Water Quality Monitoring Run Guide

Lower Whanganui

POINT DISCHARGE
Monthly 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	☐	Suspended loads	☐	Noise – plant and equipment	☐
Difficult entry/exit	☐	Falling objects	☐	Communication – means of	☐
Oxygen deficiency/excess	☐	Working near cranes and crane runways	☐	Remote area	☐
Poisonous fumes/gas	☐	Live rails-gantry cranes	☐	Temperature extremes	☐
Explosive gas	☐	Trip hazards	☐	Reduced visibility	☐
Flammable materials	☐	Slippery surfaces	☐	Unauthorized persons	☐
Combustible materials	☐	Manual handling	☐	High pressure water	☐
Hazardous substances	☐	Sharp materials	☐	Vacuum	☐
Drowning	☐	Line of fire	☐	Air emissions – dust, fumes	☐
Engulfment	☐	Pressurized fluids	☐	General waste	☐
UV Radiation	☐	Pressurized air/gas	☐	Hazardous waste	☐
Electrical – low /high voltage	☐	Traffic / vehicle movements	☐	Hydrocarbon / chemical spill	☐
Multiple electrical feeds	☐	Machinery – mobile plant	☐	Soil disturbance/erosion	☐
Working at height	☐	Moving parts	☐	Habitat disruption	☐
Ladders	☐	Chemical reaction (Pyrophoric iron)	☐	Lighting	☐
Elevated work platforms	☐	Transport of hazardous substances	☐	Weather extremes	☐
Potential for difficult rescue	☐	Stock/Farm Animals	☐		

Required PPE– 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	PROTECTIVE GLOVES	PERSONAL FLOATATION DEVICE (PFD)
						
☐	☐	☐	☐	☒	☐	☐

HI VIZ	SAFETY HARNESS	WADERS	HAND SANITISER	VEHICLE BEACON	PERSONAL LOCATOR BEACON	
						
☐	☐	☒	☒	☒	☒	

Known Hazard	Significant		Can it be Eliminated		Can it be Minimised		Method of control
	Yes	No	Yes	No	Yes	No	
							ENTER KNOWN HAZARDS AND CONTROLS HERE TESE SHOULD BE 'KNOWN' ISSUES WITH THE RUN/SITES WITH APPROPRIATE METHODS STATED
Trip Hazards	✓			✓	✓		Prior to sampling staff must check area is clear of any items that pose a risk. If there is any these 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 – STP PONDS	✓		✓		✓		Pond edges and river banks can be slippery at any time. Note that sampling from the pond edge is note required at Dannevirke WWTP. PFD's must be worn by staff. Vehicles must be driven a sensible distance from any pond edges. [HMP18 & 30]
Slippery Surfaces – RIVER ACCESS	✓			✓	✓		River banks can be slippery at any time. Care should be taken in all conditions. PFD's must be available to staff for use is deemed appropriate. [HMP18]
Drowning - STP PONDS	✓		✓		✓		The Ratana STP pond can be deep, full of sediments, and have operating equipment on/within them. Horizons staff do not need to sample from the WWTP pond/Pond edge. [HMP18 & 30]
Drowning	✓			✓	✓		Staff should be trained in alignment with HRC's training requirements. PFD's must be available to staff for use is deemed appropriate [HMP18]
Machinery – mobile plant	✓			✓	✓		For sample sites within an operating waste water treatment plant, plant and machinery may be on-site during sampling. Staff to wear appropriate PPE, obey on site signage and instruction, and give way to all operational traffic.
Machinery – Farm	✓			✓	✓		For sample sites within/on an farm plant and machinery may be on-site during sampling. Staff to wear appropriate PPE, obey on site signage and instruction, and give way to all farm traffic.
Traffic Vehicle movements	✓			✓	✓		Sample site is within an operating waste water treatment plant with council and contractor vehicles liable to be present at any time. Staff to obey on site signage and instruction. HRC Vehicle to be parked in a safe and appropriate location. [HMP 16] [HMP 20]
Noise – plant and equipment	✓			✓	✓		WWTP and Farm operation can create high levels of noise. Ear protection to be carried

Known Hazard	Significant		Can it be Eliminated		Can it be Minimised		Method of control
	Yes	No	Yes	No	Yes	No	
							in HRC vehicle at all times. Ear protection to be worn when machinery is running [HMP 4]
Hazardous Waste – treated Effluent	✓			✓	✓		Sampling activities require the collection of a sample of treated effluent. Staff must wear sampling gloves, eye protection and have access to anti-bacterial hand-gel to sample. Hepatitis B vaccinations are offered by HRC [HMP 30] [HMP 35]
General Waste		✓		✓	✓		General waste can be stored on site depending on operating activity. Sample staff have no need to interact with any waste. All waste created by HRC staff to be taken with them.
UV Radiation	✓			✓	✓		Horizons provide sunscreen and hats.
Manual Handling	✓			✓	✓		There should be no need for sample staff to move any equipment etc. in order to carry out sampling activities. Sampling activities require the collection of a sample of treated effluent. Staff must wear sampling gloves, eye protection and have access to anti-bacterial hand-gel to sample. Hepatitis B vaccinations are offered by HRC. [HMP 30] [HMP 35]
Electrical – low /high voltage	✓			✓	✓		Sampling activity does not require any interaction with live circuitry or equipment. Staff should check sample area is clear of any hazards (i.e. loose cables, live equipment etc.) before sampling. If access/safety is considered compromised sampling is aborted. [HMP 23]
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]
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 of additional and appropriate clothing.
Temperature Extremes - Hypothermia: following emersion	✓			✓	✓		Staff must have access to suitable PPE and spare clothing within their vehicle. [HMP18] [HMP18]
Traffic Vehicle movements	✓			✓	✓		Sample site requires parking beside a main road. The vehicle must be parked as far off of the road surface as safe and practicable to do so. Use of hazards lights must be considered. Hi-vis clothing must be worn. [HMP 16] [HMP 20]. Due to this Kai Iwi at Handley Road is not to be sampled

