

Version No: 1.0 Issue Date: 24/05/2021 Portfolio: Discrete Water Quality	Horizons Regional Council	Section No: 15.7 Appendix No: XX Page: 1 of 17
	Hydrology Operations Manual	

Version 1.0 24/05/2021

Invertebrate Monitoring Run Guide

Levin

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 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.

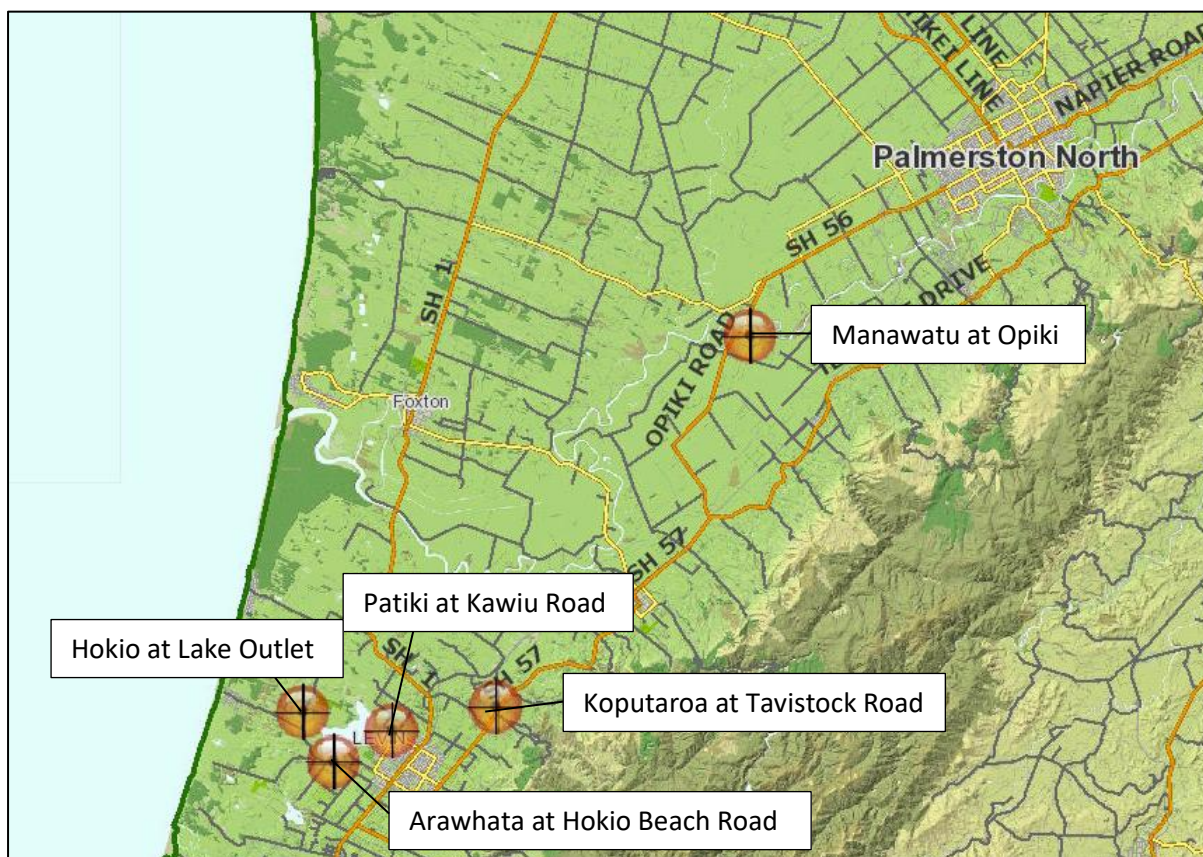
SAMPLING GLOVES	EAR PROTECTION	HARD HAT	SAFETY GLASSES / GOGGLES	WORK BOOTS / WADERS	PROTECTIVE GLOVES	PERSONAL FLOATATION DEVICE (PFD)
						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>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

