

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 21
	Hydrology Operations Manual	

Version 1.0 24/05/2021

Invertebrate Monitoring Run Guide

RANGITIKEI

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.

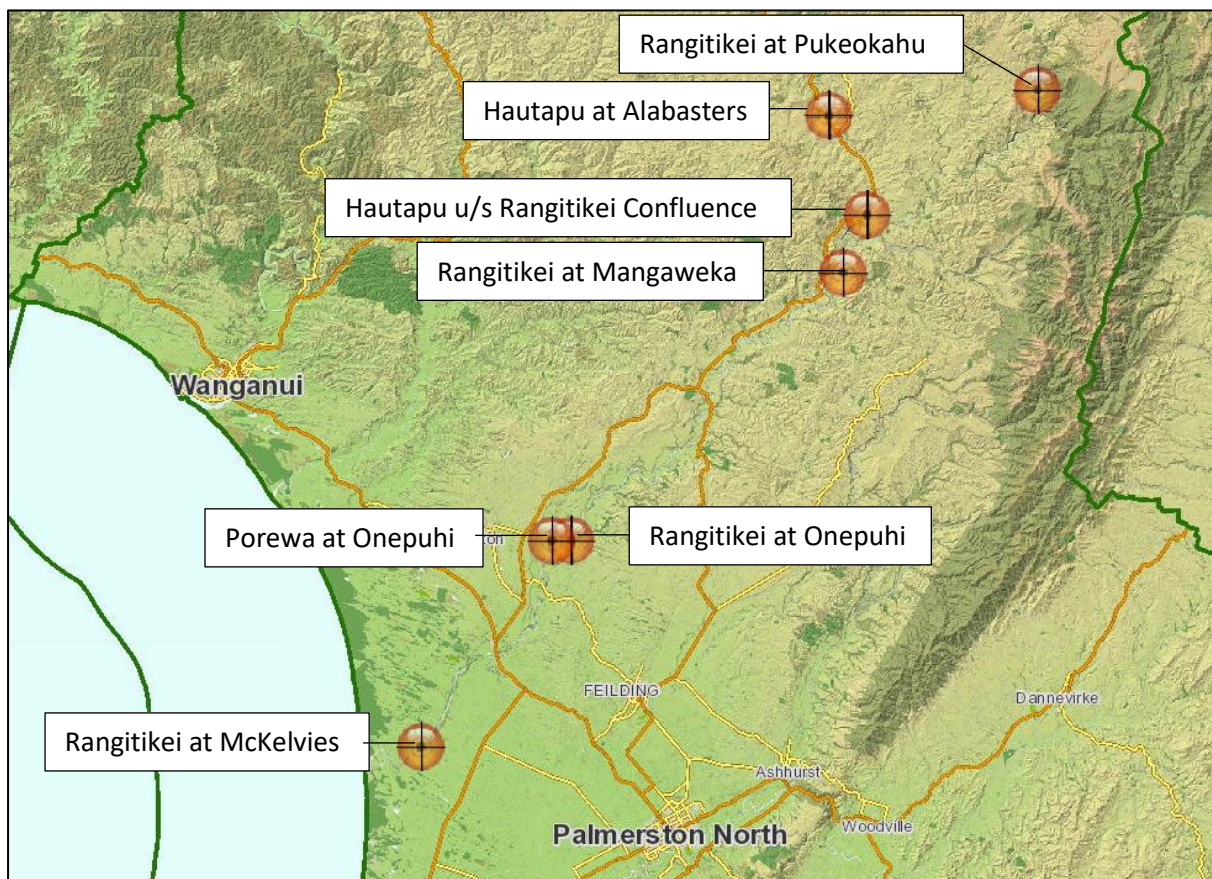
SAMPLING GLOVES	EAR PROTECTION	HARD HAT	SAFETY GLASSES / GOGGLES	WORK BOOTS / WADERS	PROTECTIVE GLOVES	PERSONAL FLOATATION DEVICE (PFD)
						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>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

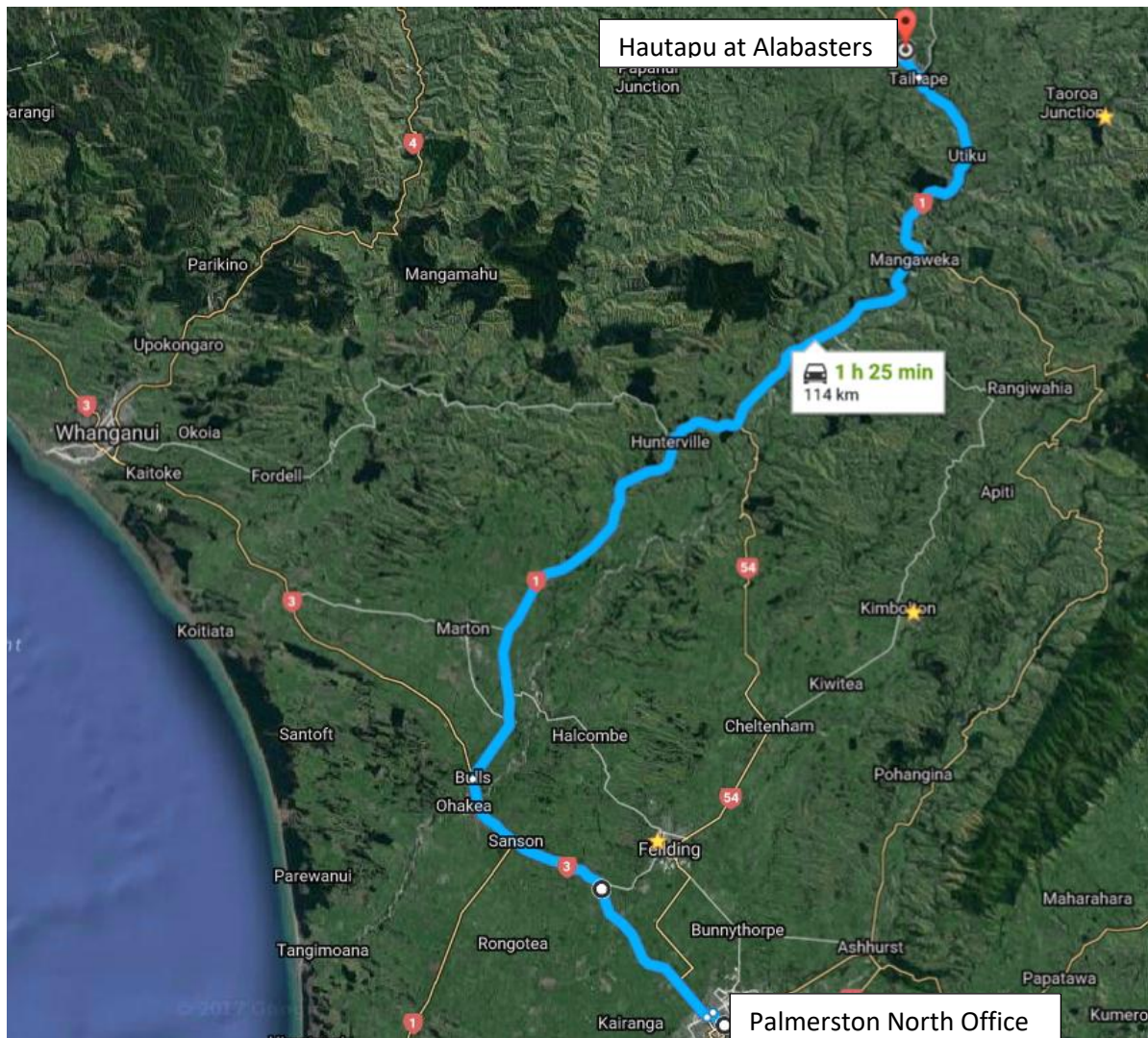
Hilltop Site Name	Easting/Long (NZTM)	Northing/Lat (NZTM)
Hautapu at Alabasters	1838875	5606422
Rangitikei at Pukeokahu	1861284	5609139
Hautapu u/s Rangitikei Confluence	1842980	5595725
Rangitikei at Mangaweka	1840409	5589546
Porewa at Onepuhi	1809179	5560802
Rangitikei at Onepuhi	1811243	5560827
Rangitikei at McKelvies	1795149	5538707



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
------------------	---

SITE LOCATION MAP – Hautapu at Alabasters



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

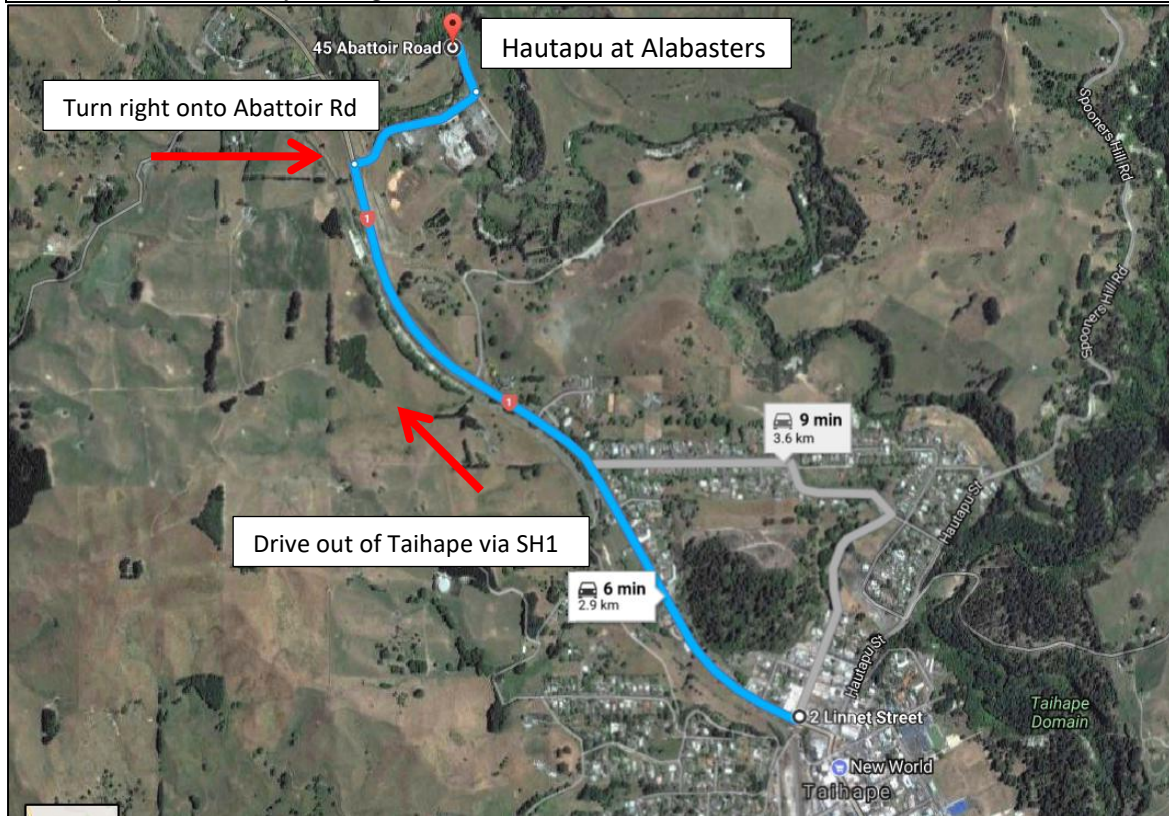
Drowning	UV Radiation	Slippery surfaces	Trip hazards
Difficult entry/exit	Potential for difficult rescue	Stock/Farm Animals	Traffic / Vehicle Movements
Weather/Temperature Extremes	Electrical- low/high voltage		

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	
---------------------------	-----	-------------------------------------	-------------------------------	-----------	-----------	--------	--

