MEMO

TO:	Eric Osborne	DATE:	20 July 2025
FROM:	Tony Trueman	PROJECT NO.:	J000814
COPY:	Craig Martell, Susan Jones		
SUBJECT:	PEER REVIEW RESPONSES TO 100 & 110 TE MOANA ROAD, FLOOD ASSESSMENT & STORMWATER MANAGEMENT CONCEPT MEMO		

INTRODUCTION:

Te Miro Water have made a further information request regarding the flood assessment & stormwater management concept memo supporting the plan change.

The following points have been raised by Te Miro Water.

1. *RFI – Update information provided around the effects of the Chillingworth stop bank breach.*
2. *RFI – Provide detailed soakage test information.*
3. *RFI – Provide full Geotechnical Report and method for establishing seasonal high groundwater elevation.*
4. *RFI – Provide a clear solution of how the stormwater associated risks are managed for flood plain filling and peak flow rate mitigation.*
5. *RFI – Provide a clear solution of how water quality and runoff volume will be managed.*

Response – Point 1:

RFI – Update information provided around the effects of the Chillingworth stop bank breach.

There are impacts on peak depths within the site associated with the Chillingworth stop-bank breach scenario.

1. Breach flows move north-west toward the expressway following the lowest topography.
2. The low-lying ground adjacent the expressway stores some of the flow moving north.
3. Flow moves under the expressway and into the site.
4. Flow moves over Te Moana Road and into the Waimeha Stream

Peak depths within the site are in the order of 10 mm to 600 mm in this breach scenario.

