

LIFE SAVING VICTORIA

# Aquatic Risk Assessment

## Wodonga Creek Activation Project



## Acknowledgement of Country

Life Saving Victoria acknowledges the Traditional Custodians of the land and waterways where our activities take place. We pay our respects to Elders past and present.

The authors gratefully acknowledge any volunteer and community members, government entities and aquatic industry agencies that provided feedback via surveys, interviews, and focus group sessions.

## Suggested citation

Life Saving Victoria – Aquatic Risk Assessment – Wodonga Creek Activation Project

Report prepared by: Clare Keogh-Davies



### FOR MORE INFORMATION

[ais@lsv.com.au](mailto:ais@lsv.com.au)

[lsv.com.au](http://lsv.com.au)

LIFE SAVING VICTORIA

ABN 21 102 927 364 200

200 The Boulevard, Port Melbourne VIC 3207

03 9676 6900

# Contents

Executive Summary	4
<b>1 Section One - INTRODUCTION</b>	<b>1</b>
1.1 About Life Saving Victoria	2
1.2 Assumptions	3
1.3 Disclaimer	3
1.4 Aim and Objectives	4
1.5 Scope	5
1.6 Aquatic environment category	6
1.7 Associated Hazards	6
1.71 Riverine Profiles	7
1.8 Facility Images	10
1.9 Project Stakeholders	13
1.10 Document Control	14
1.11 Document Distribution	15
1.12 Document Alignment	16
1.13 Definitions	17
1.14 Legislative Requirements and Industry Best Practice	20
<b>2 Section Two - DROWNING PREVENTION</b>	<b>21</b>
2.1 Drowning Definition	22
2.2 Drowning Prevention - Drowning Timeline	22
2.3 National Drowning Statistics	23
2.4 Victorian Drowning Statistics	25
2.5 Coronial Recommendations	26
2.6 Drowning Prevention Strategies	28
2.7 Global Report on Drowning	29
2.8 Australian Water Safety Strategy	30
2.9 Victorian Water Safety Strategy	31
2.10 Guidelines for Inland Waterway Safety	32
<b>3 Section Three - RISK MANAGEMENT PROCESS</b>	<b>34</b>
3.1 Aquatic Risk Management	35
3.2 Aquatic Risk Categories	38
3.3 Aquatic Risk Best Practice	40
3.4 Aquatic Risk Barriers	42
<b>4 Section Four - RISK ASSESSMENT</b>	<b>43</b>
4.1 Risk Assessment Explained	44
4.2 Aquatic Risk Register - Aquatic Users	48
4.3 Aquatic Risk Register - Aquatic Environments	54
4.4 Aquatic Risk Register - Aquatic Activities	63
4.5 Aquatic Risk Treatment Table	68

4.6 Discussion 73

**5 Section Five - REFERENCES/APPENDICES ..... 75**

5.1 References 76

5.2 Appendices 78

Appendix 1 - Drowning Prevention Strategies (ILS) 78

Appendix 2 - Policy/Case Law Findings and Recommendations (RLSSA) 80

Appendix 3 - Review of Victoria’s Water Safety Arrangements (IGEM) 82

## Executive Summary

In January 2026, LSV's Aquatic Industry Services (AIS) team was engaged by Woodward to undertake an Aquatic Risk Assessment of the Wodonga Creek Activation Project. The purpose of this assessment was to evaluate the aquatic risks associated with the development of a new precinct along the Wodonga Creek specifically the water access points at Diamond Park and Stock Route Reserve North.

The assessment was conducted in accordance with recognised risk management standards and reflects best practice in water safety and drowning-prevention research. A site visit was not conducted though plans were sighted and photos sent through on 4<sup>th</sup> February 2026 to ensure an accurate understanding of the local environment. The scope of this project, and the recommendations provided, relate specifically to the areas of the proposed diamond park and stock route north.

The body of this report includes comprehensive evaluations of safety-related risk presented through risk registers and treatment tables. The findings identify a range of aquatic user, environment, and activity risks, with particular emphasis on risks associated with children, unintended water entry, vegetation-obscured edges, sudden changes in water depth, and unrestricted access points.

While a wide range of potential risk treatments (mitigations) are identified, the following represent what LSV considers to be the most practical and/or the most effective.

### Most Practical

- **Implementation of signage recommendations** Implementation of the Life Saving Victoria signage assessment, including information, warning, and prohibition signage, to improve hazard awareness, communicate child supervision responsibilities, and clearly identify restricted or unsafe activities.
- **Promotion of parental and guardian supervision** Installation of supervision messaging signage in accordance with recognised international standards, particularly within child-focused play areas, to reinforce shared responsibility for supervision and reduce child-related drowning risk.
- **Installation of first aid and public rescue equipment with emergency markers** Investigation and establishment of first aid facilities and public rescue equipment outposts (e.g. lifebuoys and AEDs), supported by clearly identifiable emergency location markers, to improve bystander response capability and emergency service access in the event of an incident.

### Most Effective

- **Denial of access through physical barriers and landscaping** Extension and continuity of barrier fencing around playground, water play, and adventure play areas, combined with vegetation management to limit unintended access to high-risk water edges and drop-off points.
- **Infrastructure improvements to control access and egress** Provision and maintenance of clearly defined safe entry and exit points at both formal and informal access locations,

along with consideration of barrier fencing along walking tracks where significant, visually obscured drop-offs are present.

Collectively, these risk treatments have the potential to improve public safety and reduce the likelihood of aquatic incidents at the new Wodonga Creek location. While this assessment outlines practical and effective options, the final determination of the most appropriate course of action remains with Woodward and the land manager, who are best positioned to consider feasibility, resourcing, and local priorities.

# 1.0 Section One - INTRODUCTION



## 1.1 About Life Saving Victoria

Life Saving Victoria Limited (LSV) is a public company limited by guarantee and was formed in 2002 through the merger of Surf Life Saving Victoria and the Royal Life Saving Society Australia - Victoria Branch.

As the Victorian peak body for water safety, LSV is:

- A recognised emergency service, under Emergency Management legislation.
- A registered training organisation with the Australian Skills Quality Authority.
- A state sports association representing extensive affiliated members.
- A registered charity with the Australian Charities and Not-for-profits Commission.
- Endorsed for deductible gift recipient status with the Australian Taxation Office.

LSV's purpose is to save lives and empower communities to safely enjoy water.

LSV's vision is "Together preventing drowning. Together thriving around water".

This vision reflects a shared responsibility for water safety and a commitment to enabling safe, positive participation across Victoria's aquatic environments. LSV will achieve this through strong and effective partnerships with its members, communities, education providers, governments, and other organisations in the provision of advocacy, education, training, health promotion, aquatic risk management, community development, research, leadership and participation, underpinned by a cohesive and sustainable organisation.

LSV was engaged to complete this Aquatic Risk Assessment, to assist the provision of safer inland waterway locations, and to assist the owners and management representatives in profiling and treating their risk exposure with the aim of protecting value within the organisation. The assessments were conducted in accordance with recognised risk management and signage standards, representing best practice in water safety and drowning prevention research.

The remainder of this document is the outcome of that engagement. LSV hope that this document can provide the foundation of, not just a compliant aquatic safety system, but as a tool to foster continuous improvement and the development of a robust safety culture.

## 1.2 Assumptions

This Aquatic Risk Assessment makes assumptions about matters such as the availability of resources and services, and the execution of prevention measures and responses within estimated timeframes. This includes:

- Accessible and operable emergency and safety equipment.
- Appropriate and current skills, knowledge, and information.
- Working services and/or utilities.
- Appropriate response time of emergency service organisations.

## 1.3 Disclaimer

This Aquatic Risk Assessment was produced by LSV's Aquatic Industry Services (AIS) team on behalf of Woodward. It is designed and intended to provide targeted water safety guidance, advice, and recommendations and is current at the time of publication. The contents do not constitute legal advice and are not intended to be a substitute for legal or other professional advice and should not be relied upon as such.

LSV are subject matter experts, and in consultation with the relevant stakeholders and community partners, exercise care in the compilation and drafting of this document; however, the document and related imagery, graphs, and tables could include technical inaccuracies or typographical errors, and the information may not be appropriate to all situations.

The assessment is based on the Assessor's knowledge of the relevant statutory requirements, Australian Standards, and associated guidelines. It is strictly limited to the observations and information available during the period of the assessment/consultation.

The recommendations are designed to help the responsible parties to achieve a safe level of operation, to the level deemed reasonably practical. The following context elements are provided specific to this risk assessment and risk treatment plan:

- The project was commissioned by Woodward.
- The intended purpose and use of the report is as a reference document specific to the location defined in project scope.
- The risk assessment and associated treatment plan was undertaken and prepared by the Assessor.
- The risk assessment is specific to activities undertaken by the general public within the defined area, as noted in the scope.
- The identification and treatment of risks are limited to aquatic (recreational - both active and passive) related deaths and injury within the identified aquatic area and immediate surround that is utilised for recreation both direct and indirect.

Initial risk treatment options outlined within the assessment are the opinion of the Assessor/s and at a draft report stage have taken little account of the resources allocated, capabilities and / or priorities of the risk owner or their delegate.

## 1.4 Aim and Objectives

This Aquatic Risk Assessment incorporates risk identification, analysis, and evaluation components, under the broader risk assessment process and risk management framework. Risk assessments should be conducted systematically, iteratively, and collaboratively, drawing on the knowledge and views of various stakeholder groups. It should use the best available information and be supplemented by further enquiry as necessary.

This document is designed to establish a thorough and systematic framework for the identification, analysis, and management of aquatic risks associated with waterways overseen by landowners and managers, ensuring public safety and adherence to regulations.

The document has the following additional objectives:

- To provide a structured analysis of the aquatic risk associated with user safety in and around waterways.
- To be an educational tool for relevant landowners, land managers & responsible parties.
- To support the provision of a safe aquatic environment by highlighting hazards associated with aquatic users, environments, and activities which influence aquatic supervision.
- To support the prevention of perceivable worst-case scenarios, such as aquatic related death or injury.
- To support the adherence to existing regulatory, compliance, and industry best practice obligations.
- To contribute to the social, health, and wellbeing benefits which derive from aquatic recreation and learn to swim activities.
- To enable an enjoyable experience of the facility and features for patrons and staff.

This document should remain as a live document and should be reviewed, updated, and redistributed if any of the contributing risk, environmental or operational input drivers or factors change, or there are changes to the organisational approach to risk management or occupational health and safety.

The document should be formally reviewed on an annual basis as a component of best practice by the responsible stakeholders. Additionally, it should also be reviewed following a major accident or incident or a trend of similar incidents.

## 1.5 Scope

Through appropriate aquatic risk management activities, aquatic facility personnel consider and improve their understanding of aquatic users, environment, and activities, and their possible impact in preventing and/or responding to an aquatic emergency.

This document is created as a component of the overall supervision framework and should be a lead contributor to the facility aquatic supervision plan. It is solely for use at the facility for which it has been developed and is not transferrable.

Whilst risk management activities can be applied to financial risk, technological risk, ecological risk, social risk, operational risk, and reputational risk (amongst others), the scope of this report is strictly limited to health and safety related risk and focuses on the usage of the aquatic environment and the immediately surrounding areas.

The following are excluded from scope.

- Non-aquatic accidents and incidents.
- Major environmental emergencies such as earthquake.
- Criminal behaviours such as theft, assault.
- Damage to property.
- Financial risk.
- Ecological risk.
- Reputational risk.
- Infrastructure integrity.

This Aquatic Risk Assessment applies to following the aquatic areas:

Aquatic Environment Profile	
Aquatic Environment	Scope/features
Wodonga Creek Activation Project	Construction of new pathways, playgrounds and water access points along the Wodonga Creek. Documents: Diamond Park Sheet 2 & 3 Diamond Park Playground Stock Route Reserve North

The information within this document has been included as guidance material only and needs to be systematically monitored and reviewed as a component of the recognised risk management process (ISO 31000:2018, Guidelines - Risk Management).

*Note: LSV accepts no liability for any plan derived from this template if it hasn't been appropriately contextualised and reviewed. Furthermore, liability is not accepted if the appropriate consultation measures with facility staff and local management have not been conducted.*

## 1.6 Aquatic environment category

Royal Life Saving Society Australia (RLSSA) develop and maintain the Guidelines for Inland Waterway (GIWS). The GIWS provide practical guidance for any person or entity with a responsibility or duty to take reasonable care to reduce the risk of death or injury resulting from access to and/or use of inland waterways.

The GIWS is considered best practice and an industry benchmark for the ownership and management of inland waterway environments. The GIWS is inclusive of different aquatic categories (e.g., lake, river, dam), and these definitions/categories are used in this risk assessment.

Aquatic Environment Category	
Location	Aquatic Category
Wodonga Creek	Creek

## 1.7 Associated Hazards

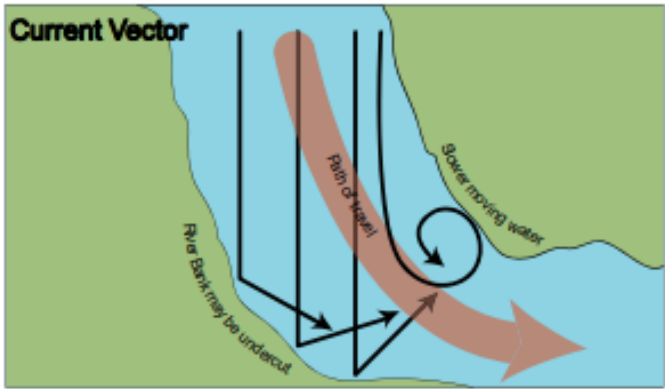
The inherent risks associated with the different aquatic environments are provided in detail in the appendix. Below is an executive summary of some of the key risks being considered, are which are likely to be identified through the actual risk assessment. Many of the risks exist across multiple aquatic environments.

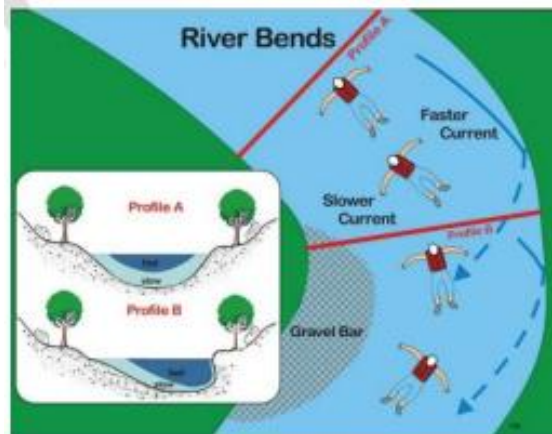
- Fast moving water
- Changing water speed
- Helical flow
- Laminar flow
- Current vectors
- High water force
- Obstacles
- Obstructions
- Eddies
- Rocky shallows
- Holes/standing water
- Low head dams/weirs
- Strainers
- Snags/submerged objects
- Causeways/fishways
- Shallow water
- Deep water
- Cold water
- Toxic contaminated water
- Poor water clarity
- Strong currents
- Sudden drop offs (water)
- Sudden drop offs (land)
- Slipper rocks/surfaces
- Submerged objects
- Inlets/pipes
- Pumps
- Uneven bottom
- Unstable riverbanks
- Overhanging branches
- Vegetation
- Width Rainfall/flooding

## 1.71 Riverine Profiles

Rivers, creeks and 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.

