



Delta Grinding Facility

Project Description

Pursuant to the *Canadian Environmental Assessment Act, 2012*,
and the British Columbia *Environmental Assessment Act*

Lehigh Hanson Materials Limited

March 2019

Quality information

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Tables of Concordance

Concordance with the CEA Agency's "Guide to Preparing a Description of a Designated Project under the *Canadian Environmental Assessment Act, 2012*" (March 2015)

CEA Agency Project Description Requirements	Corresponding Section in this Project Description
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1. GENERAL INFORMATION AND CONTACT(S)		
1.1.	Describe the nature of the designated project, and proposed location (2–3 paragraphs; note that additional location details are to be provided in section 3).	1.1 Project Overview
1.2.	Proponent information.	1.2.1 Proponent Contact Information
1.2.1.	Name of the designated project.	1. General Information and Contacts
1.2.2.	Name of the proponent.	1.2.1 Proponent Contact Information
1.2.3.	Address of the proponent.	1.2.1 Proponent Contact Information
1.2.4.	Chief Executive Officer or equivalent (include name, official title, email address and telephone number).	
1.2.5.	Principal contact person for purposes of the project description (include name, official title, email address and telephone number).	
1.3.	Provide a list of any jurisdictions and other parties including Aboriginal groups and the public that were consulted during the preparation of the project description. (A description of the result of any consultations undertaken is to be provided in sections 6 and 7).	1.3 Engagement and Consultation
	Provide information on whether the designated project is subject to the environmental assessment and/or regulatory requirements of another jurisdiction(s).	1.4 Federal and Provincial Environmental Assessment Thresholds
	Provide information on whether the designated project will be taking place in a region that has been the subject of an environmental study. Proponents are advised to contact the Agency during the preparation of the project description for information regarding any regional environmental studies that may be relevant.	1.5 Regional Environmental Studies
2. PROJECT INFORMATION		
	Provide the following information to the extent that it is available or applicable.	
2.1.	Provide a general description of the project, including the context and objectives of the project. Indicate whether the designated project is a component of a larger project that is not listed in the <i>Regulations Designating Physical Activities</i> .	2.1 Project Purpose and Rationale
	Indicate the provisions in the schedule to the <i>Regulations Designating Physical Activities</i> that describe the designated physical activities that are proposed to be carried out as part of the designated project.	1.4 Federal and Provincial Environmental Assessment Thresholds
	Components and activities Provide a description of the components associated with the designated project, including:	
2.1.1.	The physical works associated with the designated project (e.g., large buildings, other structures, such as bridges, culverts, dams, marine transport facilities, mines, pipelines, power plants, railways, roads, and transmission lines) including their purpose, approximate dimensions, and capacity. Include existing structures or related activities that will form part of or are required to accommodate or support the designated project.	2.2 Project Components and Phases

2.1.2.	Anticipated size or production capacity of the designated project, with reference to thresholds set out in the <i>Regulations Designating Physical Activities</i> , including a description of the production processes to be used, the associated infrastructure, and any permanent or temporary structures. The production capacity does not refer to the planned production capacity of a project but the maximum production capacity based on the project's design and operating conditions.	2.2 Project Components and Phases; 1.4 Federal and Provincial Environmental Assessment Thresholds
2.1.3.	If the designated project or one component of the designated project is an expansion, describe the size and nature of the expansion with reference to the thresholds set out in the <i>Regulations Designating Physical Activities</i>	Not applicable
2.1.4.	A description of the physical activities that are incidental to the designated project. In determining such activities, the following criteria shall be taken into account:	
2.1.4.1.	nature of the proposed activities and whether they are subordinate or complementary to the designated project;	
2.1.4.2.	whether the activity is within the care and control of the proponent;	
2.1.4.3.	if the activity is to be undertaken by a third party, the nature of the relationship between the proponent and the third party and whether the proponent has the ability to "direct or influence" the carrying out of the activity;	
2.1.4.4.	whether the activity is solely for the benefit of the proponent or is available for other proponents as well; and,	
2.1.4.5.	the federal and/or provincial regulatory requirements for the activity.	
	Should an EA be required for the designated project, the Agency will take these criteria into consideration in determining the activities that are incidental to the designated project.	
2.2.	Emissions, discharges and waste Provide a description of any waste that is likely to be generated during any phase of the designated project and plans to manage that waste, including the following:	2.7 Emissions, Noise, Discharges, and Wastes
2.2.1.	Sources of atmospheric contaminant emissions during the designated project phases (focusing on criteria air contaminants and greenhouse gases, or other non-criteria contaminants that are of potential concern) and location of emissions.	
2.2.2.	Sources and location of liquid discharges.	
2.2.3.	Types of wastes and plans for their disposal (e.g., landfill, licensed waste management facility, marine waters, or tailings containment facility).	
2.3.	Construction, operation, decommissioning and abandonment phases and scheduling. Provide a description of the timeframe in which the development is to occur and the key project phases, including the following:	2.2 Project Components and Phases
2.3.1.	Anticipated scheduling, duration and staging of key project phases, including preparation of the site, construction, operation, decommissioning and abandonment.	
2.3.2.	Main activities in each phase of the designated project that are expected to be required to carry out the proposed development (e.g., activities during site preparation or construction might include, but are not limited to, land clearing, excavating, grading, de-watering, directional drilling, dredging and disposal of dredged sediments, infilling, and installing structures).	
3.	PROJECT LOCATION	
3.1.	Provide a description of the designated project's location including:	3. Project Location and Mapping

3.1.1.	Coordinates (i.e., longitude/latitude using international standard representation in degrees, minutes, seconds) for the centre of the facility or, for a linear project, provide the beginning and end points.	3.1 Project Location and Coordinates
3.1.2.	Site map/plan(s) depicting location of the designated project components and activities. The map/plan(s) should be at an appropriate scale to help determine the relative size of the proposed components and activities.	
3.1.3.	Map(s) at an appropriate scale showing the location of the designated project components and activities relative to existing features, including but not limited to:	Figure 1-1 Proposed Facility Location on Tilbury Island, Delta, British Columbia; Figure 2-1 Lehigh Hanson Materials Limited Project Plot Plan; 3.2 Land and Water
3.1.3.1.	watercourses and waterbodies with names where they are known;	
3.1.3.2.	linear and other transportation components (e.g., airports, ports, railways, roads, electrical power transmission lines and pipelines);	Figure 1-1 Proposed Facility Location on Tilbury Island, Delta, British Columbia; Figure 2 2 Stage 1 Shipping Routes for Imported Materials (Segment 1); Figure 2 3 Stage 2 Shipping Routes for Imported Materials (Segment 2); Figure 2 4 Stage 2 Shipping Routes for Imported Materials (Segment 1); Figure 2 5 Stage 2 Shipping Routes for Imported Materials (Segment 2);
3.1.3.3.	other features of existing or past land use (e.g., archaeological sites, commercial development, houses, industrial facilities, residential areas and any waterborne structures);	Figure 3-2 Surrounding Neighbouring Communities; Figure 9-1 Recorded Archaeological Sites in Proximity to the Project
3.1.3.4.	location of Aboriginal groups, settlement land (under a land claim agreement) and, if available, traditional territory;	Table 3 1 Indigenous groups in Order of Closest Distance to the Site
3.1.3.5.	federal lands including, but not limited to National parks, National historic sites, and reserve lands;	Figure 1-1 Proposed Facility Location on Tilbury Island, Delta, British Columbia ; Figure 3-1 Vancouver Fraser Port Authority Jurisdiction
3.1.3.6.	nearby communities;	Figure 1-1 Proposed Facility Location on Tilbury Island, Delta, British Columbia; Figure 3-2 Surrounding Neighbouring Communities
3.1.3.7.	permanent, seasonal or temporary residences;	
3.1.3.8.	fisheries and fishing areas (i.e., Aboriginal, commercial and recreational);	Figure 5-1 FREMP Habitat Compensation Sites in Proximity to the Project
3.1.3.9.	environmentally sensitive areas (e.g., wetlands, and protected areas, including migratory bird sanctuary reserves, marine protected areas, National Wildlife areas, and priority ecosystems as defined by Environment Canada); and,	
3.1.3.10.	provincial and international boundaries.	Figure 1-1 Proposed Facility Location on Tilbury Island, Delta, British Columbia; Figure 3-1 Vancouver Fraser Port Authority Jurisdiction
3.1.4.	Photographs of work locations to the extent possible.	Photo 1-1 Looking west toward the existing Lehigh Hanson Materials Limited Cement Facility, the foreground is the location of the proposed Project; Photo 1-2 Looking north toward the Fraser River, the foreground is the location of the proposed Project.
3.1.5.	Proximity of the designated project to:	

3.1.5.1.	any permanent, seasonal or temporary residences;	3.4 Neighbouring Communities Figure 3-2 Surrounding Neighbouring Communities
3.1.5.2.	traditional territories, settlement land (under a land claim agreement) as well as lands and resources currently used for traditional purposes by Aboriginal peoples; and,	Figure 3 3 Reserves of Indigenous groups
3.1.5.3.	any federal lands.	Not applicable
3.2.	Land and Water Use To the extent that is known at this time, describe the ownership and zoning of land and water that may be affected by the project, including the following.	3.2 Land and Water
3.2.1.	Zoning designations.	3.3 Zoning Designations
3.2.2.	Legal description of land to be used (including information on sub-surface rights) for the designated project, including the title, deed or document and any authorization relating to a water lot.	
3.2.3.	Any applicable land use, water use (including ground water), resource management or conservation plans applicable to or near the project site. Include information on whether such plans were subject to public consultation.	
3.2.4.	Describe whether the designated project is going to require access to, use or occupation of, or the exploration, development and production of lands and resources currently used for traditional purposes by Aboriginal peoples.	15. Potential Effects on Indigenous peoples from Changes to the Environment
4.	FEDERAL INVOLVEMENT – FINANCIAL SUPPORT, LANDS AND LEGISLATIVE REQUIREMENTS	
4.1.	Describe if there is any proposed or anticipated federal financial support that federal authorities are, or may be, providing to support the carrying out of the designated project.	4.2.1 Federal Financial Support
4.2.	Describe any federal lands that may be used for the purpose of carrying out the designated project. This is to include any information on any granting of interest in federal land (i.e., easement, right of way, or transfer of ownership).	4.2.2 Federal Lands and Waters
4.3.	Provide a list of any federal permits, licences or other authorizations that may be required to carry out of the project.	4.1 Legislative Requirements
5.	ENVIRONMENTAL EFFECTS	
	The information to be provided in this section is meant to be a brief assessment of the environmental interactions of the project. A detailed examination of the potential environmental effects of the project does not need to be included in the project description. If the proponent is of the opinion that the designated project is not likely to cause adverse environmental effects, it must provide evidence to support its view.	
	Using existing knowledge and available information provide an overview of the following:	
5.1.	A description of the physical and biological setting, including the physical and biological components in the area that may be adversely affected by the project (e.g., air, fish, terrain, vegetation, water, wildlife, including migratory birds, and known habitat use).	5. Potential Effects on the Natural Environment
5.2.	A description of any changes that may be caused as a result of carrying out the designated project to:	
5.2.1.	fish and fish habitat, as defined in the <i>Fisheries Act</i> ;	5.2 River Hydraulics and Morphology; 5.3 Aquatic Ecosystems; 5.4 Marine Ecosystems
5.2.2.	marine plants, as defined in the <i>Fisheries Act</i> ; and,	11.2 Aquatic Species

5.2.3.	migratory birds, as defined in the <i>Migratory Birds Convention Act, 1994</i> .	5.5 Terrestrial Ecosystems; 11.4 Migratory Birds and Raptors
5.3.	A description of any changes to the environment that may occur, as a result of carrying out the designated project, on federal lands, in a province other than the province in which the project is proposed to be carried out, or outside of Canada.	12. Potential Changes to the Environment that Could Occur on Federal Land 14. Potential Changes to the Environment of Transboundary Lands
5.4.	A description of the effects on Aboriginal peoples of any changes to the environment that may be caused as a result of carrying out the designated project, including effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.	9. Potential Effects on Heritage Resources 10. Potential Effects on Human Health 15. Indigenous Interest
6.	PROPONENT ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS	
	Experience has shown that engagement by proponents with Aboriginal groups early in the planning and design phases of a proposed project can benefit all concerned. By learning about Aboriginal interests and concerns and identifying ways to avoid or mitigate potential impacts, proponents can build these considerations into their project design, thereby improving project design and reducing the potential for future project delays and increased costs.	
	Provide the following information to the extent that it is available or applicable:	
6.1.	A list of Aboriginal groups that may be interested in, or potentially affected by, the designated project.	1.3.1 Indigenous groups
6.2.	A description of the engagement or consultation activities carried out to date with Aboriginal groups, including:	17. Engagement and Consultation to Date
6.2.1.	names of Aboriginal groups engaged or consulted to date with regard to the designated project;	
6.2.2.	date(s) each Aboriginal group was engaged or consulted; and,	17. Engagement and Consultation to Date
6.2.3.	means of engagement or consultation (e.g., community meetings, mail or telephone).	
6.3.	An overview of key comments and concerns expressed by Aboriginal groups identified or engaged to date, including any responses provided to these groups.	
6.4.	A consultation and information-gathering plan that outlines the ongoing and proposed Aboriginal engagement or consultation activities, the general schedule for these activities and the type of information to be exchanged and collected (or, alternatively, an indication of why such engagement or consultation is not required).	17.3 Ongoing Engagement with Indigenous groups. Lehigh Hanson Materials Limited will develop Indigenous Engagement and Consultation Plan in collaboration with Indigenous groups.
	The proponent is encouraged to provide background information on Aboriginal groups' potential or established Aboriginal or treaty rights. The proponent is also encouraged to provide information on the impact area of the designated project and how it overlaps with uses by Aboriginal groups that have potential or established Aboriginal or treaty rights.	17.1 Identification of Indigenous groups; 17.2 Consultation Activities to Date
	This information will be used to facilitate the Agency's understanding of the scope of Aboriginal interests in relation to the designated project, including the potential for impacts on Aboriginal rights and issues of concern.	
7.	CONSULTATION WITH THE PUBLIC AND OTHER PARTIES (OTHER THAN ABORIGINAL CONSULTATION INCLUDED ABOVE)	
	Provide the following information to the extent that it is available or applicable:	

7.1.	An overview of key comments and concerns expressed to date by stakeholders and any responses that have been provided.	17.4 Governments, Public, and Other Parties
7.2.	An overview of any ongoing or proposed stakeholder consultation activities.	17.4.1 Stakeholders and Related Consultation Activities
7.3.	A description of any consultations that have occurred with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the project.	17.4.4 Discussions with Other Jurisdictions
8.	SUMMARY OF THE PROJECT DESCRIPTION	
	<p>Proponents are to include as part of the project description a standalone section that summarizes the information identified in Sections 1 to 7 of this Guide. Under CEAA 2012, the Agency is required to consult the public on a summary of the project description that has to be posted on the Agency's Internet site in both of Canada's official languages as required under the <i>Official Languages Act</i>. As a result, in order to be in a position to initiate the screening phase in a timely manner, the summary is to be prepared and submitted to the Agency in both English and French.</p>	<p>Provided as a separate document to this Project Description</p>
	<p>The Agency strongly encourages proponents to submit accessible documents to reduce barriers and support public participation. The Government of Canada's Standard on Web Accessibility refers to the internationally accepted Web Content Accessibility Guidelines 2.0 (WCAG 2.0) produced by the World Wide Web Consortium (W3C). The WCAG 2.0 sets out principles for accessible web content and the W3C website offers additional guidance for making content accessible</p>	

Concordance with the BC EAO's "Guidelines for Preparing a Project Description for an Environmental Assessment in British Columbia"

BC EAO Project Description Requirements

Corresponding Section in this Project Description

GENERAL INFORMATION AND CONTACT(S)	
MI 1 - The name of the proposed project and a two-to-three paragraph description of its nature and general location.	1. General Information and Contacts 1.1 Project Overview
MI 2 - A list of government ministries, Aboriginal groups, and other parties, including the public, that were consulted prior to the preparation of the Project Description.	1.3 Engagement and Consultation
MI 3 - Proponent contact information, including name, mailing address, phone and fax numbers, email address, and website URL. Include the name of a contact person for the EA.	1.2.1 Proponent Contact Information
MI 4 - Corporate information, including particulars of company incorporation, whether the company is private or publicly traded, and partners' names (if applicable).	1.2 Proponent Overview
MI 5 - The names of other projects or facilities owned or operated by the proponent (or its parent, subsidiary, or affiliated company) in BC, including any other projects in respect of which an EA certificate has been applied for or issued.	
MI 6 - A description of corporate policies regarding environment, health, safety, sustainability, local hiring and procurement, and/or Aboriginal and stakeholder engagement, if any.	
MI 7 - The names, qualifications, and summary of relevant experience of qualified persons responsible for preparing the information provided in the Project Description.	1.2.2 Authors of this Project Description
PROJECT OVERVIEW	
MI 8 - A description of the project purpose and rationale.	2.1 Project Purpose and Rationale
MI 9 - The size, dimensions, and capacity of the proposed project and its components.	2.2 Project Components and Phases
MI 10 A description of the major components and ancillary activities associated with all phases of the proposed project, including construction, operation, and decommissioning and reclamation, if applicable. Include the purpose of each component and options if the final site layout and design/route selections are not yet made.	
MI 11 A description of utilities and infrastructure requirements, including any new facilities or modifications to existing facilities that are required in order for the proposed project to proceed. Identify the owners/developers of those other facilities, if other than the proponent.	2.2.6 Supporting Infrastructure 2.3 Utilities
MI 12 A description of activities related to transportation and shipping of materials to or from the site, in the construction, operation and decommissioning phases of the project. Include loading locations, the use of existing or new transportation corridors and frequency and timing of shipping.	2.4 Transportation
MI 13 Number of construction jobs and operating jobs (in person years or full time equivalents), and a description of any proposed workforce accommodation.	2.5 Project Finance
MI 14 Estimated cost for construction and decommissioning of the project, as well as projected annual operating costs.	
MI 15 Project schedule, including the anticipated date of application for an EA certificate if one is determined to be required, anticipated ¹ construction start date and duration, timing and duration of main activities, duration of commissioning, if applicable, operational in-service date, expected life of the project, and timing of eventual decommissioning and reclamation, if applicable.	2.6 Project Schedule
MI 16 Indication of the current stage of project design (e.g., conceptual, feasibility, preliminary, detailed) and an identification of any major technical, economic, or other data gaps pertinent to design.	1.1 Project Overview

EMISSIONS, DISCHARGES, WASTE	
MI 17 A description of expected emissions, effluents, discharges, wastes, and other disturbances associated with all phases of the project, including potential accidents and malfunctions, their sources and locations.	2.7 Emissions, Noise, Discharges, and Wastes
CONSTRUCTION, OPERATION, DECOMMISSIONING AND ABANDONMENT PHASES AND SCHEDULING	
MI 18 If proponents are planning to proceed in stages they should provide a description of all proposed stages, including the approximate timing of proposed expansion or modifications and the components and activities associated with each stage.	2.2 Project Components and Phases
PROJECT LOCATION, LAND AND WATER USE	
MI 19 Provide the latitude and longitude (degrees, minutes, seconds) of the Project and maps at an appropriate scale showing the proposed project's location in relation to neighbouring communities, Indian Reserves, established or asserted traditional territories of Aboriginal groups, major natural and anthropogenic landscape features, and environmentally sensitive areas.	3.1 Project Location and Coordinates
MI 20 A description of the land required for the proposed project, including whether the project is located in whole or in part on private lands, provincial or federal Crown lands, or Indian Reserve lands. Include as well the applicable zoning, Agriculture Land Reserve designation, land and resource management plans, and other land use designations (e.g., parks and protected areas) and the legal land descriptions and/or tenure numbers of those lands, if known.	3.2 Land and Water
MI 21 A description of past uses of the land required for the proposed project, including whether the site has been previously developed.	
MI 22 A description of water requirements for the project, if applicable, and the proposed source of water.	
REGULATORY CONTEXT	
MI 23 The type and size of the proposed project, with specific reference to the thresholds set out in the Reviewable Projects Regulation.	1.4 Federal and Provincial Environmental Assessment Thresholds
MI 24 Whether the provisions of the federal Regulations Designating Physical Activities apply.	
MI 25 Materials supporting those conclusions, including any correspondence received from the Canadian Environmental Assessment Agency (Agency), can be included as an appendix. If a determination from the Agency has not yet been received but it is felt that the project will not be federally designated, please provide the rationale for that conclusion.	
MI 26 If the proposed project is located in an area subject to a treaty or related agreement between BC and a First Nation, whether there are other EA or regulatory requirements pursuant to the treaty or agreement that are expected to apply.	Not applicable
MI 27 A list of other required provincial, federal, or municipal approvals, permits, licences, tenures, or	4. Federal, Provincial, and Municipal Involvement and Regulatory Requirements
MI 28 Other authorizations and their status if any have been applied for.	Not applicable
POTENTIAL ENVIRONMENTAL, ECONOMIC, SOCIAL, HERITAGE AND HEALTH EFFECTS	
MI 29 Identification of any sensitive or vulnerable environmental, economic, social, heritage, or health values that may be affected by the project.	5. Potential Effects on the Natural Environment; 6. Potential Effects on the Economic Environment; 7. Potential Effects on the Recreational; Environment; 8. Potential Effects on the Social Environment; 9. Potential Effects on Heritage Resources; 10. Potential Effects on Human Health
MI 30 A list of existing data, including monitoring reports, previous EAs, regional studies, and/or other sources of information that support the understanding of the existing conditions and potential effects of the proposed project.	Please see the reference list for a comprehensive list of the sources used to inform the "Setting" section the environmental, economic, social, heritage, and health sections of this document.
MI 31 A summary of key conclusions of any feasibility studies undertaken that may be pertinent to understanding the potential effects of the proposed project, if applicable.	Not applicable

MI 32 A brief description of the potential environmental, economic, social, heritage, and adverse health effects that may result from the project.	5. Potential Effects on the Natural Environment 6. Potential Effects on the Economic Environment; 7. Potential Effects on the Recreational; Environment; 8. Potential Effects on the Social Environment; 9. Potential Effects on Heritage Resources; 10. Potential Effects on Human Health;
MI 33 A preliminary assessment of any anticipated cumulative effects.	13. Preliminary Assessment of Cumulative Effects
MI 34 A preliminary assessment of any anticipated trans-BC-boundary effects.	14. Potential Changes to the Environment of Transboundary Lands
MI 35 Initial measures or practical means to prevent or reduce the potential effects to an acceptable level. Include measures that could be integrated into project design, compliance with applicable regulations, standards, codes of practice, or Best Management Practices, corporate management systems, and/or project-specific measures that will be implemented.	5. Potential Effects on the Natural Environment; 6. Potential Effects on the Economic Environment; 7. Potential Effects on the Recreational Environment; 8. Potential Effects on the Social Environment; 9. Potential Effects on Heritage Resources; 10. Potential Effects on Human Health;
MI 36 A brief description of proposed monitoring programs that will be implemented to confirm the effects of the project and the effectiveness of mitigation, if known.	5. Potential Effects on the Natural Environment; 6. Potential Effects on the Economic Environment; 7. Potential Effects on the Recreational Environment; 8. Potential Effects on the Social Environment; 9. Potential Effects on Heritage Resources; 10. Potential Effects on Human Health
ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS	
MI 37 A list of Aboriginal groups including treaty nations whose established or asserted traditional territories overlap with or may be affected by the project and its components or activities, and if known, a summary of information regarding established or asserted Aboriginal rights, title, and other interests, including current use for traditional purposes, that may be affected by the project.	1.3.1 Indigenous groups
MI 38 For each Aboriginal group identified above, a summary of engagement activities that have been carried out, a description of issues that have been raised with respect to the project, and an explanation of how those issues have been or will be addressed by the proponent.	17. Engagement and Consultation to Date; 17.2 Engagement and Consultation to Date;
MI 39 A preliminary assessment of potential impacts on established or asserted Aboriginal rights, title, and other interests.	16. Potential Effects on Indigenous peoples from Changes to the Environment
ENGAGEMENT AND CONSULTATION WITH GOVERNMENTS, THE PUBLIC AND OTHER PARTIES	
MI 40 A summary of consultation activities that have been carried out with provincial and federal agencies and local governments.	17. Engagement and Consultation to Date; 17.4 Governments, Public, and Other Parties
MI 41 A summary of consultation activities that have been carried out with landowners, other commercial, industrial, agricultural, and recreational land users, as well as the public. Provide a table identifying the issues that have been raised by those parties with respect to the project, and an explanation of how those issues have been or will be addressed by the proponent.	17. Engagement and Consultation to Date; 17.4 Governments, Public, and Other Parties

Preface

The purpose of this Project Description is to present a summary of all Project components and activities, in addition to describing the environmental and social setting at the Site. It is anticipated that this document will support the engagement and consultation process for the provincial and federal Environmental Assessment (EA) reviews of the Project. This Project Description has been prepared in accordance with the BC Environmental Assessment Office (EAO) *Guidelines for Preparing a Project Description for an Environmental Assessment in British Columbia* (2013) and the Canadian Environmental Assessment Agency (CEA Agency) *Guide to Preparing a Description of a Designated Project Under the Canadian Environmental Assessment Act, 2012* (2014).

