

ROBERTS BANK TERMINAL 2 PROJECT **OVERVIEW AND RATIONALE**

OCTOBER 2018



FOREWORD



Canada's international trade is growing, which has a direct impact on regions like Metro Vancouver, home of Canada's largest port. About \$1 in every \$3 of our imports and exports in goods beyond North America go through the Port of Vancouver. A significant portion of these goods travel in shipping containers, part of a worldwide trend that has favoured their efficiency since they were introduced in the 1950s.

In Vancouver, those containers will leave loaded with Canadian grain, lumber and food products, among other goods. They will come back filled with appliances, clothing, food and other consumer products, as well as auto parts and manufactured goods.

The volume of shipping containers handled along Canada's west coast has grown substantially in the past decades. To manage this growth, there have been significant improvements to container terminals in Vancouver and Prince Rupert to increase their efficiency and capacity, as well as investments in road and rail to improve the flow of trade.

However, even with the additional capacity provided by these improvements, forecasts from independent experts show that it won't be enough to manage Canada's future trade demand.

The resulting challenge for the Vancouver Fraser Port Authority is to anticipate and prepare for growth in the densely populated Lower Mainland of British Columbia, respecting the impact on local communities of more rail and truck traffic, and protecting the environment in the wake of necessary project development.

To quote federal transportation minister Marc Garneau, "We must remember that we can have the best quality products and the most ambitious trade agreements in the world, but none of that will matter if we don't move our goods efficiently and reliably to markets."

The port authority began studying how best to address the pending capacity shortfall in the late 1990s. Since then, guided by regularly updated third-party forecasts, we've determined that Canada needs a new marine container terminal on the West Coast. Unfortunately, there is no available land on which to build a new terminal, and therefore new land needs to be created, as has been done in many other ports around the world.

After several years of early planning and over six years of environmental research and engineering study, we have determined that the best place to locate a new container terminal is at Roberts Bank in Delta, British Columbia. The Roberts Bank Terminal 2 Project is currently undergoing a review by an independent panel appointed by the federal minister of environment and climate change. This important process will ensure community, Aboriginal and scientific interests are carefully considered and addressed.

We are pleased to share the details of the analysis that explains the need for the project, which we must now advance to ensure the port is ready to serve Canadians into the future, realize our nation's trade potential and sustain our quality of life.



Robin Silvester
President and CEO
Vancouver Fraser Port Authority

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SUMMARY

Canada is a resource-rich nation that relies on trade to support its growing population and standard of living. Canada's west coast ports, including the Port of Vancouver and the Port of Prince Rupert, have experienced substantial growth in container shipping trade. Canadian importers and exporters of all sizes, from auto manufacturers in Ontario to blueberry farmers in British Columbia, rely on these ports to help sustain their businesses and support growth opportunities.

All levels of government have plans to capitalize on a growing global economy, which requires Canada to be prepared for the trade that will come to Canadian ports. At the Port of Vancouver, we handled a record 3.25 million 20-foot-equivalent unit containers (also called TEUs) in 2017.

Historical trade figures and third-party forecasts have long signalled that the ability of West Coast ports to serve this growth is becoming constrained and that, as early as the mid-2020s, we won't have the capacity to handle the anticipated future growth of trade in containers at the Port of Vancouver or anywhere else on the West Coast.

The role of the Vancouver Fraser Port Authority is to ensure the port is ready for Canada's trading future. As we plan, we must consider how to provide needed port facilities within a growing metropolitan area. To date, we have partnered with industry, governments and communities to improve road and rail networks, investing to help goods flow smoothly throughout our region. We have also consulted with local governments, Aboriginal groups and residents on the ways we can grow responsibly.

Investments in increased size and improved efficiency are being made, or have been made to West Coast container terminals, including recent improvements at the Port of Vancouver's Deltaport, which is Canada's largest container terminal, and at Fairview in Prince Rupert.

However, even with these investments, we won't have enough space to accommodate the shortfall in needed capacity.

After extensive planning, environmental study and engagement with Aboriginal groups and communities, the port authority has determined that a new marine container terminal is needed at Roberts Bank in Delta, British Columbia. Roberts Bank has existing port facilities with links to road and rail networks that have already been improved, in anticipation of trade growth in the region.

The proposed Roberts Bank Terminal 2 Project would be a new terminal in deep water away from residential communities and sensitive intertidal habitats.

The land base for the proposed project would be created primarily from sand that is released in the Fraser River each spring during freshet; this sand has to be removed to keep the river from overflowing and to keep the channel open for vessels.

For each year during operation, on-terminal activities would provide approximately 1,500 well-paying full-time jobs, with a further 11,000 full-time jobs generated by off-terminal activities such as trucking and warehousing.



The project is undergoing a thorough and robust federal environmental assessment by an independent review panel, under the *Canadian Environmental Assessment Act, 2012* and requires other permits and authorizations before it can proceed. Following its review and public hearings, the panel will issue a report to the minister of environment and climate change, who will then make a decision as to whether the project can proceed.

The Roberts Bank Terminal 2 Project would play a critical role in meeting consumer demand for imports, supporting Canadian businesses shipping goods to and from global markets, and in ensuring we can keep Canada open for trade with growing economies around the world, well into the future.

About the Vancouver Fraser Port Authority and the Port of Vancouver

The Vancouver Fraser Port Authority is responsible for the stewardship of the federal port lands and waters in and around Vancouver, British Columbia. It is accountable to the federal minister of transport and operates pursuant to the *Canada Marine Act*. As such, the port authority is mandated to ensure the long-term sustainability of the port by enabling Canada's trade objectives while also maintaining security, protecting the environment and considering local communities.

Located in a naturally beautiful setting on Canada's west coast, the Port of Vancouver is Canada's largest, and North America's third largest by tonnes of cargo, facilitating trade between Canada and more than 170 world economies. The port authority and port terminals and tenants are responsible for the efficient and reliable movement of goods and passengers, and for integrating environmental, social and economic sustainability initiatives into all areas of port operations. Port activities enable the trade of approximately \$200 billion in goods annually, sustaining 115,300 jobs, \$7 billion in wages and \$11.9 billion in GDP across Canada.

Status of the Roberts Bank Terminal 2 Project

The port authority is currently in the environmental assessment, permitting and procurement phases of developing the Roberts Bank Terminal 2 Project.

CONSULTATION

The port authority has conducted four rounds of public consultation, and participated in over 440 project-related meetings with regulators, Aboriginal groups, local government, stakeholders and the general public. Consultation is expected to continue throughout the construction and operation phases.

ENVIRONMENTAL REVIEW

The Roberts Bank Terminal 2 Project is undergoing a review by an independent panel appointed by the federal minister of environment and climate change. The panel will challenge the environmental science and assess whether, after mitigation, the project is likely to have a significant environmental effect. The panel will then provide recommendations to the minister.

ABORIGINAL ENGAGEMENT

As directed by the Canadian Environmental Assessment Agency, the port authority has undertaken an engagement and consultation program with 46 Aboriginal groups that will continue throughout the federal review and permitting of the project and, should the project proceed, into construction and operation. The port authority is also negotiating mutual benefit agreements with Aboriginal groups.

TERMINAL OPERATOR PROCUREMENT

In January 2016, the port authority issued a request for proposals to five shortlisted terminal operator teams, with submissions due in the fall of 2016. This process was monitored by an independent fairness advisor. Confidential discussions with the preferred proponent continue as part of the request for proposals process.

INFRASTRUCTURE DEVELOPER PROCUREMENT

The timing of the infrastructure developer procurement will be driven by the federal panel process.

INTRODUCTION

This document summarizes the role shipping containers play in serving Canada's trade objectives, and the impact on our economy of the growing trade of goods shipped in containers.

It describes the planning undertaken by the Vancouver Fraser Port Authority to meet increasing container trade, and the alternatives that were considered before it was determined that a new marine terminal at Roberts Bank in Delta, British Columbia was necessary to ensure that Canada can deliver on its trade commitments and ambitions.

About trade through Vancouver

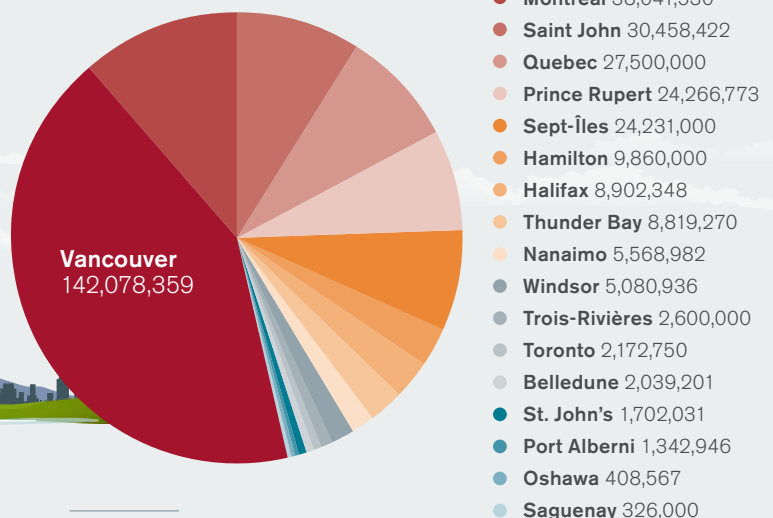
- Vancouver is the third-largest port in North America by tonnes of cargo, and the largest export port
- The Port of Vancouver handled approximately 142 million tonnes of cargo in 2017, representing approximately 42 per cent of all cargo handled by Canadian port authorities
- Trade through Vancouver is nearly equal to the five next-largest Canadian ports combined
- Containers handled at the Port of Vancouver carry more than \$100 billion in cargo annually
- The Port of Vancouver handles more than 50 per cent of Canadian offshore container trade

About the proposed terminal

- 108 hectares of new industrial land
- Placed in subtidal waters to minimize environmental impacts
- Up to three berths for container ships
- Modern, semi-automated terminal providing 1,500 on-terminal jobs

