

<b>Version No:</b> 1.0 <b>Issue Date:</b> 24/05/2021 <b>Portfolio:</b> Discrete Water Quality	<b>Horizons Regional Council</b>	<b>Section No:</b> 15.7 <b>Appendix No:</b> XX <b>Page:</b> 1 of 18
	<b>Hydrology Operations Manual</b>	

Version 1.0 24/05/2021

## Invertebrate Monitoring Run Guide

# Mangatainoka Run 2

### 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.

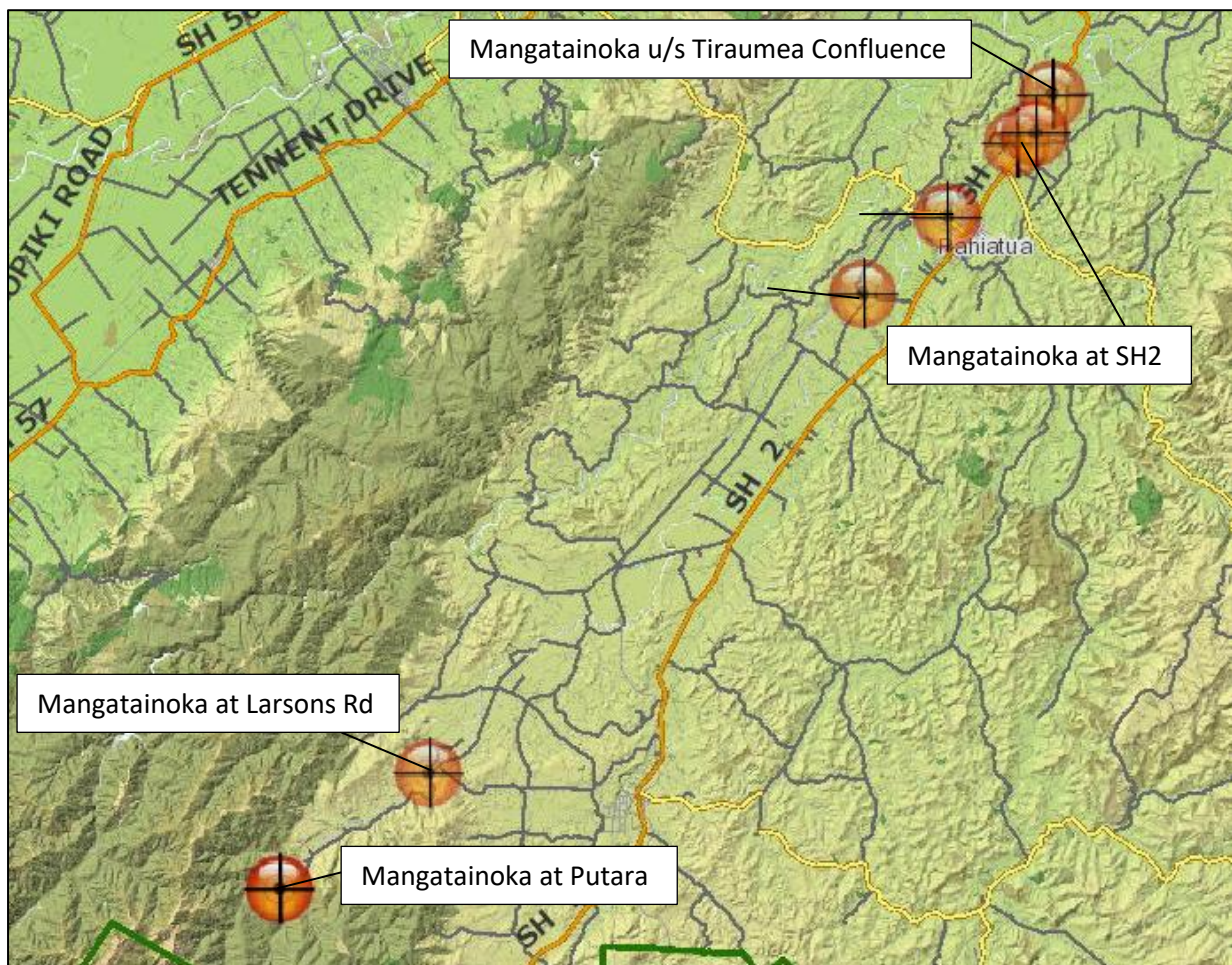
SAMPLING GLOVES	EAR PROTECTION	HARD HAT	SAFETY GLASSES / GOGGLES	WORK BOOTS / WADERS	PROTECTIVE GLOVES	PERSONAL FLOATATION DEVICE (PFD)
						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>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

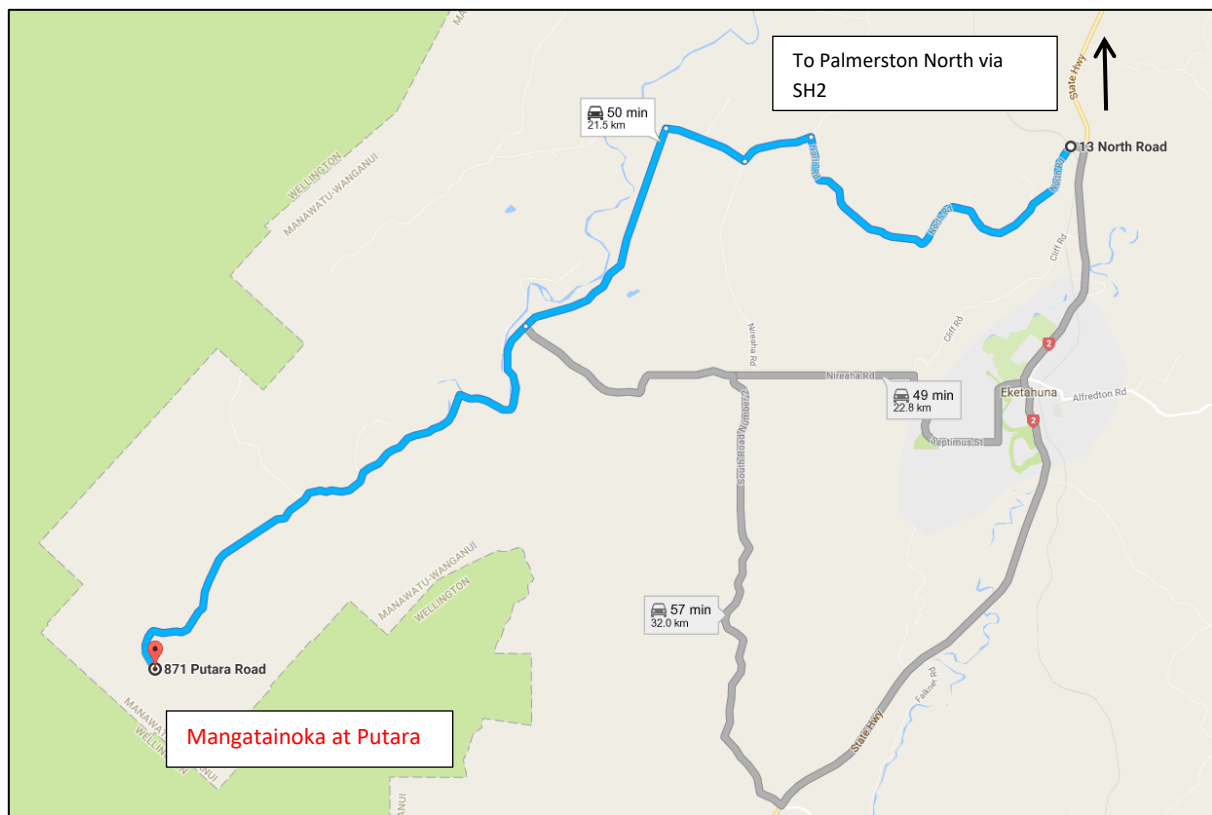
Hilltop Site Name	Easting/Long (NZTM)	Northing/Lat (NZTM)
Mangatainoka at Putara	1815288	5493586
Mangatainoka at Larsons Rd	1820856	5497900
Mangatainoka at Pahiatua Town Bridge	1840208	5518648
Mangatainoka u/s Tiraumea Confluence + NEMS	1844130	5523215
Mangatainoka at SH2	1842795	5521394



