

BHP

Proposed BHP Potash Export Facility at Fraser Surrey Docks

Discussion Guide



BHP

Our Charter

**We are BHP,
a leading global resources company.**

Our Purpose

Our purpose is to create long-term shareholder value through the discovery, acquisition, development and marketing of natural resources.

Our Strategy

Our strategy is to own and operate large, long-life, low-cost, expandable, upstream assets diversified by commodity, geography and market.

Our Values

Sustainability

Putting health and safety first, being environmentally responsible and supporting our communities.

Integrity

Doing what is right and doing what we say we will do.

Respect

Embracing openness, trust, teamwork, diversity and relationships that are mutually beneficial.

Performance

Achieving superior business results by stretching our capabilities.

Simplicity

Focusing our efforts on the things that matter most.

Accountability

Defining and accepting responsibility and delivering on our commitments.

We are successful when:

Our people start each day with a sense of purpose and end the day with a sense of accomplishment.

Our teams are inclusive and diverse.

Our communities, customers and suppliers value their relationships with us.

Our asset portfolio is world-class and sustainably developed.

Our operational discipline and financial strength enables our future growth.

Our shareholders receive a superior return on their investment.



Andrew Mackenzie
Chief Executive Officer

BHP Billiton Canada Inc. (BHP) is a leading global resources company with assets and projects in iron ore, petroleum, copper, and coal. BHP proposes to construct a potash export facility (Project) at Fraser Surrey Docks (FSD) in Surrey, British Columbia (BC) to export potash from the proposed Jansen Project in Saskatchewan. With a throughput of up to approximately 8 million tonnes per annum (Mtpa), the new facility would receive, store, load, and ship potash onto bulk ocean-going vessels to customers around the world.

The FSD terminal is an active port facility, located at 11060 Elevator Road in Surrey, BC, opposite the northern end of Annacis Island and adjacent to the South Westminster Heights residential neighbourhood. The proposed Project is located on federal lands within the jurisdiction of the Vancouver Fraser Port Authority (port authority) and is therefore subject to port authority review and approval. The Application has been prepared to meet the Project and Environmental Review (PER) Application Submission Requirements for PER No. 17-108 issued by the port authority on July 24, 2017. The Application includes engineering and environmental studies, effects assessments, and management plans to address anticipated construction and operation-phase effects.

BHP uses a rigorous environmental management approach to identify, assess, and control material risks, and strives to deliver lasting benefits to the environment and the communities in which it operates by improving natural resource management and enhancing biodiversity. BHP is committed to delivering responsible environmental management solutions for this Project while continuously pursuing conservation and other opportunities to achieve social and environmental benefits. Supporting conservation efforts and responsible development is integral to sustainability, identified as a core value in BHP's Charter. Additional information about BHP is available on the corporate website at www.bhp.com.

What is Potash?

Potash, technically referred to as potassium chloride, is a naturally occurring mineral salt and a key ingredient in agricultural fertilizer, including common household garden fertilizers. Potash is non-flammable, non-combustible, and considered non-toxic to aquatic species. Similar to table salt, potash is mildly corrosive to metals and is water soluble, so requires a dry location for storage. The world's largest known reserves of potash are located in Saskatchewan, Canada. Potash is processed into solid particles that are up to approximately 4 millimetres in size and range from pink to red in colour.

Canada exports potash to countries including the United States, Brazil, Indonesia, China, and India. Approximately 95 percent (%) of potash consumption is for use in fertilizers; the remaining 5% is used in a variety of chemical and manufactured products. Potash is a major contributor to improving crop yields and resilience, and helps to feed the growing global population.



Project Rationale

BHP anticipates that the world will require additional supplies of potash in the next decade, as the market rebalances with demand growth absorbing current overcapacity and latent capacity. BHP has identified the FSD site as a potential location for the Project. FSD is considered a suitable location for the Project because of the existing rail and deep-water infrastructure.

Canada has the world's largest known reserves of potash. BHP is investing in the long-term future of the potash market by developing its potash business and holdings in the Saskatchewan basin to meet the increasing global demand for potash. BHP's proposed facility would receive potash via rail from the proposed Jansen Project in Saskatchewan, store the product, then load onto bulk ocean-going vessels for export. A permitted port site is required to seek approval of the proposed Jansen mine project.