Cargo volume at Canadian ports (2017)

In metric tonnes



Data source: Canadian Sailings, February 9, 2018



ECONOMIC BENEFITS DURING CONSTRUCTION (5.5 YEARS)



- › 12,700 person-years of highly paid construction jobs
- › \$1 billion wages
- › \$1.3 billion GDP

TAX REVENUES DURING CONSTRUCTION (5.5 YEARS)



- › Over \$300 million total tax revenue
 - › \$127 million federal tax revenue
 - › \$154 million provincial tax revenue
 - › \$20 million local government tax revenue

CONSULTATION



- › Ongoing, with more than 440 meetings with regulators, Aboriginal groups, local government stakeholders and the public to date
- › Four rounds of public consultation that helped shape project design
- › Project has been refined in response to feedback

BENEFITS



- › Ready for trade, ensuring that Canadian businesses can export and import goods to and from growing economies around the world to meet local and international consumer demand
- › Support for thousands of middle-class jobs in Vancouver and across the country
- › Benefits to Aboriginal groups through training, employment, environmental initiatives and contract opportunities
- › Community investments based on enrichment, education and training, and environmental leadership
- › Contributions to science, including data, decision-making tools and overall understanding of the ecosystem at Roberts Bank

ECONOMIC BENEFITS DURING OPERATION ANNUAL ON-TERMINAL AND OFF-TERMINAL ACTIVITIES



- › 12,400 person-years (1,550 on-terminal; 10,850 off-terminal¹)
- › \$810 million wages
- › \$1.2 billion GDP

TAX REVENUES DURING OPERATION ANNUAL ON-TERMINAL AND OFF-TERMINAL ACTIVITIES



- › \$205 million tax revenue
 - › \$96 million federal tax revenue
 - › \$75 million provincial tax revenue
 - › \$34 million local government tax revenue

ENVIRONMENTAL STUDIES



- › More than 85 studies over seven years
- › Contributions from more than 100 independent professional scientists
- › More than 35,000 hours of fieldwork
- › Studies demonstrate that any environmental effects can be addressed through avoidance, mitigation and offsetting

FIND OUT MORE



- › portvancouver.com/RBT2
- › 604.665.9337
- › container.improvement@portvancouver.com
- › Visit our Delta Community Office, located in Trenant Park Square in Ladner, at 5225A Ladner Trunk Road, Delta, B.C.

¹ Direct, indirect and induced jobs

1.0

CONTAINERS AND CANADIAN TRADE



Canada – the trading nation

Canada has a long history as a trading nation. For thousands of years, the Coast Salish Peoples had complex systems for trade and commerce in the Salish Sea, Burrard Inlet and the Fraser River, long before European explorers recognized the area as an ideal deep-water port.

Confederation and subsequent railway connections transformed Canada into a competitive economic force that could efficiently transport goods to new markets.

Canada's trade ambitions remain strong: Canada accounts for about half of one per cent of the world's population and 2.5 per cent of global merchandise exports².

The future of Canada's economic prosperity depends on being able to get goods and resources to and from other markets efficiently and reliably, a sentiment echoed by governments at all levels in their trade strategies and plans. Ongoing access to foreign markets is also critical to small and medium-sized businesses, which represent more than half of Canada's economic output and produce 25 per cent of the total value of Canadian exports³.

“Canada’s international trade performance depends on the quality of its transportation system”

The Honourable Marc Garneau,
Minister of Transport, Government of
Canada

Trade strategies and plans

The Canadian government is actively pursuing new and growing markets that offer opportunities for Canadian businesses to diversify and expand their export opportunities or to access the consumer goods and inputs needed to produce a large range of products and services.

Most recently, the Canadian government has signed the following agreements to increase market access for Canadians:

- Comprehensive and Progressive Agreement for Trans-Pacific Partnerships⁴ (CPTPP). The CPTPP will provide enhanced access to key Asian markets, including Japan, Malaysia and Vietnam. Once in force, it will be one of the largest trade agreements in the world. Canadian imports from and exports to the 10 other CPTPP countries accounted for \$100 billion in 2016. In 2016, CPTPP members were responsible for 20.8 million tonnes of Canadian market cargo through the Port of Vancouver, worth \$16.6 billion, and accounted for 22 per cent of the port's Canadian tonnage.
- Comprehensive Economic and Trade Agreement (CETA). CETA is an ambitious trade initiative that opens new European Union markets of about 510 million consumers to Canadian exporters. Bilateral trade as a result of CETA is estimated to increase by 20 per cent⁵.

“...increased capacity from this project will allow goods from Manitoba to be moved efficiently and safely to markets around the world”

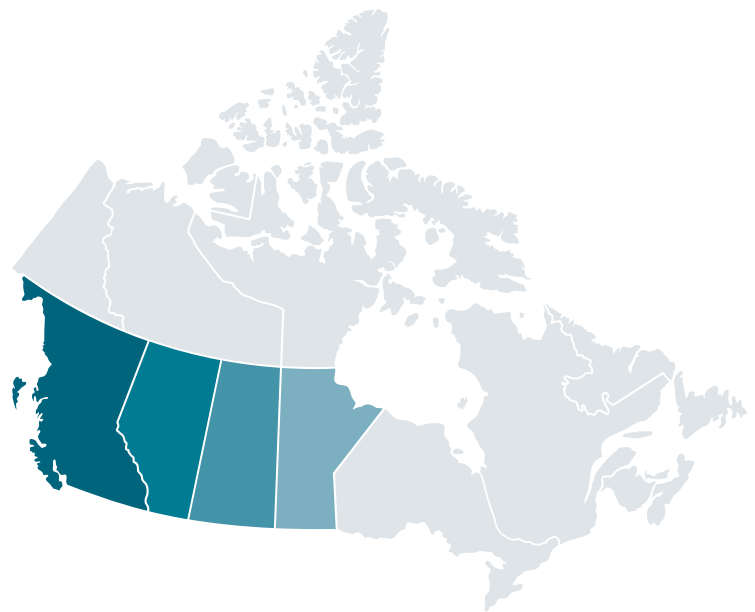
The Honourable Ralph Eichler, Minister of Agriculture, Province of Manitoba

Negotiations with countries like India and China are ongoing, and should a trade deal be reached with either or both countries, there will be substantial gains in bilateral trade, with exports and imports spread across a variety of sectors⁶.

Similarly, provincial economic strategies rely on the increased ability to get goods and resources to market, creating more sustainable and diversified economies. British Columbia, Manitoba, Saskatchewan and Alberta rely on the Port of Vancouver to help meet their trade and economic objectives, which include:

- In **British Columbia**, building on global export growth to meet increasing demand, cultivating new markets, and expanding established export markets in several export sectors including agrifoods, forestry, mining, natural gas and technology⁷
- Improving access to global markets, ensuring opportunities for job creation, and encouraging sustainable growth, economic diversification and foreign investment in **Alberta**⁸
- In **Saskatchewan**, growing export volumes and value in markets with significant potential for growth⁹
- Growing the **Manitoba** economy by growing exports and expanding foreign direct investment¹⁰

Overall, these trade strategies and plans reinforce Canada's continued intent to be a trading nation in which prosperity is linked to the global economy. The Port of Vancouver is the primary gateway to Asian markets, and has already experienced substantial growth in cargo. This means that Canada Port Authorities, like the Vancouver Fraser Port Authority, must thoughtfully plan how to efficiently move these goods to ensure Canada is able to capitalize on the substantial potential of world trade in the future.



² Canada's State of Trade: Trade and Investment Update – 2017. www.international.gc.ca

³ 10 things you (probably) didn't know about Canadian SMEs. www.bdc.ca

⁴ Background on previous Asia-Pacific trade negotiations. www.international.gc.ca

⁵ Smith, M-D. (2017, September 21). What you need to know about CETA, Canada's trade deal with Europe that takes effect today. *National Post*. www.nationalpost.com

⁶ Canada-India Free Trade Agreement Negotiations. www.international.gc.ca

⁷ Trade and Invest British Columbia. www.britishcolumbia.ca

⁸ Alberta Economic Development and Trade Business Plan 2018–21. open.alberta.ca

⁹ Saskatchewan Trade and Export Partnership 2016-17 Annual Report. www.sasktrade.com

¹⁰ Manitoba Trade and Investment, Mission Statement. www.gov.mb.ca/trade

Containers – how Canada moves its goods

Global trade was transformed in the 1950s with the efficiencies created by the introduction of standardized shipping containers. As a result of this worldwide shift to shipping a wide variety of goods in containers, a steadily growing volume of Canada's international trade moves through the Port of Vancouver in containers each year.

Importers and exporters prefer moving their goods in containers because they:

- Can carry almost any type of cargo safely and securely around the world
- Have a standardized design and are sturdy and reusable
- Can be easily moved between different modes of transportation including truck, train and ship
- Enable exporters to provide high-quality goods, as containers reduce the risk of damage and contamination, and can be temperature controlled
- Provide cost-effective access to customers all over the world



A container's economic impact

One container through the Port of Vancouver represents:



Over
\$500
in wages



Almost
\$1,000
in GDP



Almost
\$2,000
in economic output

Approximately 85 per cent of all containers that moved through the Port of Vancouver in 2017 originated from or were destined for Canada, a figure expected to remain steady.

What is a TEU?

To account for the different lengths of containers in use, the container industry measures capacity and volumes in 20-foot-equivalent units, or TEUs. A 20-foot container is referred to as one TEU, and a 40-foot container is considered two TEUs.

In 2016, 701 million TEUs moved through container ports around the world.¹¹

9,500 TEUs



Average container ship

400–700 TEUs



Train

1 or 2 TEUs



Truck

Container shipping on Canada's west coast

There are currently two ports on the west coast of Canada that handle significant volumes of shipping containers: the Port of Vancouver and the Port of Prince Rupert. The marine terminals at these two ports provide Canada with the ability to efficiently export and import goods in containers to many trading economies worldwide, the largest of which are China, Japan and Korea. Collectively, the Port of Vancouver and the Port of Prince Rupert handled 4.18 million TEUs in 2017.