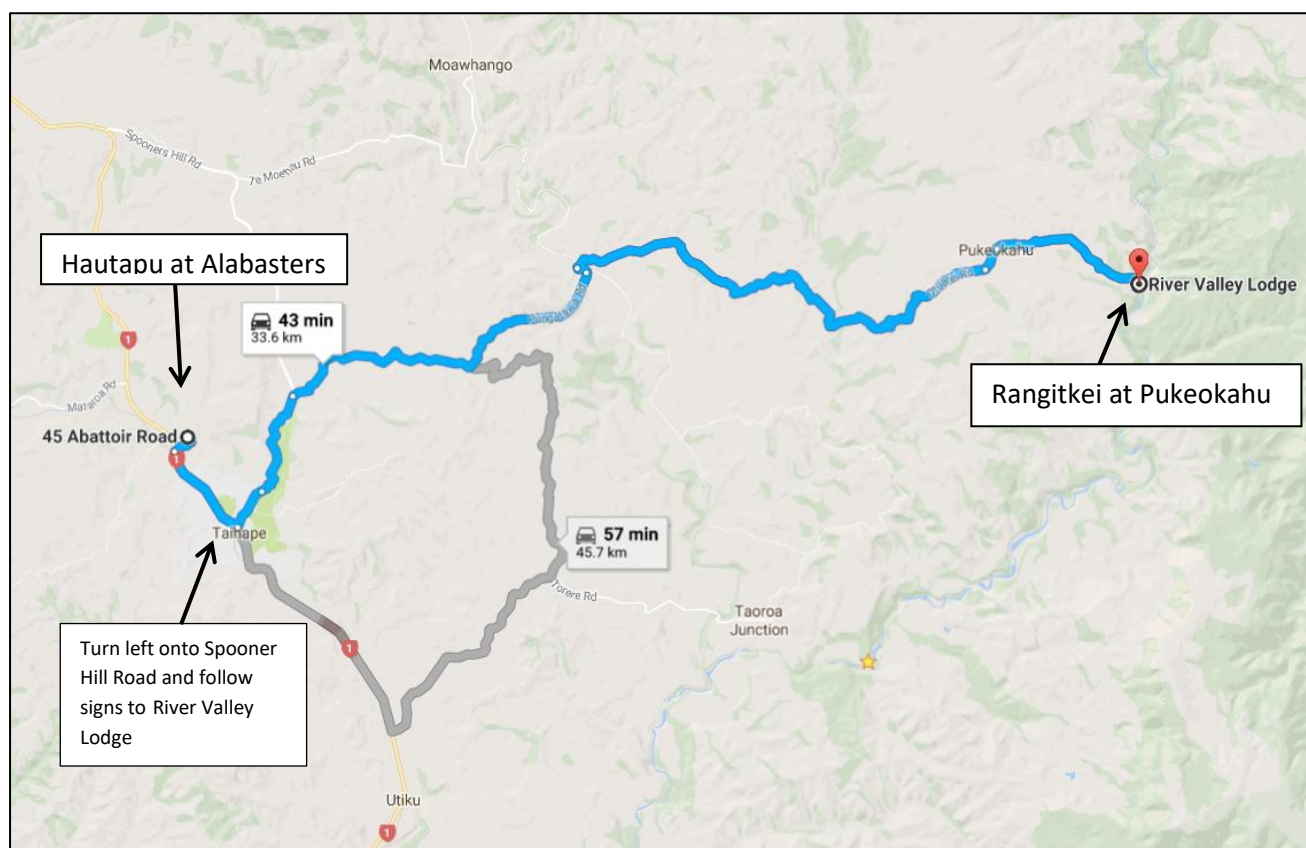
DIRECTIONS:

- From the office head out of Palmerston North via Rangitikei Street (SH3). Stay on SH3 until you come into Bulls and then turn right onto SH1.
- Follow SH1 for about 112km. 2.4km passed Taihape turn right onto Abattoir Rd.
- Follow Abattoir Rd about 600m to a bridge. Immediately after the bridge drive into the paddock on your right and head down to the stream. Find a suitable riffle to sample.



Hautapu at Alabasters upstream of road bridge sample point.

SITE LOCATION MAP – Rangitikei at Pukeokahu



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

Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes	Communication	Remote Area	Potential for difficult rescue
Travel/vehicle movements	Difficult entry/exit		

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

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

DIRECTIONS:

- From Alabasters head back to SH1 and turn left heading back the way you came to Taihape.
- In Taihape you will come to a T-intersection at the town clock tower; turn left onto Hautapu St. From here you can follow the signage to River Valley Lodge all the way to Pukeokahu.
- Hautapu Rd eventually turns into Spooners Hill Rd. About 2.8km out of town there will be an intersection with Pungatawa Rd, turn right here.
- Stay on Pungatawa Road for approximately 9 kilometres. You will come to an intersection with Moawhango Road - turn left here and then take the next right which will lead you onto Otuarei Road. These are both signposted for River Valley Lodge.
- At the end of Otuarei Road you will lead into Pukeokahu Road. A short way on there is another road called Mangahoata Road coming off to the right. There is a set of stock sheds at

the corner of these two roads. Take Mangahoata Road on the right and follow this road to the end. This will lead you to River Valley Lodge where you will do your sampling.

