



Project and Environmental Review Project Permit

PER No.:	21-183
Tenant/Permit Holder	EM Business Park Limited Partnership
Project:	City of Pitt Meadows/Katzie First Nation Stormwater Outfall – Bonson Road
Project location:	South foot of Bonson Road at River Road, Pitt Meadows, BC
Land use designation:	Log storage and barge moorage
Applicant	Pacific Land Group
Category of review:	C
Date of approval:	March 30, 2023
Date of expiry:	April 30, 2025
Project description	
<p>For the purposes of this project permit, (the “Permit”), the project is understood to include the following works on Vancouver Fraser Port Authority (“Port Authority”) property:</p> <p>Pacific Land Group on behalf of EM Business Park Limited Partnership proposes to install a stormwater outfall at the south foot of Bonson Road at River Road within Pitt Meadows, BC and Katzie Reserve No.1. The outfall will discharge stormwater to the Fraser River.</p> <p>The Project includes site preparation, installation of a pre-cast concrete headwall, and placement of granular filter rock and riprap armouring below high water mark.</p> <p>The Project consists of:</p> <ul style="list-style-type: none"> • Removal of approximately three square metres of low-lying vegetation • Excavation of approximately six cubic metres of soil • Installation of one pre-cast concrete headwall • Installation of 45 cubic metres of granular filter rock and 130 cubic metres of riprap armoring below high water mark <p>Project works would include the use of heavy machinery and equipment. Equipment would access the Project location from land. Marine access is not anticipated.</p> <p>Project works would be carried out both above and below high water mark. Works below high water mark will be carried out in the dry within the regional fish window for the Project area (August 1 to September 15) during favorable low tides.</p> <p>Project works are anticipated to take approximately two to four weeks. Where possible, construction activity is anticipated to take place during the Port Authority’s standard work hours of Monday to Saturday 7:00 a.m. to 8:00 p.m. (excluding Sundays and holidays). However, some activities are dependent on tidal conditions, therefore, work may need to take place outside standard hours.</p>	

Project and environmental conditions

The Port Authority has undertaken and completed a review of the Project in accordance with the *Canada Marine Act* and Section 5 of the *Port Authorities Operations Regulations* and, as applicable, Section 82 of the *Impact Assessment Act*.

If at any time the Permit Holder fails to comply with any of the project and environmental conditions set out in the Permit below, or if the Port Authority determines that the Permit Holder has provided any incomplete, incorrect or misleading information in relation to the Project, the Port Authority may, in its sole and absolute discretion, cancel its authorization for the Project or change the project and environmental conditions to which such authorization is subject.

Pursuant to Section 29 of the *Port Authorities Operations Regulations*, the Port Authority may also cancel its authorization for the Project, or change the project and environmental conditions to which such authorization is subject, if new information is made available to the Port Authority at any time in relation to the potential adverse environmental and other effects of the Project.

The following are the project and environmental conditions that must be followed by the Permit Holder to mitigate potential or foreseeable adverse environmental and other effects.

Port Authority Guidelines and Record Drawing Standards referenced in this document can be located at: <https://www.portvancouver.com/permitting-and-reviews/per/project-and-environment-review-applicant/guidelines/>.

No.	General conditions
1.	The Permit Holder must have a valid lease, licence, or access agreement for the Project site prior to accessing the Project site or commencing construction or any other physical activities on the Project site. This Permit shall in no way limit any of the Permit Holder's obligations, or the Port Authority's rights, under such lease, licence, or access agreement.
2.	The Permit Holder shall at all times and in all respects, comply with and abide by all applicable statutes, laws, regulations and orders from time to time in force and effect, including all applicable environmental, labour and safety laws and regulations.
3.	This Permit in no way endorses or warrants the design, engineering, or construction of the Project and no person may rely upon this Permit for any purpose other than the fact that the Port Authority has permitted the construction of the Project, in accordance with the terms and conditions of this Permit.
4.	The Permit Holder shall indemnify and save harmless the Port Authority in respect of all claims, losses, costs, fines, penalties or other liabilities, including legal fees, arising out of: (a) any bodily injury or death, property damage or any loss or damage arising out of or in any way connected with the Project; and (b) any breach by the Permit Holder of its obligations under this Permit.
5.	The Permit Holder is responsible for locating all existing site services and utilities, including any located underground. The Permit Holder shall provide an Infrastructure Surveyed Data Drawing that includes topographic and utility locate data based on surveys in accordance with the Port Authority's Record Drawing Standards. The Permit Holder is responsible for repair or

	replacement of any damage to existing site services and utilities, to the satisfaction of the Port Authority, that result from construction and operation of the Project.	
6.	The Permit Holder shall undertake and deliver the Project to total completion in a professional, timely and diligent manner in accordance with applicable standards and specifications set out in the sections above entitled Project Description and Information Sources, including the attached plans and drawings numbered PER No. 21-183-A to C. The Permit Holder shall not carry out any other physical activities unless expressly authorized by the Port Authority.	
7.	The Permit Holder shall cooperate fully with the Port Authority in respect of any review by the Port Authority of the Permit Holder's compliance with this Permit, including providing information and documentation in a timely manner, as required by the Port Authority. The Permit Holder is solely responsible for demonstrating the Permit Holder's compliance with this Permit.	
8.	The Permit Holder shall review the Permit with all employees, agents, contractors, licensees and invitees working on the Project site, prior to such parties participating in any construction or other physical activities on the Project site. The Permit Holder shall be solely responsible for ensuring that all such employees, agents, contractors, licensees and invitees comply with this Permit.	
9.	The Permit Holder shall make available upon request by any regulatory authority (such as a Fishery Officer) a copy of this Permit.	
10.	Unless otherwise specified, the Permit Holder shall provide plans, documents, and notices required under this Permit to our compliance and monitoring portal at https://eper.portvancouver.com .	
11.	Unless otherwise specified, all plans, schedules, and other Project-related documentation that the Permit Holder is required to provide under this Permit, and any subsequent updates, must be to the Port Authority's satisfaction.	
12.	The Port Authority shall have unfettered access to environmental compliance documentation and the Project site at all times during construction without notice.	
13.	The Permit Holder must maintain and retain any records associated with, or produced by, actions or activities undertaken to achieve compliance or that indicate non-compliance with project permit conditions. These records must be made available at the request of the Port Authority.	
14.	All conditions in this Permit which expressly or by their nature survive expiration or termination of this Permit will remain in effect after the expiration or termination of this Permit.	
No.	Conditions – prior to commencing construction or any physical activities	Submission timing (business days)
15.	The Permit Holder shall submit Issued For Construction Drawings for proposed works in accordance with the Port Authority's Record Drawing Standards. These drawings shall be signed, sealed, and approved for construction by a professional engineer licensed to practice in the Province of British Columbia. In addition, these	5 business days before commencing construction or any physical activities

	drawings shall be submitted in both AutoCAD and PDF format and shall be named according to the record drawing index numbering system set out at Section 2.10 of the Port Authority's Record Drawing Standards.	
16.	The Permit Holder shall provide a draft construction notification to the Port Authority's satisfaction in accordance with the Port Authority's Public Engagement Guidelines.	20 business days before commencing construction or any physical activities
17.	The Permit Holder shall distribute a construction notification to residents and businesses to an area of approximately 400 metres. This shall be completed to the Port Authority's satisfaction. The Permit Holder shall notify the Port Authority when such distribution has been completed.	10 business days before commencing construction or any physical activities
18.	The Permit Holder shall provide a Project schedule to the Port Authority showing the anticipated start dates for all major phases of the Project as identified by the Port Authority. The Permit Holder shall notify the Port Authority of any material changes to the Project schedule and, upon request, shall provide an updated Project schedule.	20 business days before commencing construction or any physical activities
No.	Conditions – during construction or any physical activities	
19.	The Permit Holder shall notify the Port Authority upon commencement of construction, or any physical activities (e.g., mobilization to the Project site).	
20.	Where possible, general construction and physical activities related to the Project shall be conducted from Monday to Saturday between the hours of 7:00 a.m. and 8:00 p.m. No construction and physical activities shall take place on Sundays or statutory holidays in British Columbia or Canada. Some construction and physical activities are dependent on tidal conditions, therefore, work may need to take place outside of standard construction hours (Monday to Saturday 7:00 a.m. to 8:00 p.m., excluding Sundays or holidays). The Permit Holder shall submit a written request in line with the Guideline for Construction Outside of Regular Work Hours , to the Port Authority's satisfaction, no less than 30 business days prior to the desired start date of these activities. No pile driving activities shall take place outside of the standard construction hours noted above.	
21.	The Permit Holder shall notify the Port Authority within two business days of any complaints received from the community and stakeholders during construction and indicate how the Permit Holder has responded to such complaints.	
22.	Prior to and/or during construction, the Permit Holder shall conduct an Archaeological Impact Assessment completed by a professional archaeologist. Please see condition 46 for reporting requirements.	
23.	If the Permit Holder encounters, expects to encounter, or should expect to encounter an actual or potential archaeological resource, the Permit Holder shall:	

