Working Around Water SOP

Overview: (This does not replace or override the HMP for working around water)

The Working Around Water **HMP** (Hazard Management Plan) outlines when a staff member should be wearing a **PFD** (Personal Floatation Device [lifejacket]). It also recognises that there are situations that wearing a PFD may hinder the otherwise safe completion of some tasks. The HMP specifies – "In extraordinary situations like this a department-specific **SOP** (Standard Operating Procedure) is to be documented and approved by the departmental manager." This document forms the SOP for Hydrology operations only. For this procedure, SOP, the person acting as a safety person and also the person entering the water shall have competed a working around water course.

Note: PFD's will be used by Hydrology Staff in accordance with the Working Around Water HMP.

Table 1 – Safety Provisions for Work in Watercourses

Surface velocity (m/s)	Depth				
	Shin	Knee	Mid Thigh	Full Thigh	Over Groin
>1.0	Single manning	Single manning with PFD	Double manning with PFD	Double manning with PFD and throw bag	Double manning with PFD and throw bag
1.0 to 0.5	Single manning	Single manning. PFD is discretionary	Single manning with PFD	Double manning with PFD and throw bag	Double manning with PFD and throw bag
<0.5	Single manning	Single manning	Single manning with PFD	Single manning with PFD	Single manning with PFD

Note 1: *These provisions are applicable only to able-bodied persons in normal daylight, good visibility and firm bed conditions.*

Note 2: *The depths referred to in Table 1 refer to the depth of water the wading activity is planned to take place in.*

Note 3: *The requirements listed in Table 1 assume staff have been trained in the use of PFDs. It is important for staff to develop individual wading capability awareness.*

Extraordinary Situations:

Gauging and other work in deep but very slow moving water

Very slow moving water is defined as water that is visually stationary or almost stationary on the surface. In these situations staff are in reduced risk of being washed away, but will be beyond the depth that the auto-inflate function of the PFD is activated. If the PFD inflates it will cause the person to float, resulting in loss of traction on the bottom and prevent the task being completed safely. A manually inflating PFD should be used is this situation.

Maintenance of stilling well intakes

Stilling well intakes have to be deep to ensure they are submerged even in low flows. To clean and maintain intakes staff often need to bend or reach down into the water to a point that causes a automatic PFD to inflate. This contributes an additional hazard to an otherwise safe task. Inside the well is a confined space requiring a confined space entry permit. A manually inflating PFD should be used is these situation.

Maintenance and installation of External Staff Gauges and in-water sensors
Where possible these are installed in such a way that staff can access and maintain them without getting into the water. However in some situations staff may be required to enter the water and may need to bend or reach into the water in a manner that causes the PFD to inflate. Again this contributes an additional hazard to an otherwise safe task. A manually inflating PFD should be used is this situation.

Oil Spill response work
When working near the shore helping to deploy booms or oil clean up equipment there is a chance you are working in condition where you may need to bend over and would risk setting off an automatic PFD accidently. A manually inflating PFD should be used is this situation.

Low altitude Helicopter activities over water
Staff involved in sampling or low level work over water shall have completed the HUET course. They must also wear a manual inflating PFD. (Use of a permanently buoyancy or automatic PFD will hinder escape from the helicopter if trapped inside following an accident. Mannual PFD's are only deployed once clear of the sinking helicopter.)

Controls:

For the above examples (except helicopter and oil spill) we have **historically** approved entering the waterway without a PFD following an onsite risk assessment. We are **no longer accepting this** as a control to the hazard of water. Our normal work requires a type 402 self-inflating or permanently buoyant PFD to be used. Instead **we will now require as a minimum a manually inflating PFD to be worn** when carrying out the "Extraordinary Situations" activities. The remainder of our work around water will remain with self-inflating or permanently buoyant foam PFD's. The manning scale and PFD requirement mentioned in our HMP and NEMS remains unchanged, just the type of PFD used.

We have reassessed the risk determining the hazard of the water has not been removed, but the risk of accidentally falling in to the water is much less as in these circumstances.

Our automatically inflating PFD's do have an "arming cartridge" which fires the inflating mechanism when it is submerged. For the above special circumstances we are now allowing this automatic arming cartridge to be temporarily removed during these tasks and the PFD's returned to an automatic PFD **ASAD** (**As Soon As Dry**).

Procedure:

Before removing an arming cartridge from a PFD to perform one of the above tasks, staff must first:

1. Assess whether there is another way to complete the task
2. Complete a **JSA** (Job Safety Assessment Use the hazard matrix (next page) to assess the risk.
3. If any risk gains a score of 6 or more, then do not proceed.
4. If all risks gain a score of 5 or less then entry to or near the water with a manually inflating PFD is permitted.