Abbreviations

Term	Definition
AIR	Application Information Requirements
%	Percent
3D	Three-dimensional
AECOM	AECOM Canada Ltd. (Architecture, Engineering, Consulting, Operations, and Maintenance)
ALR	Agricultural Land Reserve
AIA	Archeological Impact Assessment
AOA	Archeological Overview Assessment
BC	British Columbia
BC Ferries	British Columbia Ferry Services Inc.
BCEAA	British Columbia <i>Environmental Assessment Act</i>
BIEAP	Burrard Inlet Environmental Action Program
BMP	Best (environmental) Management Practice
CAC	Criteria Air Contaminant
CDF	Coastal Douglas-fir (biogeoclimatic zone)
CDFmm	Coastal Douglas-fir moist maritime (biogeoclimatic zone and subzone)
CEA Agency	Canadian Environmental Assessment Agency
CEAA 2012	<i>Canadian Environmental Assessment Act, 2012</i>
CMTs	Culturally Modified Trees
CO	Carbon monoxide
CO ₂	Carbon dioxide
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CRA	Commercial, Recreational, or Aboriginal
DFO	Fisheries and Oceans Canada (or Department of Fisheries and Oceans)
DPM	Diesel Particulate Matter
DWT	Dead Weight Tonnes
EA	Environmental Assessment
EAC	Environmental Assessment Certificate
EAO	British Columbia Environmental Assessment Office
ECCC	Environment and Climate Change Canada
FAA	<i>Fisheries Act</i> Authorization
FLNRORD	BC Ministry of Forests, Lands, Natural Resource Operations & Rural Development
FREMP	Fraser River Estuary Management Program
GGBFS	Ground Granulated Blast Furnace Slag
GBFS	Granulated Blast Furnace Slag
Ha	Hectare
ICG	Indigenuity Consulting Group Inc.
I/O	Input and Output
ILO	International Labour Organization
Kg	Kilogram
Km	Kilometre

Term	Definition
LEED	Leadership in Energy and Environmental Design
LRTW	Least-Risk Timing Window
M	Metre
m ²	Square metre
m ³	Cubic metre
m ³ /h	Cubic metre per hour
MCC	Motor Control Centers
MVAAQO	Metro Vancouver's Ambient Air Quality Objectives
Mg	Milligram
mg/Nm ³	Milligrams per cubic metre at standard temperature of 25 C and pressure of 1 kilopascal
MGO	Marine Gas Oil
Mm	Moist Maritime (biogeoclimatic subzone)
MOECCS	BC Ministry of Environment and Climate Change Strategy
Mt CO ₂ e	Carbon dioxide equivalent tonnes
MW	Megawatt
N ₂ O	Nitrous oxide
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides of various species
OECD	Organization for Economic Co-operation and Development
PHRD	Provincial Heritage Registry Database
PM ₁₀	Particulate matter that is 10 micrometres or less in diameter (includes PM _{2.5})
PM _{2.5}	Particulate matter that is 2.5 micrometres or less in diameter
PNW	Pacific Northwest of the United States of America, usually consisting of the states of Oregon, Washington, and Alaska
RPR	Reviewable Projects Regulation of BCEAA
SARA	<i>Species at Risk Act</i>
SCC	Supreme Court of Canada
SCM	Supplementary Cementitious Material
Slag Cement	Portland cement blended with GGBFS
SO ₂	Sulphur dioxide
SO _x	Sulphur oxides of various species
sp.	Species (unknown or unspecified)
spp.	Species as a plural
SRKW	Southern Resident Killer Whale
T	Tonne (also known as a metric ton)
t/h	Tonnes per hour
TFN	Tsawwassen First Nation
TFNFA	Tsawwassen First Nation Final Agreement
Tpy	Throughput yield
TSP	Total Suspended Particulates
USA	United States of America
V	Volt

Term	Definition
VC	Valued Component
VFPA	Vancouver Fraser Port Authority
VOC	Volatile Organic Compound
WMA	Wildlife Management Area

1. General Information and Contacts

Lehigh Hanson Materials Limited proposes to construct, operate and decommission a grinding facility to manufacture Supplementary Cementitious Material (SCM) adjacent to its existing cement production facility located at 7753 Berg Road, on Tilbury Island in Delta, British Columbia (BC) (the Site; Figure 1-1).

The name of the project is the Delta Grinding Facility (the Project).

1.1 Project Overview

Lehigh Hanson Materials Limited is proposing to construct, operate and decommission an SCM grinding facility with a marine terminal (the Facility), adjacent to its existing Delta Cement Plant, on lands owned by Lehigh Hanson Materials Limited that are zoned for industrial use (see Figure 1-1, Photo 1-1 and Photo 1-2). Along with water and aggregates, cement is the binding component of ready-mix concrete – the world’s most widely used construction material.



Photo 1-1 View westward of the existing Lehigh Cement Plant, with the location of the proposed Project in the foreground



Photo 1-2 View northward of the Fraser River, with the location of the proposed Project in the foreground

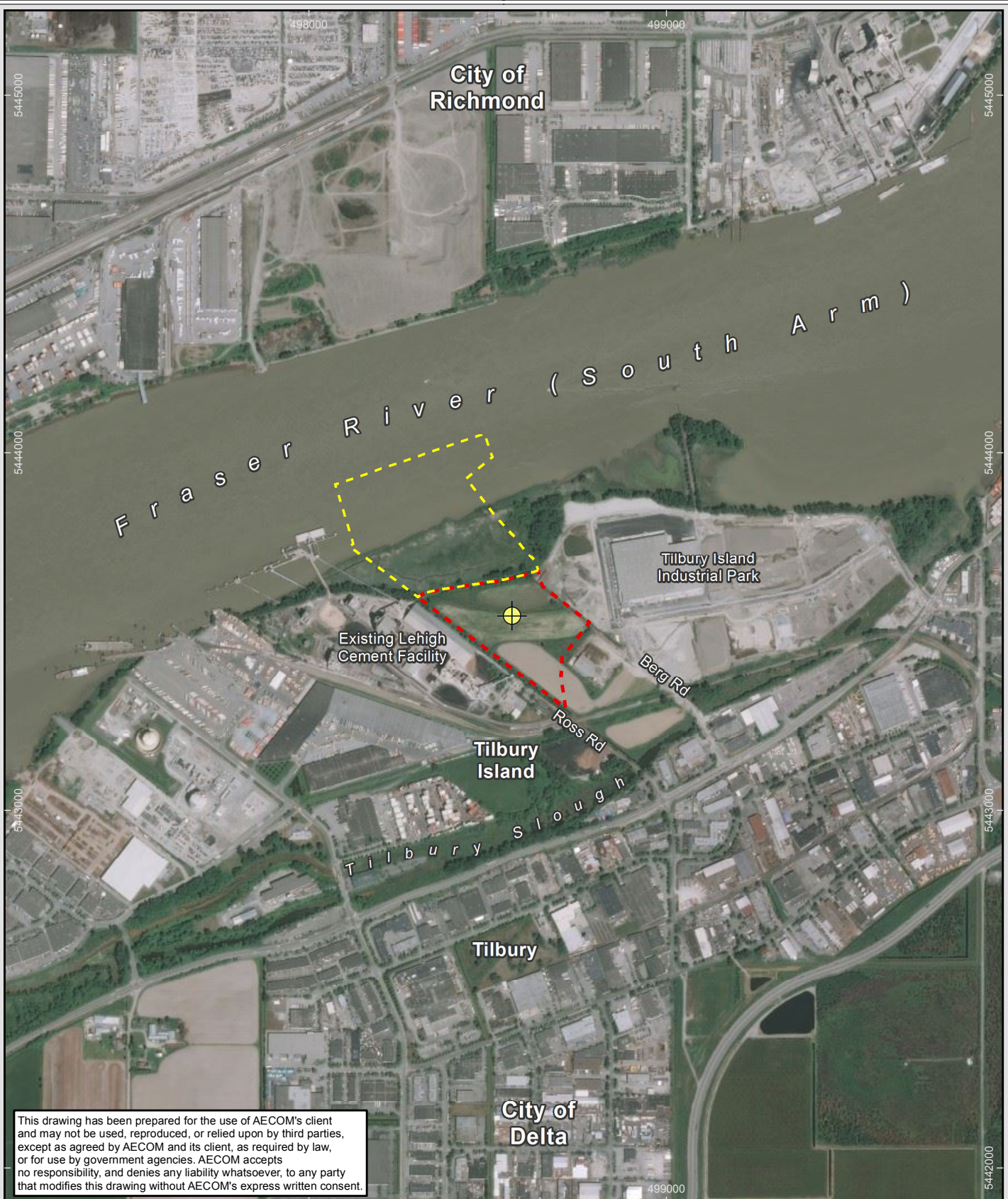
SCMs replace cement in concrete and are made from by-products that originate from steel mills, blast furnaces, and coal-fired power generation plants (e.g., slag, silica fume [microsilica], and fly ash). Re-using these materials has the benefit of improving the hardness, durability, and porosity of concrete, while also reducing the volume of greenhouse gases associated with the production of cement (by up to 50%). With greater demand for green-building projects certified by Leadership in Energy and Environmental Design (LEED) and other rating programs, and changing building codes, SCMs will become critical for the continued sustainable use of concrete. Further information on the benefits of SCMs is provided in Section 2.1.

Lehigh Hanson Materials Limited is proposing to import and store Granulated Blast Furnace Slag (GBFS), a by-product of the iron and steel industry, which will be ground to a suitable fineness (Ground Granulated Blast Furnace Slag or GGBFS) and mixed with cement to produce slag cement. The Project includes construction of a grinding facility and associated dust-collection equipment, raw-material stockpiles, storage silos, pneumatic piping connecting to the Delta Cement Plant, and a covered conveyor leading to a new marine terminal. The Facility is expected to have an annual nominal production capacity of 650,000 t when fully operational, and to employ approximately 14 people. While there will be some use of existing infrastructure at the Delta Cement Plant, there are no changes to cement production or production processes at the Delta Cement Plant. The SCM is a separate product offering, catering to a distinct market and with its own production process.

The Project will be developed in two stages:

Stage 1 will entail construction and commissioning of the grinding facility and associated infrastructure. Materials will be shipped through the existing marine terminal at the adjoining Delta Cement Plant. Stage 1 is expected to be complete in 15 months excluding pre-construction and Site preparation. Preliminary design for Stage 1 is expected to be completed to support the effects assessment process in the event an environmental assessment is required.

Stage 2 will entail construction and commissioning of the marine terminal and conveyor belt system, and is expected to be complete in 16 to 22 months, excluding pre-construction and Site preparation, depending on the chosen configuration. The design for Stage 2 will remain conceptual, and the timing of construction is dependent on market conditions.



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Basemapping from Bing, DataBC and AECOM 2018.

0 100 200
Metres
1:15,000
NAD 1983 UTM Zone 10N

Legend

- Project Location
- Approximate Boundary of Project**
- Stage 1
- Stage 2



Lehigh Hanson
HEIDELBERGCEMENT Group
Location: Tilbury Island, Delta, BC

Proposed Facility Location on Tilbury Island, Delta, British Columbia

January 2019

AECOM Figure 1-1

1.2 Proponent Overview

The Project will be designed, built, operated and decommissioned by Lehigh Cement, a division of Lehigh Hanson Materials Limited, part of the Heidelberg Cement Group.

The Heidelberg Cement Group is one of the world's largest building materials companies, with about 60,000 employees at more than 3,000 production facilities in 60 countries on five continents. Heidelberg Cement acquired its Canadian operations in 1993, and among the facilities it currently maintains is the Delta Cement Plant operating since 1978, together with extensive aggregate deposits, and many ready-mix concrete plants throughout BC. Lehigh Hanson Materials Limited has no other projects that have previously sought or are currently seeking, a BC Environmental Assessment Certificate (EAC).

Lehigh Hanson Materials Limited Canada's four business lines work together as an integrated business to ensure a steady supply of sustainable high-quality construction materials to our customers:

- **Aggregates:** sand and gravel mines across Western Canada and the Pacific Northwest of the USA
- **Cement:** two cement production plants (Delta, BC and Edmonton, AB)
- **Concrete:** ready-mix batch plants throughout British Columbia, Alberta, Saskatchewan, Manitoba, and the US States of Washington and Oregon
- **Concrete Pipe:** hard-wearing, long-lasting concrete pipe and pre-cast products produced in Vancouver, Calgary and Winnipeg

Commitment to Sustainability

All subsidiaries of the Heidelberg Cement Group operate under Group-wide leadership principles that build the foundation of a common management culture across all geographies. The Heidelberg Cement Group is committed to complying with all applicable environmental laws, standards, and other requirements, and takes a proactive and long-term view of environmental matters to prevent pollution and continuously improve environmental performance.

Sustainability is one of the core leadership principles and part of the corporate strategy. The Heidelberg Cement Group's commitments to sustainability include:

- Striving for continuous improvement in the field of environmental protection
- Fostering good relationships at our locations and contributing to creating value locally, and taking social responsibility at our locations worldwide
- Making a positive contribution to environmental protection by delivering sustainable building products
- Climate protection by reducing both carbon dioxide emissions and use of fossil fuels
- Promoting species diversity through professional recultivation and naturalization of our quarries

As a globally active company, the Heidelberg Cement Group is committed to the following internationally recognized standards:

- The Universal Declaration of Human Rights
- The eight core labour standards of the International Labour Organization (ILO)
- The Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
- The United Nations Guiding Principles for Business and Human Rights ("Protect, Respect and Remedy") – Framework

1.2.1 Proponent Contact Information

This Project Description has been prepared on behalf of Lehigh Hanson Materials Limited by AECOM Canada Ltd. (AECOM). Contact information for Lehigh Hanson Materials Limited and AECOM, including company representatives, is provided in Table 1-1.

Table 1-1 Project Contact Information

Proponent: Lehigh Hanson Materials Limited

Project Name:	Delta Grinding Facility
Project Website:	Currently Under Development
Proponent Address:	Lehigh Cement 7753 Berg Road Delta, BC Canada V4G 1B8
Senior Executive:	Chris Ward President – Region Canada Chris.Ward@LehighHanson.com +1 780 420 2504 Lehigh Hanson Materials Limited 12640 Inland Way NW Edmonton, AB Canada, T5V 1K2
Project Representative:	Sophie Mullen Director, Sustainable Resource Development Sophie.Mullen@LehighHanson.com +1 604 812 6116 Lehigh Hanson Materials Limited 8955 Shaughnessy Street Vancouver, BC Canada, V6P 3Y7

Consultant: AECOM Canada Ltd.

Address:	3292 Production Way, Floor 4 Burnaby, BC Canada, V5A 4R4
Phone:	+1 604 444 6400
Fax:	+1 604 294 8597
Representative:	Joanne Petrini Associate Vice President, Environment, BC and Yukon joanne.petrini@aecom.com

1.2.2 Authors of this Project Description

This Project Description was compiled by AECOM on behalf of Lehigh Hanson Materials Limited. The contributors to this Project Description and their qualifications are listed in Table 1-2.

Table 1-2 Authors Contributing to this Project Description

Section (as applicable)	Main Contributor	Title
Overall Report Development	Jonathan Ward, MSc, RPBio	Senior Environmental Scientist
Report Review and Quality Assurance	Joanne Petrini, BA, LLB, MBA	Associate Vice President, Environment, BC and Yukon
	James Neville, MEdes, RPBio, PMP	Senior Scientist and Technical Editor

Section (as applicable)	Main Contributor	Title
Section 2 – Project Information Plant Design and Operation	Lehigh Hanson Materials Limited	Lehigh Cement plant engineering team and plant operations
Section 2 – Berth Design	Moffatt & Nichol	Marine Engineers
Section 5.1 – Climate	Peter Tkalec, PEng	Senior Air Quality Engineer
Section 5.2 – River Hydraulics and Morphology	Jonathan Ward, MSc, RPBio	Aquatic Ecologist
Section 5.3 – Aquatics Environment	Ravi Chatterji, PhD, RPBio	Senior Aquatic Ecologist
Section 5.4 – Marine Environment	Anna Hall, PhD, RPBio	Senior Marine Mammal Specialist
Section 5.5 – Terrestrial Ecosystem	Keith Bell, RPF, RPBio, PBIol	Senior Vegetation Ecologist
Section 6 - Economic Environment	Olga Cherepanova, MA	Socio-economic Specialist
Section 7 - Recreational Environment		
Section 8 - Social Environment		
Section 9 - Heritage Resources	Dave Hall, MA, RPCA Arrowstone Archaeological Research and Consulting Ltd.	Archaeologist
Section 10 - Human Health	Lesley Reid, MEng, PEng, CSAP	Senior Environmental Engineer
Indigenous Group Consultation (including: Sections 15,16 and 17)	Indigenuity Consulting Group	Indigenous community consultation group

Jonathan Ward

Mr. Ward is a senior environmental scientist and Professional Biologist (RPBio). Mr. Ward has nine years of experience in environmental science, five directly relating to environmental impact assessment, aquatic biology, environmental management planning, Indigenous and stakeholder consultation, and associated legislative and planning processes in BC.

Joanne Petrini

Ms. Petrini has degrees in public policy and administration, environmental law, and business. She has been working in the field of environmental impact assessment and permitting since 1987 for projects in the utilities, chemical, petroleum, manufacturing and mining sectors throughout Canada.

James Neville

Mr. Neville is a senior environmental scientist and project manager with experience since 1988 in ecological management, regulatory and policy analysis, land-use planning, and public engagement. He is a Professional Biologist (RPBio) and Project Management Professional (PMP) who has participated in numerous large-scale, multidisciplinary environmental impact assessments and planning processes.

Peter Tkalec

Mr. Tkalec is a chemical engineer specializing in air quality, with over 15 years of experience and PEng status in several provinces and territories. His expertise includes air pollution determination through direct measurement and engineering estimation; preparing emission inventories (including greenhouse gases) and air dispersion models; specifying pollution measurement and control equipment; negotiating approvals and permits with regulatory agencies; and determining compliance with legislation.

Ravi Chatterji

Dr. Chatterji is a fisheries biologist with a PhD in environmental science and 14 years of experience in environmental sciences and consulting. His experience has centered on conducting technical baseline studies, environmental

assessments, and regulatory planning and permitting. Dr. Chatterji's work has focussed on fish habitat offsetting identification and investigation, and leading development of Paragraph 35(2)(b) *Fisheries Act* authorization applications. He has also conducted freshwater ecological research relating to the population dynamics, behaviour, and habitat requirements of wild salmonids, and their interactions with farmed strains.

Anna Hall

Dr. Hall received her PhD from University of British Columbia in 2011, based on research that explored the biophysical relationships between small cetacean biology, oceanography, and celestial events. She specializes in marine mammal monitoring and underwater acoustics for a variety of coastal applications, including scientific research, effects mitigation, and industrial and military operations, and effects of coastal construction and marine operations, including impact and vibratory pile driving, dredging, drilling, geophysical surveys, sonar exploration, and nearshore and underwater explosives. Dr. Hall She is a member of the Species at Risk Advisory Committee at Environment and Climate Change Canada, an Adjunct Professor at Royal Roads University, and a participant in the University of Victoria's Ocean Networks Canada coastal acoustics research initiative on the BC coast.

Keith Bell

Mr. Bell is a terrestrial ecologist with expertise in terrestrial baseline studies and impact assessment. He is both a Registered Professional Forester (RPF) and Registered Professional Biologist (RPBio), and has a total of 13 years' experience on projects within Western Canada, including 5 years leading terrestrial programs for environmental assessments. Mr. Bell has designed and completed studies for wetlands, rare plants, invasive plants, terrain classification, terrain stability, soil classification, and Terrestrial Ecosystem Mapping (TEM).

Olga Cherepanova

Ms. Cherepanova is a socio-economic and development specialist. She holds a Master's degree in Public and International Affairs, with a specialization in socio-economic development. She has worked in Canada and around the world, supporting and managing multi-phase projects; coordinating socioeconomic data collection for case studies production; conducting needs assessments, baseline studies and knowledge gaps analyses; developing and implementing training and capacity-building programs.

Lesley Reid

Lesley Reid is a Contaminated Sites Approved Professional (CSAP) – Standards and Risk Assessment Specialist in BC, and a Professional Engineer in BC and Yukon. She has completed Human Health Risk Assessments (HHRAs), and Confirmation of Remediation (COR) projects for a wide variety of sites, including megaproject port facilities, and other industrial properties.

Dave Hall, Arrowstone Archaeological Research and Consulting Ltd.

Arrowstone Archaeological Research and Consulting Limited (est. 1999) is a full service archaeological and heritage consulting firm. David Hall is the owner and operator of Arrowstone, and has over 20 years' experience conducting archaeological assessments in the Province of BC. Arrowstone's areas of expertise include: Archaeological Impact Assessments, Archaeological Overview Assessments, Lithic Analyses, and Culturally Modified Tree (CMT) Identification.

Mr. Hall is a Professional Member of the British Columbia Association of Professional Archaeologists (BCAPA), and a member of the Archaeological Society of BC, the Canadian Archaeological Association, and the Tri-Cities Chamber of Commerce. His academic credentials include a Master of Arts degree in Archaeology and a Certificate of Public History, both from Simon Fraser University.

Indigenuity Consulting Group

Indigenuity Consulting Group is an Aboriginal firm with extensive experience working with Indigenous communities and organizations, government, and the private sector. Its members specialize in delivering meaningful engagement and consultation processes, building partnerships and joint ventures, and defining and delivering strategies that lead to real and measurable results.

Cheryl Brooks, President of Indigenuity for 14 years, is a Sto:lo from the community of Sts'ailes in the Upper Fraser Valley. Ms. Brooks has held several senior positions in aboriginal organizations and the corporate sector, including that of the founder and first manager of BC Hydro's Aboriginal Relations Department, and Associate Deputy Minister in the BC Ministry of Energy and Mines. As a consultant, she has applied her expertise on First Nations to numerous industrial impact assessment processes.

Moffatt & Nichol

Moffatt & Nichol is one of the largest specialized maritime planning and engineering firms in the world specializing in structural, coastal, and civil engineering; environmental sciences; economics analysis; inspection and rehabilitation; and program management solutions. The firm has built an international reputation for providing innovative solutions to support virtually any port, maritime, or freight transportation assignment anywhere in the world.

1.3 Engagement and Consultation

Lehigh Hanson Materials Limited has identified the following groups and organizations to be consulted and engaged with as part of the environmental assessment (EA) of the Project:

- Indigenous groups
- Federal Government
- Provincial Government
- Local Government
- Landowners and resource users on Tilbury Island

Sections 1.3.1 and 1.3.2 present the Indigenous groups, governmental organizations, local communities, and stakeholders identified to-date, and engagement and consultation activities that have been undertaken. During the EA process, further engagement with identified parties is planned. It is also anticipated that the list of consultees will evolve.

1.3.1 Indigenous Groups

Lehigh Hanson Materials Limited has identified both Indigenous groups and organizations that provide referral support to Indigenous groups listed in Table 1-3 as having Indigenous rights and potential interest in the Project. A summary of consultation and engagement to-date is provided in 17.2. Lehigh Hanson Materials Limited will develop an Indigenous Engagement Plan in collaboration with Indigenous groups.

Table 1-3 Indigenous Groups

Indigenous Group (in alphabetical order)

Cowichan Tribes	Halalt 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 Tribe	Seabird Island Band	Semiahmoo First Nation
Stz'uminus First Nation	Tsleil-Waututh Nation	Tsawwassen First Nation

Referrals Offices

People of the River Referrals Office (PRRO). PRRO is an agency that works for multiple Stó:lō Nations, including Shxw'ow'hamel First Nation, Soowahlie First Nation, Sq'ewá:lxw (Skawahlook) First Nation, Stó:lō Nation, and Stó:lō Tribal Council, by providing a screening mechanism for referrals.

1.3.2 Stakeholders

Stakeholders for this Project are defined as individuals or organizations interested, affected, or otherwise having a stake in the Project, or individuals and organizations that may be affected by the Project. A stake in the Project by an individual or organization may be real or perceived, and can be financial or non-financial. Table 1-4 lists identified stakeholders and the rationale for consultation and will be refined as the Project evolves.

Table 1-4 Project Stakeholders

Stakeholder	Rationale for Consultation
Federal Government	
Canadian Environmental Assessment Agency (CEA Agency)	The CEA Agency is responsible for review and permitting of projects that require review under the <i>Canadian Environmental Assessment Act, 2012</i> (CEAA 2012).
Fisheries and Oceans Canada (DFO)	DFO is responsible for administration and approvals under the <i>Fisheries Act</i> .
Vancouver Fraser Port Authority (VFPA)	VFPA is responsible for stewardship of federal port lands and navigation in and around Vancouver, BC, including granting of permits under their remit.
Transport Canada	Transport Canada must approve construction of the marine terminal, in-water works, and shipping, under the <i>Navigation Protection Act</i> .
Environment and Climate Change Canada (ECCC)	ECCC administers permits under the Disposal at Sea Regulation of the <i>Canadian Environmental Protection Act, 1999</i> .
Provincial Government	
British Columbia Environmental Assessment Office (EAO)	EAO is responsible for review and permitting of reviewable projects under the BC <i>Environmental Assessment Act</i> (BCEAA).
Ministry of Forests, Lands, Natural Resource Operations & Rural Development (FLNRORD)	FLNRORD is responsible for a variety of permits for activities taking place on Crown lands, and for dike inspection. Further, the offshore portion of the Facility is situated on Crown lands (water lots) along the South Arm of the Fraser River that have recently come under the jurisdiction of FLNRORD.
Ministry of Environment and Climate Change Strategy (MOECCS)	MOECCS is responsible for a variety of permits for activities taking place that may influence conservation or affect BC's water, land, air, and living resources.
Local Government	
City of Delta	Delta is the municipality where the Project will be located, and is responsible for the zoning and permitting of lands and activities.
Metro Vancouver	The Regional District is responsible for management of air quality in greater Vancouver, including the City of Delta.
City of Richmond	Richmond is the municipality adjacent to the one where the Project will be located.
Land Owners and Tilbury Island Resource Users	
FortisBC	The FortisBC Tilbury LNG Liquefaction Plant is nearby, to the west of the Site on Tilbury Island, and is undergoing expansion.
Residents of Nearby Farms	The identified permanent residents closest to the Project are three farm dwellings located approximately 750 m to the south, on 68th Street, south of River Road. No other seasonal or temporary residents were identified within 1 km of the Site.
Tilbury Island Businesses	Tilbury Island is a heavily industrialised area that is home to various businesses. Lehigh Hanson Materials Limited will actively discuss the proposed Project with interested businesses that are located in the area.