	<p>(A) Immediately stop any activities that may disturb the archaeological resource or the site in which it is contained (Site);</p> <p>(B) Not move or otherwise disturb the archaeological resource or other remains present at the Site;</p> <p>(C) Stake or flag the Site to prevent additional disturbances; and,</p> <p>(D) Immediately notify the Port Authority by email and phone.</p>
24.	The Permit Holder shall carry out the Project in accordance with the construction environmental management plan provided by the Permit Holder, and any subsequent updates made to the Port Authority's satisfaction.
25.	The Permit Holder, or their contractor, shall engage a qualified environmental professional to monitor the Project in order to ensure that the works are carried out in compliance with this Permit. Monitoring events shall take place as required by the environmental monitor, the construction environmental management plan, or the Port Authority, provided that monitoring will be full time when works are underway that have the potential to adversely affect fish or fish habitat.
26.	The Permit Holder shall provide environmental monitoring reports to the Port Authority as specified in the construction environmental management plan or more frequently if the Port Authority requires. In addition, a summary report for the whole monitoring period shall be forwarded to the Port Authority within 30 days of the conclusion of the monitoring period.
27.	Without limiting the generality of permit condition #2, the Permit Holder shall not, directly or indirectly: (a) deposit or permit the deposit of a deleterious substance of any type in water frequented by fish in a manner contrary to Section 36 of the <i>Fisheries Act</i> ; or (b) adversely affect fish or fish habitat in a manner contrary to Section 35 of the <i>Fisheries Act</i> .
28.	If there is potential to affect birds and/or their active nests and eggs, the Permit Holder shall conduct nest surveys. For any nests identified in surveys, a qualified environmental professional shall confirm that the nest is not occupied by a species protected at that time of year under applicable legislation. To reduce the risk of Project-related harm, the Permit Holder should avoid certain physical activities during the general bird breeding season, which falls between April 1 and July 31, or outside of this time span if occupied nests are present.
29.	<p>The Permit Holder shall not permit sediment, sediment-laden waters, or other deleterious substances to enter the water during the Project. The Permit Holder shall carry out all physical activities in a manner that prevents induced sedimentation of foreshore and near shore areas and induced turbidity of local waters, and the release of sediment, sediment-laden waters, and turbid waters to the aquatic environment. The Permit Holder shall manage turbidity in compliance with the following water quality criteria:</p> <p>(A) when background is less than or equal to 50 nephelometric turbidity units (NTU), induced turbidity shall not exceed 5 NTU above the background values; and</p> <p>(B) when background is greater than 50 NTU, induced turbidity shall not exceed the background values by more than 10% of the background value.</p> <p>For the purposes of this condition, "background" means the level at an appropriate adjacent reference site that is affected neither by physical activities at the project site, nor sediment-laden or turbid waters resulting from physical activities at the project site.</p>

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30.	The Permit Holder shall immediately cease work and notify the Port Authority if the Permit Holder has reasonable grounds to believe that the Project has harmed fish or fish habitat, including observation of distressed, injured, or dead fish. The Permit Holder shall not resume work until authorized by the Port Authority.	
31.	The Permit Holder shall not disturb the riverbed outside the Project site.	
32.	The Permit Holder shall repair and/or remediate any damage or erosion resulting from disturbance to the intertidal zone during the Project.	
33.	The Permit Holder shall carry out all works in the intertidal zone in the dry, i.e., above the water surface.	
34.	Riprap shall be clean and free of fines and shall be deposited near the river and not dumped or deposited from above or near the water surface.	
35.	The Permit Holder shall use an environmentally clean excavator bucket. The bucket and any portion of the excavator arm that will be in contact with or near the water shall be cleaned of any residual hydrocarbons or other contaminants prior to the start of works.	
36.	The Permit Holder shall dispose of any soils excavated from the project site that are not suitable for backfill at appropriate off-site facilities and maintain records of off-site disposal.	
37.	Without limiting the generality of permit condition #2, if suspect contaminated materials are encountered, the Permit Holder shall contain, test and dispose of such materials at appropriate licensed off-site facilities and maintain records of off-site disposal. The Port Authority shall be notified of such activities and provided relevant documentation upon completion.	
38.	The Permit Holder shall conduct all activities involving the use of concrete, cement, mortars and other Portland cement or lime-containing construction materials in a manner that shall not deposit sediments, debris, concrete (cured or uncured), and concrete fines into the aquatic environment, either directly or indirectly. Water that has contacted uncured or partly cured concrete or Portland cement or lime-containing construction materials (such as the water that may be used for exposed aggregate wash-off, wet curing, equipment and truck washing) shall not be permitted to enter the aquatic environment. The Permit Holder shall provide containment facilities at the site for the wash-down water from concrete delivery trucks, concrete pumping equipment, and other tools and equipment, as required.	
39.	Without limiting the generality of permit condition #2, materials brought onto the project site to be used for backfilling, site preparation, or other uses shall be from sources demonstrated to be clean and free of environmental contamination, invasive species and noxious weeds. The Permit Holder shall maintain records to verify this.	
No.	Conditions – upon completion	Submission timing (business days)
40.	The Permit Holder shall notify the Port Authority upon completion of the Project.	Upon substantial completion

41.	The Permit Holder shall prepare and submit a self-report form to the Port Authority demonstrating compliance with conditions.	Within 30 business days of completion
42.	The Permit Holder shall provide record drawings, including a Project site plan that clearly identifies the location of works, in both AutoCAD and PDF format (with an Engineers stamp where applicable) in accordance with the Port Authority's Record Drawing Standards. All drawings shall be named according to the record drawing index numbering system set out at Section 2.10 of the Port Authority's Record Drawing Standards.	Within 40 business days of completion
43.	The Permit Holder shall submit an updated Stormwater Pollution Prevention Plan to the Port Authority's satisfaction. The Stormwater Pollution Prevention Plan shall outline analytical sampling of stormwater to assess the effectiveness of installed treatment devices. The Permit Holder shall provide the Port Authority a copy of all the monitoring reports and water quality data for the first year after installation, and any subsequent sampling events or monitoring periods, as described in the updated Stormwater Pollution Prevention Plan.	30 business days prior to operation
44.	The Permit Holder shall repair and/or remediate any unanticipated changes in erosion or scour patterns resulting from the Project. If the Project results in adverse effects to the intertidal area or downriver areas, a remedial plan shall be provided to the Port Authority's satisfaction.	As required
45.	The Permit Holder shall send record drawings to the Database Information Office of the Canadian Hydrographic Service (250-363-6360 or chsdatacentre@dfo-mpo.gc.ca) to arrange for the relevant Canadian Hydrographic Service charts to be updated. The Port Authority's Marine Operations department must be carbon copied into the request (navigation.review@portvancouver.com).	Within 30 business days of project completion
46.	The Permit Holder shall submit the results of an Archaeological Impact Assessment completed by a professional archaeologist, to the Port Authority's satisfaction.	Within 30 business days of project completion

The Port Authority reserves the right to rescind or revise these conditions at any time that new information warranting this action is made available to the Port Authority.

Length of permit validity

The Project must commence by **August 1, 2024** (the "Commencement Date") and be completed no later than **April 30, 2025** (the "Expiry Date").

Amendments

- Details of any material proposed changes to the Project, including days and hours when construction and any physical activities will be conducted, must be submitted to the Port Authority for consideration of an amendment to this Permit.
- For an extension to the Commencement Date, the Permit Holder must apply to the Port Authority in writing no later than 40 business days prior to that date.
- For an extension to the Expiry Date, the Permit Holder must apply in writing to the Port Authority no later than 40 business days prior to that date.

Failure to apply for an extension as required may, at the sole discretion of the Port Authority, result in termination of this Permit.

Project and Environmental Review decision

In completing the project and environmental effects review, the Port Authority has reviewed and taken into account relevant information available on the proposed Project and has considered any adverse impact that the Project may have on the rights of Indigenous peoples, Indigenous knowledge, community knowledge, comments received from the public, and measures that would mitigate any significant adverse environmental effects of the Project. We conclude that with the implementation of proposed mitigation measures and Permit conditions, the Project is not likely to cause significant adverse environmental effects.

The Port Authority concludes that the Project has appropriately addressed all identified concerns subject to conformance with the project and environmental conditions in the Permit.

Project Permit PER No. 21-183 is approved by:

ORIGINAL COPY SIGNED

Andrea MacLeod
Director, Project and Environmental Review

3/30/2023

Date of approval

Contact information

Vancouver Fraser Port Authority
100 The Pointe, 999 Canada Place
Vancouver BC V6C 3T4 Canada

Project and Environmental Review
Tel.: 604-665-9047
Fax: 1-866-284-4271
Email: PER@portvancouver.com
Website: www.portvancouver.com

After normal business hours:

In the event of any land or marine construction incidents or concerns related to works carried out on-site under this permit, please contact the 24/7 Port Operations Centre 604-665-9086. In the event of an emergency requiring 'First Responders', please call 911 first.

POST-DEVELOPMENT - BONSON ROAD STORM SEWER DESIGN - RATIONAL METHOD

Location: Eagle Meadows Business Park
 Ref. No.: 20001
 DF Curve: P/E Meadows (Works Yard)
 Return Period: 100 Year

Q_{max} = Design Flow (m³/s)
 A = Area (ha)
 R = Runoff Coefficient
 I = Rainfall Intensity (mm/hr)
 N = 0.00278

$T_c = T_i + T_t$
 T_c = Time of Concentration (min)
 T_i = Inlet Time (min)
 T_t = Travel Time (min)
 $I = aT^b$ where I in mm/hr, T in hr
 a = 29.143
 b = -0.545

n = Roughness Coefficient
 V_{cap} = Velocity at Capacity (m/s)
 Q_{cap} = Flow at Capacity (m³/s)
 Date: 10-Jan-22
 Calc. By: Hub Engineering Inc. - MCRK
 Sheet: 2 of 2

Location		Tributary Area				Runoff				Sewer Design				HGL Condition					
From MH	To MH	Area No.	A (ha)	R	Σ (AR)	T _i (min)	T _t (min)	T _c (min)	I (mm/hr)	Q _{max} (m ³ /s)	Q _{cap} (m ³ /s)	Diameter (mm)	n	Slope (%)	V _{cap} (m/s)	Length (m)	HGL Condition	HGL Slope (%)	
CITY OF PITT MEADOWS - BONSON ROAD																			
EX D-1	EX D-2	A	0.13	0.55	0.07	0.07	10.00	1.69	11.69	71.0	0.014	0.033	250	0.013	0.310	0.67	68.5	IN GROUND	0.056
EX D-2	EX D-3	B	0.74	0.55	0.41	0.48	11.69	2.16	13.86	64.7	0.086	0.032	250	0.013	0.290	0.65	84.7	SURFACE	2.097
EX D-3	EX D-4	C	0.57	0.55	0.31	0.79	13.86	1.00	14.86	62.3	0.137	0.132	375	0.013	0.570	1.20	72.1	SURFACE	0.612
EX D-4	EX D-5	D	0.11	0.55	0.06	0.85	14.86	0.43	15.29	61.3	0.145	0.213	600	0.013	0.120	0.75	19.6	SURFACE	0.056
CITY OF PITT MEADOWS - BONSON ROAD																			
MHD-8	EX D-5	E	0.15	0.85	0.13	0.13	5.00	0.41	5.41	108.0	0.038	0.268	600	0.013	0.190	0.95	23.2	SURFACE	0.004
EX D-5	EX D-6				0.00	0.98	15.29	0.77	16.07	59.7	0.163	0.353	600	0.013	0.330	1.25	58.0	SURFACE	0.070
			Σ 1.70 ha																

PRE-DEVELOPMENT - BONSON ROAD STORM SEWER DESIGN - RATIONAL METHOD

Location: Eagle Meadows Business Park
 Ref. No.: 20001
 DF Curve: P/E Meadows (Works Yard)
 Return Period: 100 Year

Q_{max} = Design Flow (m³/s)
 A = Area (ha)
 R = Runoff Coefficient
 I = Rainfall Intensity (mm/hr)
 N = 0.00278

$T_c = T_i + T_t$
 T_c = Time of Concentration (min)
 T_i = Inlet Time (min)
 T_t = Travel Time (min)
 $I = aT^b$ where I in mm/hr, T in hr
 a = 29.143
 b = -0.545

n = Roughness Coefficient
 V_{cap} = Velocity at Capacity (m/s)
 Q_{cap} = Flow at Capacity (m³/s)
 Date: 10-Jan-22
 Calc. By: Hub Engineering Inc. - MCRK
 Sheet: 1 of 2

Location		Tributary Area				Runoff				Sewer Design				HGL Condition					
From MH	To MH	Area No.	A (ha)	R	Σ (AR)	T _i (min)	T _t (min)	T _c (min)	I (mm/hr)	Q _{max} (m ³ /s)	Q _{cap} (m ³ /s)	Diameter (mm)	n	Slope (%)	V _{cap} (m/s)	Length (m)	HGL Condition	HGL Slope (%)	
CITY OF PITT MEADOWS - BONSON ROAD																			
EX D-1	EX D-2	A	0.13	0.55	0.07	0.07	10.00	1.69	11.69	71.0	0.014	0.033	250	0.013	0.310	0.67	68.5	IN GROUND	0.056
EX D-2	EX D-3	B	0.74	0.55	0.41	0.48	11.69	2.16	13.86	64.7	0.086	0.032	250	0.013	0.290	0.65	84.7	SURFACE	2.097
EX D-3	EX D-4	C	0.57	0.55	0.31	0.79	13.86	1.00	14.86	62.3	0.137	0.132	375	0.013	0.570	1.20	72.1	SURFACE	0.612
EX D-4	EX D-5	D	0.11	0.55	0.06	0.85	14.86	0.43	15.29	61.3	0.145	0.213	600	0.013	0.120	0.75	19.6	SURFACE	0.056
CITY OF PITT MEADOWS - BONSON ROAD																			
MHD-8	EX D-5	2,3,4,5,6,6	30.76	0.40	12.30	12.30	45.00	0.41	45.41	33.9	1.160	0.268	600	0.013	0.190	0.95	23.2	SURFACE	3.570
EX D-5	EX D-6				0.00	13.16	45.41	0.77	46.18	33.6	1.229	0.353	600	0.013	0.330	1.25	58.0	SURFACE	4.007
			Σ 32.31 ha																

POST-DEVELOPMENT STORM SEWER DESIGN - INFOWORKS ICM 13.1.5

LOCATION: Katzie Reserve No.1
 REF. No.: 20001
 Rain Gauge: Katzie Pump Station
 Return Period: 10 Year and 100 Year 24hr Rainstorms

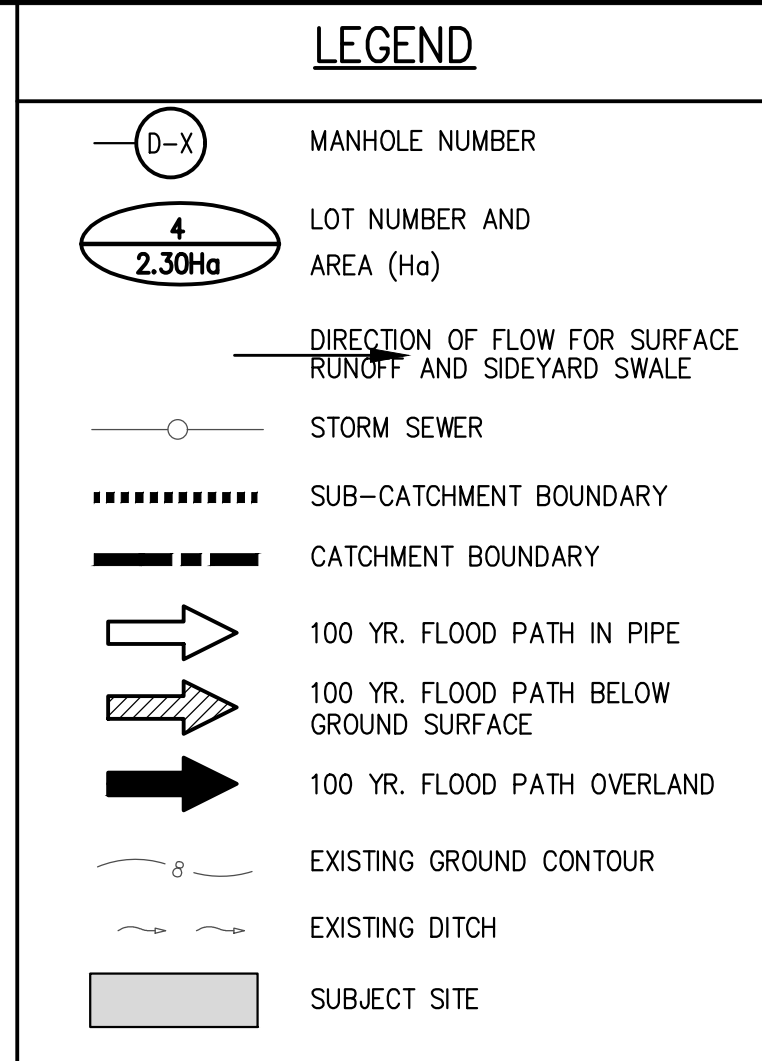
INFOWORKS ICM 13.1.5

Ø=Pipe Diameter (mm)
 n=Roughness Coefficient
 S=Slope of Pipe (%)
 Vcap=Velocity at Capacity (m/s)
 L=Length of Pipe (m)
 Ccap=Flow at Capacity (m³/s)
 Date: January 27, 2022
 Calc. By: MN
 Sheet: 1 of 1

Location		Segment	Tributary Area		Max Flow in Pipe		Sewer Design				100 yr. HGL Condition at Upstream Node				
From	To	Link Name	Area No.	A (ha)	Impervious (%)	Q-10 Year (m ³ /s)	Q-100 Year (m ³ /s)	Ccap (m ³ /s)	Ø (mm)	n	S (%)	Vcap (m/s)	L (m)		
Fraser Way															
FUT D-11	FUT D-10	MHD-11.1	6	8.78	90	0.130	0.284	0.905	900	0.013	0.250	1.42	100.0	IN GROUND	
FUT D-10	FUT D-9	MHD-10.1	5	6.81	90	0.222	0.511	0.905	900	0.013	0.250	1.42	100.0	IN GROUND	
FUT D-9	FUT D-8	MHD-9.1	4	3.94	90	0.281	0.596	1.221	1050	0.013	0.200	1.41	100.0	IN GROUND	
FUT D-8	D-7	MHD-8.1	3	3.66	90	0.343	0.715	1.489	1200	0.013	0.146	1.32	65.5	IN GROUND	
D-7	D-6	MHD-7.1	-	-	-	0.344	0.715	1.488	1200	0.013	0.146	1.32	34.3	IN GROUND	
D-6	D-5	MHD-6.1	-	-	-	0.345	0.715	1.486	1200	0.013	0.145	1.31	96.3	IN GROUND	
D-5	D-4	MHD-5.1	-	-	-	0.435	0.920	1.452	1200	0.013	0.139	1.28	100.9	IN GROUND	
D-4	D-3	MHD-4.1	2	7.42	90	0.435	0.920	2.054	1200	0.013	0.278	1.82	10.8	IN GROUND	
Bonson Road															
D-3	D-2A	MHD-3.1	1	0.46	90	-	0.483	0.952	2.149	1200	0.013	0.304	1.90	92.0	IN GROUND
			8	0.61	20	-	0.483	0.952	2.149	1200	0.013	0.304	1.90	34.0	IN GROUND
D-2A	D-2		-	-	-	0.483	0.952	2.149	1200	0.013	0.304	1.90	34.0	IN GROUND	
D-2	D-1	MHD-2.1	-	-	-	0.483	0.952	2.123	1200	0.013	0.297	1.88	134.8	IN GROUND	
D-1	HW	MHD-1.1	7	8.58	40	1.113	1.746	2.627	1200	0.013	0.455	2.32	17.6	IN GROUND	

Note: Fraser River HGL elevations provided by Northwest Hydraulics Consultants (10yr = 3.7m) (100yr = 4.7m)
 Note: All commercial lots are assumed to restrict 100yr and 10yr flows to pre-development conditions.

Imperv. Roughness = 0.013
 Perv. Roughness = 0.250
 Imperv. Storage Depth = 0.071 m
 Perv. Storage Depth = 0.280 m
 Initial Infiltration = 76.00 mm/hr
 Limiting Infiltration = 2.50 mm/hr
 Decay Factor = 2.00 hr⁻¹
 Maximum Infiltration = 50 mm



LEGAL DESCRIPTION: ---
 SURVEY BENCHMARK: MGN: 88H0617
 SCALE FACTOR: 6.525m (GEODETIC)
 ELEV.: 6.525m (GEODETIC)

REV.	DATE	DESCRIPTION	BY
4	NOV 17/21	ISSUED FOR MUNICIPAL REVIEW	KK
3	OCT 07/21	ISSUED FOR REVIEW	KK
2	JUL 25/21	ISSUED FOR MUNICIPAL REVIEW	MC
1	JUN 17/21	ISSUED FOR MUNICIPAL CONCEPTUAL REVIEW	MC

NOT FOR CONSTRUCTION

FOR COORDINATION ONLY

CONSULTANT
Hub Engineering Inc.
 Engineering and Development Consultants
 EGBC Permit to Practice Number: 1003404
 Suite 212, 12992 - 76 Avenue, Surrey, B.C. V3W 2V6
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EAGLE MEADOWS
 BUSINESS PARK

CLIENT
EM BUSINESS PARK LTD.
 1910 - 1177 WEST HASTINGS STREET
 VANCOUVER, B.C., V6E 2K3, TEL: (604) 270-1890

TITLE
STORM WATER CATCHMENT PLAN

SCALE: HOR. 1:2500
 VERT. 1:2500

DATE (YYYY.MM.DD)
 FEB 2020

CONSULTANT PROJ. NO.
 20001

DESIGNED
 MC/MN/KK

DRAWN
 AKG

REVIEWED
 KL/RFK

DWG. NO.
16

REV. 4

MUNICIPAL PROJECT NUMBER
 -

DRAWING TYPE
DRAINAGE

Jan 28, 2022

DESTROY ALL PRINTS BEARING PREVIOUS NUMBER

G:\Projects\20001.ctb\B1 Design\StormAnalysis\ICM Model\2022-01-27 SWCP for 20001.ctb\Infoworks ICM INTERIM 1/28/2022 11:05AM

EPTA DEVELOPMENT CORPORATION

BONSON ROAD OUTFALL



SITE PLAN
SCALE = NOT TO SCALE

DRAWING INDEX	
TITLE	REVISION
SITE PLAN, DRAWING INDEX, AND NOTES	0
PLAN, PROFILE, AND SECTIONS	0

1. GENERAL NOTES

- 1.1. ALL WORK IS TO COMPLY WITH CURRENT AUTHORIZATIONS AND PERMITS.
- 1.2. ALL ELEVATIONS, DIMENSIONS, AND QUANTITIES SHALL BE VERIFIED BEFORE CONSTRUCTION COMMENCEMENT.
- 1.3. DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
- 1.4. ALL ELEVATIONS ARE RELATIVE TO CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28).
- 1.5. TABULATED ESTIMATES OF MASS AND VOLUMES ARE CLEAN LINE ESTIMATES AND ALLOWANCES FOR SETTLEMENT AND/LOSS ARE NOT INCLUDED.
- 1.6. SLOPES SHALL BE GRADED TO PROVIDE A SMOOTH, UNIFORM SURFACE. ALL STUMPS, LARGE ROCK, BRUSH, OR OTHER DEBRIS SHALL BE REMOVED. ALL DEPRESSIONS SHALL BE FILLED, AND LOOSE OR UNSTABLE SOILS SHALL BE REPLACED.
- 1.7. ESTIMATED MATERIAL QUANTITIES ARE BASED ON CLEAN LINE ESTIMATES. CONTRACTOR RESPONSIBLE TO CONFIRM QUANTITIES REQUIRED.

MATERIAL QUANTITIES			
ITEM	DESCRIPTION	UNIT	APPROXIMATE QUANTITY
1	CONCRETE OUTFALL	LS	1
2	FLOOD GATE	LS	1
3	HANDRAIL	LS	1
4	250-kg RIPRAP	m ³	130
5	GRANULAR FILTER	m ³	45
6	CRUSHED GRAVEL	m ³	1
7	DRAIN ROCK	m ³	3

2. MATERIALS

- 2.1. RIPRAP
 - 2.1.1. 250-kg RIPRAP IS TO BE USED FOR THE BANK ARMOURING.
 - 2.1.2. ROCK SHALL BE PREDOMINATELY ANGULAR AND BLOCKY.
 - 2.1.3. ROCK IS TO BE ROUGHLY EQUI-DIMENSIONAL; LENGTH NOT MORE THAN 2.4 TIMES THE WIDTH OR THICKNESS AS MEASURED AT THE MIDDLE OF THE STONE.
 - 2.1.4. PLACEMENT OF RIPRAP SHALL BE CARRIED OUT BY EXCAVATOR. END DUMPING USING CHUTES OR SIMILAR METHODS WILL NOT BE PERMITTED.
 - 2.1.5. RIPRAP GRADATION TO BE CONFIRMED PRIOR TO DELIVERY AND ON SITE BY THE SITE ENGINEER.
- 2.2. GRANULAR FILTER
 - 2.2.1. GRANULAR FILTER IS TO BE USED TO PROVIDE A FILTER LAYER BETWEEN THE RIPRAP AND THE UNDERLYING ROCK BANK/CHANNEL MATERIALS.
 - 2.2.2. THIS MATERIAL IS TO BE WELL GRADED GRAVEL, SAND, AND COBBLE.
 - 2.2.3. PLACEMENT OF THE FILTER ROCK SHALL BE INSPECTED BY THE SITE ENGINEER PRIOR TO BE PLACEMENT OF OVERLAYING MATERIAL, AND IMMEDIATE FOLLOWED BY PLACEMENT OF THE OVERLAYING MATERIALS.

2.3. CRUSHED GRAVEL

- 2.3.1. CRUSHED GRAVEL TO BE USED FOR HEADWALL FOUNDATION.
- 2.3.2. CRUSHED GRAVEL TO BE 19 mm CLEAR CRUSH AS PER MMCD STANDARD SPECIFICATION.
- 2.3.3. UNDERLYING SOIL TO BE VERIFIED BY GEOTECH ENGINEER BEFORE PLACEMENT OF GRAVEL.
- 2.3.4. GRAVEL PLACEMENT TO BE CONFIRMED BY GEOTECH ENGINEER PRIOR TO INSTALLATION OF HEADWALL.

2.4. DRAIN ROCK

- 2.4.1. DRAIN ROCK TO BE USED AT BACK SIDE (LANDSIDE) OF HEADWALL
- 2.4.2. DRAIN ROCK TO BE 25 mm DRAIN ROCK AS PER MMCD STANDARD SPECIFICATION.

2.5. ROCK GRADATION

ROCK GRADATION				
PERCENT PASSING (STONE SIZE IN MILLIMETRES FOR PERCENT PASSING)				
MATERIAL	15%	50%	85%	100%
250-kg RIPRAP	≥260	≥570	≥820	≤1000
GRANULAR FILTER	7.5-10	30-65	55-100	≤150

2.6. OUTFALL

- 2.6.1. OUTFALL TO BE CUSTOM PRECAST REINFORCED CONCRETE, ENGINEERED AND SUPPLIED BY LANGLEY CONCRETE (I.E. 2.7 X 2.5 m HEADWALL MAX SERIES) OR APPROVED EQUIVALENT.
- 2.6.2. OUTFALL TO BE APPROVED BY PROJECT ENGINEER PRIOR TO ORDERING.
- 2.6.3. CONTRACTOR TO VERIFY SELECTED HEADWALL, FLOODGATE, AND PIPE ARE COMPATIBLE (I.E. SUFFICIENT OPENING SIZE AND SPACING).
- 2.6.4. HANDLING, STORAGE, AND INSTALLATION TO FOLLOW SUPPLIER/MANUFACTURER'S RECOMMENDATIONS.

2.7. FLOODGATE

- 2.7.1. OUTFALL FLOODGATE TO BE NEOPRENE DUCK-BILL CHECK VALVE WITH STAINLESS STEEL FASTENERS, SUCH AS TIDEFLEX TF-1 OR APPROVED EQUIVALENT.
- 2.7.2. FLOOD GATE TO BE APPROVED BY PROJECT ENGINEER PRIOR TO ORDERING
- 2.7.3. CONTRACTOR TO VERIFY SELECTED HEADWALL, FLOODGATE, AND PIPE ARE COMPATIBLE (I.E. SUFFICIENT OPENING SIZE, SPACING, AND GATE FITS ON O.D. OF PIPE).
- 2.7.4. HANDLING, STORAGE, AND INSTALLATION TO FOLLOW SUPPLIER/MANUFACTURER'S RECOMMENDATIONS.

NOT FOR CONSTRUCTION



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1910-1177 West Hastings Street
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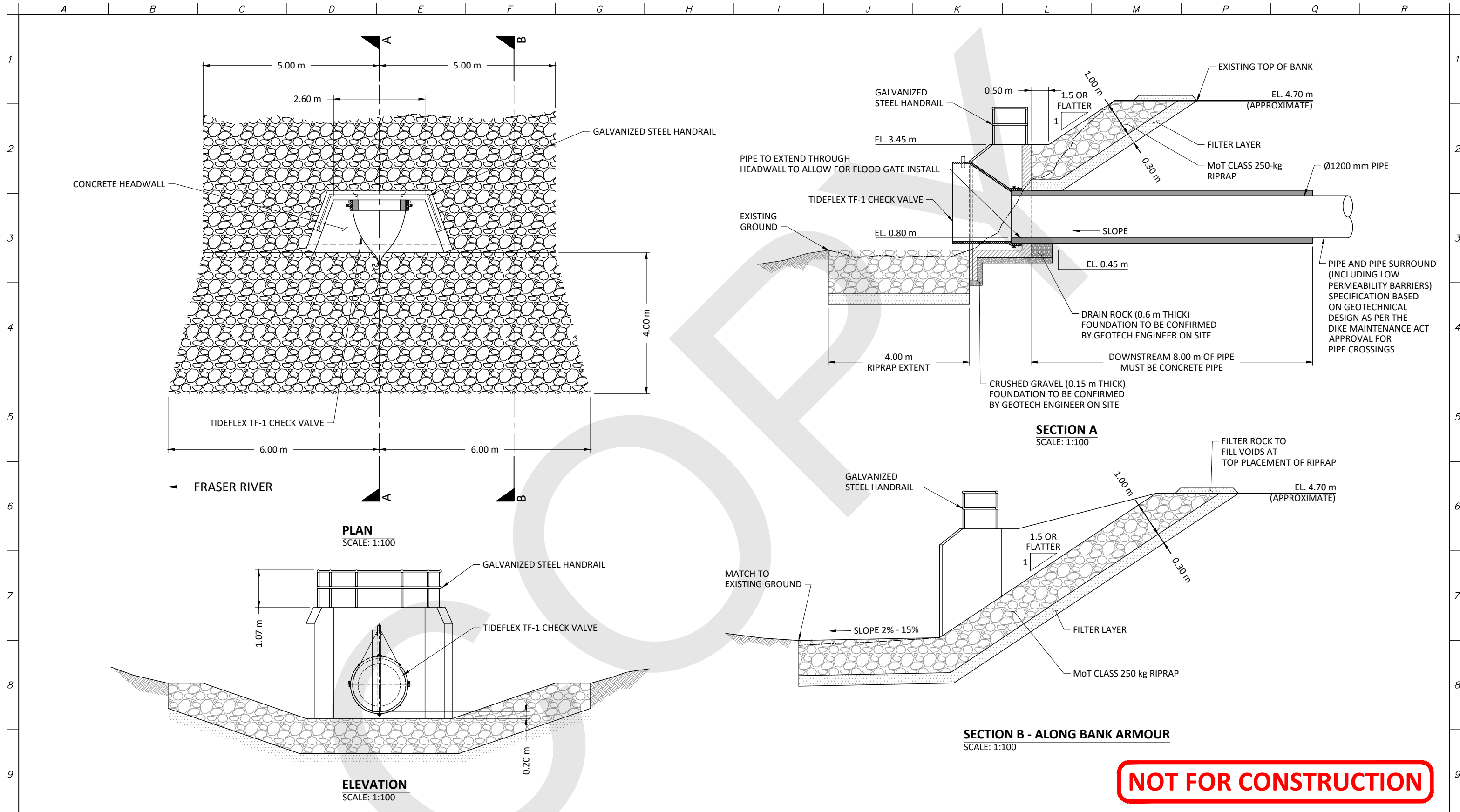
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REVISIONS			DRAWING INFORMATION	
0	14 Sep 2021	ISSUED FOR REVIEW	DATE	10 Feb 2022
			DESIGNED BY	HXH
			DRAWN BY	BXH
			CHECKED BY	DPM
			SHEET SIZE	B (11" x 17")

BONSON ROAD OUTFALL

Site Plan, Drawing Index, and Notes

PROJECT NUMBER	3006489
DRAWING NUMBER	3006489-1
SHEET NUMBER	1 OF 2
REVISION	0



NOT FOR CONSTRUCTION

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REVISIONS			DRAWING INFORMATION	
0	10 Feb 2022	ISSUED FOR REVIEW	DATE	10 Feb 2022
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			DRAWN BY	BXH
			CHECKED BY	DPM
			SHEET SIZE	B (11" x 17")

BONSON ROAD OUTFALL
 Plan, Profile, and Sections

PROJECT NUMBER	3006489
DRAWING NUMBER	3006489-2
SHEET NUMBER	2 OF 2
REVISION	0



PORT of
vancouver

Vancouver Fraser
Port Authority

Project and Environmental Review report

City of Pitt Meadows/Katzie First Nation Stormwater Outfall –
Bonson Road

Prepared for: Director, Project and Environmental Review

March 30, 2023

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PER No.:	21-183
Tenant/Permit Holder:	EM Business Park Limited Partnership
Project:	City of Pitt Meadows/Katzie First Nation Stormwater Outfall – Bonson Rd.
Project location:	South foot of Bonson Road at River Road, Pitt Meadows, BC
Land use designation:	Log storage and barge moorage
Applicant:	Pacific Land Group
Applicant address:	12992 76 Ave #212, Surrey, BC V3W 2V6
Category of review:	C
Recommendation:	That PER No. 21-183 for installation of a stormwater outfall be approved.

1. Introduction

The Vancouver Fraser Port Authority (the “Port Authority”), a federal port authority, manages lands under the purview of the *Canada Marine Act*, which imparts responsibilities for environmental protection. The Port Authority 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 the Port Authority’s project and environmental review of PER No. 21-183: City of Pitt Meadows/Katzie First Nation Stormwater Outfall – Bonson Rd. (the “Project”) proposed by Pacific Land Group working on behalf of EM Business Park Limited Partnership (the “Applicant”).

This project and environmental review was carried out to address the Port Authority’s responsibilities under the *Canada Marine Act*, and to meet the requirements of the *Impact Assessment Act*, as applicable. The proposed Project is not a “designated project” under the *Impact Assessment Act* and an impact assessment as described in the *Impact Assessment Act* is not required. However, Port Authority authorization is required for the proposed Project to proceed and in such circumstances, where applicable, Section 82 of the *Impact Assessment Act* requires federal authorities to assure themselves that projects will not likely cause significant adverse environmental effects. The project and environmental review process is designed to provide that assurance. In addition, the Port Authority 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 the Port Authority and other consultation carried out by the Port Authority. A full list of information sources germane to the review is provided in Appendix 1.

This project and environmental review report is NOT a project authorization. This project and environmental review report summarizes the review outcome, and provides the basis for approval or denial. Should the project be approved, the report is accompanied by a project permit (the “Permit”) and the conclusions described in this report require compliance with the conditions in the Permit.

2. Project description

The Applicant proposes to install a stormwater outfall at the south foot of Bonson Road at River Road within Pitt Meadows, BC (see location plan in Appendix 2). The proposed outfall would service Katzie Reserve No. 1, including a proposed seven-hectare (17 acre) light industrial development, all of which fall outside the Port Authority's jurisdiction. The outfall would discharge stormwater from the upland site to the Fraser River.

Within the Port Authority's jurisdiction, the Project includes site preparation, installation of a pre-cast concrete headwall, and placement of granular filter rock and riprap armouring below high water mark.

Outside the Port Authority's jurisdiction works would include installation of a backflow preventer valve and tie-in to piping that would intersect an existing dike. Upstream stormwater infrastructure along Bonson Road would also be installed.