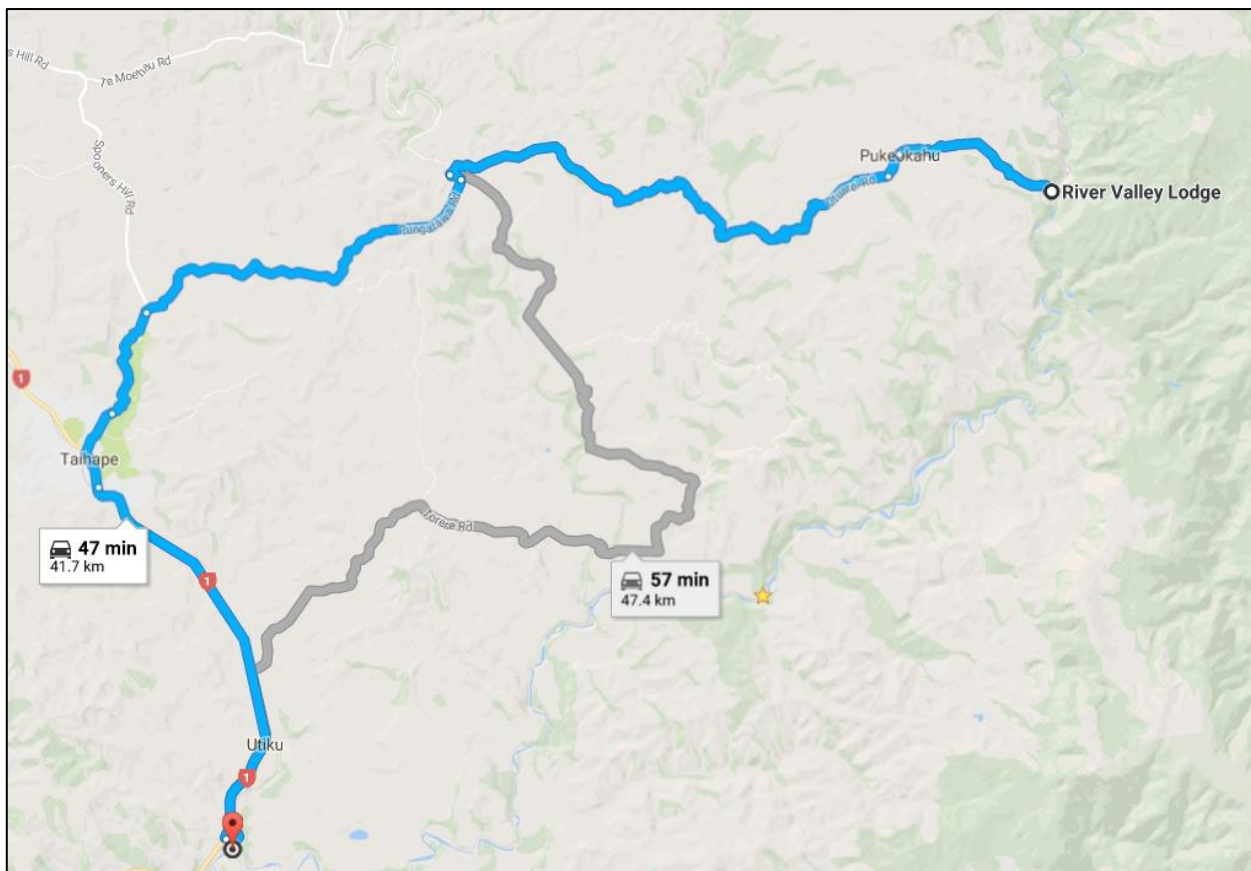
- Drive through the camp ground and down the steep hill (carefully as this can be slippery and is rutted. A low gear is a good idea). You will drive towards the front of the lodge. The track follows around to the left of the lodge. Follow this around the front of the lodge and you will come to an area with a round-a-bout in the middle with buildings all around. Park here somewhere out of the way. As you came around the building there would have been a clear area on your left next to the river. Find a suitable riffle to sample.



Looking downstream from sample point at Pukeokahu.



SITE LOCATION MAP – Hautapu u/s Rangitikei 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
Weather Extremes	Communication	Remote Area	Potential for difficult rescue
Travel/vehicle movements	Difficult entry/exit		

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

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

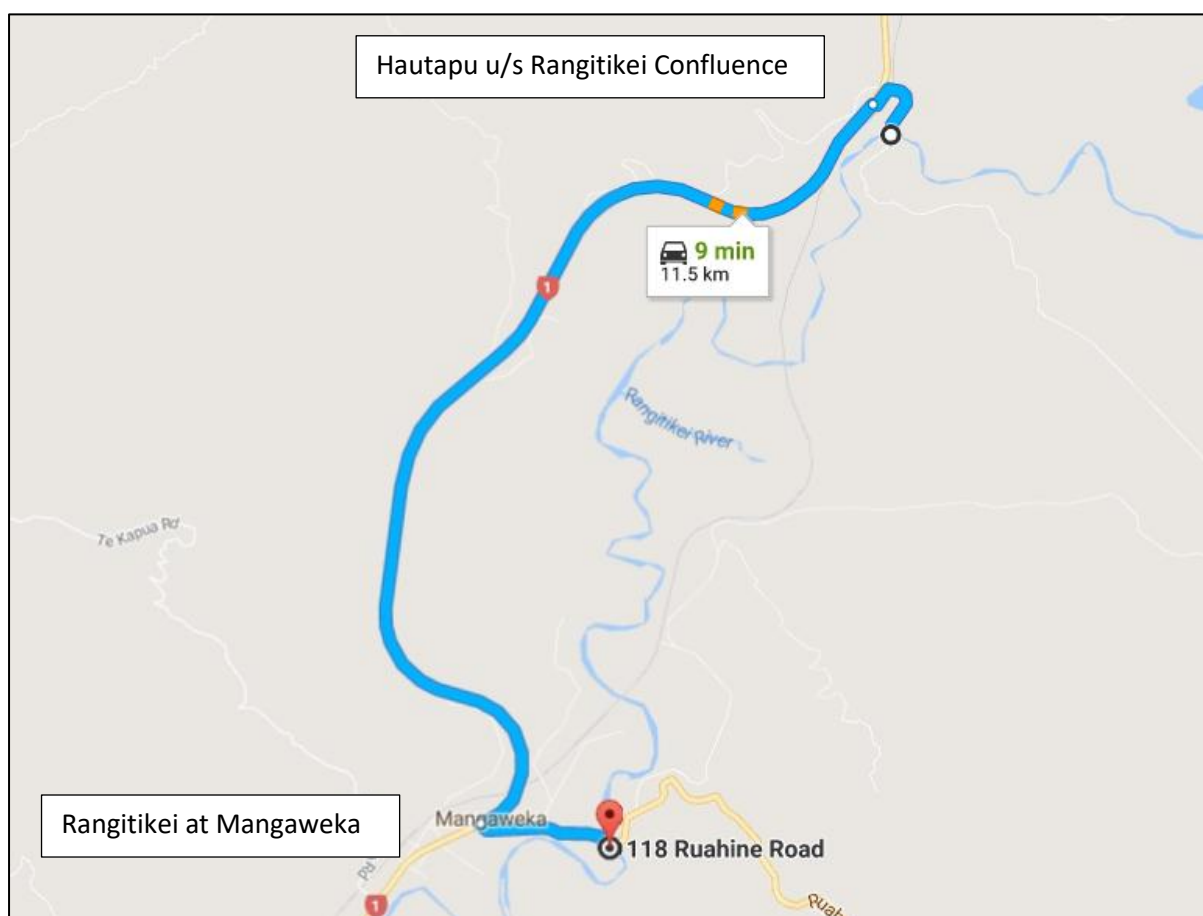
DIRECTIONS:

- From Pukekahu head back the way you came to Taihape back up Mangahoe Rd, then left onto Pukekahu Rd, and then right onto Otuairei Rd. Follow Otuairei Rd for about 13km then turn left onto Pungatawa Rd. Stay on Pungatawa Rd for about 9.2km, then continue left onto Spooners Hill Rd and straight onto Hautapu Rd into Taihape.
- From Taihape head south down SH1 towards Palmerston North. About 9.5km south of Taihape turn left onto Toetoe Rd.
- Drive about 750m down Toetoe Rd; you will come to a large bridge over the Rangitikei River. Just you drive onto the bridge on your right there is a grassy patch where you can park the truck. Drive across the bridge and find a safe place to turn around then come back to this spot and park here.

- Across the road you should find a track (with steps) through the bush that heads down to the Rangitikei River. Follow this track and then follow the Rangitikei River upstream until you come to the Hautapu River.
- Find a suitable riffle to sample.



SITE LOCATION MAP – Rangitikei at Mangaweka



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

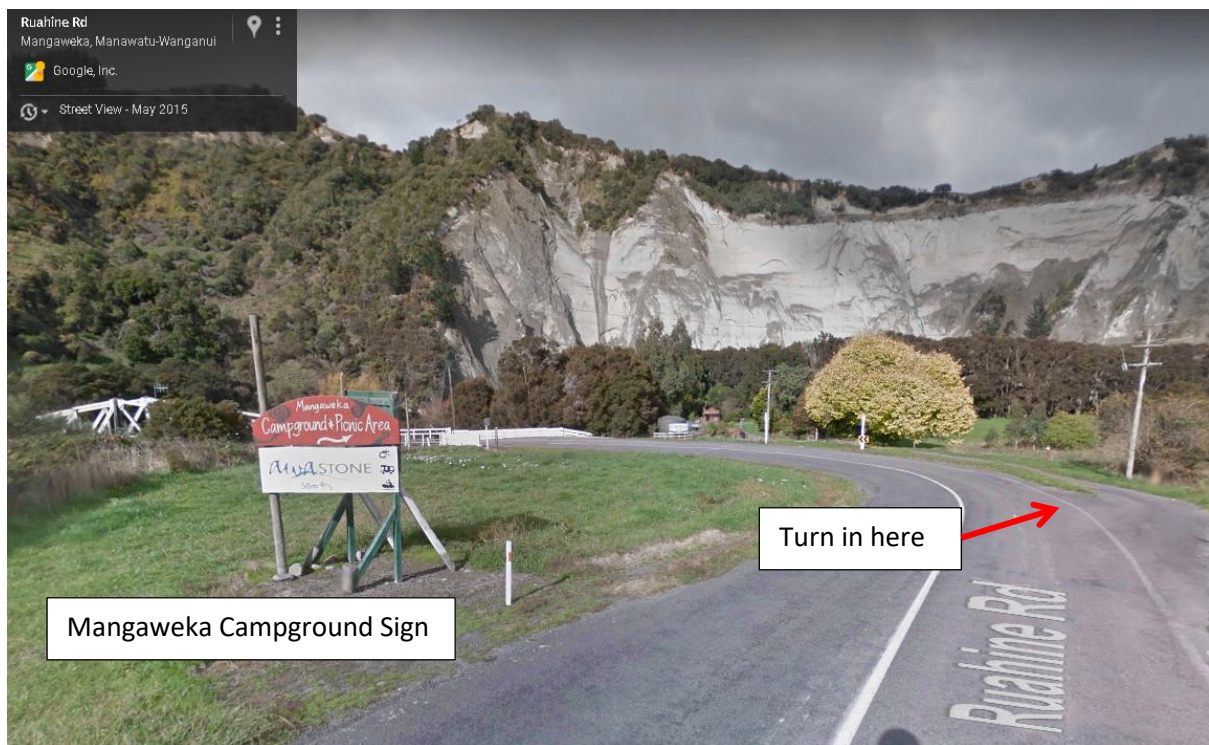
Drowning	UV Radiation	Slippery surfaces	Trip hazards
Weather Extremes	Travel/vehicle movements	Difficult entry/exit	Potential for difficult rescue

