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State of Environment – Lake Horowhenua



Organise Helicopter and check the weather a few days before, contact:

Downers yard supervisor he can make sure the yard is clear of their vehicles for landing.

PPCS (located at the rear of the Downers yard so they are not running vehicles through at that time.

[Contact details can be found here.](#)

SoE

Lake Horowhenua

2018-

(Monthly Sampling)

Included on this run is a service on the water quality buoy:

Take two recently calibrated EXO2 Sonde's with fresh batteries with you. Take gear to clean the solar panel

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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 checked="" 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 checked="" 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 checked="" 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 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 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 checked="" 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"/>	

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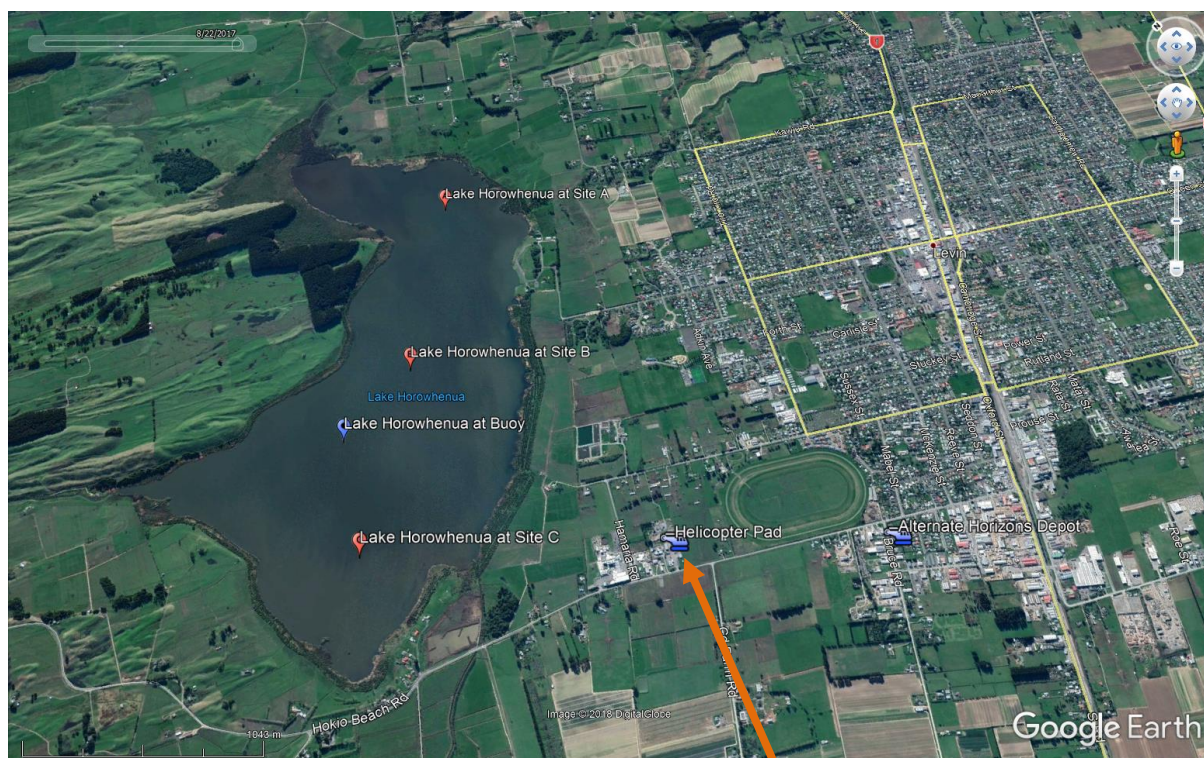
Known Hazard	Significant		Can it be Eliminated		Can it be Isolated		Method of control
	Yes	No	Yes	No	Yes	No	
Drowning	✓			✓		✓	PFD's must be worn by staff. All PFD's used in a helicopter must be manual inflation only, to allow easy escape of the helicopter in the event of an emergency landing over water. All Horizons staff will have attended a HUET and swift water course. Will always be two staff on hand for these runs. [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 Helicopter poses many risks and should be treated with caution. Refer to the pilot and also to our hazard management plan for safe approaching, entry and exit methods. PFD's must be worn by staff and staff must be trained for working around water. [HMP1]
Potential for Difficult Rescue	✓			✓		✓	PFD's must be worn by staff and staff must be trained for working around water. Have a personal locator beacon on hand. If a rescue is needed (someone stuck, on the platform, helicopter issues, contact the Manawatu coastguard / police search and rescue) [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	✓			✓	✓		Care must be taken stepping onto the platform and entering the helicopter. Wear saftet boots with good boot tread. [HMP 9]
Traffic Vehicle Movements							The gates to Downers yard are to be closed when the helicopter is labding and taking off. Contact the yard the day before sampling to arrange the time for the gates to be closed. [HMP 9] [HMP 16] [HMP 20].
Communications-Means of							Cell phone coverage is available at all sites on this run. Staff must exiting the helicopter to also carry a PLB or spot.[HMP 24]
Temperature/ Weather Extremes	✓			✓		✓	For the Helicopter staff exiting the machine to service the buoy are likely to get wet, wear appropriate wet weather clothing and / or have a change of clothes. [HMP 18]
Weather Wind / limited visibilty	✓			✓		✓	Contact the pilot before the run (days before) and confirm favourable weather. Pilot has final call on whether it is safe. [HMP1]

