTAL MANAGEMENT PLAN AND FOLLOW-UP**

During the Project review the Environmental Management Plan (EMP) was subjected to numerous discussions and refinements. The EMP was discussed in the Application, but extensively amended and refined based on comments from review agencies, First Nations and the public. Mitigation measures have emerged during the review and incorporating in the EMP requirements. These mitigation measures are summarized and presented in the “Owner’s Table of Commitments and Assurances” attached to the Assessment Report.

In addition to specific mitigation commitments, the Proponent has agreed to monitoring activities to identify environmental impacts that may occur and to ensure that the implementation of mitigation measures are having the intended results and adequately mitigating potential impacts. In particular, the Proponent has reached an agreement with the Government of Canada represented by EC, to develop and implement an Adaptive Management Strategy (AMS) that will include significant monitoring activities relating to potential Project impacts in the Roberts Bank inter-causeway area. This agreement will also pave the way for a Proponent commitment to a longer term environmental stewardship approach to Deltaport developments.

Key EMP issues considered during the Project review were:

- Need for the EMPs to reflect habitat compensation and the AMS;
- Commitments to compensation and mitigation measures that reflect on strict environmental management planning, and embedded in a number of specific construction and operational EMPs; and
- Need to ensure that general environmental monitoring and reporting for the construction and operation phases of the Project will be conducted, complying with the terms and conditions of appropriate authorizations and approvals as applicable.

## **SPECIAL CEAA REQUIREMENTS RAISED DURING THE ASSESSMENT**

The harmonized federal and Provincial EA did cover federal reporting topics required under CEAA. These topics include accidents and malfunctions, effects of the environment on the Project, cumulative effects assessment, and sustainability. The discussions on these federal reporting requirements are covered in this Assessment Report, although not specifically required for a review under the Act. The Project review issues are summarized below.

### ***Accidents and Malfunctions:***

The Application’s coverage of accidents and malfunctions identifies that environmental effects of any potential Project malfunctions or accidents that may occur can be addressed with appropriate construction and operational EMPs and spill response plans. It further concludes that provided such plans are in place and are updated for the Project, no significant accident and malfunction effects to the environment are likely to occur that cannot be managed. Key review issues raised were:

- Proposed new storm sewer system must have catch basins of an appropriate size to allow for containment of minor spills and discharges; and
- Contingency plan to deal with any required ballast water exchange while vessels call at Deltaport.

### ***Effects of the Environment on the Project:***

The effects of tsunamis, earthquakes, storms and climate change potentially present a risk to the Project. However, assessments included in the Application, complying with a CEAA review requirement, indicate that the likelihood of the environment affecting the Project is low. The Roberts Bank landform and Vancouver Island protect the Roberts Bank port facility from large tsunami that are either generated in mid-ocean, or from submarine landslides in the Strait of Georgia.

The Project may also be affected by global warming events (sea-level rise and storms). Both of these conditions could result in waves overtopping the wharf, resulting in some terminal downtime and financial loss. To address seismic risks, the Project has been designed to the current version of the National Building Code of Canada to resist a 1:475 year seismic event.

**Cumulative Effects Assessment:**

The Project's Cumulative Effects Assessment (CEA) developed into one of the most debated topics during the EA review. During the Application review some Working Group members, the Corporation of Delta (COD), First Nations and public interest groups expressed concerns with the CEA, in particular with the absence of details relating to impacts from a second contemplated container terminal at the northern side of the Roberts Bank causeway (T2). In particular, the concerns related to air quality, noise and traffic. The Proponent is in no position to provide design and operation details of a T2, which is no longer in a pre-application review phase under the Act. The Proponent agreed to amend the Application's CEA chapter, which was made available to regulators, the Working Group and subsequently posted on EAO's Project website for the third formal public comment period. The additional review material included cumulative effects analysis of air quality impact from a potential T2 at assumed 2021 operational conditions.

Although the public, some First Nations and COD continue to raise issues with the Project's CEA, federal review agencies have concluded that the CEA documentation meet CEAA requirements. Key review issues raised were:

- The scope of the CEA being deemed too narrow;
- The assessment and use of T2 details;
- The adequacy of the amended CEA meeting earlier review comments and assessment requests; and
- Inclusion of land uses associated with industrial development in response to Deltaport expansions.

**Sustainable Development:**

The Application included a chapter on the Project's potential impacts on sustainable developments, as requested under CEAA. The key review issues can be summarized as follows:

- The Proponent's position that the loss of habitat is being sustainable because there is ample multi-purpose habitat available at Roberts Bank;
- The occurrence of ongoing and undefined habitat changes; and
- Unchanged water and air quality as a consideration as a surrogate for sustainability.

**COMMITMENTS MADE BY THE PROPONENT FOR MITIGATION OF POTENTIAL EFFECTS**

The Proponent and regulatory agencies and other decision makers have developed a comprehensive mitigation and compensation plan as detailed in the "Owner's Table of Commitments and Assurances", attached as *Appendix E* to the Assessment Report. Some of the key mitigation measures from this appendix are extracted and summarized below:

**Habitat:**

- Conceptual fish habitat and migratory bird compensation plan dated March 12, 2006.
- Adaptive Management Strategy<sup>3</sup> for the Roberts Bank inter-causeway area to provide practical advance warning of any potential emerging negative ecosystem trends, including marine eutrophication events, marine environment and waterfowl and coastal seabird concerns and effects on water quality

**Water and Sediment Quality<sup>4</sup>:**

- The relocation of all storm water outfalls to the southeast side of the terminal (off the wharf face) and storm water discharges addressed in the proposed Environmental Management Program.
- Mitigation to reduce turbidity during dredging and dredge spoil discharge at a designated disposal at sea site.
- The direction of all sewage will be directed to the

<sup>3</sup> EC and the Proponent are developing an Agreement outlining an Adaptive Management Strategy (AMS). This Agreement includes a *Schedule B* dated April 2006 which defines the AMS process. The Agreement is assumed executed following a federal Project determination

<sup>4</sup> Also with relevance to Habitat and Marine Environment

- during Project construction and operation.
- Monitoring of migratory birds as outlined in the adaptive management strategy.
- Participation in a wider reaching Roberts Bank Stewardship Program.
- A phased program to undertake stabilization of the existing dendritic channels in the inter-causeway area as part of the Habitat Compensation Plan.

### Marine Environment:

- Reduction of Project footprint from the original proposed 32 hectares to approximately 22 hectares.
- Silt curtains or booms will be deployed to minimize silt plume impacts on the biotic marine environment during dredging if required.
- Mitigation to reduce turbidity during dredging and disposal will be employed, and dredging and disposal operations will be stopped if killer whales enter the immediate area.
- Concentrating construction phases in the intertidal zone to winter months to minimize disruption to eelgrass and to intertidal mudflats, which makes these habitats less susceptible to increased TSS levels.
- Prior to placement of fill in the intertidal area for the terminal footprint, surveying the intertidal area and relocating juvenile and adult crabs to a suitable adjacent area away from construction.
- If monitoring indicates juvenile salmon are present in areas where work is occurring in water less than five meters CD, bubble or silt curtains will be deployed to keep fish away from the works area or isolate the
- Working with BC Pilots to develop an education and awareness program about marine mammals
- Additional mitigation for potential underwater noise effects to marine mammals include adjusting vessel speeds to 10 knots or less when approaching the port area and encouraging proper maintenance of ship propellers.

### Waterfowl and Coastal Seabirds:

- Consult with the appropriate regulatory agencies and non-government agencies/organizations to establish pelagic cormorant resting/roosting structures away from port industrial structures.
- Incorporating the infrastructure for shore power for ships in the Project design and construction and conducting a feasibility study for shore based power (Overhead power line and bird mortality).

### Socio-Community Issues:

- Implementing a complaint tracking and response mechanism for the construction phase of the Project.
- A Traffic Management Plan and work with relevant agencies to address transportation related issues.

### Wildlife and Vegetation:

- A Wildlife and Vegetation Environmental Management Plan and mitigation measures to address barn owl collision with vehicles.

existing Deltaport sewage treatment plant which has an existing provincial effluent permit and sufficient capacity to adequately treat the additional effluent.

### Dredging:

- Modifying the dredge program to source terminal fill from the Fraser River, eliminating the need for additional dredging in the turning basin and substantially reducing the overall marine dredging program.
- Adhering to DFO dredging guidelines, as well as, Best Management Practices during construction to minimize disruption of habitat or losses of individual adult Dungeness crabs, fishes and lingcod and their egg masses which are also food for waterfowl and coastal seabirds that use the study area.

### Visual, Lighting and Noise:

- Minimizing light and noise effects and related disturbance impacts to fishes, marine mammals and birds including modifications to the marine dredge lighting systems and setting maximum allowable noise emission from each type of machinery prior to construction.
- Development of a Noise Management Plan that will be incorporated into the construction and operation Environmental Management Plans.
- A Community Liaison Committee, to address public generated concerns including noise, lighting and visual impacts.
- Modifications to the marine dredge lighting systems and terminal lighting system to minimize trespass light to the environment and surrounding community.

### Air Quality:

- Reducing overall air emissions from the Project as well as from all port operations wherever it is technically and economically feasible to do so.
- A Construction Air Quality Mitigation Program that addresses all Project construction impacts
- Implementing air quality initiatives, in the tendering process for the construction of the Project and during operation, to reduce emissions where possible.
- Establishing an air quality monitoring station and address shore power supply.

### Environmental Management Plan

- A Construction Environmental Management Plan with sub-plans to address dredging, surface water quality and sediment control, hazardous waste management and spills, health and safety, emergency response, waste management, noise, wildlife and vegetation impacts, marine environment, marine water quality, air quality impacts and traffic concerns.
- An Operational Environmental Management Plan that will include sub-plans for the Deltaport Terminal, Vancouver Port Authority environmental management plan and TSI emergency response plan.

The Working Group in general concluded that if the construction and operation of the Project proceeds as described in the EA documentation and adheres to the mitigation and monitoring

commitments identified during the Project review, the construction and operation of the Project is not anticipated to result in adverse effects that cannot be managed.

With respect to First Nation interests, EAO concludes that while there may be potential impacts from the proposed Project on the asserted aboriginal rights of the identified First Nations, these impacts are mitigated through commitments of the Proponent. If the Project proceeds as described in the EA documentation and adheres to the mitigation and monitoring commitments identified during the Project review, First Nations should reasonably be able to continue to exercise asserted aboriginal rights around the Project's impact area. Other appropriate forums are available to continue the process of further reconciling First Nations interests.

## **OVERALL CONCLUSION**

In conclusion, and based on the cooperative environmental assessment, the Environmental Assessment Office is satisfied that:

- The review documentation, as defined in the Assessment Report, adequately identifies and assesses the potential significant adverse environmental, economic, social, heritage, health of the Project, including potential effects on First Nations interests;
- Public and First Nations consultation, and the distribution of information about the Project, have been adequately carried out by the Proponent;
- Issues identified by the public, First Nations and federal, provincial, regional and local government agencies, that are within the scope of the environmental assessment, were adequately addressed by the Proponent during the review of the Application and subsequent Project review material submitted by the Proponent; and
- Practical means have been identified to prevent or reduce to an acceptable level potentially significant adverse effects arising from the Project and appropriate compensation measures are proposed where an acceptable level of impact management is not achieved solely by means of Project design and implementation measures.

