

AUSTRALIAN COASTSAFE
 The national coastal safety management service of Surf Life Saving Australia


Coastal Public Risk & Safety Mapping

Adam Weir
*Coastal Risk Manager
 CoastSafe
 SLSA*

1 


What is CoastSafe

- CoastSafe is the intelligence and strategic national coastal safety management service of Surf Life Saving Australia
- We gather data on all beaches around Australia and establishes systems and programs to deliver a safer aquatic environment .
- CoastSafe offers services to
 - all levels of government,
 - coastal management organisation,
 - private developers and tourism operators
- The aim is to reduce the risk of injury or death and protect the reputation of Australia's coastal lifestyle and the significant economic value this brings to our nation.

2 

Outline


- CoastSafe
- Context
- Coastal Risk Management
- Guidelines and Standards
- Implementation of Geographical Information Systems & Technology
- Future Research and Development
- Strategic Direction for SLSA & CoastSafe

3 



Context

- Over 85%^[i] of Australians live near the coast
- Our tourist beaches alone receive an estimated 55 million visitations every year
- Coastline of Australia covers more than 35,877kms and when all islands are included the length increases to 59,736kms^[ii]
- Living on and visiting the coasts: social, health and lifestyle benefits, also inherent and unpredictable risk.
- Only 3% of Australia's 11,748 beaches have a lifesaving or lifeguard service

[i] Australian Bureau of Statistics, 2004
 [ii] Geoscience Australia


4 


Coastline attraction

5 

Estuary water ways and beaches



6 

Coastal Beaches



7



Climate Change

- Extreme weather events
 - Change to coast
 - Create sand cliffs that can collapse
- Sea level rise
 - Known hazards will need to be monitored
 - Previous safe may become hazardous
 - Community engagement

Shifty sand cliffs a growing danger



AN STRONG SQUALL SANDY cliff up to 3m high and eroding and built a unsuspecting beachgoers. However, beachgoers cliff's from the beach as the sea forced during a storm on the weekend. There's been an associated danger by recent high tides.

With Department of Environment and Heritage concerned about the erosion and the risk of people being injured, the department has issued a warning to beachgoers to be careful when sitting on sand cliffs.

Department of Environment and Heritage said that the erosion is a result of the sea level rise and the risk of people being injured is a real one.

Department of Environment and Heritage said that the erosion is a result of the sea level rise and the risk of people being injured is a real one.

Department of Environment and Heritage said that the erosion is a result of the sea level rise and the risk of people being injured is a real one.

Erin and Caitlin Huber with Chrissie MacCallum at Manly Beach.

Climate change

- Vulnerability
 - People
 - Lifestyles
 - Access
 - Emergency Services such as lifesavers
 - Surf lifesaving clubs: e.g.
 - Seaspray, Victoria 2007



9



Climate Change

- Coastal policies, strategies and plans give due considerations to the coastal environment, the ecology, biology, geomorphology and the impacts of human use.
- Few give reasonable consideration to human safety
- Environmental impacts from climate change will affect human health, safety and wellbeing
- Social and economic effect of climate change
- Human safety in the coastal zone can be managed with improved programs such as coastal risk management and coastal monitoring

10



EcoSurf

- Use of surf life saving clubs to showcase environmental practices
- Development of tools and resources based on the learning of SLS that can be made available to other community organisations
- Use of clubs to host community EcoSurf planning and workshops
- Community volunteers such as surf lifesavers involved in environmental monitoring. The Australian Beach Safety and Management Program (ABSAMP) may provide a mechanism for recording and promulgating relevant information.

11



Coastal Risk

- Inherent risks presented by conditions: waves, rocks, unpredictable
- Infrastructure: location, use, condition and maintenance
- Community perceptions
- Individual perceptions
- Changing expectations
- Population
- Demographic: e.g. tourists

12



COASTAL RISK MANAGEMENT

Recommendation 19 of the National Water Safety Plan 2004 to 2007

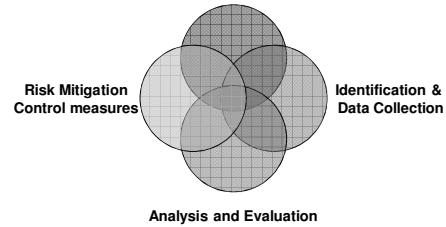
"Risk and Safety Audits be conducted and Risk Management Plans be prepared and implemented at all regularly used aquatic locations - beaches, pools, inland swimming holes."