1.4 Federal and Provincial Environmental Assessment Thresholds

The Project has the potential to trigger EAs under both provincial and federal processes.

Under the Reviewable Projects Regulation (RPR) of BCEAA, Part 2 (Industrial Projects), one review criterion is: *a new manufacturing facility in the hydraulic cement industry with a production capacity of 100,000 t*. The Project is a grinding facility for producing SCM, a component of concrete, with a production capacity greater than 100,000 t, and therefore meets that criterion.

Another RPR criterion considered potentially applicable, under Part 8 (Transportation Projects), is: *a new marine port facility if its construction entails dredging, filling, or other direct physical disturbance of 1,000 m of linear shoreline or more, or 2 hectares (ha) or more of foreshore or submerged land below the natural boundary of a marine coastline or marine estuary*. It is anticipated that Project works along the Fraser River shoreline will result in physical disturbance of up to 0.95 ha of foreshore and submerged land (the foreseen maximum dredging requirement); therefore the Project will not meet this criterion.

A criterion under the CEAA 2012 Regulations Designating Physical Activities, Section 24 (c) is: *the construction of a new marine terminal designed to handle ships larger than 25,000 DWT, unless the terminal is located on lands that are routinely used as a marine terminal and have been historically used for that purpose, or that are designated for such use in a land-use plan that has been the subject of public consultation*. Stage 2 of the Project will include construction of a marine terminal with a capacity to handle ships greater than 25,000 DWT. While it will be located next to the Delta Cement Plant's marine terminal that has routinely and historically been used as a shipping terminal since 1978, the area where the new marine terminal is to be constructed has not been previously used for that purpose; therefore, the Project will meet this criterion.

In the event that the Project is considered to trigger the federal EA process, Lehigh Hanson Materials Limited anticipates the Province of BC to seek to undertake the EA through a substituted process under Section 32 of CEAA 2012, and in accordance with Memorandum of Understanding between the federal government and the Province of BC that establishes expectations, roles and procedures for implementing substitution of EAs in BC (CEAA 2013). Under substitution, the EAO prepares an EA report then both the EAO and the CEA Agency render separate decisions.

1.5 Regional Environmental Studies

The Project is located in a region that has not been the subject of federal regional environmental studies. The site of the proposed Project is surrounded by several projects that have been subject to environmental assessment (under both the provincial and federal review processes), including the WesPac Tilbury Marine Jetty Project, South Fraser Perimeter Road Project, George Massey Tunnel Replacement Project, Vancouver Airport Fuel Delivery Project, and the Roberts Bank Terminal 2 Project. Publicly available information from these projects that can inform the effects assessment of the Delta Grinding Facility will be drawn upon.

2. Project Information

2.1 Project Purpose and Rationale

SCMs are a key resource for the continued sustainable use of concrete. Lehigh Hanson Materials Limited plans to construct, operate and decommission an SCM grinding facility to supply the Canadian and USA Pacific Northwest (PNW) markets. The SCMs market in BC and the PNW is expected to expand over the next several years as a result of changing building codes, construction design mandates, green-building requirements, and the reduction of current SCM (fly ash) availability due to legislative changes. Projects with certification under the LEED program and other sustainability rating systems continue to drive demand and growth of SCM products in this market. The purpose of the Project is to stay ahead of expected SCMs demand. SCMs are the by-products of industrial processes, such as fly ash from coal combustion and blast furnace slag from steel production.

Lehigh Hanson Materials Limited is planning to use GBFS as the raw material to produce SCMs. GBFS is the stony waste matter separated from metals during the smelting of steel. Slag cement is hydraulic cement formed when GBFS is ground to suitable fineness, and is used to replace Portland cements (cement) in the production of ready-mix concrete. GGBFS reacts with water to produce cementitious properties.

Fly ash is currently widely used, due to its cementitious properties. With reduction in coal use for electrical power generation, and increased use of natural gas and hydroelectric sources, less and less fly ash will be produced. Furthermore, the current Canadian federal and provincial regulations that prohibit coal-fired power generation beyond 2030 will result in fuel conversions and plant shutdowns that will further limit the availability of fly ash in the Canadian market¹. Accordingly, if Lehigh Hanson Materials Limited does not develop a GBFS grinding facility, it will be unable to fully serve the demand for SCMs in BC and the PNW.

Slag cement is commonly found in ready-mix concrete, precast concrete, masonry, soil cement, and high-temperature-resistant building products, and has been incorporated into concrete projects for over a century to improve durability and reduce lifecycle costs. Among its measurable benefits in concrete are its better workability and finish quality, higher compressive and flexural strengths, and improved resistance to aggressive chemicals.

Slag cement reduces the air emissions at the blast furnace and the volume of material deposited to landfills and, most significantly, GGBFS decreases cement use by as much as 50 percent (%), thereby reducing carbon dioxide (CO₂) emissions from the manufacture of cement. Approximately one tonne of CO₂ is released for every tonne of cement produced. Between 75 kg and 170 kg of CO₂ are saved per cubic metre of concrete by using a 50% slag cement substitution, representing a 42% to 46% reduction in greenhouse gas emissions.

Replacing cement in concrete with a portion of GGBFS reduces the embodied energy in a cubic metre of concrete by 30% to 48%. Raw materials for cement production are gathered through mining operations; manufacture of 1 t of cement requires about 1.6 t of raw materials. Substituting up to 50% of cement with GGBFS (thereby creating slag cement) can save between 170 kg and 380 kg of raw material per cubic metre of concrete (between 130 kg and 290 kg per cubic yard).

2.2 Project Components and Phases

2.2.1 Overview

SCM will be made available for markets in three steps: (1) imported GBFS is delivered to the Facility by vessel and truck and stockpiled; (2) the imported GBFS is processed by adding gypsum and limestone and grinding the mixture in the mill with a natural-gas-fired air system, and, once the required moisture level and particle size is achieved in

¹ TransAlta announced transition its Alberta coal-fired plants to natural gas by 2023 and Capital Power is planning its conversion by 2030. Some units at SaskPower's Boundary Dam will also be affected by these regulations, depending on further expansion of carbon capture. The Centralia Power plant in Washington State (USA) is already committed to shutting down one unit in 2020 and the second and final unit in 2025.

the mill, the ground material is cooled; (3) the final ground product (GGBFS) is stored in silos until being transferred to trucks or vessels for delivery to customers.

As previously described, the Project will be constructed and operated in two stages. A Project plot plan is provided in Figure 2-1. The Project will be located on Lehigh Hanson Materials Limited-owned lands next to the Delta Cement Plant and will take advantage of some of the existing infrastructure. The existing marine terminal infrastructure will be used for incoming shipments of materials during Stage 1 and outgoing shipments of product during both Stage 1 and Stage 2. There will be no modifications to the existing berth. The extent of use of the existing infrastructure by the new Facility will be limited to the Delta Cement Plant's existing marine terminal, guard house, control room, administrative, and maintenance facilities.

The Project components associated with each stage are:

Stage 1

- GBFS stockpile area
- Gypsum and limestone stockpile area
- Vertical roller mill or ball mill system to dry and grind the GBFS
- Pneumatic conveying system extending from the new GGBFS silos to the existing blending facility at the Delta Cement Plant, and to the existing dock silos
- Four GGBFS storage silos
- Truck loadout facility
- The existing marine terminal

Stage 2

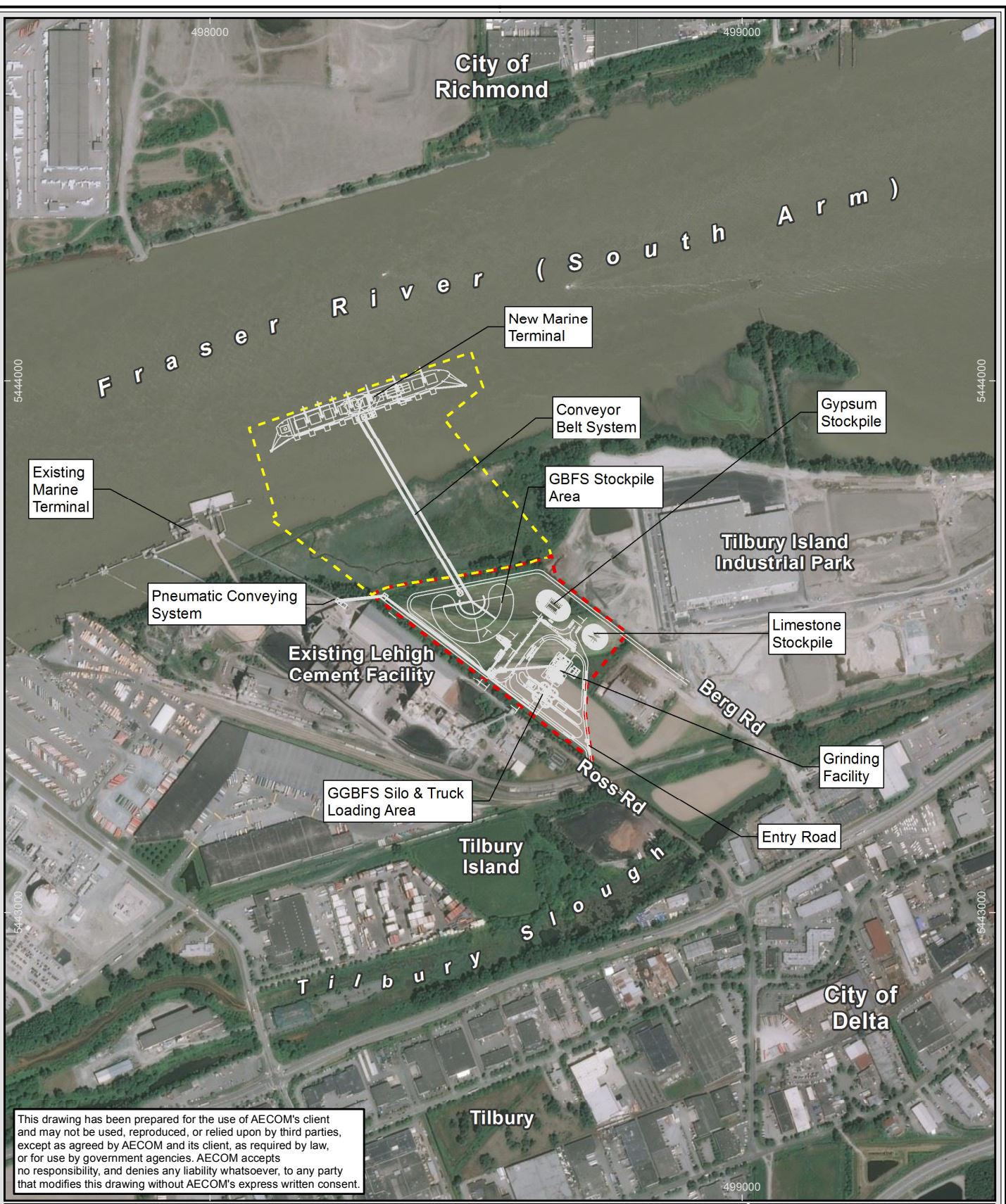
- Belt conveyor system
- Marine terminal

There are to be three Project Phases:

Construction – including Site preparation, construction of civil works, utilities and foundations, construction and installation of equipment, and commissioning, as described in Section 2.2.2.

Operation – including operation and maintenance of the plant components, as described in Section 2.2.3.

Decommissioning – including the plant and all associated infrastructure, thereby returning the area to pre-construction conditions (i.e., lands suitable for industrial development), as described in Section 2.2.5.



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Legend

Approximate Boundary of Project

- Stage 1
- Stage 2



Lehigh Hanson
HEIDELBERGCEMENT Group
 Location: Tilbury Island, Delta, BC

Project Plot Plan

February 2019

AECOM Figure 2-1

2.2.2 Construction

2.2.2.1 Construction of Stage 1

Construction of Stage 1 will consist of the following blocks of activity:

- Site preparation
- Civil construction
- Mechanical and structural construction
- Electrical and controls
- Commissioning and finishing

Site preparation for construction will include adding structural fill and compaction of the soil for the purpose of supporting building foundations. Infrastructure to be installed early will include underground pipes for supplying process water and natural gas, and for managing rainwater runoff, and any deep foundations that may be specified by geotechnical engineers.

Civil construction will include installing foundations for process equipment, material handling areas, and storage areas, and slip-forming the product storage silos.

Mechanical and structural construction will include installation of the mechanical equipment and its supporting and auxiliary structures. Equipment to be installed will include the grinding mill, the main fan and filter, the air heater, the material handling equipment, the dust collection system, the closed-loop water cooling system, the product transport system, and the bulk truck loadout equipment. Ductwork, aboveground piping, and other infrastructure will also be installed. The building cladding will be attached and painted or touched up as required.

Electrical and controls will include construction of the new substation with a transformer and incoming power line. All electrical, instrumentation, and control equipment will be installed and interconnecting cables run. Any required upgrades to the control system of the existing Delta Cement Plant that might be needed for control of the grinding plant will be completed at that time.

Commissioning and finishing will commence upon completion of the electrical and controls construction. All equipment will be checked for mechanical operation, electrical operation, and control signal functionality. Control system sequencing and safety interlocks will be tested. After the checkout is complete, the system will be commissioned with material for initial operation through the product storage silos and bulk loadout.

In parallel with the above activities, minor modifications will be made to the existing dock silos and blending system at the Delta Cement Plant to receive SCMs via pneumatic conveying from the new installation. There will be no modification to the existing berth.

After successful commissioning of the plant, paving, landscaping, and Site cleanup work will be completed.

2.2.2.2 Construction of Stage 2

Stage 2, construction of the marine terminal, with an area of approximately 1.8 ha, will consist of the following blocks of activity (Moffatt & Nichol 2017; 2018):

- Installation of piles
- Installation of deck elements for the marine terminal
- Installation of mechanical systems
- Dredging

To minimize the environmental footprint, “open” pile-supported structures are proposed, as opposed to solid sheet pile bulkhead walls or gravity-based structures such as concrete caissons. Piled structures have minimal contact with

the river bottom and result in the least disruption of established river currents and sedimentation patterns. The structures are also to be placed as far out into the river as practicable to minimize the need for dredging, avoiding the most environmentally sensitive areas closest to shore. It is anticipated that marine terminal components will be fabricated off-site, enabling delivery of fully or partially formed components to the Site, thereby reducing the duration and scale of in-water construction activities.

Installation of piles will be into the deep layers of alluvial sands and silts that the riverbed comprises, providing generally favourable conditions for constructing pile-supported marine facilities. Piles supporting the marine terminal structures will likely be reliant on some combination of end-bearing and skin friction to resist applied loads. Alternative pile materials include tubular steel and precast, pre-stressed concrete.

The total number of piles required is estimated to be between 93 and 105 (the number in the final design will likely be toward the low end of this range). These piles would have a total footprint between 200 m² and 220 m². The method used to install piles (e.g., vibration or impact hammering) will be finalized once the design of the Facility progresses and a contractor has been chosen. All appropriate Best Management Practices (BMPs) will be adopted for the work with the goal of minimizing any potential effects on the aquatic environment.

Installation of deck elements for the marine terminal will be conducted in a way that minimizes the need for cast-in-place concrete, thereby reducing construction time and minimizing potential effects on the aquatic environment. The marine terminal design has not yet been finalized, and deck elements could be constructed of steel or concrete, or a combination of those materials. If concrete is the chosen material, pile-caps and deck beams would be precast offsite and delivered to the Facility as needed once the piles have been driven.

Installation of mechanical systems will comprise the handling equipment and structures for receiving raw materials at the marine terminal and trestle. Options being considered are of two configurations: travelling loaders and fixed loaders. Either configuration could handle inbound raw materials arriving at the Facility by self-unloading or geared vessels up to Panamax size. A conveyor belt will also be constructed for directly moving raw materials from the marine terminal to the stockpiles. The conveyor belt system will be constructed on piles to minimize disturbance of the foreshore area.

Dredging of sediments will be necessary. The layout of the marine terminal has not yet been finalized, but the alternatives being considered would entail vessels docking as closely as possible to the existing Fraser River navigation channel. This channel is routinely dredged to maintain a draft of up to 11.5 m for tidally assisted vessel navigation. To accommodate a Panamax vessel with a draft of 11.5 m at the marine terminal during all tide stages, a relatively small amount of additional dredging would be needed between the maintained channel and the marine terminal face. The amount of dredging would vary by chosen marine terminal layout, and estimates range from 5,000 m³ for a travelling loader option to 8,000 m³ for a fixed loader option.

In summary, conservative estimates² of Stage 2 infrastructure are:

- Total number of piles: 105
- Total footprint of piles (contact area with river bed): 220 m²
- Total area of dredging: 9,500 m²
- Total volume of dredging: 8,000 m³
- Total plan area of marine structures (shading area on water surface): 8,500 m²

² A conservative estimate has been used to capture the largest potential footprint that the marine terminal could have so as to not underestimate the full extent of any potential effect. These estimates overstate the likely footprint and will be refined on final engineering.

2.2.3 Operation

2.2.3.1 Operation of Stage 1

Delivery of Raw Materials

During Stage 1, the inbound GBFS (600,000 t) will arrive by Panamax or Handymax vessels. The GBFS will be lightered onto barges in Plumper Sound and delivered to the existing Delta Cement Plant marine terminal or to other nearby Lehigh Hanson Materials Limited owned barge offloading facilities in Delta and Surrey (the GBFS will then be trucked to the Facility). Crushed limestone and gypsum will arrive at the Facility by barge.

Further details about transportation and movement of vessels and barges is provided in Section 2.4.

Product Manufacturing

Front-end loaders and portable stacking belts will be used to place the GBFS into two stockpiles. Each stockpile will store approximately 35,000 t of GBFS. Crushed limestone and gypsum will also be stockpiled on-site (Figure 2-1). The stockpiles will not be covered, because the material is dense (i.e., the material is solid and not easily mobilized), non-toxic and very stable. GBFS, limestone, and gypsum will be managed with front-end loaders. Material will be taken from the stockpiles illustrated in Figure 2-1, and placed into hoppers that will convey the material to the grinding mill.

The GBFS, limestone and gypsum will be ground to the required particle size and dried to the required moisture level in the new grinding mill. The mill will be sized for a nominal production capacity of 90 tonnes per hour (t/h) at 550 m²/kg product fineness. The ground product (GGBFS) from the mill system will be cooled in a non-contact cooler and then transported to a set of four new 10,000 t storage silos. The product and plant machinery will be cooled with process water, which in turn will be cooled by an evaporative cooling tower. The system will be closed-loop, entailing no discharge of process water. A small amount of make-up water (approximately 5 m³/h) will be required to replace water evaporated in the non-contact product cooler and the cooling tower. This make-up water will be provided by the utility system of the existing Delta Cement Plant.

Operation of the new facilities will be integrated with the existing Delta Cement Plant. All stationary plant equipment will be run by the Delta Cement Plant central control room, located in the operations building.

Product Export

Half of the GGBFS produced (325,000 t) will be shipped from the Facility through the automated truck loading facility. Two loading lanes are included in the design. Trucks will be loaded for road distribution of the product to concrete ready-mix plants and other consumers. Further details about transportation of the finished product are provided in Section 2.4.2.

The other half of the GGBFS (325,000 t) will be transferred, via a new pneumatic conveying system at a rate 300 t/h,.

A new pneumatic conveying system will transfer 300 t/h of the product from the new GGBFS silos to the existing blending facility and silos at the Delta Cement Plant marine terminal before distribution by barge to consumers in the Lower Mainland and PNW.

2.2.3.2 Operation of Stage 2

Delivery of Raw Materials

During Stage 2 the delivery of GBFS and gypsum will be transferred to the new marine terminal. This is the only operating difference between Stage 2 and Stage 1. The new marine terminal will be large enough to accommodate self-unloading Panamax or Handymax-sized vessels. The GBFS and gypsum will be conveyed directly from the marine terminal to the stockpile area by the belt conveyor system. This conveyor will move materials at a rate of up to 2,000 t/h.

Three alternate design options are currently under consideration for the unloading and loading infrastructure:

The travelling loader options would require product arriving by self-unloading vessels to discharge to one of two travelling hoppers equipped with a dust collection system and a feeder (Moffatt & Nichol 2017). The location of a travelling hopper can be adjusted to suit the self-unloading vessel's conveyor head end. Product arriving by geared vessels would be discharged by the ship's deck cranes equipped with clamshell type grabs. The grabs are part of the ship's own gear and will vary in size and capacity depending on the product being unloaded. Two ship's cranes can work simultaneously, each unloading to one of the two travelling hoppers provided. The hoppers can travel the length of the marine terminal and be parked at different positions along the vessel depending on the hatch being unloaded.

The fixed loader options would require product arriving by self-unloading vessels to discharge to a fixed hopper equipped with a dust collection system and a feeder (Moffatt & Nichol 2017). Product arriving by geared vessels would be discharged by a shore crane equipped with a clamshell type grab. The crane would be mounted on a pedestal fixed atop the berthing platform, at a position sufficiently high to provide the operator an unobstructed view of the ship's hatch opening. Different grab types, varying in size and capacity depending on the product being unloaded, would be supplied with the crane. The unloaded product would be deposited by the grab on a fixed mounted hopper adjacent to the shore crane structure and equipped with a dust collection system.

The shore crane will have slewing and luffing capabilities and, depending of the vessel size and deck configuration, will be able to unload two hatches at once (Moffatt & Nichol 2017). To unload all hatches, the vessel will have to be "warped" (i.e., shifted) alongside the marine terminal platform and dolphins. This operation will be accomplished by using the ship's mooring lines and coordinated by the ship's crew and terminal staff. The warping operation should not require the use of a tug or hiring of a pilot, provided the ship's Master deems the operation to be safe and permission is first obtained from VFPA as per standard port operating procedures.

Product Manufacturing

Product manufacturing in Stage 2 will be the same as that in Stage 1.

Product Export

Delivery of the finished product during Stage 2 will continue in the same way as that in Stage 1.

2.2.4 Facility Maintenance

Successful operation requires that all equipment be maintained regularly. During the operating life of the Facility, routine maintenance will be performed on an on-going basis. Daily and weekly maintenance will include inspection, vibration monitoring, lubrication oil analysis, and adjustments. Less frequently, worn or failed components may be repaired or replaced on certain equipment, such as belt conveyors, piping and ductwork, air flow control dampers, field instruments, and electrical equipment as required.

Semi-annually, the mill will be shut down and worn internal grinding parts will be re-welded or replaced. Every few years or as required, worn or damaged dust collector filter media will be replaced. The most intensive maintenance outages will typically take place once a year in the first quarter, and could result in up to 50 additional contracted personnel working at the Facility for a period of up to three weeks.

Maintenance Dredging

The active nature of sedimentation patterns in the Fraser River would likely necessitate annual maintenance dredging following spring freshets (Moffatt & Nichol 2017). The volume of dredging is estimated to be 5,000 m³ to 6,700 m³, with the amount depending on the final design option. The exact volume of material to be removed and the extent of dredge footprint will be refined through the design of Stage 2 infrastructure. Management and disposal of dredged materials is described in Section 2.7.

2.2.5 Decommissioning

The grinding, storage, and shipping facilities will be designed for a normal operating life of 40 years but, if the Facility continues to be commercially viable, the operating life could be extended indefinitely through maintenance of, and upgrades to, the equipment and infrastructure. After decommissioning, it is anticipated the Site will be used for another industrial purpose.

When the Facility is decommissioned, remaining raw materials will be processed to product. Mechanical and electrical equipment will be removed, and reused elsewhere or properly disposed of or recycled. Steel structures will be dismantled and sold for scrap. Concrete structures will be demolished to grade. Based on the plant design and operating plan, no contaminated soil or other waste materials will remain at the time of decommissioning.

The marine terminal facilities, once built, are expected to remain in service for an indefinite period, with normal maintenance and upgrades, serving this installation or a successor industry. Thus there is no decommissioning plan for the marine terminal.

2.2.6 Supporting Infrastructure

Other than the Project structures described in Section 2.2.1, there is no additional supporting infrastructure required.

2.3 Utilities

A new underground branch pipeline will transport natural gas from the existing Delta Cement Plant to a new metering station and air heater at the Facility.

A new electrical substation of approximately 10 megawatts (MW), with a step-down 13,200/4,160 volt (V) transformer, will be installed at the Facility. Consultation with the electrical utility is required to determine whether the power supply will be from the existing Delta Cement Plant or via a new feed.

A new underground process water line will bring make-up water from the Delta Cement Plant to the grinding plant process water system. This system will operate in a closed-loop with an evaporative cooling tower, and there will be no discharge of process water.

Other new utilities and infrastructure systems will include a compressed air system, an air-conditioned electrical room with a 4,160/460 V transformer, motor control centers (MCCs), variable speed drives, I/O cabinets, paved and unpaved roadways and parking areas, and a stormwater management system.

All equipment and systems will be owned, operated and maintained by Lehigh Hanson Materials Limited.

2.4 Transportation

2.4.1 Construction of Stage 1

Equipment and construction materials will be sourced domestically or by import, according to price and availability. Approximate quantities of equipment and construction materials associated with site preparation and physical structures are:

- Fill Material: 100,000 m³
- Concrete: 750 m³
- Equipment: 2,000 t
- Structural steel: 1,000 t

It is anticipated that most deliveries of construction materials will arrive at the Facility by truck via existing transportation corridors along River Road and Highways 17 and 99, however, opportunities to use the existing Delta Cement Plant marine terminal and rail facilities will be considered. For Site preparation, approximately 10,000 truckloads of structural fill are anticipated. It may be possible to deliver some of this material by barge. During the 15-month main construction period, construction personnel will make 15,000 to 20,000 round trips to work. Approximately 400 truck deliveries will be required for equipment, structural steel, concrete and miscellaneous construction materials.

2.4.2 Operation

Table 2-1 provides a summary of transportation activities for Stage 1 and Stage 2 related to delivery of raw materials to the Facility and export of final product from the Facility.

2.4.2.1 Transportation during Stage 1 Operation

Delivery of Raw Materials

GBFS will be imported from steel mills in Asia or Europe. Delivery of GBFS during Stage 1 will result in approximately 10 calls per year by Panamax vessels or 14 by Handymax vessels³ to Plumper Sound where the GBFS will be lightered onto barges and delivered to the marine terminal at the Delta Cement Plant and the Lehigh Hanson Materials Limited-owned barge off-loading facilities at Delta and Surrey depots. It is estimated that 60% of the GBFS will be barged to the Delta Cement Plant, resulting in approximately 75 barges per year⁴. The remaining 40% (240,000 t) of GBFS will be lightered onto barges for transport, and directed to the existing Delta and Surrey depots, from where it will be transported to the Facility by truck, resulting in approximately 30 barge trips and 5,715 truck trips⁵. Gypsum (30,000 t per year) from Mexico is delivered by vessel to multiple clients in the PNW before being lightered to barges in Plumper Sound for delivery to the Facility; this will result in 4 barges per year.

Ships will arrive at Plumper Sound from the Pacific Ocean along established shipping routes, through Juan De Fuca Strait. All shipping associated with the Project will be undertaken by qualified shipping and barging companies.

Crushed limestone from Texada Island (35,000 t per year) will be delivered by barge to the existing Delta Cement Plant marine terminal, resulting in 5 barges each year⁶.

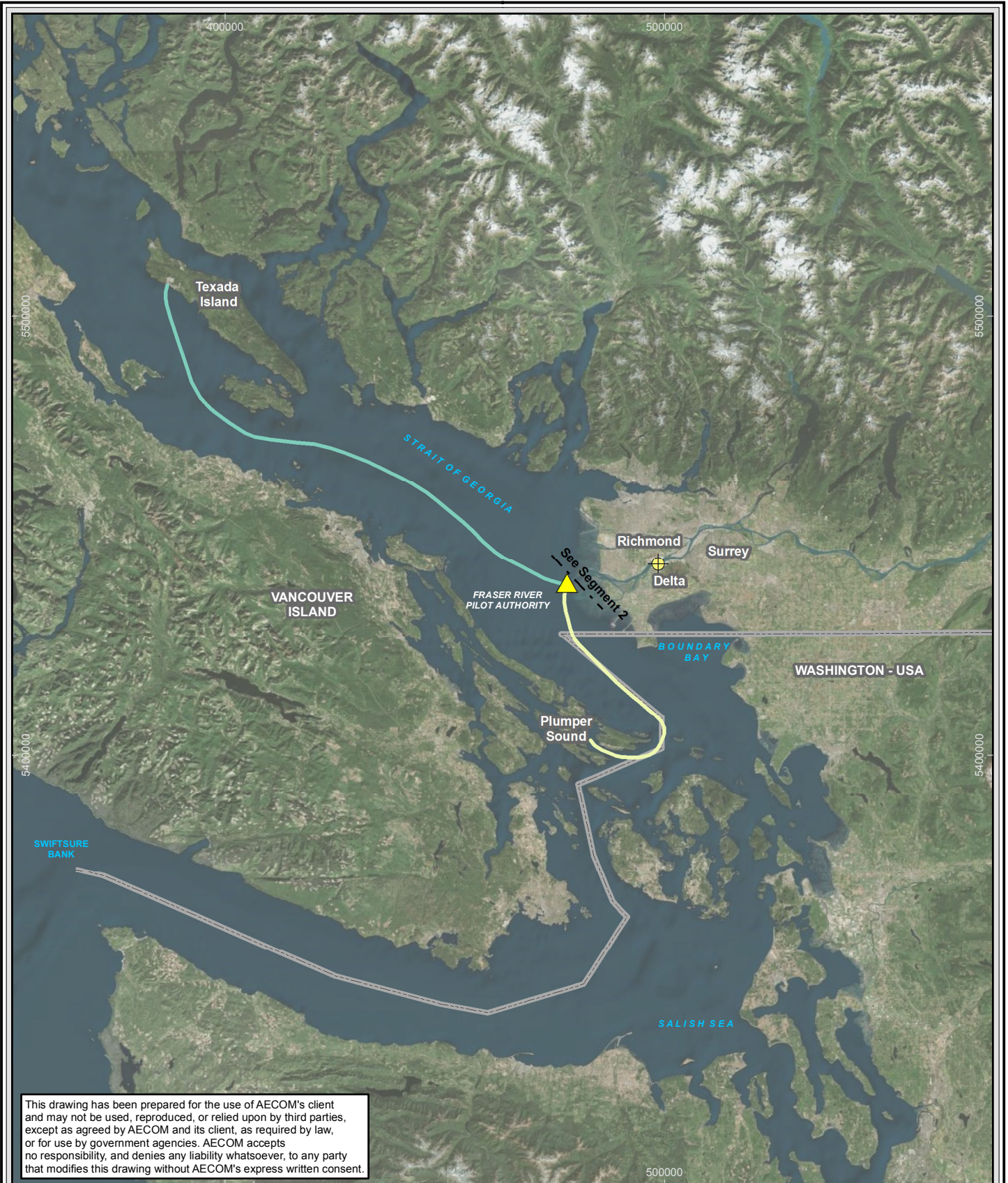
The delivery routes from Plumper Sound and Texada Island are depicted in Figure 2-2 and Figure 2-3.

³ Vessel call estimates are based vessel capacity of 65,000 t for Panamax and 45,000 t Handymax vessels.

⁴ Barge calls per year estimates are based on a barge capacity of 8,000 t.

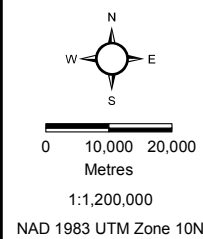
⁵ Truck trips estimates are based on trucks with a capacity of 42 t.

⁶ Barge calls per year estimates are based on a barge capacity of 8,000 t.







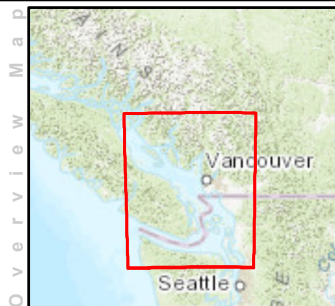
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Legend

-  Project Location
-  Sands Head Lighthouse
-  Plumper Sound Lightering Shipping Route
-  Texada Island Gypsum Shipping Route



Lehigh Hanson
HEIDELBERGCEMENT Group
 Location: Tilbury Island, Delta, BC

Stage 1 Shipping Routes for Imported Materials (Segment 1)

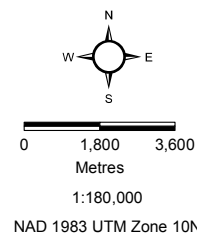
January 2019

AECOM Figure 2-2







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Legend

-  Project Location
-  Receiving Depots
-  Sands Head Lighthouse
-  Shipping Route to the Facility and Depots



Lehigh Hanson
HEIDELBERGCEMENT Group
 Location: Tilbury Island, Delta, BC

Stage 1 Shipping Routes for Imported Materials (Segment 2)

January 2019

AECOM Figure 2-3

Road access to the Project by truck will be via the new road entrance from Ross Road, just south of the Delta Cement Plant operations building. Tilbury Island is in an industrialized area of Delta with access from commercial traffic corridors, such as River Road and the South Fraser Perimeter Highway. Traffic in the immediate area of the Facility and in the River Road area does not interact with residential communities, and Lehigh Hanson Materials Limited will direct trucking providers to use a pre-defined transport route for access to the Facility via Berg Road.

Product Export

During both Stage 1 and Stage 2, the final product will be delivered to customers by truck and barge.

Based on current market assumptions, the 650,000 t of GGBFS produced annually will be distributed equally between the Delta Cement Plant via the pneumatic conveying system to replace Portland cement in concrete, and customers in the Lower Mainland.

GGBFS (325,000 t) will be transferred, via a new pneumatic conveying system, to the existing blending facility and silos at the Delta Cement Plant marine terminal, before distribution by barge to consumers in the Lower Mainland and PNW. This will result in 54 barges leaving the Delta Cement Plant⁷. The remaining 325,000 t of GGBFS will leave the Facility by truck which will result in 7,917 trucks per year transporting product from the Facility⁸.

2.4.2.2 Transportation during Stage 2 Operation

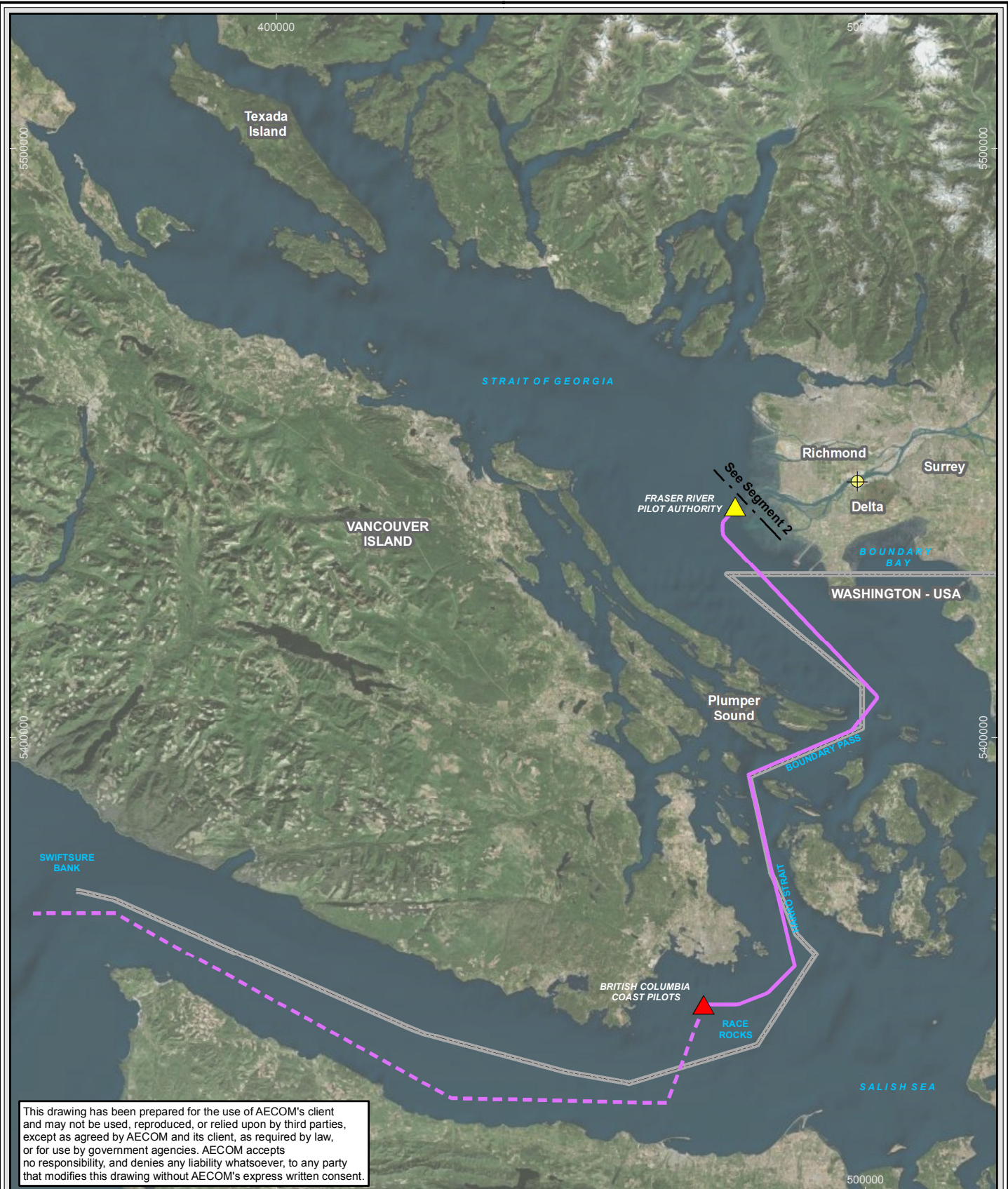
Delivery of Raw Materials

The means of transporting raw materials, specifically GBFS and gypsum, to the Facility during Stage 2 will differ from Stage 1. Stage 2 will involve operating the new marine terminal, large enough to accommodate self-unloading Panamax or Handymax-sized vessels carrying up to 65,000 DWT and 45,000 DWT of cargo, respectively. Stage 2 moves inbound shipping activities for GBFS and gypsum from the existing marine terminal to the new marine terminal. This process eliminates the lightering of vessels and reduces the number of barges and level of truck traffic going to the Facility. The shipping route for the vessels delivering GBFS and gypsum will be the same as that used during Stage 1, but the vessels will no longer lighter, i.e., the vessels will travel directly along prescribed shipping lanes to the Facility. Ships will arrive from the Pacific Ocean along established shipping routes, through Juan de Fuca Strait and the Strait of Georgia, and then enter the South Arm of the Fraser River to the Site. All shipping associated with the Project will be undertaken by qualified shipping and barging companies.

Inbound GBFS will arrive at the Facility by Panamax or Handymax vessels, 10 or 14 vessel calls per year, respectively. Gypsum will also arrive by Panamax or Handymax vessel, necessitating one vessel call per year. These are the same numbers of vessels coming to the Vancouver area as during Stage 1, except that they will now go directly to the Facility instead of lightering to barges.

The delivery routes from international waters and Texada Island are depicted in Figure 2-4 and Figure 2-5. A summary of inbound and outbound shipping activities is provided in Table 2-1.

⁷ Barges used for product delivery have lower capacity than those for inbound raw material, as outbound product must travel in covered barges.



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- Legend**
- Project Location
 - Sands Head Lighthouse
 - Pilot Boarding Point
 - Stage 2 Shipping Route



Lehigh Hanson
HEIDELBERGCEMENT Group
 Location: Tilbury Island, Delta, BC

Stage 2 Shipping Routes for Imported Materials (Segment 1)

January 2019

AECOM

Figure 2-4

File Location: P:\60560505\900-CAD_GIS\920-929 (GIS\Graphics)\02_MXD\S\Shipping\Fig_2_5_Stage2_ShippingRoutes_Segment2.mxd Date Revised: January 16, 2019 Reviewed By: RC Paper Size: 8.5"x11" Scale is referenced to the specified paper size.



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Basemapping from Bing, DataBC and AECOM 2018.

- Legend**
- Project Location
 - Sands Head Lighthouse
 - Shipping Route to the Facility



Lehigh Hanson
HEIDELBERGCEMENT Group
 Location: Tilbury Island, Delta, BC

Stage 2 Shipping Routes for Imported Materials (Segment 2)

January 2019

AECOM Figure 2-5

Table 2-1 Summary of Inbound and Outbound Shipping Activities for Stage 1 and 2

Material	Volume (tonnes)	Distribution Method	Number of Trips per Year (conservative estimate) ¹
Stage 1 Inbound			
GBFS	600,000	Panamax or Handymax Vessels (Prior to lightering to barge)	10 Panamax or 14 Handymax
60% of GBFS to existing Delta Cement Plant marine terminal	360,000	Barge	75
40% of GBFS to Delta and Surrey Depots	240,000	Barge	30
40% of GBFS from Delta and Surrey Depots to the Project	240,000	Truck	5,715
Gypsum	30,000	Barge	4
Limestone	35,000	Barge	5
Stage 1 and Stage 2 Outbound			
GGBFS	325,000	Barge	54
GGBFS	325,000	Truck	7,917
Stage 2 Inbound			
GBFS	600,000	Panamax or Handymax Vessels	10 Panamax or 14 Handymax
Gypsum	30,000	Panamax or Handymax Vessels	1
Limestone	35,000	Barge	5

1. The actual number of trips is slightly less because the values presented were rounded up.

2.4.2.3 Increase in Shipping within VFPA Jurisdiction

The Port of Vancouver, which includes Vancouver Harbour, the lower Fraser River, and Roberts Bank, sees approximately 3,160 vessel calls per year. By 2026, this number is expected to grow to 4,380 (VFPA 2018). Stage 2 of the Project will result in a maximum increase of 15 vessels per year in waters within VFPA jurisdiction, which equates to a 0.4% increase from current levels, and a 0.3% increase at 2026 levels.

Data for 2010 to 2011 show an average of 2,379 to 3,000 tug journeys per year up and down the Fraser River (Det Norske Veritas 2012). Assuming each tug is moving a barge, the 168 barge journeys associated with the Project during Stage 1 will increase barge traffic by 5.6% to 7% per year. Stage 2 barge traffic (59 barges) will result in an increase of 1.9% to 2.4% per year.

2.4.2.4 Non-Production Related Transportation

Other transportation associated with the operation of the Facility will be limited to employee vehicles, and service and delivery vehicles. Pedestrian access will be via a new footbridge near the existing operations building.

2.5 Project Finance

The total capital cost for the Project is estimated at \$141.5M CAD. This sum is broken into the two stages of the Project; Stage 1 has an estimated cost of \$105M CAD; Stage 2 has an estimated cost of \$36.5M CAD. These are preliminary estimates and will be revised during the detailed design phase.

As described in Section 2.2.5, the Project facilities will be designed for an operating life of at least 40 years before decommissioning would be contemplated. Even were the facilities to be decommissioned without an extension to that lifespan, it is anticipated that the Site would be acquired for another industrial purpose. The cost of decommissioning is estimated to be \$2 million (in 2018 CAD). Owing to probable re-use of the Site, that cost does not include costs for remediation or reclamation processes.

The Project will generate employment and contracting opportunities during the construction and operation phases. During preparation and construction, the Project will generate approximately 134 person-years of employment in Stage 1, and 24 person years of employment in Stage 2.

Throughout the operation of the Facility, the Project is expected to generate the following employment opportunities:

Project Employees – The Project is expected to employ an average workforce of 14 people for Stage 1 and 15 for Stage 2. Over the minimum 40-year life of the Project, these numbers represent approximately 560 person-years.

Contracted Employment – In addition to Project employees, the Project will hire contractors to provide services for a number of activities, including trucking, scheduled maintenance, and barge and tug operations.

Indirect Employment – Opportunities will be generated as a result of the purchase of goods, services, equipment, and raw materials during operations and construction.

Induced Employment – Construction and operation of the Project will result in increased employment and household income that may promote extra spending in the local economy.

The Operations period is expected to last a minimum of 40 years. The Project will not require any workforce accommodations.

2.6 Project Schedule

Site preparation work will start immediately on receipt of all required regulatory approvals and will last approximately 12 months. Receipt of the BC EA Certificate is anticipated in May 2020.

The 15-month main construction phase will follow, with two months expected for commissioning activities. The system will enter normal operation approximately 20 months after construction is authorized to start.

Preliminary bar-chart construction schedules for Stage 1 and Stage 2 are shown in Table 2-2 and Table 2-3, respectively.

The final schedule will be developed after consultation with Indigenous groups and other users of the area to minimize disruption or schedule conflicts.

Table 2-2 Stage 1 Project Schedule

Stage 1: Delta Grinding Facility																				
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Site Preparation																				
Grading	■	■	■																	
Site civil works, drainage underground piping					■	■	■													
Soil densification and deep foundations						■	■	■												
Phase 2: Construction																				
Construct equipment and silo foundations								■	■	■	■	■								
Slipform product silos											■	■								
Erect mill, filter, feeding equipment, bins, piping											■	■	■	■	■	■				
Erect silos feed and discharge mechanical												■	■	■	■					
Install new substation and transformer												■								
Install new power line to substation													■							
Construct electrical components													■	■	■	■	■			
Modify upgrade control system																■	■			
Modify existing dock silos																■	■			
Install pneumatic conveying to existing dock silos																	■	■		
Commissioning																		■	■	
Paving																			■	■
Landscaping																				■

Table 2-3 Stage 2 Project Schedule

Stage 2: Marine Terminal Development																				
Month	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
Option 1: Marine Terminal - Travelling Loader																				
Initial consultation with VFPA	■	■																		
Site data collection		■	■	■	■															
Feasibility study					■	■	■	■												
Detailed engineering marine structures								■	■	■										
Procurement package development mechanical equipment								■	■											
Marine structures foundation construction										■	■	■	■	■	■	■	■			
Detailed Design										■	■	■	■							
Fabrication													■	■	■	■	■	■	■	
Delivery & Installation																		■	■	■
Marine Terminal - Fixed Loader																				
Initial consultation with VFPA	■	■																		
Site data collection		■	■	■	■															
Feasibility study					■	■	■	■												
Detailed engineering marine structures								■	■	■										
Procurement package development mechanical equipment								■	■											
Marine structures foundation construction										■	■	■	■	■	■	■				
Detailed Design									■	■	■	■								
Fabrication												■	■	■	■					
Delivery & Installation															■	■	■			

Adapted from Moffatt & Nichol 2017

2.7 Emissions, Noise, Discharges, and Wastes

The EA will include a full assessment of emissions, noise, discharges, and wastes associated with construction and operation of the Project, including greenhouse gases (GHGs).

2.7.1 Construction

A Construction Environmental Management Plan (CEMP) will be implemented that will define procedures for how activities undertaken during the construction will be managed to avoid or mitigate potential adverse environmental effects. The objectives of the CEMP are to:

- Protect valued ecological features of the terrestrial, marine, and atmospheric environments during construction
- Protect human health and ensure the safety of the public and site workers
- Ensure compliance with conditions of permits and approvals granted by environmental regulatory agencies
- Manage potential environmental liabilities

During construction of Stage 1, all liquid and solid wastes will be contained on-site before being sent off site for disposal to an approved facility. The management and disposal location of the waste will depend on the type of waste material. Typical construction waste includes hydrocarbons, fuels and solvents, oil filters, absorbent materials, ozone-depleting substances, domestic sewage, off-cuts of construction materials (metal, wood, and concrete), and packaging associated with materials (e.g., plastic and paper). Wastes will be segregated at source by material type and then stored and managed in a manner appropriate to the material type before being picked up by an approved waste management company.

Air emissions are expected from diesel- and gasoline-powered construction equipment and will be mitigated through proper maintenance of equipment and operating procedures. Dust control measures, such as applying water spray to avoid dust mobilization and re-seeding of disturbed areas, will be implemented as necessary to control dust from construction activities. An Erosion and Sediment Control Plan will be developed and implemented to control sedimentation and direct runoff to appropriate discharge locations.

Should driven piles be specified by the geotechnical engineer to support foundations for the grinding plant, the process will generate noise and vibrations. Ground compaction and stabilization will also generate noise and vibrations. Otherwise, noise sources during construction will be limited to the operation of stationary and mobile construction equipment, including back-up warning horns.

During construction of Stage 2, all land-based emissions are anticipated to be the same as those during Stage 1. The primary difference during Stage 2 will be the requirement for dredging in preparation for marine construction. Based on the preliminary design, a conservative estimate of 8,000 m³ of dredgeate will be removed and require disposal. The volume of dredgeate is expected to decrease through design optimization and the availability of updated data on riverbed bathymetry. It is anticipated that the dredgeate will be managed as part of current Fraser River maintenance dredging works, and be disposed of through beneficial reuse as a construction material, or at a Disposal at Sea Location certified by Environment Canada under a Disposal at Sea Permit. This work is currently carried out by Fraser River Pile and Dredge, under a 10-year contract with the VFPA that expires in 2021. Construction wastes associated with Stage 2 will be similar to those of Stage 1 and will be managed in the same manner as in Stage 1. Noise and vibrations will be generated during installation of piles during marine terminal construction. Light emissions associated with construction will be limited to mobile lighting units, which typically are powered by a diesel generator.

2.7.2 Operation

During operation, emissions will be released to the air from mobile and stationary sources associated with material delivery, handling, and processing. Noise and fugitive light will also be generated.

Marine sources of emissions will include vessels used to deliver raw material to the Facility and to take the finished product to various markets. Those sources include ocean-going vessels in transit and hotelling and tug boats that will

escort larger vessels and assist with delivery of raw products by barge. Marine sources of emissions use Marine Gas Oil (MGO) and diesel fuel, and release particulates (e.g., particulate matter that is 10 micrometres (μm) or less in diameter [PM_{10}], particulate matter that is 2.5 μm or less in diameter [$\text{PM}_{2.5}$], and diesel particulate matter [DPM], the aggregate sometimes expressed as Total Suspended Particulates [TSP]), sulphur dioxide (SO_2), nitrogen oxides of various species (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs) as combustion by-products.

Trucks will also be used to deliver raw material to, and handle material at the Facility, and to deliver SCM to various markets. Trucks use diesel fuel and release particulates (e.g., PM_{10} , $\text{PM}_{2.5}$, and DPM), SO_2 , NO_x , CO and VOCs as combustion by-products.

Conveyors and cranes may also be used for handling materials. Though conveyors and cranes are normally electric and do not produce combustion by-products, materials handling has the potential to generate and entrain dust (PM_{10} and $\text{PM}_{2.5}$) in the ambient air. The concentration of entrained material depends on the dust content and moisture content in the material being handled, and on the handling methods.

Materials will be stockpiled outside in open (uncovered) areas of the Site. Stockpiles have little potential to generate dust, as the non-toxic material is dense and stable and does not readily become air-borne. A small amount of dust (PM_{10} and $\text{PM}_{2.5}$) may be mobilized by air currents. The amount of material depends on the dust and moisture content in the material being handled, and on the handling methods associated with managing the stockpiles.