2.1. Proposed works

The Project consists of:

- Removal of approximately three square metres of low-lying vegetation
- Excavation of approximately six cubic metres of soil
- Installation of one pre-cast concrete headwall
- Installation of 45 cubic metres of granular filter rock and 130 cubic metres of riprap armoring below high water mark

Project works would include the use of heavy machinery and equipment. Equipment would access the Project location from land. Marine access is not anticipated.

Project works would be carried out both above and below high water mark. Works below high water mark would be carried out in the dry within the regional fish window for the Project site (August 1 to September 15) during favorable low tides.

Project works are anticipated to take approximately two to four weeks. Where possible, construction activity is anticipated to take place during the Port Authority's standard work hours of Monday to Saturday 7:00 a.m. to 8:00 p.m. (excluding Sundays and holidays). However, some activities are dependent on tidal conditions, therefore, work may need to take place outside standard hours.

3. Technical review

The Port Authority has reviewed the application and has the following project considerations.

3.1. Planning

The Project site is on the north bank of the Fraser River in Pitt Meadows. To the north of the site is Bonson Road and residential properties. To the east of the site is a small marina and residential properties occur to the west.

The proposed outfall and related infrastructure would service Katzie Reserve No. 1 including a proposed upland warehouse/distribution facility. The proposed installation and operation of the stormwater outfall (utility) is not anticipated to affect the adjacent marina use.

3.1.1. Land use designation

The proposed stormwater outfall is located within an area designated as “Log Storage and Barge Moorage” in the Port Authority’s Land Use Plan. The installation of a stormwater outfall does not represent a change in use and is, therefore, compliant with the Land Use Plan.

3.2. Engineering

The Port Authority’s Engineering and Asset Management department has reviewed the application and has determined that the Applicant is required to:

- Comply with dike design requirements from the Province of British Columbia
- Identify and protect all existing utilities
- Submit signed and sealed drawings prepared by a Professional Engineer licensed to practice in the Province of British Columbia within the relevant timeframes included in the attached permit:
 - Issued for Construction Drawings
 - Record Drawings

These requirements are reflected in Permit conditions 2, 5, 16 and 41.

Infrastructure upstream from the outfall would cross through an existing dike outside the Port Authority’s jurisdiction. The Applicant has received an approval with terms and conditions under the provincial *Dike Maintenance Act*.

The proposed Project meets the Port Authority Engineering and Asset Management requirements, subject to adherence to permit conditions.

3.3. Marine Operations

The proposed Project would be carried out from land and no vessel use is anticipated. Although some works would occur below high water mark, the proposed Project is not anticipated to impact marine navigation.

The proposed Project meets the Port Authority marine operations requirements, subject to adherence to the listed Permit conditions.

3.4. Environment

The environmental review of the proposed Project is summarized in Section 7, Environmental Effects Review.

4. Stakeholder consultation

The proposed Project was assessed to have potential impacts to stakeholders and consultation activities were determined to be required. The following sections describe the stakeholder engagement activities undertaken by the Port Authority as part of the project and environmental review.

4.1. Municipal consultation

The proposed Project was assessed by the Port Authority to have potential impacts to municipal interests. A referral letter was sent to the City of Pitt Meadows on October 18, 2022 notifying them of the proposed Project.

The City of Pitt Meadows responded with comments on the proposed Project. The table below summarizes the comments received and how they were considered as part of the project and environmental review.

Issue	Mitigations and permit conditions	Rationale
<p>Discrepancy in the frequency of monitoring and inspection of the outfall to ensure proper functioning between the Construction Environmental Management Plan (CEMP) and the Stormwater Pollution Prevention Plan (SPPP).</p>	<p>None required.</p>	<p>The Port Authority provided clarification to the City of Pitt Meadows:</p> <ul style="list-style-type: none"> Section 9.1.2 of the CEMP specifies that Environmental Monitor and the Project Engineer would conduct annual monitoring for the function of the outfall, with additional inspections during periods of high rain events (>25 mm in 24 hrs) with the potential for quarterly water quality monitoring to also take place during any of the function monitoring visits Section 8.4.1 of the SPPP specifies that for one year following construction, the Applicant would conduct monthly monitoring for water quality, which would be reduced to quarterly after one year <p>The City of Pitt Meadows accepted the clarification and had no further comments.</p>
<p>The CEMP did not indicate that monitoring reports also be sent to the City of Pitt Meadows.</p>	<p>If approved, a permit condition would be included that requires the Applicant to carry out the Project in accordance with the CEMP.</p>	<p>The Port Authority requested that the Applicant provide the monitoring reports to the City of Pitt Meadows. The Applicant has updated the CEMP to reflect this change.</p>

5. Public engagement

Public engagement occurred through the Canadian Impact Assessment Registry. An applicant led public engagement process was not required; however, the Applicant was required to create a project-specific webpage. Issuance of construction notification letters would be required and is included as a Permit condition.

5.1. Canadian Impact Assessment Registry

To meet requirements of section 86 of the *Impact Assessment Act*, the Port Authority posted a description of the Project and notice of public participation to the Canadian Impact Assessment Registry to provide the public 30 calendar days to comment on the project and provide community knowledge.

The comment period ran from October 12 to November 10, 2022. At the close of the 30-calendar day public comment period, no comments were received.

5.2. Summary of public engagement activities

5.2.1. Port Authority webpage

A description of the Project and proposed works, and all supporting materials (and links), were posted to the Port Authority's website in October 2022 for public review and comment.

5.2.2. Applicant webpage

The Applicant posted a Project-specific webpage in October 2022 that included a project description, application submission materials, a link to the Port Authority's project-specific webpage as well as contact details for the Applicant and the Port Authority's Project Environmental Review department.

5.2.3. Construction notification letters

The Port Authority assessed the proposed Project and determined that it could have potential impacts to community interests in the surrounding area during construction. These potential impacts include traffic, noise, and dust impacts during construction.

As a result, the Applicant is required to send a construction notification to adjacent residents and businesses as shown in the map below. The notification area is within approximately 400 metres of the Project site (Figure 1). The Applicant shall distribute the construction notification at least 10 business days prior to the start of the works (Permit condition number 17). The construction notification will be posted on the Port Authority's and the Applicant's websites.

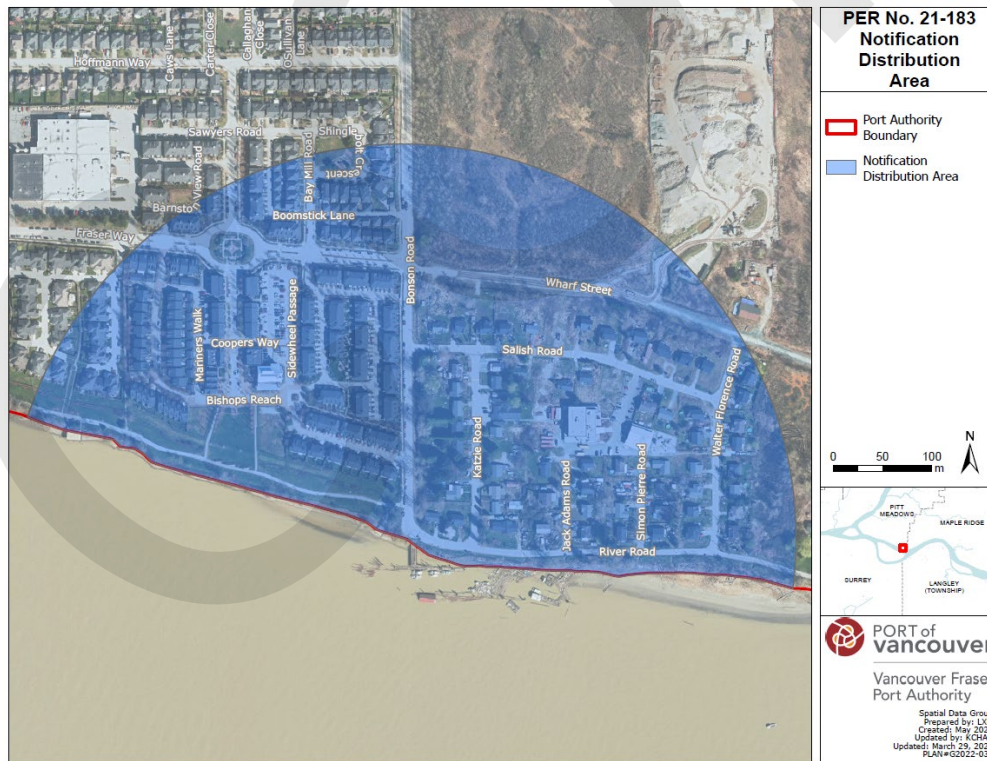


Figure 1 Map of Notification Area

6. Indigenous consultation

The Port Authority reviewed the proposed Project and determined that the Project may have the potential to adversely impact Aboriginal or Treaty rights.

The Port Authority made best effort to consult following Indigenous groups:

- Katzie First Nation
- Kwantlen First Nation
- Musqueam Indian Band
- Semiahmoo First Nation
- S'ólhTéméxw Stewardship Alliance - notification
- Tsleil-Waututh Nation

The Port Authority carried out the following consultation activities:

- Provided a referral package for review including, a referral letter, location plan, grading and utilities drawings, Bonson outfall drawings, stormwater pollution and protection plan, construction environmental management plan, habitat assessment, archaeological impact assessment
- Provided a Project location map to Indigenous groups who were notified of the Project
- Conducted check-ins on the Project with Indigenous groups who have standing monthly PER sessions
- Sent reminders to Indigenous groups who did not confirm they had no comments

The Port Authority did not receive any comments.

The Port Authority has made a meaningful effort to consult with all potentially affected Indigenous groups. Based on the record of consultation, the Port Authority is of the view that the duty to consult has been met.

7. Environmental effects review

To fulfill its responsibilities under the *Canada Marine Act* and the *Impact Assessment Act*, the Port Authority must make a determination on the potential environmental effects of a proposed project on Port Authority managed lands and waters prior to authorizing those works to proceed. To make that determination, the Port Authority considers the residual adverse effects of the Project, that is, the effects after mitigation measures have been taken into account.

This section of the project and environmental review report summarizes the environmental effects review conducted for the Project and provides the environmental effects determination. 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.

The temporal scope of the review includes Project construction and operation.

The environmental review considered potential adverse environmental and social effects of the Project on 15 environmental components (e.g., air quality, noise, soils, species with special status, aquatic resources, 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 environmental effects review and proposed mitigations.

7.2. Environmental effects and mitigation summary

Project information pertinent to the environmental review includes the following:

- The Applicant submitted a Request for Review to Fisheries and Oceans Canada (DFO). DFO has reviewed the project and determined that a *Fisheries Act* Authorization is not required. DFO has issued a Letter of Advice recommending mitigation measures to be implemented to reduce potential impacts to fish and fish habitat and aquatic species at risk. These include carrying out works in the dry, ensuring that material such as rock or riprap is inert and free of fines, implementing an erosion and sediment control plan, implementing a spill response plan, and monitoring by a qualified environmental professional for all sensitive and high-risk works.
- The habitat assessment submitted as part of the application, including a physical assessment and desktop review of environmental resources in the Project site. The Project site occurs between a municipal roadway and the Fraser River. Low-growing native and non-native vegetation occurs along the sloped bank between the roadway and the river foreshore. The banks of the river are undercut and show signs of erosion. The Fraser River is a fish-bearing stream and provides habitat for numerous fish and aquatic species. The Project site may provide habitat for birds, raptors, and small mammals. Several federally-listed wildlife species at risk were identified to have (low) potential to occur within the Project site including Great Blue Heron, Pacific Water Shrew, Oregon Forestsnail, and White Sturgeon. Although no suitable habitat was identified for Great Blue Heron, Pacific Water Shrew, Oregon Forestsnail and they are not anticipated to be affected by the Project. The Project would result in permanent and temporary impacts to wildlife, fish, and vegetation through vegetation removal, headwall installation, the introduction of new flows to the Fraser River, and construction activities. Construction works are not expected to affect species at risk.
- The construction environmental management plan (CEMP) submitted as part of the application identified mitigation measures to be implemented during the Project, including: scheduling activities to occur within least-risk work windows for aquatic species, undertaking environmental monitoring (including water quality monitoring) by a qualified environmental professional, installing temporary erosion and sediment control measures, and implementing spill prevention and response procedures.
- A desktop-based hydrotechnical assessment submitted as part of the application identified that the outfall (and associated storm system) would introduce new flows to the Fraser River. Localized scour at the outfall is also expected. The pipe would be around 60% full with an average flow velocity under 2.5 metres per second. A tide gate and duckbill valve along with some backpressure on the flow from the Fraser River when water levels are high would regulate the flow. The proposed riprap armouring and concrete headwall have been designed to protect against scour and erosion. Following installation, the project engineer would conduct annual monitoring to monitor outfall function and water quality monitoring would take place monthly for the first year, and then quarterly.
- A stormwater pollution and prevention plan prepared for the adjacent upland development (outside the Port Authority's jurisdiction) includes the installation of a hydrodynamic (swirl concentrator) oil/grit separator (Rainwater Management unit of equivalent) to treat stormwater

prior to discharge through the new outfall. A new greenway ditch outside the Port Authority's jurisdiction would also filter stormwater prior to discharge.

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

Environmental component	Potential adverse effects?		Overview of potential adverse effects, mitigation measures, and residual adverse effects	Significant residual adverse effects?	
	Yes	No		Yes	No
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects on air quality during construction from equipment operation and dust generation. Impacts from construction would be temporary and short-term in duration and would cease after Project construction.</p> <p>Mitigation measures to reduce the potential for adverse effects due to air quality would be implemented as detailed in the CEMP. This includes an idling reduction, regular dust control, and covering material loads.</p> <p>With mitigation in place, residual adverse effects on air quality are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lighting	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>No new lighting would be installed as part of the Project.</p> <p>Project works would take place during standard construction hours of 7:00 am to 8:00 pm, as described in the CEMP.</p> <p>Impacts due to lighting are not anticipated.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Noise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse noise effects during construction activities. Construction noise is not anticipated to be greater than existing urban use.</p> <p>Impacts from noise during construction would be temporary and short-term in duration.</p> <p>Mitigation measures to reduce the potential for adverse effects due to noise would be implemented as detailed in the CEMP. Measures include idle reduction and keeping machinery in good working order. Where possible, work would be undertaken during standard construction hours of 7:00 am to 8:00 pm. Some construction and physical activities depend on tidal conditions. Therefore, works may need to take place outside standard construction hours. If required, works outside standard construction hours will be minimized where possible. The public will be notified of the potential for works outside regular work hours.</p> <p>After construction, no noise sources would remain on site.</p> <p>With mitigation in place, adverse effects on the acoustic environment are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects to soil (upland) during construction from minor excavation, importing and placement</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental component	Potential adverse effects?		Overview of potential adverse effects, mitigation measures, and residual adverse effects	Significant residual adverse effects?	
	Yes	No		Yes	No
			<p>of soil/structural fill and riprap for the headwall, and potential spills.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects to soils. Stockpiled soils would be covered with poly sheeting to prevent erosion. Imported soils would be clean and free of contamination. Clean equipment would be used during construction. A spill prevention, containment and clean-up plan would be implemented prior to works.</p> <p>With mitigation in place, adverse effects on soil quality are expected to be not significant.</p>		
Sediments	■	<input type="checkbox"/>	<p>There is potential for adverse effects to sediment (aquatic) during construction from minor excavation and importing and placement of soil/structural fill and riprap for the headwall, and potential spills. During operations, there is some potential for localized scour.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects to sediments. Stockpiled soils would be covered with poly sheeting to prevent erosion and potential runoff into aquatic environments. Imported soils and structural fill would be clean and free of contamination. Clean equipment would be used during construction. A spill prevention, containment and clean-up plan would be implemented prior to works.</p> <p>The outfall design would regulate flow and maintain velocity. The riprap armouring and headwall have been designed to protect against scour and erosion.</p> <p>With mitigation in place, residual adverse effects on sediment quality are expected to be not significant.</p>	<input type="checkbox"/>	■
Ground water	■	<input type="checkbox"/>	<p>There is potential for adverse effects to groundwater from spills during construction activities.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects to groundwater. Clean equipment would be used during construction. A spill prevention, containment and clean-up plan would be implemented prior to works.</p> <p>With mitigation in place, residual adverse effects on groundwater quality are expected to be not significant.</p>	<input type="checkbox"/>	■

Environmental component	Potential adverse effects?		Overview of potential adverse effects, mitigation measures, and residual adverse effects	Significant residual adverse effects?	
	Yes	No		Yes	No
Surface water and water bodies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects on surface water and water bodies during construction activities, including excavation and riprap placement. Potential adverse effects are anticipated to be limited to water quality effects.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects to surface water and water bodies. Works in the intertidal zone would be conducted in the dry, above the surface of the water. Environmental monitoring would be carried out by a qualified environmental professional and would include water quality monitoring. Riprap would be clean and free of fines. Clean equipment would be used during construction. A spill prevention, containment and clean-up plan would be implemented prior to works.</p> <p>During operation, stormwater from the adjacent upland development would pass through an oil/grit separator prior to discharge to the Fraser River. A greenway ditch outside the Port Authority's jurisdiction would also filter stormwater prior to discharge.</p> <p>Riprap armouring and concrete headwall have been designed to protect against scour and erosion of the riverbed.</p> <p>With mitigation in place, residual adverse effects on surface water and water bodies are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Species/habitat with special status</p> <p>Assessed under section 79 of the <i>Species at Risk Act</i>, as applicable</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects on species with special status during marine construction activities including the potential for sensory disturbance, accidental injury or mortality, effects from spills, or impacts to water quality.</p> <p>Several federally-listed wildlife species at risk were identified to have (low) potential to occur within the Project site including Great Blue Heron, Pacific Water Shrew, Oregon Forestsnail, and White Sturgeon. There is no suitable habitat for Great Blue Heron, Pacific Water Shrew, Oregon Forestsnail and they are not anticipated to be affected by the Project.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects to species/habitat with special status including reducing noise, completing wildlife sweeps prior to starting works, proper waste disposal and storage, implementing a stop work procedure, and implementing a spill prevention, containment and clean-up plan. Impacts to aquatic species with special status would be mitigate by carrying out works during the regional timing window, carrying out work in the dry, and implementing erosion and sediment control measures. Environmental monitoring would be carried out by a qualified</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental component	Potential adverse effects?		Overview of potential adverse effects, mitigation measures, and residual adverse effects	Significant residual adverse effects?	
	Yes	No		Yes	No
			<p>environmental professional and would include water quality monitoring.</p> <p>The Applicant submitted a Fisheries and Oceans Canada (DFO) Request for Review. DFO determined that the impacts to fish and fish habitat were not likely to result in the death of fish by means other than fishing, or the harmful alteration, disruption, or destruction of fish habitat. DFO issued a Letter of Advice with recommendations to mitigate impacts to fish and fish habitat – including White Sturgeon.</p> <p>With mitigation in place, residual adverse effects on the species described above are not likely and if they occurred they are expected to be not significant.</p>		
Wildlife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects on wildlife during construction including the potential for sensory disturbances, accidental injury or mortality, and effects from spills.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects on wildlife including reducing noise, completing wildlife sweeps prior to starting works, proper waste disposal and storage, implementing a stop work procedure, and implementing a spill prevention, containment and clean-up plan. Environmental monitoring would be carried out by a qualified environmental professional and would include water quality monitoring.</p> <p>Mitigation measures outlined in the construction environmental management plan would be implemented during construction to mitigate adverse effects on wildlife.</p> <p>With mitigation in place, residual adverse effects on wildlife are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental component	Potential adverse effects?		Overview of potential adverse effects, mitigation measures, and residual adverse effects	Significant residual adverse effects?	
	Yes	No		Yes	No
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>There is potential for adverse effects on vegetation. Approximately three-square meters of low-productivity herbaceous vegetation and invasive species would be removed during construction. Disturbed areas would be reseeded following construction.</p> <p>The Project may also result in the introduction or spread of invasive species.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects on vegetation. All seed would be certified weed-free, machinery, equipment and footwear would be clean prior to entering or leaving the site, invasive species would be managed prior to construction, erosion and sediment control measures would be in place, and a spill prevention, containment and clean up plan would be implemented.</p> <p>With mitigation in place and revegetation measures to be implemented, no residual adverse effects on vegetation are expected.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetlands	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The Project is located on the bank of the Fraser River and is not within wetland habitat. No known wetlands occur in adjacent areas.</p> <p>Wetland habitat is not anticipated to be affected by the Project.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental component	Potential adverse effects?		Overview of potential adverse effects, mitigation measures, and residual adverse effects	Significant residual adverse effects?	
	Yes	No		Yes	No
Aquatic resources (e.g., aquatic plants, fish and fish habitat, waterbirds, marine mammals, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Project-related activities have the potential to disturb aquatic species and fish habitat during construction and operation.</p> <p>During construction, there may be effects to aquatic resources through induced turbidity and other changes to water quality, and accidental spills.</p> <p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects on aquatic resources including carrying out works during the regional timing window, carrying out work in the dry, and implementing erosion and sediment control measures and the implementation of a spill prevention, containment and clean-up plan. Environmental monitoring would be carried out by a qualified environmental professional and would include water quality monitoring.</p> <p>During operations there would be a new permanent water source contributing flows to the Fraser River. There is potential for localized scour.</p> <p>Stormwater would be treated prior to discharge. The outfall design would regulate flow and maintain velocity. The riprap armouring and headwall have been designed to protect against scour and erosion. Following installation, the project engineer would conduct annual monitoring to monitor outfall function, and water quality monitoring would take place monthly for the first year, and then quarterly.</p> <p>The Applicant submitted a Fisheries and Oceans Canada (DFO) Request for Review. DFO determined that the impacts to fish and fish habitat were not likely to result in the death of fish by means other than fishing, or the harmful alteration, disruption, or destruction of fish habitat. DFO issued a Letter of Advice with recommendations to mitigate impacts to fish and fish habitat.</p> <p>With mitigation in place, residual adverse effects on aquatic resources are expected to be not significant.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Health and socio-economic conditions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The Project could result in impacts to water quality or the introduction of deleterious substances, which in turn could impact sediment or aquatic organisms including benthic organisms or fish species. This could result in temporary indirect impacts to Indigenous groups and others who rely on the species of the Fraser River for sustenance.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental component	Potential adverse effects?		Overview of potential adverse effects, mitigation measures, and residual adverse effects	Significant residual adverse effects?	
	Yes	No		Yes	No
			<p>Mitigation measures outlined in the CEMP would be implemented during construction to mitigate adverse effects on aquatic resources including carrying out works during the regional timing window, carrying out work in the dry, and implementing erosion and sediment control measures and the implementation of a spill prevention, containment and clean-up plan. Environmental monitoring would be carried out by a qualified environmental professional and would include water quality monitoring.</p> <p>The effects are expected to be short term and temporary in nature and low in magnitude. Any effects on air quality and noise are predicted to be negligible.</p> <p>With mitigation in place, residual adverse effects on health or socio-economic conditions of people, including Indigenous people are expected to be not significant.</p>		
<p>Archaeological, physical, and cultural heritage resources</p>	<p>■</p>	<p>□</p>	<p>There is potential for adverse effects on archaeological, physical, and cultural heritage resources.</p> <p>The Project area is adjacent to DhRq-5, which includes pre-contact cultural material and lithics. To its east, there are also a number of other archaeological sites within 1km. Based on this and other readily available information, the likelihood of impacts on archaeological resources is high. An Archaeological Impact Assessment (AIA) would be completed for this project concurrent with construction. The AIA would address and mitigate potential impacts to archaeological resources and would include monitoring for archaeological potential, proper recovery of archaeological resources and provision of a final report to the port authority satisfaction.</p> <p>With mitigations in place, residual effects on adverse effects on archaeological, physical, and cultural heritage resources are expected to be not significant.</p>	<p>□</p>	<p>■</p>
<p>Accidents and malfunctions</p> <p>Assessed as required by the <i>Canada Marine Act</i></p>	<p>■</p>	<p>□</p>	<p>There is potential for adverse effects on surface water, soils, and sediments from accidental equipment leaks or spills.</p> <p>Mitigation measures would be in place to reduce potential for adverse, project-related effects due to accidents, by implementing the measures outlined in the Construction Environmental Management Plan.</p> <p>With mitigation measures in place, the effect of an accident or malfunction on the environment, if it were to occur, is predicted to be not significant.</p>	<p>□</p>	<p>■</p>

7.3. Characterization of effects

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

- Air quality
- Noise
- Soils
- Sediments
- Ground water
- Surface water and water bodies
- Species/habitat with special status
- Wildlife
- Aquatic resources
- Archaeological, physical, and cultural heritage resources
- Accidents and malfunctions

Overall, the residual adverse effects of the Project on all of the environmental components are generally characterized as:

- Low in magnitude: the effects differ from the average value for baseline conditions, but are within the range of natural variation and are expected to be well below guideline or threshold values
- Local in extent: Effects are expected to extend beyond the Project footprint to within the local study area (e.g., a neighbourhood)
- Short and long term in duration and intermittent in frequency:
 - During construction, effects are expected to be short-term in duration because the Project construction phase would be intermittent and temporary for approximately two to four weeks.
 - During operation, effects are expected to be long-term, as the stormwater outfall would be in operation for decades. The outfall would discharge treated stormwater intermittently.
- Reversible: the outfall would result in discharge to the Fraser River that could be removed or decommissioned at the end of the project life.

Based on the characterization above, the mitigation measures proposed by the Applicant, and the permit conditions, the residual adverse effects from the Project are predicted to be not significant.

8. Conclusion

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. 21-183**.

Appendix 1: List of information sources

The Port Authority has relied on the following sources of information for the review of the Project:

- Application form and materials submitted by Applicant on May 10, 2022
- Project correspondence from May 10, 2022 to March 31, 2023
- All plans and drawings labelled PER No.21-183 A to C
 - A. Reference Stormwater Drawing, January 28, 2022, Hub Engineering Inc.
 - B. Outfall Drawing (Sheet 1 of 2), September 14, 2021, Northwest Hydraulic Consultants Ltd.
 - C. Outfall Drawing (Sheet 2 of 2), September 14, 2021, Northwest Hydraulic Consultants Ltd.
- Topographic Survey 1-500, December 20, 2020, Wade and Associates
- Location Plan, April 29, 2022, Hub Engineering Inc.
- Lot Grading and Utilities, April 29, 2022, Hub Engineering Inc.
- Site Plan, April 29, 2022, Hub Engineering Inc.
- Archaeological Overview Assessment, June 18, 2020, Terra Archaeology
- Bonson Road Stormwater Outfall Design, September 30, 2021, Northwest Hydraulic Consultants Ltd.
- Construction Environmental Management Plan, February 9, 2023
- Fisheries and Oceans Canada Request for Review Application, December 12, 2021
- Stormwater Pollution and Protection Plan, September 7, 2022, Pacific Land Group
- Regulatory Approvals
 - Letter of Advice, Fisheries and Oceans Canada, August 3, 2022
 - Dike Maintenance Act Approval, BC Ministry of Forests, Lands, Natural Resources Operations and Rural Development
 - Change Approval, Water Sustainability Act, BC Ministry of Forests

Appendix 2: Location plan