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

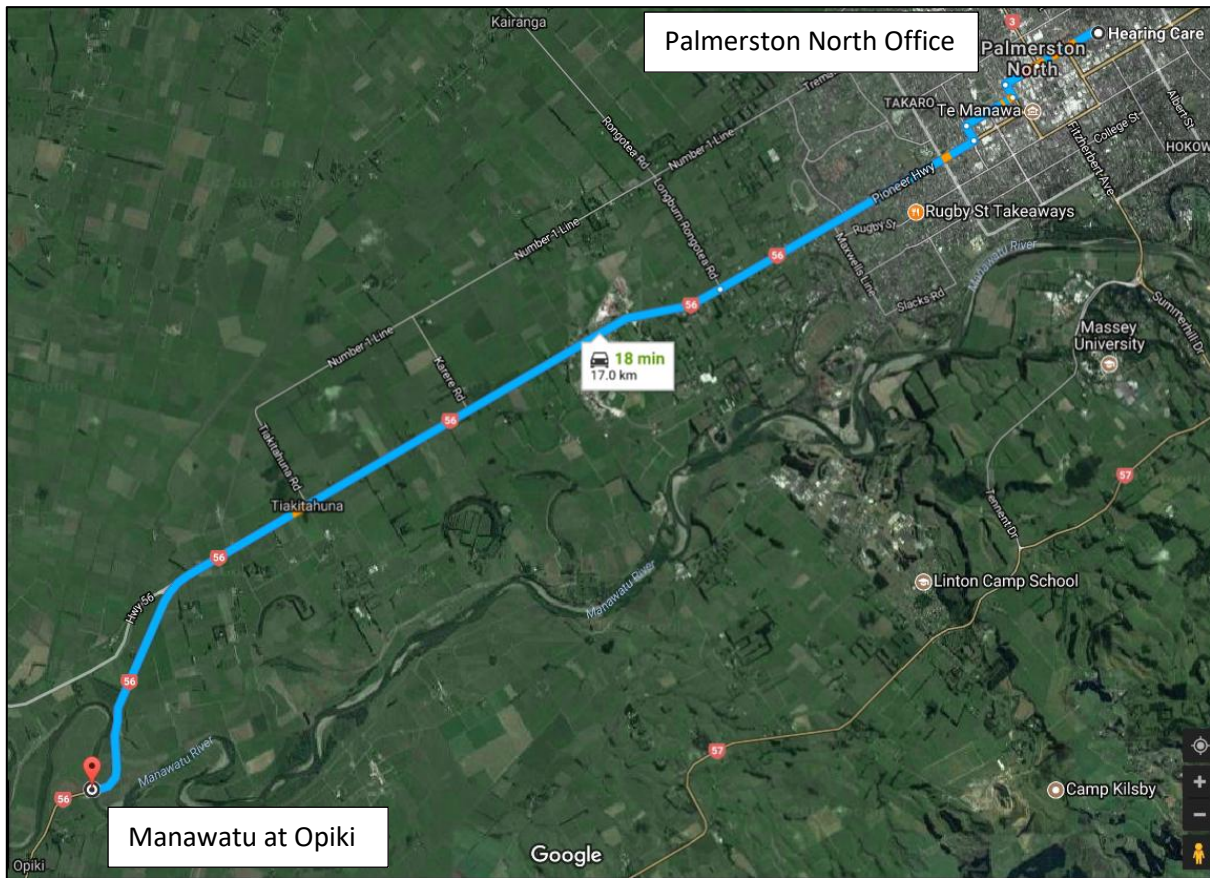
Hilltop Site Name	Easting/Long (NZTM)	Northing/Lat (NZTM)
Manawatu at Opiki	1809722	5520874
Koputaroa at Tavistock Rd + NEMS	1797740	5503387
Arawhata at Hokio Beach Rd (hard bottom-protocols if possible)	1790083	5500787
Hokio at Lake Outlet (hard bottom-protocols if possible)	1788621	5503134
Patiki at Kawi Road	1792826	5502257



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
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SITE LOCATION MAP – Manawatu at Opiki



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

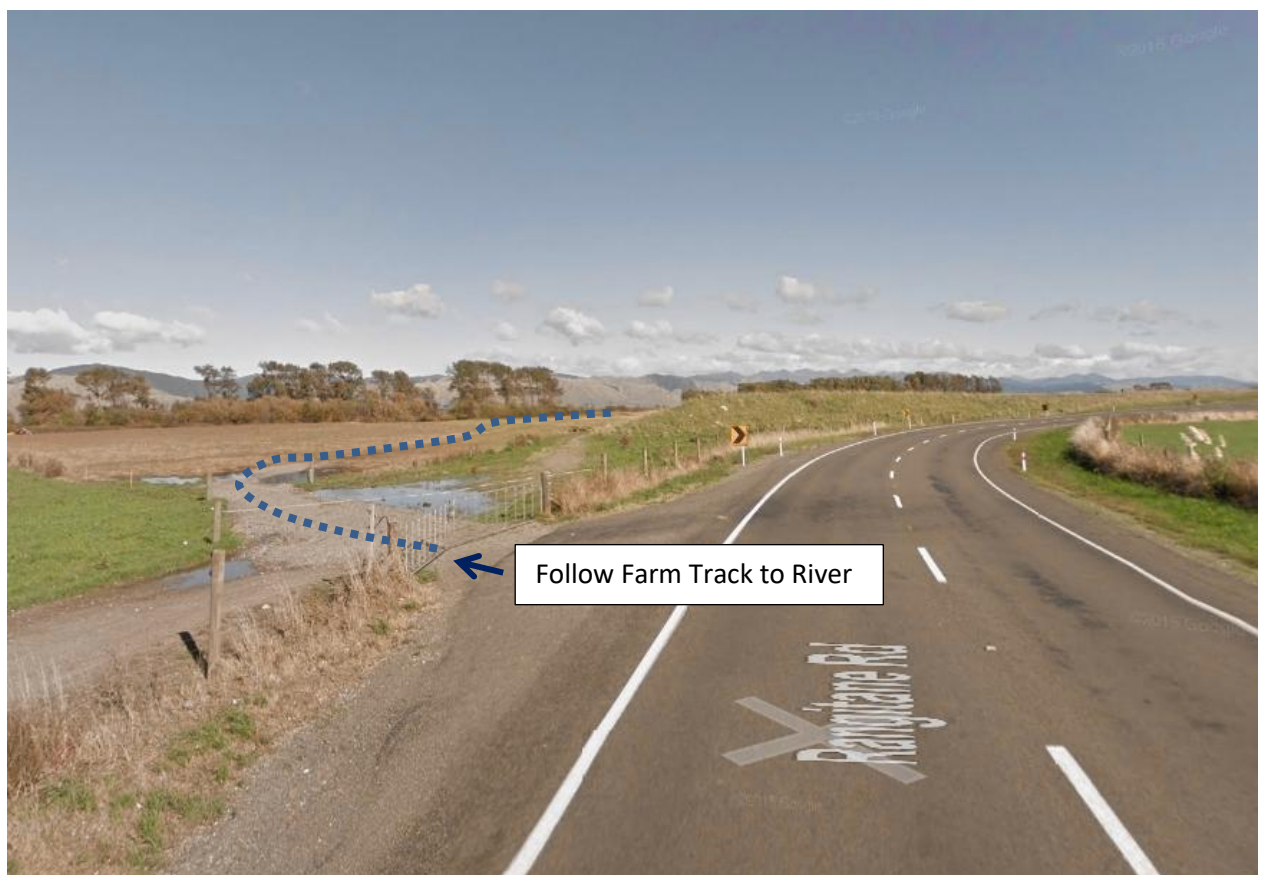
Drowning	UV Radiation	Slippery surfaces	Trip hazards
Difficult entry/exit	Potential for difficult rescue	Stock/Farm Animals	Traffic / Vehicle Movements
Weather/Temperature Extremes	Electrical- low/high voltage		

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):

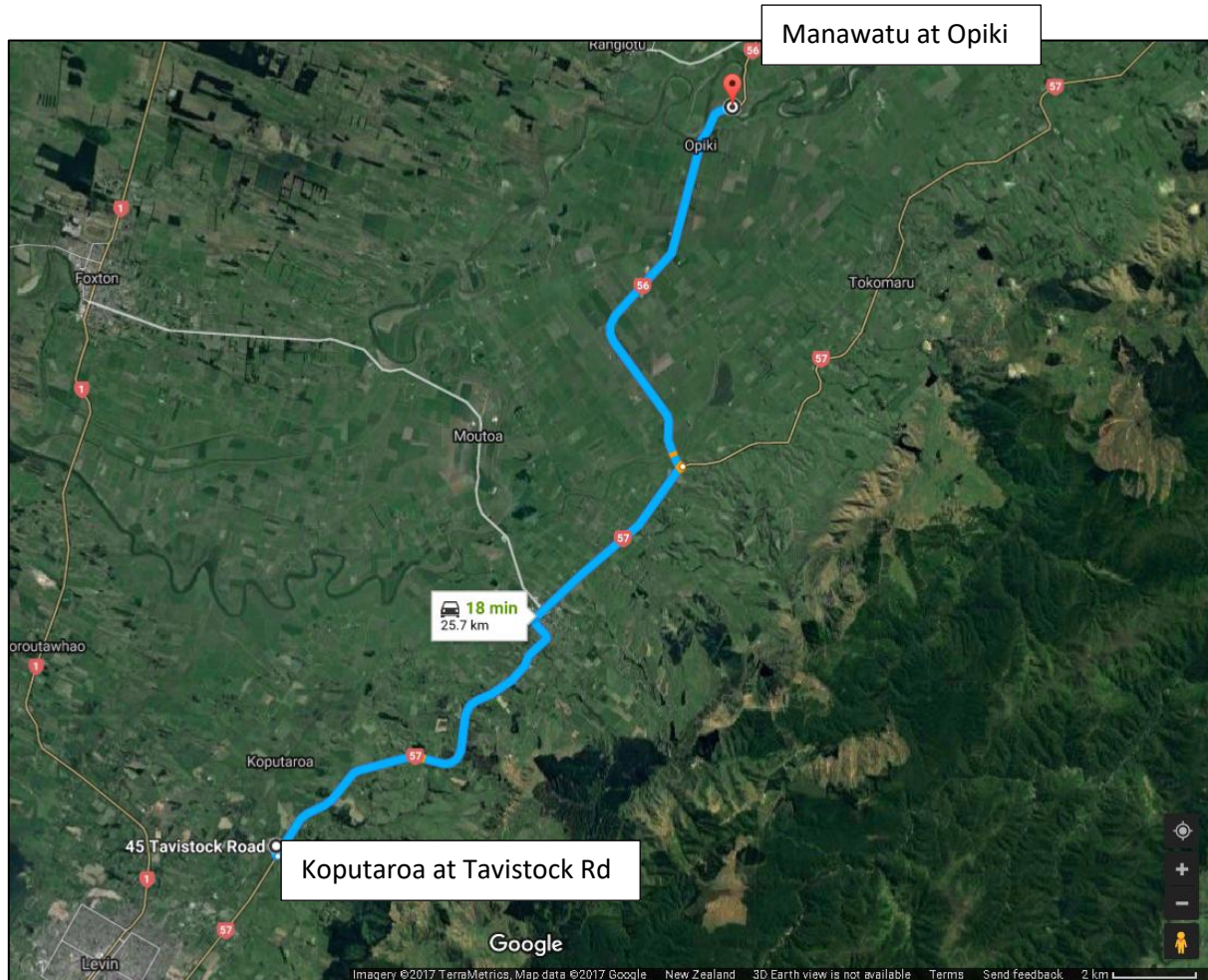
WORK BOOTS / WADERS	PFD	SUNSCREEN & HAND SANITISER	PERSONAL LOCATOR BEACON	THROW BAG	VHF RADIO	HI-VIS	
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DIRECTIONS:

- From the Palmerston North Office head out of town via Pioneer Highway. Drive approximately 10km along Pioneer Highway which eventually turns into SH56.
- You will come to an intersection which turns off to Foxton, stay on the road you are following to the left and about 800m after the intersection you will come to a bridge.
- Just before the bridge there is a farm gate to the left side of the road, park up next to this gate.
- Climb over the gate and follow the farm track towards this river. When you reach the river find an ideal riffle to sample.



SITE LOCATION MAP – Koputaroa at Tavistock Road + 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:

- From the Manawatu at Opiki site continue down SH56, go over the bridge and drive approximately 10.3km until you come to the intersection with SH57.
- Turn right onto SH57 and follow for about 15.1km. Turn right onto Tavistock Rd.
- Approximately 240m down Tavistock Rd you will come to a small bridge. Park up on the side of the road just before the bridge.
- Find a suitable riffle to sample.

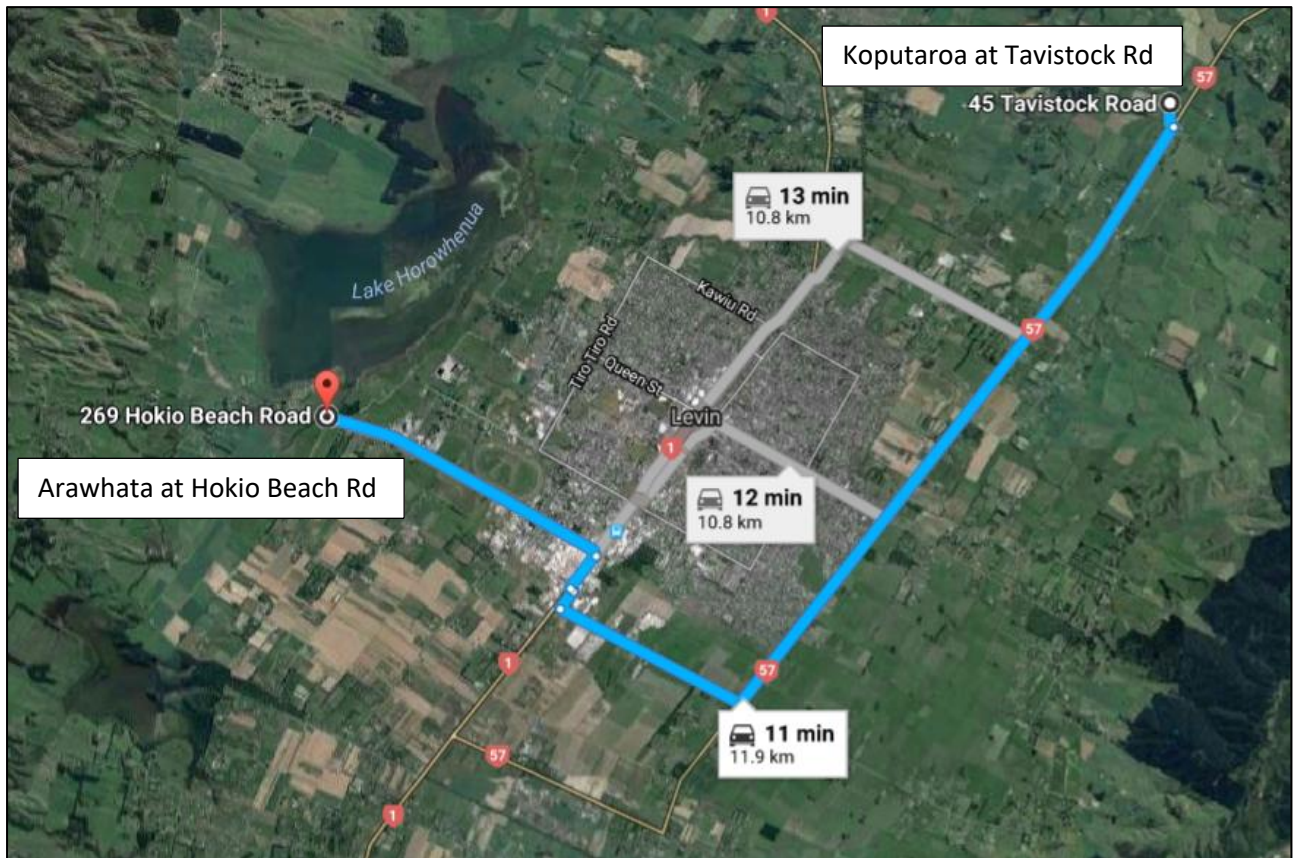


Koputaroa at Tavistock Rd.



Koputaroa Weir at Tavistock Site.

SITE LOCATION MAP – Arawhata at Hokio Beach 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	Stock/Farm Animals	Traffic / Vehicle Movements
Weather/Temperature Extremes	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 the Koputaroa site head back the way you came down Tavistock Rd. Turn right onto SH57 and follow for 6.5km.
- Turn right onto Tararua Rd and follow for about 1.8km. Tararua Rd turns into Cambridge St as it turns to the right. Follow Cambridge St, at the give way sign turn left over the railway tracks and then turn right onto South Rd.
- Follow South Rd for about 400m and then turn left onto Hokio Beach Rd. Follow Hokio Beach Rd for about 2.8km. You will come to small bridge which isn't very distinguishable other than it has silver road barriers on each side of the road. On the left side of the road is the driveway to a dairy farm with the Fonterra Number 45521. Across the road on the right there is a reserve of remnant native forest. Park on the left side of the road out of the way of blocking any of the farm fences. Walk down to the stream and find a suitable riffle to sample.



Arawhata Stream upstream of the road bridge.

SITE LOCATION MAP – Hokio at Lake Outlet



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	Stock/Farm Animals	Traffic / Vehicle Movements
Weather/Temperature Extremes	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 the Arawhata at Hokio Beach Rd continue down Hokio Beach Rd for about 2.6km, then turn right onto Moutere Rd.
- Follow Moutere Rd for about 750m, you will come to a small bridge, just after the bridge there is a driveway to your left. Find somewhere to park in the driveway where you are not blocking any gates or traffic.
- Walk back across the bridge and on the right side of the road there should be a stile for you to climb over the farm fence and a track that follows along the Hokio Stream. Follow the track and look for a suitable riffle to sample. Note: this stream is often soft-bottomed.



Hokio downstream of road bridge.

SITE LOCATION MAP – Patiki at Kawiu Road



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

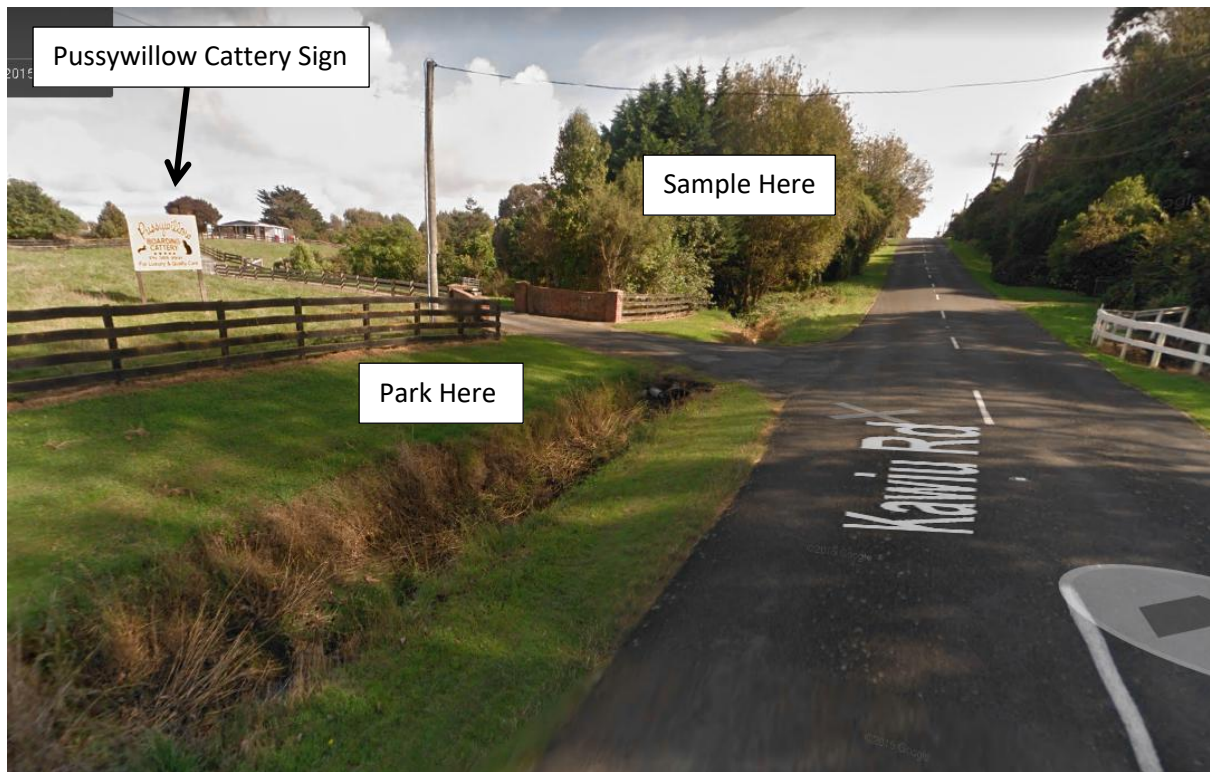
Drowning	UV Radiation	Slippery surfaces	Trip hazards
Difficult entry/exit	Potential for difficult rescue	Weather/Temperature Extremes	Traffic / Vehicle Movements

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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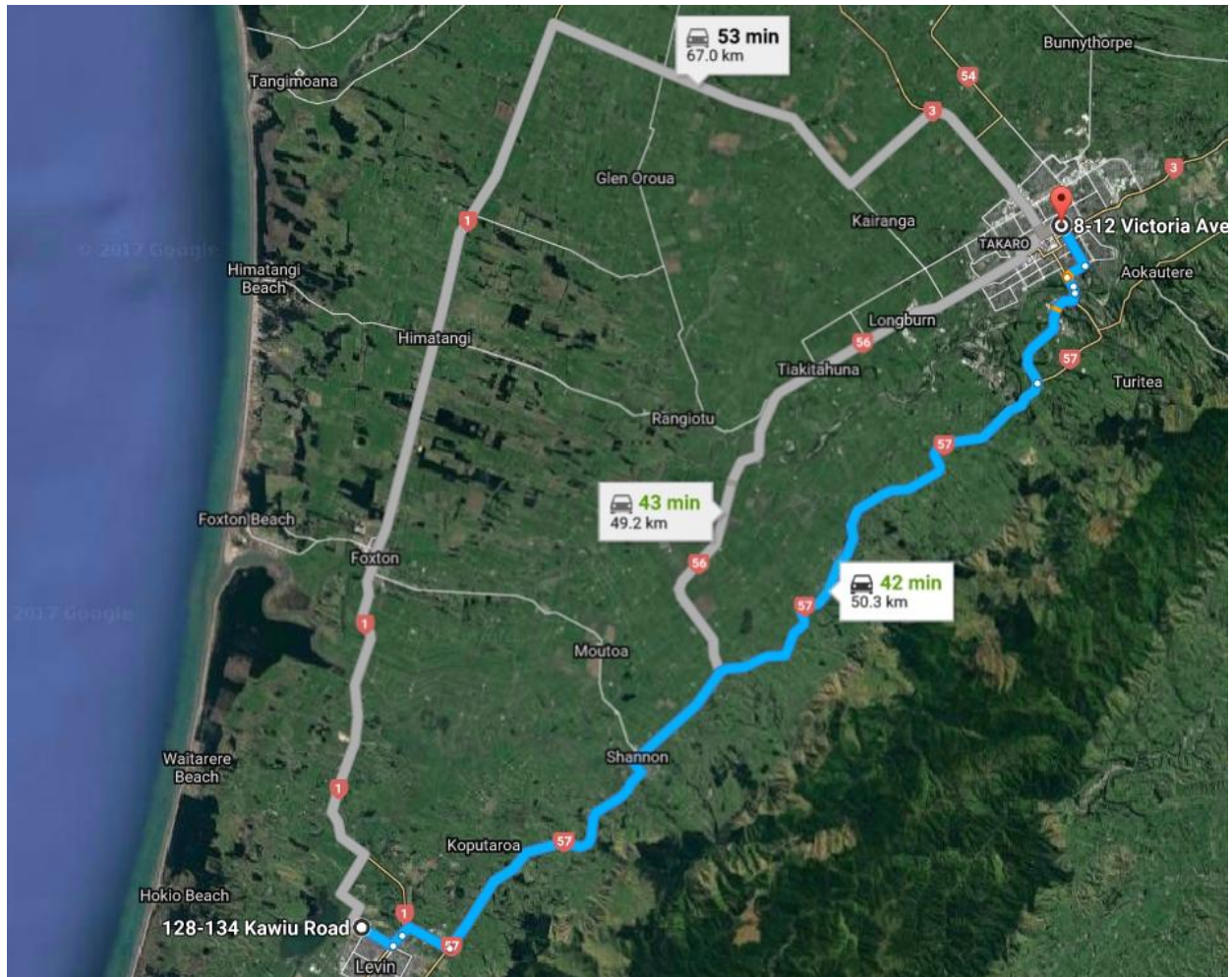
DIRECTIONS:

- From the Hokio site head back the way you came down Moutere Rd and then turn left onto Hokio Beach Rd.
- Follow Hokio Beach Rd for about 3.4km and then turn left onto Hamaria Rd. At the end of Hamaria Rd turn right onto Makomako Rd. Follow for about 1km before turning left onto Tiro Tiro Rd.
- Follow Tiro Tiro Rd for about 2km, then turn left onto Kawiu Rd. Drive about 200m down Kawiu Rd. You will see a sign for Pussywillow Cattery to your left, this building is right next to the Patiki Stream. Find somewhere to park then walk down to the Patiki and find a suitable riffle to sample downstream of the road.



Patiki at Kawiu Rd looking downstream of the road.

RETURNING TO THE PALMERSTON NORTH OFFICE



DIRECTIONS:

- From the Patiki at Kawi Rd site head back up Kawi Rd the way you came until you reach the main road (SH1). Turn left onto SH1.
- Follow SH1 for about 600m and then turn right onto Roslyn Rd. Follow Roslyn Rd for about 2.3km then turn left onto SH57.
- Follow SH57 which eventually turns into Tennent Drive for about 42.4km until you come into Palmerston North.
- Drive over the Fitzherbert Bridge, after about 600m at the first set of lights turn right onto Te Awe Awe St.
- Follow Te Awe Awe St for about 900m then turn left onto Victoria Ave. Drive down Victoria Av until you reach the Palmerston North office on your right.