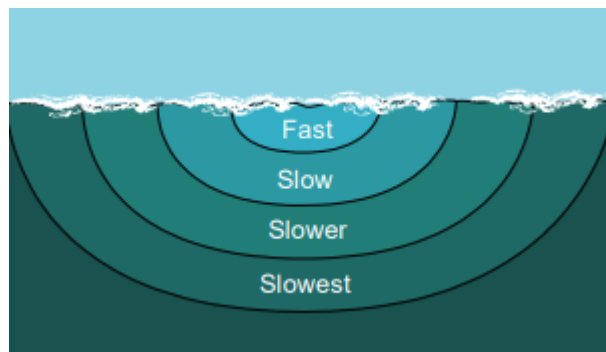
The following are specific features that are present in the Wodonga Creek within scope of this activation project. Below is information taken from the Guidelines for Inland Waterway Safety - Royal Lifesaving Society Australia (GIWS, 2025).

Wodonga Creek	
<b>Current Vectors</b>	<ul style="list-style-type: none"><li>As the water flows in the watercourse, current vectors will form. This is where the water flows along the river, following the easiest and quickest path. As the river 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.</li></ul>  <p>The diagram, titled 'Current Vector', illustrates a river bend. A large red arrow indicates the 'Fast moving water' (the main current) flowing towards the outside of the bend. A smaller black arrow shows the 'River Bank may be undercut' on the outside of the bend. A circular arrow indicates a 'Spiralling effect' of the water. Vertical lines represent the 'Path of vessel' moving through the bend.</p>
<b>River Bends</b>	<ul style="list-style-type: none"><li>When the river bends, inertia forces the main current towards 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 spiralling effect. Off the bottom of the river, 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 snags. In contrast, the slower, shallow, and less powerful current is usually found on the inside of the bend.</li></ul>



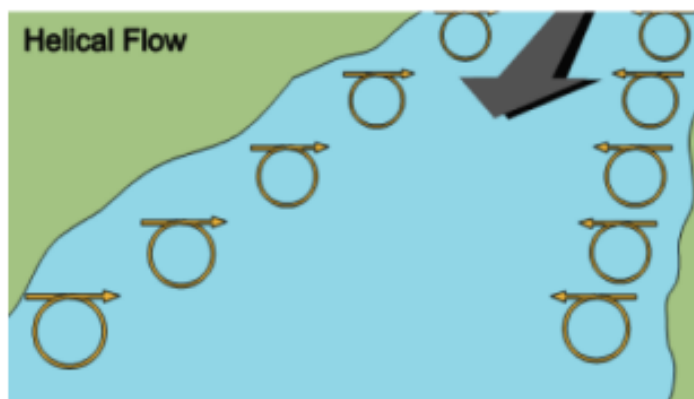
### Laminar Flow

- Laminar flow will usually occur in the centre of the river, in the main current. Affected by friction on the river bottom and sides, the water will flow at different speeds throughout the depths 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-affected. As such, the fastest flowing water is just below the surface, at a depth where a person who has fallen would normally float.



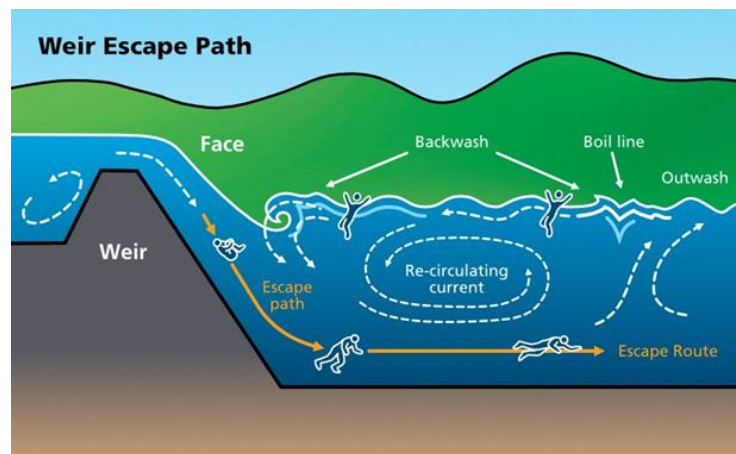
### Helical Flow

- Helical flow is created along the river 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. 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 land managers to understand that anyone who falls into this helical flow will be carried into the centre of the river and into the laminar flow (as above).



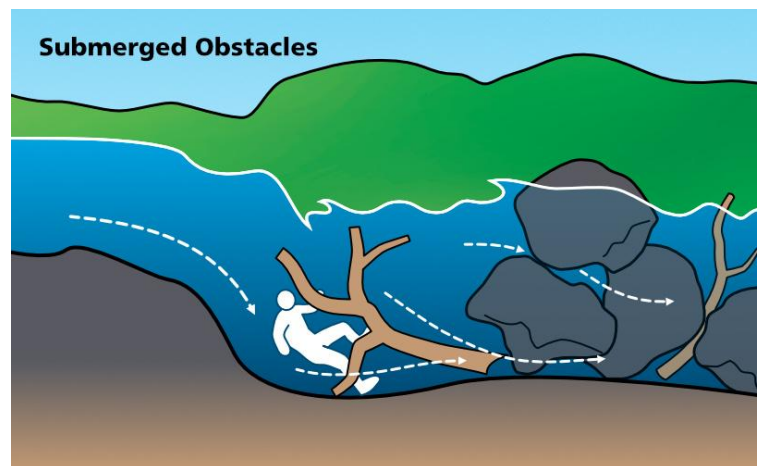
## Low head dams or weirs

- Weirs are man-made, overflow style dams commonly found 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 its structure, or through sluice gates, creating hydraulics/stoppers. Stoppers occur when water flows over an obstacle and then forms a rapid and aggressive re-circulating flowing motion back towards the object.
- Swimmers should under no circumstances allow themselves to be washed into a low head dam, normally indicated by an “unknown horizon” as one travels downstream.



## 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. Due to the nature of many inland waterways, submerged objects may not always remain stationary. 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.
- 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 or through it. Snags are particularly hard to see under the surface and present a very real risk to swimmers and other water users



## 1.8 Facility Images



Image 1: Site Overview from google earth 2024 (aged photo used due to flooding in later imagery)



Image 2: Overview summary of future works involved in the activation project



**Image 3: Current creek banks photo provided by Woodward**



**Image 4: Current creek banks photo provided by Woodward**



**Image 5: Current creek banks photo provided by Woodward**



**Image 6: Current creek banks photo provided by Woodward**

## 1.9 Project Stakeholders

Consultation was made with the following principal aquatic facility stakeholders and communication and consultation are built into the development of this procedure.

The Head of Authority is provided with a draft and final version of this Aquatic Risk Assessment to review. From this they can add comments to the information contained within procedure and suggest alterations in an open and consultative manner.

On completion, the facility is provided with editable versions of the documentation to enable future review, development, and application.

Project Stakeholders		
Name	Organisation	Role
Shannon Leahy	Woodward	Civil Engineer / Project Manager (Head of Authority)
John Forrest	Woodward	Associate (Responsible)
TBC	Wodonga Council	Informed
TBC	North East Water	Informed
Clare Keogh-Daves	Life Saving Victoria	Specialist – Aquatic Industry Services (Assessor)
Clare Keogh-Daves	Life Saving Victoria	Specialist – Aquatic Industry Services (Reviewer)
Alek Olszewski	Life Saving Victoria	Senior Manager – Aquatic Industry Services (Subject Matter Expert)

## 1.10 Document Control

This Aquatic Risk Assessment should be maintained in its entirety to ensure parts of the assessment do not go missing. Improperly constructed versions can cause confusion about responsibilities. This document should be reviewed on a minimum annual basis, ahead of the summer season.

Reviews will also occur following changes in legislation, regulations or the Guidelines for Inland Waterway Safety (GIWS), changes to equipment or development at the precinct, changes of policy, procedure or process, changes in products and activities, lessons from incidents, findings and learnings from audits, reporting and communication.

Continual improvement activities are possible and encouraged, spanning all elements of aquatic risk including process, capability, behaviours, tools, and templates. These initiatives and decisions from the continual improvement process should be documented and should lead to improvement in the management of risk at the aquatic facility.

Upon change/amendment of the Aquatic Risk Assessment, all previous copies must be archived, and all interested parties notified.

Document Summary	
Provision	Detail
Location Name	Wodonga Creek
Landowner/s	Crown Land
Land manager/s	Wodonga Council / North-East Water
Primary Contact	Shannon Leahy - Woodward
Project Location/s	Wodonga Creek
Date Provided (Draft)	18 <sup>th</sup> February 2026
Date Provided (Final)	TBC
Review Period	Annual
Aquatic Areas	Inland Waterway – Creek

This Aquatic Risk Assessment is a managed document. For identification of amendments, each document contains an issue date and a version number. Changes will only be issued as a complete replacement document. Recipients should remove superseded versions from circulation.

Document History			
Version	Detail	Author	Authorising Person
Draft	Draft	C. Keogh-Davies	A. Olszewski

## 1.11 Document Distribution

This document distribution register captures the details of the individuals that have been directly provided with a copy of this Aquatic Risk Assessment. The document distribution register relates only to the distribution of the most current version of the document, as detailed in the Project Stakeholder and Document Control sections.

The Aquatic Risk Assessment shall be available to all relevant staff, contractors and volunteers working within the development project.

Document Distribution		
Name	Organisation	Date
Shannon Leahy	Woodward	
John Forrest	Woodward	
Clare Keogh-Daves	Life Saving Victoria	
Callum Hazell	Life Saving Victoria	
Alek Olszewski	Life Saving Victoria	

## 1.12 Document Alignment

This Aquatic Risk Assessment should not be managed nor used in isolation. It should refer to and consider the following organisational resources and documents.

Document Alignment	
Name	Link
<b>Strategic</b>	
Organisational / aquatic strategy	[Insert link]
TBC	[Insert link]
TBC	[Insert link]
<b>Staff Health and Wellbeing</b>	
TBC	[Insert link]
TBC	[Insert link]
<b>Training</b>	
TBC	[Insert link]
TBC	[Insert link]
<b>Operational</b>	
Standard operating procedures	[Insert link]
Pre-operational checks / procedures	[Insert link]
Post-operational checks / procedures	[Insert link]
Reporting procedures (Including incidents)	[Insert link]
Pool water quality procedures	[Insert link]
Accident and incident records	[Insert link]
Emergency management plan/s	[Insert link]
TBC	[Insert link]
TBC	[Insert link]

## 1.13 Definitions

- **Aquatic area:** The aquatic space related to the aquatic area in the facility/environment.
- **Aquatic supervision:** The concentrated observation of a person or persons in a water-based environment.
- **Benchmark:** A standard point of reference against which things may be compared.
- **Bodies of water:** The individual swimming area which users may enter (intentionally or unintentionally).
- **Capability:** Collective ability to reduce the likelihood and consequences of an emergency before, during and after.
- **Capacity:** The extent to which the core elements of capability can be sustained, before, during and after an emergency.
- **Child:** A person aged 15 years or under. A young child is a person aged four (4) years and under.
- **Communication and consultation:** Continual and iterative processes that an organisation conducts to provide, share or obtain information, and to engage in dialogue with stakeholders.
- **Consequence:** Outcome of an event affecting objectives.
- **Control:** Measure that maintains and/or modifies risk.
- **Drowning:** Respiratory impairment from being submerged in or under liquid.
- **Emergency:** A serious, unexpected, and often dangerous situation requiring immediate action.
- **Emergency management:** A range of measures to manage risks to communities and the environment; the organisation and management of resources for dealing with all aspects of emergencies.
- **Event:** Occurrence or change of a particular set of circumstances.
- **Fatal drowning:** A drowning incident leading to the death of the person involved.
- **Guidelines:** A voluntary principle, piece of advice or general rule.
- **Guidelines for Inland Waterway Safety (GIWS):** The minimum standard for safety related issues in inland waterway environment.
- **Hazard:** A source of potential harm or a situation with a potential to cause loss.
- **Inland waterway:** Waterways that are not coastal or aquatic facilities, such as: billabongs, canals, irrigation channels, creeks, dams (commercial or farm), estuaries, harbours, lagoons, lakes, ornamental water bodies, ponds, rivers, spillways, springs, storm water drains, streams, swimming holes, waterfalls, water troughs, weirs, Swells, and wetlands.

- **Inland waterway safety assessment:** The auditing of an inland waterway operational performance, against known Industry standards, behaviours, and expectations specific to safety.
- **Landowner/s:** A person or entity who by law is the rightful owner of 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.
- **Lifeguard:** A person designated by the owner or operator who is paid to maintain surveillance over the patrons on a beach, in a swimming area or in the water, who supervises patron safety, and prevent and respond to emergency situations.
- **Lifesaver:** A person, usually a volunteer, who provides surveillance and/or supervision of patrons of a beach or swimming area who prevents and responds to emergency situations
- **Likelihood:** Chance of something happening.
- **Local waterway safety committee (Committee):** A local community working group, convened to guide the development of a Local Water Safety Plan associated with one or more inland waterways.
- **Local waterway safety plan/strategy:** A custom plan/strategy intended to prevent and respond to water safety incidents that could affect people, property and / or the environment.
- **Non-fatal drowning:** A drowning incident which doesn't lead to death but may lead to significant neurological damage or injury.
- **Patrol:** A person whose job description includes responsibility for response to aquatic rescue situations.
- **Patrons:** Users of the aquatic environment, regardless of whether they are paying a fee or not, who are generally owed a duty of care.
- **Preparedness:** Arrangements to ensure that, should an emergency occur, all the resources and services that are needed to cope with the effects can be efficiently mobilised and deployed.
- **Prevention:** The action of stopping something from happening or arising.
- **Qualifications:** Accredited training certificates issued by an authorised Registered Training Organisation in line with the requirements of the Australian Skills Qualification Authority.
- **Responsible adult:** A person aged 16 years or above, who is free of drugs and alcohol.
- **Risk:** The effect of uncertainty on objectives.
- **Risk assessment:** A systematic process of evaluating the potential risks that may be involved in a projected activity or undertaking.
- **Risk management:** Coordinated activities to direct and control an organisation with regard to risk.
- **Scanning:** Systematic observation of the aquatic environment, its users, and activities.

- **Shared responsibility:** All parties contribute within their capacity towards the outcome of a safer aquatic culture and environment.
- **Stakeholder:** Person or organisation that can affect, be affected by, or perceive themselves to be affected by a decision or activity.
- **Supervision:** The concentrated observation of a person or persons in a water-based environment.
- **Swiftwater:** Fast moving water condition, whereby water over 60cm is moving at a minimum of one knot.
- **Vulnerability:** Describes attributes of the subject of the risk, which may be an individual, community, assets, or systems.

**Further definitions:**

- **Risk Management:** Refer to ISO 31000 (2018) - Risk Management.
- **Emergency Management / Disaster Resilience:** Refer to the Australian Institute for Disaster Resilience.
- **Inland Waterway categories:** Refer to Guidelines for Inland Waterway Safety

## 1.14 Legislative Requirements and Industry Best Practice

This Aquatic Risk Assessment should not be read in isolation. It has been developed with consideration to the documents listed below which were provided to or sourced by LSV to inform context and decision making, which in turn has led to the direction and content contained herein.

Further general and industry specific reference documents and materials have also been used and are detailed in the reference page at the end of the document.

Requirement and Best Practice	
Source Organisation	Document Reference
Federal / State Government	Occupational Health and Safety Act/Regulations
	Public Health and Wellbeing Act/Regulations
	Emergency Management Act/Regulations
	Equipment (Public Safety) Act/Regulations
	Dangerous Goods Act/Regulations
	Local Government Act/Regulations
	Disability (Access to Premises – Building) Standards
Department of Education	Swimming and Water Activities - Adventure Activity Guidelines
Australian / International Standards	Australian / International Standards - Standards Handbook
	AS/NZS ISO:31000 Risk Management
Life Saving Victoria	Safer Public Pools - Code of Practice
	Pool Safety Assessment
Royal Life Saving Society Australia	Guidelines for Safe Pool Operations (GSPO)
	Guidelines for Inland Waterway Safety (GIWS)
	Lifeguarding - 6th Edition
	National Aquatic Facility Classification and Definition System
Surf Life Saving Australia	Guidelines for Safer Surf Clubs
WorkSafe	Incident Notification Form
	First Aid in the Workplace Compliance Code
Other	Water Quality Guidelines for Public Aquatic Facilities
	Victorian Building Code

## 2 Section Two - DROWNING PREVENTION



## 2.1 Drowning Definition

The definition of drowning used in this Aquatic Risk Assessment is that adopted at the first World Congress on Drowning in 2002. This definition is consistent with the Australian Resuscitation Council and the definition used in the Victorian Drowning Report and Water Safety Strategy.

*“The process of experiencing respiratory impairment from submersion/immersion in liquid.”*

A non-fatal drowning incident occurs when a person survives an experience of respiratory impairment from submersion/immersion in liquid. People who experience non-fatal drowning incidents can acquire both physical and psychological injury, and these can have lifelong impacts on the individual and their loved ones, as well as emergency service providers responding to the incident.

## 2.2 Drowning Prevention - Drowning Timeline

The International Drowning Research Alliance created the drowning timeline which details triggers, actions, and possible interventions throughout the drowning process, with a concentration on preventative methods.

By using clear and definitive terminology, the timeline enables more specific drowning prevention strategies to be developed, and for costs and benefits to be better measured alongside corresponding outcomes (e.g., health, social, and political).

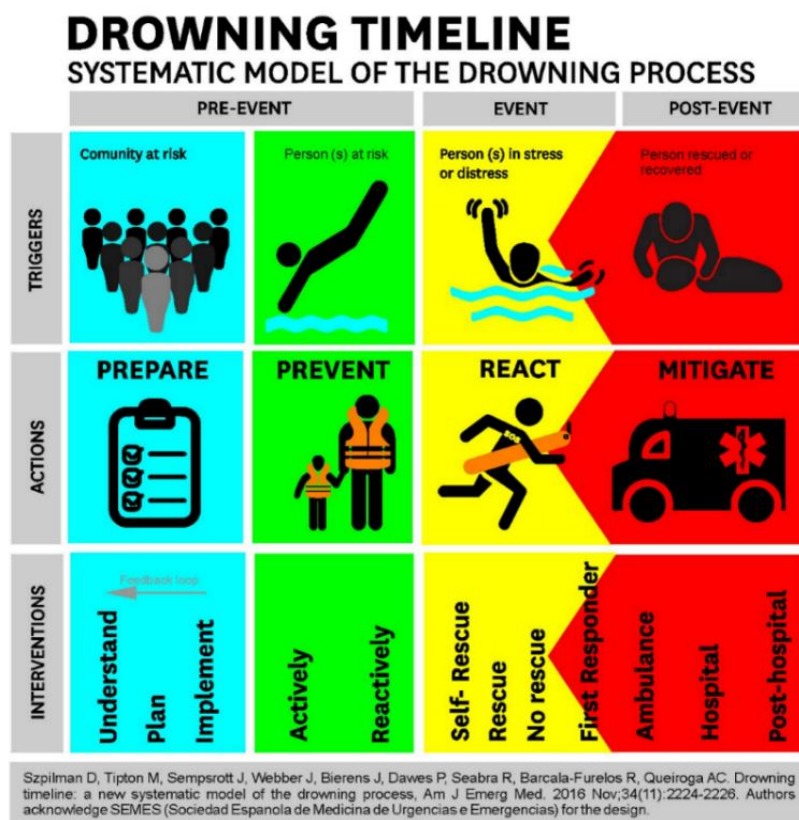


Figure 1: Summary strategic alignment model (International Drowning Research Alliance).

## 2.3 National Drowning Statistics

Tragically 357 people lost their lives to drowning between 1 July 2024 and 30 June 2025. Royal Life Saving Society Australia and Surf Life Saving Australia conservatively estimate that several hundred additional people were directly affected by non-fatal drowning, which often requires hospitalisation and can leave people with life-limiting disabilities.

- 357 people drowned in Australia in 2024/25.
- There was a 27% increase on the 10-year average.
- 81% of all drowning deaths were males.
- 33% were adults aged 65 years and older.
- Swimming and recreating was the leading activity prior to drowning in all age groups except for children aged 0-4 years.
- 121 People drowned in inland waterways in Australia in 2024/25.
- 154 People drowned in Coastal Environments in Australia in 2024/25.

Percent of 2024/25 drowning deaths by location compared to the 10-year average

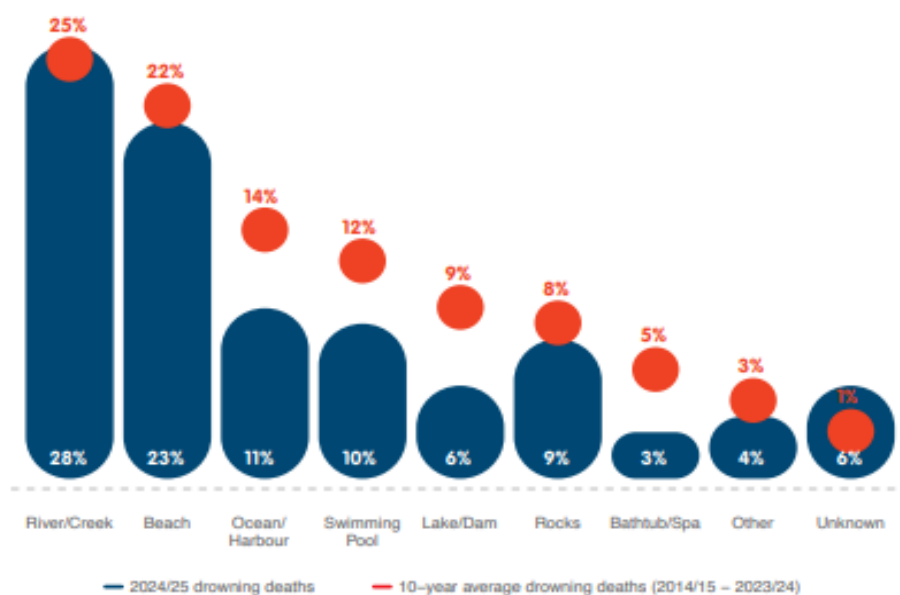


Figure 2: Drowning deaths by location compared to the 10-year average (RLSSA/SLSA, 2025).

## INLAND WATERWAYS

\*Includes rivers/creeks and lakes/dams

### 34% of 2024/25 Drowning Deaths

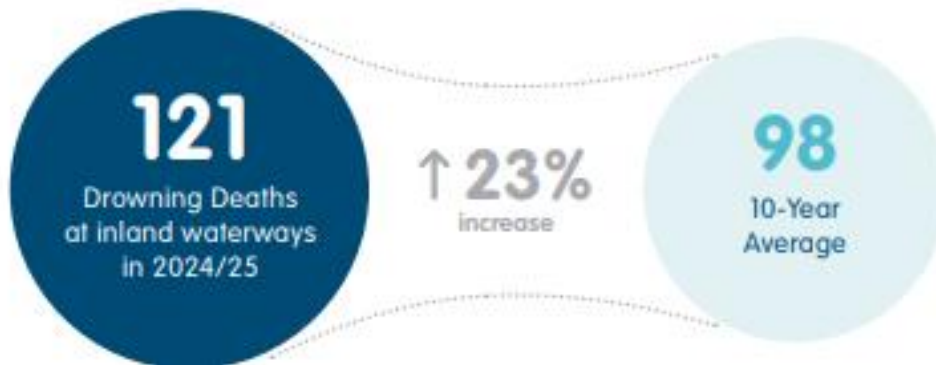


Figure 3: Inland waterways Drowning Deaths 2024/25,

The highest number of drowning deaths in 2023/24 occurred at rivers and creeks with 28% of all cases, an increase in proportion from the 10-year average of 25% of the total portion of drowning deaths. Beaches followed with 23% of cases a 5% increase from the 10-year average of 22% of drowning deaths

Rivers and creeks were the leading drowning location this financial year, this is a 31% increase from last year.

- 99 drowning deaths occurred in rivers and creeks in 2024/2025 a 1% increase on last year
- 79 per cent were male.
- 49 percent occurred in regional or remote locations.

Lakes and dams represented 6% of drowning deaths this financial year which is a 15% decrease from the 10-year average.

- 22 drowning deaths occurred in lakes and dams.
- 77% were male
- The most common activity being undertaken prior to drowning was boating.

The top five inland waterway blackspots across Australia are the Murray River, Yarra River, Hawkesbury River, Murrumbidgee River, and the Swan River. Despite continue drowning prevention efforts targeting visitors to inland waterways, especially rivers, the overall rates of drowning at inland waterways remain unchanged.

## 2.4 Victorian Drowning Statistics

There were 175 drowning incidents in Victoria between 1 July 2024 and 30 June 2025 (LSV, 2025), comprising 52 drowning deaths and 123 non-fatal incidents attended by paramedics. Adults aged 65 years and older had the highest age-specific fatal drowning rate during this period (1.03 per 100,000 population) while children aged 0-4 years had the highest age specific rate for non-fatal drowning incidents at 39%.

The 52 drowning deaths in 2024/25 represent a crude fatal drowning rate of 0.75 per 100,000 population in 2024/25. This is a 9% increase compared to the 10-year. Of the 52 drowning deaths in Victoria in 2024/25, 38 (85%) were male. Males are consistently over-represented in drowning statistics, and over the past decade were over three times more likely to drown than females.

### Deaths in Victorian Inland Waterway Environments

In the 2024/25 there have been 15 Drowning deaths in inland environments in Victoria, approximately 29% of the total unintentional drowning deaths in Victoria. When reviewing these incidents in ore deaths, the following trends emerged:

- The most (76%) of the deceased were male.
- The mean age was 46 years old (range 2 – 62 years).
- Over half (71%) occurred in summer and autumn.

## 2.5 Coronial Recommendations

The Coroners Court of Victoria has the role of independently investigating deaths and fires, reducing preventable deaths, promoting public health and safety and the administration of justice. As a component of an investigation, the coroner considers whether anything could be done differently to help prevent similar events, to inform any recommendations as part of the finding.

Following fatal drowning incidents, multiple Coronial findings have been handed down and recommendations made. In the content of public access pools these have predominantly commented on inadequate levels of supervision by both parents / guardians and Pool Lifeguards, insufficient industry standards inadequate policies and procedures as contributing factors. In 2014, Victorian Coroner (Jameson) stated that “No one should drown in a public pool.”

All Coronial inquest findings with recommendations are published (unless otherwise ordered by a Coroner) and are available to retrieve at: <https://www.coronerscourt.vic.gov.au/inquests-findings/findings>

Coronial Recommendations	
Case	Recommendations
COR 2020 4420	<ul style="list-style-type: none"> <li>Continued water safety campaigns covering i) how quickly children can get into difficulty, ii) the importance of safety barriers, iii) the wearing of high-vis clothing in rural settings, iv) the removal of floating items from waterways, v) the importance of an emergency management plan.</li> </ul>
COR 2019 0638	<ul style="list-style-type: none"> <li>Ensure regular inspection and maintenance of the fencing.</li> </ul>
COR 2014 6219	<ul style="list-style-type: none"> <li>More actively enforce signage and fencing measures, known to be regularly disregarded or removed.</li> <li>Increase the capability of Victoria’s Water Police Squad to contribute to the existing multi-agency approach to enforcement.</li> <li>Consider banning human powered vessel use near weirs, spillways, and irrigation outlets.</li> <li>Continued education, safety, and enforcement campaigns, highlighting the risks of alcohol and illicit drugs whilst operating human powered vessels.</li> </ul>
COR 2016 0260	<ul style="list-style-type: none"> <li>Conduct a risk assessment of the footbridge crossing the waterway.</li> <li>Review warning signage relating to speed, speed bumps.</li> <li>Consider additional fencing measures.</li> </ul>
COR 2008 1019	<ul style="list-style-type: none"> <li>Examine and support how to teach swimming and water safety specific to open water environments for recently arrived immigrants.</li> </ul>
COR 2010 0661	<ul style="list-style-type: none"> <li>The adoption and application of the DEECD (now DET) safety guidelines relating to school student swimming and water-based activities to non-Government schools.</li> <li>Government and regulator promote the voluntary adoption of the guidelines by all Victorian Schools.</li> </ul>

Coronial Recommendations	
Case	Recommendations
	<ul style="list-style-type: none"> <li>• Include the guideline information in the regulator guide/s and support materials.</li> <li>• Achievement of full compliance with guidelines in respect of swimming and other water-based activities and making compliance a condition of registration.</li> <li>• Request regular risk assessment advice, to enable the provision of appropriate levels of safety equipment.</li> <li>• Purchase a defibrillator or defibrillators and obtain instruction in their use.</li> </ul>
COR 2012 0706	<ul style="list-style-type: none"> <li>• Targeted interventions to prevent or deter alcohol-affected persons from entering the water.</li> <li>• Trial any interventions aimed at reducing alcohol-related unintentional drowning.</li> </ul>
COR 2010 0038	<ul style="list-style-type: none"> <li>• Use the education system to support parents, where possible, to understand and meet the supervision responsibility.</li> <li>• Continue to highlight the importance of water safety messaging and reading water safety signage.</li> <li>• Incorporate inquest findings into the development of future water safety projects and learn to swim programs in Victorian schools.</li> </ul>
COR 2018 6156	<ul style="list-style-type: none"> <li>• Advising boat users of the possible consequences of not being in a fully seated position on a vessel, in any pamphlets or similar materials provided to users.</li> <li>• Encourage practicing the man overboard procedures and in particular, the requirement to stop engines.</li> </ul>
COR 2013 2331	<ul style="list-style-type: none"> <li>• Explore models for vessel seaworthy inspection and certification at points of registration, transfer of ownership, and after any modifications.</li> </ul>
COR 2011 1180	<ul style="list-style-type: none"> <li>• Promote the awareness of and compliance with lifejacket regulations amongst human-powered vessel occupants.</li> <li>• Retailers distribute the Australia New Zealand Safe Boating Education Group's Paddle Safe brochure to consumers at the point of sale.</li> <li>• Key (canoeing / kayaking) industry agencies distribute of the Australia New Zealand Safe Boating Education Group's Paddle Safe brochure to their members.</li> </ul>

## 2.6 Drowning Prevention Strategies

The International Life Saving Federation (ILS) developed the Drowning Prevention Strategies resource in 2015, as part of its leadership role in drowning prevention. Like other resources, the document identifies the benefits of recreational waterway usages, acknowledges the inherent drowning risks associated with water, highlights the importance of effective preventative management strategies, and states the importance of partnerships between the different stakeholders.

Importantly the document introduces the drowning prevention chain, which identifies four causal factors contributing to drowning events and four subsequent control measure categories. This Aquatic Risk Assessment uses the control measure categories as the basis for the identification and selection of the most appropriate drowning prevention strategies.

### Casual Factors in Drowning Events

- Lack of knowledge, disregard or misjudgement of the hazard.
- Uninformed, unprotected or unrestricted access to the hazard.
- Lack of supervision or surveillance.
- An inability to cope once in difficulty.

### Drowning Prevention Control Measure Categories

- Education and information.
- Denial of access, improvement of infrastructure and/or provision of warnings.
- Provision of supervision.
- Acquisition of survival skills.

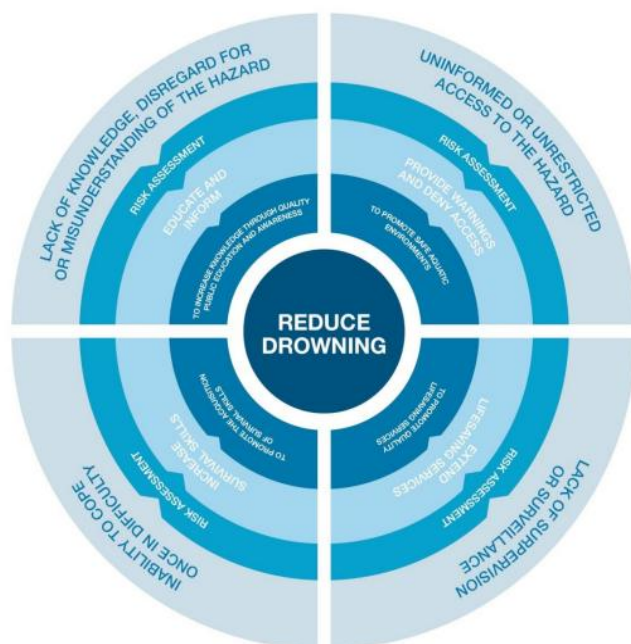


Figure 4: Drowning Prevention Chain (International Life Saving Federation).

## 2.7 Global Report on Drowning

Similar to the International Life Saving Federation, the World Health Organization developed the Global Report on Drowning in 2014. The report identifies that “every hour of every day more than 40 people lose their lives to drowning” and sets out current knowledge about drowning incidents and prevention and calls for a substantial scaling up of efforts and resources to reduce what they consider “an intolerable death toll, particularly among children and adolescents”.

Under the headers of community-based action, effective policies and legislation, and further research the report identifies ten key response activities, each of which is directly applicable to inland waterway prevention and response activities.

- Install barriers controlling access to water.
- Provide safe places away from water for pre-school children, with capable child-care.
- Teach school-age children basic swimming, water safety and safe rescue skills.
- Train bystanders in safe rescue and resuscitation.
- Strengthen public awareness and highlight the vulnerability of children.
- Set and enforce safe boating, shipping, and ferry regulations.
- Build resilience and manage flood risks and other hazards locally and nationally.
- Develop a national water safety plan.
- Address priority research questions with well-designed studies.

Most of the community-based actions can be mapped to the controls identified by the International Life Saving Federation, which are used for this Aquatic Risk Assessment.



Figure 5: Community Based Preventative Actions (World Health Organization, 2014).

## 2.8 Australian Water Safety Strategy

The Australian Water Safety Strategy 2030 is an inter-sector Strategy released in 2021 which provides a framework to reduce drownings by 50% by 2030. In it, aquatic facilities are identified as a key aquatic location able to support the strategies targets. Key themes occurring from the Strategy encourage community-based action in the form of this type of Aquatic Risk Assessment.

Many aspects of this Aquatic Risk Assessments design and development process are closely aligned to the Australian Strategy and the objective remains the same - reduced fatal and non-fatal drowning by creating safer aquatic users, activities and environments for all to enjoy. In particular, there is a clear overlap with the 'guiding principles' and 'enablers' identified in the Australian Strategy.

### Guiding Principles

- Inclusion.
- Safe participation.
- Targeted advocacy.
- Empowering communities.
- Taking action.

### Enablers

- Research.
- Policy.
- Advocacy.
- Collaboration.
- Education.
- Safe environments.
- Workforce

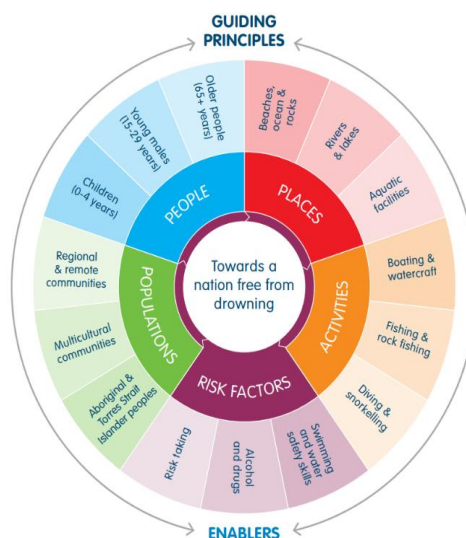


Figure 6: Australian Water Safety Strategy 2030 (Australian Water Safety Council).

Figure 7: Australian Water Safety Strategy 2030 - Model (Australian Water Safety Council).

## 2.9 Victorian Water Safety Strategy

The Victorian Water Safety Strategy has the vision to “encourage more Victorians to safely participate and enjoy recreation in and around water, while reducing the number of drownings and water related injuries to zero”.

It draws on the principles of the national Strategy, however, takes a different approach to prioritising effort and resources. It prioritises areas and actions targeted at emerging water safety risks and opportunities rather than setting actions for each of the various components of risk.

This Aquatic Risk Assessment leverages the ‘way forward’ element of the Strategy and is aligned with the ‘actions’ identified.

### **The way forward: Improved collaboration and coordination to drive drownings to zero.**

- Promote shared responsibility in communities.
- Work with local partners to manage local risk.
- Improve coordination and collaboration between agencies.

### **The actions: Set the foundation for more effective collaboration.**

- Establish better ways of working together through effective governance.
- Expand research and data to underpin policy and decision making.
- Empower communities to better assess, and respond to, water safety risks.



Figure 8: Victorian Water Safety Strategy 2021-25 (Department of Justice and Community Safety).

## 2.10 Guidelines for Inland Waterway Safety

The Guidelines for Inland Waterway Safety (Guidelines/GIWS) provide practical guidance to assist inland waterway owners and operators, as well as statutory authorities to determine how best to manage the risk of drowning and injury resulting from the use of or access to inland waterways.

It provides a framework that is intended to compliment advice and guidance from State and Federal Governments and seeks to help communities, organisations, and individuals to determine what is appropriate for their local communities. The guidelines were developed by Royal Life Saving Society Australia (RLSSA).

The development of this Aquatic Risk Assessment has been aligned to the structure, content, and recommendations of the guidelines. Where inconsistencies between other standards and the guidelines exist, a decision has been made to align with the guidelines, considering the range of water safety knowledge, research and expertise which has been incorporated into the document's development. In addition, the Aquatic Risk Assessment uses the inland waterway environmental definitions from the guidelines, which are detailed in the glossary.

This plan considers the 'whole of community' approach specified in the guidelines, through engagement activities open to "local government, state emergency services and local community groups such as recreational groups, caravan parks, resorts and local aquatic facilities".

The following documents constitute the current sections of the Guidelines.

- IW1. Risk management framework for inland waterways.
- IW2. Conducting risk assessment for inland waterways.
- IW4. Local water safety planning committee.
- IW5. Developing a local water safety plan.
- IW6. Zoning aquatic activity.
- IW7. Supervision of aquatic programs.
- IW8. Provision of safety signage around inland waters.
- IW9. Designated swimming and recreation areas.
- IW11. Public awareness and community education.
- IW12. Public rescue equipment.



Figure 9: Guidelines for Inland Waterway Safety (Royal Life Saving Society Australia).

The guidelines identify a range of specific hazards associated with inland waterways. These are summarised below, inclusive of whether they are considered relevant to this project scope (Y/N). Many of these hazards are specific to aquatic environment, and it is strongly recommended that the GIWS are reviewed to ensure these risks are properly understood. The GIWS also identifies a range of animal/insect related hazards (e.g., snakes) and activity related hazards (e.g., alcohol/drug use), which are less technical and excluded from the table below.

Each applicable hazard is considered in more detail through the risk register and risk treatment plan components of the document.

Aquatic Hazards Table					
Type	Hazard	Y/N	Type	Hazard	Y/N
Physical hazards and moving water	Fast moving water	Y	General physical hazards	Shallow water	Y
	Changing water speed	Y		Deep water	Y
	Helical flow	Y		Cold water	Y
	Laminar flow	Y		Toxic contaminated water	N
	Current vectors	N		Poor water clarity	Y
	High water force	Y		Tides	Y
	Obstacles	Y		Strong currents	N
	Obstructions	Y		Snow and ice	N
	Eddies	Y		Sudden drop offs (water)	Y
	Aerated water	N		Sudden drop offs (land)	Y
	Rocky shallows	Y		Slipper rocks/surfaces	Y
	Cushion/pillow waves	N		Submerged objects	Y
	Holes/standing water	N		Inlets/pipes	Y
	Smiling/frowning holes	N		Pumps	Y
	Low head dams/weirs	Y		Uneven bottom	Y
	Downstream/upstream V's	N		Unstable riverbanks	Y
	Unknown horizons	N		Overhanging branches	Y
	Strainers	Y		Vegetation	Y
	Snags/submerged objects	Y		Width Rainfall/flooding	Y
Causeways/fishways	Y	Wide river/lack of exit points	Y		

### 3. Section Three - RISK MANAGEMENT PROCESS



### 3.1 Aquatic Risk Management

Risk is defined in the international risk management standard (ISO 31000:2018 Risk Management - Guidelines), as ‘the effect of uncertainty on objectives’. The same resource defines risk management as the ‘coordinated activities to direct and control an organisation with regard to risk’ and goes on to define risk assessment as ‘the overall process of risk identification, risk analysis and risk evaluation’.

The appropriate management of risk supports responsible stakeholders to make informed decisions in an environment of uncertainty. Good risk management identifies and protects what people and society value. Risk management activities should be applied at a broader level and be managed at an appropriate level with organisations and stakeholders.

Risk management is inclusion of principles, a framework, and a process. This Aquatic Risk Assessment focuses on the ‘process’ element, although those with responsibilities should remain cognisant of the broader intent and implications of risk management activities.

Several principles underpin and support the effective management of risk. These principles are articulated in the international standard and applied to emergency risk management as:

- Creates and protects value.
- Integrates into all organisational processes.
- Structured and comprehensive.
- Customised.
- Inclusive.
- Dynamic.
- Best available information.
- Human and cultural factors.
- Continual improvement

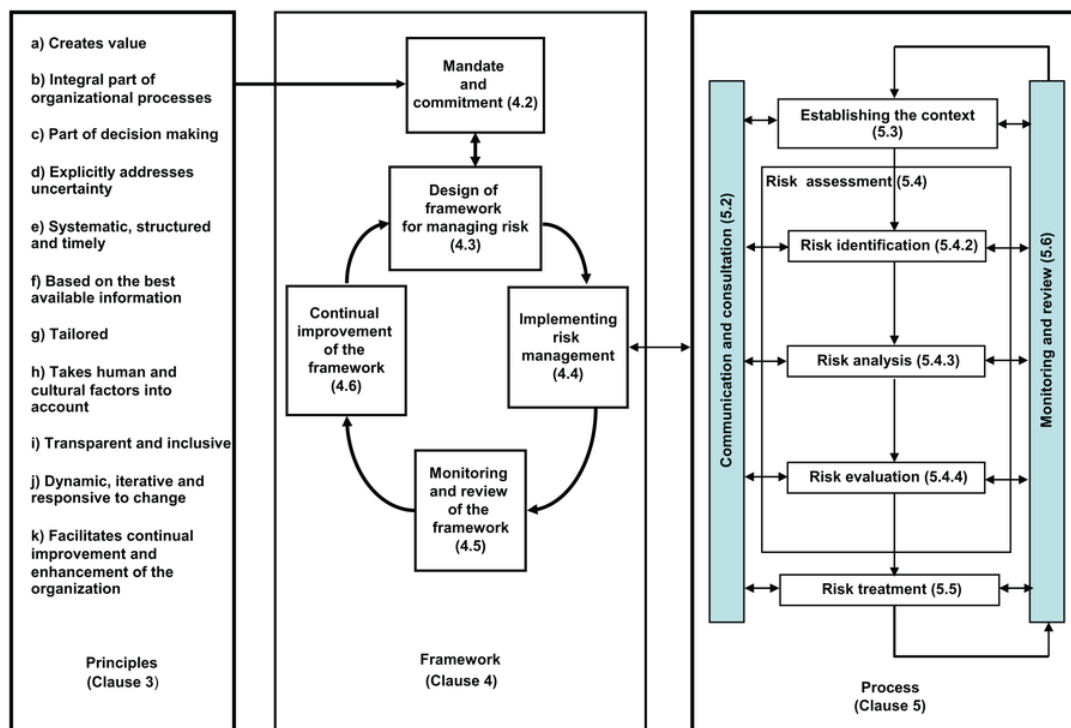


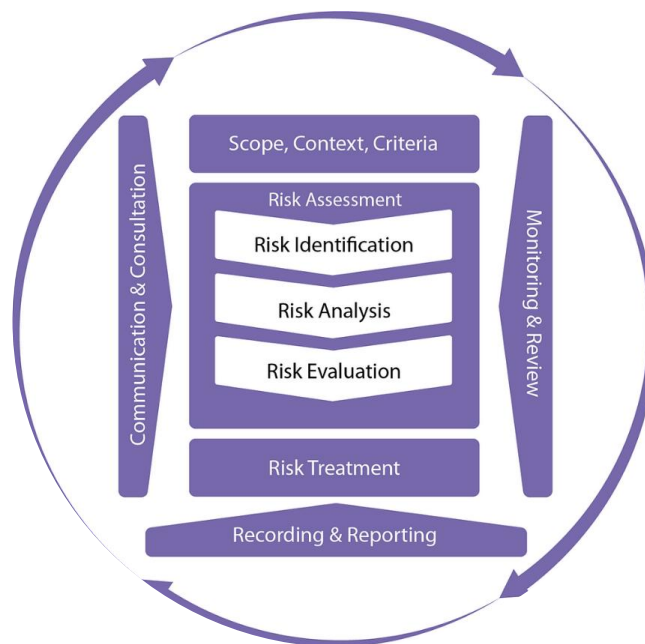
Figure 10: Risk Management Principles, Framework and Process (ISO 31000: 2018) Source: SAI Global.

Risk management assists in building understanding and a commitment to act. Effective communication and consultation underpin every aspect of the process, including the technical aspects of risk assessment, to encourage support and acceptance. It is an iterative process that involves systematically identifying, analysing, assessing, treating, monitoring, and communicating the risks associated with an organisation's activities or processes.

Consultation and stakeholder engagement should ideally occur before the risk assessment process starts, although this is not always practical. Risk assessment activities are built into the stakeholder engagement and community forum activities.

The following definitions consider the information from the international risk management standard (ISO 31000:2018 Risk Management - Guidelines). Minor adjustments to terminology to contextualise to emergency events have been accommodated and explained below. The definitions have been included to closely align to the recognised risk management systems, structures, and activities most likely used throughout the industry.

- **Scope, Context, Criteria** - This phase defines the outcome, the level at which the risk assessment is being considered, objectives, inclusions and exclusions, resources, responsibilities and records and sets internal and external parameters.
- **Risk assessment:**
  - **Risk identification** - Sources of risk are identified and described based on available information and knowledge.
  - **Risk analysis** - The process through which the level of the identified risks and the associated characteristics are scrutinised (likelihood x consequence).
    - **Risk likelihood** - Chance of something happening.
    - **Risk consequence** - Outcome of an event affecting objectives.
  - **Risk evaluation** - The establishment of the level and priority of the risk is compared with the established risk criteria descriptions.
- **Risk treatment** - Consideration and selection of the available treatment action/s to reduce the risk levels (likelihood and/or consequence).
- **Recording and reporting** - The mechanisms used to document and communicate the outcomes of the risk assessment processes.
- **Communication and consultation** - Ongoing process of two-way communication with key stakeholders and the provision of important information to other interested parties.
- **Monitoring and review** - Establish ongoing processes for monitoring and review to confirm the treatment and account for changes in circumstance.



**Figure 11: Risk Management Process (ISO 31000: 2018). Source: SAI Global.**

This Aquatic Risk Assessment is provided in the following section and is displayed in two components:

- Aquatic Risk Register.
- Aquatic Risk Treatment Plan.

Both components are displayed in line with the **safe systems model** which is explained in the following pages. This model includes risks categories under three headers:

- Aquatic user.
- Aquatic environment.
- Aquatic activity.

If the risk assessment was completed by LSV personnel, it is limited to the observations made and information made available during the period of the assessment and any preceding engagement/consultation activities.

## 3.2 Aquatic Risk Categories

The appropriate level of risk identification and treatment (control) activities exists at the intersection of the below three risk categories:

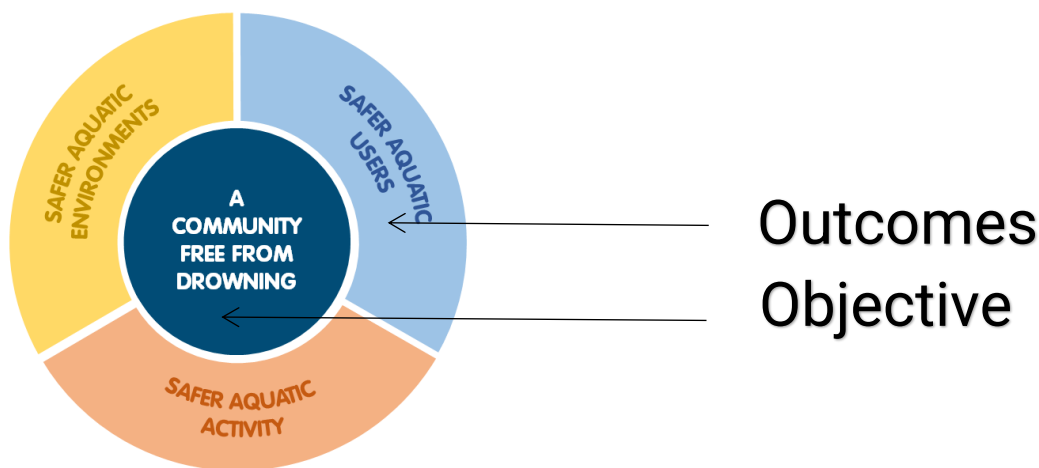


Figure 12: Safer Systems Approach (Royal Life Saving - New South Wales).

- **Safer Aquatic Users** - This is achieved through drowning prevention strategies that seek to change behaviour through a combination of context-appropriate information, education, and enforcement activities.
- **Safer Aquatic Environments** - This is achieved through drowning prevention strategies that seek to improve the physical or natural environments in, on and around waterways which individuals participate in recreational or work-related activity.
- **Safer Aquatic Activity** - This is achieved through drowning prevention strategies that seek to change the methods or process in which an activity is being undertaken or performed through such things as policy, funding, planning or procedures.

By considering inherent risks that exist across three categories of users, activities, and environment, we can determine what the most appropriate risk treatment measures are, based on these overlaying risk factors. For example, a weak swimmer with a pre-existing medical condition (user) doing deep water running (activity) in a pool with a sudden drop off (environment) carries more risk than a competent adult swimmer (user), swimming laps (activities) in water that is 1.2m deep (environment).

Creating a quality model of supervision needs to incorporate more than just planning and documentation. The process needs to be iterative, collaborative, independent and formally evaluated as well as pressure tested for effectiveness at the grassroots level.

Good documents mean little if they are not adhered to and/or cultural practices do not align with and endorse the plans. Positive outcomes will rely on good processes, as well as culture and practices of following those processes. This occurs at the intersection between safety, compliance, and culture.

The development of this Aquatic Risk Assessment is intended to be based on the desires and priorities of the facility and its stakeholders/patrons. The facility demonstrates leadership by

valuing and progressing the safe systems approach to improved safety standards and represents a commitment of working together for improved safety outputs and outcomes.

By using the safe systems approach, the Aquatic Risk Assessment describes three key actions areas each with key risks and treatment (controls) activities that the facility seeks to achieve through the development and implementation of the Aquatic Risk Assessment. These include:



Figure 13: Safer Systems Approach - Action areas (Royal Life Saving - New South Wales).

### 3.3 Aquatic Risk Best Practice

The content below is the overview of the contextualised information on Risk Management provided in the RLSSA Guidelines for Inland Waterway Safety (GIWS). The document is provided as 'IW1: Risk management for Inland Waterways.' It is intended that this Aquatic Risk Assessment supports and encompasses the intent and provisions detailed in the guidelines.

- IW1 1.3.2: Risk management should be an all-encompassing activity involving governments, entities, and individuals.
- IW1 1.3.3: For inland waterways, risk management involves coordinated activities to allocate resources for risk reduction.
- IW1 1.3.4: Risk management should be systematic, transparent, and disciplined.
- IW1 1.3.5: Aquatic risk management focuses on methodical and consistent risk addressal.
- IW1 1.4.1: The owner or operator should establish a comprehensive risk management framework aligned with AS/NZS ISO 31000:2018.
- IW1 1.4.2: For additional guidance, consult the RLSSA Guidelines for Safe Pool Operations: Risk Management section.
- IW1 1.6.1: LGAs have extensive powers to enact by-laws and other tools for inland waterway safety and risk management.

The content below is the overview of the contextualised information on Risk Management provided in the RLSSA GSPO. The document is provided as i) RM1 - Mandate and scope of aquatic risk management, ii) RM2 - Risk management policy, iii) RM3 - Risk Management strategy, iv) RM4 - Risk information, v) RM5 - Communication and consultation of aquatic risk, vi) RM6 - Risk reporting, vii) RM7 - Review of an aquatic risk management framework and viii) RM8 - Continual improvement of a risk framework. The GSPO details:

- RM1. 1.2.1. The owner or operator of an aquatic facility should develop, implement, monitor, and continually improve a risk management framework that includes each aquatic environment within their area of responsibility.
- RM1. 1.2.2. The framework should be consistent with the AS/NZS ISO 31000:2018 Risk management- Principles and Guidelines and the Guidelines for Safe Pool Operations - Aquatic Risk Management and any of their amendments.
- RM1. 1.4.1. The context of an aquatic risk management framework should take into account the internal and external aspects of the Aquatic facility including but not limited to:
  - The frameworks, legislation, policies, procedures, contractual arrangement, and rules that have an influence on the aquatic facility.
  - The political, cultural, and economic influences.
  - Drivers and trends that have an impact on the aquatic facility locally through to nationally.
  - The relationships, values, and perceptions of internal and external stakeholders.
  - The natural and physical elements of the aquatic facility (i.e., water, structures, swimming pools, plant, chemicals, equipment, facilities).
  - The owner or operators governance and structures.
  - The owner or operators' capabilities in terms of knowledge, skills, and resources.
  - The owner or operators staffing, roles and responsibilities.

- RM1. 1.5.1. The owner or operator of the aquatic facility should ensure that the risk management framework is embedded into the organisational processes and plans of the aquatic facility. Such plans may include:
  - Your organisations strategic plan.
  - Whole-of-organisation functional plans, such as those for human resource management, asset management, financial management and risk management.
  - Whole-of-organisation activity plans, such as those for procurement, communications, information management, work health and safety, business continuity and security.
  - Divisional business plans, such as regional service delivery plans
  - Project plans.
  - Individual work plans.

**Swimming and Water Activities: Adventure Activity Guidelines (2023). Department of Education.**

The purpose of these guidelines is to act as mandatory minimum standards for schools ‘*when planning, conducting and approving adventure activities that are swimming and water activities*’. The guidelines detail categories and definitions for aquatic activities, staffing, aquatic environments, and supervision/safety requirements.

Whilst the scope of these guidelines is broader than this Plan in some areas (e.g., it covers all school activities, at all aquatic environments) it is more limited in others (e.g., it is only concerned with school-based activities). The resource considers the document to avoid the provision of contradictory information but has not limited itself through a direct application of the content from the guidelines, where more suitable content, research or literature was available.

**Australian Policy and Case Law for Public Safety in Inland Waterways (2022). Royal Life Saving Society Australia.**

The purpose of this report was to examine ‘legal cases involving inland waterway drowning cases’ from across Australia. The report found a lack of minimum standards, inconsistent regulations. The report identified several key findings and subsequent recommendations to progress and improve the current situation.

This review was a lead driver for the development of the RLSSA - Guidelines for Inland Waterway Safety and Victorian Inland Waterway - Code of Practice. This Plan is an outcome of those documents, developed to be a practical tool for landowners and operators to identify and address the challenge of inland waterway safety. This Plan has been developed to align with each of these resources. Further information on the report key findings and recommendations can be found in the Appendix.

**Australian Adventure Activity Standard/Guides (2019). Outdoor Council of Australia.**

This national standard and the supporting guidance documents are a voluntary good-practice framework supporting ‘*the safe and responsible planning and delivery of outdoor adventure activities with dependent participants*’. They provide practical content guidance on managing risk, planning, participants, environments, equipment and logistics, and leadership.

Similar to the Department of Education resource, the scope is broader than this resource in some areas (e.g., it covers several dry and wet activities) it is more limited in others (e.g., it targets the activity users, rather than the landowner/operator). The resource considers the document to avoid the provision of contradictory information.

### 3.4 Aquatic Risk Barriers

Risk treatment failure is perhaps best described using the 'Swiss Cheese' Model (James Reason - Swiss Cheese Model).

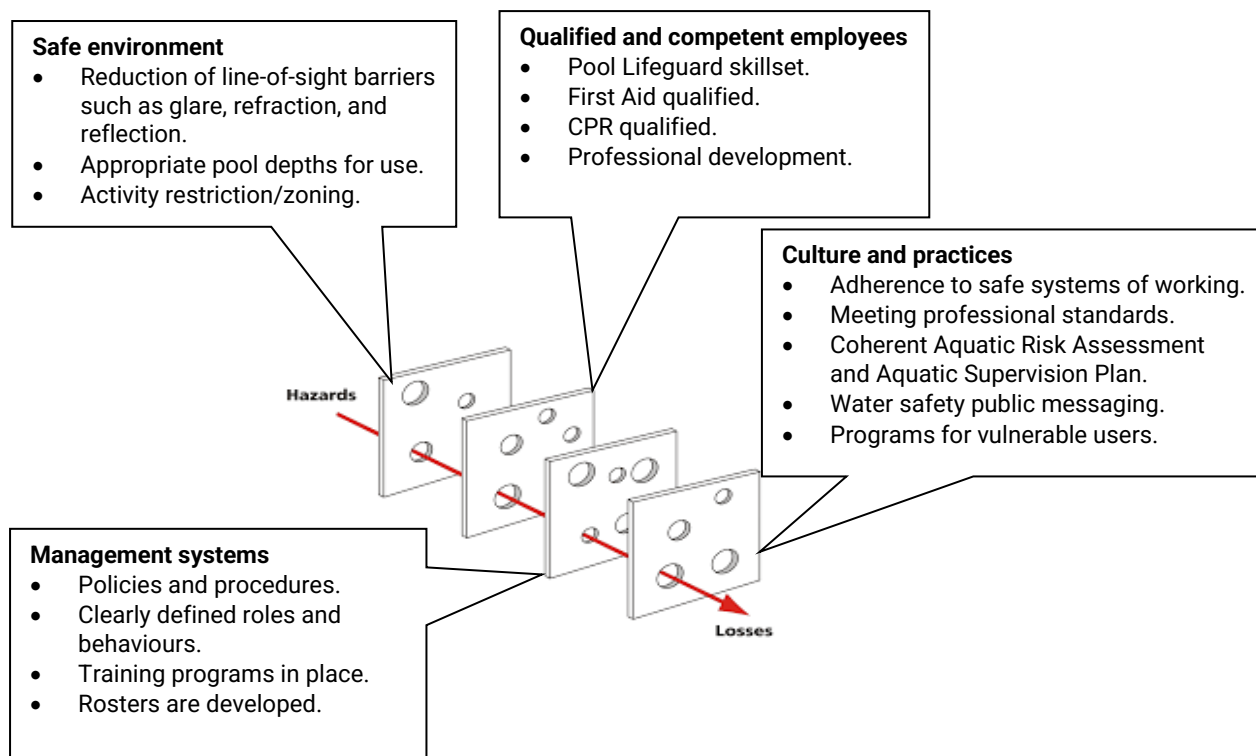


Figure 14: Swiss Cheese Model, Active and Latent Failures (Reason, 1990).

Risk treatment activities are linked within the overarching risk management framework, and intervention at any stage (particularly early on) can stop an event unfolding. It is helpful to think of the slices of cheese as the different layers of defence (preventative measures).

What is critical to note, is that risk events like drowning do occur, and on the other side of the event, there are a range of responsive treatment measures that can be effective in reducing the consequence of the occurrence. For example, a drowning occurs, staff quickly identify and retrieve the patient, perform early and effective oxygen resuscitation, and the emergency services are engaged immediately and able to provide early advanced treatment. In this situation the patient may make a swift recovery without any lasting injury.

Alternatively, if the same drowning incident occurs and there is no one qualified to identify, react, rescue, and provide resuscitation or contact emergency services, there is an increased likelihood that the consequence will be more significant.

## 4 Section Four - RISK ASSESSMENT



## 4.1 Risk Assessment Explained

This Aquatic Risk Assessment is displayed in two components. The Aquatic Risk Register is the document that captures the detail and status of the risk, with respect to its likelihood, consequence and subsequent rating and priority. The Aquatic Risk Treatment Plan builds on the findings of the register and provides information on the proposed, actual, and selected treatment options as well as the implementation details including the responsible person and review date.

The Aquatic Risk Register and Aquatic Risk Treatment Table (collectively the Aquatic Risk Assessment) are displayed in the corresponding columns of the tables on the following pages.

- **Aquatic Risk Register.**
  - 1. Risk category.
  - 2. Risk description.
  - 3. Risk location.
  - 4. Controls observed.
  - 5. Risk likelihood.
  - 6. Risk consequence.
  - 7. Risk rating (likelihood x consequence).
  - 8. Risk rating (descriptor).
  - 9. Proposed risk treatment options.
- **Aquatic Risk Treatment Plan.**
  - 10. Treatment action (Level 1).
  - 11. Treatment action (Level 2).
  - 12. Treatment action (Level 3).
  - 13. Descriptive treatment actions (actual).
  - 14. Control effectiveness.
  - 15. Practical/reasonable.
  - 16. Agreed action.
  - 17. Responsible person.
  - 18. Review date.

The categories, scores, descriptors, and descriptions used in the Aquatic Risk Register and Aquatic Risk Treatment Table have been developed by LSV and can be readily applied within the context of water safety and drowning prevention.

Where an organisation has their own equivalent risk management model, this can (and should) be used as the outcome will better correlate to the specific risk appetite of the organisation responsible for the risk management activities.

A brief synopsis of the LSV model components is provided below.

- **1. Risk category** - This is the category of risk. Using the safe systems model this category will be either aquatic user, aquatic environment, or aquatic activity.
- **2. Risk description** - The risk category type that may arise from the realisation of the hazard, inclusive of the identification of the hazard itself.
- **3. Risk Location** - The physical locations within the aquatic area of the facility where the identified risk exists.
- **4. Controls observed** - The existing controls (risk treatments) which are already in place and contribute to the identified risk likelihood and risk consequence rating.
- **5. Risk likelihood** - A semi-quantitative descriptive ranking scale of the perceived probability or frequency of an event at the assessment location.

Risk Likelihood table		
Score	Descriptor	Description of likelihood
1.0	Almost Certain	Occurrence is inevitable and/or has occurred within similar aquatic environments and the with intended recreational purpose and use levels.
0.8	Likely	Occurrence is likely and/or has occurred within similar aquatic environments and with the intended recreational purpose and use levels.
0.5	Possible	Occurrence is likely and/or foreseeable given the existing environment conditions and with the intended recreational purpose and use levels.
0.25	Unlikely	Occurrence is, possible but unlikely, given existing aquatic environment conditions and with the intended recreational purpose and use levels.
0.05	Rare	Occurrence is highly unlikely given the existing aquatic environment conditions and with the intended recreational purpose and use levels.

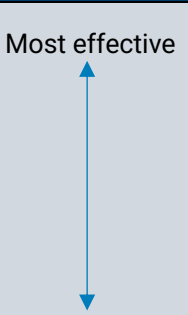
- **6. Risk consequence** - A qualitative ranking of the perceived outcome of an event at the assessed location based on observed environmental conditions and past.

Risk Consequence table		
Score	Descriptor	Description of likelihood
1.0	Catastrophic	Multiple fatalities and injuries.
0.8	Major	Single fatality, permanent total disability.
0.6	Serious	Major injuries, partial injury, or longer-term injury.
0.4	Moderate	Minor injuries, medical aid, and low severity impairment.
0.2	Minor	Slight injury, illness, first aid required.

- **7 & 8. Risk rating (likelihood x consequence) and Risk rating (descriptor)** - Quantitative score between 0.0 (routine risk) to 1.0 (extreme risk) and qualitative descriptor reflecting the likelihood of a risk arising and the consequence of its impacts.

Risk Rating table		
Score	Descriptor	Description of risk factor/treatment priority
0.76-1.00	Extreme	Detailed risk treatment action is required. This may be directed to reducing the likelihood of the risk (or avoiding it altogether), or to reducing its consequences or both.
0.51-0.75	Problem area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures.
0.26-0.50	Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk.
0.00-0.25	Routine	Risks in this area can often be managed by standard processes, system, and procedure or on an ad hoc basis.

- **9. Proposed risk treatment options** - Initial guidance on the risk treatment actions that may be appropriate. The likelihood and consequence ratings are used to determine the risk priorities. All treatment options are selected from the ILS Drowning Prevention Chain Treatment Categories.
- **10. Descriptive treatment actions (actual)** – The application of the generic proposed risk treatment option, contextualised to the aquatic users, activities and environments.
- **11. Control effectiveness** - Overall guidance on the effectiveness of the application of the proposed risk treatment options on the identified risk.

Control Effectiveness table	
Effectiveness	Description of effectiveness
Most effective  Least effective	<b>Avoiding</b> the risk by deciding not to start or continue with the activity.
	<b>Removing</b> the risk source.
	Changing the <b>likelihood</b> .
	Changing the <b>consequence</b> .
	<b>Sharing</b> the risk.
	<b>Retaining</b> the risk by informed decision.

- **12. Practical/reasonable** - A 'Yes/No' response advising whether the implementation of the proposed treatment is reasonably practical to apply, specific to the users, activities and environments and the organisation responsible for the risk.
- **13. Agreed action** - A 'Yes/No' response advising whether the organisation responsible for the risk management will progress to implement the proposed treatment/s.
- **14. Responsible person** - The identification and clarification of the individual person responsible for implementing the identified and agreed treatment action.
- **15. Review date** - The date by which the implementation of the agreed treatment will first be reviewed to consider progress/impact.

## 4.2 Aquatic Risk Register - Aquatic Users

Aquatic Risk Register - Aquatic Users								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic User	Use by young children (Drowning/Fall injury)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces,</li> <li>Safe entry/exits are provided by the boat ramp areas,</li> <li>Non-Slip surfaces are used for the official access boat ramp.</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children,</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic User	Use by non/weak swimmers (Drowning injury)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Safe entry/exits are provided by the boat ramp areas,</li> <li>Non-Slip surfaces are used for the official access boat ramp.</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage</li> </ul>
Aquatic User	Use by people with disabilities (Fall injury/Drowning)	<ul style="list-style-type: none"> <li>Walking Paths,</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate path width is provided as 2.5m</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> </ul>

Aquatic Risk Register - Aquatic Users								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
		<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>					procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.2.3 Prohibition signage,</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic User	Unexpected entry into water (Impact injury/Drowning)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Non-Slip surfaces are used for the official access boat ramp.,</li> <li>Safe entry/exits are provided by the boat ramp areas,</li> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.1.1 Improvement of infrastructure,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children</li> </ul>
Aquatic User	Use by those unfamiliar to risks (Misbehaviour/Drowning)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1 Community Education,</li> <li>1.1.1 School Education,</li> <li>1.1.4 Awareness programmes,</li> <li>1.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> </ul>

Aquatic Risk Register - Aquatic Users								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
								<ul style="list-style-type: none"> <li>3.3.1 Promotion of importance of parental guardian supervision of children,</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic User	Lack of appropriate supervision (Misbehaviour/Drowning)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp, Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children</li> </ul>
Aquatic User	Overestimating own abilities (Drowning)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children</li> </ul>
Aquatic User	Inherent challenges associated with supervising younger, older adult, non-swimmers or weak swimmer who are also from CALD communities	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1 Community Education,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage</li> </ul>

Aquatic Risk Register - Aquatic Users								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic User	Inherent challenges associated with supervising large groups	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1 Community Education,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>1.1.1 School Education</li> </ul>
Aquatic User	Unauthorised activities (Misbehaviour/Vari-ous)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>Gates limit access to official boat ramp for authorised activity only</li> </ul>	Likely	Moderate	0.32 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage</li> </ul>
Aquatic User	Use by those with pre-existing medical conditions (Various)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Serious	0.3 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>1.2.1 Information signage,</li> <li>4.2 Emergency Communication:</li> </ul>
Aquatic User	Occurrence of a medical episode / emergency (Various)	<ul style="list-style-type: none"> <li>Diamond Park,</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Serious	0.3 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for	<ul style="list-style-type: none"> <li>4.2 Emergency Communication:</li> </ul>

Aquatic Risk Register - Aquatic Users								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
		<ul style="list-style-type: none"> <li>Stock Route Reserve North</li> </ul>					the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	
Aquatic User	Impairment associated with alcohol and drugs (Fall injury/Drowning)	<ul style="list-style-type: none"> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate path width is provided as 2.5m,</li> <li>Safe entry/exits are provided by the boat ramp areas</li> </ul>	Unlikely	Catastrophic	0.25 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic User	Risk taking behaviours (Misbehaviour/Various)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces</li> </ul>	Possible	Moderate	0.2 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>1.1 Community Education,</li> <li>1.1.1 School Education,</li> <li>1.1.4 Awareness programmes,</li> <li>1.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic User	Loss of a participant / Missing child	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Catastrophic	0.05 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> </ul>

## Aquatic Risk Register - Aquatic Users

Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
								<ul style="list-style-type: none"> <li>3.3.1 Promotion of importance of parental guardian supervision of children,</li> <li>1.1.1 School Education</li> </ul>
Aquatic User	Conflict between users (Impact injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Serious	0.03 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic User	Overcrowding / attendances exceeding safe limited (Impact injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Moderate	0.02 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic User	Inherent challenges associated with supervising school groups and/or sporting groups	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	N/A	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic User	Aggressive behaviour by patrons towards staff or other patrons	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	N/A	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic User	Inherent challenges associated with supervising aquatic exercise and program groups (vulnerable users)	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	N/A	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## 4.3 Aquatic Risk Register - Aquatic Environments

Aquatic Risk Register - Aquatic Environments								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic Environment	Vegetation occluding water edge (Unintended water entry/Drowning)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Landscaping planted to prevent access to riverbank from play area and high-level banks,</li> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.3 Regulations,</li> <li>2.3.1 Formal regulatory arrangements,</li> <li>1.2.1 Information signage,</li> <li>2.2.2 Warning signage</li> </ul>
Aquatic Environment	Submerged sediment obstacles (Impact injury/Drowning)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1.4 Awareness programmes,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>4.2 Emergency Communication,</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic Environment	Exposure to shallow water (Impact)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> </ul>	<ul style="list-style-type: none"> <li>Landscaping planted to prevent access to riverbank from play</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving	<ul style="list-style-type: none"> <li>1.1.4 Awareness programmes,</li> </ul>

## Aquatic Risk Register - Aquatic Environments

Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
	injury/Spinal injury)	<ul style="list-style-type: none"> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	area and high-level banks				management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>4.2 Emergency Communication:</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic Environment	Access to deep water (Submersion/Drowning)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Barrier fencing fully encloses Toddler Playground,</li> <li>Barrier Fencing Partially encloses water play and adventure Playground spaces,</li> <li>Landscaping planted to prevent access to riverbank from play area and high-level banks</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1.4 Awareness programmes,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>4.2 Emergency Communication:</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic Environment	Drop off - sudden change in water depth (Submersion/Drowning)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1.4 Awareness programmes,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>4.2 Emergency Communication,</li> </ul>

## Aquatic Risk Register - Aquatic Environments

Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
								<ul style="list-style-type: none"> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic Environment	Strong currents (Submersion/Drowning)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1.4 Awareness programmes,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>4.2 Emergency Communication,</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic Environment	Vegetation causing entanglement/entrapment in the water (Drowning)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>2.3 Regulations,</li> <li>2.3 Regulations,</li> <li>2.3.1 Formal regulatory arrangements,</li> <li>1.2.1 Information signage,</li> <li>2.2.2 Warning signage</li> </ul>
Aquatic Environment	Insufficient safety information (Various)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Major	0.4 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children</li> </ul>

Aquatic Risk Register - Aquatic Environments								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
							resources even through the risk may seem less urgent.	
Aquatic Environment	Poor water quality (Disease related illness)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Likely	Moderate	0.32 Catastrophic	<p>Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.</p>	<ul style="list-style-type: none"> <li>2.3 Regulations,</li> <li>2.3.1 Formal regulatory arrangements</li> </ul>
Aquatic Environment	Unknown water quality (Disease related illness)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Likely	Moderate	0.32 Catastrophic	<p>Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.</p>	<ul style="list-style-type: none"> <li>2.3 Regulations,</li> <li>2.3 Regulations,</li> <li>2.3.1 Formal regulatory arrangements</li> </ul>
Aquatic Environment	Insufficient lighting levels (Fall injury/Impact injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Serious	0.3 Catastrophic	<p>Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.</p>	<ul style="list-style-type: none"> <li>3.1.1 Improvement of infrastructure</li> </ul>

Aquatic Risk Register - Aquatic Environments								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic Environment	Inappropriate maintenance measures (Various)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Serious	0.3 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.3.1 Formal regulatory arrangements</li> </ul>
Aquatic Environment	Inappropriate maintenance of vegetation	<ul style="list-style-type: none"> <li>Diamond Park, Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Serious	0.3 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.3.1 Formal regulatory arrangements</li> </ul>
Aquatic Environment	Undefined / unclear edges / un-barriered edges (Fall injury/Drowning)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Landscaping planted to prevent access to riverbank from play area and high level banks, Safe entry/exits are provided by the boat ramp areas</li> </ul>	Unlikely	Catastrophic	0.25 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children</li> </ul>
Aquatic Environment	Water transparency / visibility	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Unlikely	Catastrophic	0.25 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency	<ul style="list-style-type: none"> <li>2.3 Regulations,</li> </ul>

Aquatic Risk Register - Aquatic Environments								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
	(Drowning/Cold related injury)	<ul style="list-style-type: none"> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>					plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.3.1 Formal regulatory arrangements</li> </ul>
Aquatic Environment	Steep entry ramp / slippery surfaces (Impact/Fall injury)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Non-Slip surfaces are used for the official access boat ramp.,</li> <li>grass and geogrid will be used to construct the public access ramp</li> </ul>	Possible	Moderate	0.2 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Slippery surfaces / rocks and uneven surfaces (Impact/Fall injury)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Non-Slip surfaces are used for the official access boat ramp.,</li> <li>grass and geogrid will be used to construct the public access ramp,</li> <li>bank remediation and stabilisation work to be undertaken in some sections</li> </ul>	Possible	Moderate	0.2 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Day to day slip, trip or falls on land (Fall/Impact Injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>Non-Slip surfaces are used for the official access boat ramp.,</li> </ul>	Almost Certain	Minor	0.2 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## Aquatic Risk Register - Aquatic Environments

Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
			<ul style="list-style-type: none"> <li>Appropriate path width is provided as 2.5m,</li> <li>Landscaping planted to prevent access to riverbank from play area and high-level banks</li> </ul>					
Aquatic Environment	Exposure to cold water (Cold related injury)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Likely	Minor	0.16 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Access to unstable flow channels and rock batter (Impact/Fall injury)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>bank remediation and stabilisation work to be undertaken in some sections</li> </ul>	Unlikely	Moderate	0.1 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Exposure to sun (Heat related injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>shade structures over seating areas and extensive existing tree canopy available</li> </ul>	Unlikely	Minor	0.05 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Exposure to strong winds (Cold related injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Unlikely	Minor	0.05 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Fire (Heat related injury/Death)	<ul style="list-style-type: none"> <li>Diamond Park,</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Catastrophic	0.05 Routine	Risks in this area can often be managed by standard processes,	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Aquatic Risk Register - Aquatic Environments								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
		<ul style="list-style-type: none"> <li>Stock Route Reserve North</li> </ul>					system and procedure or on an ad hoc basis.	
Aquatic Environment	Contact with land-based animals (Bite/sting injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Moderate	0.02 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Exposure to sewage / similar discharge (Disease related illness)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Moderate	0.02 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>2.3 Regulations:</li> </ul>
Aquatic Environment	Topological hazards and man-made structures (Fall/Impact injury)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points,</li> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Minor	0.01 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Contact with aquatic organisms (Bite/Sting injury)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Minor	0.01 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Aquatic Risk Register - Aquatic Environments								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
		<ul style="list-style-type: none"> <li>Creek access points</li> </ul>						
Aquatic Environment	Exposure to extreme wave conditions (Fall injury/Drowning)	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Environment	Remote location, difficult to establish contact in case of emergency (Emergency assistance)	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## 4.4 Aquatic Risk Register - Aquatic Activities

Aquatic Risk Register - Aquatic Activities								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic Activity	Uncontrolled / undefined access (Drowning/Misbehaviour)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Gates limit access to official boat ramp for authorised activity only,</li> <li>Landscaping planted to prevent access to riverbank from play area and high-level banks</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1 Community Education,</li> <li>1.1.4 Awareness programmes,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>4.2 Emergency Communication:</li> </ul>
Aquatic Activity	Inability to undertake a rescue (Drowning)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>4.2 Emergency Communication:</li> </ul>
Aquatic Activity	Insufficient available rescue equipment (Drowning)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>4.2 Emergency Communication:</li> </ul>

Aquatic Risk Register - Aquatic Activities								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic Activity	Unplanned / unintended aquatic activities (Drowning)	<ul style="list-style-type: none"> <li>Walking Paths,</li> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp,</li> <li>Creek access points, Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>Landscaping planted to prevent access to riverbank from play area and high-level banks,</li> <li>Non-Slip surfaces are used for the official access boat ramp.,</li> <li>grass and geogrid will be used to construct the public access ramp</li> </ul>	Possible	Catastrophic	0.5 Problem Area	Risks in this area generally have high likelihoods, but moderate to low impacts. Treatment actions can often be directed to improving management systems and procedures. This area typically receives a lot of management attention because of the high frequency and may result in an over-allocation of resources.	<ul style="list-style-type: none"> <li>1.1 Community Education,</li> <li>1.1.4 Awareness programmes,</li> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>4.2 Emergency Communication,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children,</li> <li>3.1.1 Improvement of infrastructure</li> </ul>
Aquatic Activity	Use for diving / jumping activities (Spinal injury/Drowning)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Unlikely	Catastrophic	0.25 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.2.1 Information signage,</li> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>3.1.1 Improvement of infrastructure,</li> <li>3.3.1 Promotion of importance of parental guardian supervision of children</li> </ul>
Aquatic Activity	Insufficient public rescue equipment (Drowning)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Unlikely	Catastrophic	0.25 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for	<ul style="list-style-type: none"> <li>1.2.1 Information signage,</li> <li>4.2 Emergency Communication:</li> </ul>

Aquatic Risk Register - Aquatic Activities								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
							the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	
Aquatic Activity	In-water entrapment (Drowning)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Safe entry/exits are provided by the boat ramp areas</li> </ul>	Unlikely	Catastrophic	0.25 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage</li> </ul>
Aquatic Activity	Inability to safely enter/exit the water (Drowning/Cold related injury)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Safe entry/exits are provided by the boat ramp areas</li> </ul>	Unlikely	Catastrophic	0.25 Catastrophic	Risks in this area generally have low likelihoods but potentially high impacts. Effective preparation and crisis management or contingency plans are often valuable options for the catastrophic residual risk. Insurance may be appropriate. Management should ensure that this area receives the appropriate resources even through the risk may seem less urgent.	<ul style="list-style-type: none"> <li>2.2.2 Warning signage,</li> <li>2.2.3 Prohibition signage,</li> <li>2.2.1 Information signage</li> </ul>
Aquatic Activity	Inability to provide timely first aid (Various)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Possible	Moderate	0.2 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>4.2 Emergency Communication:</li> </ul>

## Aquatic Risk Register - Aquatic Activities

Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic Activity	Transfer between dry (pier) and wet (watercraft) environments (Fall injury/Drowning)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp,</li> <li>Public Access Boat Ramp</li> </ul>	<ul style="list-style-type: none"> <li>Non-Slip surfaces are used for the official access boat ramp.,</li> <li>grass and geogrid will be used to construct the public access ramp</li> </ul>	Possible	Moderate	0.2 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Insufficient emergency preparedness (Various)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Unlikely	Serious	0.15 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>1.2.1 Information signage,</li> <li>4.2 Emergency Communication:</li> </ul>
Aquatic Activity	Use of large waste collection / emergency service vehicles (Impact/Collision injury)	<ul style="list-style-type: none"> <li>Diamond Park,</li> <li>Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Unlikely	Serious	0.15 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Aquatic recreational craft / boating activities (Collision/Drowning)	<ul style="list-style-type: none"> <li>Public Access Boat Ramp,</li> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>Safe entry/exits are provided by the boat ramp areas</li> </ul>	Rare	Catastrophic	0.05 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Entanglement with fishing lines/nets (Drowning/Cold related injury)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp, Public Access Boat Ramp, Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	Rare	Catastrophic	0.05 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Insufficient Public Amenities / Availability of drinking water / food	<ul style="list-style-type: none"> <li>Diamond Park, Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>Public Amenities are provided at the playground area</li> </ul>	Rare	Minor	0.01 Routine	Risks in this area can often be managed by standard processes, system and procedure or on an ad hoc basis.	<ul style="list-style-type: none"> <li>N/A</li> </ul>

Aquatic Risk Register - Aquatic Activities								
Risk category	Risk description	Risk location	Controls observed	Risk likelihood	Risk consequence	Risk rating (L x C)	Risk rating (descriptor)	Proposed risk treatment options
Aquatic Activity	Use for paragliding, gliding, kite surfing activities (Spinal injury/Drowning)		<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	General watercraft accidents (Impact injury/Drowning)	<ul style="list-style-type: none"> <li>Official Services Boat Ramp, Public Access Boat Ramp, Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Vehicle manoeuvring areas (Impact/Collision injury)	<ul style="list-style-type: none"> <li>Diamond Park, Stock Route Reserve North</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Breath holdings activities (Drowning)	<ul style="list-style-type: none"> <li>Creek access points</li> </ul>	<ul style="list-style-type: none"> <li>No controls observed</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Remote location, difficult to establish contact in case of emergency	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Remote location, difficult to locate patient by emergency personnel in case of emergency	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Aquatic Activity	Use by persons undertaking rock fishing, shore based fishing (incl. pipis) in the wave zone (Fall injury/Drowning)	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This risk has been deemed not applicable at this location</li> </ul>	NA	NA	0 NA	This hazard has been deemed not applicable at this location	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## 4.5 Aquatic Risk Treatment Table

Treatment action (Level 1)	Treatment action (Level 2)	Treatment action (Level 3)	Descriptive treatment action (actual)	Control effectiveness	Practical/ reasonable (Y/N)	Agreed action (Y/N)	Review date
<b>1. Education and information:</b>	<b>1.1 Community Education:</b>	1.1.1 School Education	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		1.1.2 Electronic and digital media	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		1.1.3 Leaflets and brochures	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		1.1.4 Awareness programmes	<ul style="list-style-type: none"> <li>Project manager should work with land manager to distribute key water safety messaging to the community through school and community group programs (e.g. Bush nippers)</li> </ul>	Medium			
	<b>1.2 Arrival information:</b>	1.2.1 Information signage	<ul style="list-style-type: none"> <li>Project manager should consider the potential use of community notice boards at the site to display key water safety initiative information e.g. respect the river/ boating safety / Child supervision information</li> </ul>	Medium			
		1.2.2 Face to face	<ul style="list-style-type: none"> <li>Project manager should understand, in consultation with the land manager, how frequently park rangers visit the area and how they could support the provision of water safety information in response to emergencies.</li> </ul>	Medium			
		1.2.3 On-site education	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
	<b>1.3. Regulations:</b>	1.3.1 Group registration	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
	<b>2.1 Arrival Information:</b>	2.1.1 Public address systems	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			

Treatment action (Level 1)	Treatment action (Level 2)	Treatment action (Level 3)	Descriptive treatment action (actual)	Control effectiveness	Practical/ reasonable (Y/N)	Agreed action (Y/N)	Review date
<b>2. Denial of access and/or provision of warnings:</b>		2.1.2 Access barriers	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		2.1.3 Buoy lines	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
	<b>2.2 Signage:</b>	2.2.1 Information signage	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		2.2.2 Warning signage	<ul style="list-style-type: none"> <li>Implement the recommendations of the LSV signage assessment.</li> </ul>	High			
		2.2.3 Prohibition signage	<ul style="list-style-type: none"> <li>Implement the recommendations of the signage assessment and work in conjunction with the land and waterway managers to understand the prohibitions and restrictions on watercraft and activities in the Wodonga creek.</li> </ul>	High			
		2.2.4 Flags	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
	<b>2.3 Regulations:</b>	2.3.1 Formal regulatory arrangements	<ul style="list-style-type: none"> <li>Consultation should be done with the regulatory body for the waterway to determine if any regulatory restrictions are requiring as this area is used as a water source for the water treatment plant. These may include restrictions on swimming, use of powered vessels or fishing</li> </ul>	Medium			
			<ul style="list-style-type: none"> <li>Consultations should also be done with the waterway manager to understand if any water quality testing is currently done and if this information can be shared back to the community / users in the form of water closures in unsafe conditions.</li> </ul>	Medium			
			<ul style="list-style-type: none"> <li>Work with the land manager to establish responsibility for maintenance works in the development are including preventing vegetation from obscuring the creek edge / creating</li> </ul>	High			

Treatment action (Level 1)	Treatment action (Level 2)	Treatment action (Level 3)	Descriptive treatment action (actual)	Control effectiveness	Practical/ reasonable (Y/N)	Agreed action (Y/N)	Review date
			entrapment risks by preventing safe exit from the waterway.				
		2.3.2 Permit systems	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
	<b>2.4 Activity Restrictions:</b>	2.4.1 Zoning	<ul style="list-style-type: none"> <li>Consideration for the restriction of swimming and boating activities in in Wodonga creek to designated areas.</li> </ul>	Low			
		2.4.2 Beach / water closures	<ul style="list-style-type: none"> <li>Provisions should be made for the closure of water spaces in particular conditions including hazardous conditions e.g. flooding and at the needs of the pumping station.</li> </ul>	High			
<b>3. Provision of supervision:</b>	<b>3.1 Regulations:</b>	3.1.1 Improvement of infrastructure	<ul style="list-style-type: none"> <li>Consideration should be begiven to ensuring the design of the fencing surrounding the playground area is sufficient to prevent unintentional access to the waterway area.</li> </ul>	High			
			<ul style="list-style-type: none"> <li>Consideration should be given to continuing the fencing around the whole of the play area including the Water play and adventure play areas with gated access at the main path connection points. E.g. at the bike rack and the picnic tables near the new rolled lawn.</li> </ul>	High			
			<ul style="list-style-type: none"> <li>Consideration should be given to the installation of barrier fencing along the walking track where a significant drop-off is present and not easily visible.</li> </ul>	High			
			<ul style="list-style-type: none"> <li>Consideration should be given to ensuring safe egress points are available at the boat ramp areas (both official an unofficial)</li> </ul>	High			

Treatment action (Level 1)	Treatment action (Level 2)	Treatment action (Level 3)	Descriptive treatment action (actual)	Control effectiveness	Practical/ reasonable (Y/N)	Agreed action (Y/N)	Review date
		3.1.2 Recognition of life saving services	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.1.3 Activity management	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.1.4 Self-regulation programmes	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
	<b>3.2 Trained observers:</b>	3.2.1 Trained activity supervisors	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.2.2 Coaches and instructors	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
	<b>3.3 Parent / guardian supervision:</b>	3.3.1 Promotion of importance of parental guardian supervision of children	<ul style="list-style-type: none"> <li>The developer should implement the recommendations of the signage assessment including installing signage inclusive of parental supervision recommendations</li> </ul>	Medium			
	<b>3.4 First aid facilities:</b>	3.4.1 Portable first aid kits	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.4.2 Permanent / fixed facilities	<ul style="list-style-type: none"> <li>The developer should engage with the land manager to determine whether a first aid station can be established at this location, potentially including an AED and other essential rescue equipment</li> </ul>	High			
	<b>3.5 Lifeguard Services:</b>	3.5.1 Paid lifeguards	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.5.2 Volunteer lifeguard services	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.5.3 Roving lifeguards	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.5.4 Surveillance	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			
		3.5.5 Full service	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A			

Treatment action (Level 1)	Treatment action (Level 2)	Treatment action (Level 3)	Descriptive treatment action (actual)	Control effectiveness	Practical/ reasonable (Y/N)	Agreed action (Y/N)	Review date	
		3.5.6 After hours call-out	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
		3.5.7 Operational support	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
<b>4. Acquisition of survival skills:</b>	<b>4.1 Community Education:</b>	4.1.1 Survival skills	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
		4.1.2 Self-rescue skills	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
		4.1.3 Rescue skills	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
	<b>4.2 Emergency Communication:</b>	4.2.1 Public / emergency telephone	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
		4.2.2 Outpost alarms	<ul style="list-style-type: none"> <li>Consideration into implementing the outcomes of the signage assessment including the inclusion of emergency markers to enable accurate location and access by emergency services.</li> </ul>	High				
		4.2.3 Radios	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
	<b>4.3 Public Rescue Equipment:</b>	4.3.1 Lifebuoys	<ul style="list-style-type: none"> <li>Developer should work with the land manager to explore the establishment of a PRE at this location, as its isolated nature would benefit from such a station.</li> </ul>	High				
		4.3.2 Throw lines	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
		4.3.3 Other extraction equipment	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				
	<b>4.4 Flotation Devices:</b>	4.4.1 Lifejackets	<ul style="list-style-type: none"> <li>N/A</li> </ul>	N/A				

## 4.6 Discussion

This section provides an integrated analysis of the findings outlined in the preceding sections. As the project scope focuses on water safety and in particular drowning, it is beneficial to look at the available treatment actions in a summative form.

The below provides details of the specific treatment actions available. They are displayed under the main headers used in the drowning prevention chain

### Category 1 - Education and information

- **Awareness programmes:** The Developer should work with the land manager to distribute key water safety messaging through community and school-based programs (e.g. Bush Nippers), targeting families, children, and first-time visitors.
- **Information signage:** The Developer should work with the land manager to use community noticeboards, if present as a part of the development, to display key water safety information, and relevant campaign materials.
- **Face-to-face information:** The Developer should consult with the land manager / water authority to understand the frequency of ranger or staff presence and how face-to-face engagement could support water safety messaging during routine visits or emergency responses.

### Category 2 - Denial of access, improvement of infrastructure and/or provision of warnings

- **Warning signage:** the recommendations of the Life Saving Victoria signage assessment should be implemented to warn users of hazards at the location.
- **Prohibition signage:** Prohibition signage should be installed in consultation with land and waterway managers to clearly identify restricted or unsafe activities within Wodonga Creek.
- **Zoning:** Consideration should be given to restricting swimming and boating activities to designated areas to reduce exposure to high-risk sections of the creek, e.g. surrounding pipes and pumps.
- **Beach / water closures:** Provisions should be made for temporary closure of water access during hazardous conditions such as flooding or infrastructure operations.

### Category 3 - Provision of supervision

- **Improvement of infrastructure:** Fencing design should be reviewed to ensure the playground area prevents unintentional access to the waterway, details have not been included in the documentation provided.
- **Improvement of infrastructure:** Consideration should be given to extending fencing to fully enclose water play and adventure play areas, with gated access at key entry points. E.g. the bike parking area, and the connection back to the main path between the adventure and main path under the overhead power lines.
- **Improvement of infrastructure:** Barrier fencing should be considered along walking tracks where significant, visually obscured drop-offs are present. Though this is not specifically

present in the provided drawings several photos show high banks on some portions of the creek, causing significant drop offs from land.

- **Improvement of infrastructure:** Safe egress points should be maintained at both official and informal boat ramp locations, it is currently unclear if the bank rejuvenation works mentioned in the planning documents will include safe entry/exit points.
- **Promotion of parental supervision:** Signage should be installed in line with the signage assessment to include parental and guardian supervision responsibilities, particularly in child-focused play areas.
- **Permanent / fixed facilities:** The Developer should engage with the land manager to determine whether a first aid station or outpost can be established, potentially including an AED.

#### **Category 4 - Acquisition of survival skills**

- **Emergency Communication:** Consider the inclusion of emergency markers, aligning with the recommendations within the signage assessment.
- **Lifebuoy:** The Developer should work with the land manager to explore the option of installing Public Rescue Equipment at this location.

## 5 Section Five - REFERENCES/APPENDICES



## 5.1 References

- Australian Government. (2018). Department of Education and Training. National Register of VET. Retrieved from <https://training.gov.au/>
- Australian Water Safety Council (2008). A Guide to Water Safety Essentials for Local Governments. Australian Waters Safety Council, Sydney [Secretariat: Royal Life Saving Society Australia].
- Australian Water Safety Council. (2021). Australian Water Safety Strategy. Retrieved from <https://www.royallifesaving.com.au/research-and-policy/australian-water-safety/australian-water-safety-strategy>
- Coroners Court of Victoria. (2016). Coronial Findings - Case 2014-0761. Retrieved from [https://www.royallifesaving.com.au/\\_data/assets/pdf\\_file/0020/42086/Coronial-Inquest-WaterMarc-2014.v1.0.pdf](https://www.royallifesaving.com.au/_data/assets/pdf_file/0020/42086/Coronial-Inquest-WaterMarc-2014.v1.0.pdf)
- Department of Justice and Community Safety. (2021). Victorian Water Safety Strategy 2021-25. Victorian State Government. Retrieved from <https://content.vic.gov.au/sites/default/files/2021-12/Victorian%20Water%20Safety%20Strategy%202021-2025.pdf>
- Department of Education and Training. (2024). Swimming and Water Activities - Adventure Activity Guidelines. Retrieved from <https://www2.education.vic.gov.au/pal/excursions/guidance/adventure-activities>
- International Drowning Research Alliance (2022). Drowning Timeline. Retrieved from <http://idra.world/>
- International Life Saving Federation. (2015). Drowning Prevention Strategies: A framework to reduce drowning deaths in the aquatic environment for nations/regions engaged in lifesaving. Leuven, Belgium.
- International Organization for Standardization. (2018). ISO 31000 - Risk Management. Geneva, Switzerland.
- Joost J.L.M. Drowning. (2014). Drowning - Prevention, Rescue, Treatment. Springer-Verlag, Berlin.
- Life Saving Victoria. (2023). Victorian Drowning Report 2022/23. Life Saving Victoria. Retrieved from <https://lsv.com.au/research/victorian-drowning-reports>
- Reason, J. British Medical Journal. (2000). Human error: models and management. BMJ 2000; 320 (7237): 768-770.
- Royal Life Saving Society of Australia (2025). Lifeguarding - 6th Edition
- Royal Life Saving Society of Australia (2023). Guidelines for Safe Pool Operations. New South Wales, Australia.
- Royal Life Saving Society - Australia. (2025). National Drowning Report 2025. New South Wales, Australia.
- Royal Life Saving Society - Australia. (2017). National Aquatic Facility Classification and Definition System. Retrieved from <https://www.guidelines.royallifesaving.com.au/facility-classifications>
- Royal Life Saving Society – Australia. (2024). Guidelines for Inland Waterway Safety. Retrieved from <https://www.royallifesaving.com.au/Aquatic-Risk-and-Guidelines/guidelines/guidelines-for-inland-waterway-safety>

- Standards Australia. (2012). Handbook 89-2012 - Risk management - Guidelines on risk assessment techniques. Sydney, New South Wales.
  - State Government of Victoria. (2018). Department of Education and Training. Policy and Advisory Library. Retrieved from <https://www2.education.vic.gov.au/pal>
  - State Government of Victoria (2013). Emergency Management Act 2014 (VIC). Victoria, Australia.
  - State Government of Victoria (2007). Equipment (Public Safety) Regulations 2017 (VIC). Victoria, Australia.
  - State Government of Victoria. (2004). Operational Health and Safety Act 2004 (VIC). Victoria, Australia.
  - State Government of Victoria. (2017). Operational Health and Safety Regulations 2017 (VIC). Victoria, Australia.
  - State Government of Victoria. (2008). Public Health and Wellbeing Act 2008 (VIC). Victoria, Australia.
  - State Government of Victoria. (2019). Public Health and Wellbeing Regulations 2019 (VIC). Victoria, Australia.
  - State Government of Victoria. (2021). Safer Public Pools – Code of Practice. Life Saving Victoria, Australia
  - Tipton. M, Montgomery. H. (2021). The experience of drowning 2021. Vol. 90, Issue. 1. Retrieved from <https://journals.sagepub.com/doi/pdf/10.1177/00258172211053127>
  - WorkSafe Victoria. (2018). Incident Notification Form - June 2017 (VIC). Retrieved from <https://www.worksafe.vic.gov.au/resources/incident-notification-form>
- World Health Organisation. (2014). Global Report on Drowning. Preventing a Leading Killer. Geneva, Switzerland.

## 5.2 Appendices

### Appendix 1 - Drowning Prevention Strategies (ILS)

The International Life Saving Federation - Drowning Prevention Commission provides leadership in the global effort to prevent drowning with an emphasis on reducing drowning of children, in developing countries, regions and populations with high drowning mortality and drowning because of aquatic disasters.

The framework assists nations and organisations to provide the best response to drowning reduction. This framework can be used based on the setting and identified issues within a target population. For nations with established lifesaving organisations and an effective drowning reduction programme (such as Australia), the framework is intended to assist in the fine-tuning of the drowning prevention strategies employed.

Drowning Prevention Categories		
Prevention Category (Level 1)	Prevention Category (Level 2)	Prevention Category (Level 3) Incl. Risk Treatment Option Category
Education and information	Community education	School education (Administrative)
		Electronic and digital media (Administrative)
		Leaflets and brochures (Administrative)
		Awareness programmes (Administrative)
	Arrival information	Information signage (Administrative)
		Face to face (Administrative)
		On site education (Administrative)
Regulations	Group registration (Administrative)	
Denial of access and/or provision of warnings	Arrival information	Public address systems (Administrative)
		Access barriers (Isolate)
		Barriers/domes/booms (Isolate)
		Buoy lines (Isolate)
	Signage	Information signage (Administrative)
		Warning signage (Administrative)
		Prohibition signage (Administrative)
		Flags (Isolate)
	Regulations	Formal regulatory arrangements (Administrative)
		Permit systems (Administrative)
	Activity restrictions	Zoning (Isolate)

Drowning Prevention Categories		
Prevention Category (Level 1)	Prevention Category (Level 2)	Prevention Category (Level 3) Incl. Risk Treatment Option Category
		Beach/water closures (Eliminate)
Provision of supervision	Regulations	Improvement of infrastructure (Engineering)
		Recognition of life saving services (Administrative)
		Activity management (Administrative)
		Self-regulation programmes (Administrative)
	Trained observers	Trained activity supervisors (Administrative)
		Coaches and instructors (Administrative)
	Parent / guardian supervision	Promotion of importance of parental guardian supervision of children (Administrative)
	First aid facilities	Portable first aid kits (Administrative)
		Permanent/fixed facilities (Administrative)
	Lifeguard services	Paid lifeguards (Administrative)
		Volunteer lifeguard systems (Administrative)
		Roving lifeguards (Administrative)
		Surveillance (Administrative)
		Full service (Administrative)
		After hours call-out (Administrative)
		Operational support (Administrative)
Acquisition of survival skills	Community education	Survival skills (Administrative)
		Self-rescue skills (Administrative)
		Rescue skills (Administrative)
	Emergency communication	Public/emergency telephone (Administrative)
		Outpost alarms (Administrative)
		Radios (Administrative)
	Public rescue equipment	Lifebuys (Personal protective equipment)
		Throw lines (Personal protective equipment)
		Other extraction equipment (Personal protective equipment)
	Floatation devices	Lifejackets (Personal protective equipment)

## Appendix 2 - Policy/Case Law Findings and Recommendations (RLSSA)

The purpose of this report was to examine 'legal cases involving inland waterway drowning cases' from across Australia. The report found a lack of minimum standards, inconsistent regulations. The report identified several key findings and subsequent recommendations to progress and improve the current situation.

This review was a lead driver for the development of the RLSSA - Guidelines for Inland Waterway Safety and Victorian Inland Waterway - Code of Practice. This Plan is an outcome of those documents, developed to be a practical tool for landowners and operators to identify and address the challenge of inland waterway safety. This Plan has been developed to align with each of these resources.

### Case study key findings:

- 1. Multiple preventable deaths have occurred in inland waterways over the past decade.
- 2. There is a considerable gap in the standard of water safety management between inland waterways and beaches and pools.
- 3. A lack of prescriptive guidelines and regulations for inland waterways may contribute to a lack of practical safety measures being implemented, which could see drownings continue if left unaddressed.
- 4. Many patrons of inland waterways clearly did not possess adequate knowledge to take care and responsibility when using waterways, but the onus, in many cases, was placed directly on them.
- 5. The law is reluctant to find any acts of negligence by public authorities, owners, and operators of inland waterways when serious injury or death occurs because there is no authoritative guidance to follow in this area. A policy framework could assist adjudicators in making inland waterway public safety recommendations for owners and operators clearer and more consistent.
- 6. In the absence of standards, Coroners have provided detailed recommendations for specific locations that nationally consistent standards could enhance.
- 7. Some deaths could have been avoided with basic risk management practices that would be considered standard for beaches and swimming pools, such as safety signage. Without further prescriptive intervention, the risk of harm to the public will continue.
- 8. There is a need for cross-collaboration between stakeholders to ensure risk is effectively and extensively mitigated across a range of settings and applications.

### Case study recommendations

- Develop industry guidelines for waterway owners/ operators. The guidelines should address the risk management considerations that are reasonable and practicable where members of the public swim or recreate in and around waterways. The guidelines would assist with decision-making around ways of reducing risk.
- Encourage the development of local water safety plans/strategies which consider local knowledge, insights, and realities about hazards and risks and ways of mitigating them.
- Encourage supervision, particularly of children, around all aquatic environments.
- Introduce zoning to waterways to prohibit activities in areas where they would be unsafe.

- Design waterfronts and shorelines to increase their safety and/or provide engineering solutions where waterfronts are hazardous, and it is known that swimmers and recreational users frequent them.
- Develop warning systems for floods and surge currents.
- Designate safe swimming locations that are supported by rescue equipment, a beach patrol, and/or supervision.
- Prohibit alcohol and drugs in high-risk locations and enforce the prohibitions.
- Encourage collaboration between stakeholders.
- Encourage life jacket use.
- Develop and implement local water safety campaigns and communication messages, and partner with media providers to amplify voice.
- Provide and promote safe swimming environments like aquatic facilities and beaches.
- The requirement to have water safety signage should be consistent across all publicly accessible waterways where swimming and recreation are known to occur.
- Australian Standards for water safety signs already exist, however should be contextualised to inland waterways as to what is reasonably practicable to install and where.

## Appendix 3 - Review of Victoria's Water Safety Arrangements (IGEM)

The review of Victoria's water safety arrangements by the Inspector-General for Emergency Management (IGEM) was undertaken in response to a greater than average drowning toll in 2020-21 and 2021-22. Its purpose was to assess whether the current water safety arrangements are conducive to lowering the drowning toll and delivering the outcomes identified in the Victorian Water Safety Strategy 2021–25.

The review examined four key elements of water safety: governance and funding, risk, prevention and response and the scope was inclusive of all aquatic environments. Specific to inland waterways, this Plan acknowledges the IGEM findings and observations and is supportive of the IGEM recommendations.

### Findings and observations

- Planning for water safety is highly variable and siloed.
- The complexity of land/waterway management make it difficult to determine accountability.
- There is no specific regulations/guidance for water safety prevention on public land.
- Coordination/collaboration is lacking with respect to risk management and prevention activities.
- There is no centralised coordination for water safety risk assessment and prevention.
- Many organisations do not understand or accept their obligation to assess water safety risks.
- By their nature, water safety risks do not fit into arrangements for assessing emergency risks.
- State, regional, and municipal emergency management planning committees have not systematically considered drowning as a hazard in their risk assessments.
- Organisations involved in water safety do not systematically involve local communities in the identification and assessment of water safety risks.
- There is significantly more information available about the potential hazards of Victoria's coastal beaches compared to inland waterways.
- Data on drowning and information on physical waterway characteristics is a significant gap.
- There is no overarching coordinated approach to assessing Victoria's water safety risks to leverage the assessments conducted by individual organisations.

Water safety risks are not systematically or collaboratively considered by many organisations, against the recommendations of the Victorian Water Safety Strategy



**FOR MORE INFORMATION**

[ais@lsv.com.au](mailto:ais@lsv.com.au)

[lsv.com.au](http://lsv.com.au)

LIFE SAVING VICTORIA ABN 21 102 927 364 200

200 The Boulevard, Port Melbourne VIC 3207

03 9676 6900 / [mail@lsv.com.au](mailto:mail@lsv.com.au) /