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

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

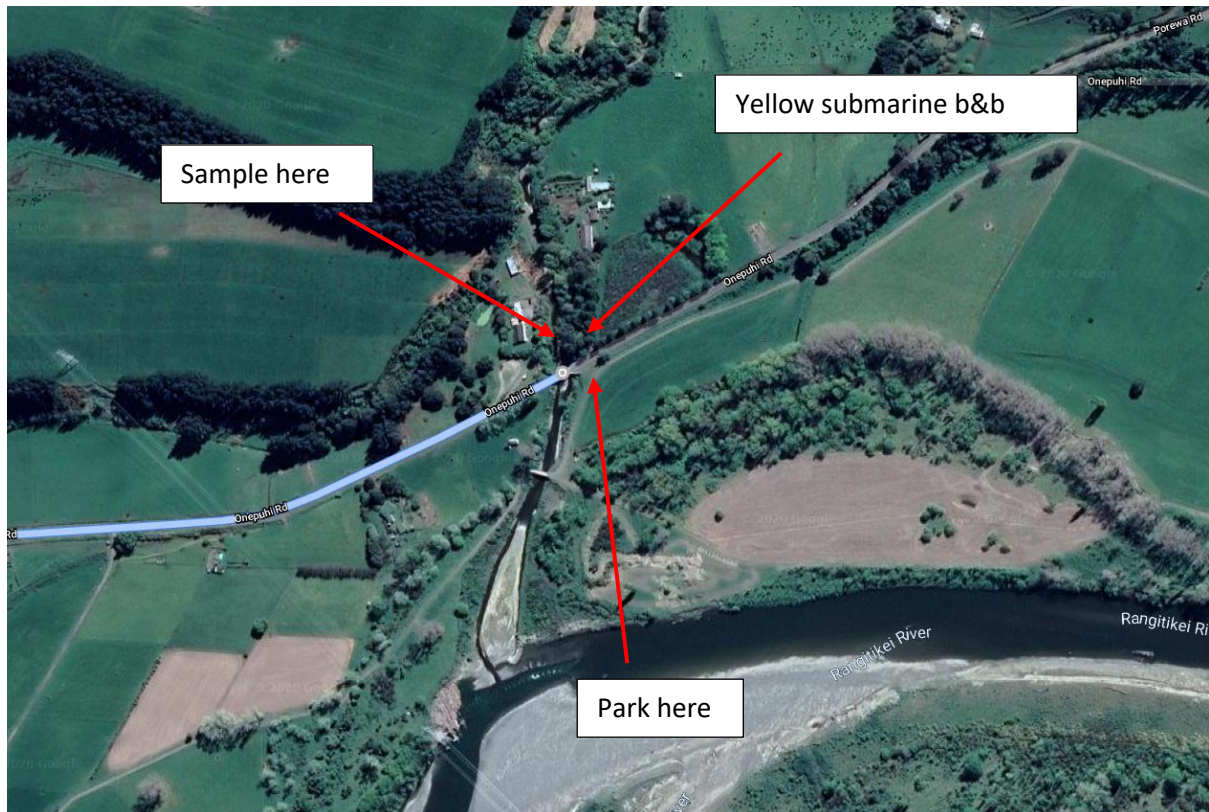
DIRECTIONS:

- From the Hautapu u/s Rangitikei Confluence site head back the way you came up Toe Toe Rd towards SH1. At SH1 turn left heading south.
- Head south on SH1 about 9.5km to Mangaweka. Just before you reach the 70kmph signs coming into Mangaweka there is a road that comes off on the left hand side which is called Ruahine Road. Take this road.
- Drive down the hill for approximately 1 kilometre. You will come to a bridge spanning the Rangitikei River. Just before this on the right hand side you will see the Mangaweka Campground. Drive down through the camp and you will see a track which leads down onto the gravel next to the river.
- Walk down to the river and find a suitable riffle to sample.



Rangitikei at Mangaweka sample point downstream of bridge.

SITE LOCATION MAP – Porewa at Onepuhi



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	Communication- means of	Remote Area	Reduced Visibility

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	
---------------------------	-----	----------------------------------	-------------------------------	-----------	-----------	--------	--

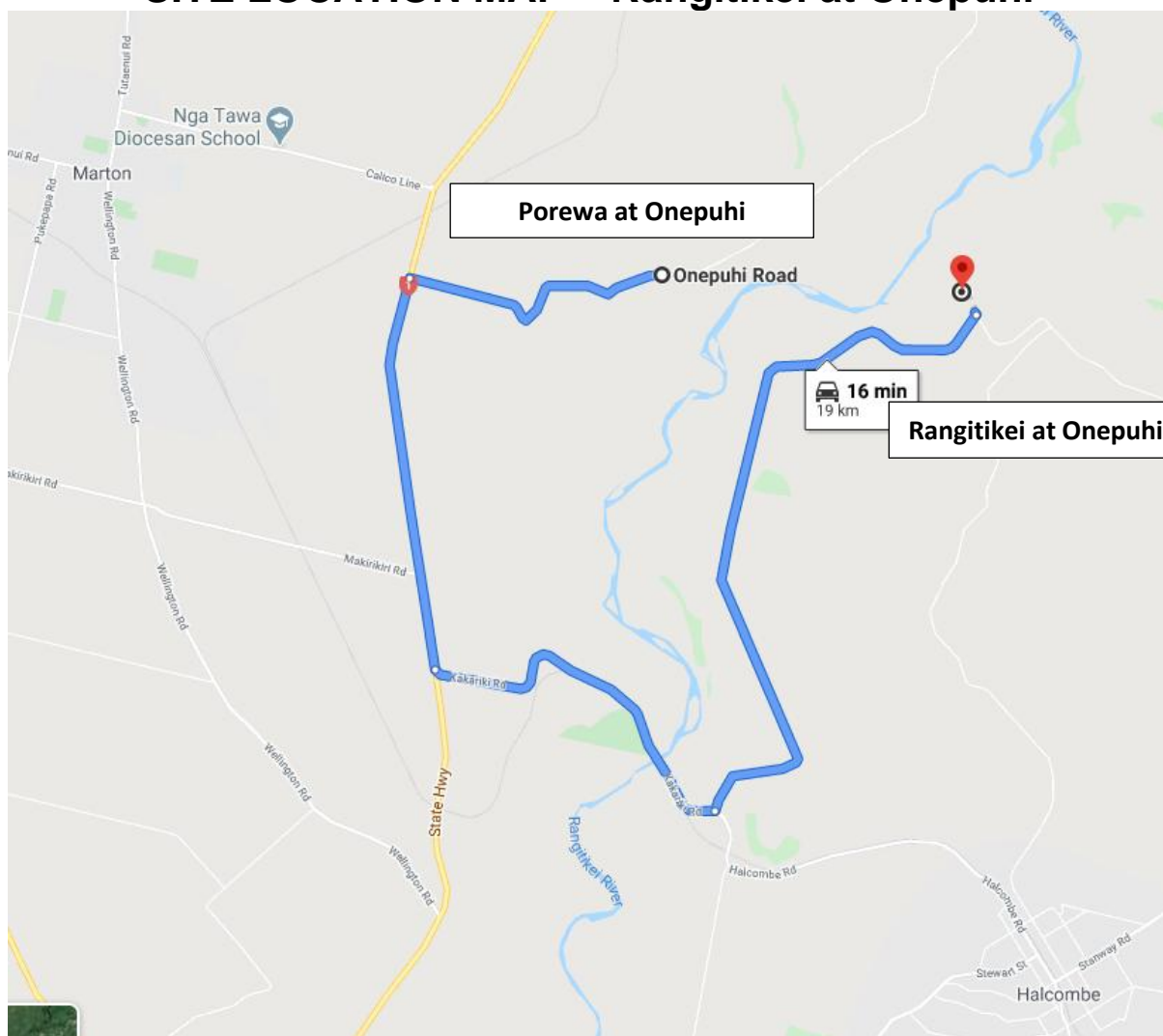
DIRECTIONS:

- From Mangaweka head back the way you came up Ruahine Rd, then turn left onto SH1.
- Follow SH1 for about 41km then turn left onto Porewa Rd.
- At the intersection with Onepuhi Rd, continue straight.
- About 450m down Onepuhi road you will come to a small bridge. Park on the left hand side of the road before the bridge out of the way of traffic. You will see a big yellow submarine on the right hand side of the road
- Walk into the farm paddock on your left and head under the bridge. Find a suitable riffle and sample upstream of the bridge.



Porewa at Onepuhi Sample Point.

SITE LOCATION MAP – Rangitikei at Onepuhi



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	Communication- means of	Remote Area	Reduced Visibility

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	
---------------------------	-----	----------------------------------	-------------------------------	-----------	-----------	--------	--

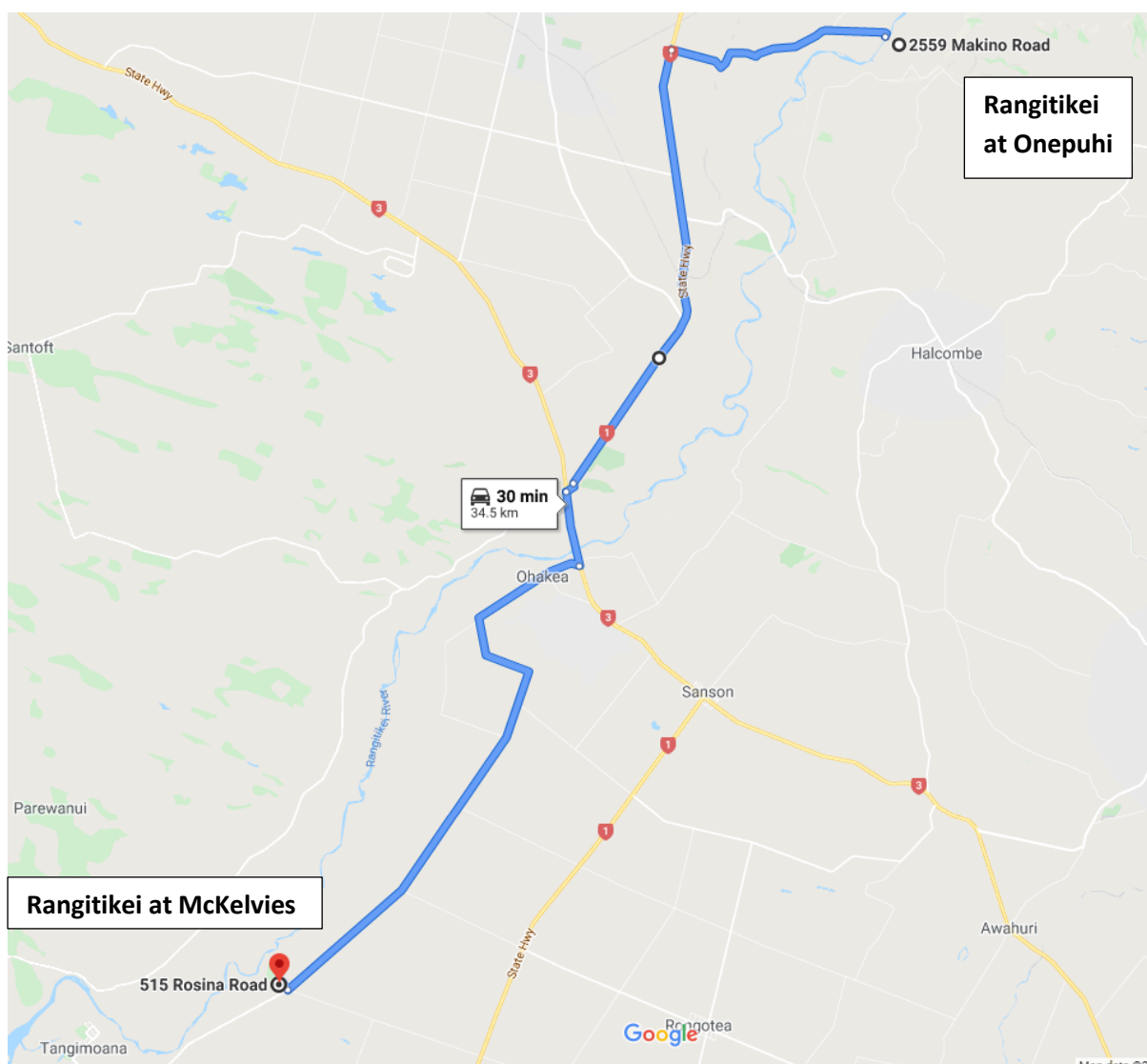
DIRECTIONS:

- From Porewa at Onepuhi continue over the bridge and follow the road until you reach SH1. Turn left here and follow SH1 for approximately 4km.
- Turn left onto Kakariki Rd (Signs for Fielding).

- After approximately 4km you will cross the Rangitikei River. Take the next left onto Pryces Line. Follow this for about 8km and then turn left onto Makino Rd.
- Makino Rd will turn into a gravel road. Follow this until you reach a sharp right hand corner. Park on the grass off the road.
- There is a gate on the left (which hangs out over the bank) go into this paddock and go down to the river. Cross the river and walk upstream. Find a suitable riffle but sample above where the river splits. Note that the image below shows the old river path (google maps hasn't updated)



SITE LOCATION MAP – Rangitikei at McKelvies



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	Communication- means of	Remote Area	Reduced Visibility

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:

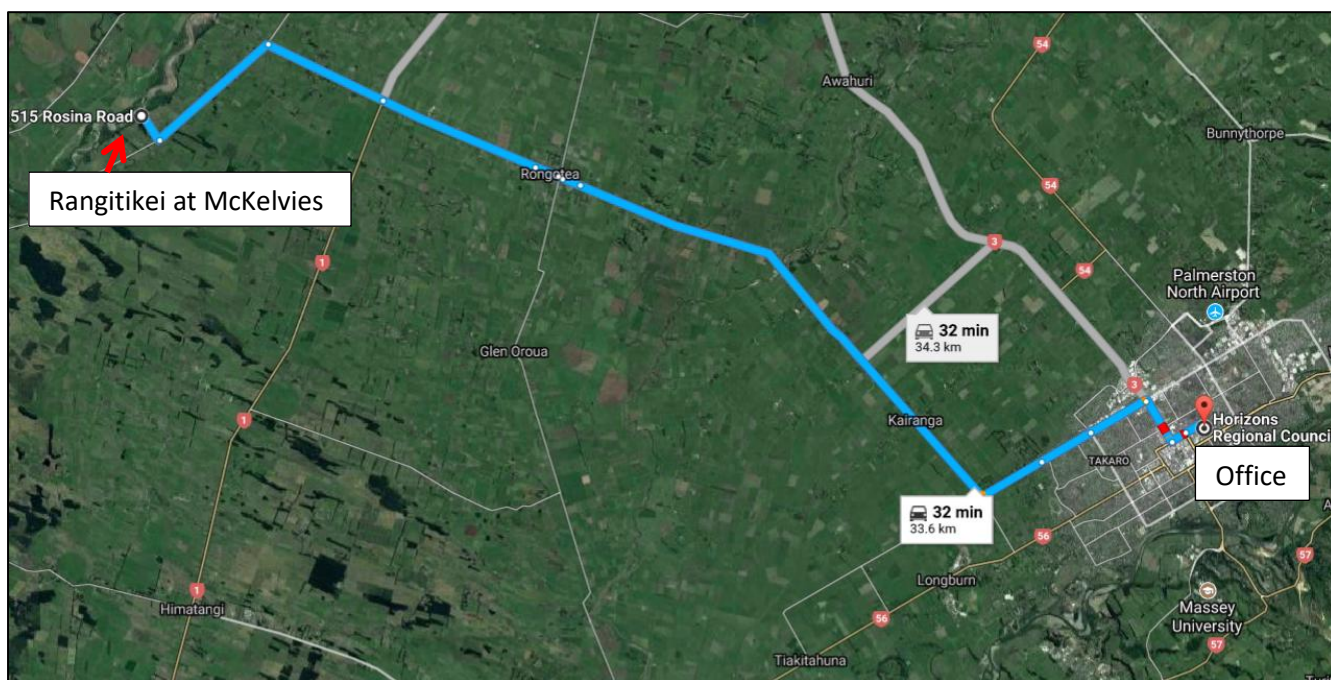
- From Rangitikei at Onepuhi drive back to Pryces Line and turn right onto this road and follow to the end.

- Turn left onto Halcombe Rd and then turn right/continue straight onto Mingaroa Rd to Sanson and follow until you reach SH1 (Mingaroa Rd turns into Wilsons Rd at the intersection with Ngaio Rd).
- Turn left onto SH1 and head towards Sanson. In Sanson, turn right to continue on SH1 (signs for Wellington).
- Continue along SH1 until you reach Campion Rd. Turn right here and follow to the end. At the end turn left onto Tangimoana Rd.
- Follow Tangimoana Road for approximately 4 kilometres until you reach Rosina Road. Turn right onto Rosina Road.
- Rosina Road will turn into a gravelled road. You will go through a gateway and around a left hand turn. The road will split with the right hand track dropping down. Take this right hand track. Stay straight on it and after approximately 100 metres you will come out onto a gravel beach. Park next to the river here somewhere and find a suitable riffle to sample.



Rangitikei at McKelvies sample spot.

RETURNING TO THE PALMERSTON NORTH OFFICE



DIRECTIONS:

- From Rangitikei at McKelvies head back to Rosina Rd and drive up Rosina Rd, then turn left onto Tangimoana Rd.
- Stay on Tangimoana Rd for about 3.7km, then turn right onto Campion Rd.
- Follow Campion Rd for about 3.3km to the intersection with SH1, then drive on straight across the intersection onto Longburn-Rongotea Rd.
- Drive down Longburn-Rongotea Rd, you will come to an intersection with Number 1 Line just before you drive onto an overpass bridge (approximately a 25km drive). Turn left onto Number 1 Line.
- Number 1 Line eventually turns into Tremain Ave. You will come to a set of lights at an intersection with Rangitikei St, turn right onto Rangitikei St.
- Drive down Rangitikei St, then turn left onto Grey St.
- Turn off Grey St onto Victoria Ave and drive until you reach the Horizons Office.