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SoE and Periphyton Monitoring Run Guide

Cyanobacteria Mangatainoka Run

**POINT DISCHARGE/STATE OF ENVIRONMENT
(Monthly Sampling)**

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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 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"/>	

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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]
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 aquaducts. 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]
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

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Known Hazard	Significant		Can it be Eliminated		Can it be Isolated		Method of control
	Yes	No	Yes	No	Yes	No	
							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]
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

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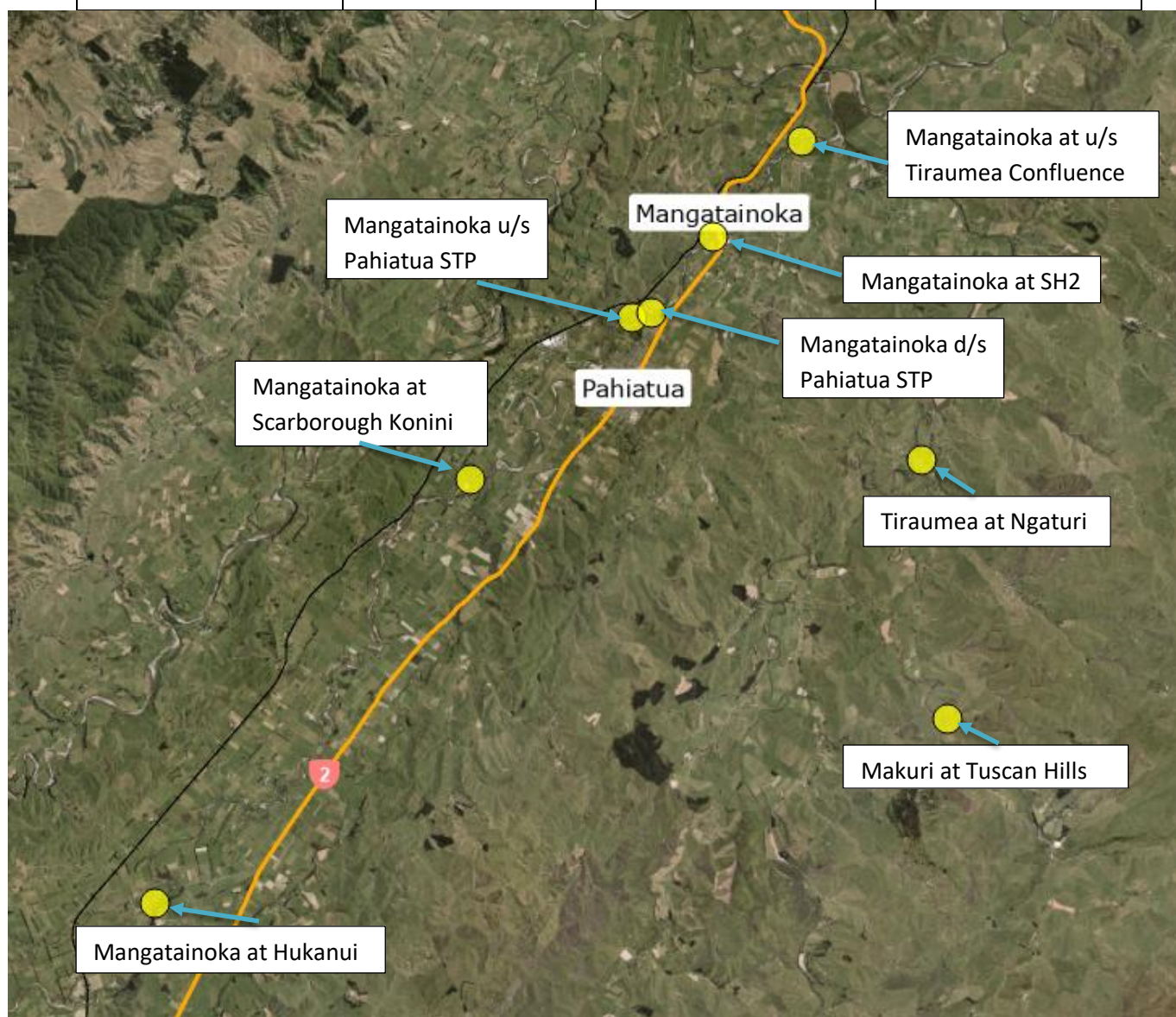
Known Hazard	Significant		Can it be Eliminated		Can it be Isolated		Method of control
	Yes	No	Yes	No	Yes	No	
							access to suitable PPE and spare clothing within their vehicle. [HMP 18]
Reduced Visibility	✓			✓		✓	If you find you are driving in limited visibility slow your driving speed and turn your fog lights on and watch out for vehicles that aren't using their lights. When working in limited visibility if you cease to 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]

Site Information

Hilltop Site Name	Easting/Long (NZTM)	Northing/Lat (NZTM)	Comments
Mangatainoka at Hukanui	1829621	5505734	Chlorophyll a sample, 20-view visual assessment of periphyton, Water Quality Samples and Smartroll reading
Mangatainoka at Scarborough Konini	1837067	5515764	Chlorophyll a sample, 20-view visual assessment of periphyton, Water Quality Samples and Smartroll reading, black disc
Mangatainoka at u/s Pahiatua STP	1840894	5519593	Chlorophyll a Sample, 20-view Visual assessment
Mangatainoka at d/s Pahiatua STP	1841334	5519688	Chlorophyll a Sample, 20-view Visual assessment
Makuri at Tuscan Hills	1848336	5510091	Chlorophyll a Sample, 20-view Visual assessment

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Tiraumea at Ngaturi	1847722	5516229	Chlorophyll a Sample, 20-view Visual assessment
Mangatainoka at u/s Tiraumea Confluence	1844895	5523732	Chlorophyll a sample, 20-view visual assessment of periphyton, Water Quality Samples and Smartroll reading, black disc



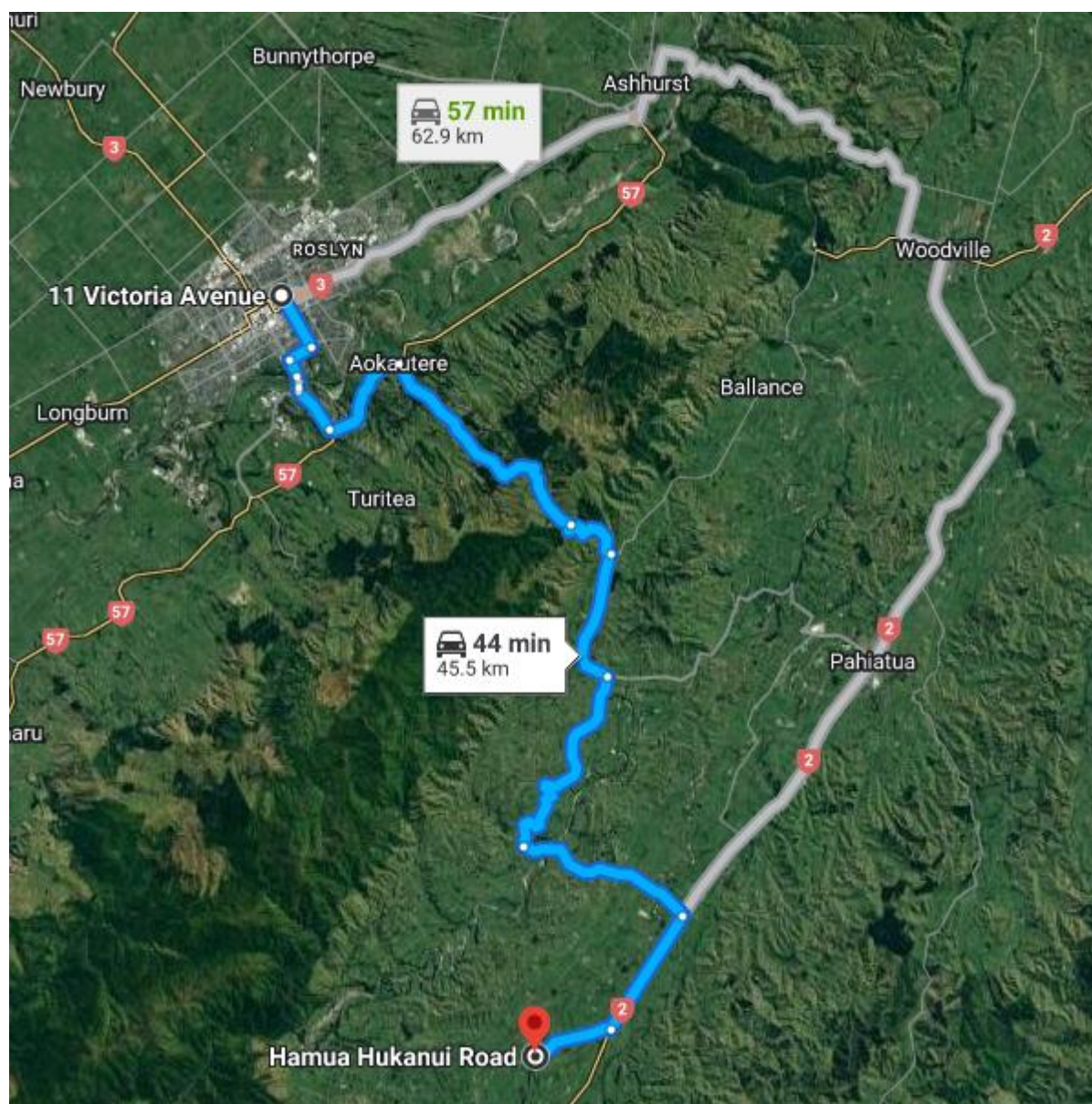
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Equipment Required

Sample Bottles	FOUR (4) sample bottle sets – refer to http://tqm.horizons.govt.nz/Hydrology/SOPs/cd_om_15.4_Appendix_4_ELS%20Bottle%20Guide.xlsx
	FOUR (Water Quality) EIGHT (Periphyton)
Equipment	<ul style="list-style-type: none"> • Handheld multi-parameter instrument (calibrated) – including iPad/screen WITH CADDIS INSTALLED • 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 • Disinfectant equipment for sampling equipment • Field sampling books • Sampling ID labels (created using Hilltop Sampler) • Alcohol gel • Personal Locator Beacon • 4WD Vehicle equipped with VHF Radio • Throw Bag
Additional Comments	<ul style="list-style-type: none"> • Makuri at Tuscan Hills; be careful when opening and closing the farm gate for access as large trucks may be coming down the road. Paddock can also get slippery and muddy during the winter.

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SITE LOCATION MAP – Mangatainoka at Hukanui



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	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/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	THROW BAG	VHF RADIO	HI-VIS	
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DIRECTIONS:

- From the Office travel south-east out of Palmerston North on SH57 towards Summerhill. Travel along Summerhill Drive, this will eventually turn into Aokautere Drive. Continue straight until you see Pahiatua-Aokautere Road on the right. Take this turn.
- Continue along Pahiatua-Aokautere Road, whichs turns into Makomako Road. Follow this road straight for about 15 minutes until you see Nikau Road on the right. Take this turn.
- Follow Nikau Road, this will eventually turn into Tutaekaea Road. Follow Tutaekaea Road until you reach the junction with SH2. Turn right onto SH2.
- Travel for about 4km on SH2 turn right onto Hamua-Hukanui.
- Once on Hamua Hukanui Road travel about 2.5km further.
- Just before you cross the bridge over the Mangatainoka River there will be a reserve to turn into on your left. It can be hard to see.
- Turn in here, park up and follow the track down to the river to sample.

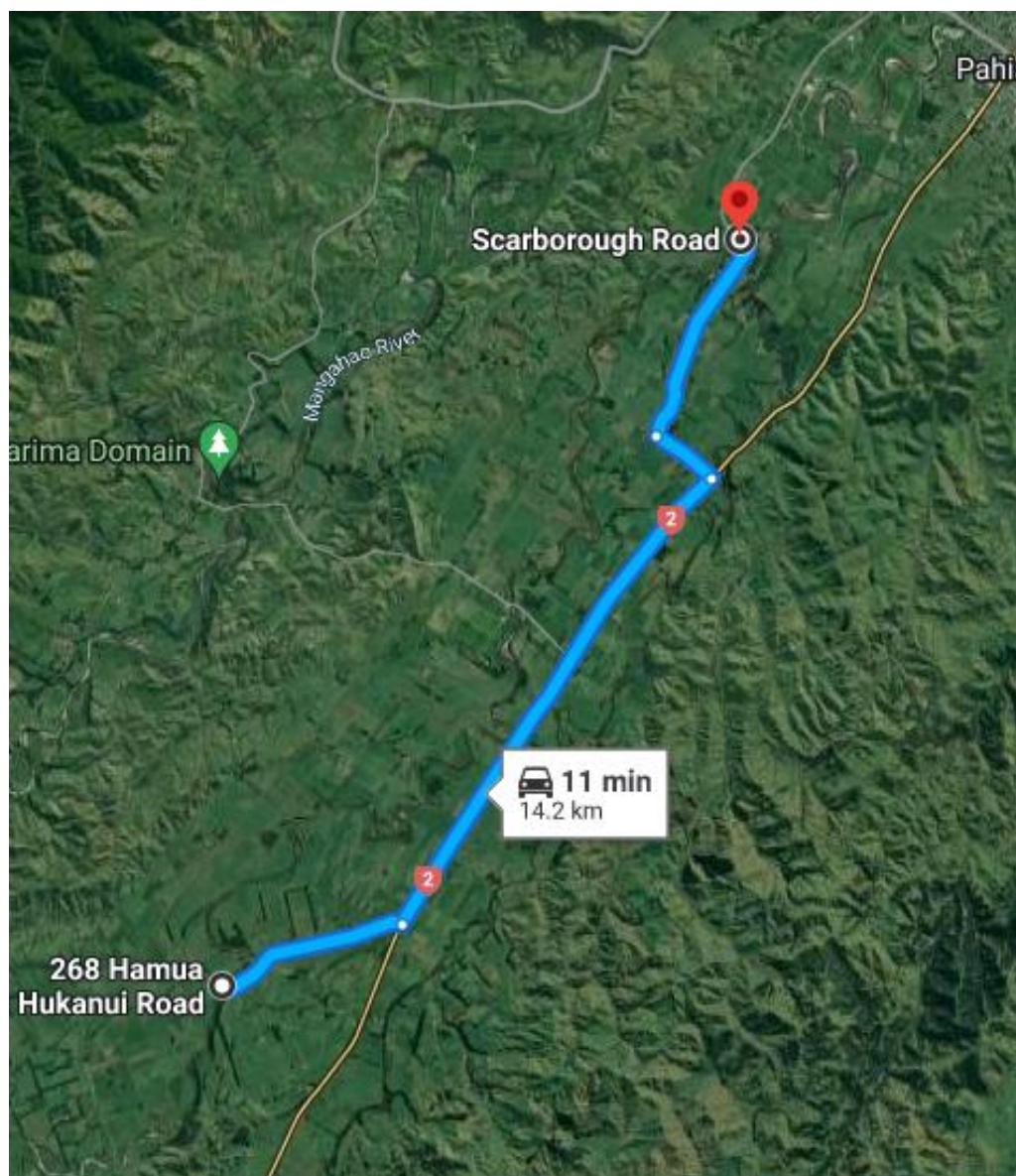


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SITE LOCATION MAP – Mangatainoka at Scarborough Konini



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	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/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):

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WORK BOOTS / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO	HI-VIS	
DIRECTIONS: <ul style="list-style-type: none"> • Turn around, drive out of the reserve and turn right onto Hamua Hukanui Road back the way you came. • At the end of the road turn left into SH2 • Travel for about 7.5km on SH2 until you come to Bridge Street on your left • Turn left down Bridge Street and follow it for about 500m. Then turn right onto Scarborough Road • Follow Scarborough Road for about 3km. After you cross the Mangatainoka River there will be a driveway to your left, go through the one closest to the left. (Sometimes this gate will be closed so you may need to open it). • Drive down the gravel path and park at the end of the road. • To get to the sampling point walk back up the drive and across the road. Climb the farm gate on the other side of the road (gate closest to the bridge) and follow the track through the low bush down to the river. Sample below the weir. 							



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Farm gate to jump over to walk down to the river



Path through small bush to get to the sampling site

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SITE LOCATION MAP – Mangatainoka at u/s Pahiatua 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
Difficult entry/exit	Potential for difficult rescue	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/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	THROW BAG	VHF RADIO	HI-VIS	
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DIRECTIONS:

- Turn left back onto Scarborough Road
- Follow the road until it comes to an end at a T-intersection. Turn right.

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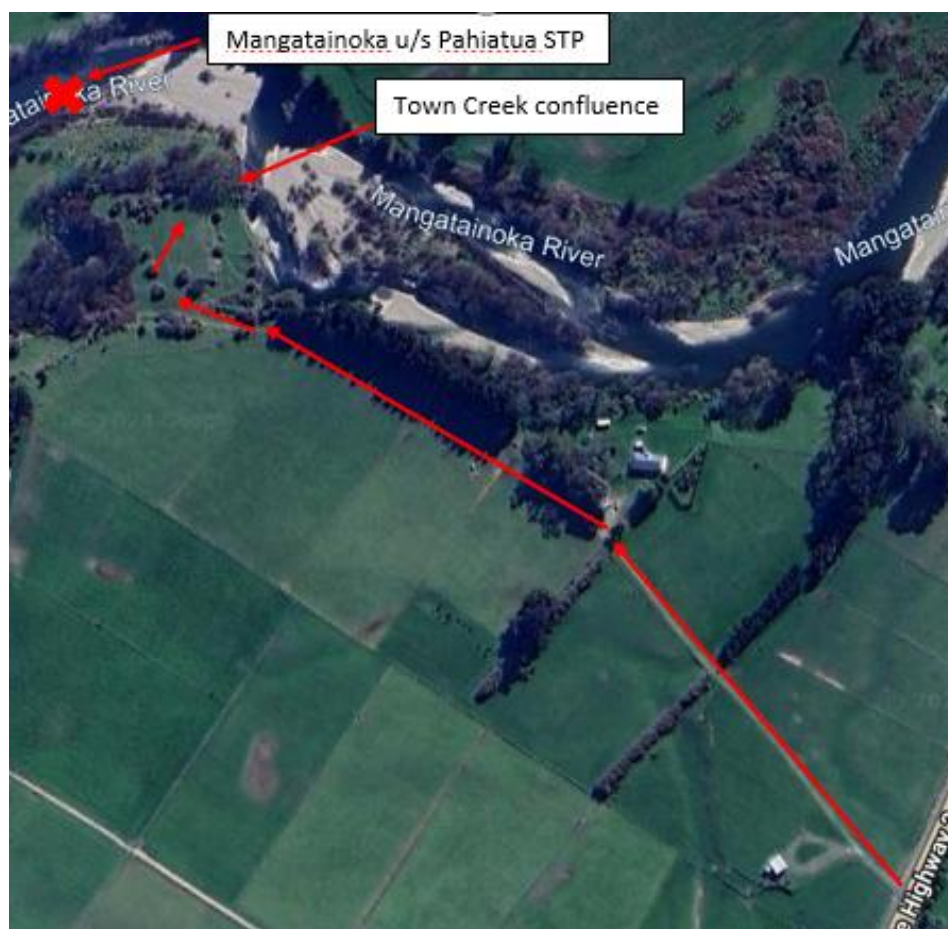
- Follow this road (Pahiatua-Mangahao Road) until it comes to an end at a T-intersection in Pahiatua
- Turn left onto SH2 and follow this road for about 2km
- Turn left into the driveway/farm race for 81624 SH2. Follow the driveway down a little terrace and past the house.
- Park up on the grass somewhere out of the way just as the driveway turns sharply to the right

ACCESS:

- To get to the sampling site walk along the farm race that continues straight as you drove in (alongside the pine trees). There may be a couple of gates as you go, so don't forget to leave them as they were found.
- The track will dip down to a lower paddock and curve around. Follow it as it swoops around to the right. There will be a clearing in the trees in front of you with a farm gate, climb this gate.
- Walk through the trees to the river, you will cross a small stream while in the trees, this is called Town Creek and contains the outflow from the STP.
- Continue to head along the gravel to the river. Once on the river bed, walk 200m upstream so you are well above the Town Creek confluence with the Mangatainoka.



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SITE LOCATION MAP – Mangatainoka at d/s Pahiatua 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
Difficult entry/exit	Potential for difficult rescue	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/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	THROW BAG	VHF RADIO	HI-VIS	
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DIRECTIONS:

- From the u/s site walk downstream until you reach the confluence with Town Creek. Just upstream of the confluence there is a riffle that is safe to cross during moderate to low flows. Cross the river here to the gravel bar in the middle of the river. This is potentially difficult and

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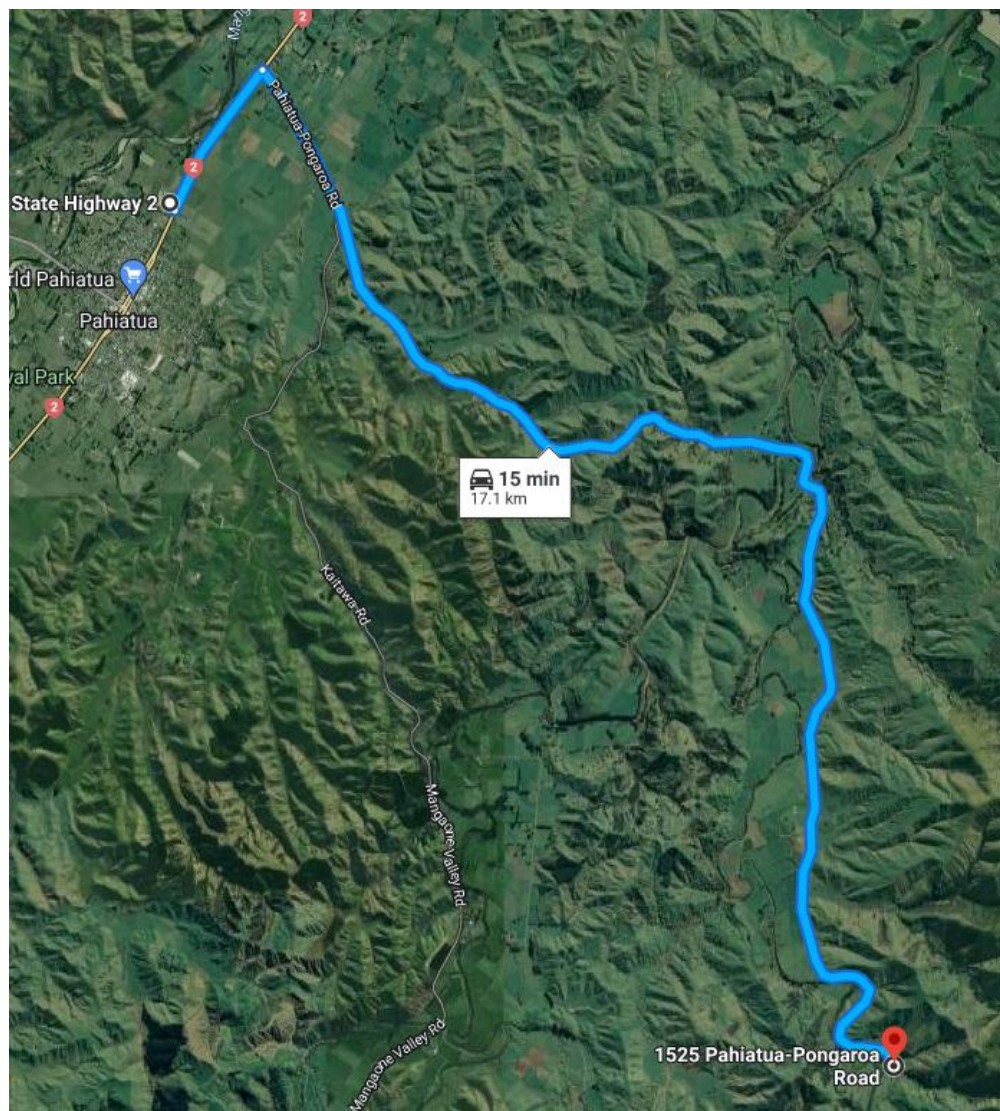
potentially dangerous depending on the height of the river. Follow appropriate safety protocols.

- Carry on approximately 50 to 100 meters downstream of the discharge point (where Town Creek enters the Mangatainoka River)
- If you cannot cross at the gravel bar then return to the vehicle and the junction you initially drove past. Here there should be a rope tied to a tree, climb down the bank with the aid of the rope and access the river this way (where you enter the river would be roughly the end of your reach).
- **ACCESS:** This sampling point can be highly changeable as the river here changes course frequently. Make sure that you get a sample that is representative of the entire river. If the river splits you may have to take half of your sample from one branch of the river and the rest of the sample from the other branch though ideally find a suitable spot where the branches coverage. Usually 1 transect from the left branch and 3 from the other. Split the rocks in two.



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SITE LOCATION MAP – Makuri at Tuscan Hills



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	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/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	THROW BAG	VHF RADIO	HI-VIS	
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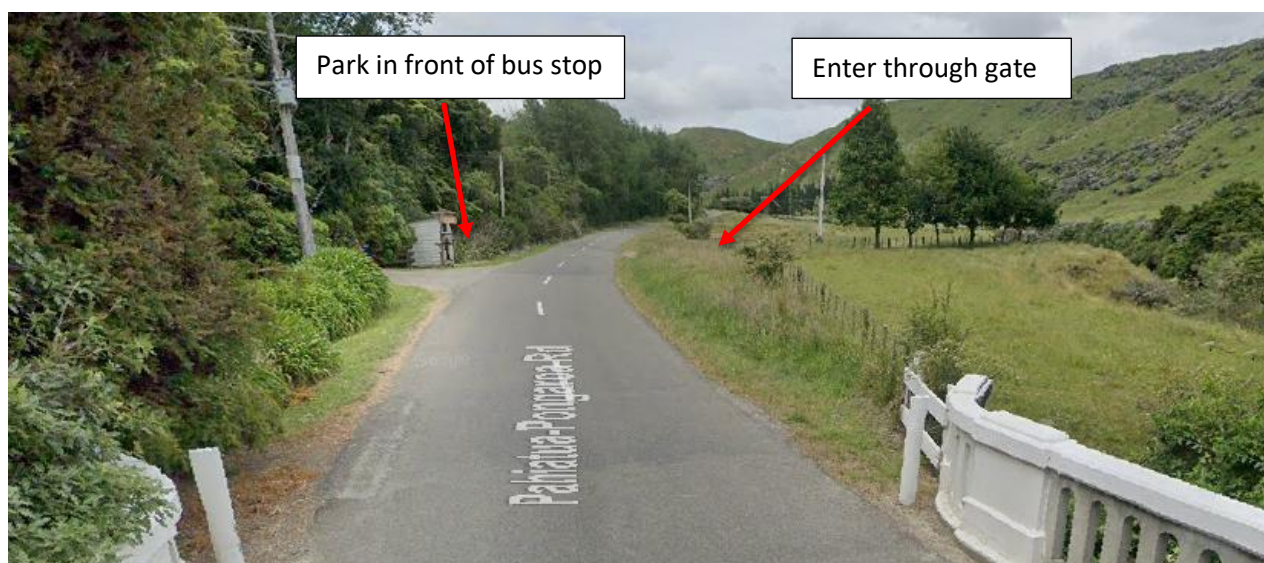
DIRECTIONS:

- From the d/s Pahiatua STP site, drive back up the driveway and turn left onto SH2.
- Drive approximately 2km along SH2 and then turn right onto Pahiatua-Pongaroa Road

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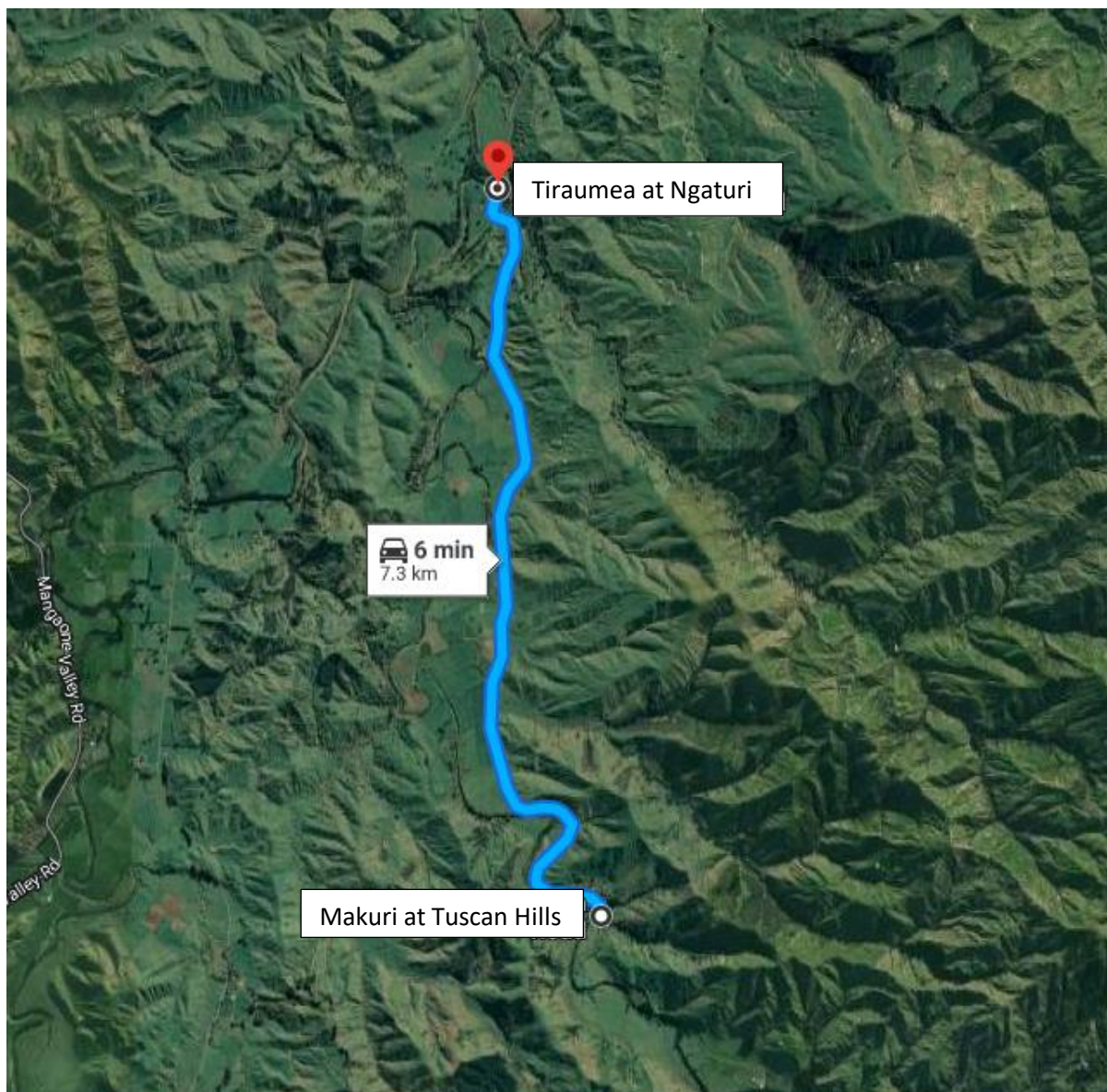
- Stay on Pahiatua-Pongaroa Road for approximately 15km. After approximately 8 kilometres you will cross a bridge over the Tiraumea River. You will be coming back to this site to sample next.
- When you are close to the 15km mark the road takes a sharpish turn to the right, then goes over a bridge and there is a sign on the left which says Tuscan Hills. Watch out on the right hand side of the road for a paddock with a hydrology shed in it (a large green shipping container) and a bus shelter on the left of the road. This should be very obvious when you see it.
- Park next to the bus shelter and walk into the paddock with the Hydrology shed. You will come to a steep hill, head down this to the Makuri River.

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SITE LOCATION MAP – Tiraumea at Ngaturi



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	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/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):

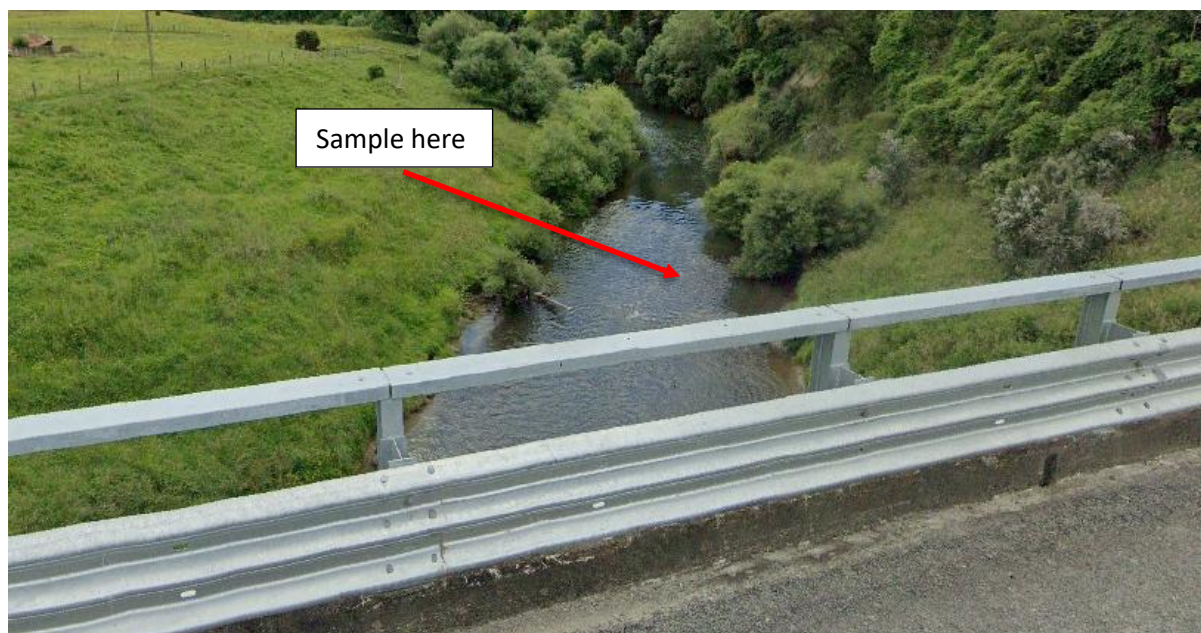
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WORK BOOTS / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO	HI-VIS	
DIRECTIONS: <ul style="list-style-type: none"> From the Makuri at Tuscan Hills site turn left out of the paddock back onto Pahiatua-Pongaroa Road Travel down the road for about 7km until you cross a one way bridge, which crosses over the Tiraumea River. Pull into the hydro site access way and just park up there and walk down to the site. 							
ACCESS: <ul style="list-style-type: none"> Cross the road and you will see a small white shed – this is the old hydrology shed. Cross the fence here (there is a stile to get over the fence) and walk down the track towards the river. Walk under the bridge and approximately 50m upstream. This is where you will sample. Be careful walking down to the river as the paddock is often slippery and has large ruts that are covered by long grass. Walk upstream to a riffle and get off the banks here. Otherwise it is too deep to get into and often murky in the winter times. 							

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SITE LOCATION MAP – Mangatainoka at u/s Tiraumea Confluence



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	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/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	THROW BAG	VHF RADIO	HI-VIS	
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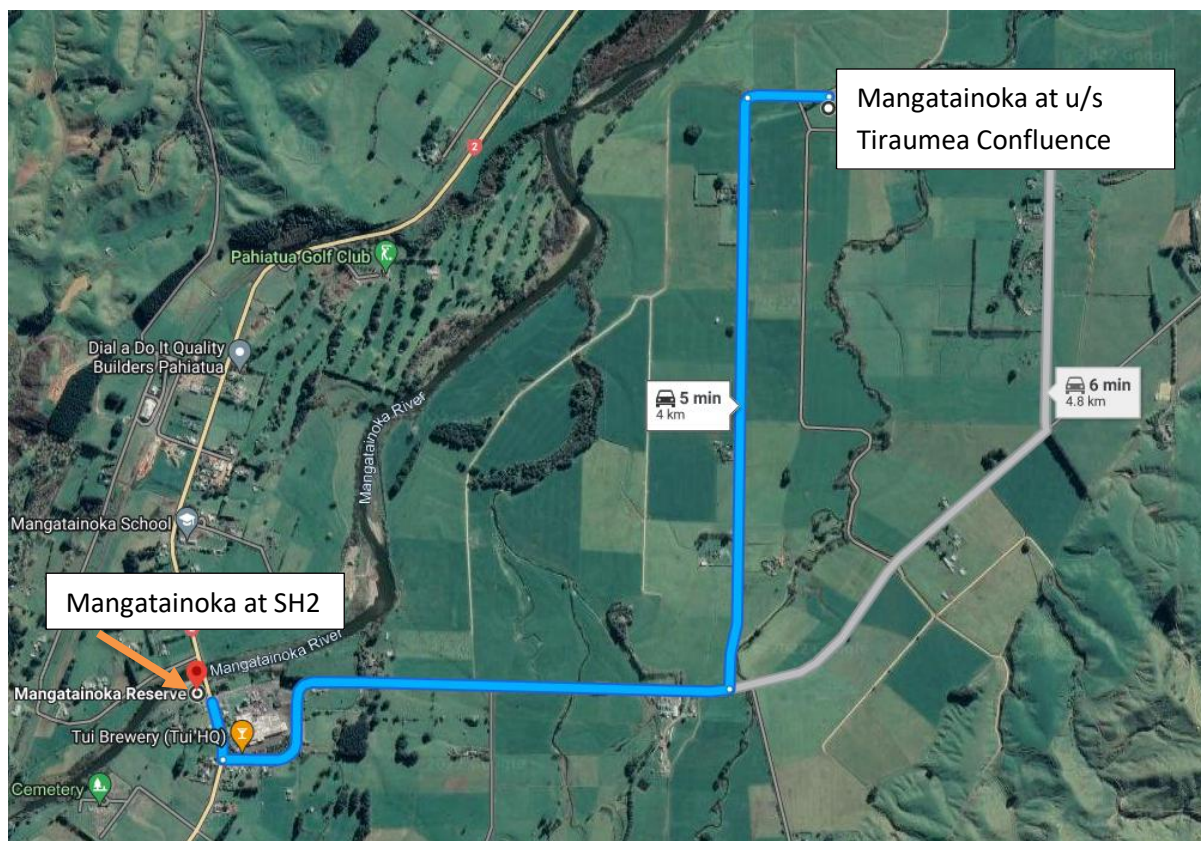
DIRECTIONS:

- From Tiraumea at Ngaturi, continue back towards SH2 (turn left out of the driveway). Continue for 6.5km until you reach a road on your right called Middle Road.
- Take this right. Stay on Middle road until the end as it comes to a T-intersection.
- Turn right and then about 400m down the road take the next left called Tawera Road.
- Travel down this road as it turns into gravel and there is a sharp corner to the right (which the road turns into Namu Road). Go around this corner and then about 200m past this corner there will be a raceway on your left. Park on the grass verge just past the race entry.
- Walk along the race until it ends. Head into the paddock and aim for the large tree area near a bunded pump shed. Keep to the right of the pump shed.
- Access the river banks via a cleared opening in the trees. Sample here, flows are typically quite flat and even all year round.



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SITE LOCATION MAP – Mangatainoka at SH2 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
Difficult entry/exit	Potential for difficult rescue	Machinery- mobile plant	Traffic / Vehicle Movements
Weather/Temperature Extremes			

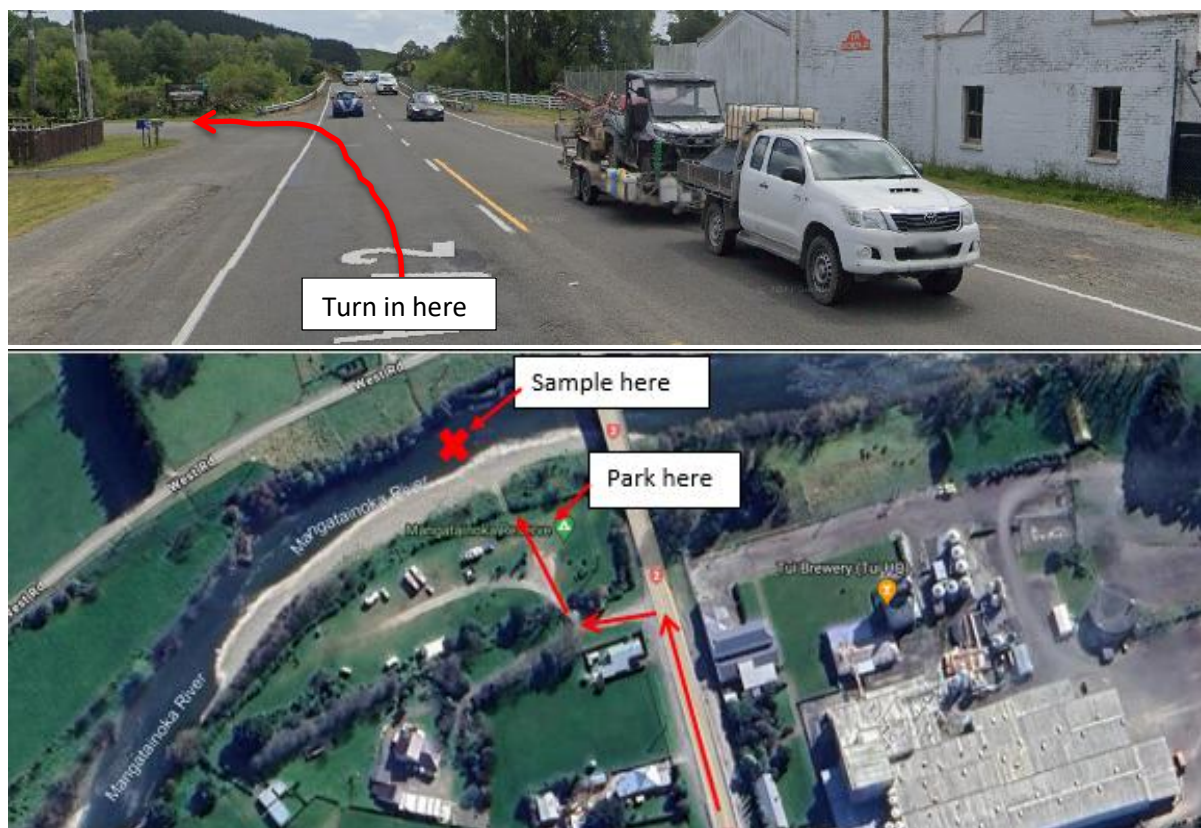
REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

WORK BOOTS / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO	HI-VIS	
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DIRECTIONS:

- From the u/s Tiraumea Confluence site head back the way you came down Tawera Road then turn right onto Kohinui Road.
- Follow Kohinui Road to the end, as you go past the Tui Brewery the road changes to Mara Street. Follow to the end then turn right onto SH2.
- Just before you drive over the bridge turn into the picnic area on the left and drive approximately 200 metres upstream and do your sampling here.

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Once you have finished sampling you can drive back to the office via the Pahiatua Track or alternatively the Saddle Road if the track is closed.