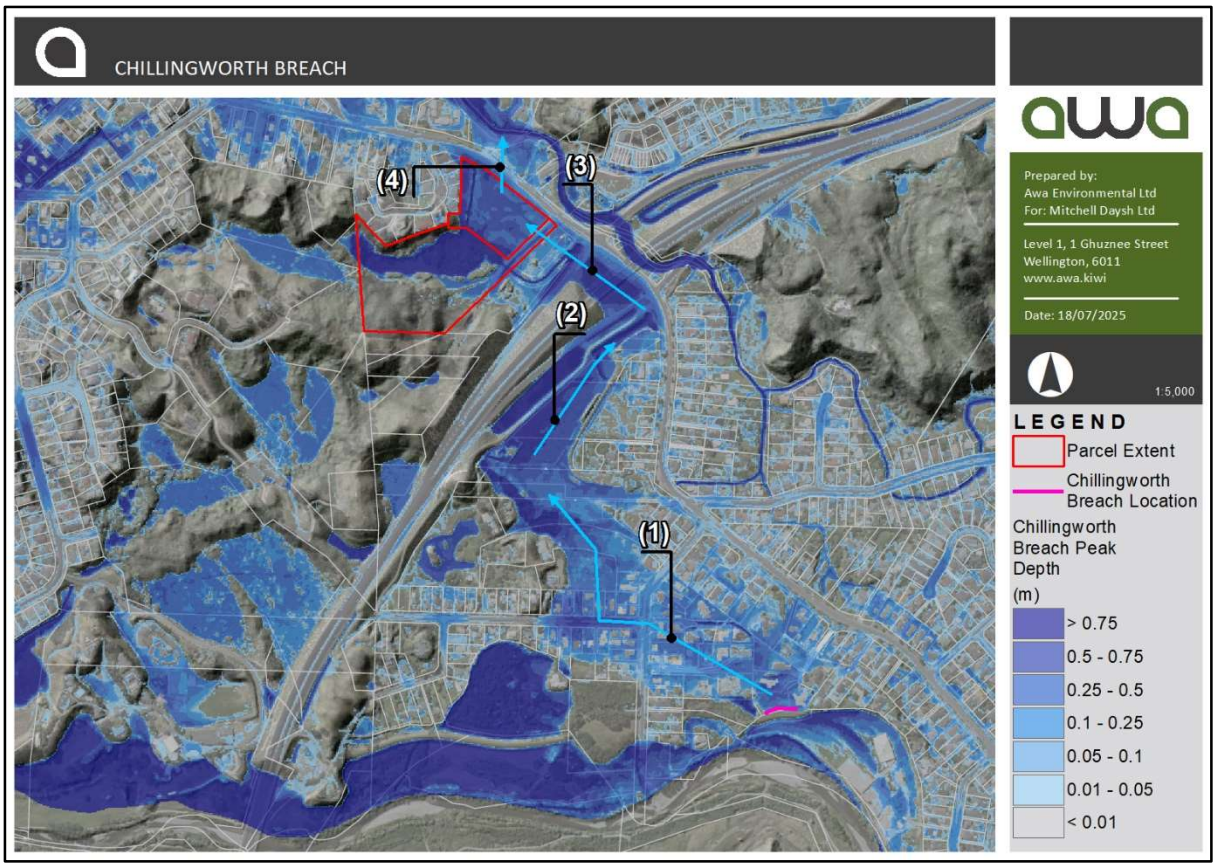


Figure 1 Chillingworth Stop-Bank Breach Scenario Peak Depths

There is sufficient scope, through site earthworks, to maintain the "effective functionally" of the residual overflow path through the site post development. A specific flood hazard assessment will be undertaken, including the development design, as part of future resource consent applications.

Response – Point 2:

RFI – Provide detailed soakage test information.

See detailed soakage test information in Appendix 1.

Response – Point 3:

RFI – Provide full Geotechnical Report and method for establishing seasonal high groundwater elevation.

The ground water levels have been shown to vary across the site in response to seasonal, wet weather events, soil type and local drainage. Awa and Cuttriss both encountered groundwater at varying depths using a hand auger. Within Lot 1 AWA encountered ground water at approximately 1.5 metres below ground level while Cuttriss encountered ground water at approximately 600mm below ground level. CGW have assumed a ground water 1.0 metre below ground level.

It is recommended by Cuttriss, CGW and AWA that standpipe piezometers are installed across the site along with regular water level monitoring to determine the groundwater level across the site.

Response – Point 4:

RFI – Provide a clear solution of how the stormwater associated risks are managed for flood plain filling and peak flow rate mitigation.

This is a flood assessment & stormwater management concept memo for a plan change application. The purpose of the memo is to provide an overview of the local and regional flood hazard associated within the site and whether there is sufficient scope to mitigate development of the site. A specific flood hazard assessment will be undertaken, including the development design, as part of future resource consent applications.

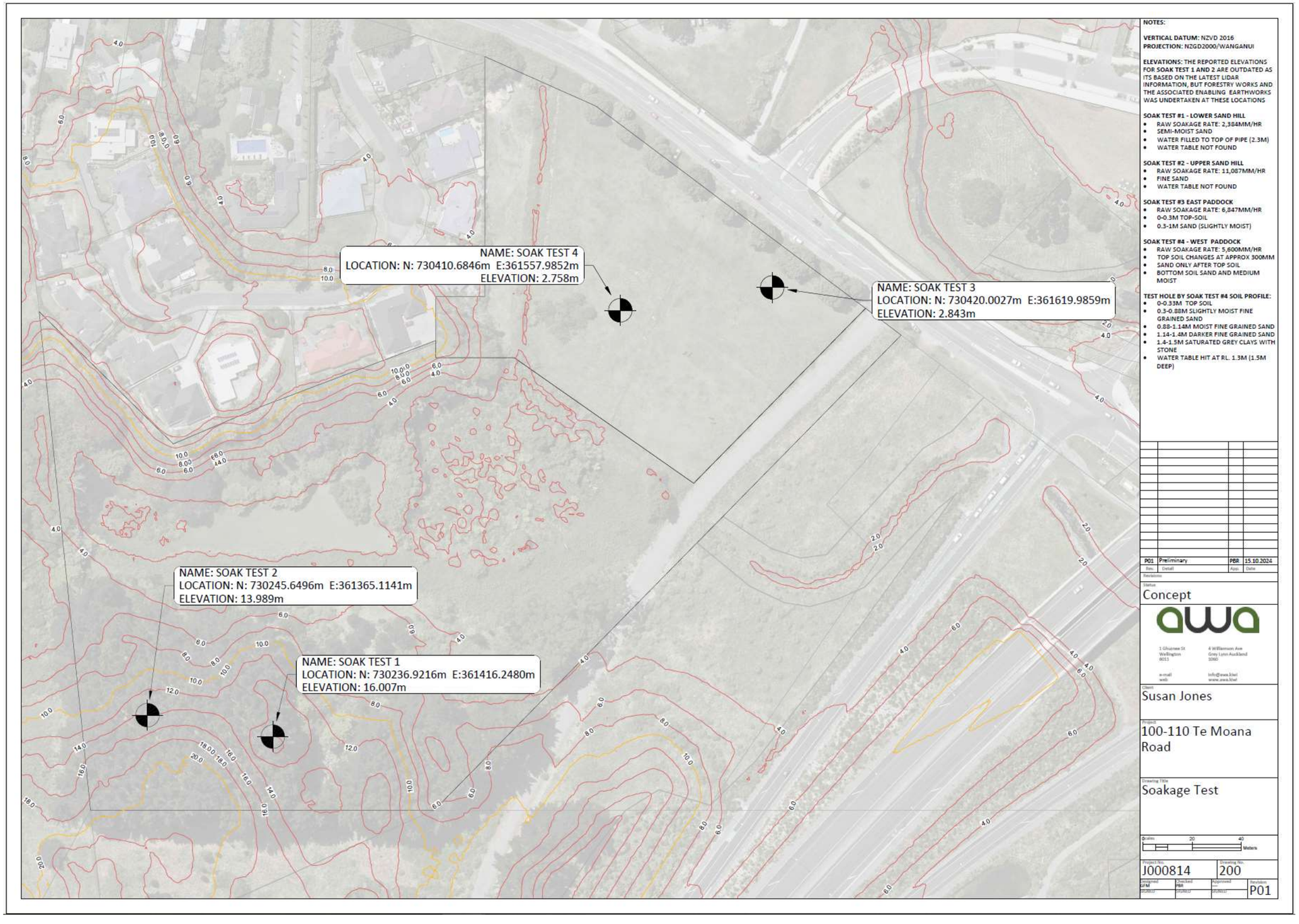
Response – Point 5:

RFI – Provide a clear solution of how water quality and runoff volume will be managed.

There are several options available to maintain water quality across the site. These could take the form of infiltration or attenuation devices such as soakage/storage crates, bio-infiltration devices or constructed wetland areas. All these devices return runoff to ground in a diffuse manner which will mimic pre-development runoff patterns while maintain water quality.

A specific flood hazard assessment for mitigating runoff volume associated with the development design will be undertaken as part of future resource consent applications.

Appendix 1:

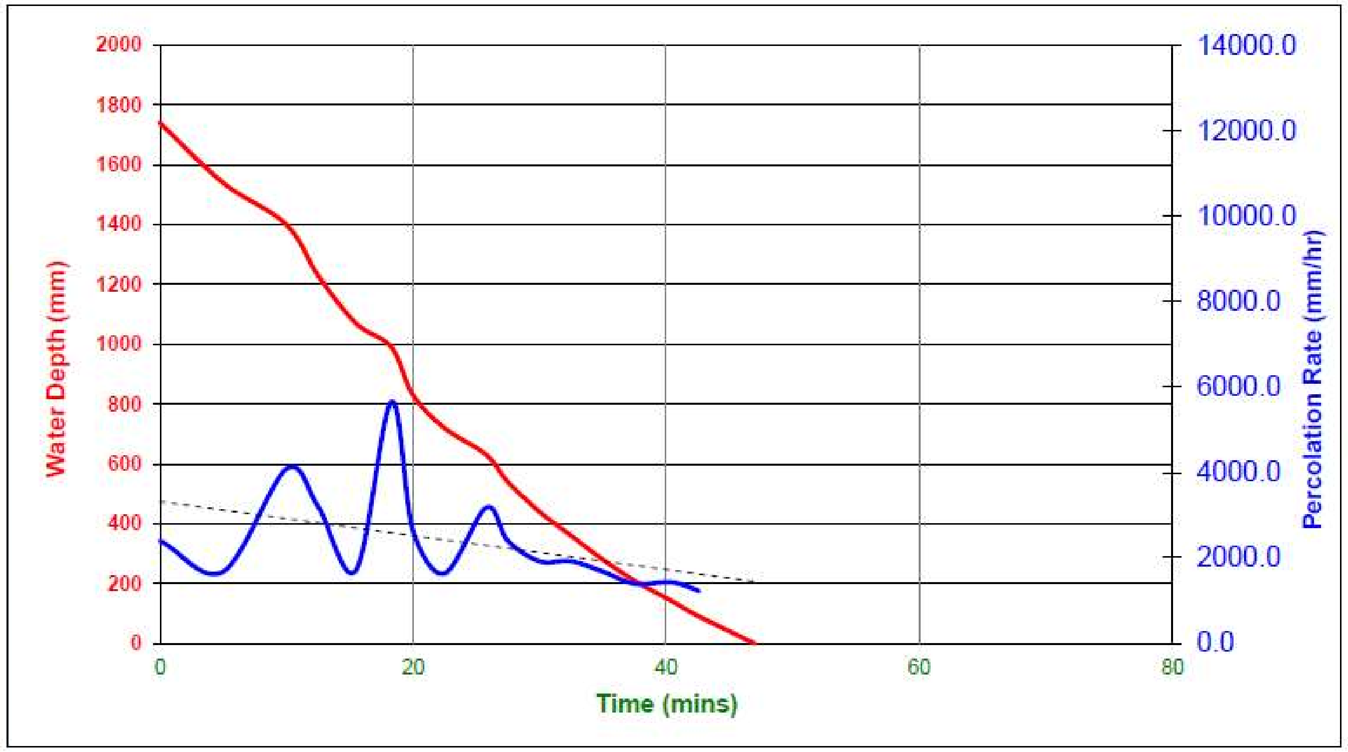

NAME: SOAK TEST 4
LOCATION: N: 730410.6846m E:361557.9852m
ELEVATION: 2.758m
NAME: SOAK TEST 3
LOCATION: N: 730420.0027m E:361619.9859m
ELEVATION: 2.843m
NAME: SOAK TEST 2
LOCATION: N: 730245.6496m E:361365.1141m
ELEVATION: 13.989m
NAME: SOAK TEST 1
LOCATION: N: 730236.9216m E:361416.2480m
ELEVATION: 16.007m
NOTES:
VERTICAL DATUM: NZVD 2016
PROJECTION: NZGD2000/WANGANUI
ELEVATIONS: THE REPORTED ELEVATIONS FOR SOAK TEST 1 AND 2 ARE OUTDATED AS ITS BASED ON THE LATEST LIDAR INFORMATION, BUT FORESTRY WORKS AND THE ASSOCIATED ENABLING EARTHWORKS WAS UNDERTAKEN AT THESE LOCATIONS
SOAK TEST #1 - LOWER SAND HILL
RAW SOAKAGE RATE: 2,384MM/HR
SEMI-MOIST SAND
WATER FILLED TO TOP OF PIPE (2.3M)
WATER TABLE NOT FOUND
SOAK TEST #2 - UPPER SAND HILL
RAW SOAKAGE RATE: 11,087MM/HR
FINE SAND
WATER TABLE NOT FOUND
SOAK TEST #3 EAST PADDOCK
RAW SOAKAGE RATE: 6,847MM/HR
0-0.3M TOP-SOIL
0.3-1M SAND (SLIGHTLY MOIST)
SOAK TEST #4 - WEST PADDOCK
RAW SOAKAGE RATE: 5,600MM/HR
TOP SOIL CHANGES AT APPROX 300MM
SAND ONLY AFTER TOP SOIL
BOTTOM SOIL SAND AND MEDIUM MOIST
TEST HOLE BY SOAK TEST #4 SOIL PROFILE:
0-0.33M TOP SOIL
0.3-0.88M SLIGHTLY MOIST FINE GRAINED SAND
0.88-1.14M MOIST FINE GRAINED SAND
1.14-1.4M DARKER FINE GRAINED SAND
1.4-1.5M SATURATED GREY CLAYS WITH STONE
WATER TABLE HIT AT RL. 1.3M (1.5M DEEP)
P01 Preliminary PBR 15.10.2024
Concept
Susan Jones
100-110 Te Moana Road
Soakage Test
J000814
200
P01

Soak test 1
Lower Sand hill

Percolation Test Results
(NZBC & Side and head wall)

Pipe Depth (m) = 2.34 m   Bore DIA (mm) = 80

Time (minutes)	Water Level (mm below surface)	Water Depth	Soakage Area (m^2)	Soakaged Volume (m^3)	Percolocation Rate (mm/hr)
0	600	1740	0.0050		
5	800	1540	0.0050	0.00101	2400.0
10	940	1400	0.0050	0.00070	1680.0
12.5	1110	1230	0.0050	0.00085	4080.0
15.5	1270	1070	0.0050	0.00080	3200.0
18.3	1350	990	0.0050	0.00040	1714.3
20	1510	830	0.0050	0.00080	5647.1
22.5	1620	720	0.0050	0.00055	2640.0
25.8	1710	630	0.0050	0.00045	1636.4
27.5	1800	540	0.0050	0.00045	3176.5
30	1900	440	0.0050	0.00050	2400.0
32.5	1980	360	0.0050	0.00040	1920.0
35	2060	280	0.0050	0.00040	1920.0
37.5	2130	210	0.0050	0.00035	1680.0
40.5	2200	140	0.0050	0.00035	1400.0
42.6	2250	90	0.0050	0.00025	1428.6
47	2340	0	0.0050	0.00045	1227.3
				0.00875	



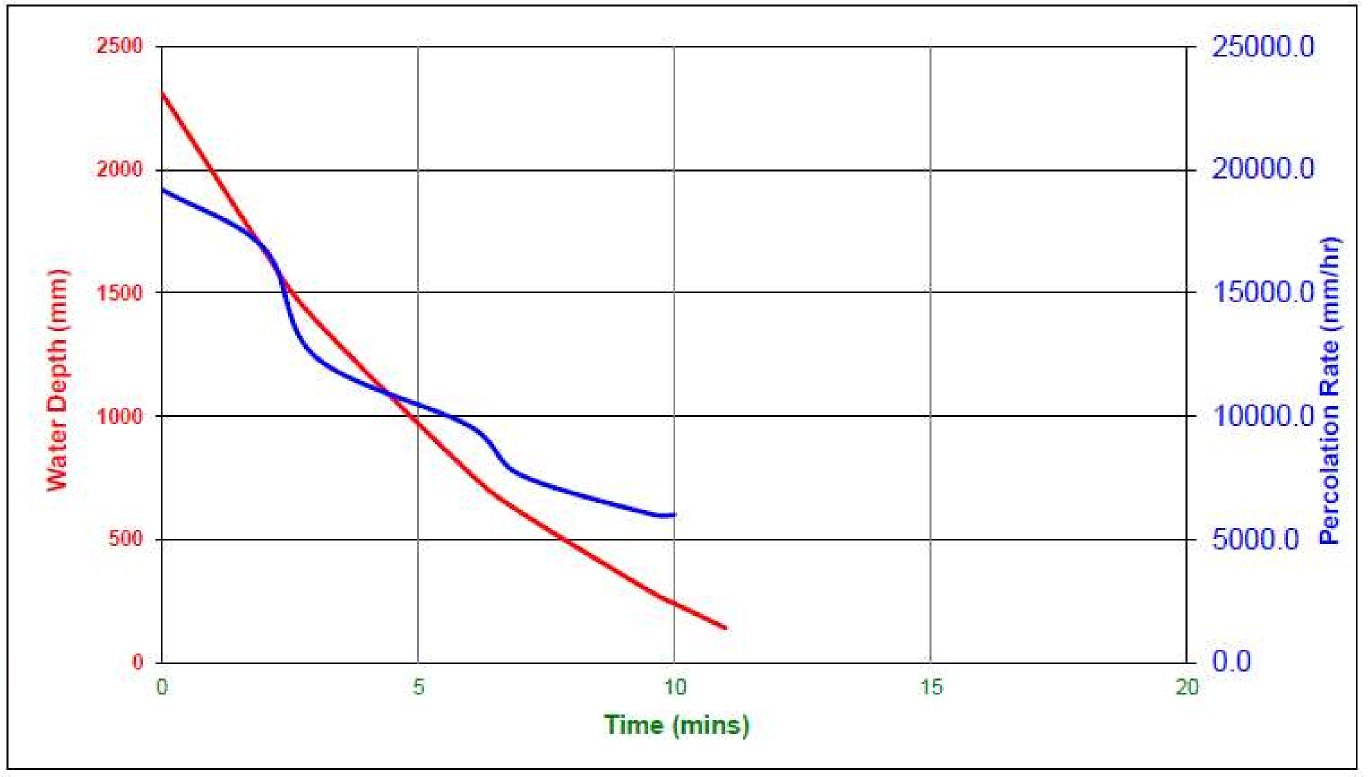
Average Soakage Rate	2384.4 (mm/hr)	596.0941
Soakage Rate per day	57.23 (m/day)	

