

Version No: Issue Date: Portfolio:	2.0 25/05/2022 Discrete Water Quality	Horizons Regional Council	Section No: Appendix No: Page:	15.7 XX 1 of 29
horizons regional council		Hydrology Operations Manual		

Version 2.0 25/05/2022

Invertebrate Monitoring Run Guide

OHAKUNE

STATE OF ENVIRONMENT (Annual 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 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 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 checked="" type="checkbox"/>	Stock/Farm Animals	<input checked="" type="checkbox"/>		

Required PPE & 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.

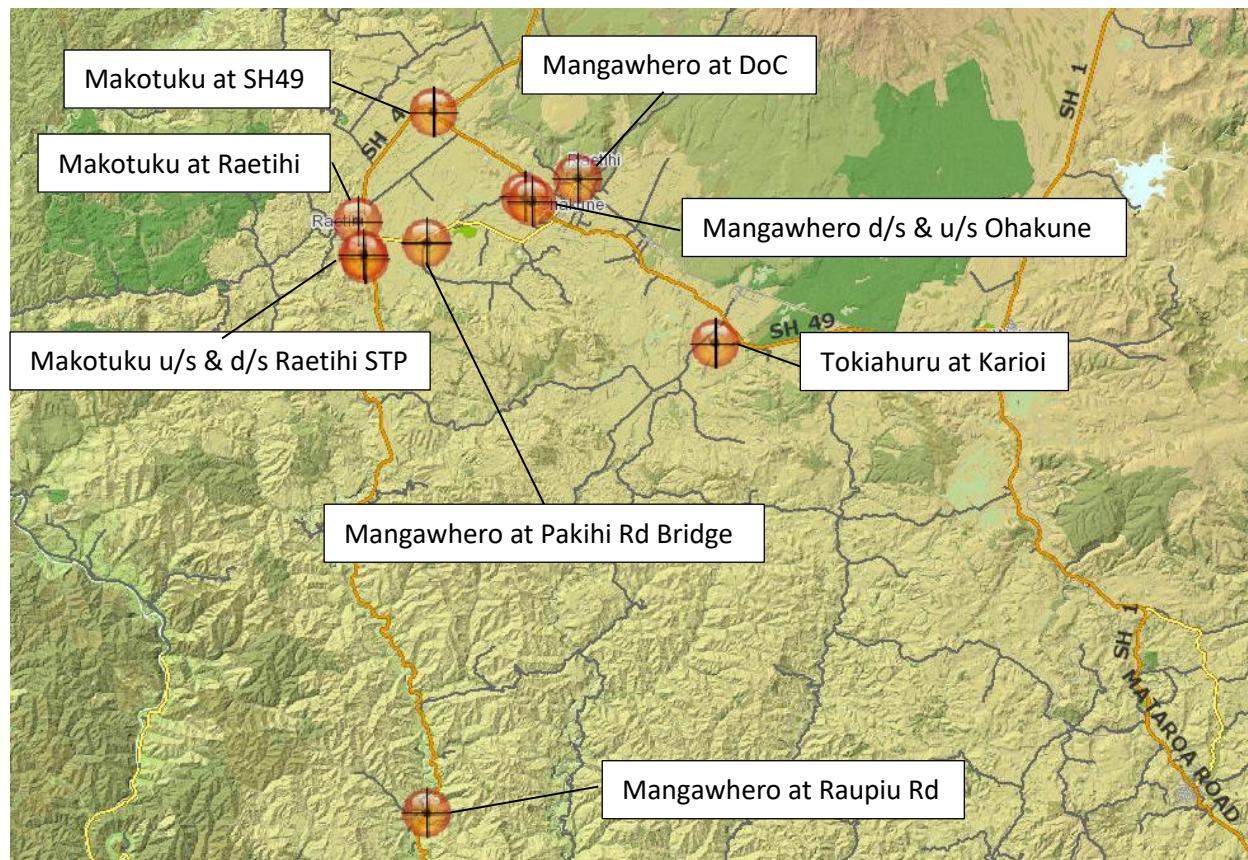
SAMPLING GLOVES	EAR PROTECTION	HARD HAT	SAFETY GLASSES / GOGGLES	WORK BOOTS / WADERS	PROTECTIVE GLOVES	PERSONAL FLOATATION DEVICE (PFD)
						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
HI VIZ	SAFETY HARNESS	SUN BLOCK & HAND SANITISER	VHF RADIO	THROW BAG	PERSONAL LOCATOR BEACON	
						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Known Hazard	Significant		Can it be Eliminated		Can it be Isolated		Method of control
	Yes	No	Yes	No	Yes	No	
Drowning	✓			✓		✓	Staff should use a sample pole if access into the river/stream is unsafe. PFD's must be worn by staff. 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 [HMP 18]
UV Radiation	✓			✓	✓		Horizons provide sunscreen and hats. Staff are encouraged to make use of these. [HMP 17]
Difficult Entry/Exit	✓			✓	✓		Entry and exit into waterways poses many risks and should be treated with caution. Sampling must 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. [HMP18]
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 fence is live and discuss alternative routes or options for avoiding the fence if possible.
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 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]
Trip Hazards	✓			✓	✓		Prior to sampling, staff must check area is clear of items that pose a risk. Trip Hazards 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 be done from stable level. Vehicles must be driven a sensible distance from any river or pond edges. [HMP 18]. Staff driving four wheel drive vehicles must have adequate training [HMP 9]
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]

Known Hazard	Significant		Can it be Eliminated		Can it be Isolated		Method of control
	Yes	No	Yes	No	Yes	No	
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].
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]
Communications-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]
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 to additional and appropriate clothing. Staff must have access to suitable PPE and spare clothing within their vehicle. [HMP 18]
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 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]

Site Information

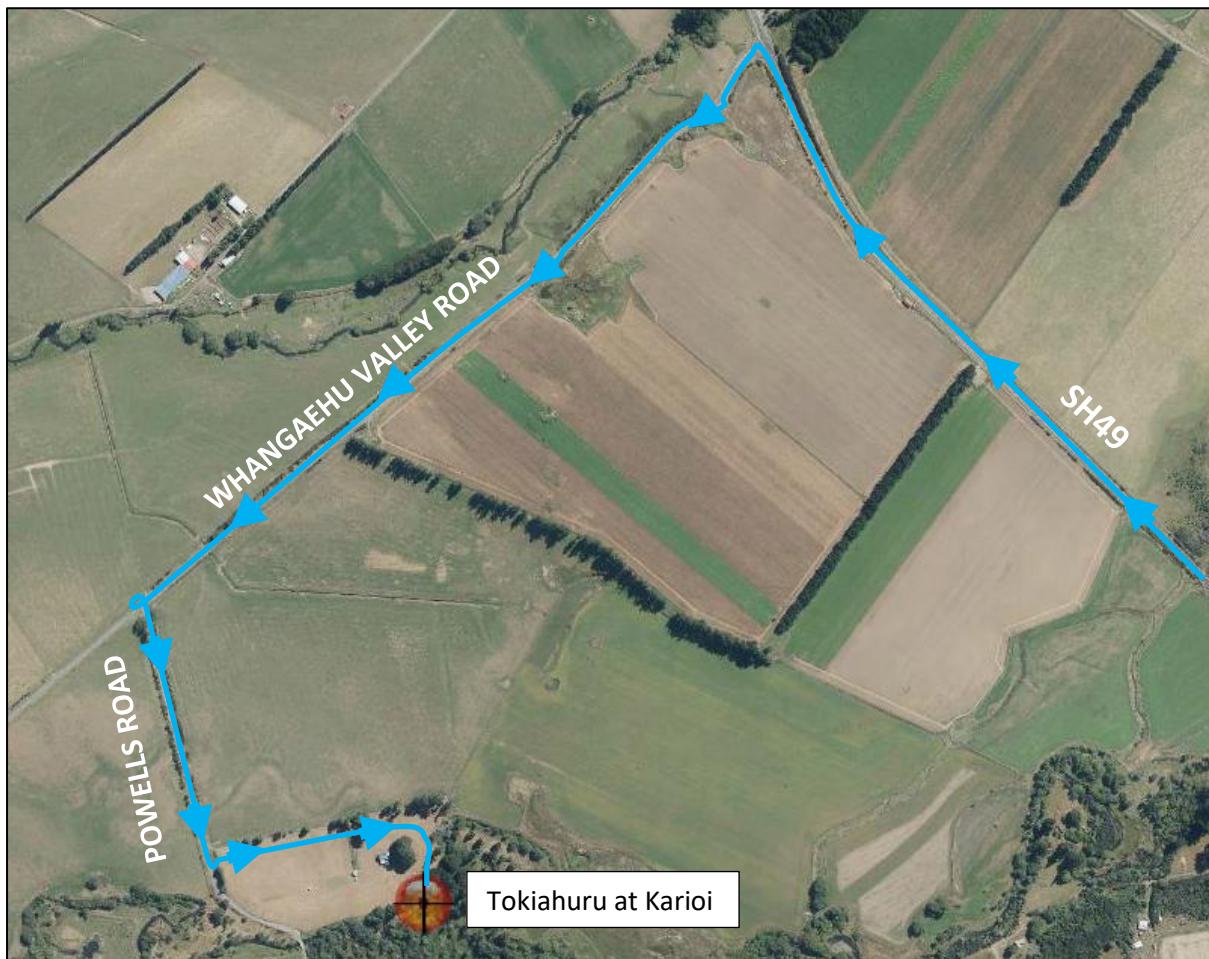
Hilltop Site Name	Easting/Long (NZTM)	Northing/Lat (NZTM)
Tokiahuru at Karioi	1815047	5627516
Mangawhero at DOC Headquarters +NEMS	1807880	5636086
Mangawhero at u/s Ohakune STP	1805528	5634894
Mangawhero at d/s Ohakune STP	1805147	5635122
Makotuku at SH49A	1800258	5639451
Makotuku at Raetihi	1796540	5634043
Makotuku at u/s Raetihi STP	1796704	5632136
Makotuku at d/s Raetihi STP	1796748	5631897
Mangawhero at Pakihi Rd Bridge	1799897	5632848
Mangawhero at Raupiu Rd	1800012	5603075



Equipment Required

Equipment	<ul style="list-style-type: none">• Camera and GPS• Kick net• Invertebrate Pottles and Propan-2-ol• White plastic tray• Metal ruler• Gravelometer• Sampling Worksheet and Pencil• Bathoscope / Viewer• Scrubbing brush, tooth brush, washer bottle, yellow sample bottle lid and ice cream container• Pottles (Approx 10), chilly bins and ice-packs• Personal Locator Beacon• 4WD Vehicle equipped with VHF Radio• Throw Bag
Additional Comments/ Instructions	<ul style="list-style-type: none">• This run can be done in two teams, if splitting into teams have one team do all the Mangawhero Sites and the other do all the Makotuku Sites. Reunite once both teams are finished and complete the last three sites together.• Contact from Ngati Rangi: Assistants can be requested from the local iwi, to arrange this contact, Holly Molesworth Environmental Researcher 027 206 8244 06 385 9500 / 0800 NRANGI holly@ngatirangi.com• Mangawhero at u/s Ohakune STP – Contact landowner prior to visiting (can text on the day). Get landowner details from contact register on Teams.• Makotuku u/s and d/s Raetihi STP – Remember to take keys (636 key) to enter the STP as his will save you time walking.

SITE LOCATION MAP – Tokiahuru at Karioi



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

Drowning	UV Radiation	Slippery Surfaces	Trip Hazards
Weather Extremes	Temperature Extremes		

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	THROWBAG
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DIRECTIONS:

- From Palmerston North travel north along State Highway 1 to Waipoua.
- When in Waipoua turn left onto State Highway 49 towards Ohakune and follow for about 10 minutes until you reach Whangaehu Valley Road on your left.
- Turn left onto Whangaehu Valley Road and follow for about 1km until you come to Powells Road on your left. Turn down Powells and follow for about 350m until you come to a gate on your left. The gate will lead into a paddock with rugby goal posts and a hall. Drive in here and up past the hall.
- Park up just past the hall by a group of macrocarpa trees. Just past here there is a track that leads down the hill to the Tokiahuru Stream, follow down to the stream and find a suitable riffle to sample.

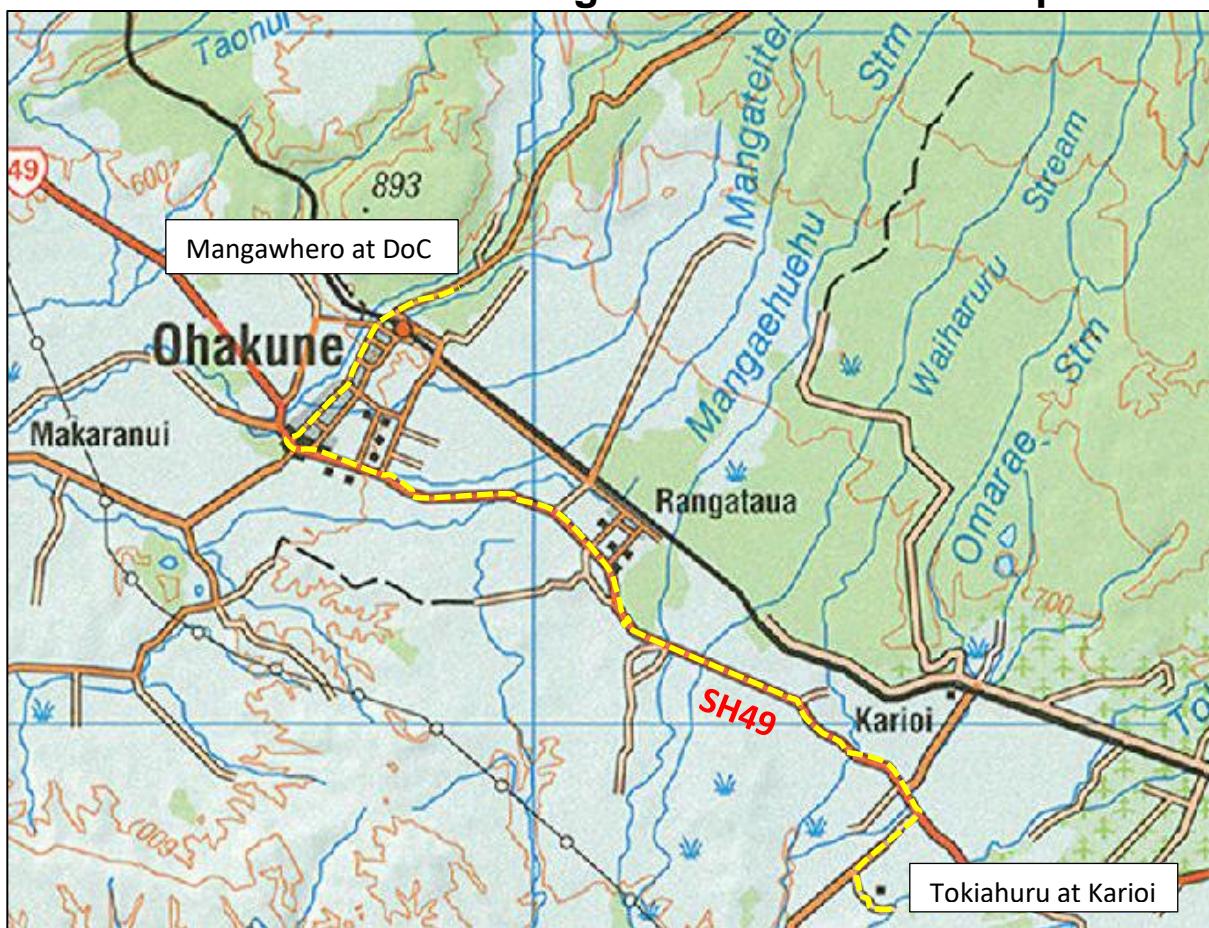


Tokiahuru at Karioi domain looking upstream



Tokiahuru at Karioi domain looking downstream

SITE LOCATION MAP – Mangawhero at DOC Headquarters



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

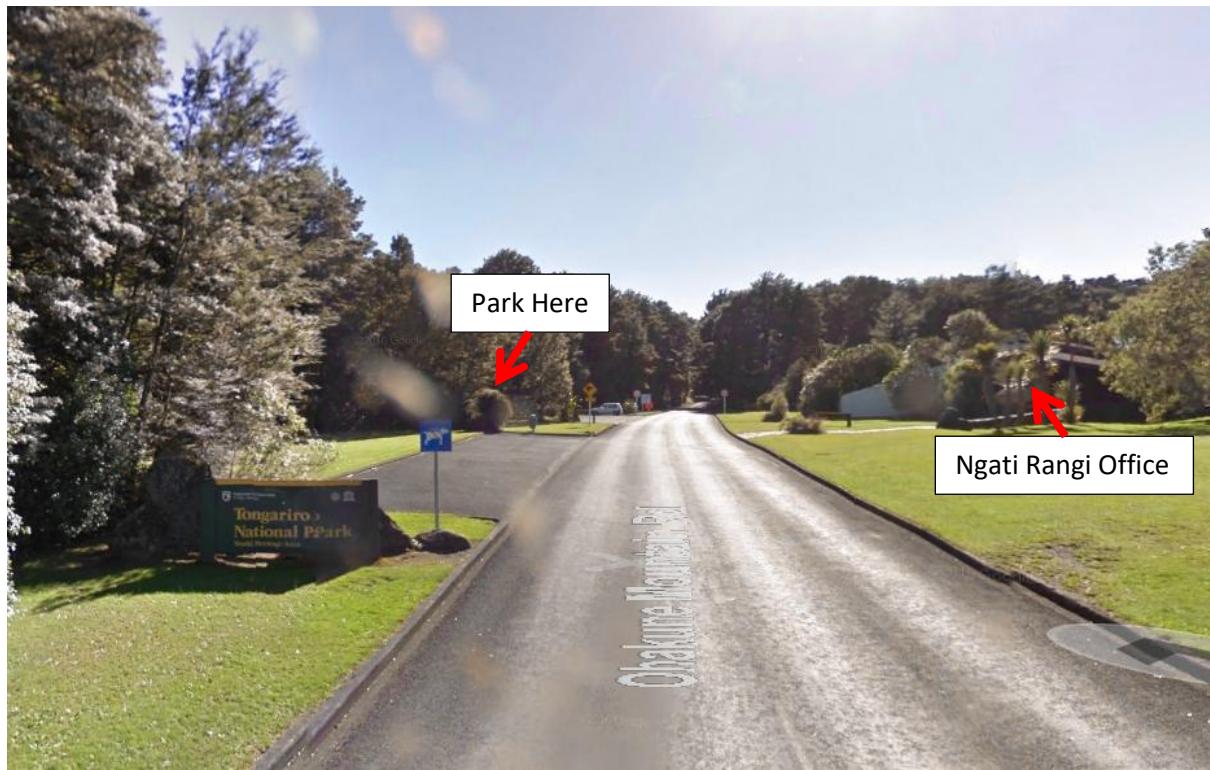
Drowning	UV Radiation	Slippery Surfaces	Trip Hazards
Weather Extremes	Temperature Extremes		

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):

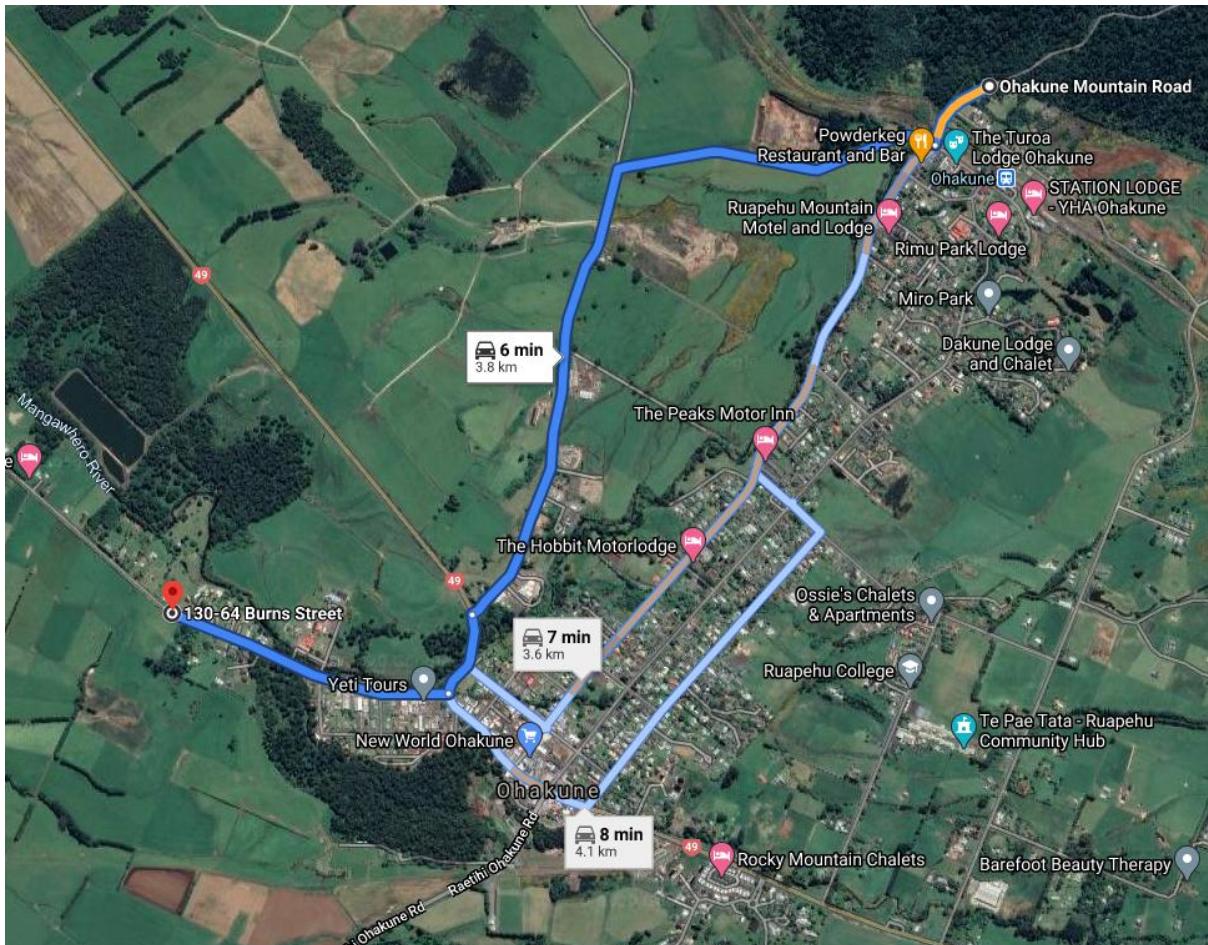
WORK BOOTS / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROWBAG
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DIRECTIONS:

- From Tokiahuru at Karioi head back the way you came, turning right onto Powells Rd and then right again onto Whangaehu Valley Rd back towards SH49.
- When you come to SH49 turn left and drive towards Ohakune.
- Drive into Ohakune and turn right onto Goldfinch Street which is heavily signposted with signs to Turoa Skifield.
- Follow Goldfinch Street towards the Turoa Skifield for approximately 3 kilometres until you reach a carpark and picnic area which has a green public toilet on the left and park here. The Ngati Rangi headquarters office (formerly DoC office) is on the right across the road.
- Walk back down the road in the direction that you came and you will find a path leading down alongside the river. If you walk all the way down to the bridge which crosses the river you have gone too far. Take the track that leads down to the river and find a suitable riffle to sample.



SITE LOCATION MAP – Mangawhero at u/s Ohakune STP



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes	Traffic / Vehicle Movements		

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	HI-VISIBILITY GARMENT	PERSONAL LOCATOR BEACON	THROWBAG		
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DIRECTIONS:

- From the Mangawhero at DoC site head back down Goldfinch Street in the direction that you came and turn right at the first intersection approximately 500 meters down the road, onto Old Station Road which goes immediately across a bridge.
- Stay on Old Station Road until you reach the end intersection with State Highway 49, also known as Tohunga Road.
- Turn left onto Tohunga Road back into Ohakune and take the next right onto Burns St. Travel approx. 820m and turn into 66A.
- Follow the driveway keeping left. Go past the shed towards the gate by the river. Park here.
- Sample at a suitable riffle. Contact -Trish Walker Ph: 021815115

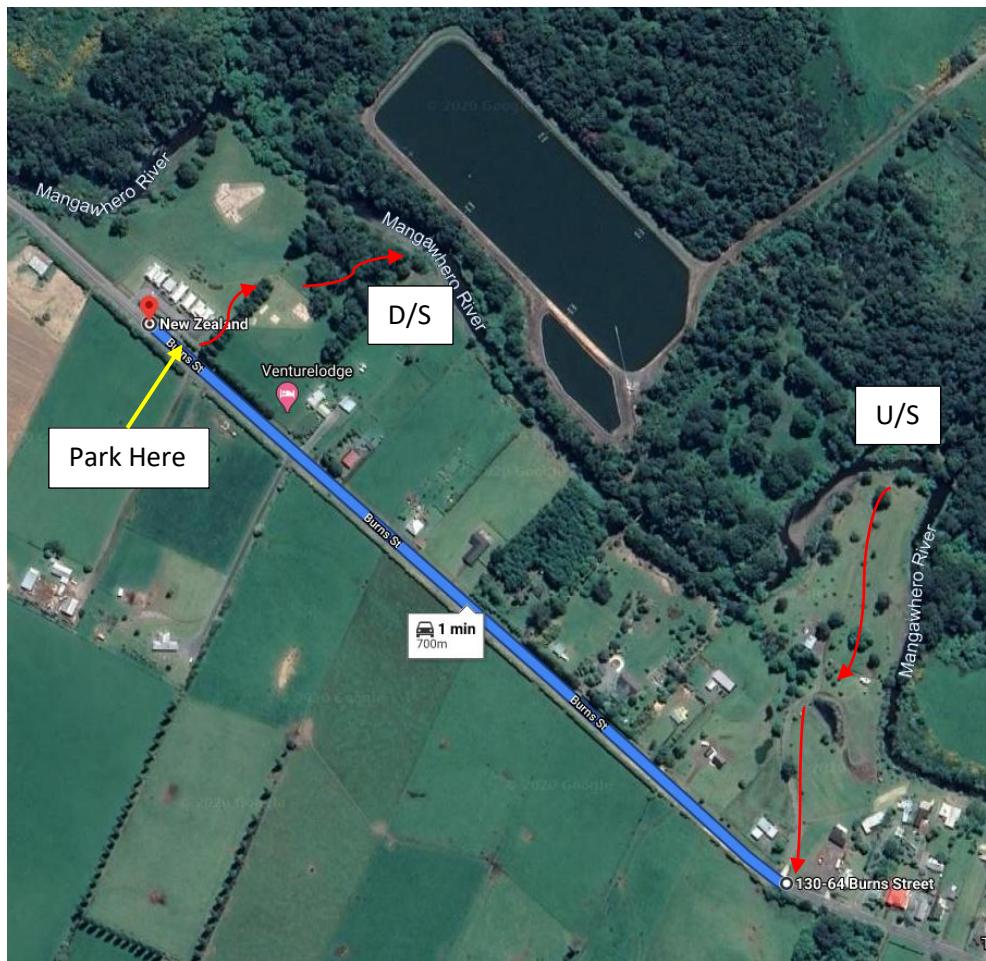


Looking upstream



Looking downstream

SITE LOCATION MAP – Mangawhero at d/s Ohakune STP



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes	Traffic / Vehicle Movements	Manual Handling	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	HI-VISIBILITY GARMENT	PERSONAL LOCATOR BEACON	THROWBAG	SAMPLE GLOVES	SAFETY GLASSES / GOGGLES

DIRECTIONS:

- From the upstream Ohakune STP site drive back to the main driveway towards the road.
- Turn to right and drive 700m down the road until you get to 134 Burns St, the building is obviously not a house and is a campground.
- Park in the car park on the right and walk down the grounds towards the river, over the sty, and through the forest
- There is a slight path which should take you all the way.



Camp and parking area



Sty and path to river



Looking Downstream



Looking Upstream

SITE LOCATION MAP – Mangawhero at Pakihi Rd Bridge



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes	Traffic / Vehicle Movements		

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	HI-VISIBILITY GARMENT	PERSONAL LOCATOR BEACON	THROWBAG
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DIRECTIONS:

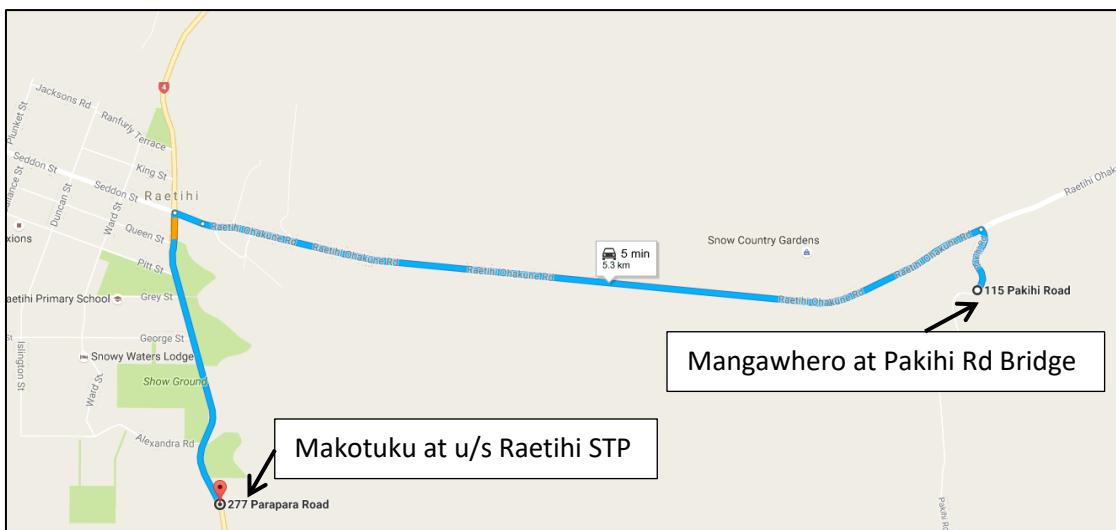
- From the downstream Ohakune STP site travel back down the driveway to SH49 (Tohunga Road). At SH49 turn right towards Ohakune.
- Drive through Ohakune until you reach the BP Station and turn right onto Raetihi-Ohakune Road. Follow this road for approximately 7.5 kilometres until you reach Pakihi Road which will be on your left-hand side.
- Turn left onto Pakihi Road and follow until you reach a bridge. Go over the bridge and immediately on your left there will be a farm gate into a paddock. Drive into the paddock and park up.
- Find a suitable riffle to sample. Historically the best place to sample has been inbetween the hydrology shed and upstream of the bridge.

ACCESS:

- Warning it is quite a sharp turn into the farm paddock across the other side of the bridge. If you feel necessary, drive up the road past the paddock turn off and find a safe place to turn around and then drive back into the paddock.**



SITE LOCATION MAP – Makotuku at u/s Raetihi STP



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes			

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	SAFETY GLASSES / GOGGLES	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROWBAG

DIRECTIONS:

- From Mangawhero at Pakihi Road Bridge head back down Pakihi Road in the direction that you came towards Raetihi-Ohakune Road.
- Turn left onto Raetihi-Ohakune Road and drive approximately 3.6 kilometres until you reach the Raetihi Township.
- In Raetihi turn left onto SH4. A few minutes out of Raetihi you will see the sewage ponds on the left hand side of the road. This is very obvious so you should have no problem seeing it. Turn in here. If you have keys drive into the facility, if not park outside the gate (but do not block access) and climb the gate.
- As you enter the STP grounds walk left and around the ponds and head away from the road to the far left corner of the pond farthest from the road. From here continue on down to the river.
- Follow the river upstream around the bankside and find a suitable riffle to sample.

ACCESS:

- Remember to bring Raetihi STP Keys with you to save walking.



SITE LOCATION MAP – Makotuku at d/s Raetihi STP

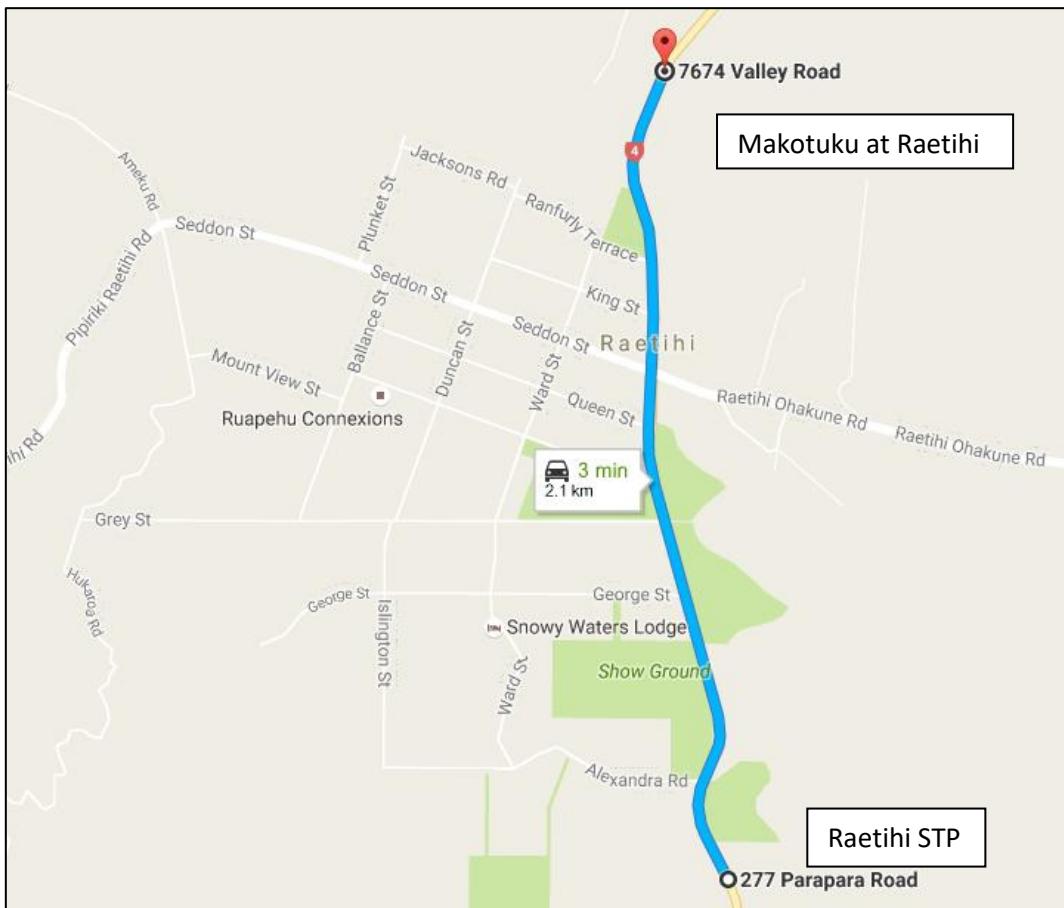


POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):							
Drowning	UV Radiation		Slippery surfaces		Trip hazards		
Weather Extremes	Traffic / Vehicle Movements		Manual Handling		Machinery- Mobile Plant		
REQUIRED PPE (in accordance with above hazards – 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	HI - VIS	SAMPLE GLOVES	SAFETY GLASSES / GOGGLES	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROWBAG
DIRECTIONS:							
<ul style="list-style-type: none"> From the upstream Makotuku STP site walk back downstream until you reach the ponds. Walk around the outside of the ponds until you reach the south eastern corner of the pond closest to the road. From here head down to the stream by walking away from the ponds towards the nearest bush edge. When you reach the river walk on the side downstream for a further 50 metres and find a suitable riffle to sample. 							



Makotuku at d/s Raetihi STP site looking downstream

SITE LOCATION MAP – Makotuku at Raetihi



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes			

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):

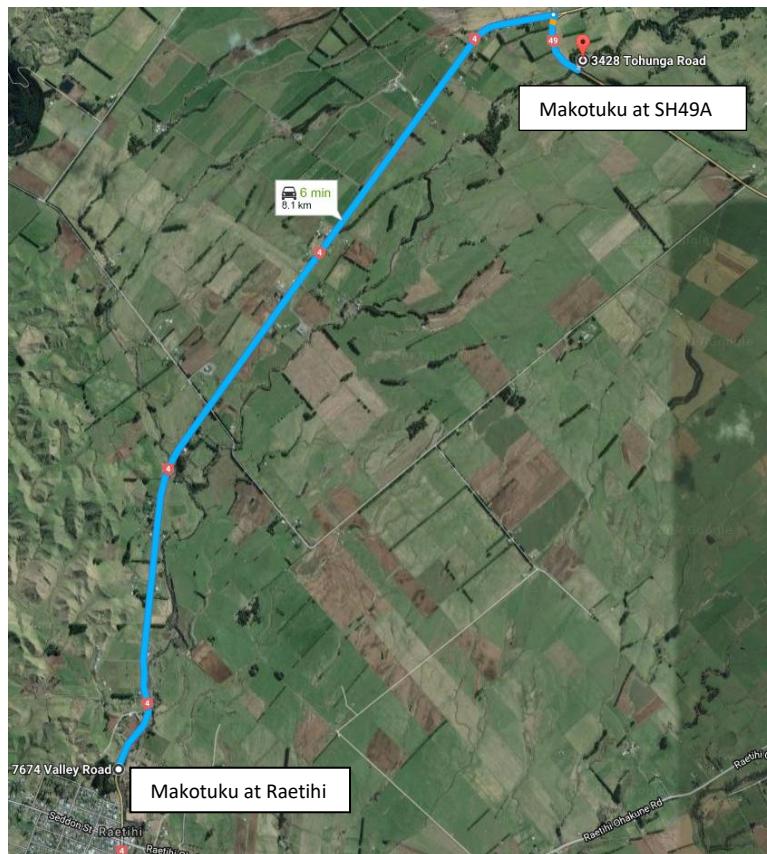
WORK BOOTS/ WADERS	PFD	HI - VIS	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROWBAG

DIRECTIONS:

- From the Raetihi STP turn right back onto SH4 and drive through the Raetihi Township.
- Approximately 350m after Raetihi there is a grassy bit on your right hand side. You can see a concrete patch with a hydro box on it. Park there.
- There is a weir blocking the river here. Find a suitable riffle to sample.



SITE LOCATION MAP – Makotuku at SH49a



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes			

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):

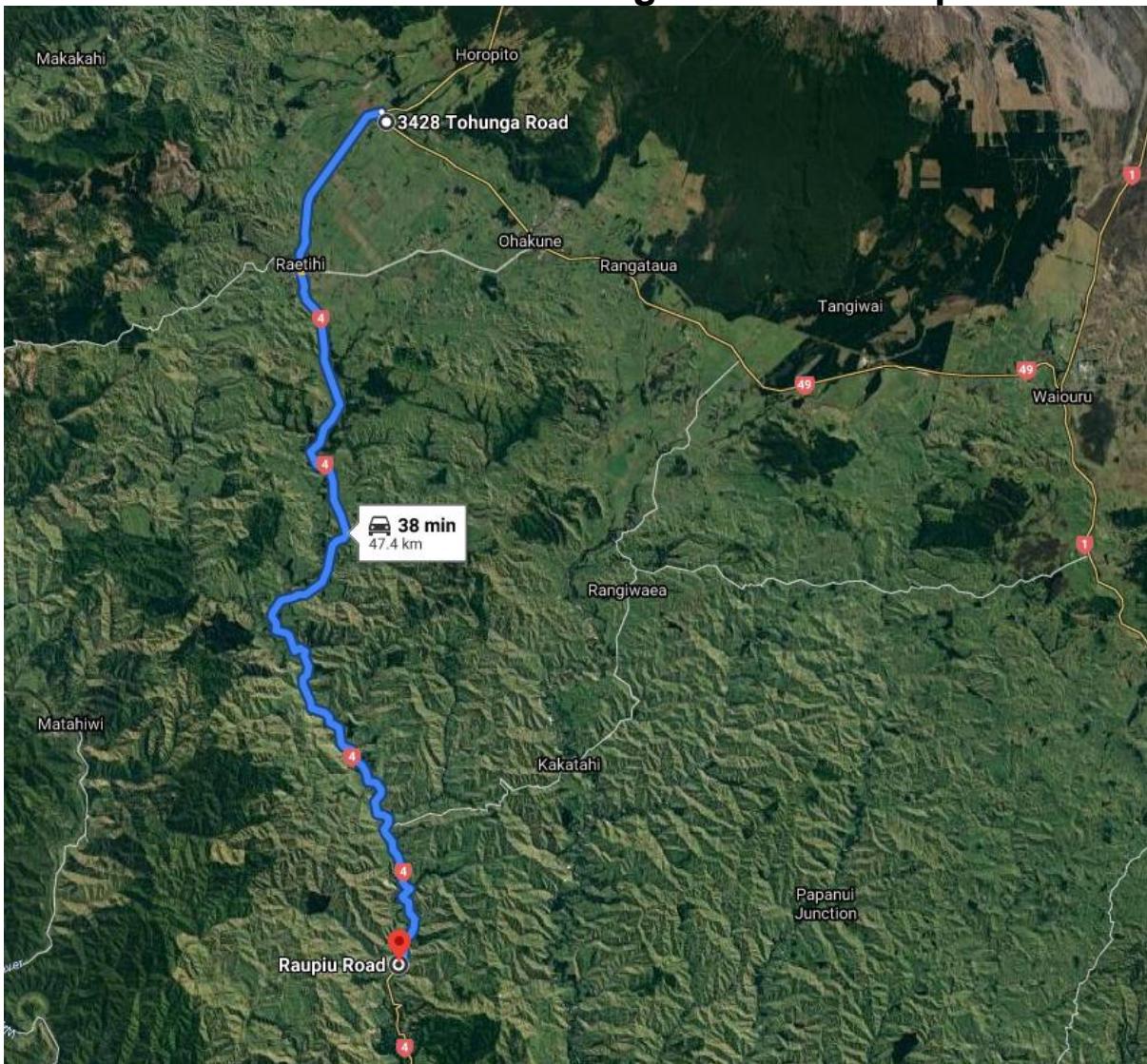
WORK BOOTS/ WADERS	PFD	HI - VIS	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROWBAG
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DIRECTIONS:

- From the Makotuku at Raetihi site, carry on heading up state highway 4.
- Follow state highway 4 until you get to state highway 49 (Tohunga Road) and turn right onto it.
- Turn left immediately after the first bridge you cross on state highway 49 and drive through the farm gate and into the paddock. You should be able to see a small Hydrology station on the far left of the paddock. Park by this.
- Cross the fence it is next to and make your way down to the river here.
- There is a weir blocking the river here. Find a suitable riffle to sample upstream of the weir.



SITE LOCATION MAP – Mangawhero at Raupiu Rd



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes			

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	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROWBAG

DIRECTIONS:

- From the Makotuku at SH49 site, head back to state highway 4 and turn left.
- Follow state highway 4 for 47km until you get to the turn off to Raupiu Rd on your right (Raupiu Rd is approx. 5 to 7 minutes past Fields Track turn off (green sign towards Waiouru))
- Turn right onto Raupiu Rd, cross the bridge and find a spot to turn.
- Approximately 100m down the road SH4 veers around to the right. There is a spot where you can park (in between the road bend signs). Park as much to the left as possible.
- Follow the road until you can see a culvert facing the river (can be difficult to spot, walk past the northern most 45km sign and there should be a wooden post sticking out of the ground)

near the culvert, go down here). There is a small track to get down to the Mangawhero. When you reach the river walk u/s to the run.

- You need to cross the river, which can be difficult because the riverbed is made of bedrock (papa) and is quite deep and slippery. It might be worth to only wear togs and shoes instead of waders.
- On the other side (true right) is a riffle where you will be able to take the samples.







RETURNING TO THE OFFICE

DIRECTIONS:

- From the Mangawhero at Raupiu Rd site turn continue towards Whanganui.
- Drive through Whanganui and turn onto SH3 towards Palmerston North.
- SH3 will turn into Rangitikei St once you are in Palmerston North. Stay on Rangitikei St and then turn left onto Grey St.
- Follow Grey St for about 450m, then turn right onto Victoria Ave and drive until you reach the Palmerston North Office.

