

Key Requirement

**Managing
risk**

Working on or
around Water Bodies

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Purpose

The purpose of this Key Requirement is to set out Watercare's controls to reduce the risks from work on or around water bodies and to help managers and contractors to reduce these risks.

All Watercare's managers must ensure that work is planned in accordance with these controls and ensure that the controls are applied by workers. All Watercare's workers must ensure that they are following the processes and controls for work on or around water bodies, including using appropriate equipment.

Background

Working on, above or adjacent to water occurs within many Watercare operations. Projects constructing new structures and facilities sometimes require tasks around or near water. Operational, monitoring or maintenance work commonly requires workers to perform tasks around or near water, including working over aerated water and working in boats.

It is Watercare's intention to ensure adequate risk controls whenever work is carried out on or near water, including:

- the use of boats (Small boats, operating as a work boat for Watercare, are used primarily to collect water samples and do routine maintenance checks of Watercare-monitored dams and reservoirs.)
- work performed while maintaining, monitoring or testing water storage lakes
- work on the shore of water storage lakes, rivers, ponds, streams, creeks, intertidal storage basin, open wastewater and water treatment plant storage vessels and associated bodies of water

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Responsibilities

All workers	<ul style="list-style-type: none">• Attend training courses as required by Watercare or its contractors• Comply with the controls for working on or around water, as communicated in standard operating procedures, job safety analyses, Take 5 assessments and Toolbox meetings• Use equipment according to manufacturer's directions and other controls imposed by Watercare
Supervisors	<ul style="list-style-type: none">• Monitor workers to ensure they understand and comply with the risk controls for working on or around water, as communicated in standard operating procedures, job safety analyses, Take 5 assessments and Toolbox meetings
Tier 4 Managers	<ul style="list-style-type: none">• Attempt to eliminate the need to work on or around water• For work on or around water that cannot be eliminated, ensure that workers are isolated from the hazard, as far as reasonably practicable using the hierarchy of risk controls• For work on or around water that cannot be eliminated or isolated, ensure that workers are provided with appropriate protective equipment; that safe methods of work are planned, communicated and implemented; and that workers have been trained and understand the use of the equipment• Monitor sites and projects to ensure that work is appropriately planned, that workers have adequate equipment and training and that work is being carried out in compliance with this Key Requirement
Tier 2, 3 Managers	<ul style="list-style-type: none">• Monitor sites and projects to ensure that this Key Requirement is understood by Tier 4 managers, supervisors and workers
Health and Safety Advisors	<ul style="list-style-type: none">• Assist Tier 4 managers to understand the controls in this Key Requirement• Monitor sites and projects to ensure that work is appropriately planned, that workers have adequate equipment and training and that work is being carried out in compliance with this Key Requirement
Health and Safety Manager	<ul style="list-style-type: none">• Monitor the implementation and effectiveness of this Key Requirement and report to the senior management health and safety committee• Recommend any further actions or changes required to ensure adequate management of working on or around water

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Chief Executive
Officer

- Review reports of the implementation and effectiveness of this Key Requirement and report to the Board

Planning

Careful consideration must be given to worker training and capability and the type and suitability of equipment when work on or around water is being planned. Where the potential of engulfment or drowning exists, the following steps must be considered:

1. can the job be done without exposing anyone to the hazard(s) associated with working on or around water?
2. if step 1 above cannot be achieved and all reasonably practicable steps have been taken, then steps must be taken to isolate workers from the hazard. This can be achieved using:
 - a) safe working platforms and guardrail systems
 - b) barriers to restrict access
3. if steps 1 or 2 are not reasonably practicable, then steps must be taken to minimise the likelihood of any harm resulting. Consideration must be given to the use of:
 - a) work positioning systems or travel restraint systems
 - b) safety harnesses
 - c) appropriate lifesaving or buoyancy devices

Where such work is regular or permanent, safe access must be provided. Safe access must, if reasonably practicable, include engineered barriers to any location where engulfment or drowning may occur.

Working over aerated water exposes workers to a much higher risk of drowning due to its much reduced buoyancy. Particular attention must be given to protecting workers from exposure to this hazard.

It is essential that the hazards are identified before the work starts, that the necessary equipment is provided and that a safe method of work has been developed and included in a standard operating procedure or job safety analysis.

Risk controls

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The following risk controls have been developed using the bow-tie method. (Appendix B)

Top event	Fall Into Water	
<u>Prevention controls</u>	Engineering	<ul style="list-style-type: none"> Equipment permanently secured to avoid movement Access ways in compliance with NZ Building Code D1, including non-slip surfaces Lighting in compliance with NZ Building Code G8 and AS/NZS 1680, including spotlights Floating rope barrier Use of fall restraint in compliance with WorkSafe Best Practice Guidelines for Working at Height in New Zealand (page 20) Engineered retaining at sampling points and permanent access locations
	Administrative	<ul style="list-style-type: none"> Standard operating procedures or job safety analysis, toolbox meetings, setting out safe method of work and including requirements for checking weather prior to work and restrictions on work in adverse weather conditions and in darkness Specified limits permit (Maritime NZ)¹ Training programme/qualification requirements for boat skippers Exclusion zones Signs warning of risks Scheduled preventative maintenance and routine inspections Annual recertification of equipment Supervision Inspections and monitoring Powerboat Training NZ operational reviews (every two years) Defect reporting
	PPE	<ul style="list-style-type: none"> Non-slip footwear Torches and headlights Any other task-specific PPE items

¹ Refer <http://www.maritimenz.govt.nz/commercial/safety/safety-management-systems/specified-limits/>

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<u>Recovery controls</u>	Administrative	<ul style="list-style-type: none">• A task-specific emergency response plan• Rescue training• 1st Aid training and equipment and assigned responsibilities.• Scheduled rescue equipment checks and maintenance
	PPE	<ul style="list-style-type: none">• Lifesaving equipment, e.g. personal buoyancy devices and personal locator beacons

Prevention

Engineering controls

Access ways and access points to places where work over or adjacent to water is carried out must be constructed to standards that reduce the risk of slips and falls.

Handrails constructed to standard must be in place where practicable. All workers working over aerated water must be tethered securely to prevent falling. All controls to protect workers from engulfment in aerated water must regularly be inspected and monitored.

Administrative controls

Before any item of plant or equipment is put into operation, managers must:

- ensure that the work has been planned appropriately. A planned method for work on or around water should be contained in:
 - a standard operating procedure for work that is routine and of low residual risk
 - a Take 5 assessment for work that is non-routine and is of low residual risk
 - a permit to work and a job safety analysis for work that is moderate to high residual risk
 - a specified limits plan, which is designed for vessels operating outside normal flows of marine traffic, close to the shore, with a limited scope of operation and within a limited area, e.g. water sampling, work on sewage settling ponds, construction projects. Under Maritime Rule 20.41, a specified limits plan is required to enable an application for a specified limits permit. The specified limits plan identifies the area of operation and gives details about the operation, vessels and personnel. The specified limits permit is not a maritime document
- provide all workers who are to use plant and equipment with information, training, instruction or supervision to ensure compliance with the planned method of work
- ensure that all reasonably practicable steps to prevent harm from falling into waterbodies (e.g. life vests, lanyards and harness, rescue equipment)

² <https://www.lawa.org.nz/media/16575/nems-code-of-practice-2013-06.pdf>

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Working on or around water of moderate to high residual risk Requiring a Permit to Work and Job Safety Analysis
<ul style="list-style-type: none">• Working above aerated water
<ul style="list-style-type: none">• Working alone on or around water
<ul style="list-style-type: none">• Any work that has a residual risk of moderate or higher

Small boats are required to comply with the Watercare Small Boat Operations Manual. In addition, when working from a boat (excluding at Rosedale Wastewater Treatment Plant), a personal locator beacon must be available and used in accordance with the Watercare Personal Locator Beacon Procedure. Alternatively, the boat operator will be required to hold a commercial skipper qualification and the boat will be required to be surveyed annually and reported to Maritime NZ. Maritime NZ must be notified of any changes to these documents.

Methods of working safely must be documented in standard operating procedures or job safety analyses Hydrology field work, and water quality sampling from non-urban rivers, streams estuaries and beaches must take account of the Safe Working Code of Practice for Acquisition of Field Data in and Around Fresh Water².

Standard operating procedures for operations of Watercare's boats must be revised by Powerboat Training NZ Ltd every two years. Powerboat Training NZ Ltd must also conduct an annual spot operational assessment.

Work methods must take account of the following:

- lone working should not be permitted for workers performing tasks on or around water where there is a moderate to high risk of drowning or engulfment. A minimum number of two people should be required and should remain within sight and sound of each other at all times
- all reasonably practicable steps must be taken to reduce risks to the public around bodies of water owned, operated and maintained by Watercare
- work boats should only be operated in daylight hours
- work boat operations should be limited to fine weather or when wave height is less than the free board of the boat. The boat operator has final authority to decide on the suitability of the weather and water conditions
- all vessels must be subject to routine maintenance checks
- all vessel maintenance or repairs must be carried out by a competent service centre

Small boat operators must complete the Powerboat Training NZ Ltd course every two years. Other workers in the crew must receive an instructional briefing by a qualified small boat operator annually. These workers must also demonstrate the capability to swim 100 metres.

Emergency response

Appendix A: Definitions

Terminology	Description
Aerated water	Water to which air is artificially added
Crew	A person who has been trained in the Safe Working Procedures Small Boat Operations Manual
Intertidal Storage Basin	The area between mean high-water level and mean low-water level in a coastal region where treated water is temporarily stored
Neoprene waders	A waterproof boot extending from the foot to the chest, usually about 5 millimetres thick
Passenger	A person on the boat who is neither the operator nor a member of the crew and who is not required to assist with the task being undertaken
Personal Flotation Device	A piece of equipment designed to help a wearer, who may be conscious or unconscious, to stay afloat
Personal Locator Beacon (PLB)	A tracking transmitter that aids in the detection and location of boats and people in distress
Small Boat Operator	A Watercare qualification that authorises the operator to operate a small boat or work boat
Wader belt	An adjustable belt cinched near the top of chest waders to keep out the water
Workboat	A boat used for work or trade rather than sport, public transportation or military purposes

Appendix B: Working above or near to water bowtie analysis

Appendix C: References

Maritime NZ (2014), Developing a Specified Limits Plan. <http://www.maritimenz.govt.nz/commercial/safety/safety-management-systems/specified-limits/documents/Developing-specified-limits-plan-guidance-2014.pdf>

MIBIE (2009), Compliance Document for New Zealand Building Code Clause G8 Artificial Light. <https://www.building.govt.nz/assets/Uploads/building-code-compliance/g-services-and-facilities/g8-artificial-light/asvm/g8-artificial-light-1st-edition-amendment-1.pdf>

MIBIE (2016), Acceptable Solutions and Verification Methods for NZ Building Code Clause D1 Access Routes. <https://www.building.govt.nz/assets/Uploads/building-code-compliance/d-access/d1-access-routes/asvm/d1-access-routes-2nd-edition-amendment6.pdf>

National Environmental Monitoring Standards (2013), Safe Acquisition of Field Data in and Around Fresh Water Code of Practice. <https://www.lawa.org.nz/media/16575/nems-code-of-practice-2013-06.pdf>

Standards New Zealand (2005), Specification for Buoyancy Aids and Marine Safety Harnesses and Lines. NZS 5823. [https://shop.standards.govt.nz/catalog/5823%3A2005\(NZS\)/view](https://shop.standards.govt.nz/catalog/5823%3A2005(NZS)/view)

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WorkSafe New Zealand (2012), Best Practice Guidelines for Working at Height in New Zealand. <http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/best-practice-guidelines-for-working-at-height-in-new-zealand/working-height.pdf>