Container shipping at the Port of Vancouver

In 2017, the four container terminals within the Port of Vancouver handled 3.25 million TEUs, most of it consumer-driven imports, representing an estimated 51 per cent of Canada's offshore container trade.

Vancouver's share of container traffic across all Pacific Northwest ports (Prince Rupert, Vancouver, Seattle, Tacoma and Portland) was 41 per cent in 2017, an increase from 35 per cent in 2011.

North American container terminals typically send containers back to Asia empty. In contrast, Port of Vancouver container terminals are unique in that they handle closer to equal volumes of loaded import and export containers.

This provides a number of competitive advantages, including:

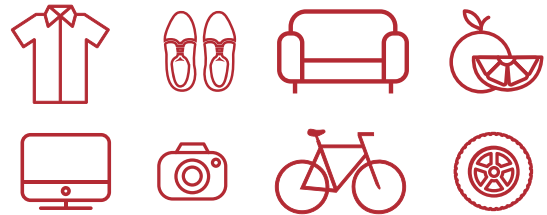
- Less vulnerability to fluctuations in import or export traffic
- Increased revenue opportunities for shipping lines, since they can earn revenue by shipping goods in containers both ways
- Better integration of specialized transportation and warehouse services in proximity to marine terminals, resulting in a more flexible gateway that delivers better overall reliability, lower costs and less time in transit

¹¹ The World Bank. www.worldbank.org

What's in a container?



EXAMPLES OF **IMPORT CARGOS** AT THE PORT OF VANCOUVER



EXAMPLES OF **EXPORT CARGOS** AT THE PORT OF VANCOUVER



Blueberry farming in the Lower Mainland

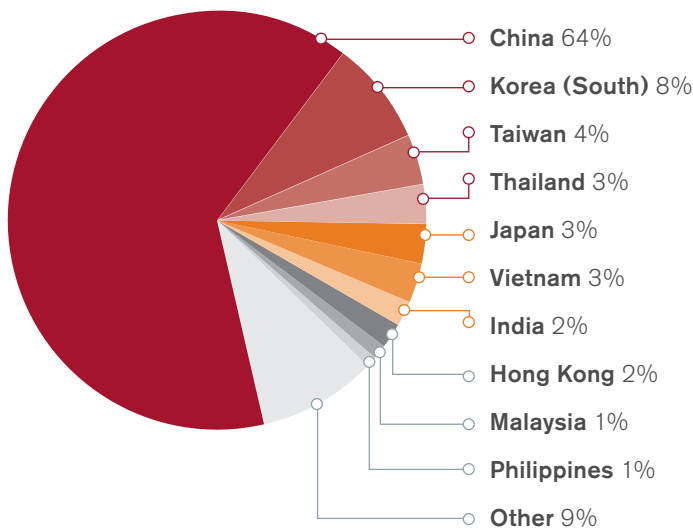
With a multi-generational history of farming from the Punjab region of India, Paul's father started the family farm in British Columbia's Lower Mainland in the late 1970s. Today, their farm focuses on blueberry production, which has grown significantly in the past decade. Port access has allowed their business to evolve and to enter new international markets, ensuring they stay competitive.

Where does our cargo in containers come from, and where does it go?



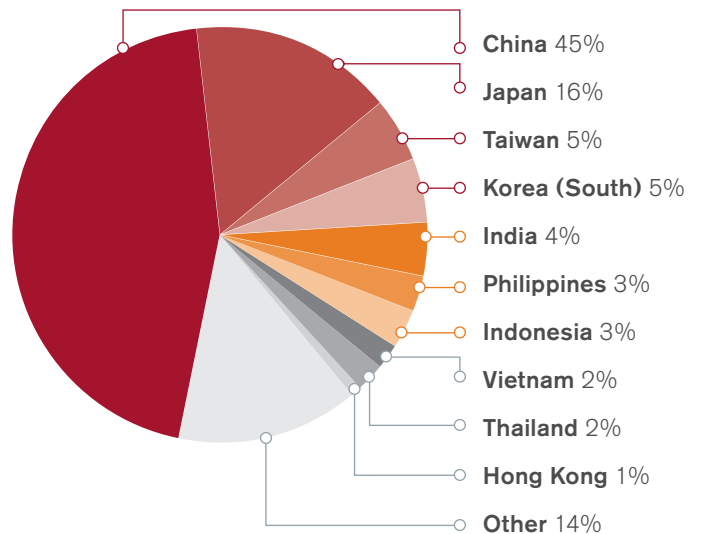
Principal trading economies (container imports)

11,860,154 total metric tonnes



Principal trading economies (container exports)

14,169,484 total metric tonnes



Historical growth has been strong

There has been stable growth in container demand on Canada's west coast over the past two decades, with volumes increasing at an average rate of 10 per cent per year since 1995, quickly recovering from temporary downturns, like the one in 2008 associated with the global financial crisis, or the slowdown in 2016 related to United States port labour disruptions in 2015.

There are several reasons for this sustained period of high growth:

- The Chinese economy was opened in the early 2000s, resulting in a dramatic increase in trade of goods in containers
- Shippers increasingly adopt containers as a preferred method of moving goods, such as grain, lumber and steel, that were previously shipped by other methods
- There has been continued economic growth, both in Canada and around the world, and increasing Canadian consumer demand for imported goods

Overall container volumes have grown at a significantly greater pace than overall economic growth within Canada, and greater than even international trade growth itself. Between 1995 and 2000, the average annual growth of containers through West Coast ports was 142,000 TEUs (about 19 per cent annually). Since 2012, average growth has risen to about 180,000 TEUs (about five per cent annually). Though the rate of growth is lower, it reflects a much larger increase in the actual number of containers moved through the port.

Forecasts predict continued growth

As part of our work to ensure there is enough space for growing trade on Canada's west coast, the port authority has commissioned a series of independent, expert third-party container traffic forecasts¹² that consider long-term trends in global markets and trade, as well as a range of other drivers of container traffic demand. The findings of these forecasts conclude that container traffic to and from the West Coast is expected to grow significantly, well into the future, due to increasing Canadian consumer demand and export opportunities.

The expert forecasts have proven very accurate. Since 2001, the west coast of Canada has on average achieved more than eight per cent growth annually in the container sector, a trend that was predicted by early forecasts.

The most recent forecast, completed in 2016, predicts sustained growth in container traffic through the west coast of Canada to 2040 and beyond, albeit at a lower rate of growth than in the past, due to maturity in global economic growth and the container sector.

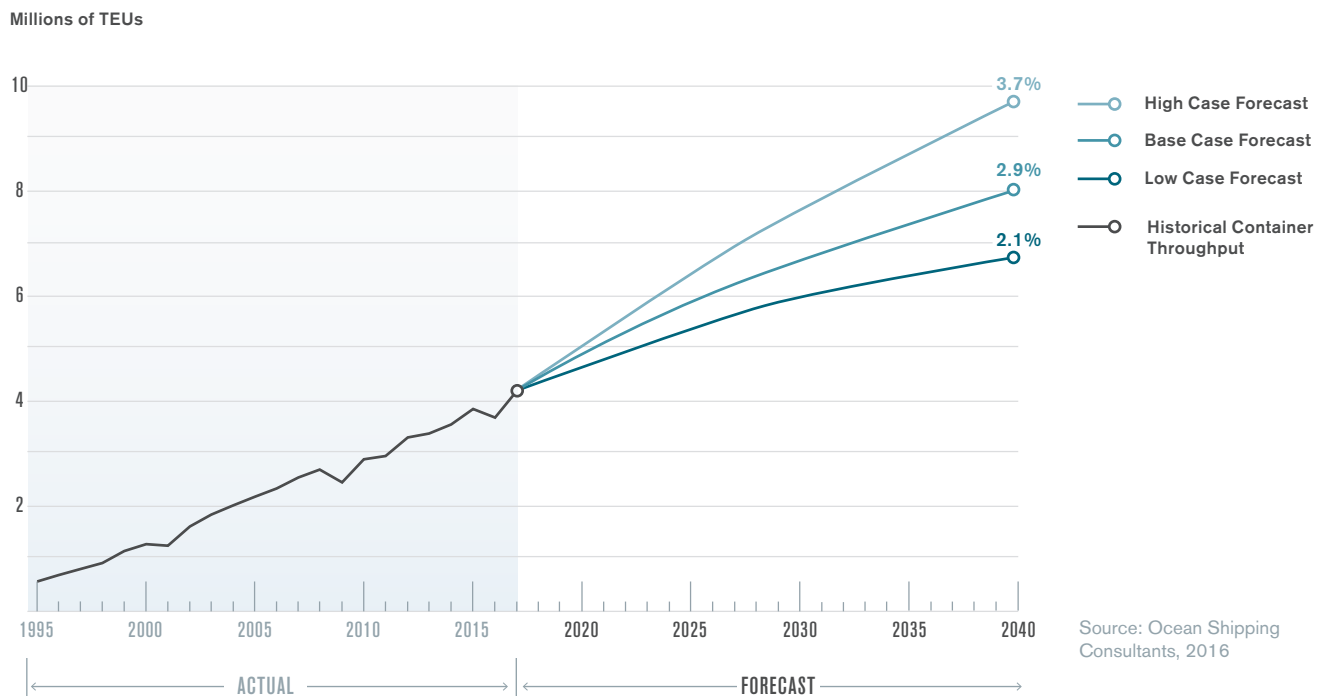
¹² www.robertsbankterminal2.com/news-information/project-documents-reports/

The latest forecast offers three scenarios — low, base and high — that informed the port authority's container sector planning:

- The low case is a scenario in which there is a restrained compound annual growth rate of 2.1 per cent between 2017 and 2040. The low case forecast for West Coast container traffic volumes is 6.7 million TEUs by 2040 (average 109,000 TEUs per year).
- The base case is a scenario in which global trade growth continues at a compound annual growth rate of 2.9 per cent between 2017 and 2040. The base case forecast for West Coast container traffic volumes is 8.0 million TEUs by 2040 (average 165,000 TEUs per year).

