

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 1 of 21
	Hydrology Operations Manual	

SoE and Periphyton Monitoring Run Guide

Whanganui

(Monthly Sampling)

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 2 of 21
horizons regional council 	Hydrology Operations Manual	

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 checked="" type="checkbox"/>	Falling objects	<input type="checkbox"/>	Communication – means of	<input checked="" type="checkbox"/>
Oxygen deficiency/excess	<input type="checkbox"/>	Working near cranes and crane runways	<input type="checkbox"/>	Remote area	<input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/>	Stock/Farm Animals	<input checked="" type="checkbox"/>		

Required PPE and Safety Equipment– 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  <input checked="" type="checkbox"/>	EAR PROTECTION  <input type="checkbox"/>	HARD HAT  <input type="checkbox"/>	SAFETY GLASSES / GOGGLES  <input checked="" type="checkbox"/>	WORK BOOTS / WADERS  <input checked="" type="checkbox"/>	PROTECTIVE GLOVES  <input checked="" type="checkbox"/>	PERSONAL FLOATATION DEVICE (PFD)  <input checked="" type="checkbox"/>
HI VIZ  <input checked="" type="checkbox"/>	SAFETY HARNESS  <input type="checkbox"/>	SUNBLOCK & HAND SANITISER <input checked="" type="checkbox"/>	VHF RADIO <input checked="" type="checkbox"/>	THROW BAG <input checked="" type="checkbox"/>	PERSONAL LOCATOR BEACON <input checked="" type="checkbox"/>	

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 3 of 21
horizons regional council 	Hydrology Operations Manual	

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	✓			✓	✓		Sampling must always be done from stable level. Vehicles must be driven a sensible distance from any pond edges. [HMP 18]. Staff driving four wheel drive vehicles must have adequate training [HMP 9]
Drowning	✓			✓	✓		Staff should use a sample pole if access into the river/stream is unsafe. PFD's must be worn by staff. Vehicles must be driven a sensible distance from any pond edges. [HMP18]
Machinery – mobile plant	✓			✓	✓		Staff are to wear appropriate PPE, obey on site signage and instruction, and give way to all operational traffic.
Traffic Vehicle movements	✓			✓	✓		The designated driver of a vehicle is responsible for ensuring the safety and operational requirements and recommendations are met. All staff working within the road reserve must wear high visibility clothing to AS/NZS 1906.4:2010. This clothing must be fluorescent red orange in colour unless the individual is the site STMS then the garment must be fluorescent lime yellow. [HMP 9] [HMP 16] [HMP 20].
Hazardous Waste – treated Effluent	✓			✓	✓		Sampling activities require the collection of a sample of treated effluent. Staff must wear sampling gloves, eye protection and have access to anti-bacterial hand-gel to sample. Hepatitis B vaccinations are offered by HRC [HMP 30] [HMP 35]
UV Radiation	✓			✓	✓		Horizons provide sunscreen and hats. Staff are encouraged to make use of these. [HMP 17]
Manual Handling	✓			✓	✓		Staff must wear sampling gloves, eye protection and have access to anti-bacterial hand-gel to sample treated effluent. Hepatitis B vaccinations are offered by HRC. [HMP 30] [HMP 35]
Electrical – low /high voltage	✓			✓	✓		Many of the rural sampling sites require traversing across farm paddocks equipped with electric fences that contain stock. If unknown, treat every farm fence as electric and avoid direct contact. Contact the landowner for advise on whether or not the

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 4 of 21
horizons regional council 	Hydrology Operations Manual	

