

Lucy Deverall

From: Verity Kirstein <verity.kirstein@pdp.co.nz>
Sent: Tuesday, 18 August 2026 11:08 am
To: Lucy Deverall
Subject: Fish Passage, Haul Road Culverts

Hi Lucy,

Following our discussions around fish passage on the haul road culverts, please the note the following points for consideration:

- Fish passage is considered challenging due to a) low flow volumes, b) the steep gradient, c) total length.
- In-culvert modifications (e.g. grouted rocks) might enable fish passage for climbing fish.
- May require additional modifications (e.g. constructed baffles (rock, timber)) to hold water to create pools.
- The low flows have the potential to create very low water depths, would need to channel the flow rather than have it spread the width of the culvert.
- Debris screen placed on the upstream end to prevent large debris entering.
- Given its length and confined spaces access, may need to include an inspection chamber part way down the length, my knowledge of this is limited.
- In-stream modifications would require an upsizing of the culvert to allow safe access for maintenance and reduce blockage potential. A box culvert with increased height is an option, or a larger circular pipe.
- An O&M plan for proactive work ahead of rain events.

At this stage, the potential options for fish passage on the Eastern Culvert (Trib 4) are conceptual and further development and analysis will be needed down the line to confirm whether it would be practical in both design, construction, and maintenance, as well as successful in achieving the end goal.

Regards
Verity

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