Project Overview

The 29-hectare site is located entirely on port authority property, and would occupy part of the existing FSD container yard and FSD's Berth #9. The proposed facility would:

- Receive shipments of potash by rail from the proposed Jansen mine
- Offload product from railcars to the conveyor system
- Store potash in the storage building
- Transfer product from the potash storage building, or directly from rail, via the conveyors to the shiploader and to a waiting vessel for export.

The proposed Jansen mine is planned to initially produce 4 Mtpa of potash, and ramp-up over time to 8 Mtpa. At the eventual throughput of 8 Mtpa, 8 to 10 trains and 3 to 4 vessels per week would be servicing the facility.

Site preparation and construction activities are planned.

Site Preparation:

- Demolish existing structures and remove asphalt in select areas. Demolition will include the former Bekaert office building, the container truck gate, the diesel shop, portions of existing rail, and a portion of Shed 5.
- Relocate existing sewer main, watermain, and storm sewer utilities to accommodate new structure foundations.
- Preload the facility footprint using clean fill and conduct other ground improvements.

Construction:

- Install the railcar unloading facility and material handling and transfer system including dust collection units.
- Install the rail loop, and complete access improvements.
- Construct fully enclosed potash storage building, including materials handling equipment.
- Conduct seismic upgrades at the berth.
- Install traveling shiploader with cascade-type spout to minimise dust and maintain product quality.

No development dredging is required to deepen the berth.

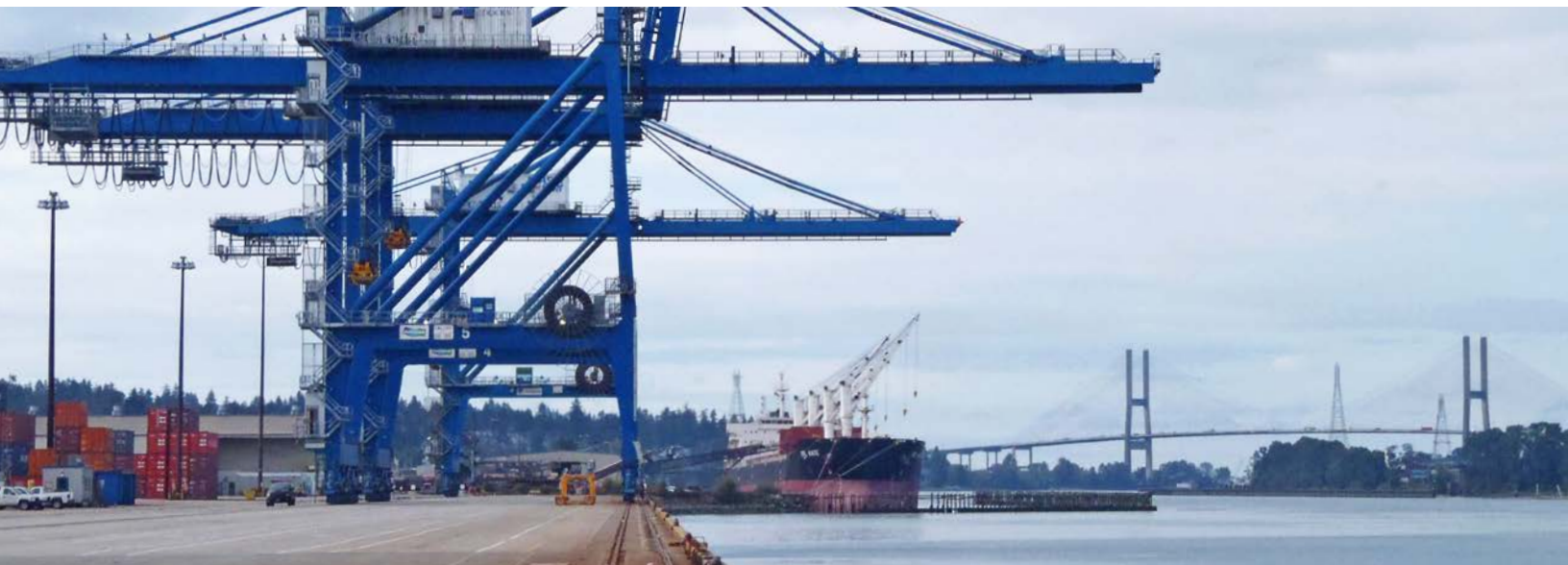


Project Setting

The Project site is located in Surrey, BC in an industrial area adjacent to Highway 17 (South Fraser Perimeter Road). Situated on the south shore of the Fraser River's Main Arm, the site has been an industrial port facility since the early 1930s. Land use west of Highway 17 is designated as industrial, and east of the highway is designated for residential, institutional, and park use. The nearest residences are located approximately 75 metres (m) from the Project site.



Project Rendering



Studies, Reports, and Plans

The Application includes the following studies, assessments, and plans:

1.0 General Submission Requirements	4.0 Required Studies, Reports and Plans	5.0 Community and Stakeholder Consultation
1.1 Application Fee and Documentation Deposit 1.2 Building Permit 1.3 Project Team Members Contact List Attachment 1-A: Table of Concordance Attachment 1-B: Project Team Contact List	4.1 Project Engineering Studies Attachment 4.1-A: Hazardous Materials Report for Demolition Attachment 4.1-B: Geotechnical Report Attachment 4.1-C: Energy Efficiency Study Attachment 4.1-D: Marine Traffic Information Requirements Report	5.1 Preliminary Comment Period 5.2 Planned Consultation During Application Review 5.3 Planned Communications During Construction Attachment 5-A: Consultation Summary Report Attachment 5-B: Input Consideration Report
2.0 Project Description Requirements	4.2 Project Effects Assessments Effects Assessments Attachment 4.2-N: Phase I and II Environmental Site Assessment Attachment 4.2-O: Lighting Impact Statement Attachment 4.2-P: Noise Assessment Attachment 4.2-Q: Air Quality Assessment Attachment 4.2-R: View and Shade Impact Analysis Attachment 4.2-S: Traffic Impact Assessment Attachment 4.2-T: Archaeological Potential – Preliminary Assessment Report Attachment 4.2-U: Archaeological Overview Assessment Attachment 4.2-V: Flood Protection Assessment Attachment 4.2-W: Aquatic Resources Assessment Report Attachment 4.2-X: Terrestrial Resources Assessment Report Attachment 4.2-Y: Summary of Potential Effects and Mitigation	6.0 Indigenous Engagement Attachment 6-A: Indigenous Engagement Summary
3.0 Project Drawing Requirements		
Attachment 3-A: Drawings		



Core sample of potash from Saskatchewan



Service shaft headframe at the Jansen Potash Project in Saskatchewan

Project Engineering Studies and Key Findings

- **Hazardous Materials Report for Demolition**
 - Buildings to be demolished have the following hazardous materials: asbestos-containing materials, lead paints, polychlorinated biphenyls-containing ballasts or capacitors, lead, mercury, and stored chemicals. The Hazardous Materials Report for Demolition recommends measures for storing, handling, and recycling or disposing of hazardous building materials prior to and during demolition of buildings.
- **Geotechnical Study** – Project-related geotechnical concerns pertain to the seismic risk and potential for liquefaction of low-resistance clean sand underlying the site. Stone columns and soil densification are proposed ground improvement options to meet the seismic performance requirements for the berth. In addition, the use of soil densification and piling is proposed for the storage building to meet the ground settlement criteria and provide acceptable seismic performance.
- **Energy Efficiency Study** – Both Project design technology and measures recommended for operation are proposed for Project energy conservation. Combined, these result in a total energy savings of 1,535 megawatt hours per year and an overall savings of 14% in relation to the theoretical baseline energy consumption.
- **Marine Traffic Information Requirements**
 - Marine vessel types include Handysize, Handymax, Supramax, Ultramax, Panamax, and Kamsarmax. The operational plan includes guidance for vessel berthing and unberthing (along with information on pilotage tug assistance), as well as mooring and unmooring operations.



Project Effects Assessments and Key Findings

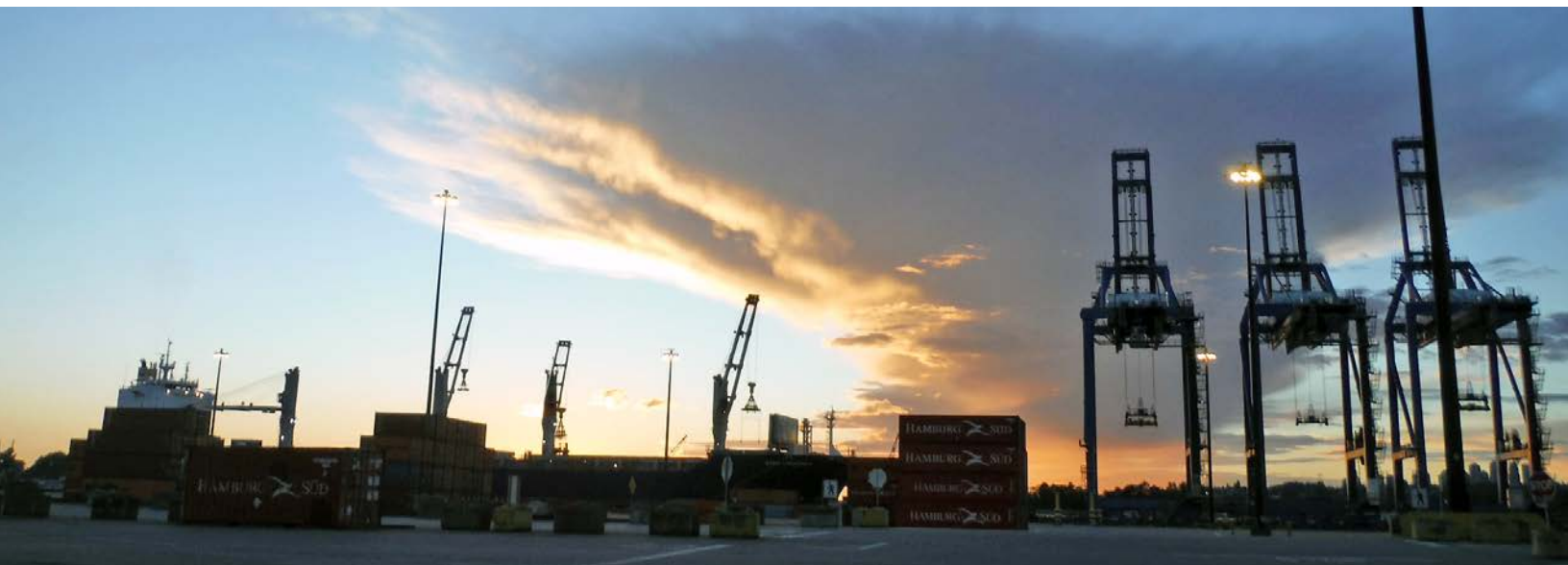
- **Traditional Use** – The Traditional Use (TU) information will be assessed separately in an addendum to this Application, as the information is provided. This Application has been written using secondary data and does not incorporate TU information provided by Indigenous groups' own TU studies. Each Addendum will assess potential impacts to a specific Indigenous group, using the same assessment scope that was used for this Application. Each Addendum will also discuss relevant additional mitigation measures if applicable.
- **Phase I and II Environmental Site Assessment** – The Phase I and II Environmental Site Assessment identified 10 onsite areas of potential environmental concern and 2 offsite areas of potential environmental concern. Based on the information reviewed and sampling conducted, there is a low likelihood of contaminated soil or groundwater being encountered during construction, and adverse Project effects are unlikely with the application of proposed management measures.
- **Lighting** – The lighting design and proposed operation for the Project is consistent with port authority guidance and industry practice, and uses energy-efficient light-emitting diode sources. The Lighting Impact Statement concludes that Project lighting design will minimise the potential for adverse lighting effects to the greatest extent practical while meeting worker safety requirements.
- **Noise** – Baseline (2015) noise levels and expected (2030) noise levels were modeled using Cadna/A. With the implementation of the Project's low noise initiatives and without additional mitigation, the average increase in the noise rating level at residential receivers during the operation phase is predicted to be no more than 1 A-weighted decibels (dBA) and the change in the percentage of people highly annoyed by the overall noise environment is predicted to be less than 6.5%. The predicted noise levels generally comply with the port authority's noise criteria and the change in the percentage of people highly annoyed is predicted to comply with Health Canada's suggested criteria of 6.5% (Health Canada 2017).
- **Air Quality** – Baseline and Project-related air quality emissions were modeled using CALPUFF. No offsite exceedances of ambient air quality objectives are predicted due to the Project. Predicted air quality effects, including ambient background levels, at sensitive receptors and



residential neighbourhoods will be generally low and will remain below all ambient air quality objectives.

- **View and Shade** – The Project is consistent with existing land uses, and is visually similar to the existing infrastructure that predominates in the area. Based on viewscape and shading modeling, the Project will likely have minimal effects on views and shade in the surrounding communities.
- **Traffic** – The Project will generate a minimal amount of additional road traffic. Increased Project rail traffic will lengthen delays to road traffic due to blockages at rail crossings. For the road crossing across Robson Road at Elevator Road, an increase of road blockages from approximately one and a quarter hours per day without the Project, up to five and a half hours per day is likely to occur without mitigation. Vehicle access into the rail loop will be restricted while a potash train is unloading which will only affect BHP operations. The proposed mitigation options (Elevator Road Interchange or notional internal overpass) will mitigate all road blockages, allowing unimpeded access to Gunderson Slough and FSD.

- **Archaeological Potential Preliminary Assessment and Archaeological Overview Assessment** – Potential effects from the Project on archaeological resources include the potential disturbance to archaeological resources by densifying soils when pre-loading materials on the surface, and eventually loading product materials on site; and potential disturbance to archeological resources by excavating soils below 2 m depth where a lens of organic material, including archaeological artifacts or features, may be present. An Archaeological Chance Find Procedure is included in the Application, and will be in place during construction. A preliminary assessment of archaeological potential was also conducted in accordance with port authority guidance. The assessment compared depth of Project excavations to depth of native soils based on geotechnical data. This assessment recommended that ground for disturbance deeper than 2 m to 50 cm past the organic lens, at distances of more than 100 m from the shoreline, should be monitored by a qualified archaeologist and First Nations representatives.
- **Flood Protection Assessment** – The Project site is not protected by a diking system, and is therefore vulnerable to Fraser River flooding. Flood inundation maps based on flood levels simulated using a hydraulic model of the Fraser



River were generated for five scenarios: 1:200-year flood using present conditions and with a 1 m sea level rise; 1:500-year flood using present conditions and with a 1 m sea level rise; and the 1894 flood of record. The flood inundation maps all show substantial inundation at the Project site. The product storage building includes a perimeter concrete wall, supporting the roof structure that protects the product against flood events. Electrical rooms will also be elevated. As the concrete wall surrounding the potash storage facility is only penetrated by service doors, potential mitigation options for the service doors could consist of providing water-tight flood doors, sand bags, water-filled flood barriers, or other temporary flexible membrane barriers.

- **Aquatic Resources (including Species at Risk)** – The aquatic effects assessment determined that potential Project-related effects can be mitigated, and residual effects are not anticipated. With appropriate mitigation and good work practices in place, most construction-related effects on aquatic resources associated with the Project will likely be of short duration. In the portion of the Strait of Georgia that overlaps with Project activities, potential effects on marine mammals during the Project’s operation phase are an increased risk of vessel strikes, along with potential acoustic masking for the southern

resident killer whale and harbour porpoise. With the application of appropriate mitigation measures, including adherence to the Construction Environmental Management Plan, Operation Management Plans, and Best Management Practices, residual effects are not anticipated for any of the aquatic resource components, including commercial, recreational or Aboriginal fisheries.

- **Terrestrial Effects (including Species at Risk)** – Vegetation at the Project site is limited as 98% of the site has been developed and is currently used for industrial activities. Vegetation is primarily patches of common weeds and non-native plants. The Project site provides limited wildlife value, except for relatively mobile species and species with high tolerance for human-related activities. Habitat loss due to Project construction is generally limited to low-quality weedy areas. The Project’s rail loop overlaps with area designated under the *Species at Risk Act* as critical habitat for streambank lupine (*Lupinus rivularis*), a plant species at risk. During repeated surveys, no streambank lupine plants have been observed in the affected area since 2013. The assessment provides details on proposed mitigation and monitoring to meet requirements of the *Species at Risk Act* (SC 2002, c. 29) recovery plan for streambank lupine.