Raw material will arrive in a coarse form and be reduced in size by the grinding plant, before being blended with other material as needed. Grinding can generate significant levels of particulates (PM_{10} and $\text{PM}_{2.5}$) that will be controlled by a dust-collection system before the airstream is released to the environment. Once ground, the material will be stored in silos equipped with vents, reducing the potential to generate particulate emissions (PM_{10} and $\text{PM}_{2.5}$).

Other potential emissions will originate from building and process heating requirements, and from smaller sources, including on-site support vehicles.

The predominant noise sources during operation will be the grinding Facility, docking and loading of vessels, and maintenance dredging activities (if required). Noise will also be generated from the day-to-day running of the Site, which includes trucks and staff members' vehicles entering and exiting the Facility.

Sources of light emissions will be mainly limited to fixed on-site lighting, navigational lighting, and lighting associated with the marine terminal. Mobile lighting units may be used during periods of maintenance or in the event of a power failure. These units are typically powered by diesel generators.

In addition to emissions to the atmosphere, the project will generate various solid and liquid wastes. These include sanitary sewage, domestic and office waste (e.g., paper, food waste), and small quantities of hazardous materials, associated with the operation and maintenance activities such as batteries, lubricants, solvents, oily rags and oil. Wastes will be segregated at source and stored and managed as appropriate to the waste type prior to disposal. Sanitary sewage will be tied into to the City of Delta sewage system. A stormwater management system will be constructed to collect and convey rainwater runoff from the Site. The stormwater management system will tie into the City of Delta storm-sewer system and include engineering and operational controls as required.

2.7.3 Accidents and Malfunctions

During construction and operation, there is the potential for accidents and malfunctions to occur. An accident is an unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injury. A malfunction is an equipment or systems failure. Potential accidents and malfunctions include:

- Spills and leaks of fuel or other hydrocarbon liquids from mobile and stationary equipment
- Shipping collisions with other vessels or with marine infrastructure, and grounding
- Ground motor vehicle accidents
- Fires and explosions at the Facility

Unanticipated air emissions and discharges to land and water may result from accidents and malfunctions. As there are no hazardous materials associated with the SCM manufacturing process, any discharges resulting from accidents or malfunctions will consist of loss of raw materials (e.g., limestone, gypsum, GGBFS), loss of product (SCM) hydrocarbon spills, and any air emissions will result from combustion of infrastructure. Some accidents and malfunctions such as fire and explosion, vessel collisions or motor vehicle accidents also have potential to result in personal injury.

Lehigh Hanson Materials Limited will establish procedures for preventing and handling accidents and malfunctions during construction, operation, and decommissioning. Potential accidents related to shipping activities will be addressed in cooperation with the Canadian Coast Guard and the VFPA. Protocols will be in place for addressing fires and explosions, which are considered unlikely, and any air emissions would be short-term.

3. Project Location and Mapping

Section 3 provides a description and, where appropriate, maps of the various aspects of the proposed Project.

3.1 Project Location and Coordinates

The Site is located along the South Arm of the Fraser River, on Tilbury Island, Delta, BC. The Facility will cover an area totalling approximately 8.85 ha (8 ha of terrestrial area and 0.85 ha of water [excluding dredging]) immediately to the east of the existing Delta Cement Plant.

The coordinates at the centre of the Site are: 49°08'40.2°N and 123°01'10.7°W.

The Site was selected as it is on an accessible waterway, on lands owned by Lehigh Hanson Materials Limited and adjacent to existing infrastructure owned and operated by Lehigh Hanson Materials Limited.

Tilbury Island is a highly developed industrial area, with approximately 80% of the land used for industrial activities, including the existing Delta Cement Plant, the FortisBC Tilbury LNG Plant, Dynacor Coatings Ltd., and several manufacturing and retail businesses, including those in the Tilbury Island Industrial Park that is nearing full build-out.

The Project will be located east of the existing Delta Cement Plant, on an area currently used as farmland. Immediately to the east of the Project is an area of industrial and retail operations currently under construction. The Site is not within the provincial Agricultural Land Reserve (ALR). Farther afield, areas surrounding Tilbury Island are a mix of industrial, farming, and recreational lands. The Site is approximately 20 km upstream of the mouth of the Fraser River.

3.2 Land and Water

The onshore component of the Project will be constructed on lands owned by Lehigh Hanson Materials Limited. The offshore component of the Project (i.e., the marine terminal as part of Stage 2) will be constructed in water classified as provincial Crown Land that falls under the administration of FLNRORD. A Crown Licence of Occupation Water Lot Lease will be required for that component of the work and operations.

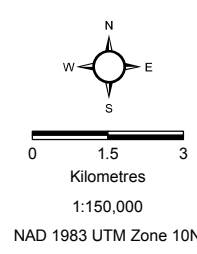
The marine terminal, which is part of the Delta Cement Plant, is owned and operated by Lehigh Hanson Materials Limited within an existing Water Lot Lease. The VFPA has jurisdiction of the navigation of water in and around the Project extending west beyond Roberts Bank. Figure 3-1 depicts the extent of the VFPA jurisdiction.

File Location: P:\605605900-CAD_GIS\920-929 (GIS-Graphics)\MXDs\Project_Description\Fig_3_1_VFPA_Jurisdiction.mxd Date Revised: June 27, 2018 Reviewed By: JW Paper Size: 8.5"x11" Scale is referenced to the specified paper size.



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Basemapping from Bing, GeoBC and AECOM 2018.



- Legend**
- Project Location
 - Vancouver Fraser Port Authority Managed Federal Lands and Waters
 - Vancouver Fraser Port Authority Navigational Jurisdiction



Lehigh Hanson
HEIDELBERGCEMENT Group
Location: Tilbury Island, Delta, BC

Vancouver Fraser Port Authority Jurisdiction

June 2018

AECOM

Figure 3-1

3.3 Zoning Designations

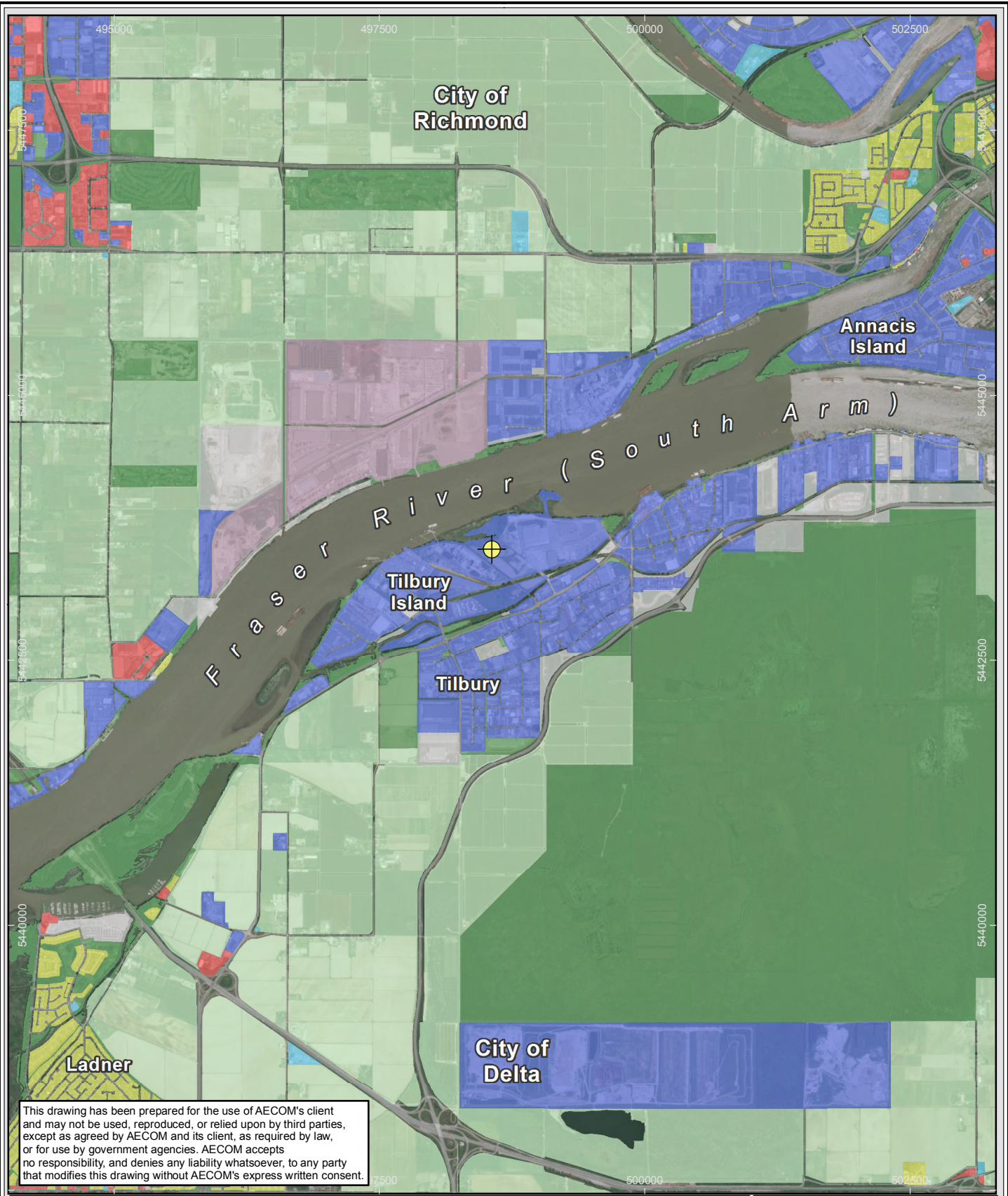
The Site is zoned by the City of Delta as I2: Heavy Industrial. This designation enables all uses permitted in the I1 – Light Industrial Zone and the operation of manufacturing and processing industries, but excludes cement and asphalt production. Accordingly, the Site will need to be rezoned to I7: Special Industrial, which allows for manufacturing, processing, finishing, and storage of cement.

This zoning re-designation would also correspond with the zoning designation of the existing Delta Cement Plant, which is currently zoned as I7 (Parcel Identifier Number 029-657-385). The current zoning of the land surrounding the Project is depicted in Figure 3-2.

The City of Delta's Official Community Plan (OCP) underwent consultation with governmental agencies, stakeholders, and Indigenous groups during its development. The planned re-zoning of the areas from I2 to I7 is in keeping with the City of Delta's future land-use plan to use the land as Riverside Industrial (RI).

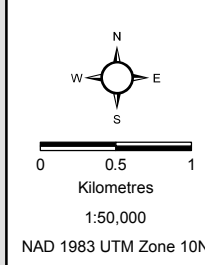
3.4 Neighbouring Communities

The nearest residential dwelling appears to be approximately 1.1 km south of the Site, opposite River Road. The Project is located approximately 5 km from the centre of the City of Delta, 10 km from the centre of the City of Richmond, 7 km from the highly industrialized Annacis Island (partly within the City of Delta and partly within the City of New Westminster), and 20 km upstream from the mouth of the Fraser River (Figure 3-2).



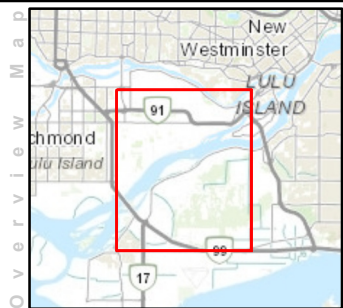
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Basemapping from Bing, GeoBC and AECOM 2018.



Legend

- Project Location
- Residential
- Commercial
- Industrial
- Institutional
- Port Metro Vancouver
- Agriculture
- Recreation, Open Space and Protected Natural Areas
- Undeveloped and Unclassified



Lehigh Hanson
HEIDELBERGCEMENT Group
Location: Tilbury Island, Delta, BC

Surrounding Land Use & Neighbouring Communities
June 2018

AECOM Figure 3-2

3.5 Indigenous Groups

Table 3-1 lists Indigenous groups with established or asserted traditional territories that overlap with, or are in close proximity, to the Project Site. This list is based on the publically available information from Indigenous groups, the Statement of Intent maps available through the BC Treaty Commission and from the public version of the Consultative Areas Database maintained by the Province of British Columbia. Figure 3-3 depicts the location of the reserves of Indigenous groups listed in Table 3-1. Boundaries of traditional territories may be subject to refinement, based on consultation with Indigenous groups.

Table 3-1 Indigenous Groups in order of Closest Distance to the Project Site

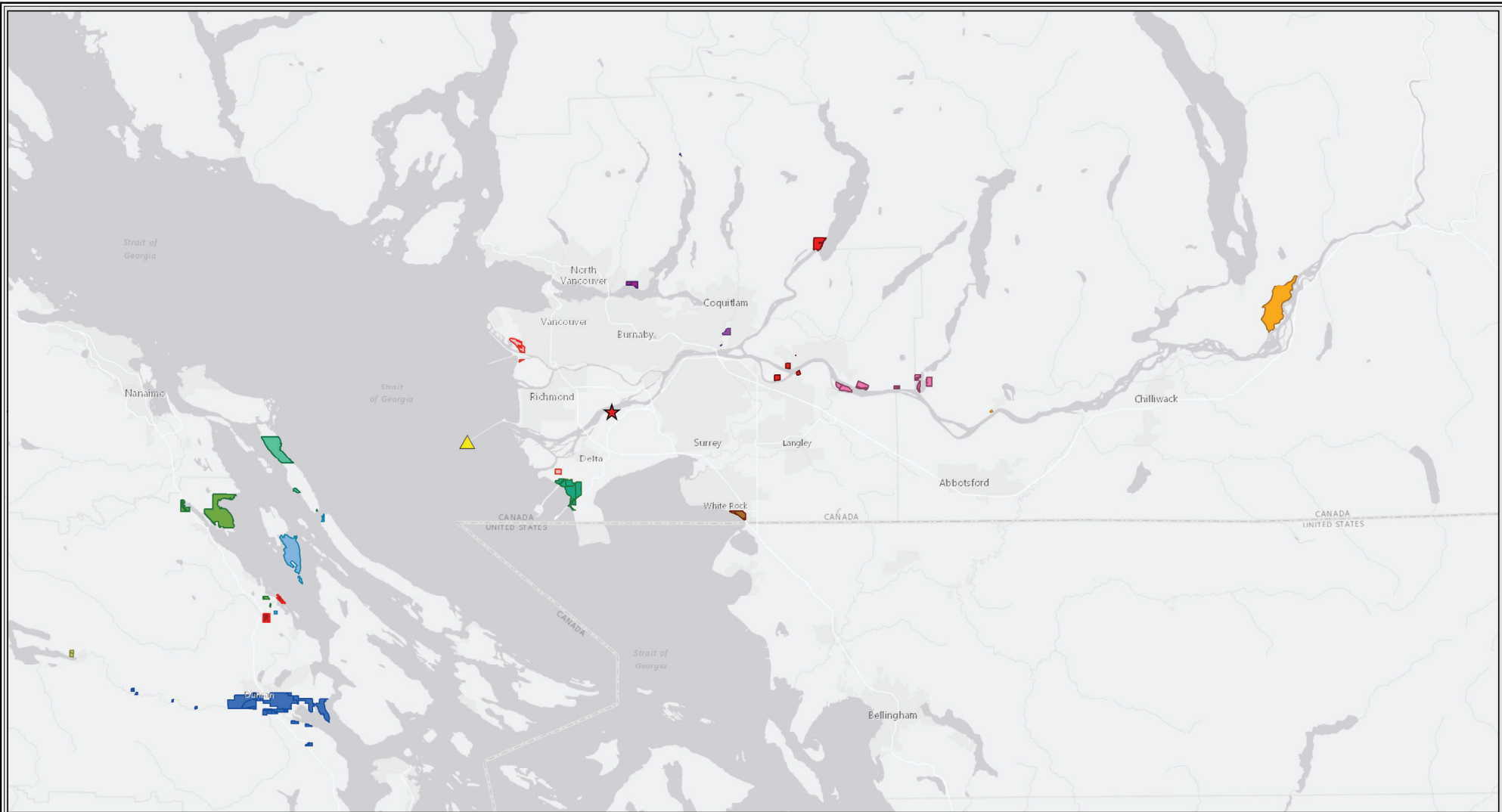
Indigenous Group	Location	Approximate Distance from the Site¹
Musqueam Indian Band	The main Musqueam community is located at the mouth of the North Arm of the Fraser River, within the limits of the City of Vancouver.	10 km (Reserve)
Tsawwassen First Nation	The main Tsawwassen community is on the southern point of the Fraser River delta, on the west side of the peninsula that separates Boundary Bay from the Strait of Georgia.	12 km (Treaty Lands)
Tsleil-Waututh Nation	The main Tsleil-Waututh community is located in North Vancouver, approximately 2 km east of the north end of the Second Narrows Bridge, on Burrard Inlet 3.	19 km (Reserve)
Kwikwetlem First Nation	The Kwikwetlem First Nation's two reserves are located in Coquitlam.	19 km (Reserve)
Semiahmoo First Nation	Semiahmoo has one reserve, fronting Semiahmoo Bay (part of Boundary Bay) at the Canada-United States border, about 1 km southeast of White Rock.	24 km (Reserve)
Katzie First Nation	The main Katzie communities are located in Pitt Meadows (Katzie 1), in Langley (Katzie 2), and on Barnston Island (Katzie 3).	27 km (Reserve)
Kwantlen First Nation	Kwantlen First Nation administrative office is located on McMillan Island (also the location of Reserve #6) and has administration over 6 different Reserves along the Stave River and Fraser River, and in the District of Mission.	35 km (Office)
Lyackson First Nation*	The main Lyackson community is located on Vancouver Island, in Chemainus.	46 km (Reserve)
Penelakut Tribe**	The main Penelakut community is located on Kuper Island off the east shore of Vancouver Island, near Chemainus.	48 km (Reserve)
Halalt First Nation **	The main Halalt community is located on Vancouver Island in the community of Chemainus. Halalt First Nation IR2 is located 10 km south of the town of Chemainus on Vancouver Island. Halalt First Nation IR1, Willy's Island, is located at the mouth of the Chemainus Estuary near the town of Crofton. The traditional village site of Tl'uqtnus is located on the north shore of the South Arm of the Fraser River, directly opposite the project location.	53 km (Reserve)
Stz'uminus First Nation**	The main Stz'uminus community is located on Vancouver Island in Chemainus.	54 km (Reserve)
Cowichan Tribes**	The main Cowichan reserve is located on Vancouver Island in the community of Duncan and at Cowichan Bay.	61 km (Reserve)
Lake Cowichan First Nation*	The main Lake Cowichan community is located on Vancouver Island, on the east end of Lake Cowichan approximately 30 km west of the community of Duncan.	83.3 km (Reserve)
Seabird Island Band	The Seabird Island Band Office is located on Seabird Island just east of Agassiz on the Fraser River.	95 km (Band Office)
Métis Nation British Columbia	Métis Nation British Columbia is not part of the reserve system, but has six chartered communities in the lower mainland region: North Fraser Métis Association (located in New Westminster), Nova Métis Heritage Association (located in Surrey), Waceyá Métis Society, Golden Ears Métis Society (located in Maple Ridge), Fraser Valley Métis Association (located in Chilliwack), and Chilliwack Métis Association (located in Chilliwack), and three on south Vancouver Island.	

1. (Reserves, Communities, or Chartered Communities)

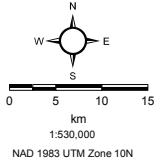
*These First Nations are members of the Hul'q'umi'num' Treaty Group. Hul'q'umi'num' assert a collective core (title) territory that includes the lower Fraser River, including the area of the Project.

+ These First Nations are members of the Cowichan Nation Alliance. The Cowichan Nation Alliance is collective of First Nations who represent their members in title and rights negotiations.

File Location: P:\06060600\CAD_GIS\030_030_GIS_Graphics\02_Maps\First Nations\Renumbered\FIG-3_60606060_IG_Reserves_v2.mxd
 Date Revised: January 24, 2019
 Reviewed By: [Name]
 Paper Size: 11"x17" Scale is referenced to the specified paper size.



Basemapping from Esri World Light Gray;
 First Nation Layers from GeoBC



Legend

- ★ Project Location
- ▲ Sands Head Lighthouse
- RESERVES OF INDIGENOUS GROUPS**
- COWICHAN NATION ALLIANCE**
- Cowichan Tribes
- Halalt First Nation
- Penelakut Tribe
- St'umnum First Nation
- KATZIE FIRST NATION
- KWANTLEN FIRST NATION
- KWIKWETLEM FIRST NATION
- LAKE COWICHAN FIRST NATION
- LYACKSON FIRST NATION
- SEMIAHMOO FIRST NATION
- SEABIRD ISLAND BAND
- TSAWWASSEN FIRST NATION LANDS
- TSLEIL-WAUTUTH NATION
- MUSQUEAM INDIAN BAND

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Leigh Hanson
REGISTERED CIVIL ENGINEER
 Location: Tilbury Island, Delta, BC

**Reserves of
 Indigenous Groups**

December 2018

AECOM

Figure 3-3

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4. Federal, Provincial, and Municipal Involvement and Regulatory Requirements

4.1 Legislative Requirements

Lehigh Hanson Materials Limited has identified several permits, licences, and approvals from federal, provincial, and municipal levels of government that are required for delivery of the Project (Table 4-1). During the course of engagement, the list will be refined accordingly. In addition to approvals from federal, provincial and federal agencies, Indigenous groups may also have approvals related to Project activities. Lehigh Hanson Materials Limited will work with Indigenous groups to identify and secure approvals applicable to the Project.

Table 4-1 Permits, Licences, and Approvals

Responsible Authority	Description of Federal Permits, Licences and Approvals	Project Activity
Federal Permits, Licences, and Approvals		
Fisheries and Oceans Canada	<i>Fisheries Act</i> Authorization (FAA)	Required for works that potentially cause serious harm to fish, including dredging, riparian works, construction of a marine terminal
Transport Canada	Navigation Protection Program Approval	Required for construction of the marine terminal, any in-water works, and shipping
Environment and Climate Change Canada	Disposal at Sea Permit	May be required for marine disposal of dredgeate
Provincial Permits, Licences, and Approvals		
Ministry of Forests, Lands, Natural Resource Operations & Rural Development	Crown Licence of Occupation	Water lot Lease is required for the area used for ship marine terminal and in water works
Ministry of Forests, Lands, Natural Resource Operations & Rural Development	Change Approval or Submit Notification of Instream Work	Required before in-water works can be undertaken
Ministry of Forests, Lands, Natural Resource Operations & Rural Development Archaeology Branch	Heritage Inspection Permit	Archaeological inspections to support the EA
	Heritage Investigation Permit	Required only if an archaeological site is identified; a further permit is required to undertake a systematic study and data recovery from an archaeological site
	Site Alteration Permit	Required only if an archaeological site is identified that would be altered as a result of the Project
Municipal Permits, Licences and Approvals		
City of Delta	Development Permit	The Site is within a Riparian Protection Development Permit Area, but no other Development Permit is required from the City
	Rezoning Permit	The current Site zoning, I2 Heavy Industrial, must be rezoned to I7, Special Industrial, which includes manufacturing, processing, finishing, and storage of cement
	Authorization for Work	Required if Project design impinges on the integrity of the dike (if applicable) as part of the Project
Metro Vancouver	Air Quality Permit	Permit to discharge air contaminants

4.2 Federal Involvement

4.2.1 Federal Financial Support

There is no proposed, or expected, federal financial support associated with the Project.

4.2.2 Federal Lands and Waters

The land and marine-based infrastructure for the Project are not located on federal lands or waters.

5. Potential Effects on the Natural Environment

Information in this section is preliminary based on desktop studies and technical investigations conducted to date. The EA will provide a thorough analysis of the potential effects of the Project, and fully consider and incorporate Indigenous Knowledge (IK) together with empirical science. Lehigh Hanson Materials Limited looks forward to working with Indigenous groups and understands that IK includes both traditional and current knowledge.

5.1 Climate

The Project is located in the Lower Fraser Valley Airshed, in the jurisdiction of Metro Vancouver. In 2015, total greenhouse gas emissions in BC were 61.6 million carbon dioxide equivalent tonnes (Mt CO₂e), including 1.7 Mt CO₂e in offsets from forest management projects in the province⁹. Of that total, industrial processes and product manufacturing accounted for 3.9 Mt CO₂e, and cement production accounted for 1.0 Mt CO₂e. BC manages greenhouse gas generation through the application of a tax on the purchase price of hydrocarbon-based fuels, such as gasoline, diesel, natural gas, and heating fuel. BC also requires larger industrial operations to calculate and report greenhouse gas production annually, and that process provides input to provincial inventories of greenhouse gas releases.

The Project has the potential to release greenhouse gases during the construction, operation and decommissioning. An evaluation will be conducted to assess the magnitude of those releases and develop strategies to mitigate effects, where practical. Greenhouse gases to be considered in the assessment are those that result from SCM manufacturing, material handling, and the movement of materials by truck and marine vessels. There is potential for two greenhouse gases to be generated and released to the environment during these activities: carbon dioxide (CO₂) and nitrous oxide (N₂O).

The greenhouse gas assessment will include estimating the potential magnitude of these releases and developing mitigation measures to reduce the generation and release of these pollutants by equipment or operational changes.

5.1.1 Atmospheric Conditions

Existing ambient air quality includes pollution from both human and natural sources (e.g., fire), and from both nearby and unidentified distant sources. Land use around the Site is dominated by marine, urban and industrial activities. Commercial shipping on the South Arm of the Fraser River, ship loading and unloading at nearby terminals, road traffic, and industrial activities on adjacent properties contribute to the existing air quality and the acoustic environment.

Air contaminants such as particulate matter (i.e., PM_{2.5} and PM₁₀) are emitted from existing industrial activities, shipping traffic and road traffic and have the potential to affect receptors.

The Project is located in a primarily industrial area, the closest residence is approximately 1.1 km south of the Site. Sensitive receptors identified near the Project are listed in Table 5-1.

Table 5-1 Sensitive Receptors near the Site

Receptor Type	Name or Description	Approximate Distance from the Site (km)
Residence	68 St. and River Rd.	1.1
Senior Care Facility	Diversicare Canada Management Services Co., Inc.	4.7
School	Neilson Grove Elementary	5.74
Child Care Facility	Animal Crackers Day Care	6.4

⁹ "Provincial Greenhouse Gas Inventory," British Columbia, 2017. <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory>

Background (ambient) air quality data for the pollutants of concern are measured at a number of monitoring locations across Metro Vancouver. Generally, ambient air concentrations of monitored pollutants are below the corresponding level specified in *Metro Vancouver's Ambient Air Quality Objectives* (MVAAQO; Metro Vancouver 2016). The nearest Metro Vancouver air quality monitoring stations are T17 (Richmond South) and T31 (Vancouver Airport). These stations both measure PM_{2.5}, sulphur dioxide (SO₂), carbon monoxide (CO) and nitrogen dioxide (NO₂) and ozone (O₃) on a continuous basis. Stations T31 (Vancouver Airport) and T18 (Burnaby South) both measure PM₁₀ on a continuous basis.

Based on the 2014 Lower Fraser Valley Air Quality Monitoring Report (Metro Vancouver, Air Quality and Climate Change Division 2015), the 2015 Lower Fraser Valley Air Quality Monitoring Report (Metro Vancouver, Air Quality Policy and Management Division 2018), and the Lower Fraser Valley Air Zone Report (2014-2016) (MOECCS [Ministry of Environment and Climate Change Strategy] 2018), there were a total of five air-quality advisories from 2014 through 2016. Reports from 2017-2018 are unpublished at the time of submission.

In 2014, an air-quality advisory for elevated concentrations of ozone was issued for two days in July, and a second air quality advisory was issued for one day in August for elevated PM_{2.5}, primarily due to smoke from wildfires occurring outside the region (Metro Vancouver, Air Quality and Climate Change Division 2015). In 2015, an air-quality advisory for elevated concentrations of ozone was issued for two days in June, a second advisory was issued for six days in July attributed to the influence of smoke from wildfires burning outside the region, and a third advisory was issued for two days in August for elevated ozone and PM_{2.5}, primarily due to smoke from wildfires occurring outside the region (MOECCS 2018). In 2016, no air advisories were issued (MOECCS 2018).

CO and NO₂ levels have remained consistent despite population growth, primarily due to stricter vehicle emission standards. SO₂ and PM_{2.5} levels have decreased due to reduced sulphur in marine, on-road, and off-road fuels, and to shutdowns of large industrial facilities in the area. All ambient Criteria Air Contaminant (CAC) concentrations are below ambient air quality objectives and standards (Metro Vancouver, Air Quality Policy and Management Division 2018).

Industrial facilities may only discharge air contaminants in accordance with the terms and conditions of a permit or emission regulation, according to the GVRD Air Quality Management Bylaw 1082, 2008. The Project operations that could affect air quality include: road and marine traffic, use of mobile equipment and process equipment on Site. The air quality assessment for the Project will assess the magnitude of those effects and develop strategies to mitigate those effects where practical. Contaminants to be considered in the air quality assessment are the result of grinding, material storage and handling, and the movement of materials by truck, rail, and marine vessel. There is potential for the following pollutants to be generated during these activities and released to the environment:

- Nitrogen Oxides
- Sulphur Oxides
- Carbon Monoxide
- Particulate matter 10 micrometres or less in diameter (PM₁₀)
- Particulate matter 2.5 micrometres or less in diameter (PM_{2.5})
- Diesel Particulate Matter
- Volatile Organic Compounds

The air quality assessment will determine the magnitude of any such releases and their expected maximum ground-level concentration within a pre-determined study area, and develop mitigation measures to reduce the generation and release of these pollutants by equipment or operational changes.

5.1.2 Acoustic Environment

The City of Delta Noise Bylaw No. 1906 restricts specific sources of noise during different times of day to prevent noise from causing a nuisance to nearby receptors, such as those stated in Table 5-1. The Project has the potential to generate unwanted noise during the construction and operational phases. Noise generating activities include: material grinding, material handling and storage, and the movement of bulk materials by truck, rail, and marine vessels. The

objective of the noise assessment will be to assess the magnitude of those effects and develop strategies to mitigate those effects where practical.

The noise assessment will determine the magnitude of potential noise-generating activities and equipment and their expected effects on sensitive receptors. Once acoustic effects on sensitive receptors are understood, appropriate mitigation measures will be developed and best practices will be reviewed, aimed at reducing the effects of noise-generating activities and equipment.

5.2 River Hydraulics and Morphology

Tilbury Island is located along the south shore of the South Arm of the Fraser River, which conveys 87% of the total flow of the Fraser River (DFO 2014). Flows in the Fraser River are driven primarily by spring freshet, which causes a fluctuation from the lower winter flows of $300 \text{ m}^3 \text{ s}^{-1}$ to a maximum of $10,000 \text{ m}^3 \text{ s}^{-1}$ during spring freshet flows in June. The annual freshet event, fed by melting snow in the surrounding mountain ranges, also conveys a large volume of sediment that settles out at various stages along the river, depending on particle size. According to FREMP and BIEAP (2006), 70% of the sediment generated during freshets is deposited along the river, while 30% of the sediment travels to the Pacific Ocean as far as Sand Head. The riverbed along Tilbury Island is expected to be a reflection of the distinct flow patterns: the high energy outer bend of the river consists of sand and coarser materials, while the inside bend, with lower flow, consists primarily of finer substrates (FREMP and BIEAP 2006).

Deposition of freshet-derived sediment is the driver for the annual dredging program that the VFPA conducts in the Fraser River, the aim of which is to maintain the navigation channel in the South Arm and enable safe movement of vessels along the river.

Stage 2 of the Project may alter a number of aspects of river hydraulics and morphology, including flow patterns and water velocities, and may have a local impact on erosion and sediment deposition patterns. The Project will aim, through the use of three-dimensional (3D) Morphodynamic Modelling, to determine the significance of any such changes and how they can be mitigated (e.g., alternation in design and location of piles).

This portion of the Fraser River is tidally influenced by the salt water wedge from the Pacific Ocean. During lower, winter-flow conditions, the salt water wedge flows upstream of the Site as far as Annacis Island, while during the larger, summer freshet flows, the salt water wedge extends to approximately the mid-point of Deas Island, downstream of the Site (FREMP and BIEAP 2006). During a tidal cycle, the salt water wedge moves along the river bottom while the lower-density freshwater overlies the saltwater layer. Accordingly, the salinity concentration of the Fraser River at Tilbury Island varies over a tidal cycle and is also dependent on the influence of the freshet.

5.3 Aquatic Ecosystems

5.3.1 Setting

Fish Habitat

While Tilbury Island is dominated by industrial activity, the riparian area surrounding the island is a mix of intertidal marsh and woodland dominated by deciduous trees (FREMP 2016)¹⁰. Intertidal marine vegetation that would be expected to grow in the marsh condition around Tilbury Island is minimal to absent (FREMP 2015). This combination of habitats continues both upstream and downstream of Tilbury Island, with an increase in intertidal marsh present downstream toward the Fraser River estuary. Marine plants, including rockweed (*Fucus* spp.), sea lettuce (*Ulva* spp.), bull kelp (*Nereocystis luetkeana*), and eelgrass (*Zostera marina*), grow beyond the mouth of the Fraser River, approximately 20 km from the Site.

¹⁰ While the FREMP has been discontinued, the data sets produced during its operation are considered to be the gold standard of ecological understanding of the Fraser River and are regularly used to inform federal and provincial decision making and effects assessments.

The shoreline of Tilbury Island has been classified as high-productivity habitat, as defined by FREMP (2015), with smaller portions of moderate-to-low productivity habitat also having been delineated. FREMP (2015) defined this high productivity habitat to:

“... include productive and diverse habitat features that support critical fish and wildlife functions on-site or as part of a more regional context and/or areas where habitat compensation has been previously constructed to offset habitat losses....”

There are several sites of previous habitat compensation in close proximity to the Site that may be influenced by hydrological changes to the river arising from Stage 2 of the Project. Those sites include:

- C.P. Rail Systems marsh bench with riprap berm
- Department of Fisheries and Oceans Tilbury Slough Restoration Project
- Fraser Richmond Landfill compensation site
- Fraser River Harbour Commission marsh lagoon creation
- Kozul Holdings Inc. riparian habitat creation
- Linwood Homes Ltd. compensation site
- Modalink Vancouver Gateway Distribution Hub Ltd. creation of riparian habitat
- The City of Delta riparian vegetation replanting in Tilbury Slough

These habitat compensation sites are illustrated below in Figure 5-1.

Within the terrestrial portion of the Site are several ditches. Based on a preliminary Site assessment carried out by AECOM, the ditches likely offer poor rearing and overwintering salmonid habitat. Although vegetated fish cover appears abundant overall and water levels were sufficient to support fish in places, habitat complexity is low and there was little-to-no flow. The habitat is unsuitable for spawning and incubation as only fine substrates were present and suitable spawning gravels were absent. Furthermore, water temperatures during the May 2018 Site assessment were sub-optimal for all salmonid life history stages, and there is uncertainty about the potential connectivity of the Site ditches with Tilbury Slough.

In assessing potential serious harm to fish under the provisions of the *Fisheries Act*, a variety of factors will be considered, including the availability and condition of existing nearby fish habitat. Therefore, this assessment will be conducted with the perspective of the current state of the ecosystem (i.e., pre-existing impacts included).

Fish Species

The Fraser River system¹¹ is home to a rich diversity of fish, with 53 species in total, of which 43 are considered native to BC (McPhail and Carveth 1993). The majority of populations of introduced species reside in the lower reaches of the Fraser River. The fish species of the Fraser River support a commercial, recreational and aboriginal fishery throughout the river's system including the areas adjacent to the Project.

Key fish species known to inhabit the Fraser River, and that will be included in the effects assessment, include white sturgeon (*Acipenser transmontanus*), eulachon (*Thaleichthys pacificus*), all five species of Pacific salmon (*Oncorhynchus* spp.), the anadromous rainbow trout (*O. mykiss*), and coastal cutthroat trout (*O. clarki clarki*). Salmonids occupy the lower Fraser during their upstream migration to spawning grounds and during their downstream, outward migration as juveniles. Rearing of juvenile salmon also takes place along the freshwater and brackish reaches of the Fraser River prior to seaward migration. The Fraser River is also home to the Green sturgeon (*Acipenser medirostris*), a species listed as being of “Special Concern” under the *Species at Risk Act* (SARA).

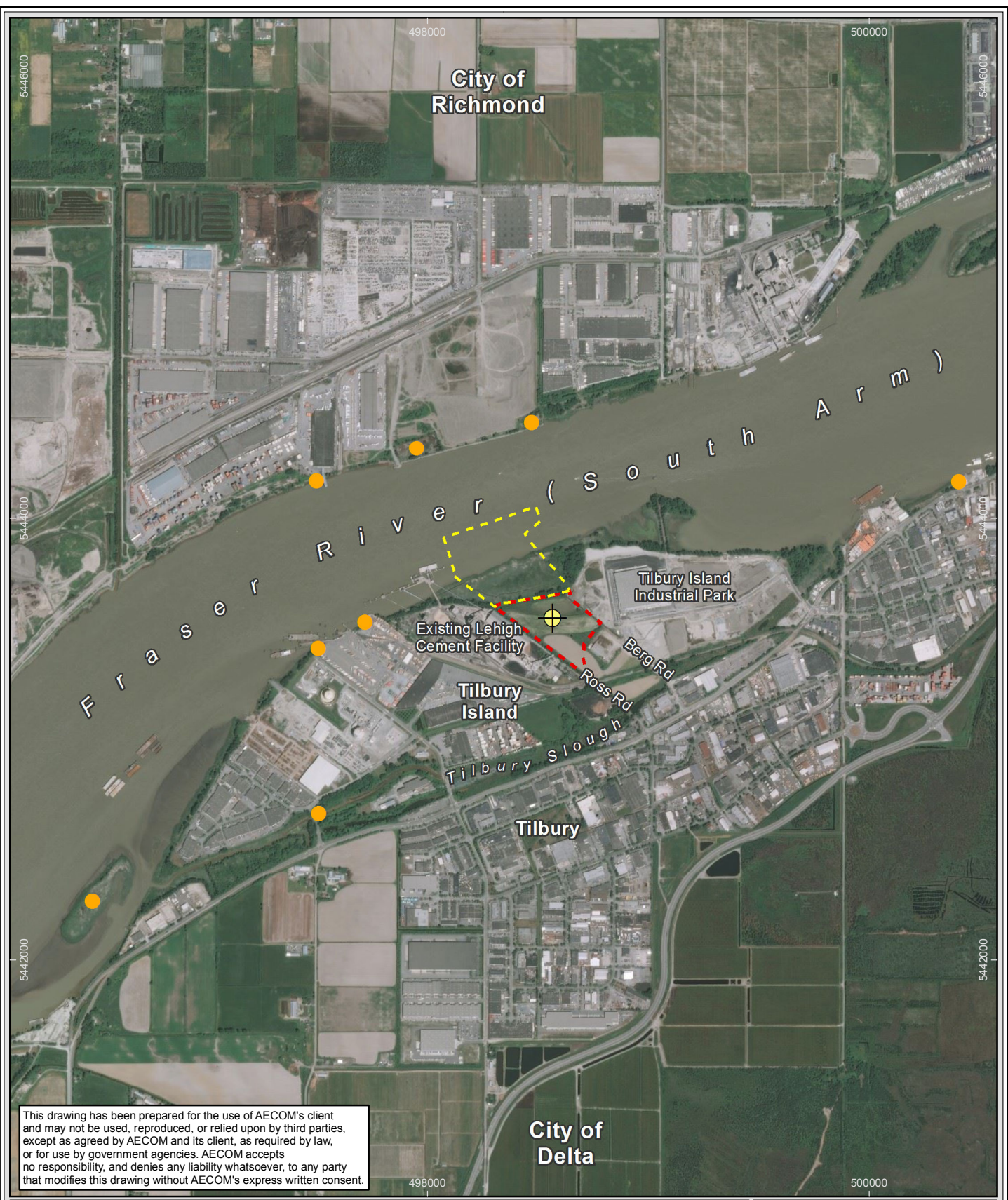
The fish species inhabiting the Site ditches were identified during May 2018 field assessments, through minnow trapping and electrofishing. At that time, only two species were caught: three-spined stickleback (*Gasterosteus*

¹¹ The Fraser River system figures quoted include contribution from the Nooksack and Skagit rivers.

aculeatus), a widespread species native to BC, and pumpkinseed sunfish (*Lepomis gibbosus*), an introduced species originally from central and eastern parts of North America.

Invertebrate Community

Owing to the soft sediment mudflats and marsh habitat, benthic communities in the Fraser River surrounding Tilbury Island are expected to be dominated by burrowing species with a preference for this type of habitat, for example, Oligochaetes (Stronach 1995).



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Basemapping from Bing, DataBC FREMP and AECOM 2018.

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Legend

- Project Location
- FREMP Habitat Compensation Site

Approximate Boundary of Project

- Stage 1
- Stage 2



Location: Tilbury Island, Delta, BC

FREMP Habitat Compensation Sites in Proximity to the Project

October 2018

AECOM

Figure 5-1

5.3.2 Potential Effects and Mitigation Measures – Aquatic Ecosystems

Construction of the marine terminal in Stage 2 will require in-water activities, and may result in serious harm to fish (as defined by the *Fisheries Act*) that may necessitate a FAA and the requirement for offsetting. This effect may be realized during both construction and operation (if maintenance dredging is required), and include: change in water and sediment quality, loss of benthic invertebrate communities, degradation of habitat as a result of an alteration in river processes, noise and lighting effects from construction and operation, and direct mortality resulting from marine terminal infrastructure and maintenance dredging.

Notwithstanding potential effects, actual effects are likely to be small in magnitude. The physical footprint of the marine terminal and conveyor belt systems will be small, as they will be constructed on piles, thereby limiting their footprint, both in the water and on-shore. Furthermore, areas surrounding the proposed marine terminal are regularly dredged as part of the annual VFPA Fraser River dredge program.

A site-specific environmental management plan will be developed, aimed at reducing the potential effects on freshwater fish, and will likely be combined with the estuarine-marine management plan discussed in the following section. Mitigation measures may include:

- The timing of works to avoid sensitive life stages and ensure compliance with DFO's least-risk timing window (LRTW) from June 16 to February 28
- Design modifications where possible (e.g., incorporation of grating into the Stage 2 marine terminal to enable natural light to penetrate)
- Best management practices (BMPs) (e.g., appropriate setbacks from fish-bearing streams, and effective erosion and sediment control to protect water quality)
- Use of silt curtains to minimize the release of sediment, and bubble curtains to reduce mechanical effects on fish
- Adoption of vibratory pile methodology to reduce the potential underwater acoustic effect and/or the use of pile cushion for impact hammering

Work conducted outside of a DFO or provincial LRTW may require additional and appropriate mitigation (e.g. fish salvage, fish exclusion) to reduce the risk to an acceptable level. Work timing will be discussed with Indigenous groups and other users of fisheries resources. In accordance with DFO policy, work will be timed not only in relation to the LRTW, but also to protect fish, including their eggs, juveniles, spawning adults, and the organisms upon which they feed.

Should offsetting of serious harm be required, an offsetting plan will be developed that meets the specific requirements of an FAA. The plan would include measures to avoid any effects on ongoing offsetting or restoration projects, which may include opportunities for synergy with other projects.

5.4 Marine Ecosystems

5.4.1 Setting

While the South Arm of the Fraser River is influenced by saltwater, the Project is not considered to be taking place in a marine environment. There is, however, the potential for marine mammal species to be present in close proximity to Tilbury Island, specifically harbour seal (*Phoca vitulina*) and sea lion (*Zalophus californianus*). Other marine mammals associated with the Strait of Georgia, almost 20 km away (e.g., whales and dolphins), are highly unlikely to move so far upstream.

Shipping associated with Stage 1 of the project will increase the number of vessels sailing to Plumper Sound to lighter the GBFS onto barges. Shipping associated with Stage 2 of the Project will increase the number of vessels to Tilbury Island. This increase in vessel traffic has the potential to interact with several SARA-listed species (Table 5-2). The area surrounding the mouth of the Fraser River forms part of the critical habitat of the Southern Resident population of the Killer Whale (*Orcinus orca*).

Table 5-2 Marine Mammals of the Strait of Georgia

Species	SARA Status	Expected Seasonal Occurrence in the Strait of Georgia	Expected Seasonal Occurrence in the Fraser River
Southern Resident Killer Whale (<i>Orcinus orca</i>)	Endangered	Year round (most common late spring to early autumn)	None Expected
Transient Killer Whale (<i>Orcinus orca</i>)	Threatened	Year-round	None Expected
Harbour Porpoise (<i>Phocoena phocoena</i>)	Threatened	Year-round	Possible
Grey Whale (<i>Eschrichtius robustus</i>)	Special Concern	Spring through Fall	None Expected
Humpback Whale (<i>Megaptera novaeangliae</i>)	Special Concern	Spring through Fall (Winter sightings have recently occurred)	None Expected
Steller Sea Lion (<i>Eumetopias jubatus</i>)	Special Concern	Late Summer through Spring	Possible
California Sea Lion (<i>Zalophus californianus</i>)	Not at Risk	Year-round	Year-round
Harbour Seal (<i>Phoca vitulina</i>)	Not at Risk	Year-round	Year-round

Vessel routes will pass through the known range of the Southern Resident Killer Whale (SRKW), and in close proximity to a portion of its Critical Habitat. Vessel routes will also be close to several marine Wildlife Management Areas (WMAs) that have been established under Section 4 of the BC *Wildlife Act*. WMAs are designated for the benefit of regionally or internationally important species of wildlife and fish, and their habitats, through conservation and management. The SRKW Critical Habitat and WMAs associated with waters adjacent to the Fraser River delta are depicted in Figure 5-2.

WMAs in close proximity to the shipping lane are:

- Roberts Bank WMA
 - Marine species present include: all five species of Pacific salmon, white sturgeon, green sturgeon, steelhead, cutthroat trout, Pacific herring (*Clupea pallasii*), eulachon, flounders (e.g., starry flounder, *Platichthys stellatus*), and sculpins (e.g., *Cottus* spp.); marine mammals include killer whales, harbour seals and California sea lions (FLNRORD 2018).
- South Arm Marshes WMA
 - Marine species present include: juvenile spring, pink, chum, and coho salmon, which utilize the tidal marsh during their seaward migration (FLNRORD 2018).
- Sturgeon Bank WMA
 - Marine species present include: all five species of Pacific salmon and at least 27 species of non-salmonid fish, including starry flounder, three-spined stickleback (*Gasterosteus aculeatus*), herring, and shiner perch (*Cymatogaster aggregata*) (FLNRORD 2018).

File Location: \\cabny1\p001\prod\Projects\605605900-CAD_GIS\920-929 (GIS-Graphics)\MXDs\Project_Description\Fig_5_2_WildlifeManagementAreas.mxd Date Revised: January 03, 2019 Reviewed By: JW Paper Size: 8.5" x 11" Scale is referenced to the specified paper size.



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Basemapping from Bing, GeoBC, Data BC Data Catalogue and AECOM 2018.

Legend

- Project Location
- Wildlife Management Areas**
 - Roberts Bank
 - South Arm Marshes
 - Sturgeon Bank
- Critical Habitat for Southern Resident Killer Whales**
 - Transboundary Waters of Southern BC
 - Transboundary Waters of Northern Washington



Lehigh Hanson
HEIDELBERGCEMENT Group
Location: Tilbury Island, Delta, BC

Marine Features in Proximity to the Project

January 2019

AECOM

Figure 5-2

Potential effects on the marine environment as a result of the Project are related to an increase in noise generated through shipping and the construction of the vessel marine terminal and conveyor belt system. As a result of the Project, vessel traffic in the Strait of Georgia, Juan de Fuca Strait, and the Fraser River will increase. This increase in vessel traffic will result in louder underwater noise generated by running engines, vessel wake, and propeller wash, and has the potential to cause displacement or natural behaviour change in fish and marine mammals. Furthermore, increased vessel traffic may lead to a higher incidence of vessel strikes on marine mammals.

Construction of the marine terminal for Stage 2 may result in the generation of noise and vibrations that may affect marine mammals. The extent of in-water works will be refined through the design process.

5.4.2 Potential Effects and Mitigation Measures – Marine Ecosystems

Mitigation measures that may reduce potential effects on the estuarine-marine ecosystem associated with the construction of the marine terminal and conveyor belt system include:

- The timing of works to avoid sensitive life stages and ensure compliance with DFO's least-risk work windows
- Use of silt curtains to avoid the release of sediment, and bubble curtains to reduce the effect on marine mammals
- Adoption of vibratory pile methodology to reduce potential underwater acoustic effects, or use of pile cushions for impact hammering, or both methods
- Construction monitoring by a certified marine mammal observer where appropriate
- Adoption of the VFPA's Enhancing Cetacean Habitat and Observation Program (ECHO) for the movement of Vessels in Haro Strait

5.5 Terrestrial Ecosystems

5.5.1 Setting

The Site is located on industrial lands within the moist maritime (mm) subzone of the Coastal Douglas Fir (CDF) Biogeoclimatic Zone (iMap BC 2018). The CDFmm biogeoclimatic zone is defined by low elevations and having warm, dry summers and mild, wet winters (Nuszdorfer et al. 1991).

5.5.2 Vegetation

Trees and other plants common within the Project area include:

- Douglas-fir (*Pseudotsuga menziesii*)
- Grand fir (*Abies grandis*)
- Western redcedar (*Thuja plicata*)
- Salal (*Gaultheria shallon*)
- Dull Oregon grape (*Mahonia nervosa*)
- Ocean-spray (*Holodiscus discolor*)
- Baldhip rose (*Rosa gymnocarpa*)
- Common snowberry (*Symphoricarpos albus*)
- Western trumpet honeysuckle (*Lonicera ciliosa*)
- Vanilla leaf (*Achlys triphylla*)

The onshore component of the Project will be built on land historically farmed that is flanked by ditches along the east and west borders of the Site. To the north, the Site is bounded by a dike separating it from the Fraser River. Owing to the farm use, vegetation within the onshore area of the Project is low in biodiversity, consisting mainly of a monoculture of potatoes. The ditches are vegetated by riparian species typical of the region, specifically willows, sedges, and horsetails. Also, because of past disturbance of the site, there is a very low probability of SARA-listed plant species being present. Rare plants will be included in the effects assessment.

Should Stage 2 go ahead, that part of the Project will span an area of marshy wetland, and riparian vegetation that consists of tall-shrub woodlands. Species that grow in this area include:

- Angelica (*Angelica* sp.)
- Common cattail (*Typha latifolia*)

- Various Grasses (family Poaceae)
- Sedges (*Carex* spp.)
- Red-osier dogwood (*Cornus stolonifera*)
- Silverweed (*Potentilla anserina*)
- Willow (*Salix* sp.)
- Red alder (*Alnus rubra*)
- Black cottonwood (*Populus trichocarpa*)
- Himalayan blackberry (*Rubus armeniacus*), an exotic and invasive species
- Skunk cabbage (*Lysichiton americanus*)

5.5.3 Wildlife

Amphibians and Reptiles

Both the terrestrial and riparian areas of the Project footprint may offer habitat for several amphibian and reptile species. The ditches may all provide habitat suitable for breeding, rearing, and feeding of amphibians and reptiles. Amphibians that may occupy portions of the Site include the Pacific chorus frog (*Pseudacris regilla*), northwestern salamander (*Ambystoma gracile*), long-toed salamander (*Ambystoma macrodactylum*), western red-backed salamander (*Plethodon vehiculum*), western toad (*Anaxyrus boreas*), red-legged frog (*Rana aurora*), Oregon spotted frog (*R. pretiosa*), and rough-skinned newt (*Taricha granulosa*). The western toad and the red-legged frog are blue-listed provincially and designated as being of Special Concern federally.

Reptiles with the potential to inhabit the Site include the common garter snake (*Thamnophis sirtalis*) and Northwestern garter snake (*T. ordinoides*). The distribution of Western painted turtle (*Chrysemys pica*, Pacific Coast Population), which is provincially red-listed, threatened by COSEWIC, and Endangered under Schedule 1 of SARA, includes the Site.

Mammals

The Site is potentially inhabited by a number of mammal species, including deer, raccoon, beaver, coyotes, shrews, rodents, and mustelids.

Shrews that may be present include the Pacific water shrew (*Sorex bendirii*) and the Olympic shrew (*S. rohweri*). The Pacific water shrew is a red-listed species provincially and considered Endangered federally under the SARA. The Olympic shrew is red-listed provincially and largely endemic to the Pacific Northwest of the USA; it is found only in three geographic areas: two in Washington State (USA) and one that is centered on Burns Bog in Delta, south of Tilbury Island.

Birds

The mudflats and estuarine conditions of the Fraser River are home to a wide variety of bird species that use these habitats for one or all of their life stages. In particular, many species of migratory birds potentially inhabit the Fraser River shoreline adjacent to the Project, and are protected under the federal *Migratory Birds Convention Act*. The Site is located within an Important Bird Area (IBA), the BC017: Boundary Bay–Roberts Bank–Sturgeon Bank (Fraser River Estuary) (IBA Canada 2018). Delineation of the IBA boundary may require updating, as the surrounding industrialized areas are not reflected on the map. IBA Canada (2018) identifies 50 species of shorebirds and describes the WMAs of Boundary Bay, Roberts Bank, and Sturgeon Bank collectively as “one of the richest and most important ecosystems for migrant and wintering waterbirds in Canada”. Furthermore, IBA Canada (2018) states that this IBA is home to globally or continentally significant populations of:

- American Wigeon (*Mareca americana*)
- Northern Pintail (*Anas acuta*)
- Mallard (*A. platyrhynchos*)
- Black Brant (*Branta bernicla nigricans*)
- Snow Goose (*Anser caerulescens*)
- Trumpeter Swan (*Cygnus buccinator*)
- Western Sandpiper (*Calidris mauri*)
- Black-bellied Plover (*Pluvialis squatarola*)
- Dunlin (*Calidris alpina*)
- Great Blue Heron (*Ardea herodias*)*
- Western Grebe (*Aechmophorus occidentalis*)
- Red-necked Grebe (*Podiceps grisegena*)
- Glaucous-winged Gull (*Larus glaucescens*)
- Thayer's Gull (*L. glaucoides thayeri*)

- Mew Gull (*L. canus*)
- Barn Owl (*Tyto alba*)*
- Peregrine Falcon (*Falco peregrinus*)*

* Denotes species of birds that are determined to be of Special Concern under SARA.

The largest concentration of these species is in the WMAs noted above, and it is unlikely that members of many of the species frequent the terrestrial footprint of the Project, owing to heavily industrialized activities on Tilbury Island. The shoreline habitat of the Site (mudflats and riparian zone) may be used for foraging by some of these species; however, habitat quality is diminished owing to the existing surrounding industrial activity and historic use of the area.

The Site is also located along the Pacific Flyway, a migratory corridor extending from Patagonia in the south to Alaska in the north. The IBA noted is a key location along this migratory route for feeding and resting. The area surrounding the Site is also designated as a Ramsar Site owing to the wetlands in the area having international importance. This Ramsar Site is known as Fraser River Delta Site No. 243, which is a combination of Burns Bog, Sturgeon Bank, South Arm Marshes, Boundary Bay, Serpentine, and the former “Alaksen” Ramsar Site.

5.5.4 Potential Effects and Mitigation Measures – Terrestrial Ecosystems

Potential effects on the terrestrial ecosystem as a result of the Project would consist of loss of habitat and direct mortality of plants and animals as a result of works. Construction of the Facility during Stage 1 will require placement of structural fill, grading and building construction of suitable foundations, and any loss of habitat would be considered permanent. Works associated with Stage 2 of the Project will have a smaller footprint occupying parts of the intertidal marsh and riparian area for the foundations of the conveyer belt system towers but may fragment habitat for certain species.

The Project will also create noise and light that may affect the quality of the surrounding habitat from a sensory perspective, specifically the marsh along the Fraser River that constitutes a wildlife corridor. During the course of the EA, a site-specific environmental management plan will be developed and aimed, in part, at reducing the potential effects on the terrestrial ecosystem. Mitigation measures may include:

- The timing of works to avoid sensitive life stages, including bird nesting timing windows
- Construction monitoring and adaptive management
- Pre-construction surveys to confirm the absence of sensitive receptors

6. Potential Effects on the Economic Environment

6.1 Setting

The Site is within the boundaries of the City of Delta, which includes three urban communities: Ladner (administrative centre), Tsawwassen, and North Delta. The Project is located on Tilbury Island directly across from the City of Richmond.

Tilbury Island, the Project location, lies along the south side of the South Arm of the Fraser River, and is one of the largest industrial areas in Metro Vancouver. Delta's industrial marine facilities include Deltaport, Canada's largest container terminal, with three berths, on-dock rail facilities and the only quad lift crane in North or South America; and Westshore Terminals coal shipping facility, both located at Roberts Bank. Near the Roberts Bank terminals is the Tsawwassen Ferry Terminal, operated by British Columbia Ferry Services Inc. (BC Ferries). The terminals and facilities on the Roberts Bank causeway are connected to road and rail infrastructure that supports the movement of goods within, across, and beyond the region (Port Metro Vancouver 2018).

6.2 Employment

Delta is home to 102,238 people of whom 21,000 reside in Ladner, 21,000 in Tsawwassen, and 60,000 in North Delta. Seniors make up 20% of the population of Delta, and this proportion is expected to increase to 41% by 2024 (Statistics Canada 2016).

The population has grown steadily, albeit at a slow rate, registering 2.3% growth in the five-year period from 2011 to 2016. That modest population growth rate is reflected in an equally modest change in the size of the labour force, which reached 54,370 workers in 2016 – up 2.5 % since 2011. In 2016 Delta's unemployment rate was 5.3%, lower than that of Metro Vancouver (5.8%), as well as the BC and national averages of 6.7% and 7.7%, respectively (City of Delta 2017; Statistics Canada 2016). Between 2016 and 2017, the unemployment rate in Delta increased by 1.1%.

Over 12.6% of the labour force is self-employed. The level of educational attainment is generally high, with over 40% of adult residents having a university degree, 26% a college degree or diploma, and 26% high school completion diploma (Statistics Canada 2016).

6.2.1 Potential Effects and Mitigation Measures – Employment

The majority of Project economic effects are expected to be beneficial. The Project will generate employment and contracting opportunities during construction and operation phases. Potentially adverse effects might result from the Project de-commissioning phase, resulting in lost employment income.

The majority of direct employment opportunities are anticipated to be in trades-related occupations. The occupational grouping will include technicians, operators, skilled and semi-skilled labour, as well as some professional occupations. Indirect employment opportunities will be created through businesses that supply products and services to the Facility. Additional employment opportunities will be introduced through increased levels of income and spending, resulting in higher levels of employment in local tourism, recreation, entertainment, real estate, and food industries.

Lehigh Hanson Materials Limited is committed to diversity and inclusion and will continue working with local Indigenous and non-Indigenous communities to enhance training opportunities and optimize local hiring, with the goal of retaining local employees. A local procurement strategy will be developed to optimize contracting opportunities.

7. Potential Effects on the Recreational Environment

7.1 Setting

The Fraser River is a critical transportation route and has important marine resources. It is one of the largest salmon spawning rivers in the world, and one of only three rivers in BC where the white sturgeon spawn. The Fraser River Estuary is also one of Canada's important bird areas (Fraser River Discovery Centre 2018).

7.2 Potential Effects and Mitigation Measures – Recreation

It is anticipated that Project-induced increased marine traffic may have adverse effects on navigation safety and the use of waterways for commercial and recreational activities. Increased road traffic during the construction phase might adversely affect access to land routes and their use for commercial and non-commercial purposes. Recreational access to the dike and foreshore fronting the Facility will be restricted for reasons of safety and security.

8. Potential Effects on the Social Environment

8.1 Setting

Delta residents have access to a wide range of community and health services through a network of recreation centres, fitness studios, seniors' and youth facilities, theatres, and arts studios managed both by the Parks, Recreation and Culture Department of the City of Delta and by community-based organizations. The latter include specialized, non-profit organizations (e.g., the local branch of the Canadian Mental Health Association), churches and other faith organizations, and local libraries. Fraser Valley Regional Library, for example, provides varied programming for residents in all three major communities. There is also a local hospice that provides comprehensive palliative care and support for patients and their families. The United Way of the Lower Mainland has an active branch in Delta that offers over 35 programs through 28 agencies.

In 2016, the City of Delta established a Department of Social Planning mandated to work with various municipal departments and community groups to make sure community and social services are able to meet the needs of the evolving multi-cultural communities. In the same year, the City of Delta adopted a new social policy focusing on eliminating barriers and accommodating marginalized population groups.

The City of Delta (2017) identified several areas of concern and issues that affect the current availability of community services: the availability of just one comprehensive social services agency with limited funding; challenging multiple-source funding structure for agencies that adversely affects service continuity; lack of knowledge about the existing community organizations and their programming; declining numbers of volunteers; and lack of knowledge and awareness of the specific needs of a rapidly aging population.

8.2 Potential Effects and Mitigation Measures – Social Environment

The Project will create economic opportunities for the local residents and is not expected to result in an influx of non-resident workers. Therefore, no effect on the use or availability of current infrastructure and services is anticipated. Project-induced increased marine and road traffic may lead to reduced recreational and tourism opportunities, but these effects are expected to be minimal and will not disrupt community life or threaten public safety.

9. Potential Effects on Heritage Resources

9.1 Setting

Ethnographic literature documents heavy use of the banks of the Fraser River in pre-contact times by various Coast Salish peoples who inhabited the area and utilized the abundant resources available. These resources included berries of numerous varieties, black-tailed deer, elk, smaller fur-bearing mammals, fish, and waterfowl.

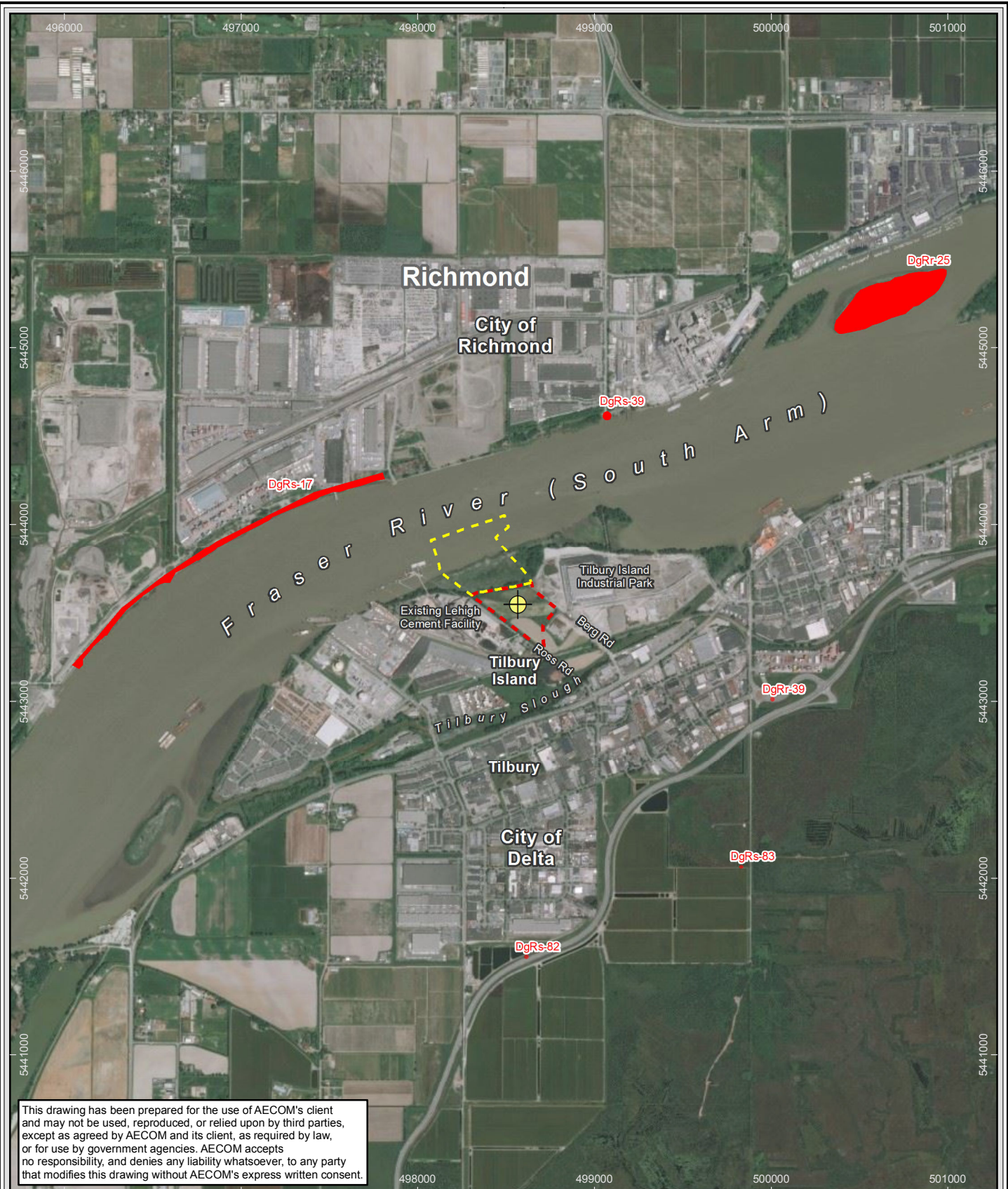
Archaeological sites previously recorded in the general study area range from large settlements with high-density lithic scatters and shell midden deposits, to small seasonal camps. Expected site types include: temporary and seasonal habitation sites, which leave remains such as hearths, features related to dwelling structures (e.g., plank house depressions and storage pits), artifact and lithic scatters, special-use campsites (e.g., menstrual huts, spirit or vision quest sites, and plant resource processing sites); and others, such as pictographs, petroglyphs, trails, burial areas, fishing locations, trap sets, and possibly forest utilization sites comprising Culturally Modified Trees (CMTs).

A search of the Provincial Heritage Registry Database (PHRD) at FLNRORD in Victoria revealed that no archaeological sites have been previously recorded within the Project footprint. The closest archaeological sites recorded nearby are: **DgRs-17**, **DgRr-25**, **DgRr-39**, **DgRs-39**, **DgRs-82**, and **DgRs-83**.

Locations of these sites, described below in numerical order, are depicted in Figure 9-1:

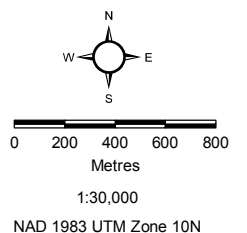
- Site **DgRs-17** consists of a fishing weir and lithic scatter area, located along the north bank of the Fraser River immediate opposite the Project footprint
- Site **DgRr-25** consists of a historic Japanese fishing site, with the potential to contain prehistoric items associated with longstanding Indigenous occupation of the area, located on an island in the Fraser River, northwest of the Project footprint
- Site **DgRr-39** consists of a shell-midden site, located on the north bank of the Fraser River, northwest of the Project footprint
- Site **DgRs-39** consists of a fishing weir and lithic scatter area, located southeast of the Project footprint
- Sites **DgRs-82** and **DgRs-83** consist of lithic scatter areas, both located southeast of the Project footprint





Lehigh Hanson Materials Limited appreciates that “heritage” is not limited to known archaeological sites, and will work with Indigenous groups to ensure that other aspects of cultural heritage are appropriately assessed.



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Basemapping from Bing, DataBC and AECOM 2018.



- Legend**
-  Project Location
 - Approximate Boundary of Project**
 -  Stage 1
 -  Stage 2
 -  Archaeological Sites



Lehigh Hanson
HEIDELBERGCEMENT Group
 Location: Tilbury Island, Delta, BC

Recorded Archaeological Sites in Proximity to the Project

October 2018

AECOM Figure 9-1

9.2 Potential Effects and Mitigation Measures – Heritage Resources

Potential effects on any archaeological sites that might be present within the Project footprint could result in the disturbance or destruction of any materials. Causes of such adverse effects might include excavation, grading, trenching, and various road construction, and landscaping activities.

To mitigate any potential effects on unrecorded archaeological sites within the Project footprint, a two-stage approach is being proposed:

- Stage 1: an Archaeological Overview Assessment (AOA) of the Project footprint
- Stage 2: an Archaeological Impact Assessment (AIA) (if identified as being necessary as a result of the AOA)

Objectives of the AOA will be:

- 1) to identify areas within the footprint of the proposed development and within the surrounding area that have potential to contain archaeological sites
- 2) to prepare predictions regarding the distribution, density, and variability of archaeological sites within the proposed development area
- 3) to evaluate the proposed development for its potential to affect archaeological sites
- 4) to recommend any need and appropriate scope of future archaeological research pertaining to the proposed development

The AOA will be undertaken in accordance with the Guidelines and Objectives put forth in *Archaeological Overview Assessments as General Land Use Planning Tools – Provincial Standards and Guidelines* (2009). Identification of traditional use sites is beyond the scope of an AOA and will not be included. The AOA will be conducted without prejudice to Indigenous Group treaty negotiations, Aboriginal rights, or Aboriginal title.

The AOA will include a field reconnaissance and review of archaeological, ethnographic, and historic materials pertinent to the study area, so as to determine the nature of potential prehistoric land use in the Project area. Library and online resources of various institutions will be consulted, including those at the University of British Columbia, Simon Fraser University, the Archaeology Branch of FLNRORD, and the Provincial Heritage Registry Database (PHRD) in Victoria.

The AOA report, developed with support from local Indigenous groups, will include:

- A description of the methodology used for the AOA
- Results of the review of ethnographic, archaeological, geomorphological, and historical documents and works pertinent to the study area
- Identification of First Nations whose asserted traditional territories encompass the proposed development area
- A description of past First Nations land use practices that may have taken place within the proposed development area
- A statement of archaeological resource potential within the proposed development area and in the immediately surrounding area
- A data gap analysis of the nature of the documents and works consulted for the AOA
- Recommendations regarding any need for, and the appropriate scope of, future archaeological research on the proposed development area

10. Potential Effects on Human Health

10.1 Setting

The Project has the potential to affect human health through the release of emissions (with pathways to human receptors by inhalation, dermal contact, and ingestion, including through the food chain), and changes in harvesting availability and consumption patterns of sources of upland, shoreline, and marine country foods.

10.2 Potential Effects and Mitigation Measures – Human Health

The Project may result in:

- Increased concentrations of air contaminants and particulate matter, which may cause a potential adverse health risk to local communities, including recreational users, residents, and Indigenous groups
- Deposition of dust on plants and soil, which can result in uptake of metals from dust by plants that are then consumed by people, including Indigenous users
- Changes in downstream water quality with potential adverse health effects on humans consuming untreated surface water while undertaking recreational activities
- Changes in downstream water quality with potential adverse health effects on people consuming fish, including Indigenous groups
- Worker and public health and safety
- Stress and annoyance (due to environmental changes)

Potential risks to human health associated with the Project will be evaluated through a quantitative human health risk assessment. The potential for health effects will be considered for workers at the Facility and neighbouring facilities, residents of Delta, and other people who may be exposed through their activities in the area. Appropriate mitigation measures may include:

- Safe work and occupational health plans and associated training during all Project phases
- Public access controls on the Facility to control public safety risks
- Controlling and mitigating noise from the Project experienced by residents of Delta
- Control technologies for reducing emissions and discharges
- Ongoing monitoring of emissions and discharges
- Controlling any disruption of areas used for the harvest of country foods or traditional medicines should they be identified within the Project footprint

11. Potential Changes to the Environment Related to Federal Legislation

11.1 Fish and Fish Habitat

Delivery of Stage 1 and Stage 2 will require in-water works. These activities have the potential to cause serious harm to fish, defined in the federal *Fisheries Act* as:

- “the death of fish;
- a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;
- the destruction of fish habitat of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes.”

Stage 1 may require alteration of ditches on site. Based on initial Site surveys conducted in May 2018, the Site ditches support populations of three-spined stickleback and pumpkinseed sunfish. Based on fish habitat assessments conducted in May 2018, the affected habitat does not support fish that are part of a Commercial, Recreational or Aboriginal (CRA) fishery, or fish that support such a fishery. Fieldwork was conducted at a time when the presence of resident (i.e., trout) and migratory (i.e., juvenile Pacific salmon) CRA fish species likely to use that type of ditch or tidal channel habitat would have been expected. Therefore, the proposed work, undertaking, or activity has a low likelihood of resulting in serious harm to fish that are part of, or support, a CRA fishery. A low level of uncertainty (i.e., a high level of confidence) applies to this conclusion. As such, it is considered that no Authorization under Section 35(2) of the *Fisheries Act* is required from DFO.

Stage 2 may require a *Fisheries Act* Authorization (FAA). The marine terminal will be constructed in the Fraser River and affect an area of high productivity that is assumed to offer rearing habitat for juvenile salmon (FREMP 2015). Stage 2 will also require dredging of the Fraser River to facilitate navigability by the proposed Panamax and Handymax vessels. The Project design and construction methods associated with Stage 2 are not sufficiently advanced currently to enable the potential level of serious harm to be quantified. Many measures are available to mitigate the effects of construction activities, including adherence to LRTW and implementation of BMPs.

11.2 Aquatic Species

As described in Section 5.4, the following Project aspects have the potential to affect aquatic species:

- Increase in vessel traffic resulting in louder underwater noise, which may cause displacement or natural behaviour change in fish and marine mammals
- Increase in vessel traffic resulting in increased potential for vessel strikes
- Modification of the Fraser River foreshore, which could affect aquatic species, including aquatic plants

As stated in Section 5.4, construction and operation of Stage 2 has the potential to affect aquatic species federally listed under SARA, including:

- Green Sturgeon – Special Concern
- Grey Whale – Special Concern
- Harbour Porpoise – Threatened
- Humpback Whale – Special Concern
- Southern Resident Killer Whale – Endangered
- Steller Sea Lion – Special Concern
- Transient Killer Whale – Threatened

11.3 Terrestrial Animals

Project activities that have the potential to affect terrestrial animals include:

- Clearing and infilling of the Project footprint resulting in the loss of habitat and direct mortality
- Construction and operations, which creates noise, resulting in migratory birds avoiding the area, thereby reducing access to habitat
- The Facility light sources could attract prey (e.g., insects), thereby increasing the presence of bats, with a potential to result in injury through collisions
- Alteration of the foreshore area as a result of the new berth and the conveyor belt may:
 - act as a barrier to movement
 - limit access to feeding habitat
 - cause the fragmentation of foreshore habitat

SARA species potentially affected by the above Project activities include:

- Amphibians:
 - Oregon spotted frog – Endangered
 - Pacific chorus frog (Not listed, Provincially Yellow Listed)
 - Red-legged frog (Not listed, Provincially Blue Listed)
 - Rough-skinned newt (Not listed, Provincially Yellow Listed)
 - Western toad – Special Concern
- Mammals
 - Fringed bat – Special Concern
 - Keen's long-eared bat – Special Concern¹²
 - Little brown myotis – Endangered
 - Northern myotis – Endangered
 - Pacific water shrew – Endangered
 - Pallid bat – Threatened
 - Spotted bat – Special Concern
 - Townsend's mole – Endangered

¹² Recent studies show that Keen's Myotis is not genetically distinct from the Long-eared Myotis, and its status may change

11.4 Migratory Birds and Raptors

Migratory birds are addressed in the *Migratory Birds Convention Act*. Project activities that have the potential to affect migratory birds include:

- Clearing suitable resting or nesting habitat within the Project footprint, specifically the foreshore area
- Construction and operational activities, including marine shipping, that create noise, resulting in migratory birds avoiding the area, thereby reducing access to habitat
- The Facility light sources could attract birds, with a potential to result in injury

There is a likelihood that the Great Blue Heron forages along the foreshore, as there is a large rookery on the Tsawwassen Bluffs, west of the Site. This bird is designated Special Concern under SARA.

Two raptor species may inhabit the Site at times, to be confirmed through field investigations:

- Barn Owl – Special Concern
- Peregrine Falcon – Special Concern

12. Potential Changes to the Environment that Could Occur on Federal Land

The Project will not affect federal lands.

13. Preliminary Assessment of Cumulative Effects

The provincial EAC Application and federal EA Submission will include an assessment of cumulative effects of the Delta Grinding Facility in combination with past, present, and reasonably foreseeable projects with potentially overlapping effects pathways. It is anticipated that residual effects of the Project (i.e., effects that cannot be fully mitigated) may be assessed in combination with those of the existing Delta Cement Plant and marine terminal, the FortisBC Tilbury LNG Liquefaction Plant, and other industrial operations on Tilbury Island. Any residual effects of marine shipping would be assessed in combination with industrial operations beyond Tilbury Island.

As the Project is to be constructed on a brownfield site and within an industrial area, and as any harmful effects on fish and fish habitat would be addressed in a *Fisheries Act* Authorization, it is anticipated that residual operational effects to be included in a cumulative assessment will likely be limited to effects of plant operations and marine shipping on:

- Atmosphere (greenhouse gas emissions and air quality)
- Marine Mammals
- Land and Marine Resource Use

14. Potential Changes to the Environment of Transboundary Lands

The Project will not affect transboundary lands. As the Facility is to be located approximately 16 km north of the Canada-USA border, no discharges to water or emissions to air are likely to extend outside BC or Canada, apart from greenhouse-gas (GHG) emissions that are managed regionally. Movement of ships through international waters is not considered to be a transboundary effect of the Project.

15. Indigenous Interests

“Aboriginal Interests” are defined by the EAO as “asserted or proven Aboriginal Rights, including Aboriginal Title, and Treaty rights that require consultation, and if appropriate, accommodation”. Examples include hunting, fishing and gathering”. Assessment of effects on Aboriginal or Indigenous Interests will include but not be limited to subsection 5(1)(c) of CEAA 2012, “current use of lands and resources for traditional purposes”.

Current use of the land portion of the Site for Aboriginal interests in the Project Area is restricted by industrial or agricultural activities on Tilbury Island and the southern portion of Lulu Island. While current commercial and public navigation in the Project Area restricts marine use for traditional purposes, Indigenous groups participate in domestic and Food, Social or Ceremonial (FSC) fisheries in the lower Fraser River for all five species of Pacific Salmon (Chinook, sockeye, chum, coho, and pink), primarily using drift nets (DFO 2018).

A summary description of asserted Aboriginal interest areas and activities for the Indigenous Group identified in Table 1-3 is presented below. Lehigh Hanson Materials Limited will work with these groups to identify current traditional or contemporary use activities within the Project Area.

Cowichan Tribes

The Cowichan Tribes are a member of the Hul'qumi'num Treaty Group (HTG) for the exclusive purpose of negotiating a modern-day treaty under the BC Treaty Process. The HTG asserts Aboriginal rights (including title) and governance through their traditional territory. The Cowichan Tribes is a descendant community of the historic Cowichan Nation (along with Halalt First Nation, Stz'uminus First Nation, Penelakut Tribe, and Lyackson First Nation). Core Cowichan Nation territory includes the watershed boundary of Cowichan Lake and Cowichan River, the watershed boundary of Chemainus River, the Southern Gulf Islands, and extends to the south arm of the Fraser River as far as Douglas Island.

HTG's Statement of Intent asserts the right to fish on marine or fishing territory that overlaps the Site. Cowichan Tribes asserted that their traditional territory encompasses the same territory as the HTG (Cowichan Tribes, n.d.), but also specifies uses in the Fraser River from the mouth to Yale. The asserted traditional fishing territory includes all waters of the Fraser River from Strait of Georgia to Sawmill Creek north of Yale. Cowichan Tribes states that a large and permanent year-round Cowichan Nation residence site called Tl'uqtinus was located on Lulu Island, which is on the north side of the south arm of the Fraser River opposite the Project site. Cowichan Tribes, along with Stz'uminus First Nation, Halalt First Nation, and Penelakut Tribe have filed a notice of civil claim in British Columbia Supreme Court for a declaration of Aboriginal title to the lands of Tl'uqtinus and a declaration of fishing rights along the entirety of the South arm of the Fraser River (Cowichan Tribes, pers. comm., 26 November 2018).

Halalt First Nation

Halalt First Nation is a descendant community of the historic Cowichan Nation (along with Stz'uminus First Nation, Penelakut Tribe, Cowichan Tribes, and Lyackson First Nation). Core Cowichan Nation territory includes the south arm of the Fraser River as far as Douglas Island. Further, Halalt First Nation is part of the Hul'qumi'num Treaty Group (HTG); the HTG asserts Aboriginal Rights and governance through their traditional territory as seen in the HTG Statement of Intent Map, which overlaps the Project Site.

Halalt First Nation asserts that a large and permanent year-round Cowichan Nation residence site called Tl'uqtinus was located on Lulu Island, which is on the north side of the south arm of the Fraser River opposite the Project site.

Halalt First Nation, alongside Cowichan Tribes, Penelakut Tribe, and Stz'uminus First Nation, has filed a notice of civil claim in British Columbia Supreme Court for a declaration of Aboriginal title to the lands of Tl'uqtinus and a declaration of fishing rights along the entirety of the South arm of the Fraser River. Halalt First Nation has asserted a Right to Fish in the South Arm of the Fraser River, specifically within the project area. Halalt First Nation, as part of the Cowichan Nation Alliance, is party to a Declaration for Reconciliation for the Tl'uqtinus lands outlining the intent to recover the village site lands and re-establish permanent residence and river access at that site. The Declaration further outlines the reestablishment of cultural practices (namely, fishing and harvesting) and the realization of

socioeconomic benefits that are compatible with re-establishing residence and practices at the village site (Halalt First Nation pers. Comm., 5 December 2018).

Katzie First Nation

Katzie First Nation asserts their Aboriginal rights, including the right to resources within Katzie's traditional territory (BCTC, 1994a). Their traditional territory overlaps the Site, encompassing Kirkland Island at the mouth of the Fraser River up to the north end of Pitt Lake, and runs through Delta, Surrey, White Rock, Langley, New Westminster, west of New Westminster to Marpole Avenue in Vancouver, and Maple Ridge (BCTC, 1994a).

Kwantlen First Nation

Kwantlen First Nation asserts Aboriginal Interests within their traditional territory, which overlaps the north end of Tilbury Island (FCRSA 2016a). Kwantlen First Nation's traditional territory extends from Richmond and New Westminster in the west, to Surrey and Langley in the south, east to Mission, and to the northernmost reaches of Stave Lake (Kwantlen FN, 2018). Kwantlen was identified by Fisheries and Oceans Canada as a Nation who fish in segments of the Fraser River between the Port Mann Bridge and Mission (DFO 2014).

Kwikwetlem First Nation

Kwikwetlem First Nation asserts title, jurisdiction, and stewardship over their traditional territory, which centers on the confluence of the lower Coquitlam and Fraser Rivers. The most western point of Kwikwetlem First Nation's territory is to the east of Annacis Island and encompasses the eastern portion of New Westminster and parts of Surrey, extending north to include Coquitlam Lake (JFK Law, 2016). Kwikwetlem First Nation fishes from Douglas Island to the Pattullo Bridge. Fishing effort and species caught are reported to Fisheries and Oceans Canada by the band (2016).

Lake Cowichan First Nation

Lake Cowichan First Nation's asserted traditional territory encompasses Lake Cowichan and the western portion of the Cowichan River (Lake Cowichan FN, 2013). Lake Cowichan is a member of the Hul'qumi'num Treaty Group (HTG).

Lyackson First Nation

Lyackson First Nation's asserted territory is Le'eyqsun (Valdes Island), located in the Strait of Georgia and directly west from the mouth of the Fraser River (Lyackson, 2018). Lyackson also asserts the areas of Tl'uqtinus (Roberts Bank and the South Arm of the Fraser) and the Strait of Georgia within the Salish Sea (Written Submissions of Lyackson First Nation, 2016). Lyackson is a member of the Hul'qumi'num Treaty Group (HTG).

Métis Nation British Columbia

Métis Nation British Columbia represents almost 18,000 provincially registered Métis Citizens in British Columbia. The six chartered communities in the lower mainland region are North Fraser Métis Association (located in New Westminster), Nova Métis Heritage Association (located in Surrey), Waceyá Métis Society, Golden Ears Métis Society (located in Maple Ridge), Fraser Valley Métis Association (located in Chilliwack), and Chilliwack Métis Association (located in Chilliwack). There are three chartered communities on south Vancouver Island: Mid-Island Métis Nation Association, Cowichan Valley Métis Association, and The Métis Nation of Greater Victoria Association (Métis Nation British Columbia, 2018).

Musqueam Indian Band

As defined in the Musqueam Declaration, June 10, 1976, Musqueam's asserted traditional core territory (or Musqueam Area of Intent), encompasses the lands of Vancouver, West Vancouver, North Vancouver, New

Westminster, Burnaby, Delta, Surrey, and Richmond, and the waters of the Fraser River and Roberts Bank area, all the waters of the Fraser River Delta, and northwards to include Burrard Inlet and Indian Arm, and into the Salish Sea (Musqueam 2011). According to oral traditions, the Musqueam traveled up the Fraser River as far as Hope during salmon fishing season (Suttles 1998). Historical habitation includes but is not limited to sites located at Marpole, Sea Island, Steveston, Brownsville, Wreck Beach, Jericho Beach, Lumberman's Arch, and near the mouth of the Capilano and Seymour rivers. In addition, numerous seasonal locations allowed for access to resources throughout the lower Fraser River region (Musqueam Band Council 1984). Musqueam Indian Band members have a legally established Aboriginal right to fish for food, social and ceremonial purposes in the area of Canoe Pass on the South Arm of the Fraser River (SCC 1990; also described therein as the "waters of Ladner Reach and Canoe Passage"). Musqueam also asserts a right to fish throughout their traditional territory, a broader area that extends from the north shore of Burrard Inlet to the south shore of the main channel of the Fraser River, including waters of the three channels through which the Fraser River reaches the ocean (SCC 1990). This area includes, and is not limited to, all waters of the Fraser River that flow downstream of the Port Mann Bridge to the Strait of Georgia (EAO and VFPA [previously Port Metro Vancouver] 2012). Musqueam 4, located at Canoe Pass, is the closest reserve to the Site, approximately 10.1 km away.

Penelakut Tribe

Penelakut Tribe's asserted territory is located in the southern Gulf Islands and includes Penelakut Island, Tsussie, Tent Island, and Galiano Island (FNMHF, 2018). Penelakut is a member of the Hul'qumi'num Treaty Group (HTG).

Seabird Island Band

Seabird Island Band resides on Seabird Island east of Agassiz and is a member of the Stó:lō Tribal Council (AANDC, 2017). Seabird Island Band was identified by Fisheries and Oceans Canada as a Nation who fish in areas between Mission and the confluence of the Fraser River with Sawmill Creek (DFO 2014).

Semiahmoo First Nation

The Semiahmoo First Nation's main community and offices are located on the Semiahmoo Reserve which is between the boundary of White Rock, British Columbia and the Canada-United States boundary and Peace Arch Provincial Park (MOT, 2006).

Stz'uminus First Nation

The Stz'uminus First Nation is a Coast Salish Indigenous group whose ancestors have lived around the Salish Sea for thousands of years and have traditionally lived in permanent villages including those of what is known today as Kulleet Bay, Sibell Bay (or Shell Beach), the Chemainus River, and the South Arm of the lower Fraser River. The Stz'uminus First Nation is a descendant community of the historic Cowichan Nation (along with Cowichan Tribes, Halalt First Nation, Penelakut Tribe, and Lyackson First Nation). Stz'uminus First Nation asserts that a large and permanent year-round Cowichan Nation residence site called Tl'uq̓tinus was located on Lulu Island, which is on the north side of the south arm of the Fraser River opposite the Project site. The Stz'uminus First Nation, along with Cowichan Tribes, Halalt First Nation, and Penelakut Tribe, has filed a notice of civil claim in British Columbia Supreme Court for a declaration of Aboriginal title to the lands of Tl'uq̓tinus and a declaration of fishing rights along the entirety of the South arm of the Fraser River (Stz'uminus First Nation pers. Comm., 7 December 2018).

Tsawwassen First Nation

Tsawwassen First Nation has treaty rights relating to the Tsawwassen First Nation Final Agreement (TFNFA) signed in 2009. The TFNFA secures harvesting rights in areas located within Tsawwassen Territory, defined as the area of land and waters that extend from the southern Gulf Islands to the area around Pitt Lake (TFN et al. 2010), which encompasses the Fraser River and the location of the Site.

Tsleil-Waututh Nation

Tsleil-Waututh Nation asserted traditional territory encompasses part of the Fraser River (north of Tilbury Island) and north to Mamquam Lake (east of Whistler) (BCTC 1994b).

16. Potential Effects on Indigenous Peoples from Changes to the Environment

Project activities have the potential to affect the interests of Indigenous peoples through changes in the environment. Potential effects include:

- Health and socio-economic conditions
- Physical and cultural heritage, including any structure, site or thing that is of historical, archaeological, paleontological or architectural significance
- Current use of lands and resources for traditional or contemporary purposes

Table 16-1 summarizes a preliminary identification of potential effects on Indigenous peoples from the Project, or from cumulative effects with other projects.

Table 16-1 Potential Effects on Indigenous Peoples from Changes to the Environment

CEAA Subsection 5(1)(c) factor	Potential Effects
Health and socio-economic conditions	<ul style="list-style-type: none"> • Exposure to noise, light and air emissions • Biological agent exposure • Safety risks related to vessel traffic • Reduction in quantity of fish for an Aboriginal rights fishery • Revenue loss associated with potential disruption of commercial fishing activity • Employment and contracting opportunities • Reduction of migratory bird-hunting opportunities • Loss of sense of place and cultural continuity
Physical and cultural heritage, including any structure, site or thing that is of historical, archaeological, paleontological or architectural significance	<ul style="list-style-type: none"> • Changes to fisheries habitat • Changes to access to fishing for food, social, medicinal and ceremonial purposes • Environmental disturbance which may alter landscapes or waterways, and may result in visual impacts • Changes to heritage resources or structures of cultural importance that may alter the landscape, waterscape or viewscape, resulting in a changed sense of place • Effects to cultural continuity
Current use of lands and resources for contemporary and traditional purposes	<ul style="list-style-type: none"> • Changes to the accessibility of preferred sites for traditional purposes • Environmental changes which may alter the availability, quantity and quality of preferred resources for traditional purposes • Potential changes to the quality of a traditional use experience due to increased noise, light, perceived safety risk or altered sense of place • Avoidance or preferred sites for traditional purposes resulting in a loss of intergenerational knowledge transfer

17. Engagement and Consultation to Date

17.1 Identification of Indigenous Groups

Indigenous groups which have been identified for consultation are listed in Table 1-3 (Section 1.3.1) above.

17.2 Consultation Activities to Date

Consultation activities with all Indigenous groups listed in Section 1.3.1 were initiated in the summer of 2018. Project introduction letters were distributed, which included an introduction to Lehigh Hanson Materials Limited, an overview of the proposed Project, a description of the environmental assessment process, and other required approvals. Per request, KMZ and shapefiles were also provided. A draft Project Description was provided to all Indigenous groups in the table below for review and input. Based on the outcome of initial communications, Lehigh Hanson Materials Limited has continued sharing information and is meeting with Indigenous groups who have shown interest. Key points are summarized in Table 17-1 below.

Table 17-1 Consultation Activities to Date¹³

Indigenous Group (in alphabetical order)	Activity	Key Points
Cowichan Tribes	Letter, emails, phone calls, in-person meeting	<ul style="list-style-type: none"> Lehigh Hanson Materials Limited met with Cowichan Tribes (alongside other Cowichan Nation Alliance members) on September 21, 2018 to provide a general overview of the Project. Clarifications on plant operation and size of the marine terminal area was provided by Lehigh Hanson Materials Limited. Cowichan Tribes provided comments to Lehigh Hanson Materials Limited on the draft Project Description on November 26, 2018, including information pertaining to Cowichan Tribes territory.
Halalt First Nation	Letter, emails, phone calls, in-person meeting	<ul style="list-style-type: none"> Lehigh Hanson Materials Limited met with Halalt First Nation (alongside other Cowichan Nation Alliance members) on September 21, 2018, to provide a general overview of the Project. Clarifications on plant operation and size of the marine terminal area was provided by Lehigh Hanson Materials Limited. Lehigh Hanson Materials Limited provided information on project timelines and government processes to Halalt First Nation. Halalt First Nation provided comments to Lehigh Hanson Materials Limited on the draft Project Description on December 5, 2018, including information pertaining to Halalt First Nation territory.
Katzie First Nation	Letter, emails, phone calls	<ul style="list-style-type: none"> PRRO deferred Lehigh Hanson Materials Limited's referral to the Katzie First Nation. Katzie First Nation provided a letter Lehigh Hanson Materials Limited on September 25, 2018, that confirmed the Project is within Katzie traditional territory and provided requests regarding appropriate archaeological assessments prior to earthworks and indicated that a Katzie First Nation archaeological monitor may be required on-site during earthworks. Katzie First Nation requested that revegetation, planting requirements, and slope stabilization measures use native plant and grass species only. Katzie First Nation provided comments to Lehigh Hanson Materials Limited on the draft Project Description on November 9, 2018.
Kwantlen First Nation	Letter, emails, phone calls, in-person meeting	<ul style="list-style-type: none"> PRRO deferred Lehigh Hanson Materials Limited's referral to the Kwantlen First Nation. Lehigh Hanson Materials Limited met with Kwantlen First Nation on December 13, 2018, to provide a general overview of the project. Kwantlen First Nation discussed concerns relating to: <ul style="list-style-type: none"> regional studies; cumulative effects on Tilbury Island; and, resident orcas.
Kwikwetlem First Nation	Letter, emails,	<ul style="list-style-type: none"> Lehigh Hanson Materials Limited met with Kwikwetlem First Nation on November 15, 2018, to provide a general overview of the Project. Kwikwetlem First Nation

¹³ Reflects consultation between Lehigh and Indigenous Group from June 2018 to December 2018.

Indigenous Group (in alphabetical order)	Activity	Key Points
	phone calls in-person meeting	had questions concerning project size and description, project schedule, and the EA process.
Lake Cowichan First Nation	Letter, emails, phone calls	<ul style="list-style-type: none"> Lehigh Hanson Materials Limited provided clarifications regarding specific Site information to Lake Cowichan First Nation. Lake Cowichan Nation indicated that they defer to Nation(s) whose title and governing authorities are directly affected by the project; however, should Lake Cowichan Nation identify greater interests in the project in the future, they retain the right to revise their assessment.
Lyackson First Nation	Letter, emails	<ul style="list-style-type: none"> No comments or concerns received from Lyackson First Nation to date Lehigh Hanson Materials Limited is engaging with Lyackson First Nation to determine whether they have an in the project
Musqueam Indian Band	Letter, emails, phone calls, in-person meeting	<ul style="list-style-type: none"> PRRO deferred Lehigh Hanson Materials Limited's referral to the Musqueam Indian Band. Lehigh Hanson Materials Limited met with Musqueam on September 25, 2018, to provide a general overview of the Project. Musqueam indicated they have established rights/interests that are legally asserted within the area of the Project. Musqueam discussed concerns relating to: <ul style="list-style-type: none"> impacts on Musqueam Rights and Interests; the sensitive and critical nature of the Site; and, inadequacy of the BC and Canada assessment process. Lehigh Hanson Materials Limited provided Musqueam the summary of studies conducted and anticipated for the Project. Lehigh Hanson Materials Limited followed up with clarifications regarding project size and description, capital costs, and links between the Project and other Lehigh Hanson Materials Limited permitting activities Musqueam inquired as to whether the Gilly's Quarry Mine is linked to the Project or has the potential to be linked to the Project in the Future. Lehigh Hanson Materials Limited clarified that Gilley's Quarry Mine will not have any link to the Project. Lehigh Hanson Materials Limited provided Musqueam with an estimate of marine traffic for the Project. Musqueam provided Lehigh Hanson Materials Limited with comments on the draft Project Description on December 7, 2018. Musqueam provided Lehigh Hanson Materials Limited with resources to use in preparation of draft Environmental Assessment materials.
Métis Nation of British Columbia		<ul style="list-style-type: none"> Lehigh Hanson Materials Limited is engaging with Métis Nation British Columbia to determine whether they have an interest in the project.
Penelakut Tribe	Letter, emails, meeting summary	<ul style="list-style-type: none"> No comments or concerns received from Penelakut Tribe to date Lehigh Hanson Materials Limited provided notes from a September 21, 2018 meeting with other Cowichan Nation Alliance members. Lehigh Hanson Materials Limited is engaging with Penelakut Tribe to determine whether they have an interest in the project.
Seabird Island Band	Letter, emails, phone calls	<ul style="list-style-type: none"> Lehigh Hanson Materials Limited has engaged with Seabird Island Band to determine whether they have an interest in the project. Seabird Island Band confirmed that the project does not fall in the core area of Seabird Island Band's traditional territory, and requested that they continue to receive information about the project. Seabird Island Band inquired about potential impacts to fisheries. Lehigh Hanson Materials Limited indicated that the proposed project includes a berth in the river and a marine shipping route. Seabird Island noted that they would review the water portions of the referral.
Semiahmoo First Nation	Letter, emails	<ul style="list-style-type: none"> No comments or concerns received from Semiahmoo First Nation to date Lehigh Hanson Materials Limited is engaging with Semiahmoo First Nation to determine whether they have an interest in the project
Stz'uminus First Nation	Letter, emails, phone calls, in-person meeting	<ul style="list-style-type: none"> Lehigh Hanson Materials Limited met with Stz'uminus First Nation (alongside other Cowichan Nation Alliance members) on September 21, 2018, to provide a general overview of the Project. Clarifications on plant operation and size of the marine terminal area was provided by Lehigh Hanson Materials Limited. Stz'uminus First Nation provided Lehigh Hanson Materials Limited with comments

Indigenous Group (in alphabetical order)	Activity	Key Points
Tsawwassen First Nation	Letter, emails, in-person meeting	<p>on the draft Project Description on December 7, 2018.</p> <ul style="list-style-type: none"> • PRRO deferred Lehigh Hanson Materials Limited's referral to the Tsawwassen First Nation. • Lehigh Hanson Materials Limited met with Tsawwassen First Nation on November 15, 2018 to provide a general overview of the Project. Tsawwassen First Nation inquired about the potential impacts to sturgeon and economic opportunity for Tsawwassen First Nation. They discussed concerns relating to: <ul style="list-style-type: none"> – possible impacts to fishing rights and migratory bird harvesting; – health of salmon and salmon habitat; – access; – cumulative effects; and, – heritage and archaeological considerations.
Tseil-Waututh Nation	Letter, emails, phone calls in-person meeting	<ul style="list-style-type: none"> • PRRO deferred Lehigh Hanson Materials Limited's referral to the Tseil-Waututh Nation. • Lehigh Hanson Materials Limited met with Tseil-Waututh Nation on October 25, 2018 to provide a general overview of the Project. Tseil-Waututh stated they need to ensure its values, title, rights, and interests are protected before a proposal can proceed in their territory, in accordance with their Stewardship Policy. Tseil-Waututh inquired on expected Project timelines.

In addition to the consultation activities to date listed above, archaeology permits to conduct an AOA were obtained from those Indigenous groups that have permit systems in place including, and not limited to, Musqueam and Tseil-Waututh.

17.3 Ongoing Engagement with Indigenous Groups

Lehigh Hanson Materials Limited seeks respectful and meaningful engagement with Indigenous groups that may be affected by the Project. An Indigenous Engagement and Consultation Plan will be developed in collaboration with Indigenous groups. The approach to Indigenous engagement may vary between Indigenous groups; however, Lehigh Hanson Materials Limited is guided by the following principles:

- Demonstrating respect for Aboriginal rights and developing a positive long-term relationship with Indigenous groups potentially affected by the Project
- Incorporating Indigenous groups' perspectives, interests and concerns into the environmental assessment (EA) and Project design
- Communicating Project information in a timely manner and making sure that Indigenous groups know how their input has been incorporated into the process

Lehigh Hanson Materials Limited is committed to sharing drafts of all regulatory submissions with Indigenous groups prior to formal submission to regulatory agencies.

A draft of the Project Description was shared with Indigenous groups and their feedback was incorporated into the final Project Description. Other draft documents that will be shared include, The Valued Component (VC) Rationale, Application Information Requirements (dAIR), technical study reports and aspects of the EAC Application will also be shared with Indigenous groups and their feedback sought and considered. Input from Indigenous groups will inform Lehigh Hanson Materials Limited's approach to its regulatory applications.

17.4 Governments, Public, and Other Parties

17.4.1 Stakeholders and Related Consultation Activities

Lehigh Hanson Materials Limited is committed to ongoing consultation with identified, interested and potentially affected stakeholders. Stakeholders are listed in Section 1.2.2 (Table 1-4).

17.4.2 Consultation to Date

On February 8, 2018, Lehigh Hanson Materials Limited attended a meeting with the CEA Agency and BC EAO to introduce Lehigh Hanson Materials Limited and the proposed Project.

Lehigh Hanson Materials Limited continues to actively engage with the City of Delta to discuss the Project permitting and the requirements to have the Site rezoned from I2, Heavy Industrial, to I7, Special Industrial, which includes manufacturing, processing, finishing, and storage of cement and other permitting requirements.

Lehigh Hanson Materials Limited attended a meeting Metro Vancouver on October 12, 2018, to discuss the requirement surrounding the modelling of potential air quality effects and the subsequent air quality permit.

17.4.3 Ongoing Consultation and Engagement with Governments, Public and Other Parties

Lehigh Hanson Materials Limited will seek to engage in meaningful dialogue with all interested parties throughout the EA Process, to this end, Lehigh Hanson Materials Limited will develop a Public Engagement Plan. The goal of engagement with interested parties is to:

- Develop a positive long-term relationship with stakeholders potentially affected by the Project
- Integrate input from stakeholders into the EA process, and Project design where practicable
- Communicate Project information in a timely fashion and demonstrate how the stakeholder's input has been incorporated into the EA process, Project design and/or inform future consultation efforts

To achieve these goals Lehigh Hanson Materials Limited will:

- Provide opportunities for stakeholders to learn more about the Project and discuss key topics of interest
- Launch a Project website that will provide Project information and Project updates, and also support a contacts database allowing direct communication to publicise opportunities such as open houses and Project updates
- Maintaining communication records, through meeting minutes and records
- Recording issues and concerns expressed by stakeholders, and responses by Lehigh Hanson Materials Limited

This Project Description will be shared with stakeholders via the BC EAO Project Information and Collaboration site (ePIC) website, and if applicable, the CEA Agency Canadian Environmental Assessment Registry. The draft AIR will also be shared with stakeholders and their feedback will be sought and considered.

17.4.4 Discussions with Other Jurisdictions

It is not anticipated at this time that there will be other jurisdictions that will have an interest in the Project that have not already been identified in previous sections.

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