Known Hazard	Significant		Can it be Eliminated		Can it be Minimised		Method of control
	Yes	No	Yes	No	Yes	No	
							fence is live and discuss alternative routes or options for avoiding the fence if possible.
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]
Temperature/ 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. Staff must have access to suitable PPE and spare clothing within their vehicle. [HMP18]
Communication-means of	✓			✓	✓		Cell phone coverage is not available at all sites. Staff must be capable of communicating via VHF radio in an equipped vehicle. [HMP 24]
Remote Area	✓			✓	✓		Most council vehicles are fitted with the E-Road vehicle locator system. Many vehicles are also fitted with a radio operating on the Horizons digital radio network providing communication and tracking coverages across a majority of the region. [HMP 24]
Difficult entry/exit	✓			✓	✓		Entry and exit into waterways poses many risks and should be treated with caution. Rivers/Streams can have varying flow levels. STP ponds can be deep, full of sediments, and have operating equipment on/within them. Sampling must always be done from stable level ground. Staff should use a sample pole if access into the river/stream is unsafe. PFD's must be worn by staff and staff must be trained for working around water. Vehicles must be driven a sensible distance from any pond edges. [HMP18]
Potential for difficult rescue	✓			✓	✓		Sampling must always be done from stable level ground. Staff should use a sample pole if access into the river/stream is unsafe. PFD's must be worn by staff and staff must be trained for working around water. Vehicles must be driven a sensible distance from any pond edges. Always carry a throw bag when working around water and have a personal locator beacon on hand. It is always preferable to have someone else with you at all times when working around water [HMP18]

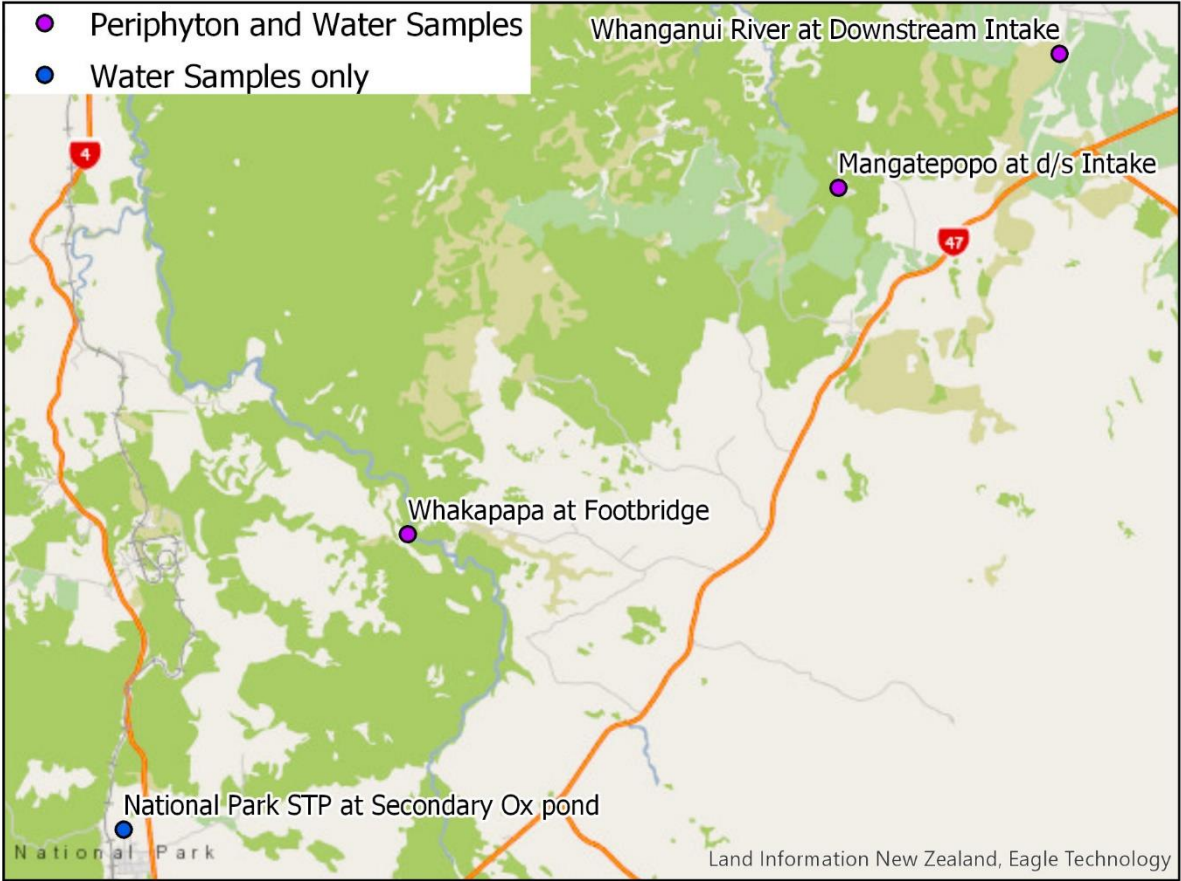
Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 5 of 21
horizons regional council 	Hydrology Operations Manual	

