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	<b>Hydrology Operations Manual</b>	

## Site Hazards

### 1. Overview:

Horizons Regional Council (HRC) Staff will encounter site hazards at Discrete Water Quality sampling sites. The intention is to eliminate, or if unable to, isolate such risks via method(s) of control. As sample sites are static known hazards can be quantified and documented in preparation of any visit. These known hazards are logged against the site within the appropriate run guide.

**Additionally** the sample site should be reviewed by an onsite review prior to undertaking work. Site hazards will change according to weather and flow conditions in addition to infrequent events (i.e. logging operations, roadworks etc.).

Known site hazards should be logged in the run guide – the run guides should be reviewed and updated by an appropriate staff member annually. However, any updates or edits with respect to Health and Safety (such as new hazards, induction procedures) should occur as soon as possible. References to HRC's Hazard Management Plans (HMP's) should be referred to where appropriate.


### 2. Run Guide Documentation:

The [run guide template](#) includes the documentation required- any run guides need to base on this template. At the start of the run guide a job hazard and task analysis should be completed for known hazards, this includes required PPE. For each hazard, a method of control needs to be confirmed. As detailed above this does not negate an onsite assessment prior to undertaking sampling work. Sample staff should review the run guide prior to undertaking the sample run.

Below is an example from the Coastal streams SoE Run Guide:

## 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 <b>does not negate</b> the need to assess for and potentially eliminate or isolate any hazards at <i>each</i> sample location at <i>every</i> visit					
Hazard	Yes	Hazard	Yes	Hazard	Yes
Confined space	<input type="checkbox"/>	Suspended loads	<input type="checkbox"/>	Noise – plant and equipment	<input checked="" type="checkbox"/>
Difficult entry/exit	<input type="checkbox"/>	Falling objects	<input type="checkbox"/>	Communication – means of	<input 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 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"/>	Working near aircraft	<input checked="" type="checkbox"/>
Drowning	<input checked="" type="checkbox"/>	Line of fire	<input checked="" type="checkbox"/>	Air emissions – dust, fumes	<input type="checkbox"/>
Engulfment	<input checked="" type="checkbox"/>	Pressurized fluids	<input type="checkbox"/>	General waste	<input checked="" type="checkbox"/>
UV Radiation	<input checked="" type="checkbox"/>	Pressurized air/gas	<input checked="" type="checkbox"/>	Hazardous waste	<input checked="" type="checkbox"/>
Electrical – low /high voltage	<input 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 checked="" type="checkbox"/>	Soil disturbance/erosion	<input checked="" 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"/>






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Elevated work platforms	<input type="checkbox"/>	Transport of hazardous substances	<input type="checkbox"/>	Weather extremes	<input checked="" type="checkbox"/>
Potential for difficult rescue	<input type="checkbox"/>	Stock/Farm Animals	<input checked="" type="checkbox"/>	Difficult site access/egress	<input checked="" type="checkbox"/>

**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)
						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



HI VIZ	SAFETY HARNESS	WADERS	HAND SANITISER	VEHICLE BEACON
				
<input checked="" type="checkbox"/>	<input 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	
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 – 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 - FLOWING WATER	✓			✓		✓	Staff should be trained in alignment with HRCs training requirements. PFD's must be available to staff for use is deemed appropriate [HMP18]
Machinery – mobile plant	✓			✓		✓	KAITOKE AT VECTOR GAS LINE: Access is via the 'airside' of Whanganui Airport. Full induction required prior to access.

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Known Hazard	Significant		Can it be Eliminated		Can it be Isolated	Method of control	
	Yes	No	Yes	No	Yes	No	
Noise – plant and equipment	✓			✓	✓		KAITOKE AT VECTOR GAS LINE: Access is via the 'airside' of Whanganui Airport. Full induction required prior to access. Airport operation can create high levels of noise. Ear protection to be carried in HRC vehicle at all times. Ear protection to be worn when machinery is running [HMP 4]
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.  [HMP 17]
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]

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Known Hazard	Significant		Can it be Eliminated		Can it be Isolated	Method of control	
	Yes	No	Yes	No	Yes	No	
Traffic Vehicle movements – WHANGANUI AIRPORT	✓			✓		✓	KAITOKE AT VECTOR GAS LINE: Access is via the 'airside' of Whanganui Airport. Full induction required prior to entry. Staff to obey on site signage and instruction. HRC Vehicle to follow specified route. Use of truck beacon required. HRC Vehicle to be parked in a safe and appropriate location. [HMP 16] [HMP 20]
Traffic Vehicle movements – ROADSIDE /GENERAL	✓			✓		✓	Some sample sites require 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 truck beacon required. Hi-vis clothing must be worn. [HMP 16] [HMP 20]
Traffic Vehicle movements – ERNSLAW ONE FORRESTRY BLOCK	✓			✓		✓	KOITIATA AT BEAMISH ROAD: Site is within a forestry block. Induction required. Block is to be considered active at all times. The vehicle must be parked as far off of the logging/forestry track as safe and practicable to do so. Use of truck beacon required. Hi-vis clothing must be worn. [HMP 16] [HMP 20]
Remote Area	✓			✓		✓	KOITIATA AT BEAMISH ROAD: Cell phone signal is limited within the forestry block. Some intermittent signal at the clearing where the vehicle is parked for sampling.
Pressurized Air/Gas	✓			✓	✓		KAITOKE AT VECTOR GAS LINE & KAIKOKOPU STREAM AT HIMITANGI BEACH sample locations are within a few meters of the main pressurised gas line (buried). The gas line is marked by white posts and signage. Do not undertake activities between any of the posts that involve digging!
Engulfment – Tidal and Tsunami Zones	✓			✓		✓	Sites are all within Tsunami inundation zones. All sites can and should be accessed without entering any tidal zone
Line of fire	✓			✓		✓	KOITIATA AT BEAMISH ROAD: Lake is actively used during duck shooting season. Contact Ernslaw One for access prior to visit. If shooting is happening during site visit assess risk and abandon sample/visit if needed

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## Site Hazards

Each site within the run guide should also have a summary of possible site hazards (below is an example for the Koitiata at Beamish Road site):

POSSIBLE SITE HAZARDS (this does not negate undertaking a hazard review prior to sampling on the day):							
Drowning – River, Lake	Traffic / vehicle movements – logging trucks and machinery		Slippery surfaces – cobbles, periphyton		Traffic / vehicle movements – public road access and farm machinery		
Trip hazards – cobbles, uneven ground, tree debris	UV Radiation		Forestry block in operation – induction required		Lake - used during duck hunting season		
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):							
ACTIVE FORRESTRY	HI VIZ	PFD	WADERS	VEHICLE BEACON	VEHICLE HEADLIGHTS ON	RADIO COMMUNICATIONS REQUIRED	
							

### 3. Undertaking a sample run:

Staff should only undertake a sample run/site visit once they are comfortable to do so. The Environmental Data (ED) Team typically chaperone new staff with experienced staff members for fieldwork (including sampling runs). Pre-requisites such as 4x4 and swift water training are also required for ED staff prior to field and/or lone working.

In addition, the run-guide(s) should be read and understood prior to leaving for site. Further support is offered by the Discrete Water quality Portfolio /Holder.