To convert our automatic PFD's to manual PFD's refer to the next page.

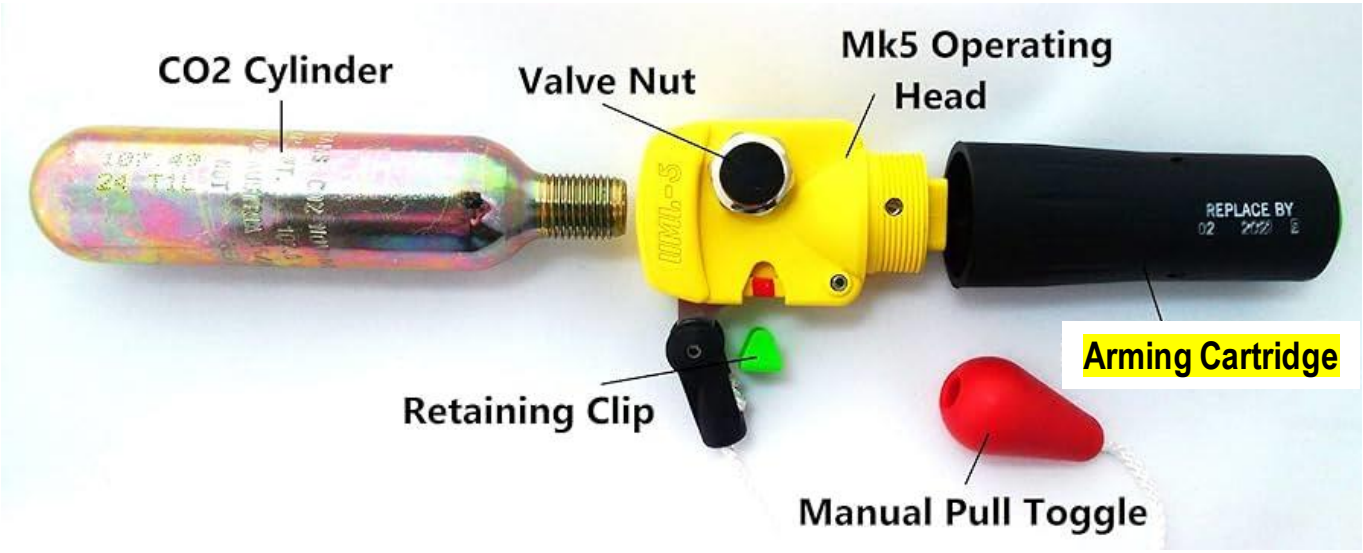
Risk matrix / score

RISK ANALYSIS

CONSEQUENCE

LIKELIHOOD	1. INSIGNIFICANT Dealt with by in house first aid	2. MINOR Treated by medical professionals, hospital out patients	3. MODERATE Significant non permanent injury overnight hospital stay	4. MAJOR Extensive permanent injury eg. Loss of fingers, extended hospital stay	5. CATASTROPHIC Death, permanent disabling injury eg. Loss of hand, quadriplegia
A. Almost certain to occur in most circumstances	MEDIUM 8	HIGH 16	HIGH 18	CRITICAL 23	CRITICAL 25
B. Likely to occur frequently	MEDIUM 7	MEDIUM 10	HIGH 17	HIGH 20	CRITICAL 24
C. Possibly and likely to occur at sometime	LOW 3	MEDIUM 9	MEDIUM 12	HIGH 19	HIGH 22
D. Unlikely to occur but could happen	LOW 2	LOW 5	MEDIUM 11	MEDIUM 14	HIGH 21
E. May occur but only in rare circumstances	LOW 1	LOW 4	LOW 6	MEDIUM 13	MEDIUM 15

Convert an automatic PFD to manual



Step 1 Locate and remove (gently unscrew) the Arming cartridge from the PFD.

Step 2 Repack so the Manual Pull Toggle is visible and accessible.

This manual pull cord is now required to inflate the PFD, and **needs to be visible** (don't store it inside the PFD pocket).

To inflate the PFD, simply pull this toggle or use the manual oral inflator.

At the end of the activity (**or when the PFD is dry**) reverse this procedure / screw the arming cartridge back on the mechanism.

- Ensure the retaining clip is still on (green clip)
- Ensure the green cap is on the arming cartridge
- Ensure the replace by date on the cartridge is still valid
- Ensure the manual pull cord is still visible when packed
- If any of the above are faulty or the PFD has been set off, please return it to the office for a service.
- Ensure the CO_2 bottle has not been used and is hand tight
- Return the PFD to the vehicle and store as an Automatic PFD.

Cyanobacteria (Blue Green Algae)

Often overlooked, functions of the councils work involve sampling for the presence of Cyanobacteria in lakes, and rivers in part for the contact recreation sampling and state of environment. This of course also means we can come into contact with water which knowingly or unknowingly can contain their toxins. Generally for the lakes program we would be aware of elevated levels of cyanobacteria either by previous tests, or visually present blooms. For the rivers it is more likely to be mats of algae over the rocks and can look brownish:

Rivers:

Lakes:

Pictures above are from the LAWA website of cyanobacterial blooms, on the right is a bloom on Lake Horowhenua.

New Guidelines were released in late 2024: https://environment.govt.nz/assets/publications/Cyanobacteria-Guidelines_ME1851.pdf have changed the traffic light alert system. Red Alert is no longer closed, but a warning to alert the user to make their own informed decisions. This does not mean the risk has been reduced.

Health and safety (copied section 4.1 of the cyanobacteria guidelines)

When sampling cyanobacteria in lakes or rivers, consideration needs to be given to protecting the sampler. Samplers should wear gloves and waders or gumboots to reduce the risk of skin contact. If sampling when there is excessive foam present and windy conditions, a dust / surgical face mask should be worn. When wading into swift-flowing rivers and streams, standard water-quality sampling procedures should be observed to identify hazards and reduce the risk of being swept downstream. Organisations should develop standard operating procedures to mitigate any potential risks.

- Toxic algae produce toxins that are harmful to humans and animals if swallowed and, in some cases, through contact with skin when swimming or undertaking activities such as river gauging, equipment maintenance, and sampling.
- Drinking water contaminated with these toxins can cause numerous health effects ranging from minimal (i.e., diarrhea, headaches, and skin irritation) to life threatening (i.e., death).
- Exposure to water containing toxic algae has been reported to cause symptoms such as skin rashes, nausea, tummy upsets, and tingling or numbness around the mouth or fingertips.
- If you have had contact with contaminated water and experience health symptoms, visit a doctor immediately and notify your manager and record as an incident in our safety system. (Vault / Donesafe)

When Sampling:

Minimise skin contact with the water where at all possible.

Bank side sampling	Sampler should wear gumboots or waders, and when there is a known or suspected cyanobacterial bloom be wearing sampling gloves. Use of a sample pole will also help minimise the risk of skin contact.
Wading samples	Sampler shall wear waders when there are known or suspected cyanobacterial bloom and be wearing sampling gloves.
Boat sampling	Ensure the boat skipper is aware of the risk, wear waders when helping launch or retrieve the boat. Choose a good forecast for low wind and waves conditions. Arrange for the skipper to drive the vessel in a controlled way to minimise the risk of spray. Consider wearing a face covering while underway. Wear sampling gloves when collecting the samples, and where possible use sample poles or van dorn samplers to avoid submerging your hand in the water.
Helicopter Sampling	Lower a 'helicopter sampling device' to collect a sample without the need to submerge your hand, consider wearing sampling gloves.
Drone Sampling	Should be considered when algal blooms are at their highest points typically in summer months. This can help keep the sampler away from the water body.

Windy conditions or foam forming (In addition to the above) try not to breathe (this air for too long)**.**

Bank side sampling	Sampler should reduce the time they need to spend downwind of the waterbody. Consider wearing a surgical face mask. Samplers also need to be aware that concentrations of the algae and toxins are likely to be strongest on the downwind part of the waterbody. (this is likely the best place to sample)
Wading samples	Sampler shall consider other methods if possible or consider wearing a face mask.
Boat sampling	Firstly try to organise sampling from a boat in fair weather conditions. Wear full wet weather clothing, including gloves. Have the skipper drive the vessel in a way that minimises spray. Sample from the downwind side which may be the stern (back) of the vessel. Consider wearing a face covering while underway.
Helicopter Sampling	Ask pilot to rotate the machine when possible so the sampling side is on the downwind side of the helicopter.
Drone Sampling	Ensure the wind conditions do not exceed the drone's capabilities. Ideally keep the drone operations upwind of the sampling locations.

After coming into contact with water, wash with soap and water at the earliest opportunity (recommend having fresh water and soap in the sampling vehicle). Dry yourself and consider hand sanitisers.