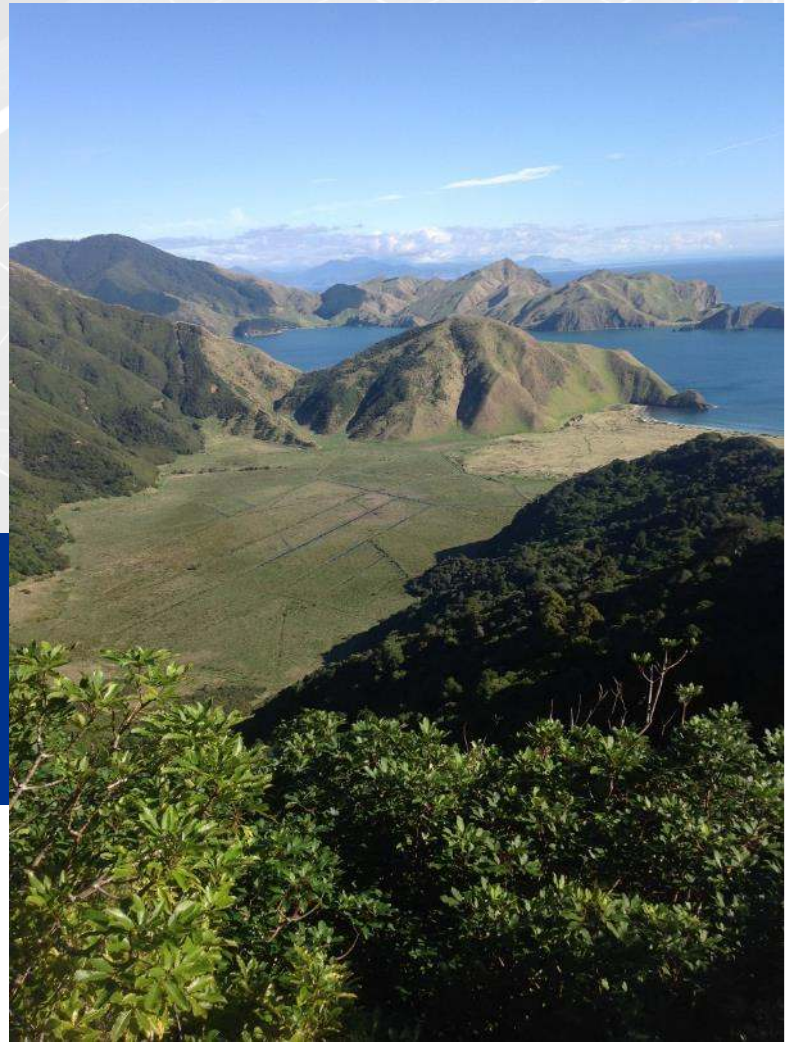
Preliminary results of drainage impacts to wetland hydrology around NZ



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Arawai Kākāriki Programme

Department of Conservation
Te Papa Atawhai

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Introduction to the study

- The hydrology of New Zealand wetlands is continuously being characterised

- Drains impact wetlands…

  – However the amount of water level change due to drainage, and the extent of the impact zone, is not well described in NZ literature

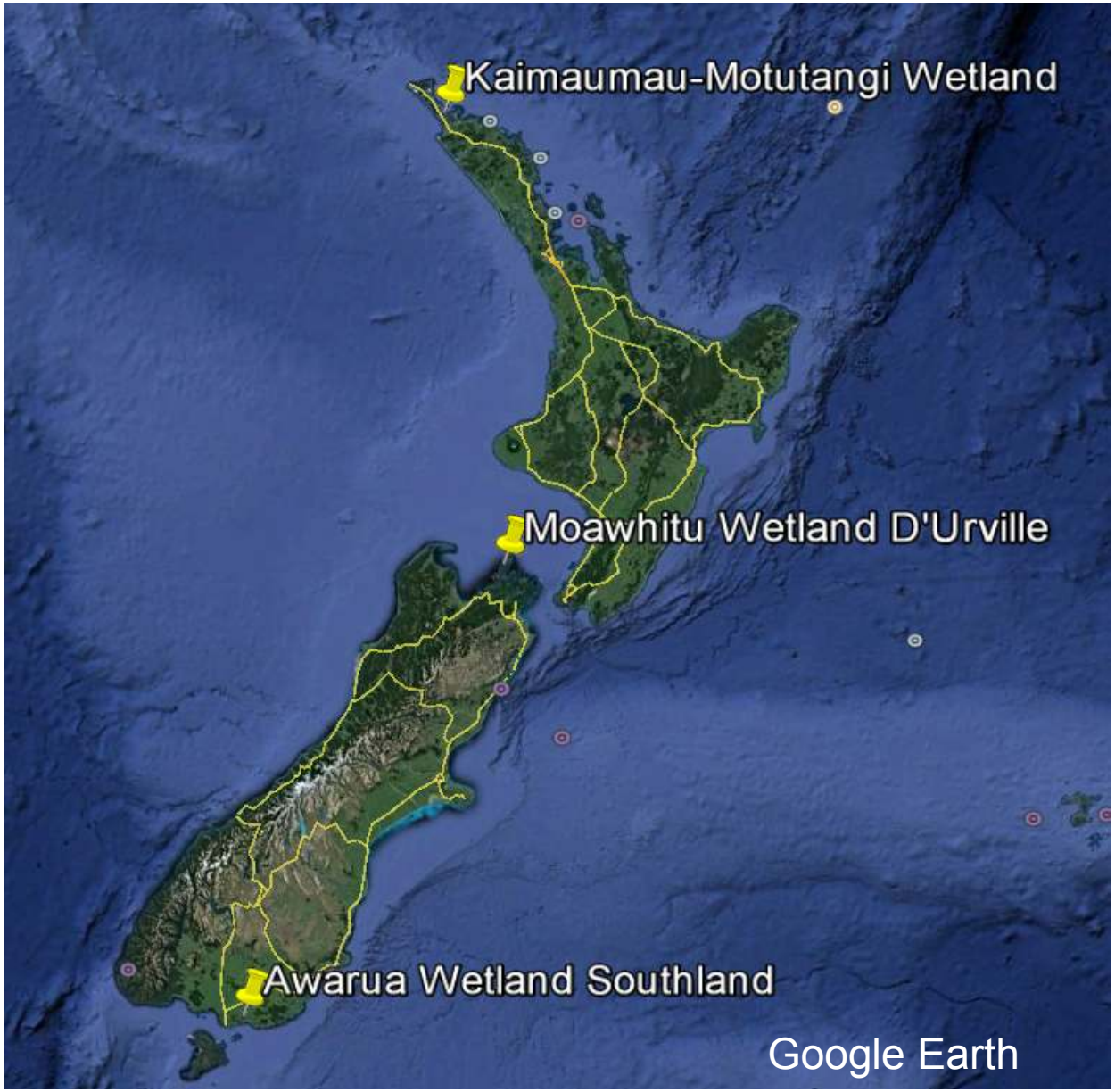
Aims and Objectives

- Design and install a wetland hydrological monitoring system

- Use this data to understand drainage impacts on different wetlands and water level/ecological changes.

- Eventually restore the wetlands, with methods driven by observations of hydrology and ecology

The sites!



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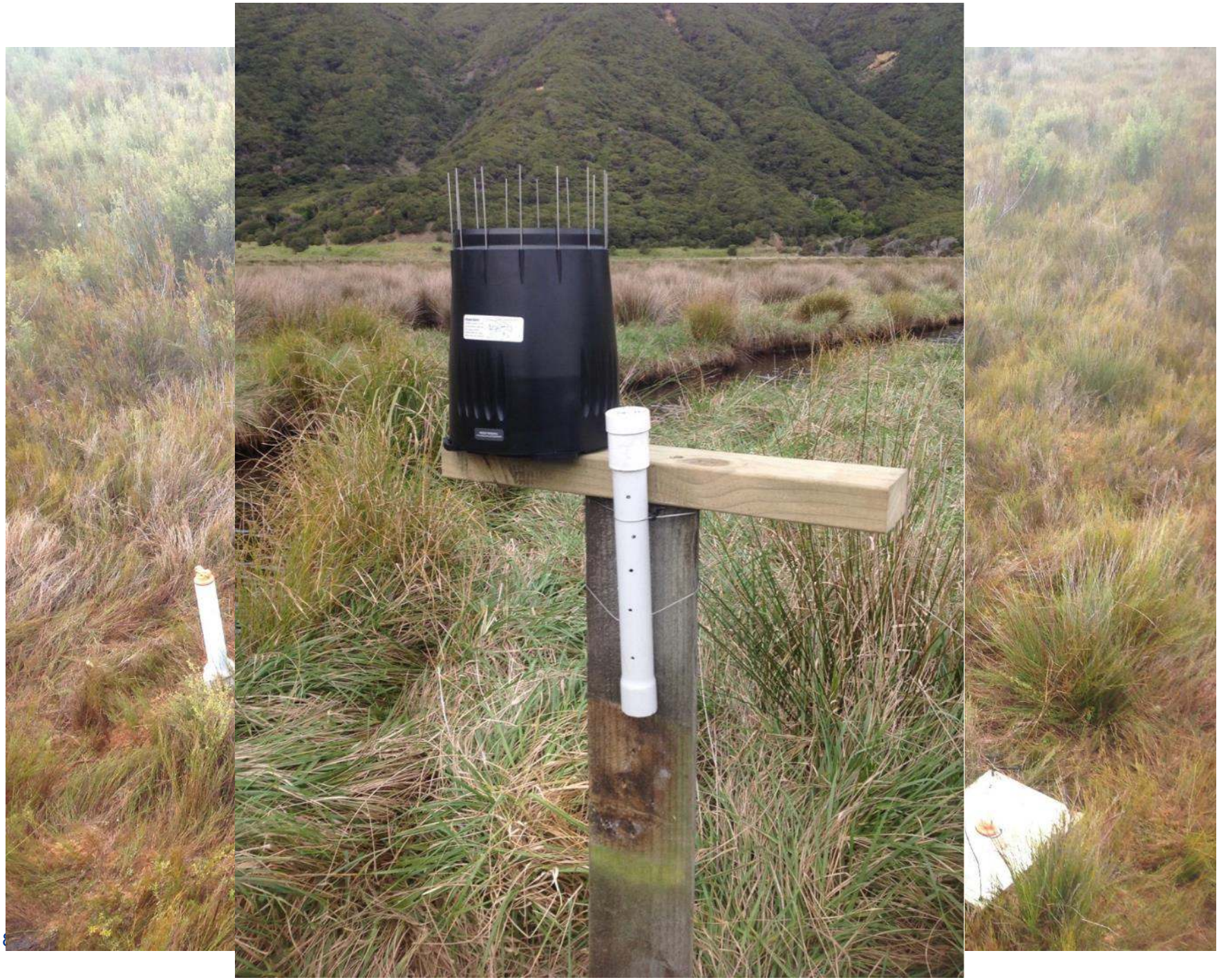
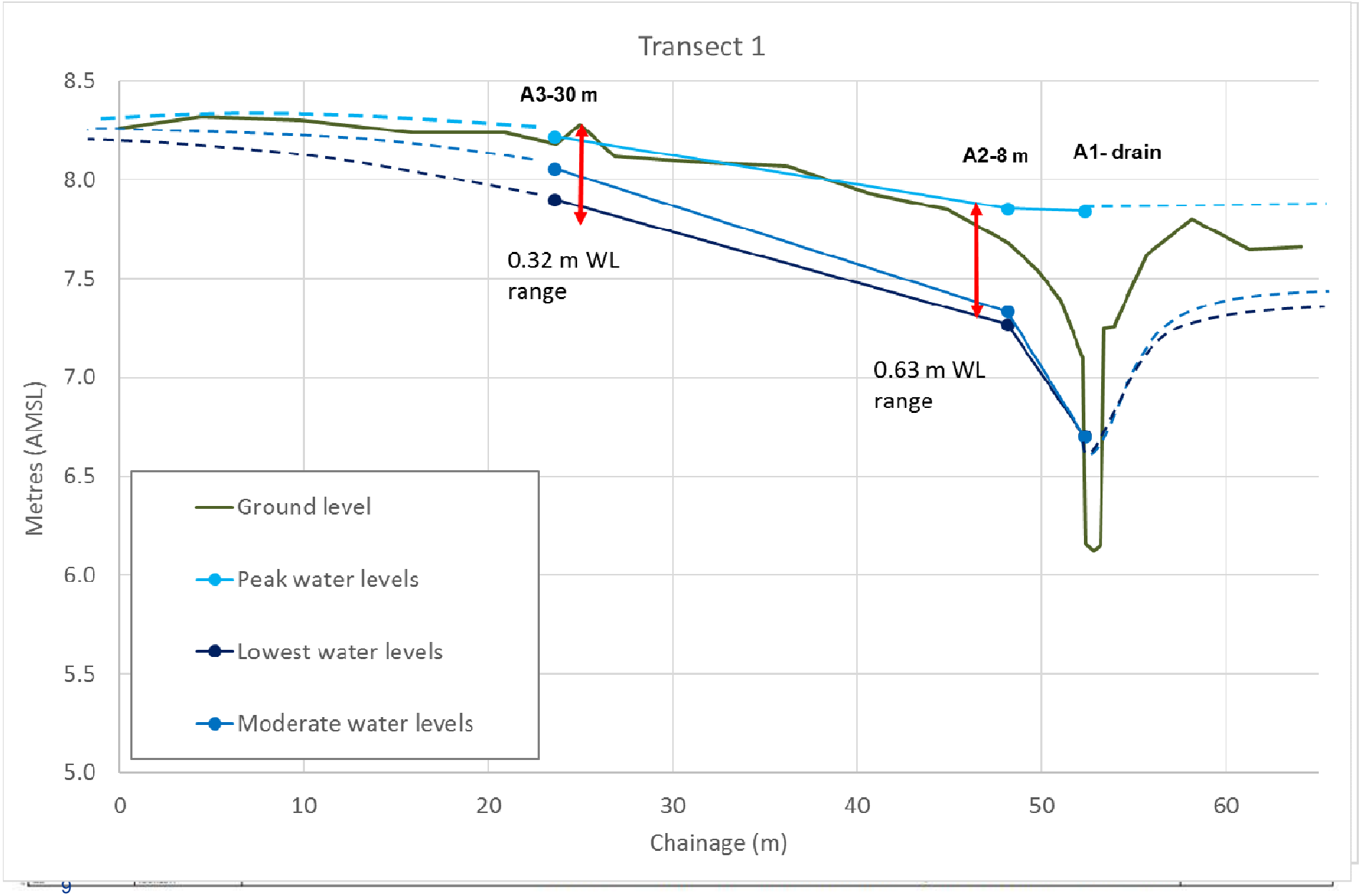
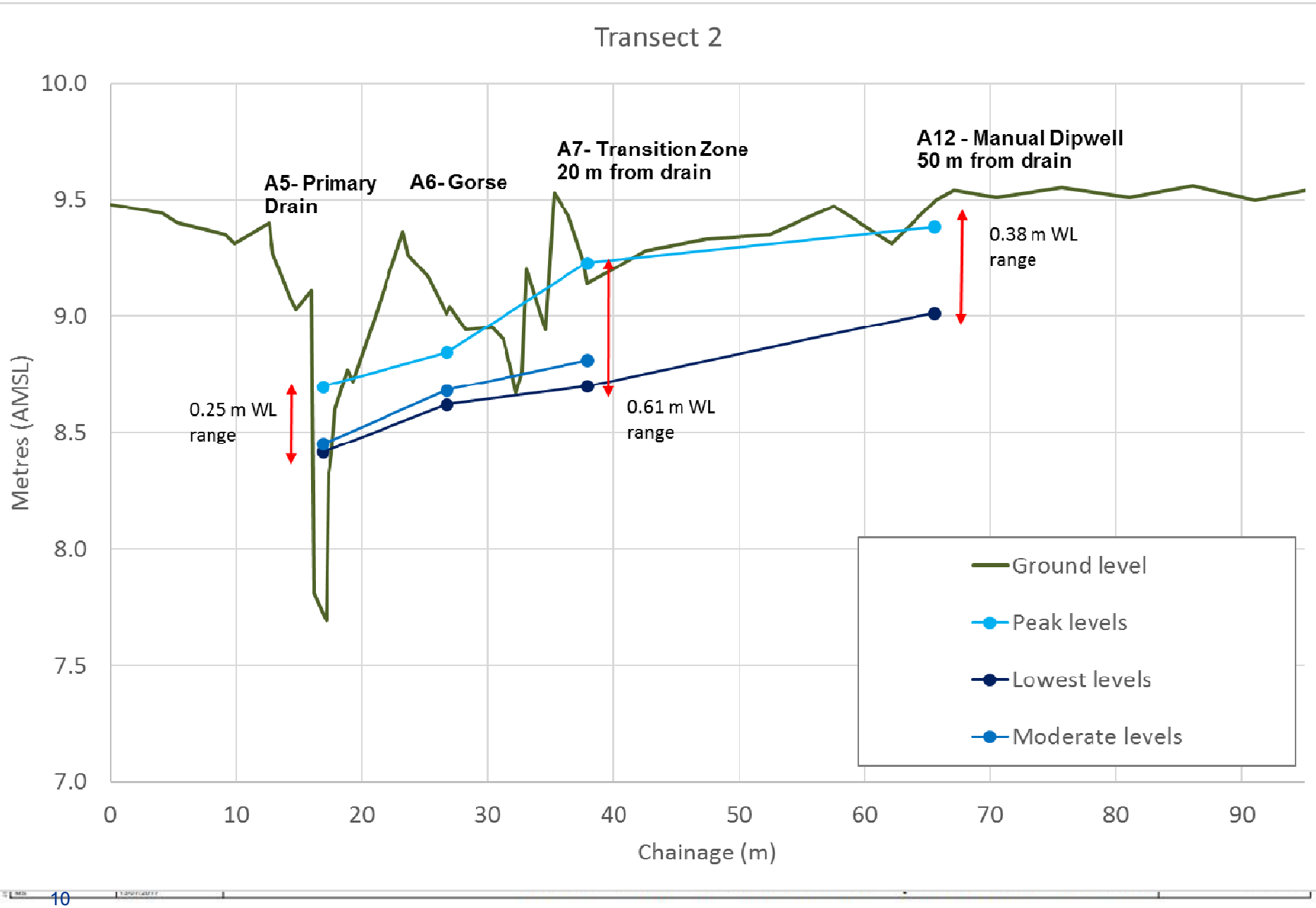


Awarua Transect 1




Transect 2
10.0
9.5
9.0
8.5
8.0
7.5
7.0
Metres (AMSL)
0
10
20
30
40
50
60
70
80
90
Chainage (m)
A5- Primary Drain
A6- Gorse
A7- Transition Zone 20 m from drain
A12 - Manual Dipwell 50 m from drain
0.25 m WL range
0.61 m WL range
0.38 m WL range
Ground level
Peak levels
Lowest levels
Moderate levels

Awarua-Transect 3

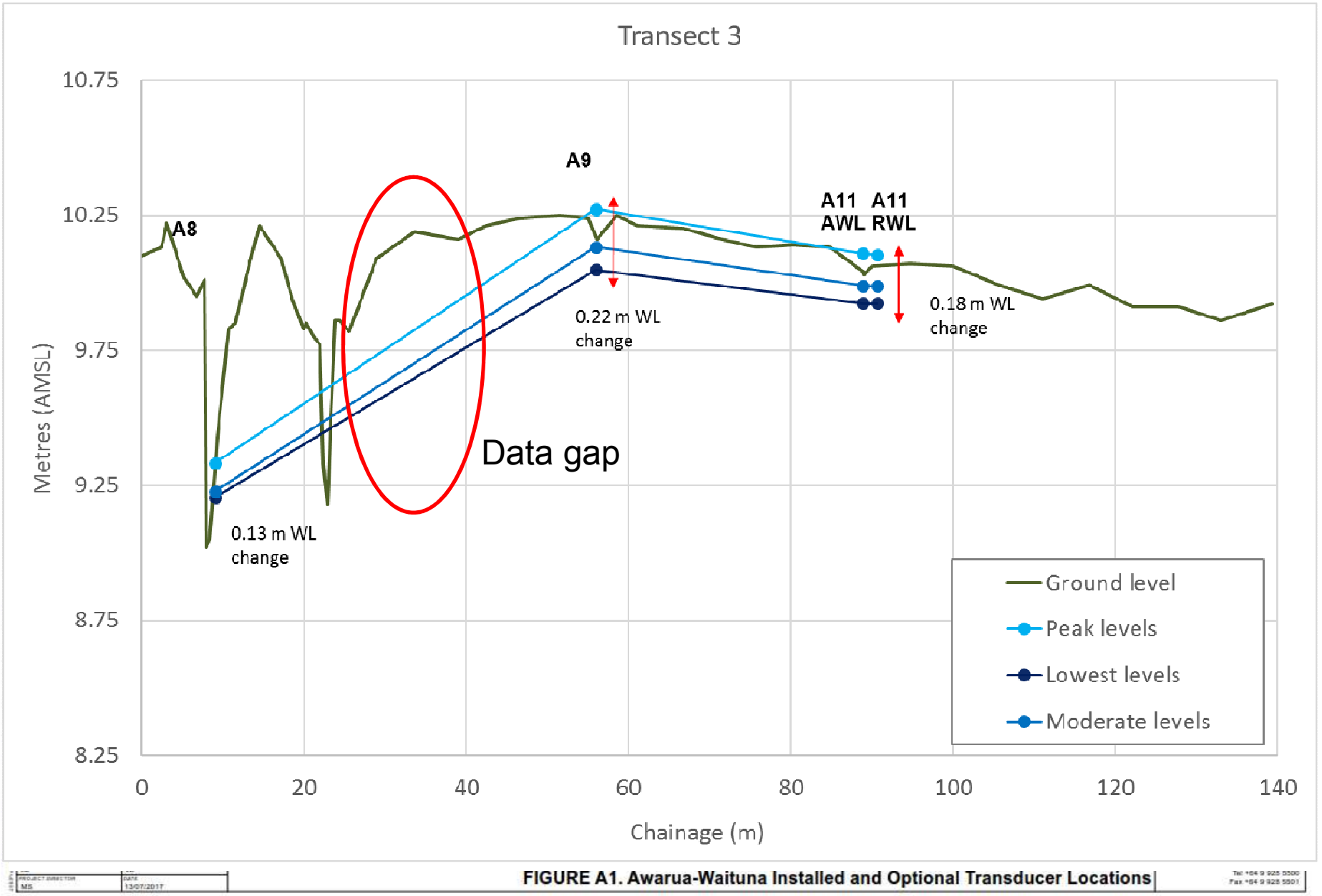


FIGURE A1. Awarua-Waituna Installed and Optional Transducer Locations

Quick Summary

Drain effects on WL in restiad bog over 3 months show:

1. 20-35 m from drain (T1 and T2) = 0.32-0.38 m
2. 45 m from drain (T 2) = 0.22 m
3. 80 m from drain (T3) = 0.18 m

Further Work

- Inundation study completed at Moawhitu
- Kaimaumau WL data used in hearing on Avocado GW Take (>380 L/s)
- Annual WL impacts - NZFSS in December
- Restoration planning underway

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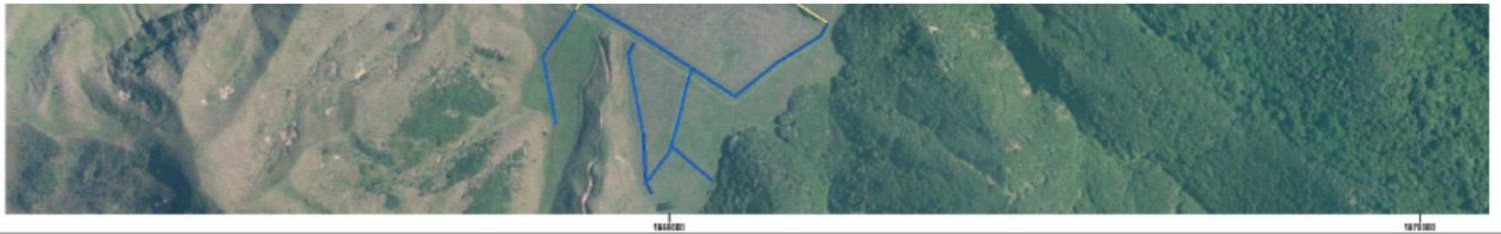
Legend

- Major Drains
- Minor Drains
- Inundation 2.8m
- Inundation 2.9m

Level (mRL)	M1 (Lake)	M2 (Outlet)	M3	M4	M5	M6	M7	M8	M9	M10 (upper catchment)	M11 (Runway)
2.6	100%	100%	100%	100%	100%	100%	100%	88%	90%	100%	100%
2.7	100%	82%	95%	89%	95%	100%	100%	81%	77%	100%	100%
2.8	100%	60%	69%	63%	85%	100%	95%	73%	69%	100%	100%
2.9	100%	42%	50%	46%	74%	91%	68%	63%	62%	99%	100%
3	100%	27%	35%	32%	63%	81%	48%	50%	52%	97%	100%
3.1	100%	17%	21%	20%	24%	67%	33%	20%	21%	86%	100%
3.2	100%	10%	13%	13%	13%	41%	19%	13%	13%	63%	100%
3.3	100%	6%	8%	8%	7%	11%	12%	7%	7%	14%	54%
3.4	100%	2%	5%	4%	4%	6%	7%	4%	4%	5%	45%
3.5	87%	0%	1%	1%	1%	2%	3%	1%	1%	1%	36%
3.6	60%	0%	0%	0%	0%	0%	1%	0%	0%	0%	24%
3.7	52%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%
3.8	44%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
3.9	27%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4.1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%



Moawhitu Wetland Water Level Assessment

SCALE 1:6,081 @ A3	PROJECT CODE IZ108700
PROJECT MANAGER JB	DRAWN TN
PROJECT DIRECTOR X	DATE 6/06/2018
DRAWING NO A1	REVISION DRAFT

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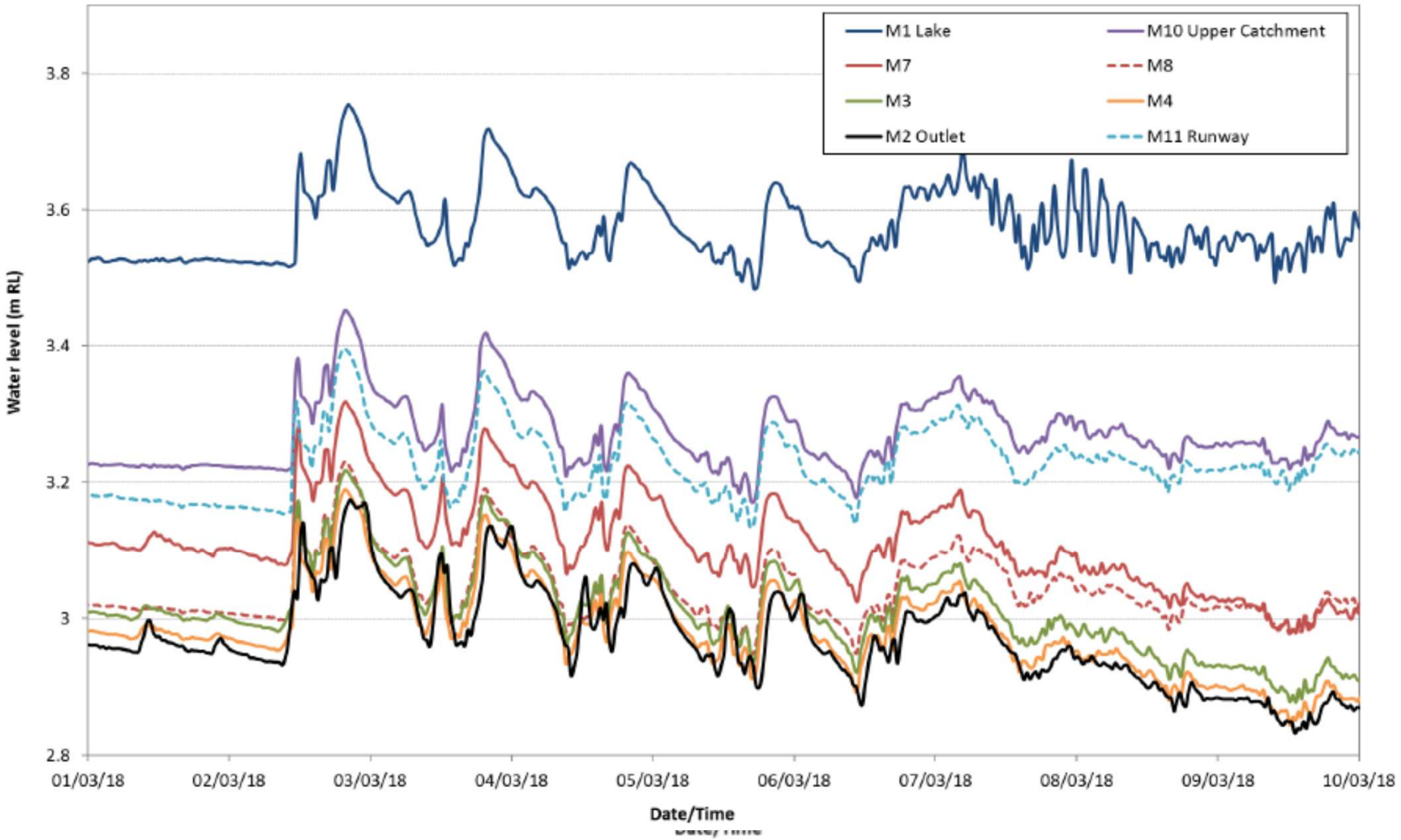
M1 Lake
M10 Upper Catchment
M7
M8
M3
M4
M2 Outlet
M11 Runway
Water level (m RL)
3.8
3.6
3.4
3.2
3
2.8
01/03/18
02/03/18
03/03/18
04/03/18
05/03/18
06/03/18
07/03/18
08/03/18
09/03/18
10/03/18
Date/Time

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