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Memo

To:	[redacted]	From:	Mark Johannes, PhD., R.P.Bio, P.Biol, Principal Geoff Rousseau, P.Ag., Project Manager
	FrontCounter BC, Skeena Region Ministry of Forests		Stantec Consulting Ltd., Burnaby
File:	Application Number 100347761	Date:	May 25, 2022

Reference: Updated Crown Land Management Plan for Wetland adjacent to CN Mile 84.4

INTRODUCTION

This Crown Land Management Plan (CLMP) has been prepared to support Canadian National Railway Company (CN)'s application for a Crown Land Lease. The parcel of unsurveyed crown land is located adjacent to CN's property along the Skeena subdivision at Mile 84.4 (416412.2 m E, 6007295.3 m N), British Columbia (BC; Figure 1). This CLMP provides the following:

- Background, Project overview, summary of the investigative work, CN's Indigenous engagement, location, infrastructure, and schedule
- Description of the environmental and socio-economic setting
- Environmental management recommendations and monitoring plans for offsetting construction

BACKGROUND

CN retained Stantec Consulting Ltd. (Stantec) to provide regulatory support for the new Zanardi Bridge and new connecting track between Port Edward and Kaien island, BC (the Zanardi Project). An Authorization and associated fish habitat offsetting plan are required for the Zanardi Project under the *Fisheries Act*. The location of proposed offsetting is near the eastern limit of the Project at CN's Mile 84.4.

The offsetting plan includes installing a 6-foot (1.8 m) diameter smooth walled steel pipe (SWSP) through CN's right-of-way to address an existing barrier to fish passage between Lelu Slough and a roughly 1.8- hectare (ha) saltmarsh (Figure 2). CN's intent is to install the new 6-foot diameter SWSP *before* any construction is undertaken on the Zanardi Project, to avoid time lags between the functioning of the offsetting and the effects of the Zanardi Project construction on the marine environment. A further environmental benefit of the overall Zanardi Project includes the removal of derelict creosote marine dolphins and wharves off the shore of Port Edward, BC, north of the salt marsh area. The connection will make the saltmarsh accessible to marine fish and provide refugia, feeding habitat, and improve the flow of nutrients to the Lelu shoreline ecosystem (Stantec 2021). Most of the wetted saltmarsh and some of the associated riparian habitat is located on unsurveyed Crown Land. The remaining portions are on adjacent privately held land.

Reference: Crown Land Management Plan for Wetland adjacent to CN Mile 84.4

CN is not proposing to install infrastructure on the Crown Land. Rather, CN is seeking a general industrial tenure of the marsh to provide fish habitat protection above and beyond the protections that will automatically be in place under the *Fisheries Act,* once the pipe is installed, and the limitations on the scope and extent of development currently provided by Port Edward's Zoning Bylaw NO. 713, 2020 (RURAL A1 classification along the western part of the wetland).

The following provides information to address the requirements of Sections 1 to 3 of the BC *Management Plan Application Guidance Document* (Government of BC 2019). Infrastructure will not be installed on the Crown parcel, rather the new permanent infrastructure will be installed on CN property. Temporary construction access to ≤50 m^2 (0.005 hectares) may however be required in the existing Crown parcel for roughly 6 weeks to facilitate the installation of the works on CN's property. Access to utilities or water supply (surface water and/or groundwater) will not be required for the offsetting construction or during the lease.

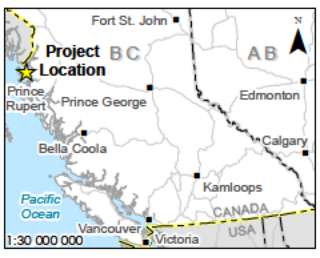
Information on the related investigative work, Indigenous engagement, location, description and justification, construction schedule and approach, waste management, and FireSmart BC approach are detailed below.