Known Hazard	Significant		Can it be Eliminated		Can it be Minimised		Method of control
	Yes	No	Yes	No	Yes	No	
Difficult access egress to sample site	✓			✓	✓		**WHANGANUI AT TE REWA**: Access to ESG is difficult in wet condition. Care is required at all times. In high flow conditions, bad weather (i.e. conditions under foot) access may not be safe and therefore sampling should be taken at the alternative location downstream
No cell phone network	✓			✓	✓		**WHANGANUI AT TE REWA** –no cellular network at site – take EPIRB.
Working from Height	✓			✓	✓		**TURAKINA AT O'NEILLS BRIDGE** – Water level reading (using a laser level) is taken from the bridge at the bracket at the radar. Staff are to only record from the bracket and must remain behind the railings at all times. In difficult conditions (i.e. high wind) the risk of undertaking this activity should be considered before being started. [HMP 7] **KAI IWI AT HANDLEY ROAD** – sample from top of ladder on secure footing using a sample pole and clarity tube. [HMP 7]

Site Information

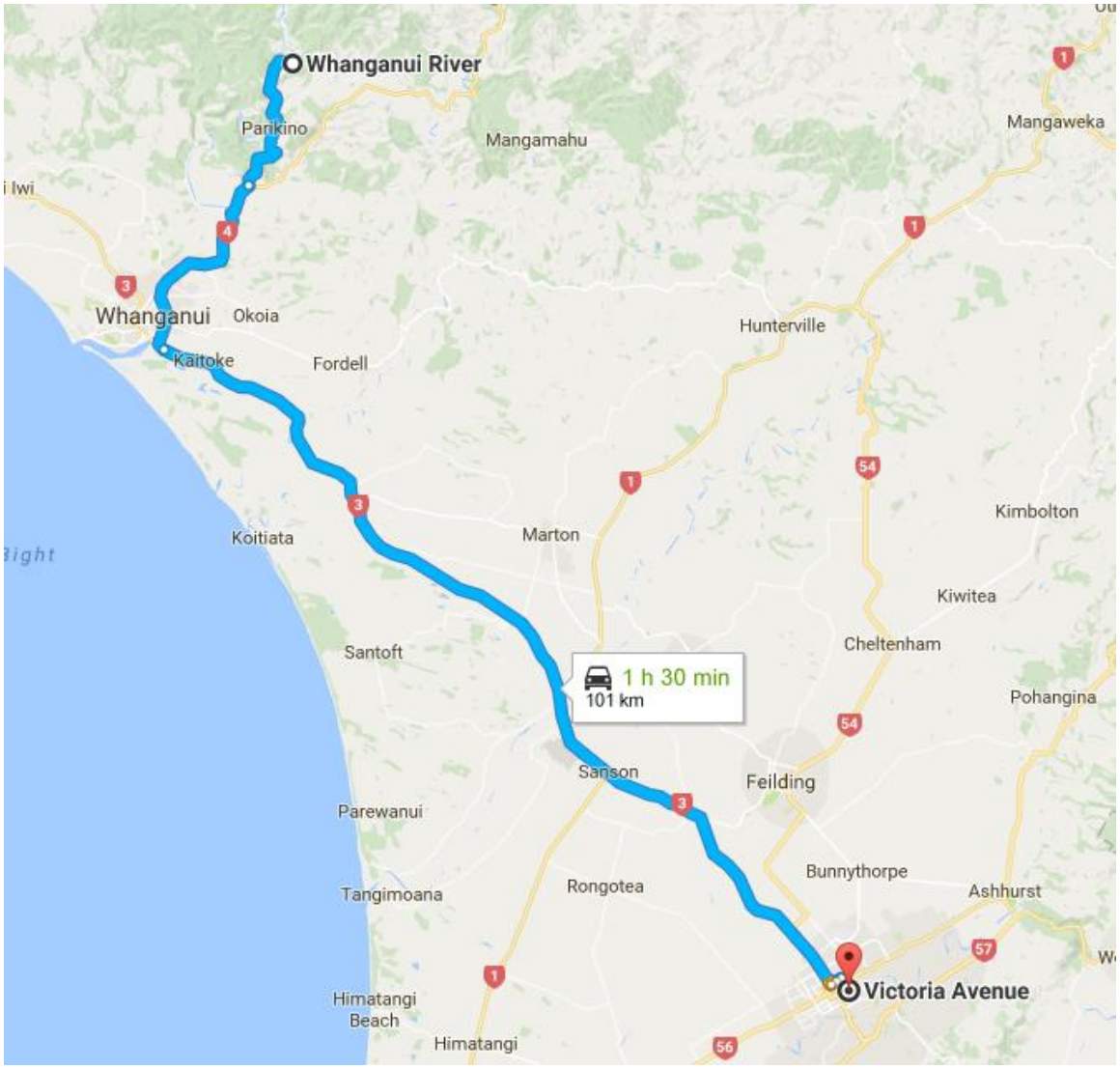
Hilltop Site Name	Easting/Longitude		Northing/Lat	Comments
Whanganui at Te Rewa	NZMG:	2695130	6157357	Hydro site
	NZTM:	1785092	5595659	
	WGS84:	175.161023	-39.768892	
Kai Iwi at Handley Road	NZMG:	2672772	6145662	
	NZTM:	1762735	5583653	
	WGS84:	174.903041	-39.878867	
Mowhanau Stream at Footbridge	NZMG:	2672650	6144924	
	NZTM:	1762614	5583215	
	WGS84:	174.901809	-39.885542	
Ratana STP at Secondary oxpond waste	NZMG:	2695015	6127270	
	NZTM:	1784987	55655567	
	WGS84:	175.168325	-40.039856	
Unnamed Trib of Waipu at us Ratana STP	NZMG:	2695031	6127264	
	NZTM:	1785004	5565560	
	WGS84:	175.168514	-40.039905	
Unnamed Trib of Waipu at ds Ratana STP	NZMG:	2694983	6127278	
	NZTM:	1784956	5565574	
	WGS84:	175.167948	-40.039792	
Turakina at O'Neills Bridge	NZMG:	2700599	6128713	Hydro site
	NZTM:	1790573	5567012	
	WGS84:	175.233315	-40.025605	

Contact details can be found here.

