RNLI Risk Assessment Report

Beach Name: Ventnor	Also known as: NA	Management Authority: Ventnor Town Council
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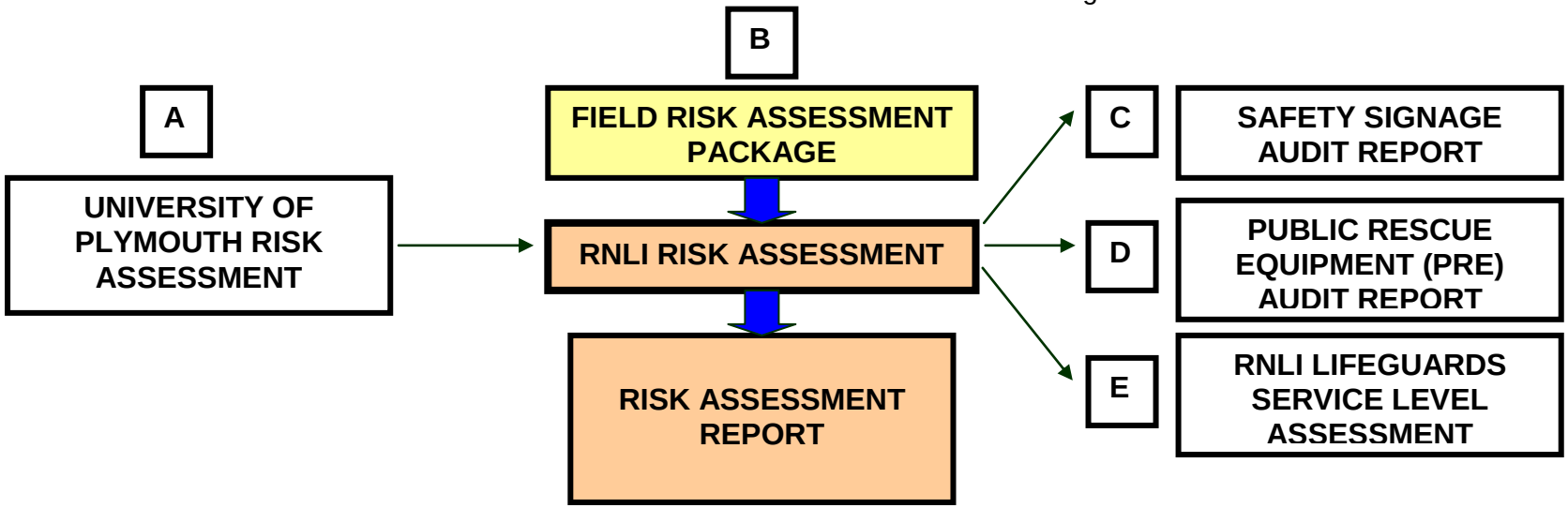
Introduction to the RNLI and Risk Assessment

The Royal National Lifeboat Institution is a registered charity that saves lives at sea. It provides, on call, a 24-hour lifeboat search and rescue service up to 100 nautical miles out from the coast of the United Kingdom and Republic of Ireland and a beach lifeguard service on appropriate beaches in the United Kingdom and Republic of Ireland.

The RNLI Lifeguards have developed a “total service” concept where a drowning prevention strategy is used to control risk. Conducting a risk assessment is the first step to improving safety on the beach.

The RNLI offer a full suite of risk assessment services to local authorities and beach managers:



THIS REPORT CONTAINS A FULL FIELD RISK ASSESSMENT PACKAGE (PARTS A & B)

The University of Plymouth risk assessment is based on a beach safety and management programme developed in Australia.

Field risk assessment package: This package provides the user with a toolkit to conduct an assessment of risk based on history and observation.

The RNLI provides a series of specialist audits based on best practice and national standard guidance. Reports C (Safety Signage Audit) and D (PRE audit) are available on request. Report E (RNLI Lifeguards Service Level Assessment) is only available to local authorities who are exploring the option of the RNLI providing a lifeguard service.

Summary of Findings

Conducting a risk assesment is the first step in improving safety on the beach.

During the assessment there were a number of hazards identified where the level of risk was felt to be high. Control measures should be considered. Priority hazards are:

- Swimming
- Inflatable users
- Surfing
- Body boarding
- Rip currents
- Tidal currents

The following series of potential control measures have been suggested in this report to manage high level risks and specific hazards as well as broader recommendations relating to management strategies. These include:

- Complete centre disk on PRE housing regarding reference points
- Update signage to meet national guidelines
- Record incident statistics and visitor/activity numbers for future analysis
- Ensure suite of standard and local operating procedures are in place for all activities performed or managed
- Establishment of a beach safety and management group with responsibility for communicating with user groups
- Participate in National Beach Safety working group
- Provide beach safety information to targeted groups such as school groups and Tourist Information Centres
- Establishing volunteer codes of practice and review byelaws to manage potential activity conflict
- Consider the option of ongoing access to RNLI resources
- Consider the introduction of a seasonal lifeguard service.
- Use National Water Safety forms for recording of incidents and actions.

It is further recommended that the following additional audits are undertaken:

- Signage audit
- PRE audit
- Lifeguard service level assessment

It is the responsibility of the management authority to formulate an action plan based on the recommendations. An action plan template is included in section two of this report.

The RNLI is currently reviewing options for providing ongoing assistance and support to management authorities that they do not necessarily provide Lifeguard Services for. Management authorities could gain from this assistance by formally approaching the RNLI to develop a longer-term association. These services are provided at either no cost or at cost recovery only.

Many management authorities currently benefit from advice relating to community education, risk assessments, signage standard operating procedures and equipment procurement.

For further advice please contact:

Lifeguard Services Team, RNLI
(01202) 663553

Please note: all advice is given as recommendations and does not constitute any formal agreements

Simplified Risk Calculator for Beaches

	Energy			Population	
Level	**Tides**	**Tidal flow***	**Average wave height***	**Population (in-water)****	**Conflicting activities**
7			2.0m+	200+	
6			1.5–2.0m	150–200	
5		White water	1.0–1.5m	100–150	
4	Extensive tidal range with potential for cut off	6+ knots	0.75–1.0m	75–100	Persistent and dangerous
3	Potential for tidal cut off	4–6 knots	0.5–0.75m	50–75	Persistent
2	Extensive tidal range	2–4 knots	0.25–0.5m	25–50	Regular
1	Normal tidal range	0–2 knots	0–0.25m	1–25***	Isolated incidents

*Tidal flow versus Average wave height: Only use the one most appropriate measure of energy
** For calculating the in-water population to include surf craft: a novice surfer or body boarder = 0.5; an experienced surfer = 0.25
***If population in-water is 0, the beach will default to lower risk

UKBSAM beach type	Weighting	UKBSAM beach type	Weighting
LTT+R(HE)	3	UD(HE)	-1
LTBR(HE)	3	LTT(LE)	-1
STB (HE)	2	NBD(HE)	-1
MITB (LE)	1	R	-1
UD+TF(LE)	0	STB(LE)	-2
LTT(HE)	0	NBD(LE)	-2
R(HE)	0	Unclassified	0

NB. See University of Plymouth glossary at Appendix 3 for UKBSAM beach type definitions. The particular beach type for this assessment is detailed overleaf.

Energy (*Tides* + *Average wave height or Flow) + Population (*In-water population* + *Conflicting activity*) +/- UKBSAMP weighting = Risk**

Control Measures (General Guide Only)

Score	Risk level	Suggested controls – *provided as a general indicator only*
15+	Higher	• Lifeguards may regularly close the beach to aquatic activities • Lifeguards will require additional support (increased personnel or equipment levels)
12-15	Medium–higher	• Lifeguards may occasionally close the beach to aquatic activities • Lifeguard may require additional support (increased personnel or equipment levels)
8-12	Medium	• Lifeguards normally recommended
5-8	Lower –medium	• Monitoring of in-water population should be undertaken, with the provision of a lifeguard service considered • PRE should be considered • Signage strongly recommended
0-5	Lower	• Signage should be considered • PRE may be considered • Pre-arrival education

Ventnor beach is a medium risk beach

University of Plymouth UK Beach Safety Assessment Model (UKBSAM) Beach Type

NB. For further information on the partnership work between the RNLI and the University of Plymouth please see Appendix 2

VENTNOR BEACH HAS NOT YET BEEN CLASSIFIED UNDER THE UKBSAM SYSTEM

Risk Priority Matrix Summary

All hazards identified on the beach are included below. For more detailed information on each specific hazard see section 2 'Audit'.

		Severity				
		Minor (1)	Major (2)	Critical (3)	Fatal (4)	Multiple fatalities (5)
Likelihood	Improbable (1)			2.7 Inshore holes/channels/gutters 3.5 Buildings and structures 6.3 Fog/mist (reduced visibility) 7.1 Dogs	6.4 Lightning 7.2 Marine envenomation i.e. weaver fish / jelly fish 9.3 Beach/pier fishing 10.1 Paddling/wading	
	Remote (2)	7.3 dangerous marine life	4.2 Sewage outlet 4.4 Water quality/pollution 9.6 Large kite flying	1.1 Steep cliffs **2.4 Submerged rocks/debris** 8.1 Fire safety 8.3 Hazardous or explosive substances 9.5 Managed vehicle use and parking 9.7 Climbing/bouldering 9.10 Sand digging/tunnelling	**1.5b Unsafe walkways, lookouts and promenades** 3.2 Groynes and coastal defences 3.3 Jetties **3.6 Buoys, lines and netting** **5.4 Free rip** **5.5 Tidal currents** 9.4 Rock walking/rock fishing 10.2 Diving **10.6 Bodysurfing**	1.4 Tidal cut off
	Occasional (3)	4.1 Storm-water outlet	8.4 Dangerous litter (glass, disposable BBQs, sharps) 9.2 Cycling	**6.1 Strong winds**	**2.1 Sudden drop off/steep slope** **2.2 shallow sandbanks** **2.3 rock shelves/reefs** **5.1 Wave type** **5.2 Beach rip** **5.3 Topographically constrained rip** **10.3 Swimming** **10.4 Inflatable users** **10.5 Skimboarding** **10.7 Bodyboarding** **10.8 Wave dodging** **10.9 Cliff, rock or pier jumping** **10.10 Surfing** **10.11 Windsurfing** **10.12 Kitesurfing** **11.1 Rowing (oar or paddle)** **11.2 Sailing** **11.3 Snorkelling/ spear fishing** **11.4 Scuba diving** **11.5 Personal watercraft (PWC)/powered craft/skiing**	
	Probable (4)		**6.5 UV radiation (Sun) short-term** **6.6 UV radiation (Sun) long-term**			
	Frequent (5)	9.1 General beach activities				

BOLD denotes those hazards where the current controls are felt to be inadequate.

Risk Matrix Summary Explained

	HIGH RISK	The level of risk is very high and is difficult to justified on any grounds; high level control measures should be applied.
	MEDIUM RISK	The level of risk is significant and medium level control measures should be applied to reduce the risk as soon as possible
	LOW RISK	Level of risk is at a level where low level control measures suffice

The numbers in the table below are calculated thus: Severity x Likelihood = Risk

		SEVERITY (S)				
		MINOR (1)	MAJOR (2)	CRITICAL (3)	FATAL (4)	MULTIPLE FATALITIES (5)
LIKELIHOOD (L)	IMPROBABLE (1)	**1**	**2**	**3**	**4**	**5**
	REMOTE (2)	**2**	**4**	**6**	**8**	**10**
	OCCASIONAL (3)	**3**	**6**	**9**	**12**	**15**
	PROBABLE (4)	**4**	**8**	**12**	**16**	**20**
	FREQUENT (5)	**5**	**10**	**15**	**20**	**25**

N.B. Some activities i.e. extreme sports are by their very nature intermittently dangerous. In certain circumstances, hazards may remin in the high risk field despite adequate controls being in place. Hazards that are therefore felt to be insufficiently controlled are highlighted in bold.

Field risk assessment package

Section 2: Audit

Action Planning Explained
Action Plan
Audit Explained
Audit

Action Planning Explained

It is the responsibility of the management authority to complete an action plan based on the observations reported in this assessment

A template has been provided to assist in the completion of such a report. It is not mandatory to use this format, however ISO standard 31000:2009(E) (Risk management – principles and guidelines), does require a section to be completed on the treatment of risk and the continued monitoring and review of hazards.

An essential element of coastal risk management is communication and consultation; it is also recommended that a communications plan be developed which relates to the risk itself and the process to manage it. It is important that consultation does not end when the formal risk assessment is complete. Consideration should be given to the formation of a working group that allows ongoing dialogue with stakeholders.

It is recommended that you prioritise those hazards with the highest risk first, these are detailed in the red section of the risk priority matrix summary and listed in the summary of finding earlier in the document.

The RNLI are happy to work with the management authority in the completion of any action plan. For further assistance with this please call the lifeguard services team on 01202 662200.

CONTROL MEASURE IMPLEMENTATION (*MANAGEMENT AUTHORITY TO COMPLETE*)

Ref	Hazard	Additional control measures	Priority			Person responsible for implementing control measures	Complete by date	Details of action taken	Review date
			H	M	L				

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Audit Explained

The following section is the detailed coastal risk audit for the area under assessment. To help further understand and interpret the information contained within the risk tables, the reader may wish to read the explanation contained within the appendices before continuing with this section of the report.

Key - risk assessment table:

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk rating	Existing control measures	Existing controls sufficient Y/N	Control risk rating	Alternative potential control measures (BOLD – Suggested control measures)
1.1	Steep cliffs	Employees Males Very young 16–35 TVM Pre-existing medical conditions	Falls from height Persons becoming stranded on cliff face	3	3	9	Signage Zoning, fencing Emergency communications Trained observer provision First aid provision	Y	6	Pre-arrival education **Signage (national guidance)** Emergency communications (national guidance) Extend first aid provision Extend trained observer provision Removal/closure

What and where is the hazard

Types of people most affected by the risk identified

What are the associated risks with that hazard

S = Severity (1 = lowest 5 = highest)
L = Likelihood (1 = lowest 5 = highest)
Risk Rating = S x L, refer to priority table above

What existing control measure/treatment plans are in place at the location(s) to reduce or remove risk

Are the existing control measures in place effective at controlling risk? Yes / No

Given the control measures in place, how does this affect the severity, likelihood and therefore the overall risk rating

Brief description of other additional control measures that could be used to reduce the risk rating further. Those highlighted are the ones the Institution considers the most appropriate for this specific hazard and location.

Audit

1.0 Surrounding environments

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk rating	Existing control measures	Existing controls sufficient Y/N	Control risk rating	Alternative potential control measures (BOLD – Suggested control measures)
1.1	Steep cliffs **At the west end of the beach**	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions	Falls from height Persons becoming stranded on cliff face	3	3	9	Pre-arrival education (cliffs – OTB) Signage Signage (national guidance) Barriers (partial) Emergency communications (national guidance) Trained observer provision First aid provision Designated cliff top footpath	Y	6	**Signage (national guidance)** **L**ifeguard provision Redirect current footpath
1.2	Unstable cliffs/rock falls/mud slides	Not observed or described in risk assessed area								
1.3	Unstable and/or eroded dunes	Not observed or described in risk assessed area								
1.4	Tidal cut off Steeple Cove	Employees Males Very young 16–35 TVM 60+ Non-swimmers	Tidal cut off	5	4	20	Pre-arrival education (tides – OTB / ITS) Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Tide times displayed Emergency escape route	Y	10	**Signage (national guidance) Tidal cut off** Lifeguard provision Means of beach closure
1.5 a	Unsafe walkways, lookouts and promenades	Not observed or described in risk assessed area								
1.5 b	Unsafe walkways, lookouts and promenades Eastern End steps Spy Glass Pub	Employees Males Very young 16–35 TVM 60+	Extreme weather causing waves to break over prom etc. Associated currents Drowning Impact injuries	4	2	8	Signage (national guidance) – strong currents / rips) Barriers (partial) Emergency communications (national guidance) Trained observer provision First aid provision	N	8	**Pre-arrival education (large breaking waves during extreme weather conditions)** Barriers (Full) Lifeguard provision Lifeguard provision **Means of closure (beach / prom)**
1.6	Other									

2.0 Beach profiles

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk rating	Existing control measures	Existing controls sufficient Y/N	Control risk rating	Alternative potential control measures (BOLD – Suggested control measures)
2.1	Sudden drop-off/steep slope At high tide	Employees Males Very young 16–35 TVM 60+ Non-swimmers Weak swimmers	Drowning	4	3	12	Pre-arrival education Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Tide times Red flag	N	12	**Signage (national guidance) steep shelving beach** Zoning (designated bathing area) Lifeguard provision Means of beach closure
2.2	Shallow sandbanks	Employees Males Very young 16–35 TVM 60+ Non-swimmers Weak swimmers	Head, neck and back injuries from diving into shallow water Beaching craft impacting with sandbank Incoming tide can trap persons on sandbar	3	4	12	Pre-arrival education Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Tide times Craft regulations / restrictions / byelaws Red flag	N	12	**Signage (national guidance) shallow sand banks** Lifeguard provision Means of beach closure
2.3	Rock shelves/reefs	Employees Males Very young 16–35 TVM 60+ Non-swimmers Weak swimmers	Head, neck and back injuries from diving into shallow water Beaching craft impacting with shelf/reef Impact injuries Entrapment	3	4	12	Pre-arrival education Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Tide times Craft regulations / restrictions / byelaws Red flag	N	12	**Signage (national guidance) submerged rocks** Lifeguard provision Means of beach closure

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk rating	Existing control measures	Existing controls sufficient Y/N	Control risk rating	Alternative potential control measures (BOLD – Suggested control measures)
2.4	Submerged rocks/debris	Employees Males Very young 16–35 TVM Non-swimmers Weak swimmers	Head, neck and back injuries from diving into shallow water Beaching craft impacting with shelf/reef Impact injuries Entrapment	3	3	9	Pre-arrival education (rocks - OTB) Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Tide times Red flag	N	6	**Signage (national guidance) submerged rocks** Lifeguard provision Removal of objects Marker bouys / hazard markers Means of beach closure
2.5	River mouth	Not observed or described in risk assessed area								
2.6	Mud/quicksand	Not observed or described in risk assessed area								
2.7	Inshore holes/channels/gutters	Employees Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Associated currents Rapid change of water depth (especially hazardous for children)	3	3	9	Pre-arrival education (do not swim or play on / near breakwater, rips & groynes) Signage (national guidance) – beware of rips / do not jump / dive off breakwaters Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	Y	3	Lifeguard provision Means of beach closure
2.8	Other									

3.0 Man-made structures

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk rating	Existing control measures	Existing controls sufficient Y/N	Control risk rating	Alternative potential control measures (BOLD – Suggested control measures)
3.1	Overhead power lines	Not observed or described in risk assessed area								
3.2	Groynes and coastal defences	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Jumping/diving Slips, trips and falls Associated currents Impact injuries Entrapment Drowning Collision risk	4	3	12	Pre-arrival education (do not swim or play near breakwaters, rips & groynes) Signage (keep off rocks) Signage (national guidance) – beware of rips / do not jump / dive off breakwaters Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Removal Inspection/repair Craft regulations / restrictions / byelaws (please state) Red flag	Y	8	Zoning (designated bathing area) Lifeguard provision Removal Groyne markers Means of beach closure
3.3	Jetties/piers Harbour arm	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Jumping/diving Slips, trips and falls Associated currents Impact injuries Entrapment Drowning Activity conflict	4	3	12	Pre-arrival education (do not swim or play near breakwaters, rips & groynes) Signage (national guidance) – beware of rips / do not jump / dive off breakwaters Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Craft regulations / restrictions / byelaws Inspection/repair Red flag	Y	8	**Zoning (designated bathing area) (beach / map)** Lifeguard provision **Swim exclusion zone** Means of beach closure
3.4	Rock swimming and paddling pools	Not observed or described in risk assessed area								

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk rating	Existing control measures	Existing controls sufficient Y/N	Control risk rating	Alternative potential control measures (BOLD – Suggested control measures)
3.5	Buildings and structures Beach chalets	Employees Males Very young 16–35 TVM 60+	Misadventure Slips, trips and falls Impact injuries	3	2	6	Emergency communications (national guidance) Trained observer provision First aid provision Removal – out of season Inspection/repair	Y	3	Pre-arrival education (keep off buildings) Signage (national guidance) keep off buildings Lifeguard provision
3.6	Buoys, lines and netting	Employees Males Very young 16–35 TVM 60+ Non-swimmers Weak swimmers	Slips, trips and falls Beyond capability attraction Entrapment Drowning Craft entanglement	4	2	8	Pre-arrival education (safe swimming – OTB) Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Inspection/repair Removal – out of season Craft regulations / restrictions / byelaws	N	8	Signage (national guidance) – safe swimming message **Signage (national guidance) slipway sign)** Zoning (designated bathing area) Lifeguard provision Activity restrictions e.g. fishing
3.7	Other									

4.0 Water quality

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
4.1	Storm-water outlet	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Water quality/pollution Sharps	1	3	3	Pre-arrival education (water quality) Signage (water quality results shown) Inspection - Trained observer provision (water quality testing) Beach cleaning Emergency communications (national guidance) First aid provision Red flag	Y	3	**L**ifeguard provision **Means of beach closure** **Emergency action plan** **Liaise with Environment Agency for advice**
4.2	Sewage outlet	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Water quality/pollution Sharps Microbiological e.g. e coli	2	2	4	Pre-arrival education (water quality) Signage (water quality results shown) Inspection - Trained observer provision (water quality testing) Beach cleaning Emergency communications (national guidance) First aid provision Red flag	Y	4	**L**ifeguard provision **Means of beach closure** **Emergency action plan** **Liaise with Environment Agency for advice**
4.3	Agricultural run-off	Not observed or described in risk assessed area								
4.4	Water quality/pollution Seaweed	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Water quality/pollution Microbiological e.g. e coli	2	2	4	Pre-arrival education (water quality) Signage (water quality results shown) Inspection - Trained observer provision (water quality testing) Beach cleaning Emergency communications (national guidance) First aid provision Red flag	Y	4	**L**ifeguard provision **Means of beach closure** **Emergency action plan** **Liaise with Environment Agency for advice**
4.5	Other									

5.0 Surf conditions

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
5.1	Wave type: Plunging waves ✔ Shore break ✔ Surging waves Spilling ✔ Passing vessels ✔	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Impact injuries Drowning	4	3	12	Pre-arrival education (waves - OTB) Signage (national guidance) – beware of wash from passing ships Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red Flag	N	12	Zoning (designated bathing area) Lifeguard provision Means of beach closure
5.2	Beach rip: Topographically driven rip currents are associated with sandbanks and troughs. The rip currents flow seaward through a trough or 'hole'. These currents often occur only for a short time in the day (10–30 minutes).	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Drowning	4	3	12	Pre-arrival education (rips - OTB) Signage (national guidance)- beware of rip currents Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Tide times	N	12	Zoning (designated bathing area) Lifeguard provision Means of beach closure

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
5.3	Topographically constrained rip: These rip currents are very common in the UK and are caused by solid objects in the surf zone such as rock outcrops, headlands and groynes. These rips will generally be semi-permanent features depending primarily on wave height.	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Impact injuries Drowning	4	4	16	Pre-arrival education (rips, keep clear of breakwaters) Signage (national guidance) – Rips currents Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Tide times	N	12	Zoning (designated bathing area) Lifeguard provision Means of beach closure
5.4	Free rip: These rips can occur anywhere on the beach. Caused by water movement in the surf zone, they can occur on a flat beach and can come and go very quickly.	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Impact injuries Drowning	4	3	12	Pre-arrival education (rips, keep clear of breakwaters) Signage (national guidance) – Rips currents Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Tide times	N	8	Zoning (designated bathing area) Lifeguard provision Means of beach closure
5.5	Tidal currents	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Drowning	4	3	12	Pre-arrival education Signage (national guidance) – Beware of tides Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red Flag Tide times	N	8	Lifeguard provision Means of beach closure
5.6	Extensive tide range	Not observed or described in risk assessed area								

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
5.7	Other									

6.0 Weather

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
6.1	Strong winds	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Wind chill Inflatables being blown out to sea Persons blown from height	3	4	12	Pre-arrival education (inflatables) Signage (do not use inflatables when windy) Signage (national guidance) (beware strong winds, do not use inflatables when windy) Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flags	N	9	Zoning (designated bathing / activity area) Lifeguard provision Means of closure – wind sock **Emergency action plan** Restrict local sales
6.2	Storms/hail/heavy rain	No associated issues								
6.3	Fog/mist (reduced visibility)	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Persons becoming lost in sea Observers losing sight of swimmers Collision danger to watercraft	3	2	6	Pre-arrival education (going afloat - make sure sea and weather conditions are suitable) Signage (going afloat - make sure sea and weather conditions are suitable) Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Craft regulations / restrictions / byelaws	Y	3	Lifeguard provision Means of beach closure **Emergency action plan**

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
6.4	Lightning	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Electrocution risk Fire risk	4	1	4	Pre-arrival education (going afloat - make sure sea and weather conditions are suitable) Signage (going afloat - make sure sea and weather conditions are suitable) Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Craft regulations / restrictions / byelaws	Y	4	Lifeguard provision Means of beach closure **Emergency action plan**
6.5	UV radiation (Sun) short-term	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Swimmers	Sunburn and heat stroke	2	5	10	Pre-arrival education – sun safety Signage (national guidance) sun safety Trained observer provision First aid provision	N	8	**Work with PCT sun safety clinics** Lifeguard provision **Provide sun block**
6.6	UV radiation (Sun) long-term	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Swimmers	Skin cancer	4	2	8	Pre-arrival education – sun safety Signage (national guidance) sun safety Trained observer provision First aid provision	N	8	**Work with PCT sun safety clinics** Lifeguard provision **Provide sun block**
6.7	Other									

7.0 Animals

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
7.1	Dogs Ban 1st May – 30th September	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions	Impact/bite injuries/infection Excrement	3	3	9	Pre-arrival education (dogs) Signage (national guidance) (No dogs 1/5 – 30/9 & no fouling) Byelaw / control orders (No dogs 1/5 – 30/9 & no fouling) Zoning / restrictions Dogs on lead on prom Beach cleaning Dog bin provision Trained observer provision – dog wardens Emergency communications (national guidance) First aid provision	Y	6	**L**ifeguard provision
7.2	Marine envenomation i.e. weaver fish / jelly fish	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Stings, cuts, swelling Anaphylactic shock	1	4	4	Pre-arrival education (marine stingers) Signage (national guidance) – beware of weaver fish Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Monitoring	Y	4	Lifeguard provision Means of beach closure
7.3	Other dangerous marine life	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Bites Stings, cuts, swelling Anaphylactic shock	1	2	2	Pre-arrival education Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Monitoring	Y	2	Signage (national guidance) Zoning (supervised zone) Lifeguard provision Means of beach closure

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
7.4	Dangerous snakes	Not observed or described in risk assessed area								
7.4	Other									

8.0 General hazards

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
8.1	Fire safety	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit	Burns Smoke inhalation Damage to wildlife Damage to property Life risk	3	2	6	Pre arrival educations (dangerous litter and BBQ's) Signage (national guidance) – no BBQ's Emergency communications (national guidance) Trained observer provision First aid provision	Y	6	**Fire safety risk assessment** Byelaw – fires / BBQ Public firefighting equipment Lifeguard provision Hot BBQ disposal bins Designated BBQ / fire areas Emergency action plan
8.2	Electrical safety	Not observed or described in risk assessed area								
8.3	Hazardous or explosive substances	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions	Life and property risk	3	2	6	Pre arrival educations (dangerous litter) Signage (contents of drums etc washed up on the beach may be dangerous) Emergency communications (national guidance) Trained observer provision First aid provision	Y	6	**Hazardous / explosive substances risk assessment** Lifeguard provision Means of beach closure **Safe storage** **Emergency action plan**
8.4	Dangerous litter (glass, disposable BBQs, sharps)	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers	Cuts Burns Needlestick injuries Burns to young children from incorrectly disposed BBQs	2	4	8	Pre arrival educations (dangerous litter) Signage (dispose of litter) Byelaw (littering) Emergency communications (national guidance) Trained observer provision First aid provision Beach cleaning Waste Bins Sharps box	Y	6	Lifeguard provision Hot BBQ disposal bins Designated BBQ / fire areas Means of beach closure
8.5	Other									

9.0 Beach and dune areas

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	Number pursuing activity / freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
9.1	General beach activities	500+ daily	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit	Slips, tips and falls Lost children/adults	1	5	5	Pre-arrival education (missing children) Signage (national guidance) - 999 message Emergency communications (national guidance) Trained observer provision First aid provision	Y	5	**Zoning – activities** **Beach reference / meeting points** Lifeguard provision **Lost child scheme**
9.2	Cycling		Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit	Impact injuries Collision with pedestrians	2	3	6	20 mph speed limit Emergency communications (national guidance) Trained observer provision First aid provision	Y	6	Pre-arrival education Signage (national guidance) cycling Byelaw / bicycle restrictions Zoning – cycle route / lane Lifeguard provision
9.3	Beach/pier fishing	< 10 daily	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Puncture injuries from hooks Drowning (after fall or surging wave)	4	2	8	Club/self regulation Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Sharps box	Y	4	Pre-arrival education (safe fishing advice) Signage (national guidance) caution fishing Byelaw Lifeguard provision Means of beach closure Equipment disposal bins

Ref	Hazard (and location if applicable)	Number pursuing activity / freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
9.4	Rock walking/rock fishing	50 weekly	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Slips, trips and falls Impact injuries Lacerations from rocks/barnacles Entrapment	4	3	12	Club/self regulation Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag Sharps box	Y	8	Pre-arrival education (safe fishing advice) Signage (national guidance) caution fishing Byelaw Lifeguard provision Means of beach closure Equipment disposal bins
9.5	Managed vehicle use and parking	daily	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions	Impact injuries Vehicle collisions Crush injuries	3	2	6	Signage (parking restrictions) Emergency communications (national guidance) Trained observer provision First aid provision	Y	6	Pre-arrival education (vehicle restrictions) Signage (national guidance) motor vehicles **Byelaw (please define)** Lifeguard provision
9.6	Large kite flying	5 – 10 weekly	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit	Impact injuries Falls from height Entanglement Electrocution (If electricity distribution in area)	2	3	6	Club/self regulation Emergency communications (national guidance) Trained observer provision First aid provision	Y	4	**Pre-arrival education (kite safety)** Signage (national guidance) kites Byelaw **Zoning (activity)** **L**ifeguard provision
9.7	Climbing/bouldering	daily	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit	Falls from height Impact injuries Entrapment Suspension trauma	3	3	9	Signage (keep off rocks) Emergency communications (national guidance) Trained observer provision First aid provision Cliff inspection	Y	6	**Pre-arrival education (no climbing / unstable cliffs)** **Signage (national guidance) (unstable cliffs no climbing**) Byelaw **Zoning – safe routes** **Club/self regulation** Lifeguard provision **Enforce personal protective equipment (PPE)**

Ref	Hazard (and location if applicable)	Number pursuing activity / freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
9.8	Horse-riding	Not observed or described in risk assessed area									
9.9	Wind-powered vehicles	Not observed or described in risk assessed area									
9.10	Sand digging/tunnelling	daily	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit	Entrapment Asphyxiation Falls from height into open holes	3	2	6	Pre-arrival education (sand digging / tunneling) Emergency communications (national guidance) Trained observer provision First aid provision	Y	6	Signage (national guidance) (sand digging / tunnelling) Zoning (supervised zone) Lifeguard provision
9.11	4WD vehicles/quad/dirt bikes	Not observed or described in risk assessed area									
9.12	Paragliding / handgliding	Not observed or described in risk assessed area									
9.13	Other										

10.0 Surf zones

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	Number pursuing activity / Freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
10.1	Paddling/wading	100 daily	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Drowning	4	2	8	Pre-arrival education (general water safety message) Signage (beach safety code of conduct) Signage (national guidance) – main water hazards listed Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	Y	4	**Zoning (designated swim / activity zone)** Lifeguard provision Means of beach closure
10.2	Diving	daily	Employees Males Very young 16–35 TVM Non-swimmers Weak swimmers	Head, neck and back injuries Drowning	4	3	12	Pre-arrival education (tombstoning) Signage (beach safety code of conduct) Signage (national guidance) – do not jump from rocks Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	Y	8	**Zoning (designated swim / activity zone)** Lifeguard provision Means of beach closure

Ref	Hazard (and location if applicable)	Number pursuing activity / Freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
10.3	Swimming	20 daily	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Drowning	4	3	12	Pre-arrival education (swimming) Signage (beach safety code of conduct) Signage (national guidance) – main water hazards listed Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	12	Zoning (designated swim / activity zone) Red and yellow flags Lifeguard provision Means of beach closure
10.4	Inflatable users	100+	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Drifting offshore (offshore winds) Drowning	4	4	16	Pre-arrival education (inflatables) Signage (do not use inflatables when windy) Signage (national guidance) – Do not use inflatables when windy Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision	N	12	Zoning (designated swim / activity zone) Lifeguard provision Closure – wind sock **Restrict inflatable sales locally**
10.5	Skimboarding	< 10	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Impact Injuries Head, neck and back injuries Drowning	4	3	12	Pre-arrival education (general water safety message) Signage (beach safety code of conduct) Signage (national guidance) – main water hazards listed Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	12	**Zoning (designated swim / activity zone)** Lifeguard provision Means of beach closure

Ref	Hazard (and location if applicable)	Number pursuing activity / Freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
10.6	Bodysurfing	20 +	Employees Males 16–35 TVM Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Head, neck and back injuries Impact injuries Drowning	4	2	8	Pre-arrival education (general water safety message) Signage (beach safety code of conduct) Signage (national guidance) – main water hazards listed Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	8	**Zoning (designated swim / activity zone)** Lifeguard provision Means of beach closure
10.7	Bodyboarding	10 +	Employees Males 16–35 TVM Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Head, neck and back injuries Impact injuries Drowning	4	3	12	Pre-arrival education (body boarding) Signage (beach safety code of conduct) Signage (national guidance) – main water hazards listed Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	12	**Zoning (designated swim / activity zone)** Lifeguard provision Means of beach closure
10.8	Wave dodging	<10	Employees Males Very young 16–35 TVM Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Impact injuries Drowning	4	3	12	Pre-arrival education (waves) Signage (national guidance) – beware of wash from passing ships Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	12	Zoning (supervised zone) Lifeguard provision Means of beach closure

Ref	Hazard (and location if applicable)	Number pursuing activity / Freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
10.9	Cliff, rock or pier jumping	daily	Employees Males Very young 16–35 TVM Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Head, neck and back injuries Impact injuries Drowning	4	3	12	Pre-arrival education (tombstoning) Signage (Don not jump from rocks) Signage (national guidance) – do not jump off groynes or rocks Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision	N	12	Lifeguard provision **Restrict access to sites**
10.10	Surfing	10 - 20	Employees Males 16–35 TVM Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Impact injuries Drowning	4	3	12	Pre-arrival education (surfing) Pre-arrival education (going afloat advice) Signage (national guidance) – main water hazards listed Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	12	**Zoning (designated swim / activity zone)** Red and yellow flags Black and white flags **Club/self regulation** Lifeguard provision Means of beach closure
10.11	Windsurfing	occasional	Employees Males 16–35 TVM Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Head, neck and back injuries Impact injuries Drowning Collision with other water users	4	3	12	Pre-arrival education (windsurfing) Pre-arrival education (going afloat advice) Signage (national guidance) – main water hazards listed Signage – going afloat guidelines Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	12	**Zoning (designated swim / activity zone)** Red and yellow flags Black and white flags **Club/self regulation** Lifeguard provision Means of beach closure

Ref	Hazard (and location if applicable)	Number pursuing activity / Freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control risk level	Alternative potential control measures (BOLD – Suggested control measures)
10.12	Kitesurfing	occasional	Employees Males 16–35 TVM Pre-existing medical conditions Unfit Non-swimmers Weak swimmers	Head, neck and back injuries Impact injuries Drowning Collision with other water users Entanglement	4	3	12	Pre-arrival education (kitesurfing) Signage (beach safety code of conduct) Signage (national guidance) – main water hazards listed Emergency communications (national guidance) PRE (national guidance) Trained observer provision First aid provision Red flag	N	12	**Zoning (designated swim / activity zone)** Red and yellow flags Black and white flags **Club/self regulation** Lifeguard provision Means of beach closure
10.13	Other										

11.0 Beyond surf zones

Severity: 1 minor, 2 major, 3 critical, 4 fatal, 5 multiple fatalities
Likelihood: 1 improbable, 2 remote, 3 occasional, 4 probable, 5 frequent

Ref	Hazard (and location if applicable)	Number pursuing activity /Freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control Risk level	Alternative potential control measures (BOLD – Suggested control measures)
11.1	Rowing (oar or paddle) Kayaks ✔ Canoes ✔ Stand up Paddleboard ✔	frequent	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers Non-swimmers Weak swimmers	Drifting Drowning	4	3	12	Pre-arrival education (kayaking & Canoeing) Pre-arrival education (going afloat advice) Signage (national guidance) – main water hazards listed Signage – going afloat guidelines Emergency communications (national guidance) Trained observer provision First aid provision Byelaw / craft restrictions / regulations	N	12	**Zoning (designated swim / activity zone)** Red and yellow flags Black and white flags **Club/self regulation** Lifeguard provision Launch restrictions
11.2	Sailing Launch from Shanklin	occasional	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers Non-swimmers Weak swimmers	Collisions Drifting Drowning Entanglement	4	3	12	Pre-arrival education (going afloat advice) Signage (national guidance) – main water hazards listed Signage – going afloat guidelines Byelaws – dangerous driving, noise restrictions, 8 knot limit Emergency communications (national guidance) Trained observer provision First aid provision	N	12	**Zoning (designated swim / activity zone)** Red and yellow flags Black and white flags **Club/self regulation** Lifeguard provision Launch restrictions

Ref	Hazard (and location if applicable)	Number pursuing activity /Freq.	At-risk groups	Associated problems	S	L	Risk level	Existing control measures	Existing controls sufficient Y/N	Control Risk level	Alternative potential control measures (BOLD – Suggested control measures)
11.3	Snorkelling/ spear fishing	frequent	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers Non-swimmers Weak swimmers	Drowning Entanglement Impact injuries	4	3	12	Signage (national guidance) – main water hazards listed Emergency communications (national guidance) Trained observer provision First aid provision Red flag	N	12	**Pre-arrival education (snorkelling safety)** Signage (national guidance) (caution snorkelling) **Zoning (designated swim / activity zone)** Red and yellow flags Black and white flags **Club/self regulation** Lifeguard provision Means of beach closure
11.4	Scuba diving	< 5 weekly	Employees Males Very young 16–35 TVM 60+ Pre-existing medical conditions Unfit Swimmers Non-swimmers Weak swimmers	Drowning Entanglement Impact injuries Decompression injuries	4	3	12	Signage (national guidance) – main water hazards listed Emergency communications (national guidance) Trained observer provision First aid provision Red flag	N	12	**Pre-arrival education (scuba safety)** Signage (national guidance) (caution scuba diving) **Zoning (designated swim / activity zone)** Red and yellow flags Black and white flags **Club/self regulation** Lifeguard provision Means of beach closure
11.5	Personal watercraft (PWC)/powered craft/skiing 2-3 incidents per week Launch from large motor yachts and harbour	Frequent	Employees Males Very young 16–35 TVM Swimmers	Impact injuries Collisions Drowning	4	3	12	Pre-arrival education (going afloat advice) Signage (national guidance) – main water hazards listed Signage – going afloat guidelines Byelaws – dangerous driving, noise restrictions, 8 knot limit Emergency communications (national guidance) Trained observer provision First aid provision	N	12	**Zoning (designated swim / activity / launch zone)** **Club/self regulation** Emergency communications (national guidance) Lifeguard provision Launch restrictions / regulations
11.6	Other										

Field risk audit package

Appendix 1: Supporting Beach Information

Existing Services Overview
Emergency Services Overview
Existing Control Measures
Control Measures Reference Sheet
UKBSAM data
General Beach Observations
Behaviours and Perceived Incidence
Communication and Consultation
Photograph Reference Sheet
Supporting Photographs

Existing Services Overview

	Employer/Organisation	Dates/Hours	Other info e.g. qualification level
Lifeguard service	NA	NA	NA
First aiders	1 employed & 10 volunteers	1000 – 1600 1st May – 30th September	St Johns Ambulance 1st Aid at Work RLSS Emergency response – Open Water
Lost children provision	NA	NA	NA

Patrol Zone set up		Lifeguard Powercraft
Small beach, no lifeguards	✔	Used for rescues and short duration work only
Flagged small under 200m		1 craft used for constant patrols
Flagged medium 200-1000m		2 craft used for constant patrols
Flagged large over 1000m		
Open beach		
Multiple flagged over 1000m and open		

Emergency Services Overview

Emergency and other services that respond or which have responsibility within the assessment area

Emergency services	Response time / nearest facility / contact name
Ambulance	Ventnor 1st responder 5 mins & Shanklin ambulance 4 miles
Air ambulance	Southampton
Local police unit	Ventnor (station due to close) & PCSO
Coastguard	Ventnor
Lifeboats	Sandown & Shanklin 20 – 30 mins
Other:	

Designated access route for emergency response vehicles:	Yes

Mobile phone coverage: **Best network:**	Poor Orange Vodafone
Public telephone located near by:	No Location: Nearest phone is at the top of the hill
Designated Emergency Telephone/call point:	No Is it National Guideline Standard? NA Location:- NA
Public Rescue Equipment	Yes Type? Lifering Is it National Guideline Standard? Yes

Control Measures Reference Sheet - Below is a summary of existing broad level control measures in place.

Pre-arrival Education **Record all hazards and activities highlighted on pre-arrival materials**			**Signage** **Record all hazards and prohibitions highlighted on existing signage at beach location**		**Byelaws** **Record all relevant byelaws relating to beach based hazards or activities**
Website	**Leaflets**	**Posters**	**National Guideline**	**Non-National Guideline**	
Council web site:- Do not: Swim; when red flag flying, near breakwaters. After eating, Play on or near breakwaters. Use inflatables when windy. Abuse life saving equipment. Going afloat; Make sure vessel and equipment in good condition. If hiring make sure operator is licenced. Wear lifejackets. Tell someone where you are going. Make sure sea and weather conditions are suitable.	On the Beach (OTB) In the Surf (ITS) Tides – OTB / ITS Dangerous litter (including BBQ's) - OTB Rocks - OTB Cliffs - OTB Harbour walls - OTB Rips – OTB / ITS Waves – OTB / ITS Marine stingers – OTB / ITS Piers/groynes - OTB Powerboats - OTB UV Radiation/Sun Safety – OTB / ITS Sand digging/tunnelling - OTB Missing children - OTB Inflatables - OTB Flags – OTB / ITS Swimming - OTB	Water quality posters Blue flag posters Quality Coast Award poster Pleasure boat byelaws Beach code of conduct	Beware of rip currents Beware of strong winds Beware of tides Beware of wash from passing ships Beware of weaver fish Do not jump of groynes or rocks No BBQs Do not use inflatables when windy No dogs 1/5 – 30/9 Location of PRE etc 999 in emergency UBLC's Dog fouling	Beach safety code of conduct: Do not swim after a meal Play on or dive from breakwaters Abuse lifesaving equipment Going afloat; Make sure vessel and equipment in good condition. If hiring make sure operator is licenced. Wear lifejackets. Tell someone where you are going. Make sure sea and weather conditions are suitable. Sun safety No Lifeguards Dispose of litter Check water quality results Road safety	Pleasure craft; 8 knot Apr – Oct inside buoyed areas Dangerous driving Noise restrictions Dogs 1/5 – 30/9 20mph speed limit on road **Other Control Measures** **(eg. PRE)** 4 x life rings Waist bins Dog waist bins Beach cleaning

Red flag info Beach masters info Water quality info Dog ban	Surfing – OTB / ITS Bodyboarding – OTB / ITS Tombstoning - OTB PPE - ITS Surf Etiquette - ITS Windsurfing - ITS Kayaking and canoeing - ITS Kitesurfing - ITS Stand up paddleboarding - ITS			Water quality info Warning cliff falls Caution slip / trip hazard keep off slipway Danger slippery surface Keep off slipway Pleasure craft byelaws; 8 knot Apr – Oct inside buoyed areas Dangerous driving / sailing Contents of drums etc washed up on beach may be dangerous	

UKBSAM Data

Ventnor Beach is not yet classified under the UKBSAM system

General Beach Observations

Type of facility provision		Type of activity being promoted		Visitor Profile	
No definable beach access		Scenic walks and views	✔	Family	✔
Informal access points		Beach and coastal walks	✔	Young (U18)	✔
Formal access points	✔	Extreme sports		Elderly	✔
Specific beach parking	✔	Family activities (beach)	✔	Local visitors	✔
Public transport		Family activities (water)		National visitors	✔
Shower points	✔	Local tourism	✔	International visitors	✔
Public toilets	✔	National tourism			
Changing rooms		International tourism		Average visitor numbers during	
Off-beach commercial activity	✔	Organised water activities		peak times	500
On-beach commercial activity	✔				

Type of built environment		Type of natural environment		Water Quality		Awards	
Remote rural		Cliffs and rocky coastline		Designated bathing beach	✔	Blue Flag	✔
Rural accessible coast		Embayment		Not tested		Seaside Award	
Coastal (rural) resort	✔	Partial embayment	✔	Fail		Green Flag	
Metropolitan /urban beach		Open beach		Basic Pass		Quality Coast	✔
Resort beach		Estuarine		Guideline		State award:	
				MCS recommended	✔		
Vehicle access to beach		Sand	✔				
4x4 access to beach	✔	Pebble					
		Shingle	✔				
Beach backed by road / prom	✔	Mud					
		Multi-terrain					

Behaviours and Perceived Incidence (Stakeholder Perception)

Behaviour	No change	Increasing	Decreasing	No Answer	Comment
Alcohol use	✔				Existing issues
Drug use	✔				Some use
Controlled risk taking behaviour		✔			Free running
Uncontrolled risk taking behaviour		✔			Rock jumping
Aggressive / violent behaviour		✔			
Criminal / Antisocial behaviour	✔				

NB. For definitions of the terms mentioned above please see RNLI glossary at Appendix 3.

Communication and Consultation

Stakeholders involved in risk assessment process:

Internal stakeholders:	Dave Gray, Lead First Aider, Ventnor Town Council
External stakeholders:	Lee Fisher, Lifeguard Services Manager, RNLI Darren Lewis, Lifeguard Inspector, RNLI

Working group details:

Is there a coastal safety working group (or similar) in existence?	No
If no working group is in place, will a working group be formed?	Not able to answer
If yes, what's the name of the working group?	[<Insert name of working group>]
Internal members:	[<Insert name, title, organisation and contact details>] [<Insert name, title, organisation and contact details>]
External members:	[<Insert name, title, organisation and contact details>] [<Insert name, title, organisation and contact details>]

Recording and reporting of incidents:

Do you use the National Water Safety Forum forms to record incidents?	No (notes made in diary)
If no, who produces the forms you use to record incidents?	[<Insert name of form provider>]
How do you report upon incidents recorded e.g. BREM database?	[<Please describe reporting method>]

Photograph reference sheet

#	Photo	Comment
1	Main information sign	Suggest upgrading to national guidance signage
2	Main information sign	Suggest upgrading to national guidance signage
3	Main information sign	Suggest upgrading to national guidance signage
4	Public Rescue Equipment	
5	Dog restrictions	
6	Emergency telephone	

Photographs 1 and 2

Photographs 3 and 4

Photographs 5 and 6

Field risk assessment package

Appendix 2: Risk Assessment Theory

RNLI Risk Assessment
ISO Risk Assessment Principles and Practice
University of Plymouth Risk Assessment
Considering Risk Versus Benefit
Residual Risk

Introduction to Risk Assessment

Coastal management authorities need to take preventative actions to avoid foreseeable loss of life and injury on any section of coastline likely to be visited by the public. The RNLI has been proactive in working with various groups with the objective of reducing risk and therefore liability.

There is no such thing as zero risk. The purpose of hazard and risk assessment is to assess the probability that certain events will take place and assess the potential adverse impact these events may have on people, property or the environment or other adverse outcomes.

By definition, a **hazard** is a set of circumstances that may lead to injury or death, and the term **risk** is used to describe the probability that a given exposure to a hazard will lead to an adverse health outcome. Thus, hazards can be viewed as a combination of (1) the potential cause of an injury/illness and (2) the absence of measures to prevent exposure or mitigate against a more severe adverse outcome.

The job of accurately analysing the potential personal risk to members of the public at a coastal location is a difficult one. The determination and evaluation of potential risks is made more complicated in coastal regions due to the continually changing nature of the environment. Coastal regions are dynamic environments where the presence and level of a potential danger varies with numerous factors such as time, weather and human interaction. In order to effectively assess hazards and their associated risks, the assessor must understand all the contributing factors that go together to create the danger, for example the beach topography and the prevailing weather and wave climates.

Consideration is required to treat and manage the risks present to ensure visitors can enjoy the safest aquatic recreation possible.

Solutions will include:

- removal of hazards where possible
- community education programmes to raise awareness of potential hazards
- signage to allow visitors to make informed decisions on whether they wish to proceed into an area or with an activity
- supervision through the deployment of appropriately trained personnel
- appropriate emergency management systems put in place.

Establishing the Context

Establishing the context of the risk assessment helps define the basic parameters within which risks must be managed and sets the scope of the risk management process. It is important to ensure that the objectives defined in the risk management process take into account the organisational and external environment.

Authority: This beach risk and safety consultation has been conducted under the authority of the management authority.

Scope: The scope of the risk audit is to:

1) Conduct a beach risk audit and prepare a report
2) Make recommendations on improving the level of risk and safety management on the beaches through the use of risk management practices in line with the current standards and best practices.

References: The primary reference documents used for this inspection were:

1) *Safety on beaches, Operational guidelines* (RoSPA, 2004)
2) *A guide to beach safety signs, flags and symbols* (RNLI, Version 2, 2007)
3) *A guide to coastal public rescue equipment* (RNLI, 2007)
4) *ISO 31000:2009(E) Risk Management – Principles and guidelines*

RNLI beach risk assessment protocols and procedures were applied where appropriate.

Methodology: For the purpose of this site inspection, the following techniques were employed:

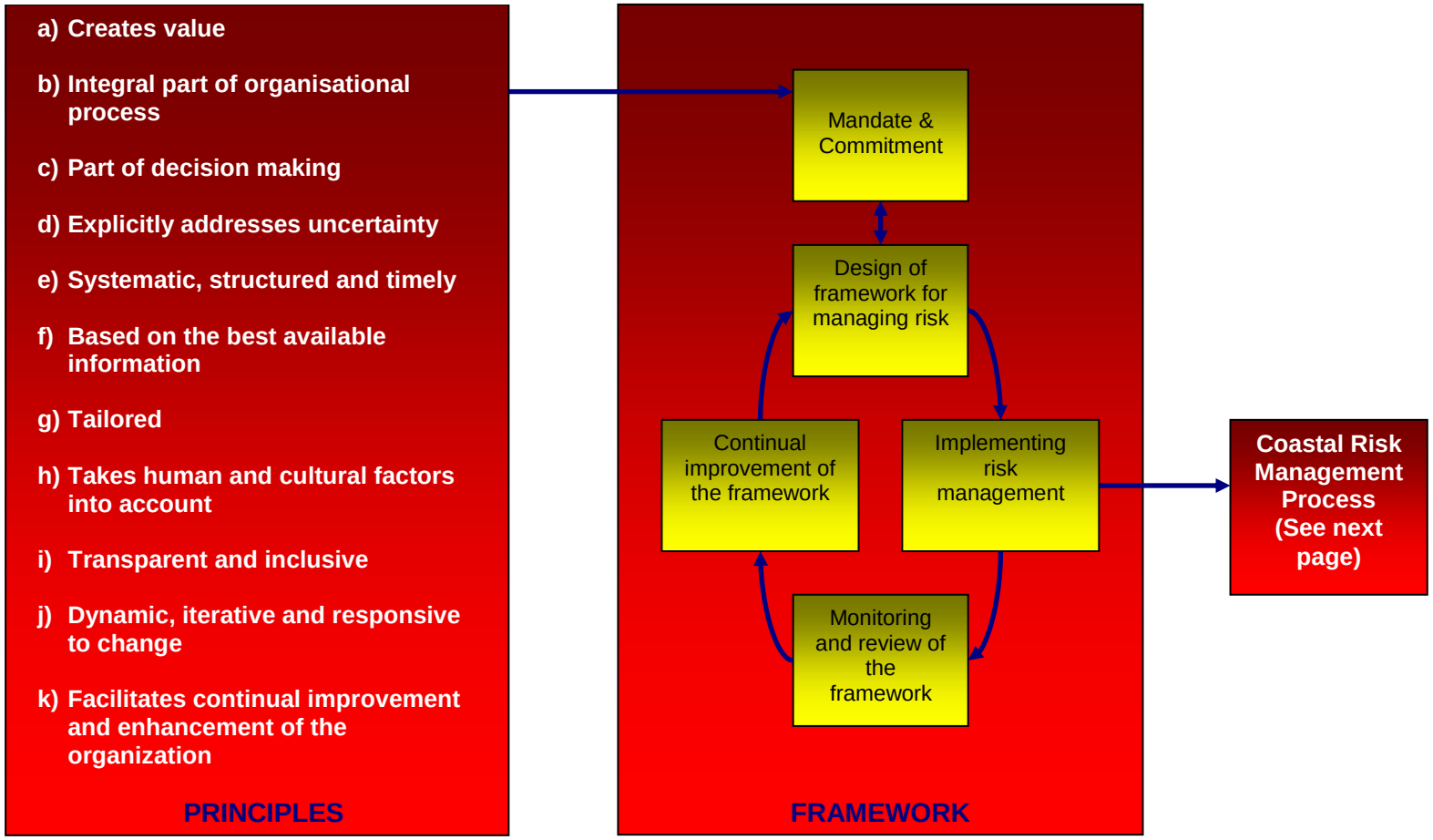
1) Inspection of the coastal environment and adjoining associated sites
2) Interviews with selected staff.

Findings: Observations from site inspections are limited due to the timing of the inspections. It is recommended that risk audits be completed at different times of the year and at varying tide / weather conditions.

Additional information can be gained through interviews with staff.

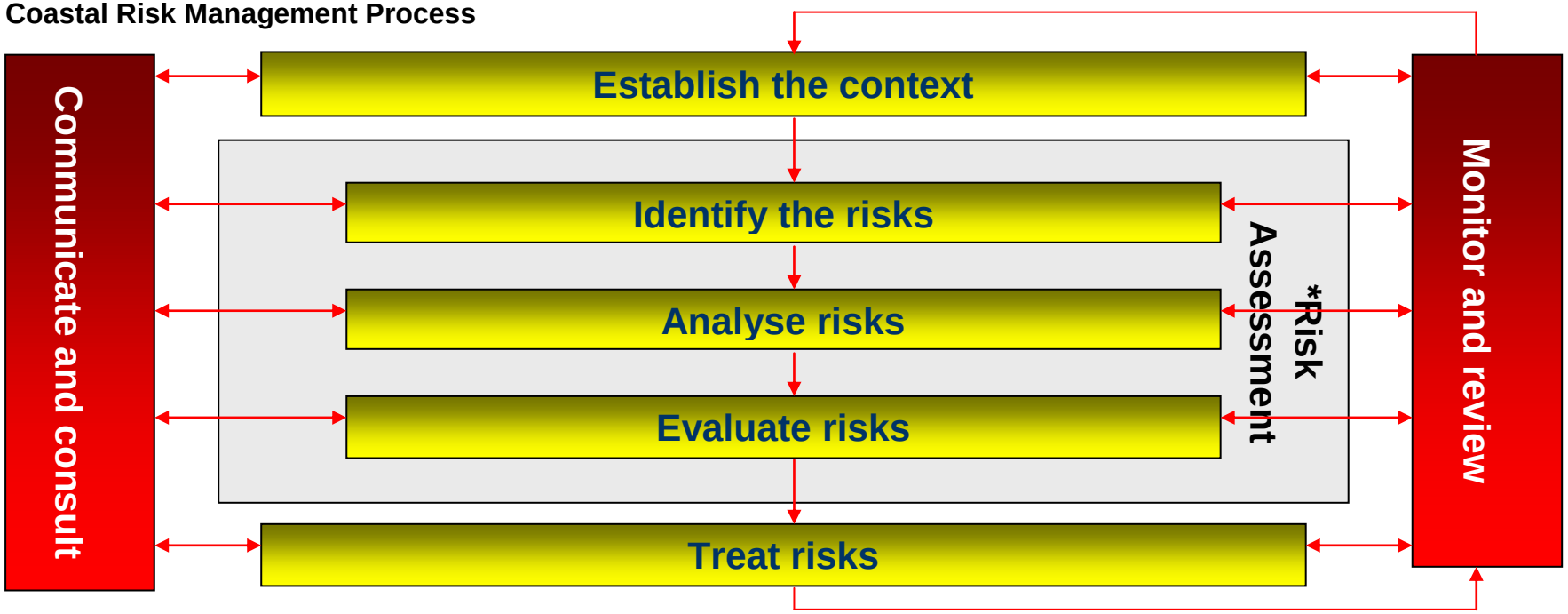
Risk Assessment Principles and Framework

The International Organisation for Standardisation (ISO) recognises the following system for beach risk assessment:



Ref: ISO 31000:2009(E) Risk management – Principles and guidelines

Coastal Risk Management Process



Ref: ISO 31000:2009(E) Risk management – Principles and guidelines

*The RNLI risk assessment process satisfies the ISO requirements for these 3 steps. It is the beach manager's responsibility to put this risk assessment into the wider context of risk management.

University of Plymouth UK Beach Safety Assessment Model (UKBSAM)

The RNLI beach risk audits are based upon a comprehensive, up-to-date, scientific understanding of the dynamics and hazards of beaches in the United Kingdom (UK). Research conducted at the University of Plymouth (UoP) for the RNLI has identified a strong link between beach type and the baseline physical hazard levels present at UK beaches. This research, which analysed physical scientific data from over 100 beaches around the UK in conjunction with the archive of RNLI incident reports, has led to the generation of a UK Beach Safety Assessment Model (UKBSAM), developed by Dr Tim Scott at the UoP in collaboration with the RNLI. The UKBSAM comprises of a UK beach classification and hazard assessment model. Baseline beach information that feeds the model is derived from a comprehensive, standardised and scientific database, collected by the UoP, containing physical environmental information about all bathing beaches in the UK relevant to assessing their potential physical hazards. This baseline assessment of physical beach hazards then provides valuable background understanding, helping to inform the context of the risk assessment, from which point the beach risk audit visit is conducted.

Beach Classification: By classifying a beach as one of 13 distinct types identified by the research, it is possible to make informed assessments about the likely physical hazards present and their potential variation throughout a typical year, providing an understanding of the seasonal variation in tide, waves, wind and beach shape that is expected to be observed, complementing the assessment of physical beach hazards during site visits. Following the classification of beach type, a hazard index is used to identify levels of specific hazards typically associated with that particular beach type.

Environmental setting: In addition to a general beach type classification, a number of local environmental parameters associated with each beach site are recorded in the database. These data provide important information in furthering the understanding of the surrounding natural environment and how it can modify the hazard levels already identified by the general beach type classification.

Coastal Risk Summary: The UKBSAM informs the simplified risk calculation for beaches and comprises part of the generalised beach observations.

Considering Risk Versus Benefit

No matter how well risks are managed there will always be some inherent dangers associated with visiting the beach environment but in this risk conscious society it is important to also recognise the benefits in spending time in and around the water.

"The sea has always been associated with recovery and health and led to the development of health resorts along the coast. There is good scientific evidence that living by the coast can reduce symptoms in those suffering from asthma and bronchitis due to the cleaner air. Research has also found that people living on or near the coast are more physically active. This coastal effect is due to the attraction of the sea front offering an attractive flat and uninterrupted walk, jog or bike ride which is usually easy to access.

Being regularly active has very strong health benefits including halving the risk of developing heart disease or diabetes and significantly reducing the risk of breast and bowel cancer. According to the chief medical officer physical activity is as effective as anti-depressants in treating depression. Water based exercise raises the heart rate without putting any stress on the main joints.

Another benefit of the coast, beach and sea is the contact with nature. Research has shown that this contact with the natural world immediately reduces blood pressure, pulse rate and most importantly stress. It is constant stress that is now known to be an important cause for heart disease, cancer, diabetes and even obesity. Regular visits to the beach will help the body become more resilient to many of the main health problems we suffer from.

The Blue Gym aims to get more people more active near, in, on or under the water! The Blue Gym believes that by developing a strong connection to the natural water environment our health and wellbeing will benefit along with a greater respect and protection to the natural world on which our health depends.

Come on in the water is lovely!"

Dr William Bird for The Blue Gym

For more information visit http://www.bluegym.org.uk/

Residual Risk Factors

Risk assessments are designed to limit risk as far as possible. There is always potential for residual risk. The main residual risk factors to be aware of in the coastal environment are outlined below:

Countermeasure	Control measures	Applications	Residual risk factors
Education and information	Pre-arrival education	▪ Electronic and digital media ▪ Leaflets/brochures ▪ Awareness programmes	▪ Did not receive or understand awareness information ▪ Does not interpret hazard as being a risk to themselves ▪ Accepts risk
	Arrival information	▪ Information signage	▪ Did not see signage or did not understand signage ▪ Does not interpret hazard as being a risk to themselves ▪ Accepts risk
	Safe beach access	▪ Formal access ways	▪ Access ways not maintained
	On-site education	▪ Public address systems ▪ Face-to-face	▪ Did not receive or understand awareness information ▪ Does not interpret hazard as being a risk to themselves ▪ Accepts risk

Countermeasure	Control measures	Applications	Residual risk factors
Denial of access and/or provision of warnings	Barriers	▪ Access barriers	▪ Avoids or breaches barriers ▪ Barriers creating a hazard
	Signage	▪ Information signage ▪ Warning signage ▪ Prohibition signage	▪ Did not see signage or did not understand signage ▪ Does not interpret hazard as being a risk to themselves ▪ Accepts risk
	Byelaw development	▪ Formal regulatory arrangements ▪ Recognition of lifeguard services and other service	▪ Inability to 'police' regulations

Countermeasure	Control measures	Applications	Residual risk factors
Provision of supervision	Trained observers	▪ Trained activity supervisors	▪ Outside of staff hours of duty or season ▪ Not within area of coverage ▪ Observers fail to identify person in difficulty ▪ Observers failure to respond appropriately
	First aid facilities	▪ Portable first aid kits ▪ Permanent/fixed facilities	▪ Outside of staff hours of duty or season ▪ Not within the area of coverage ▪ Staff failure to identify person in difficulty ▪ Staff failure respond appropriately
	Lifeguard services	▪ Intermittent (roving) ▪ Surveillance ▪ Full service (between the flags or open beach) ▪ After-hours call out	▪ Outside of lifeguard hours of duty or season ▪ Not within the lifeguarded area ▪ Lifeguards' failure to identify person in difficulty ▪ Lifeguards' failure to reach person(s) in difficulty
	Activity management	▪ Club/group registration ▪ Self regulation programme ▪ Permit systems	▪ Individuals not aware of self regulation programmes, permit systems or clubs ▪ Rogue operators/individuals
	Activity restrictions	▪ Zoning ▪ Beach/water closure	▪ Individuals not aware of zoning systems ▪ Rogue operators/individuals

Countermeasure	Control measures	Applications	Residual risk factors
Acquisition of survival skills	Community training	▪ Survival skills ▪ Self-rescue skills ▪ Rescue skills	▪ Did not receive training ▪ Inappropriate or incomplete training ▪ Over confidence of individual, therefore assuming a higher level of risk
	Emergency communications	▪ Public telephone ▪ Outpost alarms ▪ Dedicated emergency telephone ▪ Radio	▪ Equipment not able to be seen or accessed ▪ Equipment not available or fit for purpose (vandalism or theft) ▪ Equipment not suitable for purpose
	PRE	▪ Lifebuoys ▪ Throw lines ▪ Other extraction equipment and fixtures	▪ Equipment not able to be seen or reached ▪ Equipment not in place or not in a usable condition (stolen or vandalised) ▪ Rescuer not able to use equipment ▪ Rescuer enters water and places themselves at risk ▪ Equipment not suitable for task

Field risk assessment package

Appendix 3: Glossary

RNLI Glossary
University of Plymouth Glossary

RNLI Glossary

At Risk Groups

Males	Males feature prominently in coastal incident statistics. This is usually attributed to a greater tendency to participate in risk taking activity.
Very young	The very young (0–4 years) are the highest risk group for drowning in still-water environments. This group is vulnerable without constant adult supervision.
16–35 year olds	People in this age group, in particular young males, tend to participate both in more physical and more risk-taking activities. This risk-taking behaviour is often increased when there are groups involved.
Elderly	The elderly tend to be less adventurous, however, they often lack the physical skills and abilities to self recover if they get themselves into difficulties.
Tourists/visitors/migrants (TVM)	Tourists are usually unfamiliar with the local environment, often having little or no experience with coastal hazards. They may be identifiable as being improperly dressed for beach conditions. However, with surf clothing being highly available and considered fashionable, this is not always the case. Lacking a tan, being sunburnt and certain ethnic groups may also be indicators, but these are unreliable. International visitors may also present additional communication difficulties.
Pre-existing medical conditions	Pre-existing medical conditions, in particular cardiac conditions and conditions that affect consciousness; can increase the risk to an individual. People with physical or mental disabilities may also be at increased risk.
Physically unfit	Participation in many beach and aquatic activities can be very dynamic and many people are unprepared for the physical demands. They may be identifiable as being overweight or significantly underweight, but this is not always the case.
Non-swimmers	Any non-swimmer is at risk in the water. Most non-swimmers enter deep water accidentally.
Poor or weak swimmers	Poor or weak swimmers may overestimate their ability or underestimate the risks. They may also be overly reliant on surfing equipment, flotation devices, and other equipment for survival.
Employees	All employers have a legal responsibility to look after the health and welfare of their employees.

Perceived Behaviours - Definitions

BEHAVIOUR	CHARACTERISTICS
Alcohol use	Alcohol is linked to a high percentage of coastal incidents. Alcohol makes a person less aware of hazards and less capable of responding once in difficulty.
Drug use	As with alcohol a person under the influence of either legal or illegal drugs may become less aware of hazards and less capable of responding appropriately, however, the extent of this problem is less well known.
Controlled risk taking behaviour	Controlled risk taking is associated with adventure/extreme sports enthusiasts who follow defined safety rules and tend to understand their own limits and that of their equipment. There is still the chance of equipment failure, miscalculation or other misadventure. Controlled risk taking behaviour lends itself to management through voluntary codes of practices.
Uncontrolled risk taking behaviour	Uncontrolled risk takers fail to take appropriate precautions and often endanger themselves or others through ignorance or by committing acts of bravado. This behaviour is also strongly associated with alcohol use.
Aggressive / Violent Behaviour	Problems associated with aggressive or violent behaviour will be exacerbated by alcohol or drug use. It is also a feature of over-crowding and competition for limited space or opportunities and conflicting activities.
Criminal / Antisocial Behaviour	Coastal areas are not immune to problems that affect other parts of society. The most common criminal behaviours are normally opportunistic in nature and often associated with groups.

Severity and Likelihood Explained

Severity	Level	Definition
None	0	No injury sustained to public
Minor	1	A minor injury, such as cuts and bruises, that can be dealt with swiftly and easily by the lifeguards themselves and requires only minor first aid
Major	2	A major injury requiring more than minor first aid
		May require a trip to and accident and emergency department
Critical	3	Critical injury to the public such as broken limbs, major cuts
		An essential need for outside assistance and possibly hospitalisation
		More than 3 days required off work
Fatal	4	Permanent or life-threatening injury to the public
		Loss of a limb
		Loss of member of public out to sea – death
Multiple fatalities	5	Permanent or life-threatening injury to more than one member of the public
		Multiple loss of limbs
		Loss of more than one member of the public out to sea – death

Likelihood	Level	Definition
None	0	Never occurs
Improbable	1	An event that is so unlikely to occur that it should not be considered as possible to occur
Remote	2	Unlikely to occur, but nevertheless should be considered as being possible
Occasional	3	Unlikely to occur often but may occur several times during the season under normal weather conditions
Probable	4	Likely to occur under normal conditions; likelihood increases during extreme weather conditions
Frequent	5	Likely to occur often, under all weather conditions, throughout the year

University of Plymouth UKBSAM Glossary

BEACH TYPE DESCRIPTIONS
(PHYSICAL CHARACTERISTICS)

PHYSICAL HAZARDS MODAL (HIGH ENERGY)

General: Where appropriate hazard levels are given for high water levels (HW) and low water levels (LW). Hazard levels are considered for modal and high energy conditions (associated with 10% exceedence wave events). Hazard ratings are described on five levels (very low, low, medium, high and very high). These levels are specific to each hazard and levels for different hazards should not be directly compared as some hazards carry a greater severity than others (e.g. rip currents are more severe than beach gradient hazards).
Rip currents: Rip currents are wave driven current circulations in the surf zone, which have a strong offshore flowing component associated with them. These currents are the greatest cause of incident at RNLI beaches and worldwide. They can potentially transport a bather from a region of low hazard to one of increased hazard by moving them both laterally along the beach to deeper water and offshore through the surf zone and occasionally beyond. A number of rip current types exist but the beach type classification guide refers only to accretionary and erosional beach rips driven by sandbar formations and high energy waves, respectively. These hazards are often strongly controlled by the prevailing wave conditions and tidal levels, appearing and disappearing under a combination of wave, tide and sandbar conditions. Permenant topographic rips, associated with rock outcrps and headlands are a locally derived hazard (see 'Environmental setting additional hazards checklist').
Wave breaking: Wave breaking hazard in this context refers to the hazard presented to the bather through different types of wave breaking, classified as: spilling, plunging, collapsing and surging. Generally, spilling waves are associated with dissipative beaches and plunging and collapsing/surging are associated with intermediate and reflective types respectively. Essentially the plunging wave type expends its energy over a shorter distance than dissipative types and plunging / collapsing waves are responsible for increased submersion, disorientation and potentially seabed collision hazard through more energetic wave breaking. For additional surging hazards see Swash
Surf zone energy: High surf zone energy and waves lead to a turbulent and dynamic surf zone where forcing by larger waves can generate high levels of water movement in the surf zone. This increases levels of bather submersion and disorientation, limiting the ability of the insea beach user to be aware of their location and the associated hazards within the surf zone. This also reduces their ability to escape the regions of high hazard.
Beach gradient: Referring to the steepness of the beach surface. Reflective regimes are associated with steeper gradients than dissipative regimes and therefore present greater beach gradient hazards. Beach gradient hazard is driven by the rate at which a bather or water user can be out of their depth from the shore. In addition to overall beach slope, beach morphology in the form of sandbars and sandbanks creates a hazard through rapid variations of water depth within the inner surf zone.
Swash: Associated with swash events and surging waves (occurring at seconds to minutes associated with individual waves and groups or sets of waves respectively), the rapid lateral movement of the shoreline (up and down the beach) can act to overpower the beach user either transporting them seawards to a region of increased hazard, or creating a collision hazard through falling (e.g. on slipway).
Tidal cut-off: The varying of tidal level creates a temporal reduction in beach area and can rapidly increase water depth that a bather needs to pass to reach a region of reduced hazard (dry beach), often associated with headlands and cliff-foot beaches that are submerged at high water. In addition to beach area at high water, beach morphology in the form of sandbars and sandbanks can increase cut-off hazard through the isolation of sandbars during the flooding tide.
Littoral currents: An alongshore current hazard (parallel to the beach), causing the relocation of the insea beach user parallel to the shoreline. This is often associated with a rip current hazard as rip current hazard levels are commonly variable in the alongshore. Littoral currents are often driven by strong winds, high waves and waves approaching the beach at an angle.
Summary: Provides a description of some of the key hazards and hazard levels associated with the specific beach type in question.
Hazard Rating: The hazard rating represents the general overall level of hazard associated with the beach type when taking into account the specific hazards described above. This hazard represents the common level of hazard under average wave conditions for the beach type in question.

BEACH TYPE CHARACTERISTICS

(**HW:** high water; **LW:** low water)

Wave: Wave energy is defined as either high or low. The distinction is important to differentiate between expected surf zone processes. Typically, high-energy beaches are dominated by ocean swell waves. Wave climate characteristics are described as either swell, mixed or wind. Wind waves ('wind chop') are termed 'steep waves', they are derived from local winds and tend to have a lower wave period in relation to the wave height when compared to swell waves. Swell waves ('ground swell') arrive at the coast from a distant source and have a high wave period in relation to wave height. The concept of wave steepness plays an important role in controlling beach type. Mixed wave climates have significant amounts of wind and swell wave influences.
Sediment: Sediment size typically ranges from fine sand (occasionally mud) to boulders. For a beach to exist there must be an accumulation of mobile sediment, therefore the properties of this sediment are crucial in determining how the waves and currents will move it around determining the type of beach that is formed. In general, the average sediment size is the parameter used to describe sediment characteristics. In simple terms, the grain size will control whether the sediment is more likely to be moved onshore or offshore. Coarser sediment encourages onshore movement and finer sediment offshore movement, hence in most cases the coarser sediments are found at the top of the beach.
Tide: The tide range (TR) in the UK varies enormously and ranges from what is called micro-tidal (<2 m), through meso-tidal (2 m > TR < 4 m) to macro-tidal (4 m < TR < 8 m) and in some cases mega-tidal (>8 m). Most of the coast is in the meso- to macro-tidal range. An increase in tide range, in effect, smears and flattens the beach between high- and low-tide and increases the amount of exposed beach episodically exposed at low-tide. This smearing reduces the amount of time the different wave processes have to generate beach forms like bars at any one position as the shoreline is always moving. But, during the period around high and especially low-tide still-stand, the wave processes have the opportunity to create beach forms, hence on beaches with a large tidal range, if bar systems are present they are often found within the low-tide region.
Surf zone width: The surf zone width is the distance from the shoreline to the point of wave breaking under average wave and beach conditons. Descriptions of surf zone width range from very narrow - very wide.
Comments: The comments section provides a description of some distinguishing characteristics of each beach type that may be of significance to beach safety. Some commomly used terms are:
Reflective - These beaches are so called because they have a reflective surf zone regime throughout the tidal cycle with a steep beach slope. Consequently, the majority of wave energy reaches the shoreline and breaks energetically through plunging and surging waves.
Intermediate - These beaches lie between the two reflective and dissipative end-members and possess elements of both regimes. Within this type the nature of wave breaking and beach slope often vary within the tidal cycle with a predominantly steeper reflective beach at high water becoming flatter and more dissipative towards low water. Transmission of wave energy to the shoreline varies with the tide; plunging and surging waves break at the shoreline at high water and a wider more dissipative surf zone develops as the tide drops. Intermediate beaches are often characterized by the presence of sand bars at mid- and low-tide, which can create a mix of plunging and dissipative wave breaking, driving surf zone currents (i.e. rip currents).Rhythmic low-tide sand bar formations typically range from longshore bar/trough (a fairly straight 'winter' formation with a deep trough between shoreline and breaker zone) and transverse bar/rip (3D 'summer' configuration where sand shoals have welded to low-tide beach intersected by deep rip channels).
Dissipative - Dissipative beaches, so called because they have a dissipative surf zone regime throughout the tidal cycle, are characterised by spilling breakers across the surf zone. Typically exhibiting a shallow slope and a wide inter-tidal beach, significant attenuation of wave energy from breaking to the shoreline occurs across the surf zone, leading to limited incident wave energy reaching the shoreline. These beaches are often fine grained and/or high energy with large tidal ranges. They rarely accomodate significant bar systems.
Ultra-dissipative - These beaches typically lie in low-energy mega-tidal regions. At spring low-tide they often represent the transition to tidal flats. Unlike the other wave dominated and tide-modified regimes, tidal influence begins to rival, and sometimes dominate, that of waves. High levels of wave energy attenuation throughout the near-shore and surf zone through wave shoaling and wave breaking mean little incident wave energy reaches the shoreline, except possibly at high-tide. Sediment at low-tide is commonly mud/fine sand and can coarsen throughout the transition to the upper beach.
General stability: Refers to the potential of the beach to alter in shape significantly under varying environmental (principally wave) conditions. This variation can lead to either a change in bar configuration or a change to a different beach type/state. Often these changes can occur seasonally due to variations in the wave climate (winter - storm, summer - calm) or can be due to significant storm events. Factors such as the introduction new coastal protection schemes, or beach nourishment are not considered here.

IMPORTANT General beach type physical characteristics provide an overview of generic beach types. On a local scale, these physical characteristics can be modified by local environmental conditions (rock exposure, drainage, coastal structures etc). Please refer to the 'Environmental setting additional hazards checklist' for more information on how local environmental characteristics in addition to the general beach type can modify levels of hazard.

ENVIRONMENTAL SETTING
(ADDITIONAL HAZARDS CHECKLIST)
GLOSSARY OF TERMS

ENVIRONMENTAL SETTING
General: Aspects of the local environmental setting associated with a beach system can have a significant modifying effect on the general beach type characteristics and hazards.
Drainage: The presence of beach drainage can alter the character of the beach shape, affect the potential for bar formation and modify surf zone currents. Beach drainage characteristics within a beach system are classified as either estuary/inlet, river or stream (intermittent flow).
Coastal morphology: The characteristics of the land boundary of the beach system. Important backshore charateristics for interpreting hazards are the presence of dunes, high (>20 m) and low (<20 m) cliffs and whether the beach is bound by headlands and whether it is is embayed or open. These characteristics influence surfzone circulation and levels of beach segmentation at high water.
Segmentaion/submersion: Where beaches have a lack of sediment supply, are eroding coasts or the inter-tidal zone is intersected by rock outcrops or headlands. The fluctuation of the tide can segment the beach at high-tide into smaller sections and leave regions competely submerged.
Embaymentisation: A value relating to the relationship between the straight-line distance between headlands (chord) and that of the distance along the shoreline from headland to headland (arc).
Inter-/sub-tidal geology: Indicates the presence of inter-tidal hard rock exposure within the inter-tidal (region exposed during the tide) and sub-tidal zone (region below low water).
Coastal structure (man-made): The presence of coastal structures within the beach system can dramatically alter the beach shape and surfzone circulation potentially having significant implications for bathing hazards. Types of structures include groynes, piers, slipways, breakwaters, seawalls and harbours (marinas).

ADDITIONAL HAZARDS
Topographic and Mega rip currents: A strongly embayed beach has a high potential for mega-rips to exist under high energy conditions. These rips are fixed and driven by the headlands. These rips flow at the greatest speeds and can often flow far beyond the edge of the surf zone. Similarly, Topographic rips driven by solid obstruction caused by the presence of headlands, inter-tidal and sub-tidal geology act to constrain surf-zone circulation on what may be a beach type where rips are generally uncommon (rock exposure can vary seasonally with sand cover). Topographic rips are also generated by the presence of man-made structure that interact with the surf zone.
Beach rip currents: The presence of drainage systems flowing into/though beaches can generate morphology (bedforms like sandbars and sandbanks) that is not typical of the general beach type. These bedforms can drive beach rip systems when they are located within the surf zone and significantly modify beach hazard levels associated with the general beach type. Sub-tidal geology (e.g. reefs) can affect the wave breaking patterns on the beach which can in turn lead to the generation of beach rips. This may affect hazard levels if that general beach type is not typically associated with bar/rip morphology.
Wave breaking: Sandbars and sandbanks often associated with river mouths and estuaries/inlets can induce heavy wave breaking (plunging/dumping waves). Rock outcropping and reefs that exist below low-tide can induce heavy irregular wave breaking (plunging/dumping waves). Rock exposure can vary seasonally with sand cover. Wave breaking may also be modified by man-mage structures in the surf zone increasing wave breaking hazard.
Beach gradient: Exposed hard rock geology within the inter-tidal beach can modifying beach gradient essentially leading to sudden drop-off or shallowing (rock exposure can vary seasonally with sand cover). Man-made structures are a significant cause of beach gradient hazard in some cases creating a vertical drop-off of varying severity into deep water.
Tidal cut-off: In environments where a larger low-tide beach is isolated into a number of smaller beaches by headlands, promontories or cliffs during the higher tide, an increased tidal cut-off hazard is created. This is exacerbated by beaches that are completely submerged at high water.
Littoral currents: Strong littoral currents can be created due to the presence of and estuary/inlet or river system. Embayed beaches can also experience strong variation in wave height from more sheltered to more exposed sections of the beach. This variation can drive littoral currents in the surf zone. In some cases on embayed beaches these currents can be associated with headland controlled mega-rips. The modification of the surf zone with man-made structures can drive strong littoral currents too (i.e. along the base of a breakwater or seawall if waves approach at an angle).
Collision: Headlands, inter-tidal geology, sub-tidal geology and man-made structures, when occurring within the surf zone, present an increased collision hazard. It is important to remember that rock exposure can vary seasonally with sand cover.
Offshore wind: If the average annual wind direction is greater than 90 degrees to the beach orientation there is a high percentage of days with offshore wind. This can create a hazard by causing bathers to be blown away from the beach into deeper water. This hazard is particularly important if there is a high level of inflatable and unpowered water craft use. Often these beaches will have a low wave height, promoting inflatable use.