

GUIDELINES FOR INLAND WATERWAY SAFETY

**GUIDANCE AND
MINIMUM
STANDARDS**



ROYAL LIFE SAVING
AUSTRALIA

ABOUT ROYAL LIFE SAVING

Royal Life Saving is focused on reducing drowning and promoting healthy, active and skilled communities through innovative, reliable, evidence-based advocacy; strong and effective partnerships; quality programs, products and services; underpinned by a cohesive and sustainable national organisation.

Royal Life Saving is a public benevolent institution (PBI) dedicated to reducing drowning and turning everyday people into everyday community lifesavers. We achieve this through: advocacy, education, training, health promotion, aquatic risk management, community development, research, sport, leadership and participation and international networks.

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Royal Life Saving Society – Australia

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Authorisation

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Royal Life Saving Society Australia acknowledges the Traditional Custodians of Country throughout Australia and recognises their continued connection to land, waters and communities. We pay our respects to Aboriginal and Torres Strait Islander cultures; Elders past and present.



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INTRODUCTION

Inland waterways such as rivers, creeks and streams, lakes, dams and lagoons provide significant social and economic value to Australia and require comprehensive consideration in waterway planning and management.

While health, resource, environmental and recreation considerations are often the subject of dialogue and debate when it comes to inland waterway planning and management, safety remains a significant issue in how society governs the interactions between human activity and the natural environment.

Within Australia, inland waterways are the most prominent location for unintentional fatal drownings to occur, with 21% of incidents in 2019/2020 taking place at rivers/creeks and a further 13% at lakes/dams. More Australians drown in inland waterways than any other aquatic location with consistently high numbers of drowning deaths in inland waterway locations over the last 10 years.

Rivers and creeks were the top location for drowning in 2020-21 at 26% of overall drownings. 25% of drownings involved swimming and recreation, 15% involved boating and 14% involved an unintentional fall into water. 173 Australians drowned in inland waters.

The use of any water body introduces a level of risk to the public. The Royal Life Saving Society Australia has developed these Guidelines for Inland Waterway Safety in response to that risk.

These guidelines provide advice for land managers, operators, designers, developers, government authorities, sales agents and residents on water safety considerations that should be integral to the design, development

and the longer-term operation of any inland waterway.

Effective collaboration and communication among key agencies is essential to the success of water safety management programs. Community engagement is also a critical part of water safety management. It provides an understanding of what the community values about waterways and supports the planning for, and delivery of water safety management.

Other stakeholders with an interest in waterways include Traditional Owners, environmental groups, recreational users, local government, other water entitlement holders, landholders and local communities. It is important that the interests and values of these groups are incorporated in planning for, and management of water safety in and around inland waterways.

How to use this Guideline

This document provides guidance to assist inland waterway owners and operators as well as statutory authorities determine how best to manage the risk of drowning and serious injury resulting from the use of or access to inland waterways and their waterfronts.

It provides a framework that complements and links to more detailed advice from State and Territory Governments. This document is not intended to prescribe specific approaches, but instead seeks to help communities, organisations and individuals determine what is appropriate for their local circumstances.

In this Guideline, the following terms are used:

- **must** – indicates a legal requirement that businesses must comply with
- **should** – indicates a recommendation
- **may** – indicates a choice
- **can** – indicates a possibility or a capability.

SCOPE

The primary purpose of these Guidelines is to protect the health and safety of Australians from threats posed by the recreational use of inland open waterways. The guideline is a life saving guideline and is not intended to cover the health risks associated with water quality which is covered in other guidance.

The Guidelines should be used to ensure that aquatic environments are managed to be as safe as is reasonably possible so that users can benefit from all of the lifelong social, health and economic benefits of aquatic activities and recreation without any harm occurring.

The Guidelines provide practical guidance for any person or entity with a responsibility or duty to take reasonable care to reduce the risk of injury or death resulting from access to and/or use of inland waterways.

It includes information on risk assessment and managing risks within and around the aquatic environment. Each waterway has unique features, and no single document can adequately address every situation and need.

The minimum standards of the Guidelines for Inland Waterway Safety may not meet the safety requirements of all facilities, applications, programs and/or community.

Landowners and operators of recreational programs should customise and contextualise safety efforts and where practically possible maintain higher standards than those outlined in these minimum safety standards.

By the same token, one or more recommendations may be impractical or impossible to implement at a particular waterway due to an unusual geographical

feature, or for other reasons. Owners and operators should apply good judgment in fulfilling the intent of these safety guidelines. This national life saving guideline applies to all publicly accessible waterways and public-access waterfronts such as: rivers, creeks, streams, billabongs, canals, irrigation channels, dams, estuaries, harbours, lagoons, lakes, ponds, ornamental water bodies, spillways, springs, ditches, storm water drains and retention systems, swimming holes, waterfalls, water troughs, wells, weirs, wetlands, bogs, inland beaches, rock pools, city freshwater fronts, causeways, bridges, dams, trails, roads and paths.

The Guideline should be used to guide activities in particular for those who have operative control over the access to and use of waterways as well as those who benefit commercially or otherwise from the use of the waterways, including tourism operators, those running programs such as sports, recreation, camps and/or learn to swim or life saving programs.

This Guidelines have been developed by Royal Life Saving Society Australia for adoption by the Commonwealth, state and territory governments, local governments and owners and operators of inland waterways, the access to and from these waterways and/or programs and activities being conducted on these waterways.

It should be noted that drowning in inland waterways is a whole of community issue and should be approached as such with local government, state emergency services and local community groups such as recreational groups, caravan parks, resorts and local aquatic facilities being likely stakeholders in the development of coordinated community-wide preventative activities and local water safety plans.

DEFINITIONS

TYPES OF INLAND WATERWAYS

There are many types of inland water bodies. Each type of inland water body has its own characteristics and there is a lot of variation within each type of inland waterway.

Billabong: A backwater channel that forms a lagoon or pool. A branch of river running to a dead end.



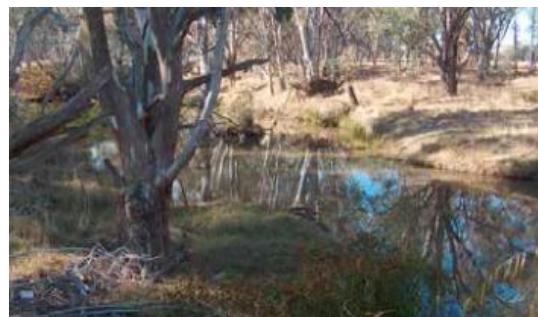
Canal: An artificial waterway constructed for navigation, irrigation, waterpower, etc.



Irrigation Channel: An artificial waterway constructed for the purposes of supplying water [Lake](#) for irrigation.



Creek: A small stream or tributary that may be fed by other rivers often characterized by intermittent flow.



Dam (Commercial): a body of water created by a barrier of concrete, earth, etc, used for a domestic water supply. May vary in size and depth, commercial dams usually owned by corporations or government. A reservoir created by such a barrier.



Dam (Farm): A barrier of concrete, earth, etc., built across a river to create a body of water, as for a domestic water supply. May vary in size and depth. A reservoir created by such a barrier.



Estuary: The widening channel of a river where it nears the sea, with a mixing of fresh water and salt (tidal) water.



Harbour: Sheltered area of water where ships or another watercraft can anchor.



Lagoon: Small, pond like body of water that may be connected to a larger body of water, can be salt or freshwater, includes billabongs.



Lake: An expanse of water surrounded by land and unconnected to the sea except by rivers or streams, may contain fresh water or salt water.



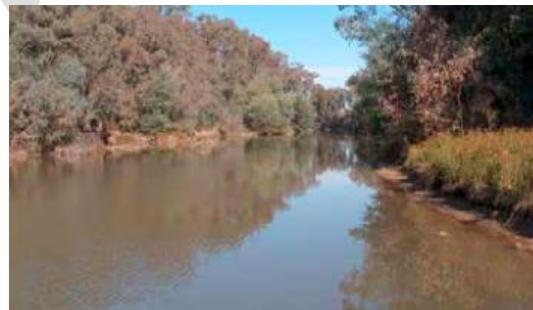
Ornamental Water Body: A body of water created artificially and purely for architectural or aesthetic effect.



Pond: A pool of still water, often artificially created, often containing fish, plants, and other ornamental features, can vary in size.



River: A large natural stream of fresh water along a definite course, usually into the sea, being fed by tributary streams.



Spillway: A channel that carries away surplus water, as from a dam.



Spring: A natural outflow of ground water, as forming the source of a stream.



Storm Water Drain: An artificial waterway constructed for the purposes of carrying away storm water



Stream: A small river or brook.



Swimming Hole: An area of a river, creek or billabong that has been set aside (officially or unofficially) for the purpose of recreational swimming.



Waterfall: A cascade of falling water where there is a vertical or almost vertical step in the river.



Water Trough: A narrow open container, typically used for food or water for animals.



Well: A hole or shaft that excavated, drilled or bored, or cut into the earth to tap a supply of water, oil, gas, etc. A natural pool where ground water comes to the surface.



Weir: A low dam that is built across a river to raise the water level, divert the water, or controls its flow.



Wetland: An area of swampy or marshy land, typically considered as part of an ecological system.



Swift water: flowing water which may be categorised according to the international river classification system. This covers water commonly known as 'moving water' or 'white water' but also refers to flowing water which may not look either 'swift' or 'white' to an observer. Please see the [International River Classification System](#) for more information. Can include moving water in nearly any environment, including areas that are not ordinarily inundated by water, like a flooded urban area.



OTHER TERMS

Coastal waterways: include all beaches (bay and surf) with direct access to ocean waters, any beach exposed to ocean swell, and any beach that is exposed to currents, rips, strong winds or surf. This may include port or harbour waterways at times with these features.

Instructional swimming: refers to programs conducted for the purpose of teaching swimming and water safety. It does not apply to water activities such as recreational swimming, surfing, canoeing, boating etc.

Lifesaving programs: lifesaving in its broadest context implies the saving of life through the prevention of accidents, personal survival and the rescue of others; they encompass a range of lifesaving programs including the Bronze Medallion.

Recreational swimming: can refer to either structured or unstructured activities in water when teaching swimming and water safety is not the main objective of the activity. These include fun days, end of year activities or water/adventure parks.

Operator: means a person or entity designated by an owner as being responsible for the operation of the waterway, or its waterfront and associated facilities. Refers also to tourism, camping, recreation, boating, swimming or program operators, accommodation providers with waterfronts, private businesses on waterfronts such as bars and restaurants and event and festival operators where waterways or waterfronts are used.

Owner: means a person or entity who owns a waterway, waterfront or the access to a waterway such as a national, state or local government, private landowner, statutory

authority, business, camp owner or private corporation.

Beach: A gently sloping strip of land separating the waterway from the rest of the inland area which facilitate access to and from the waterway for swimmers and other users.

Swimming area: means a section of the waterfront marked and designated exclusively for swimming and wading activity; free of hazards that pose a risk to the safety of patrons; in which boating is prohibited.

Lifeguard: means a person designated by the owner or operator to maintain surveillance over the patrons on a beach, in a swimming area or in the water, who supervise patron safety, and prevent and respond to emergency situations.

Patrol: means a person whose job description includes responsibility for response to aquatic rescue situations.

Patrolled waterfront: means an area designated for swimming where trained staff provide an emergency response service to first aid, water rescue situations and public education to bathers. There is no direct and constant supervision provided of the designated swimming area.

Waterfront: means the area of land adjacent to the waterway by which access to the waterway is made available.

Channel: means the width of the waterway at a particular point.

Water course: means the direction of the flow of moving water and the characteristics of the construction and/or composition of the waterway at a particular point.

River Orientation: When anyone is near, in or around rivers and canals, all visitors need to

use the same method to orientate themselves and others at the scene. As such directions are always given from the perspective of the individual facing downstream.

There are 4 basic directions:

- Upstream
- Downstream
- River Right
- River Left

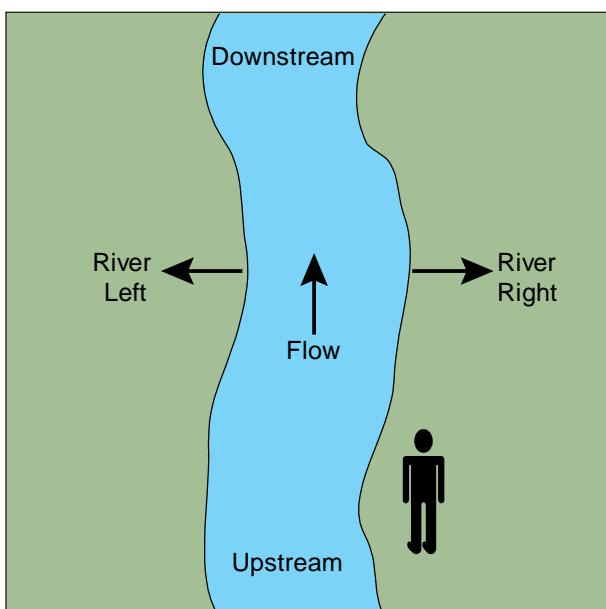


Figure 1: River Orientation

Hazard: is a source of harm to a person or property.

Risk: is the effect of uncertainty on objectives or of a harm occurring as a result of a hazard.

Exposure: is described as the contact a hazard might have on a person or thing. Exposure is a continuous variable which means it can increase or decrease by presence, number, time or frequency.

Vulnerability: describes attributes of the subject of the risk, which may be an individual, community, assets or systems.

HAZARDS

PHYSICAL HAZARDS AND MOVING WATER

Types of moving water

Rivers, creeks and many other inland waterways are natural channels of water which normally flow towards the sea or other bodies of water such as lakes or reservoirs. Tributaries, which are supply channels to rivers, are smaller flows of water created from rainfall, surface run-off and ground water. There are several names given to tributary water flow, including streams, brooks and creeks.

Estuaries are the tidal mouths of rivers (where rivers meet the sea) and these can create complex and dangerous currents. The often-murky water of estuaries is influenced by fresh river water, saline sea water and coastal conditions, including tide and wave motion. These influences contribute to one of the most prominent characteristics of estuaries, which is sedimentation of the waterbed. At low tide, the thick sediment is exposed. Estuaries can also flow against incoming waves at the estuarial mouth, causing a rip current (or in other words, a current travelling out to sea).

Waterflow and speed

Where rivers (or other waterways) flow in a straight line, the flow is at its greatest in the middle of the river and weakest near the banks (primarily due to friction on the riverbed).

As the water flows close to the riverbanks and riverbed, friction is generated between the water and edges of the river. The effect of the friction is to reduce the speed of water close to the riverbanks and bed.

The fastest flow of water is found furthest from the banks and riverbed in a layer just below the surface of the water.

The speed of the water on the surface layer is slowed due to friction experienced through contact with the air.

As water flows around bends, the main flow will be on or near the outside of the bend. It is here that the water will also be at its deepest. Conversely, the slowest and shallowest water can be found on the inside of the bend.

If the water channel gets smaller, or if the channel gradient increases or if the volume of water increases then the speed of the current will increase. This means that water speed can be variable even within the same channel of water.

Water course relationship with speed of flow

Water speed will vary dependant on the type of water course involved.

The water course will be either:

- Man Made. (i.e. Canals)
- Naturally occurring. (i.e. Rivers)

Man Made Water Speed

Variables associated with manmade water speed will include:

- Fall of the canal
- Width of canal
- Shape of the canal (vertical wall / trapezoidal walled channels); Other canals converging
- Structure of canal (concrete sides or bottom).

Naturally Occurring Water Speed

The speed at which naturally occurring water courses will run is determined by the following variables:

- Friction from composition of the river bottom

- Number of obstructions
- Size of obstructions
- Width and depth of river
- Volume of water
- Fall of the river

Water naturally flows from high to low ground under the influence of gravity. Whilst there are standard natural features that affect normal flow, objects located in the water channel can also create localised effects.

There are two different types of flow created when water moves along on a river or canal. These are:

- Helical Flow
- Laminar Flow

Helical flow

Helical Flow is created along the river / canal edges, being caused by the friction created as the water flows downstream.

This friction causes water to be slowed and pulled out and down towards the centre of the river / canal. As the current surfaces it moves back towards the area of least resistance, the riverbank where it again cycles down and out.

It is important for visitors and inland waterway management to understand that anyone who falls into this helical flow will be carried into the centre of the river and into the Laminar Flow.

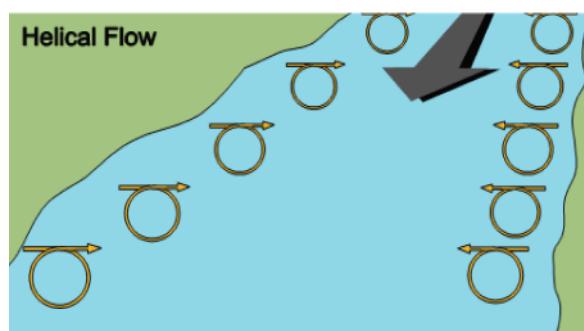


Figure 2: Helical Flow

Laminar flow

Laminar Flow will usually occur in the centre of the river / canal, in the main current.

Effected by friction on the river bottom and sides, the water will flow at different speeds throughout the depth of the current. The lower levels and outer sides will be slowed by the riverbed, whilst the surface will be slowed by friction with the air and potentially be wind effected. As such the fastest flowing water is just below the surface, at a depth where the victim would normally float.

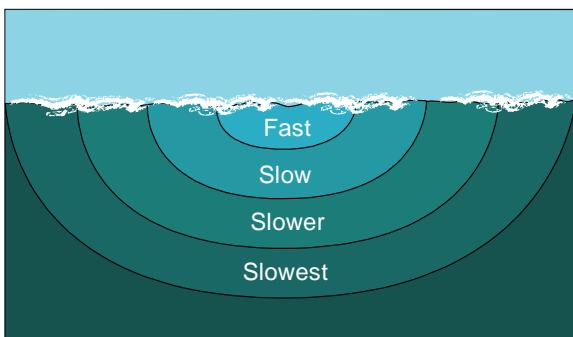


Figure 3: Laminar Flow

Current vectors

As the water flows in the water course current vectors will form. This is where the water flows along the river or canal following the easiest and quickest path.

As the river / canal winds its way along, the current will bounce from one side of the river to the other causing vectors to form. A good example of these current vectors is shown by the undercutting of a riverbank on the outside turn in a river.

By understanding these current vectors, rescuers can best anticipate the course that a victim will travel along a section of river and position themselves on the correct side of the water course to affect a land-based rescue attempt.

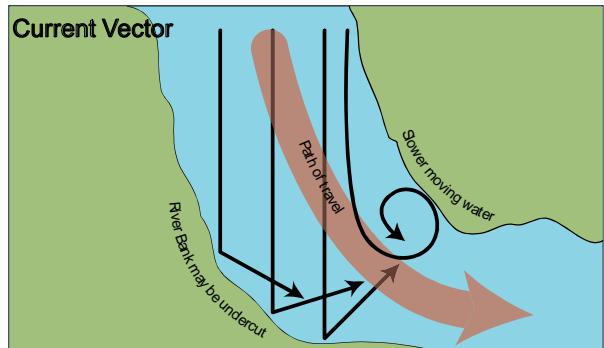
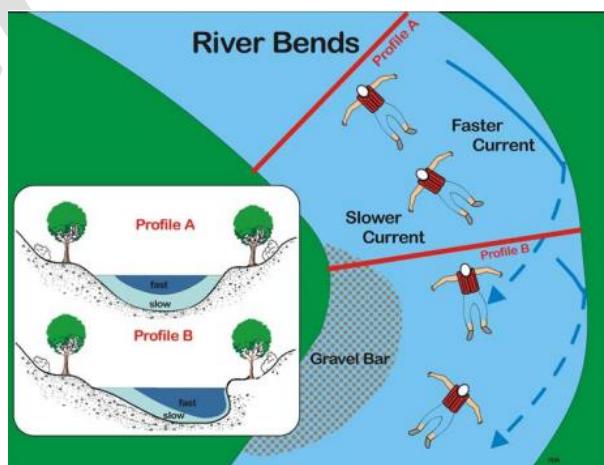


Figure 4: Current Vectors

River bends

Rivers tend to meander. When the river bends, inertia forces the main current toward the outside of the bend. As the deeper, faster and the more powerful current reaches the outside of the bend, it turns downward and creates a spiraling effect off the bottom of the river that leaves more room for surface water on the outside of the bend. The force of the water tends to erode the outside of the bend where trees and other debris fall into the river where they can form strainers. In contrast, the slower, shallower and less powerful current is usually found on the inside of the bend.



Water force

The force that water exerts on an object or person is often underestimated. Most people can be easily knocked off their feet, even in shallow and slow-moving water. It is important

to understand that the force of the water does not increase at the same rate as its speed. Water especially in the river context, is subject to a variance of properties which can drastically alter the water's velocity and erosion power.

River loads

As a river / canal flows it has the potential to pick up debris along the way.

This is known as the River Load and is broken into 3 types:

- Top Load
- Suspended Load
- Bottom Load

Top Load

The top load is usually made up of floating debris, (objects that are positively buoyant) such as wood; drums; rubbish; etc.

In flash flooding the initial wave of water will carry a large volume of debris in the top load and can be dangerous to anyone in the river / canal as the wall of water moves towards them (this is sometimes referred to as the "Golly Wash")

Suspended Load

The suspended load can be anything in the water course that is neutrally buoyant. It can include fine silt that makes water clarity very poor, to partially submersed car, or bodies.

Bottom Load

The bottom load is usually large heavy objects (objects that are negatively buoyant) being pushed along the bottom by the force of the water and assisted by the fall of the water course. The bottom load is extremely dangerous to anyone in the water as they may be crushed or pinned by the objects. Examples include cars and boulders.

Eddies

- i. Eddies are caused when water flows around an obstacle (for example, a rock) and then swirls and flows back towards the downstream side of the obstacle (against the current). In most situations, eddies don't present a high level of danger and, commonly, the calm water behind the obstacle is a safe place to shelter from the current. In rare cases with very powerful currents, eddies may present a holding effect, like a hydraulic (also commonly known as a stopper).

The harder and faster the downstream flow, the harder and faster the eddy will flow upstream or recirculate behind the obstacle. A clearly visible line may be seen between the two currents. This is known as the "Eddy Line".

This important hydraulic feature can allow a rescuer or victim to escape the main channel, making it over to the water's edge, or even to navigate back upstream against the current. It can also be used to find a haven mid-stream.

It should also be noted that whilst it is a useful feature to navigate the water course by, on "Big Flow" rivers these eddies can also contain turbulence and even whirlpools that are a threat to rescuers and victims alike. As such rescuers must be constantly monitoring the river conditions for the task at hand.

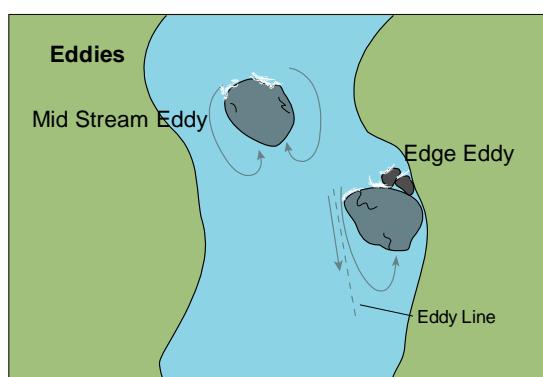


Figure 5: Midstream Eddy and Edge Eddy

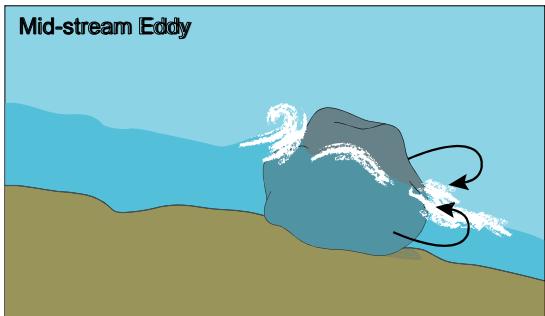


Figure 6: Midstream Eddy



Figure 7: Midstream Eddy



Figure 8: Edge Eddy with Swirl

Aerated water

When water is agitated as it runs along the water course it can become aerated. This aerated water becomes a hazard as potentially up to 60% of a person's buoyancy is lost in such water.

As such, a victim will float very low in the water, causing them to experience the feeling that they are being pulled down, this causing the individual to panic. It may also cause

ingestion of water as the victim tries to breath. Even a Lifesaver, wearing a Personal Floatation Device, will float low in the water.

Rocky shallows

Rocky shallows are typically identified by ripples on the water surface. The rocky bottom may also be visible through the water.



Figure 9. Note: Rocky shallows, ripples on the water surface



Figure 10. Rocky shallows. The rocky bottom may be visible

These types of shallows are usually found in natural rivers and streams but can occur in some man-made canals. The submerged river rocks or canal bottom may be found to be slippery under foot, particularly whilst attempting a shallow crossing. Hazards in this instance include foot entrapment or slipping and being washed downstream.

Cushion / Pillow Waves

Cushion or pillow waves form where high volumes of water flow meet a large obstruction (for example, a rock or riverbank), causing the water to 'pile up' in front of it. The waves will often push small watercraft away from the obstruction, but the impact and compression of the water can create undercut rocks and banks.

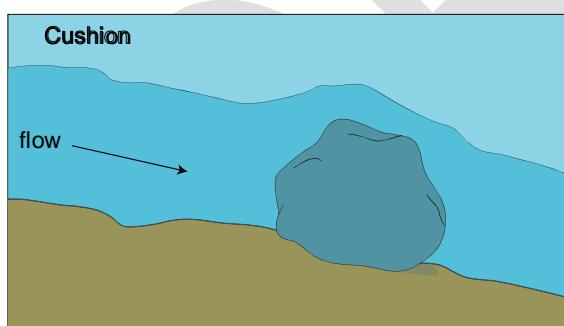
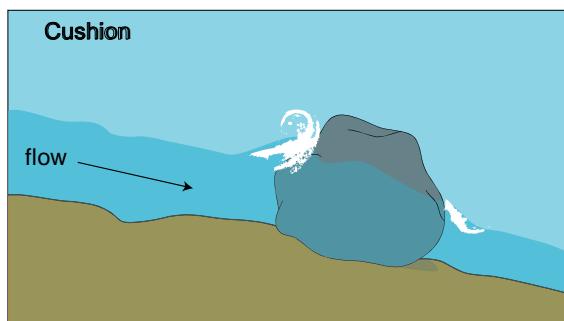
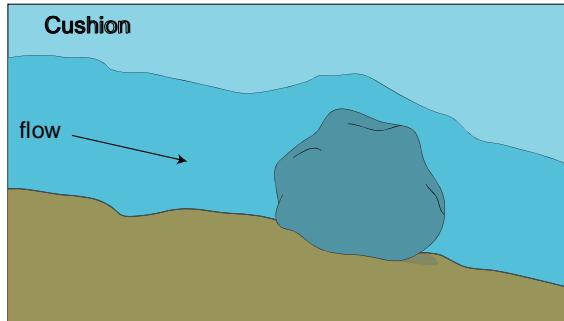


Figure 11: Cushion or pillow waves

The hydraulic effect created by the obstacle will vary dependent upon depth of water and flow rate.

