



**National Water
Safety Management
Programme**

Level 2: Still Water Module



Safeguarding lives in, on and near water

This resource is the approved material for the RLSS UK's National Water Safety Management Programme and has been specifically designed to support your learning as you develop your water safety awareness competencies.



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National Water Safety Management Programme

Level 2: Still Water Module

Introduction

Still water is defined here as water that has minimal movement, except for locally induced wind currents. Examples include lakes, lochs, ponds, quarry pool and reservoirs. Generic open water hazards were covered in the Self Study Unit which included hazards associated with still water. This module builds on that theory and takes a more detailed look at specific still water hazards. Still water is the safest open water environment considered on this programme, however, water is by its very nature hazardous and care must always be taken when being in, on or near the water margins.

For further reading consult the RLSS UK/ROSPA booklet, Safety at Inland Water Sites.

Learning Objectives

The general learning outcomes of this module are:

- To provide a group leader with the knowledge and appropriate skills to develop safety plans to manage groups effectively whilst in, or near still water (utilising simulated exercises)
- To improve individuals' awareness of personal safety when around still water environments
- To greater understand the need to manage risk in still water environments
- To develop effective use of rescue equipment

Lakes, Lochs and Reservoirs

Lakes can vary considerably in size, but they are commonly large expanses of deep, cold water, formed when natural basins fill with water flowing from rivers and streams.

Reservoirs are lakes that have been created by the construction of a dam causing the water to flood a natural basin.

Recreational activity is permitted on many lakes and reservoirs, particularly fishing and boating. Swimming in these water bodies can be extremely hazardous and should only take place where adequate safety management and supervision is in place.

Swimming in these water bodies can present risks and should only take place where adequate safety management and supervision is in place. Facilities are particularly important where young people are involved.

Water movement in lakes and reservoirs is significantly less than in rivers and the sea, but the water is not completely still. Thermoclines are a common feature of flat water in the summer, creating a significant boundary temperature differential between the surface layers and deeper water. This is caused through the sun heating the surface, where cold water descends and the warmer moves to the upper layer of the water column.

The movement of water in lakes and reservoirs is caused by:

- Inlets and outlets
- Surface waves
- Wind stress
- Internal pressure gradients created by changes in water flow and underwater obstacles



Recreational Lake



Lakes, Lochs and Reservoirs



Water Reservoir

Hazards and Risks

- Slips, trips and falls
- Deep and cold water
- High freeboards causing difficult egress
- Collision with other water users
- Locks – turbulent and irregular water flow
- Toxic algal blooms

Level 2: Still Water Module

Dams

Dams are barriers that control or contain the flow of water. Man-made dams have a number of functions. These include:

- Storage of drinking water.
- Generation of hydroelectricity.
- Irrigation of farmland.
- Improving waterways for transport.
- Industrial use.
- Control of irregular water flow and flooding (normally due to weather).

Due to the range of dam functions and designs, there are a number of ways that the water can be distributed from them, such as through outlet gates, pipes and overflows.



Large Dam Structure

Hazards and Risks

Access to dams is normally restricted due to the number of hazards they present, these include:

- Slip, trip and fall hazard (from extreme heights).
- Deep and cold water hazard.
- Strainers (caused by water outlets).
- Turbulent and irregular water flow (caused by water outlets).



Canals



Canals are artificial (man-made) channels of water. Depending on the surrounding ground composition, canals may be lined with concrete or clay. They are mainly used for transportation, and often transcend natural waterways such as rivers or lakes.

The depth of canals varies depending upon their use. Canals used purely for the transportation of water (aqueducts) may be as shallow as two to three feet deep, whereas shipping canals such as the Panama Canal can reach depths of up to 60 feet.

Swimming in canals is prohibited by British Waterways General Canal Bye-Laws.



Operational Canal

Canals

Canal Specific Features

Locks

Locks are a key feature in many canals and present unique hazards. Locks are used to control the flow of water between two levels in a canal, whilst also enabling boats to pass through.

The most common type of lock is a pound lock. This type of lock has a central chamber in which the water level can be altered to match the level on either side of the lock.

Boat passage through a lock (high to low level):

1. The water level in the chamber must first be equalized with the high side of the canal by opening the paddles in the upper gate.
2. Once the water level in the chamber has equalized, the upper gate is opened and the boat enters.
3. The upper gate and paddles are closed.
4. The paddles of the lower gate are opened and the water in the chamber lowers.
5. Once the water in the chamber has equalized with the low side of the canal, the lower gate is opened and the boat exits.



Lock

Hazards and Risks

When the water inside the chamber is at the low level, and during lock use, there are four significant hazards:

- Slip, trip and fall hazard (the lock edges cannot be fenced).
- High freeboard.
- Variable water depth.
- Turbulent and irregular water flow.

Quarry Pools and Gravel Pits

Quarry Pools and Gravel Pits are deep ponds of water contained in excavated land, from surface mining. Unmanaged or abandoned ponds created as a result of quarrying can contain dangerous submerged objects and machinery and the water may be contaminated. However, a number of these pools are actively managed and form water parks with a range of activities including sailing, swimming and scuba diving.



Quarry Pool Used for Recreational Purposes



Flooded Quarry Pool

Hazards and Risks

The specific hazards in quarry pools are largely caused by the industrial history of the sites. These include:

- Industrial scrap
- Industrial pollutants
- Irregular water beds with sudden drop offs
- Variable/uneven freeboards
- Water depth
- Sudden temperature changes due to thermoclines

Suggested Controls for Still Water

Still Water is usually considered the safest open water environment. However, as can be seen above, there are important hazards to consider including for example dams, canals and locks. A list of key hazards are presented above but this list is not exhaustive. The hazards vary in severity but all must be treated seriously.

General Controls listed here are provided as a guide for planning activities on still water. These are only suggested controls and not an exhaustive list and other arrangements may be necessary.

General Controls

- Observe all warning signs
- Where multiple activities are occurring on the same site, zoning must be considered
- If you are the designated safety cover ensure you hold a current life saving qualification and can deal with life support and basic casualty care
- Those operating around the water margin, keep a safe distance from the edge of steep drops, to avoid inadvertently falling in and beware of undercuts and edge erosion
- Ensure the leader(s) is equipped with a rescue aid (e.g. throw line, buoyant aid) and lone workers are also equipped with appropriate rescue provision
- Plan activities away from identified hazards
- Ensure there are a number of suitable access and egress points
- Beware of undercuts on the edges of the still water and unstable banks
- Be aware of the weather forecast and be vigilant of changing weather conditions
- Make sure all those operating around the water margin wear appropriate clothing to cope with hot and cold conditions and, where appropriate, wear personal protective equipment and personal floatation devices
- Time limits for water activities to avoid hypothermia
- Ensure plenty of fluid is available to avoid dehydration
- Follow the slip, slop, slap rule, applying clothing, hat and sun cream to avoid sun burn
- Create behavioural framework for still water activity

Specific Controls for Group Management

- Clear instructions be communicated to groups
- Groups should be allowed in still water where there is ease of access and egress and where the activity is programmed
- Select a site that is within the capability of the group
- Leaders to maintain contact and observation of the group at all times.
- ALWAYS have a plan B to switch activities.



General Open Water Features and Hazards Summary

FEATURES	HAZARDS AND INFORMATION
Water Beds: Composition	<ul style="list-style-type: none"> • Sand, pebble rock, shingle, clay, mud, sediment • Slip, trip and fall hazard • Entrapment hazard • Entanglement hazard
Water Beds: Depth	<ul style="list-style-type: none"> • Gently shelving – Low hazard • Steeply shelving – Moderate hazard • Sudden drop offs – High hazard • Irregular surface – High hazard
Silt, Mudflats and Quicksand	<ul style="list-style-type: none"> • Soft sediment layer • Entrapment hazard • Drowning hazard (from incoming water)
Banks and Freeboards	<ul style="list-style-type: none"> • Slip, trip and fall hazard • Self rescue difficulty • Bank collapse hazard
Water Quality (Open Water)	<ul style="list-style-type: none"> • Naturally occurring hazards (micro-organisms, parasites) • Pollution and debris • Weil's disease, poisoning, infections, injury • Blue Flag - denotes good water quality
Deep and Cold Water	<ul style="list-style-type: none"> • Sea temperatures 4°C to 21°C (inland waters drop below 0°C) • Cold Water Immersion (Stages 1-3)
Strainers	<ul style="list-style-type: none"> • Partial blockage to water flow • Holding effect

Canal Summary

FEATURES	HAZARDS AND INFORMATION
Locks	<ul style="list-style-type: none"> • Control water flow and allow passage • Slip, trip and fall hazard (the lock edges cannot be fenced) • High freeboard • Variable water depth • Turbulent and irregular water flow • Temperature

Quarry Pool Summary

FEATURES	HAZARDS AND INFORMATION
Industrial Scrap and Pollutants	<ul style="list-style-type: none"> • Industrial scrap • Industrial pollutants • Irregular water beds with sudden drop off's • Obstacles and objects

Dams Summary	
FEATURES	HAZARDS AND INFORMATION
Dams	<ul style="list-style-type: none">• Barriers to control and contain the flow of water• Slip, trip and fall hazard (from extreme heights)• Deep and cold water hazard• Strainers (caused by water outlets)• Turbulent and irregular water flow (caused by water outlets)