- The high case is a scenario in which there is high economic growth at a compound annual growth rate of 3.7 per cent between 2017 and 2040. The high case forecast for West Coast container traffic volumes is 9.7 million TEUs by 2040 (average 239,000 TEUs per year).

Figure 1 Historical container traffic (1995–2017), and forecast container traffic (2017–2040) for the west coast of Canada



Planning now to meet future growth

Capacity constraints

Without the ability to move goods efficiently and reliably through West Coast ports, shippers will search for the next best alternative, with consequences to Canada's economic progress.

A recent report¹³ commissioned by the port authority concluded that when the Port of Vancouver and the Port of Prince Rupert reach capacity, shippers will likely be forced to use ports on the west coast of the United States such as Seattle, Tacoma, Los Angeles, and Long Beach.

If Canadian importers and exporters are required to move cargo to ports in the United States, they would be forced to pay increased transportation costs. By 2030, the total additional transportation costs to reroute container cargo away from the Port of Vancouver could be as much as \$80 million per year, rising to as much as \$230 million per year in 2040 and approximately \$280 million per year in 2050¹⁴.

These additional costs would be passed on to Canadian consumers and export markets, and would impact Canada's trade competitiveness. Canada would also lose the jobs and economic benefits that would have otherwise occurred as a result of handling Canadian trade in Canada, which for the Roberts Bank Terminal 2 Project is estimated at \$1.2 billion in GDP every year.

Practical capacity

We focus on the practical capacity of a terminal for planning purposes to ensure the gateway is fluid and congestion-free. When a terminal exceeds 85 per cent of its maximum capacity for a sustained period of time, it begins to lose its efficiency and experience congestion, which results in delays throughout the supply chain, such as increased truck and rail traffic in local communities, the diversion of cargo to other ports, and delays for shipping lines, exporters and import businesses.

Therefore, we use a more realistic and practical capacity of 85 per cent in our planning, which provides room to handle fluctuations in cargo, such as when inclement weather impacts vessel and/or rail traffic, creating bottlenecks that lead to backups at the terminal.

“Additional terminal capacity to handle growing container volumes at the Port of Vancouver is needed to ensure that the efficiency of goods movement is not compromised. The Roberts Bank Terminal 2 Project would ensure that this growing demand for containerized trade is met.”

James Clements, VP Strategic Planning and Transportation, Canadian Pacific

^{13 14} Potential Impact of a Failure to Develop RBT2 at VFPA.
www.portvancouver.com/RBT2

2.0

PLANNING AND ALTERNATIVES



The plan for growth

The port authority has studied how best to address the shortfall in marine terminal container capacity since the late 1990s.

Around the world, port authorities build land for new terminals and then lease that land to terminal operators who build the terminal infrastructure and purchase cargo-handling equipment. This is particularly true in the container sector, where there are multiple customers using a terminal, so no one customer is likely to come forward to lead the development of new facilities.

As a Canada Port Authority, our mandate under the *Canada Marine Act* requires us to protect the environment and consider local communities. Our obligation is to Canadians, not to shareholders seeking an economic return. We are also responsible for ensuring terminal capacity is provided to customers at a reasonable cost and in a timely manner, which requires fair and appropriate competition between terminal operators within the port.

In planning to meet demand, the port authority explored a number of opportunities to increase container terminal capacity. Since 2003, we have:

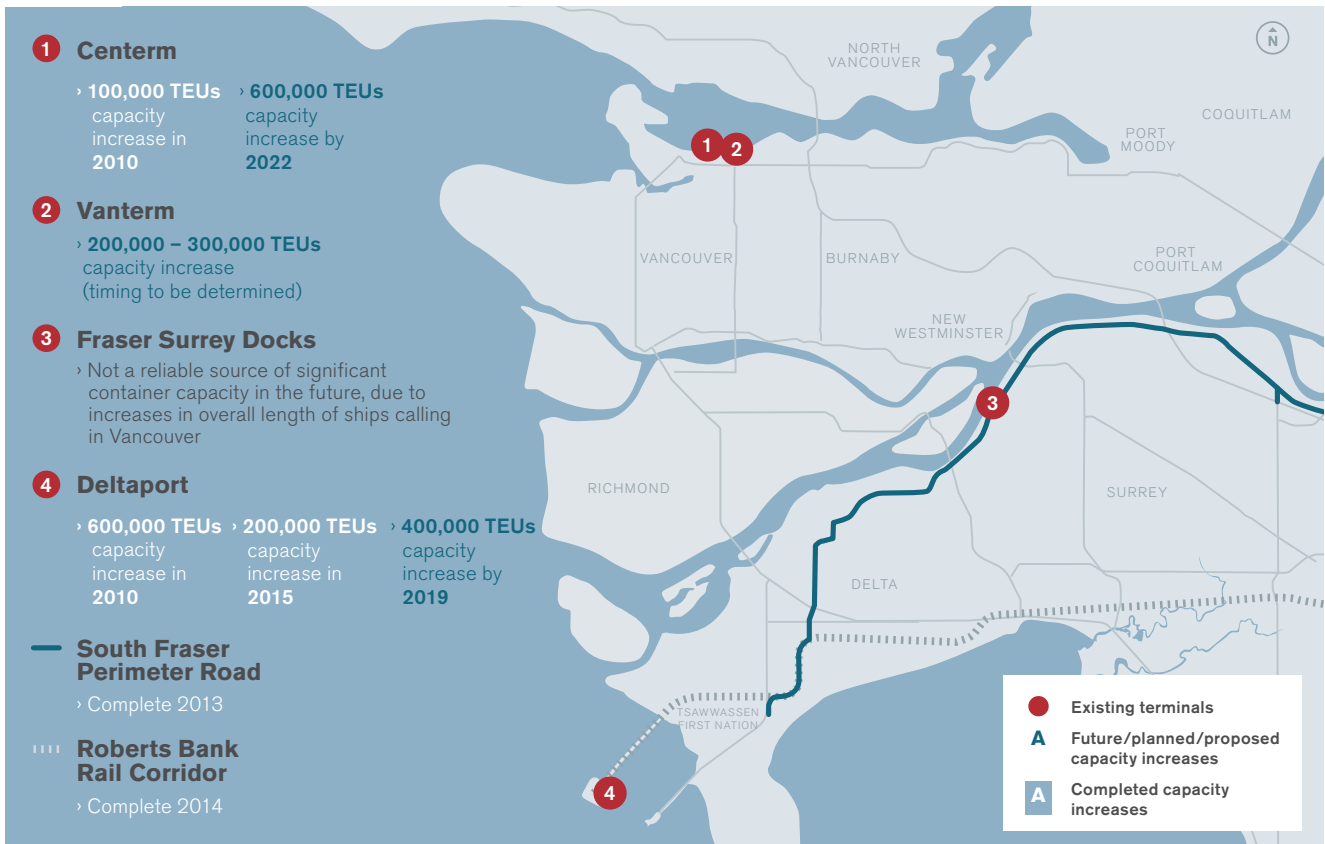
- Increased the size and efficiency of existing container terminals
- Improved road and rail connections, to handle more containers
- Explored whether other port terminals could be converted to handle containers
- Examined the possibility of building a new terminal

Improvements in the Lower Mainland of British Columbia

Since 2005 we have led and supported improvements to the Port of Vancouver's existing container terminals, including Vanterm and Centerm in Vancouver's inner harbour, and Deltaport at Roberts Bank in Delta:

- The completion of the Deltaport Third Berth expansion in 2010 added 600,000 TEUs
- As part of the Deltaport Terminal, Road and Rail Improvement Project, the port authority, along with Global Container Terminals Canada and the Province of British Columbia, will complete improvements in and around Deltaport in 2018 that will create an additional 600,000 TEUs of capacity
- Working with DP World, the port authority is proposing the Centerm Expansion Project, which will expand Centerm's physical footprint and increase the capacity of the terminal by 600,000 TEUs to 1.5 million TEUs. Subject to regulatory approvals, expansion at Centerm could be complete and operational in 2022.
- Future terminal improvements at Vanterm could generate an estimated 200,000 to 300,000 TEUs of capacity, but long-term growth is limited, due to lease agreements with adjacent terminals

Figure 2 Existing Lower Mainland container terminals, including future capacity increases and recently completed and related transportation infrastructure



In addition to investing in terminals, the port authority has taken a leadership role, working with governments, industry and communities, to improve road and rail connections throughout the region. Collectively, we have delivered more than \$7.5 billion in new regional goods movement infrastructure within the Vancouver gateway through road-and-rail grade separations, bridges, a new highway, a highway expansion and terminal expansions, all completed by 2014. These improvements reduce congestion and enhance safety for local communities, reduce emissions from idling, and increase the efficiency of goods movement for cargo owners and local businesses.

Expansion at Deltaport

At Roberts Bank, expanding the existing Deltaport container terminal is not an option for two main reasons. First, Fisheries and Oceans Canada has prohibited further land reclamation inland from Deltaport, due to environmental sensitivity. The graphic below shows how further expansion at Deltaport would have to be built almost entirely in the sensitive intertidal habitat within the inter-causeway area.

Second, expanding Deltaport would mean one terminal operator would control a significant majority of the market for container terminal services. Healthy competition is necessary to ensure users continue to pay reasonable rates for reliable service. For this reason, the Vancouver Fraser Port Authority is committed to fostering an appropriate level of competition within the Port of Vancouver. This competitive environment is especially relevant for Canadian exporters who rely on the Vancouver gateway.

Converting other port terminals

The port authority investigated the potential of converting other terminals within our jurisdiction to handle containers. Terminal operators at the Port of Vancouver operate under long-term renewable lease agreements with the Vancouver Fraser Port Authority, and make significant investments in equipment and infrastructure, so the opportunities to convert a terminal to handle containers are restricted. Ultimately, we cannot arbitrarily direct a terminal operator to change its business, and in this case, none were deemed suitable.

We also determined that terminals on the Fraser River cannot accommodate today's large container vessels because they cannot safely navigate the river. Further, road connections to terminals on the north shore of Burrard Inlet are not adequate to handle container trucking volumes.

Figure 3 Existing terminals and area of environmental sensitivity

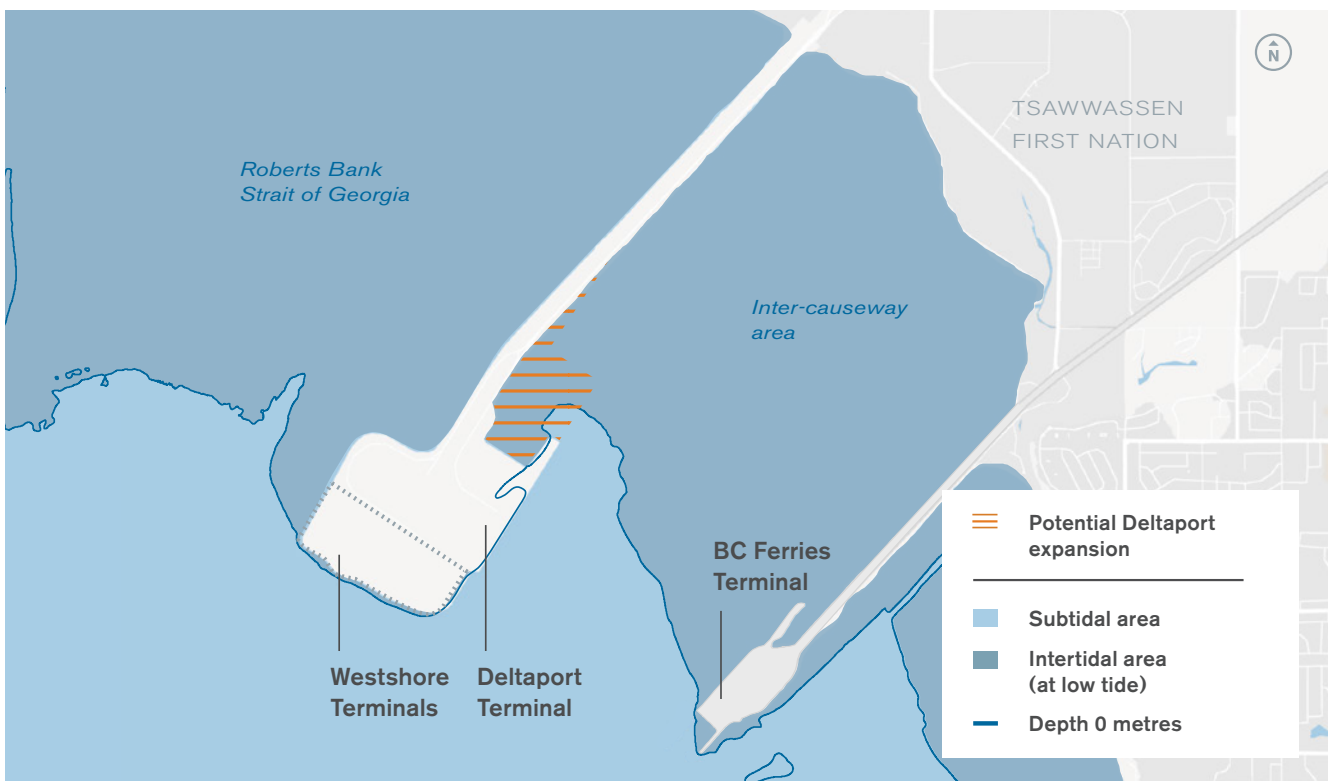




Image courtesy of the Prince Rupert Port Authority

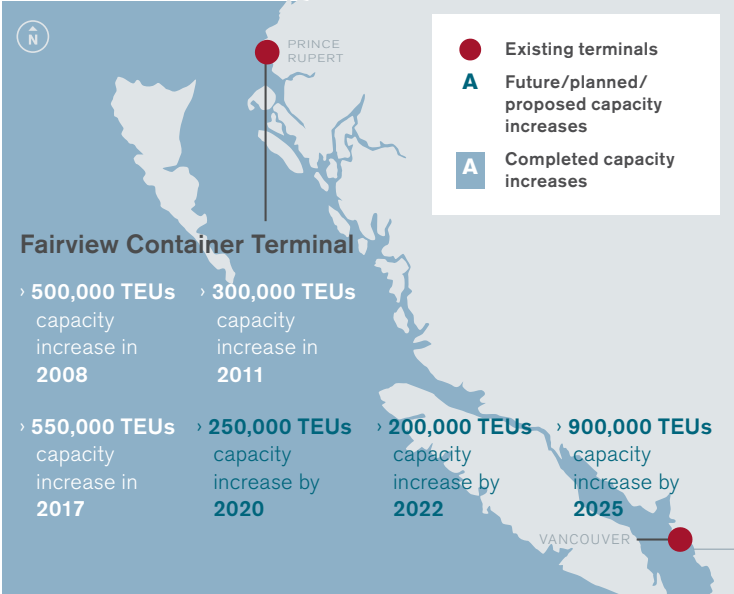
Port of Prince Rupert

The port authority also considered whether growth outside of our jurisdiction would deliver needed capacity.

The only other major marine container terminal on the west coast of Canada with a direct connection to a national railway is the Fairview container terminal in Prince Rupert. In 2007, the Prince Rupert Port Authority converted the Fairview terminal from a breakbulk terminal to a container terminal with a design capacity of approximately 500,000 TEUs. Subsequent improvements at the terminal, including the Phase II North Expansion Project that was completed in 2017, have brought the capacity to 1.35 million TEUs. Further growth by way of the Phase II South Expansion Project is anticipated to increase capacity to 1.8 million TEUs in the early 2020s and by the mid-2020s, additional planned improvements may increase capacity to 2.7 million TEUs. The potential for further expansion is being investigated, but is as yet undetermined.

All planned and possible expansion at Fairview container terminal in Prince Rupert is needed to handle Canada's growing trade, but it is not enough to accommodate the shortfall in needed capacity on the west coast of Canada.

Figure 4 Prince Rupert container terminal recent and planned capacity increases





The role of United States cargo and ports

The port authority's role is to provide the capacity required to meet Canada's trade objectives, and the Port of Vancouver handles mostly Canadian exports and imports moving to or from Asia.

Shippers are free to contract with terminals regardless of the cargo's destination, so some United States cargo moves through Canadian ports. Vancouver is an attractive gateway for cargo moving to and from Asia and the U.S. Midwest because the total transportation cost is substantially less than using United States ports and railroads. Container traffic destined for, or originating from, the United States through Vancouver was 15 per cent in 2017, a figure that has remained relatively consistent in recent years. While still a fraction of total container volumes, the handling of U.S. cargo does generate substantial family-supporting jobs for Canadians.

Without sufficient long-term capacity at the Port of Vancouver and on the west coast of Canada, we anticipate that cargo would eventually be diverted to the ports of Seattle and Tacoma, starting with U.S.-bound imports.

Eventually, Canadian imports and exports moving to and from central and eastern Canada would be diverted, resulting in additional transportation costs to shippers, and the loss of the benefits resulting from the Canadian jobs that would have otherwise been created by this cargo. This would act as an ongoing drag on the Canadian economy, and could leave Canada exposed to potential protectionist policies in the United States.

Alternative supply chain concepts

Several options — such as inland terminals and short-sea shipping — for how containers move through the supply chain beyond the main container terminals have been proposed as a way to increase container capacity and/or improve efficiency.

Shippers will ultimately decide how best to contract supply chain options for moving cargo, and the Vancouver Fraser Port Authority supports any opportunity for greater efficiency. However, these options could only ever be complementary to a new container terminal, rather than replacing it, because marine terminal capacity is needed to manage ship-to-shore container movements.

Planning now for the future

Planned improvements are underway within the jurisdiction of the port authority and at the Port of Prince Rupert. These improvements are at various stages of the planning and permitting processes, and will alleviate capacity constraints on the West Coast until Roberts Bank Terminal 2 can be delivered.

Should any of the planned improvements experience delays or not proceed to construction, the West Coast won't have enough capacity to handle container trade, and will face capacity shortfalls earlier than anticipated.

Capacity shortfalls would likely create significant negative impacts on port users and local communities as a result of terminal congestion, including truck and train backups, vessel scheduling challenges, cargo redirection, increased truck traffic to and from the United States, increased transportation costs for Canadian goods, and the loss of business for importers and exporters.