Holes / standing waves

A "Hole" is a surface phenomenon, and as such can hold surface items on the face of the wave (i.e. Surface debris, rafts and boats).

A "Hole" may be found:

- As water volume increases over the top of a mid-stream obstruction
- At a constriction in the water course
- At a step down in the water course

As the water passes through the constriction or over the obstruction, the water tries to find its own level, causing the wave to break back upstream. The wave breaks continuously in the same position. Variables include:

- size of the hole.
- flow of the water.
- the body position of the rescuer / victim.



Figure 12: Small hole



Figure 13: Hole or Hydraulic? Depends on recirculating current being partial or full depth.

'Smiling Holes' and 'Frowning Holes'

These "Holes" can also be referred to as a 'Smiling' Hole or a 'Frowning' Hole dependent on them forming a 'V' pattern in the water course, usually created by a 'step down' or ledge.

A 'Smiling' Hole offers a chance to escape its effect by swimming along its length and exiting downstream to either river left or right. Whereas a 'Frowning' hole will carry the rescuer / victim to the centre and hold them there, dependent on whether the current is partial or full depth, changing the feature from a 'hole' to a 'hydraulic'.

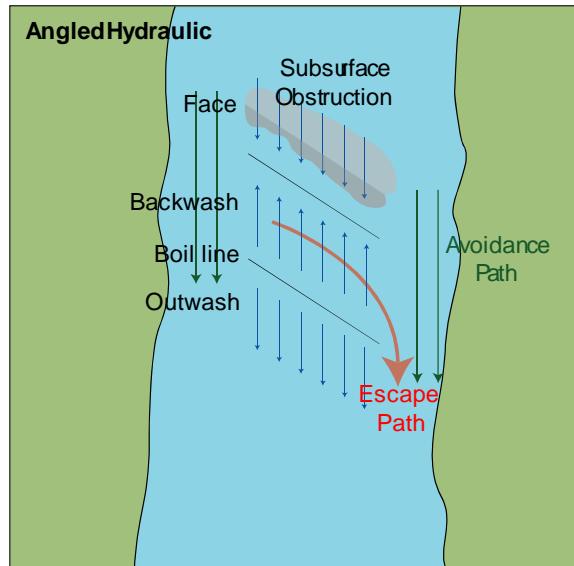


Figure 15: Angled Hydraulic

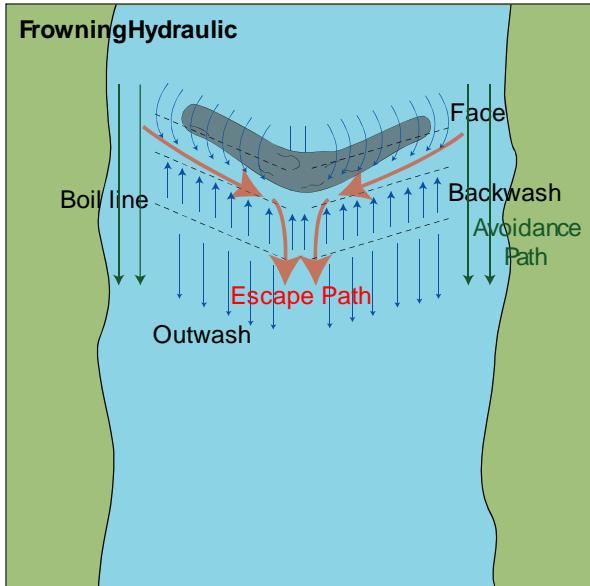


Figure 14: Frowning Hydraulic / Hole

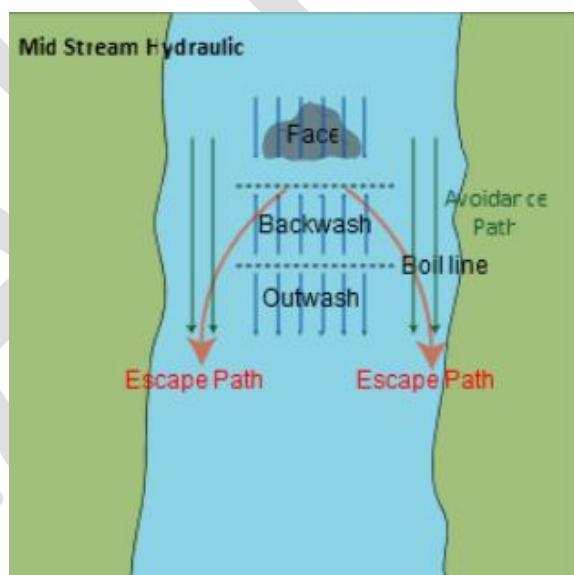


Figure 16: Mid-Stream Hydraulic

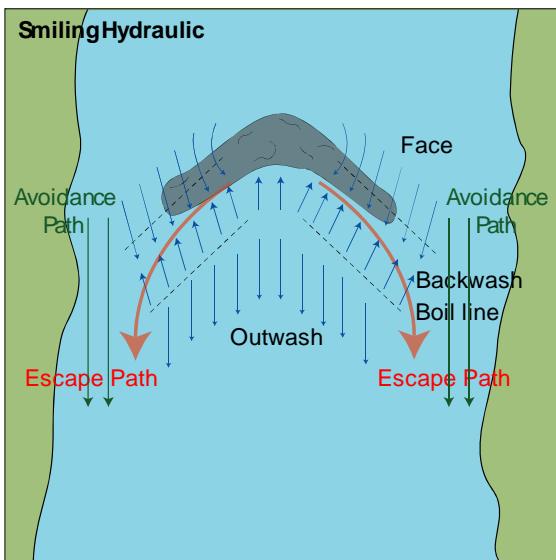


Figure 17: Smiling Hydraulic / Hole

A 'Hydraulic' is like a hole, varying in the fact that it is a full depth recirculating current that may keep an object or person in its hold for an extended period.

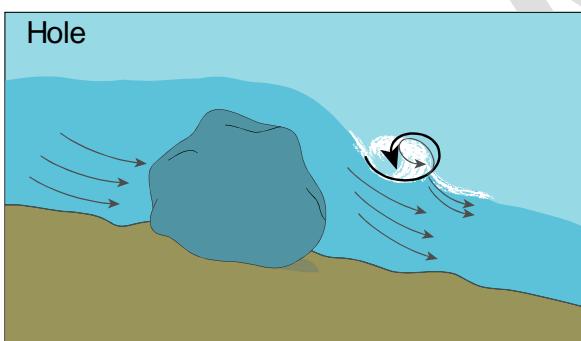


Figure 18: Hole. The partial depth recirculating current may hold objects near the surface only

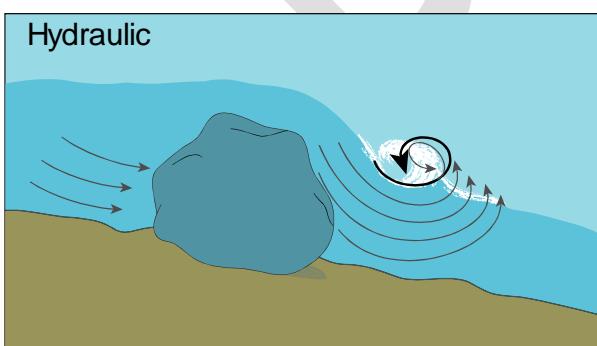


Figure 19: Hydraulic. The full depth recirculating current may hold a person indefinitely

Low Head Dams or Weirs

Low Head Dams, more commonly called "Weirs" in Australia, are also called '**Drowning Machines**' by savvy recreational water users.

Weirs are man-made, overflow style dams used commonly in rivers and canals to control the water level and flow, often to make the waterway deep enough for boats to pass through or to reduce erosion. Weirs partially obstruct the flow of the water, forcing it to either flow over the top of the weir, or through sluice gates, creating hydraulics/ stoppers.

Weir hydraulics/stoppers can be extremely dangerous, due to both their powerful recirculating motion and the fact that they often have walled, uniform edges, presenting no escape route. The features of weirs that indicate a powerful and dangerous hydraulic/stopper are:

- The height of the drop over the weir
- The steepness of the weir face
- Floating debris (stuck in the hydraulic/stopper)
- Walled in edges to the weir
- Flow rate over the weir



Figure 20: Low Head Dam / Weir



Figure 21: Low Head Dam / Weir

Low head Dams/ weirs are in effect a "Stopper", or a "Hole".

The weirs are usually an engineered solution to controlling the flow rate of manmade water courses. However, it should be noted that they can occur in natural water courses as well.

These 'drowning machines' are dangerous because:

- The water recirculates vertically upstream as well as running downstream.
- If you are caught in the upstream current you will recirculate, being drawn to the river/canal bottom time and time again until you drown or escape by pushing off the bottom towards downstream.
- The weir will normally run full width of the water course, allowing no reprieve.
- The water course will usually have vertical walled or trapezoidal walled channels, making exiting extremely difficult, without assistance.

Many rescuers and victims alike have died in low head dams and weirs.

Rescuers and users alike should under no circumstances allow themselves to be washed into a low head dam, normally indicated by an "unknown horizon" as one travels downstream.

If a swimmer gets caught in a re-circulating current from a weir, the user can tuck into a ball to sink to the bottom and attempt to swim outwards along the river floor.

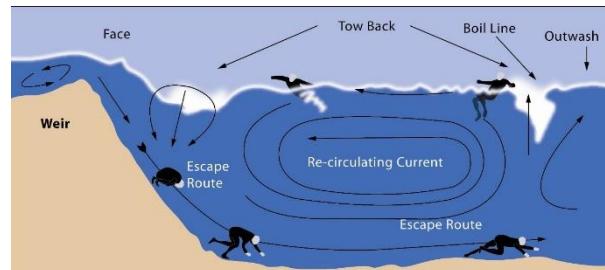


Figure 22: Low Head Dam Weir Currents / Escape

Downstream and Upstream V's

As water flows downstream, over and around various obstacles it can cause a "V" pattern in the water course.

These types of features are referred to as either Upstream V's or Downstream V's dependant on what direction they face.

An "Upstream V" will cause the water to fan out around an obstacle. A rescuer should ride past on the "Green water" to either side of the "V".

A "Downstream V" on the other hand, has the water funnelling into the point of the "V". The rescuer should ride the "Green Water" punching through the white-water.

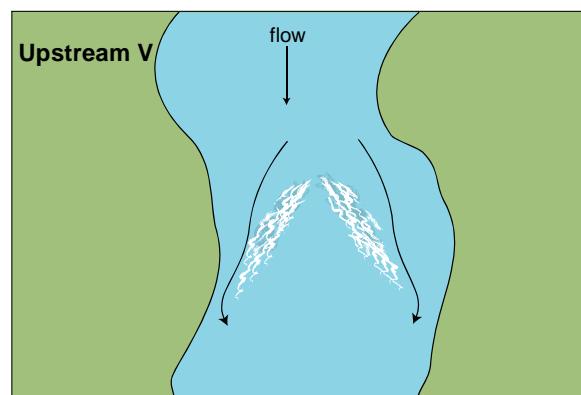


Figure 23: Preferred Paths of Travel – Upstream V

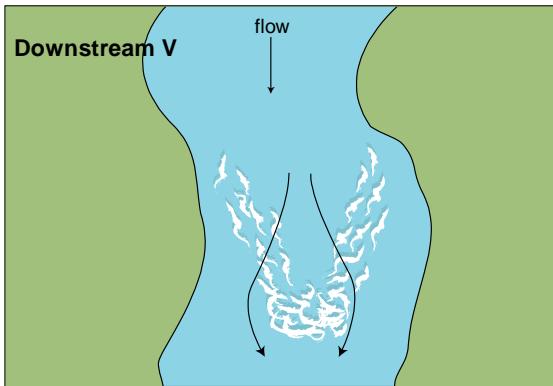


Figure 24: Preferred Paths of Travel – Downstream V

Unknown horizons

When a river or canal drops away downstream, out of your vision, it is known as an unknown horizon. If on land, make every attempt find out what is downstream, prior to any rescue attempt. If in the water, get out as quickly as possible. Horizons are evidence of a radical elevation change and can indicate dangerous rapids; a low head dam; or even a waterfall.



Figure 25: Unknown horizon

Strainers

Strainers are any fixed, or solid, objects in the water course that allows only water to pass over, under, around or through it. The most common strainers are fallen trees, rock groins, farm fencing and even traffic guard rails. A victim or rescuer may be held against a strainer and drowned



Figure 26: Strainer

Snags / submerged objects

A snag is a submerged object under the surface (typically a fallen or submerged tree) which has the potential to 'snag' or catch swimmers or vessels as they pass over it. In the majority of Australian freshwater, snags are particularly hard to see under the surface and present a very real risk to swimmers and other water users.



Figure 27: Snag

Man-made Canals

Manmade canals are designed to carry water over a specific course and at a specific rate. Designed features within the canals also create hazards for any person in the canal. These features include:

- Low Head Dams

- Vertical walled channels, where due to the channel wall height becomes impossible for a rescuer or victim to climb out of the canal even if they can get to the edge. It also hampers land-based rescue attempts as specific equipment and techniques need to be implemented.
- Trapezoidal walled channels, particularly when moss covered, also make extrication from the canal difficult.
- Bridge abutments and supporting columns for bridges crossing a water course, can act as a strainer and can pin an individual to it by the force of the water. As such you should avoid encountering these abutments wherever possible.
- Breakers will sometimes be found at the base of a low head dam or even at the convergence of two water courses. The breakers are usually found as vertical concrete columns, which assist in breaking up debris in the water course. The danger to anybody who strikes one can include drowning or severe physical injury

Causeways

A Causeway, by design, is a road that crosses a water course in a low-lying area. They may be dry most of the time, but when water levels rise in the water course: water will surge over the road surface of the causeway. Consequently, these types of crossings become more dangerous as flow across the road rises in level and speed. It takes only 150mm of fast flowing water to carry a car off the causeway.

It should also be noted that not all causeways are made of concrete or bitumen, some are made of compacted earth which may wash away if the current is fast enough or if the causeway was in poor condition prior to exposure. As such it should not be assumed that the causeway is still safe to cross or that it is safe to be used in any rescue attempt of a motorist trapped in a car on the causeway. A visual inspection must be made prior to its use.

Water flow and rising water levels must also be considered.



Figure 28: Causeway

Fishways

Fishways are passageways designed to allow fish to pass other artificial barriers in waterways. Fishways are present in most moving waterways in Australia.

Fishways are now constructed with quantitative ecological and hydrological data underpinning their design, to the point where fishways can be tailored to pass whole fish communities, target species or size ranges, and operate over a broad range of river conditions.

While the focus has primarily been on designing appropriate fishways to encourage ecological outcomes (which are important), a gap in the available guidance is the effect of fishways on human safety where these are designed in areas where human recreation occurs.

Risk that present to swimmers and other recreational users are entrapment and suction related risks causing entrapment.

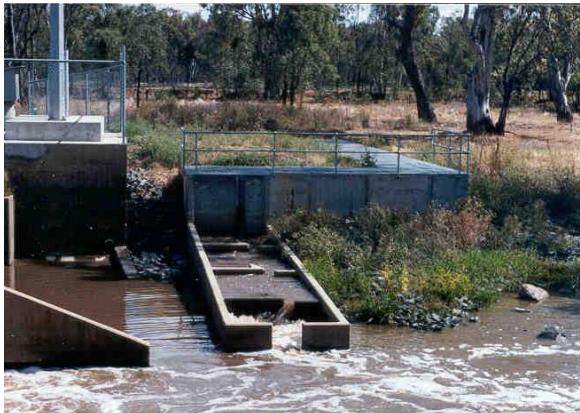


Figure 29 Fishway

GENERAL PHYSICAL HAZARDS

Shallow Water

The main risk associated with shallow water is the risk of a collision with the bottom of the riverbed or lakebed. This can lead to personal injury from mild to severe. Sadly, there are many people who have become quadriplegic from diving into shallow water.

Deep Water

Deep water is also a hazard for many people. People drown every year as a result of suddenly being immersed in water that is deeper than they anticipated. In deep water and/or in places where it is difficult to stand, people will have less support to keep their head above water which may increase the risk of drowning.

Cold Water

Cold water can rapidly weaken a person's swimming ability, cause confusion and a deterioration in the persons decision making ability. Some risks related to this hazard include hypothermia and cold-water shock. These conditions can ultimately lead to death or serious and permanent injuries.

Toxic Contaminated Water

Water quality can have a significant effect on the health and safety of the community. Poor water quality can stem from many sources such as wash off from streets, which may contain litter, chemicals, disease, other infectious debris and faecal matter. Water quality may also be compromised from a blue green algal breakout, caused by high levels of nitrogen in fertilizers that have been washed into the water or pollution from a chemical spill. These contaminants can cause mild to severe health issues which may include injury or infections related to ears, nose, skin and other gastrointestinal issues.

Water Clarity

Water clarity can be a hazard closely associated with water quality, shallow water and submerged objects. Water clarity may not pose a significant risk by itself, but it may serve to hide other, more significant dangers such as shallow water or submerged objects. Water clarity may also serve as an indicator for poor water quality.

Tides

The rise and fall of water in rivers due to tides can be hazardous for many reasons. A rising or high tide can increase water flow, move sediment and increase water levels. Low or falling tides can lead to less water, a change of flow and submerged objects being realised where they were previously absent.

Strong Currents

Strong currents pose a risk to anybody in the water and even to people in watercraft. The currents can carry people away into potentially dangerous and unknown situations. Even for a strong swimmer, dealing with a strong current can be tiring and eventually lead to drowning.

Snow and Ice

Areas where water sources may freeze over in winter such as in Australia's alpine region, are considered hazardous to walk on. Snow can be unstable and difficult to walk on increasing risk of falls and injury. Ice is especially dangerous because it is slippery and may break apart, causing potential falls and injuries. The hard surface also increases the likelihood of injury after falling.

Sudden Drop Offs-Water

A sudden change in the depth of water can lead to people finding themselves suddenly in deep water. If an individual does not have the swimming ability to get them safely back to shore and they unexpectedly find themselves out of their depth, they are at higher risk to drowning.

Sudden Drop Offs-Land

Many inland water bodies, either man made or naturally occurring, will have banks, cliffs, or levee banks with a sudden edge that people can fall over and into the water. This presents two main hazards which increase the risk of drowning. The first hazard is the nature and length of the fall. The second hazard is if the person falls into water and is unable to keep their head above water, they could drown. A fall from great height combined with an unexpected immersion in deep water, has great potential for causing injury. Falling into shallow water increases the risk of injury through striking the bottom and falling into deep water increases the risk of the person being out of their depth or being knocked out and entering the water in an unconscious or semi-conscious state.

Slippery Rocks and Surfaces

Water will often make surfaces slippery. This includes rocks, wood and concrete, of which are often found beside inland water bodies. In addition, water will often encourage the

growth of moss and lichens that make surfaces slippery. Slippery surfaces are hazardous due to the risk of injury from falling over, and the risk of drowning due to potential for an unexpected immersion to occur.

Submerged Object

Submerged objects include any matter, natural or man-made that is underwater and may or may not be visually identified from the surface. Submerged objects increase the risk of a dangerous collision. The collision could occur between the submerged object and a watercraft, a water skier, a swimmer or someone who is entering the water. Due to the nature of many inland water bodies, submerged objects may not always remain stationary. Currents will move submerged objects downstream. Swimming holes clear of submerged objects may rapidly change due to transitory submerged objects. This is important to remember in inland waterways, as many are surrounded by trees and vegetation which can be deposited into the water.

Inlets and Pipes

Many water bodies have inlets for pipes that are used to redirect water for reasons such as irrigation, maintaining water levels, cooling of equipment etc. These pipes have a suction effect as the water is drawn into them. The suction and resulting current into the pipe or inlet can be significant enough to pull a person into the centre of it. The suction itself can cause injuries and increase the overall risk of drowning, if the person becomes trapped with their head under the water.

Pumps

Pump inlets in dams and/or reservoirs are also hazardous due to the moving water in and around the pump. These pumps have potential to pin you to the intake and make it very difficult to remove yourself from danger.

Uneven Bottom

Uneven riverbeds or lakebeds are a hazard especially to those who are not intending to go into deep water. For weak or non-swimmers', uneven riverbeds or lakebeds may cause them to fall into a hole or slip down a drop off and become unexpectedly immersed in the water. Unexpected immersion increases the risk of drowning and other unintentional injuries.

Unstable Riverbanks or Waterbeds

A crumbling riverbank can lead to an accidental fall in the water, by persons and rescuers alike. Falls are a common occurrence in and around waterways which can lead to drowning after unexpected immersion. Some shorelines or waterbeds may also be composed of silt or soft sediment which may put someone at risk to entrapment if the individual is unable to pull themselves out of the quick sand or soft sediment.

Overhanging branches

Overhanging branches have been known to break or collapse and become hazards in the water for swimmers or persons participating in aquatic activities. Large hanging branches are often used as a point of entry for diving into the water but due to hazards such as submerged objects or shallow water, it is not recommended.

Vegetation

There are three ways vegetation can be considered a hazard in and around inland waterways. Firstly, vegetation can be hazardous in waterways if a person becomes caught within its tangles and is unable to free themselves. Being unable to free oneself may cause panic, anxiety and ultimately increasing the risk of drowning as a swimmer becomes tired.

A second reason why vegetation can increase drowning risk is that it often occludes the edge of the water body. This can lead to a situation where somebody becomes accidentally immersed as they were unaware of where the land ended and where the water began. Lastly, some vegetation might have sharp and/or poisonous leaves or thorns.

Wind

The wind is not an obvious hazard associated with inland water bodies; however, it can present significant danger in several ways. Firstly, wind impacts watercraft such as dinghies, small sail boats and other inflatable craft such as lie-lows and rubber boats. The wind can blow these craft off course and away from safety. Strong gusts of wind can also cause watercraft to capsize, resulting in unexpected and sudden immersions. Both effects of wind can lead to a situation where people are put in danger. A secondary hazard associated with wind is the effect that wind has in ruffling the surface of the water. This can impact visibility and cause clear water to become obscure, hiding submerged objects and other hazards that may be underwater.

Rainfall & Flooding

Australia is known to have large amounts of rainfall in a short period of time. There are many inland water bodies that only have water in them when these rain events occur. Thus, these rain events can result in a sudden dramatic increase in water levels in lakes and rivers. In these circumstances, not only can the water levels rise, but the behaviour of the water can also change considerably. Currents can become faster and stronger and can carry submerged objects and hazards with them. Storm water drains are particularly susceptible to these rapid changes from dry to raging torrents.

Additional hazards that may be present during flooding events:

- Sharp objects hidden by flood water
- Open manhole covers hidden by the flood waters
- Electrocution from submerged power lines and other electrical systems
- Water contamination from fuel oils and sewerage systems
- Fertilizers and other chemical contaminants
- Animals, reptiles and spiders looking for high/dry ground
- Liquid Petroleum Gas cylinders damaged by water flow may cause an explosive atmosphere as heavier air vapour pools in low lying areas
- Mud
- Trees may fall as saturated soil can no longer support the weight of the tree
- Building collapse / instability caused by the failure of footings or the force of flowing water

ANIMAL AND INSECT HAZARDS

Animals

Australia is renowned worldwide for its dangerous animals. The dangerous animals which inhabit some of Australian inland waterways can be placed into three main categories.

1. Bull Sharks

There is a common misperception that sharks are only found in the ocean however, there are a few species that make their home in fresh inland waterways. One species, the bull shark, can adapt to both fresh and saltwater habitats. The bull shark has been found thousands of kilometres upstream from the mouth of rivers. They are unpredictable and very aggressive species of shark. The bull shark is commonly listed as being one of the top two species of sharks involved in attacks on humans. Bull

sharks are found in warmer waters from Perth in the west, around the top of Australia and down the east coast to Sydney [10].

2. Crocodiles

Crocodiles are separated into two different species: salt water and freshwater crocodiles. Both species of crocodile are found in the tropical north of Australia and have a history of attacking humans. The crocodile most notorious and aggressive is the saltwater crocodile. Despite its name, saltwater crocodiles can also be found in freshwater environments and will move from water body to water body depending on the season and food supply.

3. Snakes

Venomous snakes are found throughout all of Australia. Several species of snakes are known to be good swimmers and many other snakes are found in the vegetation around water bodies or at the water's edge. The most common species of venomous snakes to be found around inland water bodies include: the brown snake, tiger snake, red bellied black snake and the Australian copperhead.

*Other Animals

There are many other animals near and around inland waterways that are dangerous to humans. For example, the iconic platypus can deliver a very painful sting. The male platypus has a spur behind both of its hind legs which it will use for self-defence. Stingrays can be found in inland water bodies such as estuaries or rivers with tidal movement. Stingrays have barbs on their tails and will use them for self-defence purposes.

Insects and spiders

There are many venomous insects and spiders in Australia which can be hazardous to users of waterways and waterfronts and can lead to serious sickness, injury and/or death.

ACTIVITY-RELATED HAZARDS

Alcohol and drug use

Alcohol consumption can increase the risk of drowning by impairing judgement and reaction time, increasing risk-taking behaviour, and reducing coordination. Medications can cause drowsiness, affect alertness, and impair reaction time. Illegal drugs can numb the senses, reduce inhibitions, and distort the perception of risk. Alcohol and drug use should be avoided around water.

Collision with Watercraft

There are many inland water bodies where watercraft and boats are used, this may include: canoes, kayaks, dinghies, motor cruisers, water ski and wakeboarding boats, etc. As such, there is a risk that one of these crafts may collide with a person in the water, submerged obstacle or another watercraft or boat. The risk of a collision is increased in areas where watercraft are operating close to people who are swimming and in narrow waterways where watercraft have limited ability to manoeuvre.

Crowding at popular community facilities

Crowding at community facilities, popular locations or in public spaces near inland waterways may increase exposure or the likelihood of exposure to hazards for people visiting these areas. Although community facilities in and of themselves are not hazards—if maintained and monitored properly, a popular location that is inundated with crowds of people, can become a hazard to safety. Visitation management and utilisation of ratios for organised activities at inland waterways are control measures that can improve safety and management practises at inland waterways.

River Crossings

Vehicular crossovers, also known as causeways, are considered hazardous during flood events as cars may be washed away below the visible surface level or are underwater. It should be noted that it only requires 10-12 cm for a car to begin to float. This small amount of water is enough to potentially stall a car during crossing, and if the water is flowing, wash the car from the crossing.

Risk-taking behaviour

Risk-taking behaviour involving poor decision making, such as alcohol consumption, not wearing a lifejacket and swimming alone, can also increase the risk of drowning.

Pre-existing medical conditions

Every year dozens of Australians drown because of pre-existing medical conditions. Royal Life Saving recommends that people aged 65 years and over undergo regular medical check-ups to ensure that any health conditions are detected early, treated effectively and monitored appropriately. Children and adults with a history of epilepsy should always be supervised when in, on or around the water.

GENERAL RISK REDUCTION STRATEGIES IN INLAND WATERWAYS

The following gives a general description of potential risk reduction strategies and control measures. The measures listed below can contribute to drowning prevention but may not be applicable to all situations or inland waterways.

Please note that risk reduction strategies should only be considered following a structured risk assessment of the relevant inland water body and its uses. This avoids implementation of ineffective control measures which may provide a false sense of safety and security and may also inflict adverse impacts to the environment and those in and around the waterway.

The following risk reduction strategies are general in nature and are provided to inform risk management. For some activities, locations, waterways, waterfronts and contexts, specific guidance is contained later in these Guidelines.

Elimination

Eliminating a water body may be the most appropriate course of action in some circumstances. The RLSSA acknowledges that elimination of a water body may be the best risk reduction strategy a set of circumstances however, the intent of these guidelines is risk management, not risk elimination. Aquatic recreation is an integral part of a healthy and enjoyable Australian life. The Guidelines are intended to support safe recreation and use of waterways.

Isolation

Isolation of water is recognised as an effective method of reducing the risk of drowning. This same strategy can be implemented in the

inland waterway context, around dams, ponds, lagoons, billabongs and other bodies of water. Where waterways are situated on private property, a fence or similar isolation is recommended around the property boundary to ensure visitors to the property do not inadvertently drown.

Installation of barriers

Implemented to reduce the likelihood of unintentional entry into the water where the consequence may be significant or where exposure to the water young children is high.

Barriers may be temporary (at times where increased exposure due to events) or permanent in nature.



Figure 30: Barriers

Maintenance

Regular maintenance in line with manufacturer's recommendations should be done on all equipment and plant associated with inland water bodies, including but not limited to:

- Isolation fencing and gates
- Barrier fencing and gates
- Other water entry and exit points
- Irrigation equipment such as pumps, inlets and outlets
- Safety equipment such as helmets and pfds

- Rescue equipment such as buoyancy aids and first aid kits
- Watercraft
- Engines
- Appropriate signage
- Monitoring of fencing

Checking the Conditions

By simply checking the prevailing conditions before acting, many instances of drowning and injury resulting from exposure to inland water bodies can be prevented. The following conditions should be checked prior to interaction with an inland waterway:

- Overall weather forecast
- Direction and strength of wind
- Rain forecast at the water body
- Rain forecast in the catchment area of the water body
- Uv level rating
- Air quality
- Depth of the water
- Presence of submerged objects
- Presence of currents
- Strength of currents
- Water temperature
- Presence of animals

Scanning / S.O.N.A.R

A range of low-cost SONAR and fish scanning devices can provide accurate assessments of debris, snags, rocks and other objects under water. This method of mapping waterway floor beds, particularly where recreational activities and/or swimming activities occurs is useful for identifying areas of higher risk and/or giving consideration to the removal of hazards from recreational areas.

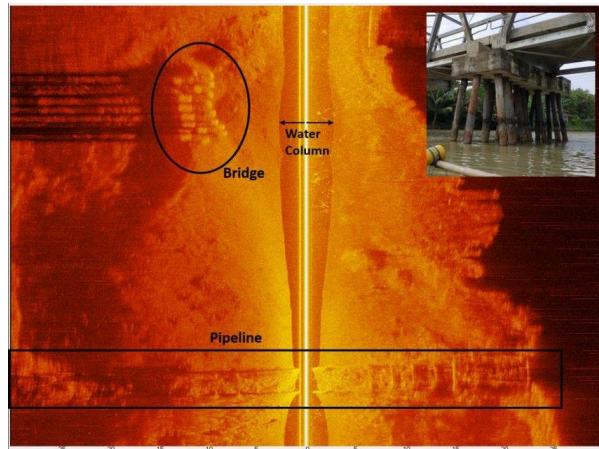


Figure 31: SONAR Imaging

Dredging / Clearing / Dragging

There are many hazards that are associated with inland water bodies that may be transitory in nature. Submerged objects such as logs, or other vegetation and debris may be carried into the area one day and away another by the prevailing currents. A regular program for checking and removing transitory hazards should be implemented, particularly if an inland water body is a recognised swimming venue.



Figure 32: Dredging an Inland Waterway

Once a transitory hazard such as a saltwater crocodile, a submerged log or a build-up of silt or mud has been removed, there remains the potential that other similar hazards will return. For animals such as bull sharks, stingers and crocodiles it may be necessary to implement a monitoring and management program

specifically for the animal hazards to ensure safety among visitors. Additional consistent control measures will need to be taken to warn users of the inland water body of the hazard, such as safety signage, patrolling or public education measures.

Emergency Planning

An emergency action plan is a vital tool in minimising the harm caused by a hazard associated with an inland water body. There will always be risk associated with interacting with the natural environment and with our inland waterways. When things go wrong, a carefully planned and well-practiced emergency plan can greatly reduce the negative consequences. Emergency plans are not just applicable to organised activities but are applicable to unplanned activities. An emergency plan can be for a single person although it is more likely to succeed if there are at least two people. An emergency plan can easily be established at a farm or for a family.

The basic contents of an emergency plan include:

- Response to a minor incident (such as a minor first aid)
- Response to a major incident (such as a heart attack or a near drowning)
- Procedure for calling emergency services & an emergency communication plan
- Location of rescue, first aid and resuscitation equipment

For an emergency plan to be most effective, all participants should be knowledgeable and well-practiced in its content.

Provision of Supervision

There are many types of supervision in relation to activities in, on or near inland water bodies. Supervision can be defined in the following ways:

1. Formal supervision by a trained professional like lifeguards
2. Formal supervision by a trained volunteer in the case of a community group or sporting club such as a canoe club or other organised activities; and/or,
3. Adult or parental supervision of children.

Children under the age of ten should be under the active supervision of an adult or guardian who is aged at least 16 whenever they are interacting with inland waterway.



Figure 33: Inland waterway supervision

Provision of Safety Equipment

Appropriate safety equipment should be provided at any activity on, in or around an inland waterway. Different activities will require different safety equipment and some activities may not require any safety equipment. The best way to determine the required safety equipment for the activity is to either consult with experts, review the law and/or to undertake a risk assessment. All participants in the activity should be appropriately trained in the use of the relevant safety equipment. Safety equipment may also include provision of

boat operators for those who require help with watercraft or boat use.

Safety equipment may include the following:

- Sunglasses
- Sunscreen
- Wet suit / booties
- Lanyards (connected to engine kill switches or similar)
- Personal floatation device (PFD)
- Flares
- Helmet
- Gloves
- Buoyancy control device (BCD)
- Propeller guards
- Knives
- Ropes
- Emergency Locator Beacons (EPLRB)

Provision of Rescue Equipment

There is at present no internationally agreed standard for distribution/ placement of public rescue equipment. As a minimum equipment provided for public use should be:

- Clearly positioned and
- In colours of red and yellow at an optimal height for ease of access
- Appropriately sign-posted

The frequency of placement and locality should be determined by visitor numbers and based on a systematic risk assessment. Regular inspection of the equipment throughout the year is required and replaced/ repaired when necessary. Vandalism of rescue equipment is a very real problem experienced by all waterway authorities, so budgetary provisions are advisable. Evidence suggests that rescue equipment in secure housing may provide a better deterrent to vandalism. The housing should be secure but easy to open when required.

Appropriate rescue equipment should be provided where possible for activities on or in

an inland water body. Different activities will require different rescue equipment and some activities may not require any rescue equipment. The best ways to determine the required rescue equipment is to either consult with experts, review the law and to undertake a risk assessment. The rescue equipment should be easily accessed for emergency situations.

Emergency equipment can include:

- First aid kits
- Reach poles
- Rescue tubes
- Throw ropes
- Life buoys
- Rescue tubes & flippers
- Rescue boards
- Inflatable rescue boats
- Personal watercraft

People who are expected for reasons of employment to be able to use the emergency equipment should be fully trained in the use of that emergency equipment including any relevant formal qualifications. Rescue equipment that is intended to be used by untrained people should have clear instructions on how to use it.

For public-access rescue equipment, the equipment should be visually prominent, recognisable and simple to use, such as a throw ring / life buoy.

Rescue equipment should be considered for all swimming locations or high-population-density inland waterways where there are significant amounts of visitors.



Figure 34: Life Buoy / Throw Ring

The rescue equipment should be readily accessible, that is, able to be accessed quickly in an emergency.

Public rescue equipment can include:

- first aid kits
- reach poles / throw ropes / life buoys
- throw bags
- defibrillators

Resuscitation equipment and advanced rescue equipment

Appropriate resuscitation equipment should be provided at any workplace or commercial activity on, in or around an inland waterway and staff should be trained and competent in its use.

Resuscitation equipment may include:

- An oxygen resuscitator
- Appropriate facemask
- Defibrillator
- Suction equipment (if applicable)

Advanced rescue equipment should be available to lifeguards and/or trained water rescue staff for workplace or commercial activities on or around inland waterways.

Advanced rescue equipment may include:

- A spinal board
- Straps

- Headblocks

Activity Plans

When conducting any organised activity on, in or around an inland waterway, the organisers should develop an activity plan. This plan should include things like start and finish times, what the activity is, and where the activity is being held.

A copy of the activity plan should be distributed to all participants and if appropriate, to an emergency service such as the police or with a parks and wildlife service. These precautions should be implemented so if anything goes wrong and the activity plan is not met, people will know very quickly even with no communication and will be able to get help in as short a time as possible.

For any large-scale event the promoter or responsible authority should require a 'Job (or Task) Safety Analysis' and risk assessment as the formal basis for identifying risk in the proposed activity and the risk reduction strategies required to render the activity acceptably safe. It is common for the JSA and risk assessment to be a requirement imposed on the parties setting up and managing the event (such as contractors, security, catering, fire protection and emergency planning etc).

Public Education

Public education is a vital part in inland water safety. If a watering hole is no longer safe for swimming due to a blue green algal bloom, it is very important to let visitors know. Public education can include things such as newspaper adverts, information bulletins on electronic media such as the radio, television and the internet, public meetings, letter drops, school programs, community activities such as fetes and fairs etc.

Public awareness campaigns such as Royal Life Saving's "Keep Watch" program are ideally suited water safety programs that can be disseminated to the public in many forms.

Training

Water safety training, including swim lessons, is a vital tool in drowning prevention. Any training relevant to inland waterways should involve potential hazards associated with inland water bodies, how to identify them and what to do if an emergency occurs. Water safety training can include general water safety courses such as Royal Life Saving's Bronze Medallion, learn to swim programs such as Royal Life Saving's Swim and Survive, cardiopulmonary resuscitation, first aid courses and much more.

Prohibitions

If certain activities have been identified as having an unacceptable risk level, then these activities can be prohibited. Some examples of this are the prohibition of diving because of shallow water, while allowing swimming to continue, or the prohibition of swimming while allowing boating.

For prohibitions to be effective, they must be:

- Clearly communicated and disseminated to the people or focus population who is expected to abide by the prohibitions, signage is great option to address this need
- Actively enforced. A prohibition that is not enforced runs the risk of not being taken seriously by the focus population

Signage

Signage is a risk reduction strategy especially where remote supervision is limited. For signage to be effective, it must be appropriate to the population, visible, legible and understandable to those who need to see it. The use of pictorial signs placed at the appropriate position is also an important communication strategy, to ensure understanding across a broader scope of people, such as non-English speakers. Signage should comply with the Guideline on inland waterway signage and ISO 20712: 2020 *Water safety signs and beach safety flags - Part 3: Guidance for use*



Figure 35: Signage on the Yarra River



Figure 36: Signage on a Golf Course



Figure 37: Signage at McKenzie Falls



Figure 38: Signage at Wagga Beach

Insurance

Insurance is a form of contract (policy) where financial risk is transferred to an insurance company for a fee (premium). As there are differences between policies, the document needs to be read carefully and the scope of indemnity fully understood. People, companies or community organisations who hold, host or plan organised activities on inland water bodies should have public liability insurance for these events.

Separation of Activity Use/Zoning

Separation of uses of the same inland water body by boating and swimming, should be considered. With this strategy, designated swimming areas should be kept well clear of any boating infrastructure such as jetties and ramps and all should be clearly marked by buoys (or similar).

Swimming and boating are designated for specific zones or areas to prevent injuries or other collision related issues.

Designated swimming areas should be kept well clear of any boating infrastructure such as jetties and ramps and should be clearly marked by buoys (or similar). Separation may also include the zoning of high-risk aquatic activity to swimming.

Aquatic Activity Zones should be identifiable from land and while in/on the water using buoys and/or signage and in larger areas may require a map of the specified zones.



Figure 39: Activity Zoning

Safe Design of Pathways / Trails / Bridges Around Waterfront

Implemented to reduce the risk of unintentional entry into the water. Pathways designed a distance from the water's edge, above tidal and flood levels with ambient

lighting can help shape an individual's travel path and discourage egress along water edge.

Implemented to reduce the risk of unintentional entry into the water.

Quality pathways are level in nature with no slip or trip hazards. They are built with a demarcation of the edge of the pathway. These pathways are only preferred when pathways cannot be a distance from the water's edge.



Figure 40: Safe Pathway Around and Over Waterway



Figure 41: Safe Walkway Adjacent and Over Waterway



Figure 42: Walkway Over Waterway

Egress from Waterway

Implemented to aid with the egress of persons on vertical platforms that are difficult to access once in the water.

Typically designed using ladders, ropes or chains. This does not change the hazard or likelihood of entry however may increase the chance of survival by having both a means to hold on to and exit the water. This is most common in canals, harbours and on jetties.



Figure 43: Egress Support for Waterway

Redesign Gradient of Water's Edge

Implemented to reduce risks associated with entry to the water (intentionally and unintentionally) and improve access to exit the water.



Figure 44: Waterfront Gradient Reduction Works

Environmental means minimise the engineered look and retain a natural feel.

Design of Fishways Entries / Exits

Design of fishways should be undertaken in such a way as to minimise the risk of aquatic related injury and/or death to swimmers and recreators in the waterway.

The *Guidelines for the design, approval and construction of fishways* (O'Connor, Stuart & Jones, 2017) recommend fishway 'trash racks' should be installed to 'avoid debris build-up' and recommend a 45-52 degree slope to 'allow debris to rise to the surface, and constitute three times the area of the fishway channel to maximise the surface area filtered.' They note 'floating booms can also be installed to deflect debris'.



More research is needed into the drowning risk presented by this design, however, additional consideration should be:

- Whether there is an entrapment risk presented by the distance between slots
- Ensuring slots are vertically arranged and not horizontal
- Ensuring a sufficiently shallow angle that a person could pull themselves to safety
- Ensuring some form of railing or exit is available in the event a person becomes at risk of entrapment
- Balancing the environmental and ecological considerations with the recreational use of the area – consider zoning areas so that swimming is prohibited if necessary or designing the fishway so as not to present a risk to swimmers

Design of Specific Water Entry / Access

Implemented to reduce the risk of unintentional entry into the water and/or used to assist in designating locations where swimming and recreational activity can take place.

Design of specific entry / access also assist in injury minimisation. Ramps should be designed with the principles of access for all in mind and relevant.



Figure 45: Jetty Constructed for Water Access

Local Water Safety Plan

Aquatic incidents and emergencies can vary between land and water, and can be the result of natural processes or human action.

A locality specific waterway-based water safety plan should consider many preventative and emergency situations including swimming and water safety education, public awareness campaigns, hazard reduction, zoning, prohibitions, vessel accidents, pollution event, severe weather, structure collapse, structure climbing / descending emergencies, and natural disasters such as flooding.

The plan should be developed with the involvement of cross-stakeholder consultation with all relevant stakeholders. This may include relevant personnel from the local government authorities and regional agencies for the State government, emergency services representatives and local safety organisations

Local Water Safety Plans should:

- Provide a criterion for risk assessment by relevant authorities
- Allow for identification of sites posing unacceptable risks to public safety with a specific focus on drowning safety; and,
- Support the allocation of resources to improve water safety within the community
- Priority actions should be informed by the likelihood and consequence of failing to address the identified risk

The plan and associated emergency actions should be tested and periodically practiced, and the existence of the plan should be communicated with relevant stakeholders, and the community at large.

Emergency Warnings / Communications

Emergency phones placed in remote areas or areas far from patrol offices which for emergency calling around the inland waterway to access dispatch for emergency services.



Figure 46: Emergency Phone

Systems should be in place to warn users of waterways and waterfronts of imminent danger from flood, poor water quality, storm, algal bloom or other significant and/or sudden natural hazard.

Warnings can be in the form of signage, SMS messages, radio announcements, closure / barriers and/or other public announcement measures.



Figure 47: Flood Warning Sign



Figure 48: Flood Warning Boom Gate

Activity Restrictions / Prohibitions

In addition to the zoning / activity considerations, the separation of swimming and boating may necessitate the need for prohibition and/or warning signage advising that swimming is not advised. A distinction between the two types of signage (prohibition and warning) needs to be made as considerations arise with each alternative.

Fundamentally, a prohibition 'No Swimming Sign' can be interpreted as requiring a systemic approach of reinforcement/ policing (e.g. enforceable within local laws regulations). If it cannot be feasibly enforced, consideration should be given to erecting an advisory warning sign of 'Swimming Not Advised'.

Consultation should be made with the local laws or relevant regulatory enforcement body.

Designated Swimming Areas / Patrolled Beaches

A lifeguarded area or designated patrolled swimming area is one at which a trained lifesaver and/or lifeguard is stationed during

prescribed times and designated by the flying of red and yellow flags.



Figure 49: Neptune Royal Life Saving Club

A lifesaver/lifeguard or lifeguard vehicle that periodically visits or checks shorelines should not be considered as providing a patrolled or lifeguarded waterfront and banks by either the management or the population served.

Waterfront visitors should be made aware of the location of the guarded and unguarded sites so that they may make an informed choice as to where to swim. This can be achieved through appropriate signage, advertising in local media, and public awareness through residential and accommodation promotion.

Supervision

The supervision of aquatic environments such as inland waterfronts, beaches and banks, is often required in order to manage locational risks.

These risks arise due to several factors that include prevailing water conditions, proximity to large populations of people or attendance to a particular waterway due to its proximity or attractiveness. The following elements of the hierarchy of supervision, are vital components of effective aquatic supervision:

Visual supervision is vital in any effective supervision.

Lifeguards at inland waterfronts, water-edges, towers, in-water and/or in combination are the most effective method of supervision. They provide supervision that is capable to prevent incidents. They can be mobile to compensate for changing environmental conditions such as the weather and water conditions. They can also modify the waterfront environment to factor for changes in visitor numbers and behaviours such as events.

Continuity of supervision refers to the importance of uninterrupted, undistracted and dedicated supervision in order to detect and respond to imminent threats within the aquatic environment.

Proximity of supervision in the aquatic safety context can be defined as the location (waterway access points and edges, in a lifeguard tower, mobile, in-water, on vessel or vehicle etc.) of persons providing supervision (lifeguard) to persons in proximity to the waterway and / or in the water such that they can affect an intervention to minimise the risk of injury or death.

Timeliness of supervision is the provision of supervision at appropriate or opportune times where there is a reasonable likelihood, determined by historical and real time data analysis, of people being in proximity to the waterway or in the water and requiring intervention to ensure their safety from risk of injury or death.

There are a range of waterway specific supervisory services that should be considered as it is not "one size fits all". They include:

- Full time comprehensive Lifesaving Service with appropriate levels of trained personnel, fixed and portable facilities, equipment, craft, vehicles and links to central command and emergency services.

- Seasonal Lifesaving Service with appropriate levels of trained personnel, portable facilities, equipment, craft, vehicles and links to central command and emergency services.
- Seasonal Lifesaving Service with trained personnel, portable facilities, some equipment and craft, and links to a command centre.
- Camera surveillance, however the limitations as outlined above must be noted
- No Service, but the provision of Safety Signs.

As is often the case, the provision of supervision can be difficult to establish and is often not provided for some or all of the following reasons:

- The provision of a service may encourage attendance at a non-suitable location
- Difficulty locating suitable volunteers
- Deemed too cost-prohibitive and therefore not provided by the responsible management or ownership agency.

Community Education

Education and awareness programs for residents and visitors (tourists) alike have been shown to be effective in controlling risks at aquatic recreation waterways.

Public education and safety awareness programs outlining known and likely occurring hazards should be implemented within communities who use inland waterways. Additionally, local community groups should also be made aware of any potential hazards associated with their local waterway environment i.e. primary school children.

Targeted communication should be delivered to CALD communities. CALD communities can be at higher risk of misinterpreting or misunderstanding risk due to:

- Language and comprehension difficulties, including the ability to understand English warning signs,
- The inability to swim; and,
- Different understandings of water safety, including when a body of water is dangerous.

Community groups may benefit from the delivery of a range of structured and / or informal education programs. These programs would ideally revolve around the acquisition of

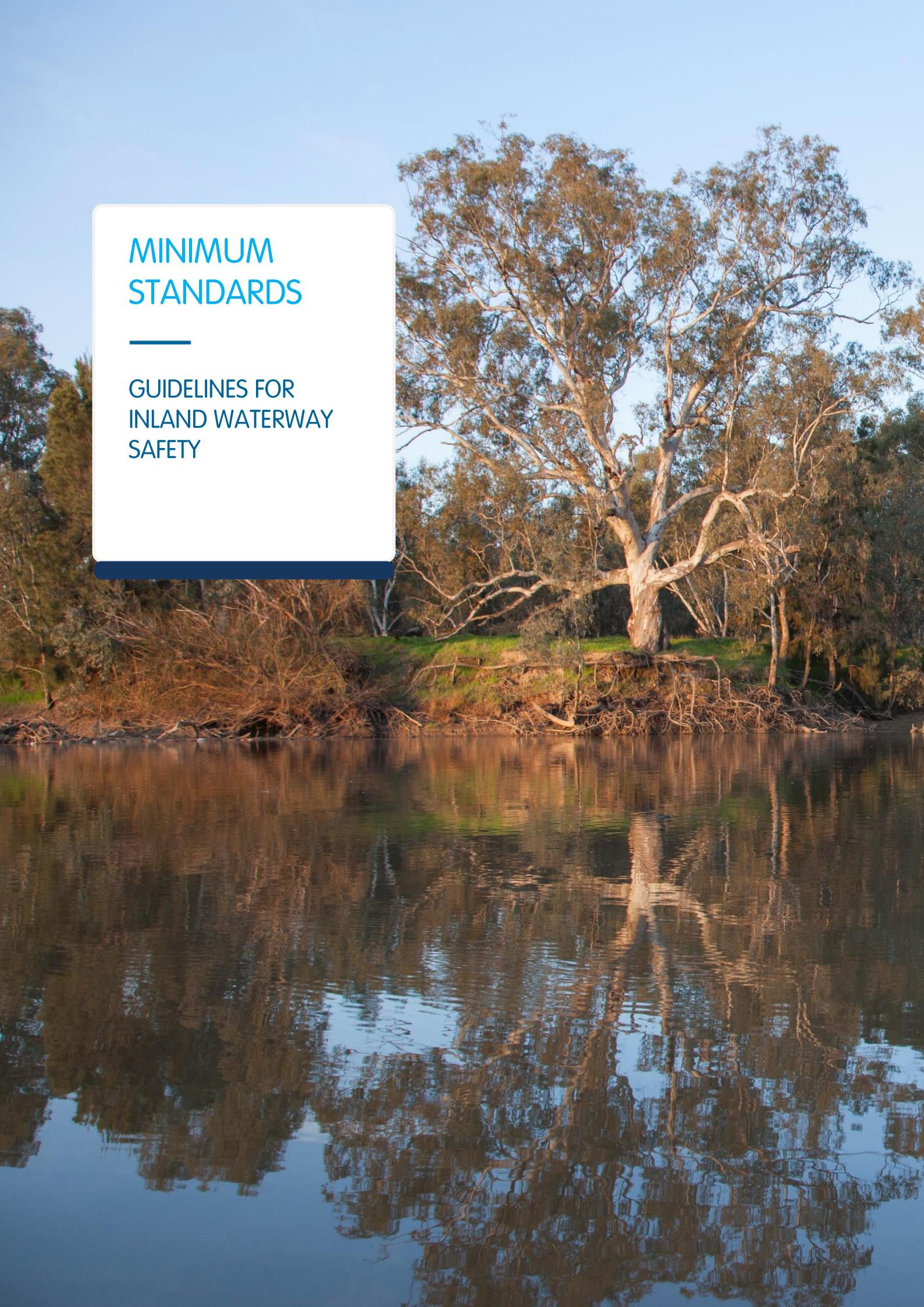
survival skills, self-rescue skills and skills which enable individuals to rescue others in the safest manner possible while minimising any personal risk.



Figure 50: Bush Nippers / Outback Life Savers – Junior Lifesaver Education Program for Inland Waterways (Pictured: Echuca)

MINIMUM STANDARDS

GUIDELINES FOR
INLAND WATERWAY
SAFETY



IW1. RISK MANAGEMENT FRAMEWORK FOR INLAND WATERWAYS

Issued: 21/09/2021

Effective as of: 01/07/2022

Version: 1.0

1.1 Purpose

- 1.1.1 To ensure the management of risk in inland waterways is based on sound risk management practices and principles.

1.2 Scope

- 1.2.1 This guideline applies to entities and/or individuals who own, operate, control access, or otherwise receive a benefit from the use of the associated inland waterway such as land managers.
- 1.2.2 In the event of a failure to reasonably identify who the land manager is, such as the owner or operator of the waterway and/or adjacent land, the responsibility for adherence with this guideline should rest with the nearest Local Government Authority (LGA) who are best place to know and understand their local community, areas, populations, visitors and who have sufficient resources, powers (See **IW1.6**), networks and access to address and mitigate risks to users and visitors of inland waterways in their community or LGA area.
- 1.2.3 This Guideline does not include guidance on water quality management in inland waterways which is covered in the *Guidelines for Managing Risks in Recreational Water* (National Health and Medical Research Council 2008).

