

**Folder [20240320 Williamson Park Pond Stormwater Detention Basin Alternate Design (2)]**

WRA Whangamata Rate Payers Association &gt; Folder [WRA Stormwater Action Group

(2023)]

Folder [Williamson Park Pond Weir]

**Second alternate design for Williamson Pond**

We have now learned more about Williamson Pond - information that can be used to reduce the issues with it. Still useful to consider earlier findings.

**There are three basic issues -**

1. health and safety - cannot have permanent detention ponds around public spaces, batter of sides etc
2. Water level effect on surrounding water table and
3. Water backs up into pipe system reducing efficiency of draining

**None are acceptable.**

The current statement that WRC require a wetland is false. WRC are not allowed by law to determine what we need. Their role is to review what we propose and work out in their opinion whether what is proposed will comply with the standards.

The sole reason WRC are being engaged is because an outfall pipe is suggested as the only alternative. This is also false. The pond was built sometime in the 1970's so doesn't 'suddenly' need a pipe.

Any outfall pipe into a water body requires a 'new' application which must meet new requirements.

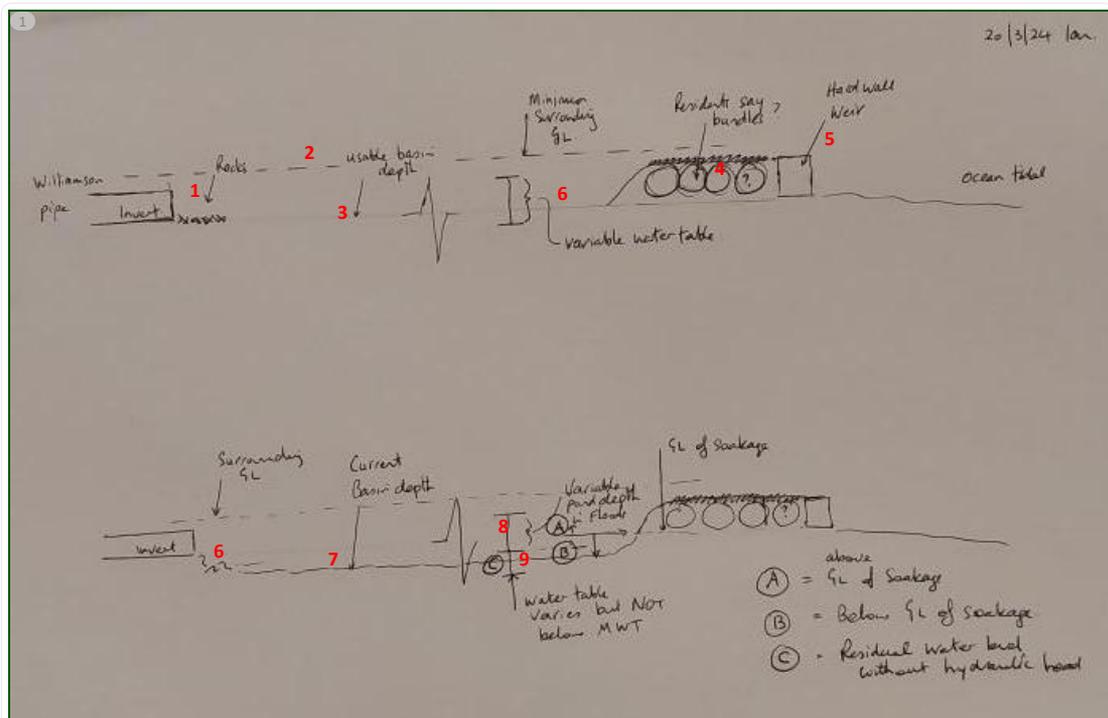
The immediate discussion must focus on why the pond is 'suddenly not working'. I explain why in the descriptions below.

**What needs review is:**

1. Is the soakage mechanism through the weir sufficient - can it cope with the catchment discharge within a reasonable time after rain? Does the soakage device need opening to be maintained and reducing in length to speed up flows
2. is the weir wide enough to discharge the pond water in flood
3. How can the new design be maintained so that its operation does not get affected at each maintenance cycle.
4. If the pond basin was lifted up to the invert would the pond water then affect the surrounding water table
5. If the pond could drain at sufficient rate through the soakage devices would the pipes still remain choked?
6. When the water table level lifted above the pond basin depth water would bleed into the basin - how will this be drained?

These are the questions that need answering.

Please read my first alternate proposal which showed the rainfall event in February drained into the surrounding water table in less than 2 days - whether this form of aquifer recharge is good also needs discussing. In summer dry months probably yes. In wetter winter months it won't happen anyway as the water table is already higher.



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#### Freehand sketch cross section of Williamson basin

**Top image** is my extrapolation of what I believe it looked like at design/build.

1. Is invert of 1.05m dia discharge pipe ex Williamson/Ocean. The rocks we see are likely to stop erosion when outflow is increased.
2. Is surrounding GL of park land
3. Is the basin depth - ie 2-3 times area is water storage potential (minus weir depth to GL)
4. Is a soakage system - best I can get from residents is its a series of wrapped devices - likely Geotech around something. It has a plastic grate surface to prevent erosion and the Geotech. At design it would not be sensible to have these below the basin depth as they would then be in the water table. ie the expected depth is just below the invert for fall from one end to the other
5. Is the weir height which will only operate when discharge rate exceeds the absorption back into the surrounding water table plus what travels through 4 the soakage devices.

Since the basins construction we believe was around the later 1970's when the Ocean outfall pipes were cut back residents say a new weir was constructed 2m back from the original one. The remnants exist so I accept this. They date this around 5 or so years ago. I cannot confirm this.

**Bottom image** is my extrapolation of what I believe it now looks like. We were not given copies of the Metis workings so if heights to RL or whatever need refining then do so.

6. Rocks have sunk down but show no silting
7. Basin depth now lower - Bruce from EPL stated they remove 150mm-200mm of the basin at each maintenance event.
8. Variable pond depth in flood - before basin depth was lowered
9. Line RL of current water table NB: this RL line is below the old basin depth and below the soakage devices so remains as ponding corresponding to surrounding water table level

The issue is the maintenance has changed the operation of the original design by lowering the basin depth into the water table.

A: When water level is above A the soakage devices can work - if they have been maintained

B: Below this line the soakage through device does not work so to remove this water relies on a lower surrounding water table - which is variable depending on preceeding rain events volume/time

C: The continuation of current maintenance regime will cause more still water depth and be

undesirable.

**What can be done:**

(i) clean out the basin

(ii) clean out the wall of the soakage device and likely remove 2/3 of them to speed up through soakage in heavy rains

(iii) backfill the basin to its original depth at invert level

(iv) create a cleaning mechanism like a concrete pit to clean out any residual sands that escape being caught in the road cesspits.

(v) create a new maintenance regime that does not alter its original design.

On this basis no outfall pipe to the Ocean is required. Therefore WRA do not need consultation - except in as much as including this asset in the CSDC.