Figure 5 Historical and available future container terminal capacity (without the Roberts Bank Terminal 2 Project)

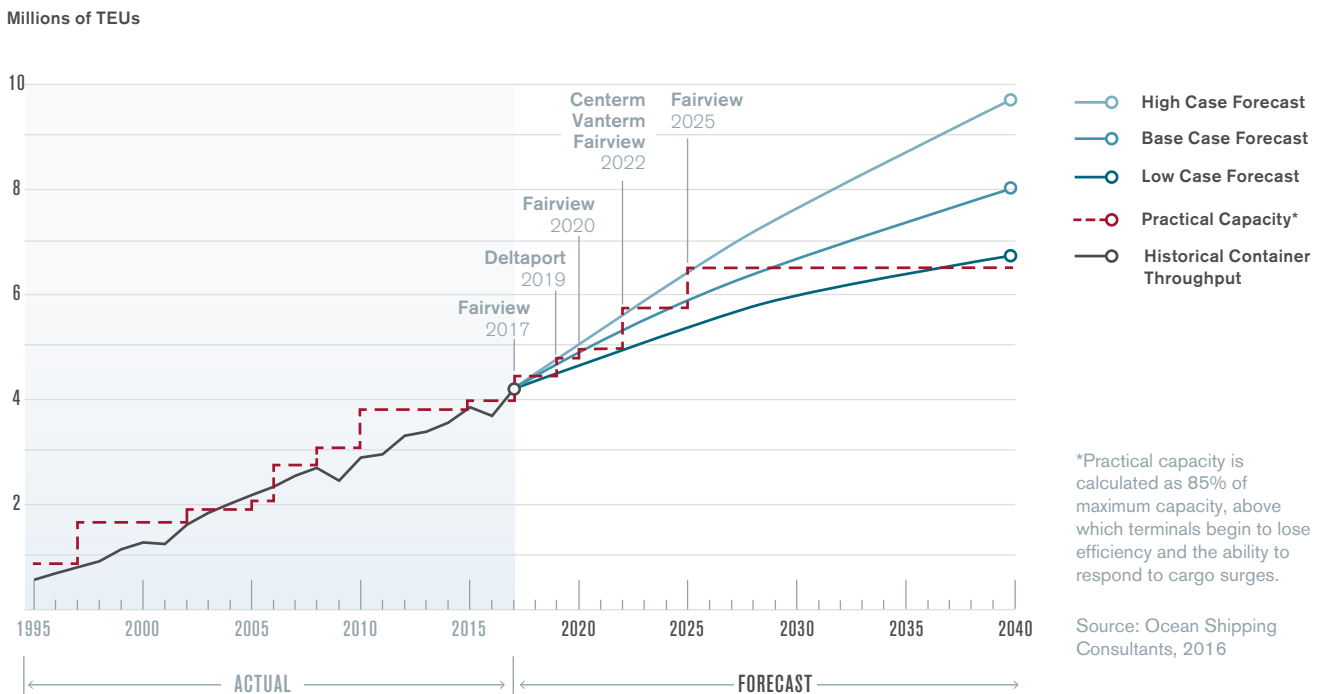
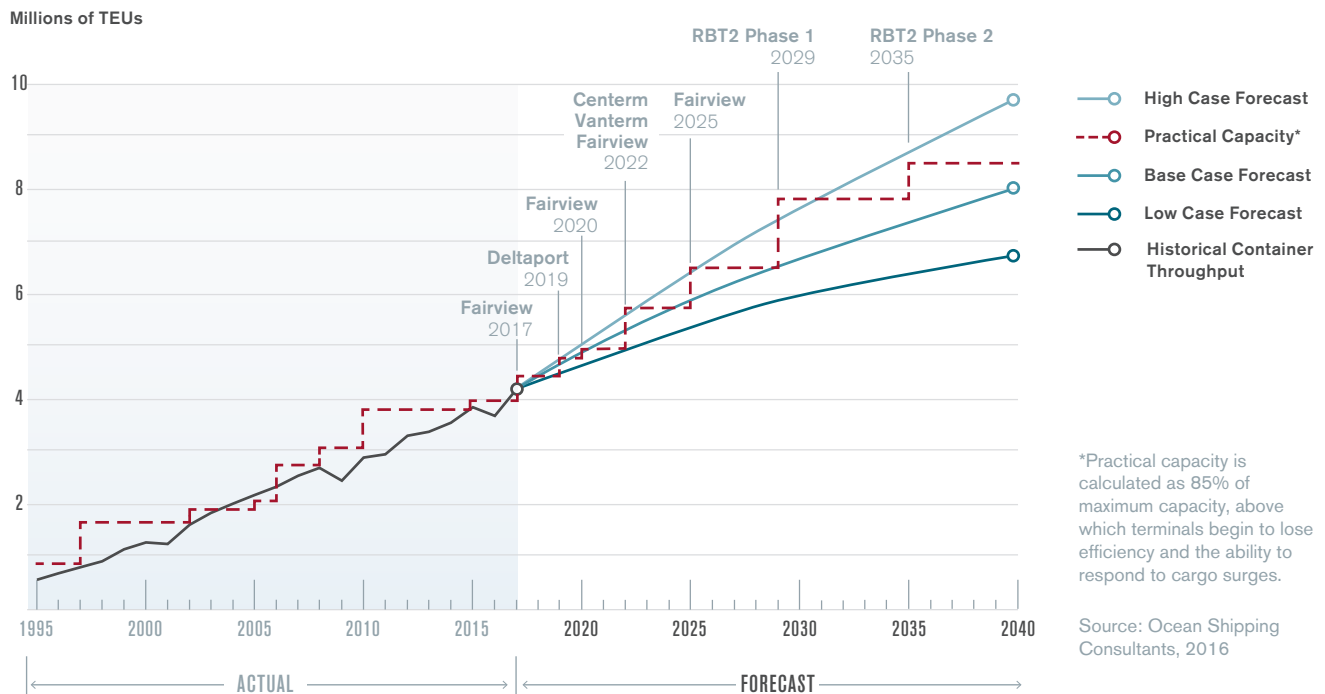


Figure 6 Historical and available future container terminal capacity (with the Roberts Bank Terminal 2 Project)



Building a new marine terminal

The construction of an entirely new marine container terminal is a last-resort solution that requires several conditions to be met:

- Deep water
- Flat land
- Access to the national road and rail network
- A local population base to provide sufficient labour

The port authority analyzed the suitability of a series of potential waterfront sites for a new container terminal, but identified no available sites that meet these conditions.

The only remaining option is the creation of land where deep-water access and road and rail connections already exist. Based on the port authority's analysis, the only viable option for this approach is at Roberts Bank, where two terminals already operate on reclaimed land.

The graphic above shows the Roberts Bank Terminal 2 Project coming in service in 2029, which is the earliest we believe the project can be delivered. The project construction would be complete in time to prevent capacity shortfalls on the West Coast (assuming base case growth).

The Roberts Bank Terminal 2 Project has been designed to eventually deliver 2.4 million TEUs of container handling capacity. The Vancouver Fraser Port Authority intends to take a phased approach to making that capacity available when the market needs it. The timing shown in the above graphic represents the most likely scenario, and is subject to changes in market conditions.

Based on our container traffic and capacity forecasts, the entire capacity of the Roberts Bank Terminal 2 Project is needed to ensure Canada is able to meet trade plans and objectives through to the mid- to late-2030s.

3.0

EXPANDING CANADA'S TRADE AT ROBERTS BANK





Trade at Roberts Bank

After several years of early planning and over six years of environmental research and engineering study, we have determined that the only viable option to locate a new container terminal is next to the existing terminals at Roberts Bank.

As an established trade gateway, Roberts Bank is well positioned to accommodate future growth in trade activity. The location has several competitive advantages:

- Deep water that can accommodate the largest modern container ships and is away from sensitive ecosystems closer to the shore in the Fraser River Delta, such as eelgrass that provides habitat for Chinook salmon and crab-rearing beds
- Proximity to major truck and rail corridors, including direct access to CN, CP and BNSF main lines to and from Canada and the United States
- Proximity to the Strait of Juan de Fuca and Pacific Ocean shipping routes
- Direct access to an established network of off-dock container handling facilities that support a full range of import and export activities

In recent years, significant improvements have been made to the road and rail infrastructure serving Roberts Bank in order to improve the flow of trade and minimize any impacts of the movement of goods on local communities.

These improvements include the \$1.2 billion South Fraser Perimeter Road Project completed in 2013, and the \$300 million Roberts Bank Rail Corridor Program completed in 2014. In addition, a further \$240 million is being invested to further improve the Highway 17 and Highway 91 connection in Delta, British Columbia.

In 2016, the Tsawwassen First Nation announced the development of the Deltaport Logistics Centre on Tsawwassen First Nation lands adjacent to the Roberts Bank causeway. The centre is under construction and is fully leased to:

- Delta iPort (logistics facility available for occupancy in 2018)
- Port of Vancouver (Canada Border Services Agency container examination facility, complete in 2019)
- EuroAsia Transload (warehouse building, complete in 2020)

The Roberts Bank Terminal 2 Project

There are three main components of the proposed Roberts Bank Terminal 2 Project, shown in Figure 8:

1. A new three-berth **marine container terminal**
2. A **widened causeway** to accommodate additional road and rail infrastructure
3. An **expanded tug basin** to accommodate a second tug operations contractor

The marine terminal would be located immediately west of the existing Roberts Bank terminals, about 5.5 kilometres from the mainland end of the causeway. The terminal would sit on 108 hectares of new industrial land, created mainly from sand that is released in the Fraser River each spring during freshet; this sand has to be removed to keep the river from overflowing and to keep the channel open for vessels. The terminal would provide berths for up to three container ships on the south side, container storage in the centre, and rail intermodal yards on the north side.

The Roberts Bank causeway would be widened to link existing road and rail networks to the marine terminal and to provide additional road and rail infrastructure.

An expansion of the existing tug basin would accommodate additional tugboats, which are necessary to efficiently and safely assist in the arrival and departure of ships calling at the new terminal. The expansion would allow for separate access gangways and pontoon floats, and would include sufficient moorage for two tug operators.

Advancing the work

Since large infrastructure projects like the proposed Roberts Bank Terminal 2 Project require a long lead time due to regulatory, permitting, procurement, construction and commissioning processes, the port authority chose to advance the project in 2011. Based on the current project schedule, subject to regulatory approvals and a final investment decision, the project could be operational by the late-2020s, in time to meet forecast growth in demand.

Figure 7 Regional context



Figure 8 Project components

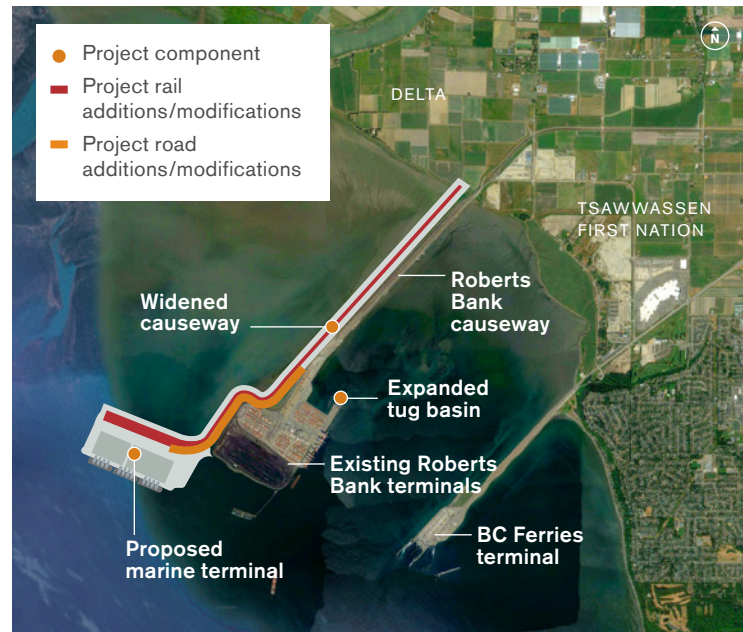
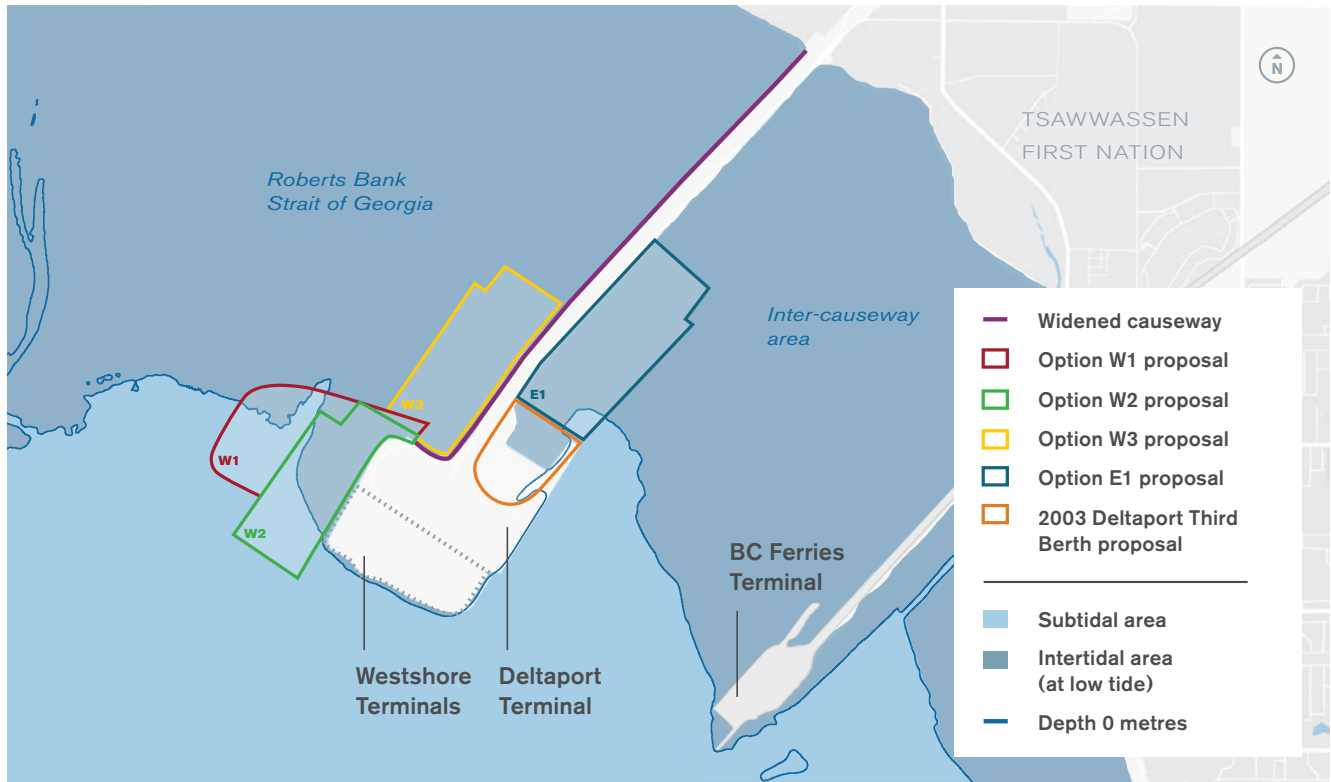


Figure 9 Location options considered in 2003 for the Roberts Bank Terminal 2 Project



Locating the terminal to protect the environment

The port authority evaluated several alternatives for the specific terminal location, orientation, layout and configuration, considering in particular the potential environmental impacts.

Studies to assess each option, shown in Figure 9, examined the advantages and disadvantages of situating the terminal in a range of positions, from those as far offshore as possible to those as close to the shore as possible. The studies analyzed impact on intertidal habitat, construction cost, operational effects of storm winds and currents, and potential for changes in coastal processes (such as seabed erosion).

In 2003, the minister of Fisheries and Oceans Canada wrote in a letter to the port authority that the terminal could not be built inland of the existing terminals because of highly vulnerable ecosystems in that area, effectively eliminating options W3 and E1 in Figure 9.

The potential sites for a new terminal were therefore limited to those immediately west of the existing Roberts Bank facilities.

Further analysis in 2012 resulted in two viable options, as seen in Figure 10: W1, with a berth facing offshore and W2, with a berth perpendicular to the shoreline. Each of these options were split into sub-options at various setbacks, or distances from the deepest water in which they could be safely built.

The environmental and technical work that was conducted indicated a clear preference for the offshore-facing W1 alternative. It is located the farthest offshore, almost entirely in subtidal waters, which would avoid effects on sensitive intertidal habitat and reduce the amount of dredging required to accommodate the largest container ships that would call on the terminal.

Environmental studies

Building on decades of available environmental study of Roberts Bank in 2011, the port authority commenced a program that included over 77 individual studies, resulting in over 35,000 hours of fieldwork by over 100 professional scientists.

In response to requests made during consultation, the port authority made the terms of reference for the field studies and all available prior study reports available on the project website. The port authority also distributed regular notifications to inform local governments, Aboriginal groups and the public about the specific environmental studies being undertaken in their communities.

Technical advisory groups

In 2012 and 2013, the port authority established four technical advisory groups, comprised of local and international scientific and technical experts with specialized knowledge from regulatory agencies, academic institutions, non-governmental organizations, and consulting firms.

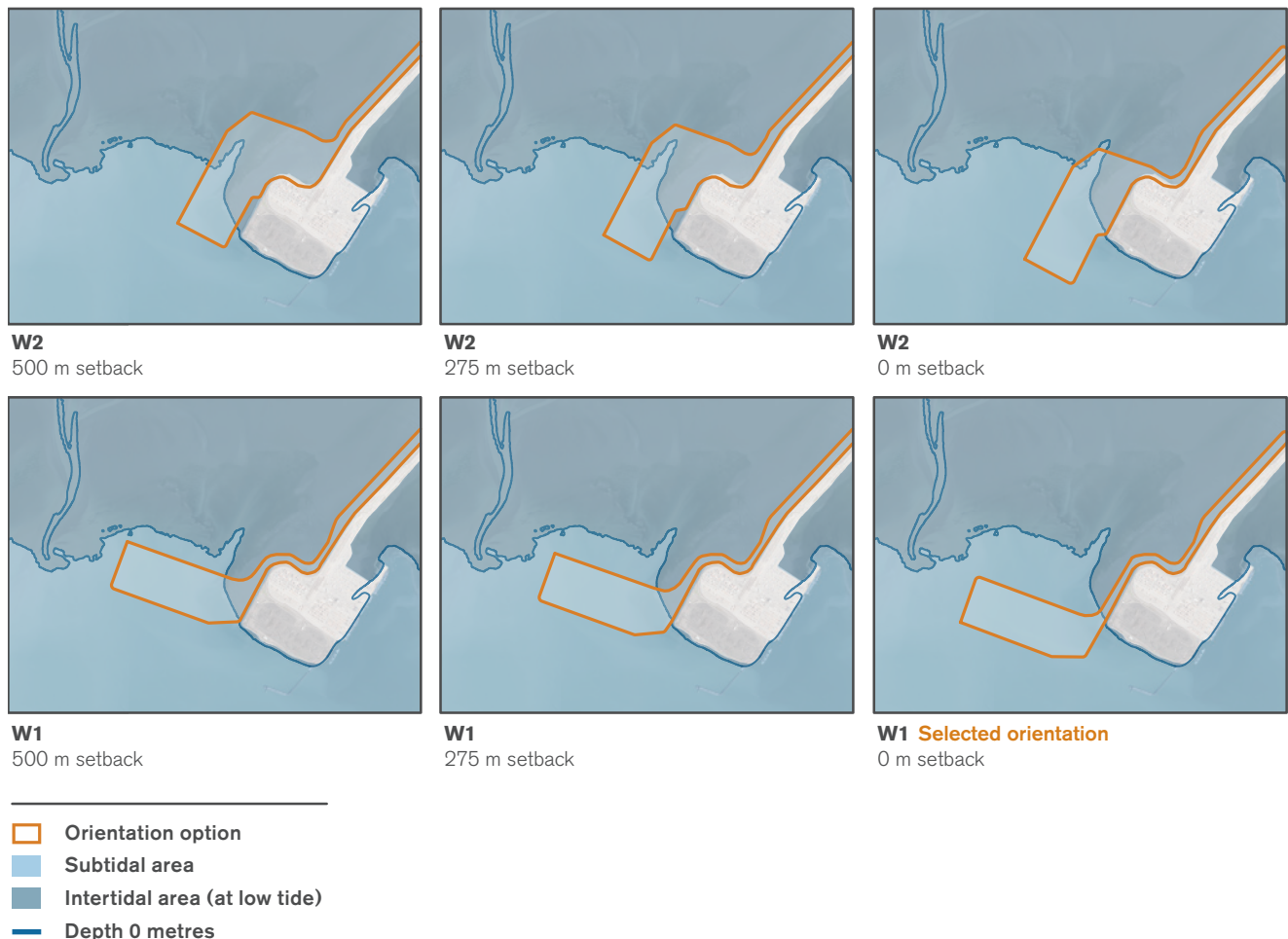
The purpose of the groups was to improve the relevance, quality, rigour and completeness of studies and information submitted as part of the Roberts Bank Terminal 2 Project environmental impact statement.

Each group provided expert advice regarding one of four key environmental components in the Roberts Bank ecosystem, including:

- Biofilm and shorebirds
- Coastal geomorphology
- Productive capacity
- Southern resident killer whales

Experts reviewed existing information and field study work plans, identified priority information needs and appropriate methods of impact assessment, and made recommendations to the port authority.

Figure 10 Potential orientations considered in 2012 for the Roberts Bank Terminal 2 Project



Environmental impact statement

Beginning in 2014, at the direction of the minister of environment and per the *Canadian Environmental Assessment Act, 2012*, the port authority undertook the development of the Roberts Bank Terminal 2 Project environmental impact statement. This report documents four years of extensive scientific study and consultation with regulators, Aboriginal groups, local government and the public to assess the potential environmental, economic, social, heritage and health effects of the terminal's construction and operation.

The scope of the project for the purposes of the environmental assessment includes all project components and physical activities outlined in our environmental impact statement, including marine, road and rail transportation within the port authority's jurisdiction.

The conclusion of the comprehensive environmental studies carried out by the Vancouver Fraser Port Authority is that, after the implementation of mitigation and offsetting, the project is not expected to result in any significant adverse environmental effects. Furthermore, the port authority is confident that potential adverse effects can be fully or partially avoided or reduced through project design and the implementation of environmental management plans.

Studies conducted since the submission of the environmental impact statement

Since the submission of the environmental impact statement in March 2015, the port authority has conducted additional studies based on feedback and engagement with Aboriginal groups, local communities, environmental groups and government agencies, and we have submitted over 3,000 pages of additional information to the independent federal review panel.

A substantial part of this work has focused on developing a greater understanding of biofilm, which is an important food source for some migratory shorebirds. We originally developed our study approach with input from a technical advisory group, and are continuing to build on studies that began in 2012. Through this work, we are further advancing the scientific understanding of biofilm as a critical component of the Roberts Bank ecosystem. The results we have received from these studies to date have strengthened our confidence in the conclusions of the environmental impact statement.

“As long-standing supporters of free enterprise and a more competitive and prosperous region, we recognize and thank the Port for seeking input from the community, Aboriginal groups, and the public throughout the development of the Roberts Bank Terminal 2 Project.”

Iain Black, President and CEO, Greater Vancouver Board of Trade



Consultation and engagement

Prior to submission of the environmental impact statement, four rounds of substantive Aboriginal, public and local government consultation input shaped our approach to developing the project. Since that time, we continued to refine the design of the project and update construction activities, based on ongoing input from Aboriginal groups, regulators and other stakeholders.

As an example, we undertook over a year of technical work in response to concerns raised by Aboriginal groups about the effects of an intermediate transfer pit on crab populations, crab health, and the exercise of Aboriginal and treaty harvesting rights and access within the project area. As a result of additional technical work performed in response to this feedback, we determined that an intermediate transfer pit would no longer be required as a temporary storage location during project construction. Eliminating this feature made it possible to eliminate the anticipated temporary effects on the crab population, and addressed the concerns of Aboriginal harvesters.



Project benefits

The Roberts Bank Terminal 2 Project would play an important role in supporting Canadian businesses shipping goods to and from markets, and in ensuring we can keep Canada open for trade with growing economies around the world into the future.

This project would also mean that supply chain jobs associated with international trade are kept in Canada, thus ensuring that Canadians reap the benefits of handling our own trade.

The project would be a significant economic generator for the region. Like most large, recently constructed container terminals, Roberts Bank Terminal 2 would be semi-automated, creating about 1,500 jobs on the terminal and another 11,000 trucking, warehousing and other jobs off the terminal, totalling about \$810 million in wages annually. The project would also generate \$1.2 billion in GDP annually and contribute more than \$200 million in tax revenue to all levels of government. These numbers do not include the value of the goods themselves to the economy; therefore, the economic benefit is expected to be even greater.

The construction of the terminal over five and a half years would provide 12,700 person-years of employment worth about \$1 billion in wages. The construction of this project would also generate \$1.3 billion in GDP, and contribute \$300 million in tax revenue to all levels of government.

The project would create opportunities for Aboriginal groups, including training, employment and project contracting opportunities.

Roberts Bank and the surrounding area would continue to attract investment in goods movement infrastructure, demonstrating a recognition of the continued growth anticipated for the Roberts Bank gateway.

The project would also provide for community benefits, with the port authority working with local governments and residents to help deliver initiatives of importance to them, should the project be approved.

Further, the project has already made a significant contribution to scientific knowledge of the Roberts Bank ecosystem and many species of interest. These studies are openly shared with other organizations working toward goals of environmental protection and stewardship.

“Our members typify the based-in-B.C. businesses directly and positively impacted by this project, both directly by the construction opportunities presented, and long-term by the stability and access to markets created.” Clyde Scollan, President and CEO, Construction Labour Relations Association of British Columbia

4.0

CONCLUSION

The Port of Vancouver needs to be ready to accommodate the increase of goods in containers that is coming to the west coast of Canada. The Roberts Bank Terminal 2 Project meets that need and fulfills the following objectives:

- 1. Prepare for shipping container trade growth on behalf of Canada and Canadians.** The Port of Vancouver's container sector facilitates Canada's trade with Asia-Pacific economies, serving Canadian consumers, companies, and exporters as far away as central and eastern Canada. Additional container capacity will be required on Canada's west coast by the late-2020s.
- 2. Ensure that port growth does not come at the expense of the environment, local communities or Aboriginal groups.** The port authority is committed to minimizing the environmental and community impact of port operations.
- 3. Provide economic benefits, including job creation, to the region, British Columbia and Canada.** This generational investment provides a long-term solution to keep the Vancouver gateway open for Canadian trade, creating jobs and opportunities for Canadian industries to grow, generating significant revenue for all levels of government.

GLOSSARY

Berth

The berth is a designated location where a container vessel is secured, usually for the purposes of loading and unloading. The Roberts Bank Terminal 2 Project would have a berth face approximately 1,300 metres long, and could accommodate the simultaneous handling of up to three container ships, depending on their individual lengths.

Biofilm

Biofilm is a thin dense layer of microscopic diatoms, algae, bacteria, sediment and organic matter, and is a key food and nutritional source for shorebirds, including western sandpipers and dunlin, during their semi-annual migration stopovers at Roberts Bank.

Canada Marine Act

The *Canada Marine Act* is federal legislation that outlines the responsibilities of Canada Port Authorities.

Canada Port Authority

Canada Port Authorities are established by the government of Canada, as set out in the *Canada Marine Act*, and are accountable to the minister of transport. Each Canada Port Authority is required to be financially self-sufficient, operating at arm's length from the federal government, and is governed by a board of directors chosen by port users and municipal, provincial and federal governments.

Canadian Environmental Assessment Agency

The Canadian Environmental Assessment Agency is the body responsible for the administration of the federal environmental assessment process within Canada.

The agency is responsible to the minister of environment and climate change, and operates pursuant to the *Canadian Environmental Assessment Act, 2012*.

Centerm terminal

Centerm is a 72-acre full-service container terminal operated by DP World and located on the south shore of Burrard Inlet in Vancouver, British Columbia.

Deltaport terminal

Deltaport is a 210-acre full-service container terminal operated by GCT Canada and located at Roberts Bank in Delta, British Columbia.

DP World

DP World is a global terminal operator with a portfolio of 78 marine and inland terminals around the world. DP World operates Centerm container terminal in Vancouver, British Columbia and Fairview container terminal in Prince Rupert, British Columbia.

Dredging

Dredging generally refers to the underwater excavation of bottom sediments for the purposes of increasing the depth of a waterway or navigational route.

Environmental impact statement

An environmental impact statement is a document prepared by a project proponent that identifies and assesses the environmental effects of a project and the measures proposed to mitigate these effects, in accordance with the guidelines prepared by the Canadian Environmental Assessment Agency.

Fairview terminal

Fairview terminal is a 59-acre full-service container terminal operated by DP World and located in Prince Rupert, British Columbia.

Freshet

Freshet refers to the seasonal increase in fresh-water river flows resulting from the thawing of snow and ice accumulations in the mountains during spring.

GDP

Gross domestic product is a monetary measure of the market value of all final goods and services produced in a defined area over a set period of time.

Global Container Terminals Canada

Global Container Terminals Canada (GCT) is a North American terminal operator with four container terminals in Canada and the United States. GCT operates Deltaport and Vanterm container terminals in British Columbia.

Infrastructure developer

The Roberts Bank Terminal 2 Project infrastructure developer will be procured through a competitive process, and will be responsible for designing, building, and possibly financing and maintaining the terminal landmass and related infrastructure.

Intermediate transfer pit

An intermediate transfer pit is a temporary marine storage location for dredged sand.

Intertidal habitat

Intertidal habitat refers to seashore that is above water at low tide and below water at high tide, and usually contains a high diversity of species.

Maximum capacity

Maximum capacity of a container terminal is a measure of the total number of containers that could theoretically be handled by a terminal in a year, assuming timely and efficient interactions with all vessels, trucks and trains that service the terminal and recognizing the seasonal nature of the business.

Practical capacity

Practical capacity of a container terminal is calculated as 85 per cent of maximum capacity, and is considered a threshold above which terminals may experience reduced efficiency and ability to recover from supply chain congestion.

Terminal operator

The terminal operator for the Roberts Bank Terminal 2 Project is being procured through a competitive process, and will be responsible for outfitting terminal facilities, supplying equipment and managing ongoing container handling operations.

Vanterm terminal

Vanterm is a 76-acre full-service container terminal operated by GCT Canada and located on the south shore of Burrard Inlet in Vancouver, British Columbia.

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