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PURPOSE: Gardom Pond Decommissioning Design Brief

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DATE: January 23, 2018 **FILE:** 16-1856

SUBJECT: **Gardom Pond Dam Decommissioning/Naturalization Design Brief – Breach at Existing Spillway Location**

The CRD has developed a dam decommissioning concept considering, and in consultation with, the following documents and stakeholders:

1. AECOM engineering reports titled:
 - a. "Gardom Pond Dam Evaluation – North Pender Island", dated June 19, 2013.
 - b. "Gardom Pond Dam Evaluation – Alternative Spillway/Breach Evaluation", dated February 5, 2014.
 - c. "Gardom Pond Dam – Decommissioning of Low-Level Outlet and Additional Investigations of Alternative Spillway Evaluation", dated March 3, 2015.
2. Consultation with the following stakeholders:
 - a. The six water license holders held on Gardom Pond dam
 - b. The Ministry of Forests, Lands, Natural Resource Operations & Rural Development (FLNRO) regional Dam Safety Officer, John Baldwin
 - c. The Ministry of Transportation and Infrastructure (MoTi) South Island Operations Manager, Ryan Evanoff

The decommission work is planned to eliminate the storage of water that requires a water license under the BC Water Sustainability Act (WSA) for a dam. The current dam naturalization/decommission proposal provides for the spillway outlet to remain at its current location (see attached map).

The decommissioning effort will involve modifications to the existing outlet, extending across the Gardom Pond Park land (Owned by the CRD, Lot 12), 6610 Harbour Hill Drive (Owned by [REDACTED] Lot 8), and 6608 Harbour Hill Drive (Owned by [REDACTED] Lot 6) terminating at the tie-in point into the MoTi owned Harbour Hill Drive Road right-of-way (RROW), to provide for a 200-year period design flow storm event flow.

The proposed location for the spillway is a non-traditional method of dam breaching which leaves the dam intact but lowers the existing reservoir and spillway channel. The channel is to pass a 200-year period design flow of 0.36 m³/s. The pond will be effectively lowered to the original invert of the stream bed El. 84 m. The current pond surface elevation fluctuates seasonally between approximately El. 85-86 m. The dam crest is at El. 87 m.

The proposed outlet channel would cut from the existing pond outlet invert El. 85.98 m to the original outlet invert of El. 84 m extending approximately 110 meters west to the culvert beneath Gardom Lane (invert El. 84.31 m). Cut depths would taper from 2 m at the spillway entrance to

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around 1 m at the upstream end of the Gardom Lane culvert. The outlet side slopes are to be stable with a 3:1 slope or better. Excavated material would be windrowed on the north side of the cut. The channel from the spillway inlet to the Gardom Lane culvert would be riprapped with 150 mm nominal riprap over a geotextile filter cloth. A 1000 mm diameter culvert would be required at Gardom Lane to pass a 200-year period design flow.

Downstream of the Gardom Lane culvert the terrain slopes steeply towards the Harbour Hill Drive RROW (El. 82.5 m dropping to 51.6 m, ~25% slope). It is assumed that a head pond would be required at the downstream end of the Gardom Lane culvert and a riprap lined channel, or equivalent, would be required extending to the Harbour Hill Drive RROW. An energy dissipater, or equivalent, may be required prior to entering the Harbour Hill Drive RROW.

The extent of construction would end at the entrance to the Harbour Hill Drive RROW. Harbour Hill Drive was constructed by MoTi after the construction of the Gardom Pond dam and the roadway construction design considered the existing surface run-off and spillway flow from the area catchment.

MoTi acknowledges and accepts the CRD proposal to limit the extent of construction to the entrance point to the Harbour Hill Drive RROW with regard to the proposed decommissioning work. CRD's obligation will be to ensure the outlet flow is suitably discharged into the RROW. Any possible future drainage works required downstream of the tie-in point will be the responsibility of MoTi.

The existing dam embankment will remain in place and continue to serve as an access road to Lots 4 and 5. The existing low level outlet pipe extending through the dam embankment will be sealed with concrete. The existing 6" dry hydrant located on Gardom Lane directly to the west of the dam embankment will remain operational. An environmental impact assessment of the lowering of the water level in Gardom Pond will be required. Drainage of the pond may be supported by use of the existing standpipe located on the corner of Razor Point and Harbour Hill Road.

MoTi will require a work permit should the decommissioning effort extend into their RROW at the tie-in location. The CRD should make application for this work in January 2018.

Regards,



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Attachment(s): Site Plan, Proposed Dam Decommissioning Extent of Construction

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2 km sq.



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 10 3

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GARDOM POND DAM DECOMMISSIONING

EXTENTS OF PROPOSED CONSTRUCTION WORKS