



# **Safety on European Beaches**

## Operational guidelines

1st Edition

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and for the safe management of beaches.  
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Many beach operators throughout Europe currently apply for a Blue Flag to fly at their location, to show that their beach has reached approved standards according to the criteria laid down by the Foundation for Environmental Education (FEE) - Blue Flag Campaign. However, these criteria involve mostly environmental issues and do not include safety aspects in a sufficient level.

It is not a new idea to fix an objectivized standard for water safety. Already the 1910 founded Fédération Internationale de Sauvetage aquatique (FIS) initiated this work for beaches and other bathing areas in the eighties of the previous century. Dimitar Venov (Bulgaria) and myself have worked out a draft for planning the rescue service including the number of lifeguards and equipment needed.

In this context - particularly in the United Kingdom and Ireland - the idea of the necessity of evaluating the bathing areas was picked up, and my special thanks for the collaboration goes to the Royal Society for the Prevention of Accidents (RoSPA) and the Royal Life Saving Society United Kingdom (RLSS UK).

They have provided their documents free of charge. Brian Sims (United Kingdom) has generously worked out an internal draft, which has been editorially expanded by the team of the International Life Saving Federation of Europe (ILSE): Dr. Dirk Bissinger (Germany), Danny Bryant (Great Britain), Ortwin Kreft (Germany), Martin O'Sullivan (Ireland) and Helga and Dr. Klaus Wilkens (Germany). Several lifesaving associations (Surf Life Saving Association of Great Britain - SLSA, Royal Life Saving Society United Kingdom - RLSS UK, Deutsche Lebens-Rettungs-Gesellschaft - DLRG, Irish Water Safety - IWS, Koninklijke Nederlandse Bond to het Redden van Drenkelingen - KNBRD) have provided and supported this document with photo material and illustrations. The layout has been done by Henning Bock and Dieter Fröhling (Germany).

May all readers - particularly the participants of the training courses "Risk Assessment/Beach Management" - have a great benefit out of this document for improving their skills and knowledge, which will help to make Europe's beaches and other bathing waters safer and to reduce the number of drownings.

Dr. Klaus Wilkens

President of the INTERNATIONAL LIFE SAVING Federation of Europe (ILSE)



### Drowning as a worldwide problem

The water safety aspect is getting more and more relevant, because the drowning figures all over the world (500.000 +/- drownings per year) are much too high and do not decrease enough. In Europe alone 35.000 - 40.000 people lose their lives by drowning every year.

In 1993, the Royal Society for the Prevention of Accidents (RoSPA) and the Royal Life Saving Society UK (RLSS UK) published operational guidelines for safety on British beaches, which has since become widely acknowledged as authoritative guidance. The need for international guidelines had been recognised for some time by a number of different organisations.

Prior to this publication, organisations such as ILSE Member associations had worked to improve overall safety practice, whilst a variety of sporting organisations had striven to achieve better safety practice within their particular discipline.

This document has now been produced for European beaches and reflects the following needs for beach safety around the coasts, including:

The introduction of an internationally recognised flag system informing people about sea conditions

More information about local dangers – available both on beaches and in tourist offices

Careful zoning on beaches separating swimmers from other water sports areas

Flexible hours for lifeguards so they can be on duty on hot spring days or fine summer evenings and

Governments working with the National Water Safety Committees and the Foundation for Environmental Education (FEE) to draw up a clear set of guidelines for the local authorities to follow on their beaches.

In addition, any local authorities may seek advice on the control and regulation of water users.

The basis for all safety activities must be a risk assessment. The Rescue Commission of ILSE has therefore developed a strategic approach to Risk Assessments, which will make a significant contribution to the safety of European bathing areas. This model has been developed specifically for ILSE accredited Risk Assessors who will carry out the assessments on the designated bathing areas within the European region.

A properly implemented programme of Risk Assessment will assist greatly in the prevention of drowning fatalities and bathing related injuries. Such a programme will fix the minimum number of lifeguards and equipment, assist effective beach management and would therefore be beneficial to beach managers, lifeguards and Local Authorities/Beach Operators in general.

## Drowning as a worldwide problem

The Risk Assessment is divided into eight sections which cover the following areas:

1. **The area surveyed** – The extend and description of the area surveyed
2. **Area and usage and Activities** – To include any areas to be zoned
3. **Emergency Service Access** – Ease of access for emergency services
4. **Public Rescue Equipment** – Any available rescue equipment for use by the public
5. **Signage** – Availability of appropriate signage
6. **Safety Information Board** – Availability and location of safety information
7. **Hazards and Risks** – Identify, classify, remove or minimise
8. **Lifeguard Provision** – Where necessary, appropriate provision, equipment, facilities and location

All risk assessors must have successfully undergone training and assessment courses conducted and approved by ILSE. All beaches which fullfill the criteria and conditions of the risk assessment may apply for a special ILSE safety sign: "Lifeguarded Beach" (Appendix 3).

Risk Assessments should be a part of the collaboration between FEE & ILSE and should be included in the Blue Flag application process in future. Therefore some pilot projects shall be realised in the next years to find the right way of collaboration with the perspective of decreasing the number of drownings in Europe.



### Causes of drowning



The causes and locations of drowning may vary according to the time of year and prevention policies will need to take this into account. Although drowning data often supplies information on the activity leading to the tragedy, it is not uncommon for an individual to be found washed up on a beach, with no witnesses able to give the cause of drowning. These victims may have fallen in unseen, or deliberately entered the water with the aim of taking their own life. Coroners will often be left with no choice but to record an open verdict.

Numbers of drownings are not the only index of potential danger. The numbers of rescues recorded are equally important in providing a realistic assessment of risk to life.

The responsibility of authorities and private beach operators to minimise the risks of injury/drowning on beaches is not satisfied merely by installing rescue equipment along a beach in the absence of other measures; nor by denying access to the water, which is clearly an unacceptable approach. A comprehensive strategy is required, which considers every link to the drowning chain.

Death by accidental drowning can usually be accounted for through one or more of the following factors:

1. Ignorance, disregard or misjudgement of danger
2. Uninformed or unrestricted access to the water hazard
3. Lack of supervision
4. Inability of the victim to cope (or to be rescued) once in difficulty

Although each of the above factors may be contributory, the major cause of drownings is undoubtedly the first point as few would be casualties knowingly enter a potentially lethal situation.

Uninformed or unrestricted access to the hazard can easily prove fatal. Warning notices may deter the potential casualty and adequate and well-maintained barriers will help prevent access.

Supervision includes that provided by parents/guardians as well as professional supervisors such as lifeguards.

The inability to cope once in difficulty can often result from immersion, either willingly or accidentally, into cold water. Even those who believe themselves to be good swimmers can find their ability severely impaired in cold and fast moving water. Underwater obstacles can significantly affect someone's ability to cope in open water.

### Scope of these guidelines

The guidelines within this document can be applied to all sections of the coast generally accessible to the public. Areas of coast solely for commercial use are excluded. Harbours and docks are not considered.

The advice given in these guidelines concerns the safety of the public. While many of the general safety principles described may



## Aspects of the Drowning problem

also be relevant to the protection of employees and the self-employed working on or near water.

It is a key principle of this document that whoever undertakes the beach risk assessment clearly defines the area of beach being assessed.

The guidelines do not include all the health and safety issues relating to water and beach pollution. Additional advice can be obtained from ILSE and its member Associations whose details are listed at the back of this document.

The purpose of this document is to:

Place the concept of risk assessment in its operational and legal context.

Provide a strategy and guidelines for risk management.

Establish systems and standards which are practical and consistent throughout Europe and

Establish a widely agreed body of knowledge on beach safety provisions, which will provide the basis for future discussion and refinement.

In the case of beach safety, the laws applicable to each Country shall have an affect and will require consideration.

Liability and negligence arises from the breach of a duty, known as a 'duty of care'. The 'duty of care' is as follows, and applies to members of the public as well as operators: "To take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour".

The duty specified is to take 'reasonable' care. This can be defined as "what the reasonable person would have foreseen as being necessary". A certain level of risk is acceptable. In the case of the safe management of a beach, the burden of taking adequate precautions is on the operator.

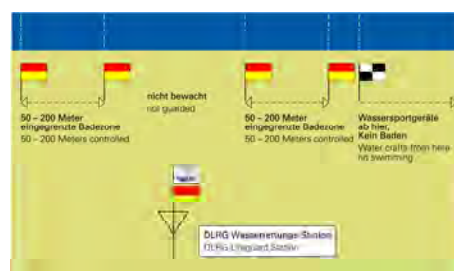
Of particular importance to those concerned with beach operation is the standard of care arising from their activities. It is essential that public liability insurance is obtained and all reasonably practical steps should be taken to obviate any reasonably foreseeable risks.

It is no longer possible to consider the legal responsibility of beach operators without reference to European legislation. The law in this area is continually developing. New initiatives are already under way to prepare for the implementation of the EC Habitats Directive.

A new order-making procedure has been introduced relating to the design of boats and where they are permitted to operate.

The Bathing Directive has some impact on water safety but this is covered within the water quality issues section of this document.