Project Plans

- **Stormwater Pollution Prevention Plan** – This plan has been prepared to prevent or minimise the discharge of pollutants by stormwater runoff during operation. Measures are proposed to efficiently and proactively manage stormwater pollution risks, and that are consistent with stormwater management for the overall FSD site.
- **Construction Environmental Management Plan (CEMP)** – This plan provides measures to avoid or mitigate potential construction-related effects to environmental resources and the surrounding community. Proposed mitigation measures are based on Project scope, current environmental conditions of the site, assessments completed on the Project site to date, and industry-standard environmental construction techniques. Mitigation measures include water quality protection, invasive species management, guidance on soil and groundwater management, and archaeological monitoring.
- **Rail Operations Plan** – The Project will require reconfiguration of the rail within the FSD property. Rail component specifications comply with industrial standards from the connecting carriers, and are fit for purpose to the proposed traffic levels.
- **Fire Safety Plan** – This plan provides the organisational and procedural framework for responding to fire emergencies during Project operation. It has been developed to comply with all relevant federal and provincial legislation, regulations, guidelines, and objectives, and is largely based on FSD's existing Emergency Response Plan.
- **Spill Prevention and Emergency Response Plan** – This plan provides guidance for onsite and offsite personnel on the required actions for preventing and responding to emergencies. This plan also provides guidance to mitigate the risk of environmental contamination from the accidental release of harmful materials by providing clear procedures for their storage and handling as well as clear plans of action should such a release occur.





BHP employees conducting air quality monitoring near the Jansen Potash Project in Saskatchewan

Community and Stakeholder Engagement

BHP is committed to ensuring community interests are considered as part of the Vancouver Fraser Port Authority Project and Environmental Review (PER) process. We have submitted our permit application to the Vancouver Fraser Port Authority and it is now under review. To learn more about the project, read our application and technical reports, find out how to participate and provide your feedback online by visiting: www.bhp.com/fsdpotashexport.

This is our second round of consultation. A comprehensive round of initial engagement and consultation was completed in November 2017 and was designed to introduce the company and the Project to interested parties. Project stakeholders and members of the public were invited to provide comments and ask questions about the scope of studies being completed as part of the PER application to the port authority.

Input received during the initial phase of consultation was considered in developing the scope of technical and environmental studies. Information about the initial phase of consultation and the input received can be found in the *Preliminary Public Comment Period Consultation Summary Report* and the *Preliminary Public Comment Period Input Consideration Report*, which are available at www.bhp.com/fsdpotashexport and on the port authority's website.



Indigenous Engagement

BHP has commenced early engagement activities with Indigenous groups that may have overlapping interests with the Project. BHP's approach to engagement focuses on early engagement and frequent communications to develop relationships. Engagement efforts strive to identify areas of concern and are intended to enhance the potential economic benefit for local or potentially impacted Indigenous groups.

BHP recognises the traditional and legal rights of Indigenous groups, and acknowledges their right to practise and protect their cultures, identities, traditions, and customs. In addition, BHP encourages cultural awareness and diversity, and recognises and respects sites, places, structures, and objects that are culturally or traditionally significant to Indigenous groups. Acknowledging and respecting Indigenous groups as traditional owners or users of the land is a practice that is aligned with the BHP Global Indigenous Peoples Policy. Knowing who is connected to the land and the nature of that connection is critical to engaging Indigenous groups appropriately.

Preliminary Indigenous Engagement

During this phase of engagement, BHP initiated discussions regarding the proposed Project with Indigenous groups potentially impacted by the Project. BHP shared detailed Project information and supported review of Project documents including Baseline Studies, the Archaeological Overview Assessment (AOA), and the Draft Assessment.

Issues and concerns have been tracked, and included comments on effects to fishing as well as fish and fish habitat, cumulative effects, potash spills, archaeological potential, and others.

To-date, BHP has communicated with Cowichan Tribes, Halalt First Nation, Hwlitsum First Nation, Katzie First Nation, Kwantlen First Nation, Kwikwetlem First Nation, Lake Cowichan First Nation, Lyackson First Nation, Métis Nation British Columbia, Musqueam Indian Band, Penelakut Tribes, Qayqayt First Nation, Semiahmoo First Nation, Stó:lō Nation, Stz'uminus First Nation, Tsawwassen First Nation and Tsleil-Waututh Nation

Application Review Phase Indigenous Engagement and Consultation

BHP will continue to work with Indigenous groups who indicate and identify an interest in the Project to develop customised engagement and consultation strategies that align with each community or organisation's unique potential and actual concerns, rights, and traditional uses.

Future engagement activities planned during the Application review are currently being discussed with the port authority, and are anticipated to include meetings, emails, information sessions, potential workshops, sharing of updated Project documents and others. Once the Application has been accepted for review, the port authority will confirm which consultative activities will be delegated to BHP, and which will remain with the port authority.



BHP

We welcome questions by email, mail or phone.

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