

PROJECT AND ENVIRONMENTAL REVIEW REPORT

PER NO. 15-167 TSAWWASSEN EELGRASS PROJECT

Prepared for: Director, Environmental Programs

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PORT of VANCOUVER FRASER PORT AUTHORITY VANCOUVER PROJECT AND ENVIRONMENTAL REVIEW REPORT					
PER No.:	15-167				
Applicant:	Vancouver Fraser Port Authority (VFPA) Habitat Enhancement Program (HEP)				
Project:	Tsawwassen Eelgrass Project				
Project Location:	Southeast of BC Ferries Tsawwassen Ferry Terminal				
VFPA SID No.:	DEL034				
Land Use Designation:	Land Use Plan to be amended. Port Water proposed.				
Category of Review:	С				
Recommendation:	That PER No. 15-167 for Tsawwassen Eelgrass Project be approved.				

INTRODUCTION

The Vancouver Fraser Port Authority (VFPA), a federal port authority, manages lands under the purview of the Canada Marine Act, which imparts responsibilities for environmental protection. VFPA accordingly conducts project and environmental reviews of works and activities undertaken on these lands to ensure that the works and activities will not likely cause significant adverse environmental effects. This report documents VFPA's project and environmental review of PER No. 15-167: Tsawwassen Eelgrass Project (the Project) proposed by VFPA Habitat Enhancement Program (the Applicant).

This project and environmental review was carried out to address VFPA's responsibilities under the Canada Marine Act, and to meet the requirements of the Canadian Environmental Assessment Act, 2012 (CEAA 2012), as applicable. The proposed Project is not a CEAA 2012 "designated project" and an environmental assessment as described in CEAA 2012 is not required. However, VFPA authorization is required for the proposed Project to proceed and in such circumstances, where applicable, Section 67 of CEAA 2012 requires federal authorities to assure themselves that projects will not likely cause significant adverse environmental effects. This review provides that assurance. In addition, VFPA considers other interests, impacts and mitigations through the project and environmental review.

The project and environmental review considered the application along with supporting studies, assessments and consultations carried out or commissioned by the Applicant, as well as other information provided by the Applicant. In addition, this project and environmental review considered other information available to VFPA and other consultations carried out by VFPA. A full list of information sources germane to the review is provided in Appendix B.

This project and environmental review report is NOT a project authorization. It is a prerequisite to the issuance of a project permit (the Permit) and the conclusions described in this report require compliance with the conditions in the Permit.

2 PROJECT DESCRIPTION

VFPA Habitat Enhancement Program proposes to raise the elevation of two subtidal depressions and create eelgrass beds on Roberts Bank, south of the BC Ferries Tsawwassen Ferry Terminal, Delta, BC. The Project will convert two depressions, which were likely generated by historic dredging activities, into more productive fish habitat by creating two beds of suitable elevation and

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substrate for the establishment and persistence of eelgrass. A total estimated area of 42,600 m² of eelgrass beds will be created.

The Project includes:

- Constructing riprap perimeter berms at each of the two sites (sites 1 and 2)
- Installing navigation markers (four in total) at each end of both perimeter berms, adjacent to the recreational boating channel
- Placing fill material within the constructed berms
- Transplanting donor stock eelgrass after a suitable period of substrate settlement

Fill material will consist of sediments dredged from the Fraser River South Arm as part of VFPA's annual maintenance dredging program. Eelgrass will be installed most likely by divers utilizing selfcontained underwater breathing apparatus (SCUBA). Post-construction monitoring to assess the establishment and survival of planted eelgrass will be conducted in accordance with the Post-Construction Monitoring Plan (PCMP) developed with input and feedback from Fisheries and Oceans Canada (DFO).

A small portion of site 2 is located on lands not administered by VFPA. While this project and environmental review report describes all works and activities associated with the Project, the Applicant is solely responsible for obtaining any and all required permits, authorizations and approvals for activities proposed to be undertaken on lands not administered by VFPA.

2.1 Proposed Works and Activities

2.1.1 Berm Construction and Placement of Fill

- Two separate perimeter berms will be constructed adjacent to the southern edge of the recreational boating channel, followed by the placement of suitable fill material within the berms.
- The two sites will be approximately 42,600 m² in total area, consisting of 25,800 m² at site 1 and 16,800 m² at site 2.
- The perimeter berms will extend approximately 3 m above the existing seabed, with 4:1 side slopes to be constructed of suitable quarry run rock (along the outside of the berm) and quarry screenings (along the inside of the berm).
- A total of approximately 23,000 m³ of guarried rock materials is expected to be required for berm construction.
- Navigation markers (four in total) will be installed on the north side at each end of both perimeter berms. Navigation markers will consist of a 305 mm (12-inch) diameter steel pile and a two-sided hazard sign board.
- The existing elevations of the depressions (approximately -5.0 m to -6.0 m Chart Datum) will be raised to approximately -2.25 m Chart Datum at site 1 and -1.4 m Chart Datum at site 2.
- Approximately 135,000 m³ of fill is expected to be required for the Project. The sides of the resultant beds will be blended to match adjacent eelgrass beds.
- Fill will be dredged materials, sourced from the lower reaches of the South Arm of the Fraser River.
- The specific material placement methods will be determined following contractor selection. Dredged material may be discharged by opening the bottom doors of the hopper or by using high pressure pumps with hoses to discharge the material.
- A survey will be conducted to confirm the proper establishment of the beds and that design elevations have been achieved.

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2.1.2 Eelgrass Planting

- Following construction, stabilization, and final survey of the eelgrass beds, eelgrass from donor stock will be planted.
- Eelgrass donor material will be sourced from suitable adjacent beds using SCUBA divers.
- Removal of parent stocks will be limited to one shoot per m² for moderately dense beds and two shoots per m² for dense beds. Donor beds will be geo-referenced to ensure that future donor stocks are not collected from the same bed.
- Parent stock will be planted at densities of 8 to 10 shoots per m² between the months of April and September. Due to time requirements, plantings are anticipated to be undertaken in two separate but consecutive years (i.e., 2020 and 2021).