INVESTIGATIVE WORK

The following assessments have been completed within or near the subject Crown Land in support of CN's overall Zanardi Project:

- 2019 wetland characterization field survey (Stantec 2021)
- 2019 intertidal surveys at CN Mile 84.4 (Stantec 2021)

An Archaeological Impact Assessment was also completed for the CN Watson Island Siding from Milepost 82 to 86 near Port Edward, BC (Golder 2018).



- Highway
- Railway
- Topographic Contour
- Bathymetric Contour (m) (Chart 3800)
- City of Prince Rupert
- District of Port Edward
- Prince Rupert Port Authority Boundary
- CN Track Mile Post
- Port Edward Harbour Authority
- Coastal Wetland Offset Location

0 1 2 3 km

1 75 000 (at original document s ze of 8.5x11)

Notes
1. Coordinate System NAD 1983 UTM Zone 9N
2. Data Sources DataBC Government of Brit sh Columbia Natural Resources Canada
3. Imagery Source Microsoft Bing

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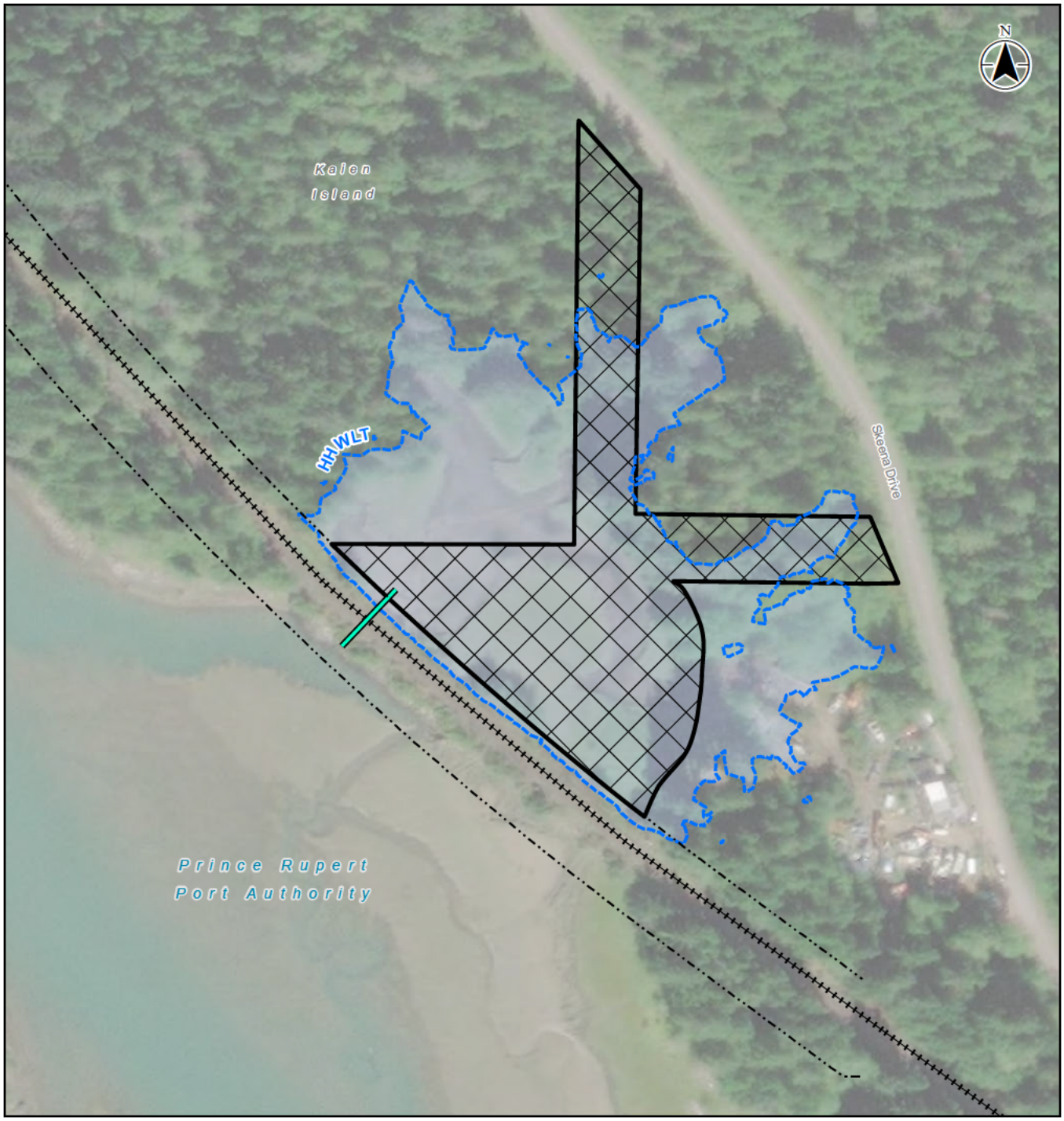
Project Location
Prince Rupert and Port Edward
Brit sh Columbia

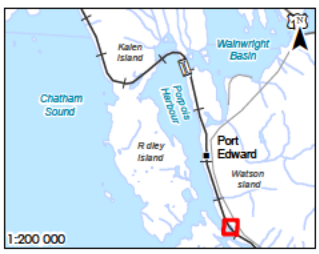
Project Number 123221657
Prepared by LTRUDELL on 20220429
Discipline Review by GROUSSEAU on 20220429

Client/Project/Report
Canadian National Railway Company
CN Mile 84 4
Crown Land Management Plan

Figure No.
1

Title
General Location Map





CN Right-of-Way
Existing Track
Higher High-Water Large Tide (7.4 m chart datum 3.579 m geodetic datum)
Proposed 1.8 m Diameter Culvert
Unsurveyed Parcel

0 20 40 60 80 100 m
1 2 000 (at orig nal document size of 8.5x11)

Notes
1. Coordinate System NAD 1983 UTM Zone 9N
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Client/Project/Report
Canadian National Railway Company
CN Mile 84 4
Crown Land Management Plan

Figure No.
2

Title
Detailed Site Plan

Reference: Crown Land Management Plan for Wetland adjacent to CN Mile 84.4

[redacted]

LOCATION, GENERAL DESCRIPTION, JUSTIFICATION, AND USE

The Crown Land is located within a rural area of the District of Port Edward, BC. It is bordered by unoccupied private land to the north, private land used as a storage yard to the south and by Skeena Drive to the east. CN's property and mainline track is west of the Crown Land and its causeway divides the saltmarsh from the Pacific Ocean shoreline (Lelu Slough and Channel). The wetted area presently receives some freshwater seepage from a forest area east of Skeena Drive and diurnal tidal inundation through rock voids in the existing rail ballast. Hence, the water in the saltmarsh is brackish (Stantec, 2021).

The objective of CN's offsetting plan is to support local marine resident fish, invertebrates and migrating juvenile fish. The wetland offset area was identified as both a feasible and potentially productive habitat offset that is accessible for construction within the CN property and nearby the Zanardi Project for which it offsets habitat losses.

Construction activities for the proposed installation of the 6' (1.8 m) diameter steel pipe to connect the saltmarsh to the marine environment will largely occur on CN property under the existing rail bed in 2023, although for planning purposes, up to 50 m² may be required on the Crown parcel for temporary construction access.

Following construction, the offsetting will be monitored to meet the requirements of the Zanardi Project authorization under the Fisheries Act. CN anticipates habitat offsetting effectiveness monitoring to be completed over a 5-year period beginning the first full year following construction. Each annual survey will include a spring (April) and late summer (August) assessment for each of the five years.

INFRASTRUCTURE

New infrastructure is not proposed on the Crown Land parcel. No waste will be generated, septic systems are not required, and there will be no changes to existing utilities, if any are present. A description of the construction is below, for reference.

