

# Memo



**PURPOSE:** Gardom Pond Decommissioning Design Brief **AMENDMENT**

**FROM:** Ben Martin, P.Eng  
Senior Project Engineer, Facilities Management & Engineering Services

**DATE:** March 4, 2019 **FILE:** 16-1856

**SUBJECT:** **Gardom Pond Dam Decommissioning/Naturalization Design Brief – Breach at Original Stream Channel**

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Further to the January 23, 2018 design brief outlining a breach scenario at the existing spillway location, please accept this amended brief outlining a breach scenario at the original stream channel. Due to issues regarding land encumbrances the previously proposed design to breach at the existing spillway has been abandoned. The CRD has developed this dam decommissioning concept in 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
- d. Land Owners at 6606 Harbour Hill Drive, [REDACTED]

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 original stream outlet channel to be reinstated (see attached project drawings).

The decommissioning effort will involve modifications to the existing dam embankment, extending across 6606 Harbour Hill Drive (Owned by [REDACTED]) and fortifying the existing stream outlet channel extending to the tie-in point into the MoTi owned Harbour Hill Drive Road right-of-way (RROW).

The channel is to pass a 200-year period future design flow of 0.215 m<sup>3</sup>/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 be cut into the existing dam embankment with a 900 mm culvert (inlet invert 84 m, outlet invert 83.9 m) with the downstream channel extending approximately 160 meters to the Harbour Hill Drive RROW (El. 42 m). At the tie-in point a 0.9 m sump, lined with riprap, will be instated. The stream outlet channel would be riprapped with 150 mm nominal riprap over a geotextile filter cloth and measure 3 m wide by 0.45 m deep.

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

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The logo for CRD (Central River District) is located in the top right corner of the page. It consists of the letters 'CRD' in a bold, sans-serif font, set against a dark, curved background that resembles a stylized wave or a bridge structure.

Gardom Pond and 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.

However, due to anticipated future flow intensities greater than the 200-year period due to climate change, modifications will be undertaken further downstream. Accordingly, as part of the decommissioning work, a 600 mm culvert will be installed within the RROW at the junction of Harbour Hill Drive and Razor Point Road. In addition, drainage improvements will be undertaken at 6618 Razor Point Road which will include replacing two 400 mm culverts with 600 mm culverts and fortifying the existing outlet channel.

The existing dam embankment will be lowered by 0.35 m and remain in place and continue to serve as an access road to 6604 and 6602 Harbour Hill Drive. 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 updated environmental impact assessment of the lowering of the water level in Gardom Pond is underway.