## Aims of these guidelines



## Legal considerations

### Duty of care

## EU considerations

### Remedial measures

Remedial measures appropriate in addressing the causal factors in drowning are:

Education and information

Denial of access and/or provision of warnings

Acquisition of rescue and survival skills

Supervision and the provision of rescue equipment

Together, these measures constitute a drowning prevention strategy to help control risk. They are likely to be most effective when utilised as a hierarchy of measures targeted at specific points in the sequence of events which can lead to drowning.

Employing a strategic approach demands a thorough grasp of the principles of risk assessment on the part of operators to assist them in applying those control measures most appropriate to the conditions.





Operators cannot solve their safety problems by simply introducing a one-off technical measure following an accident. This reactive approach fails to address the accident causation chain and will not identify any underlying weaknesses in the operator's safety management system. If not corrected, such weaknesses can easily lead to further accidents, the risk of which will not have been identified by a kneejerk response to a single accident/incident event.

It is a common misperception that an accident free record at a beach indicates a safe beach. This is short-sighted and dangerous since all water poses some degree of risk. Operators must therefore develop a pro-active approach to managing their risks, establishing the policy, organisation and procedures for ensuring safety before considering specific problems and their possible solutions.

The starting point is to establish a safety management system based on acknowledged good practice. The key to a planned approach to safety management lies in developing an effective approach to risk assessment.

Where an occupational health and safety management system has already been developed, operators must ensure that it takes water safety management, and in particular safety of the public, into consideration.

The purpose of a risk assessment is to:

Ensure that potential safety problems are properly understood.

Check whether existing control measures (including emergency plans) are adequate.

Determine what is necessary to reduce risks to a reasonable level.

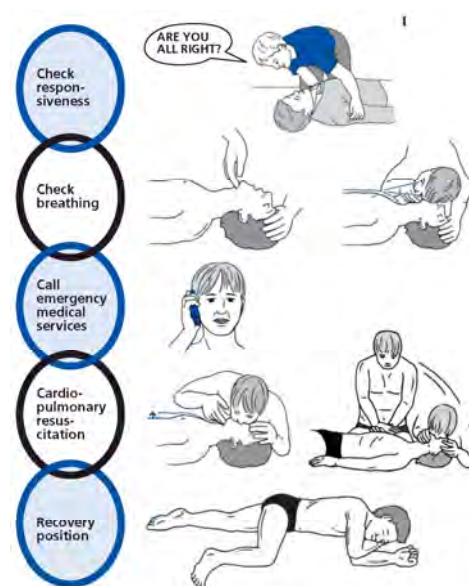
Prioritise unacceptable risks identified by the assessment and determine further action.

Risk in terms of safety is defined as the likelihood or probability that a hazard (source of potential harm) will give rise to an unplanned event (accident) with a harmful outcome (consequence). Therefore, to assess risk it is necessary to identify hazards, estimate the risk from each hazard (i.e. the likelihood of harm occurring coupled with the severity of the consequence if it does occur) and then decide if the risk is tolerable.

One way in which this might be approached is to use a simple risk estimator and risk based control plan such as that shown overleaf.

This assists the grading of the likelihood of an accident occurring against the severity of harm that could be done should it occur. Thus, if an accident is unlikely and could only result in slight harm, then the risk would be classed as trivial. However, if the chance of an accident is high and the outcome potentially extremely harmful (e.g. drowning), then the risk would be intolerable and immediate action to reduce the risk to a tolerable level would have to be taken.

## Beach safety management



## Purpose of risk assessment

Risk assessment is only of value if it generates an inventory for action. It should not be regarded as an end in itself or a bureaucratic, form-filling exercise. It should be carried out by competent people with a practical knowledge of the activities being assessed. Since water safety issues often involve several different parties, it is important that each of them has an opportunity to contribute to the risk assessment process.

The key questions in any risk assessment are:

Who is exposed? How often?

How likely is it that an accident could happen?

How bad could the consequences be?

What controls are in place?

Are any more controls required?

ILSE has developed a Risk Assessment Course based on the experiences of its member associations.

Furthermore, demonstrating that a suitable and sufficient risk assessment has been carried out by a competent person will eventually be a requirement for beach awards.

#### 1a) A simple risk level estimator

Probability of accidents	Severity of outcome		
	Slightly harmful	Harmful	Extremely harmful
High unlikely	Trivial risk	Tolerable risk	Moderate risk
Unlikely	Tolerable risk	Moderate risk	Substantial risk
Likely	Moderate risk	Substantial risk	Intolerable risk

#### 1b) A simple risk-based control plan

Risk level	Action and timescale
Trivial	No action is required and no documentary records need to be kept.
Tolerable	No additional controls are required. Consideration may be given to a more cost-effective solution or improvement that imposes no additional cost burden.
Moderate	Efforts should be made to reduce the risk, but the costs or prevention should be carefully measured and limited. Risk reduction measures should be implemented within a defined time period. Where the moderate risk is associated with extremely harmful consequences, further assessment may be necessary to establish more precisely the likelihood of harm as a basis for determining the need for improved control measures.
Substantial	Activity should not be started until the risk has been reduced. Considerable resources may have to be allocated to reduce the risk. Where the risk involves activity in progress, urgent action should be taken.
Intolerable	Activity should not be started or continued until the risk has been reduced. If it is not possible to reduce the risk even with unlimited resources, activity has to remain prohibited.



There are two main types of sea currents that are caused by tides, wave action or a combination of both:

### Identifying beach hazards Currents

A rip current is a body of water moving out to sea. These are often fast moving and have the potential to put swimmers at risk of drowning. The term 'rip-tide' is a misnomer and confuses movement of water due to physical effects of the local physical environment with the gravitational tidal effect on large bodies of water.

### Rip currents

Rip currents fall into four types:

**Permanent:** Permanent rip currents remain in the same area for months or even years. The permanent nature is due to the ocean bottom and prevailing conditions changing very little. Rock projections, groynes, drainage pipes or piers force lateral currents seaward to form permanent currents. Rivers and tidal outflow can also be classed as permanent rips.

**Fixed:** Fixed rip currents on open sandy beaches are caused by a build-up of water on a beach swept in with the oncoming waves. The current often moves parallel to the shoreline until it reaches a slightly deeper channel formed between sandbanks, at which point it turns seaward. Once established, the rip may last from several hours up to many months. The length of time and channel depth depends on the movement of sand.

**Flash rips:** The flash rip is temporary in nature for any given location. It is caused by stormy, heavy surf build-up with long wave sets increasing the volume of water, which can cause a sudden change in the structure of sand bars and banks. A sudden collapse of the bank will lead to a flash rip developing as the water finds a new way back out to sea. It will appear suddenly and usually without warning and is relatively short lived.

**Travelling rip:** A travelling rip current is propelled along the beach by a strong lateral or sideward current in the prevailing wave direction. These sideward currents cause the leading edge of the sandbank to build and the following edge to erode, thereby creating a moving channel between the sandbanks. The process often happens very quickly, especially with large waves. Travelling rips can cause havoc with bathing crowds moving them along the beach and pulling large numbers seawards.

Rip currents can be identified by the following characteristics: They are however, more difficult to pick out on a windy day when the surf is choppy.

Rip currents, especially those that are non-permanent, are very difficult to manage from a beach safety perspective. Warning signs, zoned areas, barriers and supervision can all be employed depending on the nature and the location of the rip. These control measures are discussed later in the publication.

Discoloured water, generally brown, due to sand stirred off the bottom.

Foam on the surface extending beyond the beach.

Waves breaking larger and further out on both sides of the rip, often on banks.

Debris floating seawards.

A rippled appearance, when the water around is generally calm.

#### Lateral currents

A body of water moving parallel to shore. Inshore currents are more commonly known as a lateral current or 'side sweep'. This kind of current moves parallel to the shore and is caused by either the tidal flow along the coastline or the action of waves hitting the beach at an oblique angle. Its intensity tends to be greater inside the surf line and diminishes as you move away from the shoreline. The transport of sand in the surf zone parallel to the shoreline by longshore currents is known as 'longshore drift'.

In most situations, for an average swimmer, there is no danger, as the current takes them along a beach rather than away from it. However, in some locations, these currents can wash into a rip current or off the end of a spit where the land suddenly changes direction and can drag weaker swimmers with it.

#### Undertow or backwash

Backwash usually occurs with high tides on beaches that rise sharply away from the water's edge. Backwash occurs when the water remaining on the beach returns forcefully to the surf beneath later incoming waves. It is particularly dangerous for small children playing near the water's edge. Even in the short distance between breaking waves and deep water, backwash is powerful enough to knock people off their feet.

#### Estuaries

Estuarial waters are amongst the most treacherous locations around the coastline, especially in narrow channels with fast currents. Although such places often contain attractive beaches nearby, and offer good opportunities for water sports, they have been proven to be most hazardous, with a high risk of drowning.

Unless there is very good reason to the contrary, swimming should be prohibited from estuarial beaches and appropriate warning signs should be posted at all access points, including those from adjacent beaches.

