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SoE and Periphyton Monitoring Run Guide

Upper Manawatū Discharge/Run 3

**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 FLOTATION 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/stream 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]
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 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

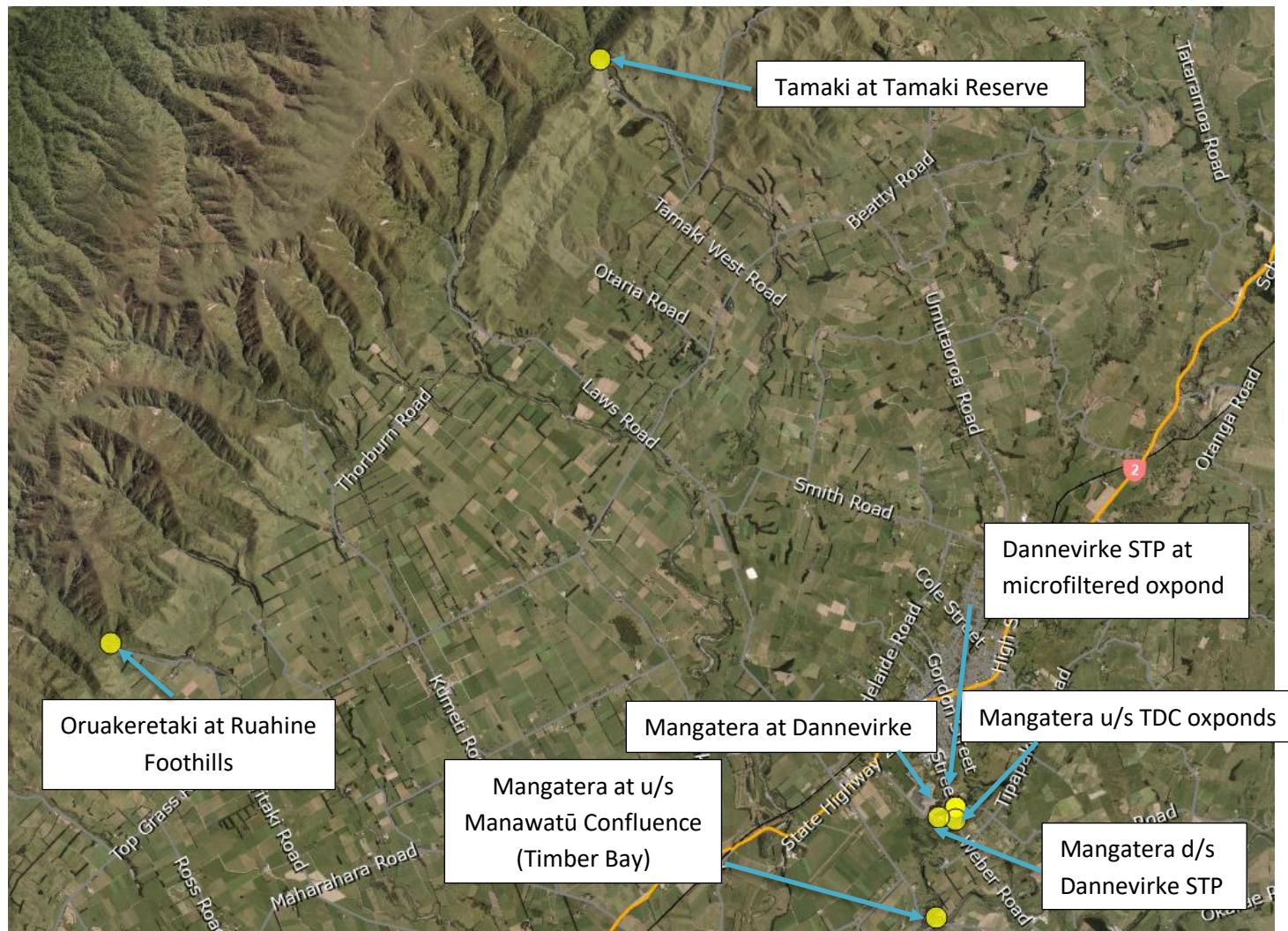
Hilltop Site Name	Easting/Long (NZTM)	Northing/Lat (NZTM)	Comments
Mangatera at Dannevirke			Chlorophyll a Sample and Visual assessment. Water Quality and Black Disk
Mangatera u/s Dannevirke STP	1863903	5542705	
Mangatera at u/s TDC oponds	1863911	5542683	Gauged and water quality – metals bottles needed
Mangatera at d/s Dannevirke STP	1863908	5542494	Chlorophyll a Sample and Visual Assessment. Water Quality and Black Disk – metals bottle needed
Dannevirke STP at microfiltered opond	1863644	5542526	Water quality – metals bottle needed
Mangatera at u/s Manawatū confluence (Timber Bay)	1863606	5540937	Water Quality and Black Disk. Access in high flow and bad



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			weather conditions marginal
Tamaki at Tamaki Reserve	1858299	5554509	Chlorophyll a Sample and Visual Assessment. Water Quality and Black Disk
Oruakeretaki at Ruahine Foothills	1850545	5545284	Gauged, water quality and black disk. Access takes time. No cell phone coverage at sample site. Sample within Ruahine Reserve – hunters and trampers.



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Equipment Required

Sample Bottles	SEVEN (7) sample bottle sets – refer to http://tqm.horizons.govt.nz/Hydrology/SOPs/cd_om_15.4_Appendix_4_ELS%20Bottle%20Guide.xlsx
Sample numbers	SEVEN (Water Quality) THREE (Periphyton)
Equipment	<ul style="list-style-type: none"> • Handheld multi-parameter instrument (calibrated) – including iPad/screen • Black disc, viewer, tape measure • Clarity Tube • Bathoscope / Viewer • Pottles (Approx 10) • Scrubbing brush, tooth brush and washer bottle • Yellow sample bottle lid • Ice cream container • Sampling pole • Chilly bins and ice-packs • Bags for isolating effluent samples • Disinfectant equipment for sampling equipment • Field sampling books • Sampling ID labels (created using Hilltop Sampler) • Gloves for wastewater and effluent samples • Alcohol gel • Personal Locator Beacon • 4WD Vehicle equipped with VHF Radio • Throw Bag
Miscellaneous	<ul style="list-style-type: none"> • Dannevirke STP at micro-filtered opond: ‘TDC’ key for access required • Oruakeretaki at Ruahine Foothills: Out of cellular signal range – take EPIRB • Oruakeretaki at Ruahine Foothills: Hunters and trampers in vicinity of sample site • Oruakeretaki at Ruahine Foothills: Gauged site – viable x-sections limited as steep boulder channel, no safe way of gauging in higher flows.
Additional Comments/ Instructions	<ul style="list-style-type: none"> • Mangatera at d/s Dannevirke STP: Alternative route to sample site is possible from the Dannevirke STP compound. • Mangatera at u/s Manawatū Confluence: Access is limited due to slumped banks and a mobile channel. Care required at all times. Access may be unsafe in high flow conditions or in poor weather/conditions • The following sites are sampled for the HRC/TDC Contract: Dannevirke STP at micro-filtered opond, Mangatera at u/s T.D.C OxPonds, Mangatera at d/s Dannevirke STP.

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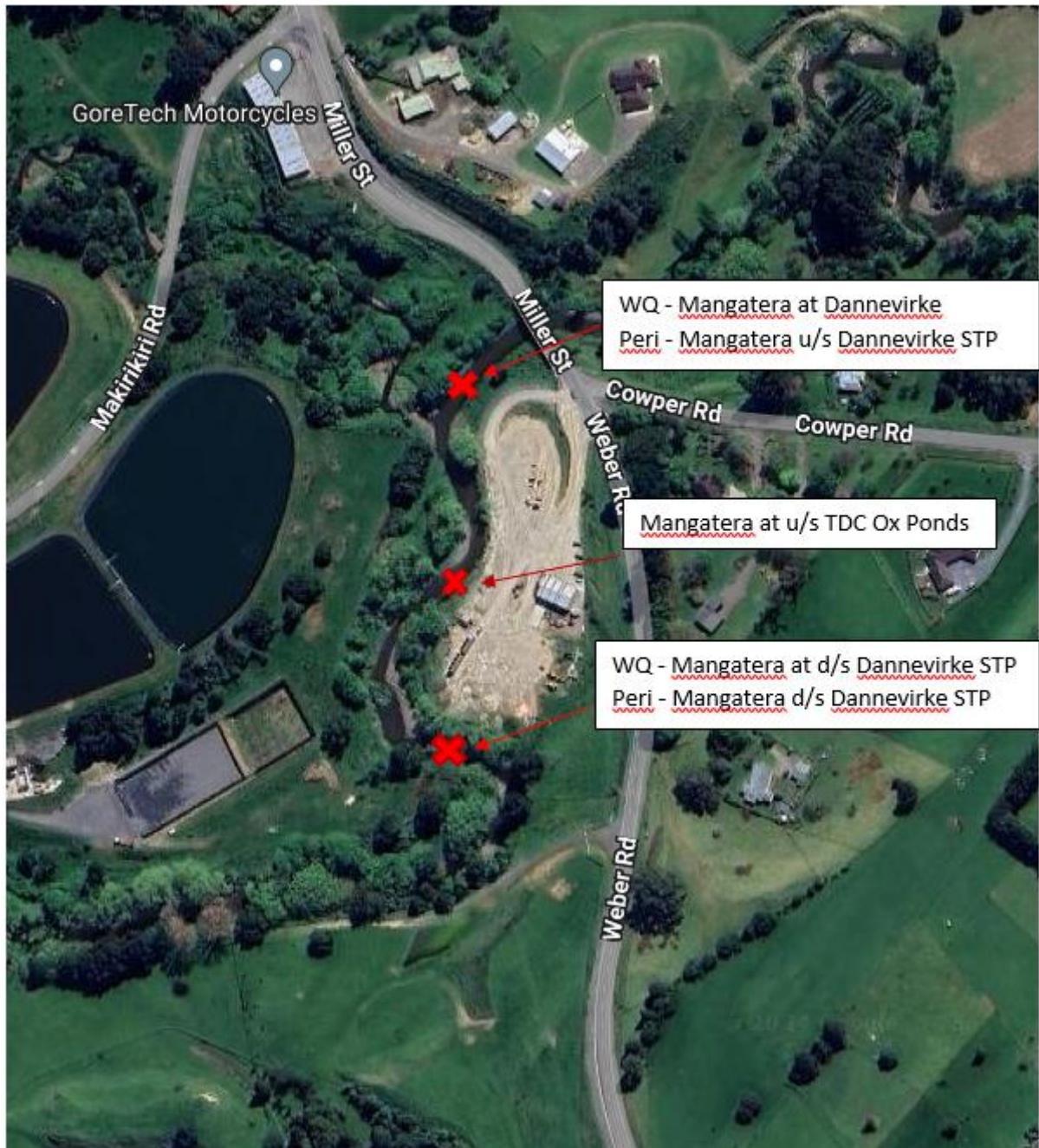
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Mangatera Sample Sites:

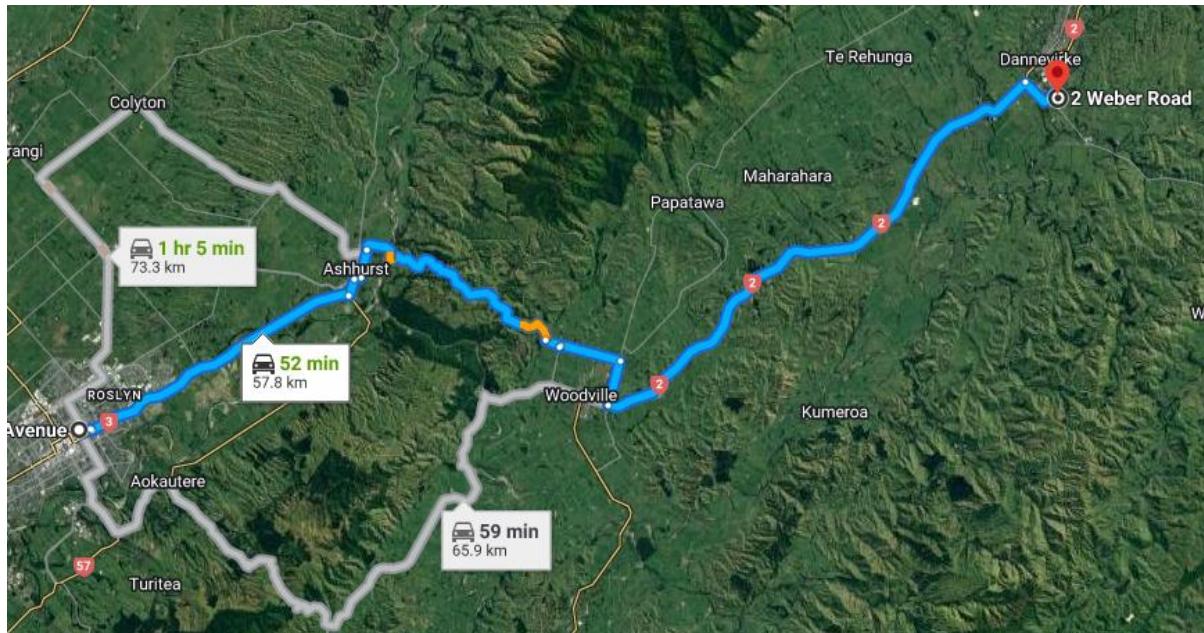
Mangatera at Dannevirke; Mangatera at u/s T.D.C. Ox Ponds; and Mangatera at d/s Dannevirke STP

See map below



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SITE LOCATION MAP – Mangatera at Dannevirke (Sci – u/s STP site)



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			

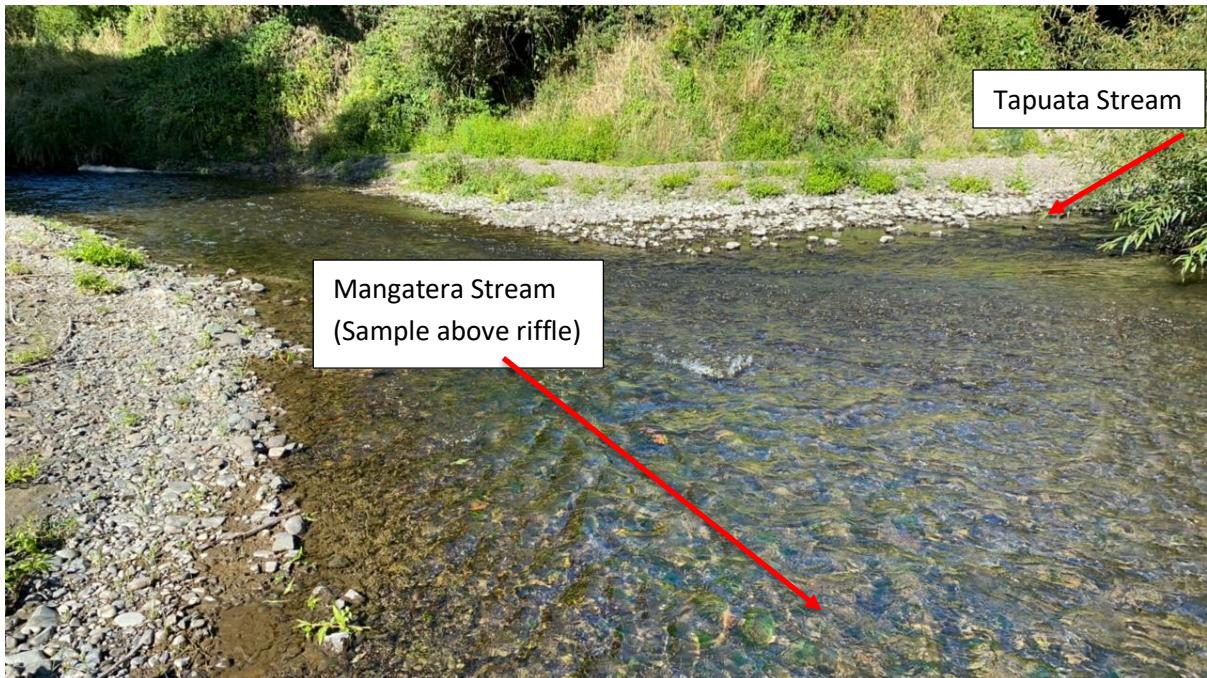
REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

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

DIRECTIONS:

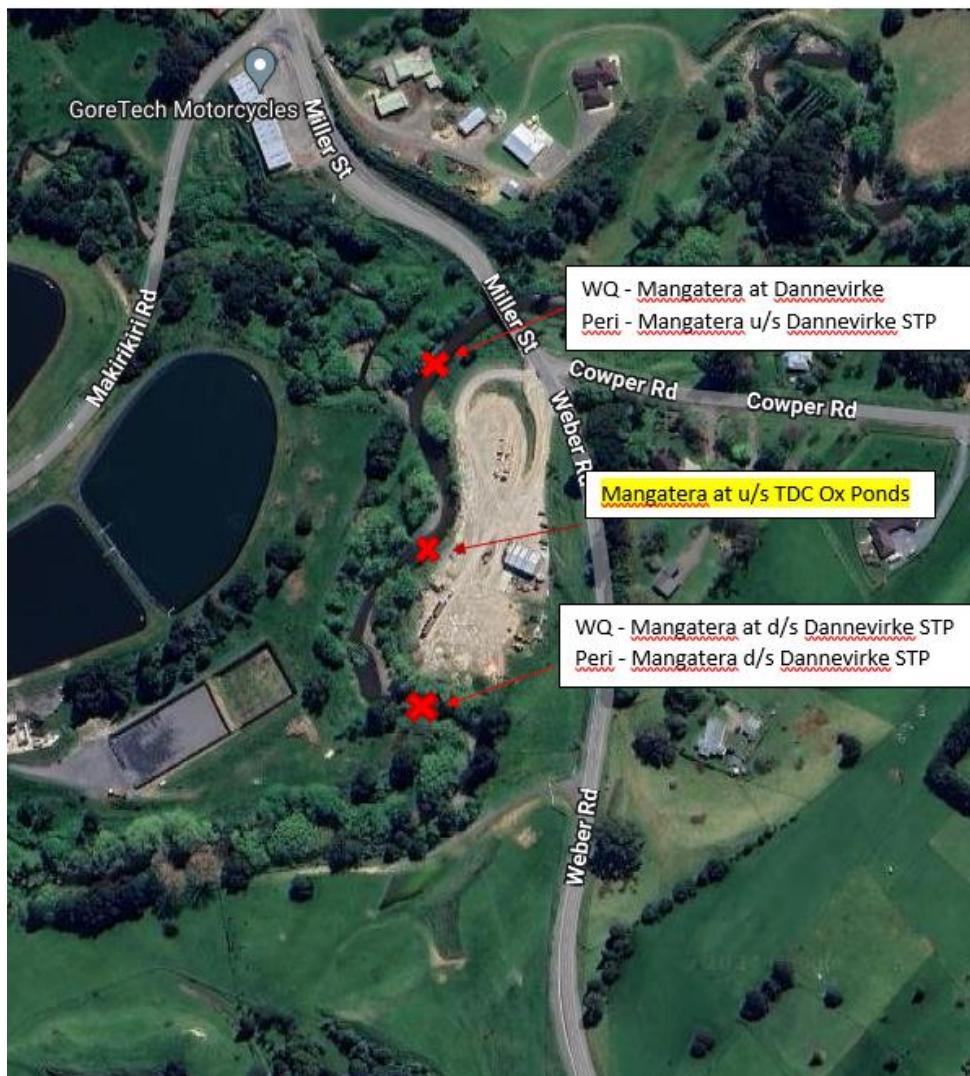
- From the Palmerston North office travel north-east over Saddle Road to Dannevirke. As you enter the 70 km/hr area just before Dannevirke there is a bright green Farm Source building on the right. Immediately after this turn right on to Makirikiri Road.
- Follow this road around, past the sewage treatment ponds until it reaches the intersection with Weber road. Turn right onto Weber road.
- Follow Weber road down the hill and across the bridge. Immediately after the bridge turn into the driveway on the right. There is a large shed and an open area, find somewhere close to the river towards the bridge to park up. You should see a track leading down to the stream, follow this.
- Sample upstream of where the Tapuata stream converges with the Mangatera. This is a very obvious confluence on the true right of the Mangatera stream. When doing WQ walk further upstream to the bridge.

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SITE LOCATION MAP – Mangatera at u/s TDC Ox Ponds



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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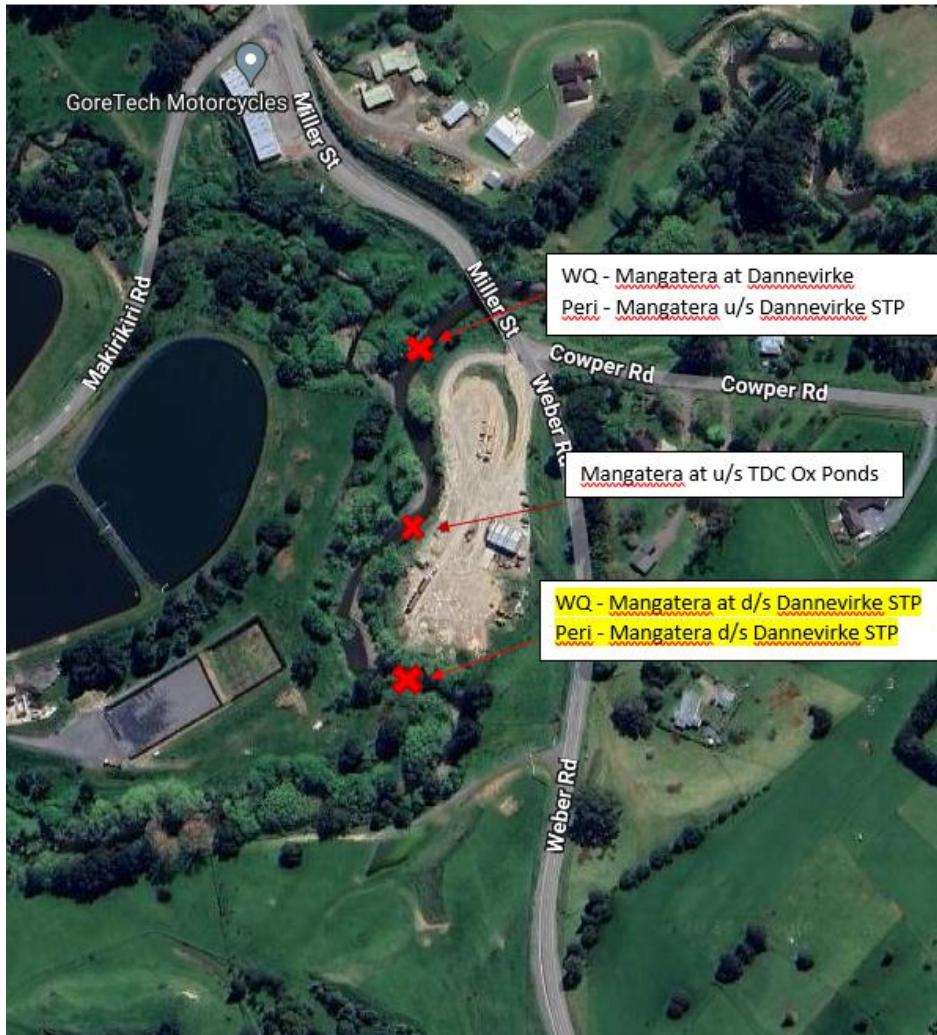
ACCESS:

- From the Mangatera at Dannevirke site walk downstream about 100m past the tributary coming in and take water quality samples and complete a gauging



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SITE LOCATION MAP – Mangatera at d/s Dannevirke 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			

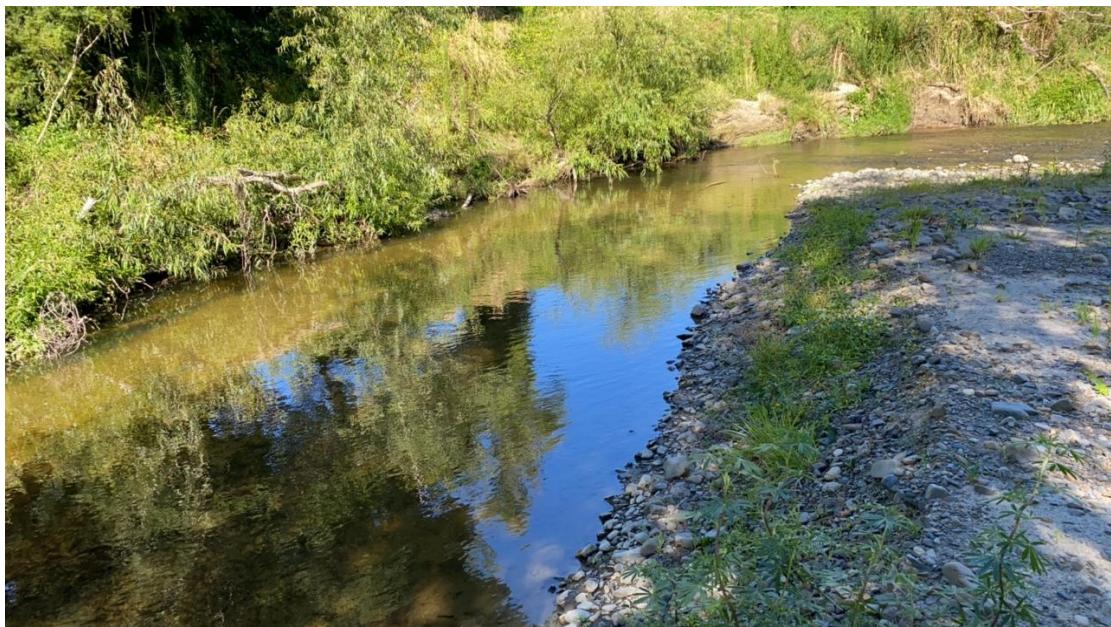
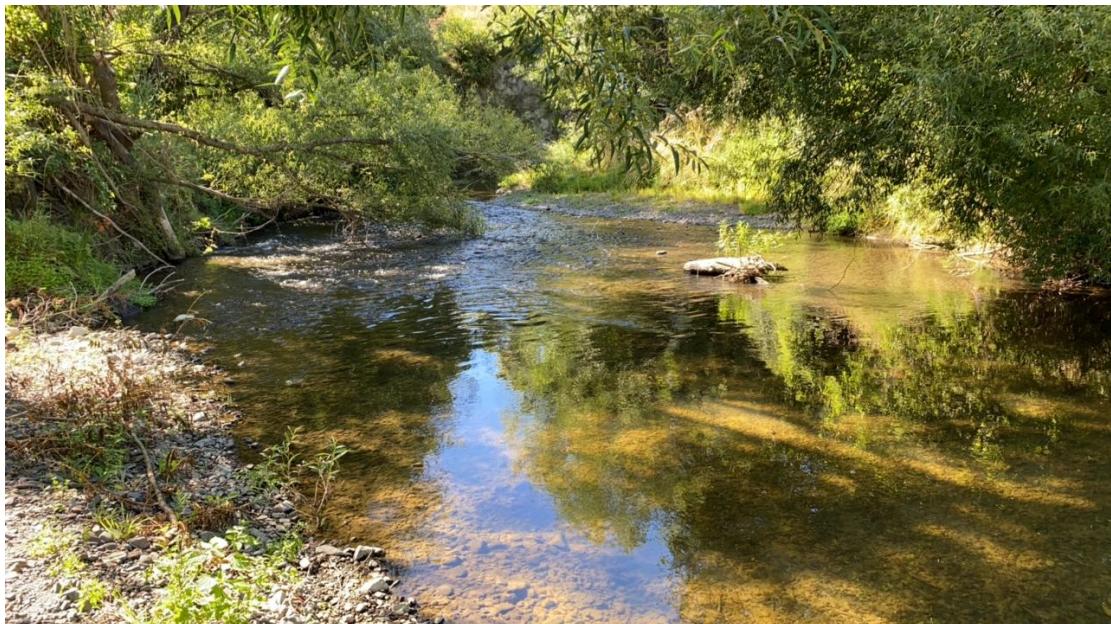
REQUIRED PPE (in accordance with above hazards – this does not negate undertaking a hazard review prior to sampling on the day and/or using additional PPE if deemed necessary):

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

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ACCESS:

- Walk back to the bank and walk to the end of the driveway/quarry until you see a track going down to the stream.
- On the true right of the river is the discharge from the Dannevirke STP which takes the form as a small tributary coming into the Mangatera Stream.
- Continue down from the discharge for approximately another 100 meters. You will come to a sharp right hand corner. You may need to cross the stream a few times when making your way down.



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SITE LOCATION MAP – Dannevirke STP at microfiltered oxpond



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 Mangatera sampling locations leave the quarry and turn left onto Weber Road (towards Dannevirke)

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- Drive over the bridge and up the hill, take the first left onto Makirikiri Road
- After approximately 500m on the left is a gravelled shoulder with two cyclone gates
- The first leads to the edge of the ponds – ignore this one
- The second takes you via a sealed roadway to the STP compound. You will need the TDC keys to access this roadway. Unlock this gate and go down the track until you reach the compound and park inside the fence.
- Wear appropriate PPE

ACCESS:

- The STP sample point is from a tap (see photos below) inside the large shed.
- Allow the tap to run for a few seconds as a flush.
- Collect the sample.

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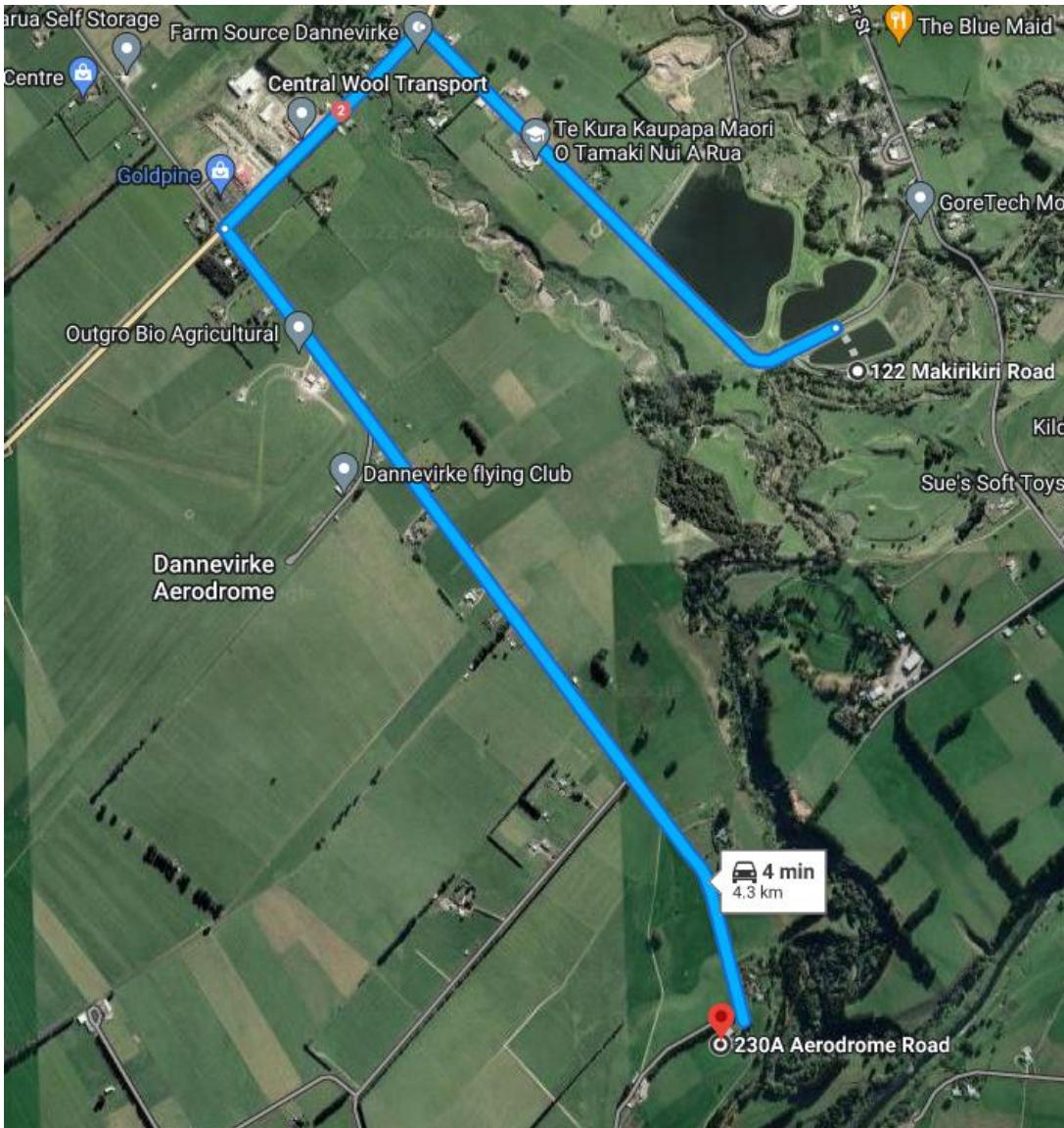




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SITE LOCATION MAP – Mangaterā at u/s Manawatū confluence (Timber Bay)



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"> • Leave the STP compound and turn left onto Makirikiri Road (toward SH2) • At the end of the road turn left onto SH2 • After approximately 650m turn left onto Aerodrome Road • Follow this to the end through the cyclone gate and stock grid • Landowner contact details found here • 							
ACCESS:							
<ul style="list-style-type: none"> • Continue straight on the track downhill (not to the right toward a private property). Drive slowly as the track is slippery at times. • Park near the cyclone gate of the paddock to your left just before the slope down to the picnic area • Watch out for electric fences! Safest route is over the cyclone gate, across the first paddock and down the sloping path to the lower paddock – access via bungee cords. • Cut across the lower paddock and under/over the single wire fence on the other side • Access the river via the wooded banks. • The bank material is very mobile – always treat them as uneven. Safe access to the stream is pretty much limited to this access point. • In high flow conditions or when it is slippery under foot access may not be viable – in such circumstances consider abandoning any sampling, documenting the situation with photos and contacting the Discrete Water Quality portfolio holder upon your return to the office. 							

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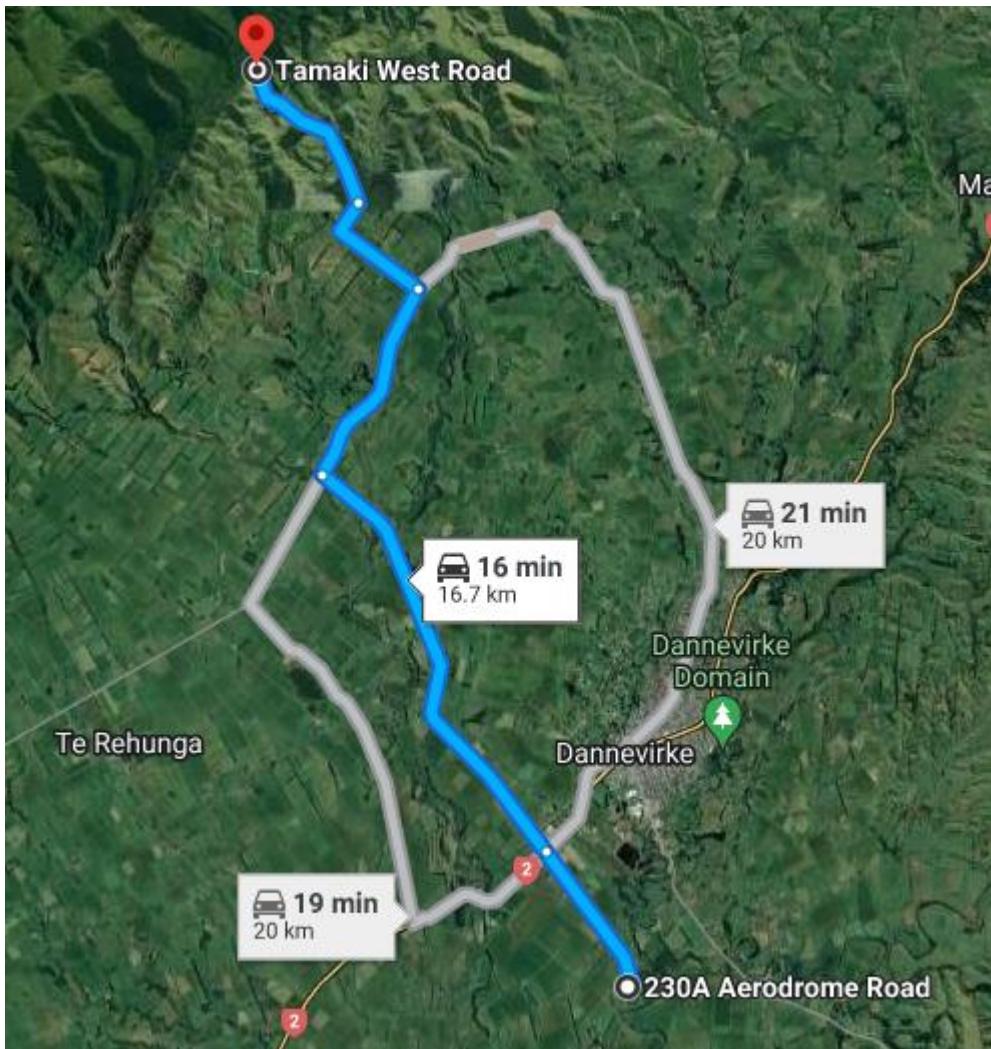
Sample location looking upstream



Sample location looking downstream

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SITE LOCATION MAP – Tamaki at Tamaki Reserve



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 around and go back the way you came out of Aerodrome Road heading back towards SH2

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- At the intersection with SH2 continue straight onto Laws Road
- Follow Laws Road until you get to the intersection with Top Grass Road (which is at the Ruaroa town hall). Turn right into Top Grass Road
- Continue on this road until you get to the second left which should be Tamaki Road West, turn down here. Follow this road round a left hand bend/intersection with Tamaki Road East.
- Follow the road past some sheep yards to the end of the road. You will be able to park here, there will be a DOC sign visible.

ACCESS:

- Follow the walking track to the first small stream. When you reach the stream follow it downstream to the confluence with the Tamaki Stream.
- Walk about 50m downstream of this confluence and conduct sampling.

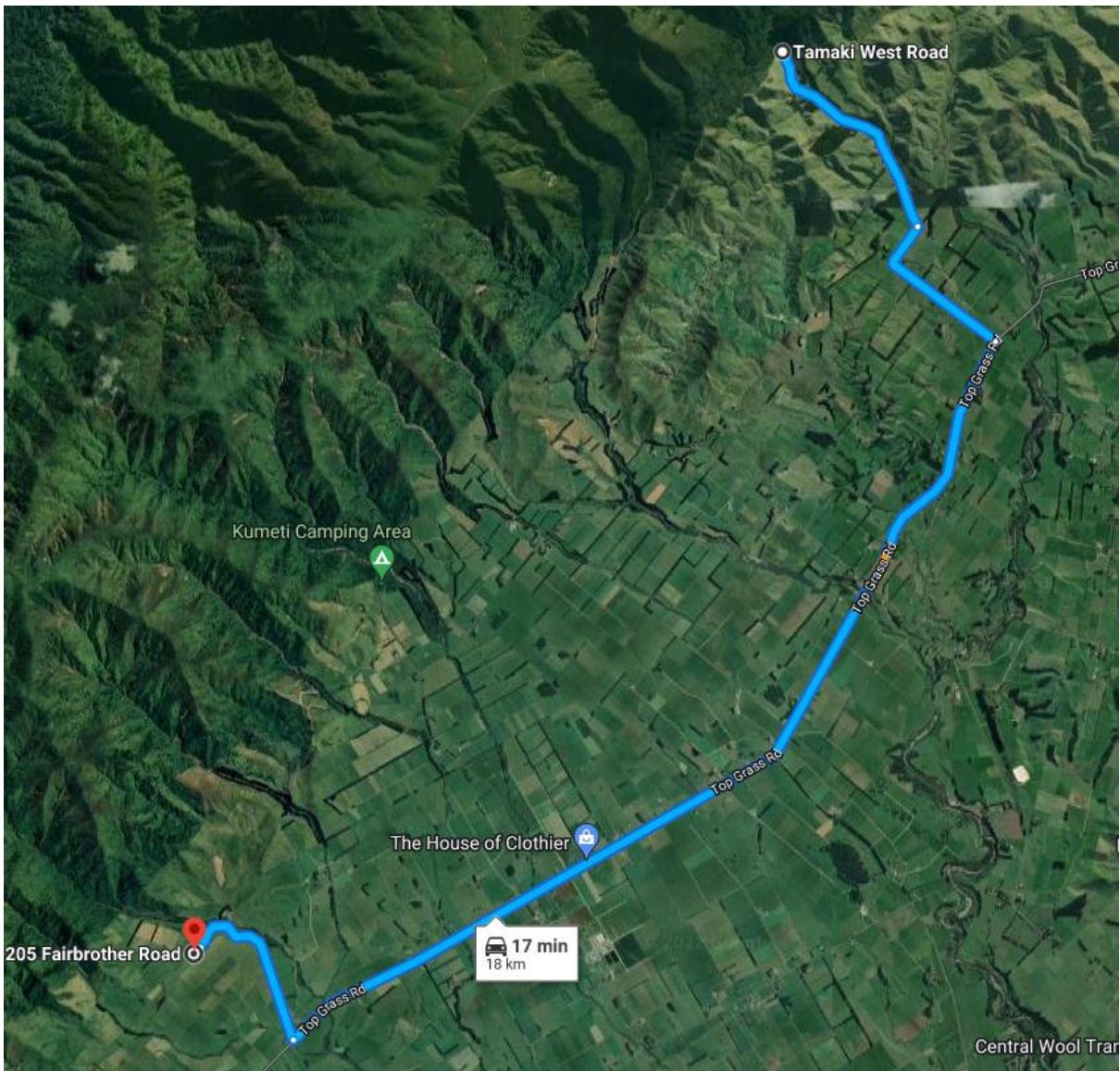


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SITE LOCATION MAP – Oruakeretaki at Ruahine Foothills



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"> • After sampling turn around and head back the way you came on Tamaki West Road • Turn right at the intersection with Top Grass Road and continue along this road for about 12km. • Just after you cross the Kumeti Stream, Fairbrother Road will be on your left. Take this turn • Continue along Fairbrother Road as it turns into gravel. • At the end of the road, continue along the race way towards the house and open the first gate on your right. Go through this paddock to get into the raceway, there is a relatively defined track that you should be able to follow to the next set of gates to get onto the race way. • Once you are on the race, follow it along the paddocks as it goes up a small rise and curves to the left with a line of pine trees. At the end go through the gate to the left which has a small stream running through it, go through this gate. • The track would have disappeared. There will be a hill which falls away to your right towards the river. The landowner has advised this is generally firm, even in winter, but take caution driving down this hill when wet. It may be sensible to park at the top of the hill and walk. • Drive or walk down to the opposite corner of the paddock and park up on the side of the gateway 							
ACCESS:							
<ul style="list-style-type: none"> • Walk through the gateway and along the boundary fence, there should be a clearly marked style to climb over the fence. This leads to a track which can be followed a short distance to the river. • Follow the track toward a sharp left hand turn (that is also uphill) and continue straight – the Oruakeretaki is just a few meters from the track here • This is the general area for sampling and gauging. The gauging section will vary depending on flow (areas highlighted below); the chances of a high quality conventional gauging are low given the nature of the channel morphology. In higher flows access to a suitable x-section may not be possible 							



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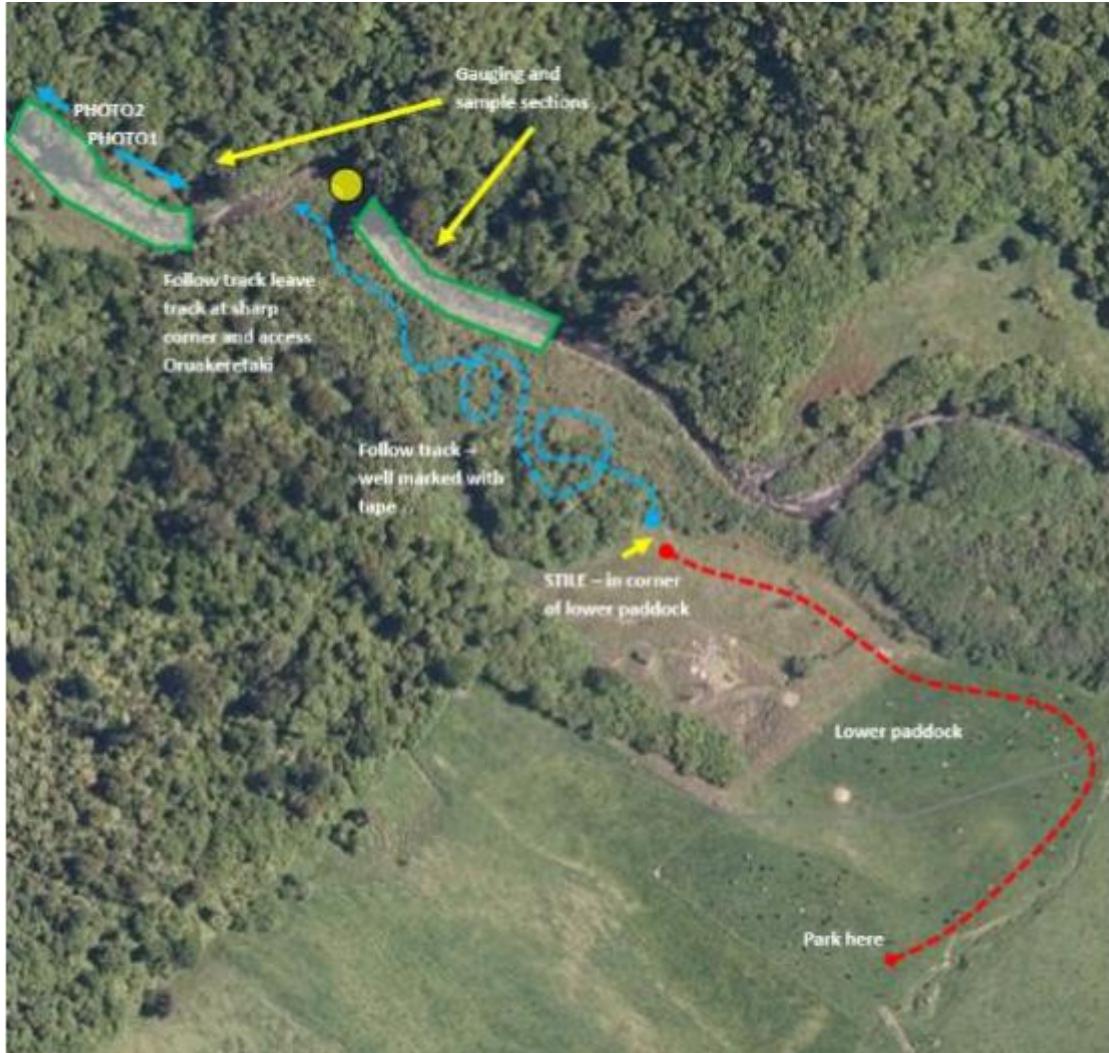
Site access map 1



Site access map 2



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