

Version No: 03 Issue Date: 21/10/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 22 Page: 1 of 24
	Hydrology Operations Manual	

Version 3.2.23/01/2020

Water Quality Monitoring Run Guide

Lake Horowhenua Inflows

**STATE OF ENVIRONMENT
(MONTHLY Sampling)**

Job Hazard & Task Analysis











Hazard Identification – tick all that apply, write additional hazards identified:

The yellow highlighted hazards are known hazards at the time of compiling this document. This **does not negate** the need to assess for and potentially eliminate or isolate any hazards at *each* sample location at *every* visit

Hazard	Yes	Hazard	Yes	Hazard	Yes
Confined space	<input type="checkbox"/>	Suspended loads	<input type="checkbox"/>	Noise – plant and equipment	<input type="checkbox"/>
Difficult entry/exit	<input type="checkbox"/>	Falling objects	<input type="checkbox"/>	Communication – means of	<input type="checkbox"/>
Oxygen deficiency/excess	<input type="checkbox"/>	Working near cranes and crane runways	<input type="checkbox"/>	Remote area	<input type="checkbox"/>
Poisonous fumes/gas	<input type="checkbox"/>	Live rails-gantry cranes	<input type="checkbox"/>	Temperature extremes	<input checked="" type="checkbox"/>
Explosive gas	<input type="checkbox"/>	Trip hazards	<input checked="" type="checkbox"/>	Reduced visibility	<input type="checkbox"/>
Flammable materials	<input type="checkbox"/>	Slippery surfaces	<input checked="" type="checkbox"/>	Unauthorized persons	<input type="checkbox"/>
Combustible materials	<input type="checkbox"/>	Manual handling	<input type="checkbox"/>	High pressure water	<input type="checkbox"/>
Hazardous substances	<input type="checkbox"/>	Sharp materials	<input type="checkbox"/>	Vacuum	<input type="checkbox"/>
Drowning	<input checked="" type="checkbox"/>	Line of fire	<input type="checkbox"/>	Air emissions – dust, fumes	<input type="checkbox"/>
Engulfment	<input type="checkbox"/>	Pressurized fluids	<input type="checkbox"/>	General waste	<input type="checkbox"/>
UV Radiation	<input checked="" type="checkbox"/>	Pressurized air/gas	<input type="checkbox"/>	Hazardous waste	<input type="checkbox"/>
Electrical – low /high voltage	<input checked="" type="checkbox"/>	Traffic / vehicle movements	<input checked="" type="checkbox"/>	Hydrocarbon / chemical spill	<input type="checkbox"/>
Multiple electrical feeds	<input type="checkbox"/>	Machinery – mobile plant	<input type="checkbox"/>	Soil disturbance/erosion	<input type="checkbox"/>
Working at height	<input type="checkbox"/>	Moving parts	<input type="checkbox"/>	Habitat disruption	<input type="checkbox"/>
Ladders	<input type="checkbox"/>	Chemical reaction (Pyrophoric iron)	<input type="checkbox"/>	Lighting	<input type="checkbox"/>
Elevated work platforms	<input type="checkbox"/>	Transport of hazardous substances	<input type="checkbox"/>	Weather extremes	<input checked="" type="checkbox"/>
Potential for difficult rescue	<input type="checkbox"/>	Stock/Farm Animals	<input checked="" type="checkbox"/>		

Required PPE– tick all that apply, write additional PPE required:

The yellow highlighted PPE are known required PPE at the time of compiling this document. This **does not negate** the need to assess for the appropriate required PPE measures at each sample location per visit.

SAMPLING GLOVES	EAR PROTECTION	HARD HAT	SAFETY GLASSES / GOGGLES	WORK BOOTS	PROTECTIVE GLOVES	PERSONAL FLOATATION DEVICE (PFD)
						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HI VIZ	SAFETY HARNESS	WADING				
						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				

Known Hazard	Significant		Can it be Eliminated		Can it be Minimised		Method of control
	Yes	No	Yes	No	Yes	No	
Trip Hazards	✓			✓	✓		Prior to sampling staff must check area is clear of any items that pose a risk. If there is any these should only be moved if safe to do so. Sampling only to commence if the sampler is satisfied that any slip, trip or fall hazards are isolated.
Slippery Surfaces – STREAM ACCESS	✓			✓	✓		River banks can be slippery at any time. Care should be taken in all conditions. PFD's must be available for staff if use is deemed appropriate. [HMP18]
Drowning	✓			✓		✓	Staff should be trained in alignment with HRCs training requirements. PFD's must be available for staff if use is deemed appropriate [HMP18]
UV Radiation	✓			✓	✓		Horizons provide sunscreen and hats.
Electrical – low /high voltage	✓			✓	✓		Sampling activity does not require any interaction with live circuitry or equipment. Staff should check sample area is clear of any hazards (i.e. loose cables, live equipment etc.) before sampling. If access/safety is considered compromised sampling is aborted. [HMP 23]
Stock/Farm Animals	✓			✓	✓		Although generally docile farm animals can still be hazardous. The risk should be isolated by finding alternative access routes to the sample location or contacting the owner for assistance. [HMP26]
Weather Extremes	✓			✓	✓		During the duration of a sampling run varying types and degrees of weather may be experienced. All sampling staff are to have access within their HRC vehicle of additional and appropriate clothing.
Temperature Extremes - Hypothermia: following emersion	✓			✓		✓	Staff must have access to suitable PPE and spare clothing within their vehicle. [HMP18] [HMP18]
Traffic Vehicle movements	✓			✓		✓	Sample site requires parking beside a main road. The vehicle must be parked as far off of the road surface as safe and practicable to do so. Use of hazards lights must be considered. Hi-vis clothing must be worn. [HMP 16] [HMP 20]

Site Information

Hilltop Site Name	Latitude	Longitude	Comments
L Horowhenua Inflow at Lindsay Road	-40.586452°	175.268403°	Gauge
Patiki Stream @ Kawi Road	-40.608177°	175.278990°	Gauge
Makomako Road Drain at Lake Horowhenua	-40.619618°	175.257150°	Gauge
Hokio Beach Road Drain u/s Arawhata	-40.622632	175.248461	Sample if flowing – has a specific test suite. Gauge if actually flowing
Arawhata Drain at Hokio Beach Road	-40.622245°	175.246800°	Gauge
Arawhata Drain at Dairy Track Bridge	-40.626681	175.239976	Gauge
Hokio at Lake Horowhenua	-40.605623°	175.236899°	Gauge

Site Contact Information

[Contact details can be found here.](#)

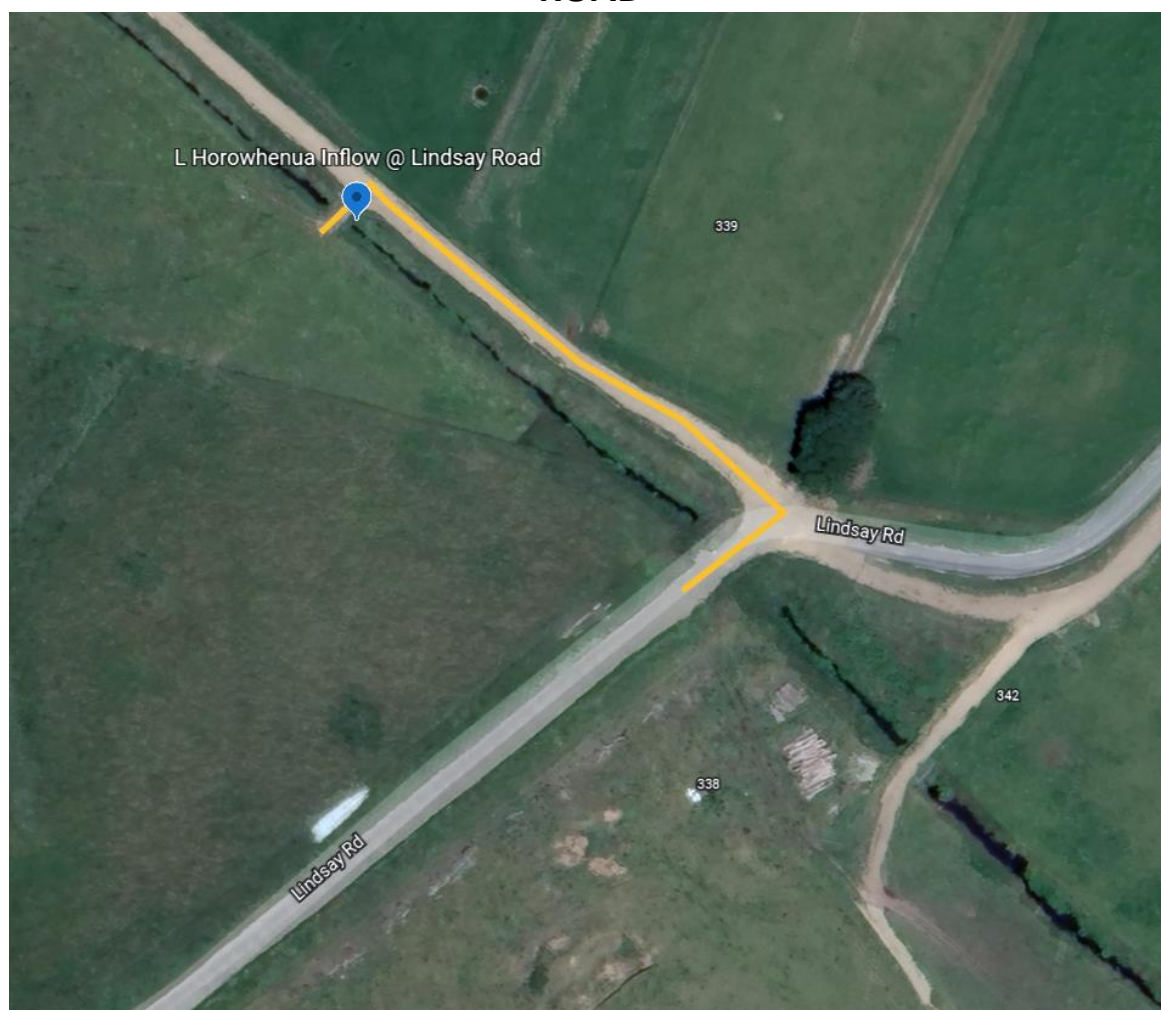
Equipment Required

Sample Bottles	SEVEN (07) sample bottle sets - refer to http://tgm.horizons.govt.nz/Hydrology/SOPs/cd_om_15.4 Appendix 4 ELS%20Bottle%20Guide.xlsx
Sample numbers	SEVEN (07)
Equipment	<ul style="list-style-type: none"> • Handheld multi-parameter instrument (calibrated) – including iPad/screen • Black disc, viewer, tape measure • Clarity Tube • Sampling pole • Chilly bins and ice-packs • Field sampling books • Sampling ID labels (created using Hilltop Sampler) • Alcohol gel
Additional Comments/ Instructions	<ul style="list-style-type: none"> • L. Horowhenua Inflow @ Lindsay Road: Sign in to Zero Harm app before getting to site and sign out afterwards.

Overview and approximate site locations:






SITE LOCATION MAP – L HOROWHENUA INFLOW AT LINDSAY ROAD



POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):

Drowning – River	Traffic / vehicle movements		
Trip hazards – cobbles, uneven ground	UV Radiation		
Slippery surfaces – mud, periphyton			

REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS	HI VIZ	WADING					
							

DIRECTIONS:

- From Palmerston North Head to Shannon.
- Take the Shannon-Foxton Road turn off (just as you enter town) and head towards Foxton.
- Head south from Foxton (SH1) towards Levin.
- Around 12.5kms South of Foxton you will see Kawiu Road on your right – turn in here.
- You will come to the Lindsay Road intersection – turn right.
- Follow this road and you will see the inflow (just before you see the sign for Ohourangi Farm (Moutere)).
- Turn left down the race, park up alongside the hydro site box.
- Collect sample and gauge here.

ACCESS:

- **Note: Sign into the ZeroHarm app before arriving on site and sign out once off site.**



Turn left at race intersection (site is in blue)



Lindsay Road site.



Lindsay Road site. Sample at new ESG (right hand ESG), and Gauge within 15m upstream of culvert




SITE LOCATION MAP – PATIKI STREAM @ KAWIU ROAD



POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):

Drowning – River	Traffic / vehicle movements – sales yard		
Trip hazards – cobbles, uneven ground	UV Radiation		
Slippery surfaces – mud, periphyton			

REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS	HI VIZ	WADING					
							
DIRECTIONS: <ul style="list-style-type: none"> Head back to Kawiu Road and turn right. Follow the road for about 3.4km and you will see the inflow. Address is 125 Kawiu Road. Park up and walk around pond and over little bridge to get to the site. 							
ACCESS: <ul style="list-style-type: none"> This is private property, you can park on the lawn (yellow mark) if the ground is dry, if it wet park up in the cattery carpark (green mark). Pet dog usually comes running/barking and jumps into stream. The bridge can be very slippery, take care when crossing it. 							



Walk around the pond, there is a gap in the bush to the stream



Patiki site. Sample off the upstream side of footbridge. Gauging to be done at a suitable section within 1m below the footbridge to upstream at the fence line.




SITE LOCATION MAP – MAKOMAKO ROAD DRAIN @ L HOROWHENUA



POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):

Drowning – River	Traffic / vehicle movements – sales yard		
Trip hazards – cobbles ,uneven ground	UV Radiation		
Slippery surfaces – mud, periphyton			

REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS	HI VIZ	WADING					
							

DIRECTIONS:

- Turn right out of the Patiki Stream site driveway back onto Kawui Road. Take the next right onto Tiro Tiro Road.
- Follow all the way to the end and at the T intersection turn right onto Makomako Road.
- Before the farm at the end of the road you will see the drain on the left
- Sample and gauge here.

ACCESS:

- This is on the side of the road, park alongside the drain next to the staff gauge (yellow mark)



Makomako site. Staff gauge pictured. Sample and gauge (if flowing - usually dry) within 3m of staff gauge.




SITE LOCATION MAP – HOKIO BEACH ROAD DRAIN U/S ARAWHATA



POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):

Drowning – River	Traffic / vehicle movements – sales yard		
Trip hazards – cobbles uneven ground	UV Radiation		
Slippery surfaces – mud, periphyton			

REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS	HI VIZ	WADING					
							

DIRECTIONS:

- From the Makomako Road Drain site, turn right onto Hamaria Road.
- Follow to the end and turn right onto Hokio Beach Road.
- Just before the Arawhata Drain at Hokio Beach Road site, on the opposite side of the road, is a drain that (when flowing) enters the Arawhata Drain.

- Safest to park at the Arawhata Drain at Hokio Beach Road site and walk up.
- Sample and gauge here.
- **NOTE:** Special Test Set

ACCESS:

- Site is on private property. It is best to park at Arawhata Drain @ Hokio Beach Road site and walk to site.



U/S Arawhata site. Sample and gauge (if flowing – usually dry) within the blue circle. **NOTE: Special test set**




SITE LOCATION MAP – ARAWHATA DRAIN @ HOKIO BEACH ROAD



POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):

Drowning – River	Traffic / vehicle movements – sales yard		
Trip hazards – cobbles, uneven ground	UV Radiation		
Slippery surfaces – mud, periphyton			

REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS	HI VIZ	WADING					
							

DIRECTIONS:

- Park behind the safety barrier next to the hydro site.
- Sample and gauge here.

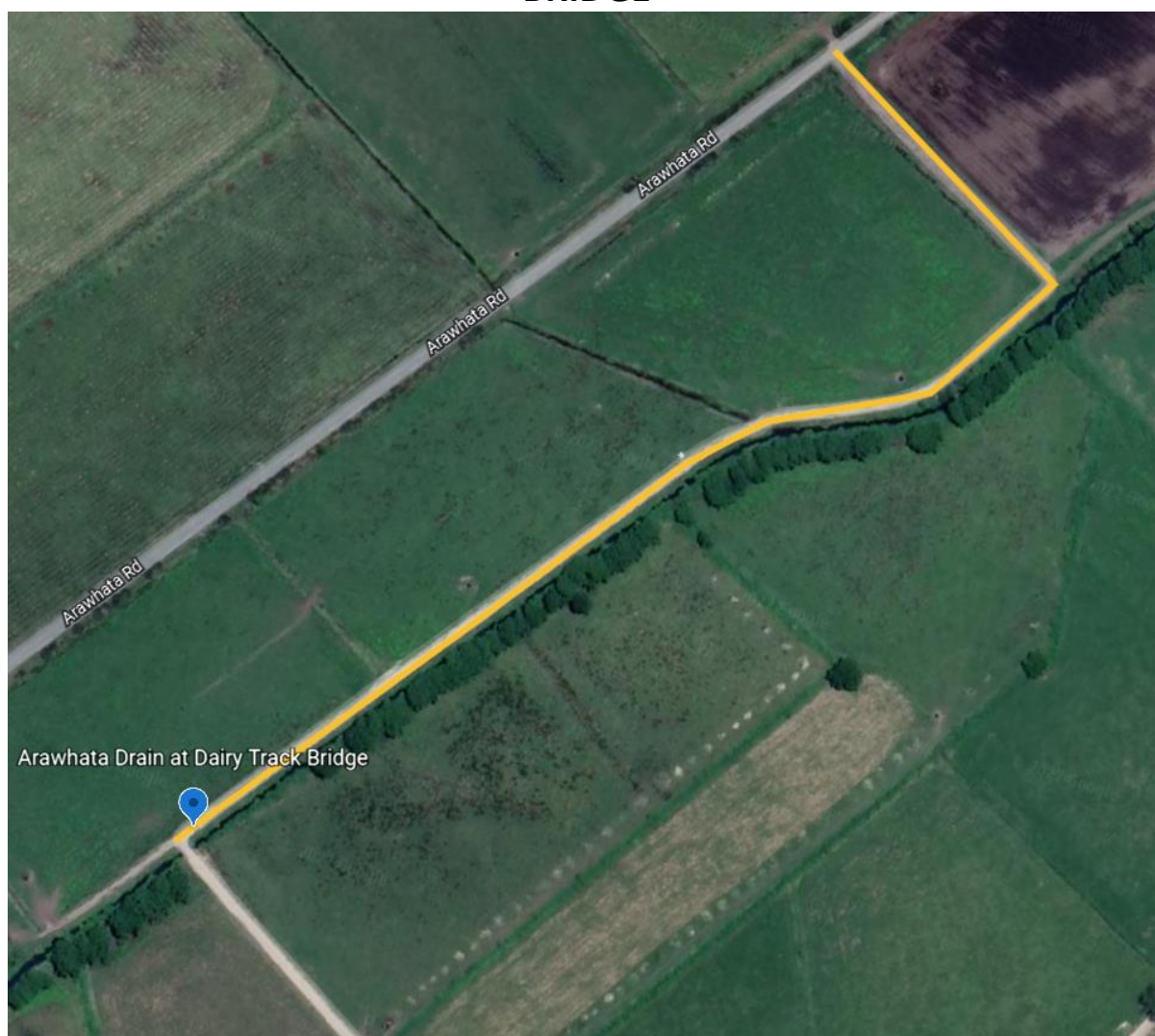
ACCESS:

- Drive around the road safety railing and park up next to the site (yellow mark)



Arawhata Drain @ Hokio Beach Road site. Sample off the concrete blocks. Gauge at the culvert.



SITE LOCATION MAP – ARAWHATA DRAIN @ DAIRY TRACK BRIDGE



POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):

Drowning – River	Traffic / vehicle movements – sales yard		
Trip hazards – cobbles ,uneven ground	UV Radiation		
Slippery surfaces – mud, periphyton	Stock/Farm Animals		

REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS	HI VIZ	WADING					
							

DIRECTIONS:

- Keep following Hokio Beach Road.
- Turn down the next left, Arawhata Road.
- 230m down the road on the left is a farm gate, enter the farm here.
- Following the race around to the right and down to the Hydro site.
- Sample and Gauge here.
- You have to reverse out down the race. If the paddocks aren't too wet you may be able to turn around in one on the way out. **DO NOT** drive over the dairy track bridge.

ACCESS:

- The farm is owned by HRC but is still being leased out as a cut and carry and cattle farm. Please leave gates as you find them.
- **NOTE:** You need to contact the farm lessee Grant before arriving onsite and let him know how long you'll be on the farm and where around the farm you will be.
- Weed in the stream can be a big problem especially for gauging and may need removing before beginning.



Go through this gate and follow the race around to the right to the site



Dairy track site. Sample at ESG.



Dairy track site. The most stable gauging section is immediately below the track bridge.



SITE LOCATION MAP – HOKIO @ LAKE HOROWHENUA



POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):

Drowning – River	Traffic / vehicle movements – sales yard		
Trip hazards – cobbles, uneven ground	UV Radiation		
Slippery surfaces – mud, periphyton	Stock/Farm Animals		

REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS	HI VIZ	WADING					
							

DIRECTIONS:

- Go back down Arawhata Road.
- Turn left onto Hokio Beach Road.
- 2.3km down the road on your right is Moutere Road, turn here.
- Drive just over the one way bridge that goes over Hokio Stream. Use the driveway on the left to turn around so you can drive down the drive that is immediately after the bridge on the right.
- Drive through here and drive carefully the track is narrow in parts. Follow the stream up to the weir.
- Sample and gauge here.

ACCESS:



Hokio site. View from the camera which is on the opposite side to where you have parked up. Old staff gauge is just past the pictured flax. The rest of the site is on the side you parked on. Sample point is at the pipe with the EXO Sonde. Gauge site to the left.



Red circle is the Hokio Stream at Weir ESG. Yellow circle is the Exo Sonde pipe. Blue circle is the Lake Horowhenua at Hokio ESG – do a separate hydro inspection for this ESG.



Gauge between the two blue lines (25m-30m downstream of the weir). There is a loop in place (at the first blue line) for when the weir is flooded and the stream is too high to wade.