Generally, the sea reaches its highest level on the shore twice a day with an average interval between two successive high tides being just over 12 hours. The range between low and high water can be anything up to nine metres on a spring tide. The rate of rising and falling between successive tides acts in the same way as the movement of a pendulum. At mid-tide the water level may rise 1.5 m in 30 minutes, which would be critical for a small child cut off while venturing across rocks close to the waterline. It should be observed that storm surges could increase tidal levels substantially.

The systematic rise and fall of the tide may cause upper regions of some beaches to become cut off from the main beach during a rising tide. It is important that visitors to the beach are made aware of this on beaches where tidal cut-off is prevalent.

On the shores most waves are formed by the wind and their size is determined by four factors: the wind's strength, duration and distance over which it acts and the depth of water. As a wave approaches shallow water it increases in height while its speed decreases. Eventually too little water is supplied to the face of the wave for it to maintain its shape. It therefore becomes top-heavy and breaks. The broken wave is referred to as surf. Waves pose a threat to swimmers because of the intensity and energy that they harness.

There are three ways in which waves break. The slope of the beach and the type of wave approaching the surf zone determine which type of wave is going to be predominant:

**Breaking (Spilling) wave** This occurs on gently shelving beaches and is characterised by its crest tumbling down the face of the wave. Waves of this type are the safest ones for body surfers, swimmers and board riders.

**Dumping (Plunging) wave** This is commonly called the 'dumper' and occurs on fairly steeply shelving beaches. This wave will peak up until it is an advancing wall of water, the crest advances faster than the base, and the wave curls and then descends violently into the trough. Waves of this type break with tremendous force and swimmers can be thrown to the bottom and suffer injuries or can lose their footing and be dragged seaward by the rush of water between waves (backwash). The force of the wave, once broken, knocks people off their feet, from which they are unable to recover before a subsequent wave.

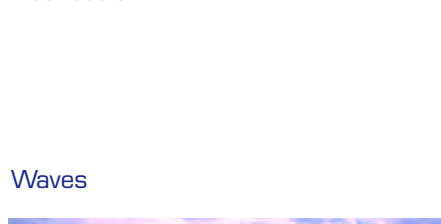
**Surging wave** This type of wave may never actually break as it approaches the water's edge and occurs on particularly steeply shelving beaches or on rocks. This situation causes a great build-up of water unexpectedly on the beach. The dangers in these circumstances are that swimmers' feet may be knocked from under them or inattentive people may be plucked from the shoreline by a particularly large wave.

Offshore winds pose a particular danger to those using inflatables, which due to their low density/high bulkiness are easily picked up by the wind and driven out to sea faster than they can be rowed or paddled back. Likewise, novice kite or windsurfers may not have the

### Tides



### Tidal cut off



### Waves



### Offshore winds



ability to tack or return back to shore in offshore winds and therefore find themselves in a similar predicament.

While offshore winds occur on many beaches from time to time, they are particularly predominant on the East coast, due to the generally prevailing west-southwest winds especially in UK and Ireland. One of the main reasons why offshore winds pose such a hazard is that, in general, flat seas accompany them and lull users into a false sense of security. When high cliffs are to be found behind the beach, these can distort wind patterns, making it harder to gauge wind direction.

An orange wind-sock, accompanied by information regarding the dangers of offshore winds, provides a good method of warning would-be users. A variety of locally designed flags exist, but their use - whilst effective locally - is counterproductive internationally.

### Sun

The sun presents obvious health risks to those on the beach and people should be encouraged to adhere to the safe sun message, **SLIP (on a shirt), SLAP (on a hat) and SLOP (on appropriate sun screen)**. It is advisable to avoid direct exposure to the sun during the hottest part of the day, between the hours of 11 am and 3 pm. It is also important to stay hydrated when visiting the beach for extended periods of time and to prevent damage to your eyes by wearing sunglasses that offer 100 % UV protection.

### Fog and sea mist

Weather conditions are the one variable factor that can turn an otherwise relatively safe beach into a highly dangerous one. The sudden arrival of a sea mist or fog bank would result in significantly reduced visibility on the beach, causing disorientation and loss of bearings and prove a difficult environment to manage.

### Beach gradient

Water depth is the most important consideration for those who are weak or non-swimmers. Beaches that have abrupt changes of depth due to sandbars, sandbanks and shelves are hazardous to all but good swimmers, particularly when coupled with strong currents and/or large waves. On the other hand, beaches with a gradient 1:10 or less throughout the tidal range can generally be considered 'low hazard', except when they give rise to fast incoming tides.

### Beach composition



Beaches are made up of materials of different grades, ranging between mud and sand, to shingle and pebbles, to boulders and flat rock. Mud and fine sand formed beaches may contain areas of quicksand with the obvious associated hazard.

Near the waterline, pebble beaches provide an unstable base on which to stand and tend to shelf steeply as they are thrown up into banks by wave action. In a combination of steep shelving pebbly beach with large surge waves, paddlers will literally have the ground moved from beneath them. Rocky and bouldered beaches are obviously hazardous to those who fall and also provide an uneven entry and exit to the water to swimmers.



On some beaches, the action of waves and currents leads to an uneven configuration between the high and low water marks, resulting in sandbars interceded by deep troughs. These can be dangerous on the incoming tide in that paddling, weak or non-swimmers may either be washed into the trough or find their return to the shoreline blocked by unexpectedly deep water.

There are several areas where the beach configuration changes from season to season and year to year, caused by wave and tide action. Traditionally, beaches can be expected to have a winter and a summer profile, where the winter profile experiences much lower levels of sand, often resulting in exposed rocks. The summer profile however often has higher sand levels, which can cover many winter hazards. Even a subtle change can result in a far more hazardous situation than had originally been recognised. It is therefore important that a regular re-assessment is made of all beaches.

### Beach configuration

There are a number of potentially hazardous substances that can be washed up onto a beach, including fuel oils from ships, waste, sharps and rubbish either from boats or left on the beach, to include fishing nets. There is also the possibility for unexpected hazards by chemical related products to be washed upon some beaches, including ordnance and chemical drums. All these things pose a threat to the public using the beach and can result in lacerations due to sharp waste, needle sticks or becoming covered in oil. These sorts of substances also pose a threat to all marine and wild life on and around the beach.

### Hazardous substances

Pollution is one of the greatest hidden hazards on the beach. Visible waste, oil spills and sewage are what most people consider as hazardous to their health. However, it is the unseen, invisible pollution that can cause the greatest harm to beach goers. There are a number of ways in which water quality, in terms of the nature and level of contamination present, may affect the health of people using the water for recreational purposes. Here are four examples of potential sources of pollution:

### Pollution/water quality

**Industrial plants:** occasionally industrial wastes can be flushed out into rivers or streams untreated.

**Sewage:** on occasions secondary treated effluent is released into some coastal locations. This can include animal faecal matter left on the beach by dog owners.

**Agricultural run-off:** rural beaches may be more susceptible to this, whereby agricultural chemicals have been used on farmlands and rainfall will cause excess to run off onto the beach. This can be compounded by surface run-off from roads.

**Microbiological:** naturally occurring or otherwise alga blooms are known to have negative health outcomes in the form of toxins. Organic toxins occur naturally from red tides, these are a result of large amounts of dinoflagellate algae blooms in the near shore environment. Human contact with these blooms should be avoided at all times.

Bathing water standards are set in the EC Bathing Water Directive 76/160/EEC. There are several different award schemes for bea-

ches that use these water quality standards and they try to reflect levels of water cleanliness and other safety related issues.

The Blue Flag compares beaches that meet high standards of cleanliness and management, promote coastal environmental care and have attained the higher guideline standard of water quality. It is reviewed annually and administered by National Juries on behalf of FEE (Foundation for Environmental Education). A distinctive blue flag is on display at each beach along with useful information. Blue Flags are also given to Marinas, which meet high standards of management and cleanliness.



### Natural structures

Cliffs, large rocks and other natural promontories present on or near a beach, pose obvious hazards. In some rural locations it is necessary to navigate unstable cliff paths to get down on to the beach; there is the potential for a slip, trip or fall under these conditions. Large rocks and other promontories will be continually submerged and exposed with the rise and fall of the tide; this poses a hazard to all water users who may collide with hidden underwater obstacles.

### Cliff falls/landslides

Cliffs can be dangerous in a number of guises, either from loose debris falling from the top onto the beach or due to the hazard of falling off the edge, especially in areas with thick, unstable soil and where debris slides downhill to the base as waves undermine the cliff. Storm events periodically do the most damage in eroding the cliffs; at the base storm waves undermine the cliff face whilst at the cliff top, pressures build up from groundwater accumulation which in turn can cause landslides.

### Manmade structures

Harbour walls, piers, jetties and other similar structures and buildings present certain well-recognised hazards. At high tide the danger may be of a non-swimmer falling into deep water; at low tide a fall onto the beach - which could be anything up to ten metres below - may result in serious injury.

The maintenance demands on such structures to maintain a reasonable level of safety are high. The provision of lighting will, in some

places, significantly improve safety, coupled with adequate signage and barriers. Where embarkation points are incorporated into the structure, there will be a greater need for signage and lighting.

Coastal defences such as groynes, sea walls, wave breaks and other structures that protrude seawards from beaches create alluring but hazardous features of ironwork or concrete. The design of these features has not always sufficiently considered the risk posed to water users. Sections of these structures will be either completely or partly submerged from time to time and will thereby present a hidden danger. As such features are often accompanied by strong rip currents during certain prevailing sea/wind conditions they are doubly dangerous. Swimming should be prohibited in these areas and warning signs should be posted clearly indicating the dangers.

### Coastal defences



A number of these facilities are found around the coast. They are usually a combination of natural and manmade features. Often natural rock features will be linked by the construction usually in concrete of walls, sills and aprons to constrain water to provide a semi-natural tidal pool. They will vary in how often the tide will overtop them. Sometimes it will be every high tide at others it may only occur during the higher spring tides. They are separate from salt-water lidos, which can be regarded as formal swimming pools as they just use salt water to flush through them and are not overtopped by tides in general.

### Tidal rock pools used for swimming and other water activity

Because of the tidal influence on these pools it will be very difficult to control weed and algal growth in and around the pools. Sand and pebbles will regularly be deposited in them, which will cause significant variation in their depth.

Although they present a further hazard, for operators, they can provide a valuable resource in terms of them creating a more controllable swimming area than the beach and a facility that can be used when conditions dictate that the beach itself is closed.

To that end it is important that they are managed, risk assessed and that operating procedures and emergency action plans are developed along with the necessary control measures that the pools may require.

Often this is likely to include supervision and life guarding when they are accessible for use, especially during busy times of the peak season.

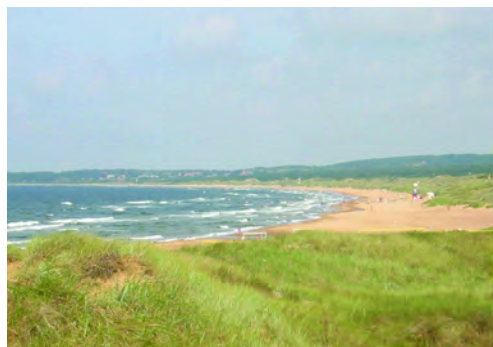
Environmental and physical hazards pose no risk on their own. It is water and beach users interacting with these hazards that create risk. There are certain activities that present a greater risk than others, which, when combined with certain types of behaviour create a far higher level of risk.

### Human factors

The fundamental factor here however, is the number of beach and water users. An increase in the number of people exposed to the hazard generally increases the risk. This relationship may not always be linear, that is there may be a threshold where overcrow-

ding in the water or a high density of beach users leads to additional hazards and increased risk. It is very difficult to restrict the number of people using the beach and the water, so any risk assessment needs to account for the effect of abnormally high beach use and maximum bather loading levels.

### Activity hazards



In the last few decades, there has been an explosion in the popularity of water sports, such as windsurfing, surfing and the use of personal watercraft. In some areas, land yachting and power kiting poses a potential risk on beaches. The management of these activities on a beach poses particular problems with relation to the collision hazard they pose. Of course, the more crowded the beach, the more acute this problem is.

Despite the educational work of governing bodies of sport, the problems of unsuitable or unseaworthy equipment are ever present. Poor equipment is the cause of many calls upon the search and rescue organisations whilst a lack of appreciation for the 'rules of the road' often causes conflict with other water users.

### Behavioural hazards

Statistics consistently show that male drownings account for a round 76 % of the total; bravado, adventurousness, and especially alcohol-induced foolishness and misjudgement are all contributory factors to this imbalance. Particularly vulnerable are those in their late teens and early adulthood. Evidence of alcohol intake is frequently present in casualties and the dangers of swimming under the influence of alcohol cannot be too strongly warned against.

The table in Appendix 1 should be viewed in conjunction with the guidelines given in appropriate chapters. It should not be seen as a definitive guide of what must and must not be done, but an outline of various possibilities.

Hot weather, early in the year, can provoke a drowning danger. Recreational water users are compromised with an unrealistic perception of their swimming ability - usually judged in the warm conditions of a swimming pool.

### Higher risk populations/groupings

Drowning statistics consistently show a disproportionately high number of casualties suffering from epilepsy, mental illness or who get into difficulties as a result of a medical condition, such as heart problems. Water safety strategies should take account of the vulnerability of such groups, who may have a lethal lack of awareness and often get less information, protection and supervision than they deserve.

## Beach Information

The first consideration of a strategy for accident prevention should always be to try to remove the hazard. If this is not a possible or practicable solution, reasonable steps should be taken to reduce the level of risk. The provision of information becomes more important where less can be done to reduce the risk through other measures. To be fully effective, an information-giving strategy should use the full range of techniques with which to convey safety messages.

A hierarchy of control measures increasing in the level of control range from:

Safety leaflets

Public education

Information signs

Warning signs

Prohibition signs

Public rescue equipment

Trained surveillance

First aid facility

Lifeguards  
(with appropriate equipment)

The final control measure may be to prevent any activity taking place by 'red flagging the beach' or closing sections of the beach off. This may only be possible if relevant byelaws are in place.

The first part of the drowning chain is lack of knowledge or ignorance of the risk. The most effective method of breaking this 'drowning chain' and addressing the most fundamental cause of drowning is through community education. It is in this way that people's perceptions of the dangers in and around open water can be challenged and their awareness of the risks increased. This could take the form of talks to groups and schools, information sheets and posters etc. Involving the local community and encouraging them to think of the site as a recreational asset for them will engender a healthy relationship with the operator. This will be mutually beneficial and may establish an informal network for the reporting of anti-social behaviour or emergent risks.

The educational programme should aim to promote water safety at an early age through a series of prioritised messages, based on the drowning chain referred to earlier. Lifesaving federations and other organisations provide leaflets based on this strategy.

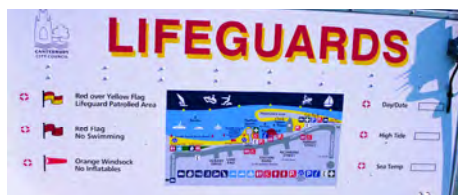
Adult education should emphasise the inherent dangers in drinking alcohol and taking drugs whilst swimming. Education should also extend to local sporting groups and aim to encourage greater awareness of safety generally as well as of practical safety procedures.

The final area of education that so far has not been addressed relates to the use of public rescue equipment. If people are expected to react to an emergency by using public rescue equipment then the equipment needs to be standardised and the public trained to use it. Schools are the obvious place to start the education process coupled with public educational and awareness campaigns. It is unrealistic to expect someone to read and understand a set of instructions on how to operate a piece of equipment whilst someone is clearly in need of assistance and possibly drowning.

## Overall strategy



## Educational awareness



### Content of safety leaflets

At a seaside resort, particularly where a number of different activities take place, leaflets/handouts on water safety or incorporating water safety information can be distributed at visitor centres and hotels. As with safety information boards, such leaflets should prioritise the safety messages, and preferably relate directly to the location in question.

A suggested checklist for the contents of the local safety leaflet would contain information and a map indicating the following:

Designated swimming and activity areas

Specific local hazards

Local rescue provision e.g. position of telephones and rescue equipment

Location of first aid and lifeguard stations

What to do in an emergency i.e. 112 procedure

Specific warnings about behaviour, especially alcohol and the risks of spinal injury

The authority of the lifeguards

The responsibility of adults for children

An explanation of flag systems in use

General water safety information based around the Water Safety Code

### The Water Safety Code

**Spot the dangers** - Open water may look safe but even in the summer it is extremely cold and will be much harder to swim in than a warm indoor pool. Beware of deep water, slippery banks and strong currents.

**Take safety advice** - Look out for signs and notices which tell you of the dangers and where it is safe. Know what the sign means and follow the advice.

**Go together don't go alone** - If you're alone there will be no-one to help you if you get into trouble in the water. Children should always go with an adult and water sports enthusiasts should ensure someone else is near.

**Learn how to help** - By learning rescue and survival skills you may be able to help someone else and yourself if there is an accident in water. Try to get help immediately and do not put yourself in danger as you try to save someone else.

In addition to the Water Safety Code, the F.L.A.G.S message is aimed at beaches that are lifeguarded and is an acronym that is easy to remember whilst at the beach. The message is now used on a variety of beach safety resources and it is intended that F.L.A.G.S will become the national beach safety message working along side the Water Safety Code, which is aimed at a more general water safety audience.



## Beach Information

**Find the red and yellow flags and swim between them.** Always swim where there is a lifeguard on patrol, and stay inside the area marked by the red and yellow flags. Never swim where a sign says not to, or when the red flag is flying.

**Look at the safety signs.** Always read and obey the safety signs - they will help you to avoid potential dangers on the beach, and to identify the safest areas for swimming.

**Ask a lifeguard for advice.** If in doubt, it's always best to play it safe and ask the experts.

**Get a friend to swim with you.** Make sure there are other people around, because you never know when help might be needed.

**Stick your hand up and shout for help if you get into difficulty.** And if you see someone else in difficulty, tell somebody, preferably a lifeguard. Or find a telephone, call 112.

To stay safe at the beach  
always remember F.L.A.G.S.

Variations in the way in which different organisations convey safety information can be confusing, and therefore ineffective. The temptation to 'customise' these notices should be resisted in order to standardise safety information internationally (see Appendix 2).

## Safety signs and notices

Name	Function	Shape	Composition	Example
Prohibition	Prohibit behaviour likely to incur or cause danger	Round	The pictogram must be black and on a white background with red edging and incorporate a left to right diagonal line at 45°. Red must cover least at 35% of the area of the sign	No swimming or diving
Warning	Give warning of a hazard or danger	Triangular	The pictogram must be black and on a yellow background and make up at least 50% of the area of the sign	Deep water or sudden drops
Mandatory	Indicate a specific course of action	Round	The pictogram must be white on a blue background. Blue must make up at least 50% of the area of the sign	The need to wear protection, respiratory equipment, safety gloves, life-jackets etc.
Safe conditions	Provide information on emergency exits, first aid or rescue facilities	Square or rectangular	The pictogram must be white on a green background. The green part must make up at least 50% of the area of the sign	First aid or lifeguard station, public rescue equipment
Information	Provide information other than that above		Usually black pictogram or wording on white	A swimming area

The International Standards Organisation (ISO) is working on a system to standardise safety signs throughout the world. Whenever a particular safety sign is seen, it provides the same message. Employers should use a safety sign where there is a significant risk to the health and safety of their employees, which cannot be avoided or satisfactorily controlled by other methods as required under relevant law, provided the use of a sign can help reduce the risk.

### Signs at access points



Signs are not a substitute for other means of controlling risk and, in many cases it is appropriate to use them in conjunction with other measures.

If possible, and where appropriate, the favoured locations for the display of safety information is at principal access points, car parks and visitor centres.

Where a variety of information is to be displayed on a multi-board, it should be divided up into categories of information shown and the corresponding colours used. Essential advice should be displayed at these access points including details of the flag systems in operation, the times of high and low water and the extent and times of life-guard supervision. Safety information should always be displayed separately from that relating to other matters, such as the location of toilets or refreshments.

The information should be clear and concise and, where possible, be given pictorially - otherwise it may become overlooked. For the same reason, it should be displayed separately to information relating to other matters, such as 'country codes'.

### Signs at hazardous locations

Warning signs should be strategically located at identified hazard spots. A traditionally popular beach area which is too hazardous for swimming or a point where a path passes close to deep water are examples of locations which need special consideration. Thought should be given to the exact height, position and angle of the sign to ensure maximum viewing potential. Where the site can be approached from a number of directions, more than one sign may be necessary. These signs will help reinforce the safety messages already displayed at access points.

### 'Nag' signs

'Nag' signs are miniature reinforcements of key safety messages already displayed and should act as reminders of warnings or rules, such as 'no swimming' along an extended stretch of water. Being relatively small (perhaps 100 mm x 150 mm) these signs need not spoil the aesthetic value of the area but their visibility is nonetheless important. The exact location for all such signs should be determined by 'walking the site' in the 'shoes of the visitor' and not merely by marking up a map. It is not recommended that signs of any type are attached to trees. Nag signs should comply with the guidance given on the Specifications for Safety Signs Table on page 38 and page 39.

### Flag systems

Flags are a traditional information-giving device, which, if operated correctly can be an effective safety measure. Notices explaining the meanings of the different coloured flags should be erected at the approaches to beaches and on the flagpoles themselves if appropriate.

Two flag systems exist, one offering information on sea conditions, and the other on beach zoning. In both cases, flag systems should only be used on beaches designated as recognised swimming areas. These flag systems are complementary and not mutually exclusive.

## Beach Information

There are currently well-recognised zoning and safety flags in operation. These are used to designate specific areas/warnings within a supervised system (see Appendix 4).

The flags included are:

Red Rectangular - 'Danger; do not enter the water'

To signify the danger of unsafe water conditions for swimming and other water activities.

Red over yellow rectangular - 'Lifeguard(s) on duty'

'Two flags' signify a swimming zone patrolled by lifeguards.

Black and white quartered - 'Non-powered water craft zone'

To signify a zone between two flags designated for use of non-powered water craft.

Orange windsock - 'Danger'; no inflatables to be used on the water

To signify the danger of using inflatables in windy or unsafe water conditions.

### Flag zoning



In the absence of any technical device which allows remote control, the suggested flags need to be manually controlled within a prescribed system. Failure to do so will result in:

The system falling into disrepute because the appropriate changes are not made, e.g. as when a red flag is left flying in a 'calm' condition

The system being counter-productive by giving wrong information e.g. not signifying a change from 'calm' to 'danger'.

### Operation of flag systems

Because of the need to be present to monitor the conditions and change flags, these systems should only operate during a prescribed and well-publicised period each day (e.g. 9 am - 6 pm). The presence of these systems will also relate to seasonal activity. Most beaches restrict the operation to prime usage months. This information should also be clearly posted, as weather variances may provoke un-seasonal behaviour.

### Times of operation

### Protective barriers and systems

Methods of protection will vary from place to place and will require site-specific risk assessment.

Whether into water or not, there is a reasonable requirement to protect persons from falling from heights of two metres or more. Such falls may be due to loss of balance, slipping or being swept off by the sea. In these circumstances protection from falling should be achieved with rails appropriate to the location and visitor risk profile.

The position of balustrades is important. They should be installed not more than 300 mm from the edge. A greater distance creates an edge platform and haven, which may attract intrusion. Care should be taken not to balustrade an area, which could deny easy access from shore to land. Balustrading should be accompanied by hazard warning signs.

When the aim is one of exclusion, the provision of rescue equipment, other than in exceptional circumstances, is not advised. It should be noted that if operators can reduce the water edge risk/hazard e.g. in-filling with shingle, pontoon walkways, then a lesser balustrade response may be satisfactory.

### Cliff tops

It is not practicable to erect 'denial fencing' on long stretches of cliff top, although where the risk increases at viewing spots and other features, which attract the public, this will be necessary. Otherwise an established pathway, at least two metres from the cliff edge, should be identified and followed. Where a cliff or raised coastline, is subject to frequent erosion and subsidence which changes the route of a path, signage should be used to indicate the fragile/infirm nature of this ground.

A low, single rail can be used to help identify the cliff top and such a rail should be on the cliff edge side of the routeway. Access points to such routeways should have a clear warning sign indicating a cliff top hazard, and as appropriate, 'nag' signs should be used throughout.

### Promenades, piers and breakwaters

Promenades are usually well used. Most problems arise when the promenade has been diverted nearer to the water than is safe, or otherwise when the water inundates the shore during stormy weather. There are promenades that are regularly prone to flooding by heavy seas and this hazard should be clearly identified. Action may include temporary closure in stormy weather, until conditions are



safer. If only infrequent flooding occurs, then notices should give warning of this danger. Responsible operators should not hesitate to prohibit public access if this is in the best interest of safety. This applies to all the features mentioned in this section.

Many harbours whose traditional roles have changed from fishing and commercial interests to leisure related activities, may have to cope with the responsibility of public access to hazardous places, such as open sea walls.

Such walls may also be traditional walkways for the general public. However, these features are potentially very dangerous in stormy conditions, as they often have elevated footpaths high above deep water, or rocks. Often several hundred metres long, it may not be practicable to install handrails or balustrading on these walls. Not only would such measures be expensive, they would also require constant maintenance as they endure the ravages of heavy seas.

Problems arise if youngsters have access to these places where racing and dare games may cause a tragic accident. Also, the damage to walkways created by heavy seas provides further danger to pedestrians. The first consideration is to assess the risk in allowing any public access at any time. Prohibition of access may be unpopular but prudent. Access conditional upon weather conditions needs monitoring and then either supervising or fencing off.

Where conditions are not sufficiently dangerous to require a general prohibition, appropriate information should be given to allow parents to make a risk assessment appropriate to the needs of their children.

Many people - particularly children - have died from playing this highly dangerous game on promenades and other sea fronts. If there are locations that are vulnerable to heavy seas breaking onto the shore or promenade and to which children are attracted, positive action should be taken to deny access. As an interim or temporary measure, denial of access may be enforced by the physical presence of a member of staff. If the children concerned can be identified with any school or group of schools then this issue should be addressed there or if not this issue needs to be dealt with by an educational message within the wider community.

Zones on beaches are generally used to ensure the harmonious co-existence of different user (water or beach) groups within a confined area. There are dog-free zones, conservation areas and naturalist zones, as well as zones for sail boarding, swimming, power boating etc.

Zoning of water-based activities is an important measure in minimising risk. There are two important functions of zones:

To limit swimming to a specific area i.e. the least hazardous stretch of a beach, away from rocks, currents etc. It also has the advantage of minimising the level and concentrating the focus of supervision.

### Sea walls



### Wave dodging

### Zoning

To segregate incompatible activities, such as water-skiing from personal watercraft, where there is a foreseeable risk of collision, depending on the level of usage at a site. The main priority should always be the segregation of swimmers, but then subsequently to segregate board craft, sail craft and power craft. Where possible there should be further subdivision especially, for example, between parascending, personal watercraft, kite surfers and water-skiers.

Some of these activities may share a common access point, or buoyed lane, into open waters, which may offer more room for zoning.

#### Consultation

Relevant bodies, such as local harbour authorities and the local authority legal department should be consulted about the viability of a proposed zone. The consultative process should also address the relative needs of formal (e.g. clubs) and informal users (e.g. the general public), as well as those indirectly affected through, for example, nuisance noise from jet skis/powerboats.

Meeting regularly with all user groups is recommended to discuss and negotiate the introduction of zoning schemes. Imposing segregation may be quicker in the short term in solving an urgent problem, but in the long term is unlikely to provide a workable option. The support of local user groups can lead to self-regulation and sets a clear example to visiting users.

#### Other factors

The physical attributes of the site, such as accessibility, are also an important factor in helping to determine zoning. Some beaches will, for example, prove unsuitable for swimming or launching powercraft - so a natural process of zoning can be consolidated. Account should be taken of the degree of access for the various user groups and the existing and proposed facilities on site.

Zones are particularly effective where activity clubs are established. These will help regulate the behaviour of users. To ensure public awareness and use of zones it is essential that the zoning policy is communicated through a good information strategy and that areas are clearly identified. Where zoning is backed up by local bye-laws, reference needs to be made to these in signage and literature.

#### Zoning for swimmers



In the interests of bather safety, it is recommended that specific areas within the beach are zoned for swimming. Even on beaches where there are no potentially conflicting activities, a zoned swimming-only area, approximately 200 metres across and extending out to approximately 200 metres, will permit cost-effective bather supervision and allow bathers a choice of supervised or non-supervised water use.

#### Defining zoned areas

Areas to be zoned can be defined using flags, buoys and/or booms:

**Flags:** Flagged zones are particularly useful on beaches where the only purpose is to restrict the swimming area and on surf beaches where the presence of physical constraints of buoys/booms in the water can be a hazard in themselves.



**Buoys:** By mooring buoys in lines, channels can be produced for the use of water skiing etc., which would clearly delineate the area to be used by these craft. Buoys are available in a number of different materials including metal, hard plastic, foam filled and inflatable. They can be individually placed or anchored in a line, fixed to a chain held between sinkers or anchors. These 'special use' buoys should be coloured yellow in accordance with the International Association of Lighthouse Authorities Code of Practice.

**Booms:** If appropriate, booms go a step further than buoys by providing a physical barrier across the water's surface. They can be used in conjunction with buoys in defining 'swimming only' areas.

**Time:** Certain activities, such as regattas or races, may be considered incompatible with general beach use, and are best arranged at a time of day or indeed at a time of year outside peak use.

A variety of incentives can be used to encourage acceptance and correct use of zones. These include the provision of launch sites for watercraft, parking and other facilities. The use of registration and permit systems, with the threat of their possible withdrawal will encourage further compliance.

There may also be a need to enforce the use of zones through strict policing. Methods of enforcement could include the appointment of bye-law enforcement officers and the use of on water high-speed patrols.

Many local authorities rely too heavily on the provision of rescue equipment, often seeing it as the most important or indeed the only aspect of their drowning prevention policy. However, it is not a proactive measure and may not be appropriate at all. It should therefore be seen as only one element of an overall strategy.

Although at present there is no internationally agreed standard for public rescue equipment, it is generally accepted that, as a minimum, all equipment provided for public use should be:

Clearly positioned and in colours of red and yellow at an optimal height for ease of access.

Located at intervals determined by visitor numbers and risk assessment.

Regularly inspected throughout the year and replaced where necessary.

Vandalism of signage and rescue equipment is a very real problem experienced by all coastal authorities, so proper budgetary allowance should be made for its inspection and replacement. Evidence suggests that rescue equipment in secure housing may provide a better deterrent to vandalism. Housings protect equipment from

### Management of zones



### Public rescue equipment provision

### Distribution

the elements and over the long term reduces maintenance costs. The housing should be secure but easy to open when required.

Signage, railings and supporting structures should be made from material that cannot be used as fuel.

As drownings occur throughout the year, it is recommended that public rescue equipment be in place throughout the winter season. Inspection should take place as often as practicable, at least once every month and be backed up by a signed checklist. Frequency of inspection will depend on accessibility and the frequency of vandalism in the location. In busy beaches inspections should take place daily. Breaking strain tests should take place annually.

The issue of public education has already been covered but it cannot be stressed enough that rescue equipment designed for use by the public is likely to be totally ineffective if the first time someone uses it is in response to a potential fatality.

### Range of equipment

The range of equipment available is extensive and although in the past local authorities may have an operational preference for one or more particular device, standardisation should be encouraged wherever possible. In general these will fall into the following categories:

Lifebuoys / special lifebuoy (perry buoy)  
Throw bags inclusive of throwing lines  
Torpedo buoys / rescue tubes

Equipment type	Function	Usage	Suitable sitings	Unsuitable sitings	Advantages	Dis-advantages
Perry buoys	Provide buoyancy; rope can secure casualty	Vertical i. e. for „dropping“	e. g. piers, seawalls, promenades	Beaches, sites needing horizontal projection	Easy to use; familiar; discourages entry into water	Accuracy, awkward to use, limited distance; can injure if it hits casualty
Pole	Extend normal reach of rescuer; retrieval	Vertical or horizontal reach	e. g. low piers, seawalls, steeply shelving beaches (supervised and non-supervised) i. e. where entry to water is risky	High piers sea walls promenades	Easy to use; discourages entry into water	Limited use difficult to carry
Throwbags/lines	Greatly extend normal reach of rescuer; (level of buoyancy depends on make); retrieval	Vertical or horizontal throw to casualty	Most places e. g. beaches of all descriptions, piers, sea walls, promenades (supervised and especially non-supervised)		Accurate usage can remove the need for rescuer to enter water; discourages entry into water	Untrained use is unreliable; accuracy is difficult
Torpedo buoys (foamfilled nylon or hollow plastic tubes attached to a strap harness)	Limited extension to reach; provision of considerable buoyancy; secures casualty; permit a non-contact swimming rescue	Throw or pass to casualty in water to prevent physical contact	On popular beaches	Piers, sea walls, promenades i. e. where entry to water is high-risk, an low use beaches	Distances rescuer from casualty	Demands strong swimming ability; encourages swimming rescues and risk-taking
*Harness/reel and line	Secures rescuer to land	Rescuer swims to casualty, attached by harness and rope to land; pulled in	Supervised or popular non-supervised beaches	Piers, sea walls, promenade etc.	Ensure link between land and rescuer	Demands strong swimming ability; encourages swimming rescues and risk-taking; relies on back-up on beach

The use of these items needs to be related and appropriate to the specific location. Equipment that places the rescuer at risk themselves should be avoided. The old 'Hicks Reel' has been known to nearly drown the rescuer because the public using it were not trained.

Mobile phone use has increased dramatically over recent years. However, operators should not assume that everyone will be carrying a mobile or that they will be operational and capable of use in case of emergency and cut back on investment in emergency telephones.

Many beaches have a wide range of activities including sailing, canoeing, surfing, sub-aqua, water-skiing, windsurfing, land yachting, kite flying, kite surfing, personal water craft use (jet skiing), angling (and baitdigging) occurring. All of these present some element of risk. Swimming from beaches presents particular risk, especially if carried out where some of the former activities take place.

Supervision of  
water-based activities

With the ever-increasing popularity of watersports, there is more demand than ever from clubs for access to suitable sites. As a result, many owners and operators of such water have leased out facilities to clubs to offer watersports opportunities to both club members and the general public. Such clubs will be responsible for management of their activities but the site owner will have a responsibility to ensure, as far as is reasonably practicable, that basic standards of health and safety are attained both for employees, and other members of the public.

Formal watersports

Listed below are some of the safety issues to be considered by the sports operator for which the site owner will require evidence:

Safety issues

### Competency testing of members/participants

Minimum, and in some cases maximum, numbers participating at one time

Time/buddy system

Duty officer

Operations in inclement weather

Establishment of normal operating procedures

Qualifications and competence of trainers/supervisors

The wearing of safety equipment e.g. personal buoyancy

Participants' safety rules

The distribution of safety rules (e.g. in membership literature)

Display of safety rules (e.g. in club house, at slipway etc.)

Reinforcement of safety rules

Responsibility to other users

Emergency action plan

First aid facilities

Rescue provision

Investigation and recording of near misses and accidents

Procedures for the reporting of accidents

Periodic review of safety practices

Insurance requirements

### Angling

Whilst there are several national governing bodies for the sport of angling, the vast majority of the people who participate in the sport are not, in fact, members of a governing body and so will tend not to benefit from safety advice issued by them. Unlike some water sports where formal training is indispensable (e.g. sailing), angling is a relatively straightforward and inexpensive sport to become involved in. It is also an activity popular with children, who will tend to be less careful than adults. It is therefore important that operators consider the safety of anglers carefully in the risk assessment process. On-site safety advice should be made available, particularly where specific risks exist which are not obvious to the casual visitor. Local angling clubs can, and should, also be encouraged to play a significant role in drowning prevention. Appropriate zoning and other safety advice or rules can then be established and displayed for the benefit of anglers.

### Zoning



At some locations, different water sports clubs may use the same site, giving rise to additional risks to participants, such as collisions. In order for two or more clubs to co-exist at the same site, a zoning system may be required. Zoning can be organised on either a spatial or temporal basis, i.e. activities can take place either in different areas or at different times. To be effective, it needs to take into account all local sporting interests. Users must be aware of the zoning arrangements and be prepared to comply with them. Consultation and education are necessary to ensure that these criteria are met.

### Supervision of swimming - lifeguarding

Swimming in open water presents particular risk. The purpose of this section is to provide guidance to operators on the supervision of swimming at coastal water sites, following a risk assessment.

At many locations it is common knowledge that children, and indeed adults, commonly use accessible sites for swimming even though there is no provision for supervision. In these circumstances careful

consideration needs to be given to the way in which the risks are managed.

There are many site operators who do not wish to permit swimming on their site or at particular locations. They must make this clear and take measures to prevent would-be users if they are to discharge their 'duty of care' without providing supervision. It is important for site operators who are aware that their property is used for swimming, to be clear about how they manage the situation.

Where recreational swimming is undertaken with permission, or active encouragement at a beach or other water sites, there is a need for risk assessment and written operating procedures to be produced and reviewed on a regular basis.

Locations where swimming is permitted

Where lifeguards are employed, either in a full-time paid capacity, or as a volunteer unit, there are a number of principles that must be understood and applied. There must be:

Operating procedures on sites where lifeguards patrol

A map showing where bathing will be supervised.

Definition of expected training and qualifications which staff must have.

A specified minimum number of lifeguards for each area of the site when swimming will be supervised, and the days and times when cover will be provided.

A clear indication of how the facilities are linked with emergency services and emergency call-out procedures.

Lines of communication and operating authority on the site.

Operation of control centres and patrol points; maximum visibility locations; the positioning of relevant flags, buoys, signs, and a clear indication that swimming is not permitted when the area is not guarded or patrolled.

Specification, and details of systems for inspection and maintenance of equipment.

Incident reporting procedures and

An emergency action plan (EAP).

These can be drawn together in a variety of ways providing that they comprise a clear set of instructions to the lifeguards and can be inspected by the beach owner/operator on demand.

1. Standard Operating Procedures (SOPs) contain general operational procedures relating to the provision of the service.
2. Local Operating Procedures (LOPs) contain site or beach specific variations of SOPs and should be in place for each beach life-guarded.

3. Normal Operating Procedures (NOPs) contain a mixture of both and are more generally used by smaller organisations and local authorities.

#### Emergency action plan

Wherever swimming is permitted at a beach or other water site, an emergency action plan (EAP) must be produced and held in writing, in addition to the normal operating procedures (NOP). In emergency situations, it is important the correct actions are taken in the right order so that the emergency is not compounded.

It is vital that the EAP is adequately conveyed to all staff through training and appropriate written material.

The EAP should provide step-by-step procedures for each member of the team and should usually contain the following items:

Rescue management system for all incidents.

Continuity of supervision of the water area, or the removal of swimmers from the water during an incident.

Communication procedure during an incident both within the team and with external agencies and services.

Aftercare and transportation to medical assistance of all casualties, and any necessary counselling and support for rescuers and

Expected level of performance for lifeguards/rescuers and support staff.

Adequate distinction should be made in the EAP between major emergencies (incidents resulting in serious, urgent or life-threatening situations), and minor emergencies (incidents which will not prove life threatening if dealt with promptly), and separate procedures drawn up for each.

It is important that lessons are learned from the specific incidents. A thorough examination of each incident is necessary and areas of improvement should be identified, actioned and written into the EAP.

#### Liaison with other agencies and emergency services

The Coastguard are responsible for the initiation and co-ordination of any incident on coastal waters and can of course call upon Search and Rescue services (SAR) as well as ambulance, police and fire, to assist the site operator where appropriate.

The National Water Safety and/or Lifesaving Organisations should initiate and co-ordinate Search and Rescue action for persons in distress or at risk around the coastline. In a beach environment, lifeguards and beach officials are normally the first reporting point of contact and can often help resolve location issues. Similarly, lifeguards and beach officials may also render first aid and can offer advice on whether hospitalisation or further treatment may be appropriate. EAPs should reflect agreed procedures with each of the emergency services to ensure that the appropriate emergency service is always alerted when the criteria are reached. Detailed



records should be maintained of each occasion when an emergency situation is encountered.

The local contact names and numbers of all services should be readily available and posted at all significant control points.

The key duties will be to:

Maintain observation of bathers and communication with other staff on the site in order to anticipate and prevent problems and identify an emergency quickly.

Control areas designated for other water sports to guard against accidents which might involve a contact between swimmers and other water users.

Carry out rescues, and initiate emergency action, as and when necessary.

Enforce bye-laws where appropriate.

Promote awareness of specific and general hazards through educational programmes, and give assistance to members of the public and other users to ensure safe activity.

### Functions and duties for lifeguards

It is not generally good practice to employ lifeguards to do other duties (hire deck chairs, collect litter etc.) that could detract from their core requirement to supervise and respond to incidents.

Staff must be physically fit, alert, self-disciplined and hold current and relevant qualifications (i.e. ILS Beach Lifeguard certificate). They should be continually aware of activity on the site, as well as in the water in order to respond to circumstances. Well-trained staff will be able to take decisions such as 'removing swimmers' from the water by signalling potential dangers, or if conditions deteriorate.

### Competence of lifeguards

In some circumstances supplementary site-specific training will need to be externally assessed, particularly where specialised equipment is being used, for example the use of rescue boats. All staff should have relevant knowledge and skills which will include the following:

A general understanding of safety provision at beaches and other coastal water sites.

The general principles of hazard awareness and potential risk at coastal water sites connected with the presence and use of natural and man-made features.

The dangers associated with currents, waves and other environmental conditions.

The effects of coastal water conditions, the dangers from currents and unexpected cold, together with the effect of cold wind and adverse weather conditions.

Communication with, and distance from, emergency services and qualified medical assistance

Availability and use of general and specialist water rescue equipment including inshore rescue boats (IRBs), rescue watercraft (RWC), and of other people trained in the use of this equipment

Basic life support and first-aid

Communication system, public relations, and crowd management and

Individual and team rescue skills.

Training should be provided to the minimum standard set by the International Life Saving Federation and may follow a nationally agreed competency based training framework.

#### Equipment and clothing

Equipment supplied will depend on the number of staff, their duties and the facilities available. Special consideration must be given to the equipment needed by staff working without immediate back-up from a control point. Equipment might include:

Throwing line/throw bags, rescue poles

Torpedo buoys and other buoyant aids

Communication systems (radios, mega phones, telephones)  
Signs, flags, buoys and booms

First-aid and resuscitation equipment

Rescue craft (IRB, RWC)

Patrol base, (hut, portacabin, etc) and

Uniform appropriate to weather conditions and usage. This must be red and yellow, the internationally recognised colours for lifeguards' uniforms and protective clothing used by lifeguards. Protection from the sun needs to be considered as well as keeping the lifeguard warm and dry and easily recognisable by water users.

Lifeguards must be provided with sun block and appropriate eyewear for long periods of observation at the water (polarised sunglasses).

#### Staff numbers and zoning

The Risk Assessor must identify the hazards, risks, and user numbers at their busiest times, and specify the number of staff required to cover the area, together with the necessary rota system for lifeguards. The patrolled area of the site should be contained to match the number of staff employed.

Where lifeguards are deployed they should operate in pairs to ensure safe response to an emergency. Lifeguards should only be deployed singly when radio contact can provide back-up within three minutes.



tes. It is essential that staff duty hours are indicated at access points (e.g. traditionally 9 am to 6 pm).

Although a foot patrol is often the most effective form of patrolling, consideration should be given to providing a mobile unit with suitable transport to both offer some protection from the elements but also to respond to incidents should they occur some distance away (ATV, 4WD, mountain bike).

At some water sites, where it is known swimming takes place, it may not be appropriate or cost-effective to employ full-time or indeed volunteer units. The duties of wardens or rangers must be clearly defined. Even where that duty is to reinforce notices which prohibit swimming, it is highly desirable that such staff are fully trained in accident prevention measures, rescue techniques, first aid, and basic life support.

It is suggested that performance levels should be established for lifeguards and that these be specified within the NOP/EAP and incorporated into training programmes. Only by setting performance standards can levels of safety be monitored and improved.

Lifeguard cover is likely to be from April/May to September/October with specific dates linked to national holidays. However, a sudden warm spell at the beginning or end of the season may well determine an advance or extension to this time. The operator must take this into consideration when planning. The periods and hours of safety cover should be clearly signed at the site.

Although there has been no specific research relating to maintenance of concentration during observation work of this nature, structuring of times should ensure that:

Lifeguards are not required to carry out any other tasks which distract them from their prime duties of supervision of the water site at any given time.