13



Coastal Risk Assessment

Risk Assessment Principles



14



Coastal Risk Assessment



- Working alongside Statewide Mutual, Civic Mutual Plus and the University of Sydney to develop a consistent approach to Coastal Risk Assessment processes.
- Providing the capacity for coastal management authorities to take a proactive approach to reducing risk, and therefore liability, by working closely together to identify risk management solutions for the aquatic environment.
- Implementation will help to promote and enhance public safety.

15



Coastal Risk Assessment

- Accessible aquatic environments provide a potential hazard. If you add in the risks that people are willing to take, the consequences may be dire.
- Every time a picnic ground is built, a car park is laid, a toilet block is provided, public barbecues supplied, a caravan park developed or an access road created close to water, the result is an increase in the community exposure to water frontage, either deliberately or inadvertently.

16



Coastal Risk Assessment

- An aquatic risk and safety assessment is an excellent planning tool for local government, organisations and private developers who are looking to develop a site that will improve access to the community, thus increasing usage at that location.
- The primary objective of any Coastal Risk Assessment is to reduce the number and severity of hazards, risks, and the potential injuries at the location.

17



Coastal Risk Assessment

Development Rating (D)	ABSAMP Hazard Rating
1	ABSAMP beach rating 1 and 2
2	ABSAMP beach rating 3 and 4
3	ABSAMP beach rating 5 and 6
4	ABSAMP beach rating 7 and 8
5	ABSAMP beach rating 9 and 10

Population Rating (P)	Population Use
1	< 5 people at a time
2	5 to 50 people at a time
3	51 to 100 people at a time
4	101 to 500 people at a time
5	> 501 people at a time

Frequency of Use Rating (F)	Frequency of Use
1	An annual activity or event is held on the beach/reserve
2	An activity or event takes place within the beach/reserve on a monthly basis
3	An activity or event takes place within the beach/reserve on a weekly basis
4	An activity or event takes place within the beach/reserve on a daily basis
5	The beach/reserve is in continuous use for the majority of the day

18



Coastal Risk Assessment

HUMAN/ACTIVITY INTERACTION RATING

Population (in-water)	Conflicting activities	Population (on beach)	Conflicting activities
100+	5 Persistent and dangerous	5 1000+	5 Persistent and dangerous
75-100	4 Persistent	4 750-1000	4 Persistent
50-75	3 Regular	3 500-750	3 Regular
25-50	2 Isolated conflicts	2 250-500	2 Isolated conflicts
1-25	1 No conflicts reported	1 1-250	1 No conflicts reported

ACCESS RATING

Access Rating	Qualifying Description
1	No identifiable access via road or track, no facilities, car parking or obvious access points
2	Access via un-maintained track with no facilities and/or via water access
3	Access via any form of track or walkway (either maintained or un-maintained) AND any provision of facilities or services including (but not limited to) public transport, shower, public toilet, payphone, kiosk, significant roadway, parking
4	Access via maintained tracks with clearly identified parking area AND/OR provision of basic facilities (i.e. public toilets, public shower/ wash down area) AND/OR within 10km of moderate sized town or city (population greater than 5,000)
5	Clearly evident, marked or signposted and maintained access points AND/OR within 10km of major town or city (population greater than 25,000) AND /OR car parking for 50 or more vehicles/boat trailers. Public transport provided within 250m of a beach access point