Construction of the offsetting measures is expected to occur over a roughly six-week period, the timing of which will be determined by CN Bridges & Structures group, and CN's contractor. Prior to construction, a site-specific Environmental Protection Plan will be prepared by the selected contractor. This will be made available to Indigenous communities for review and comment. The construction tasks will generally proceed as outlined below.

Task 1 Site mobilization, access, and setup of temporary workspace

Construction will include machine access pathways as necessary, mobilization of equipment (via CN property or from adjacent private driveway which extends onto CN property) isolation / water bypass of the work area from tidal water flows, and installation of mitigation measures (e.g., erosion and sediment controls). Construction will be facilitated from Skeena Drive in the District of Port Edward, via private parcel access to the CN property and on CN track.

Task 2 Pipe installation

Installation of the pipe on CN's property by the contractor will include the following:

- A temporary workspace area of approximately 6 m x 6 m is required for a bell hole to be excavated and shored on the upslope side of the rail tracks and will progress toward Lelu Slough. Once the site is set up, the crossing is constructed using an auger to drive the pipe horizontally under the rail bed.
- Material under the rail track bed is removed by an auger operating inside the pipe and stored in the bell hole or at surface.
- One approximately 26 m long steel 1,800 mm (6 foot) diameter pipe will be installed through the grade in welded sections.

Task 3 Back-filling, reclamation of disturbed areas, water re-introduction

Shoring will slowly be removed; bell hole workspaces are backfilled, and disturbed areas are reclaimed and revegetated. Re-introduction to the aquatic environment will be timed with low tide to limit turbidity.

Task 4 Demobilization

Equipment and materials will be removed via CN's property and adjacent private land parcels.

ENVIRONMENTAL

This section of the memo provides information to address the requirements as per Sections 4 and 5 of the BC *Management Plan Application Guidance Document* (Government of BC 2019). No pesticides and herbicides will be used during construction. There will be no visual impacts or changes to public access, and no works will occur in Aquatic Lands, as defined in the guidance. Description of potential effects to terrestrial land, atmospheric resources, habitats, and socio-community values is below. Mitigation measures and best management practices applied to the CN property are described afterward, for reference.

LAND IMPACTS

Up to 50 m^2 of temporary sediment disturbance may occur in the wetland in association with the pipe installation on CN property. A review of existing information specific to aquatic habitat, wildlife, vegetation, and community within CN's property was completed to determine effects to the existing environmental setting and potential indirect effects to the adjacent Crown Land.

Vegetation Removal

No vegetation will be cleared on the Crown Land during construction activities.

Soil / Sediment Disturbance

Soils / sediments will be disturbed during the excavation of the bell hole on the upslope side of the rail crossing and the removal of material via an auger during the installation of the pipe underneath the existing rail bed.

Soils within the Crown Land may be temporarily disturbed during construction if required for the pipe installation. However, the area of temporary disturbance is limited and will be restored post construction. Work areas will be isolated from tidal waters through constructed coffer dams or similar and Contractors will implement spill preparedness and response plan onsite.

Riparian Encroachment

The pipe construction will be staged within the upslope side of the CN ROW. While staging from the upland side, there will be no adverse effects to fish and fish habitat. Work areas will be isolated from tidal waters through constructed coffer dams or similar. Construction materials associated with the isolation will include rock and steel shoring and equipment such as excavators, crane-boom railcars, and dewatering pumps and storage tanks.

Archaeological Sites

An Archaeological Impact Assessment (AIA) was completed in 2018 for the proposed Watson Island Siding Project, which is located within the CN ROW from Mile 86 to Mile 82 (Golder 2018). The AIA focused on the land side of the existing railway tracks in areas where forest cover was characterized by old-growth forest, areas that were characterized by existing archaeological potential models and areas that contained historical remains. [redacted]

ATMOSPHERIC IMPACTS

Air and noise emissions from construction equipment and machinery are expected during pipe installation and will be mitigated using best management practices. No atmospheric impacts are anticipated after construction.

FISH AND WILDLIFE HABITAT

Potential effects on water quality, such as elevated turbidity, may result from construction or accidental release of hydrocarbons from heavy equipment/machinery working in or near water. To mitigate this risk, the pipe construction will be staged from within the CN ROW, which is currently disconnected from the broader marine environment due to a lack of drainage infrastructure. While staging from the upslope side of the track, no adverse effects to fish and fish habitats are anticipated. Work areas will be isolated from tidal waters through constructed coffer dams or similar.

Disturbance to wildlife habitat is not anticipated as no vegetation will be cleared during construction and the work area will be isolated. Construction noise may temporarily displace wildlife from suitable habitats within and adjacent to the pipe installation.

Reference: Crown Land Management Plan for Wetland adjacent to CN Mile 84.4

SOCIO-COMMUNITY

The construction on CN's property will not change the current land-use or require changes to existing community services in the District of Port Edward.

MITIGATION MEASURES

The following mitigation measures in Table 2 have been selected based on the anticipated construction activities planned.

Table 2 Mitigation Measures anticipated for Construction

Topic	Mitigation Measures
Waste Management	• Waste or any miscellaneous unused materials will be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown into the aquatic or terrestrial environment. • Portable toilets will be located a minimum of 30 m from any waterbody. Sewage from portable toilets will be disposed of in an approved sewage disposal facility on an as needed basis. • Sorbent materials or soils saturated with hydrocarbons (greater than or equal to 3% by weight) are classified as hazardous waste under the British Columbia Environmental Management Act and will be managed accordingly. Used petroleum products, including their empty containers, will be collected, and transported to a licensed recycling facility in approved storage containers following applicable regulations.
FireSmart BC	As necessary, the Contractor will implement Fire Smart BC critical infrastructure assessment to determine the appropriate mitigation measures.
Invasive Species Management	The use of construction equipment and machinery has the potential to transport and introduce invasive species to the saltmarsh. The following mitigation measures will be implemented, as appropriate: • Construction will be undertaken in accordance with the Provincial *Weed Control Act* and associated regulation which requires the control of noxious weed species. • Equipment will be cleaned for invasive species (including seeds) prior to entering and exiting the saltmarsh area to prevent the introduction or dispersal of noxious or invasive weed species. • Equipment will be inspected for invasive species upon arrival to the Project site. Dispose of invasive plant species at a facility equipped to handle invasive plant waste.
Archaeological Resources	The presence of archaeological sites may persist, even in heavily developed settings. The contractor will implement an archaeological chance find management plan, prepared by an Archaeological consultant, prior to undertaking ground disturbing activities.

Reference: Crown Land Management Plan for Wetland adjacent to CN Mile 84.4

Table 2 Mitigation Measures anticipated for Construction

Topic	Mitigation Measures
Atmospheric	To manage air emissions and potential environmental effects during construction, the following mitigation measures will be implemented: • Stationary emission sources such as diesel generators will only be used as necessary and will be shut off when not in use, safety permitting • Avoid idling of vehicles and construction equipment when not in use • Equipment, vehicles, and stationary emission sources will be maintained properly prior to use. Non-road diesel equipment must use low-Sulphur diesel as available.
Noise	Construction noise will be generated during pipe installation. To manage noise and vibration, CN will implement the District of Port Edward's noise bylaw (DPE 2011) to the extent feasible and implement the following mitigation measures: • Equipment will be properly maintained and fitted with exhaust and muffler systems. • Engines will be turned off when not in use. Where possible, the dominant sound path will be blocked between the source and the receptor.
Aquatic Life	• Equipment will use biodegradable hydraulic fluids and re-fueling will not occur within 30 m of aquatic habitat. • The Environmental Monitor (EM) will conduct inspections of construction machinery, spill equipment, and required sediment and erosion control features. – An appropriate number of spill containment kits, containing materials appropriate to the works, will be readily accessible on-site in the event of a release of a deleterious substance to the environment. – On-site staff will be trained in spill response and use of spill containment kits. – If a spill occurs, the EM should be notified immediately, and if the spill is of a substance of reportable quantities that is toxic, polluting, or deleterious to aquatic life to Emergency Management BC at 1-800-663-3456 and Fisheries and Oceans Canada's (DFO's) Observe, Record and Report Hotline 1-800-465-4336. An EM will be on-site as required for construction works to monitor water quality (turbidity) in the nearby wetted area. The CCME water quality guidelines will be adhered to throughout construction (e.g., adding mitigation measures to prevent a change from background turbidity beyond thresholds).

Table 2 Mitigation Measures anticipated for Construction

Topic	Mitigation Measures
Wildlife	• Conduct nesting surveys at and adjacent to the project area before and during construction (April 4 to August 11 [ECCC 2018]). • Bird nests discovered onsite may not be disturbed. If bird nests are observed, guidance from an appropriately qualified wildlife biologist will be obtained regarding the establishment of mitigation (e.g., species-specific buffer areas around nests). • Maintain the active work site free of wildlife attractants (e.g., garbage, food, and odorous materials), potential nesting materials, and potential nesting sites (e.g., infrequently disturbed areas, open-ended pipes). • Disturbance of wildlife (e.g., scaring, physical contact, feeding) is not permitted. The EM must first be contacted if wildlife is found obstructing construction activities. • Listed (e.g., Threatened, Endangered, Special Concern) species discovered onsite must be reported to the EM.

ENVIRONMENTAL MONITORING

A QEP[1] or an EM[2] will oversee the pipe installation. Responsibilities of the QEP and EM include but will not necessarily be limited to developing the work plan and identifying temporary access points and materials staging areas with the Contractor, monitoring all work area isolation and excavations, conducting water quality monitoring to ensure compliance with provincial and federal water quality guidelines (i.e., turbidity) and overseeing site restoration once the pipe is installed. The EM and/or QEP will participate in daily tailgate meetings to review the scope of work each day and work with the Contractor to implement mitigation measures as required for specific construction tasks. The EM will inspect mitigation measures and provide technical advice and support to the Contractor to ensure they function as intended and are repaired or augmented as needed. The EM will work with the Contractor to address environmental matters properly and adaptively throughout construction.

POST-CONSTRUCTION MONITORING

Stantec will undertake post construction monitoring of the newly installed culvert and the saltmarsh, which will include assessments of culvert condition, as well as aquatic / submergent vegetation surveys, aquatic life and water quality sampling conducted at different tide levels. These activities will be completed under provincial and federal fish collection permits, with the associated annual reporting requirements. Foot surveys and handheld equipment will be used for these activities. Machine support will not be required.

[1] The QEP will be an Agrologist (P.Ag.), Applied Technologist or Technician (i.e., R.B.Tech. or C.Tech.), Professional Biologist (R.P.Bio.) or a Professional Geoscientist (P.Geo.) (BC Reg. 2019).
[2] Environmental Monitor will be a QEP (e.g., P.Ag., R.B.Tech., C.Tech., R.P.Bio., or P.Geo.) or will be overseen by a QEP (BC Reg. 2019).

Reference: Crown Land Management Plan for Wetland adjacent to CN Mile 84.4

CLOSING

We trust that this information meets with your present requirements. A copy of this CLMP will be provided to the construction Contractor prior to works commencing and reviewed with the operator's implementing construction. Should you require additional information, please contact Karla Graf, Manager, Environmental Impact, CN Western Region, 604 679 8039, Karla.Graf@cn.ca

Regards,

Stantec Consulting Ltd.

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Attachment A: Summary of Zanardi Bridge Engagement with Indigenous Groups
Attachment B: Information requests, comments, and responses

Copy: Karla Graf, Manager, Environmental Impact, CN

REFERENCES

District of Port Edward (DPE). 2011. District of Port Edward Noise Control Bylaw No. 520, 2011. Available at: https://www.portedward.ca/services/bylaws.

Environment and Climate Change Canada (ECCC). 2018. Nesting Periods. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#_zoneA_calendar.

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