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MEET HELICOPTER at Downers yard in Levin:

122 Hokio Beach Road

–Ring Downers Contact day before to confirm times. He will arrange for helipad to be clear of vehicles. Also ring PPCS Contact so they are not running vehicles through at that time.



Coordinates of the helicopter pad:

-40.624858° 175.258240°

This location is safe for landing and removal of the doors to allow safe egress to the monitoring platform. This is the helicopter landing pad used by the rescue helicopter when serving the Levin region.



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SITE INFORMATION

[Contact details can be found here.](#)

Sites to be sampled:

Source	Site Name	GPS (East-North)	Comments
Lake Horowhenua	Site A	E2701631 N6064533 -40.603232 / 175.264755	
Lake Horowhenua	Site B	E2700791 N6063858 -40.609512 / 175.255013	
Lake Horowhenua	Site C	E2700096 N6063425 -40.613568 / 175.246936	
Lake Horowhenua	Composite of A,B,C above.		
Lake Horowhenua	Water Quality Buoy	E2700280 N6063739 -40.610680 / 175.246936	

EQUIPMENT REQUIRED

SAMPLE BOTTLES	10 Litre bottle	1 Litre bottles	Amber glass	Iodine preserved
	1	8	1	2
Sampler NUMBERS	Five (5) Sampler Two from CADDIS			
METERS/EQUIP	Two manually operated inflatable PFD's PLB, Cellphone, Helicopter sampling device, SmarTroll x 2 (one for chopper one for buoy), Secchi disk with tape measure, Chilly Bin & Slickers, Field Sampling Sheets, Gear bag to hold EXO sondes and sampling equipment.			

SAMPLING DETAILS

- SECCHI DISK** – Measures water clarity at the buoy only (don't use from helicopter, only while on the platform), log this for composite.
- DO, TEMPERATURE, BAROMETER & pH & COND** – Use hand held meters.
- GRAB SAMPLES**
 - Fill 1 1 litre bottle at a depth of 0.5 meters at the buoy
 - From sites A, B, & C, take two 1 litre samples from the helicopter three of the bottles are combined in the 10 litre container (composite of the three sites), the other three samples are sent to the lab as is.
- OBSERVATIONS** – Weed & Algae growth density & depth from surface. Plus anything else of interest.

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SPECIAL INSTRUCTIONS

Lake Horowhenua Special Conditions:

Lake Horowhenua is a Maori (Muaupoko Iwi) owned lake and we access the lake with the permission of the Lake Horowhenua Trustees, and the Lake Horowhenua Domain Board.

After threats to workers of Horizons regional council a decision was made in June 2018 to stop sampling the lake by boat, and start sampling the lake by Helicopter. Phillip Taueki, is a known risk which is being minimised through no direct contact, and a quick turnaround.

- The helicopter company will be the same one we use for the other lake sampling and are well versed in our planned activities (approved contractor).
- All Horizons staff flying in the helicopter must have passed their HUET (Helicopter Underwater Escape Training)
- Some HUET trained staff have expressed the view that they are uncomfortable with this and we are not forcing them to undertake this work.
- We shall wear a **manual inflation PFD** while in the helicopter (automatic inflating PFD's are banned in the event of needing to escape the machine while underwater).
- We have informed our pilot of our planned activity and he is comfortable with what we are planning.
- We receive a briefing from the pilot (CAA requirement) pre-flight.
- The helicopter will land at the lake (Downers Yard) and we will remove the doors of the aircraft. This will allow horizons staff to exit the helicopter from the same side as the pilot, and allow the pilot to see the platform to hover close by.
- The pilot may decide it is not safe to exit the aircraft in which case we don't.
- After the sampling, the helicopter will return to the take-off site to refit the doors.
- We have informed the pilot of the recent threats and issues around the lake.
- We do not advertise the dates or times when we will undertake the work (as few people as possible to know)
- Down force from the helicopter could affect the "free board" of the platform, and could cause it to swing, we will assess this as we hover over it (it may yet not be possible to safely disembark)
- Rotor wash will likely kick up a lot of spray; suitable wet weather gear will be required to be worn.
- The platform itself is rough and gloves are recommended.
- There is a small possibility of the helicopter having an issue after dropping a staff member off on the platform and not being able to pick them up. Staff on the platform will be required to carry a PLB and cell phone. Worst case we may need to call the Manawatu Coastguard to rescue us if needed, this support could be an hour away.

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LOCATION

- From Palmerston North travel to Downers yard (122 Hokio Beach road, Levin) to meet pilot.

		<i>Latitude</i>	<i>Longitude</i>
Lake Horowhenua S24 020 871	Helipad	-40.624858°	175.258240°
	Buoy	-40.610660°	175.248980°
	Site A	-40.603210°	175.264690°
	Site B	-40.609682°	175.255020°
	Site C	-40.615648°	175.245267°

- Lake is approximately 0.5 nm W of the Township of Levin
- Shallow Lake approx. 2 meters deep
- Permissions in place (Very political, Lake bed and queens chain is vested in Maori Ownership)
- Monthly sampling by helicopter
- Swap the two EXO sondes on the buoy if possible on this run**

(Activist hazard) was being sampled by boat but Health and safety concerns we have shifted this to Helicopter.



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SPECIAL INSTRUCTIONS

-All crew, Horizons employees sampling from a helicopter, shall have read and signed the working in aircraft HMP and undertaken HUET, (Helicopter Underwater Evacuation Training)

SAMPLING DETAILS

Record on the lake sampling field sheet

- **DO, TEMPERATURE, BAROMETER & pH & COND** – Use hand held meters.
 - Handheld readings at a range of depths (use logging function, slowly lower the sonde recording the depth at the same time.)
- **OBSERVATIONS** – Weed & Algae growth density & depth from surface. Plus anything else of interest.
- **GRAB SAMPLES**
 - **For each lake:**

In the helicopter, collect 2 x 1 litre bottles from each sampling site as per the run guide.



Samples will then be split back in the office, as follows:

- 1 one litre bottle from each site will be sent to ELS as is
- The remaining 1 litre bottle will be poured into a 10 litre bulk composite bottle
- From the bulk, prep out the two algae samples (one preserved) for cawthron
- From the bulk, prep out a glass bottle for toxins (freeze this)
- Send bulk to ELS as a composite for the lake.
- The Lake Horowhenua Buoy samples go to ELS in Wellington.




Bottle guides, refer to next page:

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Bottles filled as followed:

	<p>Collect 1 x 1 litre bottle from each sample site to be tested for Chlorophyll for ELS</p> <p>(have increased to three samples to help ground truth the satellite data)</p> <p>From each site we collect two 1 litre bottles. 1 is poured into the bulk sample, the other is sent to the lab in the 1 litre bottle</p>
	<p>From the three sample points fill a composite bottle for ELS.</p> <p>This bottle is subsampled back at the office for algae and toxins.</p>

In the office, ALL lakes, sub sample from the bulk:

	<p>One unpreserved bottle is sent to Cawthron on the day of sampling. and is tested for Algae..</p> <p>CADDIS ID 20XXHRCPHYXXX</p>
	<p>One preserved bottle is sent to Cawthron on the day of sampling, and is tested for Algae.</p> <p>-Add 3 – 4 drops of iodine</p> <p>CADDIS ID 20XXHRCPHYXXX</p>
	<p>½ fill a glass bottle from the bulk sample and store in freezer on its side. Science will send this to Cawthron when we have enough samples of the same toxin</p> <p>CADDIS ID 20XXHRCWQUXXXX</p>

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Below is copy of letter from Domain Board granting permission for lake sampling.



**HOROWHENUA LAKE DOMAIN
BOARD**
C/- Reg Kemper
Department of Conservation
PO Box 10420
Wellington 6143

5 July 2018

Jon Roygard
Group Manager Natural Resources and Partnerships
Horizons Regional Council
Private Bag 11025
Manawatu Mail Centre
Palmerston North 4442

Dear Jon,

Subject: Helicopter access for sampling at Lake Horowhenua

Under the Reserves and Land Disposal Act 1956, and in exercise of the Horowhenua Lake Accord, I hereby authorise Horizons Regional Council to carry out regular helicopter sampling of Lake Horowhenua for the purposes of monitoring lake health, commencing from 9 July 2018.

Nāku noa, nā


Reg Kemper
Chair, Horowhenua Lake Domain Board
M: 027 248 5860 | Email: rkemper@doc.govt.nz

CC Matthew Sword
Duncan Toogood
Jon Proctor
Marokopa Wiremu-Matakatea
Michael Feyen
Piri-Hira Tukapua
Rob Warrington
Victoria Kaye-Simmons

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Emails giving permission:

