

Akaroa Wastewater Project Land Disposal Alternatives Update on Deep Bore Injection Option Locations and Costs

Presentation to the Akaroa Treated Wastewater Reuse Options Working Party
Friday 27th April 2018



Overview

- Update on managed aquifer recharge option
- Review and update of possible deep bore injection investigation sites
- Next steps and discussion

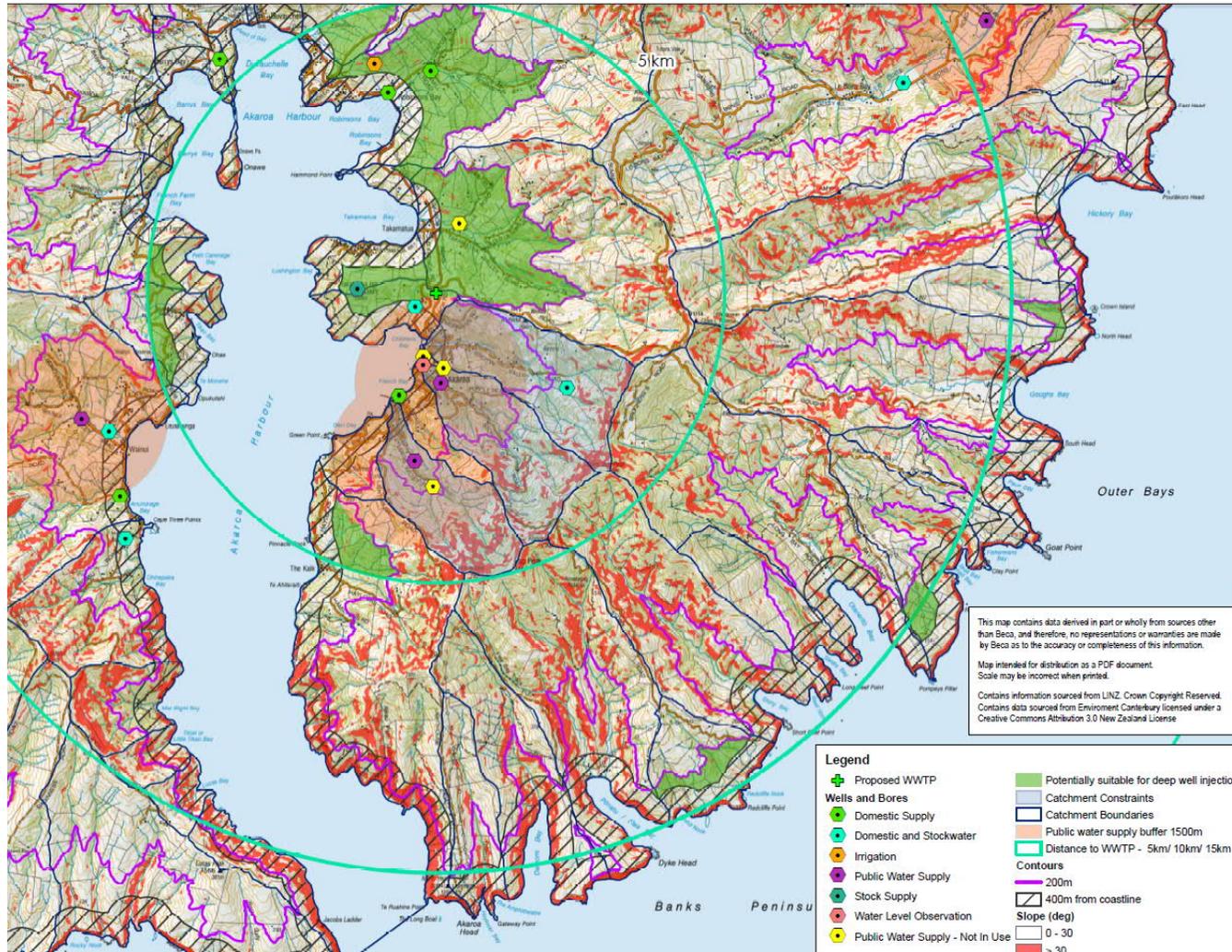
Update on Managed Aquifer Recharge (MAR) option

- CCC staff (Mike Bourke and Kylie Hills) met with Bob Bower, Russell Martin and Nathan Silby of WGA Australia (Russell and Nathan via Skype) on March 29th.
 - WGA agreed a holistic approach involving purple pipe and irrigation reuse presented a more resilient and useful solution to 100% borehole injection
 - Water restrictions in summer are primarily due to high use through garden watering making the purple pipe a more effective means of offsetting summer peak demand
 - Australian examples of MAR are mostly for storage for irrigation and non-potable re-use. WGA advised potable use is limited to two cases where there is significant residence time (many years), and dilution, in ground. Australia still grappling with the cultural issues of drinking wastewater

Update on Managed Aquifer Recharge (MAR) option

- Some discussion around risks of cross connections between non-potable re-use and water supply pipes. This was seen in Australia where a plumber unwittingly linked the two systems in a toilet block
- WGA suggested some sort of compliance monitoring may be necessary for non-potable re-use connections.
- Option of directing the treated wastewater directly to the water supply treatment plant would be more effective as there would be some loss of water between an upstream injection and abstraction from the Akaroa water supply wells
- Further involvement of WGA in the project was discussed. At this stage there is no obvious fit, however it was suggested WGA may present a useful peer reviewer once ground water modelling work has been undertaken

GIS mapping of criteria to identify possible sites for deep bore injection



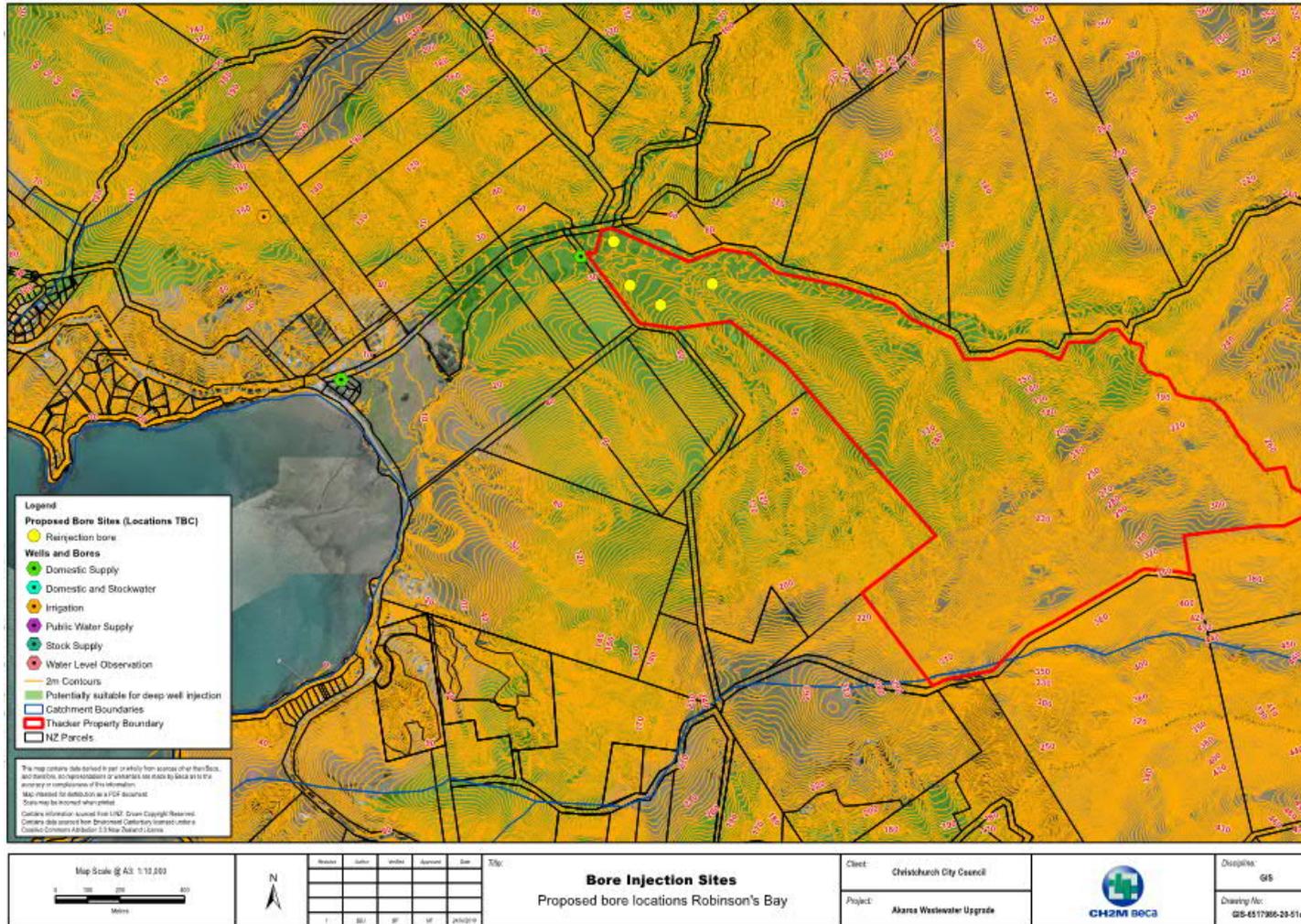
Deep bore injection site screening assessment

