

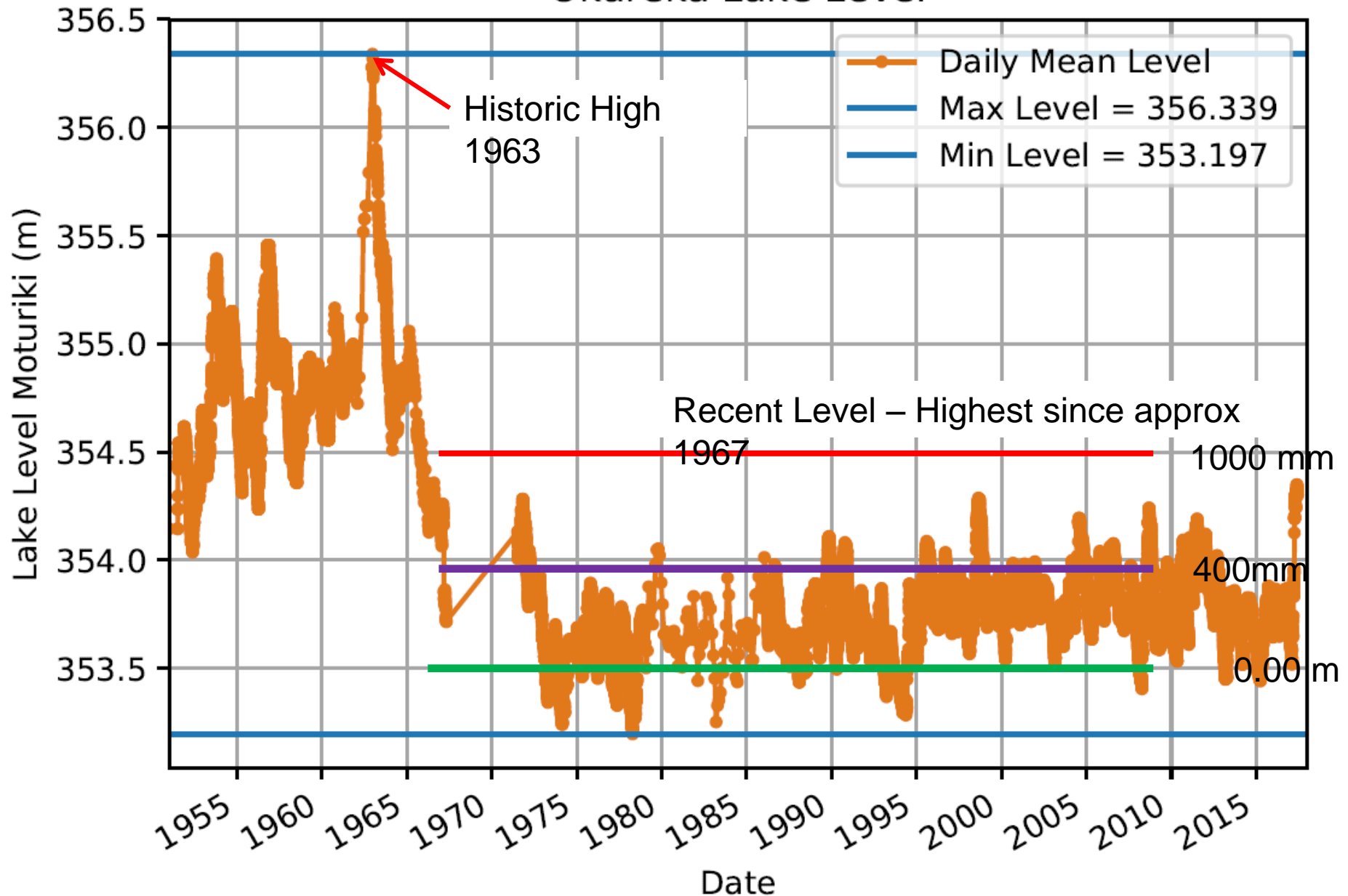
Rotorua Lakes

High lake levels and Emergency works

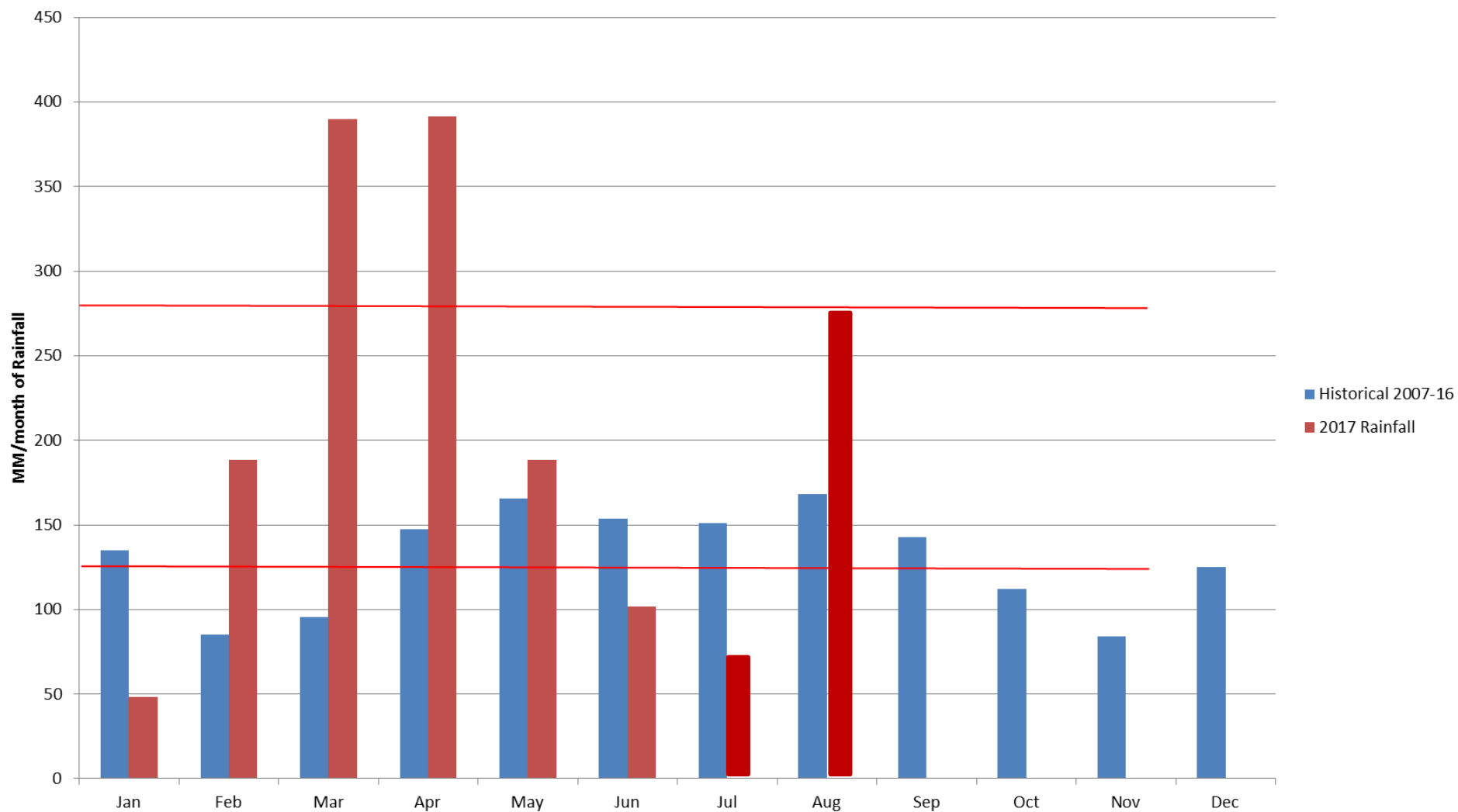
Andy Bruere / Sue-Ellen Craig
August 2017



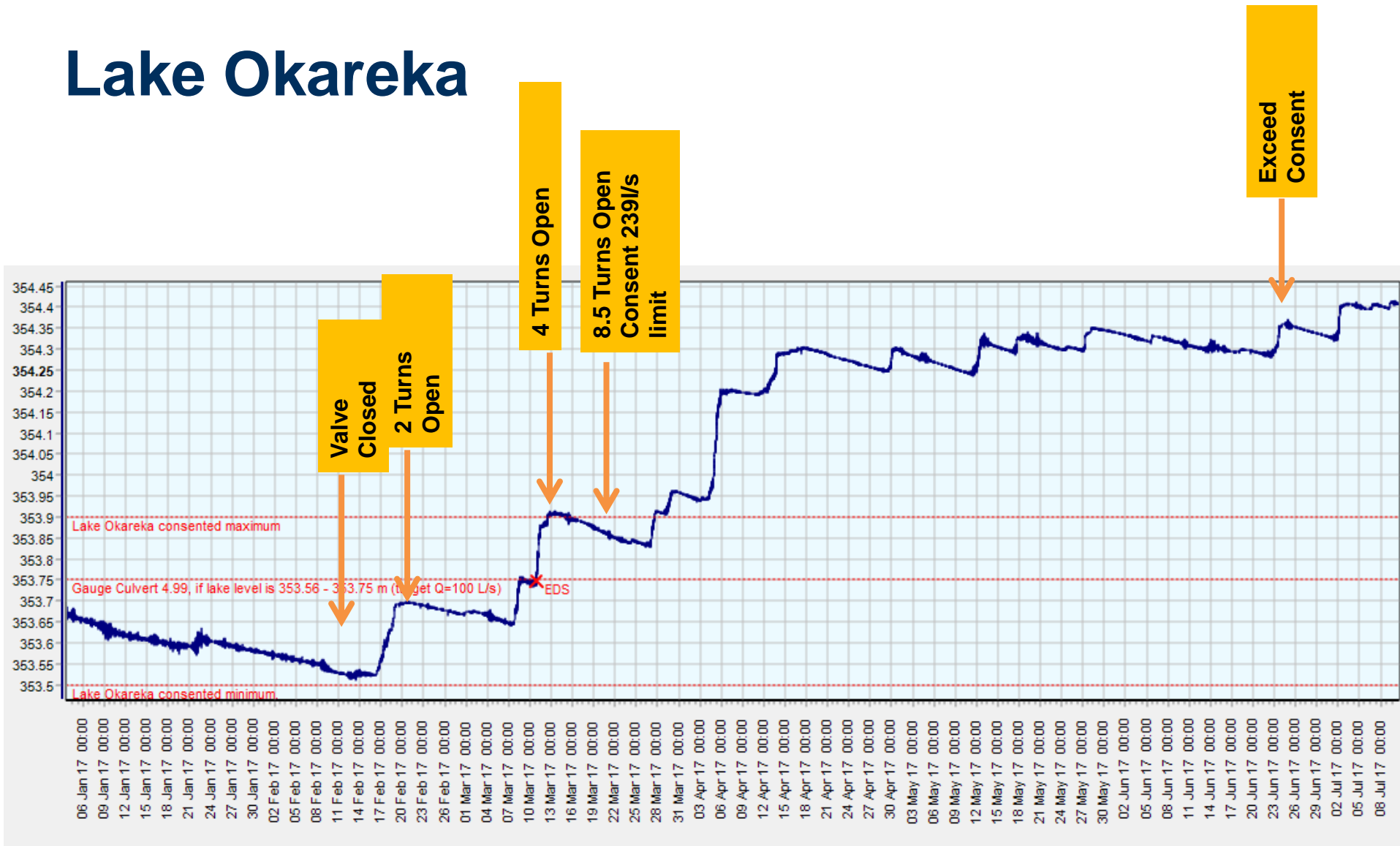
Okareka Lake Level

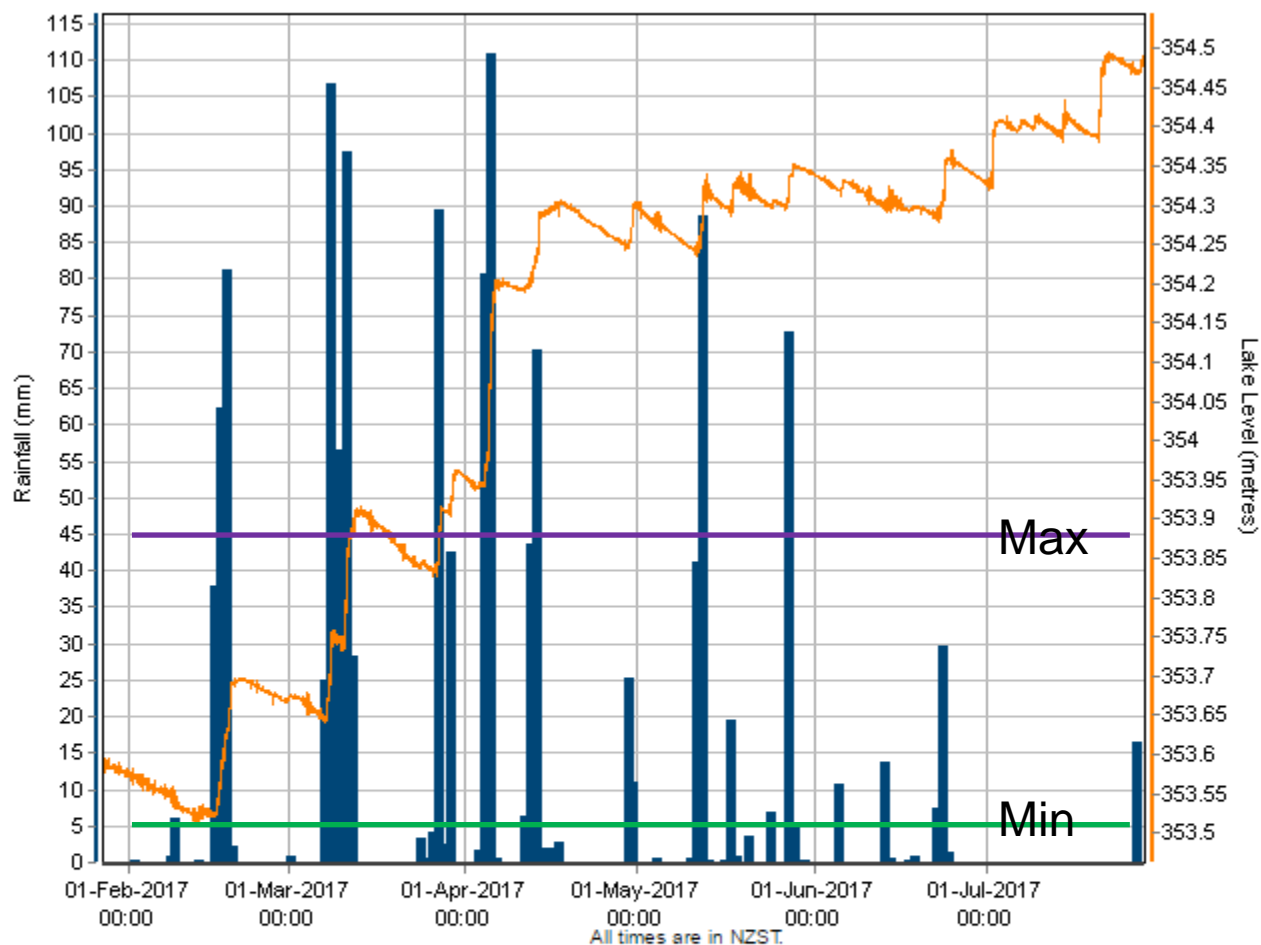


Lake Okareka



Lake Okareka






Graph

Samples

Colour	Samples	Point	Units	Format	Aggregate
	<input checked="" type="radio"/>	Lake Rotorua Buoy : Rainfall	mm	Totalled ▼	Daily ▼
	<input type="radio"/>	Lake Okareka at Longfords Farm Peninsula : Lake Level	metres	Default ▼	Plot Period ▼

Lock Plots to One Axis: ☐ [Update Plot](#)

Click on the  icon next to any Sensor on the Navigation Tree to add a trace to the graph.

Flow rate and level reduction

Comment	Flow	Daily drawdown	Monthly lake level reduction (No rainfall)
Consent max flow	239 L/s	3.5 mm	105 mm
Pipe max flow	360 L/s	5 mm	150 mm
Additional pumped flow - Total	500 L/s	6.5 -7 mm	210 mm



levels are metres above Moturiki Datum).

House - Description	Floor Level
71 Acacia Rd – lower level lounge	354.50
67 Acacia Rd – low deck	354.94
75 Acacia Rd - basement	354.94
73 Acacia Rd – garage	355.05
79 Acacia Rd - basement	355.05
15 Steep St	355.12
Steep St – small green house	355.25
Steep St – 2 storey yellow house	355.28
9 Steep St chalet (larger)	355.34
9 Steep St chalet (smaller)	355.34
69 Acacia Rd	355.40
23 Steep St	355.40
21 Steep St	355.48
19 Steep St	355.57
81 Acacia Rd	355.60
65 Acacia Rd - basement	355.79
73 Acacia Rd - house	355.79
77 Acacia Rd	355.79
13 Steep St	355.79
17 Steep St	355.81
Steep St – small green house	355.84
83 Acacia Rd - basement	355.88
63 Acacia Rd - basement	355.92
7 Acacia Rd	355.99
5 Acacia Rd	356.01