1.3 Risk Management Background

- 1.3.1 Risk is defined as the 'effect of uncertainty on objectives'. In other words, risk is the potential for either a positive or negative deviation from what is expected or desired to achieve. Risk is often expressed in terms of an event's consequences and the likelihood of its occurrence.
- 1.3.2 Risk is inevitable and all governments, entities, organisations, individuals, and communities must take action to manage it. Risk management encompasses all organisational objectives and should address all uncertainties, both negative (threats) and positive (opportunities).
- 1.3.3 Risk management in the context of inland waterways could be defined as 'coordinated activities to direct and control resources to reduce or eliminate risk'.
- 1.3.4 Risk management should occur in a systematic, transparent, and disciplined way to reduce the consequence and likelihood of risk events occurring.

1.3.5 Aquatic risk management:

- provides a framework for addressing risks at an aquatic location in methodical and consistent ways
- creates an environment where informed decisions about aquatic risks are made in an open and transparent way
- gives confidence in reducing uncertainty by effectively managing threats to an acceptable / tolerable level

1.4 Risk Management Framework

- 1.4.1 The owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator should develop, implement, monitor and continually improve a risk management framework that includes each aquatic environment within their area of responsibility.
- 1.4.2 The framework should be consistent with the AS/NZS ISO 31000:2018 *Risk management- Principles and Guidelines* and any of its amendments. For practical and/or additional guidance on how to manage risk, conduct risk assessments, treat risk, consult and communicate about risk, please see *AS/NZS 31000:2018* and/or the *RLSSA Guidelines for Safe Pool Operations: Risk Management section*
- 1.4.3 In circumstances where the inland waterway is owned by a statutory authority or where access to the waterway is via private land, owners and local governments should ensure that public risk is managed to the extent reasonably practicable by the owner or local government authority.

1.5 Legal and Regulatory Compliance

- 1.5.1 The owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator should understand the legal and regulatory requirements, their relationship and how they influence and/or must be adhered to within the application of a risk management framework for the inland waterway.
- 1.5.2 Compliance is defined as 'adhering to the requirements of laws, industry and organisational standards and codes, principles of good governance and accepted community and ethical standards'.
- 1.5.3 The context for compliance depends on the owner, operator, or the controller of access to the inland waterway, or inland waterway program or activity operator and their legal, regulatory, and moral obligations, including those created by case law and coronial recommendations.

- 1.5.4 Various laws, regulations and policies create an obligation for the owner or operator of aquatic facilities to manage public risk at aquatic facilities. These are often enforced under Work Health Safety laws, however, just because a waterway is not a workplace does not mean that the risks posed to human health and safety from use of the waterway are not equivalent to or greater than the risks posed in more controlled workplace environments.
- 1.5.5 Organisations should individually identify the legislative and policy requirements that they are required to comply with and should document how these obligations are met and by whom within their risk management framework.

1.6 Responsibilities and powers of Local Government

- 1.6.1 Local government have broad powers to make a number of by-laws and other associated tools which can be applied to inland waterway safety and risk management. These are referenced in the below table:

JURISDICTION	SOURCE	SECTION
Australian Capital Territory (ACT)	Australian Capital Territory (Self Government) Act 1988 (Cth)	s22 Power of Assembly to make laws Subject to this Part and Part VA, the Assembly has power to make laws for the peace, order and good government of the Territory. The power to make laws extends to the power to make laws with respect to the exercise of powers by the Executive.
	<i>Public Health Act 1997 (Act)</i>	s18 Public health risk activities and procedures—declaration 1. The Minister may, in writing, declare an activity that may result in the transmission of disease, or that may otherwise adversely affect the health of individuals in the context of the wider health of the community, to be a public health risk activity. s113 Public health directions—issue 1. Where the chief health officer has reasonable grounds for believing that it is necessary to prevent or alleviate a significant public health hazard, he or she may issue any or all of the following directions to a person for that purpose: a. a direction requiring a person to refrain from behaviour, or an activity, that significantly

JURISDICTION	SOURCE	SECTION
		<p>contributes, or that could so contribute, to the hazard;</p>
New South Wales (NSW)	Local Government Act 1993 (Nsw)	<p>Chapter 6 What are the service functions of councils?</p> <p>Introduction. This Chapter confers on councils their service or non-regulatory functions. Examples of these functions include the provision, management or operation of:</p> <ul style="list-style-type: none"> ○ public health services and facilities ○ environment conservation, protection and improvement services and facilities ○ waste removal, treatment and disposal services and facilities <p>This list of examples is not exhaustive.</p>
Northern Territory (NT)	Local Government Act (NT)	<p>120. Councils charged with peace, order and good government of area</p> <p>A council, in the performance of its functions, is charged with the peace, order and good government of its council area and has the control and management of that good government.</p> <p>Schedule 2</p> <p>Sections 121(2) and 122(1A) and (1B)</p> <p>Functions of local government</p> <p>22C. Public Safety and Security</p> <p>36. Public Conveniences</p> <p>37. Sanitation and Garbage</p> <p>38. Litter Control</p>
	Public Health Act (NT)	<p>s7C. Chief Health Officer may require risk to public health to be rectified</p> <ol style="list-style-type: none"> 1. Where, in the opinion of the Chief Health Officer, an owner or occupier of land has committed an offence against this Act or the Regulations which, in the opinion of the Chief Health Officer, causes or may cause a risk to public health, the Chief Health Officer may, if he is of the opinion that the offence is continuing, by notice in



JURISDICTION	SOURCE	SECTION
		<p>writing, require the owner or occupier of the land to cause the risk to be removed within such time as he specifies in the notice.</p> <p>S10 Regulations</p> <p>The Administrator may make regulations, not inconsistent with this Act, prescribing all matters which by this Act are required or permitted to be prescribed, or which are necessary or convenient to be prescribed for carrying out or giving effect to this Act, and in particular prescribing matters for or in relation to –</p> <p>(b) the maintenance of health;</p>
Queensland (QLD)	Local Government Act 1993 (Qld)	<p>s20 In exercising its jurisdiction of local government, a local government has-</p> <p>a law making role for local laws; and</p> <p>an executive role for:</p> <p>adoption and implementation of policy</p> <p>administration of local government; and</p> <p>enforcement of its local laws.</p>
	Health Act 1937 (Qld)	<p>s9 of this Act can require local governments under the direction of the Governor in council undertake activities to ".... necessary for promoting and maintaining the health of the local government's area and its inhabitants".</p>
South Australia (SA)	Local Government Act 1999 (SA)	<p>s7 Functions of a council</p> <p>The functions of a council include</p> <p>(b) to provide services and facilities that benefit its area, its ratepayers and residents, and visitors to its area (including general public services or facilities (including electricity, gas and water services, and waste collection, control or disposal services or facilities), health, welfare or community services or facilities, and cultural or recreational services or facilities);</p> <p>(c) to provide for the welfare, well-being and interests of individuals and groups within its community;</p> <p>(f) to provide infrastructure for its community and for development within its area (including infrastructure that helps</p>



JURISDICTION	SOURCE	SECTION
		<p>to protect any part of the local or broader community from any hazard or other event, or that assists in the management of any area);</p> <p>(k) to undertake other functions and activities conferred by or under an Act.</p>
	Public and Environmental Health Act 1987	
Tasmania (TAS)	Local Government Act 1993 (TAS)	<p>s20. (1) The council of a municipal area has the following functions:</p> <p>(a) to formulate, implement and monitor policies, plans and programmes for the provision of appropriate services and facilities to meet the present and future needs of the community;</p> <p>(e) to provide for the health, safety and welfare of the community;</p> <p>(f) to represent and promote the interests of the community;</p> <p>(g) to provide for the peace, order and good government of the municipal area.</p> <p>(2) In performing its functions, the council may do any one or more of the following either within or outside its municipal area:</p> <p>develop, implement and monitor programmes to ensure adequate levels of its accountability to the community;</p> <p>The range of services councils provide is diverse and spans a broad range of areas including: the environment; planning and development; infrastructure and recycling & waste management (Local Government Association of Tasmania).</p>
	Criminal Code Act 1924	<p>Common nuisance defined (s140).</p> <ol style="list-style-type: none"> 1. A common nuisance is an unlawful act or an omission to discharge a legal duty, such act or omission being one which endangers the lives, safety, health, property, or comfort of the public, or by which the public are



JURISDICTION	SOURCE	SECTION
		<p>obstructed in the exercise or enjoyment of any right common to all His Majesty's subjects.</p>
Victoria (VIC)	Local Government Act 1989 (Vic)	<p>3C. Objectives of a council</p> <p>The primary objective of a council is to endeavour to achieve the best outcomes for the local community having regard to the long term and cumulative effects of decisions.</p> <p>In seeking to achieve its primary objective, a council must have regard to the following facilitating objectives—</p> <ul style="list-style-type: none"> to promote the social, economic and environmental viability and sustainability of the municipal district; planning for and providing services and facilities for the local community; making and enforcing local laws; <p>3E. What are the functions of a council?</p> <p>The functions of a council include—</p> <ul style="list-style-type: none"> advocating and promoting proposals which are in the best interests of the local community; planning for and providing services and facilities for the local community; making and enforcing local laws;
	<i>Public Health and Wellbeing Act 2008 (Vic)</i>	<p>S24 Function of Councils</p> <p>The function of a Council under this Act is to seek to protect, improve and promote public health and wellbeing within the municipal district by—</p> <ul style="list-style-type: none"> (a) creating an environment which supports the health of members of the local community and strengthens the capacity of the community and individuals to achieve better health; (b) initiating, supporting and managing public health planning processes at the local government level; (c) developing and implementing public health policies and programs within the municipal district;



JURISDICTION	SOURCE	SECTION
		<p>(d) developing and enforcing up-to-date public health standards and intervening if the health of people within the municipal district is affected;</p> <p>(e) facilitating and supporting local agencies whose work has an impact on public health and wellbeing to improve public health and wellbeing in the local community;</p> <p>(f) co-ordinating and providing immunisation services to children living or being educated within the municipal district;</p> <p>(g) ensuring that the municipal district is maintained in a clean and sanitary condition.</p>
Western Australia (WA)	Local Government Act 1995 (WA)	<p>s3.1. General function</p> <p>The general function of a local government is to provide for the good government of persons in its district.</p> <p>The scope of the general function of a local government is to be construed in the context of its other functions under this Act or any other written law and any constraints imposed by this Act or any other written law on the performance of its functions.</p> <p>A liberal approach is to be taken to the construction of the scope of the general function of a local government.</p> <p>S3.5 Legislative power of local governments</p> <p>A local government may make local laws under this Act prescribing all matters that are required or permitted to be prescribed by a local law, or are necessary or convenient to be so prescribed, for it to perform any of its functions under this Act.</p> <p>The power conferred on a local government by subsection (1) is in addition to any power to make local laws conferred on it by any other Act.</p>



1.7 Context of an Aquatic Risk Framework

1.7.1 The context of an aquatic risk management framework should consider the internal and external aspects of the inland waterway including but not limited to:

- the frameworks, legislation, policies, procedures, contractual arrangements, and rules that have an influence on the inland waterway and its management
- the political, cultural and economic influences of the local community and visitors to the inland waterway
- drivers and trends that have an impact on the inland waterway locally through to nationally
- the relationships, values and perceptions of internal and external stakeholders
- the natural and physical elements of the inland waterway (i.e. type, flow, structures, access to and from the waterway, activities that occur in, on or around the waterway, weather systems and/or emergencies that could occur)
- the owner or operator's governance and structures
- the owner or operator's capabilities in terms of knowledge, skills and resources
- the owner or operator's staffing, roles, and responsibilities

1.8 Integration of the Aquatic Risk Framework

1.8.1 The owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator should ensure that the risk management framework is embedded into the organisational processes and plans. Such plans may include:

- Strategic plans
- Infrastructure plans
- Development plans
- Emergency plans
- Sustainability and/or continuity plans
- The Local Water Safety Plan



1.9 Document Control

1.9.1 The risk management framework should be covered by document control and records management procedures including at a minimum:

- Identification of the inland waterway to which it applies.
- Identification of those who developed and authorised the risk assessment and any associated plans including any dates and signatures of relevant officers
- Descriptions of the context of the inland waterway
- A record of the extent of the distribution of the risk management framework including specific plans for resourcing and/or consultation
- The date of issue or amendments
- The validity period and when it was last reviewed
- Reference to or attachments of insurance policies which identify the level of indemnity for each person or entity involved in the development of the framework
- A description of the consultation with entities or persons that:
 - occurred in the preparation of the Risk Management Framework and/or;
 - will occur in the preparation of the Risk Management Framework;
- The obligation to periodically review and continually improve the framework following a major accident event.

1.10 References:

- AS/NZS ISO 31000:2009 Risk management – Principles and Guidelines
- AS/NZS ISO 31000:2018 Risk Management
- Lifeguarding, 7th Edition – Royal Life Saving Society – Australia, Sydney Australia
- Guidelines for Safe Pool Operations: Risk Management – Royal Life Saving Society – Australia, Sydney Australia
- Department of Health, Australian Government

IW2. CONDUCTING RISK ASSESSMENT FOR INLAND WATERWAYS

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Effective as of: 01/07/2022

Version: 1.0

2.1 Purpose

- 2.1.1 To ensure the assessment of risk in inland waterways is based on sound risk management practices and principles.

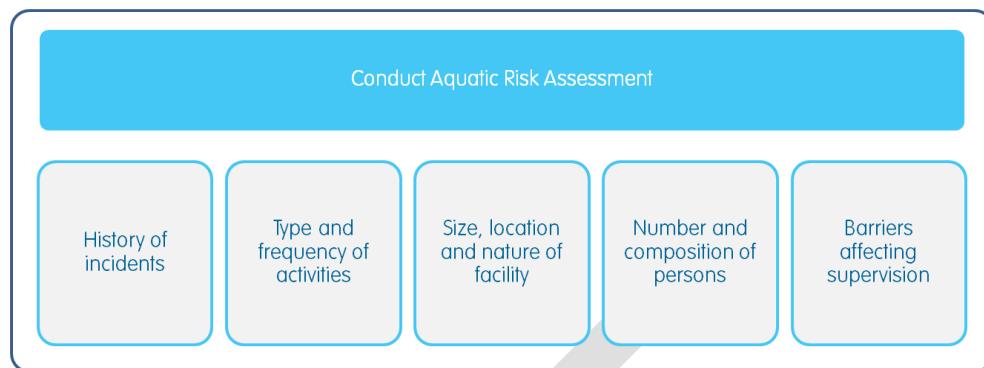
2.2 Scope

- 2.2.1 This guideline applies to entities and/or individuals who own, operate, control access, or otherwise receive a benefit from the use of the associated inland waterway, such as the land manager.
- 2.2.2 In the event of a failure to reasonably identify who the land manager is, such as the owner or operator of the waterway and/or adjacent land, the responsibility for adherence with this guideline should rest with the nearest Local Government Authority (LGA) who are best place to know and understand their local community, areas, populations, visitors and who have sufficient resources, powers, networks and access to address and mitigate risks to users and visitors of inland waterways in their community or LGA area.

2.3 Context of risk

- 2.3.1 When conducting a risk assessment for the inland waterway, the risk assessor(s) should consider all relevant matters including:
- the history of deaths, serious injuries / illness and accidents / near misses within the inland waterway and external information including coronial recommendations, regulations, Australian Standards and the case law.
 - the size, location and nature of the physical environments of the inland waterway
 - the number, characteristics and behaviour of users of the inland waterway at different times of the year and within different contexts (such as fishing seasons or large scale events)
 - the type and frequency of activities in the aquatic environment at the inland waterway
 - The extent of other aquatic risk treatments in place for the inland waterway (including environmental monitoring and water quality management)
 - the barriers that may be in place for effective risk mitigation that would impede effective management of the aquatic environment

2.3.2 They should analyse and evaluate these risks at different times of any given period relevant to the activities on or around the inland waterway



2.4 History of Incidents

2.4.1 A record of incidents and other information that has already been obtained to assist in controlling risks at an inland waterway should be considered. This includes:

- the history of deaths, serious injuries/illness and accidents/near misses within inland waterways in Australia
- coronial and civil liability cases and recommendations,
- Regulations, Australian Standards and the Guidelines for Inland Waterway Safety.

N.B. Royal Life Saving Society Australia maintains the National Fatal and Non-Fatal Drowning Database and can provide data and advice on incident history and risk profiles for particular waterways. More information:

<https://www.royallifesaving.com.au/research-and-policy/drowning-research/national-fatal-drowning-database>

2.5 Type and frequency of activities

2.5.1 Certain aquatic activities carry greater inherent risks of injury and illness and require additional risk mitigations to effectively mitigate the risk.

2.5.2 For each of the different activities the following information should be taken into consideration:

- Time of year of the activity
- Duration of Activity (i.e. Hour, Half Day, Full Day)
- Type of Activity (Routine, Event, Motorised, etc.)
- Locations within the inland waterway which will be used for the activity
- Equipment or plant used for the activity

- Stakeholders who impact or are impacted by the activity (participants, spectators, children, tourism operators, clubs etc.)

2.5.3 Types of activities may be structured or unstructured and may include:

- Swimming
- Boating / houseboating
- Water skiing / other similar activity
- Camping
- Hiking / bushwalking
- Fishing
- Kayaking / canoeing / rafting
- Snorkelling / scuba diving
- School carnivals, excursions and activity days
- Community events and celebrations
- Sporting competition and events (i.e. Races, fun-days)
- Running, jumping and diving
- Any underwater aquatic activities (i.e. rescue training, kayaking rolls, scuba diving)
- Lifesaving activities
- Aquatic exercise activities
- In-water filming
- Introduction and use of temporary amusement equipment
- Hire of any facilities
- Floating play equipment or inflatable play equipment

2.6 Sources of risk

- 2.6.1 The Plan should define the sources of risk which will determine the potential impacts on people, property and the environment
- 2.6.2 In the first chapter of this guideline, there is information on sources of risk and hazards. These are summarised below.

SOURCE	POTENTIAL HAZARDS
Natural Environment	<ul style="list-style-type: none"> • Water speed • Water flow • Current vectors • Debris • Rain • Eddies • V's • Snags • Strainers • Shallow water • Tides • Water clarity • Drop-offs (water) • Slippery rocks / surfaces • Unstable waterbody floor • Weeds / vegetation • Flooding • Pests / animals <ul style="list-style-type: none"> • Rocky shallows • Aerated water • Holes / standing waves • Hydraulics • Waterfalls • Submerged rocks / objects • Deep water • Cold water • Currents • Snow and ice • Drop-offs (land) • Uneven bottom • Unstable banks • Over-hanging branches
Built / Technological Environment	<ul style="list-style-type: none"> • Inlets / Pipes • Bridges • Weirs • Pumps • River crossings <ul style="list-style-type: none"> • Bridges • Drainage systems • Sewerage outlets • Causeways • Fishways
Activity / Social	<ul style="list-style-type: none"> • Watercraft collision • Risk-taking behaviour • Events • Crowding • Pre-existing vulnerabilities (CALD / Indigenous / Pre-existing medical) <ul style="list-style-type: none"> • Alcohol / Drug use • Terrorism • Criminal Activity • Overcrowding • Poor planning • Poor maintenance
Chemical and Biological	<ul style="list-style-type: none"> • Water Contamination • Human Disease Epidemic • Animal Disease Epidemic • Algae <ul style="list-style-type: none"> • Plant Disease Epidemic • Gas leak • Hazardous Chemical Spill

Fig 1 Sources of risk



2.7 Size, location and nature of the inland waterway

2.7.1 In relation to the size, location and nature of the inland waterway, you should take into account the:

- The quantity, dimensions, nature, capacity, depths and characteristics of all swimming locations and recreational areas in and around the waterway
- Distance from emergency responders
- The availability / suitability of ways of treating risk or managing access to the waterway
- The amount of people who have access to the waterway and any associated hazards

2.8 The number and composition of visitors and users of the inland waterway

2.8.1 The types and total number of people in attendance the inland waterway should be estimated for different times of the year, weather conditions, days of the week and/or locations within the waterway.

2.8.2 The assessor should also consider the events (seasons, weather, programs and activities) both internally and externally that have an impact on the number of persons that may visit the inland waterway within a given period.

2.8.3 Special consideration should include those user groups who through drowning and injury research are more prone to need supervision. This includes:

- Cultural and Linguistics Diverse (CaLD) patrons
- Children
- Older Australians (55 years old and over)
- Persons with a disability or medical conditions
- School Groups
- Sporting Groups
- Non-Swimmers, Weak Swimmers and persons unfamiliar with the environment
- Aquatic Exercise and Program groups
- Parents / Carers / Guardians
- Large Groups (as they often divert attention and require specific supervision resources.)

2.9 Proximity of waterfronts to high-use areas

- 2.9.1 Drowning research has shown that waterfronts in close proximity to densely populated areas, even when well designed can result in high drowning rates.
- 2.9.2 Consideration needs to be given to the types of activities that people undertake in and around waterfronts, for example
- The waterfront's proximity to Casinos, night clubs, bars and restaurants and other areas where alcohol is consumed
 - Waterfront proximity to areas where children frequent

These factors can increase the likelihood of adverse incidents occurring which can lead to drowning events.

2.10 Flood Risk

- 2.10.1 Between 2004/05 and 2014/15 there were 159 flooding related drownings across Australia – 53% of which were as a result of driving through flood waters
- 2.10.2 Flood risk is a combination of the likelihood of a flood and its consequences when it does occur. Flood risk analysis involves understanding:
- the probability of flood events
 - the population at risk
 - the average annual damages associated with different events
- 2.10.3 Floods put people who live, work or travel on the floodplain at risk of social disruption, financial loss, disease, injury or possibly death.
- 2.10.4 There are different ways to measure the population at risk, depending on the detail required. In general, the larger the population at risk, the more people who need to be warned and, if necessary, evacuated.
- 2.10.5 The population at risk is not just about total numbers however, the relative vulnerability of the people at risk is also important.

Exceedance Probability

- 2.10.6 Floodplain managers tend now to refer to the probability each year of a certain size flood being equalled or exceeded; they refer to this as the percentage Annual Exceedance Probability (AEP).
- 2.10.7 The likelihood of the occurrence of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood flow of

500 m³/s has an AEP of 5%, it means that there is a 5% chance (i.e. a one-in-20 chance) of a flow of 500 m³/s or larger occurring in any one year.

2.10.8 The term AEP reinforces the fact that there is an ongoing flood risk every year – regardless of how recently there was a similar flood.

Damage of Floods

2.10.9 Floods of different sizes cause different amounts of damage. These can be broadly categorised as:

- Direct tangible damages, including to the structure and contents of buildings, agriculture, livestock or infrastructure
- Indirect tangible damages, including to community wellbeing, economic activities and social activities and can include the costs of emergency response, clean-up, community support and/or lost production and any disruptions to transport, commerce and/or employment
- Intangible damages, including things that are difficult to quantify in monetary terms, despite their significance. These can include trauma, stress, loss of cultural heritage, biodiversity and threatened habitats.

2.10.10 For a given flood-prone area, the damage caused by floods of various magnitudes can be averaged to determine the Average Annual Damage (AAD).

2.10.11 AAD provides a basis for comparing the economic effectiveness of different structural and non-structural mitigation measures, allowing the costs of mitigation to be compared with its benefits.

Evaluating flood risk

2.10.12 Floods are predictable disasters with tools available to predict and analyse their magnitude, frequency and impact.

2.10.13 Negative impacts of flooding can be reduced by using credible data about flood behaviour such as:

- Flood heights
- Flood extents
- Flood probabilities

Flood studies

2.10.14 Flood studies can be conducted to fill gaps in knowledge and help communities consider flood management options. Flood studies should:

- Model the hydrologic inputs – including rainfall and runoff – that lead to floods of different sizes and calibrate these models against historic floods
- Model the hydraulic behaviour of floods – including flood heights, extents and velocities as they vary with time – and calibrate these models against historical floods
- Understand the varying hydraulic nature of the floodplain being studied
- Understand the varying flood hazards within the floodplain
- Assess the scale of potential flood damages for the existing community
- Assess the potential for flood damage on areas of the floodplain that may be considered for future development
- Analyse risk treatment options
- Consult with local communities to take advantage of local knowledge
- Consult with local aboriginal communities to ensure cultural values are considered in assessing and mapping flood risks
- Assess the consequences of floods of different sizes
- Capture the local community's experience and knowledge of floods.

Outcomes of flood studies

2.10.15 The outcomes of flood studies can be used to:

- Inform stakeholders including the waterway managers, local government authority, local community and Local Water Safety Committee on flood risk
- Inform the Local Water Safety Plan and/or Local Emergency Management Plans
- Provide Guidance for land use planning management and building regulation
- Inform the flood warning system requirements
- Provide options and/or recommendations for effective flood mitigation works



2.11 Activity zones

- 2.11.1 The risk assessment should identify the activities that occur in particular areas of the waterway and consider their compatibility with regards to safety.
- 2.11.2 The separation of non-complementary water-based activities is crucial for the safety of people in the water and around the aquatic facility
- 2.11.3 The use of aquatic safety zones clearly identified using well known systems will minimise the risk of injury and drowning.

2.12 Level of risk / risk rating

- 2.12.1 The Risk Assessor(s) should determine the level of risk associated with the inland waterway, including specific activities, locations or zones.
- 2.12.2 Risk levels are typically described in ISO 31000:2018 as 'Low' 'Medium' or 'High' however the owner, operator, Committee or other party can determine their own risk rating. An example risk rating table is shown below.

Risk rating table / matrix

Likelihood level	Consequence Level				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Medium	Medium	High	High	High
Likely	Low	Medium	Medium	High	High
Possible	Low	Low	Medium	Medium	High
Unlikely	Low	Low	Low	Medium	Medium
Rare	Low	Low	Low	Low	Medium



2.12.3 When determining the level of risk, the owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator should give consideration to:

- The likelihood of the hazard or risk concerned eventuating
- The degree of harm that would result if the hazard or risk eventuated
- What the owner, operator or concerned party knows, or ought reasonably to know, about the hazard or risk and any ways of eliminating or reducing the hazard or risk
- The availability and suitability of ways to eliminate or reduce the hazard or risk
- The cost of eliminating or reducing the hazard or risk

2.12.4 The risk assessor(s) can use a risk matrix or consequence and likelihood tables to determine the level of risk

Consequence Table

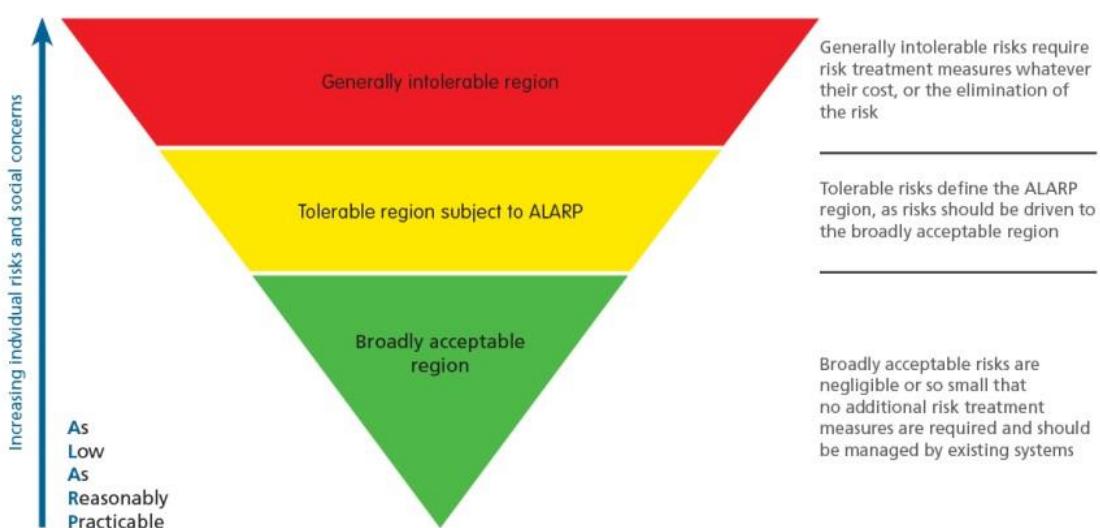
Level	Severity	Consequence
5	Catastrophic	Fatalities, Fatal Drowning
4	Major	Serious injury/illness, such as permanent disability; Non-Fatal Drowning
3	Moderate	Medical treatment or lost time injury;
2	Minor	Minor injury/illness, such as first aid;
1	Insignificant	No injury/illness.

Likelihood Table

Level	Likelihood Level	Probability	Access to Emergency or Rescue Services is	History of Major Incidents	History of Minor Incidents	Volume of Activity / Use	Frequency of Activity	Competence in Activity
5	Almost Certain	Will probably occur more than once	30+ minutes	1 or more within a month	Daily	500+ at a time	Daily Activity or Event	No or limited awareness, skills or experience
4	Likely	High probability will occur at least once	15-30 mins	1 or more within past 12 months	Weekly	100-500 at a time	Weekly activity or event	Fundamental awareness, skills or experience
3	Possible	Reasonable that it could occur more than once	10-15mins	1 or more within past 3 years	Monthly	50-100 at a time	Monthly activity or event	Partial awareness, skills or experience
2	Unlikely	May occur once	5-10mins	1 or more within past 5 years	Annually	5-50 at a time	Annual activity or event	Intermediate awareness, skills or experience
1	Rare	May occur in exceptional circumstances	0-5mins	1 or more within past 10 years	More than annually	Less than 5 at a time	Greater than annual	Advanced awareness, skills or experience

2.13 Risk appetite

- 2.13.1 After the risk assessor determines the level of risk, the Committee should document and establish its risk appetite.
- 2.13.2 The risk appetite will determine the resources available and/or required to treat the risk and are an important aspect of the planning process.
- 2.13.3 Risk levels should be reduced to as low as is reasonably practicable, and the risk appetite will determine the threshold for this - shown by the below figure:



- 2.13.4 Having given consideration to the level of risk, and the risk appetite, the owner or operator of the inland waterway, Committee and/or concerned party (including the LGA) should identify the measures that will be taken to treat the risk associated with access to and use of the inland waterway and its waterfronts.
- 2.13.5 Risks should be controlled to as low as is reasonably practicable (ALARP) within the risk appetite.
- 2.13.6 The level of urgency with which risks should be controlled should consider the likelihood and consequence of the risk occurrence.
- 2.13.7 Risk urgency can be determined using a 'traffic light' framework such as the below.

Risk Level	Urgency
High	Immediate – stop until treated. For complex treatments, implement short term controls with permanent controls implemented as soon as possible
Medium	Treat as soon as practicable but within at least 1 year
Low	Ongoing control as part of general or routine management activities

2.14 Control Measures

- 2.14.1 The owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator should implement control measures that:
- Provide for the reduction to a level that is as low as reasonably practicable of risks to health and safety of persons at or near the inland waterway
 - Provide for inspection, testing and maintenance of the safety equipment and hardware that are the physical control measures for those risks; and
 - Provide for the induction, training, exercising and development of the safety personnel that are the behavioural control measures for those risks; and
 - Provide for audit, review and continual improvement of the standard operating procedures that are the procedural control measures for those risks; and
 - Provide for adequate communications between the owners, operators and/or interested parties and any relevant safety and/or emergency services;
 - Provide for any other matter that is necessary to ensure that the risk management system meets the requirements and objects of these Guidelines; and
 - Specify the performance standards that apply.

- Identify further / more extensive assessments that are required
- 2.14.2 The owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator, or failing that, the Local Government Authority should implement risk control measures designed to minimise the event of major incidents occurring, their magnitude and the severity of their consequences to persons.
- 2.14.3 If the risk assessment has been conducted for the purposes of informing a local water safety plan, the Water Safety Planning Committee should identify which control measures will be carried out by which agencies and document this within the plan as well as agreed performance measures.

The Hierarchy of Control

- 2.14.4 The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest, known as the hierarchy of control.
- **Elimination** – The most effective control measure involves eliminating the hazard and associated risk. By designing-in or designing-out certain features, hazards may be eliminated.
- 2.14.5 If it is not reasonably practicable to eliminate a hazard the following control measures should be considered:
- **Substitution** – replace a hazardous process or material with one that is less hazardous to reduce the risk (create a path or bridge)
 - **Isolation** – separate the hazard from people, for example by designing the waterfront layout so that sufficient barriers are in place to prevent unintentional entry into the waterway
 - **Engineering controls** – use engineering control measures to minimise the risk, for example, including adequate lighting around waterfronts and/or reducing the gradient of waterfronts
 - **Administrative controls** – If engineering controls cannot reduce the risk sufficiently, then administrative controls should be used, for example using warning signs or exclusion zones where a hazardous activity is carried out.
 - **Personal protective equipment** – for example PFDs, wetsuits, helmets and/or other equipment. PPE is the least effective control measure as it relies on the worker's / user's behaviour and therefore requires thorough training and a high level of supervision to be effective.

Practical ways of reducing risk

2.14.6 The risk controls should be practicable have be effective in reducing risk. Control measures might include any of the control measures identified earlier in this Guideline.

Control Effectiveness Table

Level	Extent	Reliability	Availability	Effectiveness
5	Very High	Mostly reliable	Always	Mostly effective
4	High	Often reliable	Mostly	Often effective
3	Moderate	Somewhat reliable	Sometimes	Somewhat effective
2	Low	Rarely reliable	Rarely	Rarely effective
1	Very Low	Not reliable	Not	Not effective

2.15 Documenting the risk analysis

2.15.1 Documenting the risk analysis process provides a record of how risks were analysed in previous periods, thereby informing future risks analysis exercises. Another key element of documenting the risk analysis process is the enabling of accurate tracking of risks over time and providing evidence of due process in a legal context

2.15.2 The documentation of the risk analysis should include:

- Key assumptions and limitations
- Sources of information used
- Analysis methods used
- The existing controls and their effectiveness
- The likelihood of these consequences
- The resulting level of risk

2.16 Communication and Consultation

Expert Advice

2.16.1 In developing and reviewing a risk management framework the owner or operator or controller of access to the inland waterway should have regard to any advice and recommendations given by:

- Emergency service organisations with responsibility (part of full) for the inland waterway (part of full)
- Any government department or agency with a regulatory role in relation to inland waterway
- Non-statutory authorities or organisations with expertise / experience in inland waterway safety and drowning prevention (i.e. Royal Life Saving Society Australia)
- A recognised aquatic risk management facilitator or auditor endorsed or employed by an inland drowning prevention peak authority such as Royal Life Saving.

Staff, Contractors, Volunteers, Community Groups, Statutory Agencies

2.16.2 The owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator should consult, so far as reasonably practicable with staff, contractors and volunteers who carry out work near or around the inland waterway or are directly affected by the risk management framework in its development or any proposed changes to it.

2.16.3 The staff, contractors and volunteers should be given a reasonable opportunity to contribute to the risk management framework and shall be advised of the outcome of those contributions in a timely manner.

2.16.4 The risk management framework should be available either electronically or physically and measures should be taken to ensure the availability of ways for communication of feedback.

2.17 Monitoring and review of the risk analysis

2.17.1 Monitoring and reviewing of the risk analysis should include:

- Monitoring the effectiveness and relevance of control measures
- Monitoring the approach used to determine the likelihood and consequence of each risk

2.18 References:

- International Organisation for Standardisation. (2018). AS / NZS ISO:31000 (2018): Risk Management. ISO. Geneva, Switzerland.
- Royal Life Saving Society of Australia (2018) Lifeguarding – 5th Edition
- Royal Life Saving Society of Australia (2018) Guidelines for Safe Pool Operations – Aquatic Supervision
- Royal Life Saving Society of Australia (2016) Swimming and Lifesaving Manual - 6th Edition
- Surf Life Saving Australia. (2016). Public Safety and Aquatic Rescue (34th Edition). Surf Life Saving Australia.
- State Government of Victoria, Education and Training. (2019). School Policy and Advisory Guide: Swimming Instruction and Water Safety. Victoria, Australia.



IW4. LOCAL WATER SAFETY PLANNING COMMITTEE

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Effective as of: 01/07/2022

Version: 1.0

4.1 Purpose

- 4.1.1 To provide a framework for cross-sectoral and local action on drowning prevention between those with a responsibility and interest in the health and safety of local communities.
- 4.1.2 Royal Life Saving recognises that communities are:
 - Are best placed to understand and manage their own risks and drive preparedness, response and recovery, including through their fundamentally important volunteer contribution
 - Should be empowered with the information, capabilities and opportunities to make decisions and work with agencies for better water safety outcomes
 - Have networks and relationships that help agencies and communities identify the risks that a community faces, assess the vulnerability of the community to those risks and identify options to protect the values of most importance to them.
- 4.1.3 At the municipal level, community risk assessments and management plans, which draw on local and expert knowledge to identify risks and strategies for risk management, create safer and more resilient communities.

4.2 Scope

- 4.2.1 This Guideline applies to communities with publicly accessible open waterways where members of the community, businesses, visitors and individual use waterways for leisure, fun, fitness and/or recreation.
- 4.2.2 This guideline applies to entities and/or individuals who own, operate, control access, or otherwise receive a benefit from the use of the associated inland waterway such as land managers.
- 4.2.3 In the event of a failure to reasonably identify who the land manager is, such as the owner or operator of the waterway and/or adjacent land, the responsibility for adherence with this guideline should rest with the nearest Local Government Authority (LGA) who are best place to know and understand their local community, areas, populations, visitors and who have sufficient resources, powers (See **IW1.6**), networks and access to address and mitigate risks to users and visitors of inland waterways in their community or LGA area.

4.3 Principles

Engage stakeholders and identify leadership

- 4.3.1 Communities are networks of people defined by a common characteristic, such as a geographical area inhabited, membership of a club, or shared interests in a thing (like a waterway).
- 4.3.2 Each community that exists around an inland waterway will have a range of health, social and economic benefits and dependencies associated with the use and/or availability of the waterway.
- 4.3.3 Royal Life Saving recognises that the management of community-wide use and safety in and around inland water is inherently complex and involves a multitude of individual actors, capabilities and responsibilities. An effective LWSP will recognise and respond to the complex, dynamic and often fragmented nature of communities.
- 4.3.4 Successful plans are community-led and community-centred, responsive and flexible, engaging with communities and supporting them to move forward. They are best developed locally, closest to the community, with the help of external experts as required.
- 4.3.5 Community leaders, statutory authorities, governments businesses and individuals have a moral and social responsibility, and in some cases a legal one, to protect the health and safety of the community as a whole and its members resulting from the use of and availability of the inland waterway or any business or undertaking in relation to the waterway.
- 4.3.6 Each local community should convene a local working group to guide the development of a Local Water Safety Plan (LWSP).



4.4 Objectives

4.4.1 The (LWSP) development and review process should have the following objectives, including:

- Raising awareness of safety around water and the importance of drowning prevention
- Building consensus around solutions to issues
- Developing coherent, effective prevention, preparedness and response measures involving all relevant partners
- Fostering a sustainable and efficient drowning prevention system that minimises the likelihood, effect and consequences of drowning incidents in the local community
- Providing a strategic direction and a framework to guide multisectoral/stakeholder efforts to prevent drowning
- Coordinating drowning prevention efforts across multiple agencies, groups, sectors and agendas
- Clarifying the roles and responsibilities of agencies and groups
- Facilitating cooperation between agencies
- Creating a systems-based approach to managing risk and improving community resilience
- Setting appropriate targets for agencies, statutory authorities, owners and operators
- Monitoring action, including obtaining better data and reporting on drowning and prevention.



4.5 Water Safety Planning Principles

- 4.5.1 The key requirement for preparing a LWSP is that the plan is tailored for the community and inland waterway(s) to which it applies.
- 4.5.2 It should be sufficiently comprehensive to cover the full range of activities at or near the waterway(s) including non-routine activities such as events, emergencies, maintenance, or construction, that could increase risk.
- 4.5.3 It should be relevant, realistic and sufficiently clear to be understood by all users and reviewers of the plan.
- 4.5.4 A less hazardous waterway with a less dynamic or complex community may require a simple LWSP, while a complex community and/or more hazardous waterway may require a detailed and extensive plan, involving more agencies, people and organisations in the development, consultation and implementation phases of the plan.
- 4.5.5 The LWSP should ideally be properly integrated with local municipal and/or state emergency management plans and resourcing as applicable.
- 4.5.6 It is important that all aspects of the LSWP are realistic, workable and agreed to by the relevant parties. This includes assumptions regarding actions required, timing, effectiveness of detection methods and decision-making processes.
- 4.5.7 The LSWP should take into account the ‘worst case scenario’ that may prevail in or around a waterway and understand the difficulty in preventing and responding to such an event.

4.6 The Role of Planning

- 4.6.1 Preparedness requires identifying what to prepare for and how to respond. It therefore involves accumulating knowledge and skills, disseminating information about the management of potential aquatic emergencies, and providing and allocating resources and people to deal with the possible impacts identified.
- 4.6.2 Through planning, community members and agencies improve their understanding of the visitors, aquatic environment, infrastructure, equipment, populations, activities, flora, fauna, and their possible impacts in both routine and emergency situations.
- 4.6.3 They also develop an understanding of the roles of everyone involved in preventing, preparing and responding to aquatic risks. This understanding provides a basis for determining the most effective ways of using community resources.

4.7 Appointment of a Local Water Safety Planning Committee or Working Group

- 4.7.1 The owner or operators of the waterway and/or the local LGA should ensure that a local community working group or committee (hereafter referred to as the Committee) is established to facilitate and guide the development of a Local Water Safety Plan.

4.8 Governance arrangements for the Committee

- 4.8.1 The owner or operators of the waterway and/or the local LGA should appoint a chair to oversee its administration and governance.
- 4.8.2 The Chair should ensure that the membership of the committee is representative of the local community, its members and groups with the capabilities and local knowledge to ensure the objectives of the water safety plan are carried through.
- 4.8.3 The Committee should oversee the development, implementation, monitoring and continual improvement the plan, its outputs and actions and agreed performance measure reporting.
- 4.8.4 The Committee should be representative of the stakeholders (i.e. owners, operators, emergency services, local government, state / territory statutory authorities with shared responsibilities) from the community and should contain no less than four persons.
- 4.8.5 The Committee should also contain where reasonably available representatives of users of the waterway, the local Aquatic Facility, and should consider including persons with a disability and/or other vulnerable groups.
- 4.8.6 The Committee should also engage specialist (contractors and/or consultants) to provide advice from time to time however these should not be members of the committee.
- 4.8.7 The Committee should meet at least once every 12months (but preferably 4 times per year).
- 4.8.8 Meetings should be minuted and action items of the meeting recorded and kept for at least 7 years from the date of the meeting.

4.9 Agencies and groups to consider for inclusion on the Committee and/or for consultation purposes

- 4.9.1 The governance arrangements in the LWSP should support the sharing of roles and responsibilities for water safety with a wider range of actors, giving the community a voice and increased ownership over local arrangements.
- 4.9.2 As part of mitigation and preparedness, it is important to build the capacity of individuals, communities and businesses to make their own decisions and to work with agencies.
- 4.9.3 Agencies should consider the role and inclusion of Traditional Owners of waterways and associated lands in mitigation, response and recovery activities throughout Australia.
- 4.9.4 The LGA should employ or engage a suitably qualified person to coordinate the development and delivery of the local water safety plan and oversee its administration, including monitoring, review and reporting on the plan.
- 4.9.5 Royal Life Saving – Australia and its State / Territory members are available to assist LGAs with this process if the LGA is unable to source or engage a person locally.
- 4.9.6 The Local Government Authority should convene a Local Water Safety Plan Development, Consultation and Review Process.
- 4.9.7 The process should identify agencies with roles and responsibilities with regards to health, safety and/or emergency management. This may include:
 - Local Emergency Services (paid and volunteer)
 - Australian Defence Force
 - Australian Maritime Safety Authority
 - Australian Transport Safety Bureau
 - Bureau of Meteorology
 - Australian Government Department of Home Affairs
 - Catchment Management Authorities
 - State / Territory Planning / Land / Water / Environment Departments
 - State / Territory Emergency Management agencies
 - State / Territory Environmental Protection agencies
 - State / Territory Park Departments
 - National Parks Department

- State / Territory Building Authorities
- State / Territory Work Health Safety Authorities
- Port Corporations
- Search and Rescue

4.10 Responsibilities

4.10.1 The Committee responsibilities should be documented and should include:

- Workshopping and identifying events that could reasonably produce emergency situations, injuries and/or drownings in relation to the waterway and waterfronts
- Developing a Local Water Safety Plan
- Ensuring that resources are provided to ensure the successful implementation of the plan
- Nominating a validity period for the plan and associated attachments
- Ensuring that the Plan is identifiable and available to all community members and users of the waterway
- If necessary, establishing emergency and/or incident response teams and joint arrangements
- Monitoring, reviewing and continually improving the preventative and response measures implemented in the plan
- It is recommended to develop and maintain a current register of Incident Management Team members and their availability, skills and contact details
- Providing advice through professional sources on the indemnity and insurance of Committee members and any Incident Management Team members

IW5. DEVELOPING A LOCAL WATER SAFETY PLAN

Issued: 21/09/2021

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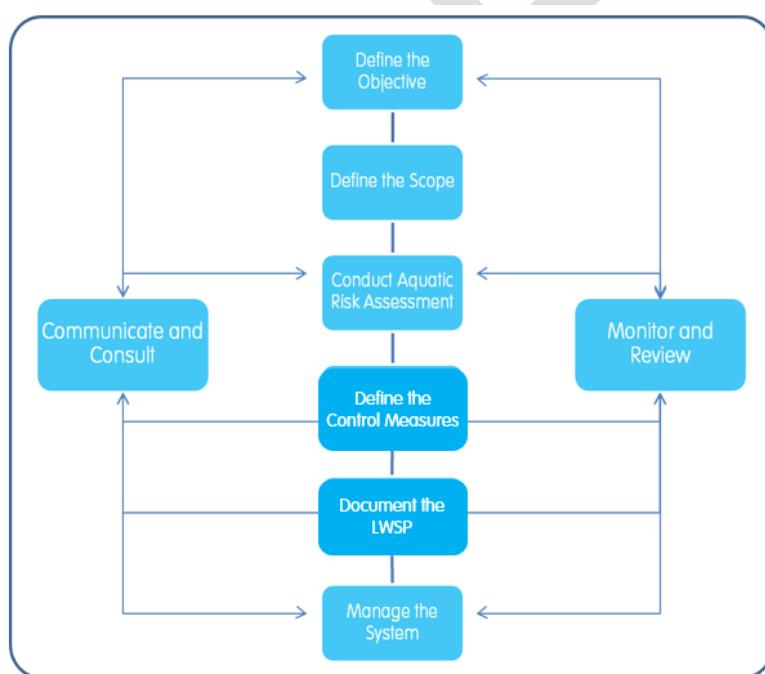
Version: 1.0

5.1 Purpose

- 5.1.1 To provide a framework for the process of developing the contents of the Local Water Safety Plan (LWSP) and guide the content of the plan.

5.2 Process of developing a Local Water Safety Plan

- 5.2.1 The development of a LWSP should be undertaken through a structured process of identifying and analysing potential aquatic risks in the inland waterway to determine the arrangements and activities that should be prescribed to mitigate those risks.
- 5.2.2 The development of the LWSP should be a cyclical process and should be continually evaluated and revised as appropriate.



5.3 Defining the aim of the plan

5.3.1 The aim of the plan should be expressed as a broad statement of intent. It should be based on the fundamental reasons for developing a plan. Examples of aims are:

- To provide a system and resources to prevent and respond to water safety incidents that could affect people, property and/or the environment
- To minimise adverse impacts on people, property and the environment

5.4 Defining the objectives of the Local Water Safety Plan

Agree upon the principles and goals of the plan

5.4.1 The parties to the plan (or if there are no other parties, the LGA) should document and set targets for the LWSP. At a minimum these targets should seek to reduce the burden of drowning and aquatic related injuries on the community and the plan should detail targeted, specific, measurable and timebound actions that will actively contribute towards reducing the burden of drowning and aquatic related injury on the local community.

5.4.2 A primary goal of any LWSP should be the preservation of life and prevention of injury.

5.4.3 Secondary goals of any LWSP should include:

- Providing a criterion for risk assessment by relevant authorities
- Allowing for identification of sites posing unacceptable risks to public safety with a specific focus on drowning safety; and,
- Supporting the allocation of resources to improve water safety within the community
- Prioritising actions informed by the likelihood and consequence of failing to address the identified risk
- Ensuring the safety of all persons visiting, working on or around, swimming, recreating and/or recreating nearby the waterway
- The development of community alerts and safety warnings that are timely, tailored and relevant to assist community members in making informed decisions about their safety
- The development of public education and awareness
- The redevelopment or development of infrastructure to support safe use
- The protection of existing assets and infrastructure

- The protection or conservation of environmental and conservation assets including flora and fauna
- The monitoring and enforcement arrangements of any local or state and territory laws relating to water safety or safe aquatic recreation (such as boat licensing laws)

Create shared responsibility and accountability

- 5.4.4 Shared responsibility paves the way for more resilient communities that are engaged, informed, and involved. Resilient communities recover more quickly and are better placed to prevent, respond and recover from emergencies and disasters. By sharing responsibility for our collective vulnerabilities, we can minimise the impacts of disasters and build safer communities.
- 5.4.5 Shared responsibility does not mean equal responsibility. In many cases, the Emergency Services sector and governments more broadly have the resources and information to make decisions and act on behalf of the Australian community. Equally, in major emergencies (such as floods) with far-reaching consequences, the state may not be able to coordinate the support the community expects.
- 5.4.6 The Plan should recognise that building safer and more resilient communities is the shared responsibility of the whole community, including governments, non-governmental organisations, businesses and individuals.
- 5.4.7 The Plan should document the common agenda, responsibility and obligations of the parties to the plan as well as the wider community.
- 5.4.8 In order to achieve shared responsibility, the LWSP must be embedded system-wide in strategy, governance, communications and culture. In practice, shared responsibility means:
- Roles and responsibilities are clearly articulated
 - Agencies and/or actors understand their role and the roles of others
 - Agencies and/or actors can influence the decisions that affect them
 - Arrangements are flexible and can be negotiated
 - Actors have the knowledge, skills and resources to fulfil their responsibilities
 - Actors have the freedom and agency to make decisions when carrying out their roles and responsibilities
 - Actors are accountable for their actions.

5.4.9 The Plan should document and establish agency roles and responsibilities with regards to:

- Preventative actions
- Emergency response responsibilities
- The administration and development of the plan
- Consultation requirements
- Communication requirements
- Resource requirements
- KPIs / Performance measures

5.5 Defining the Scope of the Local Water Safety Plan

5.5.1 Defining the scope for a LWSP should include the following:

- the location of the community and waterway(s), including any relevant street addresses, GPS coordinates and/or any significant landmarks
- a detailed map
 - showing the location of the waterway
 - sizes (length, width and depth) of all water courses and bodies
 - identifying all hazards in the area that are known to the owner and/or operator as well as the LGA and/or agencies involved in the planning process and the location of all waterway access points
- a brief description of the nature of the waterway and its operation
- the physical areas within the waterway where swimming, recreating and/or watercraft are used including any supervised or patrolled locations
- Any local amenities including lifesaving clubs, first aid facilities or emergency help points
- Waterway and waterfront users and any staff to be covered should be defined
- A description of the activities (structured and unstructured) that are offered or take place within the waterway
- The estimated number of persons and types of persons including workers, likely to be present in or around the waterway during peak and off peak periods
- The geographic area over which the plan applies should be defined.

Flood Preparation and Mitigation

- 5.5.2 The LWSP should consider the risk of flooding and its effects on people, property and plant, livestock and other natural assets. Features considered should include:
- the exposure of people
 - transport routes through potential flood-prone areas
 - the availability of barriers and/or early warning systems to reduce the likelihood of persons becoming at risk due to flooding
 - the exposure of sensitive environmental receptors
 - all people and property located within the boundaries of flood-prone area
 - hazardous materials being transported or removed from the area that are under the responsibility of the owner, operator or relevant party
 - any other areas or activities under the control or influence of the owner, operator or relevant party not covered by separate emergency arrangements.
 - It is important to identify significant community and environmental features surrounding the waterway. These should include features where large numbers of people gather (e.g. sporting complexes, function centres, casinos, bars, restaurants), sensitive land uses (e.g. schools, hospitals, child care facilities, nursing homes) and sensitive environmental receptors. Sensitive environmental receptors may include:
 - surface waterways (e.g. creeks, rivers, stormwater drainage systems, access to sewerage system)
 - sub-surface aquifers
 - soil (considering characteristics such as soil permeability, which controls the rate at which leachate from contaminated land will reach ground water reservoirs) natural buffers, wildlife corridors, State forests/national parks.

People to be covered by the Local Water Safety Plan

- 5.5.3 The people likely to be affected by aquatic incidents will be located within the physical area to be covered by the plan. The total number of people possibly affected should be estimated. The significance of their exposures can be estimated in the risk assessment process. Groups of people to be identified may include:
- Local residents
 - Sporting groups and associated activities
 - Swimming and water safety program providers

- Camps and schools
 - Tourism operators
 - Boating operators
 - Statutory authorities, their staff and their contractors
 - Visitors including CALD groups, children, older Australians, persons with a disability, school groups etc
 - Emergency responders
 - People within surrounding areas including commercial, industrial and residential neighbours
- 5.5.4 Large groups of people, or those more vulnerable to the consequences of emergencies, need to be given special consideration when determining procedures for protecting people from the impacts of an incident.

Assumptions affecting the plan

- 5.5.5 The Local Water Safety plan will usually be based upon assumptions about matters such as the availability of resources and services, and the execution of prevention measures and responses within estimated timeframes. These assumptions should be evaluated, and contingency planning developed to accommodate situations where these assumptions fail. Examples include:
- Increased response times of the emergency organisation and emergency services
 - Unavailability of staff
 - Failure of services and/or utilities (e.g. Gas, electricity, water and telecommunications, and emergency services such as fire fighting water and emergency generators)
 - Overlap between the facility emergency control centre and an inappropriate hazard zone
 - Adverse weather conditions
 - Inaccessible or inoperable emergency equipment, isolation equipment and/or safety critical equipment.

5.6 Components of a Local Water Safety Plan

5.6.1 A Local Water Safety Plan for a community or inland waterway should include but not be limited to the following:

- The arrangements to ensure that those resources and services that are needed to make the waterway(s) as safe as is reasonably possible are available and effectively utilised
- The arrangements for conducting the activities to manage and reduce risk - including the roles, responsibilities and authority of agencies and individuals
- The measures taken to prevent and decrease the likelihood of aquatic risks from occurring
- The measures taken to reduce the severity of potential or actual aquatic emergencies
- The arrangements for testing, monitoring and improving risk management at the waterway and its waterfronts

5.7 Steps to create a Local Water Safety Plan

Identify and define water safety risks associated with the waterway

5.7.1 The owner or operator of an inland waterway, or the controller of access to the inland waterway, or inland waterway program or activity operator should conduct a risk assessment relating to the inland waterway to determine the risks associated and the availability and suitability of control measures to treat associated risks. See Guideline – Assessing Risk in Inland Waterways.

Set objectives and select evidence-based drowning prevention strategies to be implemented

5.7.2 The plan should include practical ways of reducing risk.

5.7.3 The plan should identify both system-wide as well as specific activity zones within the waterway and the measures and strategies that will be applied at the system level and at specific areas or zones. Some further Guidance relating to zones is contained later in this Guideline.

Establish priorities, responsibilities and coordination mechanisms and define resource needs.

5.7.4 The plan should establish:

- What agencies and stakeholders are doing and/or will do and are responsible for doing
- When these actions are or will be done
- How they are going to do it / are doing it
- Who else is involved / interdependencies
- How the actions reduce or will reduce risk
- Why the actions are being done

Obtain stakeholder and government approval

5.7.5 The members of the committee should ensure that stakeholders, including Government agencies are consulted on the plan and approve (or at least do not object) to the plan's contents and associated actions. For example dredging a waterway may not be permitted under environmental protections.

Implement, monitor and revise strategy and targets as necessary.

5.7.6 The Committee and associated agencies should set targets and monitor and review the performance against the agreed targets within the plan.

5.7.7 A suggested framework to use may be the Australian Water Safety Strategy which targets key People, Populations, Locations, Activities and Risk Factors and identifies a series of research, policy, advocacy, collaboration, education, practical safety measures and workforce requirements to achieve the aims of the strategy.

For more information on the Australian Water Safety Strategy see:

<https://www.royallifesaving.com.au/research-and-policy/australian-water-safety/australian-water-safety-strategy>

5.8 Use of subject matter experts

- 5.8.1 The Committee should ensure that appropriate subject matter experts are consulted in the development and review of the plan.
- 5.8.2 Subject matter experts should be suitably qualified.
- 5.8.3 'Suitably qualified' means having the knowledge, skills and experience to provide advice on the issues impacting the health and safety of the users of the waterway and the broader community. The advice should reflect the current state of knowledge on water safety so the Committee can rely on this advice when controlling the risks in and around the waterway.
- 5.8.4 The suitably qualified person must be able to advise the Committee about the process of identifying hazards and implementing controls to eliminate or reduce the assessed risks, and how to monitor and review those controls.
- 5.8.5 The type of person required will always depend on the circumstances of the community.
- 5.8.6 A suitably qualified person is not expected to be expert in every aspect of water and community safety, but they must recognise the limits of their competence and identify for the Committee when further expertise is necessary.
- 5.8.7 The following matters, should all be considered when assessing whether a person has the skills, knowledge and experience to be suitably qualified:
 - **Knowledge:** Can the person demonstrate they have relevant knowledge in water safety, risk management, Work Health and Safety, Emergency Management or a related field through the completion of education?
 - If no formal qualifications, can the person through alternate means establish they understand the current state of knowledge on the issue and risk management principles and legislation?
 - **Industry experience:** Has the person worked in the water safety and community sector, dealt with emergency and risk management planning, addressed issues and evaluated the impact of possible interventions?
 - **Professional activity:** Can the person demonstrate recent professional activity in the field of Work Health Safety, Risk Management or Water Safety in which they intend to provide advice? How long has the person been professionally active?
 - **Reputation:** Is the person reputable and able to provide referees who can attest to the quality and utility of their work?

- **Professional association:** Is the person a member of a professional association that requires the attainment of and continuing development of certain knowledge, skills and experience for membership?
- **Communication skills:** Is the person able to explain what needs to be done to control any hazards or risks and write reports that are easy to understand?
- **Technical expertise:** If the person is monitoring conditions in the waterway, is their equipment suitable, appropriate and accurate? Does the person have the skills to use the equipment and analyse the results?
- **Legislative and standards understanding:** Is the person familiar with the relevant legislation, Australian Standards and these Guidelines?
- **Risk management strategies:** Is the person's approach consistent with the principle of ensuring the highest level of protection so far as is reasonably practicable? For example, it should focus on elimination of the risks rather than lower order controls such as using personal protective equipment or monitoring.

5.9 References

- AS/NZS ISO 31000:2009 Risk management – Principles and Guidelines
- Lifeguarding, 7th Edition – Royal Life Saving Society – Australia, Sydney, Australia
- AS 3745 – 2010 Planning for Emergencies in Facilities
- Emergency Management Victoria. (2020). *Victorian State Emergency Plan*. Melbourne, Australia.
- United Nations, (2014). *Global Report on Drowning*. Geneva, Switzerland
- WorkSafe Victoria (2008) Employing or engaging suitably qualified persons to provide health and safety advice, Melbourne, Australia.
- PUA12 – Public Safety Training Package
- Victorian Floodplain Management Strategy – Department of Environment, Land, Water and Planning, Victorian Government

IW6. ZONING AQUATIC ACTIVITY

Issued: 21/09/2021

Effective as of: 01/07/2022

Version: 1.0

6.1 Purpose

- 6.1.1 To provide guidelines for identifying permanent or semi-permanent activity and/or safety zones within inland waterways.

6.2 Definition

- 6.2.1 This Guideline outlines how zoning provides a management tool to isolate or separate activities that may be incompatible with the other activities or to isolate hazards or activities that are required to be contained to a particular area.
- 6.2.2 The separation of non-complementary water-based activities is crucial for the safety of people in the water and around the aquatic facility
- 6.2.3 The use of aquatic safety zones clearly identified using well known systems will minimise the risk of injury caused by a collision.

6.3 Application of zones

- 6.3.1 There are two ways that zoning should be applied:
- Isolating a particular aquatic activity to a specific location; and
 - The separation of activities that are a risk to other aquatic users.
- Activities**
- 6.3.2 The activities that are most commonly requiring zoning include:
- Boating
 - Swimming
 - Wind sports
 - Diving and Underwater Activities (i.e. Scuba Diving)
 - Special Events or Races
 - Swimming and Water Safety Instruction
 - Floating Play Equipment



6.4 Identifying zoned areas

6.4.1 Aquatic activity zones such as boating and swimming zones should be:

- Safe
- Practical
- Easy to identify
- Easy to comply with and regulate
- Responding to current and anticipated future water uses.

6.5 Aquatic activity zones

6.5.1 Zones should reflect the risk assessment and likely activities undertaken in an area and should be reflected in the water safety plan.

6.5.2 Common zones for aquatic activities in waterways may include:

- **Boating Only** - swimming is not permitted in this zone.
- **Swimming Only** - all vessels, including personal watercraft, powered and non-powered vessels, are not permitted in this zone.
- **Shared Wind Sport Area** - this zone provides an area for kite boarding, sail boarding and other wind based boating which may exceed 5 knots except within 50m proximity to other vessels and swimmers. Other vessels are permitted in this area.
- **5 Knot Speed Limit** for all vessels, typically applicable next to waterfronts or swimming areas:
 - within 50 metres of the waters' edge; or
 - within 50 metres of a fixed or floating structure in or on the water (including a wharf, jetty, slipway or boat launching ramp); except in an access lane.
- **No Wind Sports** – sailboarding and kiteboarding are not permitted;
- **No Personal Watercraft** – personal watercraft (including jetskis) are prohibited in this zone.
- **Access lane** - means an area of water which is set aside to permit access to or from the waterfront at speed:
 - for a vessel which is towing a water-skier; or,

- for launching or retrieving a vessel at a boat ramp when the ramp is located in the area specified as an access lane.
- Competition or training zone – means an activity
 - undertaken as part of a competition or training organised in accordance with the rules of a sporting organisation; and
 - approved by the waterway manager or land owner
- **No wash zone** - means an area of water through which a vessel must only pass at a speed which creates minimal wash or no wash.

6.6 Establishing zoned areas

6.6.1 Aquatic activities can be zoned temporarily by time or spatially in defined areas.

6.6.2 To establish a system of zoning, the owner or operator of the waterway should:

- Conduct an activity specific risk assessment to establish the need for zoning and the most appropriate methods for application
- Consult with relevant stakeholders
- Communicate with stakeholder and user groups and the general public
- Use a suitable device to demarcate the zone(s)

6.7 Identifying zoned areas

6.7.1 Land and waterway managers should ensure that aquatic activity safety zones are clearly identifiable both from in the water, from watercraft and from the waterfront. This may be by way of:

- Lane ropes or floating bulkheads for in-water separation
- Information signage or flags adjacent to the waterway viewable from within the water
- Information at the point of entry (i.e. Notice board / signage)
- Time of zoning

6.8 Access lanes

6.8.1 It may be suitable to provide zoning for access lanes for watercraft which enable safe access to and from the shore of the water for water craft.

6.9 Speed restriction zones

6.9.1 It may be suitable to establish speed restriction zones for watercraft in given areas.

6.10 Water skiing -prohibited zones

6.10.1 It may be suitable to prohibit water skiing within certain areas of the waterway.

6.11 Vessels – prohibited zones

6.11.1 It may be suitable to prohibit all vessels within certain areas of the waterway.

6.12 Vessels with engines – prohibition zone

6.12.1 It may be suitable to prohibit only vessels with engines in certain areas of the waterway.

6.13 No wash zones

6.13.1 It may be suitable to establish zones where no wash is permitted from watercraft.

6.14 Direction of travel for watercraft in inland waters

6.14.1 Where vessels with engines are used for propulsion on inland waters, convention is that the vessels are operated:

- in an anti-clockwise direction in relation to the approximate centre of the waterway; or
- in a clockwise direction where it is prescribed that such a vessel must be operated in that direction in relation to the approximate centre of the waterway, except when the vessel is operating in a speed restriction zone or an access lane or is being operated at a speed of less than five (5) knots.

6.15 Giving way

6.15.1 When departing from the shore at any location the master of a vessel with an engine used for propulsion must ensure that the vessel is operated in a manner such that it gives way to all other vessels.

6.16 Swimming and bathing zones

6.16.1 Activity zones should be established and signposted so that persons do not bathe:



- within 50 metres of any boat launching ramp that is being used or is about to be used for the launching or recovery of any vessel; or within an access lane.

6.17 Diving (scuba)

- 6.17.1 The master of any recreational vessel or hire and drive vessel engaged in diving operations on any inland waters should ensure that there is exhibited on that vessel where it can clearly be seen a dive flag or a rigid replica of that dive flag, and:
- In the case of a vessel of 10 metres or more in length, the height of such dive flag or replica should not be less than 1 metre; and
 - In the case of a vessel of less than 10 metres in length, the minimum size of such dive flag or replica should be 750 millimetres by 600 millimetres.

6.18 Supervision of zoned areas

- 6.18.1 Lifeguards and other enforcers of aquatic safety rules should ensure that aquatic activity safety zones are regularly monitored and that there is no unauthorised aquatic activity within specific areas.
- 6.18.2 Depending on the nature of the activity, additional Supervision may also be required either specifically for the activity safety zone or the increased risk due to more activity in the area.

6.19 References

- Maritime Safety Victoria (2021). A Guide to Vessel Operating and Zoning Rules
- Guidelines for safe recreational water environments. World Health Organization, Geneva, 2003.
- Australian Coastal Public Safety Guidelines. SLSA 2010



IW7. SUPERVISION OF AQUATIC PROGRAMS

Issued: 15 November 2021 Effective as of: TBC Draft Version: 1.0

7.1 Purpose

- 7.1.1 To provide guidance on the supervision of persons in structured aquatic activity (aquatic programs) in an inland open water environment for swimming and water safety teachers, aquatic program instructors and teachers of lifesaving.

7.2 Scope

- 7.2.1 This Guideline refers to all bodies of water into which users may enter for the purposes of participation in a program.
- 7.2.2 All aquatic programs conducted in open waterways, should consider all program participants, leaders, instructors and teachers (including swimming and water safety teachers) as bathers when assessing the risk of the aquatic environment
- 7.2.3 The information below relates to issues of safety, not ratios considered ideal for teaching effectiveness.
- 7.2.4 The responsibility of the swimming and water safety teacher or the aquatic program instructor is for the class being taught, not the users of the rest of the waterway.

7.3 Training and Qualifications – Swimming Lessons and Swim Training

Slow or still water

- 7.3.1 Swimming and water safety instructors in inland open waterways supervising aquatic programs or teaching swimming and water safety programs should hold one of the following:
- Royal Life Saving Swim Teacher Certificate
 - AUSTSWIM Teacher of Swimming and Water Safety Certificate
 - Swim Australia Teacher
 - Swim Australia Teacher of Competitive Swimming
 - Life Saving Victoria – Swimming and Water Safety Teacher
- And one of:
- Royal Life Saving Bronze Medallion
 - Life Saving Victoria Inland Waterway Lifesaving Certificate



- 7.3.2 All instructors must have a current “Working with Children” check or equivalent as required by relevant State or Territory legislation.
- 7.3.3 Where instructors are not supported by staff holding a current Provide First Aid Qualification, instructors should also hold:
- A current Provide First Aid Certificate

Swift Water

- 7.3.4 In addition to the above requirements for slow or still water, all supervising staff of a program in swift water must hold a recognised Swiftwater rescue qualification or Recognised Australian White Water Rescue Training when supervising program participants in Swiftwater.

7.4 Training and Qualifications - Lifesaving Programs

Slow or still water

- 7.4.1 Instructors of lifesaving programs in inland open waterways supervising aquatic programs or teaching swimming and water safety programs should hold the following:
- Pool Lifeguard certificate; or
 - Royal Life Saving Bronze medallion
 - Life Saving Victoria Inland Waterway Lifesaving Certificate
- And one of:
- Royal Life Saving Swim Teacher Certificate
 - AUSTSWIM Teacher of Swimming and Water Safety Certificate
 - Swim Australia Teacher
 - Swim Australia Teacher of Competitive Swimming
 - Life Saving Victoria – Swimming and Water Safety Teacher
- 7.4.2 All instructors must have a current “Working with Children” check or equivalent as required by relevant State or Territory legislation

Swift Water

- 7.4.3 In addition to the above requirements for slow or still water, all supervising staff of a program in swift water must hold a recognised Swiftwater rescue qualification or Recognised Australian White Water Rescue Training when supervising program participants in Swiftwater.

7.5 Program-specific risk assessment

7.5.1 The program activity leader should conduct a program-specific risk assessment prior to commencing the aquatic program in the waterway.

Establish the Context for Activities

7.5.2 The program activity leader should establish the context of the program activity/event to take place utilising the following areas:

- The Activity / Event
 - Time of Activity
 - Duration of Activity (Hour, Half Day, Full Day)
 - Type of Activity (Fitness Test, Carnival, Sports, etc.)
 - Locations within the waterway which will be used for the activity
 - Equipment within the activity (Rescue Equipment, Manikins, Scoreboard)
 - The nature of the program and/or activity
- The Stakeholders
 - Number of participants / students, competitors, patients, spectators, parents etc.
 - Users' health, fitness and wellbeing (health, fitness, fatigue, age, strength)
 - The ability of swimmers
 - Users' capability (experience, confidence, knowledge, skill, attitude)
- The environmental factors
 - The location / waterway type
 - Water conditions / Water quality
 - Weather forecasts
 - UV ratings / sun protection
 - Safety equipment (such as lifejackets, whistles and helmets)
 - Rescue equipment on site (such as angel rings, throw ropes and reach poles)
 - The availability of emergency management services such as ambulance response times
 - Local flora and fauna

Risk Assessment Procedure

7.5.3 The program activity leader should conduct the risk assessment in line with the processes in this and other Royal Life Saving guidance and the *ISO 31000:2018 Risk assessment process*.

Risk Treatments

7.5.4 The owner or operator of the aquatic facility should consider the range of options available for conducting the activity ensuring that the level of risk is tolerable and risk reduction strategies are implemented to bring risk As Low As Reasonably Practicable (ALARP).

7.5.5 This includes but is not limited to the following options:

- Move the location of the activity
- Change or modify the type of activity
- Change or modify the time/duration of activity
- Postpone or cancel the activity
- Reduce or restrict participant numbers
- Reduce or restrict activity to participant capability
- Zoning or Barriers
- Increase signage
- Communications (Radio, Phone etc.)
- Access to and egress for emergency services
- Access to rescue and first aid equipment
- Additional water safety equipment
- Additional supervision requirements
- Personal protection equipment
- Hire Agreements
- Specific Insurance
- Specific emergency response plans

Review/monitor the situation

7.5.6 Once risk reduction strategies have been implemented the situation should be regularly monitored and reviewed and after any changes to the risk become apparent to ensure the effectiveness of the strategy.

Communication & Consultation

7.5.7 The Activity Risk Assessment and related treatment actions should be communicated to all relevant stakeholders involved in the activity / event prior to the activity taking place. Often participants can be valuable sources of risk information such as advising of pre-existing medical conditions or local conditions.

7.5.8 This should form part of the 'Safety' component of an Activity/Event Brief.

7.6 Supervision Requirements

7.6.1 For the ease of simplifying criteria, supervision requirements for program activity leaders including swimming and water safety teachers, aquatic program instructors and teachers of lifesaving for an individual or group should be as follows:

- Each program activity leader must ensure that they are appropriately positioned to ensure that they have constant view of all students and are able to respond promptly where assistance is required.
- Program activity leaders should be positioned so that they can respond and reach a participant in distress ideally within 30 seconds.
- Program activity leaders should never leave participants un-supervised or become distracted with non-supervisory activities where participants are in and around the aquatic environment
- Program activity leaders should conduct regular scanning and surveillance strategies such as grouping, headcounts and proactive communication to ensure swimmers do not become at risk or become unaccounted for
- Rescue equipment such as ropes, poles and approved buoyancy devices that can be used for emergencies should be readily available for use by swimming and water safety teachers at the aquatic location
- All staff involved in swimming instruction must be attired to perform an immediate contact rescue if necessary and be fit and competent in rescue competencies in the aquatic environment in which the activity is being conducted.

7.7 Supervision ratios

- 7.7.1 All aquatic programs, including the teaching of swimming and lifesaving in inland open waterways should attract the following supervision ratios:

Program / activity	Maximum ratio
For the teaching of swimming and/or aquatic programs	1 Teacher / Instructor to maximum of 10 participants
For the teaching of lifesaving programs	1 Teacher / Instructor to maximum of 10 participants
Programs on inflatables	Minimum of 2 Supervisors for up to 10 participants, thereafter 1:10 (E.g. 20 participants will have 3 supervisors)

7.8 Clothing and Personal Protection Equipment

Personal Protection Equipment

- 7.8.1 The program activity leader should take a risk management approach in regards to the wearing and supply of personal protection equipment for non-swimmers and weak swimmers.
- 7.8.2 The program activity leader may consider personal flotation devices such as Life Jackets to be worn by non-swimmers or weak swimmers who are in attendance of an aquatic program.
- 7.8.3 All personal flotation devices should be fit to size of the child and consistent with Australian Standard Personal Flotation Devices AS4758:1.

7.9 Teaching equipment

- 7.9.1 All equipment used in aquatic programs should meet relevant Australian Standards.

Buoyancy Aids

- 7.9.2 Buoyancy aids such as kickboards, pool buoys, noodles and floating mats should be inspected regularly to ensure that they are in a good condition.

- 7.9.3 Buoyancy aids should be allowed to dry fully overnight before being used again to ensure that they do not retain any stagnant water and risk becoming a source of infection.
- 7.9.4 A regular program of disinfection may be required to be implemented depending on their amount of usage and their storage conditions.

Teaching Platforms

- 7.9.5 Teaching platforms should be inspected regularly to ensure that they are in good condition, are structurally sound and have no sharp edges.
- 7.9.6 The edges of the teaching platform should be of a contrasting colour to the water to assist students to easily tell where the edge of the platform is.
- 7.9.7 Teaching platforms should assist with visibility beneath them or manufactured so that people are prevented from swimming underneath them.
- 7.9.8 Teaching platforms should be made of a material that does not absorb water.
- 7.9.9 Care should be taken when moving a teaching platform, either within the aquatic environment or out of the aquatic environment, due to their weight and difficult handling characteristics.

Inflatables

- 7.9.10 All aquatic programs that use in-water inflatable equipment should conduct a detailed risk assessment on the use of the inflatable equipment as per Australian Standards.
- 7.9.11 Inflatables should attract increased supervision arrangements so entrances and exists (including accidental exits) are supervised, see above guidance on Supervision Ratios.
- 7.9.12 Inflatables should be inspected prior to use for wear and tear, leaks and rough surfaces.
- 7.9.13 When inflation and deflation are taking place, the area around the inflatable must be kept clear of pedestrian traffic.
- 7.9.14 Care should be taken when moving an inflatable, either inflated or not, due to their weight and difficult handling characteristics. Consideration should be given to appropriate mechanical aids such as trailers, trolleys and winches given the difficulty accessing inland waterways to protect the health and safety of program activity leaders.

- 7.9.15 Where possible, an inflatable should be allowed to dry fully before being stored for use.
- 7.9.16 More information on appropriate management of inflatables can be found in AS/NZS 3533.4.5-2017 *Amusement rides and devices – inflatables*.

7.10 References

- Swimming and Lifesaving Manual – 6th Edition 2018, Royal Life Saving Society – Australia, Sydney, Australia
- Lifeguarding Training Manual 6th Edition 2018, Royal Life Saving Society – Australia, Sydney, Australia
- Guidelines for safe recreational water environments. World Health Organization, Geneva, 2003
- Guidelines for Safe Pool Operations, Royal Life Saving Society – Australia, Sydney, Australia
- ISO 31000:2018 Risk management - guidelines
- Standards Australia, AS/NZS 3533.4.5-2017 Amusement rides and devices – inflatables
- Standards Australia, AS/NZS AS4758:1 - Personal Flotation Devices
- State of Victoria (Department of Education and Training) Combined Swimming Policies Advisory Library, 2019

IW8. PROVISION OF SAFETY SIGNAGE AROUND INLAND WATERS

Issued: 21/09/2021

Effective as of: 01/07/2022

Version: 1.0

8.1 Purpose

- 8.1.1 To communicate safety information to members of the public relating to aquatic activity or activity adjacent to aquatic locations that relies as little as possible on the use of words to achieve understanding and is consistent with international water safety standards
- 8.1.2 Lack of signage – and standardised signage – may lead to inadvertent exposure to hazards and/or confusion.
- 8.1.3 The use of appropriate safety signs does not replace appropriate higher order risk control measures and prevention measures, however, education is an essential part of any system that provides safety information.

8.2 Scope

- 8.2.1 This Guideline provides practical guidance on the appropriate safety signage requirements for inland waterways and areas adjacent to waterways where the waterway is accessible from.
- 8.2.2 It includes information on planning for signage as well the specific application of signage with various aspects of a swimming pool and aquatic facility.
- 8.2.3 This guidance is intended to be used by owners and operators of aquatic environments and by manufacturers of signs and equipment. It is not applicable to maritime traffic (such as boats).
- 8.2.4 This information was originally developed by RLSSA and SLSA and is now a part of ISO/AS/NZS 2416.1:2010 Part 1, Part 2 and Part 3 Water Safety Signs. This guidance is intended to support the Australian Standard, not replace it.
- 8.2.5 The recent review of the AS/NZS 2416.1:2010 Part 1, Part 2 and Part 3 Water Safety Signs and beach safety flags now show that warning symbols within a triangular shape, instead of the traditional diamond shape.

Diamonds or triangles?

- 8.2.6 Within AS/NZS 2416.1:2010 Part 1, Part 2 and Part 3 Water Safety Signs and beach safety flags the standards makes specific reference to allow warning signs within Australia to be depicted with both. The triangle shape has been introduced as the

Australian Standard is also now an International Standard and the triangle is more widely used in other parts of the world.

- 8.2.7 Whichever option is chosen by the owner or operator of an aquatic facility it is important to ensure that a consistent approach is taken in respect to the message to the public.

8.3 Establishing the context

- 8.3.1 The owner or operator of an inland waterway or the land providing public access to the inland waterway should ensure the erection of appropriate signage advising users and visitors to the waterway of the hazards, risks and information needs of potential and actual users of the waterway (whether intentional or unintentional).
- 8.3.2 Safety signs draw attention to objects and situations affecting health and safety.
- 8.3.3 Safety signs do not replace the need for proper risk and incident minimisation measures.
- 8.3.4 All safety signage should be in accordance with the Australian and International Standards listed within the references.
- 8.3.5 The placement of safety signage should be determined through the Aquatic Risk Assessment and Local Water Safety Plan (as applicable).

Determining appropriate signage requirements

- 8.3.6 Determining the most appropriate signage at an aquatic facility is a detailed process that should include assessing the hazards and associated risks which need signage then determining:
- the classification of sign to be used
 - the location and size of signs
 - the mounting height
 - the sign height and maximum viewing distance
 - the text to support the sign
 - the use of single or multiple signs
 - the lighting and illumination where the signage will be located
 - the environment where the signage will be located
 - the material, construction and physical properties
 - the fixing method of the signs

- 8.3.7 The owner or operator of an inland waterway or the land providing public access to the inland waterway should ensure that the type of sign(s) used is suitable for the intended purpose.

CALD / Accessibility Considerations

- 8.3.8 Where there are to be words on a sign, is it likely that the meaning of the sign will need to be conveyed to persons not familiar with the English language?
- 8.3.9 In addition to English, it may be necessary to repeat the message in one or more other languages, particularly if instant recognition of the message may be needed in a critical situation.
- 8.3.10 Translated messages should adhere as closely as practicable to the intent of the English version.
- 8.3.11 The interpreter symbol and a QR code should be considered with information linking to information in multiple languages.
- 8.3.12 If a symbol or symbolic sign is used, does the meaning, as specified in this Standard for that symbol or sign, accurately convey the message which needs to be conveyed by the sign? It may be necessary to add words to qualify or augment the message.

Presentation of information

- 8.3.13 The presentation of information is very important to how people understand and react to a multiple sign. The layout and presentation of information should be consistent across the family of multiple signs; this will help people to read a sign and make their decision efficiently. Grouping information into categories makes the information easier to understand. The designer should apply a grid structure to the information content within the signs.
- 8.3.14 Multiple signs should be manufactured and fixed in the most appropriate manner to suit a particular aquatic environment.

Type

- 8.3.15 The type in a multiple sign should allow for viewing distance considerations.

Colour

- 8.3.16 The use of colour in a signing scheme can establish a visual look for the scheme. Colour selection is important as a multiple sign needs to be easy to find in the aquatic environment. It is essential that the colour contrast between the colour of the text and the colour of the sign background should be carefully considered to ensure legibility.

8.3.17 The combination of red and yellow are colours commonly associated with aquatic environments and lifeguards and therefore should be used on multiple signs in and around aquatic environments. Safety symbols and supplementary text should be displayed in a manner which ensures optimum legibility.

Use of symbols

8.3.18 Water safety signs should conform to ISO 20712-1. Beach safety flags should conform to ISO 20712-2. Public information symbols should conform to ISO 7001.

8.3.19 The positioning of symbols on a multiple sign should be given careful consideration; their positioning will affect how successfully the sign is read and understood. It is advisable to use supplementary text alongside symbols to explain their meaning and this text should clearly relate to the safety sign or beach safety flag symbol which it accompanies.

8.3.20 The minimum height of symbols should take into account the needs of people with normal sight and people with visual impairments. Relevant values for distance factor are detailed in Guidelines Sign Height and Maximum Viewing Distance

Terminology and language

8.3.21 The scheme designer should consider any terminology issues and policies agreed for aquatic safety signage.

8.3.22 Terms used on multiple signs should be understandable to first time aquatic users through to frequent aquatic users.

Structure / layout of signage information

8.3.23 Consideration should be given to the order in which information is presented on signs.

8.3.24 The recommended information hierarchy for multiple signs should be consistent and is as follows:

- Location information / contact details
- Hazards and Warnings
- Information
- Regulations / prohibitions
- Key contacts



Lighting and illumination

- 8.3.25 If artificial lighting is provided, effective illumination is required both in normal and in mains-failure conditions, if applicable.
- 8.3.26 There are various ways of ensuring the satisfactory illumination of signs.
- 8.3.27 Some types of lighting, e.g. low pressure sodium do not enable effective colour recognition and are therefore unlikely to be suitable for the illumination of water safety signs.
- 8.3.28 Where a sign is illuminated by an external artificial light source, the vertical illumination should be a minimum of 100 lux under normal lighting conditions.

Signage Environment

- 8.3.29 Signs should be selected to be suitable for their operating environment. Key considerations for an Aquatic Facility that should be considered include:
- Interior or exterior use;
 - durability of base material;
 - durability of graphical content;
 - colour/light fastness;
 - resistance to damage from bather traffic or from cleaning;
 - resistance to exposure to water;
 - resistance to corrosion, such as by Chloramines;
 - resistance to graffiti;
 - flame resistance;
 - type and suitability of fixings;
 - resistance to wind loads.

Materials, construction and physical properties

- 8.3.30 Planning for signage should take into consideration the exact nature of the recommended material of manufacture. This may be done by the owner or operator of the aquatic facility, however is most commonly done through advice from an Aquatic Signage Assessor or manufacturer and include:
- The construction of any material, including multi-layered material, that is of a composite nature.

- The method used to create layers and adhesion between layers.
 - A description of the surface characteristics and any specific protection afforded to the material shall be given. This may include thickness, dimensions, density and strength.
- 8.3.31 If the safety sign is classified as phosphorescent (P) or retro reflective (R), the signage plan should include the type of construction of the photometric layer and protection provided to this layer (if any).
- 8.3.32 Installers and designers should seek adequate assurance from suppliers in these aspects.

8.4 Signage Placement - Access and entrance points

Primary access / entrance signage

- 8.4.1 Primary access signs should be placed at natural main entrances to aquatic locations, and at pedestrian entrances; the exact position will depend upon the nature of the environment.
- 8.4.2 The pathway to an inland beach for example would be an obvious spot to erect an appropriate sign detailing all of the hazards, risks and any relevant prohibitions and safety considerations relevant to the beach.
- 8.4.3 Primary access signs are usually in the form of a Multiple Sign and should include key safety information and rules that is applicable for the entire aquatic location.
- 8.4.4 Primary signage should be:
- Sited to promote readability
 - Placed at an appropriate mounting height (see below)
 - In an area vid of secondary signage / visual distraction
 - Placed near or at the start of an access track
 - In a location where the width of the track is minimal
 - Positioned so as not to be obscured as visitors stop to read the sign
 - Not positioned where the sign becomes a hazard itself

Secondary access / entrance signage

- 8.4.5 Secondary access signs may be used at pedestrian entrances or entrances to specific aquatic environment. These signs should be placed at each entrance that is not a main entrance, e.g. a small footway, side access or minor path access.

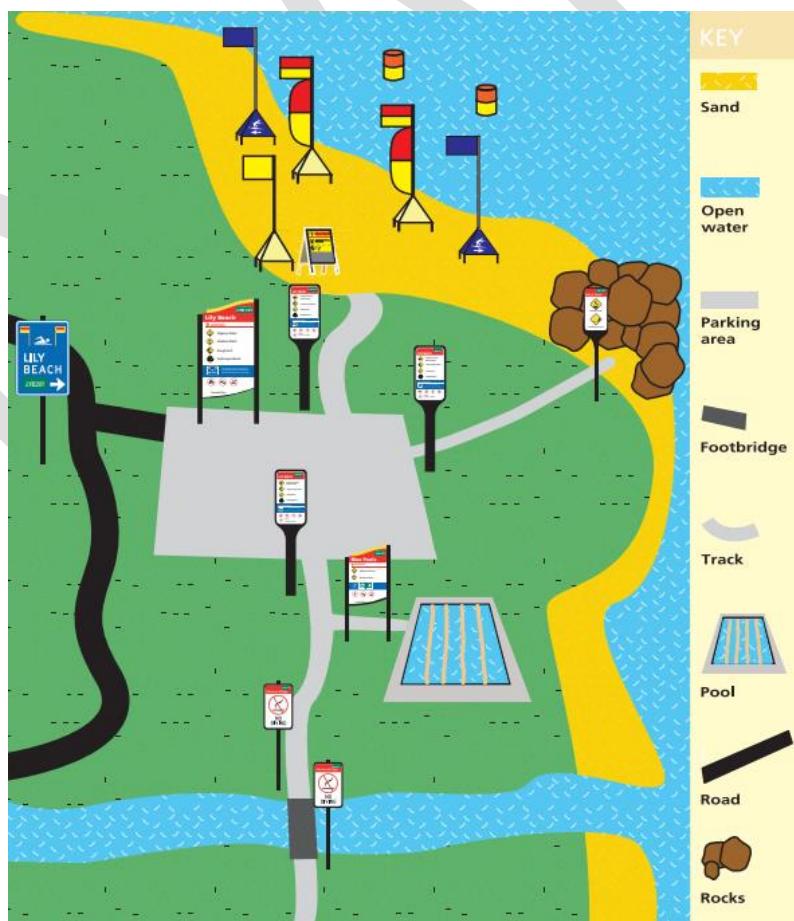
8.4.6 These signs may be used at main entrances if the location is small and/or rural. These signs can also be used to reinforce an entrance area such as an access path and are fixed at regular intervals along an open access way.

Information

- 8.4.7 Primary and secondary access signs should include the following safety information:
- Swimming information and/or prohibited activities (e.g. No swimming)
 - Key safety warning and regulations (e.g. Submerged objects, currents)
 - Lifeguard supervision information (e.g.. No lifeguard on duty)
 - Parental supervision information (e.g. Children must be supervised at all times)
 - Special considerations for the time (e.g. Beach closed)

Sign Type Placement Best Practice Model

- 8.4.8 The image below developed by Royal Life Saving and Surf Life Saving in 2006 represents the Best Practice Model for risk and safety signage at aquatic locations in Australia, giving visitors a number of opportunities to be well informed of hazards, regulations and lifesaving services within the designated area.



Sign Types

8.4.9 Six levels of sign types are included in the best practice model for risk and safety signage including:

- Level 1: Road signs
- Level 2: Car park signs
- Level 3: Access signs
- Level 4: Individual hazards and regulation signs
- Level 5: Beach signs, flags and symbols
- Level 6: Pool signs
- Level 7: Fauna signs

Road level signs

8.4.10 Road level signs may be appropriate when directing traffic to specific areas such as an inland beach. This sign is characterised by white lettering on a blue background and should include information symbols.

8.4.11 Emergency Markers should be white on a green rectangle.

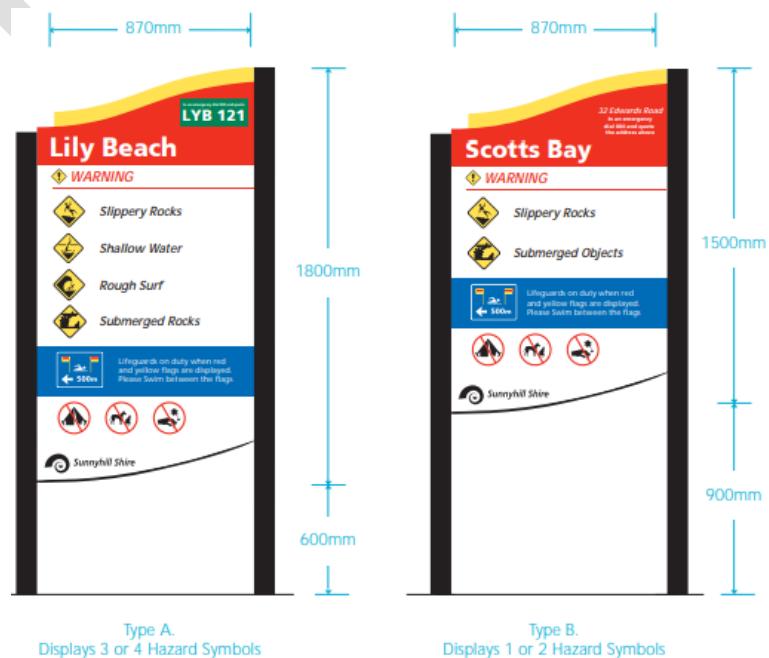
8.4.12 There may also be a need for warning symbols such as 'no lifesaving service'. These signs shall be comprised of a black symbol and border on a yellow diamond or triable background.



Example road signs

Carpark signs

- 8.4.13 Carpark signs should be installed at carparks where access to inland waterway locations is provided, such as in State and National Parks or at inland beach locations.
- 8.4.14 The carpark sign should be designed to attract attention and to display important information to visitors so that informed decisions can be made as to the suitability of the location for undertaking activities.
- 8.4.15 Signs should be made up of four sections in the following hierarchy:
- Location name and emergency marker (if applicable) or street address
 - Hazards within the designated area
 - Lifesaving service (if applicable) or safety information
 - Regulations
- 8.4.16 Location names should be displayed in white on red backgrounds.
- 8.4.17 The size of the sign will depend on the amount of information that is required to be displayed.
- Type A signs are used when 3 or 4 hazard symbols are to be displayed.
 - Type B signs are reduced in size to display 1 or 2 hazard symbols.
 - Hazard symbols are contained within ISO/AS/NZS 2416.1:2010 Part 1, Part 2 and Part 3 Water Safety Signs.
- 8.4.18 The below dimensions are a guide:



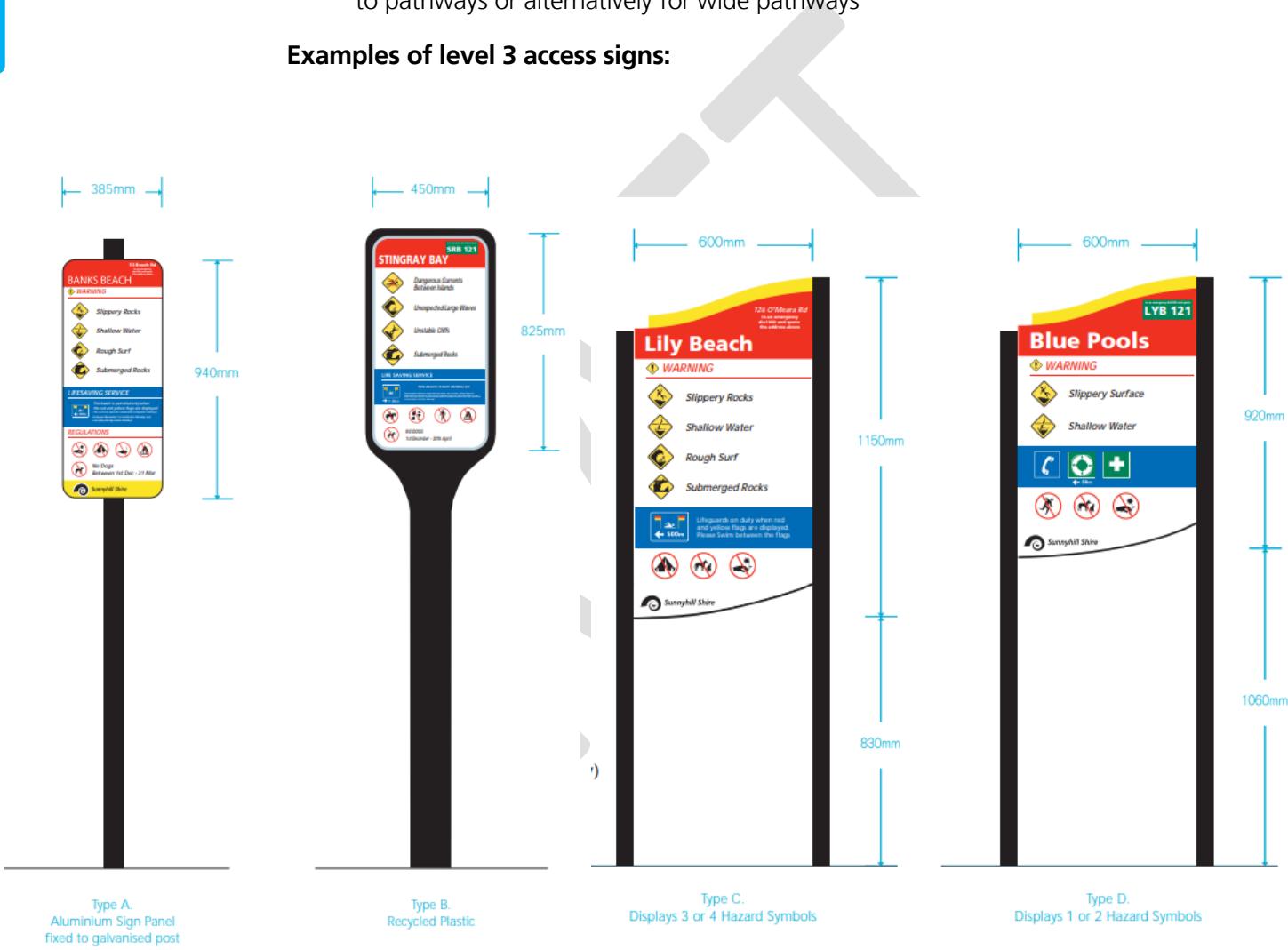
Level 3 Access Signs

8.4.19 Level 3 access signs follow the same principles as Level 2 car park signs.

8.4.20 There are two types of level 3 access signs:

- Defined access signs – which should be used where access to the waterway or reserve is controlled via a narrow pathway; and/or,
 - Open access signs – which should be used for areas where access is not limited to pathways or alternatively for wide pathways

Examples of level 3 access signs:



8.4.21 Where access is to the waterway is open, such as along the banks of a river in a city location, sufficient level 3 signs should be installed to reasonably inform a person who might access the waterway as to the risk. As a guide, every 100m would be a reasonable interspersion of water safety signs where there are multiple access routes to the aquatic location.

Level 4 Individual Hazard and Regulation Signs

- 8.5.1 Individual hazard signs should be used where a hazard is localised and has been identified at a level of risk that warrants sign posting. Examples may include unstable banks, slipper rocks and no swimming.
- 8.5.2 Individual signs may be used for displaying regulations.
- 8.5.3 For further information refer to AS2416.

Example level 4 sign



Level 5 beach signs

- 8.5.4 Beach signs should be posted for inland swimming beaches as applicable by the operator.

WARNING SWIMMING NOT ADVISED		Used to warn that an area is unsafe for swimming. Used where legislation does not exist allowing lifesavers/lifeguards to close a beach and prohibit swimming.
BEACH CLOSED		Used to inform that swimming is prohibited (should only be used where legislation permits the usage of such a prohibition).
BEACH CLOSED NO AQUATIC ACTIVITIES		Used to inform that aquatic activities are prohibited (should only be used where legislation permits the usage of such a prohibition).



8.6 Signage Inclusions

Safety Signage Classification and Use

8.6.1 Safety signs are classified and should be used according to their function as follows:

- Regulatory signs
- Hazard signs
- Emergency information signs

Regulatory signs

8.6.2 Signs containing instructions with which failure to comply constitutes either an offence at law, or a breach of standing orders, safety procedures or other directions, depending on which kind of control has been imposed at the aquatic location. They are subdivided as follows:

REGULATORY SIGNS	EXPLANATION
Prohibition Signs	Signs that indicate that an action or activity is not permitted
Mandatory Signs	Signs that indicate that an instruction must be carried out
Limitation or Restriction Signs	Signs that place a numerical or other defined limit on an activity or use of an area.

Examples of regulatory signs



Hazard signs

8.6.3 These are signs advising of hazards. They are subdivided as follows:

REGULATORY SIGNS	EXPLANATION
Danger Signs	Signs warning of a particular hazard or hazardous condition that is likely to be life-threatening
Warning Signs	Signs warning of a hazard or hazardous condition that is not likely to be life-threatening.

8.6.4 The term caution used in earlier editions has now been replaced by the term warning. The two terms are regarded as being interchangeable.

8.6.5 Warning Signs may be either triangle or diamond in shape. Either option is appropriate as long as they are used consistently.

8.6.6 Symbols should be accompanied by the relevant text to clarify the hazard shown. For example: 'Shallow water' and 'Sand bar' may use the same symbol.

Examples of Hazard Signs



Information signs

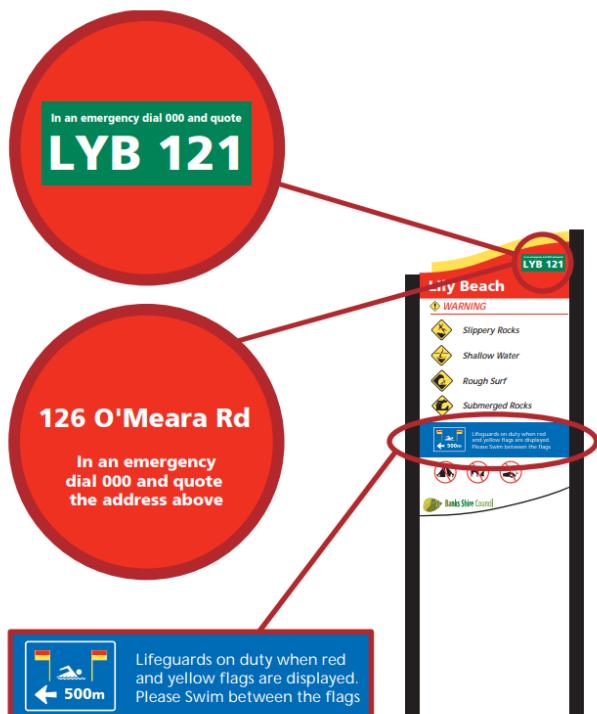
- 8.6.7 Information signs are used to show what areas of a waterway are suitable for certain activities.

Example Information Signs



Emergency markers

- 8.6.8 Emergency Location Indicators (where available) or an address should be placed on risk management signs in the top right-hand corner.
- 8.6.9 The number or address needs to be quoted over the phone to emergency services so they can respond to the location of the distress call. It is important to ensure accuracy of these markers and to register them with emergency services.



Information Signage Classification and Use

8.6.10 Separate from safety signage, owners and operators of aquatic locations may use signs to inform patrons of information and directions within an aquatic facility. These can be classified as follows:

8.6.11 This is known as 'Directional' or 'Information' signage and includes:

- Access Signage
- Public Information Signage

8.7 Location and Size of Signs

8.7.1 When planning for the location and size of water safety signs and multiple signs, the owner or operator of an inland waterway or the land providing public access to the inland waterway, should allow hazards to be recognised and appropriate avoiding action to be taken by users. The following matters (issues, factors) should be considered:

- location of hazards and their signage;
- location of entrances/access to facilities;
- location of any other signs;
- location of architectural features, décor, structures, vegetation or people that could conceal or divert attention from signs;
- lighting level and characteristics under both normal and mains-failure conditions;
- appropriate supplementary text to water safety signs;
- appropriate information on multiple signs

8.7.2 The following principles should be taken into account when planning safety signage at an aquatic location; signs should:

- be sited conspicuously within the normal field of vision;
- contrast to their surroundings;
 - NOTE The contrast and conspicuousness may be increased by the provision of an outer border or by mounting on a sign board with a colour contrasting to the surroundings.
- be visible prior to exposure to the hazard;
- be sited at the same height throughout the aquatic location, as far as is reasonable;

- take precedence over all other signs with the exception of escape route signage, if applicable;
 - be placed so that they are not themselves a hazard (line of sight or tripping);
 - be placed at sharp higher risk locations, if applicable;
 - be illuminated, if applicable, to ensure that they are visible and legible.
- 8.7.3 Care should be taken to avoid over-provision of safety signs at one location as this can confuse viewers and result in individual safety messages not being noticed and understood.

N.B. Signs should not be placed on moveable objects where a change of position would void the purpose of the sign or cause it to be out of sight. This does apply to signs that intend to be portable.

8.8 Mounting Height

- 8.8.1 The following principles should be applied to assist users of the locations to predict the location of successive signs, whether they are mounted on walls, posts or overhead.
- Signs should be mounted as close as practicable to the observer's line of sight in the vertical plane. For a standing adult, this will be approximately 5° up or down from a point 1500 mm above ground level in front of the observer (approximately 1700mm above the ground).
 - Signs that are freestanding or mounted overhead should be placed so that they are not a hazard and do not enter into the required space for a clear and accessible path
 - Where practical, the space in front of the sign should be clear so that people without correction lenses or with visual impairments are able to approach the sign to reduce their viewing distance.
 - Placed so as not to be obscured by vegetation.



8.9 Sign height and maximum viewing distance

- 8.9.1 A sign should be both visible and legible at the maximum viewing distance.
- 8.9.2 The required maximum viewing distance of a sign should be determined by its position within the area and take into account the needs of people with normal sight and people with visual impairments.
- 8.9.3 The recommended maximum viewing distance for a particular sign height (h) in millimetres (mm) is calculated as follows:
- Distance Factor x Sign Height = Maximum Viewing Distance or;
 - Maximum Viewing Distance / Distance Factor = Sign Height
- 8.9.4 The below table identifies the viewing distance and **sign** height that may be most useful for an aquatic location based on the distance factors within AS/NZS 2416.3:2010

MAXIMUM VIEWING DISTANCE (mm)	MINIMUM SIGN HEIGHT (with normal illumination)	MINIMUM SIGN HEIGHT (with low illumination)
3.6 metres	60mm (6cm)	120mm (12cm)
4.8 metres	80mm (8cm)	160mm (16cm)
6 metres	100mm (10cm)	200mm (20cm)
7.2 metres	120mm (12cm)	240mm (24cm)
10 metres	167mm (17cm)	333mm (33cm)
12.5 metres	208mm (21cm)	417mm (42cm)
25 metres	417mm (42cm)	834mm (84cm)
50 metres	833mm (84cm)	1666mm (167cm)

- 8.9.5 The table below identifies how the measurement of height is considered for signs:



8.10 Text to support signs

- 8.10.1 Different types of signs and sections within signs will have different viewing distances; therefore a selection of type sizes is necessary. The minimum height of letters should take into account the needs of people with normal sight and people with visual impairments.
- 8.10.2 The minimum letter height should be determined by dividing the required maximum viewing distance by the relevant distance factor.
- 8.10.3 The minimum text height of upper case letters should be 15 mm.
- 8.10.4 The below table identifies the viewing distance and **letter** height based on the distance factors within AS/NZS 2416.3:2010
- 8.10.5 The below table identifies the viewing distance and **letter** height based on the distance factors within AS/NZS 2416.3:2010

DISTANCE (mm)	MINIMUM LETTER HEIGHT			
	CAPITAL LETTERS (with normal illumination)	CAPITAL LETTERS (with low illumination)	LOWER CASE LETTERS (with normal illumination)	LOWER CASE LETTERS (with low illumination)
3.6 metres	14.5mm	30mm	11mm	22mm
4.8 metres	20mm	40mm	14mm	29mm
6 metres	24mm	50mm	18mm	36mm
7.2 metres	29mm	60mm	21mm	43mm
10 metres	40mm	84mm	29mm	59mm
12.5 metres	50mm	104mm	36mm	74mm
25 metres	100mm	208mm	72mm	148mm
50 metres	200mm	417mm	144mm	295mm



8.10.6 The table below identifies how the measurement of height is considered for letters



8.10.7 The supplementary text should not be used on its own, and may need to be in more than one language.

8.10.8 The layout of supplementary text signs should be in accordance with the relevant Australian Standards.

Lettering arrangement

8.10.9 The initial letter of the first word should be in upper case and the remainder of the wording should be lower case. Where a signal word is used on a supplementary text sign used with a warning sign, the text after the signal word should start on a new line; the initial letter of the first word should be upper case and the remainder of the wording should be lower case.

No swimming

N.B. For short messages, all capitals may be used.

Typeface (font)

8.10.10 The font used should be either a sans serif typeface, or a typeface with very small serifs with the following characteristics:

- widths of strokes throughout the letters constant within 10 %;
- widths of strokes at least one sixth of the letter height;
- width of lower case letter "x" not less than 70 % of the letter height;
- not condensed, expanded, italic, script, outline or shaded;
- letters individually formed and not joined together.

8.10.11 A typeface for use on multiple signs should be carefully chosen based on the following guidelines:

- sans serif typeface or typeface with very small serifs;
- large x-height;
- consistent stem thickness;



- regular or semi-bold weight;
- open counters

8.11 Specific considerations

Lifeguard Supervision

- 8.11.1 If there is no Lifeguard Supervision provided at the aquatic location and it is a known location for swimming and aquatic recreation, a 'No Lifeguard on Duty' sign should be prominently displayed.



Moving water

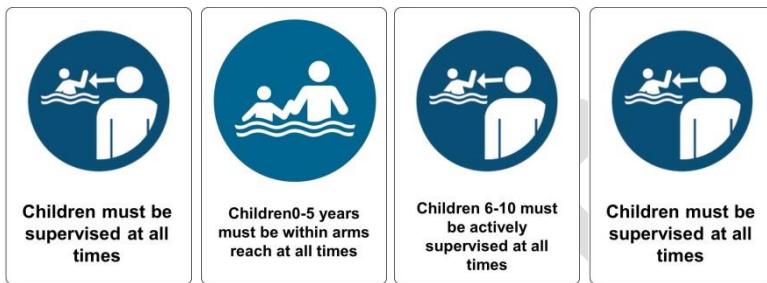
- 8.11.2 In rivers and other moving water signage should be used to indicate hazards relating to the movement of the water relevant to its pace and size. This may include strong currents, breaking waves or swimming is not advised if:

- Pregnant
- Had recent surgery
- Have a known heart condition
- Have known back condition



Parental supervision

- 8.11.3 Signage should include information to relating to the supervision of children at the aquatic location.
- 8.11.4 Children under 10 years should be under the active supervision of a person 16 years or older whilst in the activity area.



Display of rules (if applicable)

- 8.11.5 The owner or operator of an inland waterway or the land providing public access to the inland waterway with an aquatic amusement ride or device (such as a slide or inflatable) should:
- display adequate information on the possible effects the use of a ride or device may have on patrons; and
 - instruct operators of devices on the importance of carrying out, at all times, any oral instructions for patrons as may be necessary for their safe participation in the device.
- 8.11.6 The following information (or variations thereof for specific rides or devices) for patrons should be considered for display at appropriate locations:
- There are inherent risks in the participation in or on an amusement ride or device. Patrons, by their participation, accept the inherent risks of which a prudent person is or should be aware. Patrons should consider this participation an exercise in good judgement and act in a responsible manner while using the amusement ride or device.
 - Patrons have a duty not to participate in or on any amusement ride or device when under the influence of alcohol or drugs.
 - Patrons have a duty to act with good judgement and consideration, both for themselves and others, and to refrain from behaviour which could affect their safety, the safety of other patrons, or the safety of the device itself.

- Patrons have a duty to obey all reasonable written, and particularly oral, instructions and warnings, given by the proprietors or operators of any ride or device, without objection.
 - Patrons have a duty to use, as instructed, all safety equipment provided when participating in any ride or device. Patrons choosing to supply their own safety equipment do so at their own risk and accept full responsibility for any failure or non-performance of such equipment.
 - Patrons of amusement rides or devices have a duty to assist in any investigation of any incident they may have witnessed or in which they may have had some involvement and to inform an investigation as to any contribution from their own actions.
- 8.11.7 Owners or operators of amusement rides or devices should display such information on appropriate signage at the point of entry and/or point of sale (if applicable).

Emergency and Rescue Equipment

- 8.11.8 Displaying well-recognised, standardised first aid signs will assist in easily locating first aid equipment and facilities. First aid signs may be constructed to suit individual requirements but should comply with AS 1319: 1994 – Safety Signs for the Occupational Environment.
- 8.11.9 At a minimum this should include signs where the following items are located at an aquatic location (as applicable):
- First Aid Kits
 - Defibrillators
 - Rescue Equipment
 - Oxygen Equipment
 - Spinal Equipment
 - Emergency Telephones
 - First Aid Room / station
 - Emergency Eye Wash
 - Emergency Safety Showers
 - Spill Kits
 - Emergency Assembly Points
 - Safety Data Sheets
 - Emergency Stops

Emergency Evacuation and Assembly Points

8.11.10 The owner and/or operator of an aquatic location should ensure appropriate signage to signal the location of any emergency evacuation routes and/or assembly points.



8.12 More information

8.12.1 More information is available in the National Aquatic and Recreation Signage Style Manual and/or AS/NZ 2416.

8.13 References

- Guidelines for Safe Pool Operations- Aquatic Risk Management
- AS 1319-1994 Safety Signs for the Occupational Environment
- AS/NZS 2416.1:2010 Part 1, Part 2 and Part 3 Water Safety Signs and beach safety flags
- ISO 7001 Graphic Symbol – Public Information Symbols
- AS 2419 Fire Hydrant Installations
- AS 2293.3 2005 Emergency Escape Lighting and Exit Signs for Buildings
- National Construction Code of Australia 2016 (NCC)
- ISO 17398:2004 Classification, performance and durability of safety signs
- National Aquatic & Recreational Signage Style Manual, Australian Water Safety Council, 2006.



IW9. DESIGNATED SWIMMING AND RECREATION AREAS

Issued: 21/09/2021

Effective as of: 01/07/2022

Version: 1.0

9.1 Purpose and scope

- 9.1.1 To determine the appropriate risk management minimum standards that should apply at designed swimming and recreation areas.
- 9.1.2 It should be noted these are minimum standards and every effort should be taken to adopt appropriate risk management strategies and resourcing.

9.2 Definition of a designated swimming and recreation area

- 9.2.1 Whether a particular location is 'designated' as a swimming and recreation area shall depend upon its known use, not what the waterway manager ascribes
- 9.2.2 It is well-known that Australians frequent inland waterway locations for the purposes of swimming and recreation particularly in the warmer months.
- 9.2.3 Where access is not restricted to the waterway, it is unreasonable to assume that visitors to the waterway will not seek to interact with the waterway.

9.3 Location-specific risk assessment

- 9.3.1 The swimming and recreation area operator (if applicable) should conduct a location-specific risk assessment.
- 9.3.2 The risk assessment should be reviewed on a periodic basis or if new information is presented, such as following an incident.

Establish the Context for Activities

- 9.3.3 The swimming and recreation area operator (if applicable) should establish the context of the location and activities that take place at the location considering:

- **The Activities / Events**

- Time of Activities
- Duration of Activities (Hour, Half Day, Full Day)
- Type of Activities (Swimming, Fishing, Boating)
- Locations within the waterway which will be used for the activities
- Equipment within the activities (Boats, Inflatables, etc)



- The nature of any program and/or activities
- **The Stakeholders**
 - Number and composition of users / participants / students, competitors, patients, spectators, parents etc.
 - Users' health, fitness and wellbeing (health, fitness, fatigue, age, strength)
 - The ability of swimmers
 - Users' capability (experience, confidence, knowledge, skill, attitude)
- **The environmental factors**
 - The location / waterway type
 - Water conditions / Water quality
 - Weather forecasts
 - UV ratings / sun protection
 - Safety equipment (such as lifejackets, whistles and helmets)
 - Rescue equipment on site (such as angel rings, throw ropes and reach poles)
 - The availability of emergency management services such as ambulance response times
 - Local flora and fauna

Risk Assessment Procedure

9.3.4 The program activity leader should conduct the risk assessment in line with the processes in this and other Royal Life Saving guidance and the *ISO 31000:2018 Risk assessment process*.

Risk Treatments

- 9.3.5 The swimming and recreation area operator (if applicable) should consider the range of options available for managing the level of risk to ensure it is tolerable and risk reduction strategies are implemented to bring risk As Low As Reasonably Practicable (ALARP).
- 9.3.6 This includes but is not limited to the following options:
- Move the location of the activities

- Change or modify the type of activities
- Change or modify the time/duration of activities
- Postpone or cancel the activities
- Reduce or restrict participant numbers
- Reduce or restrict activity to participant capability
- Zoning or Barriers
- Increasing signage
- Communications (Louderhailer, Radio, Phone etc.)
- Access to and egress for emergency services
- Access to rescue and first aid equipment
- Additional water safety equipment
- Additional supervision requirements
- Personal protection equipment
- Hire Agreements
- Specific Insurance
- Specific emergency response plans

Review/monitor the situation

9.3.7 Once risk reduction strategies have been implemented the situation should be regularly monitored and reviewed and after any changes to the risk become apparent to ensure the effectiveness of the strategy.

Communication & Consultation

9.3.8 The Location Risk Assessment and related treatment actions should be communicated to all relevant stakeholders involved in the operations of the swimming and recreation area prior to the activities taking place.

9.4 Managing risk

- 9.4.1 If at a designated swimming and water safety area, a waterway owner or manager wants to limit or prohibit access to the area, they should do so via permanent fencing and appropriate prohibition signage.
- 9.4.2 Where access is not sought to be limited, signage considerations in line with these Guidelines should be provided at the access and egress points to the swimming and recreation area following an appropriate risk assessment.

9.5 Sign-posting swimming areas

- 9.5.1 Swimming areas should be clearly able to be seen and recognised from both land and water as such by users of personal watercraft and other boaters as well as beach-goers.
- 9.5.2 Swimming area and beach intended for use by patrons should be clearly designated through signs, buoy lines, buoy markers or a combination of these.
- 9.5.3 Swimming areas and beaches should be free from hazards, such as broken glass, hidden underwater dangers, etc.
- 9.5.4 Hazards such as drop-offs or rocky bottoms should be clearly identified.

9.6 Water quality

- 9.6.1 Water quality of public swimming beaches is checked in accordance with the Guidelines for Managing Risks in Recreational Water
- 9.6.2 Signs should be placed advising of the:
 - Status of the recreational water quality
 - The time of the last test / check
 - A contact number to report any health issues or to get information

9.7 Parental / guardian supervision of children and other non-swimmers

- 9.7.1 Policies and education signage should be posted at the designated swimming location to reinforce the importance of appropriate supervision of children and other non-swimmers.

Importance of Parental / Guardian Supervision

- 9.7.2 As a guide, education signage should be posted reinforcing the need for all children under the age of 10 should be actively supervised by a parent or guardian over the age of 16 at all times in and around the water and all children under the age of 5 should be within arms reach of a parent or guardian over the age of 16 at all times.
- 9.7.3 Public education should be provided – through pamphlets, signs, press releases or other means – with information about the level of safety supervision provided and tips on safe use of the swimming area.



9.8 Lifeguard Initial Training and Qualifications

Slow or still water

- 9.8.1 Lifeguards at swimming and recreation areas in inland waterways should hold one of the following:
- Royal Life Saving Bronze Medallion
 - Life Saving Victoria Inland Waterway Lifesaving Certificate
 - Pool Lifeguard Certificate
- 9.8.2 All Lifeguards must have a current “Working with Children” check or equivalent as required by relevant State or Territory legislation.

Swift Water

- 9.8.3 In addition to the above requirements for slow or still water, all supervising staff of a swift water location or program must hold a recognised Swiftwater rescue qualification or Recognised Australian White Water Rescue Training when supervising persons in Swiftwater.

9.9 Supervision

- 9.9.1 Lifeguard Supervision is desirable for swimming areas, particularly where it is known or anticipated to attract swimmers, such as during periods of warm weather, on weekends and school holidays.
- 9.9.2 Where no lifeguard supervision is provided, the owner/operator shall ensure that signs are posted at entrances and exits, or where there are not specific entrances and exits, at reasonable intervals along/near the swimming area. This signage may include messages in addition to the Signage Guidance in this document such as:
- “Swimming area is not supervised; all children must be supervised.”
 - “Never swim alone.”
 - “Avoid alcohol around water.”
 - “Water conditions (depth, bottom, etc.) may change.”
 - Hours of operation are identified where applicable.
 - Beach safety rules such as “No Dogs,” “No Fires,” “No Glass,” etc.
- 9.9.3 Local Governments and or swimming location operators cannot be responsible for direct and constant supervision of the designated swimming area at all times of the day or night. However, there are certain conditions that would make it reasonable

and practicable to provide lifeguard supervision at a swimming location. These include:

- Where an admission fee is charged for the facility or beach in which the swimming area is located
- The known bather load is high
- Past incidents indicate a high risk
- Other activities are occurring adjacent to the swimming area
- Advertising promotes the swimming area
- Features that make the swimming area attractive are available within the area, such as:
 - Rafts
 - Diving boards
 - Tree rope swings
 - Inflatables
 - Docks / piers
- The swimming area is associated with a licensed establishment

9.9.4 Lifeguards should be attired to be identifiable as lifeguards (E.g. Predominantly Red and Yellow Uniforms only)

9.9.5 Lifeguards should be inducted to the workplace / location, trained on the use of any specialised equipment and provided with training on emergency procedures.

9.9.6 In-service training is provided / held at least once every three months during the patrol season for lifeguard to maintain their skills / currency

9.9.7 Lifeguards should ensure that they are appropriately positioned to ensure that they have constant view of all swimmers at the swimming and recreation area and are able to respond promptly where assistance is required.

9.9.8 Lifeguards should never leave swimmers un-supervised or become distracted with non-supervisory activities where participants are in and around the aquatic environment

9.9.9 Lifeguards should conduct regular scanning and surveillance strategies such as grouping, headcounts and proactive communication to ensure swimmers do not become at risk or become unaccounted for

9.9.10 Rescue and safety equipment should be readily available for use by lifeguards at the aquatic location. Recommended rescue and safety equipment includes:

- A reach pole at least 3m in length
- A buoyant throwing aid attached to a 6mm line at least 8m long
- A rescue tube for each lifeguard
- A suitably stocked first aid kit
- Oxygen and/or spinal equipment where the lifeguards hold the Pool Lifeguard Skill Set, or its equivalent, or the individual units of competency that make up the lifeguard Skill Set or their equivalents
- Appropriate PPE for the provision of first aid, removal of sharps / glass

9.9.11 All staff involved in supervision must be attired to perform an immediate contact rescue if necessary and be fit and competent in rescue competencies in the aquatic environment in which the activity is being conducted.

9.10 Supervision ratios

9.10.1 Factors affecting the number of lifeguards required include:

- The length of the shoreline
- Bather load
- Concentration of bather load
- Potential hazards / dangers
- Geographical features such as curves or bends to the shoreline affecting the lifeguards' view
- Water and weather conditions
- Experience and training of lifeguards
- Swimming skill level of patrons and their activities
- Width of the swimming area

9.10.2 At minimum the following ratios should apply during supervised operating hours:

Factors	Ratio
Slow / still water	2:100
Moving water	2:50

9.11 Swimming area operations

- 9.11.1 The patrolled area shall be under constant surveillance of lifeguards for the full duration of the patrol.
- 9.11.2 Patrol shelters, tents or bases shall be based in the most appropriate position to ensure full surveillance of and access to the primary and secondary patrolled areas, publicly identifiable and accessible.
- 9.11.3 Appropriate hazard and information signage (mobile) should be placed at adjacent beach access points and specific hazards if applicable..
- 9.11.4 Lifesaving personnel should ensure the access (beach) to the swimming area is in a safe and clean condition prior to setting up the patrol area. Particular attention should be made to hazardous items such as broken glass, bottles, needle sticks, branches, floating debris, etc.
- 9.11.5 In a multiple person team situation lifeguards should be assigned patrol duties and tasks e.g. Patrolling water's edge, roving patrols etc.
- 9.11.6 Lifeguards should rotate roles on a regular basis –i.e. Every 20 minutes, to minimise fatigue/boredom and ensure full attention and efficiency.
- 9.11.7 Lifeguards assigned to surveillance duties should not utilise personal mobile phones or other devices which may distract attention from duties.
- 9.11.8 A Lifeguard should patrol the water's edge with a rescue tube whilst swimmers are in the water.

9.12 References

- Guidelines for safe recreational water environments. World Health Organization, Geneva, 2003
- Guidelines for Safe Pool Operations, Royal Life Saving Society – Australia, Sydney, Australia
- ISO 31000:2018 Risk management – guidelines
- Lifeguarding Training Manual 6th Edition 2018, Royal Life Saving Society – Australia, Sydney, Australia
- Standards Australia, AS/NZS 3533.4.5-2017 Amusement rides and devices – inflatables
- Standards Australia, AS/NZS AS4758:1 - Personal Flotation Devices

- State of Victoria (Department of Education and Training) Combined Swimming Policies Advisory Library, 2019
- Swimming and Lifesaving Manual – 6th Edition 2018, Royal Life Saving Society – Australia, Sydney, Australia
- Standard Operating Procedures Lifesaving Services, Surf Life Saving Australia
- Waterfront Safety Standards, Lifesaving Society Canada

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IW11. PUBLIC AWARENESS AND COMMUNITY EDUCATION

Issued: 21/09/2021

Effective as of: 01/07/2022

Version: 1.0

11.1 Purpose

11.1.1 To reduce systemic risks of drowning in inland waterways and their communities.

11.2 Description

11.2.1 The Local Water Safety Plan should identify who is drowning, where and when within the local waterway and community.

11.2.2 This information should be used to inform the provision of public awareness and community education campaigns regarding water safety.

11.2.3 Those responsible for water safety planning should resource the delivery and evaluation of programs tailored to communities at rivers and lakes

11.2.4 Public awareness and community education may take the form of:

- Offering swimming and water safety programs for community members
- Media campaigns targeting parents and carers to raise awareness and promote prevention strategies
- Targeted safety campaigns to promote safe behaviour around water (young men)
- Safety demonstrations and activity days
- Reinforcing the importance of active, adult supervision and avoiding distractions
- Swimming, Lifesaving and aquatic sporting programs
- Random testing for Blood Alcohol Concentration (BAC) and drug consumption on waterways
- First aid and CPR training courses for parents and carers
- Publication of water safety information at community centres or in bulletins / newsletters
- Posters / Stickers
- Radio / TV advertising
- Media Releases / Newspaper articles

- Community Service Announcements
 - Promotional brochures
 - Mail outs
- 11.2.5 In addition to the above, consideration should be given to partnering with local community groups to deliver key messages and/or co-contribute resources towards water safety. Interested organisations may include:
- Country Women's Association
 - Rotary Association
 - Freemasons
 - RSLs / Soldier's Clubs
 - Local pubs / cafes / community noticeboards
 - Churches / Religious Groups
 - Hobby Groups
 - Libraries
 - Sports Clubs
 - Local Emergency Services (Volunteers)
 - Shopping Centre Noticeboards
 - Local News Radio / Newspapers
 - Local Aquatic Facilities / Outdoor Swimming Pools / Swim Schools
 - Local GP / Hospital / Pharmacy
 - Post Offices
 - Local Pizza Shop / Fish and Chip Shop
 - CALD Community Groups
 - Local Schools



IW12. PUBLIC RESCUE EQUIPMENT

Issued: 21/09/2021

Effective as of: 01/07/2022

Version: 1.0

12.1 Purpose

12.1.1 To provide for arrangements for the provision of public rescue equipment (PRE) at inland waterway locations.

12.2 Description

12.2.1 The owner or operator of the inland waterway, or the Local Government Authority, should make provisions for the availability of Public Rescue Equipment at known swimming and recreation locations on the inland waterway.

12.2.2 As a minimum equipment provided for public use should be:

- Clearly positioned and
- In colours of red and yellow at an optimal height for ease of access
- Appropriately sign-posted

12.2.3 The frequency of placement and locality should be determined by visitor numbers and based on a systematic risk assessment.

12.2.4 Regular inspection of the equipment throughout the year is required and replaced/repaired when necessary. The responsible agency or persons for this should be stipulated in the local water safety plan.

12.2.5 Vandalism of rescue equipment is a very real problem experienced by all waterway authorities, so budgetary provisions are advisable.

12.2.6 Evidence suggests that rescue equipment in secure housing may provide a better deterrent to vandalism. The housing should be secure but easy to open when required.

12.2.7 Public Rescue Equipment can include:

- first aid kits
- reach poles / throw ropes / life buoys
- throw bags
- defibrillators



- 12.2.8 People who are expected for reasons of employment to be able to use the emergency equipment should be fully trained in the use of that emergency equipment including any relevant formal qualifications. Rescue equipment that is intended to be used by untrained people should have clear instructions on how to use it.
- 12.2.9 For public-access rescue equipment, the equipment should be visually prominent, recognisable and simple to use, such as a throw ring / life buoy.
- 12.2.10 Rescue equipment should be considered for all swimming locations or high-population-density inland waterways where there are significant amounts of visitors.
- 12.2.11 The rescue equipment should be readily accessible, that is, able to be accessed quickly in an emergency.

Wagga Beach Public Rescue Equipment

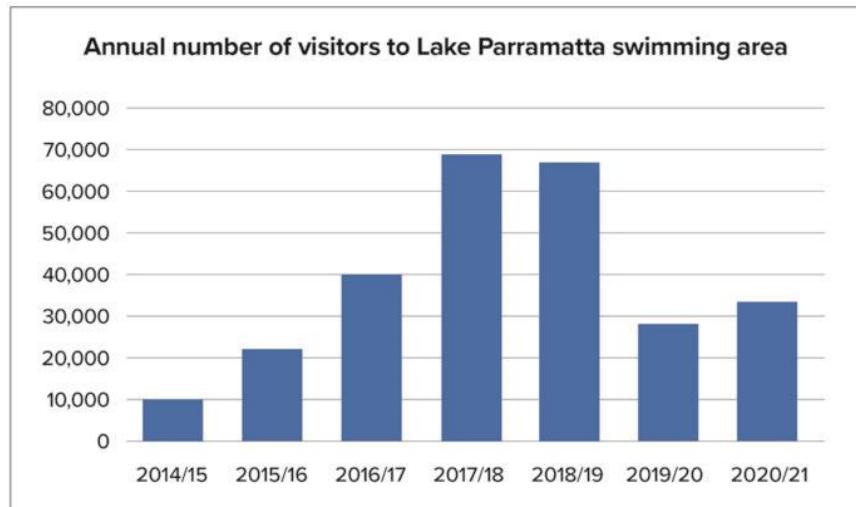


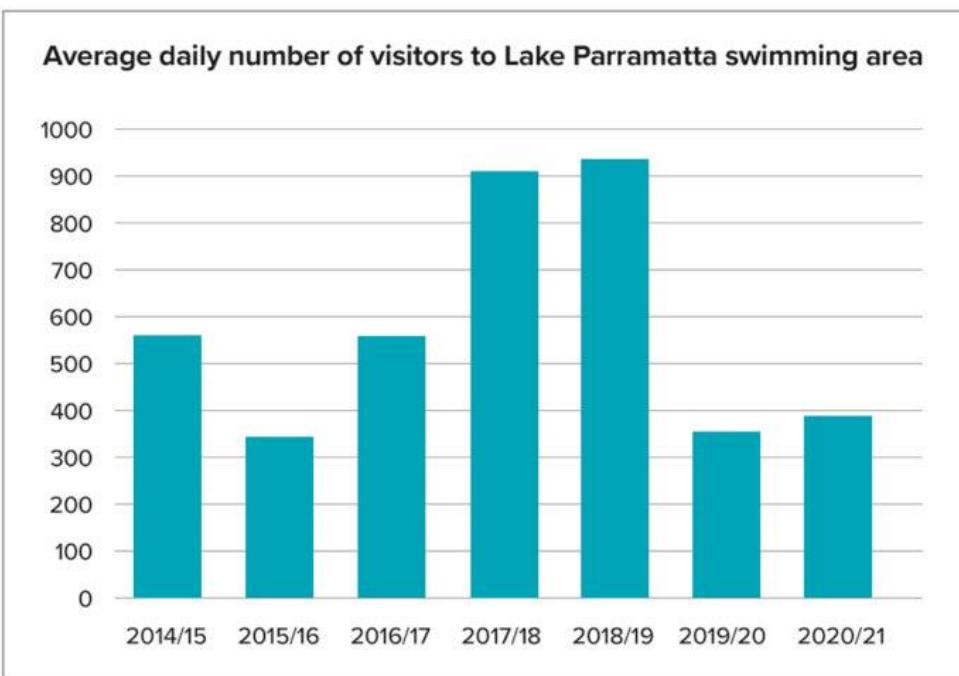


Appendix A – Case Study: Parramatta River Catchment Group

The City of Parramatta in Western Sydney manages a number of aquatic facilities, and during the summer months provides lifeguards and staff for a large lake in the centre of the city. As a diverse population, with large numbers of new arrivals and international students, providing a space that is safe, welcoming and inclusive is incredibly important. This diversity in the community is reflected in the employment of diverse staff, who work together with their local community to facilitate a place of health, fun, safety and learning.

<https://www.cityofparramatta.nsw.gov.au/recreation/swimming-at-lake-parramatta>





The Parramatta River Catchment Group, made up of 11 Councils and three State Government agencies, also drawing on local Aboriginal knowledge and culture, in collaboration with the community, under the lead of Sydney Water, came together to deliver a Master Plan to make the Parramatta River Swimmable again by 2025. Delivering a range of environmental, water quality, safety and community objectives the initiative identified swimming locations and key inputs and outputs that the agencies could collaborate on to get more of the community swimming in the natural environments of the area. Critically, the beach at Lake Parramatta was reopened for swimming in 2015 and lifeguard supervision as well as water quality monitoring is provided to ensure swimmer safety.

Source: <https://www.ourlivingriver.com.au/our-plan/masterplan-dashboard/1-get-swimming/>



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ROYAL LIFE SAVING
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More information

For more information about this Guideline or its applicability please contact the Royal Life Saving state or territory office in your location and/or phone the national office.

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