	Borefield Site	Pipeline to borefield connects to possible irrigation area	Facilitates non-potable reuse	Starting site elevation (m above sea level)	Good access	Acceptability to Ngāi Tahu Parties and local community	Pipeline, pump and bore capital cost	Preferred / Not Preferred
1	Upper and western harbour areas	Some	Possible	60	Yes	TBC	\$11.8M	Not Preferred
2	Pompeys Pillar	Yes	Possible	160	Yes	TBC	\$11.9M	Not Preferred
3	Goughs Bay	Yes	Possible	230	Yes	TBC	\$13.9M	Not Preferred
4	Redcliffe Point	Yes	Possible	160	Yes	TBC	\$13.2M	Not Preferred
5	Robinsons Bay	Yes	Possible	90	Yes	TBC	\$6.8M	Preferred
6	Takamatua Valley	Some	Possible	60	Yes	TBC	\$5M	Preferred
7	Takamatua Peninsula	No	Possible	120	Yes	TBC	\$6.9M	Preferred
8	The Kaik	No	Yes	120	No	TBC	\$6.8M	Not Preferred
9	Hamilton's Land	No	Yes	200	No	TBC	\$9.5M	Not Preferred
10	Treatment Plant Site / Pond Site 10	No	Possible	120	Yes	TBC	\$6.2M	Preferred

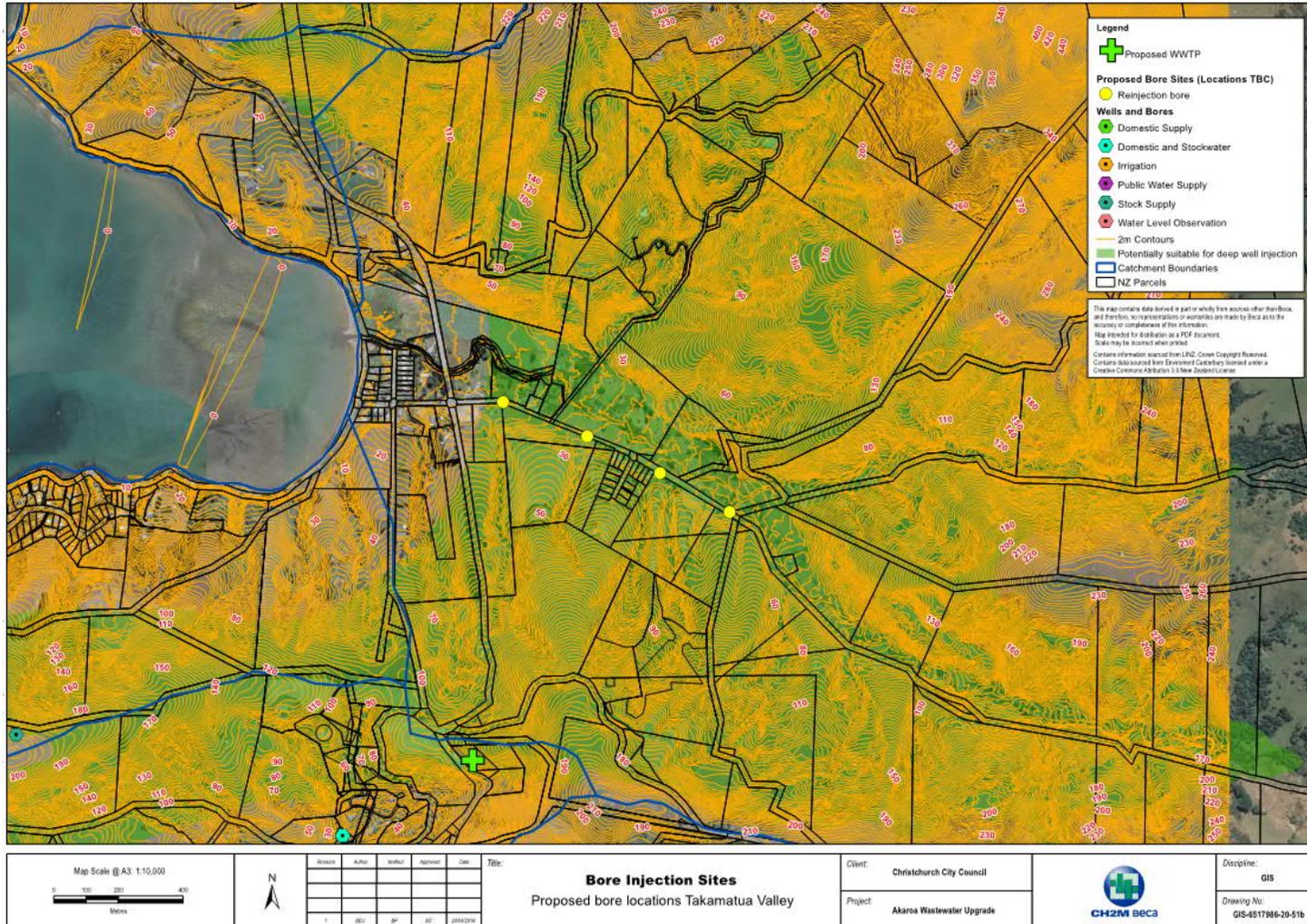
Cost includes: Pipeline, pump and bore (100m below sea level) capital cost, design and consenting, investigation

Cost excludes: Non-potable reuse (purple pipe) and irrigation

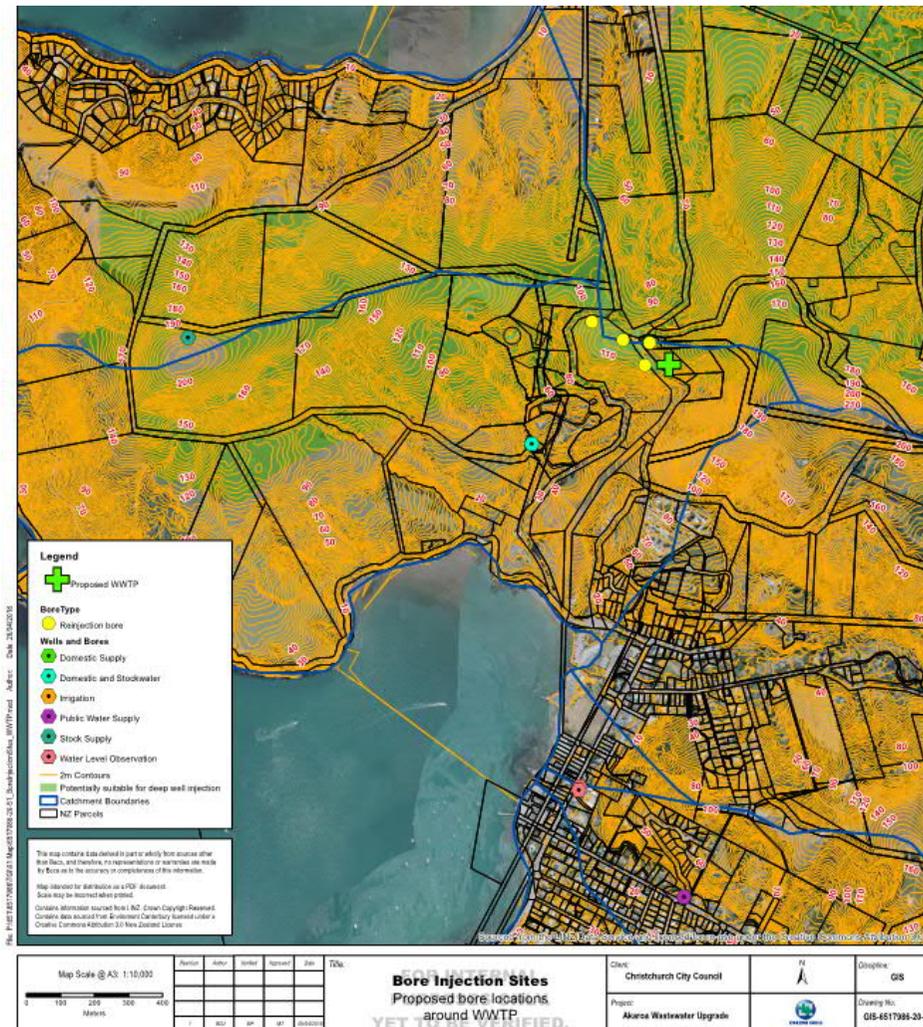
Injection Bore Concept Layout – Robinsons Bay



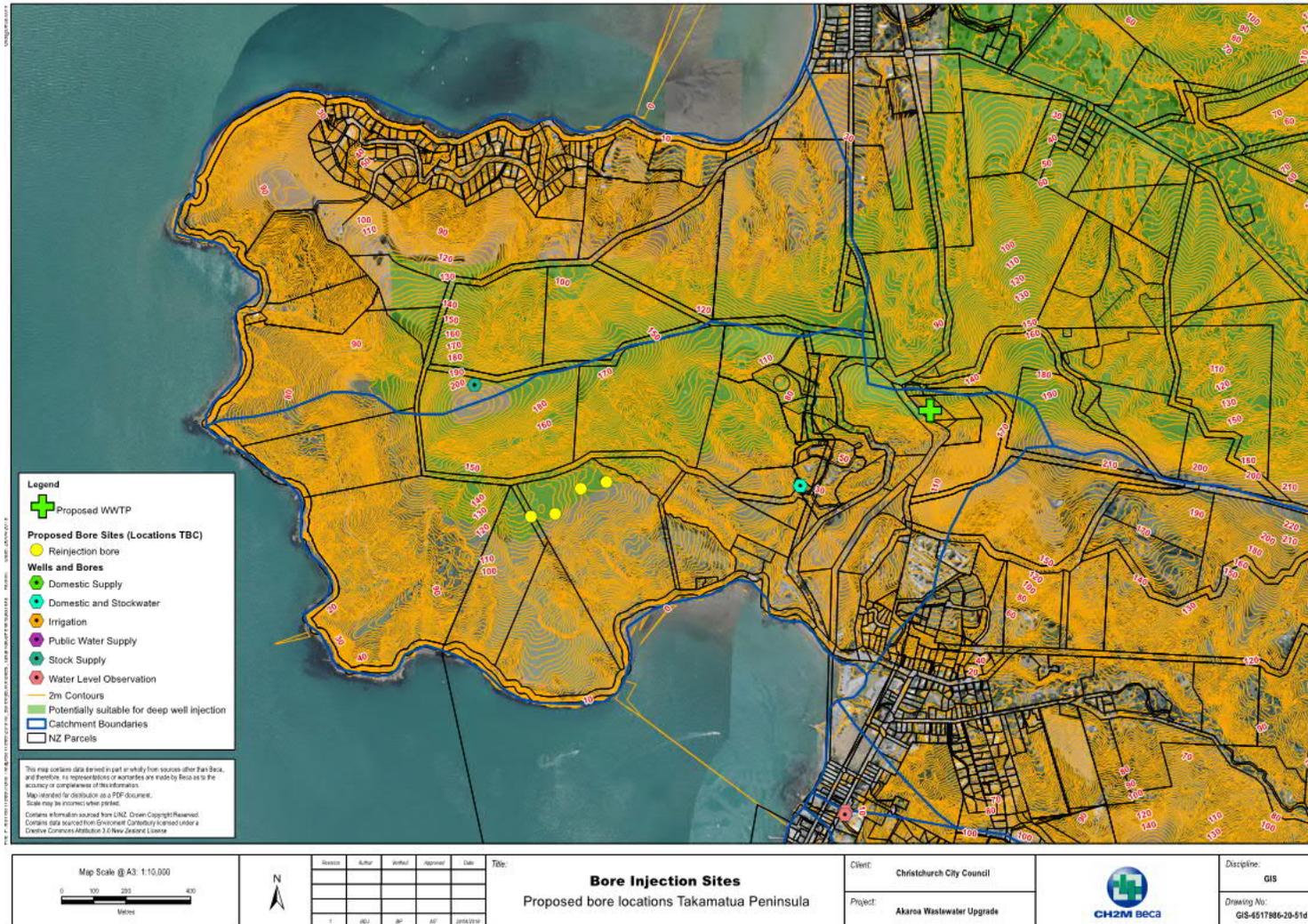
Injection Bore Concept Layout – Takamatua Valley



Injection Bore Concept Layout – Treatment Plant Site/Pond 10



Injection Bore Concept Layout – Takamatua Peninsula



Preferred Bore Sites

- The following order of preference is suggested by staff, for working party discussion, for borehole investigation drilling:
 1. The Old Coach Rd WWTP site
 2. Takamatua Peninsula
 3. Takamatua Valley
 4. Robinsons Bay Valley
- All four options could be used in conjunction with irrigation in inner harbour or Eastern bays, in conjunction with purple pipe, or as a stand alone solution
- In the event of the initial site being found to be unsuitable in the course of an investigation the second site on the list would then be investigated

Next Steps

- Inform the community about deep bore injection drilling investigation site
- Drill and test investigation bore(s), establish feasibility, effects and cost of deep bore injection
- Present baseline storm event overflow frequencies of network and “cost vs frequency reduction” assessment for discussion– what frequency should we design for? (*Further discussion with working party and Ngai Tahu*)
- Finalise the short-list of options for consultation (*Further discussion with working party and Ngai Tahu*)
- Finalise cost estimates and remaining technical work
- Undertake public consultation
- Council hearings process on submissions
- Council vote by elected members on preferred disposal scheme
- Begin resource consent process