Soak test 2
Upper Sand Hill

Percolation Test Results
(NZBC & Side and head wall)

Pipe Depth (m) = 2.50 m   Bore DIA (mm) = 80

Time (minutes)	Water Level (mm below surface)	Water Depth	Soakage Area (m^2)	Soakaged Volume (m^3)	Percolocation Rate (mm/hr)
0	190	2310	0.0050		
2	830	1670	0.0050	0.00322	19200.0
3	1110	1390	0.0050	0.00141	16800.0
6	1730	770	0.0050	0.00312	12400.0
7	1890	610	0.0050	0.00080	9600.0
9.6	2220	280	0.0050	0.00166	7615.4
10	2260	240	0.0050	0.00020	6000.0
11	2360	140	0.0050	0.00050	6000.0
			Total Soaked =	0.01091	m3



Average Soakage Rate	11087.9 (mm/hr)	2771.978 1
Soakage Rate per day	266.11 (m/day)	

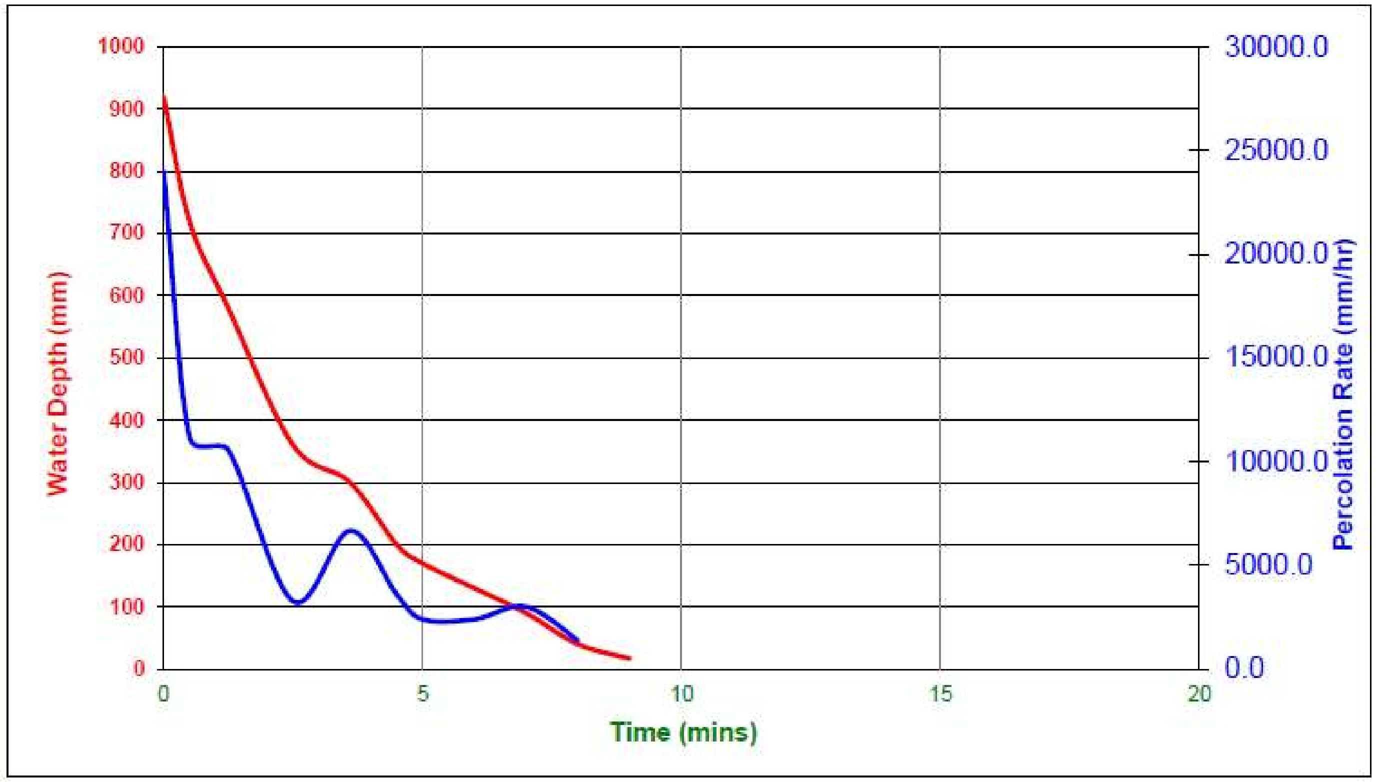
Soak test 3
Left paddock

Percolation Test Results
(NZBC & Side and head wall)

Bore Depth (m) = 1.50 m

Bore DIA (mm) = 80

Time (minutes)	Water Level (mm below surface)	Water Depth	Soakage Area (m^2)	Soakaged Volume (m^3)	Percolocation Rate (mm/hr)
0	580	920	0.0050		
0.5	780	720	0.0050	0.00101	24000.0
1.25	920	580	0.0050	0.00070	11200.0
2.5	1140	360	0.0050	0.00111	10560.0
3.6	1200	300	0.0050	0.00030	3272.7
4.5	1300	200	0.0050	0.00050	6666.7
5	1330	170	0.0050	0.00015	3600.0
6	1370	130	0.0050	0.00020	2400.0
7	1410	90	0.0050	0.00020	2400.0
8	1460	40	0.0050	0.00025	3000.0
9	1483	17	0.0050	0.00012	1380.0
			Total Soaked =	0.00454	m3



Average Soakage Rate	6847.9 (mm/hr)	1711.985 8
Soakage Rate per day	164.35 (m/day)	