Known Hazard	Significant		Can it be Eliminated		Can it be Minimised		Method of control
	Yes	No	Yes	No	Yes	No	
Reduced Visibility	✓			✓	✓		If you find you are driving in limited visibility slow your driving speed and turn your fog lights on and watch out for vehicles that aren't using their lights. When working in limited visibility if you cease to be able to make out your surrounding environment stop work immediately. If working at night it is advisable to traverse the property in daylight first to map out an action plan outlining walking tracks, vehicle tracks, fence lines, stock positions, ponds, waterways, houses, and sheds as well as other significant items of interest. [HMP12]
Engulfment	✓			✓	✓		Rivers/streams are prone to flash flooding creating the potential for engulfment. Staff must be alert and aware at all times of how the waterways are behaving around them, especially in areas where water is dammed or has structures such as intakes and aqueducts. PFD's must be worn by staff and staff must be trained for working around water. Vehicles must be driven a sensible distance from any river or pond edges. Always carry a throw bag when working around water and have a personal locator beacon on hand. It is always preferable to have someone else with you at all times when working around water [HMP18]

Site Information

Hilltop Site Name	Northing/Lat (NZTM)	Easting/Long (NZTM)	Comments
National Park STP at Secondary Oxpond	5662504	1806738	Sample gloves, safety glasses, Sample pole, bleach spray and Water Samples
Whanganui River at Downstream Intake	5676951	1825125	Chlorophyll a Sample, 20-View Visual Assessment, Samrtroll readings and Water samples
Mangatepopo at d/s Intake	5674346	1820825	Chlorophyll a Sample, 20-View Visual Assessment, Samrtroll readings and Water samples
Whakapapa at Footbridge	5667616	1812449	Chlorophyll a Sample, 20-View Visual Assessment, Samrtroll readings and Water samples and Black Disc

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 6 of 21
horizons regional council 	Hydrology Operations Manual	



Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 7 of 21
	Hydrology Operations Manual	