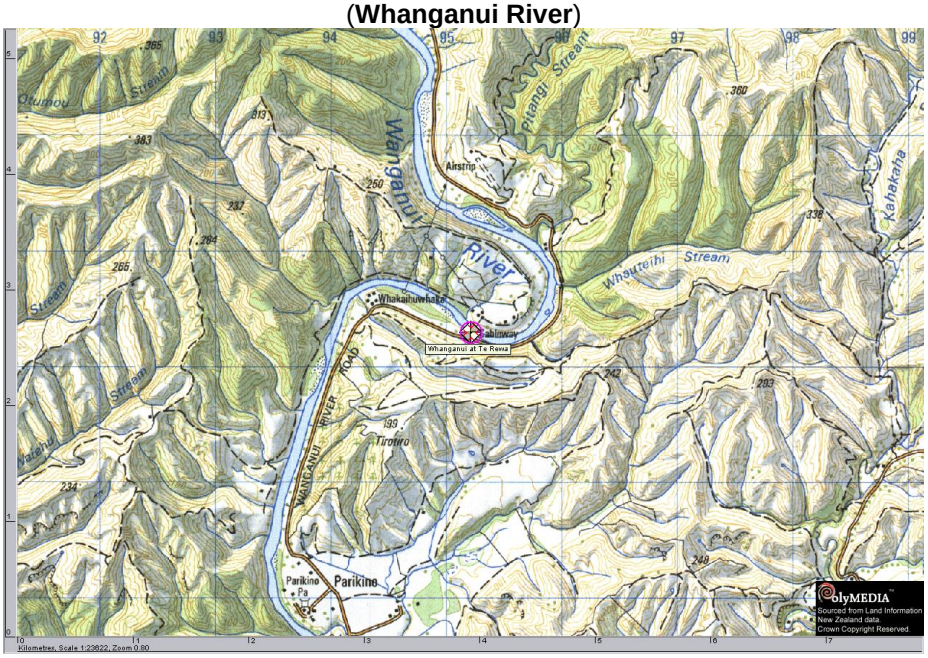
Equipment Required

Sample Bottles	**EIGHT (8) sample bottle sets - refer to http://tqm.horizons.govt.nz/Hydrology/SOPs/cd_om_15.4_Appendix_4_ELS%20Bottle%20Guide.xlsx**
Sample numbers	**EIGHT (8)**
Equipment	• Handheld multi-parameter instrument (calibrated) • Black disc, viewer, tape measure • Clarity Tube • Sampling pole • Chilly bins and ice-packs • Field sampling books • Sampling ID labels (created using Hilltop Sampler) • Use gloves for wastewater and effluent samples
Miscellaneous	• Access to Ratana STP is via a '636' padlock • Mowhanau Stream at Footbridge Sampling site – low velocity and fine sediment, consider use of clarity tube and sample pole. • Ratana STP at Secondary Oxpond Waste – discharge pipe can get overgrown and easy to miss • Unnamed Trib of Waipu Upstream Ratana STP – Can dry up in summer, typically not enough depth for use of Black Disc; consider use of clarity tube, • Unnamed Trib of Waipu Downstream Ratana STP – Always flows even over low flow conditions, majority of flow is made up of treated effluent, wear gloves. Typically too low for Black disc - consider use of clarity tube
Additional Comments/ Instructions	• Kai Iwi at Handley Rd - **DUE TO H&S ISSUES** Sampling is **NOT** required at this site - check with Discharge portfolio holder prior to undertaking the sample run to confirm whether site is still unsafe • Turakina at O'Neill's Bridge access the river from the true right hand bank. Sample on a 15 minute punch.

SITE LOCATION MAP – WHANGANUI AT TE REWA



Overview map from the Palmerston North office (**Victoria Avenue**) to Whangnaui at Te Rewa (**Whanganui River**)



Whanganui at Te Rewa

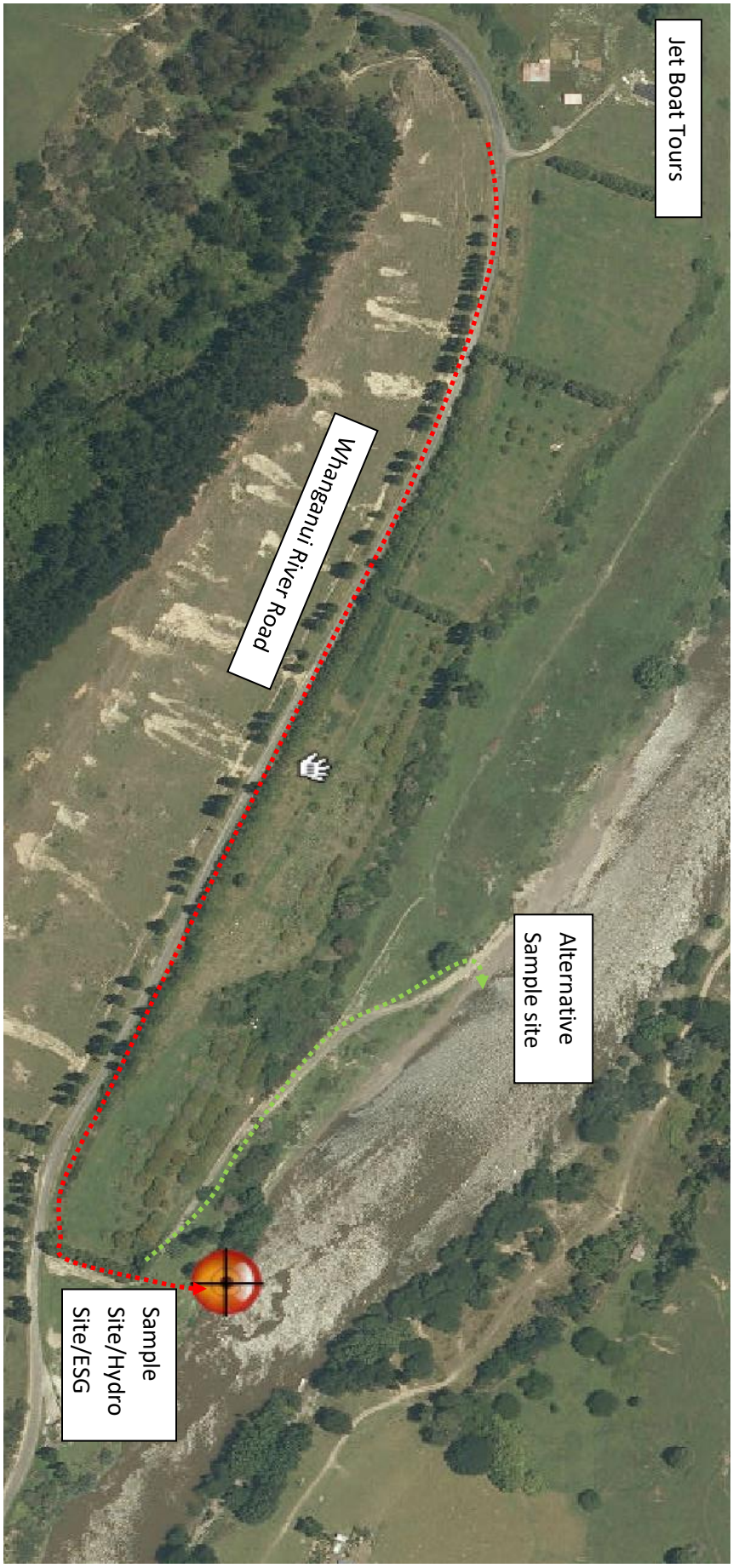
DIRECTIONS:

- From the Palmerston North office (A – in above overview map) Head toward Whanganui on SH3.
- Turn right (3rd exit) onto SH4 at the roundabout immediately before the Whanganui Bridge.
- 
- Continue on SH4 through Upokongaro.
- After approx. 16km turn left onto the Whanganui River road.
- 
- Approx. 750m after the house on your left with the Jet boat Tours signage and just past the orchard, turn left into an access track to get to the site.

ACCESS:

- Access to the hydro site is the track alongside the wind break trees just past the orchard, just around the corner you'll find a white shed surrounded by a fence.
- Sample at the ESG down the bank (steep – take care)
- If conditions are unsafe follow the track (green arrow) to a shingle beach downstream)
- If performing a site inspection, be sure to select "Whanganui at Te Rewa" and **NOT the rainfall site – even if inspecting the rainfall**

Whanganui at Te Rewa –view of access track looking toward direction of travel (i.e. Whanganui)


Jet Boat Tours
Whanganui River Road
Alternative Sample site
Sample Site/Hydro Site/ESG

Whanganui at Te Rewa - steps leading down to the ESG's option 1 sample point

Whanganui at Te Rewa - option 2 sample point looking U/S

SITE LOCATION MAP – KAI IWI AT HANDLEY ROAD

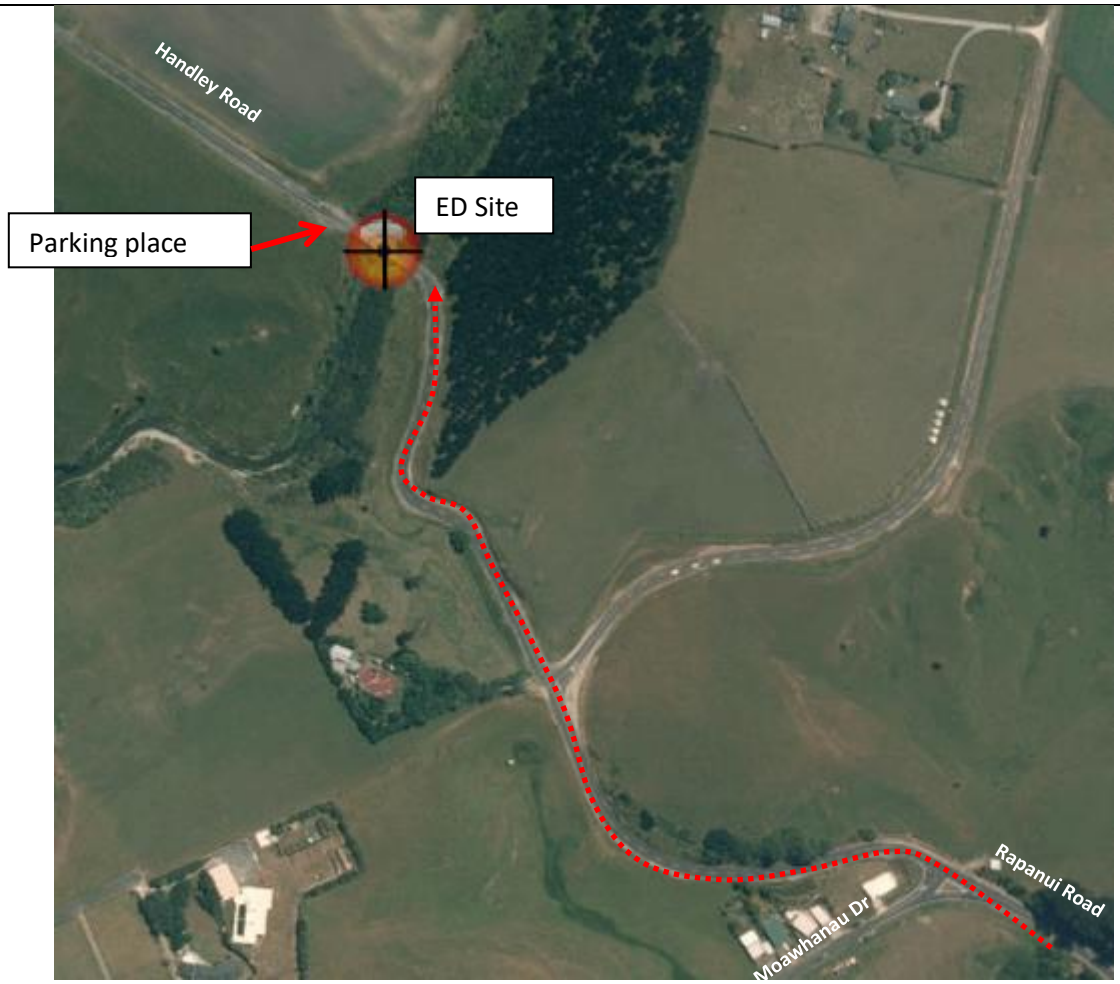
Kai Iwi at Handley Road – Not Currently Sampled

DIRECTIONS:

- From Te Rewa drive back to Wanganui on SH4
- Continue along the Dublin St Bridge, turn right at the roundabout, cross the bridge and through the next roundabout to stay on Dublin St all the way to the intersection with Victoria Ave.
- Turn right and drive up to the top of Victoria Ave and cross the railway lines onto SH3.
- Continue past Virginia Lake and turn left at the first intersection out of town onto Rapanui Rd intersection is opposite café and garage).
- Drive for 9.5km. At the turning for Kai Iwi Beach continue straight – Rapanui Road becomes Handley Road.

ACCESS:

- Drive over the bridge and then turn around in a paddock entrance to your right
- Driving back toward the bridge there is a parking area to your right immediately before the bridge, get off the road as much as possible.
- Wear hi vis and PPE suitable for working on the roadside
- Cross the bridge and access the site via the fence to your left.
- Steps on the bank at the bridge take you to the site – caution when in wet conditions
- Sample from top of ladder using sample pole. Use a clarity tube

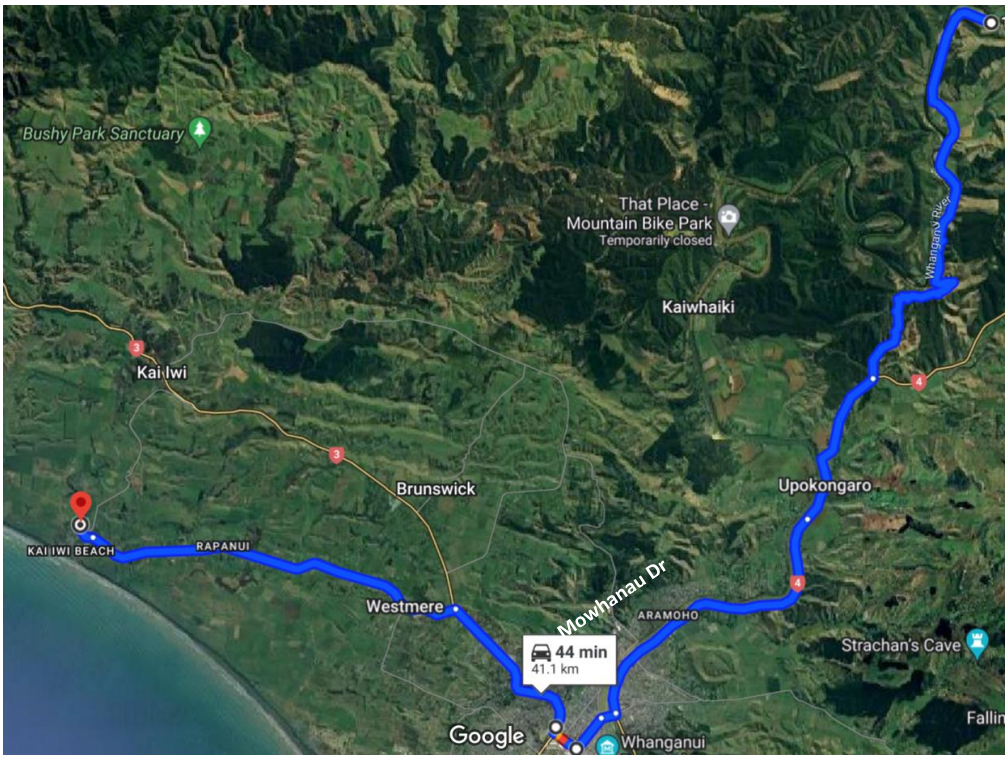


Kai Iwi Hydro Site Location Map

Parking area at Kai Iwi Hydro Site

Kai Iwi Hydro Site – view of ESG from bank at access ladder

SITE LOCATION MAP – MOWHANAU STREAM AT FOOTBRIDGE



Mowhanau Stream at Footbridge

DIRECTIONS:

- From the Te Rewa site head back to SH4 along the Whanganui River Road.
- Take a right at the Dublin Street bridge roundabout taking you across the bridge.
- Continue over the roundabout on Dublin Street, stay on Dublin Street until the lights at Victoria Avenue.
- Turn right onto Victoria Avenue. Follow this over the Railway line and continue up the hill, the road is now Great North Road (SH3).
- Continue on SH3 through Wanganui.
- Once through the town turn left onto Rapanui Road (opposite the garage and café).
- After 9.5km; at the Mowhanau Drive-Rapanui Road junction take a left onto Moawhanau Drive and follow this road through the township toward the coast at Kai Iwi Beach
- Turn left into Tangi Street and drop down the hill and park up opposite the walk track to the Moawhanau footbridge.

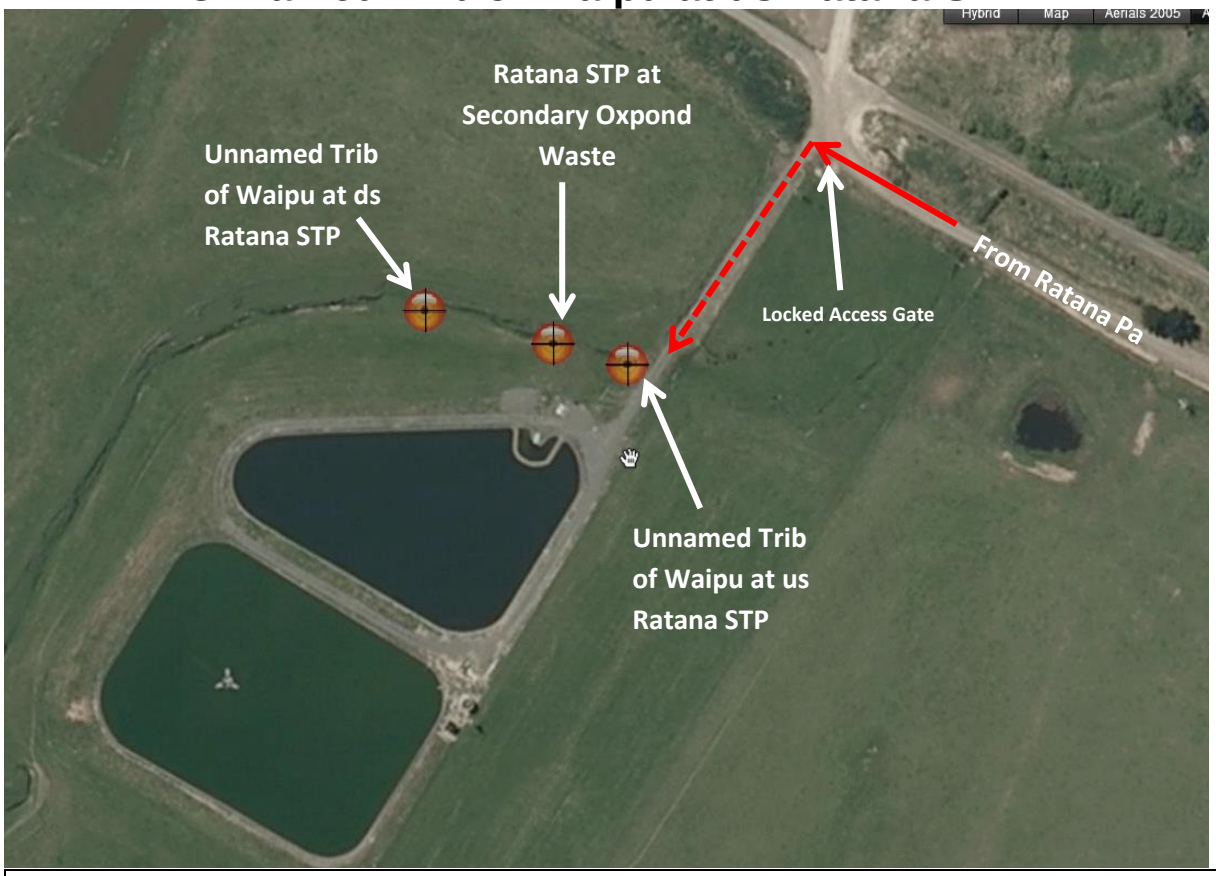
ACCESS:

- Turn around in the recreation area and park up in the layby at the stream.
- From the side of the road where you are parked you should be able to see the footbridge.
- Cross this bridge and head to the stream – in normal this is about 10m-20m upstream of the bridge.
- Alternatively in higher flows sample from the bridge.
- Typically the velocity is very slow combined with fine bed material. Therefore visual clarity should be undertaken with a clarity tube – filled via sample pole (to avoid contamination by sediment).

Mowhanau Stream at Footbridge and high flow sample location

Mowhanau Stream at Footbridge Sample Location

SITE LOCATION MAP – Ratana STP at Secondary Oxpond Waste, Unnamed Trib of Waipu at us Ratana STP and Unnamed Trib of Waipu at ds Ratana STP



Ratana STP at Secondary Oxpond Waste, Unnamed Trib of Waipu at us Ratana STP and Unnamed Trib of Waipu at ds Ratana STP

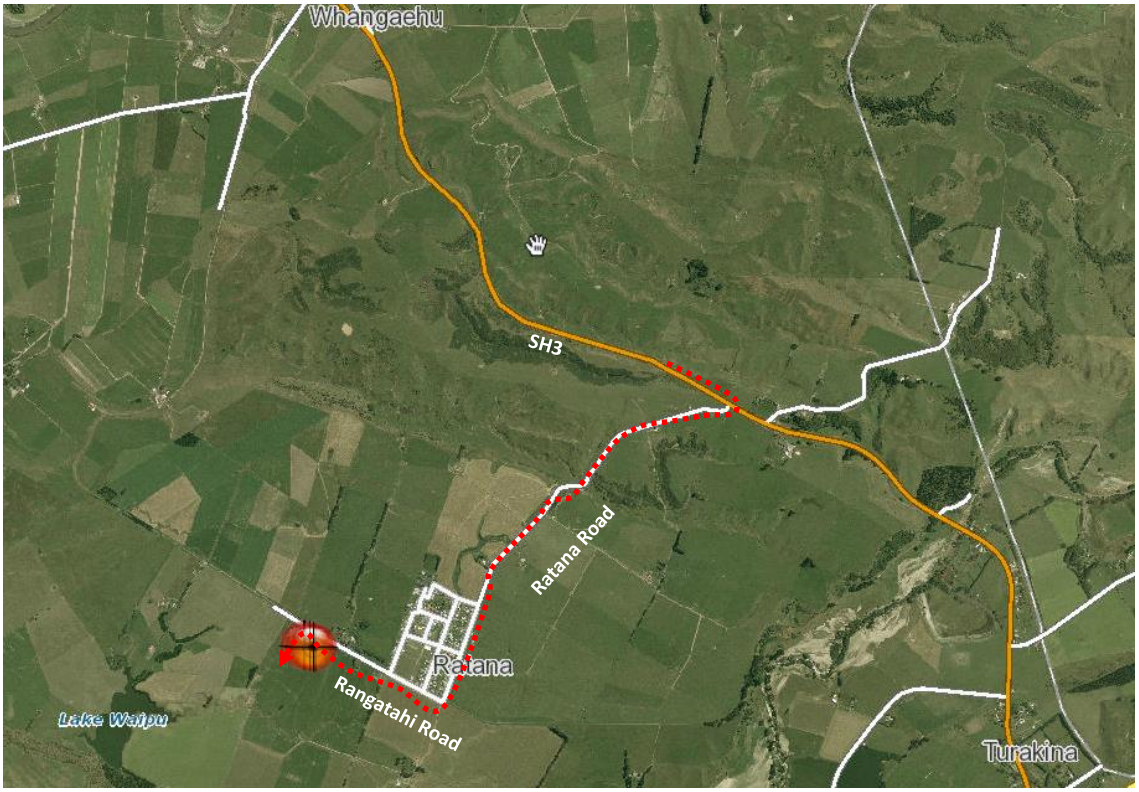
DIRECTIONS:

- Retrace your steps back through Wanganui toward Palmerston North on SH3.
- Continue on SH3 through Whangaehu.
- Turn right onto Ratana Road (before you get to Turakina)
- Continue past the houses until; you reach the end of the road and turn right onto Rangatahi Road.
- Before the end of this road you will see the STP ponds on your left.

ACCESS:

- Pull up by the entrance gate on the side of the road – access is through this gate using a '636' key.
- **Ratana STP at Secondary oxpond waste:** Sample the STP from the ponds outlet pipe – this is a small white pipe in the first paddock. This can be overgrown, detectable by the sound of the discharge. Wear gloves. **In High flows the pipe can be overtopped and therefore not sampled from. If it is unable to sample from this pipe abandon the sample with a supporting photo(s)**
- **Unnamed Trib of Waipu at us Ratana STP:** Sample the upstream site 10m above the pond outlet pipe – Black disc is not possible due to the size of the tributary; adhere to SOP's and use Clarity tube when appropriate. This site can dry up in low flow conditions, if so mark as no sample; channel dry.

- **Unnamed Trib of Waipu at ds Ratana STP:** Sample the downstream site 10 m below the pond outlet pipe. Typically this site is entirely treated effluent do not undertake clarity tube at this site due to hygiene reasons (the channel is too small for black disc). This site continues flowing throughout year largely due to the treated effluent – colour between up and downstream varies considerably. Wear gloves for this site in addition to the STP.
- Use the tap at the end of the STP to rinse equipment after taking the downstream sample.



Overview map showing directions to Ratana Pa/township

View of access to Ratana STP from parking area – paddock gate in foreground is access to sample sites

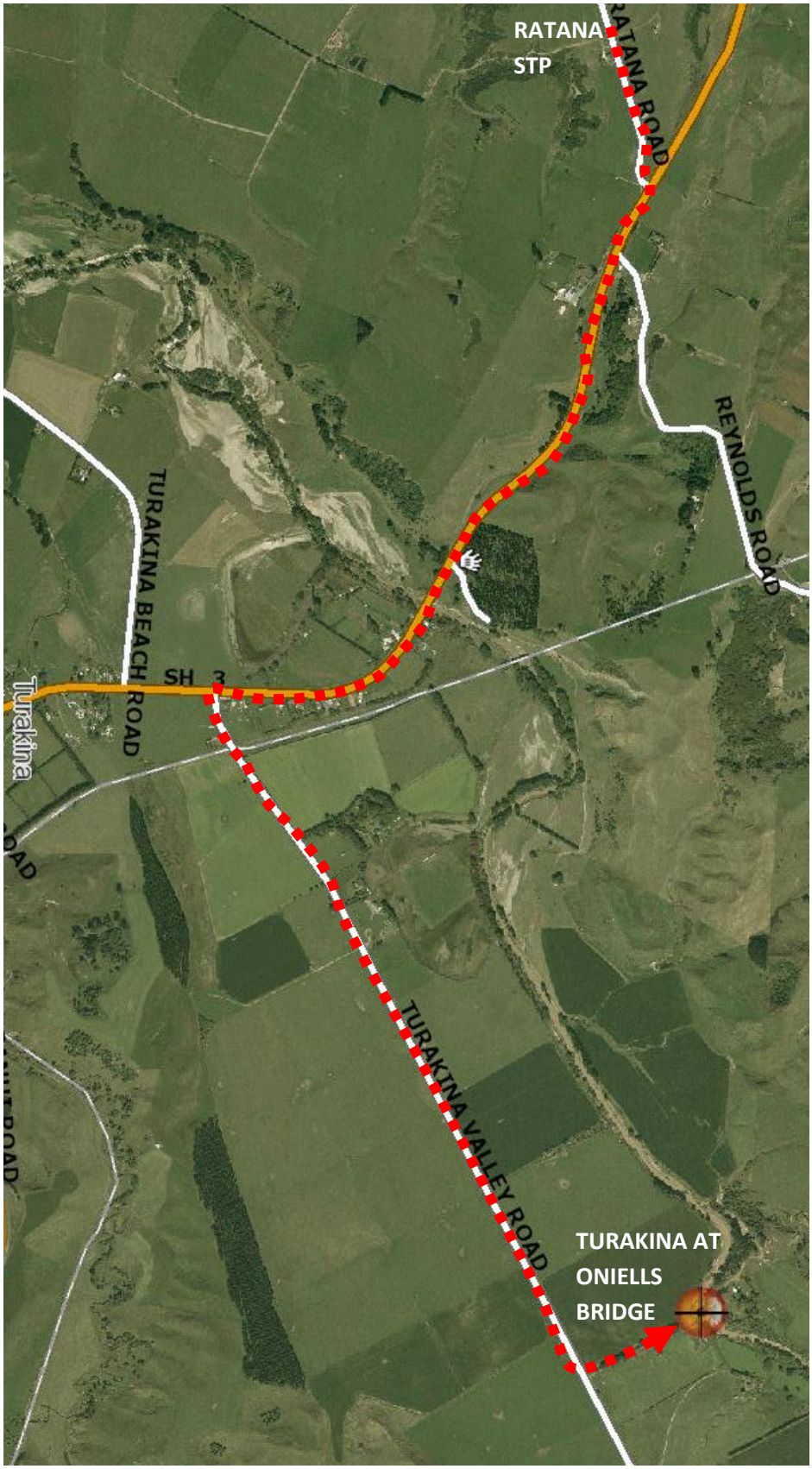
View of access to Ratana STP sample point (pipe can become obscurred by weed over the year)

View of Unnamed Trib of Waipu at Upstream Ratana STP viewed looking upstream from the STP sample point (discharge Pipe). Note the location of paddock access gate to the extreme right of photo, and sample gear marking sample point.

Unnamed Trib of Waipu at Downstream Ratana STP looking upstream toward STP and upstream site locations. Note the limits of channel size which affects how to record visual clarity.

Photo of alternative tap for cleaning sampling equipment located in STP beside the pond and fence.

SITE LOCATION MAP – TURAKINA AT ONEILLS BRIDGE



Turakina at O'Neill's

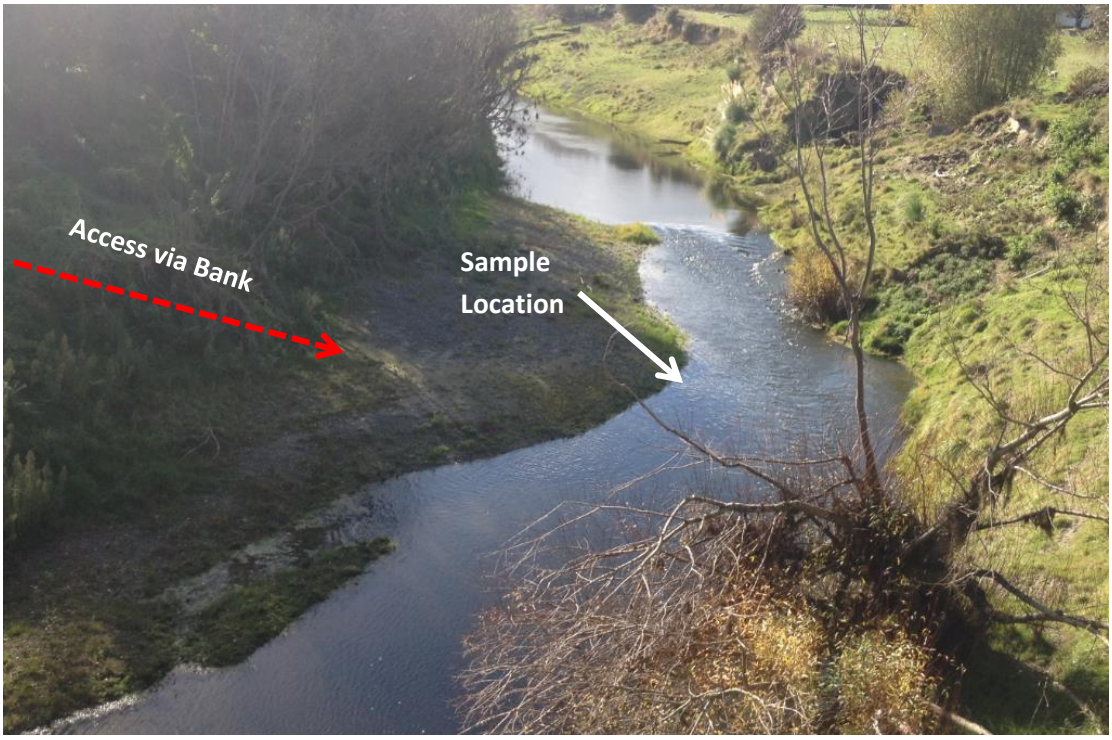
DIRECTIONS:

- Head back to SH3 through Ratana
- Turn right onto SH3 toward Palmerston North and Turakina.
- Turn left onto Turakina Valley Road (this is just before reaching Turakina).
- After about 2.2km turn left into the drive way at #237 (look for a numbered letter box)

ACCESS:

- Drive along the driveway/access track toward the bridge.
- The ED site is on the left side of the bridge'
- Park to the left hand side of the bridge (on the bank where the hydro site is).
- To sample cross the bridge.
- Access the paddock to the left using the gate approx. 10m after the bridge.
- Follow the track under the bridge.
- Approx. 5m upstream of the bridge access the river via the banks.
- Caution as banks and exposed soil/clay can be slippery.
- Record the water level with a laser level from the radar housing mid bridge and complete a site inspection. BM for the bracket is 14.588m

View of O'Neill's Bridge from Vehicle Park.



View of sample site from O'Neill's Bridge looking upstream

Location of laser level measuring point above radar centre of bridge, ds edge.

Height of measuring point is 14.588m

Complete Survey 123 inspection.