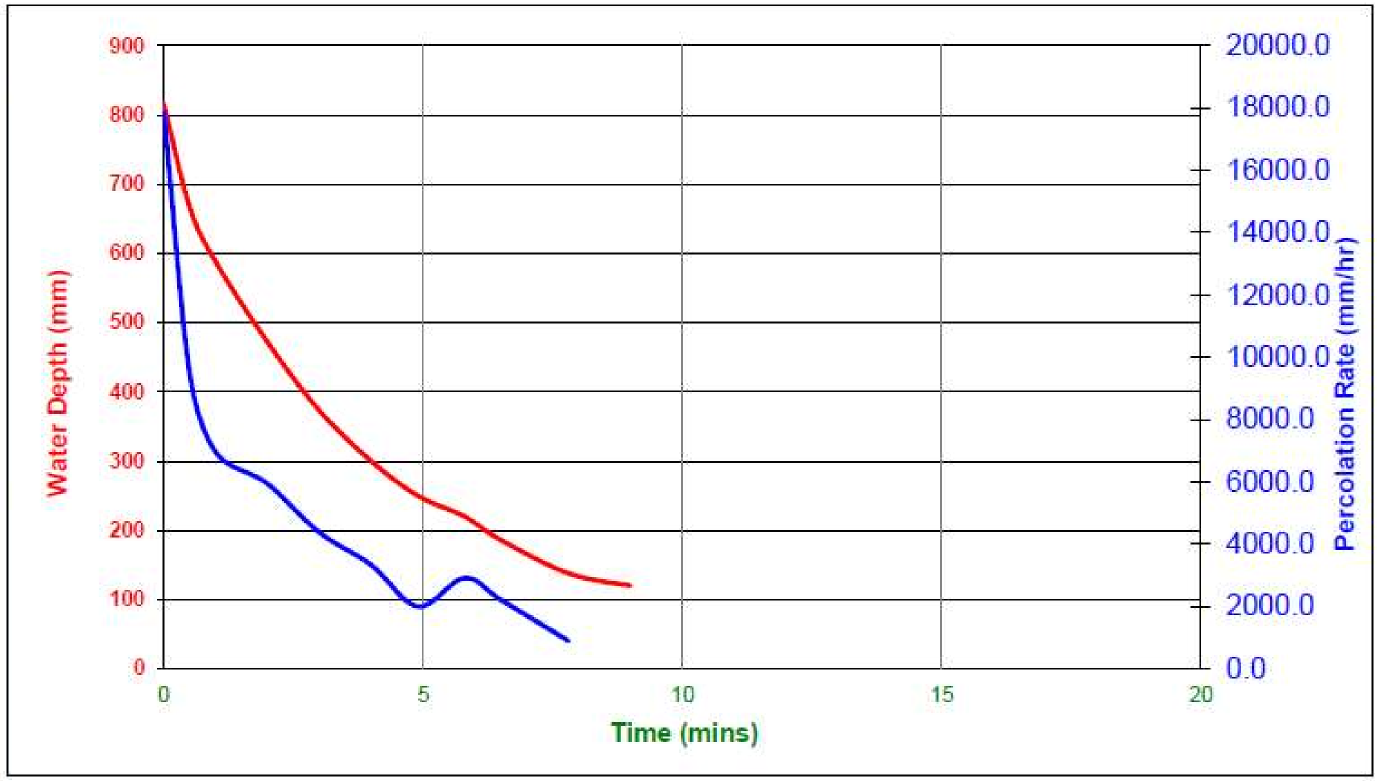
Soak test 4
Right Paddock

Percolation Test Results
(NZBC & Side and head wall)

Location (NZGD Waikanae

Pipe Depth (m) = 1.40 m   Bore DIA (mm) = 80

Time (minutes)	Water Level (mm below surface)	Water Depth	Soakage Area (m^2)	Soakaged Volume (m^3)	Percolocation Rate (mm/hr)
0	584	816	0.0050		
0.5	733	667	0.0050	0.00075	17880.0
1	812	588	0.0050	0.00040	9480.0
2	928	472	0.0050	0.00058	6960.0
3	1027	373	0.0050	0.00050	5940.0
4	1100	300	0.0050	0.00037	4380.0
4.9	1150	250	0.0050	0.00025	3333.3
5.8	1180	220	0.0050	0.00015	2000.0
6.5	1214	186	0.0050	0.00017	2914.3
7.8	1262	138	0.0050	0.00024	2215.4
9	1280	120	0.0050	0.00009	900.0
			Total Soaked =	0.00350	m3



Average Soakage Rate	5600.3 (mm/hr)	1400.075
Soakage Rate per day	134.41 (m/day)	

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