Equipment Required

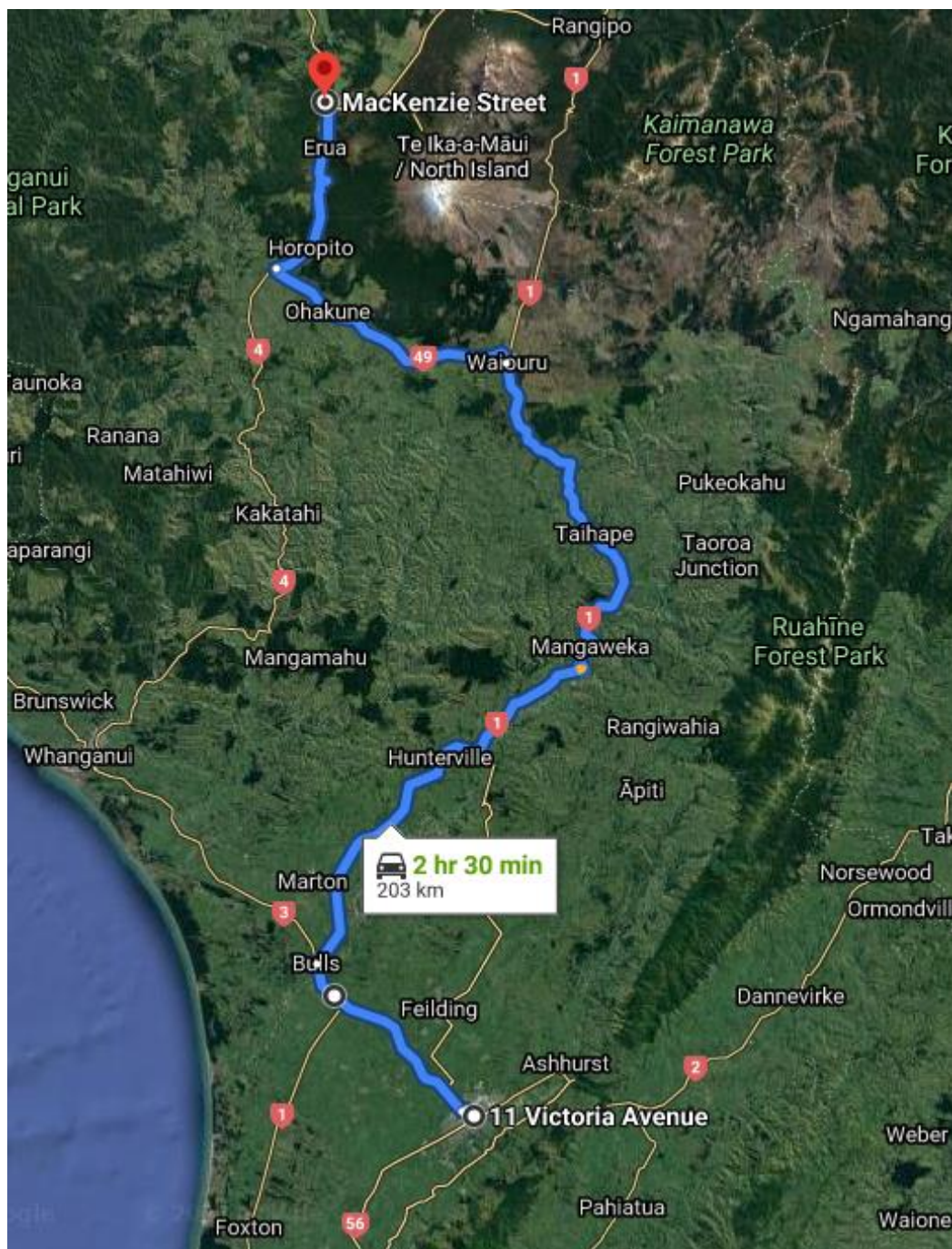
Sample Bottles	<p>FOUR (4) sample bottle sets - refer to http://tgm.horizons.govt.nz/Hydrology/SOPs/cd_om_15.4_Appendix_4_ELS%20Bottle%20Guide.xlsx</p>
Sample numbers	<p>FOUR (Water Quality) THREE (Periphyton)</p>
Equipment	<ul style="list-style-type: none"> • iPad and calibrated Smartroll • Black disc, viewer, tape measure • Clarity Tube • Bathoscope • Pottles (Approx 10) • Scrubbing brush, tooth brush, washer bottle, Yellow sample bottle lid and Ice cream container • Sampling pole • Chilly bins and ice-packs • Bags for isolating effluent samples • Disinfectant equipment for sampling equipment (Bleach spray) • Field sampling books • Sampling ID labels • Gloves for effluent samples • Alcohol gel • Personal Locator Beacon • 4WD Vehicle equipped with VHF Radio • Throw Bag • 636 KEY
Miscellaneous	<p>Mangatepopo at D/S Intake –</p> <ul style="list-style-type: none"> • You will come to a sign that says ‘Danger, unstable road ahead’. This road is still safe at the time of writing, but be careful and look for signs of damage to the road. It may be necessary to park up at the sign and walk down to the sample site <p>National Park STP at Secondary Oxpond</p> <ul style="list-style-type: none"> • You will need a key to drive into the STP otherwise you will have to walk down. Use the same key that is used for Ohakune and Raetihi STP’s although it is currently not working <p>Whakapapa at Footbridge –</p> <ul style="list-style-type: none"> • Immediately after you turned off SH47, stop and call Tokaanu Control Room (07 384 7210) to let Genisis Energy know that you are working in the river. Give them a call when you leave as well. • You will come to a sign that says ‘Access on farm business only. Trespassers will be prosecuted’. The farm owners know about us and we can go through. Sign in at the box near the large deer gates.

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 8 of 21
	Hydrology Operations Manual	

	<ul style="list-style-type: none"> • There is a 636 key on the farm gate. Failing that the combination for the padlock is 8-6-4-2 • This site is almost always high, fast flowing and prone to flash flooding. Always wear one of the PFD's and take extra care when surveying at this site. • IF YOU HEAR A SIREN GOING OFF GO OUT OF THE RIVER IMMEDIATELY AND SEEK HIGHER GROUND! Genesis will release the spill flow 2 minutes after the alarm.
<p style="text-align: center;"><u>Contact details can be found here.</u></p>	

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 9 of 21
horizons regional council 	Hydrology Operations Manual	

SITE LOCATION MAP – National Park STP at Secondary Oxpond



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

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 10 of 21
	Hydrology Operations Manual	

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Difficult entry/exit	Potential for difficult rescue	Remote Area	Traffic / Vehicle Movements
Weather/Temperature Extremes	Communication	Machinery- mobile plant	Manual Handling

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/ WADERS	PFD	HI - VIS	SAMPLE GLOVES	SAFETY GLASSES / GOGGLES	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO
--------------------------	-----	----------	------------------	--------------------------------	----------------------------------	-------------------------------	--------------	-----------

DIRECTIONS:

- From the Palmerston North office head north to Waiouru via SH3 and SH1
- At Waiouru turn left onto SH49 toward Ohakune.
- Drive through Ohakune still on SH49 (also named Tohunga Road) toward Tohunga Junction
- At Tohunga Junction (the end of SH49) turn right onto SH4 to National Park
- Once in National Park, continue straight past the petrol station on your left.
- Drive about ~1km and then turn left onto Carroll Street
- Drive a few hundred meters and then turn right onto Mackenzie Street (the second street on the right)
- Follow MacKenzie Street until you reach a farm gate. Park up on the grass to the right out of the way before the fence if no key access.
- Climb over the fence and walk/drive downhill to the ponds. Park on the flat spot on the left immediately after the gate to the pods.
- If dry you can drive right to the end of the ponds parkin up on the flat section on the left of the bottom pond.

ACCESS:

- Walk around the ponds and at the downhill end (the opposite end from where you enter) there will be a discharge via a tephra treatment bed. You need to sample downstream of this, however it is hard to access.
- Continue to walk downhill cross the small creek to the left side of the STP as you face downhill.
- Follow closely along the fence line through a cut track in the scrub. You will come out near a tussock area, walk down towards it and you will see the weir. Sample just upstream of the weir.

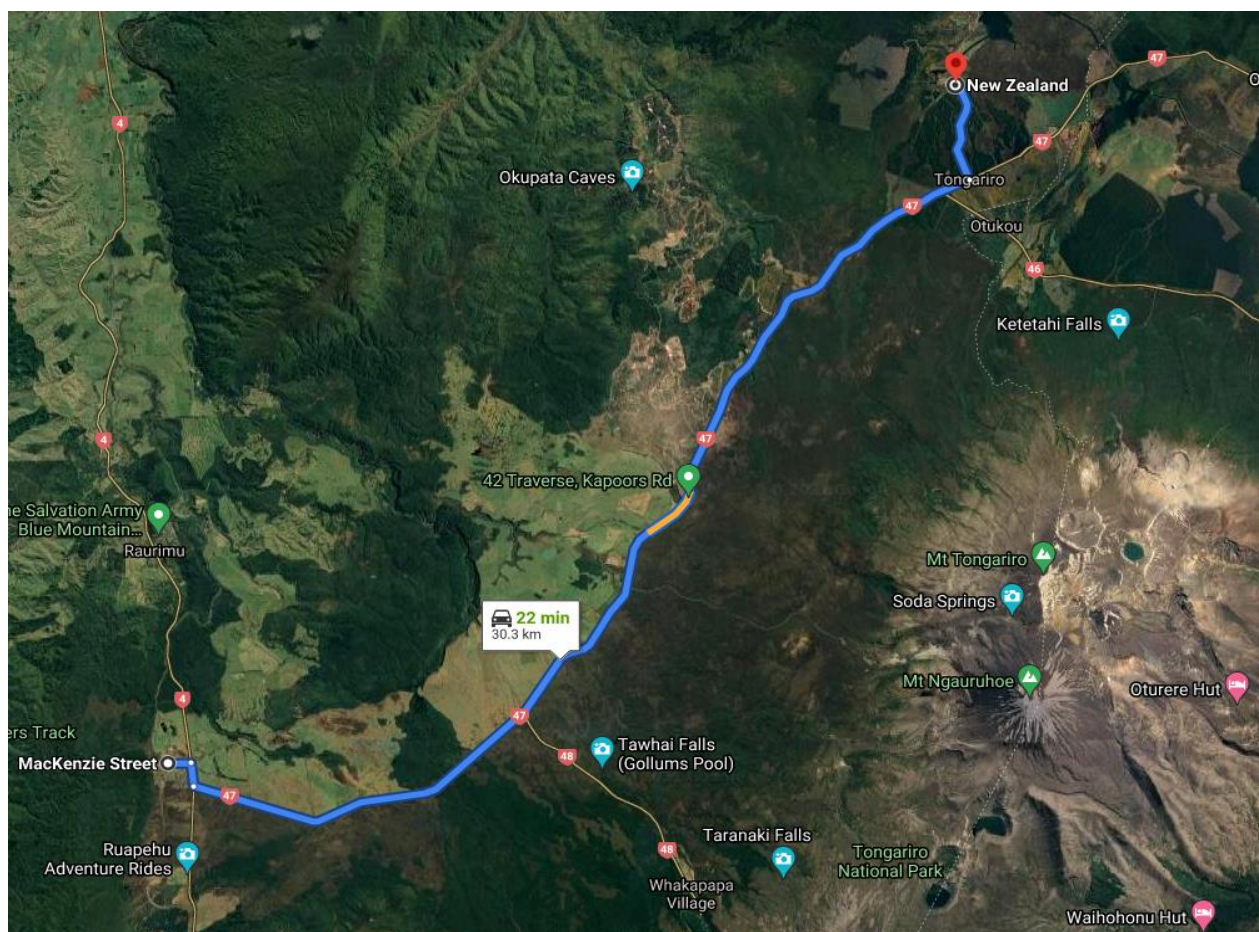
Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 11 of 21
horizons regional council 	Hydrology Operations Manual	



Sample just above the weir.

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 12 of 21
horizons regional council 	Hydrology Operations Manual	

SITE LOCATION MAP – Whanganui at Downstream Intake



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Difficult entry/exit	Potential for difficult rescue	Remote Area	Engulfment
Weather/Temperature Extremes	Communication	Machinery- mobile plant	

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 / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO		
---------------------------	-----	-------------------------------------	-------------------------------	-----------	-----------	--	--

DIRECTIONS:

- From the National Park STP, turn left out of MacKenzie Street and then right back onto SH4
- About ~1km opposite the petrol station turn left onto SH47 towards the Mountain (the next three sites all come off this road, this site is the furthest one and you will be working back following the run guide, however you can sample the sites in any order you prefer)

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 13 of 21
horizons regional council 	Hydrology Operations Manual	

- Travel along SH47 for approximately 27km then turn left onto Access Road 4 which is also signposted with Whanganui Intake.
- Follow Access Road 4 for approximately 5 minutes and then turn left down the road signposted Whanganui Intake (yellow signpost)
- Follow this road for approximately 500m and turn down the second road on your left which is sign-posted Whanganui Intake (look for the yellow signpost).
- Travel down this road for approximately 500m until you come up to a grass area on your right and turn in and park here (turn off pictured below).
- From the grass area a track heads off down the hill to the sample location. Park the car up on the grass and walk down the track to river, you will see hydrology's staff gauge- this is your sample site.

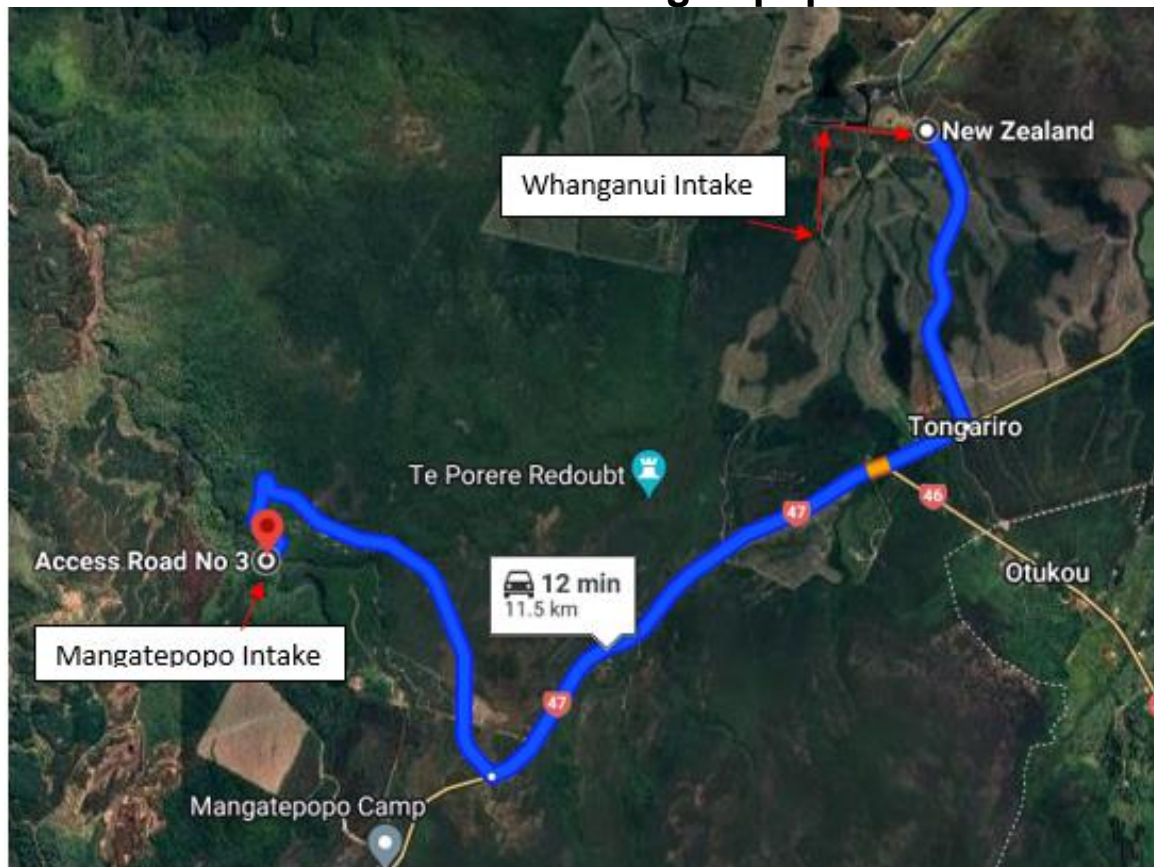


Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 14 of 21
horizons regional council 	Hydrology Operations Manual	



Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 15 of 21
horizons regional council	Hydrology Operations Manual	horizons regional council

SITE LOCATION MAP – Mangatepopo at d/s Intake



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Difficult entry/exit	Potential for difficult rescue	Remote Area	Traffic / Vehicle Movements
Weather/Temperature Extremes	Communication	Machinery- mobile plant	

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 / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO		
---------------------	-----	----------------------------	-------------------------	-----------	-----------	--	--

DIRECTIONS:

- Travel back to SH47 and turn right back towards National Park
- Travel along SH47 for approximately 10 minutes until you reach the turn off to the Sir Edmund Hillary Outdoor Pursuits Centre down Access Rd
- Turn right onto Access Road heading towards the Sir Edmund Hillary Outdoors Pursuits Centre and follow this until it crosses a ford, this is the Mangatepopo Stream. Watch out for children as they are often walking along this road. You will come to a sign that says 'Danger,

Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 16 of 21
horizons regional council	Hydrology Operations Manual	

unstable road ahead'. This road is still safe at the time of writing. Be careful and look for signs of damage to the road. It may be necessary to park up here and walk down.

- Sometimes they have a rope across the road because of the flying fox. Park and walk down.
- Park up before the ford; there is no need to drive through it. Do your sampling upstream of the ford.



Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 17 of 21
horizons regional council 	Hydrology Operations Manual	



Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 18 of 21
horizons regional council	Hydrology Operations Manual	horizons regional council

SITE LOCATION MAP – Whakapapa at Footbridge



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Difficult entry/exit	Potential for difficult rescue	Remote Area	Traffic / Vehicle Movements
Weather/Temperature Extremes	Communication	Machinery- mobile plant	

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 / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO		
---------------------	-----	----------------------------	-------------------------	-----------	-----------	--	--

DIRECTIONS:

- Travel back to SH47 and turn right heading back towards National Park for approximately 7km
- Turn right onto Whakapapa Intake Road, immediately pull over in the gravel loop road and call Tokaanu Control Room (07 384 7210) to let them know you are working in the river. You also have to call them when you leave. Along this road you will see signs saying 'Access on farm

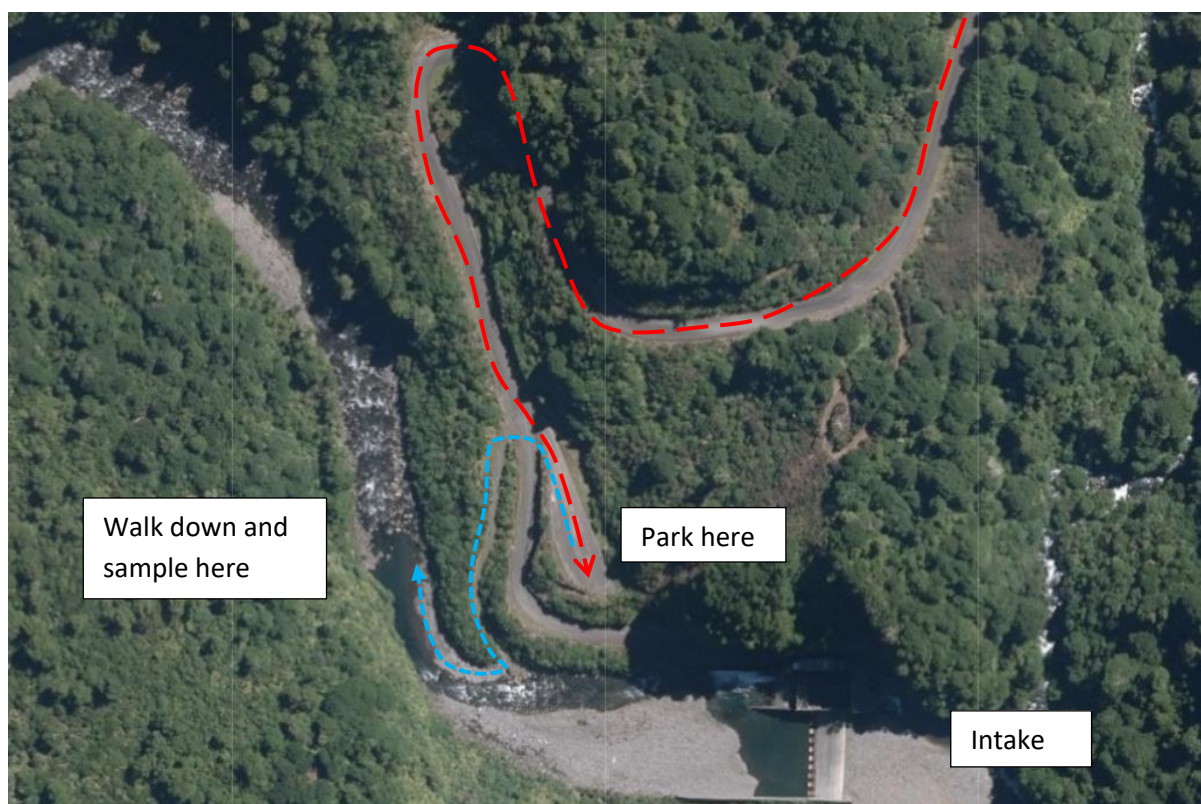
Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 19 of 21
horizons regional council	Hydrology Operations Manual	

business only. Trespassers will be prosecuted'. You can go through. Remember to sign in at the deer gates.

- Follow the road for around 10 minutes. There are gates along the road that are sometimes closed. If there is no stock continue through. If so call the farmer.
- There is a **636 key padlock** on the farm gate. Failing that the combination for the **padlock is 8-6-4-2**
- After following the road for approximately 10 minutes you will go down a hill and around some tight corners. You will come to a carpark which turns off to your left and on your right heading down the hill there will be a track leading down to the river. Park here and walk down to the river. You can also reverse down between the bollards.
- **IF YOU HEAR A SIREN GOING OFF GO OUT OF THE RIVER IMMEDIATELY AND SEEK HIGHER GROUND!** Genesis will release the spill flow 2 minutes after the alarm.

ACCESS:

- **This site is almost always high, fast flowing and is prone to flash flooding. Wear one of the PFD's and take extra care when surveying at this site, regardless of the water level when you arrive.**



Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 20 of 21
horizons regional council 	Hydrology Operations Manual	



Version No: 06 Issue Date: 20/08/2024 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: 38 Page: 21 of 21
horizons regional council 	Hydrology Operations Manual	

Return to office via most suitable route:

