

Detainment Bund ^{PS120}

Construction, Operation and Lessons Learned



Location: Tapanui, West Otago

Total farm area: 380 ha

Device catchment area: 30 ha +

Storage capacity: Approximately 4,000 cubic meters.



Site Selection Process: 14 sites identified by a LIDAR (equivalent) study were considered.

Final Site: Most practical (i.e. least farm interruption), large size (good science), catch all location (near the bottom of the catchment).



Construction

- 1) Site dimensions/location confirmed and marked out.
- 2) Keyway excavated and back filled with compacted clay.
- 3) Wall height raised with compacted clay.



4) Primary drainage pipes installed.

5) Additional clay was required to achieve the desire wall height and this material was “borrowed” from the ponding area.



6) The wall height was built up to the required level with compacted clay.

7) Once the final dimensions were achieved the site was contoured to its final shape – this included the cutting a secondary flow path into the structure.



- 7) The site was dressed with recycled topsoil and sown back into grass
- 8) The area was refenced.



Physical Operation

Very simple to manage and farm around.

After a ponding event the valve (6 inch) is opened on the third day (the pond takes about ½ day to drain when completely full).

Samples are collected from monitoring weirs (upstream and downstream) and are sent for analysis (applies to the trial only).

There is very minimal (virtually nil) interruption to day-to-day farming operations.



Lessons learned

“You have to live with your mistakes, but you don’t have to compound them. To follow up an error with a foolish reaction is to lose twice” – James Clear

- 1) Water under pressure is a real bastard. Pay attention to sealing joints and correctly compacting all material – go overboard!
- 2) Make sure all material or systems in or under the wall are “as new”.
- 3) Ensure all joints are very well sealed.
- 4) Make sure all the materials used have a suitable strength/construction rating.
- 5) Make sure the operators working on your structures are up to the task.