## Equipment Required

<b>Equipment</b>	<ul style="list-style-type: none"><li>• Camera and GPS</li><li>• Kick net</li><li>• Invertebrate Pottles and Propan-2-ol</li><li>• White plastic tray</li><li>• Metal ruler</li><li>• Gravelometer</li><li>• Sampling Worksheet and Pencil</li><li>• Bathoscope / Viewer</li><li>• Scrubbing brush, tooth brush, washer bottle, yellow sample bottle lid and ice cream container</li><li>• Pottles (Approx 10), chilly bins and ice-packs</li><li>• Personal Locator Beacon</li><li>• 4WD Vehicle equipped with VHF Radio</li><li>• Throw Bag</li></ul>
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## SITE LOCATION MAP – Mangatainoka at Putara



**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	Weather/Temperature Extremes	Traffic / Vehicle Movements
Remote Area	Communication- Means of	Engulfment	Stock / Farm Animals

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

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

- From the Palmerston North office travel South-East out of Palmerston North on SH57 towards Aokautere (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, it will eventually turn into Makomako Road. Keep following this road straight 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.
- Continue along SH2 until you see North Road on the right. Take this turn.



- Follow North Road until it comes to an intersection with Nireaha-Hukanui Road and turn left here. Follow this until you come to another intersection. You should be able to see a town hall at this intersection. Turn right here onto Mangaroa Road.
- Follow this road for a few minutes to the first left turning road which is Mangatainoka Valley Road. Take this road.
- Continue on this road until the end. It will become gravelled and turn into Putara Road. At the end there is a turning around area. Park here.
- On the left hand side as you come in there is a small gate leading into DOC land. Go through this gate and continue along the path for a few hundred meters until you come to the first open area of land. There is a boardwalk over a boggy patch of ground walk down the hill here (watch out it can be slippery) and (carefully) step over the electric fence.
- Find a riffle to sample.





## SITE LOCATION MAP – Mangatainoka at Larsons Road



**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	Weather/Temperature Extremes	Traffic / Vehicle Movements
Remote Area	Communication- Means of	Engulfment	Stock / Farm Animals
Electrical- low/high voltage			