Coastal Risk Assessment

Priority	Priority location	Priority Action & Total Score	Comments	Key to Priority Action
1	<insert name here>	<insert score and priority colour here>		High 40+
2	<insert name here>	<insert score and priority colour here>		
3	<insert name here>	<insert score and priority colour here>		Medium 31-40
4	<insert name here>	<insert score and priority colour here>		
5	<insert name here>	<insert score and priority colour here>		Low 21-30
6	<insert name here>	<insert score and priority colour here>		
7	<insert name here>	<insert score and priority colour here>		Very Low 0-20
8	<insert name here>	<insert score and priority colour here>		
9	<insert name here>	<insert score and priority colour here>		



Coastal Risk Assessment

- Coastal risk identification, analysis and evaluation using a risk matrix that includes:
 - Hazards
 - Risks
 - Probability of likelihood and consequence
 - At risk groups
 - Existing controls and treatment plans and adequacy
 - Recommended additional controls
- Risk mitigation action plan
 - What, who and when
- Monitor and review



Risk Mitigation Implementation Plans

Hazard Description (Location)	Recommended Additional Controls/Treatment Plans	Relevant Standards or Guidelines	Priority			Person responsible for implementing control measures	Complete by date	Details of action taken (date completed)	Review date
			H	M	L				



Incorporating Technology & GIS

- Streamlines the capture of relevant coastal risk data and images necessary to complete a risk assessment
- Reduces the time taken and the quantity of manual transactions required, to produce a risk assessment report
- Improves efficiency of coastal risk assessment that reduces cost to client due to reduction in time
- Increases the quality of service to clients due to improved response times and flexible reporting formats



Assessment Tools and Mapping Solutions

- Hardware;
 - GPS Camera
 - PDA
 - Tablet PC
- Field data capturing systems
- Completing the reports
- Mapping integration



Mapping Layers

Title	Description	Ability
Service	Location of all services	Contacts, Address, Pictures
Service Range	Operating range of all services	Circles showing range
Trends	Population density, forecast & characteristics (by suburb or LGA?)	Information
Drownings/Hots pot	Drownings location & high rescue/preventions	Information & stats
Beach Safety	Risk assessment - location of access, signage, flags, etc.	Details & photos
ABSAMP	Beach hazards & rating	Details & photos
Council Areas	LGA boundaries	Mapped
Key transport	Roads, rail to beaches	Mapped

25



Integration with external systems

- Topo Pro! Mapping software allows for the easy creation, manipulation and distribution of collection forms
- Allows the importation of data from land managers GIS (ESRI and Map Info)
- Also allows the exportation of data collected during the assessment to external land managers GIS



26



Assessments or Audits

- CoastSafe conducted both Coastal Risk Assessments and Audits
- Basic Audits can be conducted against existing Australian and international standards and Guidelines
 - Lifesaving Services
 - Signage & Remote Supervision Systems
 - Access & Infrastructure
 - Education and Awareness Programs
- Assessments can also be provided which provide detailed recommendations on how to better meet your 'Duty of Care'
- These two services can be provided separately or together

27



Delivered Assessments

- Risk assessments and audits have been completed for local governments directly and through local government insurers
- Risk assessments and audits have also been completed through state government departments
- CoastSafe has also delivered assessments to commercial developers and tourist & recreational facility operators around the country

28



National Delivery of Risk Assessments

- Western Australia
 - Local Government
 - Commercial Developers
- Victoria
 - Local government
 - State Government
 - Commercial Tourist Facilities
- New South Wales
 - Local Government
 - Commercial Developers
- Northern Territory
 - State Government
- Queensland
 - Local Government
 - Commercial Developers
- Tasmania
 - Local Government
- South Australia
 - Local Government

29



Coastal Risk Assessment

- providing a comprehensive assessment and identification of the risks to public safety and detailed recommendations on how to manage those risks.
- Information that can feed back into the management systems of the land manager to assist in the future planning needs along the Australian coast
- Australian CoastSafe will continue to develop and provide Coastal Risk Management services to coastal land managers

30



Research and Development

- Surf Life Saving Australia is constantly developing research projects to identify what improvements have been made as a result of Coastal Risk Assessment
- It is also important for SLSA to understand how Coastal Risk Assessments and Audits impact on the occurrence of injury and death on the Australian Coastline and how this can then be applied around the world

31



The national coastal safety management service of Surf Life Saving Australia



32