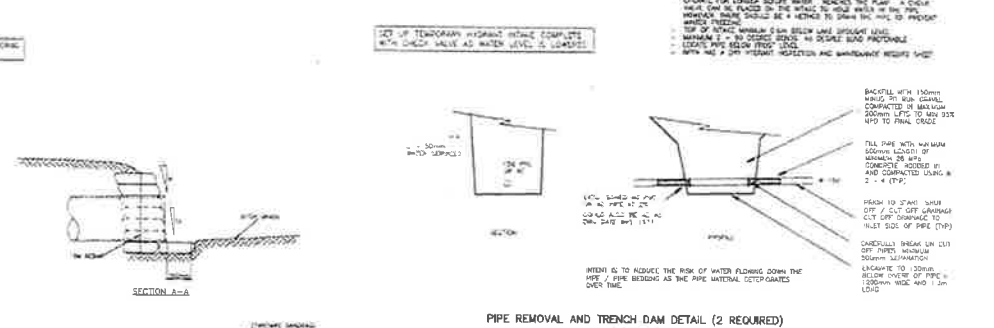
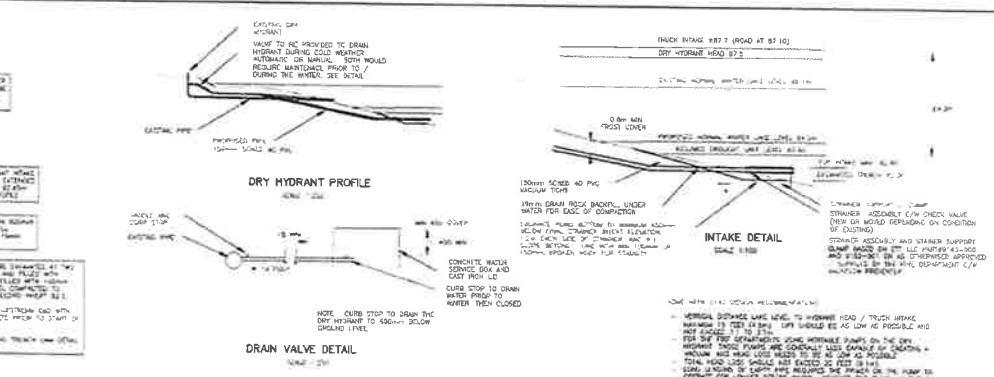
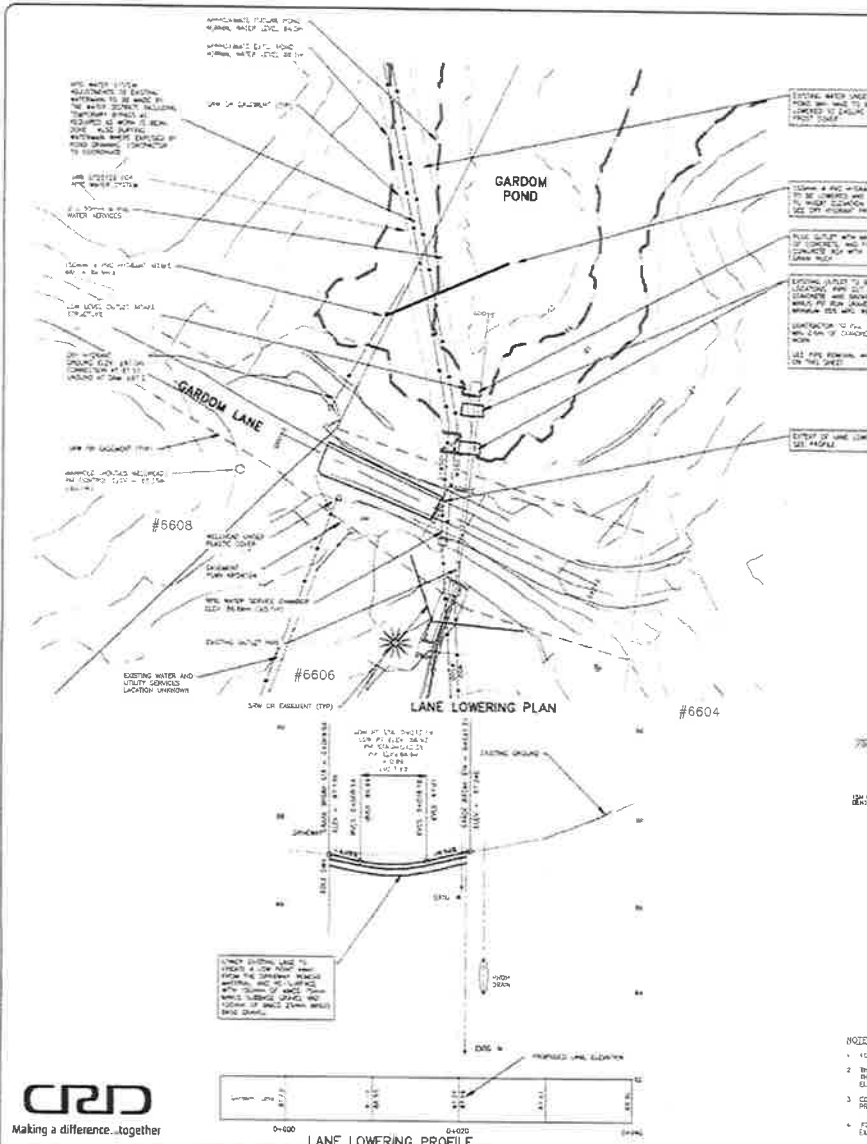
Regards,

A handwritten signature in black ink, appearing to read 'Ben Martin', is written over a horizontal line that extends across the page.

Ben Martin, P.Eng.  
Senior Project Engineer  
Facilities Management & Engineering Services

Attachment(s): Dam Decommissioning Drawings

CC: Joshua Frederick, Manager, Facilities Management & Engineering Services  
Steve May, Senior Manager, Facilities Management & Engineering Services



**FLOW CALCULATION (L/S) BASED ON 900Ø CONC PIPE OUTLET**

PERIOD	PRE-DEVELOPMENT	POST-DEVELOPMENT (2010)	POST-DEVELOPMENT (2020)
02	30	35	40
03	45	50	60
010	85	90	
0100	120	130	
0200	150	160	170
	WL 84.28	WL 84.31	

**34 HOUR RAINFALL INTENSITIES BASED ON HISTORIC INTERPOLATED AVERAGE AS FOLLOWS:**

2500	8100
2 = 35mm/hr	8 = 50mm/hr
5 = 70mm/hr	8 = 70mm/hr
10 = 84mm/hr	100 = 130mm/hr
150 = 115mm/hr	200 = 142mm/hr

**FLOW RATES ON 10% (100) ANNUAL FLOOD WITH:**

C1 = 7% FOR FOREST ABOVE POND
C2 = 7% FOR FOREST/DEVELOPED
C3 = 7% FOR FOREST/DEVELOPED
RAINFALL SCATTERED OVER CANALS 250
POND DISCHARGE TO BE ABOVE BENT AT START OF STORM
10 L/S ADDED FOR DRAINAGE OVER THE 8 HA DRAINAGE AREA

**CAULK CAPACITY BASED ON 100MM DIAM HEADWALL:**

800mm CAULKERT 400 L/S AT 10% FLOOD
800mm CAULKERT 400 L/S AT 10% FLOOD

- NOTES:**
1. THE GENERAL HOSE AND TAPPING NOTES APPLY TO DRAWING C1.
  2. THE LOCATIONS AND DIMENSIONS OF STREAM SERVICES ARE APPROXIMATE ONLY & THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM ALL LOCATIONS, SIZE, MATERIAL, AND BEHAVIOUR PRIOR TO CONSTRUCTION AND VERIFY THE EXISTENCE OF ANY SUBSTANCES.
  3. CONTACT BE, WFRD, TELUS, SHAW AND FORTIS BC (BY ONE CALL) A MINIMUM 3 DAYS PRIOR TO START OF ANY WORK.
  4. FOR GENERAL SERVING CLIENT INSTALLATION SEE FULL AREA SITE PLAN ALONG EXISTING WATERMAIN SKE AND POND CAPTING NOTES (SEE DET C).



LEGAL DESCRIPTION	VP 53831, VP 58342 AND VP 28075
PROJECT DATUM	ELEVATIONS ARE GEODETIC AND TO NAD83

NO.	REVISION/DESCRIPTION	DATE	CHECKED	BY
1	ISSUED FOR PERMITS	FEB 27/18	JR	
2	REVISED FOR CONSTRUCTION	FEB 27/18	JR	
NO.	REVISION/DESCRIPTION	DATE	CHECKED	BY

**JEA** JE ANDERSON & ASSOCIATES SURVEYORS -- ENGINEERS

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**CAPITAL REGIONAL DISTRICT**  
**PARKS AND ENVIRONMENTAL SERVICES**

**PROJECT:** GARDOM POND, NORTH PENDER ISLAND DAM NATURALIZATION DAM AREA DETAILS  
**CONTRACT # 18-1856C**

**27-M156-C3** ISSUE 1