**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:

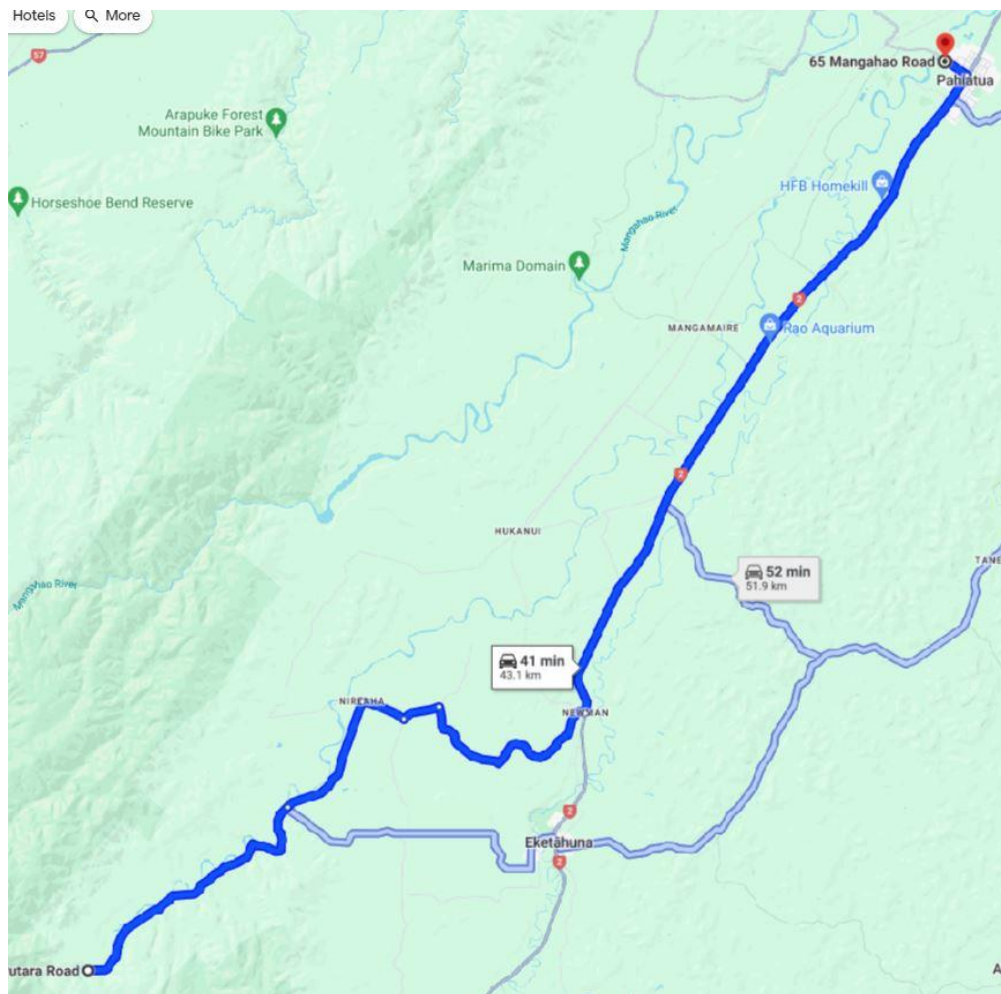
- From Putara head back down Putara Road the way you came for about 5 minutes. Just after the road changes from gravel to tar seal you will see a bridge on the left (Larson's Road). Turn left here and travel across the bridge.
- Once over the bridge you will see a house on the left, park a little further up the road from this house, on the left hand side.

- You will see a farm gate on the right hand side, go through here, walk down the bank towards the river.
- Find a riffle to sample.





## SITE LOCATION MAP – Mangatainoka at Pahiatua Town Bridge



- Head northeast on Putara Rd 8.6 km
  - Continue onto Mangatainoka Valley Rd 3.9 km
  - Turn right onto Mangaroa Rd 1.3 km
  - Turn left onto Nireaha Hukanui Rd 1.1 km
  - Continue onto North Rd 6.2 km
  - Turn left onto State Hwy 2 21.3 km
  - Turn left onto Mangahao Rd
  - Destination will be on the left
  - 750 m 65 Mangahao Road
- 
- Just before you reach the bridge leading into Pahiatua turn left into a small gravel path and park next to the gate. Make sure you don't block the access.
  - Walk towards the bridge on the pedestrian way next to the road. Before you actually start to cross the river make your way past the white fence and go down towards the river. You might have to cross an electric fence. Keep to your left and sample upstream of the bridge.

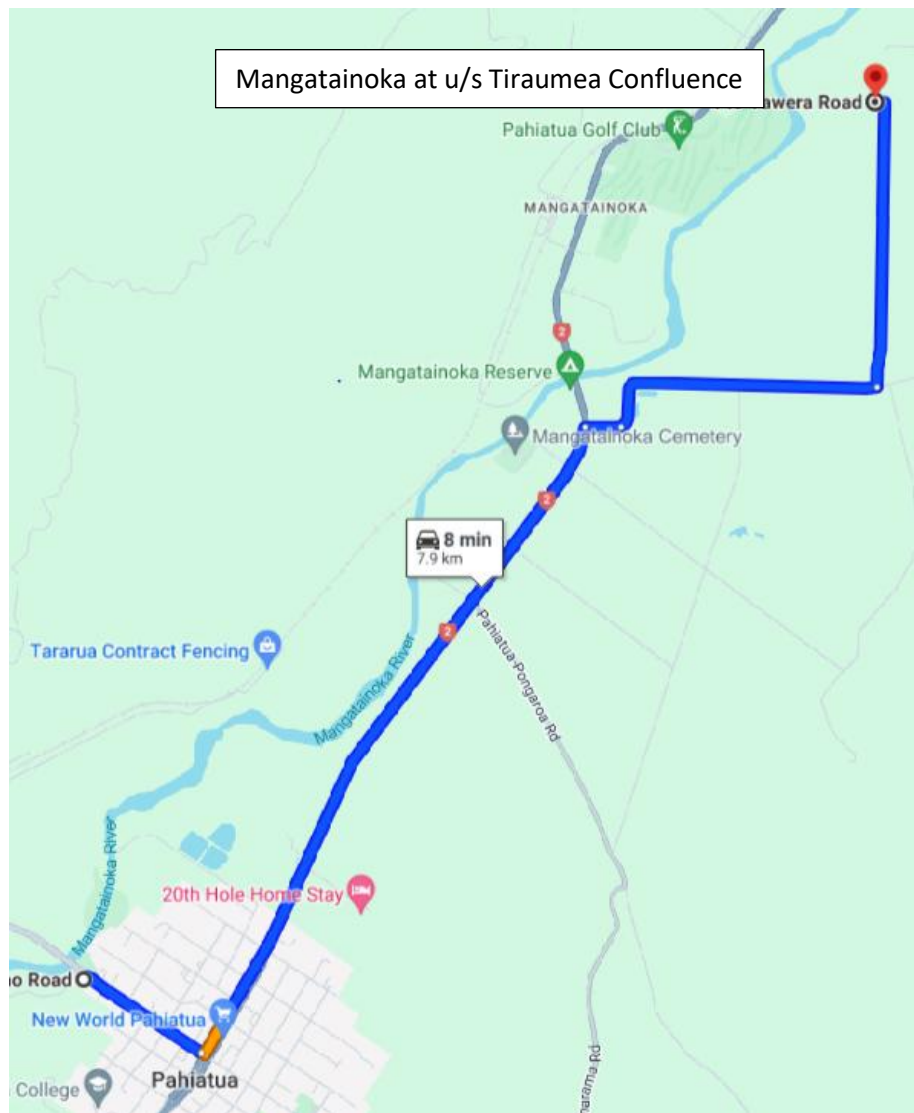
Find a riffle to sample.







## SITE LOCATION MAP – Mangatainoka at u/s Tiraumea Confluence + NEMS



**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	Weather/Temperature 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	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO	HI-VIS	
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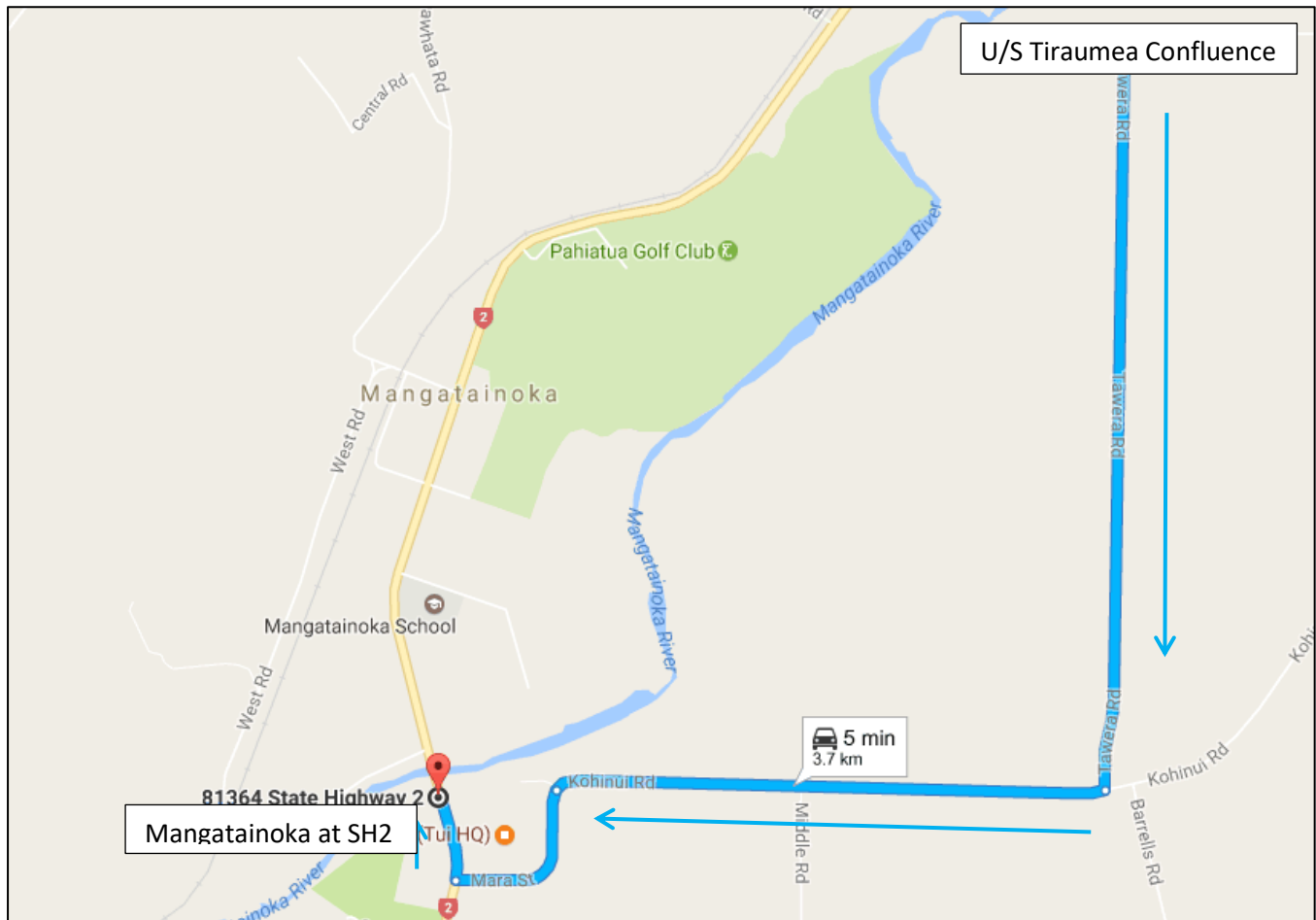
### **DIRECTIONS:**

- Head southeast on Mangahao Rd/Pahiatua Mangahao Rd toward Alexandra St
- Continue to follow Mangahao Rd 700 m

- Turn left onto State Hwy 2 3.9 km
- Turn right onto Kohinui Rd/Mara St 190 m
- Turn left onto Kohinui Rd 1.5 km
- Turn left onto Tawera Rd
- Destination will be on the left 1.5 km
- 149 Tawera Road
- Walk along the race to the end. Head into the paddock and aim for the large tree area near a
- bunded pump shed. Keep to the right side of the pump shed.
- Access to the river banks is via a cleared opening.
- Sample here, flows are typically quite flat and even all year round. Find a riffle to sample.



## SITE LOCATION MAP – Mangatainoka at SH2



**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	Weather/Temperature Extremes	Traffic / Vehicle Movements
Engulfment	Stock / Farm Animals		

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

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

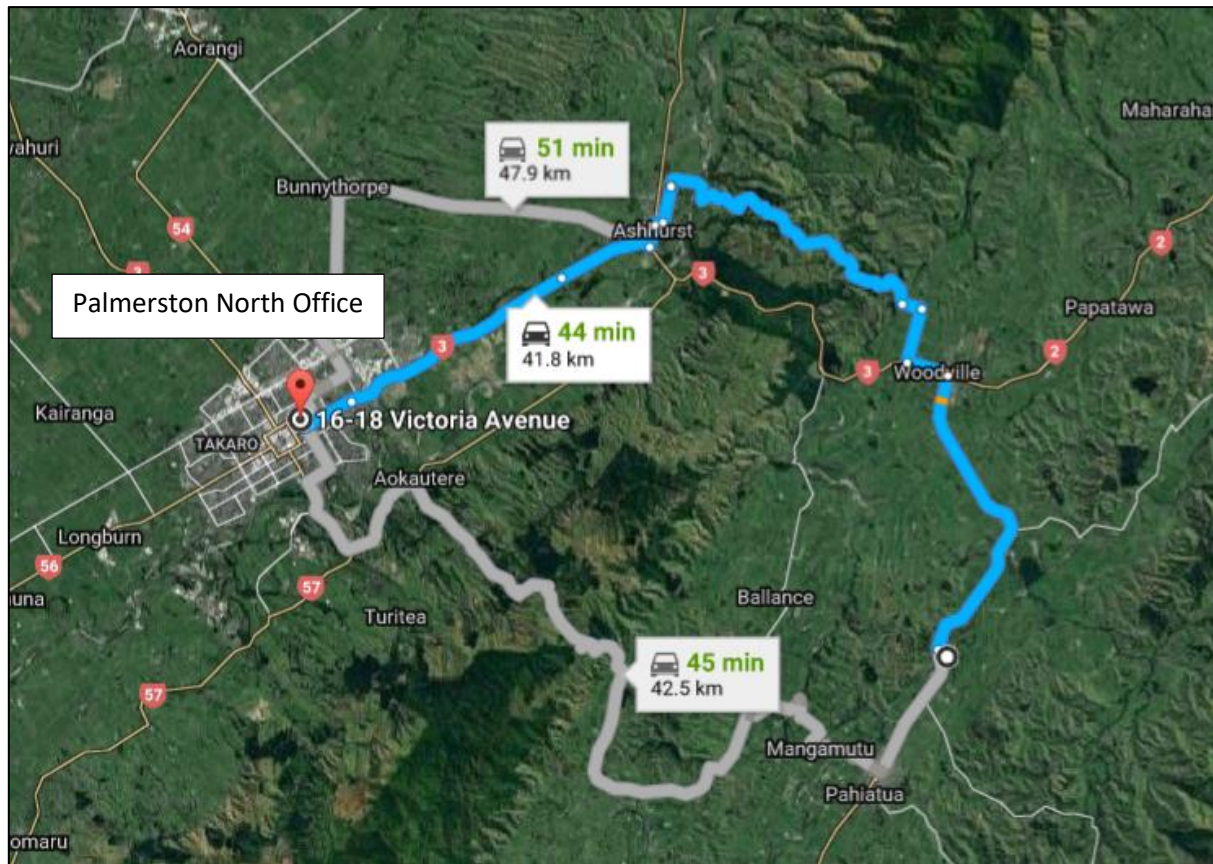
- From the upstream Tiraumea Confluence site travel back to Kohinui Road and turn right.
- Stay on Kohinui Road until you reach the intersection with SH2 in Mangatainoka.
- Turn right onto SH2 and drive a few hundred metres towards the bridge over the Mangatainoka River. Just before you reach the bridge turn left into a drive way into a popular picnic site.
- Drive approximately 200 metres upstream and find a riffle to sample.





*Mangatainoka at SH2 looking upstream.*

## RETURNING TO THE PALMERSTON NORTH OFFICE



### DIRECTIONS:

- From the Mangatainoka at SH2 site head left onto SH2 and follow this until you come into Woodville.
- Once in Woodville turn left onto SH3, follow for approximately 1.4km and then turn right onto Woodlands Rd.
- Stay on Woodlands Rd until you meet the intersection with Oxford Rd, turn left onto Oxford Rd which eventually becomes Saddle Rd. Follow Saddle Rd for about 11.2km until you come into Ashhurst.
- Once in Ashhurst Saddle Rd turns into Salisbury St, follow Salisbury Rd to the end and then turn right onto Mulgrave St.
- At the first roundabout turn left onto Cambridge Ave and follow to the end, then turn right onto SH3 (Napier Rd).
- Follow SH3 into Palmerston North for about 13km then turn right onto Victoria Ave until you come to the Horizons Office on your right.