Lake 354.53

500mm

670mm





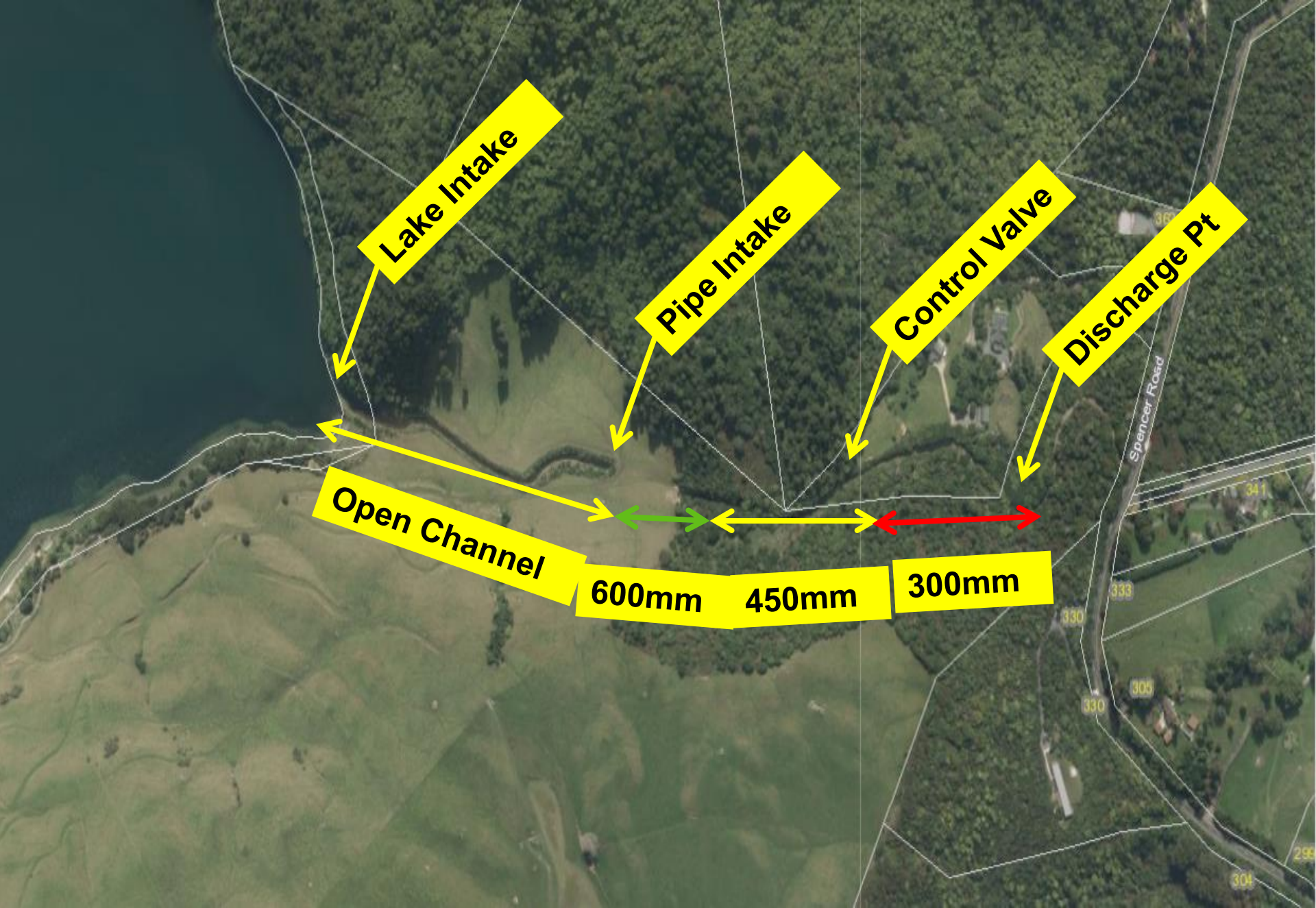


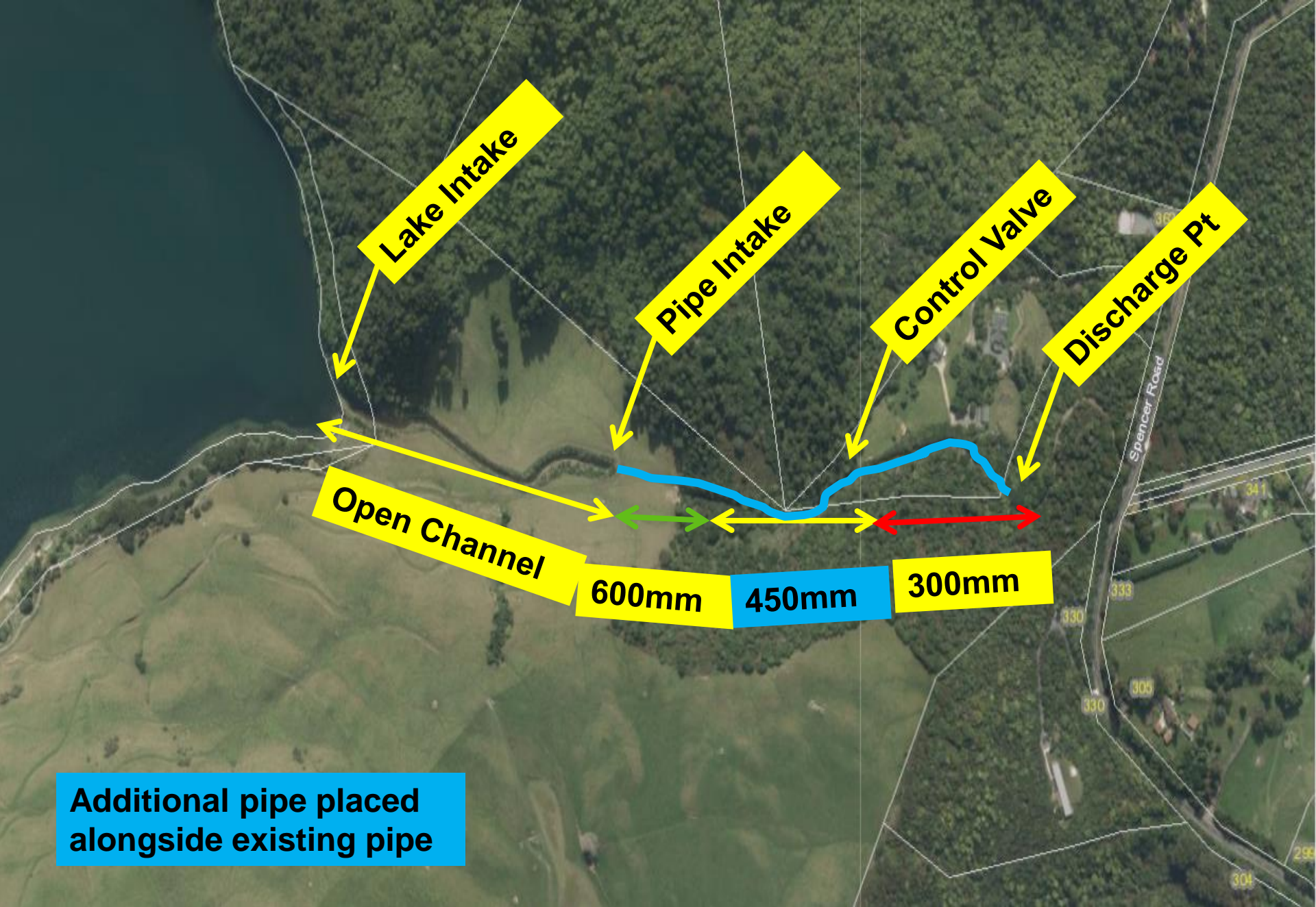


O.C. 3









Additional pipe placed
alongside existing pipe





NZTF
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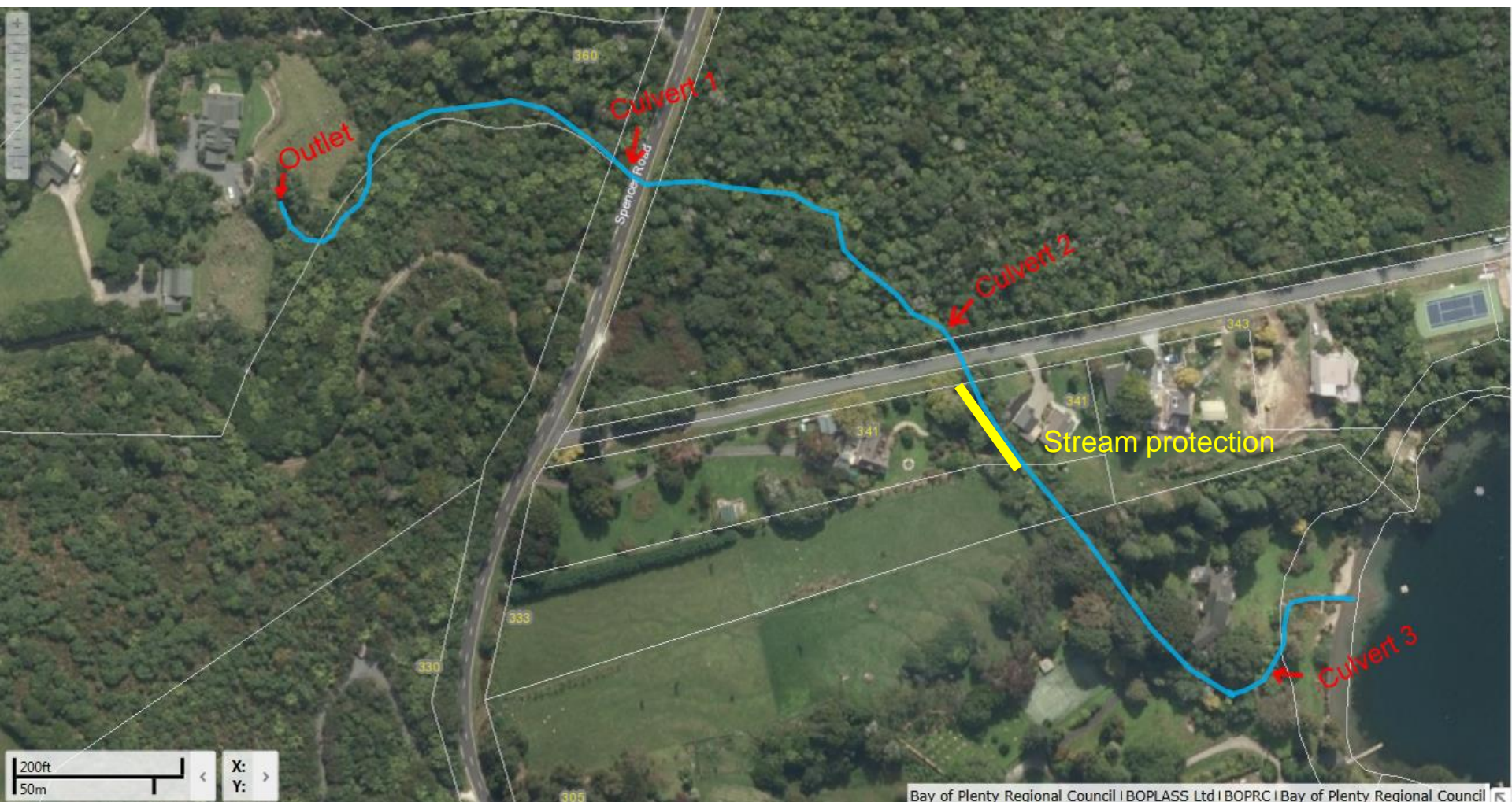
CAUTION
DO NOT ENTER BACKLASH

NZTF
SAFETY & SANITATION
0274 770 757





Outlet and Culvert locations for Waitangi Stream, Lake Ōkāreka outlet control





Culvert 2 dia.
1050mm

Culvert 2 dia.
1050mm with
plywood and
plunge pool













Culvert 3 dia.
800mm and
dia. 450mm hi-
level by-pass







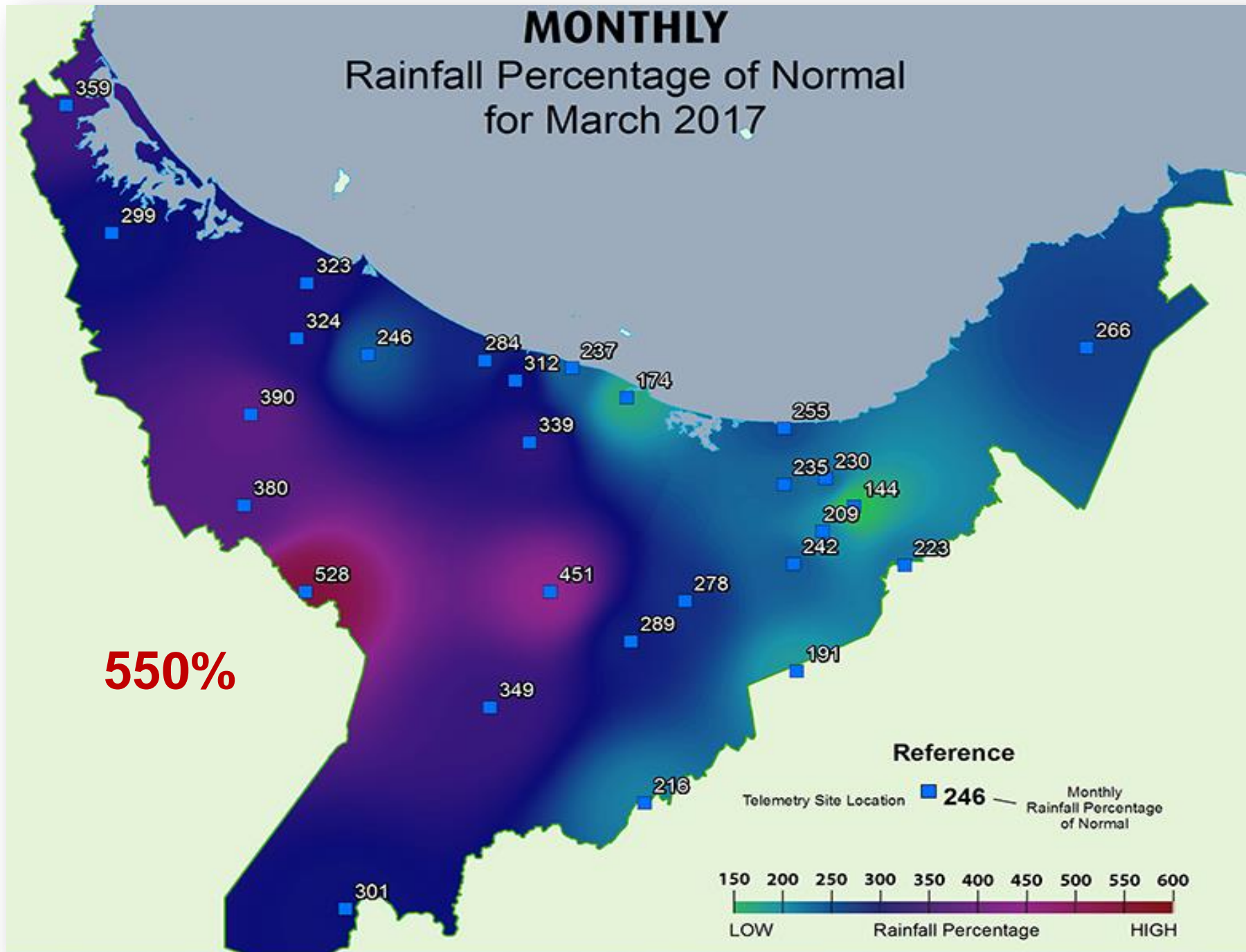
The End



- **Background**
- **Saturated ground**
- **Lake Ōkāreka**
 - **level modelling**
 - **existing water outlet**
 - **solutions**
- **Questions**

MONTHLY

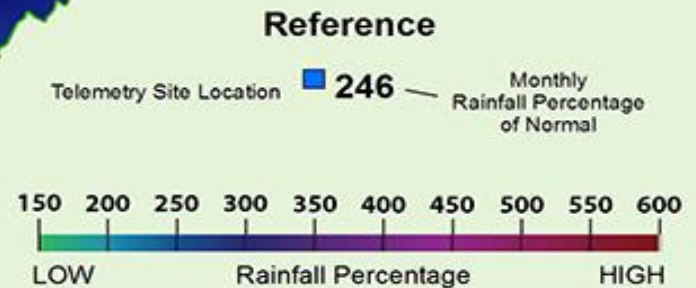
Rainfall Percentage of Normal for March 2017



MONTHLY

Rainfall Percentage of Normal for April 2017

330%





Eastern Arterial Road/Pah Rd





Lake Rotorua
4/4/17



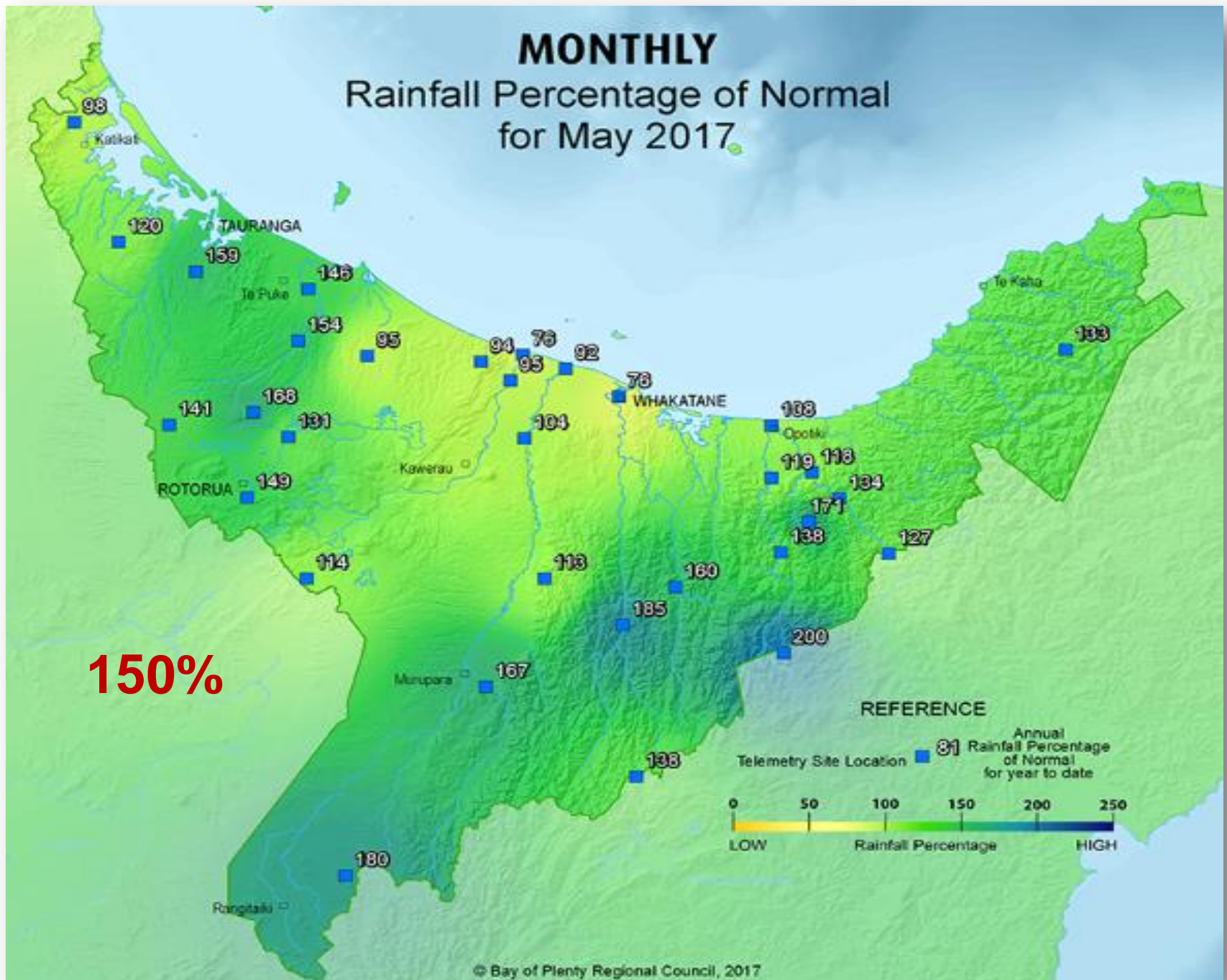
Slips closed SH30 (Lake Rotoiti)





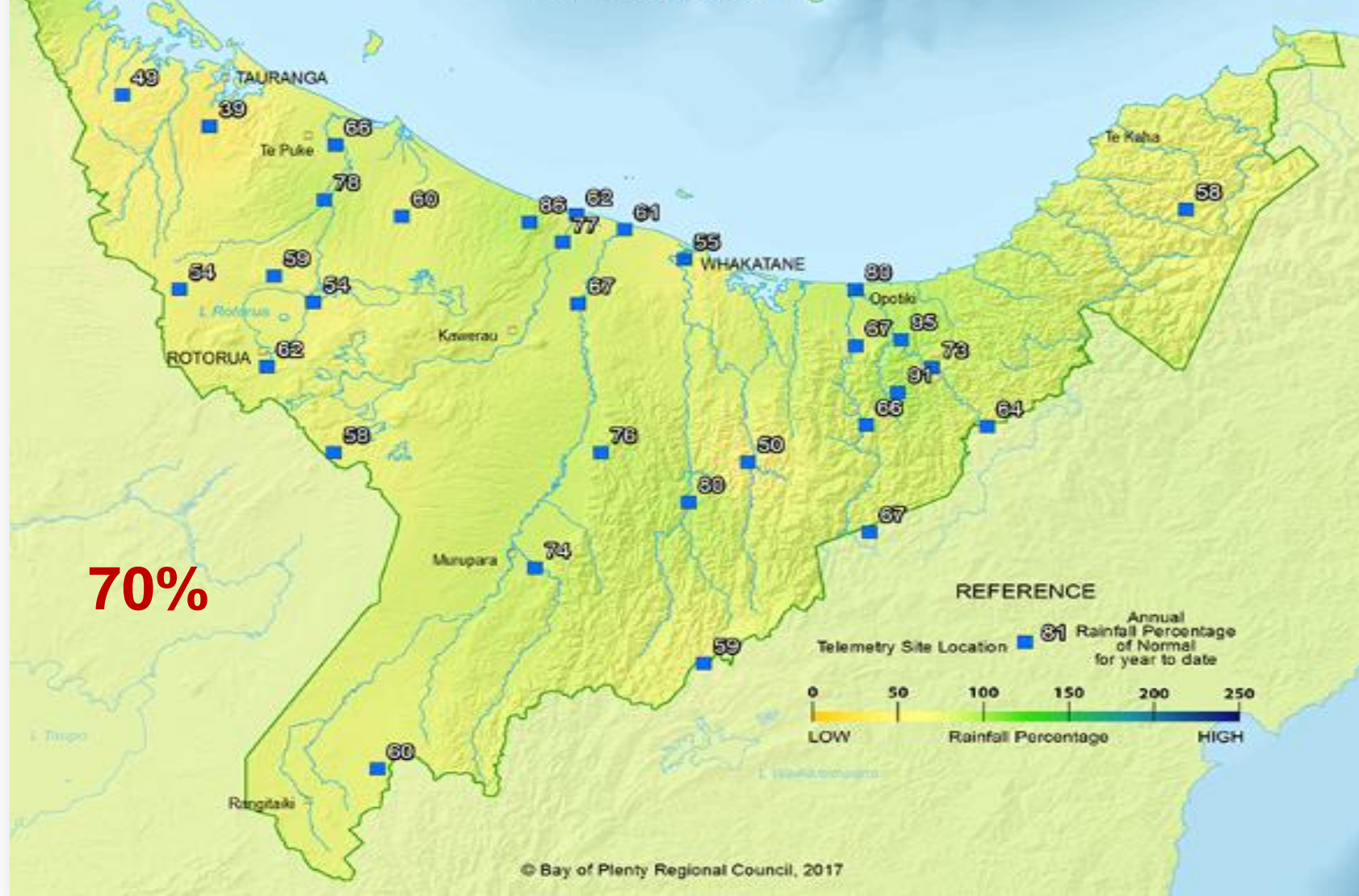
MONTHLY

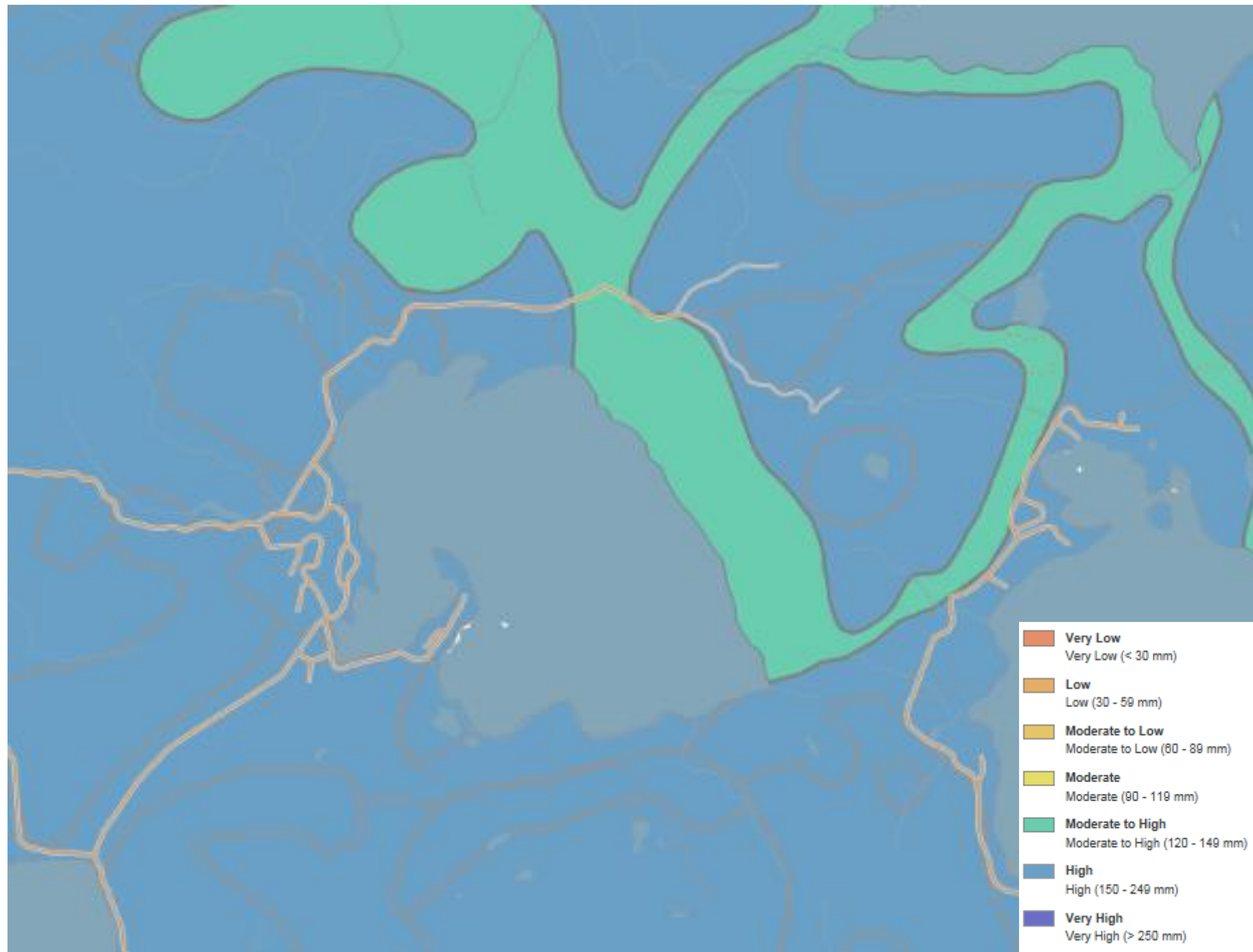
Rainfall Percentage of Normal for May 2017



MONTHLY

Rainfall Percentage of Normal for June 2017





Lake Intake



Pipe Outlet





Waitangi Stream

Lake level decrease rate

Scenario	Flow rate	% increase	Lake level decrease (Daily)	Comments
Consented flow	240 L/s		3mm/d	Normal full flow
Emergency flow	350-380 L/s	46 -58 %	5mm/d	Valve fully open
Additional Flow	480 L/s	100 – 110%	6-7 mm/d	Additional pumping

Average Rainfall

150mm monthly rainfall → 110/120mm lake level increase
- we can manage this at 5mm/day decrease → 150mm/month



Solutions – short term

Nothing has been off the table in our investigations into solutions:

- Are there any other areas that we could pump water to?
- Change current pipe capacity
- Dig a trench
- Pump through a large hose/pipe



Implementation

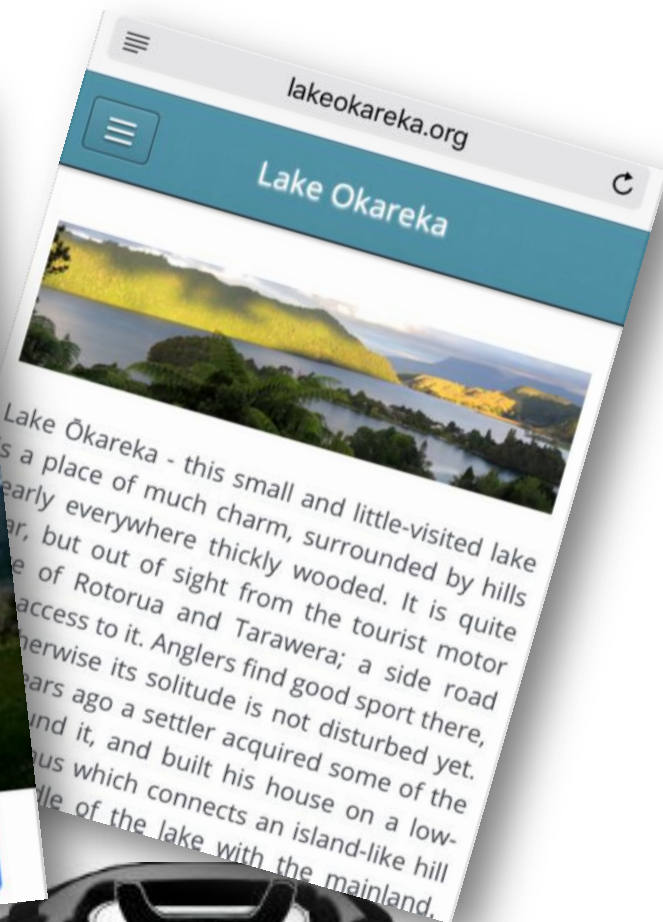
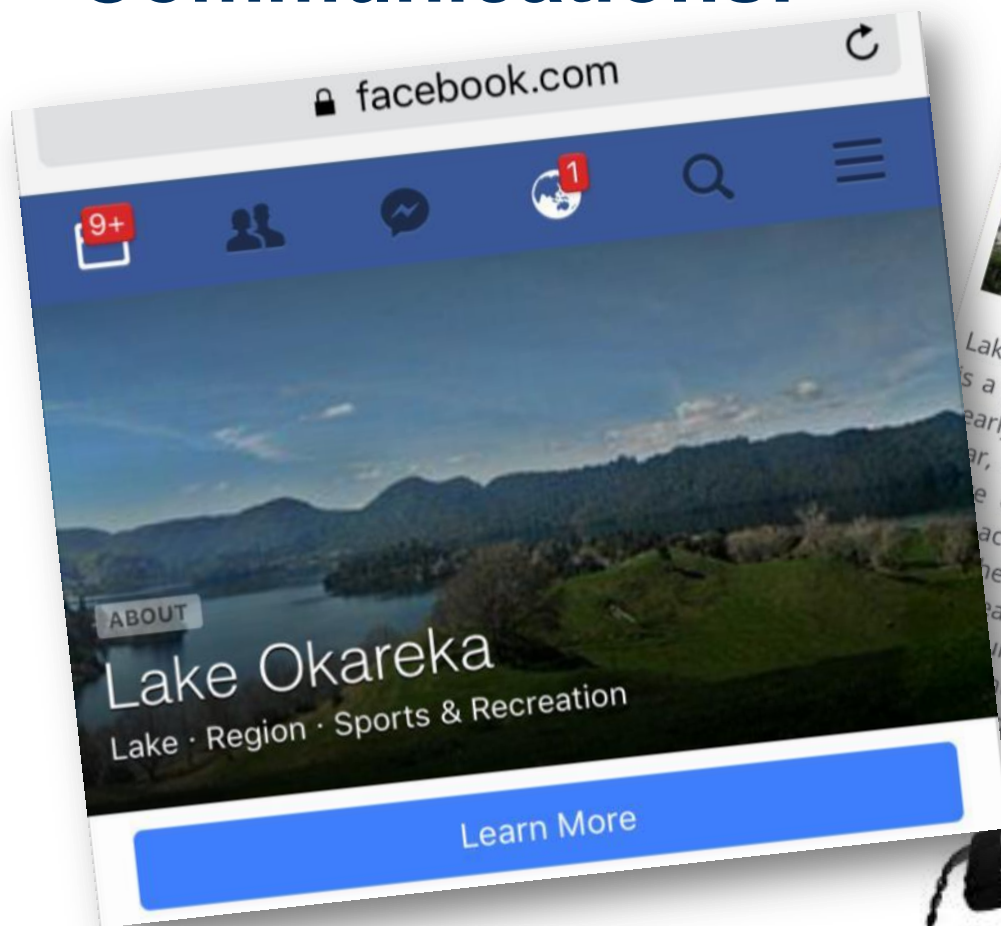
- Environmental impact
 - Flooding issues
 - Erosion
 - Trout spawning
- Source and purchase components
 - Cost
 - Component and Contractor availability
- Access for installation
 - Requires landowner approval
 - Track Access
- Power
 - Possible noise issues – Spencer Rd & Ōkāreka residents
- Regulatory/Legislative requirements
 - Emergency provisions







Communications:





Thriving together –
mō te taiao, mō ngā tāngata