Regular and sufficient breaks are incorporated into the duty rota.

The individual rota period should be overlapped to maintain continuity of supervision and

There is an integrated training programme.

Records should be kept of visitor numbers at different times of the day and week during the course of the season. Accurate records will enable a visitation pattern to emerge that can be used to predict peaks and troughs in visitor numbers. This in turn can be used to plan the 'seasons'. Quite often an operator may have long, medium and short seasons corresponding to rises in visitor numbers linked to public and school holidays. They will then staff up accordingly, engaging the help of volunteer lifeguards wherever possible to respond to predictably high visitor numbers at weekends.

Mobile units

Sites where swimming is not supervised

Performance levels for lifeguards covering swimming activities

Work schedules

### Volunteer lifeguard services

There are a number of registered volunteer lifeguard clubs on beaches and other coastal water sites. For the most part these are supporting the accident prevention and rescue facility of that site.

In many cases, they supplement the work of lifeguards employed by the site operator who may only provide a general supervisory cover. However, permission to patrol a particular site should not be given lightly to a voluntary club, nor be seen to absolve the operator from his responsibility for safety.

The volunteer unit must provide cover to the same standard as any paid lifeguard service, and must have a clearly defined role in relation to the operating procedures of the site. One approach is to ensure that voluntary lifeguard clubs have a contract or service level agreement defining their role and responsibilities within the written operating procedures. Another is to define and formalise their role within the existing structure. The latter option is preferred because it leads to a more integrated joined up' approach to the provision of a safety and rescue service.

### Liaising with other SAR agencies

As noted earlier, it is essential to liaise with the emergency services before finalising emergency action plans, and then to maintain a co-operative interface. Although radio communication can provide a direct link to the police, it is important that the operator complies with licensing requirements, and frequencies are made known to the emergency services.

The local contact names and numbers of all services should be made readily available by the site operator and displayed on the Safety Information Board.

Where possible a formal Memorandum of Understanding between the beach operator and the emergency services should be set up. This then provides a clear framework for both parties to work together. It is also recommended that:

Beach lifeguards should take the opportunity to visit Coastguard or other Rescue Centres to discover how they might contribute to protracted rescue scenarios in their coastal area

That an annual emergency services exercise is carried out to ensure contingency planning is appropriate

## Appendix 1

Hazards	Measures from which to formulate overall strategy					
Location	Nature of hazards	Info/signs/flags	Barriers	Zoning	Rescue equipment	Supervision
Surf Beach	Collision between surf craft and swimmers. Dangerous conditions for non/weak swimmers	Zoning flags, Inform of dangers and zoning systems at access points		Zone swimmers/surfers, canoeists, surf-skiers, jet-skis. Sub-zone where necessary	Appropriate rescue aids and adequate communication for emergency	Ensure strict use of zones
Beach with high use of motorised craft	Collision between craft and swimmers	Inform of dangers and zoning systems at access points	Buoys and booms	Zone incompatible activities	As above	Ensure strict use of zones
Steep or uneven beach gradient between high and low water	Non-swimmers easily out of depth/trapped by tide	Inform of dangers and zoning systems at access points	Buoys and booms	Keep swimming to well-defined area	As above	Supervise zoned areas
Beach in or at mouth of estuary	Carried away from beach by tidal currents, especially ebb	Prohibit swimming using signs at access points and other strategic sites			As above	
Beach with long-shore drift current	Carried along beach	Inform of dangers			As above	
Beach with rip currents common	Carried out to sea	Inform of dangers and zoning systems at access points. If possible define current area with flags and boom	Buoys and booms	Designated swimming area away from current	As above	Ensure swimmers use only zoned area. Watch for changing conditions
Piers, sea walls, promenades and other raised structures	Falling or sweeping off edge		Balustrades, fences, walls, gates to prevent access in extreme weather		As above	
Cliffs	Falling off edge or unstable edge due to erosion	Inform of dangers on cliff walks	Fences, walls, clearly defined routeways		As above	
Tides	Cut off by tide	Inform of times of high and low water at access points and in tide tables			As above	
Beaches with plunge and surge type waves	Swept off rocks/beach/feet. Dumped on seabed, particularly pebble beaches	Inform of dangers, zoning system at access points		Supervised swimming area	As above	Ensure swimmers only use zoned areas. Watch for changing conditions
Offshore winds	Inflatables and other light craft blown offshore	Inform of dangers at access points. Have windsock prominently displayed			As above	Prevent use of inflatables
Rough seas, heavy swell conditions	Other hazards exacerbated	Use red flag to close beach if necessary			As above	Ensure compliance with red flag

## Hazards



Attention



Deep shelving beach



Deep water



Diving



Inflatables



Kite surfing



Large surf or high breaking waves



Motorised craft



Parasailing



Personal water craft



Quicksand



Sailing



Sand yachting



Shallow water



Slipway



Strong undercurrents



Strong wind



Submerged objects



Sudden drop



Surfing



Tides



Windsurfing

## Prohibition



Do not dive



Do not use inflatables



Do not jump



Do not kite surf



Do not use motorised craft



Do not parasail



Do not use personal water craft



Do not sand yacht



Do not surf



Do not swim



Do not windsurf

## Public Information



Diving



First aid



Kite surfing



Life belt



Motorised craft



Parasailing



Personal water craft



Sailing



Sand yachting



Snorkelling



Swimming



Windsurfing



## Appendix 2 und 3

### Flag symbols



Swim between  
flags



Water craft zone



Do not swim



Do not use infla-  
tables

## Appendix 3

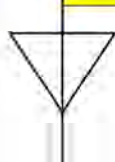
# Bewachter Strand



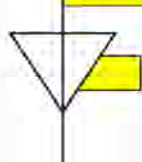
# Lifeguarded Beach

# Badezonenkennzeichnung

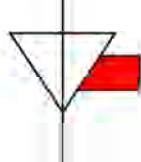
## Flags and zones



Wasserrettung  
im Dienst  
Lifeguard on duty



Baden und  
Schwimmen  
gefährlich  
Use caution  
when swimming



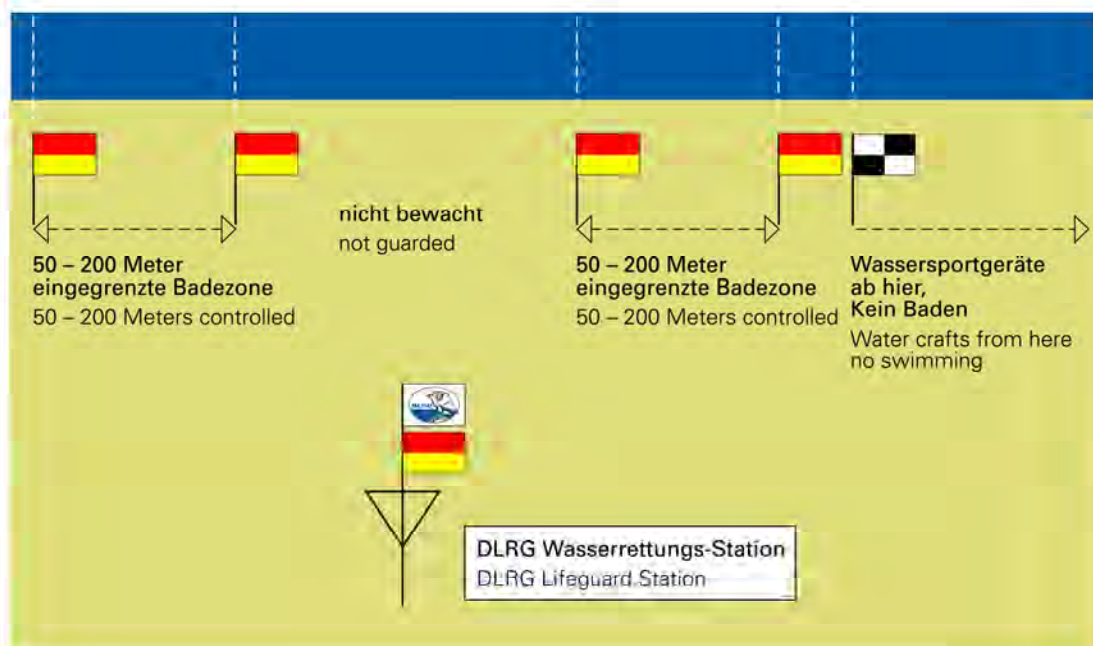
Baden und  
Schwimmen  
verboten  
Beach closed



Badezonen-  
begrenzung,  
Keine Wasser-  
sportgeräte  
Swimming zone,  
no water crafts



Wassersportgeräte  
ab hier,  
Keine Badezone  
No swimming,  
water crafts only



**Bei eingegrenzter Badezone bitte nur im  
Wasserbereich zwischen den Flaggen schwimmen.**

Swim between the flags

**Nächste DLRG Wasserrettungs-Station:**



Deutsche Lebens-Rettungs-  
Gesellschaft e.V.

Leistungssportbereich

200 Niederstraße 2

37142 Bad Nenndorf

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