2.2 Construction Details

- Work will be undertaken using heavy equipment, with access for construction equipment and materials anticipated to be from the water, by barge, via the existing boating channel.
- While efforts will be made to undertake construction activities between 7 a.m. and 8 p.m. Monday to Saturday, the majority of the work (involving placement of rock and dredged material) will be dependent on the tides to prevent grounding of equipment and machinery, and to minimize loss of material. This may involve night work to take advantage of the
- The work is proposed to commence in late summer/early fall 2019 with an anticipated construction period of approximately four to six months. Planting of donor eelgrass stock is expected to occur during the following two summers (i.e., 2020 and 2021).

2.3 Project Context

- The Project is located within southern resident killer whale critical habitat. In consultation with DFO, the potential Project-related effects were determined to not result in changes in critical habitat features that affect the southern resident killer whale population (i.e., the Project will not alter the ability of individuals to carry out essential life functions when required, such as foraging, mating, resting, and socializing).
- The Project is bordered to the north by a 60 m wide recreational boating channel and surrounded by existing eelgrass meadows to the south and east. The recreational boating channel was originally a dredge borrow area during construction of the Tsawwassen Ferry Causeway, but is currently maintained by natural scour processes and human uses.
- The sites proposed for conversion to eelgrass habitat were likely eelgrass beds prior to disturbance in the 1960s. Two eelgrass beds created as compensation habitat by the British Columbia Transmission Corporation in 2008, located in close proximity to the Project, have been successful.

3 VANCOUVER FRASER PORT AUTHORITY INTERNAL REVIEWS

The following VFPA departments have reviewed the application and have the following project considerations.

3.1 Planning

Planning has reviewed the application and has the following land use comments.

Planning supports the recommendation to approve the Project subject to adherence to the listed project and environmental conditions in the Permit.

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3.1.1 Land Use Designation

VFPA has received supplementary letters patent to add the BC Ferries licence area to VFPA's Letters Patent. As required by the Canada Marine Act, the portion of the sites located on these lands will be added to VFPA's Land Use Plan and will be given a land use designation by way of a formal amendment to the Plan in 2018. In the interim, a temporary land use designation will be assigned that is consistent with the designation applied by the former authority having jurisdiction over the sites.

The lands added to VFPA's Letters Patent, roughly 90% of the Project area, were previously located within the Corporation of Delta in an area designated as "Water" in the Corporation of Delta's Official Community Plan (OCP). The "Water" designation is being adopted as VFPA's interim land use designation for these lands. The proposed use of the sites for habitat conservation conforms to the designation of "Port Water" in Vancouver Fraser Port Authority's Land Use Plan.

3.2 Engineering

Engineering has reviewed the application and requires the Applicant to submit the following:

- Signed and sealed drawings; and,
- Record drawings.

These are reflected in Conditions No. 13 and 35 in the Permit.

Engineering supports the recommendation to approve the Project subject to adherence to the listed project and environmental conditions in the Permit.

3.3 Marine Operations

The Project involves the use of barge-mounted equipment.

Marine Operations has reviewed the application and requires the Applicant to adhere to the following:

- A Notice to Shipping ("NOTSHIP") shall be issued to advise the marine community of potential hazards associated with the Project.
- Vessels and equipment shall be appropriately lit and positioned so as not to impede navigation.

These are reflected in Conditions No. 15 and 33 in the Permit.

Marine Operations supports the recommendation to approve the Project subject to adherence to the listed project and environmental conditions in the Permit.

3.4 Environmental Programs

The review of the proposed project by Environmental Programs is reflected in Section 7, **Environmental Review**

STAKEHOLDER CONSULTATION

The proposed Project was assessed to have potential impacts to stakeholders and the local community and consultation activities were determined to be required. The following sections describe the stakeholder and public consultation activities undertaken by the Applicant and VFPA as part of the project and environmental review.

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4.1 Municipal Consultation

The proposed Project was assessed by Planning to have potential impacts to municipal interests. A referral letter was sent to the Corporation of Delta on March 22, 2017 notifying them of the proposed Project. In a letter dated March 28, 2017, the Corporation of Delta expressed continued interest in and general support for the overall Habitat Enhancement Program and the Project.

4.2 Federal and Provincial Agency Referrals

Information on the Project was submitted to the following agencies for review and comment:

- On July 31, 2015, the Applicant submitted a request to the BC Environmental Assessment Office (BC EAO) to exempt the proposed Project under Section 10(1)(b) of the BC Environmental Assessment Act (BCEAA). On September 19, 2016, the BC EAO issued an exemption letter indicating that the Project may proceed without an environmental assessment under BCEAA provided that the Project is constructed in accordance with Schedule A and Schedule B of the Section 10(1)(b) Order received for the Project. On May 2, 2017, the Applicant provided BC EAO with notification of Project design changes which had occurred since the July 2015 submittal, specifically, a reduction in the spatial scale.
- The Applicant provided Project information to Environment and Climate Canada (ECCC) to determine if the placement of dredged material associated with the Project could be exempt from a Disposal at Sea Permit. On February 15, 2016, ECCC determined that the proposed re-use of dredged material was considered placement for purposes other than disposal and, as such, ECCC did not have a regulatory role. In addition, ECCC provided the Applicant advice it had received from Fisheries and Oceans Canada (DFO) regarding the movement of sediment within and adjacent to southern resident killer whale critical habitat, which was incorporated into Project mitigation measures.
- The Applicant provided Project information to the DFO Species at Risk Act (SARA) division with respect to potential effects on southern resident killer whales. In June 2015, DFO SARA provided advice to avoid effects, which was incorporated into Project mitigation measures.
- In accordance with DFO's Fisheries Protection Program Guidance, the Applicant completed a qualified environmental professional (QEP) assisted assessment to determine the potential effects of the Project on fish and fish habitat. The assessment indicated that the Project is not likely to result in serious harm to fish and that an Authorization under the Fisheries Act would not be required.
- The Applicant submitted a Notice of Works to Transport Canada's Navigation Protection Program. On May 1, 2017, Transport Canada confirmed that no Approvals under the Navigation Protection Act are required.
- VFPA referred plans for the proposed navigation markers to Canadian Coast Guard (CCG) Aids to Navigation. On April 19, 2017, CCG Aids to Navigation indicated they supported the design.

4.3 User Group Consultation

The proposed Project was assessed by Planning to have potential impacts to adjacent operations and recreational users. A referral letter was sent to the following groups on March 28, 2017 notifying them of the proposed Project:

- BC Sailing
- BC Ferries
- Sport Fishing Institute of BC

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- Boating BC
- Tsawwassen Beach Residents Association

The Tsawwassen Beach Residents Association expressed support for the Project in an April 10, 2017 email. Boating BC expressed concern about the future use of the Project area by boaters and requested additional information, which was provided by email on April 13, 2017. In a letter dated April 25, 2017, BC Ferries expressed support for the Project.

No other comments from user groups were received.

VFPA has reviewed the record of consultation and related documents and is of the view that the Project has adequately addressed the concerns raised during stakeholder consultation.

5 PUBLIC CONSULTATION

The proposed Project was assessed by VFPA to have potential impacts on community interests in the surrounding area during construction and upon completion. These include potential impacts such as the visibility of the proposed works.

The Applicant was required to conduct public consultation activities with a 15 business day (19 day) public comment period and to host a public information session. The objective of the public consultation was to solicit feedback from the public on the proposed Project, the completed technical studies, and proposed mitigations during construction and operation.

The Applicant carried out public consultation activities on the proposed Project in March and April 2017. This included a public information session held on April 5, 2017. VFPA reviewed the record of public consultation, including all comments received and the Applicant's response to comments, in determining mitigation requirements and in making a decision on the proposed Project.

5.1 Summary of Public Consultation

A description of the Project and all supporting materials were posted to VFPA's website in March 2017 for public review and comment. Details of the Applicant's public information session were posted on VFPA's website and links were provided to the Applicant's website for more information.

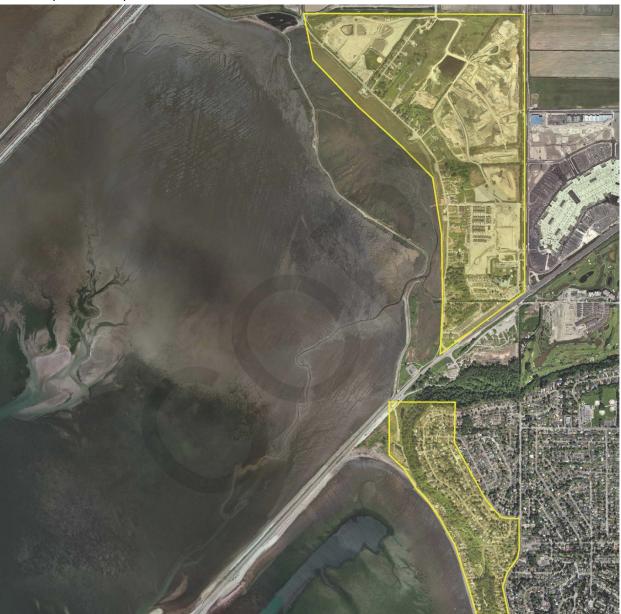
Public consultation and engagement activities were conducted by the Applicant from March 20 to April 5, 2017 and included the following:

- Hosting a public information session on April 5, 2017 in Delta;
- Developing a discussion guide with key information about the Project;
- Mailing notification postcards to residents and businesses in Delta;
- Putting up posters along the BC Ferries causeway and adjacent boat ramp, as well as various locations along the shore and at the Port of Vancouver Delta Community Office;
- Placing an advertisement in the *Delta Optimist* regarding the public consultation period;
- Creating an online feedback form (PortTalk) to collect community input;
- Providing an email address and telephone number for inquiries and submissions;
- Making follow-up phone calls to stakeholders:
- Sending an email to stakeholders on the mailing list;
- Posting all Project-related materials on-line on the Applicant's website; and
- Sending seven tweets from @PortVancouver and a targeted Facebook ad (@Portofvancouver).

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The Applicant mailed notification postcards to residents and businesses in the area shown below on March 20, 2017, with information about the proposed Project and the public information session. Due to the potential visibility of the proposed works and high community interest, the notification area was beyond the typical Category C project requirement of a four block (500 m) radius from the proposed Project site and is consistent with other recent projects in the community. The area of notification included approximately 2,500 residents and businesses in the community.

Mail drop area for public notification



The Applicant's public consultation period was from March 20 to April 7, 2017 and the public was able to provide feedback via telephone, mail, and online. A dedicated webpage for the proposed Project was created by the Applicant to inform the public and accept online feedback (http://porttalk.ca/HabitatEnhancement/news_feed/proposed-tsawwassen-eelgrass-project).

The public information session was held at the Port of Vancouver Delta Community Office located at 5225A Ladner Trunk Road (Trenant Park Shopping Centre) in Delta on April 5, 2017 between 6:00 p.m. and 9:00 p.m. The public information session provided information about the Project scope, design, environmental and other technical assessments, construction activities and construction management. Hard copies of the feedback form were also available. The Applicant had project and technical consultants available to answer questions from the public. Staff from VFPA also attended.

During the public consultation period, public participation was as follows:

- 22 people attended the public information session;
- 2 people completed the feedback form;

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- 3 comments were submitted by the public via email and letter; and
- VFPA received 0 comments via email, letter and phone call from the public.

Comments from the public were mainly related to environmental effects, project design and monitoring, educational opportunities, recreational boating, wildlife habitat and general support for the Project.

The Applicant provided a detailed summary of the public consultation process and the comments received in an Engagement Summary Report dated May 2017. The Applicant also provided a Consideration Report dated May 2017, with the Applicant's formal responses to public comments received, by theme. VFPA has reviewed the documents and found them both to be acceptable. These reports were posted on VFPA and the Applicant's websites in May 2017.

Below is a table summarizing issues raised by the public and how they were considered by VFPA as part of the permit review.

Issue	Mitigations and Permit Conditions	Rationale
 Environment Question of the environmental benefits provided by eelgrass Why the proposed locations are good sites Concern that proposed transplanting would lead to greater amounts of dead eelgrass washing up on the beach Concern of sedimentation impacts from proposed works Impacts to salmon 	Condition No. 17 of the Permit requires the Applicant to submit an environmental protection plan (EPP) describing the mitigation measures that will be implemented during construction to avoid or reduce potential impacts.	 Eelgrass provides important habitat for a variety of fish and wildlife Proposed sites were selected because of their current relatively low habitat values Two other eelgrass beds created as compensation habitat by the British Columbia Transmission Corporation in 2008, located in close proximity to the Project, have been successful Dead leaves (detritus) are a food source for many food webs The Applicant indicated coastal engineers provided input into the Project design and that the Project is not anticipated to affect existing sedimentation processes The Applicant carried out a hydrodynamic analysis showing eelgrass beds will have minimal impacts on tidal currents in the existing channel
How proposed project will be monitored post-construction	Condition No. 36 of the Permit requires the Applicant to conduct post-construction monitoring in accordance with the Post-Construction Monitoring Plan to confirm the sites are functioning as intended.	The Applicant will carry out post- construction monitoring in accordance with their Post- Construction Monitoring Plan, developed with input from DFO.
Question of whether opportunities will exist for educational institutions to participate in proposed eelgrass transplanting	None required	Not part of VFPA's permitting review process.

Issue	Mitigations and Permit Conditions	Rationale
Potential impacts to recreational boaters	None required	 The Applicant has engaged with various stakeholders (Transport Canada, recreational boating community, Aboriginal groups) for input on design of marine markers and signage. Appropriate markers and signage to be installed, as required. VFPA Marine Operations has assessed that the proposed Project will result in minimal impacts to the navigational channel. Construction activities will be undertaken during the least-risk fisheries window and measures will be implemented to avoid impacting aquatic resources and harvesting.
Support for efforts to improve and protect wildlife habitat	Condition No. 17 of the Permit requires the Applicant to submit an environmental protection plan (EPP) describing the mitigation measures that will be implemented during construction to avoid or reduce potential environmental effects. Conditions No. 21 and 22 of the Permit require the Applicant to retain an environmental professional to monitor the Project during construction and provide weekly monitoring reports to VFPA.	 Proposed works aim to convert lower-value subtidal areas into higher-value eelgrass habitat. Applicant to implement mitigation measures during construction in accordance with the EPP and carry out post-construction monitoring.
General support for proposed Project	None required	 Applicant conducted a 15 business day consultation period, including hosting one public information session, and employed thorough notification methods using various mediums. Outside of VFPA's requirements, the Applicant also engaged with various stakeholders and received support.

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VFPA has reviewed the record of public consultation and, provided that the mitigation measures and conditions outlined in the table above are included in the Permit, is of the view that the Project has adequately addressed the concerns raised during public consultation.

6 ABORIGINAL CONSULTATION

Upon receipt of the accepted Project Application, VFPA reviewed the proposed Project and determined that Aboriginal consultation was required given the Project may have the potential to adversely impact Aboriginal or Treaty rights. This determination is recorded in the Pre-Consultation Report for Project Permit 15-167.

The Applicant, the VFPA Habitat Enhancement Program, led the Aboriginal consultation activities for the proposed Project. VFPA reviewed and considered the Applicant's record of consultation to ensure the duty to consult has been met.

The information below summarizes the Applicant's consultation.

6.1 Objectives

The Objectives of the Applicant's Aboriginal consultation process were to:

- Engage identified Aboriginal groups during project development to determine potential impacts of the proposed Project on their asserted or established Aboriginal rights;
- Provide opportunities for identified Aboriginal groups' involvement in project development activities such as field studies, as applicable;
- Provide updates and share information about project development activities as they become available:
- Work with identified Aboriginal groups to determine appropriate mitigation of Project impacts as appropriate;
- Explore opportunities for identified Aboriginal groups to share in the economic and social benefits of the Project, through avenues such as employment and training; and
- Provide information to the Project Team with respect to issues raised by identified Aboriginal groups and in the development of responses to enquiries.

6.2 Scope of Consultation

The Applicant identified the following groups as potentially being affected by the proposed Project:

- Tsawwassen First Nation
- Semiahmoo First Nation
- Tsleil-Waututh Nation
- Stz'uminus First Nation
- Lake Cowichan First Nation
- Lyackson First Nation
- Penelakut Tribe
 - o Hwlitsum First Nation
- Cowichan Tribes
- Halalt First Nation
- Sto: lo Nation
- Musqueam Indian Band

All Aboriginal groups listed above were consulted on the proposed Project.

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The Applicant also shared information regarding the Project with Squamish Nation to provide a thorough and holistic understanding of the Habitat Enhancement Program and its completed and proposed projects.

6.3 Overview of Consultation Activities

Upon receipt of the accepted Project Application, VFPA reviewed the proposed Project and determined that Aboriginal consultation was required given the Project may have the potential to adversely impact Aboriginal or Treaty rights.

6.3.1 Initial Referral

On December 16, 2014, the Applicant sent the Tsawwassen Eelgrass package to Aboriginal groups to introduce the Project. The package included a project overview, project renderings and project design drawings. The covering letter invited feedback and comments from Aboriginal groups.

6.3.2 Consultation and Communication Activities

From December 2014 until May 2017, the Applicant conducted the following consultation activities with Aboriginal groups:

- Presentations to staff or Chief and Council (Habitat Enhancement Program overview);
- Meetings with staff, Chief and Council and Elders;
- Emails and phone calls;
- Letters requesting review of project design/project updates;
- Field studies notification;
- Provision of Project-related materials and studies Existing Ecological Conditions report, Source Sediment Characterization Report, Project Overview document, Project update document, design drawings, rendering, and Eelgrass Workshop documents;
- Invitation to and participation in the Aboriginal Group Eelgrass Transplant Workshop on April 30, 2015; and
- Attendance to support Tsawwassen First Nation's community open house meeting.

6.3.3 Materials Shared

Throughout the course of the consultation process, the Applicant shared the following materials with Aboriginal groups:

- Presentation (Habitat Enhancement Program Phase 1 & 2 Projects 2013/2014);
- Letters requesting review of Project design/Project updates (December 2014, April 9 2015, June 1 2015, September 2016, March 2017);
- Field studies notification (August 2014, December 2014);
- Summary of Dive Reconnaissance and bathymetric survey (December 2014);
- Knowledge Sharing workshop Eelgrass transplantation focus (April 2015);
- Provision of Project-related materials & studies Existing Conditions Report, Project Overview document, Project update document, design drawings, rendering, fact sheet for Beneficial Use of Dredged Sediment, Source Sediment Characterization Report (December 2014, February 2015, June 2015, March 2016, March 2017);
- Request for input into traditional marsh plant list (May 2014);
- Request for permission to access Tsawwassen First Nation waterlot;
- Draft Project Agreement to Tsawwassen First Nation (Spring 2017); and
- Public Consultation Discussion Guide & Display Boards (April 2017).

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Documents were shared either in hard copy format at meetings, and/or provided via email and/or courier.

6.3.4 Letters of Support

Throughout the course of consultation, three Aboriginal groups issued letters of support for the proposed Project.

6.3.5 Project Agreement

A portion of the Project falls within District Lot 955, which is a provincial waterlot leased to Tsawwassen First Nation. The Applicant is working with TFN to sign a Project Agreement to allow VFPA to use the land for the Project. At the time of writing this report, the agreement is not yet complete.

6.4 Participation Funding

The Applicant offered and provided participation funding to Aboriginal groups on a case by case basis.

6.5 Overview of Issues Raised by Aboriginal Groups

The following table summarizes the issues raised by Aboriginal groups, the Applicant's response and/or mitigation and VFPA's consideration of those issues.

Issue	VFPA Considerations	Action Required
Biophysical Setting		
Aboriginal groups have emphasized the importance of eelgrass and of ensuring its protection through projects such as the Tsawwassen Eelgrass Project. Aboriginal groups have also identified the need to ensure the eelgrass introduced into the Project area is appropriately suited to the site.	The Applicant has engaged the services of an eelgrass transplant expert and will seek direction regarding the donor sites and transplant methodology.	None
Potential for sediment contamination	The Applicant provided a sediment quality report to Aboriginal groups.	None
Location of donor bed	As the Project advances and donor sites are selected, the Applicant will ensure Aboriginal groups are provided with information regarding the location, method of transplantation and donor site viability.	None
Source and method of placement sand	The Applicant explained that sand would be sourced from routine dredging of the Fraser River. Fill has been approved for use by Environment Canada through the Project's permitting process (i.e., no contaminants).	None

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Issue	VFPA Considerations	Action Required					
Invasive species management during construction	The Applicant recognizes the importance of effectively managing invasive species and will implement an invasive species management plan if required for the Project. This is not anticipated to be required as native eelgrass will be transplanted to the restored beds, and the invasive form of eelgrass does not survive at the elevations that are proposed for transplanting. Post-construction monitoring will occur to assess the establishment and survival of planted eelgrass. Any identified deficiencies and/or invasive species concerns will be addressed through appropriate management measures.	None					
Socio-economic conditions							
Interest in potential contracting opportunities related to construction of the Project	The Project procurement process has been developed to support Aboriginal participation in the construction of the Project. The Applicant is currently exploring opportunities for Aboriginal involvement in earthworks and planting components of the Project.	VFPA added the following condition (No. 7): The Applicant and their contractor(s) shall make available employment, training and contract opportunities relating to Project construction to qualified members and/or businesses of interested Aboriginal groups.					
Interest in training and employment opportunities	To date the Applicant has ensured all Habitat Enhancement Program projects have been undertaken with the involvement of Aboriginal businesses and First Nations employees. The Applicant has successfully provided First Nations training opportunities on all Habitat Enhancement Program projects and is committed to seeking opportunities to support Aboriginal businesses and communities on the proposed Project.	VFPA added the following Condition (No. 7): The Applicant and their contractor(s) shall make available employment, training and contract opportunities relating to Project construction to qualified members and/or businesses of interested Aboriginal groups.					
Current use of lands and resources for traditional purposes							

Issue	VFPA Considerations	Action Required
Potential closure of area to allow	The Applicant responded that no	None
eelgrass to settle	closure is anticipated.	
Potential impacts to marine	Construction activities will be	VFPA added the
harvesting during construction	undertaken in accordance with the	following Condition
	least-risk fisheries window and	(No. 18):
	measures will be employed to avoid	
	impacting marine resources and	Prior to submitting the
	harvesting. The Project Team will	Environmental
	continue to consult Aboriginal	Protection Plan to
	groups regarding the plans for	VFPA, the Applicant
	construction and any required	shall share a draft plan
	mitigation.	with Aboriginal
		groups, seek comments and
		incorporate feedback
		where appropriate.
Impacts to cultural and	Construction activities will be	VFPA added the
recreational use, including dock	coordinated and planned in	following Condition
and canoe channel during	consultation with Tsawwassen First	(No. 18):
construction	Nation to ensure that member use	
	of the Tsawwassen First Nation	Prior to submitting the
	waterlot and Project area is not	Environmental
	impeded.	Protection Plan to
	The Project Team will continue to	VFPA, the Applicant
	consult with Tsawwassen First	shall share a draft plan
	Nation and other Aboriginal groups	with Aboriginal
	regarding the plans for construction	groups, seek comments and
	and any required mitigation.	incorporate feedback,
		where appropriate.
Project markers and lighting	Mitigation measures outlined in the	None None
l reject mantere and ngg	Environmental Protection Plan will	
	be implemented during construction	
	to minimize potential impacts from	
	lighting during night works.	
Impacts to fish and crabs during	Construction activities will be	VFPA added the
construction	undertaken in accordance with the	following Condition
	least-risk fisheries window and	(No. 18):
	measures will be employed to avoid	
	impacting fish and crabs.	Prior to submitting the
	A crab salvage will be undertaken	Environmental
	prior to the occurrence of	Protection Plan to
	construction activities with the	VFPA, the Applicant shall share a draft plan
	potential to harm crabs, if required.	with Aboriginal
	The Project Team will continue to	groups, seek
	consult with Aboriginal groups	comments and
	regarding the plans for construction	incorporate feedback
	and any required mitigation.	where appropriate.

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Issue	VFPA Considerations	Action Required
Harvesting rights	Construction activities will be coordinated and planned in consultation with Tsawwassen First Nation to ensure that member use	VFPA added the following Condition (No. 18):
	of the Tsawwassen First Nation waterlot and Project area is not impeded. The Project Team will	Prior to submitting the Environmental Protection Plan to
	continue to consult with Tsawwassen First Nation and other	VFPA, the Applicant shall share a draft plan
	Aboriginal groups regarding the plans for construction and any required mitigation.	with Aboriginal groups, seek comments and
		incorporate feedback where appropriate.
Physical and cultural heritage, archaeological, paleontological	and any structure, site or thing that or architectural significance	t is of historical,
Potential impacts to	The Project is not anticipated to	None
archaeological/cultural heritage	impact archaeological resources.	
sites	The Applicant understands the importance to Aboriginal groups of protecting cultural heritage sites and, when required on other Habitat Enhancement projects, is committed to involving Aboriginal groups in archaeological monitoring.	
Participation by Aboriginal groups in archaeological monitoring	The Project is not anticipated to impact archaeological resources. The Applicant understands the importance to Aboriginal groups of protecting cultural heritage sites and, when required on other Habitat Enhancement projects, is committed to involving Aboriginal groups in archaeological monitoring.	None
	As there are no anticipated impacts to archaeological resources for this specific project, VFPA will not require archaeological monitoring.	

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Issue	VFPA Considerations	Action Required
Additional Issues		
Interest in the methodology related to the creation of eelgrass beds and in how the Applicant will ensure the survival of newly created eelgrass areas should the Project advance.	In April 2015, the Applicant facilitated a Knowledge Sharing Workshop focused on eelgrass transplantation and tidal marsh construction. The Applicant invited all Aboriginal groups to participate in the workshop and elicited input on eelgrass-related topics of interest during the workshop planning phase. In an effort to address questions related to methodology and survival of newly created eelgrass beds, the Applicant engaged an eelgrass transplant expert to develop and present information at the workshop.	None
Management of project	The Applicant confirmed that the project will be managed under VFPA's Habitat Banking Agreement with DFO.	None
DFO position on Habitat Enhancement Program	DFO responded directly to Aboriginal groups regarding these concerns.	None
Role of DFO in broader Habitat Enhancement Program, especially as it relates to the determination of banking credit and the use of projects for offsetting large infrastructure projects. Desire for net environmental gain, instead of current 1:1 debit/credit assessment system	DFO responded directly to Aboriginal groups regarding these concerns.	None
Water lease rights in Project area	At the time of the workshop where the issue was raised, both BC Ferries and Tsawwassen First Nation held water lease rights in the Project area. Since the workshop, the Applicant has signed an agreement with BC Ferries. An agreement with Tsawwassen First Nation is nearing completion.	VFPA added the following Condition (No. 16): The Applicant shall complete a Project Agreement with Tsawwassen First Nation regarding use of Tsawwassen First Nation waterlot prior to construction activities within the Tsawwassen First Nation waterlot.

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Issue	VFPA Considerations	Action Required
Maintenance and monitoring responsibilities	The Applicant is responsible for post-construction monitoring of the eelgrass sites following construction.	None
	Post-construction monitoring will occur to assess the establishment and survival of planted eelgrass. Any identified deficiencies and/or invasive species concerns will be addressed through appropriate management measures.	
General support for the Project for enhancement of fish habitat	None	None
Consultation/Process Issues		
Participation funding required to meaningfully engage in the review of the Project	The Applicant made participation funding available to Aboriginal groups to support the review of Project-related materials and to facilitate participation in consultation activities.	None
Willingness to work with VFPA provided there is an agreement between VFPA and TFN to do the Project, including a discussion regarding cost, and that TFN would support the Application.	The Applicant continues to work with Tsawwassen First Nation to complete the Project Agreement. VFPA is encouraged by the work done to date with Tsawwassen First Nation and recognizes Tsawwassen First Nation as an important partner in the Habitat Enhancement Program.	VFPA added the following Condition (No. 16): The Applicant shall complete a Project Agreement with Tsawwassen First Nation regarding use of Tsawwassen First Nation waterlot prior to construction activities within the Tsawwassen First Nation waterlot.

6.6 Conclusion

The Applicant has made a meaningful effort to consult with all potentially affected Aboriginal groups. Following the implementation of mitigation measures, including permit conditions, adverse impacts to Aboriginal rights, Treaty rights and factors set out in subsection 5(1)(c) of CEAA 2012 are not expected. Based on the record of consultation, VFPA is of the view that the duty to consult has been met.

ENVIRONMENTAL REVIEW

To fulfill its responsibilities under the Canada Marine Act and CEAA 2012, VFPA must make a determination on the potential environmental effects of a proposed project on VFPA managed lands and waters prior to authorizing those works to proceed. To make that determination, VFPA considers the residual adverse effects of the project, that is, the effects after mitigation measures

have been taken into account. In addition, should a project be approved, VFPA includes additional environmental conditions in the project permit to further reduce the identified potential impacts.

This section of the project and environmental review report summarizes the environmental review conducted for the Tsawwassen Eelgrass Project, and provides the environmental review decision in Section 7.4. The environmental review also considered the information provided in the previous sections of this report.

7.1 Scope of Environmental Review

The environmental review includes consideration of the potential environmental effects of the proposed Project, taking into account mitigation measures to avoid or reduce those effects. This review considered the Project components and physical activities described in Section 2. This assessment includes the following Project components and physical activities:

- Construction of two eelgrass beds, including the placement of rock material for riprap perimeter berms and placement of fill (dredged material).
- Eelgrass transplanting, including removal from donor beds and planting at the sites.

The source of the dredged material to be used as fill will be the main navigation channel of the Fraser River. Dredging of the main navigation channel was previously authorized under VFPA Review Number 12-026, which is valid until February 28, 2018. An application to renew the maintenance dredging permit is being reviewed under PER 17-300. Dredging is therefore not included within the scope of this environmental review. If the dredging permit is not renewed, the Applicant will need to update VFPA on how they will obtain material and a permit amendment may be required.

Additional Project information pertinent to the environmental review includes the following:

- A dive assessment conducted on April 12, 2013 indicated that the biophysical attributes at site 1 are relatively homogenous, consisting of sandy silt covered in most areas by a thin layer of microalgae (diatoms). Biophysical attributes at site 2 were fairly homogenous, consisting of sandy silt with accumulations of drift macroalgae and eelgrass detritus.
- A Qualified Environmental Professional (QEP) assisted assessment of serious harm to fish noted that existing fish habitat values at the sites consist of un-vegetated sediment and are considered poor. The Project was determined to not result in residual adverse effects on habitat and was expected to result in a net increase in local productivity. Fish mortality during construction was determined to be avoidable through the application of appropriate, well-established best management practices.
- A summary of potential effects and proposed mitigation measures included in the Project Description submitted as part of the Project application identified specific mitigation measures to be implemented, including timing activities to occur within least risk work windows for aquatic species, monitoring by a qualified environmental monitor, implementing spill prevention planning, and development of a Project-specific Environmental Protection Plan (EPP) by the contractor.
- A source sediment characterization of dredged material from the Fraser River South Arm determined that the dredged material intended to be used as fill is of suitable quality to support eelgrass. In addition, Environment and Climate Change Canada confirmed that the proposed dredged sediment meets the disposal at sea action levels for contaminants and would not constitute marine pollution.

The temporal scope of the review includes Project construction, transplanting and monitoring.

The environmental review considered potential adverse environmental and social effects of the project on 14 environmental components (e.g., species with special status, aquatic species and their habitat, recreational interests, etc.) and from Accidents and Malfunctions. These environmental components are aspects of the biophysical and socio-economic environment considered to have ecological, economic, social, cultural, archaeological, or historical importance.

Section 7.2 summarizes the results of the review.

7.2 Environmental Effects Summary

The following table summarizes the potential environmental effects the project could have on the identified environmental components.

Environmental Component Potential Adverse Effects?		rse	Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects		Significant Residual Adverse Effects?	
	Yes	No		Yes	No	
Air quality	•		The Project is not expected to increase emissions. Mitigation measures outlined in the Environmental Protection Plan will be implemented during construction to avoid unnecessary idling.		•	
			With mitigation in place, residual adverse effects are predicted to be not significant.			
Lighting	-		No new lighting will be installed as part of the Project. Mitigation measures outlined in the Environmental Protection Plan will be implemented during construction to minimize potential impacts from lighting during night works. With mitigation in place, residual adverse effects from Project-related lighting are predicted to be not significant.		•	
Noise	-		The Project is located adjacent to the Tsawwassen Ferry Terminal and causeway, more than 1,800 m from residences and other noise sensitive areas. After Project completion, no noise sources will remain on site. Project-related noise during construction is not anticipated to be significant.		•	
Soils			The Project is not expected to affect soils.			

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Environmental Component Potential Adverse Effects?		rse	Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects		Significant Residual Adverse Effects?	
	Yes	No		Yes	No	
Sediments			There is potential for spills or suspension of sediments during fill placement to affect sediment quality. The dredged material to be used as fill was determined to meet the necessary sediment quality criteria for use in local projects. Mitigation measures outlined in the Environmental Protection Plan will be implemented during construction to mitigate off-site transport of sediment. With mitigation in place, residual adverse effects are not anticipated. If they do occur, they are predicted to be not significant.			
Ground water			The Project is not expected to affect groundwater.			
Surface water and water bodies	•		Construction-related activities such as rock and fill placement have the potential to generate suspended sediments. Spills or equipment leaks may potentially affect surface water quality. Mitigation measures outlined in the Environmental Protection Plan will be implemented during construction to reduce potential adverse environmental effects. With mitigation in place, residual adverse effects are			
			not anticipated. If they do occur, they are predicted to be not significant.			

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Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Species/habitat with special status			The project will take place within southern resident killer whale critical habitat. Placement of material and fill to construct the eelgrass beds has potential to affect killer whales (and other marine mammals) by increasing their exposure to polychlorinated biphenyls (PCBs) from Fraser River dredge material.		
			The results of sediment chemistry analysis indicates that the proposed fill material is unlikely to alter PCB exposure to southern resident killer whales.		
			Mitigation measures, provided as advice from DFO SARA, will be employed to avoid potential effects on killer whales and other marine mammals. This includes measures to reduce potential effects from sedimentation and a requirement to stop work (as needed) if killer whales are observed within a 1,000 m safety zone surrounding the sites during placement of material or fill.		•
			With mitigation in place, residual adverse effects are not anticipated.		
Terrestrial resources (e.g., vegetation, wildlife, etc.)			The Project is not expected to affect terrestrial resources.		•
Wetlands			The Project is not expected to affect wetlands.		
Aquatic resources (e.g., aquatic plants, fish and fish habitat, waterbirds, marine mammals, etc.)	•		Project-related activities have the potential to disturb aquatic species and fish habitat (e.g., through induced turbidity and other changes to water quality, sensory disturbance to marine mammals, disruption to migrating fish populations, and accidental spills). Mitigation measures outlined in the Environmental Protection Plan will be implemented to avoid potential adverse, environmental effects. With mitigation in place, residual adverse effects are not anticipated. If they do occur, they are predicted to be not significant.		•
Archaeological, physical, and cultural heritage resources			The Project is not anticipated to affect archaeological, physical, and cultural heritage resources.		•

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Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Current Use of Lands and Resources for Traditional Purposes of Aboriginal Peoples			The Project has the potential to impact the current use of lands and resources for traditional purposes, due to the construction activities creating an obstruction on the land, and potential biophysical impacts on the aquatic environment. Activities include canoeing, harvesting marine resources and fishing. Mitigation measures proposed include the creation of an Environmental Protection Plan, the scheduling of works to avoid the fisheries sensitive window and the undertaking of a crab salvage program, if required. The Applicant has also committed to timing construction activities to avoid Aboriginal groups' use of the area. With these mitigation measures in place, adverse impacts to the current use of lands and resources are not expected.		
Health and Socio-Economic Conditions of Aboriginal Peoples	•		The Project could adversely affect socio-economic conditions by impacting the biophysical environment which Aboriginal people may depend on for their livelihood. With the proposed mitigation measures in place, adverse impacts to the socio-economic conditions of Aboriginal people are not expected. The Project has the potential to impact the health of Aboriginal people through impacts to air quality as a result of idling, construction noise, and impacts to the biophysical environment that could negatively impact Aboriginal people who consume products from the marine environment. With the listed mitigations in place, adverse impacts to the health of Aboriginal people are not expected.		
Aboriginal Peoples' physical or cultural heritage, or structures, sites or things that are of historical, archaeological, paleontological or architectural significance		•	The proposed Project is not expected to have adverse effects on physical or cultural heritage, or structures, sites or things that are of historical, archaeological, paleontological or architectural significance.		•

Environmental Component	Potential Adverse Effects?		Overview of Potential Adverse Effects, Mitigation Measures, and Residual Adverse Effects	Significant Residual Adverse Effects?	
	Yes	No		Yes	No
Recreational interests			The Project is located adjacent to a recreational boating channel. During public and stakeholder consultation (see Section 4 and 5 for details), concern about the use of the area for boating was expressed. The rock containment berms will not encroach into the recreational navigation channel and will be appropriately marked. The elevation of the two depressions will be raised to match the elevation of the existing eelgrass beds surrounding the two sites. With mitigation in place, residual adverse effects are not anticipated. If they do occur, they are predicted to be not significant.		
Accidents and malfunctions	•		There is potential for adverse effects on surface water and sediment from accidental equipment leaks or spills. Mitigation measures will be implemented to reduce potential adverse, Project-related effects due to accidents, including an appropriate spill prevention, containment, and clean-up contingency plan for hydrocarbon products (e.g., fuel, oil, etc.) and other deleterious substances. With mitigation in place, the residual adverse effect, if it occurs, is predicted to be not significant. Remediation of any residual adverse effect is anticipated to be achievable.		

Residual adverse effects (i.e., effects that remain with mitigation in place) were identified for the following environmental components:

- Air quality;
- Lighting; and,
- Noise.

The residual adverse effects of the project on the environmental components are characterized as:

- Small in magnitude due to relatively low levels of air, light and noise emissions;
- Local in geographic extent because effects are not anticipated to extend beyond the Project site:
- Short-term in duration because the air, light and noise emissions will cease once construction is complete;
- Daily in frequency because noise will occur throughout the construction; and
- Reversible because all of the residual effects of the Project would cease once construction is complete.

Taking into consideration all of the above, and with the implementation of the proposed mitigation measures and Permit conditions, the residual adverse effects from the Project are predicted to be not significant.

7.3 Follow-up Monitoring

Post-construction monitoring will be conducted in accordance with the Post-Construction Monitoring Plan (PCMP), developed with DFO's input and feedback, to confirm the sites are functioning as intended. In the event that the Project objectives are not achieved and the habitat is not functioning as intended, follow-up measures may be required. Remedial measures may, for instance, include additional eelgrass transplanting.

7.4 Environmental Review Decision

In completing the environmental review, VFPA has reviewed and taken into account relevant information available on the proposed project, has considered the information and proposed mitigations provided by the Applicant and other information as listed elsewhere in this document, and concludes that with the implementation of proposed mitigation measures and Permit conditions, the Project is not likely to cause significant adverse environmental effects.

Original Copy Signed

February 21, 2018

ANDREA MACLEOD MANAGER, ENVIRONMENTAL PROGRAMS DATE OF DECISION

RECOMMENDATION

In completing the project and environmental review, VFPA concludes that with the implementation of proposed mitigation measures and conditions described in the Permit, the Project has appropriately addressed all identified concerns.

It is the recommendation of staff that this application be approved subject to conformance with the project and environmental conditions listed in project permit PER No. 15-167.

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APPENDIX A Location and Site Plan

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Figure 1: Location Plan



Figure 2: Site Plan

APPENDIX B List of Information Sources

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VFPA has relied on the following sources of information in the project and environmental review of the Project:

- Application form and materials submitted by the Applicant on January 27, 2017.
- All Project correspondence from January 27, 2017 to February 16, 2018.



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